

NOT TO SCALE

Well-completion diagram for monitoring well KAFB 0307. Drilled and completed by U.S. Geological Survey, Coal Branch, Denver, Colo. Started on 08-02-91, completed on 08-08-91. Well drilled using mud rotary method with Wyoming sodium bentonite drilling fluid. All depths are feet below land surface.

KAFB-0307

AR 1710

Borehole Log
KAFB0307

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 1 of 7
 Project number: 463536001 Site: KAFB0307 Drilling Company: USGS
 Location: Landfill 1 Surface Elevation:
 Date Started drilling: 28 May 91 Drilling Crew: Dan Sweney, John Palmer, Fred Gebhardt
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Air 0-4 ft., Mud 4-4 ft.
 Drilling equipment: Gardner-Denver17w Sample type:
 Logged by: Abeyta

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
28-May-91	1655			Began drilling.
	1706	0-3		(Description of cuttings) Sandy silt, vfg with < 1% coarse grains and pebbles ≤ 1 cm subangular 10 YR 4/2. Dark yellowish brown, very slightly moist. Root zone for "very" sparse vegetation.
	1725	3-7	Sampled @ ~ 5 ft	(28 inches recovered) Same as 0-3. Very soft and light-weight silt - core probably compacted in core barrel.
	1750	7-9		(27 inches recovered) Sandy silt, vfg - fg, minor caliche nodular ≤ 3 cm friable, numerous hollow root casts, 10 YR 5/4 moderate yellowish brown, Dry.
	1755	Note		Approximately 1.5 gallons deionized water added at side of augur.
	1810	9-12		(22 inches recovered). Sandy silt, vfg - fg, minor caliche. Sandy zone 10 - 16 inches from top of core coarse - vfg with pebbles, <2% ≤3 mm, angular to subrounded, poorly sorted; large boulders at bottom at core in shoe ≤7.5 cm rounded. All sample dry 10 YR 5/4 moderate yellowish brown.

Borehole Log
KAFB0307

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 2 of 7
 Project number: 463536001 Site: KAFB0307 Drilling Company: USGS
 Location: Landfill 1 Surface Elevation:
 Date Started drilling: 28 May 91 Drilling Crew: Dan Sweney, John Palmer, Fred Gebhardt
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Air 0-4 ft., Mud 4-4 ft.
 Drilling equipment: Gardner-Denver17w Sample type:
 Logged by: Abeyta

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
28-May-91	1826	12-15		(32 inches recovered) Upper 9 inches - silty sand, vfg - fg with ~ 10% coarse, vc sand and pebbles ≤3 cm, subangular to subrounded. Next 5 inches - sandy silt, vfg - fg, well sorted, 5 YR 5/6. Light brown - moist. Next 2 inches - same as upper 9. Lower 8 inches - silty sand, vfg - fg with pebbles ≤4.5 cm very poorly sorted 10 YR 5/4. Moderate yellowish brown - granite pebbles. Lower 8 inches - silty sand - med grained with ~5% coarse - vcg and pebbles ≤2.5 cm, angular to subrounded, very poorly sorted, slightly moist.
	1820	15-18		(22 inches recovered) Upper 21 inches - same as lower 8 inches of 12 - 15'. Lower 1 inch - silt with clay compacted, friable, 5 YR 4/4. Moderate brown, slightly moist.
29-May-91	0801	18-20		(20 inches recovered) Upper 12 inches silt, compacted 10 YR 5/4. Moderate yellowish brown, very slightly moist. Lower 8 inches. Sandy silt vfg - fg with < 1% pebbles ≤2 cm, and coarse to vc sand, subangular, 10YR 5/4 moderate yellowish brown very slightly moist.
29-May-91	0830	Note		Approximately 2 cups deionized water added inside hole, in sandy zone, loosening core because of loose sands.
	0826	20-22		No recovery.

Borehole Log
KAFB0307

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 3 of 7
 Project number: 463536001 Site: KAFB0307 Drilling Company: USGS
 Location: Landfill 1 Surface Elevation:
 Date Started drilling: 28 May 91 Drilling Crew: Dan Sweney, John Palmer, Fred Gebhardt
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Air 0-4 ft., Mud 4-4 ft.
 Drilling equipment: Gardner-Denver17w Sample type:
 Logged by: Abeyta

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
	0852	20-22		(6 inches recovered) Sandy silt f - med grained, with ~ 7% pebbles and gravel ≤1 cm and 1 cobble 8 cm diam, and one 4 cm angular - subrounded, poorly sorted 10 YR 5/4. Moderate yellowish brown, very slightly moist.
	0918	22-24.5		Went in with inner core - drilling through very hard material. Bolder debris, cobbles - rounded - subrounded, granite, limestone (?).
	0943	24.5-27.5		(32 inches recovered) Upper 20 inches - sand., vfg - fg with med - vc grained sand and pebbles ~30%. Angular 10 subrounded, very poorly sorted, large 3 inch cobble, rounded at bottom, middle 10 inches - silty sand with clay, vfg - fg, compact, slightly moist, 5 YR 5/6 light brown, < 1% c sand angular. Lower 2 inches - silty sand, med - veg with pebbles and gravel ≤2.5 cm, angular - subrounded, poorly sorted 10 YR 5/4 moderate yellowish brown, slightly moist.
29-May-91	1008	27.5-29.5		Note: picture says 27.5 - 30.5 - correct is 27.5 - 29.5 (28 inches recovered). Upper 7 inches - same as lower 2 inches on 24.5 - 27.5. Grades to silt slightly compacted 10 YR 5/4. Moderate yellowish brown with clay from 14-22 inches from top of cone - 5 YR 5/4. Moderate brown, compacted, brittle, slightly moist.

Borehole Log
KAFB0307

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 4 of 7
 Project number: 463536001 Site: KAFB0307 Drilling Company: USGS
 Location: Landfill 1 Surface Elevation:
 Date Started drilling: 28 May 91 Drilling Crew: Dan Sweney, John Palmer, Fred Gebhardt
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Air 0-4 ft., Mud 4-4 ft.
 Drilling equipment: Gardner-Denver17w Sample type:
 Logged by: Abeyta

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
	1030	29.5-32.5		(40 inches recovered) Silt and silt with clay - upper 3 inches silt with minor clay 10 YR 5/4 moderate yellowish brown - friable; next 7 inches - silt, well sorted, 10 YR 5/4, lower 30 inches silt with clay, clay amount increases towards bottom, compact, friable 5 YR 4/4 moderate brown, slightly moist.
	1105	32.5-35.5		(39 inches recovered) Sandy silt, vfg - fg, with c 1% vcg sand and pebbles <3 mm. 5 YR 5/6 light brown, slightly moist.
	1117			Approximately 2 gallons deionized water added to side of auger.
	1130			Approximately 5 gallons deionized water added to side of auger. Augers were pulled up approximately 15 ft and put back down.
29-May-91	1143	35.5-37.5		(33 inches recovered) Upper 24 inches - same as 32.5 - 35.5. Lower 9 inches - slough from augers being pulled up after going down 2 feet then back down.
	1155	Note		Approximately 4 gallons deionized water added to side of augers. Augers were brought up approximately 29 ft. Hole reamed with inner bit.

Borehole Log
KAFB0307

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 5 of 7
 Project number: 463536001 Site: KAFB0307 Drilling Company: USGS
 Location: Landfill 1 Surface Elevation:
 Date Started drilling: 28 May 91 Drilling Crew: Dan Sweney, John Palmer, Fred Gebhardt
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 77/8 Drilling Fluid: Air 0-4 ft., Mud 4-4 ft.
 Drilling equipment: Gardner-Denver17w Sample type:
 Logged by: Abeyta

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
	1227	37.5-40.5		(37 inches recovered) Same as 32.5 - 35.5. Zone from 3.5 - 6.5 inches from top of core is sandy with ~ 3% vc sand and pebbles ≤3 mm; slightly moist.
	1254	40.5-42.5		(28 inches recovered) Silty sand, vfg - fg with ~ 5% c - vc sand, pebbles and cobbles ≤5 cm; angular to subrounded, caliche especially in lower 19 inches 5 YR 4/4 moderate brown slightly moist.
	1305	Note		6 gallons deionized water added to side at auger.
	1320	42.5-45.5		(42 inches recovered) Same as 40.5 - 42.5 with pebbles and ≤2.5 cm and decreasing towards bottom.
29-May-91	1345	45.5-48.5		(37 inches recovered) Same as 42.5 - 45.5
	1410	48.5-51.5		(34 inches recovered) Same as 45.5 - 48.5
			Sample @ 50.0	Upper 12 inches moist (due to added water on side of augers). Moisture not at sample depth.
	1405	Note		Approximately 15 gallons water from water truck added to side of auger.

Borehole Log
KAFB0307

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 6 of 7
 Project number: 463536001 Site: KAFB0307 Drilling Company: USGS
 Location: Landfill 1 Surface Elevation:
 Date Started drilling: 28 May 91 Drilling Crew: Dan Sweney, John Palmer, Fred Gebhardt
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Air 0-4 ft., Mud 4-4 ft.
 Drilling equipment: Gardner-Denver17w Sample type:
 Logged by: Abeyta

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
	1440	51.5-54.5		(33 inches recovered) Silty sand, fg, with med - vcg ~ 3% angular to subrounded poorly sorted 5 YR 5/6 light brown, wet @ top from added water, slightly moist at bottom. Pebbles and gravel 4% 3 cm - rounded.
	1500	Note		Approximately 15 g water from water truck added to side of auger.
	1521	54.5-56.5		(13 inches recovered) Same as 51.5 - 54.5
	1548	56.5-58		(29 inches recovered) Recovered some from 54.5 - 56.5 run. silty sand, med - vcg with pebbles ≤ 2 cm, poorly sorted, angular to rounded silt leases 1.5 inches with vf -f sand, throughout core, 10 YR 4/2. Dark yellowish brown; core is saturated at top and wet at bottom from added water.
29-May-91	1627	58-58.5		(21 inches recovered) Silty sand and pebbles - med grained to vcg, poorly sorted, pebbles ≤ 7 cm; angular subrounded; wet from added water.
4-Jun-91		started a new hole		12 ft and 135° AZ from the original -
	1508	55-56		Refusal @ 56' (recovered 1.1 ft) vfg - fg sand with vcg sand ~ 10%; pebbles < 1 cm < 1%, qtz and mafics, slightly moist, upper 0.4 ft wet from H ₂ O added to annular space, light brown 5 YR 6/4.

Borehole Log
KAFB0307

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 7 of 7
 Project number: 463536001 Site: KAFB0307 Drilling Company: USGS
 Location: Landfill 1 Surface Elevation:
 Date Started drilling: 28 May 91 Drilling Crew: Dan Sweney, John Palmer, Fred Gebhardt
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Air 0-4 ft., Mud 4-4 ft.
 Drilling equipment: Gardner-Denver17w Sample type:
 Logged by: Abeyta

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
	1551	56-57		Refusal @ 57' (0.85 ft recovered) gravel mg sand - cobbles med gray (N5) ls cobble frag (0.38 X 0.30') stuck in outside of shoe; ls, mafics (serpentine), qtz, and Kspar: slightly moist.
	1655	60		Drilled with pilot bit to 60 ft. Refusal. Abandoned hole.

Borehole Log
KAFB0307

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 2 of 6
 Project number: 463536001 Site: KAFB0307
 Drilling Company: USGS Location: NW side of Landfills 4/5/6 Surface Elevation:
 Date Started drilling: 2 Aug 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Hollow stem augering
 Borehole diameter: 77/8 Date completed drilling: 4 Aug 91 Total Depth: 500
 Drilling equipment: Gardner-Denver17w Drilling Fluid: Na-bentonite
 Logged by: Dam Sample type:

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
2-Aug-91		90-95		Clay with minor sand.
		95-100		Gravel at 98-100' according to driller; cuttings as above.
	1703	100-105		Clay as above - minor gravel at 101.
	1715	105-110	2.25	Gravel at 105. Sand, m-vc, to pebbles angular to subangular, white, clear, pink with clay.
	1725	110-115	10 min./5 ft.	Sand, m-vc and clay - thick clay at 112-115 according to driller.
	1735	115-120	2	Clay with minor sand. Penetration rate increased at 114' indic. sand.
	1750	120-125	3	Clay with minor sand and rock fragments
	1755	125-130	5 min./5 ft.	Same as above.
	1800	130-135	5 min./5 ft.	Sand, m-vc, white, clear, subangular - subrounded with clay.
		135-140		Gravel at 140'; sand - m-vc - pebbles.
	1827	140-145		Large cobbles 142-145 - rock fragments, multi-colors.
	1835	145-150	8 min./5 ft.	Sand, medium-coarse, white - clear, subangular with minor clay and rock fragments.
	1842	150-155	7 min./5 ft.	Clay - thick clay balls with minor sand.
	1852	155-160	10 min./5 ft.	Thin gravel zone, at 155; clay as above.
		160-165		Sand as above with clay.
	1909	165-170		Clay with minor sand as above.

Borehole Log
KAFB0307

Project name: Kirtland Air Force Base - Phase II, Stage 2A
 Project number: 463536001 Site: KAFB0307
 Drilling Company: USGS Location: NW side of Landfills 4/5/6 Surface Elevation:
 Date Started drilling: 2 Aug 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Hollow stem augering
 Borehole diameter: 7 7/8 Date completed drilling: 4 Aug 91 Total Depth: 500
 Drilling equipment: Gardner-Denver17w Drilling Fluid: Na-bentonite
 Logged by: Dam Sample type:

Sheet 3 of 6

Date	Time	Depth(ft)	Drilling Speed (Min/ft)	Lithology and Remarks
2-Aug-91	1918	90-95	9 min./5 ft.	Clay with minor sand
		170-175		Clay and sand with minor rock fragments.
3-Aug-91	0835	175-180	2	Clay with sand and rock fragments.
		180-185	2	Sandy clay.
		185-190	2	Sand clay with minor rock fragments > 1 cm.
		190-195	2	Sand clay with slight increase in sand - m-vc - pebbles > 1 cm, subrounded.
		195-200	3	Clay with sand and rock fragments.
		200-205	3	Same as above.
		205-210	3	Same as above.
		210-215	3	Sand m-vc - pebbles with abundant clay
		215-220		Same as above with minor clay.
		1014	220-225	
1034	225-230	3	Sand - m-vc grained with clay and rock fragments.	
1042	230-235	1.5	Hard zone 230-232; clay with minor sand and rock fragments - black and green; possible basalt (?)	
1055	235-240	2.5	Sand with clay and minor rock fragments.	
1116	240-245	4.25	Sand - m-vc - pebbles and rock fragments, granitic and limestone.	
1122	245-250	1.25	Clay and sand.	

Borehole Log
KAFB0307

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 4 of 6
 Project number: 463536001 Site: KAFB0307
 Drilling Company: USGS Location: NW side of Landfills 4/5/6 Surface Elevation:
 Date Started drilling: 2 Aug 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Hollow stem augering
 Borehole diameter: 7 7/8 Date completed drilling: 4 Aug 91 Total Depth: 500
 Drilling equipment: Gardner-Denver17w Drilling Fluid: Na-bentonite
 Logged by: Dam Sample type:

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
3-Aug-91	1130	250-255	1.5	Sand with clay and rock fragments.
	1138	255-260	1.5	Sand and clay.
	1156	260-265	3.5	Clay with abundant sand.
		265-270	1	Sandy clay.
		270-275	1	Sandy clay.
	1216	275-280	20 min./ 20'	Sandy clay.
		280-285		Sand, clay with minor rock fragments.
	1240	285-290		Sand with minor clay.
	1245	290-295	1	Sand - m-vc - pebbles, rock fragments, mica, and minor clay.
		295-300	1	Same as above.
		300-305	1.75	Sand as above, abundant bright red and green rock fragments. Clay is more abundant than last 20'.
	1309	305-310	1	Sand as above with clay.
	1322	310-315	13 min./5'	Clayey sand.
	1328	315-320	1.25	Sand and clay with small rock fragments.
		320-325	1.5	Clay with sand.
		325-330	1.5	Sand - m-vc grained with rock fragments and clay.
		330-335	1.5	Sand as above.

Borehole Log
KAFB0307

Sheet 5 of 6

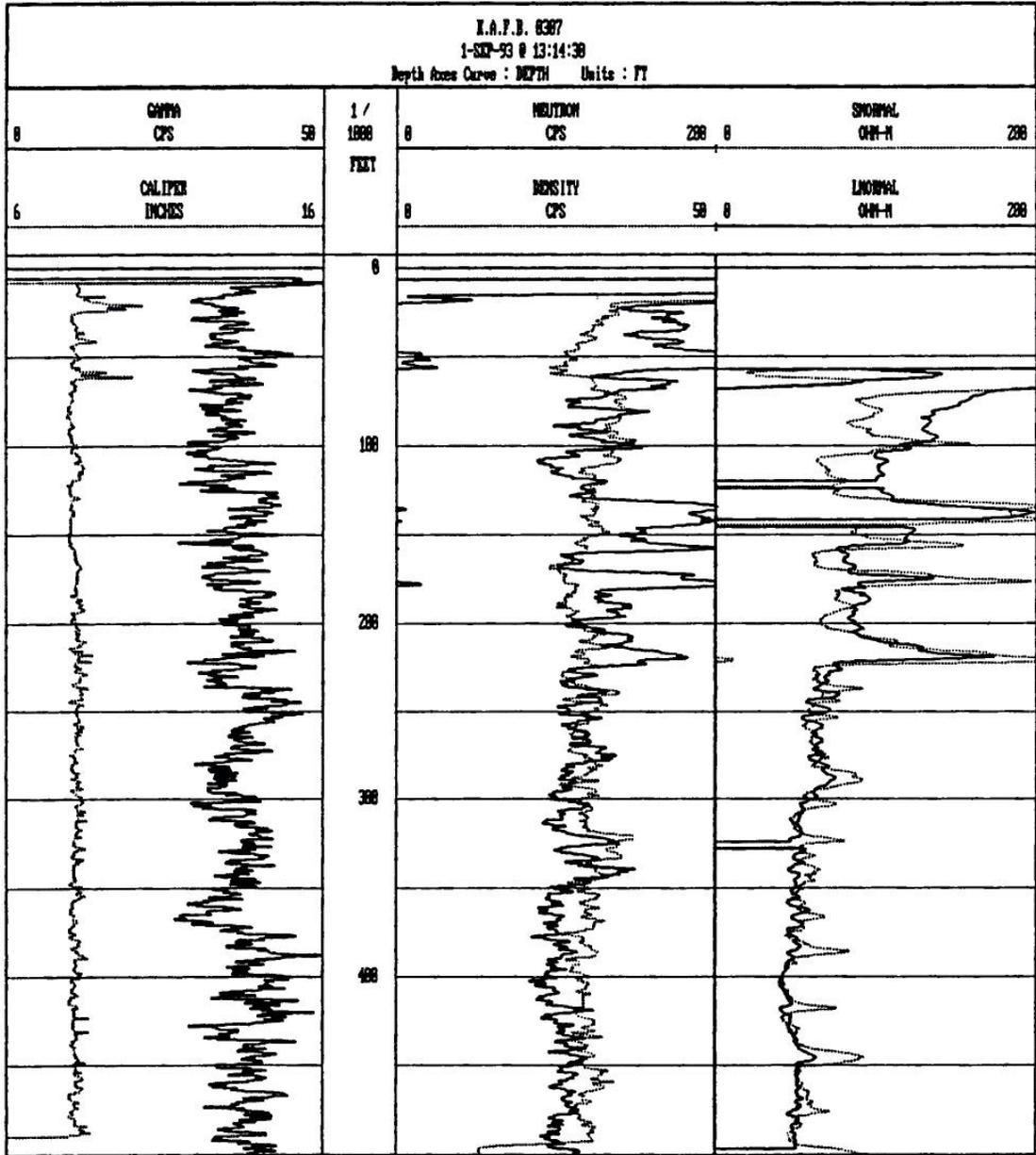
Project name: Kirtland Air Force Base - Phase II, Stage 2A
 Project number: 463536001 Site: KAFB0307
 Drilling Company: USGS Location: NW side of Landfills 4/5/6 Surface Elevation:
 Date Started drilling: 2 Aug 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Hollow stem augering
 Borehole diameter: 7 7/8 Date completed drilling: 4 Aug 91 Total Depth: 500
 Drilling equipment: Gardner-Denver17w Drilling Fluid: Na-bentonite
 Logged by: Dam Sample type:

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
3-Aug-91		335-340	1.25	Sand and clay as above.
	1715	340-345	1.25	Same as above.
	1721	345-350	1.25	Clay with sand - low yield on cuttings suggest boot forming.
		350-355		Sand - m-c with abundant clay.
	1740	355-360		Sand and clay.
		360-365	1	Clay with minor sand.
		365-370		Clay as above.
		370-375	3	Sandy clay.
	1845	375-380	1	Clay with minor sand and rock fragments.
4-Aug-91	1103	380-385	1	Clay as above.
	1108	385-390	1	Clay as above, slight increase in sand and rock fragments.
	1114	390-395	1.35	Sand c-pebbles, granitic material, quartz, feldspar, biotite, and l.s.
	1124	395-400	10 min./5'	Same as above - sand - subangular - subrounded.
	1135	400-405	2.25	Clay with minor rock fragments and sand.
	1140	405-410	5 min./5'	Sandy clay.
		410-415		Clay with minor sand.
	1155	415-420		Sand with minor clay.

Borehole Log
KAFB0307

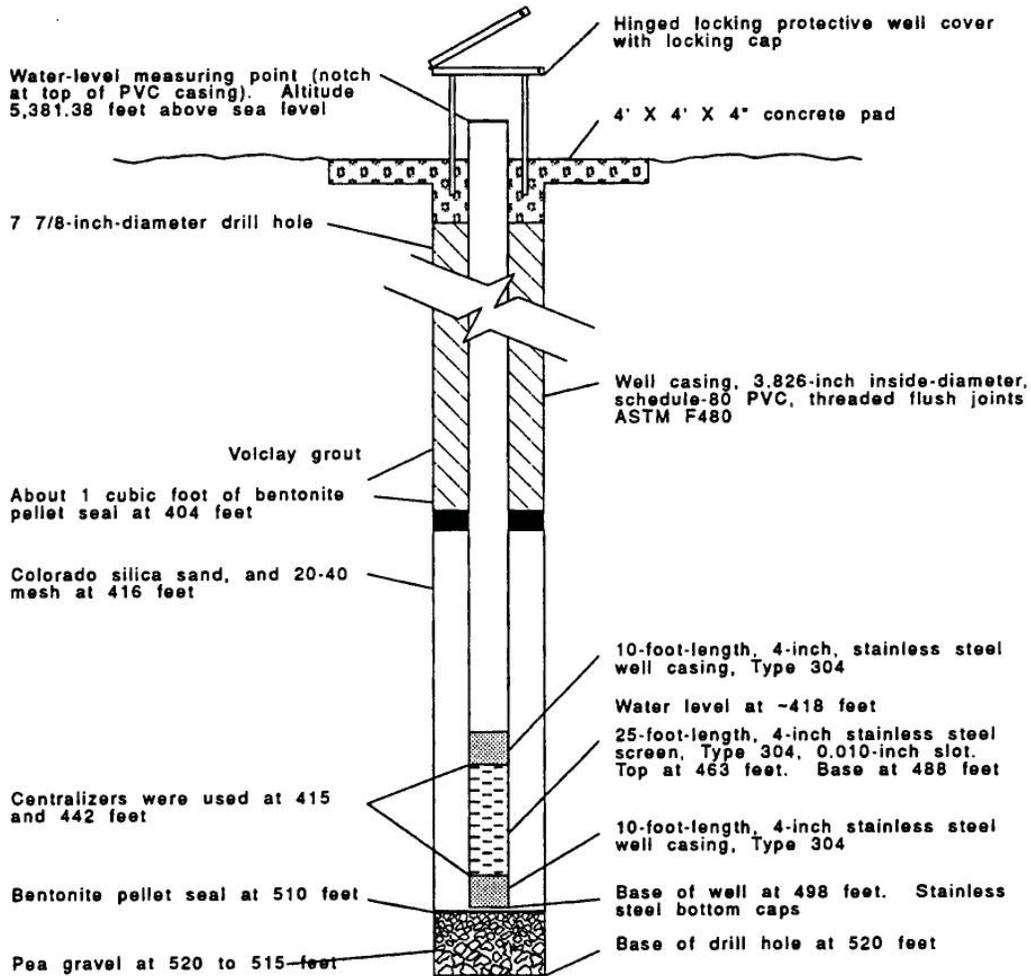
Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 6 of 6
 Project number: 463536001 Site: KAFB0307
 Drilling Company: USGS Location: NW side of Landfills 4/5/6 Surface Elevation:
 Date Started drilling: 2 Aug 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Hollow stem augering
 Borehole diameter: 7 7/8 Date completed drilling: 4 Aug 91 Total Depth: 500
 Drilling equipment: Gardner-Denver17w Drilling Fluid: Na-bentonite
 Logged by: Dam Sample type:

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
4-Aug-91	1225	420-425	5	Sand and clay in equal proportions.
	1230	425-430	5 min./5'	Same as above.
	1238	430-435	1.5	Sandy clay.
	1245	435-440	1.5	Clay with sand.
	1300	440-445	3	Sand and clay with minor rock fragments.
	1310	445-450	10 min./5'	Clay and sand
	1320	450-455	2	Sand m - pebbles and abundant rock fragments.
	1330	455-460	2	Same as above.
	1344	460-465	2.5	Clay with abundant sand.
	1354	465-470	2	Same as above.
	1404	470-475	2	Same as above with increase in sand.
	1414	477-480	10 min./5'	Same as above.
		480-485		Sand m-vc, white and clear, subangular-subrounded with rock fragments and clay.
	1435	485-490	2	Sand and clay.
	1443	490-495	1.75	Same as above.
	1454	495-500	2.25	Same as above.



KAFB-0307

AR 1710



NOT TO SCALE

Well-completion diagram for monitoring well KAFB 0308. Drilled and completed by U.S. Geological Survey, Coal Branch, Denver, Colo. Started on 07-21-91, completed on 07-31-91. Well drilled using mud rotary method with Wyoming sodium bentonite drilling fluid. All depths are feet below land surface.

KAFB-0308

AR 1710

Borehole Log
KAFB0308

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 2 of 2
 Project number: 463536001 Site: KAFB0308
 Drilling Company: USGS Location: Kirtland AFB Surface Elevation:
 Date Started drilling: 5 Jun 91 Drilling Crew: Dan Sweney, Steve Grant
 Drilling Method: Hollow stem auguring / Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 77/8 Drilling Fluid: Bentonite
 Drilling equipment: Gardner-Denver17w Sample type:
 Logged by: Wilcox

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
	1743	19.0-19.75		(0.75 ft recover) Refusal of barrel @ 19.75, sand fg - mg with isolated pebbles <1 cm, light brn 5 YR 6/4 slight moist
6-Jun-91	1036	20-20.75		New auger hole 19 ft west of original, refusal of barrel @ 20.75 (0.75 ft recovered) gravel ls, mafies, Kspar, and qtz, vfg sand - pebbles <0.2 ft.
	1107			Could not advance borehole with pilot bit. Abandon hole.

Borehole Log
KAFB0308

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 1 of 11
 Project number: 463536001 Site: KAFB0308
 Drilling Company: USGS Location: North side of landfill 4 Surface Elevation:
 Date Started drilling: 21 Jul 91 Drilling Crew: Dan Sweney, John Palmer, Keith Shoeman
 Drilling Method: Mud rotary Date completed drilling: 24 July 91 Total Depth: 520
 Borehole diameter: 7 7/8 Drilling Fluid: Bentonite
 Drilling equipment: Gardner-Denver17w Sample type: Bit is rollercone
 Logged by: Dam

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
21-Jul-93	1802	15-20		Coarse material is very angular; probably broken cobbles. Mostly quartz, some feldpars, some black rock. Fine material is pink colored, silty clay with sand-sized rock fragments. Slippery.
22-Jul-91	1445	20-25		Coarse material is same as above except this looks like a coarse sand ~ 2 mm. Very little fine material.
		25-30		Very coarse sand poorly sorted. Mostly quartz.
		30-35		Poorly sorted. Granules 2-4 mm and sand. No silt or clay.
		35-40		Coarse poorly, sorted sand. Same minerals. The fines are back. Silt and maybe some clay.
		40-45		Coarse poorly sorted sand to silt. Granules 3-4 mm. Much more fine material than above but washing removes most of it. IE clay is so well mixed with mud it is hard to distinguish from mud.
	1600	45-50		Coarse material as above but less of it. Mostly clayey silt or silty clay. Washing destroys 90% of the sample. No question this is formation clay because it is in lumps or globs.

Borehole Log
KAFB0308

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 2 of 11
 Project number: 463536001 Site: KAFB0308
 Drilling Company: USGS Location: North side of landfill 4 Surface Elevation:
 Date Started drilling: 21 Jul 91 Drilling Crew: Dan Sweney, John Palmer, Keith Shoeman
 Drilling Method: Hollow stem auguring Date completed drilling: 24 July 91 Total Depth: 520
 Borehole diameter: 7 7/8 Drilling Fluid: Bentonite
 Drilling equipment: Gardner-Denver17w Sample type: Bit is rollercone
 Logged by: Dam/Frenzel

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
22-Jul-91	1615	50-55		Mostly silty clay. Coarse material from 4 mm down very poorly sorted.
		55-60		As above but higher percentage coarse material. Still mostly silty clay.
	1645	60-65		As above.
	1653	65-70		Same materials as above but much higher percentage of coarse material. Coarse material in poorly sorted and mostly 2 mm and smaller.
	1709	70-75		Same material are above but back into mostly clay. Coarse material is mostly quartz with some feldspar and some black fragments.
		75-80		As above.
		80-85		As above.
		85-90		As above but higher percentage of clay. Washing almost completely destroyed the sample.

Borehole Log
KAFB 0308

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 4 of 11
 Project number: 463536001 Site: KAFB0308
 Drilling Company: USGS Location: North side of landfill 4 Surface Elevation:
 Date Started drilling: 21 Jul 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Hollow stem auguring Date completed drilling: 24 July 91 Total Depth: 520
 Borehole diameter: 7 7/8 Drilling Fluid: Bentonite
 Drilling equipment: Gardner-Denver17w
 Logged by: Dam/Frenzel Sample type: Bit is rollercone

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
23-Jul-91	0900	122		Wing tip bit.
	0911	120-125		This sample was drilled partly with the roller cone. This sample is more sand than clay. Very coarse to very fine poorly sorted. Sand is mostly quartz, a little feldspar. More of the black rock.
		125-130		Almost all very coarse sand as above.
		130-135		Sand as above with some silt or clay.
		135-140		All very coarse sand, sample kept.
	0935	140-145		Clayey sand - mostly very coarse sand and granules 2-4 mm. Some clay, gobs.
		145-150		Very coarse sand. Does not have the large granules of 135-140.
		150-155		Very coarse sand. Almost like 135-140.
		155-160		Very coarse sand with fragments 3-4 mm. Sample kept.
	1018	160-165		Large percentage of 4-5 mm sized fragments. Remainder very coarse sand.

Borehole Log
KAFB 0308

Project name: Kirtland Air Force Base - Phase II, Stage 2A
 Project number: 463536001 Site: KAFB0308
 Drilling Company: USGS Location: North side of landfill 4 Surface Elevation:
 Date Started drilling: 21 Jul 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Hollow stem auguring Date completed drilling: 24 July 91 Total Depth: 520
 Borehole diameter: 77/8 Drilling Fluid: Bentomite
 Drilling equipment: Gardner-Denver17w
 Logged by: Dam/Frenzel Sample type: Bit is rollercone

Sheet 5 of 11

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
23-Jul-91	1200	165-170		Very coarse sand with large percentage of fragments 3-5 mm. Also some silty clay.
	1213	170-175		As above but slightly less clay. Saved a sample.
	1233	175-180		As above.
	1233	180-185		Similar to above but higher percentage of large fragments and clay. 25% of sample fragments larger than 4 mm. 25% very coarse sand. Remainder silty clay. Looks like a mixture of pen gravel and clay. Saved a sample.
	1253	185-190		As above but higher percentage clay.
	1303	190-195		As 180-185 above.
		195-200		As 190-195 above.
	1315	Mud weight 9.2, viscosity 108		
		200-205		Mostly very course sand and some larger granules. 2-4 mm. Some clay but not much. Saved sample.

Borehole Log
KAFB 0308

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 8 of 11
 Project number: 463536001 Site: KAFB0308
 Drilling Company: USGS Location: North side of landfill 4 Surface Elevation:
 Date Started drilling: 21 Jul 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Hollow stem auguring Date completed drilling: 24 July 91 Total Depth: 520
 Borehole diameter: 7 7/8 Drilling Fluid: Bentomite
 Drilling equipment: Gardner-Denver17w
 Logged by: Gebhardt Sample type: Bit is rollercone

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
24-Jul-91	0845	305-310	sample taken	Course sand to pebbles \leq 1.5 cm with some clay contents. Subangular to subrounded colors range from clear, white, orange, black and gray.
	0855	310-315		Same as above.
	0905	315-320		Clay contents increased to \approx half of sample with coarse sand to pebbles \leq 2 cm subrounded to subangular. Colors the same.
	0930	320-325		Added 20 feet of pipe. Majority of sample clay, sand content still coarse sand, however, size decreased and so did the amount. Color and type of mineral are the same as above. Sample taken in washed only.
	0941	325-330		Same as above.
	1005	330-335		Clay content decreasing slightly becoming more of a silty-clay. Fine to coarse sand to granules \leq 4 mm. Subangular to subrounded, clear, white, orange, gray, and black in color.

Borehole Log
KAFB 0308

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 9 of 11
 Project number: 463536001 Site: KAFB0308
 Drilling Company: USGS Location: North side of landfill 4 Surface Elevation:
 Date Started drilling: 21 Jul 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Hollow stem auguring Date completed drilling: 24 July 91 Total Depth: 520
 Borehole diameter: 7 7/8 Drilling Fluid: Bentomite
 Drilling equipment: Gardner-Denver17w
 Logged by: Gebhardt/Frenzel Sample type: Bit is rollercone

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
24-Jul-91	1018	335-340		Silty-clay to coarse sand to pebbles ≤ 1 cm. Subangular to subrounded. Color same as previous sample. Sample collected.
	1153	340-345		Added 20 feet of pipe. Same as above.
	1200	345-350		
	1220	350-355		Clay. Very small amount of silt and sand (all sizes). Sample collected.
	1225	355-360		As above.
	1254	360-365		As above but slightly greater percentage of sand.
		365-370		This sample has more sand than above but the mud is so heavy that it may be carry ing the cuttings across the sample basket. Sample collected.
		370-375		As 360-365 above.
		375-380		As 365-370 above.
	1333			As 360-365 above. Drilling fast; samples small.

Borehole Log
KAFB 0308

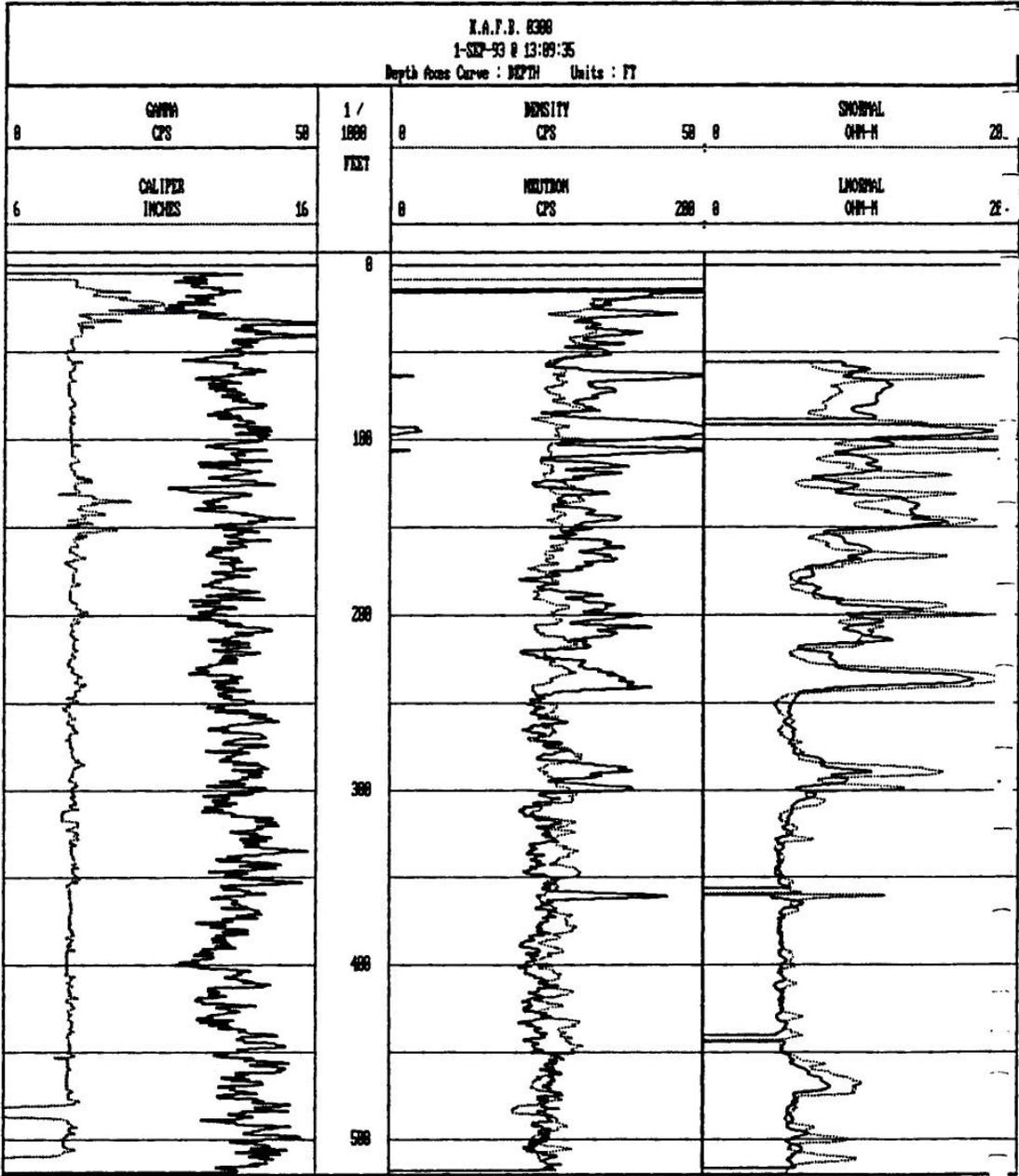
Project name: Kirtland Air Force Base - Phase II, Stage 2A
 Project number: 463536001
 Drilling Company: USGS
 Date Started drilling: 21 Jul 91
 Drilling Method: Hollow stem auguring
 Borehole diameter: 7 7/8
 Drilling equipment: Gardner-Denver17w
 Logged by: Frenzel

Site: KAFB0308
 Location: North side of landfill 4
 Drilling Crew: Dan Sweney, John Palmer
 Date completed drilling: 24 July 91
 Drilling Fluid: Bentomite

Sheet 10 of 11
 Surface Elevation:
 Total Depth: 520

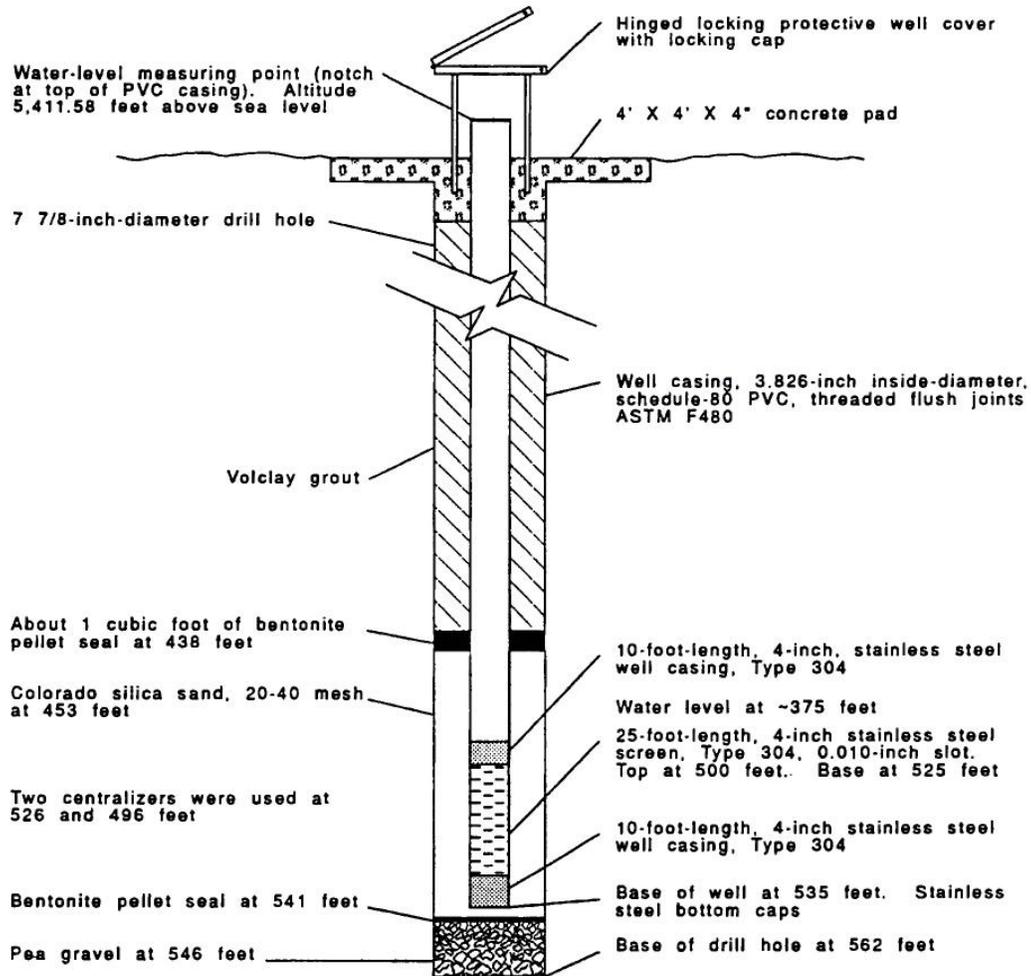
Sample type: Bit is rollercone

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
24-Jul-91	1352	380-385		Sandy clay. As 350-355 above. Sample collected.
	1404	385-390		As above.
	1410	390-395		As above.
		395-400		As above. Sample collected.
		400-405		As above.
		405-410		As above.
		410-415		As above. Sample collected.
		415-420		As above.
		420-425		As above.
		425-430		Silty clay, small percentage sand. Sample collected.
		430-435		Sandier (silty?) clay.
		435-440		Sandier and siltier, but still lots of clay.
		440-445		Sandy, silty clay. About 20% sand ranging in size from very coarse down to silt. Sample collected.
		445-450		As above.
		450-455		As above.
		455-460		As above. Feels a little sandier. Sample collected.
		460-465		As above but feels more abrasive. Could be largely silt.
		465-470		Clayey, silty sand.
	1750	470-475		Clayey, silty sand. Very poorly sorted; ranges in size from very coarse to very fine.



KAFB-0308

AR 1710



NOT TO SCALE

Well-completion diagram for monitoring well KAFB 0309. Drilled and completed by U.S. Geological Survey, Coal Branch, Denver, Colo. Started on 07-08-92, completed on 07-20-92. Well drilled using mud rotary method with Wyoming sodium bentonite drilling fluid. All depths are feet below land surface.

KAFB-0309

AR 1710

Auger Borehole Log
KAFB0309

Project name: Kirtland Air Force Base - Phase II, Stage 2A
 Project number: 463536001 Site: KAFB0309
 Drilling Company: USGS Location: Kirtland AFB Surface Elevation:
 Date Started drilling: 6 Jun 91 Drilling Crew: Dan Sweney, Steve Grant
 Drilling Method: Hollow stem auguring/Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Bentonite
 Drilling equipment: Gardner-Denver17w Sample type:
 Logged by: Wilcox

Sheet 1 of 4

Date	Time	Depth(ft)	Drilling Speed (Min/ft)	Lithology and Remarks
6-Jun-91	1401	0.3		(cuttings sample) Sand fg and pebbles ls <1 cm, sand light brn 5 YR 6/4, dry.
	1445	3-5.7		(2.7 ft recovered) Sand fg with vcg sand - pebbles < 0.15 ft very slight moisture, light brn 5 YR 6/4. Collected samples KAFB030901-1 and KAFB030902-1 @ 5 ft. traces of plant roots in sample.
		5.7-7.0		Augured with pilot bit, no core.
	1540	7.0-9.5		(2.5 ft recovered) Sand fg with vcg sand - pebbles <0.1 ft ~ 10%, light brn 5 YR 6/4 slightly moist.
	1601	9.5-13.5		(3.8 ft recovered) Upper 0.8 ft sand as above; next 0.8 ft same lithology but more indurated with caliche, very pale orange 10 YR 8/2; lower 2.2 ft sand as in upper 0.8 ft, light brn 5 YR 6/4, slightly moist.
	1629	13.5-17.5		(3.7 ft recovered) Upper 1.4 ft same as lower 0.8 ft above, next 0.8 ft grades downward into a sandy gravel fg sand - pebbles <0.03 ft, next 0.4 ft vfg sand, lower 1.1 ft vfg sand with vcg sand - pebbles <0.03 ft ~ 5%, light brn 5 YR 6/4, very slight moisture.

AR 1710

Auger Borehole Log
KAFB0309

Project name: Kirtland Air Force Base - Phase II, Stage 2A	Sheet 2 of 4
Project number: 463536001	Site: KAFB0309
Drilling Company: USGS	Location: Kirtland AFB
Date Started drilling: 6 Jun 91	Drilling Crew: Dan Sweney, Steve Grant
Drilling Method: Hollow stem auguring /Mud rotary	Date completed drilling: Total Depth:
Borehole diameter: 7 7/8	Drilling Fluid: Bentonite
Drilling equipment: Gardner-Denver17w	Sample type:
Logged by: Wilcox	

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
	1653	17.5-20.5		(3.0 ft recovered) Upper 1.5 ft sand as in lower 1.1 ft above; next 0.1 ft sandy gravel, next 0.6 ft sand vfg, next 0.3 ft sandy gravel as above; lower 0.5 ft sand vfg, very slight moisture.
6-Jun-91	1716	20.5-24.0		(3.5 ft recovered) Upper 1.4 ft sand as @ base of core above except with veg sand <1%, next 0.8 ft silty sand vfg with vcg sand <1%, lower 1.3 ft sandy gravel, very pale orange 10 YR 8/2, fg sand - pebbles <0.1 ft very slight moisture.
	1746	24.0-27.0		(1.8 ft recovered) Sandy gravel, fg sand - pebbles (granite and mafics) <0.15 ft, very slight moisture.
7-Jun-91	0820	27.0-30.0		(3.0 ft recovered) Sandy gravel, fg sand - pebbles <0.1 ft, granites, mafics, qtz; this core was collected yesterday afternoon.
	0843	30.0-33.0		(2.1 ft recovered) Upper 0.75 ft sandy gravel as above; next 0.15 ft sand vfg - fg with vcg sand ~10%; next 0.4 ft sandy gravel as above; lower 0.8 ft sand vfg, light brn 5 YR 6/4, slight moisture.
	0900	33.0-35.0		(3.0 ft recovered) Upper 1.6 ft sand as above; lower 1.4 ft gravelly sand fg - pebbles <0.05 ft, light brn 5 YR 6/4, slight moisture.

Auger Borehole Log
KAFB0309

Project name: Kirtland Air Force Base - Phase II, Stage 2A	Sheet 3 of 4	
Project number: 463536001	Site: KAFB0309	
Drilling Company: USGS	Location: Kirtland AFB	Surface Elevation:
Date Started drilling: 6 Jun 91	Drilling Crew: Dan Sweney, Steve Grant	
Drilling Method: Hollow stem auguring/Mud rotary	Date completed drilling:	Total Depth:
Borehole diameter: 7 7/8	Drilling Fluid: Bentonite	
Drilling equipment: Gardner-Denver17w	Sample type:	
Logged by: Wilcox		

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
	0959	35.0-38.5		(1.8 ft recovered) Upper 1.5 ft silty sand vfg with few caliche nodules; 0.5 gap in core; lower 0.3 ft sand vfg with vcg sand - pebbles <0.03 ft ~ 1%, light brn 5 YR 6/4, slight moisture.
7-Jun-91	1053	38.5-41.5		(3.0 ft recovered) Upper 1.3 ft gravelly sand, fg sand - pebbles <0.2 ft; next 1.0 ft sand vfg - fg, with vcg sand ~ 1%; lower 0.7 ft gravelly sand as above, light brn 5 YR 6/4, slight moisture.
	1135	41.5-45		(3.0 ft recovered) Upper 0.8 ft sand as lower 0.7 ft of 38.5 - 41.5 interval. Middle 1.1 ft silty sand, vfg - fg, with gravel < 1% ≤3 inches subangular to subrounded, gravel increases towards bottom, 10 YR 5/4 Moderate yellowish brown. Lower 1.9 ft same as upper interval.
	1150	45-47.5		(2.0 ft recovered) Gravelly sand, vfg - fg ~ 8% gravel, ≤3 inches, becomes larger in size towards bottom, angular to subrounded, matrix sand - 10 YR 5/4. Moderate yellowish brown, very slightly moist, biotite abundant.
	1230	47.5-50.5		(3.0 ft recovered) Same as 45 - 47.5 with ~ 5% gravel ≤ 2 inches, slightly moist.

Auger Borehole Log
KAFB0309

Project name: Kirtland Air Force Base - Phase II, Stage 2A		Sheet 4 of 4
Project number: 463536001	Site: KAFB0309	
Drilling Company: USGS	Location: Kirtland AFB	Surface Elevation:
Date Started drilling: 6 Jun 91	Drilling Crew: Dan Sweney, Steve Grant	
Drilling Method: Hollow stem auguring/Mud rotary		Date completed drilling: Total Depth:
Borehole diameter: 7 7/8	Drilling Fluid: Bentonite	
Drilling equipment: Gardner-Denver17w	Sample type:	
Logged by: Wilcox		

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
	1255	50.5-52.5		(2.0 ft recovered) Upper 0.7 ft - same as 47.5 - 50.5. Lower 1.3 ft silty sand, vfg - fg, with < 1% coarse sand and pebbles ≤1 cm, subangular 10 YR 5/4. Moderate yellowish brown, biotite and muscovite abundant.
7-Jun-91	1337	52.5-54.25		(22 inches recovered) Gravelly sand with cobbles, f - med grained, poorly sorted, large cobbles ≤4 inches on top and bottom of core, cobbles rounded, mostly crystalline limestone, gravel < 3% angular - subrounded, mica abundant, slightly moist.

Borehole Log
KAFB0309

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 1 of 11
 Project number: 463536001 Site: KAFB0309
 Drilling Company: USGS Location: Landfill 1 Surface Elevation:
 Date Started drilling: 08 Jul 91 Drilling Crew: Dan Sweney, John Palmer, Keith Shoeman
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Mud
 Drilling equipment: Gardner-Denver 17w Sample type:
 Logged by: Dam, Gebhardt

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
8-Jul-91	1730	0		Refer to soil boring log for top 58 feet. Drilling with 5 1/8" bit.
8-Jul-91	1815	33-34		Encountered gravel.
	1820	38-39	~ 1 min/ft	Gravel; slight loss in sand circulation gravel at 47-53
	1829	40		Sample #1W 55-60. Sand, very coarse - pebbles > .2 cm. White, clear, subangular- angular pebbles > 1 cm limestone, gray; feldspar pink, white. Poorly sorted.
	1850	60	1 min/ft	
9-Jul-91	1755	60-65		Same as above.
		65-70		Same as above.
	1805	70-75		70' - 73' Silt - fine grained sand. Sample #2 W 73'. Coarse material/pebbles as above.
		75-80		Same as above.
		80-85	~ 1 min/ft	Sand med - v. coarse, angular, clear to white with silt and pebbles as above.
	1839	85-90		Sample 3W. Same as above.
		90-95	1 min/ft	Gravel at 88', 92'; Coarse grained sand, subangular, clear to white with abundant pebbles >0.5 cm - feldspar, limestone, quartz.

Borehole Log
KAFB0309

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 2 of 11
 Project number: 463536001 Site: KAFB0309
 Drilling Company: USGS Location: Landfill 1 Surface Elevation:
 Date Started drilling: 08 Jul 91 Drilling Crew: Dan Sweney, John Palmer, Keith Shoeman
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Mud
 Drilling equipment: Gardner-Denver 17w Sample type:
 Logged by: Dam

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
9-Jul-91	1850	95-100	~ 1 min/ft	Sand, coarse grained white to clear, subangular-subrounded, pebble > 0.5 cm. Sample 4W. At 98.5' - 101' penetration rate slowed to ~10 min/ft.
10-Jul-91	0940	101-105		Same as above.
		105-110		Sand medium grain, low recovery, subangular. Same description as above with the exception of pebble size.
	0955	110-115		Sand, med-coarse grained, clear subangular-subrounded; coarse white grains angular with pink and gray fragments > 0.3 cm. Sample 5W.
		115-120		Very little recovery. Description same as above.
		120-125		Gravel at 125'. Very little recovery. Same as above.

Borehole Log
KAFB0309

Project name: Kirtland Air Force Base - Phase II, Stage 2A	Sheet 3 of 11	
Project number: 463536001	Site: KAFB0309	
Drilling Company: USGS	Location: Landfill 1	Surface Elevation:
Date Started drilling: 08 Jul 91	Drilling Crew: Dan Sweney, John Palmer, Keith Shoeman	Total Depth:
Drilling Method: Mud rotary	Date completed drilling:	
Borehole diameter: 7 7/8	Drilling Fluid: Mud	
Drilling equipment: Gardner-Denver 17w	Sample type:	
Logged by: Dam		

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
10-Jul-91	1021	125-130		Penetration time 1015 → 1021. Sand med -coarse grained clear subangular- subrounded coarse white grains angular with pink orange and gray fragments > .3 cm.
	1029	130-135	8 min/5 ft	Penetration time 1021-1029. Same as above.
	1037	135-140	~ 2 min/ft	Coarse sand; pebbles 2.5 cm. Sand description same as above. Sample 6W. Formation tight and hard at 140'.
	1145	140-145		Sand medium-coarse as above, slight increase in pebble size >0.5 cm.
		145-150		Penetration rate slow 140'-146' possible silt rate increased at 146'. Same lithology as above.
	1213	150-155	~ 5 min/ft	Penetration slowed at 151' from 153' - 154' took 5 min. 20 sec. 154-155 1 min. 14 sec. Slowed again 155.5'. Sample 7W sand, silt-coarse gr. with pebbles as above.
	1228	155-160		Sample same as above.

Borehole Log
KAFB0309

Project name: Kirtland Air Force Base - Phase II, Stage 2A	Sheet 4 of 11
Project number: 463536001	Site: KAFB0309
Drilling Company: USGS	Location: Landfill 1
Date Started drilling: 08 Jul 91	Drilling Crew: Dan Sweney, John Palmer
Drilling Method: Mud rotary	Date completed drilling:
Borehole diameter: 7 7/8	Drilling Fluid: Mud
Drilling equipment: Gardner-Denver 17w	Sample type:
Logged by: Dam	

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
10-Jul-91	1250	160-165		At 162' added 20' drilling pipe. Sandy-silt with coarse sand. Coarse white subangular grains with gray fragments
	1300	165-170	Sample taken 8W	Well sorted coarse sand subangular to sub-rounded. Coarse white grains with orangish brown and gray fragments 2-3 cm.
	1307	170-175		Description is same as above, however more colored fragments (pink, greenish, and clear grains.)
	1315	175-180		At 177' hit gravel. Same lithology as above.
	1358		'180-185	Sand, med-course grained, clear-white subangular-subrounded, coarse-pebble rock fragments > .3 cm. Sample 9W.
	1407	185-190		Sand med-coarse grained, pebble rock fragments >.3 cm subangular and sub-rounded. Basically same as above.
	1416	190-195		Lithology is basically the same as above. The exception is the fragment size is large ≥ .5 cm.

Borehole Log
KAFB0309

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 5 of 11
 Project number: 463536001 Site: KAFB0309
 Drilling Company: USGS Location: Landfill 1 Surface Elevation:
 Date Started drilling: 08 Jul 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Mud
 Drilling equipment: Gardner-Denver 17w Sample type:
 Logged by: Dam

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
10-Jul91	1426	195-200		Lithology same as previous sample.
	1449	200-205		Well sorted coarse sand and granules, subangular and subrounded. Clear, white, orangish brown and gray fragments.
	1456	205-210	9W	Same as above.
	1505	210-215		Same as above, however there are a few small pebbles ≈ 4 mm.
	1516	215-220		Coarse sand and granules, with some silt subangular and subrounded. Clear, white, pink, orangish brown and gray fragments.
	1536	220-225		Same as above, but without the silt contents.
	1546	225-230	10W	Same as above.
	1555	230-235		Very little sand mostly granules and few pebbles < 5 mm. subangular and subrounded. Color are the same as previous samples. Small recovery.

Borehole Log
KAFB0309

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 6 of 11
 Project number: 463536001 Site: KAFB0309
 Drilling Company: USGS Location: Landfill 1 Surface Elevation:
 Date Started drilling: 08 Jul 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Mud
 Drilling equipment: Gardner-Denver 17w Sample type:
 Logged by: Dam

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
10-Jul-91	1608	235-240		Little recovery. Lithology same as previous sample with the addition of some silty sand.
	1628	240-245		Medium sand and granules, subangular and subrounded. Same color fragments as previous samples.
	1650	245-250	11W	Hit clay at 246' and 247'. Fine to coarse sand. Subangular and subrounded. Same color fragments as previous samples.
	1704	250-255		Sand, fine-coarse, clear to white, subangular to subrounded.
	1718	255-260		At 260' hit gravel. Same as above with the addition of granules.
	1730	260-265		At 262 hit rock. Sand fine-coarse, clear to white with dark gray fragments subangular to subrounded.
	1752	265-270	12W	Same as above.
	1805	270-275		Same as above.
	1824	275-280		Same as above.

Borehole Log
KAFB0309

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 7 of 11
 Project number: 463536001 Site: KAFB0309
 Drilling Company: USGS Location: Landfill 1 Surface Elevation:
 Date Started drilling: 08 Jul 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Mud
 Drilling equipment: Gardner-Denver 17w Sample type:
 Logged by: Dam/Abeyta

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
15-Jul-91	1620	280-285		Sand, med-coarse grained, subrounded, white and clear; rock fragments, red, black, gray.
	1633	285-290		13W. Same as above.
		290-294		?
Abeyta				
16-Jul-91	0825	294-300	14W	Silty sand, fg.-cg, subangular, quartz, feldspar, limestone, basalt.
	0835	300-305		Same as above but with less silt and more sand.
	0900	305-310		Sand, t-veg, subangular, quartz, feldspar, limestone, muscovite, biotite.
	0925	310-315	15W	Same as above, Rig jolting at ~ 311'.
	0932	315-320	16W	Clayey, sandy silt, vtg-tg, with minor m-cg sand, 316-318 interval more silty with more clay; quartz, feldspar, micas, limestone.
	0950	320-325		Same as above but with slightly more coarse grained sand.

Borehole Log
KAFB0309

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 8 of 11
 Project number: 463536001 Site: KAFB0309
 Drilling Company: USGS Location: Landfill 4 NE Corner Surface Elevation:
 Date Started drilling: 08 Jul 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Mud rotary
 Drilling equipment: Gardner-Denver 17w Sample type:
 Logged by: Abeyta

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
16-Jul-91	1013	325-330		Same as 320'-325' interval.
	1025	330-335		Same as above.
	1035	335-340	17W	Sand, f-vcg, subangular to subrounded quartz, feldspar, limestone, mica, andesite.
	1100	340-345		Same as above but with more fines and minor silt.
	1117	345-350		Same as above 335'-340' interval.
	1135	350-355		Same as above.
	1147	355-360		Same as 340-345 interval. Changed from roller cone to wing tip drill bit.
	1240	360-365		Same as above.
	1257	365-370	18W	Sandy silt with clay, vfg-med. g, minor c-vcg, subangular to subrounded quartz, feldspar, limestone, mica.
	1315	370-375		Sand, m-vcg, with minor vfg-fg sand and silt, subangular to subrounded, quartz, feldspar, limestone, mica.
	1330	375-380		Same as 365-370 interval.
		380-385	19W	Sandy silt with clay, vfg-med. grained as minor c-vcg sand, subrounded to subangular, quartz, Beldspar, limestone, micas.

Borehole Log
KAFB0309

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 9 of 11
 Project number: 463536001 Site: KAFB0309
 Drilling Company: USGS Location: Landfill 4 NE Corner Surface Elevation:
 Date Started drilling: 08 Jul 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Mud rotary
 Drilling equipment: Gardner-Denver 17w Sample type:
 Logged by: Abeyta

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
	1355	385-390		Same as above.
	1410	390-395		Same as above.
	1425	395-400		Same as above.
	1440	400-405		Same as above.
	1530	405-440		Same as above.
	1542	440-442	20W	Sand, m-vcg, subrounded - subangular, quartz, feldspar, mica, limestone, rig jolting.
	1605	445-450		Same as above.
	1610	450-455	21W	Pebbly sand, c-vcg, pebbles abundant, rounded to subangular, quartz, feldspar, limestone, andesite (minor) pebbles < 4 mm.
	1620	455-460		Same as above but more pebbles.
	1635	460-465	22W	Silty pebbly sand, vf-mg sand, pebbles ≤ 4 mm. quartz, feldspar, limestone, angular to subrounded.
	1650	465-470		Same as above.

Borehole Log
KAFB0309

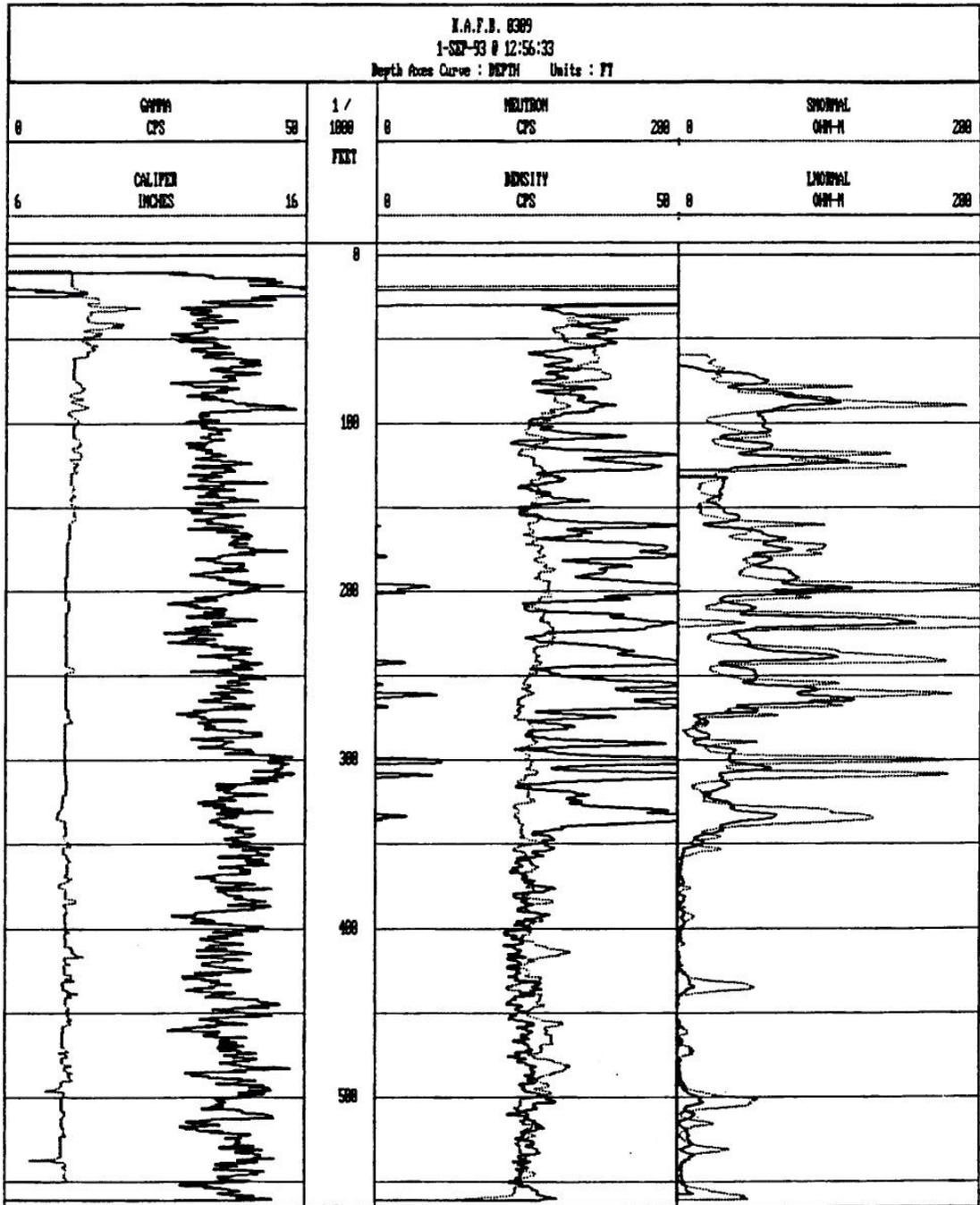
Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 10 of 11
 Project number: 463536001 Site: KAFB0309
 Drilling Company: USGS Location: Landfill 4 NE Corner Surface Elevation:
 Date Started drilling: 08 Jul 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Mud rotary
 Drilling equipment: Gardner-Denver 17w Sample type:
 Logged by: Abeyta

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
16-Jul-91	1705	470-475		Same as above.
	1710	475-480		Silty sand with minor pebbles, m-vcg pebbles ≤ 4 mm. and less abundant than above interval; quartz feldspar, limestone, angular-subrounded.
	1718	480-485		Same as above but with minor clay.
	1725	485-490	23W	Silty sand, f-vcg, with minor pebbles ≤ 4 mm, angular-subrounded, quartz, feldspar, limestone. More fines than previous interval.
17-Jul-91	1040			Resumed drilling.
	1055	490-495	24W	Sand, silt, vf-fg, with clay and with minor med-vcg, and very minor pebbles ≤ 4 mm, quartz, feldspar, micas, angular to sub-rounded.
	1107	495-500	25W	Silty sand, f-vcg, with minor limestone (chips), pebbles, vf-vcg, pebbles ≤ 4 mm, quartz, feldspar, mica, limestone, angular-subrounded.
	1120	500-505		Same as above.
		505-510		Same as above but less coarse sand and more fine.

Borehole Log
KAFB0309

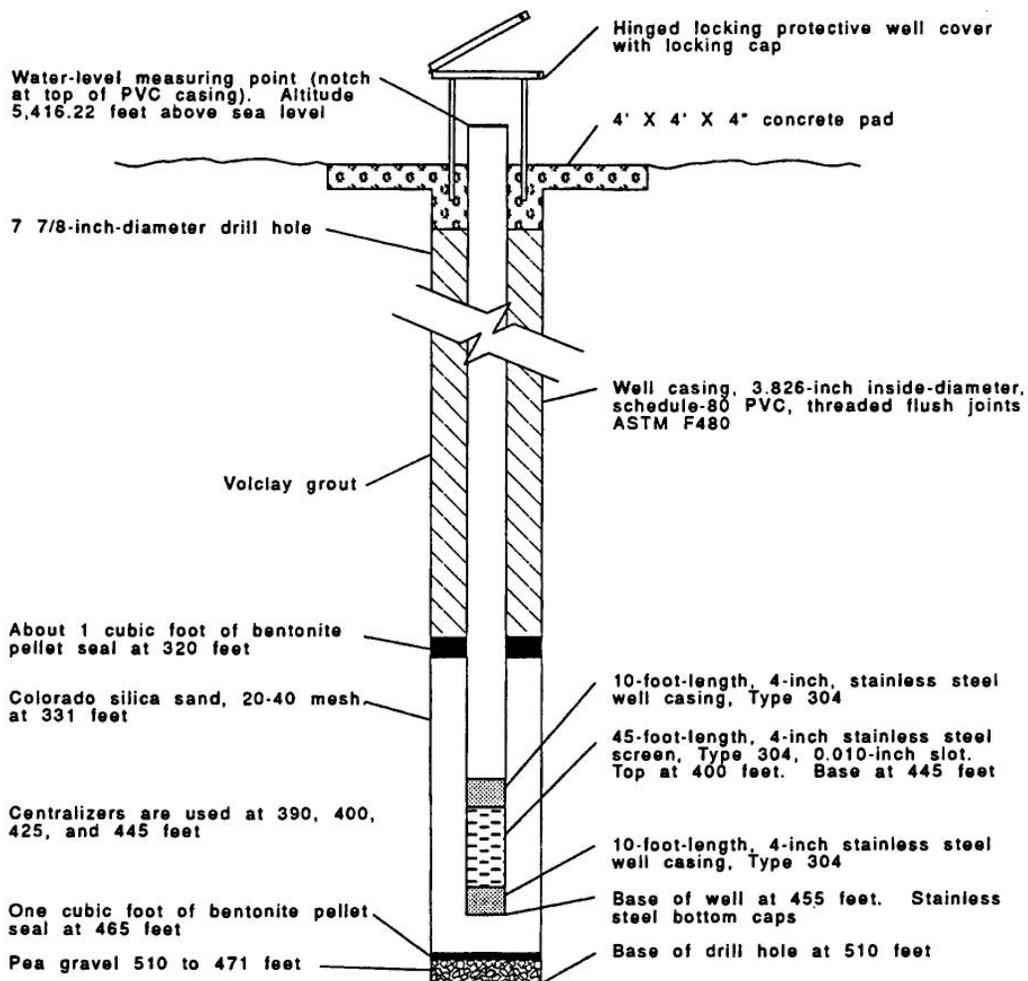
Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 11 of 11
 Project number: 463536001 Site: KAFB0309
 Drilling Company: USGS Location: Landfill 4 NE Corner Surface Elevation:
 Date Started drilling: 08 Jul 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Mud rotary
 Drilling equipment: Gardner-Denver 17w Sample type:
 Logged by: Abeyta

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
17-Jul-91	1157	510-515		Same as above with more med-vcg sand and less fines (same as 495-500 interval.)
	1215	515-520		Same as 510-515 interval.
	1227	520-525	26W	Sand, m-vcg, with minor fine grains; quartz, feldspar, olivine, limestone; subangular to subrounded.
	1235	525-530		Same as above with more vf-fg sand.
	1258	530-535		Same as 520'525' interval.
	1312	535-540		Same as above.
	1332	540-545	27W	Silty sand, vf-vcg, with minor amount of pebbles ≤ 4 mm; subangular - subrounded.
	1355	545-550		Same as above.
	1415	550-555		Same as above.
	1420	555-560		Same as above but less coarse-vc grained sand and more fine.
	1425	560-562	28W	Silty sand, vf-mg, with minor cg-vcg sand, and some clay, quartz, feldspar, limestone olivine; subangular-subrounded.



KAFB-0309

AR1710



NOT TO SCALE

Well-completion diagram for monitoring well KAFB 0310. Drilled and completed by U.S. Geological Survey, Coal Branch, Denver, Colo. Started on 08-23-92, completed on 08-29-92. Well drilled using mud rotary method with Wyoming sodium bentonite drilling fluid. All depths are feet below land surface.

KAFB-0310

AR 1710

Borehole Log
KAFB0310

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 1 of 10
 Project number: 463536001 Site: KAFB0310
 Drilling Company: USGS Location: S. corner of Landfill 4 Surface Elevation:
 Date Started drilling: 23 Aug 91 Drilling Crew: Dan Sweney, John Palmer, Abeyta
 Drilling Method: Mud rotary
 Borehole diameter: 7 7/8 Date completed drilling: 27 Aug 91 Total Depth: 510
 Drilling equipment: Gardner-Denver17w Drilling Fluid: Bentonite mud
 Logged by: Abeyta Sample type:

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
23-Aug-91	0925	4'		Began mud-rotary drilling. Surface casing set 22 Aug 91 at 0 - ~ 4 ft. See lithologic descriptions for borehole 0310. 0-60 ft.
	1215	60-70		Upper interval - clay; grades to silty sand, f-med. grained subangular; gets coarser - med - vcg sand, with gravel zone at about 70 ft; subangular - subrounded, feldspar, quartz, limestone, andesite, \leq 6 cm.
	1225	70-75		Clay, 5 YR 4/4 moderate brown, compact, visible mica chips.
	1232	75-80		Same as above.
	1245	80-85		Upper interval - same as above; lower interval sand and gravel, m-vcg sand and gravel, \leq 1.2 cm rounded-subangular, feldspar, quartz, limestone, andesite/rhyolite.
	1300	85-90		Same as above - lower interval.
	1307	90-95		Same as above with fine - med sand and minor clay.
	1315	95-100		Sand and gravel, m-vcg and gravel fragments < 1.2 cm, rounded to subangular, limestone, feldspar, quartz, andesite/rhyolite; larger gravel is predominately limestone.

AR 1710

Borehole Log
KAFB0310

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 2 of 10
 Project number: 463536001 Site: KAFB0310
 Drilling Company: USGS Location: S. corner of Landfill 4 Surface Elevation:
 Date Started drilling: 23 Aug 91 Drilling Crew: Dan Sweney, John Palmer, Abeyta
 Drilling Method: Mud rotary
 Borehole diameter: 7 7/8 Date completed drilling: 27 Aug 91 Total Depth: 510
 Drilling equipment: Gardner-Denver17w Drilling Fluid: Bentonite mud
 Logged by: Abeyta Sample type: Cuttings

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
23-Aug-91	1325	100-105		Clayey silty sand, vf - fg.
	1330	105-110		Same as above.
	1355	110-115		Silty sand, vfg - mg, subrounded - subangular. Gravel/cobble zone at 113-114 ft. - rig ratteling extensively; includes sand vcg, gravel fragments \leq 1.5 cm, subrounded - subangular. Limestone, granite, andesite.
	1420	115-120		Gravelly sand, f-vcg, with gravel fragments \leq 1.5 cm, subrounded - subangular; gravel fragments predominately limestone.
	1433	120-125		Clay with minor sand, vf-lg sticky.
	1445	125-130		Same as above.
	1453	130-135		Same as above.
	1458	135-140		Silty sand with gravel zone @ ~ 135-137 ft. Sand, vfg - vcg - subrounded - subangular; gravel \leq 1-2 cm, fragmented, subrounded - subangular, limestone, feldspar, quartz, olivine.

Borehole Log
KAFB0310

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 3 of 10
 Project number: 463536001 Site: KAFB0310
 Drilling Company: USGS Location: S. corner of Landfill 4 Surface Elevation:
 Date Started drilling: 23 Aug 91 Drilling Crew: Dan Sweney, John Palmer, Abeyta
 Drilling Method: Mud rotary
 Borehole diameter: 7 7/8 Date completed drilling: 27 Aug 91 Total Depth: 510
 Drilling equipment: Gardner-Denver17w Drilling Fluid: Bentonite mud
 Logged by: Abeyta Sample type: Cuttings

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
23-Aug-91	1415	140-145		Clayey - silty sand, vfg - fg. Minor gravel fragments \leq 1.3 cm - limestone gravel, subrounded.
	1528	145-150		Gravel zone @ ~ 145 ft. Silty sand with gravel and minor clay, vf - med. grained, minor vcg, subrounded - subangular, limestone, quartz, feldspar. Gravel fragments rounded - subangular - limestone.
	1537	150-155		Same as above, with very little gravel and vcg sand.
	1544	155-160		Silty-sandy clay, vfg-fg with very minor mg sand, subrounded, quartz, limestone.
	1612	160-165		Same as above.
	1620	165-170		Silty sand, m-vcg, with abundant gravel \leq 1 cm, fragmented, subrounded - subangular, feldspar, quartz, limestone, minor andesite and olivine.
	1630	170-175		Silty, sticky.
	1640	175-180		Same as above.
	1700	180-185		Same as above with minor clay.

Borehole Log
KAFB0310

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 4 of 10
 Project number: 463536001 Site: KAFB0310
 Drilling Company: USGS Location: S. corner of Landfill 4 Surface Elevation:
 Date Started drilling: 23 Aug 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Mud rotary
 Borehole diameter: 7 7/8 Date completed drilling: 27 Aug 91 Total Depth: 510
 Drilling equipment: Gardner-Denver17w Drilling Fluid: Bentonite mud
 Logged by: Abeyta Sample type: Cuttings

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
23-Aug-91	1713	185-190		Same as above with minor sand, vcg, subangular, limestone, quartz, feldspar.
	1721	190-195		Silty sand, vf-vcg, with minor pebbles, subrounded-subangular; limestone, feldspar, quartz.
	1745	195-200		Same as above with minor clay.
24-Aug-91	0850			Circulating mud in hole. Changed from rollercone to tri-wing drill bit. Began drilling ~0925.
	0930	200-205		Same as 195-200' interval.
	0935	205-210		Silty sand and clay, vf-fg, very minor cg sand; abundant clay.
	0940	210-215		Same as above with slightly less clay.
	0943	215-220		Same as above.
	0952	220-225		Same as above with slightly more sand vf-mg.
	1005	225-230		Silty sand, vf-fg, with minor c-vcg sand and pebbles \leq 1 cm, subrounded-subangular, quartz, feldspar, limestone.

Borehole Log
KAFB0310

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 5 of 10
 Project number: 463536001 Site: KAFB0310
 Drilling Company: USGS Location: S. corner of Landfill 4 Surface Elevation:
 Date Started drilling: 23 Aug 91 Drilling Crew: Dan Sweney, John Palmer, Abeyta,
 Drilling Method: Mud rotary Gebhardt, and Roybal
 Borehole diameter: 7 7/8 Date completed drilling: 27 Aug 91 Total Depth: 510
 Drilling equipment: Gardner-Denver17w Drilling Fluid: Bentonite mud
 Logged by: Abeyta Sample type: Cuttings

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
24-Aug-91	1015	230-235		Same as above.
	1024	235-240		Same as above - becomes more sand and more gravelly.
	1030	240-243		Gravelly sand, m-vcg sand, pebbles and fragmented gravel ≤ 2.5 cm, subrounded-subangular; feldspar, limestone, quartz, andesite, and olivine.
25-Aug-91	1715			Resumed drilling.
	1725	243-245		Silty sand with minor gravel, vf-fg, gravel fragmented ≤ 1 cm, subrounded, limestone.
	1732	245-250		Silty sand, vfg-fg, with minor clay.
	1738	250-255		Silty sand, vfg-fg, with minor m-vcg sand, subrounded-subangular, feldspar, quartz, limestone.
	1743	255-260		Same as above with more m-vcg sand.
	1758	260-265		Same as above with increasing m-vcg sand.
	1820	265-270		Same as above with minor clay.

Borehole Log
KAFB0310

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 7 of 10
 Project number: 463536001 Site: KAFB0310
 Drilling Company: USGS Location: S. corner of Landfill 4 Surface Elevation:
 Date Started drilling: 23 Aug 91 Drilling Crew: Dan Sweney, John Palmer
 Drilling Method: Mud rotary
 Borehole diameter: 7 7/8 Date completed drilling: 27 Aug 91 Total Depth: 510
 Drilling equipment: Gardner-Denver17w Drilling Fluid: Bentonite mud
 Logged by: Abeyta Sample type: Cuttings

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
26-Aug-91	1405	315-320		Silty sand, vf-fg.
	1425	320-325		Same as above.
	1435	325-330		Same as above.
	1443	330-335		Same as above.
	1450	335-340		Same as above.
	1457	340-345		Silty sand, vf-vcg, subrounded-subangular, limestone, feldspar, quartz.
	1509	345-350		Same as above with more m-vcg sand.
	1521	350-355		Pebbly sand, v-vcg, with pebbles \leq 4 mm, subrounded-subangular, limestone, feldspar, quartz.
	1533	355-360		Same as above.
	1545	360-365		Upper interval same as above; lower interval-silty sandy clay - vg-mg, abundant clay.

Borehole Log
KAFB0310

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 8 of 10
 Project number: 463536001 Site: KAFB0310
 Drilling Company: USGS Location: S. corner of Landfill 4 Surface Elevation:
 Date Started drilling: 23 Aug 91 Drilling Crew: Dan Sweney, John Palmer, Roybal, Abeyta,
 Drilling Method: Mud rotary and Young
 Borehole diameter: 7 7/8 Date completed drilling: 27 Aug 91 Total Depth: 510
 Drilling equipment: Gardner-Denver17w Drilling Fluid: Bentonite mud
 Logged by: Abeyta Sample type: Cuttings

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
26-Aug-91	1557	365-370		Silty sand, vf-vcg, subrounded-subangular, limestone, feldspar, quartz.
	1607	370-375		Same as above.
	1618	375-380		Sand, m-vcg, fairly well sorted, minor fines, pebbles \leq 4 mm; subangular, feldspar, quartz, limestone.
	1623	380-385		Silty sand, vf-vcg, subangular, feldspar, quartz, limestone.
	1637	385-390		Same as above, with less m-vcg sand.
	1650	390-395		Same as above, with less m-vcg sand.
	1700	395-400		Same as above, with more m-vcg sand.
	1725	400-405		Same as above, with more m-vcg sand.
	1735	405-410		Pebbly sand, m-vcg, with minor vf-fg sand; pebbles \leq 4 mm, fragmented; subangular; limestone, feldspar, quartz.

Borehole Log
KAFB0310

Project name: Kirtland Air Force Base - Phase II, Stage 2A
 Project number: 463536001 Site: KAFB0310
 Drilling Company: USGS Location: S. corner of Landfill 4 Surface Elevation:
 Date Started drilling: 23 Aug 91 Drilling Crew: Dan Sweney, John Palmer, Abeyta
 Drilling Method: Mud rotary
 Borehole diameter: 7 7/8 Date completed drilling: 27 Aug 91 Total Depth: 510
 Drilling equipment: Gardner-Denver17w Drilling Fluid: Bentonite mud
 Logged by: Abeyta Sample type: Cuttings

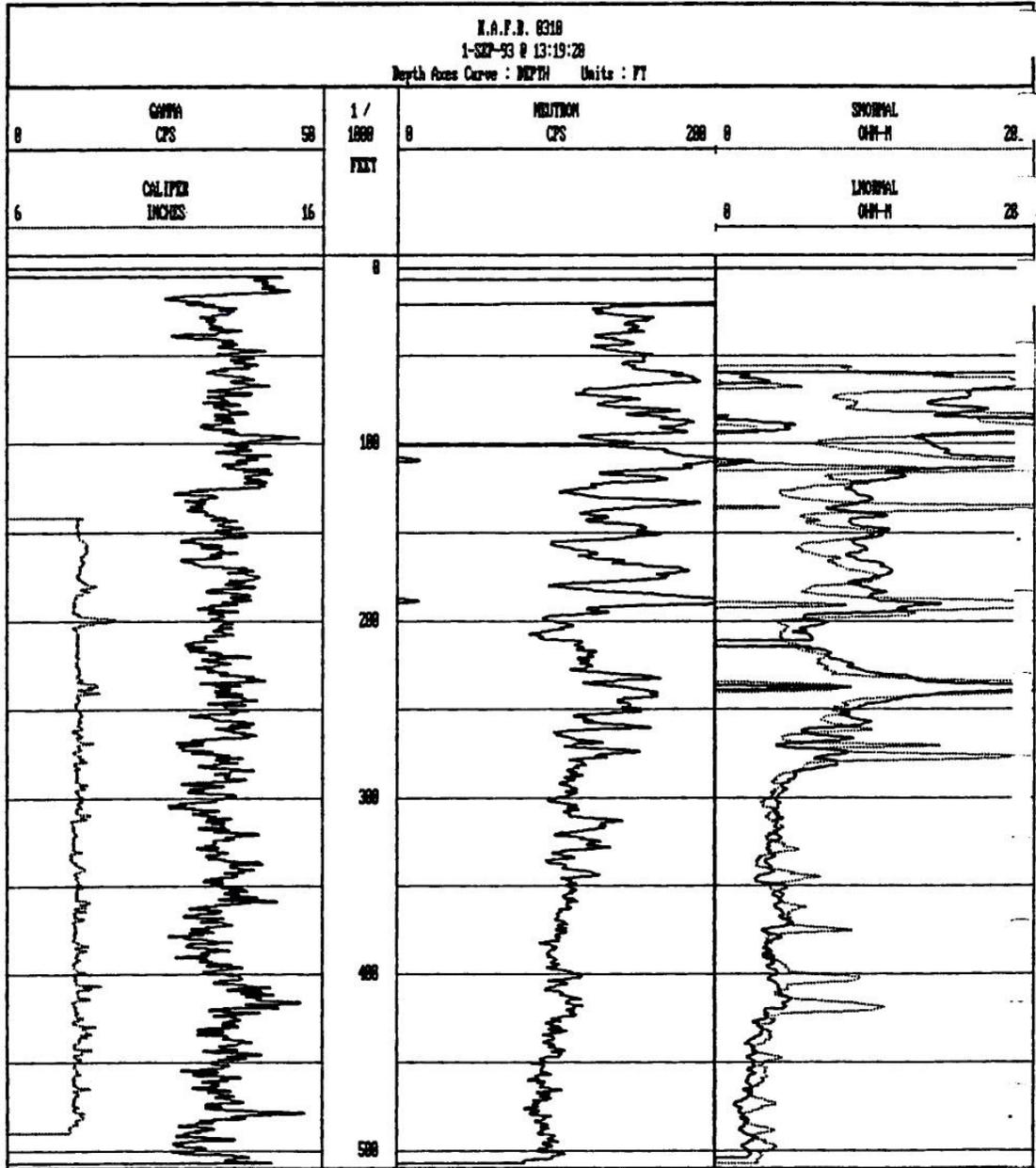
Sheet 9 of 10

Date	Time	Depth(ft)	Drilling Speed (Min/ft)	Lithology and Remarks
26-Aug-91	1740	410-415		Same as above, with minor clay.
	1720	415-420		Same as above with more m-vcg sand and pebbles.
	1755	420-425		Gravelly sand, m-vcg, gravel \leq 1 cm, fragmented, subangular; feldspar, quartz, limestone.
	1735	425-430		Silty sand, vf-vcg sand, minor pebbles \leq 4 mm, subrounded-subangular, feldspar, limestone, quartz.
	1740	430-435		Same as above with clay.
	1750	435-440		Same as above.
	1755	440-443		Same as above with more clay.
27-Aug-91	0805			Resumed drilling.
	0815	443-445		Same as above.
	0833	445-450		Same as above with less clay.
	0843	450-455		Silty sand with minor clay, vf-fg, minor m-vcg sand; subangular; limestone, feldspar, quartz.

Borehole Log
KAFB0310

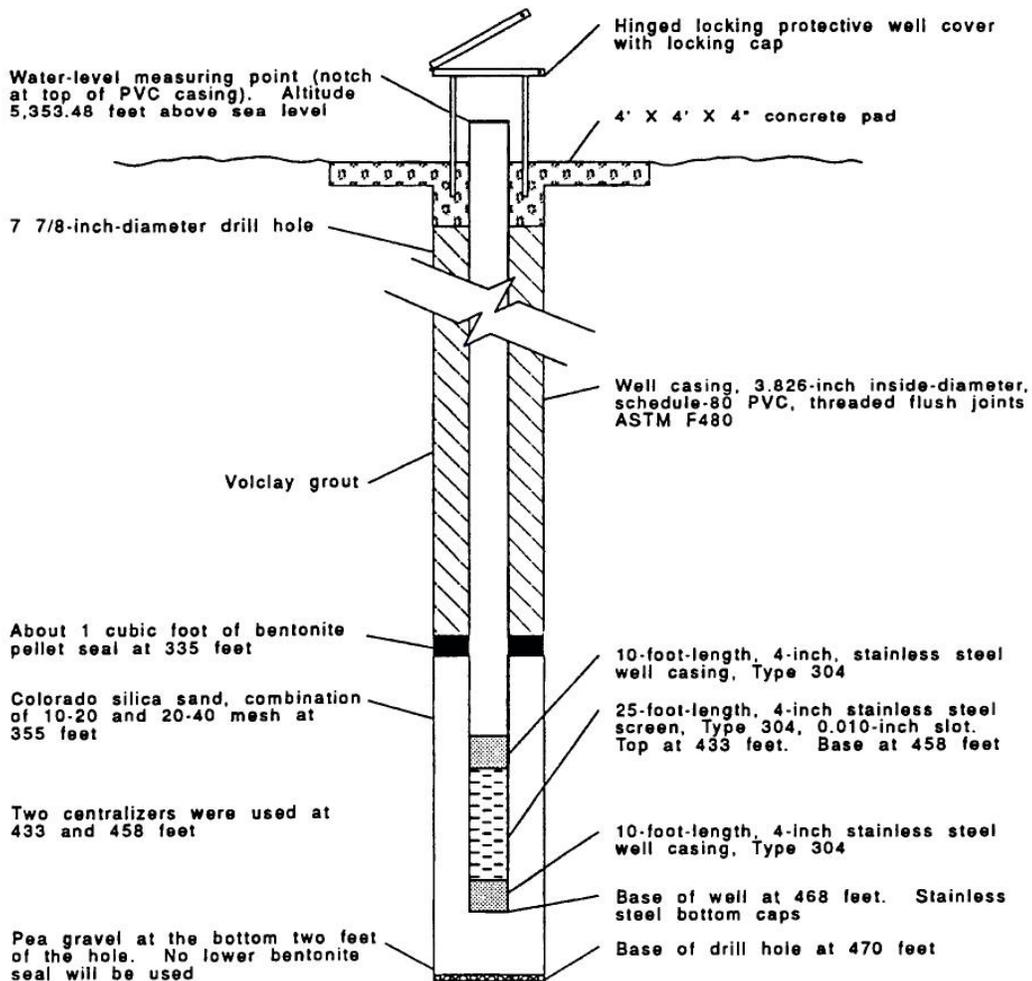
Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 10 of 10
 Project number: 463536001 Site: KAFB0310
 Drilling Company: USGS Location: S. corner of Landfill 4 Surface Elevation:
 Date Started drilling: 23 Aug 91 Drilling Crew: Dan Sweney, John Palmer, Abeyta, Young
 Drilling Method: Mud rotary
 Borehole diameter: 7 7/8 Date completed drilling: 27 Aug 91 Total Depth: 510
 Drilling equipment: Gardner-Denver17w Drilling Fluid: Bentonite mud
 Logged by: Abeyta Sample type: Cuttings

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Drilling Speed (Min/ft)</u>	<u>Lithology and Remarks</u>
27-Aug-91	0853	455-460		Same as above.
	0910	460-465		Same as above.
	0923	465-470		Same as above.
	0938	470-475		Same as above.
	0950	475-480		Same as above.
	1005	480-485		Clayey sand, vf-fg; clay more abundant than in previous intervals.
	1013	485-490		Silty sand, vf-fg, minor clay and m-vcg sand, subangular; quartz, feldspar, limestone.
	1020	490-495		Same as above with no apparent clay.
	1030	495-500		Same as above.
	1045	500-505		Same as above.
	1055	505-510		Same as above.



KAFB-0310

AR 1710



NOT TO SCALE

Well-completion diagram for monitoring well KAFB 0311. Drilled and completed by U.S. Geological Survey, Coal Branch, Denver, Colo. Started on 07-20-92, completed on 07-24-92. Well drilled using mud rotary method with Wyoming sodium bentonite drilling fluid. All depths are feet below land surface.

KAFB-0311

AR1710

Borehole Log
KAFB0311

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 1 of 5
 Project number: 463536001 Site: KAFB0311
 Drilling Company: USGS Location: Kirtland AFB Surface Elevation:
 Date Started drilling: 4 Feb 92 Drilling Crew: Dan Sweney, Dean Bohn
 Drilling Method: Hollow stem auguring/Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Bentonite
 Drilling equipment: Gardner-Denver17w West Side of Landfills 4/5/6 Sample type:

Logged by: F. Gebhardt

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Recovery</u>	<u>Lithology and Remarks</u>
4-Feb-92		0-3	cuttings	Silt moderate brown 5 YR 4/4. In the root zone. No gravels or sands.
		3.8	4.6'	Same as above, except it becomes harder pack after 4 feet. Still root zone to 6.8' this is also were there is a slight color change, light brown 5 YR 5/6. At the last .3' there is the beginning of small amounts of coarse sand and small gravel ≤ 2 mm. Minerals appear to be felspar and limestone.
		Sample collected at 5 feet		
		8-13	4.7'	Same as above, however there is an increasing size and the amount of gravel and sand ≤ 7 mm.
		13-18	4.8'	Same as above, less packed than previous sample from 13' - 16.5'. Lower section well packed. At 16.2 there is a band of coarse sand and small gravel ≤ 3 mm.
		18-22	3.8'	Upper 1.2' is same as above. There is then a limestone cobble 9 cm in length. Coarse sand and gravel make up the rest of the sample.
4-Feb-92		18-22		Gravel is mostly 2-3 mm in size however there are numerous pieces 1 - 3 cm and some as large as 8 cm. Mineral make up is limestone, felspar and sand.
		22-24	1.9'	Same as above, except without the very large pieces of gravel. Largest gravel 2 cm

AR 1710

Borehole Log
KAFB0311

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 2 of 5
 Project number: 463536001 Site: KAFB0311
 Drilling Company: USGS Location: Kirtland AFB Surface Elevation:
 Date Started drilling: 4 Feb 92 Drilling Crew: Dan Sweney, Dean Bohn
 Drilling Method: Hollow stem auguring/Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Bentonite
 Drilling equipment: Gardner-Denver 17w West Side of Landfills 4/5/6
Sample type:

Logged by: F. Gebhardt

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Recovery</u>	<u>Lithology and Remarks</u>
		24-27.5	3.3'	Upper 2.8 is identical to previous sample. The lower .5 feet is a very hard pack silt, with small traces of limestone gravel or coarse sand ≤ 2 mm. Silt color light brown 5 YR 5/6.
			Sample taken at 25 feet	
		27.5-33	4.9'	Upper .3 foot is same as above. The next .9' is very hard pack silt and clay, moderate brown 5 YR 3/4. The rest of the sample is entirely silty no sand or gravel, color is moderate yellowish brown 10 YR 5/4.
		33-35	2.2'	Upper 1.6' is the same as lower previous sample with some gravel mixed in. Lower part of this sample is large gravel and cobble ≥ 5 cm. mixed with smaller gravel and silt. Cobbles granite and limestone.
4-Feb-92		38-41.5	3.8'	Upper 1.1' is silt light brown 5 YR 6/4, the next .7' is the same silt with small amount of coarse sand or small gravel ≤ 2 mm. The follow .7' is a hard packed silt 10 YR 4/6, with small amount of caliche nodules throughout this sections. The lower part of this sample is a very hard pack silt light brown 5 YR 6/4 with caliche and limestone gravel ≤ 10 mm through this area.
		41.5-43.5	2.5'	Same as lower part of previous sample just not as well packed.

Borehole Log
KAFB0311

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 3 of 5
 Project number: 463536001 Site: KAFB0311
 Drilling Company: USGS Location: Kirtland AFB Surface Elevation:
 Date Started drilling: 4 Feb 92 Drilling Crew: Dan Sweney, Dean Bohn
 Drilling Method: Hollow stem auguring/Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Bentonite
 Drilling equipment: Gardner-Denver17w West Side of Landfills 4/5/6
Sample type:

Logged by: F. Gebhardt

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Recovery</u>	<u>Lithology and Remarks</u>
		43.5-47.5	4.0'	Upper 2.9' is the same as previous interval without caliche. The lower 1.1' however is well packed silt 5 YR 6/4 with very little gravel ≤3 mm but large amount of caliche.
		47.5-52.5	4.7'	Silty - fine sand 5 YR 6/4 throughout entire interval. Few amounts of limestone gravel ≤10 mm.
			Sample collected at 51 feet	
4-Feb-92		52.5-56.5	4.3'	Upper 1.8' is the same as previous interval with more gravel. The next .5' is med - coarse sand with gravel. ≤5 mm and some pieces as large as 4 cm. The next two feet is layered silt - sand - silt - sand. Description of these layers are the same as other silt and sand in this interval
		56.5-63	3.3'	Upper 3' is the same as above. The next 1.5' is med - coarse sand well sorted, subangular to subround limestone, felspar, quartz. There are few pieces of gravel ≤1 cm. The lower part of this sample is silt light brown 5 YR 6/4 with a caliche layer at 62'.
		63-67	4.2'	Upper .8' is silt as in lower part of previous interval. The next 2.6' is med-coarse sand as described in previous sample. The last .8' is clay moderate brown 5 YR 3/4.

Borehole Log
KAFB0311

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 4 of 5
 Project number: 463536001 Site: KAFB0311
 Drilling Company: USGS Location: Kirtland AFB Surface Elevation:
 Date Started drilling: 4 Feb 92 Drilling Crew: Dan Sweney, Dean Bohn
 Drilling Method: Hollow stem auguring/Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Bentonite
 Drilling equipment: Gardner-Denver17w West Side of Landfills 4/5/6
Sample type:

Logged by: F. Gebhardt

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Recovery</u>	<u>Lithology and Remarks</u>
4-Feb-92		67-71	3.2'	The upper 1.5' is silty-clay moderate brown 5 YR 3/4. There is change for the next /4' to just silt reddish brown 10 R 4/6. The rest of the sample is silty - fine sand light brown 5 YR 6/4. There are some caliche and cemented nodules throughout this section.
5-Feb-92		71-74	3.7'	The upper .8' of this interval is the remains of the previous interval, and is the same as the lower part. The next 1.9' is a well pack silt light brown 5 YR 5/6 with a small amount of coarse sand and small gravel ≤ 2 mm. The lower part of sample is the same as the upper .8', there is also a heavy layer f caliche in the last .5'.
		74-78	4.3'	Upper 2' is the same as lower part of previous interval. The next 1.8' is fine sand 5 YR 5/5, mixed with a small amount of gravel ≤ 5 mm. The last .5' is a very hard packed silt 5 YR 5/6.
5-Feb-92		78-82	3.4'	Upper .3' is the same as lower part of previous sample. The next 2.1' is med-coarse sand with some very large gravel 3 cm - 6 cm. At the lower .3' of the sand is a small amount of caliche. The lowest part of this sample is entirely silt 5 YR 5/6, no sands or gravels.

Borehole Log
KAFB0311

Project name: Kirtland Air Force Base - Phase II, Stage 2A Sheet 5 of 5
 Project number: 463536001 Site: KAFB0311
 Drilling Company: USGS Location: Kirtland AFB Surface Elevation:
 Date Started drilling: 4 Feb 92 Drilling Crew: Dan Sweney, Dean Bohn
 Drilling Method: Hollow stem auguring /Mud rotary Date completed drilling: Total Depth:
 Borehole diameter: 7 7/8 Drilling Fluid: Bentonite
 Drilling equipment: Gardner-Denver17w West Side of Landfills 4/5/6
Sample type:

Logged by: F. Gebhardt

<u>Date</u>	<u>Time</u>	<u>Depth(ft)</u>	<u>Recovery</u>	<u>Lithology and Remarks</u>
		82-85.5	3.5'	The upper 2.2' feet is the same as the lower part of previous interval. The lower part is sand-silt 5 YR 5/6 will packed. Sand is fine mixed with small gravels 2 mm - 4 mm.
		85.5-89	3.6'	Upper 2.8' is same as lower part of previous interval. The last part of this sample is silty - clay moderate brown 5 YR 3/4. No gravel or sands.
		89-93	1.6'	Same as lower part of previous interval, however there is a small amount of coarse sand mixed in.
		93--95.5	5.4'	Same as above, however there was two band of gravel ≤ 3 mm and coarse sand at 92.7 and 94.5.
5-Feb-92		95.5-98.5	3.5'	Upper 1.8' is silt light brown 5 YR 5/6 with coarse sand and small gravel ≤ 3 mm. The next 8' is entirely sand fine - coarse ≤ 10 mm, poorly sorted, subangular - subrounded. The lower part of sample is fine sand and silt light brown 5 YR 6/4 a few pieces of granite gravel 1-2 cm.
		98.5-100.5	3.5'	Same as the above lower section. No granite gravel but there was limestone pieces ranging from 1 cm - 4 cm.

KAFB-0312

REGIONAL
DEEP OVERBURDEN
MONITORING WELL

WELL NO. KAFB - 0312

PROJECT: KIRTLAND AFB LF-08/LF-268 AND LF-20 CMS

PROJECT NO.: 5155.0019.0009

BORING NO.: KAFB - 0312

ELEVATION: 5427.52

DATE: 11-7-98

FIELD GEOLOGIST: E. TOW

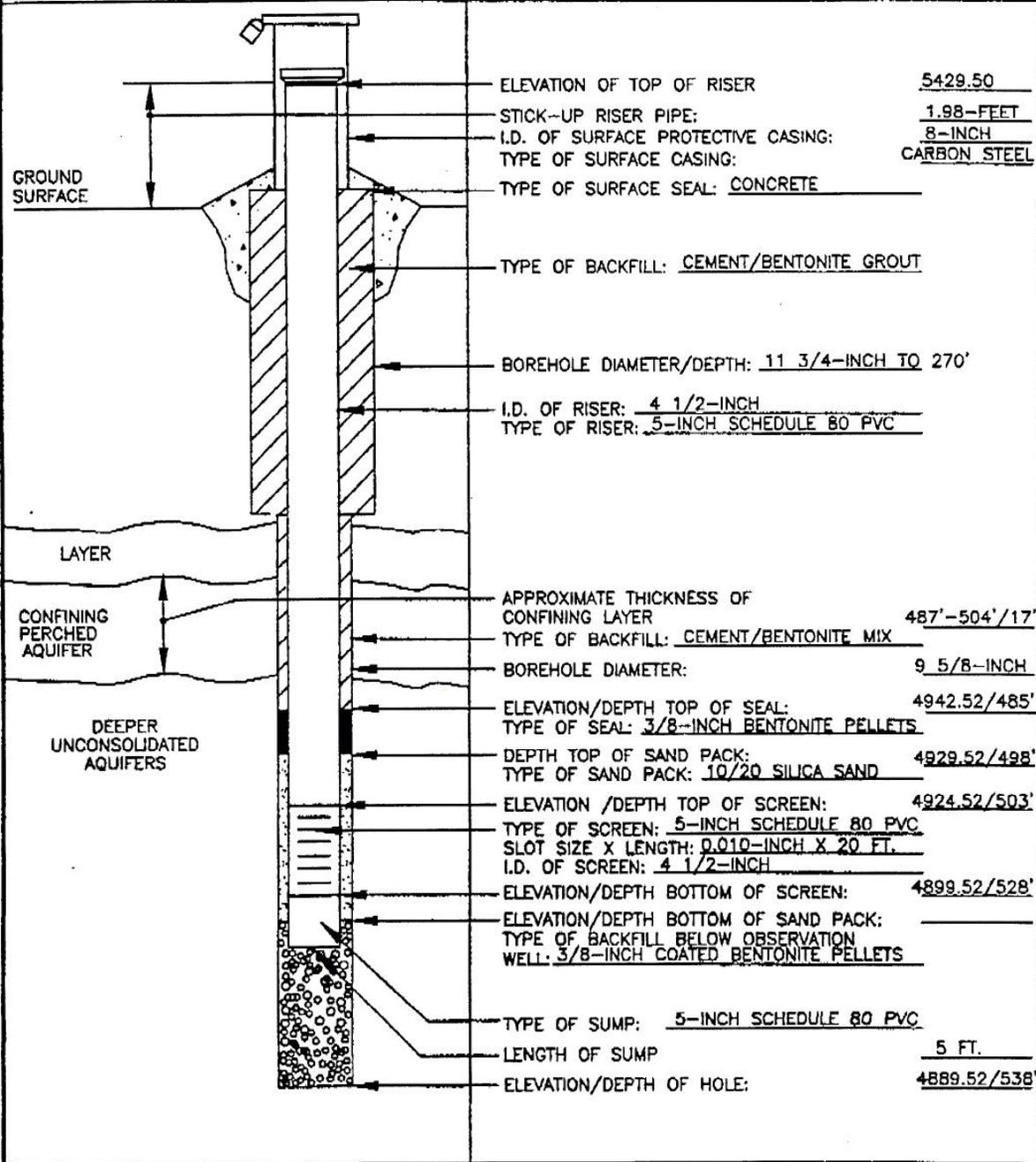
DRILLER: A. SCHOONMAKER

DRILLING

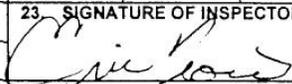
METHOD: AIR ROTARY/CASING HAMMER

DEVELOPMENT

METHOD: SUBMERSIBLE PUMP/SURGE



.530078.DWG \F08\0312.DWG
 10-5-99
 PLOT/UPDATE:

HTRW DRILLING LOG		DISTRICT OMAHA TERC		HOLE NO. KAFB-0312		
1. COMPANY NAME FOSTER WHEELER ENVIRONMENTAL CORPORATION		2. DRILLING SUBCONTRACTOR Beylik Drilling Inc.		SHEET 1 OF 19		
3. SITE Kirtland AFB, LF-08/LF-268		4. LOCATION Kirtland AFB Landfill				
5. NAME OF DRILLER A. SCHOONMAKER		6. MANUFACTURERS DESIGNATION OF DRILL Dresser W70				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	AIR ROTARY CASING		1. HOLE LOCATION N 1466654.4754 / E 418411.0855			
	HAMMER, 11-3/4 "		9. SURFACE ELEVATION 5427.52			
	DRIVE CASING		10. DATE STARTED 10-22-98		11. DATE COMPLETED 11-7-98	
	TELESCOPED TO 9-5/8"					
12. OVERBURDEN THICKNESS UNDETERMINED		15. DEPTH GROUNDWATER ENCOUNTERED 398.45 ft bgs (1hr) Perched / 430.90 ft bgs (2 hrs) Regional				
13. DEPTH DRILLED INTO ROCK NOT ENCOUNTERED		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED 430.54 ft bgs 1 hr after development / Regional				
14. TOTAL DEPTH OF HOLE 538 ft bgs		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)				
18. GEOTECHNICAL SAMPLES	DISTURBED		UNDISTURBED		19. TOTAL NUMBER OF CORE BOXES	
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHERS (SPECIFY)	OTHERS (SPECIFY)	OTHERS (SPECIFY)	21. TOTAL CORE REC. %
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHERS (SPECIFY)	23. SIGNATURE OF INSPECTOR 		
		✓				
PROJECT #: 5155.0019.0005		SITE NAME: LF-08/LF-268		HOLE #: KAFB-0312		

HTRW DRILLING LOG			DISTRICT OMAHA TERC		HOLE NO. KAFB-0312
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		SHEET 2 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
	1		SM	10YR 6/4 light yellowish brown silty coarse to fine SAND, with medium to fine Gravel (10-15%) angular to subangular, dry	
	2				
5423.52	3		ML	7.5YR 5/6 strong brown SILT, with coarse to fine Sand (~20%), little medium to fine Gravel (10-15%), angular to subrounded, s. moist	
	4				
	5				
	6				
5419.53	7		SP	7.5YR 5/4 brown coarse (+) to fine SAND, and medium to fine GRAVEL (45-50%), trace Silt (<5%), angular to subrounded, s.moist	
	8				
	9				
5415.52	10		SM	7.5YR 5/4 strong brown silty fine SAND, with medium to fine Gravel (15-20%), angular to subrounded, moist	
	11				
	12				
5411.52	13		ML	7.5YR 5/4 brown SILT, s. moist	
	14				
	15				
	16				
5407.52	17		SP-SM	7.5YR 5/4 brown coarse to fine SAND, little medium to fine Gravel (~15%), trace Silt (5-10%) angular to rounded, s.moist	
	18				
	19		ML	7.5YR 5/6 strong brown SILT, s. moist	
5403.52	20				
	21				
	22				
	23		ML	7.5YR 5/6 strong brown SILT, s. moist	
	24				
5399.52	25		ML	7.5YR 5/6 strong brown SILT, s. moist	
	26				
	27		ML	7.5YR 5/6 strong brown SILT, s. moist	
	28				
	29		ML	7.5YR 5/6 strong brown SILT, s. moist	
	30				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0312

HTRW DRILLING LOG			DISTRICT		OMAHA TERC		HOLE NO. KAFB-0312			
1. PROJECT # 5155.0019.0005			2. INSPECTOR		ERIC TOW		SHEET 3 OF 19			
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION		COMMENTS				
5395.52	31		ML	7.5YR 7/6 reddish yellow SILT, trace medium to fine Sand (5%), trace medium to fine Gravel (5-10%), subangular to subrounded, dry		Change at 30'				
	32									
	33									
	34									
5391.52	35		ML	7.5YR 6/4 light brown coarse to fine sandy SILT, with medium to fine Gravel (10-15%), angular to subrounded, s. moist						
	36									
	37									
5387.52	38		ML	7.5YR 5/6 strong brown SILT, trace coarse to fine Sand (5-10%), trace medium to fine Gravel (5-10%), subangular to subrounded, s. moist						
	39									
	40									
5383.52	41		ML	7.5YR 5/6 strong brown SILT, trace fine Sand (<5%), s. moist						
	42									
	43									
	44									
5379.52	45		SP	7.5YR 6/4 light brown silty (25-30%) SAND, some coarse to fine Gravel (20-30%), subangular to rounded, dry						
	46									
	47									
	48									
5375.52	49		ML	7.5YR 6/4 light brown SILT, s.moist						
	50									
	51									
5371.52	52		ML	7.5YR 5/4 brown SILT, trace coarse to fine Sand (~10%), with medium to fine Gravel (10-15%), subangular to subrounded, s. moist						
	53									
	54									
5367.52	55		SP-SM	7.5YR 6/4 light brown coarse to fine SAND, little Medium to fine Gravel (~15%), trace Silt (5-10%) angular to subrounded dry						
	56									
	57									
5367.52	58		ML	7.5YR 5/6 strong brown SILT, with coarse to fine Gravel (25-30%), trace fine Sand (<10%), subangular to rounded, s. moist						
	59									
	60									
PROJECT #: 5155.0019.0005			SITE NAME: LF- 08/LF-268		HOLE #: KAFB-0312					

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			2. INSPECTOR		
			OMAHA TERC		KAFB-0312
			ERIC TOW		SHEET 4 OF 19
ELEV.	DEPT H (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
	61		SP-SM	7.5YR 6/4 light brown coarse to fine SAND, with medium to fine Gravel (~15%), trace Silt (5-10%), angular to subrounded, dry	Change at 60'
	62				
5363.52	63		ML	7.5YR 5/4 brown coarse to fine sandy (~20%) SILT, with medium to fine Gravel (~15%), angular to subrounded, moist	
	64				
	65				
	66				
5359.52	67		ML	7.5YR 5/6 strong brown SILT, trace coarse to fine Sand (<5%), trace medium to fine Gravel (<5%), subangular to subrounded, moist	
	68				
	69				
	70				
5355.52	71		SW-SM	7.5YR 6/6 reddish yellow coarse to fine SAND, little Silt (~10%), little medium to fine Gravel (10-15%), angular to subrounded, dry	
	72				
	73		SM	7.5YR 4/4 coarse to fine silty (15-20%) SAND, with medium to fine Gravel (15-29%), angular to subrounded, moist	
	74				
5351.52	75		SM	7.5YR 4/6 brown coarse to fine silty (15-20%) SAND, with medium to fine Gravel (10-15%), angular to subrounded, moist	
	76				
	77				
	78				
5347.52	79				
	80				
	81		SW-SM	7.5YR 4/4 brown coarse to fine SAND, with medium to fine Gravel (15-20%), trace Silt (7-10%), angular to rounded, moist	
	82				
5343.52	83				
	84				
	85				
	86				
5339.52	87		SM	7.5YR 4/6 strong brown coarse to fine silty (25-30%) SAND, with medium to fine Gravel (15-20%), subangular to rounded, moist	
	88				
	89				
	90				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0312

HTRW DRILLING LOG			DISTRICT		HOLE NO.			
			OMAHA TERC		KAFB-0312			
1. PROJECT #			2. INSPECTOR		SHEET 5 OF 19			
5155.0019.0005			ERIC TOW					
ELEV.	DEPT H (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS			
5335.52	91		ML	7.5YR 4/4 brown SILT, with coarse to fine Sand (~15%), trace fine Gravel (~10%), subangular to rounded, moist	Change at 90'			
	92							
	93							
	94							
5331.52	95							
	96							
	97							
5327.52	98							
	99							
	100							
5323.52	101					ML	7.5YR 5/6 strong brown SILT, trace medium to fine Gravel (<5%), subrounded to rounded, moist	
	102							
	103							
	104							
	105							
	106							
5319.52	107		ML	7.5YR 5/6 strong brown SILT, little medium to fine Gravel (~10%), subrounded to rounded, moist				
	108							
	109							
5315.52	110							
	111							
5311.52	112					SM	7.5YR 5/6 strong brown coarse to fine silty (20-30%) SAND, with medium to fine Gravel (10-15%), angular to rounded, moist	
	113							
	114							
	115							
5307.52	116		ML	7.5 YR 5/6 strong brown SILT, trace coarse to fine Sand (<5%), trace fine Gravel (<5%), subrounded to rounded, moist				
	117							
	118							
5307.52	119							
	120							
PROJECT #						SITE NAME:		HOLE #:
5155.0019.0005			LF-08/LF-268		KAFB-0312			

HTRW DRILLING LOG			DISTRICT OMAHA TERC		HOLE NO. KAFB-0312
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		SHEET 6 OF 19
ELEV.	DEPT H (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
5303.52	121		SM	7.5YR 5/6 strong brown coarse to fine silty (20-25%) SAND, with medium to fine Gravel (10-15%), angular to subrounded, s. moist	2 or 3 intermittent gravel layers 6 " to 1' thick
	122				
	123				
	124				
	125				
5299.52	126		ML	7.5YR 4/6 strong brown SILT, trace coarse to fine Sand (3-7%), trace medium to fine Gravel (<5%), angular to subrounded, moist	
	127				
	128				
	129				
5295.52	130		SM	7.5 YR strong brown silty (~25%) medium to fine (+) SAND, trace medium to fine Gravel (~5%), angular to rounded, moist	
	131				
	132				
5291.52	133		ML	7.5YR 5/6 strong brown SILT, trace medium to fine Sand, trace medium to fine gravel, subangular to subrounded, moist	
	134				
	135				
	136				
	137				
5287.52	138		SW-SM	7.5YR 5/4 strong brown coarse to fine SAND, with medium to fine Gravel (15-20%), little Silt (10-15%) subangular to rounded, dry	
	139				
	140				
5283.52	141		ML	7.5 YR 6/4 light brown SILT, with medium (+) to fine Gravel (10-15%), trace coarse to fine Sand (<5%), subangular to rounded, s. moist to dry	
	142				
	143				
	144				
5279.52	145				
	146				
	147				
	148				
	149				
	150				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0312

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT #			2. INSPECTOR		
5155.0019.0005			ERIC TOW		KAFB-0312
SHEET 7 OF 19					
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
5275.52	151				Change at 150'
	152				
	153				
	154				
5271.52	155		ML	7.5YR 5/6 strong brown SILT, with coarse to fine Sand (15-20%), trace fine Gravel (5-10%), angular to subrounded, moist	
	156				
	157				
	158				
5267.52	159				
	160				
	161				
	162				
5263.52	163		CL	7.5YR 4/4 reddish brown clayey SILT, trace coarse to fine Sand (~5%), trace fine Gravel (~5%), subrounded to rounded, moist, medium Plasticity, medium dry strength	
	164				
	165				
	166				
5259.52	167				
	168				
	169				
	170				
5255.52	171				
	172				
	173				
	174				
5251.52	175		SP-SM	7.5YR 5/4 brown coarse to fine (+) silty (25-30%) SAND, little medium to fine (+) Gravel, angular to rounded, s. moist	
	176				
	177				
	178				
5247.52	179			Same as above	
	180				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0312

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT #			2. INSPECTOR		
5155.0019.0005			OMAHA TERC		KAFB-0312
1. PROJECT #			2. INSPECTOR		SHEET 8 OF 19
5155.0019.0005			ERIC TOW		
ELEV.	DEPT H (feet)	FIELD SCREEN RESULTS	USCS CLASS	MATERIAL DESCRIPTION	COMMENTS
	181		ML	7.5YR 4/6 strong brown SILT, trace coarse to fine Sand, trace fine Gravel, trace clayey Silt, low plasticity, medium dry strength, subangular to Subrounded,moist	Change at 180'
	182				
5243.52	183				
	184				
	185		SW	7.5YR 5/4 strong brown coarse to fine SAND, With fine Gravel (15-20%), and Silt (15-20%) angular to subrounded, s. moist	
	186				
5239.52	187				
	188				
	189		SM	7.5YR 5/6 strong brown silty (~25%) coarse to fine SAND, with fine Gravel (10-15%), angular to subrounded, s. moist	
	190				
5235.52	191				
	192				
	193				
5231.52	194				
	195				
	196				
	197				
	198				
5227.52	199				
	200				
	201		SM	7.5YR 5/6 strong brown silty (~25%) coarse to fine SAND, with medium to fine Gravel (20-25%), angular to subrounded, dry	
	202				
5223.52	203				
	204				
	205				
	206				
5219.52	207				
	208				
	209				
	210				
PROJECT #			SITE NAME:		HOLE #:
5155.0019.0005			LF-08/LF-268		KAFB-0312

HTRW DRILLING LOG			DISTRICT		HOLE NO.		
1. PROJECT # 5155.0019.0005			2. INSPECTOR		SHEET 9 OF 19		
			OMAHA TERC		KAFB-0312		
ELEV.	DEPT H (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS		
5215.52	211						
	212						
	213						
	214						
5211.52	215		SW-SM	7.5YR 6/4 light brown coarse to fine SAND, little medium to fine (+) Gravel (~15%), trace Silt (<10%), angular to subrounded, dry			
	216						
	217						
	218						
5207.52	219		SM	7.5 4/4 brown coarse to fine silty (~25%) SAND, with medium to fine Gravel (10-20%), angular to subrounded, moist			
	220						
	221						
	222						
5203.52	223						
	224						
	225						
	226						
5199.52	227						
	228						
	229						
	230						
5195.52	231				ML	7.5YR 5/6 strong brown SILT, with coarse to fine Sand (~15%), little fine Gravel (10-15%), angular to subrounded, moist	
	232						
	233						
	234						
5191.52	235		SM	7.5YR 4/4 brown silty (25-30%) SAND, little medium to fine Gravel (~10%), subangular to Subrounded, moist			
	236						
	237						
	238						
5187.52	239		CL	7.5YR 4/6 silty CLAY, trace coarse to fine Sand (~5%), moist, medium plasticity, medium dry strength			
	240						
PROJECT #: 5155.0019.0005			SITE NAME: LF08/LF-268		HOLE #: KAFB-0312		

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		KAFB-0312
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
	241		SW	Coarse to fine SAND, some coarse to fine Gravel, little Silt, moist	242'-264' No cuttings return; at 252' some cuttings are ejected from the top of drive casing within a 100' radius of the borehole.
	242				
5183.52	243				
	244				
	245				
	246				
5179.52	247				
	248				
	249				
	250				
5175.52	251				
	252				
	253				
	254				
5171.52	255				
	256				
	257				
	258				
5167.52	259				
	260				
	261				
	262				
5163.52	263				
	264				
	265				
	266				
5159.52	267		CL	7.5YR 4/6 silty CLAY, trace coarse to fine Sand (~5%), moist, medium plasticity, medium dry strength	Lithologic description from observation of rig performance and cuttings at 264'
		268			
	269				
	270				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0312

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT #			2. INSPECTOR		SHEET 11 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
5155.52	271		ML	7.5YR 4/6 strong brown SILT, trace coarse to fine Sand (<5%), trace fine Gravel (<5%), angular to subrounded, moist	
	272				
	273				
	274				
5151.52	275				
	276				
	277				
	278				
5147.52	279				
	280				
	281		SM	7.5YR 4/6 strong brown silty (~25%) coarse to fine SAND, with medium to fine Gravel (10-15%), subangular to rounded, moist	
	282				
5143.52	283				
	284				
	285				
	286				
5139.52	287		ML	7.5YR 4/6 strong brown SILT, trace coarse to fine Sand, trace medium to fine Gravel, subrounded to rounded, moist	
	288				
	289				
	290				
5135.52	291				
	292				
	293				
	294				
5131.52	295				
	296				
	297				
	298				
5127.52	299		SM	7.5YR 5/6 strong brown silty (25-30%) coarse to fine SAND, little medium to fine (+) Gravel, angular to subrounded, moist	
	300				
PROJECT #			SITE NAME:		HOLE #:
5155.0019.0005			LF-08/LF-268		KAFB-0312

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			OMAHA TERC		KAFB-0312
2. INSPECTOR			ERIC TOW		SHEET 12 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
	301				316'-321' Thin clay layers
	302				
5123.52	303		ML	7.5YR 4/6 strong brown clayey SILT, with coarse to fine Sand (1-15%), trace medium to fine Gravel (5-10%), angular to subround, moist, low Plasticity	
	304				
	305				
	306				
5119.52	307		ML	7.5YR 5/6 strong brown SILT	
	308				
	309				
	310				
5115.52	311		ML	7.5YR 5/6 strong brown SILT	
	312				
	313				
	314				
5111.52	315		SP	7.5YR 4/6 strong brown coarse to fine SAND, little medium to fine Gravel (10-15%), little Silt (5-10%), subangular to subrounded, dry	
	316				
	317		ML-CL	7.5YR 5/6 strong brown SILT and clayey SILT, trace coarse to fine Sand, trace medium to fine Gravel, subangular to subrounded, moist	
	318				
5107.52	319				
	320				
	321		ML	7.5YR 5/6 strong brown SILT	
	322				
5103.52	323			BOULDER	
	324		ML	7.5YR 5/6 strong brown SILT, trace coarse to fine Sand (<5%), trace medium to fine Gravel(<5%), subangular to subrounded, moist	
	325				
	326				
5099.52	327				
	328				
	329				
	330				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0312

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			2. INSPECTOR		SHEET 13 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
5095.52	331		ML	Same as above	
	332				
	333				
	334				
5091.52	335		ML	7.5YR 5/4 brown SILT, with coarse to fine Sand (~15%), trace fine Gravel (<5%), angular to subrounded, moist	
	336				
5087.52	337		ML	7.5YR 5/4 brown coarse to fine sandy (~30%) SILT, trace medium to fine Gravel(~5%), angular to subrounded, moist	
	338				
	339				
	340				
5083.52	341		ML	7.5YR 6/6 reddish yellow SILT, moist	
	342				
	343				
	344				
5079.52	345				
	346				
	347				
	348				
5075.52	349		ML	7.5YR 5/6 strong brown SILT, with coarse to fine Sand (20-25%), trace fine Gravel (5-10%), angular to subrounded, moist, trace clayey Silt	
	350				
	351				
	352				
5071.52	353				
	354				
	355				
	356				
5067.52	357		ML	7.5YR 6/6 reddish yellow SILT, moist	
	358				
	359				
	360				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0312

HTRW DRILLING LOG			DISTRICT OMAHA TERC		HOLE NO. KAFB-0312	
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		SHEET 14 OF 19	
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS	
	361		ML	Same as above		
	362					
5063.52	363					
	364					
	365					
	366					
5059.52	367					
	368					
	369					
	370					
5055.52	371					Same as above
	372					
	373					
	374					
5051.52	375					
	376					
	377					
	378					
5047.52	379					
	380					
	381		ML	7.5YR 6/6 reddish yellow SILT, trace coarse to fine Sand (<5%), trace fine Gravel(<5%), angular to subrounded, moist		
	382					
5043.52	383		ML	7.5YR 6/8 reddish yellow SILT, with coarse to fine Sand (~15%), trace fine Gravel(<5%), moist		
	384					
	385		ML-CL	7.5YR 4/4 brown SILT and CLAY, trace coarse to fine Sand (<5%), trace fine Gravel (<5%), subangular to subrounded, moist, medium plasticity, medium dry strength		
	386					
5039.52	387					
	388					
	389					
	390					
PROJECT # 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #. KAFB-0312	

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			2. INSPECTOR		SHEET 15 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
5035.52	391				Water level ~396.03 ft bgs
	392				
	393				
	394				
5031.52	395		ML	7.5YR 4/4 brown coarse to fine sandy (~25%) clayey SILT, trace fine Gravel, angular to subrounded, moist	
	396				
	397				
	398				
5027.52	399				
	400				
	401				
	402				
5023.52	403				
	404				
	405				
	406				
5019.52	407		ML	7.5YR 4/6 strong brown coarse to fine sandy (~25%) SILT, trace medium to fine Gravel, (5-10%), angular to subrounded, moist	
	408				
	409				
	410				
5015.52	411		SW	7.5YR 4/4 brown coarse (+) to fine SAND, with medium to fine Gravel(15-20%), and Silt (20-25%), angular to subangular, wet	
	412				
	413				
	414				
5011.52	415		ML	7.5YR 5/6 strong brown coarse to fine sandy (~20%) SILT, with fine Gravel (10-15%), angular to subrounded, wet	
	416				
	417				
	418				
5007.52	419				
	420				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0312

HTRW DRILLING LOG			DISTRICT OMAHA TERC		HOLE NO. KAFB-0312
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		SHEET 16 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
	421		ML-CL	SILTS and CLAYS	Change at 420' clogged return line
	422				
5003.52	423				
	424				
	425				
	426				
4999.52	427		SW	7.5YR 5/6 strong brown coarse to medium SAND, with medium to fine Gravel (20-25%), angular to subrounded, wet	Confined high water production zone
		428			
	429				
	430				
4995.52	431				
	432				
	433				
	434				
4991.52	435				
	436				
	437				
	438				
4987.52	439				
	440				
	441				
	442				
4983.52	443				
	444				
	445				
	446				
4979.52	447				
	448				
	449		ML	Clayey SILT	Cobbles 438'-440'
	450				
PROJECT #: 5155.0019.0005			SITE NAME: LF-268		HOLE #: KAFB-0312

HTRW DRILLING LOG			DISTRICT		HOLE NO.		
1. PROJECT # 5155.0019.0005			OMAHA TERC		KAFB-0312		
2. INSPECTOR			ERIC TOW		SHEET 18 OF 19		
ELEV.	DEPT H (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS		
	481						
	482						
4943.52	483						
	484						
	485						
	486						
4939.52	487						
	488						
	489						
	490						
4935.52	491						
	492						
	493		ML	10YR 5/4 yellowish brown clayey SILT, trace medium to fine (+) Sand (~5%), low plasticity, medium dry strength, wet			
	494						
4931.52	495						
	496						
	497						
	498						
4927.52	499						
	500						
	501					Same as above	
	502						
4923.52	503						
	504						
	505						
	506						
4919.52	507		SM	7.5 5/6 strong brown coarse to fine SAND, with medium to fine Gravel (10-20%), and Silt (20-30%), angular to subrounded, wet	Good water production zone, ~20 gpm		
	508						
	509						
	510						
PROJECT #: 5155.0019.0005			SITE NAME: LF-268		HOLE #: KAFB-0312		

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			2. INSPECTOR		SHEET 19 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
4915.52	511		GM	10YR 5/4 brown coarse to fine SAND and GRAVEL, little Silt (10-20%), angular to subrounded, wet	More gravel at 510' Highly transmissive zone Milky water during drilling
	512				
	513				
	514				
4911.52	515				
	516				
	517				
	518				
4907.52	519				
	520				
	521				
	522				
4903.52	523			COBBLES and BOULDERS	
	524				
	525		GM	10YR 5/4 brown coarse to fine SAND and GRAVEL, little Silt (10-20%), angular to subrounded, wet	Making water approx. 3-5 gpm
	526				
4899.52	527		SW-SC	7.5YR 4/6 strong brown coarse to fine SAND and Silty Clay (~30%), and coarse to fine Gravel (~20%), cobbles, wet	
	528				
	529		CL-ML	7.5 YR 4/6 strong brown SILT and CLAY	
	530				
4895.52	531		SM	7.5 YR 4/4 brown coarse to fine SAND, with medium to fine Gravel (~20%), and Silt (20-25%), wet	
	532				
	533				
	534				
4891.52	535				
	536				
	537				
	538				
	539			Bottom of boring at 538'	
	540				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0312

KAFB-0313

PERCHED
OVERBURDEN
MONITORING WELL

WELL NO. KAFB - 0313

PROJECT: KIRTLAND AFB LF-08/LF-268 AND LF-20 CMS

PROJECT NO.: 5155.0019.0005

BORING NO.: KAFB - 0313

ELEVATION: 5414.27

DATE: 8-10-98

FIELD GEOLOGIST: E. TOW

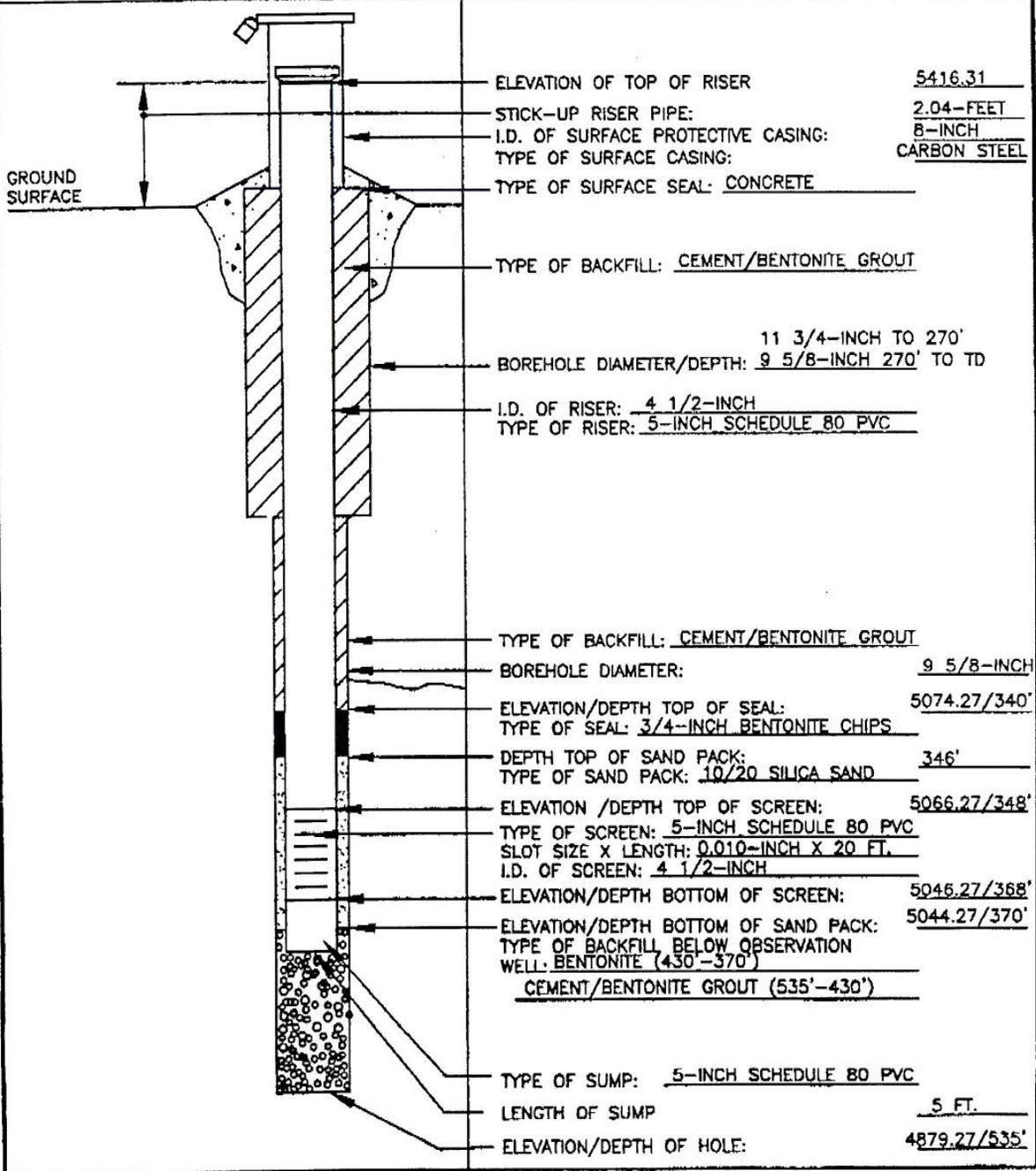
DRILLER: A. SCHOONMAKER

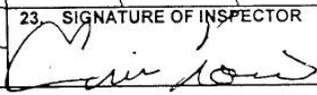
DRILLING

METHOD: AIR ROTARY/CASING HAMMER

DEVELOPMENT

METHOD: SUBMERSIBLE PUMP/SURGE



HTRW DRILLING LOG		DISTRICT		HOLE NO.	
		OMAHA TERC		KAFB-0313	
1. COMPANY NAME		2. DRILLING SUBCONTRACTOR		SHEET 1 OF 19	
FOSTER WHEELER ENVIRONMENTAL CORPORATION		Beylik Drilling Inc.			
3. SITE		4. LOCATION			
Kirtland AFB, LF-08/LF-268		Kirtland AFB Landfill			
5. NAME OF DRILLER		6. MANUFACTURERS DESIGNATION OF DRILL			
A. SCHOONMAKER		Dresser W70			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	11-3/4" DRIVE CASING		1. HOLE LOCATION		
	TELESCOPED TO		N 1467106.1194 / E416371.2270		
	9-5/8" CASING		9. SURFACE ELEVATION 5414.273		
12. OVERBURDEN THICKNESS		10. DATE STARTED		11. DATE COMPLETED	
UNDETERMINED		7-28-98		8-10-98	
13. DEPTH DRILLED INTO ROCK		15. DEPTH GROUNDWATER ENCOUNTERED			
NOT ENCOUNTERED		350 ft (Perched) 525 ft (Regional)			
14. TOTAL DEPTH OF HOLE		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
535 ft		349.80 ft (2hrs) Perched / 441.56 ft (15hrs) Regional			
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)					
18. GEOTECHNICAL SAMPLES		19. TOTAL NUMBER OF CORE BOXES			
		DISTURBED		UNDISTURBED	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC		METALS	
				OTHERS (SPECIFY)	
				OTHERS (SPECIFY)	
				OTHERS (SPECIFY)	
				21. TOTAL CORE REC. %	
22. DISPOSITION OF HOLE		BACKFILLED		MONITORING WELL	
				OTHERS (SPECIFY)	
				PERCHED	
				23. SIGNATURE OF INSPECTOR	
					
PROJECT #:		SITE NAME:		HOLE #:	
5155.0019.0005		LF-08/LF-268		KAFB-0313	

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			2. INSPECTOR		SHEET 2 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS	MATERIAL DESCRIPTION	COMMENTS
	1		SM	10YR 6/4 Light yellowish brown coarse to fine silty SAND (30%), with coarse to fine Gravel (15%), angular to subrounded, dry	
	2				
	3				
5410.27	4				
	5	75 CPM PID/NAB LEL 0% O ₂ 20.4% Co 0%			
	6				
	7				
5406.27	8				
	9				
	10				
5402.27	11				
	12				
	13	64 CPM PID/NAB LEL 0% O ₂ 20.3% Co 0%	SM	10YR 7/3 Very pale brown fine silty SAND, with Gravel (15-20%), angular to subround, dry	Little caliche
	14				
	15				
5398.27	16				
	17				
	18				
5394.27	19				
	20				
	21		ML	7.5YR 6/4 Light brown sandy SILT (> 10%), trace medium fine Gravel, subangular to subrounded, dry	Caliche
	22				
5390.27	23				
	24				
	25	76 CPM PID/NAB LEL 0% O ₂ 20.4% Co 0%	ML	7.5YR 5/6 Strong brown sandy SILT, with Gravel (15-20%), subangular to rounded, s. moist	Harder drilling; cobbles possibly
	26				
5386.27	27				
	28				
	29				
	30				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0313

HTRW DRILLING LOG			DISTRICT		HOLE NO.
			OMAHA TERC		KAFB-0313
1. PROJECT #			2. INSPECTOR		SHEET 3 OF 19
5155.0019.0005			ERIC TOW		
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
5382.27	31				2' boulder at ~35; limestone boulders & cobbles
	32				
	33		ML	10YR 4/6 Strong brown SILT, trace fine Gravel (<10%), subangular to subround, dry	
	34				
5378.27	35			Boulder	
	36				
	37		SM	10YR 6/6 Reddish yellow medium to fine silty SAND, with fine Gravel (15% to 20%), subangular to rounded, dry	
	38				
5374.27	39				
	40				
	41				
	42				
5370.27	43				
	44				
	45				
	46				
5366.27	47				
	48				
	49		SW	10YR 5/3 Brown course to fine SAND, trace Gravel (~5%), subangular to subrounded, dry	
	50				
5362.27	51				
	52				
	53				
	54				
5358.27	55		SM	10YR 6/3 Pale brown silty SAND, and medium to fine Gravel (10-15%), subangular to subround, s. moist	
	56				
	57				
	58				
5354.27	59				
	60				
PROJECT #			SITE NAME:		HOLE #:
5155.0019.0005			LF-08/LF-268		KAFB-0313

HTRW DRILLING LOG			DISTRICT OMAHA TERC		HOLE NO. KAFB-0313
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		SHEET 4 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLAS.	MATERIAL DESCRIPTION	COMMENTS
	61				
	62				
5350.27	63				
	64				
	65				
	66				
5346.27	67		ML	7.5YR 4/6 Strong brown sandy SILT, little fine Gravel, subangular to subround, s. moist	More moist at 72'
	68				
	69				
	70				
5342.27	71				
	72				
	73				
	74				
5338.27	75				
	76				
	77				
	78				
5334.27	79				
	80				
	81		ML	7.5YR 5/4 Brown SILT, moist	Silts & interbedded sands and gravels
	82				
5330.27	83				
	84				
	85				
	86				
5326.27	87				
	88	88 CPM Radmeter			
	89		SP	10YR 5/3 Brown coarse to fine SAND, little fine Gravel (15-20%), angular to subround, dry	
	90				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0313

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			2. INSPECTOR		SHEET 5 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS	MATERIAL DESCRIPTION	COMMENTS
5322.27	91				
	92				
	93				
	94				
5318.27	95				
	96				
	97	96 CPM	ML	7.5YR 5/4 Brown sandy SILT, with medium to fine Gravel (~20-25%), subangular to rounded, moist	
	98				
5314.27	9				
	100				
	101		ML	7.5YR 6/6 Reddish yellow SILT, some fine Sand, moist	
	102				
5310.27	103				
	104				
	105	98 CPM		Boulder	Boulder at 105'
	106		ML	7.5YR 5/4 Brown SILT, moist	
5306.27	107				
	108				
	109				
	110				
5302.27	111				
	112				
	113				
	114				
5298.27	115				
	116		SW	7.5YR 6/3 Light brown coarse to fine SAND, with Gravel (~20%), angular to subrounded, s. moist	
	117				
	118				
5294.27	119				
	120				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0313

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			OMAHA TERC		KAFB-0313
2. INSPECTOR			ERIC TOW		SHEET 6 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
5290.27	121		ML SW	7.5YR 5/4 Brown SILT, trace medium to fine Gravel (<5%), moist	
	122				
	123				
	124				
	125				
5286.27	126			7.5YR 5/6 Strong brown, coarse to fine (+) SAND, with medium fine Gravel (~15%), trace Silt, subangular to subrounded, moist	
	127				
5282.27	128				
	129				
5278.27	130		SW	10YR 6/4 Light yellowish brown coarse to fine SAND, little medium to fine Gravel, subangular to rounded, dry	
	131				
	132				
	133				
	134				
5274.27	135		ML	7.5YR 5/6 Strong brown SILT, some fine Gravel, subangular to rounded, moist	
	136				
	137				
5270.27	138				
	139				
	140				
	141				
	142				
5266.27	143				
	144				
	145				
	146				
	147				
	148				
	149				
	150				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0313

HTRW DRILLING LOG			DISTRICT		HOLE NO.	
1. PROJECT # 5155.0019.0005			2. INSPECTOR		SHEET 7 OF 19	
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS	
5262.27	151		ML	10YR 5/4 Light yellowish brown SILT with fine Sand (~20%), little medium to fine Gravel (10%), subangular to rounded, s. moist	168'-169' Clay layer	
	152					
5258.27	153		SM	7.5YR 5/6 Silty coarse to fine SAND, trace fine Gravel, subangular to rounded, moist		
	154					
	155					
	156					
5254.27	157		SM	7.5YR 4/6 Strong brown silty SAND, little fine Gravel (~10%), moist		
	158					
	159					
5250.27	160					
	161					
	162					
5246.27	163					SM
	164					
	165					
	166					
	167		CL	7.5YR 4/4 Brown gravelly lean CLAY, trace coarse to fine Sand, subrounded, moist		
	168					
5242.27	169		ML	7.5YR 4/6 Strong brown SILT, little fine sand, moist		
	170					
	171					
5238.27	172					
	173					
	174					
5234.27	175					
	176					
	177					
	178					
	179					
	180					
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0313	

HTRW DRILLING LOG			DISTRICT OMAHA TERC		HOLE NO. KAFB-0313
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		SHEET 8 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
	181				
	182				
5230.27	183				
	184				
	185				
	186				
5226.27	187		ML	7.5YR 5/4 Coarse to fine sandy SILT, subangular to rounded, moist	
	188				
	189				
	190				
5222.27	191				
	192				
	193				
	194				
5218.27	195				
	196				
	197				
	198				
5214.27	199		SM	7.5YR 4/6 Strong brown silty (~25%) coarse to fine SAND, subangular to subrounded, moist	
	200				
	201		ML	7.5YR 4/6 Strong brown SILT, with medium to fine (+) Sand (~15%), subangular to rounded, moist	
	202				
5210.27	203				
	204				
	205				
	206				
5206.27	207				
	208				
	209				
	210		CL	7.5YR 4/4 lean CLAY, moist	
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0313

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			OMAHA TERC		KAFB-0313
			2. INSPECTOR		SHEET 9 OF 19
			ERIC TOW		
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
5202.27	211		ML	7.5YR 4/6 Strong brown SILT, with Sand (~25%), trace fine Gravel (~5%) subangular to rounded, moist	
	212				
	213				
	214				
5198.27	215				
	216				
	217				
	218				
5194.27	219				
	220				
	221				
	222				
5190.27	223				
	224				
	225				
	226				
5186.27	227				
	228				
	229				
	230				
5182.27	231				
	232				
	233				
	234				
5178.27	235				
	236				
	237				
	238				
5174.27	239				
	240				

PROJECT #: 5155.0019.0005

SITE NAME: LF-08/LF-268

HOLE #: KAFB-0313

HTRW DRILLING LOG			DISTRICT OMAHA TERC		HOLE NO. KAFB-0313
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		SHEET 10 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
	241		SM	7.5 YR 6/4 Light brown coarse to fine silty (20% silt) SAND, with medium to fine (+) Gravel (~25%), angular to rounded, dry	Change at 240'
	242				
	243				
5170.27	244				
	245				
	246				
5166.27	247				
	248				
	249				
5162.27	252				
	253		SM	7.5 YR 5/4 Brown silty SAND, with Gravel (10-15%), subangular to subround, moist	
	254				
	255				
5158.27	256				
	257				
	258				
5154.27	259				
	260				
	261		ML	7.5 YR 5/4 Brown SILT, little medium to fine Sand, medium to fine Gravel (~10%), subangular to rounded, dry	
	262				
5150.27	264				
	265				
	266		SM	7.5 YR 5/6 silty coarse to fine (+) SAND, fine Gravel (~10%), moist	268' - 274'
	267				
5146.27	268				
	269				
	270				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0313

HTRW DRILLING LOG			DISTRICT OMAHA TERC		HOLE NO. KAFB-0313		
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		SHEET 11 OF 19		
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS	MATERIAL DESCRIPTION	COMMENTS		
5142.27	271		SW	7.5YR 5/4 Brown coarse to fine SAND, little fine Gravel, angular to subrounded, s. moist	Clay balls in cuttings		
	272						
	273						
	274						
5138.27	275						
	276						
	277						
	278						
5134.27	279						
	280						
	281		SW-SM	10YR 6/6 Brownish yellow coarse to fine SAND, little medium to fine Gravel, little Silt, subangular to subrounded, moist			
	282						
5130.27	283						
	284						
	285						
	286						
5126.27	287						
	288						
	289						
	290						
5122.27	291						
	292						
	293						
	294						
5118.27	295					ML	10YR 4/6 Dark yellowish brown clay SILT, and coarse to fine Sand (~50%) some medium to fine Gravel, moist
	296						
	297						
	298						
5114.27	299		CL	7.5YR 4/6 strong brown silty CLAY			
	300						

PROJECT #:
5155.0019.0005

SITE NAME:
LF-08/LF-268

HOLE #:
KAFB-0313

HTRW DRILLING LOG			DISTRICT		HOLE NO.	
1. PROJECT # 5155.0019.0005			2. INSPECTOR		SHEET 12 OF 19	
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS	
	301		SW	7.5YR 4/6 Strong brown coarse to fine SAND, with fine Gravel (~20%), subangular to rounded, s. moist	Change at 300'	
	302					
5110.27	303					
	304					
	305					
	306					
5106.27	307		ML	10YR 6/6 Brownish SILT, some fine Sand, moist		
	308					
	309					
	310					
5102.27	311					
	312					
	313					
	314					
5098.27	315					
	316					
	317					
	318					
5094.27	319					
	320					
	321		SW-SM	10YR 5/4 Yellowish brown coarse to fine SAND, little Silt, little medium to fine Gravel (10%), subangular to subround, moist		Mud on tip of tag line, no W.L. reading 326'; stopped at 12:20 to wait for water Start drilling at 12:45 till change
	322					
5090.27	323					
	324					
	325					
	326					
5086.27	327					
	328					
	329					
	330					
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0313	

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			OMAHA TERC		KAFB-0313
2. INSPECTOR			ERIC TOW		SHEET 13 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
5082.27	331		ML	10YR 4/4 Dark yellowish brown SILT, little fine Sand (~10%), moist	Intermittent clay layer at 300'
	332				
	333				
	334				
5078.27	335		SW-SM	10YR 4/6 Dark yellowish brown coarse to fine (+) SAND, little Silt (5-15%), little medium to fine Gravel, angular to subrounded, moist	340' Clay; stopped drilling at 320' to wait for water Pulled back 20'
	336				
	337				
	338				
5074.27	339				
	340				
	341				
	342				
5070.27	343				
	344				
	345				
	346				
5066.27	347		GM	10YR 4/4 Dark yellowish brown SILT (~15%), medium to fine Gravel, little coarse to fine Sand, subangular to rounded, v. wet	W.L. measured at 249.80 bgs, ~ 2hrs stabilization time
	348				
	349				
	350				
5062.27	351				
	352				
	353				
	354				
5058.27	355				
	356				
	357				
	358				
5054.27	359				
	360				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0313

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT #			2. INSPECTOR		
5155.0019.0005			OMAHA TERC		KAFB-0313
5155.0019.0005			ERIC TOW		SHEET 14 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
	361		CL	10YR 5/4 Yellowish brown lean CLAY, some fine Sand, moist	
	362				
5050.27	363				
	364				
	365				
	366				
5046.27	367				
	368				
	369				
	370				
5042.27	371		SM	Coarse to fine silty SAND, with medium to fine Gravel (~25%), subangular to subrounded, wet	
	372				
	373				
	374				
5038.27	375				
	376				
	377				
	378				
5034.27	379				
	380				
	381				
	382				
5030.27	383				
	384				
	385				
	386				
5026.27	387				
	388				
	389				
	390				
PROJECT #:			SITE NAME:		HOLE #:
5155.0019.0005			LF-08/LF-268		KAFB-0313

HTRW DRILLING LOG			DISTRICT		HOLE NO.	
1. PROJECT # 5155.0019.0005			OMAHA TERC		KAFB-0313	
2. INSPECTOR			ERIC TOW		SHEET 15 OF 19	
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS	
5022.27	391					
	392					
	393					
	394					
5018.27	395					
	396					
	397					
5014.27	398					
	399					
	400					
	401		CL	7.5YR 6/8 Strong brown silty CLAY, some medium to fine Sand, moist	Wet with cobbles at bottom. High water producer	
	402					
5010.27	403		SW-SM	Coarse to fine SAND and SILT, some medium to fine Gravel, subangular to subrounded, wet		Mixed sands, silts, and gravel
	404					
	405					
5006.27	406					
	407					
5002.27	408					
	409					
	410					
	411					
4998.27	412		SW-SM	Coarse to fine SAND and SILT, some medium to fine Gravel, subangular to subrounded, wet	Low water producer	
	413					
	414					
4994.27	415		CL	7.5YR 4/6 Strong brown silty CLAY, moist		
	416					
	417					
	418					
	419					
	420					
PROJECT # 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0313	

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			OMAHA TERC		KAFB-0313
2. INSPECTOR			ERIC TOW		SHEET 16 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
	421				Observation of mud and cuttings
	422				
4990.27	423				
	424				
	425				
	426				
4986.27	427		SM-CL	Coarse to fine silty SAND with occasional thin (~ 1'-2') Gravelly layers, subangular to subrounded, interbedded with lean Clay layers, moist	No good water producing zones between 420' and 457' Zones were low water producers.
	428				
	429				
	430				
4982.27	431				
	432				
	433				
	434				
4978.27	435				
	436				
	437				
	438				
4974.27	439				
	440				
	441				
	442				
4970.27	443				
	444				
	445				
	446				
4966.27	447				
	448				
	449				
	450				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0313

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT #			2. INSPECTOR		SHEET 17 OF 19
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
5155.0019.0005			OMAHA TERC		KAFB-0313
5155.0019.0005			ERIC TOW		SHEET 17 OF 19
4962.27	451		CL	7.5YR 4/6 Strong brown lean CLAY, moist	448'-457' Injected water to bring up cuttings ~455' Casing floated down easily to 460'
	452				
	453				
	454				
4958.27	455				
	456				
	457		SW	7.5YR 5/4 Brown coarse to fine SAND, with medium to fine Gravel (10-20%), subangular to rounded, wet	457'-468' High water producing zone
	458				
4954.27	459				
	460				
	461				
	462				
4950.27	463				
	464				
	465				
	466				
4946.27	467		CL	7.5YR 6/4 Strong brown lean CLAY, moist	No significant water production
	468				
	469				
	470				
4942.27	471				
	472				
	473				
	474				
4938.27	475				
	476				
	477				
	478				
4934.27	479				
	480				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0313

HTRW DRILLING LOG			DISTRICT OMAHA TERC		HOLE NO. KAFB-0313	
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		SHEET 18 OF 19	
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS	
	481		SM	10YR 4/4 Dark yellowish brown silty SAND, with medium to fine Gravel (~15%), subangular to rounded, wet	Some thin interbedded silty sand & gravel zones	
	482					
4930.27	483					
	484					
	485					
	486					
4926.27	487		CL	Silty CLAY, moist		
	488					
	489					
	490					
4922.27	491					
	492					
	493					
	494					
4918.27	495		SW	Coarse to fine SAND, little medium to fine Gravel, subangular to rounded, wet	Thin gravely layer 495'-497'	
	496					
	497		CL	Silty CLAY, moist		
	498					
4914.27	499					
	500					
	501					
	502					
4910.27	503					
	504					
	505		SW-SM	10YR 5/3 Brown coarse to fine SAND, little Silt, little medium to fine Gravel, subangular to rounded, wet	Low water producing	
	506					
4906.27	507					
	508					
	509					
	510					
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268			HOLE #: KAFB-0313

HTRW DRILLING LOG			DISTRICT		HOLE NO.			
1. PROJECT # 5155.0019.0005			OMAHA TERC		KAFB-0313			
2. INSPECTOR			ERIC TOW		SHEET 19 OF 19			
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS			
4902.27	511		CL	10YR 4/6 Strong brown silty CLAY, stiff, s. moist	Very hard driving casing 507'-518' Injected water 507'-518' Bottom of 9 5/8" casing at 518'; drilled open hole below			
	512							
	513							
	514							
4898.27	515							
	516							
	517							
	518							
4894.27	519							
	520							
	521							
	522							
4890.27	523					SW	Coarse to medium SAND, some medium to fine Gravel, subangular to rounded, wet	High water producer
	524							
	525							
	526							
4886.27	527		CL	10YR 5/4 Brown silty CLAY	High water producer			
	528							
	529							
	530							
4882.27	531			Coarse to medium SAND, some medium to fine Gravel, subangular to rounded, wet, occasional thin soft Clay layers	High water producer			
	532							
	533							
	534							
4878.27	535			Bottom of boring at 535'				
	536							
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0313			

KAFB-0314

PERCHED
OVERBURDEN
MONITORING WELL SHEET

WELL NO. KAFB - 0314

PROJECT: KIRTLAND AFB LF-08/LF-268 AND LF-20 CMS

DRILLER: A. SCHOONMAKER

PROJECT NO.: 5155.0019.0005

BORING NO.: KAFB - 0314

DRILLING

ELEVATION: 5451.24

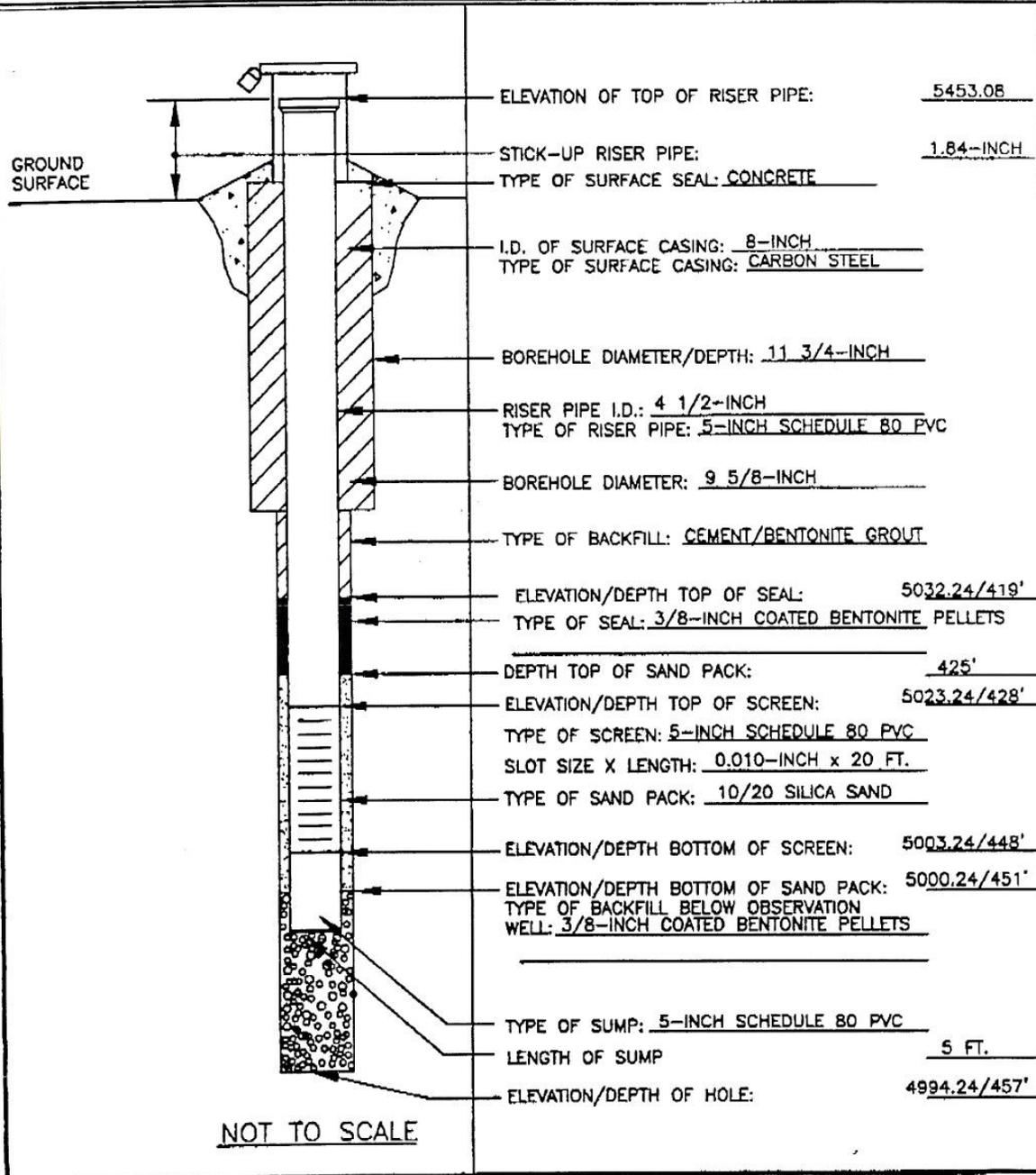
DATE: 9-16-98

METHOD: AIR ROTARY/CASING HAMMER

FIELD GEOLOGIST: E. TOW

DEVELOPMENT

METHOD: SUBMERSIBLE PUMP/SURGE



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** TOTAL PAGE.05 **

HTRW DRILLING LOG		DISTRICT OMAHA TERC		HOLE NO. KAFB-0314		
1. COMPANY NAME FOSTER WHEELER ENVIRONMENTAL CORPORATION		2. DRILLING SUBCONTRACTOR Beylik Drilling Inc.		SHEET 1 OF 17		
3. SITE Kirtland AFB, LF-08/LF-268		4. LOCATION Kirtland AFB Landfill				
5. NAME OF DRILLER A. SCHOONMAKER		6. MANUFACTURERS DESIGNATION OF DRILL Dresser W70				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Air Rotary		1. HOLE LOCATION N 1468521.1669 / E 418395.3670			
	Casing Hammer		9. SURFACE ELEVATION 5451.238			
	9-5/8 inch casing					
12. OVERBURDEN THICKNESS UNDETERMINED		15. DEPTH GROUNDWATER ENCOUNTERED 419.0'				
13. DEPTH DRILLED INTO ROCK NOT ENCOUNTERED		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED 419.5' Elapsed Time 48hrs				
14. TOTAL DEPTH OF HOLE 457' bgs		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)				
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHERS (SPECIFY)	OTHERS (SPECIFY)	OTHERS (SPECIFY)
22. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHERS (SPECIFY)	23. SIGNATURE OF INSPECTOR	
			✓			
PROJECT #: 5155.0019.0005		SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314		

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			OMAHA TERC		KAFB-0314
2. INSPECTOR			ERIC TOW		SHEET 2 OF 17
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
	1		SM	7.5YR 6/4 Light brown silty fine SAND, trace coarse to medium Sand, trace medium to fine Gravel, angular to subrounded, dry	
	2				
5447.24	3				
	4				
	5				
	6				
5443.24	7		SM	7.5YR 5/6 Strong brown, otherwise same as above	
	8				
	9				
	10				
5439.24	11				
	12				
	13				
	14				
5435.24	15		GW-GM	7.5YR 7/4 Pink coarse to fine GRAVEL, little coarse to fine Sand (~15%), little Silt (~10%), angular to subrounded, dry	
	16				
	17				
	18				
5431.24	19				
	20				
	21				
	22				
5427.24	23				
	24				
	25				
	26				
5423.24	27		ML	7.5YR 5/4 Brown SILT, little coarse to fine gravel, angular to rounded, s. moist	
	28				
	29				
	30				
PROJECT # 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			2. INSPECTOR		
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS	MATERIAL DESCRIPTION	COMMENTS
5419.24	31		ML	7.5YR 7/4 Pink medium to fine gravelly SILT, with coarse to fine Sand (~15%), angular to subrounded, dry	Change at 31'
	32				
	33				
	34				
5415.24	35				
	36				
	37		ML	7.5YR 5/3 Brown, same as above, slightly moist	
	38				
5411.24	39				
	40				
	41				
	42				
5407.24	43		SW	7.5YR 6/4 Light brown coarse to fine SAND, with medium to fine Gravel (15-25%), trace Silt, angular to subrounded, dry	
	44				
	45				
	46				
5403.24	47				
	48				
	49		GW	7.5YR 6/4 Light brown medium to fine GRAVEL, with coarse to fine Sand (~25%), trace Silt, angular to subrounded, dry	
	50				
5399.24	51				
	52				
	53				
	54				
5395.24	55				
	56				
	57				
	58				
5391.24	59				
	60				
PROJECT # 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314

HTRW DRILLING LOG			DISTRICT		HOLE NO.		
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		KAFB-0314		
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS		
	61				Change at 60'		
	62						
5387.24	63						
	64						
	65		ML	7.5YR 5/4 Brown SILT, trace coarse to fine Sand, trace fine Gravel, subangular to subrounded, s. moist			
	66						
5383.24	67						
	68						
	69						
	70						
5379.24	71					Same as above	
	72						
	73						
	74						
5375.24	75						
	76						
	77						
	78						
5371.24	79						Same as above
	80						
	81						
	82						
5367.24	83						
	84						
	85		ML	7.5YR 4/6 Strong brown SILT, trace coarse to fine Sand, trace fine Gravel, subangular to subrounded, s. moist			
	86						
5363.24	87						
	88						
	89						
	90						
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314		

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			OMAHA TERC		KAFB-0314
2. INSPECTOR			ERIC TOW		SHEET 5 OF 17
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
5359.24	91		SM	7.5YR 4/4 Brown coarse to fine silty SAND, with fine Gravel (~10%), angular to subrounded, moist	
	92				
	93				
	94				
5355.24	95		SW	7.5YR 5/3 Brown coarse to fine SAND, with medium to fine Gravel (~15%), angular to rounded, dry	
	96				
	97				
	98				
5351.24	99			Same as above	
	100				
	101				
5347.24	102			Same as above	
	103				
	104				
5343.24	105			Same as above	
	106				
	107				
	108				
5339.24	109			Same as above	
	110				
	111				
	112				
5335.24	113		Same as above		
	114				
	115				
	116				
5331.24	117		Same as above		
	118				
	119				
	120				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314

HTRW DRILLING LOG			DISTRICT		HOLE NO.			
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		KAFB-0314			
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS			
5327.24	121		SP	7.5YR 5/4 Brown medium to fine SAND, trace medium to fine Gravel, angular to subrounded, dry	Change at 120'			
	122							
	123							
	124							
	125							
	126							
5323.24	127							
	128							
5319.24	129					SW	7.5YR 6/4 Light brown coarse to fine SAND, with medium to fine Gravel (~20%), trace Silt, angular to subrounded, dry	
	130							
	131							
	132							
5315.24	133							
	134							
	135		ML	7.5YR 4/6 Strong brown SILT, some medium to fine Gravel, trace coarse to fine Sand, angular to subrounded, moist				
	136							
5311.24	137							
	138							
	139							
5307.24	140							
	141							
	142							
	143							
5303.24	144					SW-SM	7.5YR 5/6 Strong brown SAND, some medium to fine Gravel, little Silt, angular to subrounded, moist	
	145							
	146							
	147							
	148							
	149							
	150							
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314			

HTRW DRILLING LOG			DISTRICT		HOLE NO.			
1. PROJECT # 5155.0019.0005			OMAHA TERC		KAFB-0314			
2. INSPECTOR			ERIC TOW		SHEET 7 OF 17			
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS			
5299.24	151		ML	7.5YR 5/6 Strong brown coarse to fine sandy SILT, with medium to fine Gravel (~15%), angular to subrounded, moist	Change at 150'			
	152							
	153							
	154							
5295.24	155							
	156							
5291.24	157					SW-SM	7.5YR 5/4 Brown coarse to fine SAND, little Silt (~10%), with coarse to fine Gravel (~20%), angular to subrounded, dry	
	158							
	159							
	160							
5287.24	161							
	162							
	163							
5283.24	164							
	165							
	166							
	167							
5279.24	168							
	169							
	170							
	171							
5275.24	172							
	173							
	174							
5271.24	175		ML	7.5YR 5/6 Strong brown coarse to fine sandy SILT, with medium to fine Gravel (~15%), angular to subrounded, moist				
	176							
5271.24	177							
	178							
5271.24	179							
	180							
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314			

HTRW DRILLING LOG			DISTRICT OMAHA TERC		HOLE NO. KAFB-0314
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		SHEET 8 OF 17
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
	181		ML	Same as above	
	182				
5267.24	183				
	184				
	185				
	186				
5263.24	187				
	188				
	189				
	190				
5259.24	191				
	192				
	193				
	194				
5255.24	195		ML	7.5YR 5/6 Strong brown silty trace coarse to fine SAND, trace medium to fine Gravel, angular to subrounded, moist	
	196				
5251.24	197		SW	7.5YR 5/4 Brown coarse to fine SAND, little medium to fine Gravel, angular to subrounded, dry	
	198				
	199				
	200				
5247.24	201		SW	7.5YR 5/4 Brown silty coarse to fine SAND, with medium to fine Gravel (~15-20%), trace Silt, angular to subrounded, dry	
	202				
	203				
	204				
	205				
	206				
5243.24	207				
	208				
	209				
	210				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			OMAHA TERC		KAFB-0314
2. INSPECTOR			ERIC TOW		SHEET 9 OF 17
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
5239.24	211		SW-SM	7.5YR 6/4 Light brown coarse to fine SAND, with medium to fine Gravel (~15-20%), little Silt (~10%), angular to subrounded, dry	
	212				
	213				
	214				
5235.27	215				
	216				
	217				
	218				
5231.24	219		SM	7.5YR 4/6 Strong brown silty coarse to fine SAND, little Gravel (~10%), angular to subrounded, moist	
	220				
	221				
	222				
5227.24	223				
	224				
	225				
	226				
5223.24	227				
	228				
	229				
	230				
5219.24	231				
	232				
	233				
	234				
5215.24	235				
	236				
	237				
	238				
5211.24	239				
	240				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314

HTRW DRILLING LOG			DISTRICT OMAHA TERC		HOLE NO. KAFB-0314
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		SHEET 10 OF 17
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
	241				
	242				
5207.24	243		SM-SW	7.5YR 4/6 Strong brown coarse to fine SAND, with Silt (~25%), some medium to fine Gravel (~10%), angular to rounded, moist	
	244				
	245				
	246				
5203.24	247				
	248				
	249				
	250				
5199.24	251				
	252				
	253		SM-SW	7.5YR 5/4 Brown coarse to fine SAND, some Silt (~20%), with medium to fine Gravel (~20%), angular to rounded, dry	
	254				
5195.24	255				
	256				
	257				
	258				
5191.24	259				
	260				
	261		SM-SW	7.5YR 5/6 Strong brown, same as above, moist	
	262				
5187.24	263				
	264				
	265				
	266				
5183.24	267		SW-SM	7.5YR 6/3 Light brown coarse to fine SAND, with medium to fine Gravel (~15%), little Silt (~10%), subangular to rounded, dry	
	268				
	269				
	270				
PROJECT # 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314

HTRW DRILLING LOG			DISTRICT		HOLE NO.	
			OMAHA TERC		KAFB-0314	
1. PROJECT #			2. INSPECTOR		SHEET 11 OF 17	
5155.0019.0005			ERIC TOW			
ELEV	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS	
5179.24	271		SM	7.5YR 4/4 Brown silty coarse to fine SAND (~20%), with medium to fine Gravel (~15%), subangular to rounded, moist	265'-272' Interbedded layers of sand and gravel with cemented layers of sand and gravel 1'-2' thick	
	272					
	273					
	274					
5175.24	275		SW	7.5YR 6/3 Light brown coarse to fine SAND, little medium to fine Gravel, trace Silt, angular to subrounded, dry		
	276					
	277					
	278					
5171.24	279					
	280					
	281					
	282					
5167.24	283				ML	7.5YR 4/6 Strong brown SILT, with coarse to fine Sand (~15%), fine Gravel (~5%), angular to subround, moist
	284					
	285					
	286					
5163.24	287					
	288					
	289					
	290					
5159.24	291					
	292					
	293					
	294					
5155.24	295					
	296					
	297					
	298					
5151.24	299		ML	7.5YR 4/6 Strong brown SILT, coarse to fine Sand (<5%), moist		
	300					
PROJECT #			SITE NAME:		HOLE #:	
5155.0019.0005			LF-08/LF-268		KAFB-0314	

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		KAFB-0314
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
	301				
	302				
5147.24	303		ML	7.5YR 5/3 Brown fine sandy SILT (50%), angular to subrounded, dry, cemented	
	304				
	305				
	306				
5143.24	307				
	308				
	309		SM	7.5YR 5/3 Brown coarse to fine silty SAND (25%), fine Gravel (~5%), subangular to rounded, dry	
	310				
5139.24	311				
	312				
	313				
	314				
5135.24	315				
	316				
	317				
	318				
5131.24	319		ML	7.5YR 6/6 Reddish yellow SILT, with coarse to fine Sand (~25%), trace fine Gravel (<5%), angular to rounded, s. moist	Some slightly siltier layers ~1' thick
	320				
	321				
	322				
5127.24	323				
	324				
	325				
	326				
5123.24	327				
	328				
	329				
	330				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			OMAHA TERC		KAFB-0314
2. INSPECTOR			ERIC TOW		SHEET 13 OF 17
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
5119.24	331		SM	7.5YR 6/4 Light brown silty coarse to fine SAND, trace fine Gravel, s. moist	
	332				
	333				
	334				
5115.24	335				
	336				
	337				
	338				
5111.24	339				
	340				
	341		SM	7.5YR 6/4 Light brown coarse to fine silty SAND, fine Gravel (<10%), angular to subrounded, moist	
	342				
5107.24	343				
	344				
	345				
	346				
5103.24	347				
	348				
	349				
	350				
5099.24	351		SW-SM	7.5YR 6/3 Light brown coarse to fine SAND, with medium to fine Gravel (~20%), trace Silt (~10%), angular to rounded, dry	
	352				
	353				
	354				
5095.24	355				
	356				
	357				
	358				
5091.24	359				
	360				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314

HTRW DRILLING LOG			DISTRICT		HOLE NO.	
1. PROJECT # 5155.0019.0005			2. INSPECTOR		SHEET 14 OF 17	
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS	
	361					
	362					
5087.24	363					
	364					
	365					
	366					
5083.24	367		ML	7.5YR 5/6 Strong brown coarse to fine sandy SILT, trace fine Gravel (<5%), angular to subrounded, moist		
	368					
	369					
	370					
5079.24	371					
	372					
	373					
	374					
5075.24	375					Same as above
	376					
	377					
	378					
5071.24	379					
	380					
	381					
	382					
5067.24	383					
	384					
	385		ML	7.5YR 5/6 Strong brown SILT, trace coarse to fine Sand (<5%), moist		
	386					
5063.24	387					
	388					
	389					
	390					
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314	

HTRW DRILLING LOG			DISTRICT		HOLE NO.
1. PROJECT # 5155.0019.0005			2. INSPECTOR		SHEET 15 OF 17
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS
5059.24	391		CL	7.5YR 4/3 Brown silty CLAY, trace coarse to fine Sand (<10%), moist	Change at 390' stopped rotation of drill bit High drill stem torque readings
	392				
	393		CL	7.5YR 5/4 Brown silty CLAY, with coarse to fine Sand (~20%), fine Gravel (<5%), moist, stiff	
	394				
5055.24	395		CL		
	396				
	397		CL		
	398				
5051.24	399		CL		
	400				
	401		CL		
	402				
5047.24	403		CL		
	404				
	405		ML	7.5YR 5/4 Brown sandy SILT (30%), angular to subrounded, moist	
	406				
5043.24	407		ML		
	408				
	409		ML		
	410				
5039.24	411		ML		
	412				
	413		ML		
	414				
5035.24	415		ML	7.5YR 4/6 Strong brown sandy (~25%) SILT, little medium to fine Gravel (~10%), angular to subrounded, moist	
	416				
	417		ML		
	418				
5031.24	419		ML		
	420				
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314

HTRW DRILLING LOG			DISTRICT		HOLE NO.		
			OMAHA TERC		KAFB-0314		
1. PROJECT #			2. INSPECTOR		SHEET 16 OF 17		
5155.0019.0005			ERIC TOW				
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS		
	421				Water producing zone beginning at 432'		
	422						
5027.24	423		SM	7.5YR 4/4 Brown silty (20-30%) medium to fine (+) SAND, trace fine Gravel, angular to rounded, moist			
	424						
	425						
	426						
5023.24	427						
	428						
	429						
	430						
5019.24	431						
	432						
	433		GP-GM	7.5YR 4/3 Brown coarse to fine GRAVEL and coarse to fine Sand (~30%), Silt (~10%), angular to rounded, wet			
	434						
5015.24	435						
	436						
	437						
	438						
5011.24	439						
	440						
	441						
	442						
5007.24	443		GP-GM	Same as above with intermittent clay layers 6" to 1' thick			
	444						
	445						
	446						
5003.24	447						
	448						
	449						
	450						
PROJECT #					SITE NAME:		HOLE #:
5155.0019.0005					LF-08/LF-268		KAFB-0314

KAFB-0307 to KAFB-0315

HTRW DRILLING LOG			DISTRICT OMAHA TERC		HOLE NO. KAFB-0314	
1. PROJECT # 5155.0019.0005			2. INSPECTOR ERIC TOW		SHEET 17 OF 17	
ELEV.	DEPTH (feet)	FIELD SCREEN RESULTS	USCS CLASS.	MATERIAL DESCRIPTION	COMMENTS	
4999.24	451				454' Less water production	
	452					
	453					
	454					
4995.24	455					
	456					
	457					
	458					
4991.24	459					Bottom of hole at 457'
	460					
	461					
	462					
	463					
	464					
	465					
	466					
	467					
	468					
	469					
	470					
	471					
	472					
	473					
	474					
	475					
	476					
	477					
	478					
	479					
	480					
PROJECT #: 5155.0019.0005			SITE NAME: LF-08/LF-268		HOLE #: KAFB-0314	

Northy 1469305.61
 Easty 418413.54

FIGURE
 OVERBURDEN
 MONITORING WELL SHEET

WELL NO. KAFB - 0315

PROJECT: KIRTLAND AFB Landfill (LF-268)

PROJECT NO.: 5155.0030.0001

BORING NO.: KAFB - 0315

ELEVATION: 5463.44

DATE: 9/6/00 - 9/8/00

FIELD GEOLOGIST: Bill Wholey (HGS) / Jill Jefferson (FWENC)

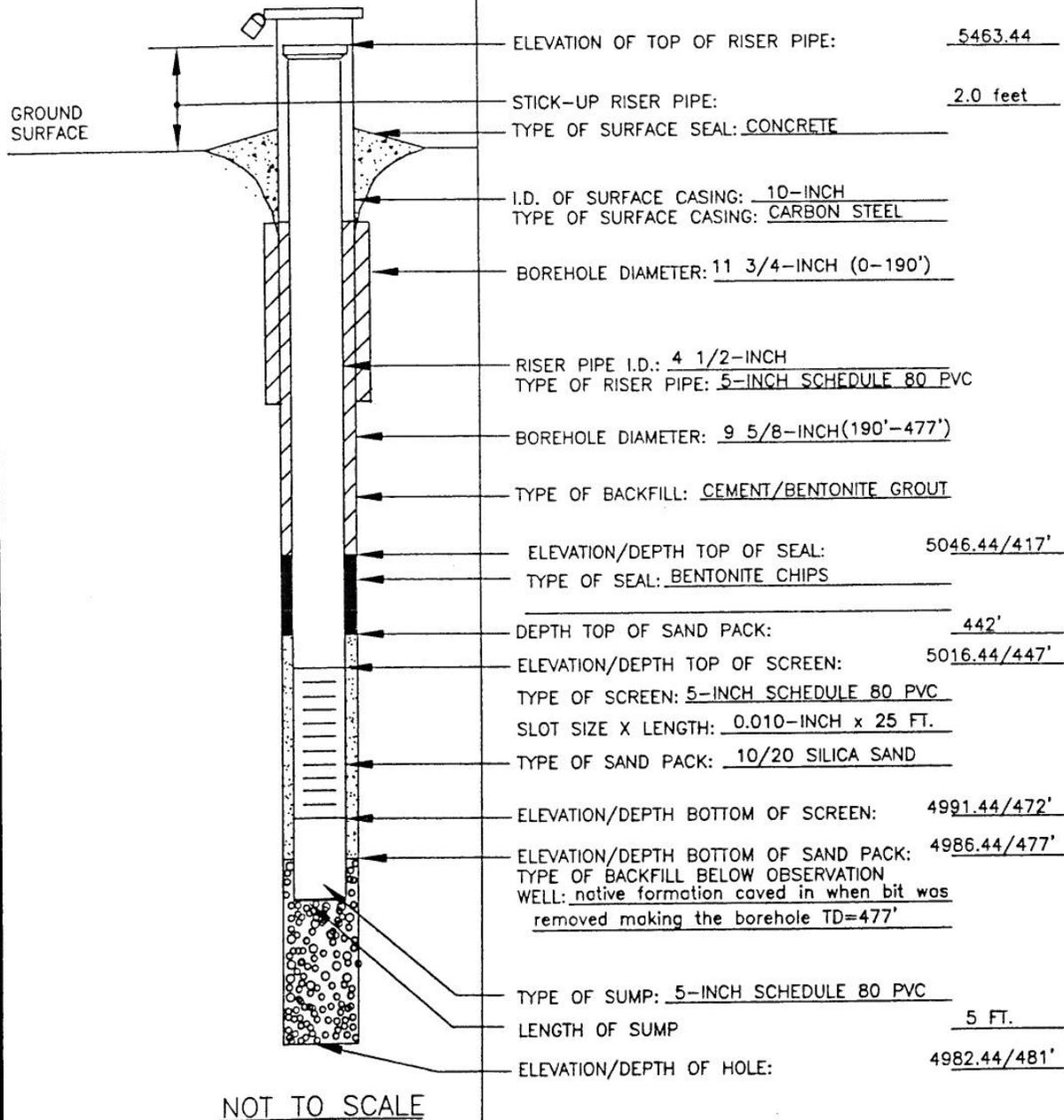
DRILLER: Marion Phillips

DRILLING

METHOD: AIR ROTARY/CASING HAMMER

DEVELOPMENT

METHOD: SUBMERSIBLE PUMP/SURGE



J:\PROJECTS\KIRTLAND\LTM\FY00WELLS\MW constrdiag.DWG

HTRW DRILLING LOG		DISTRICT <input checked="" type="checkbox"/> Major <input type="checkbox"/> Regional		Speedstar 30K Air Rotary Casing Hammer Drill		HOLE NUMBER KAFB-0315	
1. COMPANY NAME Foster Wheeler Environmental		2. DRILL SUBCONTRACTOR Water Development Corporation		SHEET 1		SHEETS of 50	
3. PROJECT 5155.0030.0001 A1200		4. LOCATION KAFB Active Landfill (LF-268)					
NAME OF DRILLER Marion Phillips		6. MANUFACTURER'S DESIGNATION OF DRILL Speedstar 30K Air Rotary Casing Hammer Drill Rig					
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION NE of LF-268					
11' 3/4" steel casing from surface to 190' bgs		9. SURFACE ELEVATION					
9' 5/8" steel casing from 190' to 481' (TD)							
9' 5/8" drill bit							
12. OVERBURDEN THICKNESS		10. DATE STARTED 8/28/00		11. DATE COMPLETED 9/8/00			
13. DEPTH DRILLED INTO ROCK N/A		15. DEPTH GROUNDWATER ENCOUNTERED GV initially encountered at 405'. Geophysical logs show perched zone at 454'.					
14. TOTAL DEPTH OF HOLE 481 feet		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED 2 hours after drilling completed, DTW 433.5' bgs					
18. GEOTECHNICAL SAMPLES N/A		DISTURBED		UNDISTURBED		19. TOTAL NUMBER OF CORE BOXES N/A	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
No samples were collected during drilling		N/A	N/A	N/A			
22. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
			KAFB-0315				
LOCATION SKETCH/COMMENTS						SCALE	
PROJECT 5155.0030.0001 A1200				HOLE NO. KAFB-0315			

ENGINEERING FORM 5056A-R, AUG 94

(Proponent: CECW-EQ)

HIRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 2 of 50 SHEETS

ELEV. (e)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	1	Medium Brown Sandy SILT, dry (ML)					
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

NG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 3 of SHEETS 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	11	Same as above					
	12						
	13						
	14						
	15	Medium brown Sandy SILT with gravel, dry, coarse sand, (ML)					
	16						
	17						
	18						
	19	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

AIRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT **5155.0030.0001 A1200**

INSPECTOR **Jill Jefferson**

SHEET **4** SHEETS **of 50**

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	21	light brown Silty SAND with gravel (<1" <SM)					
	22						
	23						
	24						
	25						
	26	Silty SAND with lots of gravel (<1/4" <SM)					
	27						
	28						
	29	Same as Above					

PROJECT **5155.0030.0001 A1200**

HOLE NO. **KAFB-0315**

LOG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 5 of SHEETS 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	31	Same as above					
	32	reddish brown Sandy SIL, some fine gravel, some moisture (ML)					
	33						
	34						
	35	Tan Sandy SIL, less moisture, gravel (<1") (ML)					
	36						
	37	reddish brown SIL with some fine Sand, very little gravel, little moisture (ML)					
	38						
	39						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HIRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 6 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	41	reddish brown SILT, with little Sand, some moisture, very little gravel (ML)					
	42						
	43						
	44						
	45	Same as above					
	46						
	47	reddish brown SILT with Sand and gravel ($<<1/4"$), less moisture (ML)					
	48						
	49	SILT and GRAVEL, light brown, dry (GP-ML)					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 7 of SHEETS 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (*)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	51	reddish brown SILT and GRAVEL (<1/2") (ML-GP)					
	52						
	53						
	54						
	55	reddish brown SILT with some fine Sand and gravel (<1/4") (2%) (ML)					
	56						
	57						
	58						
	59	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 8 of SHEETS 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	61	reddish brown SILT with some fine Sand and gravel (<1/2"), very little moisture (ML)					
	62						
	63						
	64						
	65	reddish brown SILT with fine sand, NO gravel, very little moisture (ML)					
	66						
	67	light brown SILT and GRAVEL with coarse Sand (ML-GP)					
	68						
	69						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

LOG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 9 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	71	Same as above					
	72						
	73						
	74						
	75	reddish brown poorly graded GRAVEL with Silt and Sand<(1.5) (GP-GM)					
	76						
	77						
	78	Same as above but gravel size is smaller (GP-GM)					
	79						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 10 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	81	reddish brown SILT with Sand and Gravel (<1/4"), little moisture (ML)					
	82						
	83						
	84						
	85	reddish brown SILT, little moisture, very little gravel (1" in size) (ML)					
	86						
	87						
	88						
	89	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

NG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 11 of SHEETS 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	91	GRAVEL (<1") with Silt and Sand (GP-GM)					
	92						
	93						
	94						
	95	Gravelly SILT with Sand, dry, light brown in color (ML)					
	96						
	97						
	98						
	99	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 12 of 50 SHEETS

ELEV. (e)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (a)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	101	Same as above					
	102						
	103						
	104						
	105	poorly graded GRAVEL with Sand and Silt (GP-GM)					
	106						
	107	reddish brown gravelly SILT (ML)					
	108						
	109						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

LOG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 13 of SHEETS 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	111	reddish brown Sandy SILT with gravel (<1"), little moisture (ML)					
	112						
	113						
	114						
	115						
	116	reddish brown SILT with very little gravel and little moisture (ML)					
	117						
	118						
	119	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HIRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT **5155.0030.0001 A1200**

INSPECTOR **Jill Jefferson**

SHEET **14** SHEETS
of 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	121	reddish brown SILT, very little fine Sand (little moisture (ML))					
	122						
	123						
	124						
	125		Same as above with a bit more moisture (ML)				
	126						
	127						
	128						
	129						

PROJECT **5155.0030.0001 A1200**

HOLE NO. **KAFB-0315**

FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 15 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	131	reddish brown Sandy SILT, with some gravel, more moist (ML)					
	132	light brown Sandy SILT with gravel (<1/2'), less moist (ML)					
	133						
	134						
	135	reddish brown Sandy SILT with little gravel, little moisture (ML)					
	136						
	137						
	138						
	139						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 16 of 50 SHEETS

ELEV. (e)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (a)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	141	lght brown gravelly SILT, with Sand, dry (ML)					
	142						
	143						
	144						
	145	poorly graded GRAVEL with Silt and Sand (GP-GM)					
	146						
	147						
	148						
	149						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

NG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 17 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	151	poorly graded GRAVEL reddish brown Silt, and some Sand, little moisture (GP-GM)					
	152						
	153						
	154						
	155	tan Sandy SILT (ML)					
	156						
	157						
	158						
	159	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 18 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
161							
162		reddish brown Clayey SILT, low plasticity (ML-CL)					
163							
164							
165		reddish brown SILT with some Clay, no plasticity (ML-CL)					
166							
167							
168							
169		Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

NG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 19 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	171	reddish Brown SILT, little moisture (ML)					No clay, No gravel
	172						
	173						
	174						
	175	Gravelly SILT with Sand, dry (ML)					
	176						
	177						
	178						
	179	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 20 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	181	Medum Brown Sandy SILT with little gravel, slightly moist (ML)					some clay was present between 180 and 185'
	182						
	183						
	184						
	185	light reddish brown Sandy SILT with some gravel, very slightly moist (ML)					
	186						
	187						
	188						
	189	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

IG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 21 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	191	gravelly SILT with some Clay and Sand, Little moisture (ML)					
	192						
	193						
	194						
	195	gravelly SILT and some Sand, light brown in color, dry (ML)					
	196						possible conglomerate formation.
	197						
	198						
	199	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HIRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT **5155.0030.0001 A1200**

INSPECTOR **Jill Jefferson**

SHEET **22** OF **50** SHEETS

ELEV. (c)	DEPTH (b)	DESCRIPTION OF MATERIALS (e)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	201	reddish Brown <u>CLAY</u> and <u>SILT</u> , a little moisture, low plasticity (CL)					
	202	reddish brown <u>SILT</u> with little Gravel and some Sand (ML)					
	203						
	204						
	205						
	206	reddish brown gravelly <u>SILT</u> , gravel <1" in size, some fine Sand, little moisture (ML)					
	207						
	208						
	209	reddish brown <u>CLAY</u> , silty, some gravel, a little moisture (CL)					

PROJECT **5155.0030.0001 A1200**

HOLE NO. **KAFB-0315**

NG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HIRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT **5155.0030.0001 A1200**

INSPECTOR **Jill Jefferson**

SHEET **23** of **50** SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	211	reddish Brown <u>CLAY</u> , with Sand and Gravel, low plasticity (CL)					
	212	reddish brown <u>SILT</u> with some Sand, a little moisture (ML)					
	213	light reddish brown Sandy <u>SILT</u> with Gravel, dry (ML)					
	214						
	215						
	216						
	217						
	218	reddish brown <u>SILT</u> with Gravel up to 3/4' in size, a little moisture (ML)					
	219						

PROJECT **5155.0030.0001 A1200**

HOLE NO. **KAFB-0315**

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 24 of SHEETS 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	221	light brown Sandy SILT, with some Clay and some fine Gravel, dry (ML)					
	222						
	223						
	224						
	225	Same as above but has more gravel, dry (ML)					
	226						
	227						
	228						
	229	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

NG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315
SHEET 25 of 50 SHEETS

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEO TECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
231		GRAVEL with Silt and Sand, gravel up to 1.5' in size, dry (GP-GM)					
232							
233							
234							
235		reddish brown SILT with very little gravel and some Sand (ML)					
236							
237							
238							
239		Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315
SHEET 26 of 50 SHEETS

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	241	reddish brown SILT, some moisture, no gravel (ML)					
	242	gravelly SILT with Sand, less moisture (ML)					
	243						
	244						
	245	gravelly SILT with Sand and large gravels up to 1.75' in size (ML)					
	246						
	247						
	248						
	249	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

NG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

SHEET 27 of 50 SHEETS

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	251	light brown Sandy SILT, with gravel (<1") (ML)					
	252	reddish brown SILT slightly moist, a few coarse gravels (ML)					
	253	very fine light brown SILT with very fine Sand, very little gravel, dry (ML)					
	254						
	255	light reddish brown SILT, little moisture, some coarse gravels (ML)					
	256						
	257						
	258	gravelly SILT with Sand, dry (ML)					
	259						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315
SHEET 28 of 50 SHEETS

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	261	Same as above					
	262						
	263						
	264						
	265	reddish brown SILT, slightly moist, very little gravel (<1%)					
	266						
	267						
	268						
	269	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

NG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT: 5155.0030.0001 A1200

INSPECTOR: Jill Jefferson

SHEET 29 of SHEETS 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	271	reddish brown SILT, slightly moist (ML)					
	272						
	273						
	274	gravelly SILT, with Sand, light brown in color, dry (ML)					
	275						
	276						
	277						
	278						
	279	reddish brown SILT with gravel and Sand, slightly moist (ML)					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HIRW DRILLING LOG (CONTINUATION SHEET)

KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 30 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	281	Same as above with less gravel (ML)					
	282						
	283						
	284	GRAVEL with Silt and Sand, dry (GP-GM)					
	285	redish brown SILT, slightly moist, some fine Sand and Gravel (<1% (ML)					
	286						
	287						
	288						
	289	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

NG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 31 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	291						
	292						
	293						
	294						
	295						
	296						
	297						
	298						
	299	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 32 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	301	GRAVEL with Silt and Sand, dry, light brown in color (GP-GM)					
	302						
	303	reddish brown SILT with little fine Sand and very little gravel (<1%) (ML)					
	304						
	305						
	306						
	307						
	308						
	309	Same as above with a little more gravel (white and jagged)					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 33 OF SHEETS 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	311						
	312						
	313						
	314						
	315						
	316						
	317						
	318						
	319	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HIRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT **5155.0030.0001 A1200**

INSPECTOR **Jill Jefferson**

SHEET SHEETS
34 of 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	321	Same as above with larger gravel (1-3"), less moisture (ML)					
	322	Same as above with no coarse gravel, more moisture (ML)					
	323						
	324						
	325	gravelly <u>SILT</u> , some conglomerate rocks present in soil, (ML)					
	326						
	327						
	328	reddish brown <u>SILT</u> , slightly moist (ML)					
	329						

PROJECT **5155.0030.0001 A1200**

HOLE NO. **KAFB-0315**

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 35 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
331		reddish brown CLAY, low plasticity (CL)					
332							
333		reddish brown SILT with some Sand (ML)					
334							
335		reddish brown CLAY and SILT, low plasticity, very little gravel (ML-CL)					
336							
337							
338		Same as above with more silt than clay					
339							

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 36 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	341	Same as above but more gravel and no clay (ML)					
	342						
	343						
	344						
	345	reddish brown <u>SILT</u> with some Clay and fine Sand, very little gravel (ML)					
	346						
	347						
	348						
	349	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

LOG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 37 OF SHEETS 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	351	reddish brown SILT, slightly moist, some fine Sand (ML)					
	352						
	353						
	354						
	355						
	356	Same as above but more moist					
	357						
	358						
	359						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HIKW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315
SHEET 38 of 50 SHEETS

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	361	Same as above					
	362	GRAVEL with Silt and Sand, slightly moist (GP-GM)					
	363	fine SAND with Silt, slightly moist (SM)					
	364						
	365	Fine SAND with Silt with fine to medium Gravel, trace of Clay balls, light brown color (SM)					
	366						
	367						
	368						
	369	reddish brown SILT with gravel and sand, moist					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

LOG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 39 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above but more moist					
371		Same as above but even more moist					
372							
373		Same as above, a bit less moist					
374							
375		light brown <u>GRAVEL</u> with Silt and Sand, some moisture, (fine gravel) (GP-GM)					
376							
377							
378		Same as above with medium gravel (GP-GM)					
379		reddish brown <u>SILT</u> with Gravel and Sand, a little moisture (ML)					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 40 of SHEETS 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	381	reddish brown SILT, with no gravel, moist (ML)					
	382						
	383						
	384	very fine reddish brown SILT, moist (ML)					
	385	Same as above, but some medlum gravel (ML)					
	386						
	387						
	388						
	389	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 41 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	391	reddish brown SILT, moist (ML)					
	392						
	393	Same as above with fine gravel (ML)					
	394						
	395						
	396	Same as above with medium gravel (ML)					
	397						
	398	reddish brown gravelly SILT and SAND, wet, coarse to fine gravel (SM)					
	399						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HIRW DRILLING LOG (CONTINUATION SHEET)

KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 42 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	401	Same as above					
	402						
	403						
	404						
	405						
	406	Same as above with less medium gravel, more fine gravel, wet					when drilling recommenced after adding another 20' drive casing, suttlings came out of the cyclone wet and spitting water (bit was at about 405-406')
	407						
	408						
	409						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 43 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	411	fine to medium GRAVEL <<1', wet (GW)					Silt is probably present at this depth but the water has washed it away and a sample can not be collected from the cyclone
	412						
	413						
	414	GRAVEL <<1' with Silt and Sand, wet (GP-GM)					
	415						
	416						
	417						
	418	GRAVEL with Silt and Sand, wet (GP-GM)					
	419						Began adding water to facilitate the drilling process

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 44 of SHEETS 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (*)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	421	Fine GRAVEL with coarse Sand and Silt, wet, brown in color (GP-GM)					
	422						
	423						
	424	fine to coarse GRAVEL with coarse Sand and Silt, wet (GW-GM)					
	425						Stopped drilling at 425' and let hole sit and stabilize.
	426						
	427						
	428						
	429	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

VG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 45 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	431	Same as above					
	432						
	433	brown SILT with gravel (fine, <10%), wet (ML)					
	434						
	435	Same as above with medium Gravel, wet (ML)					
	436	GRAVEL with Silt and some Sand, wet, (GP-GM)					
	437						
	438	Same as above with a trace of Clay					
	439						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 46 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
441		fine to coarse GRAVEL with Silt and Sand, wet (GW-GM)					
442							
443							
444							
445							
446		Same as above with more medium and coarse Gravels, wet (GP-GM)					
447							
448							
449		Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

LOG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 47 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	451	fine to medium GRAVEL and coarse SAND, subangular, wet (GP)					
	452	Same as above with more gravel and more silt, wet, subangular (GP)					Injected water to facilitate drilling
	453						
	454	Same as above with more silt (GP-GM)					
	455						
	456						
	457						
	458						
	459						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 48 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
461		brown SILT with Gravel and some coarse Sand, wet (ML)					
462							
463							
464							
465		Same as above with more gravel (ML)					TD drilled as of 9/1 @1000hrs is 465' bgs
466							
467							
468							
469		Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

NG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER
KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 49 of 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	471	brown Sandy SILT with gravel (fine to medium), wet, trace Clay (ML)					
	472						
	473						
	474	gravelly SILT with Sand, trace clay, wet (ML)					
	475						
	476						
	477	GRAVEL (fine to medium), coarse Sand and some Silt, subangular grains of sand and gravel, wet (GW-GM)					
	478						
	479						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)							HOLE NUMBER KAFB-0315
PROJECT 5155.0030.0001 A1200			INSPECTOR Jill Jefferson			SHEET 50 of 50 SHEETS	
ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	481	Same as above					Bit at 481' bgs- drilling stopped
	482						
	483						
	484						
	485						
	486						
	487						
	488						
	489						

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HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)