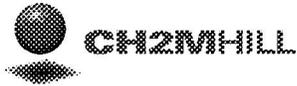
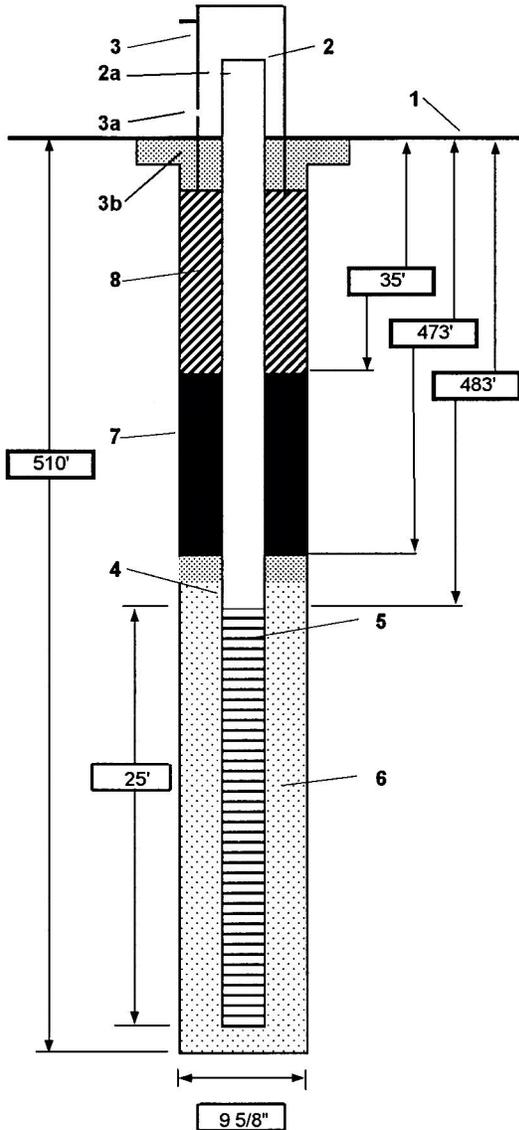


KAFB-1061 to KAFB-10610



PROJECT NUMBER 146631.BV.IC	WELL NUMBER KAFB 106-1	SHEET 1	OF 1
WELL COMPLETION DIAGRAM			

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : 65' N & 55' W of E end of rack
 DRILLING CONTRACTOR : Water Development Corp. / Marian Phillips
 DRILLING METHOD AND EQUIPMENT USED : SpeedStar 30K Stratex-ARCH
 WATER LEVEL : 483' bgl START : 10/11/2000 END: 10/21/2000 LOGGER : B LeFevre/ABQ



1- Ground elevation at well	5339.06' (concrete pad)(surveyed)
2- Top of casing elevation	5341.14' (surveyed) top of PVC
a) vent hole?	NA
3- Wellhead protection cover type	Steel 8" dia, approx. 3' high, locking cap
a) weep hole?	NA
b) concrete pad dimensions	3' x 3' + 4 concrete filled bumper posts
4- Dia./type of well casing	4" Sched 80 threaded PVC
5- Type/slot size of screen	4" Sched 80 threaded PVC 0.010" slot
6- Type screen filter	10-20 Colorado silica
7- Type of seal	Quick Grout bentonite slurry
8- Surface Seal	
a) Grout mix used	Portland cement
b) Method of placement	Tremie pipe
c) Vol. of well casing grout	
Development method	Bail, surge and pump
Development time	1 day bailing, 1/2 hr pumping
Estimated purge volume	150 Gal. bailed, 300 Gal. Pumped
Comments	1/2' sump below screen.
	Kink in PVC casing at aprox. 150' bgs. Well won't pass 3.5" x 6' bailer.
	Transition between gravel pack and seal is 5' of #30 Colorado silica, and 5' of hydrated 3/8" bentonite chips

Well survey data from March 2005 survey.

Illustration not to scale.



PROJECT NUMBER 146631.BV.IC	BORING NUMBER ST-106 SB-27	SHEET 1 OF 9
SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : 65' N & 55' W of E end of rack
 ELEVATION : DRILLING CONTRACTOR WDC/Marion Phillips
 DRILLING METHOD AND EQUIPMENT USED : SpeedStar 30K Stratex ARCH w/24" split spoon
 WATER LEVELS : 483' bgl START : 10/11/2000 END: 10/21/2000 LOGGER B.JL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
5	5-7	2.0	SS GRO/DRO	6-7-7 Silty Clay (CL) Medium brown damp firm w/cream colored streaks	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis Time 0 ppm VOC/PIC 1735 End 10/11/00 Begin 10/12/00
15	15-17	2.0	SS GRO/DRO	5-5-8 18" Silt (ML) light brown damp 6" Silty Clay (CL) Medium brown firm damp	0 ppm VOC/PIC 840
25	25-27	2.0	SS GRO/DRO	12-12-16 Gravelly & Sandy Clay (CL) Creamy-tan damp hard w/spar & qtz gravels	0 ppm VOC/PIC 920
35	35-37	2.0	SS GRO/DRO/BTEX	7-9-12 Silt (ML) & Silty Clay (CL) light brown damp firm	0 ppm VOC/PIC 1005
45	45-47	2.0	SS GRO/DRO/BTEX	8-12-13 Sandy Silt (SM) light brown firm mostly f.g. sand ~5% med sand	0 ppm VOC/PIC 1135
55	55-57	2.0	SS GRO/DRO	10-24-24 Well graded sand to Silt (SW-ML) Yellowish-orange to light brown damp firm /well packed spar qtz & dark minerals	0 ppm VOC/PIC 1356



PROJECT NUMBER 146631.BV.IC	BORING NUMBER ST-106 SB-27	SHEET 2 OF 9
SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : 65' N & 55' W of E end of rack
 ELEVATION : DRILLING CONTRACTOR WDC/Marion Phillips
 DRILLING METHOD AND EQUIPMENT USED : SpeedStar 30K Stratex ARCH w/24" split spoon
 WATER LEVELS : 483' bgl START : 10/11/2000 END: 10/21/2000 LOGGER : BJL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)		PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	STANDARD TEST RESULTS 7-14-11	SOIL DESCRIPTION	COMMENTS				
		SAMPLE #/TYPE	SS				GRO/DRO/VOC/SVOC	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.	OVM (ppm):	Headspace Analysis	Time
65	65-67	2.0	SS	GRO/DRO/VOC/SVOC	7-14-11	Silt (ML) light brown damp firm in top & bottom 6", Well graded silty sand (SW-ML) in middle	0 ppm VOC/PIC	1517			
75	75-77	2.0	SS	GRO/DRO	6-11-24	Silty (ML) light brown firm dry & Silty Clay (CL) light brown hard dry	0 ppm VOC/PIC	1655			
85	85-87	2.0	SS	GRO/DRO	2-8-25	Poorly graded sand (SP) light tan dry loose fine-grained	0 ppm VOC/PIC	1735			
							End 10/11/2000 Begin 10/12/2000				
95	95-97	2.0	SS	GRO/DRO	8-15-18	Silt (ML) yellow-orange-tan, dry-damp, cohesive/lightly cemented w/root casts	210 ppm VOC/PIC	745			
105	105-107	2.0	SS	GRO/DRO (Mass Spec)	9-18-28	Silt (ML) yellow-orange-tan, dry-damp, firm not cemented Tr. Of 2-cm subrounded concretions	333 ppm VOC/PIC	850			
115		No recovery		Cuttings	NA	Silty clay (CL) light brown moist	NA ppm VOC/PIC	930			



PROJECT NUMBER 146631.BV.IC	BORING NUMBER ST-106 SB-27	SHEET 3 OF 9
SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : 65' N & 55' W of E end of rack
 ELEVATION : DRILLING CONTRACTOR WDC/Marion Phillips
 DRILLING METHOD AND EQUIPMENT USED : SpeedStar 30K Stratex ARCH w/24" split spoon
 WATER LEVELS : 483' bgl START : 10/11/2000 END: 10/21/2000 LOGGER : BJL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	STANDARD TEST RESULTS	PENETRATION	SOIL DESCRIPTION	COMMENTS	
						DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.	
		SAMPLE #/TYPE	6"-6"-6"-6" (N)			OVM (ppm):	Headspace Analysis Time
125	125-127	2.0	SS	32-37-50/5	Poorly graded sand (SP) tan dry loose	284 ppm VOC/PIC	1004
			GRO/DRO/VOC MS / MSD				
135		No recovery		NA	Lean clay (CL) dark brown moist		
	140'		Cuttings		Fine gravel w/sand (GP)		
145	145-147	2.0	SS	10-28-28	3" Lean clay (CL) w/c.g. sand dark brown damp. Lower 15" Well graded sand (SW) w/fine gravel, dry. Gravels are metamorphic + LS	10 ppm VOC/PIC	1330
			GRO/DRO/SVOC MS / MSD SVOC Dup				
155		No recovery		NA			
165	165-167	2.0	SS	4-18-22	Poorly graded sand & silt (SP-SM) light tan, dry, well packed	25 ppm VOC/PIC weak odor	1250
			GRO/DRO/BTEX				
175		No recovery		NA	Gravelly sand (SW) light tan, damp some Bandalier(?) tuff chips		1445
			Cuttings				



PROJECT NUMBER 146631.BV.IC	BORING NUMBER ST-106 SB-27	SHEET 4 OF 9
SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : 65' N & 55' W of E end of rack
 ELEVATION : DRILLING CONTRACTOR WDC/Marion Phillips
 DRILLING METHOD AND EQUIPMENT USED : SpeedStar 30K Stratex ARCH w/24" split spoon
 WATER LEVELS : 483' bgl START : 10/11/2000 END: 10/21/2000 LOGGER BJJ

DEPTH BELOW SURFACE (FT)	PENETRATION		STANDARD TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	INTERVAL (FT)	RECOVERY (FT)			
185	185-187	2.0	SS	4-12-12 S.A.A	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis Time 30 ppm VOC/PIC 1530
195	No recovery		NA		NA ppm VOC/PID
205	205-207	2.0	SS	5-5-12 Gravelly sand (SW) light tan, moist, gravels up to 3-cm rounded	188 ppm VOC/PIC 1648
	210-212		Cuttings	Sandy clay (CL) dark brown moist hard	Fumes
215	No recovery		NA		NA ppm VOC/PIC 1520
	217-219		Cuttings	Pumice layer - white fibrous coarse sand to 3-cm sized	
225	225-227	2.0	SS	4-15-30 Poorly graded sand (SP) light tan fine grained firmly packed	107 ppm VOC/PIC 1807
			GRO/DRO/BTEX		End of day 11/13/2000 Begin 11/14/2000
235	235-237	2.0	SS	--- Poorly graded sand (SP) light tan, fine-grained well-packed, alternating layers of ashfall and qtz	151 ppm VOC/PIC 915
			GRO/DRO/VOC VOC Dup		



PROJECT NUMBER 146631.BV.IC	BORING NUMBER ST-106 SB-27	SHEET 5 OF 9
SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : 65' N & 55' W of E end of rack
 ELEVATION : DRILLING CONTRACTOR: WDC/Maion Phillips
 DRILLING METHOD AND EQUIPMENT USED : SpeedStar 30K Stratex ARCH w/24" split spoon
 WATER LEVELS : 483' bgl START : 10/11/2000 END: 10/21/2000 LOGGER: BJL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	SAMPLE #/TYPE			
245					
255		Cuttings		S.A.A. No more ash	WET cuttings
	262	Cuttings		Transition Lean clay (CL) moist	
265	265-267	2.0 SS GRO/DRO/VOC/SVOC	7-11-15	Silty clay (CL) light brown moist firm in top 12" Lean clay (CL) moist very stiff medium brown in lower 12"	212.0 ppm VOC/PIC 1040 samples are of silty clay
	265-273	Cuttings		Lean clay (CL) medium brown moist	
	273-275	Cuttings		Silt (ML)	
275	275-276	Cuttings		Lean clay (CL) medium brown moist	
	276-280	Cuttings		Well graded sand (SW)	Wet, no odor
	280-285	Cuttings		Gravelly sand (GW) up to 2-cm	no odor
285	285-287	2.0 SS GRO/DRO/BTEX/SVOC	4-8-23	Silty clay (CL) & Lean clay (CL) medium brown very stiff damp	59 ppm VOC/PIC 1250
295		Cuttings		Sandy gravel (SW) up to 25% gravel to 5-cm gravel	Lost circulation 1440



PROJECT NUMBER 146631.BV.IC	BORING NUMBER ST-106 SB-27	SHEET 6 OF 9
SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : 65' N & 55' W of E end of rack
 ELEVATION : DRILLING CONTRACT OF WDC/Marion Phillips
 DRILLING METHOD AND EQUIPMENT USED : SpeedStar 30K Stratex ARCH w/24" split spoon
 WATER LEVELS : 483' bgl START : 10/11/2000 END: 10/21/2000 LOGGER B.JL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		RECOVERY (FT)	STANDARD TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS	
	INTERVAL (FT)	RECOVERY (FT)					PENETRATION
305	305-307	2.0	SS	3-10-28	1' of <u>sandy gravel</u> (GW) well rounded up to 3-cm metamorphic rock dry. 1' of <u>Sandy clay</u> (CL) medium brown damp	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis Time 2 ppm VOC/PIC 1545	
	310		Cuttings		<u>Silty sand</u> (SM)		
315			Cuttings		<u>Well graded sand</u> (SW) fine to coarse-grained sands, tr. 2-cm gravel moist	1710	
	320		Cuttings		<u>Poorly graded sand</u> (SP) fine grained	Lost circulation	
	322		Cuttings		<u>Clayey gravel</u> (CL) 1-cm gravel	End of day 11/14/2000 1740 New day 11/15/2000	
325			Cuttings		<u>Poorly graded sand</u> (SW) light brown fine-grained moist	Wet 325' to 328'	
335			Cuttings		<u>Well graded sand</u> (SW) w/silt and fine gravel	Wet	
	345		Cuttings		<u>Poorly graded sand</u> (SP) fine grained	Wet	
345	345-347	2.0	SS	10-24-33	<u>Gravelly sand</u> (SW) rounded gravel, tr. clay at 347' damp	0 ppm VOC/PIC 1200	
	350		Cuttings		<u>Well graded gravel sand silt mix</u> (GM)	Wet	
355							



PROJECT NUMBER 146631.BV.IC	BORING NUMBER ST-106 SB-27	SHEET 7 OF 9
SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : 65' N & 55' W of E end of rack
 ELEVATION : DRILLING CONTRACTOR WDC/Marion Phillips
 DRILLING METHOD AND EQUIPMENT USED : SpeedStar 30K Stratex ARCH w/24" split spoon
 WATER LEVELS : 483' bgl START : 10/11/2000 END: 10/21/2000 LOGGER : BJJ

DEPTH BELOW SURFACE (FT)	STANDARD PENETRATION TEST RESULTS		SOIL DESCRIPTION	COMMENTS
	INTERVAL (FT)	RECOVERY (FT)		
365		Cuttings	Well graded sand (SW) dry fine-grained	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis Time
375				
385	387-395	Cuttings	Fine grained sand & silt (SP-SM) dry Silt (ML) dry light tan	
395	398-405	Cuttings	Silty sand (SM)	End of 10/15/2000 1700 Begin 10/16/2000
405	405-420	Cuttings	Silty sand (SM) & Poorly graded sand (SP) fine-grained light tan dry	
415	420-425	Cuttings	Gravel sand silt clay mixture (GM-GC) moist fine gravels	



PROJECT NUMBER 146631.BV.IC	BORING NUMBER ST-106 SB-27	SHEET 8 OF 9
SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : 65' N & 55' W of E end of rack
 ELEVATION : DRILLING CONTRACTOR: WDC/Marion Phillips
 DRILLING METHOD AND EQUIPMENT USED : SpeedStar 30K Stratex ARCH w/24" split spoon
 WATER LEVELS : 483' bgl START : 10/11/2000 END: 10/21/2000 LOGGER: BJL

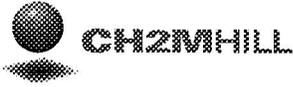
DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-8"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	SAMPLE #/TYPE			
425	425-430		Cuttings	Poorly graded sand (SP) fine-grained moist light tan	
435		440	Cuttings	S.A.A Wet	Wet
445			Cuttings	S.A.A Wet	Wet
	450		Cuttings	S.A.A Wet	Wet 1010
455	460-465		Cuttings	Poorly graded sand (SP) light tan dry	Dry
465			Cuttings	Silty clayey sandy gravel (GW-GM)	Wet 1035
	470-484		Cuttings	Poorly graded sand (SP) dry	Dry
475					



PROJECT NUMBER 146631.BV.IC	BORING NUMBER ST-106 SB-27	SHEET 9 OF 9
SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : 65' N & 55' W of E end of rack
 ELEVATION : DRILLING CONTRACTOR WDC/Marion Phillips
 DRILLING METHOD AND EQUIPMENT USED : SpeedStar 30K Stratex ARCH w/24" split spoon
 WATER LEVELS : 483' bgl START : 10/11/2000 END: 10/21/2000 LOGGER : BJL

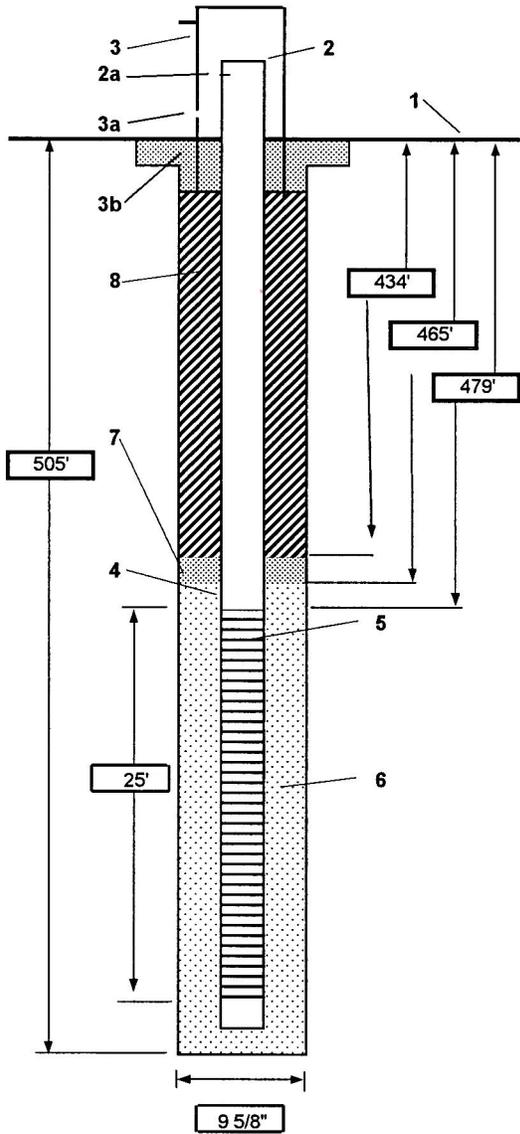
DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	SAMPLE #/TYPE			
485	Cuttings			Gravelly sand (SW) fine gravels wet	Wet 1150
490	Cuttings			Well graded sand (SW) fine- to coarse-grained	
495	498-505	Cuttings		Gravelly sands (SW) wet fine gravels fine sand	Wet 1210 0 ppm VOC/PID on wet cuttings no odor
505		Cuttings GRO/DRO			
510		Cuttings		S.A.A	TD of borehole = 510' bgs @ 1800 on 10/16/2000



PROJECT NUMBER 146631.02.PG.WI	WELL NUMBER KAFB106-2	SHEET 1	OF 1
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WELL COMPLETION DIAGRAM

PROJECT : Fuels Facility	LOCATION : Randolph Ave
DRILLING CONTRACTOR : Water Development Corp. /Marion Phillips	
DRILLING METHOD AND EQUIPMENT USED : Casing Hammer - Air Rotary	
WATER LEVEL : 484.2'	START : 3/27/2002 END: 4/3/2002 LOGGER : D.BossWalker/ABQ



1- Ground elevation at well	5336.94' (concrete pad)(surveyed)
2- Top of casing elevation	5338.59' (surveyed) top of PVC
a) vent hole?	NA
3- Wellhead protection cover type	Steel 8" dia, approx. 3' high, locking cap
a) weep hole?	NA
b) concrete pad dimensions	3' x 3' + 4 concrete filled bumper posts
4- Dia./type of well casing	4" Sched 80 threaded PVC
5- Type/slot size of screen	4" Sched 80 threaded PVC 0.010" slot
6- Type screen filter	10-20 size sand, Colorado Silica
7- Type of seal	Bentonite Chips
8- Surface Seal	
a) Grout mix used	Volclay
b) Method of placement	Drive casing pour
c) Vol. of well casing grout	
Development method	Bail, surge and pump
Development time	
Estimated purge volume	
Comments	12" sump below screen.

Well survey data from March 2005 survey.

Illustration not to scale.

PROJECT NUMBER <i>168206-02-FE-WI</i>	BORING NUMBER <i>E-106 Facility</i>	SHEET <i>1</i> OF <i>7</i>
<i>KAFB 00-62 J</i>		
SOIL BORING LOG		

PROJECT *BULK FUELS FACILITY* LOCATION *RANDOLPH AFB*
 ELEVATION _____ DRILLING CONTRACTOR *WDC*
 DRILLING METHOD AND EQUIPMENT *CASUAL HAMMER - AIR ROTARY*
 WATER LEVELS _____ START *03-20-02* FINISH *03-24-02* LOGGER *CS/DBW*

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS 10"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	INTERVAL	NUMBER AND TYPE	RECOVERY (FT)			
0						
5	5	Cuttings			<i>Silty Sand, SM, light brown, dry, some <5 mm gravel, loose, basalt gravel subangular, subrounded fine to medium grained</i>	
10	12	Cuttings			<i>Silty Sand, SM, light brown, dry, some <10 mm gravel, basalt gravel, subangular, subrounded</i>	
16	18	Cuttings			<i>Same as above</i>	
20	20	Cuttings			same <i>Silty Sand with clay, SM, light brown, 10% clay, 10% 5mm basalt subangular gravel</i>	
25	25	Cuttings			<i>Silty Gravel, GM, light brown sand, <10 mm subangular/subrounded gravel, dry, same</i>	0 PPM VOC
30	35	Cuttings			<i>same as above</i>	
40	40	Cuttings			<i>Silty Sand, SM, light brown, dry, 10% <5 mm gravel subangular, subrounded, basalt + quartz, fine to medium grained</i>	0 PPM VOC
46	46	Cuttings			<i>Gravelly Sand, SW, light brown moist, rounded, subrounded gravel <5mm</i>	
50	52	Cuttings			<i>Silty Sand, SM, light brown, dry, rounded silt clasts ~ 5mm + some basalt gravel <5% <3 mm, fine to medium grained</i>	0 PPM VOC
60						

REV 998 FORM 01588

CH2MHILL

PROJECT NUMBER 16R206.02FF.WE	BORING NUMBER Fuels Facility	SHEET 2 OF 7
KAFB 062.106-2 SOIL BORING LOG		

PROJECT Fuels Facility LOCATION RANDOLPH AVE
 ELEVATION _____ DRILLING CONTRACTOR WDC
 DRILLING METHOD AND EQUIPMENT Casing Hammered - Air Rotary
 WATER LEVELS START 05-20-02 FINISH 05-24-02 LOGGER CS/Don

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	INTERVAL	NUMBER AND TYPE	RECOVERY (FT)			
62					Silty sand with clay, SC, light brown, dry, clay clasts <10mm,	
70					SILT SAND WITH CLAY, SC LIGHT BROWN, DRY CLAY CLASTS < 20mm	
80					Same as above	0 PPM
84					Silty sand, SM, light brown (lighter), dry, fine grained	
90					Same as above	
96					Same as above Silty Sand with clay, SM, light brown, moist, fine grained, rounded clay clasts (10%)	0 PPM
102					Same as above	
106					Same as above	
110					Same as above	
120					Same as above	

REV 6/98 FORM D154K

PROJECT NUMBER 164206-02.FF.WE	BORING NUMBER FUGGS FACILITY KAFB CRZ 106-2	SHEET 3	OF 7
SOIL BORING LOG			

PROJECT BULK FUGGS FACILITY LOCATION RANDOLPH AVE
 ELEVATION _____ DRILLING CONTRACTOR WDL
 DRILLING METHOD AND EQUIPMENT CASING HAMMER - AIR ROTARY
 WATER LEVELS _____ START 03-20-02 FINISH 03-24-02 LOGGER CS/AM

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS 6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	INTERVAL	NUMBER AND TYPE	RECOVERY (FT)			
120	120				Silty Clay, SC, light brown, moist rounded clay clasts (<10mm), quartz gravel, fine gravel	
130					Silty Sand, SM, light brown, moist, fine to coarse grained, gravel (<5mm) basalt, quartz, plug	
140	140				Silty Clay, SP, light brown, moist, few gravels quartz angular (<5mm clay clasts (70%)	
	142				Silty Sand with gravel, SM, light brown fine to coarse grained, dry, gravel (<5mm)	
150	150				Silty Sand, SM, light brown, fine to coarse grained, plug (black sand)	
160	158				Same as above	1) PPM values, 1.1 PPM DOC through stem
170					Same as above	
	178				Same as above	
180					Silty Gravel, GM, light brown, dry, gravel (<10mm)	

Submerged

PROJECT NUMBER <i>168206.02.FF.WI</i>	BORING NUMBER <i>Lucas Facility</i>	SHEET <i>4</i> OF <i>7</i>
KAFB 062 10-2 SOIL BORING LOG		

PROJECT *BULK FUEL FACILITY* LOCATION *RANDOLPH AVE*
 ELEVATION _____ DRILLING CONTRACTOR *WDC*
 DRILLING METHOD AND EQUIPMENT *CASING HAMMER - AIR ROTARY*
 WATER LEVELS _____ START *03-20-02* FINISH *03-24-02* LOGGER *CS/ase*

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS 6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	INTERVAL	NUMBER AND TYPE	RECOVERY (FT)			
80						1.1 PPM VOC
150	185				Silty Sand, SM, light brown, dry, fine to coarse grained	
200	198-200	cuttings SS 2		23-37-33	Silt Sand, Gravel mixture, GM, light brown, moist, gravel 200mm SAND & GRAVEL, GW, LIGHT BROWN SAND, MIXED CORNICES, SUB-ROUNDED; REGRADING TO COARSE GRAINED SAND, MOIST, VERT RANGE Silty Sand SM, light brown, dry, fine to coarse grained.	0.7 PPM (sample) 0.0 (casing)
210	204-210	cuttings			Gravel w/ Sand SW, light brown, moist, coarse grained sand, gravel 400mm G.S.	
220	220-224	cuttings SS		6;10-16	Well graded sand, SW, light brown moist, loose, fine to coarse grained, subrounded, few quartz gravels < 3mm. Clayey sand, SC, light brown, moist. coarse grained 40% clay same as 220'	0.0 PPM (casing) 1.5 PPM (sample)
240	236				same as 220'	0.0 PPM (casing)

REV 0108 FORM D1558

PROJECT NUMBER <i>164206.02.FT. WE</i>	BORING NUMBER <i>FUGUS FACILITY</i>	SHEET <i>5</i> OF <i>7</i>
<i>KAFB 106-2</i> SOIL BORING LOG		

PROJECT *BULK FUGUS FACILITY* LOCATION *RANDOLPH AVE*
 ELEVATION _____ DRILLING CONTRACTOR *WDC*
 DRILLING METHOD AND EQUIPMENT *CASSING HAMMER - AIR ROTARY*
 WATER LEVELS _____ START *03-20-02* FINISH *03-24-02* LOGGER *CS/ADW*

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS 6"-8" SPT (N)	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY (FT)			
240	240	SS	2	5-11-22	WELL GRADED SAND, SW, LIGHT BROWN, MODST, LOOSE, FINING TO COARSE GRAINED, MEDIUM TO DENSE	1.2 ppm VOC
260	260	SS	2	6-9-11	AS ABOVE	0.9 ppm VOC
270					WELL GRADED SAND, SW, LIGHT BROWN AND SPECKLED, LOOSE, FINING TO COARSE GRAINED	
280	280	SS	2	7-50 NR	NO SAMPLE SANDY GRAVEL, GW, LIGHT BROWN SAND, MIXED COBBLES, MEDIUM TO COARSE GRAINED SAND, 5% CURVE, 20% COBBLES.	Sample for analysis 1.4 ppm VOC
290					AS ABOVE	
300	300	SS	2	21, 27, 24	SANDY GRAVEL, GW, 5% LIGHT BROWN SAND, COLORED GRAVELS, FINING GRAINED GRAVEL DET, LOOSE, DENSE	10000 ppm VOC SAMPLE FOR DRUGS ANALYSES AND VOC SIOC ANALYSES
310	310				AS ABOVE	
320	320	SS	2	7.9, 27	AS ABOVE - MEDIUM DENSE	SAMPLE FOR DRUGS ANALYSES 1-2 ppm VOC

REV 0/02 FORM D155R



PROJECT NUMBER 168206 02.FFWI	BORING NUMBER KAFB 062 106-2	SHEET 6	OF 7
SOIL BORING LOG			

PROJECT BULK FUELS FACILITY LOCATION RANDOLPH AVE
 ELEVATION _____ DRILLING CONTRACTOR NDC
 DRILLING METHOD AND EQUIPMENT CASING HAMMER - AIR LOGGING
 WATER LEVELS _____ START 03-20-02 FINISH 03-24-02 LOGGER CS/DAW

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS 6" SPT (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	INTERVAL	NUMBER AND TYPE	RECOVERY (FT)			
330	CUTSAIL				WELL GRADED SAND, SN, LIGHT BROWN, LOOSE, DRY, 5% GRAVEL FINE GRAIN	
340	340	SS	2	11.29, 42	WELL GRADED SAND WITH GRAVEL SN, LIGHT BROWN, DENSE, MOIST, 10% CORALLES AND GRAVEL	SAMPLE FOR ANALYSIS 4.5 PPM VOC
360					WELL GRADED SAND WITH GRAVEL, SN, DARK BROWN, MOIST, 10% GRAVEL	
370	CUTSAIL				WELL GRADED SAND WITH GRAVEL, SN DARK BROWN, LOOSE, MOIST. FINE GRAVELS 5%	
380	380	SS	2	6.9, 11	WELL GRADED SAND, LIGHT BROWN, LOOSE-MEDIUM DENSITY, MOIST	SAMPLE FOR ANALYSIS V-1524 PED 19929 :-GEO/ARO, VOL, SVUC
400	400	CUTSAIL			AS ABOVE	
420	420	SS	2	6.14, 23	AS ABOVE	SAMPLE FOR ANALYSIS
430	CUTSAIL				POORLY GRADED SAND, SP, DARK BROWN, LOOSE, MOIST	
440						

REV 0/0R FORM 01588

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PROJECT NUMBER 166706 02 FFWI	BORING NUMBER Fires Fallum	SHEET 7	OF 7
KAFB 106-2 SOIL BORING LOG			

PROJECT Bulk Feces Facility LOCATION RANDOLPH AVE
 ELEVATION _____ DRILLING CONTRACTOR WDC
 DRILLING METHOD AND EQUIPMENT CASING DRILLING - AIR ROTARY
 WATER LEVELS _____ START 03-20-02 FINISH 03-24-02 LOGGER CS/oa

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS 6" 6" 6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	INTERVAL	NUMBER AND TYPE	RECOVERY (FT)			
440	440	CASING				
460					AS ABOVE	
480	480	SS	2	7, 15, 26	WELL GRADED SAND WITH CAHOL, SW, FEW GRASSHOP, LIGHT BROWN, DRY, 5% GRAVEL	SAMPLE REC APPROX 0.9 MIN
500					AS ABOVE	

REV 9/88 FORM D152R



PROJECT NUMBER 168206.02.TT.WI	BORING NUMBER KAFB 106-3	SHEET 1 OF 9
SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : Randolph Ave, KAFB
 ELEVATION : NA DRILLING CONTRACTOR Water Development Corporation / Mark Green
 DRILLING METHOD AND EQUIPMENT USED : Star 30K Stratex ARCH w/18" split spoon
 WATER LEVELS : 481.9' bgj START : 1/21/2003 END: 01/25/2003 LOGGER D.Boss-Walker/Celina Salazar

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	SAMPLE #/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
5	5		Cuttings		Sandy Silt, ML, brown (7.5YR 5/4), dry, loose, non-plastic; 30% well graded sand	Depth of casing, drilling rate, drilling fluid loss, tests, and instrumentation. OVM (ppm): Headspace Analysis Ambient : 0.8 ppm
15	15		Cuttings		S.A.A	
25	25		Cuttings		S.A.A	
35	35		Cuttings		S.A.A	
45	45		Cuttings		S.A.A	
50	50		Cuttings		Silt with Sand, ML, brown(7.5YR 5/4), dry, soft, non-plastic; 15% coarse sand	0.4 ppm Above Hole
55	55		Cuttings		S.A.A	

	PROJECT NUMBER 168206.02.TT.WI	BORING NUMBER KAFB 106-3	SHEET 2 OF 9
	SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : Randolph Ave, KAFB
 ELEVATION : DRILLING CONTRACTOR: Water Development Corporation / Mark Green
 DRILLING METHOD AND EQUIPMENT USED : Star 30K Stratex ARCH w/18" split spoon
 WATER LEVELS : 481.9' bgl START : 1/21/2003 END: 01/25/2003 LOGGER : D Boss-Walker/Celina Salazar

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		RECOVERY (FT) SAMPLE #/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis Time
	DEPTH	RECOVERY				
65	65		Cuttings		S.A.A	
70	70		Cuttings		Silt with Sand, ML, brown (7.5YR 5/4), dry, soft, non-plastic, 15-20% coarse sand	0.6 ppm Above Hole
75						
80	80		Cuttings		Silt, ML, brown (7.5YR 5/4), dry, soft, non-plastic	
85						
90	90		Cuttings		Silt, ML, strong brown (7.5YR, 5/6), dry, soft, non-plastic	0.0 ppm Above Hole
95						End 01-21-03 Start 01-22-03
90	90		Cuttings		S.A.A	0.0 ppm Above Hole
105						
110	110		Cuttings		Silt with Clay, ML, brown (7.5YR, 5/4), dry, soft, low plasticity; 15-20% clay clasts, medium stiff, 10-20 mm	
115						



CH2MHILL

PROJECT NUMBER
168206.02.TT.WI

BORING NUMBER
KAFB 106-3 SHEET 3 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : Randolph Ave, KAFB
ELEVATION : DRILLING CONTRACTOR Water Development Corporation / Mark Green
DRILLING METHOD AND EQUIPMENT USED : Star 30K Stratex ARCH w/18" split spoon
WATER LEVELS : 481.9' bgl START : 1/21/2003 END : 01/25/2003 LOGGER : D.Boss-Walker/Celina Salazar

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	SAMPLE #/TYPE	STANDARD PENETRATION TEST RESULTS 6"-5"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis Time
125	125		Cuttings		Poorly Graded Sand, SP, light yellowish brown (10YR 6/4), dry, loose, fine grained	0.0 ppm in Headspace
135						
140	140		Cuttings		Poorly Graded Sand, SP, brown (10 YR 5/3) speckled red, black & white, dry, loose,	6.0 ppm in Headspace
145						
150	150		Cuttings		Poorly Graded Sand, SP, yellowish brown (10YR, 5/4), dry, loose, medium grained	0.4 ppm in Headspace
155	155		Cuttings		S.A.A	
165	165		Cuttings		S.A.A	
175	175		Cuttings		S.A.A	1.7 ppm in Headspace

	PROJECT NUMBER 168206.02.TT.WI	BORING NUMBER KAFB 106-3	SHEET 4 OF 9
	SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : Randolph Ave, KAFB
 ELEVATION : DRILLING CONTRACTOR Water Development Corporation / Mark Green
 DRILLING METHOD AND EQUIPMENT USED : Star 30K Stratex ARCH w/18" split spoon
 WATER LEVELS : 481.9' bgl START : 1/21/2003 END: 01/25/2003 LOGGER : D.Boss-Walker/Celina Salazar

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		RECOVERY (FT)		STANDARD PENETRATION TEST RESULTS 8"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
				SAMPLE #/TYPE			
185	185					S.A.A	
190	190					Poorly Graded Sand, SP, yellowish brown (10YR, 5/4), dry, loose, medium grained; 5% fine gravel	0.8 ppm in Headspace
195							
200	200					Poorly Graded Sand, SP, yellowish brown (10YR, 5/4), dry, loose, medium grained; 10% fine gravel	
205							
210	210-211.5	1.5	SS		4,6,8	Poorly Graded Sand, SP, brown (10YR 5/3), dry, medium dense, fine grained	End 01-22-03 Start 01-23-03
215							
220	220					Silty Sand with Gravel, SM, light brown, moist, loose, fine to coarse grained; 5-10 mm gravel	0.0 ppm in Headspace
225							
230	230-231.5	1.5	SS		9,24,24	Sand, SP, light brown gray, dry, dense, medium to coarse grained, 2-7 mm gravel	0.0 ppm in Headspace
235							
240	240					Sand, SP, light grey (2.5Y 7/1), dry, fine to medium grained, few gravels	Ambient PID 0-10 ppm



CH2MHILL

PROJECT NUMBER
168206.02.TT.WI

BORING NUMBER
KAFB 106-3

SHEET 5 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : Randolph Ave, KAFB
 ELEVATION : DRILLING CONTRACTOR Water Development Corporation / Mark Green
 DRILLING METHOD AND EQUIPMENT USED : Star 30K Stratex ARCH w/18" split spoon
 WATER LEVELS : 481.9' bgl START : 1/21/2003 END: 01/25/2003 LOGGER : D.Boss-Walker/Celina Salazar

DEPTH BELOW SURFACE (FT)	STANDARD PENETRATION TEST RESULTS		SOIL DESCRIPTION	COMMENTS	
	INTERVAL (FT)	RECOVERY (FT)			
	SAMPLE #/TYPE	6"-6"-6" (N)			
245					
250	250-251.5	1.5	SS	10,15,28 Sand, SP, light brownish gray (10YR 6/2), moist, dense, medium grained	1.3 ppm in Headspace
255	255		Cuttings	Sand, SP, pinkish gray (5YR 6/2), moist,	
265	21-Sep		Cuttings	Sand, SP, light brown (7YR 6/4), moist, fine to medium grained	0.6 ppm in Headspace
270	270-271.5	1.5	SS	Gravelly Sand, GP, brown (7.5YR 5/3), slightly moist, 5-20 mm gravel, coarse	0.3 ppm in Headspace
275					
280	280		Cuttings	Sand, SP, light gray (10YR 7/2), dry, fine to medium grained	0.2 ppm in Headspace
285					
290	290-291.5	1.5	SS	8,11,13 Gravelly Sand, SP, pinkish gray (7.5YR 6/2), moist, dense, fine to medium grained sand	0.4 ppm in Headspace
295					
300			Cuttings	Sandy Gravel, GP, gray, moist, rounded 5mm gravel, coarse sand	0.2 ppm in Headspace

	PROJECT NUMBER 168206.02.TT.WI	BORING NUMBER KAFB 106-3	SHEET 6 OF 9
	SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : Randolph Ave, KAFB
 ELEVATION : DRILLING CONTRACTOR Water Development Corporation / Mark Green
 DRILLING METHOD AND EQUIPMENT USED : Star 30K Stratex ARCH w/18" split spoon
 WATER LEVELS : 481.9' bgl START : 1/21/2003 END: 01/25/2003 LOGGER : D.Boss-Walker/Celina Salazar

DEPTH BELOW SURFACE (FT)	STANDARD		SOIL DESCRIPTION	COMMENTS
	INTERVAL (FT)	PENETRATION		
RECOVERY (FT)	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.	
305				
310	310-311.5	1.5	SS 5,7,11	Gravelly Sand, SP, light gray (10YR 7/1), moist, medium dense, medium grained sand, 5-10 mm subrounded gravel
315				
320	320		Cuttings	S.A.A
325				
330	330-331.5	1.5	SS 8,12,15	Gravelly Sand, SP, light yellowish brown (10YR 6/4), moist, fine to medium grained sand, 5-20 mm gravel; rounded and subrounded
335				1.0 ppm in Headspace
340	340		Cuttings	S.A.A
345				0.5 ppm in Headspace
350	350		Cuttings	Gravelly Sand, SP, light brownish gray (2.5Y 6/2), moist, loose, subrounded 5-10 mm gravel
355				0.4 ppm in Headspace
360	360		Cuttings	Gravelly Sand, SP, yellowish brown, moist, loose, 5 mm gravel, subrounded



CH2MHILL

PROJECT NUMBER 168206.02.TT.WI	BORING NUMBER KAFB 106-3	SHEET 7 OF 9
SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : Randolph Ave, KAFB
 ELEVATION : DRILLING CONTRACTOR Water Development Corporation / Mark Green
 DRILLING METHOD AND EQUIPMENT USED : Star 30K Stratex ARCH w/18" split spoon
 WATER LEVELS : 481.9' bgl START : 1/21/2003 END: 01/25/2003 LOGGER D.Boss-Walker/Celina Salazar

DEPTH BELOW SURFACE (FT)		RECOVERY (FT)	SAMPLE #/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
INTERVAL (FT)						
365	365		Cuttings		Sand, SP, pinkish brown, moist, fine to medium grained	0.1 ppm in Headspace
375	375		Cuttings		S.A.A	
384	384		Cuttings		S.A.A for 350'	
385						
390	390-391.5	1.5	SS	6,9,18	Gravelly Sand, SP, light brown(7.5YR 6/4), moist, 5-20 mm subrounded gravel, fine to medium grained sand	0.1 ppm in Headspace
395	395		Cuttings		S.A.A	End 01-23-03 Start 01-24-03
405	405		Cuttings		S.A.A	
410	410		Cuttings		Well Graded Sand, SW, light brownish gray (10YR 6/2), dry, loose; 5% fine gravel	0.6 ppm in Headspace
415						
420	420		Cuttings		Poorly Graded Sand, SP, grayish brown (10YR 5/2), dry, loose, fine grained	

	PROJECT NUMBER 168206.02.TT.WI	BORING NUMBER KAFB 106-3	SHEET 8 OF 9
	SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : Randolph Ave, KAFB
 ELEVATION : DRILLING CONTRACTOR Water Development Corporation / Mark Green
 DRILLING METHOD AND EQUIPMENT USED : Star 30K Stratex ARCH w/18" split spoon
 WATER LEVELS : 481.9' bgl START : 1/21/2003 END: 01/25/2003 LOGGER D.Boss-Walker/Celina Salazar

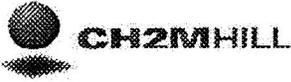
DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS	
	DEPTH	THICKNESS					SAMPLE #/TYPE
425	425		Cuttings		S.A.A		
435	435		Cuttings		S.A.A		
445	445		Cuttings		S.A.A		
450	450-451.5	1.5	SS	10,20,27	Poorly Graded Sand, SP, grayish brown (10YR 5/2), dry, medium dense, fine grained	10 ppm in Headspace	
455	455		Cuttings		S.A.A		
465	465				S.A.A		
470	470-471.5	1.5	SS	4,3,4	Poorly Graded Sand, SP, light gray (10YR 7/2) with red, black and white speckles, moist, loose, medium grained	1.7 ppm in Headspace	
475	475		Cuttings		S.A.A		



PROJECT NUMBER 168206.02.TT.WI	BORING NUMBER KAFB 106-3	SHEET 9 OF 9
SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility (ST-106) LOCATION : Randolph Ave, KAFB
 ELEVATION : DRILLING CONTRACTOR Water Development Corporation / Mark Green
 DRILLING METHOD AND EQUIPMENT USED : Star 30K Stratex ARCH w/18" split spoon
 WATER LEVELS : 481.9' bgl START : 1/21/2003 END: 01/25/2003 LOGGER D.Boss-Walker/Celina Salazar

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	SAMPLE #/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis Time
485	485		Cuttings		S.A.A	Water Encountered End 01-24-03 Start 01-25-03
500	500		Cuttings		Sandy lean Clay, CL, brown (10YR 4/3), wet, medium stiff, low plasticity	
505	505		Cuttings		S.A.A for 470' but Wet	Total Depth - 505' bgs
510						



PROJECT NUMBER
179654.02.FF.SV

WELL NUMBER
KAFB-1064

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1064

LOCATION : Veterans Affairs Hospital South Parking Lot

DRILLING CONTRACTOR : WDC Exploration & Wells

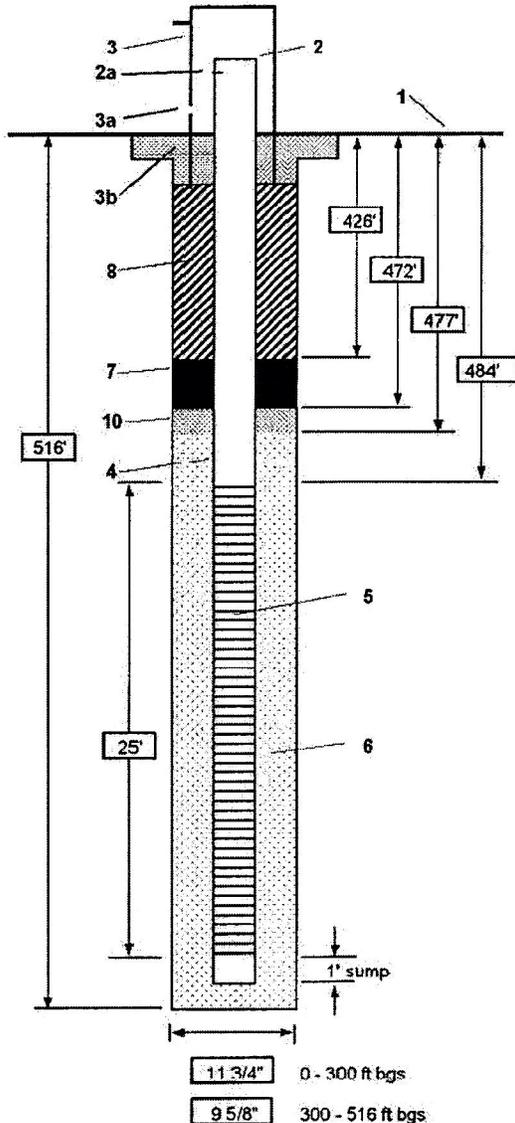
DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

WATER LEVELS: 488.34 ft bgs

START : 1/4/2006

END : 1/10/2006

LOGGER : M. Brislen



1- Ground elevation at well	5340.09
2- Top of casing elevation	5342.57
a) vent hole?	no
3- Wellhead protection cover type	above ground 8" dia. steel pipe w/locking lid
a) weep hole?	no
b) concrete pad dimensions	4' x 4' with 4 concrete filled bollards
4- Dia./type of well casing	4" schedule 80 PVC
5- Type/slot size of screen	0.010" schedule 80 PVC
6- Type screen filter	10/20 Colorado Silica Sand
a) Quantity used	
7- Type of seal	hydrated bentonite chips
a) Quantity used	
8- Grout	
a) Grout mix used	volclay bentonite grout
b) Method of placement	tremie pipe
c) Vol. of well casing grout	
Development method	bail, swab, bail, pump
Development time	
Estimated purge volume	

Comments (10) transition sand: 20/40 Colorado Silica Sand from 472 - 477; top of grout is 60 ft bgs; hydrated bentonite chips from 60 - 50 ft bgs; portland cement from 1 - 50 ft bgs; 1 foot sump below well screen

Not to scale.

 CH2MHILL	PROJECT NUMBER 197654.02.FF.SV	BORING NUMBER KAFB-1064	SHEET 1 OF 9
	SOIL BORING LOG		

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1064 LOCATION : Veterans Affairs Hospital South Parking Lot
 ELEVATION : DRILLING CONTRACTOR : WDC Exploration & Wells
 DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K
 WATER LEVEL : 488.34 ft bgs START : 01/04/2006 END : 01/06/2006 LOGGER : M. Bristen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	NUMBER	AND TYPE			
0					
10				SILT WITH SAND (ML), brown (7.5YR 5/4), dry, medium to low plasticity	PID = 0.0 ppm
20				same as above	PID = 0.0 ppm Injecting water in cyclone to reduce dust
30				same as above	PID = 0.0 ppm
40				same as above	PID = 0.0 ppm
50				same as above	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER

197654.02.FF.SV

BORING NUMBER

KAFB-1064

SHEET 2 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1064

LOCATION : Veterans Affairs Hospital South Parking Lot

ELEVATION :

DRILLING CONTRACTOR : WDC Exploration & Wells

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

WATER LEVEL : 488.34 ft bgs

START : 01/04/2006

END : 01/06/2006

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	NUMBER AND TYPE			
60				<u>WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM)</u> , brown (7.5YR 5/4), moist, low plasticity	PID = 0.0 ppm
70				<u>LEAN CLAY WITH SAND (CL)</u> , brown (7.5YR 4/4), moist, medium plasticity	PID = 0.0 ppm
80				<u>POORLY GRADED SAND (SP)</u> , brown (7.5YR 5/3), moist, low plasticity, medium to fine sand	PID = 0.0 ppm
90				same as above	PID = 0.0 ppm
100				<u>SILT WITH SAND (ML)</u> , reddish yellow (7.5YR 6/6), dry, medium to low plasticity	PID = 0.0 ppm
110				<u>SILT WITH SAND (ML)</u> , reddish yellow (7.5YR 6/6), dry, medium to low plasticity, 5% clay	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER
197654.02.FF.SV

BORING NUMBER
KAFB-1064

SHEET 3 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1064

LOCATION : Veterans Affairs Hospital South Parking Lot

ELEVATION :

DRILLING CONTRACTOR : WDC Exploration & Wells

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

WATER LEVEL : 488.34 ft bgs

START : 01/04/2006

END : 01/06/2006

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-8"-8" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
120				WELL GRADED SAND WITH SILT (SW-SM), brown (7.5YR 5/4), moist, low plasticity	PID = 0.0 ppm
130				POORLY GRADED SAND (SP), brown (7.5YR 5/3), moist, low plasticity, medium to fine sand	PID = 0.0 ppm Cyclone hose & collar clogged Cleaned out cuttings for last 20 ft, low return
140				WELL GRADED SAND (SW), light brown (7.5YR 6/4), dry, low plasticity	PID = 0.0 ppm
150				WELL GRADED SAND WITH GRAVEL (SW), light brown (7.5YR 6/4), dry, low plasticity	PID = 0.0 ppm
160				POORLY GRADED SAND (SP), light brown (7.5YR 6/4), moist, low plasticity, medium to fine sand	01/06/2006 PID = 0.0 ppm
170				same as above	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER

197654.02.FF.SV

BORING NUMBER

KAFB-1064

SHEET 4 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1064

LOCATION : Veterans Affairs Hospital South Parking Lot

ELEVATION :

DRILLING CONTRACTOR : WDC Exploration & Wells

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

WATER LEVEL : 488.34 ft bgs

START : 01/04/2006

END : 01/06/2006

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
180				<u>POORLY GRADED SAND (SP)</u> , brown (7.5YR 5/4), dry, low plasticity, fine sand	PID = 0.0 ppm
190				same as above	PID = 0.0 ppm
200				<u>WELL GRADED SAND (SW)</u> , light brown (7.5YR 6/4), dry, low plasticity	PID = 0.0 ppm
210				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , light brown (7.5YR 6/4), dry, low plasticity	PID = 0.0 ppm
220				same as above	PID = 0.0 ppm
230				<u>WELL GRADED SAND (SW)</u> , light brown (7.5YR 6/4), dry, low plasticity	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER
197654.02.FF.SV

BORING NUMBER
KAFB-1064

SHEET 5 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1064

LOCATION : Veterans Affairs Hospital South Parking Lot

ELEVATION :

DRILLING CONTRACTOR : WDC Exploration & Wells

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

WATER LEVEL : 488.34 ft bgs

START : 01/04/2006

END : 01/06/2006

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	STANDARD		SOIL DESCRIPTION	COMMENTS
	INTERVAL (FT)	PENETRATION TEST RESULTS		
	NUMBER AND TYPE	6"-8"-6" (N)		
240			<u>POORLY GRADED SAND (SP)</u> , brown (7.5YR 6/3), moist, low plasticity, medium to fine sand	PID = 0.0 ppm
250			same as above	PID = 0.0 ppm
260			same as above	PID = 0.0 ppm
270			<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , light brown (7.5YR 6/4), dry, low plasticity	PID = 0.0 ppm
280			same as above	PID = 0.0 ppm
290			<u>WELL GRADED SAND WITH SILT (SW-SM)</u> , brown (7.5YR 5/4), dry, low plasticity	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER
197654.02.FF.SV

BORING NUMBER
KAFB-1064

SHEET 6 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1064

LOCATION : Veterans Affairs Hospital South Parking Lot

ELEVATION : DRILLING CONTRACTOR : WDC Exploration & Wells

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

WATER LEVEL : 488.34 ft bgs

START : 01/04/2006

END : 01/06/2006

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	NUMBER AND TYPE			
300				SILT WITH SAND (ML), brown (7.5YR 5/4), dry, low plasticity	PID = 0.0 ppm At 300 feet telescope from 11 3/4" to 9 5/8" casing
310				not recorded	01/06/2006
320				not recorded	
330				POORLY GRADED SAND (SP), brown (7.5YR 5/3), moist, low plasticity, medium to fine sand	PID = 0.0 ppm
340				WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM), brown (7.5YR 5/4), moist, low plasticity	PID = 0.0 ppm possible perched zone
350				WELL GRADED SAND WITH GRAVEL (SW), brown (7.5YR 5/4), moist, low plasticity	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER
197654.02.FF.SV

BORING NUMBER
KAFB-1064

SHEET 7 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1064

LOCATION : Veterans Affairs Hospital South Parking Lot

ELEVATION :

DRILLING CONTRACTOR : WDC Exploration & Wells

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

WATER LEVEL : 488.34 ft bgs

START : 01/04/2006

END : 01/06/2006

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6'-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
360				WELL GRADED SAND WITH GRAVEL (SW), brown (7.5YR 5/4), moist, low plasticity	PID = 0.0 ppm
370				WELL GRADED SAND (SW), brown (7.5YR 5/4), moist, low plasticity, 5% gravel	PID = 0.0 ppm
380				WELL GRADED SAND WITH GRAVEL (SW), brown (7.5YR 5/4), moist, low plasticity	PID = 0.0 ppm
390				WELL GRADED SAND (SW), brown (7.5YR 5/4), moist, low plasticity, 5% gravel	PID = 0.0 ppm
400				WELL GRADED SAND (SW), brown (7.5YR 5/4), moist, low plasticity	PID = 0.0 ppm
410				WELL GRADED SAND (SW), brown (7.5YR 5/4), moist, low plasticity, 5% gravel	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER

197654.02.FF.SV

BORING NUMBER

KAFB-1064

SHEET 8 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1064

LOCATION : Veterans Affairs Hospital South Parking Lot

ELEVATION :

DRILLING CONTRACTOR : WDC Exploration & Wells

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

WATER LEVEL : 488.34 ft bgs

START : 01/04/2006

END : 01/06/2006

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 0"-0"-0" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	NUMBER AND TYPE			
420				<u>WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM)</u> , brown (7.5YR 5/4), moist, low plasticity	PID = 0.0 ppm
430				<u>POORLY GRADED SAND (SP)</u> , brown (7.5YR 5/3), moist, medium to low plasticity, fine sand	PID = 0.0 ppm Driller thinks this could be perched zone
440				<u>WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM)</u> , brown (7.5YR 5/4), moist, low plasticity	PID = 0.0 ppm
450				<u>WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM)</u> , brown (7.5YR 5/4), moist, low plasticity	PID = 0.0 ppm
460				<u>WELL GRADED SAND WITH SILT (SW-SM)</u> , brown (7.5YR 5/4), dry, low plasticity	PID = 0.0 ppm
470				<u>WELL GRADED SAND WITH SILT (SW-SM)</u> , brown (7.5YR 5/4), dry, low plasticity, 10% gravel	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER
197654.02.FF.SV

BORING NUMBER
KAFB-1064

SHEET 9 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1064

LOCATION : Veterans Affairs Hospital South Parking Lot

ELEVATION :

DRILLING CONTRACTOR : WDC Exploration & Wells

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

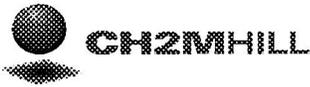
WATER LEVEL : 488.34 ft bgs

START : 01/04/2006

END : 01/06/2006

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	STANDARD		SOIL DESCRIPTION	COMMENTS
	INTERVAL (FT)	PENETRATION TEST RESULTS		
NUMBER AND TYPE	8"-8"-8" (N)			
480			<u>WELL GRADED SAND WITH SILT (SW SM)</u> , brown (7.5YR 5/4), moist, low plasticity, 10% gravel	
490			<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5YR 5/4), moist, low plasticity	Water level = 488.34 ft bgs PID = 0.0 ppm
500			<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5YR 5/4), wet, low plasticity	PID = 0.0 ppm
510			<u>WELL GRADED GRAVEL WITH SILT AND SAND (GW GM)</u> , brown (7.5YR 5/4), wet, low plasticity	PID = 0.0 ppm TD = 516 feet



PROJECT NUMBER
279495.04.01.01

WELL NUMBER
KAFB-1065

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : ST-106 KAFB Bulk Fuels Facility

LOCATION : Intersection of Fuels Drive and Randolph Ave.

DRILLING CONTRACTOR : WDC Exploration & Wells

COORDINATES : N 1474504.5202, E 1542430.6856 New Mexico State Plane Coordinates,

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

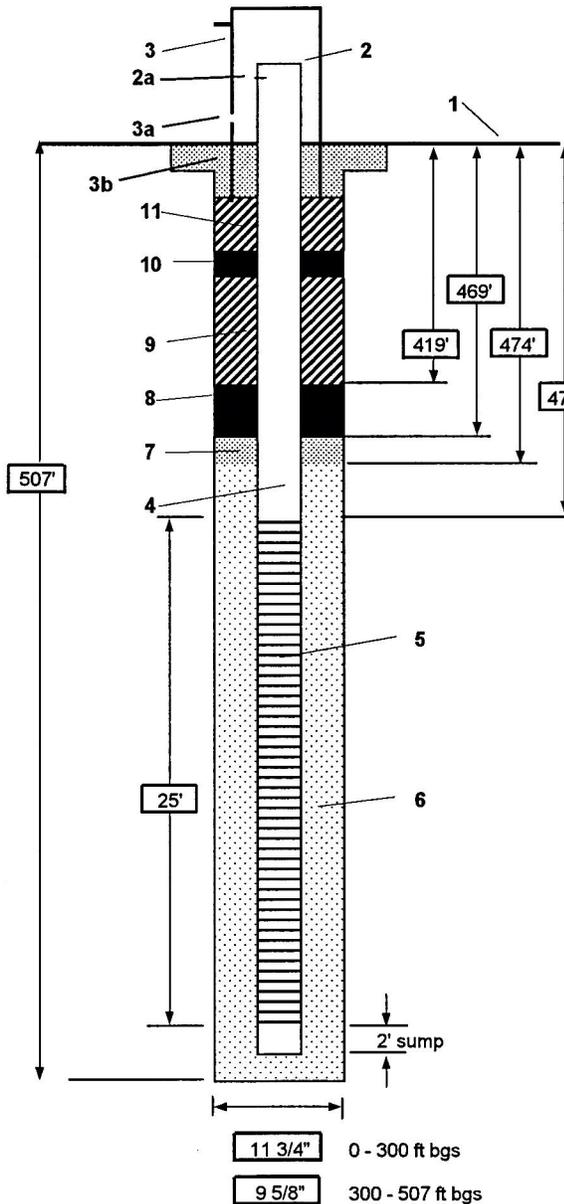
Central Zone, NAD 83 Datum

WATER LEVEL : 487.58' bgs (02/07/2007)

START : 1/22/2007

END : 1/30/2006

LOGGER : A. Forsberg



1- Ground elevation at well	5343.83 ft above Mean Sea Level
2- Top of casing elevation	5346.96 ft above Mean Sea Level
a) vent hole?	no
3- Wellhead protection cover type	above ground 8" dia. steel pipe w/locking lid
a) weep hole?	no
b) concrete pad dimensions	4' x 4' with 4 concrete filled bollards
4- Dia./type of well casing	4" schedule 80 PVC
5- Type/slot size of screen	0.010" schedule 80 PVC
6- Type screen filter	10/20 Colorado Silica Sand 474' - 507'
7- Transition sand	20/40 Colorado Silica Sand 469' - 474'
8- Type of seal	hydrated bentonite chips 419' - 469'
9- Grout	
a) Grout mix used	volclay bentonite grout 60' - 419'
b) Method of placement	direct pour
10- Type of seal	hydrated bentonite chips 50' - 60'
11- Grout	
a) Grout mix used	portland cement grout 1' - 50'
b) Method of placement	tremie pipe
Development method	bail, swab, bail, pump
Estimated purge volume	266.3 gallons
Comments	

Not to scale



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1065

SHEET 1 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1065

LOCATION : North of Fuels Drive and Randolph Ave. intersection

ELEVATION : 5346.96 ft MSL @ TOC

COORDINATES : N 1474504.5202, E 1542430.6856 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 487.58' bgs (02/07/2007) START : 01/22/2007

END : 01/30/2007

LOGGER : A. Forsberg

DEPTH BELOW SURFACE (FT)	STANDARD		SOIL DESCRIPTION	COMMENTS
	INTERVAL (FT)	PENETRATION TEST RESULTS		
0		6"-6"-6" (N)	<u>WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM)</u> , brown (7.5 YR 4/3), fine gravel, moist	PID = 0.0 ppm
10			<u>SANDY LEAN CLAY (CL)</u> , brown (7.5 YR 4/4), moist, medium plasticity, clay in nodules, 5% fine to medium gravel	PID = 0.0 ppm
20			<u>SILT (ML)</u> , reddish yellow (5 YR 6/6), dry, low to medium plasticity 10 % medium sand	PID = 0.0 ppm
30			<u>SILT (ML)</u> , light brown (7.5 YR 6/3), dry, low to medium plasticity, 10 % medium sand, 5% fine gravel	PID = 0.0 ppm
40			<u>SILT (ML)</u> , light brown (7.5 YR 6/4), dry, low plasticity, 10 % medium sand, 5% medium gravel	PID = 0.0 ppm
50			<u>SILT (ML)</u> , light brown (7.5 YR 6/4), dry, medium plasticity, 10 % medium sand, 10% medium gravel	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1065

SHEET 2 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1065

LOCATION : North of Fuels Drive and Randolph Ave. intersection

ELEVATION : 5346.96 ft MSL @ TOC

COORDINATES : N 1474504.5202, E 1542430.6856 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 487.58' bgs (02/07/2007) START : 01/22/2007

END : 01/30/2007

LOGGER : A. Forsberg

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
60			50	<u>SANDY LEAN CLAY (CL)</u> , brown (7.5 YR 5/4), medium plasticity, clay in nodules	PID = 0.0 ppm Sample ID: ST106-SB-1065-060 @ 1517
70				<u>SILT (ML)</u> , reddish yellow (5 YR 6/6), dry low plasticity, 5% fine gravel	PID = 0.0 ppm
80				Not Recorded	
90				Not Recorded	
100				<u>WELL GRADED SAND WITH SILT (SW-SM)</u> , light brown (7.5 YR 6/4), dry	End of 01/22/07 Start of 01/23/07 PID = 0.0 ppm LEL/O2 = 0/20.6 Sample ID: ST106-SB-1065-100/DUP at 0835/0840
110				<u>SILT (ML)</u> , strong brown (7.5YR 5/6), moist medium plasticity	PID = 0.0 ppm Begin adding water to cyclone for dust contr



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1065

SHEET 3 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1065 LOCATION : North of Fuels Drive and Randolph Ave. intersection

ELEVATION : 5346.96 ft MSL @ TOC COORDINATES : N 1474504.5202, E 1542430.6856 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 487.58' bgs (02/07/2007) START : 01/22/2007 END : 01/30/2007 LOGGER : A. Forsberg

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	NUMBER AND TYPE	RECOVERY (FT)			
120				<u>SILT (ML)</u> , brown (7.5 YR 5/4), moist, low plasticity	PID = 0.0 ppm
130				same as above	PID = 0.0 ppm
140				<u>WELL GRADED SAND (SW)</u> , light reddish brown (7.5YR 6/3), moist, <5% clay nodules	PID = 0.0 ppm
150				<u>WELL GRADED SAND (SW)</u> , light reddish brown (7.5YR 6/3), moist	PID = 0.0 ppm
				<u>WELL GRADED SAND WITH CLAY (SW-SC)</u> , reddish brown (5 YR 5/4), moist, medium plasticity	PID = 0.0 ppm
160				<u>WELL GRADED SAND WITH CLAY (SW-SC)</u> , brown (7.5 YR 5/4), moist	PID = 0.0 ppm LEL/O2 = 0/19.9 Sample ID: ST106-SB-1065-160 at 1215
170				<u>POORLY GRADED SAND WITH SILT (SP-SM)</u> , light brown (7.5 YR 6/4), moist	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1065

SHEET 4 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1065

LOCATION : North of Fuels Drive and Randolph Ave. intersection

ELEVATION : 5346.96 ft MSL @ TOC

COORDINATES : N 1474504.5202, E 1542430.6856 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 487.58' bgs (02/07/2007) START : 01/22/2007

END : 01/30/2007

LOGGER : A. Forsberg

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
180				<u>POORLY GRADED SAND (SP)</u> , pink (7.5 YR 7/3), dry, fine sand	PID = 0.0 ppm
190				same as above	PID = 0.1 ppm
200				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , light reddish brown (7.5 YR 6/4), moist	PID = 0.1 ppm LEL/O2 = 0/20.0 Sample ID: ST106-SB-1065-200 & 200-MS/MSD at 1435 and 1435
210				<u>WELL GRADED SAND WITH CLAY (SW-SC)</u> , brown (7.5 YR 5/4), moist	PID = 0.0 ppm
220				<u>POORLY GRADED SAND (SP)</u> , pink (7.5 YR 7/3), moist, medium sand	PID = 0.0 ppm
230				<u>POORLY GRADED SAND (SP)</u> , light brown (7.5 YR 6/3), moist, medium sand	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1065

SHEET 5 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1065

LOCATION : North of Fuels Drive and Randolph Ave. intersection

ELEVATION : 5346.96 ft MSL @ TOC

COORDINATES : N 1474504.5202, E 1542430.6856 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 487.58' bgs (02/07/2007) START : 01/22/2007

END : 01/30/2007

LOGGER : A. Forsberg

DEPTH BELOW SURFACE (FT)	STANDARD		SOIL DESCRIPTION	COMMENTS
	INTERVAL (FT)	PENETRATION TEST RESULTS		
240			WELL GRADED GRAVEL WITH SILT fine gravel, moist	
250			<u>LEAN CLAY (CL)</u> , brown (7.5 YR 4/4), moist, medium plasticity, 5% coarse sand	PID = 0.0 ppm
260			same as above	End of 01/23/07 Start of 01/24/07 PID = 0.0 ppm LEL/O2 = 0/19.8 Sample ID: ST106-SB-1065-260 at 0824
270			<u>POORLY GRADED SAND (SP)</u> , pink (7.5 YR 7/3), dry, fine sand	PID = 0.1 ppm Driller adding water to cyclone
280			<u>LEAN CLAY (CL)</u> , brown (7.5 YR 4/4), moist, medium plasticity, 5% coarse sand	PID = 0.1 ppm
294			<u>WELL GRADED GRAVEL WITH CLAY (GW-GC)</u> , reddish brown (5 YR 4/3), moist, medium plasticity	PID = 0.0 ppm
297			<u>WELL GRADED SAND WITH SILT (SW-SM)</u> , light reddish brown (5 YR 6/3), dry, non-plastic	PID = 0.0 ppm



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PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1065

SHEET 6 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1065

LOCATION : North of Fuels Drive and Randolph Ave. intersection

ELEVATION : 5346.96 ft MSL @ TOC

COORDINATES : N 1474504.5202, E 1542430.6856 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 487.58' bgs (02/07/2007) START : 01/22/2007

END : 01/30/2007

LOGGER : A. Forsberg

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
300				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , pink (7.5 YR 7/3), dry, fine to medium sand, > 5% cobbles	PID = 0.1 ppm LEL/O2 = 0/20.8 Sample ID: ST106-SB-1065-300 at 1456 At 300 feet telescope from 11 3/4" to 9 5/8" casing End of 01/24/07 1/25/2007
310				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , pink (7.5 YR 7/3), moist, fine to medium sand	PID = 0.0 ppm Driller adding water to cyclone
315				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , pink (7.5 YR 7/3), moist, fine to medium sand	PID = 0.0 ppm
320				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , pink (7.5 YR 7/3), moist, fine to medium sand	PID = 0.0 ppm
330				<u>WELL GRADED GRAVEL WITH SILT (GW-GM)</u> , brown (7.5 YR 4/3), moist	PID = 0.0 ppm
340				<u>WELL GRADED SAND WITH SILT (SW-SM)</u> light reddish brown (5 YR 6/3), dry, non-plastic	PID = 0.1 ppm
350				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , pink (7.5 YR 7/3), moist, fine to medium sand	PID = 0.2 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1065

SHEET 7 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1065

LOCATION : North of Fuels Drive and Randolph Ave. intersection

ELEVATION : 5346.96 ft MSL @ TOC

COORDINATES : N 1474504.5202, E 1542430.6856 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 487.58' bgs (02/07/2007) START : 01/22/2007

END : 01/30/2007

LOGGER : A. Forsberg

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	NUMBER AND TYPE	RECOVERY (FT)			
360				<u>SILTY GRAVEL WITH SAND (GM)</u> brown (7.5 YR 5/4), moist, fine to coarse gravel	PID = 1.0 ppm LEL/O2 = 0/20.0 Sample ID: ST106-SB-1065-360 at 1331
370				<u>POORLY GRADED GRAVEL (GP)</u> , light reddish brown (5 YR 6/4), moist, fine gravel, <5% sand	PID = 0.3 ppm
380				<u>SILT (ML)</u> , brown (7.5 YR 5/3), moist, medium plasticity	PID = 0.2 ppm
390				<u>POORLY GRADED SAND (SP)</u> , light brown (7.5 YR 6/3), moist	PID = 0.2 ppm
400				<u>POORLY GRADED SAND (SP)</u> , light brown (7.5 YR 6/4), moist	PID = 2.3 ppm LEL/O2 = 0/19.8 Sample ID: ST106-SB-1065-400 at 1631
410				same as above	PID = 0.0 ppm
					End of 01/25/07



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1065 SHEET 8 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1065 LOCATION : North of Fuels Drive and Randolph Ave. intersection
 ELEVATION : 5346.96 ft MSL @ TOC COORDINATES : N 1474504.5202, E 1542430.6856 NM State Plan Coordinates, NAD 83
 DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K DRILLING CONTRACTOR : WDC Exploration & Wells
 WATER LEVEL : 487.58' bgs (02/07/2007) START : 01/22/2007 END : 01/30/2007 LOGGER : A. Forsberg

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
420				<u>POORLY GRADED SAND (SP)</u> , light brown (7.5 YR 6/4), moist	Start of 01/26/07 PID = 0.0 ppm
430				same as above	PID = 0.1 ppm
440				<u>LEAN CLAY (CL)</u> , grayish brown (10 YR 5/2) moist, medium plasticity	PID = 0.1 ppm
443				<u>POORLY GRADED SAND (SP)</u> , light brown (7.5 YR 6/4), moist	PID = 0.1 ppm
450				<u>POORLY GRADED SAND (SP)</u> , light brown (7.5 YR 6/4), moist, very fine sand	PID = 0.1 ppm
460				Perched groundwater 460-462 ft bgs <u>WELL GRADED SAND WITH CLAY AND GRAVEL (SW-SC)</u> , brown (10 YR 4/3), wet, medium plasticity	PID = 0.2 ppm LEL/O2 = 2/20.8 Sample ID: ST106-SB-1065-460 at 1042
462				<u>LEAN CLAY WITH SAND (CL)</u> , brown (10 YR 4/3) moist, medium plasticity	PID = 0.2 ppm
470				<u>POORLY GRADED SAND (SP)</u> , light brown (7.5 YR 6/4) moist, >5% gravel	PID = 9.6 ppm strong hydrocarbon (jet fuel) odor



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1065

SHEET 9 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1065

LOCATION : North of Fuels Drive and Randolph Ave. intersection

ELEVATION : 5346.96 ft MSL @ TOC

COORDINATES : N 1474504.5202, E 1542430.6856 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

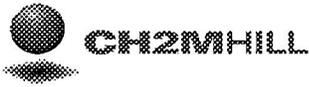
DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 487.58' bgs (02/07/2007) START : 01/22/2007

END : 01/30/2007

LOGGER : A. Forsberg

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	NUMBER	AND TYPE			
480				<u>POORLY GRADED SAND (SP)</u> , light brown (7.5 YR 6/4) moist, >5% gravel	PID = 4.9 ppm jet fuel/gasoline odor Water level: 482.89' bgs
485				same as above	PID = 380 ppm jet fuel/gasoline odor
490				same as above	PID = 12.7 ppm slight jet fuel/gasoline odor
495				same as above	PID = 0.9 ppm
500					
505					TD = 507' bgs
510					



PROJECT NUMBER
279495.04.01.01

WELL NUMBER
KAFB-1066

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : ST-106 KAFB Bulk Fuels Facility

LOCATION : 1951 Offloading Rack

DRILLING CONTRACTOR : WDC Exploration & Wells COORDINATES : N 1,473,801.9593, E 1,542,687.4539 New Mexico State Plane Coordinates,

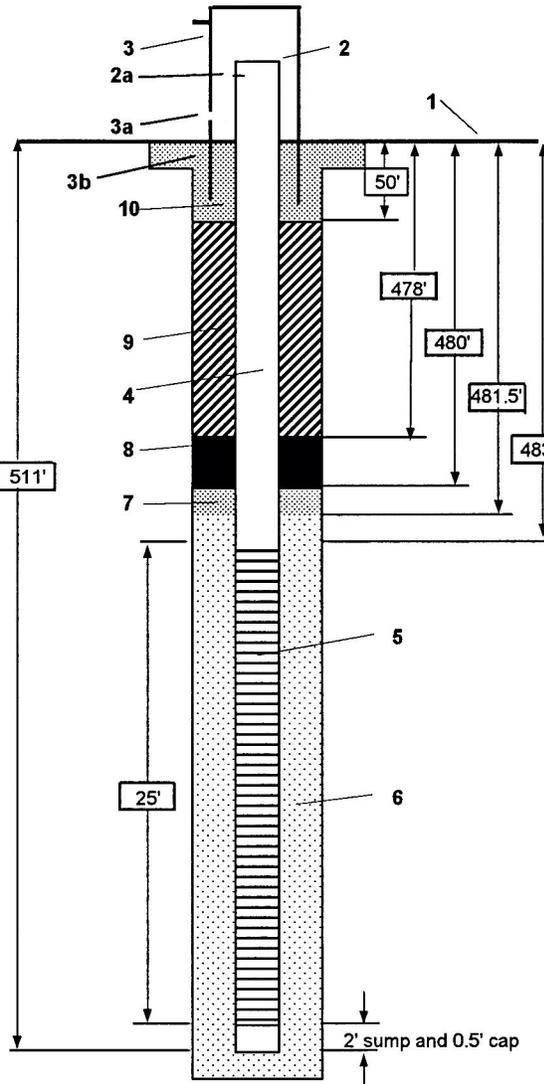
DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K Central Zone, NAD 83 Datum

WATER LEVEL : 494.3' bgs (11/1/2007)

START : 10/16/2007

END : 10/31/2007

LOGGER : M. Brislen/ E. Ludwig



1- Ground elevation at well	5348.49 ft above Mean Sea Level
2- Top of casing elevation a) vent hole?	5351.38 ft above Mean Sea Level no
3- Wellhead protection cover type a) weep hole? b) concrete pad dimensions	above ground 8" dia. steel pipe w/locking lid no 4' x 4' with 4 concrete filled bollards
4- Dia./type of well casing	4" schedule 80 PVC
5- Type/slot size of screen	stainless steel 0.010" slot
6- Type screen filter	10/20 Colorado Silica Sand 481.5' - 515'
7- Transition sand	20/40 Colorado Silica Sand 480' - 481.5'
8- Type of seal	hydrated bentonite chips 478' - 480'
9- Grout a) Grout mix used b) Method of placement	volclay bentonite grout 50' - 458' tremmie pipe
10- Cement a) Cement mix used b) Method of placement	portland cement grout 1' - 50' tremmie pipe
Development method	not developed
Estimated purge volume	

Comments native material hole collapse from 458' to 478'bgs

11 3/4" 0 - 300 ft bgs
9 5/8" 300 - 515 ft bgs

Not to scale



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1066

SHEET 1 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1066

LOCATION : 1951 Offloading Rack

ELEVATION : 5351.38 ft MSL @ TOC

COORDINATES : N 1,473,801.9593, E 1,542,687.4539 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.3' bgs (11/1/2007)

START : 10/16/2007 1620 END : 10/31/2007 1735

LOGGER : M. Brislen/E. Ludwig

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
0					10/16/2007 start drilling at 1620 (Driller - Quentin Stevens)
10		GB		<u>SILT WITH SAND (ML)</u> , yellowish red (5 YR 5/6), dry, low plasticity, clumps easily broken with pressure	PID = 0.0 ppm
20		SS		<u>SILT WITH CLAY (MH)</u> , reddish brown (5 YR 4/4), moist, medium plasticity	PID = 0.0 ppm Sample ID: ST106-SS-1066-020 collected on 10/16/2007 at 1510
30		GB		<u>SILT WITH SAND AND CLAY (ML)</u> , reddish brown (5 YR 4/4), dry, low-medium plasticity	PID = 0.0 ppm End of 10/16/07 at 1755 Start of 10/17/07 at 0815
40		SS		<u>SILT WITH SAND AND CLAY (ML)</u> , reddish brown (5 YR 4/4), dry, low-medium plasticity	PID = 0.0 ppm Sample ID: ST106-SS-1066-040 collected on 10/17/2007 at 0840
50		GB		<u>SILT WITH WELL-GRADED SAND (ML)</u> , reddish brown (5 YR 5/4), dry, no plasticity	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1066

SHEET 2 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1066

LOCATION : 1951 Offloading Rack

ELEVATION : 5351.38 ft MSL @ TOC

COORDINATES : N 1,473,801.9593, E 1,542,687.4539 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.3' bgs (11/1/2007)

START : 10/16/2007 1620

END : 10/31/2007 1735

LOGGER : M. Brislen/E. Ludwig

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
60			25	<u>WELL GRADED SAND WITH SILT AND GRAVEL</u> (SW SM), reddish brown (5 YR 5/4), dry, no plasticity, approximately 30% gravel	PID = 0.0 ppm Sample ID: ST106-SS-1066-060 collected on 10/17/2007 at 1000
70				<u>WELL GRADED SAND WITH SILT AND GRAVEL</u> (SW SM), reddish brown (5 YR 5/4), dry, no plasticity, approximately 15% gravel	PID = 0.0 ppm
80				<u>WELL GRADED SAND WITH SILT AND GRAVEL</u> (SW SM), reddish brown (5 YR 5/4), dry, no plasticity, approximately 30% gravel and <5% clay	PID = 0.0 ppm Sample ID: ST106-SS-1066-080 collected on 10/17/2007 at 1132 Sample ID: ST106-SS-1066-080DUP collected on 10/17/2007 at 1135
90				<u>WELL GRADED SAND (SW)</u> , light reddish brown, (5 YR 6/3), dry, no plasticity	
100			30	<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , light brown (5 YR 6/3), dry, no plasticity	PID = 0.0 ppm Sample ID: ST106-SS-1066-100 collected 10/17/2007 at 1340
110				<u>WELL GRADED SAND (SW)</u> , light brown (7.5 YR 6/3), dry, no plasticity	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1066

SHEET 3 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1066

LOCATION : 1951 Offloading Rack

ELEVATION : 5351.38 ft MSL @ TOC

COORDINATES : N 1,473,801.9593, E 1,542,687.4539 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.3' bgs (11/1/2007)

START : 10/16/2007 1620 END : 10/31/2007 1735

LOGGER : M. Brislen/E. Ludwig

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	NUMBER AND TYPE	RECOVERY (FT)			
120			30	<u>SILT WITH SAND (ML)</u> , light brown (7.5 YR 6/4), dry, low plasticity	PID = 0.0 ppm Sample ID: ST106-SS-1066-120 collected on 10/17/2007 at 1515
130				<u>SILT WITH SAND (ML)</u> , brown (7.5YR 6/4), dry, low plasticity, less sand than at 120'	PID = 0.0 ppm End of 10/17/2007 at 1730 Start of 10/18/2007 0829
140			23	<u>CLAY (CL) WITH 5 % GRAVEL</u> , brown (7.5 YR 5/4), dry, high plasticity, very stiff, green ribbons throughout	PID = 0.0 ppm Sample ID: ST106-SS-1066-140 collected on 10/18/2007 at 0915
150				<u>WELL GRADED SAND WITH COARSE SAND-SIZED CLUMPS OF CLAY (SW)</u> , brown (7.5 YR 5/3), dry, no plasticity	PID = 0.0 ppm
160			20	<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/3), dry, no plasticity	PID = 0.0 ppm Sample ID: ST106-SS-1066-160 collected 10/18/2007 at 1045 Odor observed at ~165' bgs VOC reading = 0.0 ppm cuttings collected and bagged
170				<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/3), dry, no plasticity	PID = 0 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1066

SHEET 4 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1066

LOCATION : 1951 Offloading Rack

ELEVATION : 5351.38 ft MSL @ TOC

COORDINATES : N 1,473,801.9593, E 1,542,687.4539 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.3' bgs (11/1/2007)

START : 10/16/2007 1620 END : 10/31/2007 1735

LOGGER : M. Brislen/E. Ludwig

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
180			SS	<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/3), dry, no plasticity, 5% gravel	PID = 0.0 ppm Sample ID: ST106-SS-1066-180 collected 10/18/2007 at 1140
190			GB	<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/3), dry, no plasticity	PID = 0.0 ppm
200			SS	<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 5/3), dry, no plasticity	PID = 0.1 ppm Sample ID: ST106-SS-1066-200 collected 10/18/2007 at 1320
210			GB	<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 5/3), dry, no plasticity	PID = 0.0 ppm
220			SS	<u>POORLY GRADED SUBANGULAR SMALL GRAVEL (GP)</u> , brown (7.5 YR 5/2), dry	PID = 0.0 ppm Sample ID: ST106-SS-1066-220 collected 10/18/2007 at 1440 Note: 8 oz jar filled, no encores collected bec sample too gravelly
230			GB	<u>WELL GRADED SUBANGULAR GRAVEL WITH SAND (GW)</u> , brown (7.5 YR 5/2), dry, no plasticity	End of 10/18/2007 at 1530 Start of 10/22/2007 at 1237



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1066

SHEET 5 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1066

LOCATION : 1951 Offloading Rack

ELEVATION : 5351.38 ft MSL @ TOC

COORDINATES : N 1,473,801.9593, E 1,542,687.4539 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.3' bgs (11/1/2007)

START : 10/16/2007 1620

END : 10/31/2007 1735

LOGGER : M. Brislen/E. Ludwig

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	NUMBER AND TYPE	RECOVERY (FT)			
240			20 for 10"	<u>SAND WITH WELL GRADED GRAVEL AND SILT (SWSM)</u> , brown (7.5 YR 5/4), dry, no plasticity	PID = 0.0 ppm Sample ID: ST106-SS-1066-240 collected 10/22/2007 at 1330
250				<u>WELL GRADED SAND WITH FINE GRAVEL (SW)</u> , brown (7.5 YR 5/2), dry, low plasticity	PID = 0.0 ppm End of 10/22/2007 at 1810 Start of 10/23/2007 at 0723
260			20 for 12"	<u>WELL GRADED SUBROUNDED GRAVEL (GW)</u> , brown (7.5 YR 5/2), dry, 5% sand	PID = 0.0 ppm Sample ID: ST106-SS-1066-260 collected 10/23/2007 at 0750 Note: no encores collected; sample too grave
270				<u>POORLY GRADED FINE GRAINED SAND WITH SILT (SPSM)</u> , brown (7.5 YR 5/4), dry, low plasticity	PID = 0.0 ppm
280			15 for 18"	<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/3), dry, low plasticity, medium to fine grained	PID = 0.0 ppm Sample ID: ST106-SS-1066-280 collected 10/23/2007 at 0930 telescope to 9 5/8"
290				<u>WELL GRADED FINE TO COARSE SAND (SW)</u> , pinkish gray (7.5 YR 6/2), dry, no plasticity	PID = 0.5 ppm



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1066

SHEET 6 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1066

LOCATION : 1951 Offloading Rack

ELEVATION : 5351.38 ft MSL @ TOC

COORDINATES : N 1,473,801.9593, E 1,542,687.4539 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.3' bgs (11/1/2007)

START : 10/16/2007 1620

END : 10/31/2007 1735

LOGGER : M. Brislen/E. Ludwig

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
300			20 for 10"	<u>WELL GRADED FINE TO COARSE SAND (SW)</u> , pinkish gray (7.5 YR 6/2), no plasticity, dry except for end of SS sample slightly moist	PID = 0.0 ppm Sample ID: ST106-SS-1066-300 collected 10/23/2007 at 1212 9 5/8" casing End of 10/23/2007 at 1805 Start of 10/29/2007 at 1215
310				<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/4), dry, loose, medium to fine grained	PID = 0.0 ppm
320	30%	SS	30 for 5"	<u>WELL GRADED GRAVEL (GW)</u> , brown (7.5 YR 5/2), dry, 1cm - 5cm gravel, little sand	PID = 0.0 ppm Sample ID: ST106-SS-1066-320 collected 10/29/2007 at 1320 Note: no encore samples collected
330		GB		<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR, 5/4), dry, loose, fine to medium-grained	PID = 0.0 ppm
340	30%	SS	40 for 5"	<u>WELL GRADED GRAVEL (GW)</u> , brown (7.5 YR 5/2), dry, 0.2cm-4cm, little sand	PID = 0.0 ppm Sample ID: ST106-SS-1066-340 collected 10/29/2007 at 1405 Note: no encore samples collected Inner/Outer casing sand locked. Drillers add water between inner & outer casing to help unstick casing. End of 10/29/2007 at 1845 Start of 10/31/2007 at 0825
350		GB		<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/4), moist, loose, medium-grained	driller misting cyclone



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1066

SHEET 7 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1066

LOCATION : 1951 Offloading Rack

ELEVATION : 5351.38 ft MSL @ TOC

COORDINATES : N 1,473,801.9593, E 1,542,687.4539 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.3' bgs (11/1/2007)

START : 10/16/2007 1620

END : 10/31/2007 1735

LOGGER : M. Brislen/E. Ludwig

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
360		SS	25 for 6"	<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/4), wet, loose, medium-coarse grained, some clay	PID = 0.0 ppm Sample ID: ST106-SS-1066-360 collected 10/31/2007 at 1030 Note: sample not submitted to lab
370		GB		<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/4), moist, loose, medium-coarse grained, some gravel	PID = 0.0 ppm driller misting cyclone
380		SS	60 for 12"	<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/2), dry, loose, fine to coarse-grained	PID = 0.0 ppm Sample ID: ST106-SS-1066-380 collected 10/31/2007 at 1125
390		GB		<u>POORLY GRADED SAND (SP)</u> , brown (7.5 YR 5/3), loose, dry, medium-grained	PID = 0.0 ppm no misting from 380' to 495'
400		SS	45 for 12"	<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/2), loose, moist, fine to medium-grained, some gravel	PID = 0.0 ppm Sample ID: ST106-SB-1066-400 collected 10/31/2007 at 1230
410		GB		<u>POORLY GRADED SAND (SP)</u> , wet, loose, medium-grained	PID = 0.0 ppm driller misting cyclone



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1066

SHEET 8 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1066

LOCATION : 1951 Offloading Rack

ELEVATION : 5351.38 ft MSL @ TOC

COORDINATES : N 1,473,801.9593, E 1,542,687.4539 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.3' bgs (11/1/2007)

START : 10/16/2007 1620 END : 10/31/2007 1735

LOGGER : M. Brislen/E. Ludwig

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
420			SS	50 for 10"	<u>POORLY GRADED SAND (SP)</u> , brown (7.5 YR 5/3), moist, loose, medium-grained PID = 0.0 ppm Sample ID: ST106-SS-1066-420 collected 10/31/2007 at 1325
430			GB		<u>POORLY GRADED SAND WITH GRAVEL (SP)</u> , brown, (7.5 YR 5/3), moist, loose, medium-grained PID = 0.0 ppm driller misting the cyclone
440			SS	50 for 10"	<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown, (7.5 YR 5/4), loose, moist to dry, medium-grained PID = 0.0 ppm Sample ID: ST106-SS-1066-440 collected 10/31/2007 at 1430
450			GB		<u>WELL GRADED SAND (SW)</u> , moist, loose, medium-grained, trace gravel PID = 0.0 ppm driller misting the cyclone
460			SS		<u>POORLY GRADED SAND (SP)</u> , brown (7.5 YR 5/3), moist, loose, medium-grained PID = 0.0 ppm Sample ID: ST106-SS-1066-460 collected 10/31/2007 at 1525
470			GB		<u>WELL GRADED SAND (SW)</u> , wet, loose, fine- to medium-grained PID = 0.0 ppm driller misting cyclone driller notices smell



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1066

SHEET 9 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1066

LOCATION : 1951 Offloading Rack

ELEVATION : 5351.38 ft MSL @ TOC

COORDINATES : N 1,473,801.9593, E 1,542,687.4539 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.3' bgs (11/1/2007)

START : 10/16/2007 1620

END : 10/31/2007 1735

LOGGER : M. Brislen/E. Ludwig

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
480		SS	35 for 10"	<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , pinkish gray (7.5 YR 6/2), dry to moist, loose, fine to medium-grained, crushed volcanic cobbles up to 1"	PID = 1.0 ppm from sample PID = 135 ppm from top of drill rod, bit at 48' Sample ID: ST106-SS-1066-480 collected 10/31/2007 at 1625
490		GB		<u>POORLY GRADED SAND (SP)</u> , wet, loose, medium-grained	PID = 0.0 ppm driller misting cyclone
500		GB		<u>POORLY GRADED SAND (SP)</u> , wet, loose, medium-grained	PID = 0.0 ppm driller stops misting cyclone
510		GB		<u>POORLY GRADED SAND (SP)</u> , same as above with trace gravel	PID = 0.0 ppm
520				TD = 515'	End of 10/31/2007 at 1735



CH2MHILL

PROJECT NUMBER
279495.04.01.01

WELL NUMBER
KAFB-1067

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : ST-106 KAFB Bulk Fuels Facility

LOCATION : Inside Tank Berm

DRILLING CONTRACTOR : WDC Exploration & Wells COORDINATES : N 1,473,401.1623, E 1,542,869.4129 New Mexico State Plane Coordinates

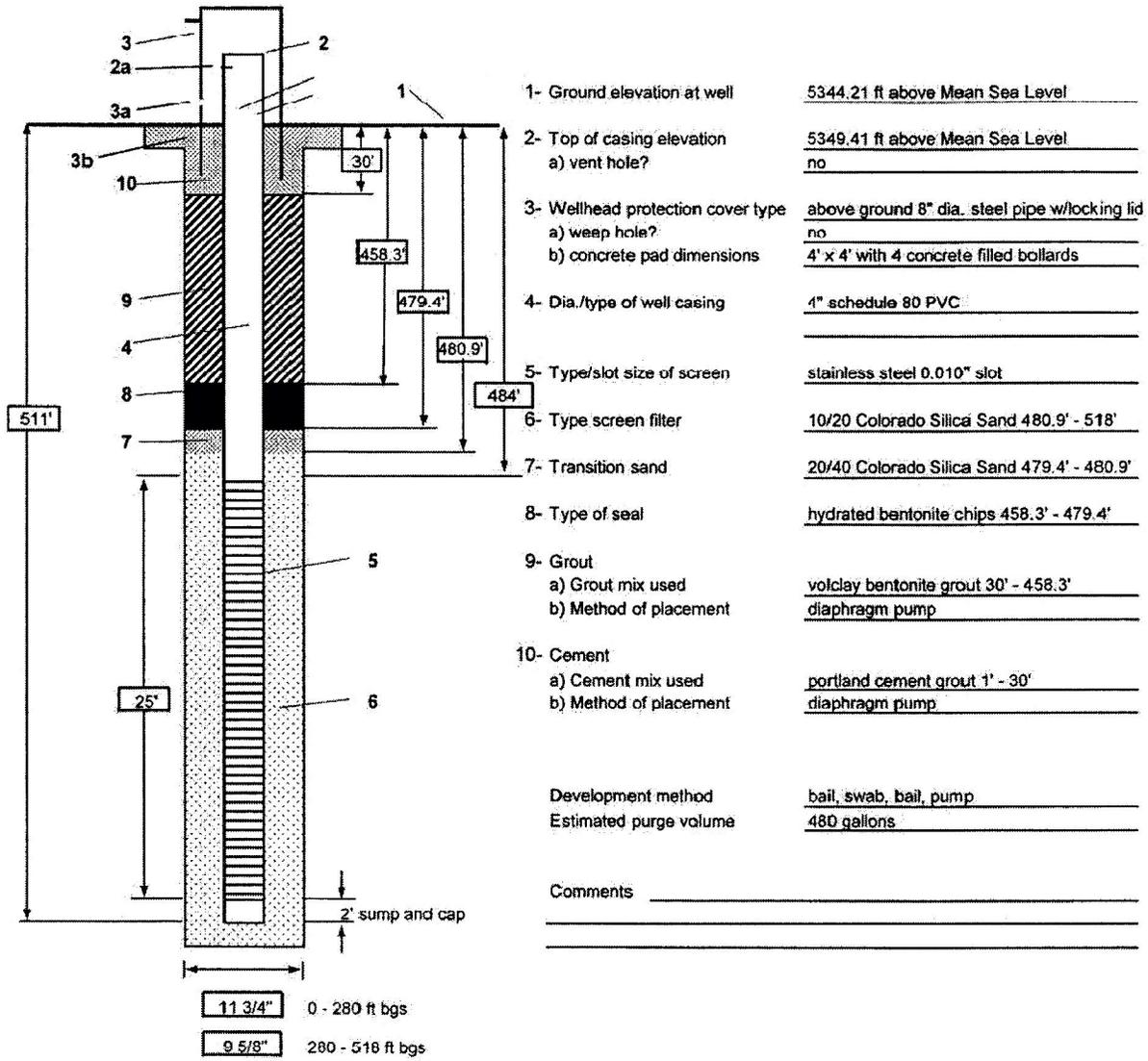
DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K Central Zone, NAD 83 Datum

WATER LEVEL : 480' bgs (11/15/2007)

START : 11/8/2007

END : 11/14/2007

LOGGER : M. Brislen



Not to scale



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1067

SHEET 1 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1067

LOCATION : Inside Tank Berm

ELEVATION : 5349.41 ft MSL @ TOC

COORDINATES : N 1,473,401.1623, E 1,542,869.4129 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490' bgs (11/15/2007)

START : 11/08/2007 0927

END : 11/14/2007 1640

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	NUMBER AND TYPE			
0					11/8/2007 start drilling at 0927 (Driller - Quentin Stevens)
10		GB		<u>SILT WITH WELL GRADED SAND (ML)</u> , yellowish red (5 YR 5/6), dry, loose, some gravel	PID = 0.4 ppm
20		SS	25 for 8" 2nd time X for 12"	<u>ELASTIC SILT/SILT WITH CLAY (MH)</u> , strong brown (7.5 YR 4/6), moist, loose	PID = 0.2 ppm Sample ID: ST106-SS-1067-020 collected on 10/08/2007 at 1000 Sample ID: ST106-SS-1067-020DUP collected on 10/08/2007 at 1015
30		GB		<u>ELASTIC SILT/SILT WITH CLAY (MH)</u> , reddish brown (5 YR 4/4), moist, loose, medium plasticity	PID = 0.0 ppm
40		SS	30 for 10"	<u>SILT WITH WELL GRADED SAND AND SOME CLAY (ML)</u> , reddish brown (5 YR 4/4), moist, loose, medium-low plasticity	PID = 0.5 ppm Sample ID: ST106-SS-1067-040 collected on 11/08/2007 at 1050
50		GB		<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , yellowish red (5 YR 5/6), dry, loose	PID = 0.5 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1067

SHEET 2 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1067

LOCATION : Inside Tank Berm

ELEVATION : 5349.41 ft MSL @ TOC

COORDINATES : N 1,473,401.1623, E 1,542,869.4129 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490' bgs (11/15/2007)

START : 11/08/2007 0927 END : 11/14/2007 1640

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	NUMBER AND TYPE			
60		SS	30 for 8"	<u>WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM)</u> , strong brown (7.5 YR 5/6), moist, loose	PID = 0.3 ppm Sample ID: ST106-SS-1067-060 collected on 11/08/2007 at 1130
70		GB		<u>WELL GRADED SAND WITH SILT AND GRAVEL</u> light brown (7.5 YR 6/3), dry, loose, 5% fine gravel (SW SM)	PID = 0.8 ppm
80		SS	30 for 6"	<u>SILT WITH SAND (ML)</u> , brown (7.5 YR 5/4), moist, loose, some clay, low-medium plasticity	PID = 0.4 ppm Sample ID: ST106-SS-1067-080 collected on 11/08/2007 at 1210
90				GB sample could not be collected; cyclone hose clogged	
100		SS	35 for 18"	<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/3), slightly moist, loose	PID = 0.0 ppm Sample ID: ST106-SS-1067-100 collected 11/08/2007 at 1410 MSMSD (14 encores 2x8 oz soil)
110		GB		<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/3), slightly moist, loose, 10% fine gravel	misting cyclone; cuttings wet



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1067

SHEET 3 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1067

LOCATION : Inside Tank Berm

ELEVATION : 5349.41 ft MSL @ TOC

COORDINATES : N 1,473,401.1623, E 1,542,869.4129 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490' bgs (11/15/2007)

START : 11/08/2007 0927

END : 11/14/2007 1640

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
120			30 for 4"	<u>CLAY WITH GRAVEL (CH)</u> , brown (7.5 YR 5/4), loose, with some unbreakable clay aggregates	PID = 0.0 ppm Sample ID: ST106-SS-1067-120 collected on 11/08/2007 at 1500 Note: no encores collected, sample too gravi
130		GB		<u>CLAY WITH SAND (CH)</u> , brown (7.5 YR 4/4), moist, stiff, medium plasticity	PID = 0.2 ppm
140		SS	23	<u>CLAY (CH)</u> , reddish brown (5 YR 5/4), moist, stiff, high plasticity	Sample ID: ST106-SS-1067-140 collected on 11/08/2007 at 1625
150				GB sample could not be collected; cyclone hose clogged	PID = 0.2 ppm
160		SS	30 for 6"	<u>CLAY WITH ROUNDED GRAVEL (CH)</u> , brown (7.5 YR 5/4), moist, stiff, medium-high plasticity	Sample ID: ST106-SS-1067-160 collected 11/08/2007 at 1720
170		GB		<u>WELL GRADED SAND WITH FINE GRAVEL (SW)</u> , brown (7.5 YR 4/4), moist, loose clay clumps in cutting from hose not from 170' bgs	End of 11/08/2007 Start of 11/09/2007 PID = 0.2 ppm



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1067

SHEET 4 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1067

LOCATION : Inside Tank Berm

ELEVATION : 5349.41 ft MSL @ TOC

COORDINATES : N 1,473,401.1623, E 1,542,869.4129 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490' bgs (11/15/2007)

START : 11/08/2007 0927

END : 11/14/2007 1640

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	NUMBER AND TYPE			
180		SS	40 for 6"	<u>WELL GRADED SAND WITH SILT AND CLAY (SWSMS)</u> , brown (7.5 YR 5/4), almost moist, loose, contains small clay clumps	PID = 0.0 ppm Sample ID: ST106-SS-1067-180 collected 11/09/2007 at 0955
190		GB		<u>WELL GRADED SAND (SW)</u> , light brown (7.5 YR 6/3), dry, loose, 5% fine gravel	PID = 0.2 ppm
200		SS	30 for 8"	<u>WELL GRADED SAND WITH FINE GRAVEL (SW)</u> , brown (7.5 YR 5/3), moist, loose, split spoon contained ~1" clay vein and clay-covered medium gravel	PID = 0.6 ppm Sample ID: ST106-SS-1067-200 collected 11/09/2007 at 1050
210		GB		<u>SILT (ML)</u> , brown (7.5 YR 4/4), almost moist, loose	PID = 0.2 ppm
220		SS	30 for 8"	<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , pinkish gray (7.5 YR 6/2), dry, loose	PID = 0.4 ppm Sample ID: ST106-SS-1067-220 collected 11/09/2007 at 1440
230		GB		<u>WELL GRADED SAND WITH FINE GRAVEL (SW)</u> , brown (7.5 YR 5/3), dry, loose	PID = 0.5 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1067

SHEET 5 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1067

LOCATION : Inside Tank Berm

ELEVATION : 5349.41 ft MSL @ TOC

COORDINATES : N 1,473,401.1623, E 1,542,869.4129 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490' bgs (11/15/2007)

START : 11/08/2007 0927

END : 11/14/2007 1640

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	NUMBER AND TYPE			
240				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 5/3), dry, loose	PID = 0.4 ppm Sample ID: ST106-SS-1067-240 collected 11/09/2007 at 1355
250				<u>ELASTIC SILT, SILT WITH CLAY (MH)</u> , brown (7.5 YR 5/3), dry, mostly loose, some hard clumps	PID = 0.3 ppm
260			30 for 8"	<u>ELASTIC SILT, SILT WITH CLAY (MH)</u> , brown (7.5 YR 5/3), dry, mostly loose, some hard clumps	PID = 0.3 ppm Sample ID: ST106-SS-1067-260 collected 11/09/2007 at 1620 End of 11/09/2007 1750 Start of 11/14/2007 0703; Driller - Mark Green of WDC
270				<u>SILT CLAY, ELASTIC/SILT, (MH)</u> , dark yellowish brown (10 YR 4/4), moist, loose samill clumps, low to medium plasticity	PID = 0.0 ppm
280			15-17-19	<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/3), moist, loose, <5% clay in clumps	PID = 0.0 ppm Sample ID: ST106-SS-1067-280 collected 11/14/2007 at 0750 Sample ID: ST106-SS-1067-280DUP collected 11/14/2007 at 0755
290				<u>CLAY (CH)</u> , olive brown (2.5 Y 5/3), moist, stiff, medium to high plasticity	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1067

SHEET 6 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1067

LOCATION : Inside Tank Berm

ELEVATION : 5349.41 ft MSL @ TOC

COORDINATES : N 1,473,401.1623, E 1,542,869.4129 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490' bgs (11/15/2007)

START : 11/08/2007 0927

END : 11/14/2007 1640

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	NUMBER AND TYPE			
300			7-7-5	WELL GRADED GRAVEL WITH SAND (GW), brown (7.5 YR 4/4), moist, loose	PID = 0.0 ppm Sample ID: ST106-SS-1067-300 collected 11/14/2007 at 0830
310				no cuttings collected	
320			18-20-25 ~7" recovery in split spoon	WELL GRADED GRAVEL WITH SAND (GW), brown (7.5 YR 4/4), moist, loose, 4" in SS, CLAY (CH), brown (7.5 YR 5/4), soft, forms ribbons, 3" in SS	PID = 0.0 ppm Sample ID: ST106-SS-1067-320 collected 11/14/2007 at 0855
330				WELL GRADED SAND WITH FINE GRAVEL (SW), brown (7.5 YR 5/3), dry, loose	PID = 0.0 ppm
340			24-28-27	WELL GRADED SAND (SW), brown (7.5 YR 5/4), almost moist, loose	PID = 0.1 ppm Sample ID: ST106-SS-1067-340 collected 11/14/2007 at 0940
350				CLAY (CH), brown (10 YR 5/3), dry, medium stiff	PID = 0.4 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1067

SHEET 7 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1067

LOCATION : Inside Tank Berm

ELEVATION : 5349.41 ft MSL @ TOC

COORDINATES : N 1,473,401.1623, E 1,542,869.4129 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490' bgs (11/15/2007)

START : 11/08/2007 0927

END : 11/14/2007 1640

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
360			12-19-24	<u>WELL GRADED GRAVEL WITH SAND (GW)</u> , brown (10 YR 5/3), dry, loose	PID = 0.2 ppm Sample ID: ST106-SS-1067-360 collected 11/14/2007 at 1030 Note: sample too gravelly for encores; only 8 oz. soil jar filled
370				<u>WELL GRADED SUBROUNDED GRAVEL (GW)</u> , brown (7.5 YR 5/4), dry, loose, 10% sand clasts coated in clay	PID = 0.3 ppm
380			18-25-27	<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/3), dry, loose, 5% fine gravel	PID = 0.1 ppm Sample ID: ST106-SS-1067-380 collected 11/14/2007 at 1110 Sample ID: ST106-SS-1067-380DUP collected 11/14/2007 at 1112
390				<u>WELL GRADED SUBANGULAR GRAVEL (GW)</u> , brown (7.5 YR 5/2), dry, loose	PID = 0.2 ppm
400			16-16-18	<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/4), dry, loose (some moisture), 10% gravel, 2-3" clay	PID = 0.9 ppm Sample ID: ST106-SB-1067-400 collected 11/14/2007 at 1200
410				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 6/2), loose, dry, 25% gravel	PID = 0.3 ppm



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1067

SHEET 8 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1067

LOCATION : Inside Tank Berm

ELEVATION : 5349.41 ft MSL @ TOC

COORDINATES : N 1,473,401.1623, E 1,542,869.4129 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490' bgs (11/15/2007)

START : 11/08/2007 0927 END : 11/14/2007 1640

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	NUMBER AND TYPE			
420		SS	8-8-10	<u>POORLY GRADED SAND WITH SILT (SP-SM)</u> , light brown (7.5 YR 6/3), dry, loose, fine to medium-grained sand	PID = 0.2 ppm Sample ID: ST106-SS-1067-420 collected 11/14/2007 at 1310
430		GB		<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , light brown (7.5 YR 6/3), dry, loose, 15% gravel up to 1"	PID = 0.3 ppm
440		SS	16-13	<u>WELL GRADED SAND (SW)</u> , light brown (7.5 YR 6/2), dry, loose, with 10% gravel up to 0.5"	PID = 0.4 ppm Sample ID: ST106-SS-1067-440 collected 11/14/2007 at 1350
450		GB		<u>WELL GRADED GRAVEL (GW)</u> , up to 1.5" in diameter coated in fine grained clayey sand	PID = 0.4 ppm
460		SS	8-12-17	<u>POORLY GRADED SILTY SAND (SM)</u> , light brown (7.5 YR 6/4), slightly moist, low plasticity	PID = 0.1 ppm Sample ID: ST106-SS-1067-460 collected 11/14/2007 at 1420
470		GB		<u>POORLY GRADED SAND (SP)</u> , light brown (7.5 YR 6/3), dry, loose	PID = 0.2 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1067

SHEET 9 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1067

LOCATION : Inside Tank Berm

ELEVATION : 5349.41 ft MSL @ TOC

COORDINATES : N 1,473,401.1623, E 1,542,869.4129 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490' bgs (11/15/2007)

START : 11/08/2007 0927

END : 11/14/2007 1640

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	NUMBER	AND TYPE			
480		SS	8-12-14	<u>WELL GRADED SUBROUNDED GRAVEL WITH SAND (GW)</u> , brown (7.5 YR 4/4), moist, loose, 45% sand	PID = 0.4 ppm Sample ID: ST106-SS-1067-480 collected 11/14/2007 at 1455
490		GB		<u>WELL GRADED SAND WITH FINE GRAVEL (SW)</u> , brown (7.5 YR 5/4), moist, loose in water table	PID = 0.0 ppm
500		GB		<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 5/3), wet, loose, 5% gravel	PID = 0.0 ppm
510		GB		<u>WELL GRADED SAND WITH FINE GRAVEL (SW)</u> , brown (7.5 YR 5/4), moist, loose	PID = 0.2 ppm
520				TD = 518'	End of drilling at 1640 11/14/2007



CH2MHILL

PROJECT NUMBER
279495.04.01.01

WELL NUMBER
KAFB-1068

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : ST-106 KAFB Bulk Fuels Facility

LOCATION : South of 90-Day Storage

DRILLING CONTRACTOR : WDC Exploration & Wells

COORDINATES : N 1,474,176.3263, E 1,542,707.2449 New Mexico State Plane Coordinates,

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

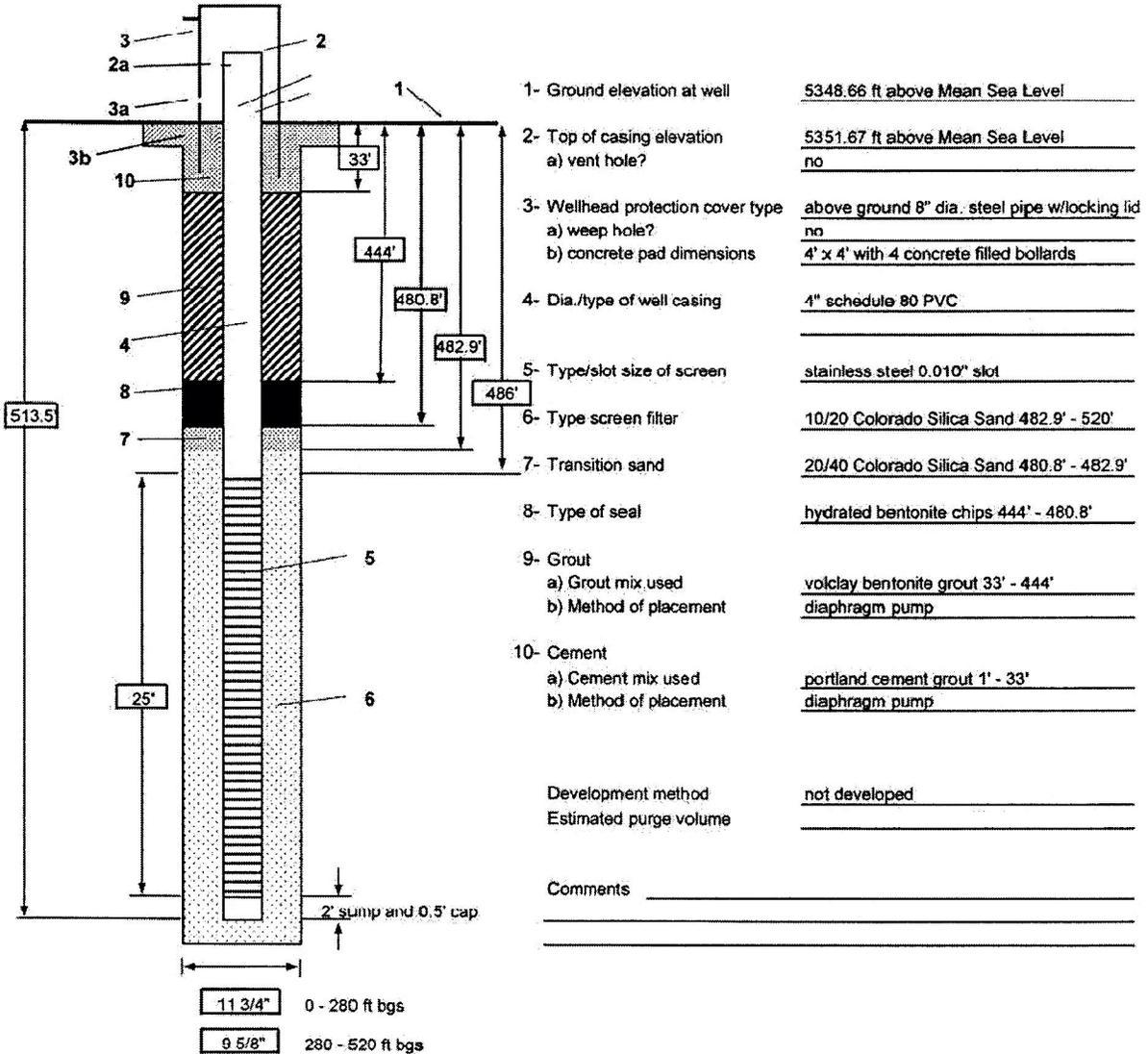
Central Zone, NAD 83 Datum

WATER LEVEL : 494.67' bgs (11/26/2007)

START : 11/18/2007

END : 11/21/2007

LOGGER : M. Brislen



Not to scale



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1068

SHEET 1 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1068

LOCATION : South of 90-Day Storage

ELEVATION : 5351.67 ft MSL @ TOC

COORDINATES : N 1,474,176.3263, E 1,542,707.2449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.67' bgs (11/26/2007)

START : 11/18/2007 0655

END : 11/21/2007 1415

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	NUMBER AND TYPE			
0					11/18/2007 start drilling at 0655 (Driller - Mark Green)
10		GB		<u>SILT WITH CLAY AND SAND (ML)</u> , reddish brown (5 YR 4/4), dry, loose	PID = 0.0 ppm
20		SS	7-7-8	<u>CLAY (CH)</u> , reddish brown (5 YR 4/4), dry, soft, medium-high plasticity	PID = 0.0 ppm Sample ID: ST106-SS-1068-020 collected on 11/18/2007 0705
30				not recorded	
40			8-15-17	<u>ELASTIC SILT/SILT WITH CLAY (MH)</u> , reddish brown (5 YR 5), dry, medium plasticity	PID = 0.0 ppm Sample ID: ST106-SS-1068-040 collected on 11/18/2007 at 0725
50				not recorded	



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1068 SHEET 2 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1068

LOCATION : South of 90-Day Storage

ELEVATION : 5351.67 ft MSL @ TOC

COORDINATES : N 1,474,176.3263, E 1,542,707.2449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.67' bgs (11/26/2007)

START : 11/18/2007 0655

END : 11/21/2007 1415

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
60			SS 18-36-41	<u>SILT (ML)</u> , reddish brown (5 YR 4/4), dry, loose	PID = 0.0 ppm Sample ID: ST106-SS-1068-060 collected on 11/18/2007 at 0740
70			GB	<u>SILT (ML)</u> , reddish brown (5 YR 4/4), dry, loose	PID = 0.0 ppm
80			SS 16-19-22	<u>SILT (ML)</u> , reddish brown (5 YR 4/4), dry, loose	PID = 0.0 ppm Sample ID: ST106-SS-1068-080 collected on 11/18/2007 at 0800
90			GB	<u>SILT WITH SAND AND CLAY (ML)</u> , reddish brown (5 YR 4/4), dry, loose, low-medium plasticity	PID = 0.0 ppm
100			SS 18-23-32	<u>POORLY GRADED FINE SAND (SP)</u> , brown (7.5 YR 5/4), dry, loose, with clumps of material from 90' bgs and 5% silt with sand and clay	PID = 0.0 ppm Sample ID: ST106-SS-1068-100 collected 11/18/2007 at 0815
110			GB	<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/4), dry, loose	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1068

SHEET 3 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1068

LOCATION : South of 90-Day Storage

ELEVATION : 5351.67 ft MSL @ TOC

COORDINATES : N 1,474,176.3263, E 1,542,707.2449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.67' bgs (11/26/2007)

START : 11/18/2007 0655

END : 11/21/2007 1415

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	STANDARD		SOIL DESCRIPTION	COMMENTS		
	INTERVAL (FT)	PENETRATION TEST RESULTS				
					RECOVERY (FT)	
NUMBER AND TYPE	6"-6"-6" (N)					
120			SS	10-13-16	ELASTIC SILT / SILT WITH CLAY (MH), strong brown (7.5 YR 4/6), dry, low-medium plasticity	PID = 0.0 ppm Sample ID: ST106-SS-1068-120 collected on 11/18/2007 at 0835
130			GB		SILT (ML), strong brown (7.5 YR 5/6), dry, loose in coarse sand-sized clumps	PID = 0.0 ppm
140			SS	10-12-15	ELASTIC SILT / SILT WITH CLAY (MH), reddish brown (5 YR 5/4), dry, high plasticity	PID = 0.0 ppm Sample ID: ST106-SS-1068-140 collected on 11/18/2007 at 0930 Sample ID: ST106-SS-1068-140DUP collected on 11/18/2007 at 0932
150			GB		WELL GRADED SAND WITH SILT (SW-SM), brown (7.5 YR 4/4), dry, loose	PID = 0.0 ppm
160			SS	12-16-18	WELL GRADED SAND (SW), brown (7.5 YR 5/3), dry, loose, contains 10% fine gravel and silty clay chunks	PID = 0.0 ppm Sample ID: ST106-SS-1068-160 collected 11/18/2007 at 1420
170			GB		WELL GRADED SAND (SW), brown (7.5 YR 5/3), dry, loose	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1068

SHEET 4 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1068

LOCATION : South of 90-Day Storage

ELEVATION : 5351.67 ft MSL @ TOC

COORDINATES : N 1,474,176.3263, E 1,542,707.2449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.67' bgs (11/26/2007)

START : 11/18/2007 0655 END : 11/21/2007 1415

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
180		SS	8-8-9 10-10-13	<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , light brown (7.5 YR 6/3), dry, loose	PID = 0.0 ppm Sample ID: ST106-SS-1068-180 collected 11/18/2007 at 1500 MSMSD 3x volume End of 11/18/2007 at 1600 Start of 11/19/2007 at 0930
190		GB		<u>WELL GRADED SAND (SW)</u> , light brown (7.5 YR 6/4), dry, loose	PID = 0.2 ppm
200		SS	8-12-14	<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 5/4), dry, loose	PID = 0.0 ppm Sample ID: ST106-SS-1068-200 collected 11/19/2007 at 0950 End of 11/19/2007 at 1700 Start of 11/20/2007 at 1340
210		GB		<u>SILT WITH WELL GRADED SAND (ML)</u> , light brown (7.5 YR 6/4), dry and loose	PID = 0.0 ppm
220		SS		<u>SILT WITH CLAY (MH)</u> , brown (7.5 YR 5/2), dry, low-medium plasticity	PID = 0.2 ppm Sample ID: ST106-SS-1068-220 collected 11/20/2007 at 1200
230		GB		<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 4/2), dry, loose	PID = 0.4 ppm



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PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1068

SHEET 5 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1068

LOCATION : South of 90-Day Storage

ELEVATION : 5351.67 ft MSL @ TOC

COORDINATES : N 1,474,176.3263, E 1,542,707.2449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.67' bgs (11/26/2007)

START : 11/18/2007 0655

END : 11/21/2007 1415

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	NUMBER AND TYPE	RECOVERY (FT)			
240			12-15-18	<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 5/2), dry, loose	PID = 0.3 ppm Sample ID: ST106-SS-1068-240 collected 11/20/2007 at 1415
250				<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/2), dry, loose	PID = 0.3 ppm
260			7-10-12	<u>ELASTIC SILT WITH SAND (MH)</u> , reddish brown (5 YR 4/3), medium plasticity	PID = 0.1 ppm Sample ID: ST106-SS-1068-260 collected 11/20/2007 at 1440
270				<u>SILT (MH)</u> , reddish brown (5 YR 4/3), dry, loose	PID = 0.2 ppm
280			7-7-9	<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/2), dry, loose	PID = 0.1 ppm Sample ID: ST106-SS-1068-280 collected 11/20/2007 at 1600
290				not recorded	End of 11/20/2007 at 1730 Start of 11/21/2007 at 0712



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1068

SHEET 6 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1068

LOCATION : South of 90-Day Storage

ELEVATION : 5351.67 ft MSL @ TOC

COORDINATES : N 1,474,176.3263, E 1,542,707.2449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.67' bgs (11/26/2007)

START : 11/18/2007 0655

END : 11/21/2007 1415

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
300			SS	12-16-17 <u>WELL GRADED MEDIUM COARSE SAND (SW)</u> , brown (7.5 YR 5/2), dry, loose	PID = 0.0 ppm Sample ID: ST106-SS-1068-300 collected 11/21/2007 at 0810
310			GB	<u>WELL GRADED FINE TO MEDIUM SAND (SW)</u> with 0.5"-1" rounded gravel, brown (7.5 YR 4/4), dry, loose	PID = 0.0 ppm
320			SS	6-7-9 <u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/3), dry, loose	PID = 0.0 ppm Sample ID: ST106-SS-1068-320 collected 11/21/2007 at 0830
330			GB	<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 4/4), dry, loose	PID = 0.0 ppm
340			SS	9-11-18 <u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 4/4), dry, loose	PID = 0.0 ppm Sample ID: ST106-SS-1068-340 collected 11/21/2007 at 0850
350			GB	<u>WELL GRADED MEDIUM SAND THROUGH FINE GRAVEL (SW)</u> , brown (7.5 YR 4/4), dry, loose	PID = 0.0 ppm



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PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1068

SHEET 7 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1068

LOCATION : South of 90-Day Storage

ELEVATION : 5351.67 ft MSL @ TOC

COORDINATES : N 1,474,176.3263, E 1,542,707.2449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.67' bgs (11/26/2007)

START : 11/18/2007 0655

END : 11/21/2007 1415

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
360			50 for 4"	WELL GRADED SAND WITH GRAVEL (SW), brown (7.5 YR 5/4), dry, loose	Sample ID: ST106-SS-1068-360 collected 11/21/2007 at 0910 Note: sample too gravelly for encores, 8 oz. soil jar half filled; poor recovery
370				WELL GRADED SAND WITH GRAVEL (SW), brown (7.5 YR 5/4), dry, loose, fine subangular gravel	PID = 0.0 ppm
380			6-9-13	WELL GRADED SAND (SW), brown (7.5 YR 5/2), dry, loose, with 10% gravel	PID = 0.0 ppm Sample ID: ST106-SS-1068-380 collected 11/21/2007 at 0930
390				WELL GRADED SAND WITH GRAVEL (SW), brown (7.5 YR 5/4), dry, loose, fine subangular gravel	PID = 0.0 ppm
400			17-25-32	WELL GRADED SAND (SW), brown (7.5 YR 5/2), dry, loose with 5% fine gravel,	PID = 0.0 ppm Sample ID: ST106-SB-1068-400 collected 11/21/2007 at 0945
410				WELL GRADED SAND (SW), light brown (7.5 YR 6/3), dry, loose	PID = 0.0 ppm



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PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1068

SHEET 8 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1068

LOCATION : South of 90-Day Storage

ELEVATION : 5351.67 ft MSL @ TOC

COORDINATES : N 1,474,176.3263, E 1,542,707.2449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.67' bgs (11/26/2007)

START : 11/18/2007 0655

END : 11/21/2007 1415

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
420		SS	6-6-9	WELL GRADED SAND (SW), brown (7.5 YR 5/4), dry, loose, fine to medium-grained	PID = 0.0 ppm Sample ID: ST106-SS-1068-420 collected 11/21/2007 at 1105
430		GB		WELL GRADED SAND WITH GRAVEL (SW), brown (7.5 YR 5/4), dry, loose	PID = 0.0 ppm
440		SS	12-14-19	WELL GRADED SAND WITH GRAVEL (SW), brown (7.5 YR 5/4), dry, loose	PID = 0.0 ppm Sample ID: ST106-SS-1068-440 collected 11/21/2007 at 1125
450		GB		WELL GRADED SAND WITH GRAVEL (SW), brown (7.5 YR 5/4), dry, loose, with 0.5-1.5" subrounded grav	PID = 0.0 ppm
460		SS	18-25-32 13-17-20	WELL GRADED FINE TO MEDIUM SAND (SW), brown (7.5 YR 5/4), dry, loose	Sample ID: ST106-SS-1068-460 collected 11/21/2007 at 1145 MSMSD double volume collected (2x8 oz jars and 10 encores)
470		GB		WELL GRADED SAND WITH GRAVEL (SW), brown (7.5 YR 5/4), dry, loose	PID = 0.0 ppm strong fuel odor



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1068

SHEET 9 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1068

LOCATION : South of 90-Day Storage

ELEVATION : 5351.67 ft MSL @ TOC

COORDINATES : N 1,474,176.3263, E 1,542,707.2449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 494.67' bgs (11/26/2007)

START : 11/18/2007 0655

END : 11/21/2007 1415

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
480		SS	6-8-10	<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 5/3), moist, loose	PID = 0.2 ppm Sample ID: ST106-SS-1068-480 collected 11/21/2007 at 1315 strong odor
490		GB		<u>WELL GRADED SAND WITH FINE GRAVEL (SW)</u> , pinkish gray (7.5 YR 6/2), moist, loose	PID = 0.0 ppm strong fuel odor
500		GB		<u>WELL GRADED FINE GRAVEL WITH SAND (GW)</u> , brown (7.5 YR 5/3), wet, loose	PID = 0.1 ppm strong odor
510		GB		<u>WELL GRADED SAND WITH FINE GRAVEL (SW)</u> , brown (7.5 YR 4/3), wet, loose, medium to coarse-grained sand	PID = 0.0 ppm
520				TD= 520' bgs	End drilling at 1415 11/21/2007



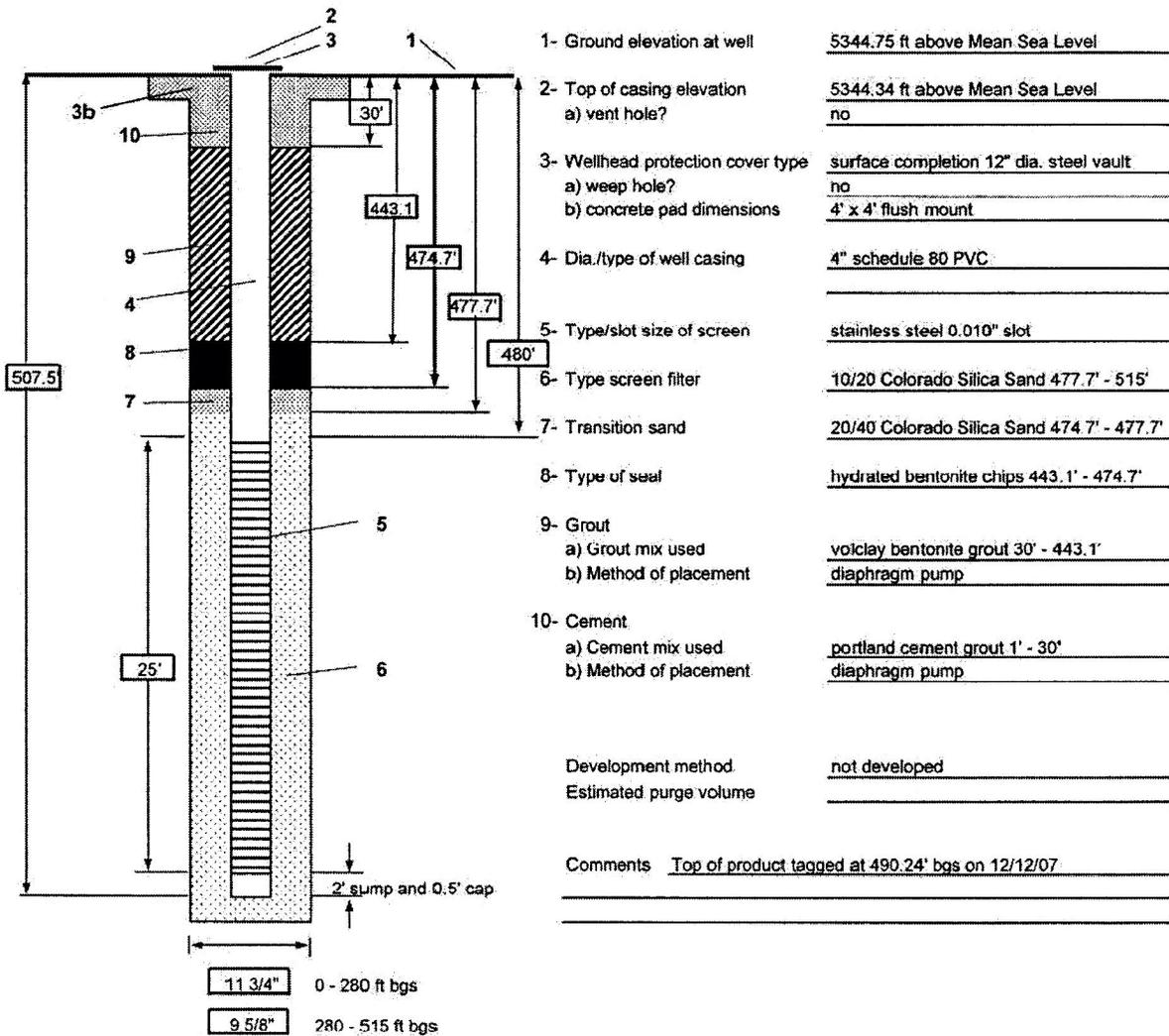
PROJECT NUMBER
279495.04.01.01

WELL NUMBER
KAFB-1069

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : ST-106 KAFB Bulk Fuels Facility LOCATION : Base Fence Line
 DRILLING CONTRACTOR : WDC Exploration & Wells COORDINATES : N 1,474,629.7653 E 1,542,482.1449 New Mexico State Plane Coordinates,
 DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K Central Zone, NAD 83 Datum
 WATER LEVEL : 491.91' bgs (12/12/2007) START : 11/28/2007 END : 12/1/2007 LOGGER : M. Brislen



Not to scale



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1069

SHEET 1 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1069

LOCATION : Base Fence Line

ELEVATION : 5344.34 ft MSL @ TOC

COORDINATES : N 1,474,629.7653 E 1,542,482.1449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 491.91' bgs (12/12/2007)

START : 11/28/2007 0922 END : 12/1/2007 0923

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
0					11/28/2007 start drilling at 0922 (Driller - Mark Green)
10		GB		<u>SILT WITH GRAVEL (ML)</u> , yellowish red (5 YR 5/8), dry, loose, fine angular gravel	PID = 0.0 ppm
20		GB		<u>SILT WITH GRAVEL (ML)</u> , yellowish red (5 YR 5/8), dry, loose, fine angular gravel and 5% clay	PID = 0.0 ppm
30		GB		<u>SILT WITH GRAVEL (ML)</u> , yellowish red (5 YR 5/8), dry, loose, fine angular gravel and 10% clay	PID = 0.0 ppm
40		GB		<u>ELASTIC SILT WITH GRAVEL (MH)</u> , yellowish red (5 YR 5/8), dry, in clumps, fine angular gravel	PID = 0.0 ppm
50		GB		<u>ELASTIC SILT WITH GRAVEL (MH)</u> , yellowish red (5 YR 5/8), dry, in clumps, fine angular gravel	PID = 0.0 ppm



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PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1069

SHEET 2 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1069

LOCATION : Base Fence Line

ELEVATION : 5344.34 ft MSL @ TOC

COORDINATES : N 1,474,629.7653 E 1,542,482.1449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 491.91' bgs (12/12/2007)

START : 11/28/2007 0922

END : 12/1/2007 0923

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
60			8-8-12	<u>ELASTIC SILT (MH)</u> , reddish brown (5 YR 5/4), dry, clumps, medium-low plasticity	PID = 0.0 ppm Sample ID: ST106-SS-1069-060 collected on 11/28/2007 at 1000 Sample ID: ST106-SS-1069-060DUP collected on 11/28/2007 at 1005
70				<u>SILT (ML)</u> , yellowish red (5 YR 4/6), dry, loose	PID = 0.0 ppm
80				<u>SILT (ML)</u> , yellowish red (5 YR 5/6), dry, loose	PID = 0.0 ppm
90				<u>SILT (ML)</u> , yellowish red (5 YR 5/6), dry, loose, 10% clay	PID = 0.0 ppm
100			9-12-13	<u>WELL GRADED SAND (SW)</u> , reddish gray (5 YR 5/2), dry, loose	PID = 0.0 ppm Sample ID: ST106-SS-1069-100 collected 11/28/2007 at 1050
110				<u>WELL GRADED SAND WITH SILT WITH FINE GRAVEL (SW-SM)</u> , reddish brown (5 YR 4/4), dry, loose	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1069

SHEET 3 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1069

LOCATION : Base Fence Line

ELEVATION : 5344.34 ft MSL @ TOC

COORDINATES : N 1,474,629.7653 E 1,542,482.1449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 491.91' bgs (12/12/2007)

START : 11/28/2007 0922

END : 12/1/2007 0923

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	NUMBER AND TYPE	RECOVERY (FT)			
120				<u>ELASTIC SILT (MH)</u> , yellowish red (5 YR 4/6), dry medium-low plasticity, pea-sized clumps	PID = 0.0 ppm
130				<u>ELASTIC SILT (MH)</u> , yellowish red (5 YR 4/6), dry medium-low plasticity, pea-sized clumps	PID = 0.0 ppm
140				<u>WELL GRADED SAND (SW)</u> , reddish brown (5 YR 5/3), dry, loose	PID = 0.0 ppm
150				<u>WELL GRADED SAND (SW)</u> , reddish brown (5 YR 5/6), dry, loose	PID = 0.0 ppm
160			4-6-6	<u>WELL GRADED SAND WITH FINE GRAVEL (GW)</u> , brown (7.5 YR 5/2), 10% gravel	PID = 0.0 ppm Sample ID: ST106-SS-1069-160 collected 11/28/2007 at 1645
170				<u>WELL GRADED SAND WITH FINE GRAVEL (GW)</u> , brown (7.5 YR 5/3), 10% gravel	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1069

SHEET 4 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1069

LOCATION : Base Fence Line

ELEVATION : 5344.34 ft MSL @ TOC

COORDINATES : N 1,474,629.7653 E 1,542,482.1449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 491.91' bgs (12/12/2007)

START : 11/28/2007 0922

END : 12/1/2007 0923

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
180		GB		<u>WELL GRADED SAND (SW)</u> , light brown (7.5 YR 6/4), dry, loose	PID = 0.0 ppm End of 11/28/2007 at 1729 Start of 11/29/2007 at 0650
190		GB		<u>WELL GRADED SAND (SW)</u> , light brown (7.5 YR 6/4), dry, loose	PID = 0.1 ppm
200		SS	7-8-12	<u>WELL GRADED SAND WITH 10% GRAVEL (SW)</u> , brown (7.5 YR 5/4), dry, loose	PID = 0.0 ppm Sample ID: ST106-SS-1069-200 collected 11/29/2007 at 0735
210		GB		<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/2), dry, loose	PID = 0.1 ppm
220		GB		<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 5/3), dry, loose	PID = 0.1 ppm
230		GB		<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 5/3), dry, loose	PID = 0.1 ppm



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PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1069

SHEET 5 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1069

LOCATION : Base Fence Line

ELEVATION : 5344.34 ft MSL @ TOC

COORDINATES : N 1,474,629.7653 E 1,542,482.1449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 491.91' bgs (12/12/2007)

START : 11/28/2007 0922

END : 12/1/2007 0923

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	NUMBER AND TYPE	RECOVERY (FT)			
240			12-15-18	<u>WELL GRADED GRAVEL WITH SAND (GW)</u> , brown (7.5 YR 5/3), dry, loose	PID = 0.2 ppm
250				<u>SILT WITH GRAVEL (ML)</u> , brown (7.5 YR 5/4), dry, loose	PID = 0.3 ppm
260			7-10-12	<u>WELL GRADED GRAVEL (GW)</u> , brown (7.5 YR 5/3), dry, loose, subrounded	Sample ID: ST106-SS-1069-260 collected 11/29/2007 at 0905 poor recovery (4") of gravel only; no encore samples collected, jar only 1/3 full.
270				<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/3), dry, loose	PID = 0.2 ppm
280				not recorded	
290				not recorded	



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1069

SHEET 6 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1069

LOCATION : Base Fence Line

ELEVATION : 5344.34 ft MSL @ TOC

COORDINATES : N 1,474,629.7653 E 1,542,482.1449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 491.91' bgs (12/12/2007)

START : 11/28/2007 0922 END : 12/1/2007 0923

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
300			SS	<u>WELL GRADED GRAVEL WITH SAND (GW), brown</u> (7.5 YR 5/4), dry, loose	Sample ID: ST106-SS-1069-300 collected 11/29/2007 at 1355 sample too gravelly for encores; soil jar analyzed for DRO only
310				not recorded	
320			GB	<u>WELL GRADED SAND WITH GRAVEL (SW), brown</u> (7.5 YR 5/3), dry, loose	PID = 0.0 ppm
330			GB	<u>WELL GRADED SAND WITH GRAVEL (SW), brown</u> (7.5 YR 5/3), dry, loose	PID = 0.0 ppm
340			GB	<u>WELL GRADED SAND WITH GRAVEL (SW), brown</u> (7.5 YR 5/3), dry, loose	PID = 0.0 ppm
350			GB	<u>WELL GRADED SAND WITH GRAVEL (SW), brown</u> (7.5 YR 5/3), dry, loose, 10% clay, gravel coated in cla	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-1069

SHEET 7 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1069

LOCATION : Base Fence Line

ELEVATION : 5344.34 ft MSL @ TOC

COORDINATES : N 1,474,629.7653 E 1,542,482.1449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 491.91' bgs (12/12/2007)

START : 11/28/2007 0922 END : 12/1/2007 0923

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	NUMBER AND TYPE			
360		SS	9-10-18	<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 5/3), dry, loose	PID = 0.0 ppm Sample ID: ST106-SS-1069-360 collected 11/29/2007 at 1445
370		GB		<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 5/3), dry, loose	PID = 0.0 ppm
380		GB		<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 5/3), dry, loose	PID = 0.0 ppm
390		GB		<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 5/3), dry, loose	PID = 0.0 ppm
400		SS	12-18-19	<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/3), dry, loose	Sample ID: ST106-SB-1069-400 collected 11/29/2007 at 1640 MSMSD - double volume collected
410		GB		<u>WELL GRADED SAND (SW)</u> , brown (7.5 YR 5/3), dry, loose	



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PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1069

SHEET 8 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1069

LOCATION : Base Fence Line

ELEVATION : 5344.34 ft MSL @ TOC

COORDINATES : N 1,474,629.7653 E 1,542,482.1449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 491.91' bgs (12/12/2007)

START : 11/28/2007 0922

END : 12/1/2007 0923

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
420		GB		<u>WELL GRADED SAND WITH FINE GRAVEL (SW)</u> , brown (7.5 YR 5/3), dry, loose	PID = 0.0 ppm
430		GB		<u>WELL GRADED SAND WITH FINE GRAVEL (SW)</u> , brown (7.5 YR 5/3), dry, loose	PID = 0.0 ppm
440		GB		<u>SANDY CLAY (CH)</u> , light olive brown (2.5 Y 5/4), dry, clumped, medium plasticity, 5% gravel	PID = 0.0 ppm
450		GB		<u>WELL GRADED SAND WITH FINE GRAVEL (SW)</u> , brown (7.5 YR 5/3), dry, loose	PID = 0.0 ppm
460		SS	5-9-12	<u>WELL GRADED MEDIUM-COARSE SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 5/4), dry, loose	PID = 0.0 ppm Sample ID: ST106-SS-1069-460 collected 11/30/2007 at 0735 End of 11/29/2007 at 1714 Start of 11/30/2007 at 0645
470		GB		<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (7.5 YR 4/4), moist, loose	PID = 0.2 ppm End of 11/30/2007 at 1530 Start of 12/1/2007 at 0833



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-1069

SHEET 9 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-1069

LOCATION : Base Fence Line

ELEVATION : 5344.34 ft MSL @ TOC

COORDINATES : N 1,474,629.7653 E 1,542,482.1449 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 491.91' bgs (12/12/2007)

START : 11/28/2007 0922

END : 12/1/2007 0923

LOGGER : M. Brislen

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
480		GB		WELL GRADED SAND WITH GRAVEL (SW), brown (7.5 YR 4/4), moist, loose	PID = 4.1 ppm fuel odor
490		GB		WELL GRADED SAND WITH GRAVEL (SW), brown (7.5 YR 4/4), wet, loose	PID = 0.8 ppm fuel odor
500		GB		WELL GRADED SUBROUNDED GRAVEL WITH SAND (GW), brown (7.5 YR 5/4), wet	PID = 0.2 ppm
510		GB		WELL GRADED SAND WITH GRAVEL (SW), brown (7.5 YR 4/4), wet, loose	PID = 0.0 ppm
515		GB		WELL GRADED SAND WITH GRAVEL (SW), brown (7.5 YR 4/4), wet, loose	PID = 0.0 ppm
520				final depth: 515' bgs	End drilling at 0923 12/1/2007



CH2MHILL

PROJECT NUMBER
279495.04.01.01

WELL NUMBER
KAFB-10610

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : ST-106 KAFB Bulk Fuels Facility

LOCATION : Bullhead Park

DRILLING CONTRACTOR : WDC Exploration & Wells COORDINATES : N 1,475,266.8613 E 1,542,980.1899 New Mexico State Plane Coordinates,

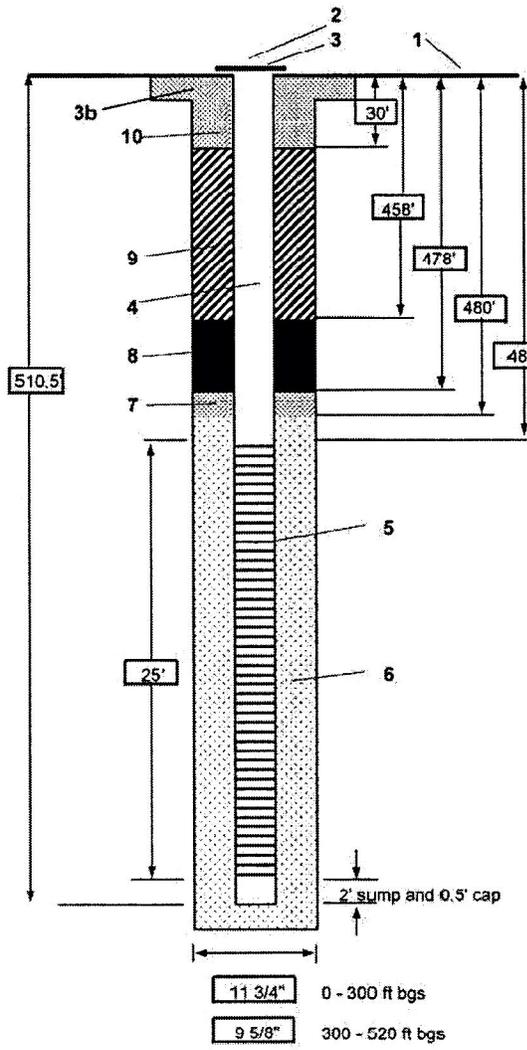
DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K Central Zone, NAD 83 Datum

WATER LEVEL : 490.41' bgs (12/7/2007)

START : 12/5/2007

END : 12/6/2007

LOGGER : M. Brislen/J. Waldron



1- Ground elevation at well	5343.39 ft above Mean Sea Level
2- Top of casing elevation	5343.20 ft above Mean Sea Level
a) vent hole?	no
3- Wellhead protection cover type	surface completion 12" dia. steel vault
a) weep hole?	no
b) concrete pad dimensions	4' x 4' flush mount
4- Dia./type of well casing	4" schedule 80 PVC
5- Type/slot size of screen	stainless steel 0.010" slot
6- Type screen filter	10/20 Colorado Silica Sand 480' - 520'
7- Transition sand	20/40 Colorado Silica Sand 478' - 480'
8- Type of seal	hydrated bentonite chips 478' - 458'
9- Grout	
a) Grout mix used	volclay bentonite grout 30' - 458'
b) Method of placement	tremmie pipe
10- Cement	
a) Cement mix used	portland cement grout 1' - 30'
b) Method of placement	tremmie pipe
Development method	not developed
Estimated purge volume	
Comments	

Not to scale



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-10610

SHEET 1 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-10610

LOCATION : Bullhead Park

ELEVATION : 5343.20 ft MSL @ TOC

COORDINATES : N N 1,475,266.8613 E 1,542,980.1899 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 5K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490.41' bgs (12/7/2007)

START : 12/5/2007 1330

END : 12/6/2007 1548

LOGGER : M. Brislen/J. Waldron

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	NUMBER AND TYPE	RECOVERY (FT)			
0					12/5/2007 start drilling at 1330 (Driller - Mark Green)
10			GB	<u>SILT (ML)</u> , strong brown (7.5 YR 5/6), dry, loose, with 5% clay and 5% fine gravel	PID = 0.0 ppm
20			GB	<u>SILT (ML)</u> , strong brown (7.5 YR 5/6), dry, loose, with 5-10% fine gravel, 5% clay	PID = 0.0 ppm
30			GB	<u>SILT (ML)</u> , with 5-10% fine gravel, 5% clay, strong brown (7.5 YR 5/6), dry, loose	PID = 0.0 ppm
40			GB	<u>SILT (ML)</u> , strong brown (7.5 YR 5/6), dry, loose, with 5-10% fine gravel, 5% clay	PID = 0.0 ppm
50			GB	<u>SILT WITH GRAVEL (ML)</u> , strong brown (7.5 YR 4/6), dry, loose	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-10610

SHEET 2 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-10610

LOCATION : Bullhead Park

ELEVATION : 5343.20 ft MSL @ TOC

COORDINATES : N N 1,475,266.8613 E 1,542,980.1899 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490.41' bgs (12/7/2007)

START : 12/5/2007 1330

END : 12/6/2007 1548

LOGGER : M. Brislen/J. Waldron

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
60			GB	<u>SILT WITH WELL GRADED SAND AND GRAVEL (ML)</u> , strong brown (7.5 YR 5/6), dry, loose	PID = 0.0 ppm
70			GB	<u>SILT (ML)</u> , strong brown (7.5 YR 5/6), dry, loose	PID = 0.0 ppm
80			SS	7-7-9 <u>CLAY WITH SILT (MH)</u> , brown (7.5 YR 5/4), dry, hard clumps, not easily broken	PID = 0.0 ppm Sample ID: ST106-SS-10610-080 collected on 12/5/2007 at 1420
90			GB	<u>SILT (ML)</u> , strong brown (7.5 YR 5/6), dry, loose, 20% clay clumps with pressure	PID = 0.0 ppm
100			SS	18-30-47 <u>CLAY WITH SILT (MH)</u> , light brown (7.5 YR 6/3), dry, hard clumps, not easily broken	PID = 0.0 ppm Sample ID: ST106-SS-10610-100 collected 12/5/2007 at 1435
110			GB	<u>CLAY WITH SILT (ML)</u> , strong brown (7.5 YR 4/6), dry, medium plasticity	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-10610

SHEET 3 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-10610

LOCATION : Bullhead Park

ELEVATION : 5343.20 ft MSL @ TOC

COORDINATES : N N 1,475,266.8613 E 1,542,980.1899 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490.41' bgs (12/7/2007)

START : 12/5/2007 1330

END : 12/6/2007 1548

LOGGER : M. Brislen/J. Waldron

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
120			GB	<u>SILT (ML)</u> , strong brown (7.5 YR 5/6), dry, loose	PID = 0.0 ppm
130			GB	<u>SILT (ML)</u> , strong brown (7.5 YR 5/6), dry, loose, with 10% clay	PID = 0.0 ppm
140			GB	<u>SILT (ML)</u> , strong brown (7.5 YR 5/6), dry, loose	PID = 0.0 ppm
150			GB	<u>ELASTIC SILT WITH WELL GRADED SAND (MH)</u> , brown (7.5 YR 4/4), dry, medium-low plasticity	PID = 0.0 ppm
160			SS	7-10-12 <u>WELL GRADED SAND WITH FINE GRAVEL (SW)</u> , brown (7.5 YR 5/3), brown, dry, loose	PID = 0.0 ppm Sample ID: ST106-SS-10610-160 collected 12/5/2007 at 1550
170			GB	<u>WELL GRADED SAND WITH FINE GRAVEL (SW)</u> , brown (7.5 YR 5/3), brown, dry, loose	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-10610

SHEET 4 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-10610

LOCATION : Bullhead Park

ELEVATION : 5343.20 ft MSL @ TOC

COORDINATES : N N 1,475,266.8613 E 1,542,980.1899 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490.41' bgs (12/7/2007)

START : 12/5/2007 1330

END : 12/6/2007 1548

LOGGER : M. Brislen/J. Waldron

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
180		GB		<u>WELL GRADED SAND WITH COARSE GRAVEL (SW)</u> , yellowish brown (10 YR 5/4), dry, loose	PID = 0.0 ppm
190		GB		<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , brown (10 YR 4/3), dry, loose	PID = 0.0 ppm
200		SS	6-12-15	<u>SILT WITH SAND (ML)</u> , pale brown (10 YR 6/3), dry, loose	PID = 0.0 ppm Sample ID: ST106-SS-10610-200 collected 12/5/2007 at 1625 End of 12/5/2007 at 1730 Start of 12/6/2007 at 0800
210		GB		<u>WELL GRADED SAND (SW)</u> , pale brown (10 YR 6/3), dry and loose	PID = 0.0 ppm
220		GB		<u>WELL GRADED SAND WITH COARSE GRAVEL (SW)</u> , pale brown (10 YR 6/3), dry and loose	PID = 0.0 ppm
230		GB		<u>WELL GRADED SAND WITH FINE GRAVEL (SW)</u> , pale brown (10 YR 6/3), dry and loose	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-10610

SHEET 5 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-10610

LOCATION : Bullhead Park

ELEVATION : 5343.20 ft MSL @ TOC

COORDINATES : N N 1,475,266.8613 E 1,542,980.1899 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490.41' bgs (12/7/2007)

START : 12/5/2007 1330

END : 12/6/2007 1548

LOGGER : M. Brislen/J. Waldron

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
240				<u>WELL GRADED GRAVEL WITH SAND (GW)</u> , pale brown (10 YR 6/3), dry, loose	PID = 0.0 ppm
250				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , pale brown (10 YR 6/3)	PID = 0.0 ppm
260			4-5-7	<u>COARSE GRAVEL (GW)</u> , pale brown (10 YR 6/3), large, well-packed gravel	PID = 0.0 ppm
270				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , pale brown (10 YR 6/3), dry, loose	PID = 0.0 ppm
280				<u>WELL GRADED SAND WITH CLAY AND GRAVEL (SW)</u> , dark yellowish brown (10 YR 4/4)	PID = 0.0 ppm
290				<u>WELL GRADED SAND WITH AND CLAY GRAVEL (SW)</u> , pale brown (10 YR 6/3), dry, loose	PID = 0.0 ppm



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-10610

SHEET 6 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-10610

LOCATION : Bullhead Park

ELEVATION : 5343.20 ft MSL @ TOC

COORDINATES : N N 1,475,266.8613 E 1,542,980.1899 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490.41' bgs (12/7/2008) START : 12/5/2007 1330

END : 12/6/2007 1548

LOGGER : M. Brislen/J. Waldron

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
300			22-35-50	<u>WELL GRADED GRAVEL WITH SAND AND CLAY (GW-GC)</u> , loose, dry	PID = 0.0 ppm too coarse for encore samples; soil jar for DRO analysis only
310				<u>LARGE COARSE GRAVEL WITH SAND (GW)</u> , loose, dry	PID = 0.0 ppm
320				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , light brown (10 YR 6/3), dry, loose	PID = 0.0 ppm
330				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , light brown (10 YR 6/3), dry, loose	PID = 0.0 ppm
340				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , light brown (10 YR 6/3), dry, loose	PID = 0.0 ppm
350				<u>WELL GRADED SAND WITH GRAVEL (SW)</u> , yellowish brown (10 YR 5/4)	



CH2MHILL

PROJECT NUMBER
279495.04.01.01

BORING NUMBER
KAFB-10610

SHEET 7 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-10610

LOCATION : Bullhead Park

ELEVATION : 5343.20 ft MSL @ TOC

COORDINATES : N N 1,475,266.8613 E 1,542,980.1899 NM State Plan Coordinates, NAD 83

DRILLING METHOD AND EQUIPMENT USED : Air Rotary Casing Hammer, Speedstar 15K

DRILLING CONTRACTOR : WDC Exploration & Wells

WATER LEVEL : 490.41' bgs (12/7/2007)

START : 12/5/2007 1330

END : 12/6/2007 1548

LOGGER : M. Brislen/J. Waldron

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (FT)	NUMBER AND TYPE			
360			SS	8-12-15 <u>WELL GRADED SAND WITH GRAVEL (SW),</u> yellowish brown (10 YR 5/4)	PID = 0.0 ppm
370			GB	<u>WELL GRADED SAND WITH GRAVEL (SW),</u> yellowish brown (10 YR 5/4)	PID = 0.0 ppm
380			GB	<u>WELL GRADED SAND WITH GRAVEL (SW),</u> yellowish brown (10 YR 5/4)	PID = 0.0 ppm
390			GB	<u>WELL GRADED SAND (SW),</u> yellowish brown (10 YR 5/4)	PID = 0.8 ppm
400			SS	8-8-12 <u>WELL GRADED SAND (SW),</u> yellowish brown 10 YR 5/4	PID = 0.0 ppm
410				not recorded	



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-10610

SHEET 8 OF 9

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LOGGER : M. Brislen/J. Waldron

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
420		GB		WELL GRADED SAND WITH GRAVEL (SW), pale brown (10 YR 6/3)	PID = 0.0 ppm
430		GB		WELL GRADED SAND WITH GRAVEL (SW), pale brown (10 YR 6/3), dry, loose	PID = 0.8 ppm
440		GB		WELL GRADED SAND WITH GRAVEL (SW), pale brown (10 YR 6/3), dry, loose	PID = 0.6 ppm
450		GB		WELL GRADED SAND WITH GRAVEL (SW), brown (10 YR 5/3), dry, loose	PID = 0.0 ppm
460		SS	5-5-7	WELL GRADED SAND WITH GRAVEL (SW), brown (10 YR 5/3), dry, loose	
470		GB		WELL GRADED SAND WITH GRAVEL (SW), brown (10 YR 5/3), dry, loose	



CH2MHILL

PROJECT NUMBER

279495.04.01.01

BORING NUMBER

KAFB-10610

SHEET 9 OF 9

SOIL BORING LOG

PROJECT : KAFB Bulk Fuels Facility Well KAFB-10610

LOCATION : Bullhead Park

ELEVATION : 5343.20 ft MSL @ TOC

COORDINATES : N N 1,475,266.8613 E 1,542,980.1899 NM State Plan Coordinates, NAD 83

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LOGGER : M. Brislen/J. Waldron

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, TESTS, INSTRUMENTATION, SAMPLE ID, AND ORGANIC VAPOR READING (PID)
	RECOVERY (FT)	NUMBER AND TYPE			
480		GB		WELL GRADED SAND WITH GRAVEL (SW), brown (10 YR 4/3), moist	PID = 0.9 ppm odor present
490				not recorded	PID = 1.0 ppm odor getting stronger
500		GB		WELL GRADED SAND WITH GRAVEL (SW), brown (10 YR 4/3), moist	PID = 0.0 ppm odor dissipated
510		GB		WELL GRADED SAND WITH GRAVEL (SW), brown (10 YR 4/3), moist	PID = 0.0 ppm
520		GB		WELL GRADED SAND WITH GRAVEL (SW), brown (10 YR 4/3), moist 520' total depth	PID = 0.0 ppm End drilling at 1548 12/6/2007