Appendix G – Hydrogeologic Investigation

APTIM

G.1 – Climate Data

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Summary of Monthly Normals
1981-2010

Generated on 05/01/2019

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Current Location: Elev: 600 ft. Lat: 42.5608° N Lon: -87.8155° W

Station: **KENOSHA, WI US USC00474174**

Temperature (°F)

	Mean						Cooling Degree Days						Heating Degree Days				Mean Number of Days					
							Base (above)						Base (above)									
Month	Daily Max	Daily Min	Mean	Long Term Max Std Dev	Long Term Min Std Dev	Long Term Avg Std Dev	55	57	60	65	70	72	55	57	60	65	Max >= 100	Max >= 90	Max >= 50	Max <= 32	Min <= 32	Min <= 0
01	30.4	16.4	23.4	5.2	6.6	5.8	0	0	0	0	0	0	979	1042	1134	1289	0.0	0.0	0.9	16.8	27.4	4.0
02	33.7	20.2	27.0	4.8	5.7	5.2	-7777	-7777	-7777	-7777	0	0	785	841	925	1065	0.0	0.0	1.5	11.3	24.0	1.5
03	42.8	28.2	35.5	3.5	2.9	3.1	4	2	1	-7777	-7777	-7777	608	669	761	915	0.0	0.0	6.5	3.6	20.3	0.1
04	52.8	37.5	45.1	3.2	2.4	2.6	21	14	7	2	-7777	-7777	316	370	453	597	0.0	0.0	15.8	0.2	5.7	0.0
05	62.7	46.3	54.5	3.2	2.4	2.7	93	70	42	15	3	1	109	147	213	340	0.0	-7777	28.1	0.0	0.2	0.0
06	73.3	56.6	64.9	3.0	2.6	2.7	308	256	186	94	35	21	10	18	38	96	0.0	1.2	30.0	0.0	0.0	0.0
07	79.3	63.5	71.4	3.2	2.3	2.6	508	447	354	209	96	64	-7777	-7777	1	11	0.1	3.0	31.0	0.0	0.0	0.0
08	78.1	63.4	70.7	2.7	3.0	2.8	488	427	335	192	78	49	-7777	-7777	2	13	-7777	1.6	31.0	0.0	0.0	0.0
09	71.0	55.4	63.2	2.5	2.3	2.2	262	212	146	64	20	11	16	26	50	118	0.0	0.4	30.0	0.0	0.1	0.0
10	59.7	43.9	51.8	2.8	2.8	2.6	58	40	22	6	1	-7777	158	201	276	415	0.0	0.0	26.8	0.0	2.3	0.0
11	47.1	32.8	40.0	4.2	4.0	3.9	6	3	1	-7777	0	0	457	515	603	752	0.0	0.0	11.4	2.0	13.6	0.0
12	34.3	20.7	27.5	5.1	6.0	5.5	-7777	-7777	0	0	0	0	853	914	1007	1162	0.0	0.0	2.1	11.6	25.6	1.6
Summary	55.4	40.4	47.9	3.6	3.6	3.5	1748	1471	1094	582	233	146	4291	4743	5463	6773	0.1	6.2	215.1	45.5	119.2	7.2

-7777: a non-zero value that would round to zero

Empty or blank cells indicate data is missing or insufficient occurrences to compute value

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Current Location: Elev: 600 ft. Lat: 42.5608° N Lon: -87.8155° W

Station: **KENOSHA, WI US USC00474174**

Precipitation (in.)								
	Totals	Mean Number of Days				Precipitation Probabilities Probability that precipitation will be equal to or less than the indicated amount		
	Means	Daily Precipitation				Monthly Precipitation vs. Probability Levels		
Month	Mean	>= 0.01	>= 0.10	>= 0.50	>= 1.00	0.25	0.50	0.75
01	1.76	9.8	4.6	0.9	0.2	0.93	1.59	2.55
02	1.39	7.4	3.4	1.0	0.1	0.56	1.34	1.72
03	2.57	9.7	5.2	1.6	0.4	1.38	2.09	3.98
04	3.77	11.5	7.1	2.6	0.8	2.25	3.54	5.02
05	3.94	11.2	7.1	2.8	0.9	2.63	3.72	4.79
06	3.63	10.0	6.0	2.2	0.9	1.83	3.49	5.19
07	3.63	9.5	6.0	2.8	1.0	2.53	3.53	4.18
08	4.05	9.6	6.1	2.5	1.1	2.11	3.64	4.61
09	3.47	8.9	5.8	2.3	0.8	2.18	2.92	4.42
10	2.99	9.5	5.7	2.0	0.5	1.66	2.55	4.16
11	2.82	10.4	6.1	1.7	0.5	1.61	2.41	4.06
12	2.12	9.5	5.2	1.3	0.4	1.05	1.84	2.65
Summary	36.14	117.0	68.3	23.7	7.6	20.72	32.66	47.33

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Current Location: Elev: 600 ft. Lat: 42.5608° N Lon: -87.8155° W

Station: **KENOSHA, WI US USC00474174**

Snow (in.)													
	Totals	Mean Number of Days									Snow Probabilities Probability that snow will be equal to or less than the indicated amount		
	Means	Snowfall >= Thresholds					Snow Depth >= Thresholds				Monthly Snow vs. Probability Levels Values derived from the incomplete gamma distribution.		
Month	Snowfall Mean	0.01	1.0	3.0	5.00	10.00	1	3	5	10	.25	.50	.75
01	11.8	6.7	4.0	1.3	0.6	-7777	19.0	13.7	7.5	1.9	6.8	11.0	13.7
02	9.2	4.4	2.7	1.1	0.4	0.1	11.9	7.4	5.0	1.7	1.4	3.0	13.7
03	5.2	2.6	1.7	0.6	0.2	-7777	4.8	2.3	1.5	0.1	0.7	3.0	9.4
04	0.8	0.5	0.3	0.1	-7777	0.0	0.4	0.1	-7777	0.0	0.0	0.0	1.0
05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
06	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
07	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
08	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
09	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	-7777	0.1	-7777	0.0	0.0	0.0	-7777	0.0	0.0	0.0	0.0	0.0	0.0
11	1.0	0.8	0.4	0.1	0.0	0.0	0.6	0.1	0.0	0.0	0.0	0.0	1.8
12	8.2	4.6	2.6	0.9	0.4	0.1	8.6	3.8	2.6	0.9	4.1	5.9	11.0
Summary	36.2	19.7	11.7	4.1	1.6	0.2	45.3	27.4	16.6	4.6	13.0	22.9	50.6

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Asheville, North Carolina 28801

Current Location: Elev: 600 ft. Lat: 42.5608° N Lon: -87.8155° W

Station: **KENOSHA, WI US USC00474174**

Growing Degree Units (Monthly)												
Base	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
40	5	8	56	190	450	748	973	953	696	372	112	14
45	1	2	25	101	303	598	818	798	546	238	53	4
50	-7777	-7777	10	48	180	450	663	643	400	132	21	1
55	0	-7777	4	21	93	308	508	488	262	58	6	-7777
60	0	-7777	1	7	42	186	354	335	146	22	1	0
Growing Degree Units for Corn (Monthly)												
50/86	2	4	31	88	219	452	650	636	412	176	44	5

Growing Degree Units (Accumulated Monthly)												
Base	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
40	5	13	69	259	709	1457	2430	3383	4079	4451	4563	4577
45	1	3	28	129	432	1030	1848	2646	3192	3430	3483	3487
50	0	0	10	58	238	688	1351	1994	2394	2526	2547	2548
55	0	0	4	25	118	426	934	1422	1684	1742	1748	1748
60	0	0	1	8	50	236	590	925	1071	1093	1094	1094
Growing Degree Units for Corn (Monthly Accumulated)												
50/86	2	6	37	125	344	796	1446	2082	2494	2670	2714	2719

Note: For corn, temperatures below 50 are set to 50, and temperatures above 86 are set to 86.

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G.2 – Regional Water Well Logs

SUMMARY OF WATER WELL REPORTS

Log #	Location		Date	Total Depth (ft)	Lithology
1	Sec. 34	T1N R22E	10/26/1955	235	Limestone
2	Sec. 34	T1N R22E	1/224/1976	198	Limestone
3	Sec. 34	T1N R22E	6/20/2002	173	Limestone
4	Sec. 34	T1N R22E	9/28/1961	204	Gravel/Sand
5	Sec. 34	T1N R22E	7/9/1955	230	Gravel/Sand
6	Sec. 34	T1N R22E	4/14/1954	168	Sand
7	Sec. 34	T1N R22E	9/30/1961	148	Sand / Gravel
8	Sec. 34	T1N R22E		153	Sand
9	Sec. 34	T1N R22E	3/17/1971	173	Coarse Sand
10	Sec. 34	T1N R22E	8/2/1960	181	Limestone
11	Sec. 34	T1N R22E	5/28/1950	260	Limestone
12	Sec. 34	T1N R22E	11/18/1963	115	Sand
13	Sec. 34	T1N R22E	11/1/1976	1962	Sandstone
14	Sec. 34	T1N R22E	3/1/1971	149	Sand and Gravel
15	Sec. 34	T1N R22E	4/30/1971	168	Sand and Gravel
16	Sec. 34	T1N R22E		210	Limestone
17	Sec. 34	T1N R22E	5/7/1976	230	Limestone
18	Sec. 34	T1N R22E	2/2/1950	225	Limestone
19	Sec. 35	T1N R22E	3/21/1965	105	Gravel
20	Sec. 35	T1N R22E	3/25/1965	108	Sand
21	Sec. 35	T1N R22E	2/8/1965	114	Sand/Gravel
22	Sec. 35	T1N R22E	5/5/1977	91	Gravel
23	Sec. 35	T1N R22E	10/15/1977	108	Gravel
24	Sec. 35	T1N R22E	10/5/1963	210	Limestone
25	Sec. 35	T1N R22E	10/21/1997	217	Limestone
26	Sec. 35	T1N R22E	10/18/1974	205	Limestone
27	Sec. 35	T1N R22E	6/7/1977	206	Limestone
28	Sec. 36	T1N R22E	9/11/1977	170	Limestone
29	Sec. 36	T1N R22E	1/26/1958	135	Limestone
30	Sec. 36	T1N R22E	10/6/1956	125	Sand and Gravel
31	Sec. 36	T1N R22E	12/18/1974	185	Limestone
32	Sec. 36	T1N R22E	3/7/1978	210	Limestone
33	Sec. 36	T1N R22E	8/8/2003	62	Sand and Gravel
34	Sec. 36	T1N R22E	7/9/1979	187	Limestone
35	Sec. 36	T1N R22E	8/15/1972	86	Sand and Gravel
36	Sec. 36	T1N R22E	12/13/1966	177	Limestone
37	Sec. 2	T46N R11E	7/23/1975	95	Sand
38	Sec. 2	T46N R11E	7/9/1992	74	Sand
39	Sec. 1	T46N R11E	9/1/1999	195	Limestone
40	Sec. 1	T46N R11E	9/25/1930	170	Rock
41	Sec. 1	T46N R11E	10/4/1978	190	Limestone
42	Sec. 1	T46N R11E	8/18/1971	98	Gravel and Sand
43	Sec. 1	T46N R11E	9/18/1989	180	Gravel
44	Sec. 1	T46N R11E	9/25/1930	195	
45	Sec. 1	T46N R11E	7/28/1979	206	Limestone
46	Sec. 1	T46N R11E	10/31/1970	93	Gravel
47	Sec. 1	T46N R11E	9/25/1930	193	Gravel

APTIM

SUMMARY OF WATER WELL REPORTS (continued)

Log #	Location		Date	Total Depth (ft)	Lithology
48	Sec. 6	T46N R12E	12/14/1978	235	Limestone
49	Sec. 6	T46N R12E	8/23/1989	209	Limestone
50	Sec. 6	T46N R12E	8/4/1992	168	Sand
51	Sec. 6	T46N R12E	11/15/1979	173	Fine Gravel
52	Sec. 6	T46N R12E	8/15/1989	204	Limestone
53	Sec. 6	T46N R12E	9/2/1989	134	Sand and Gravel
54	Sec. 6	T46N R12E	2/18/1988	174	Coarse Sand
55	Sec. 6	T46N R12E	6/15/1979	176	Sand and Gravel
56	Sec. 6	T46N R12E	7/8/1991	204	Limestone
57	Sec. 6	T46N R12E	5/15/1978	187	Gravel
58	Sec. 6	T46N R12E	2/21/1987	246	Limestone
59	Sec. 6	T46N R12E	11/4/1974	224	Limestone
60	Sec. 6	T46N R12E	10/28/1977	250	Limestone
61	Sec. 6	T46N R12E	11/1/1977	250	Limestone
62	Sec. 6	T46N R12E	9/14/1992	230	Limestone
63	Sec. 6	T46N R12E	1/14/1978	236	Limestone
64	Sec. 6	T46N R12E	7/7/1977	229	Limestone
65	Sec. 6	T46N R12E	8/9/1976	238	Limestone
66	Sec. 6	T46N R12E	3/9/1977	266	Limestone
67	Sec. 6	T46N R12E	9/13/1985	114	Sand
68	Sec. 6	T46N R12E	1/27/1992	290	Limestone
69	Sec. 6	T46N R12E	12/15/1978	275	Limestone
70	Sec. 5	T46N R12E	3/23/1976	128	Sand
71	Sec. 5	T46N R12E	6/4/1971	180	Gravel
72	Sec. 5	T46N R12E	12/1/1972	125	Sand
73	Sec. 5	T46N R12E	10/26/1977	115	Sand Gravel
74	Sec. 5	T46N R12E	9/18/1989	118	Sand
75	Sec. 5	T46N R12E	2/22/1977	220	Limestone
76	Sec. 5	T46N R12E	8/30/2001	161	Coarse Gravel
77	Sec. 5	T46N R12E	11/8/1979	99	Sand-Gravel
78	Sec. 5	T46N R12E	11/6/1979	108	Sand-Gravel
79	Sec. 5	T46N R12E	9/28/1978	179	Gravel
80	Sec. 5	T46N R12E	10/14/1987	185	Gravel and Sand
81	Sec. 5	T46N R12E	11/21/1985	210	Limestone
82	Sec. 5	T46N R12E	4/10/1979	204	Gravel
83	Sec. 5	T46N R12E	11/17/1994	136	Sand
84	Sec. 5	T46N R12E	4/9/1996	206	Limestone
85	Sec. 5	T46N R12E	8/29/1979	230	Limestone
86	Sec. 5	T46N R12E	1/16/1990	189	Sand and Fine Gravel
87	Sec. 5	T46N R12E	9/4/1987	205	Limestone
88	Sec. 5	T46N R12E	10/2/1998	215	Limestone
89	Sec. 5	T46N R12E	9/29/2003	193	Limestone
90	Sec. 5	T46N R12E	6/1/2005	184	Limestone
91	Sec. 5	T46N R12E	8/19/1991	48	Sand and Gravel
92	Sec. 5	T46N R12E	10/20/1991	65	Sand and Gravel
93	Sec. 5	T46N R12E	1/7/2005	77	Gravel and Sand
94	Sec. 5	T46N R12E	5/27/1971	218	Rock
95	Sec. 5	T46N R12E	12/19/1972	120	Gravel

APTIM

SUMMARY OF WATER WELL REPORTS (continued)

Log #	Location		Date	Total Depth (ft)	Lithology
96	Sec. 5	T46N R12E	7/19/1976	113	Gravel and Sand
97	Sec. 5	T46N R12E	7/30/1973	118	Sand
98	Sec. 5	T46N R12E	7/15/1976	131	Gravel and Sand
99	Sec. 5	T46N R12E	7/16/1976	114	Sand
100	Sec. 5	T46N R12E	5/28/1981	254	Limestone
101	Sec. 5	T46N R12E	8/31/1988	191	Sand and Gravel
102	Sec. 5	T46N R12E	6/30/1978	193	Gravel
103	Sec. 5	T46N R12E	3/23/1984	176	Fine Gravel
104	Sec. 5	T46N R12E	4/20/1988	80	Gravel and Sand
105	Sec. 5	T46N R12E	7/15/1985	116	Sandstone
106	Sec. 5	T46N R12E	3/10/1969	202	Limestone
107	Sec. 5	T46N R12E	12/12/1979	200	Limestone
108	Sec. 5	T46N R12E	8/18/1977	212	Limestone
109	Sec. 5	T46N R12E	2/24/1989	203	Limestone
110	Sec. 5	T46N R12E	5/4/1985	190	Limestone
111	Sec. 5	T46N R12E	8/12/1970	57	Gravel
112	Sec. 5	T46N R12E	7/4/1975	68	Gravel
113	Sec. 5	T46N R12E	11/11/1991	65	Sand and Gravel
114	Sec. 5	T46N R12E	9/24/1930	57	Gravel
115	Sec. 11	T46N R11E	9/20/1977	182	Gravel
116	Sec. 11	T46N R11E	9/25/1930	50	Gravel
117	Sec. 11	T46N R11E	8/28/1975	185	Gravel
118	Sec. 11	T46N R11E	4/21/1968	81	Fine Gravel
119	Sec. 11	T46N R11E	9/1/1925	130	
120	Sec. 11	T46N R11E	6/8/1979	95	Gravel
121	Sec. 11	T46N R11E	10/24/1968	85	Gravel and Sand
122	Sec. 12	T46N R11E	9/26/1930	220	Rock
123	Sec. 12	T46N R11E	10/15/1976	127	Gravel
124	Sec. 12	T46N R11E	8/25/1975	76	Sand
125	Sec. 12	T46N R11E	10/11/1985	171	Sand
126	Sec. 12	T46N R11E	5/24/1993	103	Fine Sand
127	Sec. 12	T46N R11E	8/13/1974	152	Limestone
128	Sec. 12	T46N R11E	5/12/1983	153	Fine Gravel
129	Sec. 12	T46N R11E	12/12/1988	53	Gravel and Sand
130	Sec. 12	T46N R11E	1/21/1982	128	Gravel
131	Sec. 12	T46N R11E	6/3/1999	122	Limestone
132	Sec. 12	T46N R11E	4/5/2002	1170	Sandstone
133	Sec. 12	T46N R11E	1/1/2002	1170	Sandstone
134	Sec. 12	T46N R11E	6/4/1977	252	Limestone
135	Sec. 12	T46N R11E	2/7/1978	300	Limestone
136	Sec. 1	T46N R11E	1/27/1981	400	Limestone
137	Sec. 13	T46N R11E	3/17/1980	144	Gravel
138	Sec. 12	T46N R11E	3/3/1998	240	Limestone
139	Sec. 12	T46N R11E	9/25/1974	127	Sand and Gravel
140	Sec. 12	T46N R11E	2/15/1988	111	Sand
141	Sec. 12	T46N R11E	8/25/1989	211	Limestone
142	Sec. 12	T46N R11E	8/25/1989	202	Limestone
143	Sec. 12	T46N R11E	8/12/2004	1210	Galesville Ss.

SUMMARY OF WATER WELL REPORTS (continued)

Log #	Location		Date	Total Depth (ft)	Lithology
144	Sec. 12	T46N R11E	7/6/2006	1105	Sandstone
145	Sec. 12	T46N R11E	6/21/2002	207	Sand and Gravel
146	Sec. 12	T46N R11E	10/10/1977	76	Gravel
147	Sec. 12	T46N R11E	10/15/1979	96	Gravel
148	Sec. 7	T46N R12E	1/31/2000	1100	Sandstone
149	Sec. 7	T46N R12E	8/21/1982	280	Limestone
150	Sec. 7	T46N R12E	6/10/1998	260	Limestone
151	Sec. 7	T46N R12E	10/25/1979	222	Limestone
152	Sec. 7	T46N R12E	9/25/1930	140	Gravel
153	Sec. 7	T46N R12E	1/2/1974	105	Gravel
154	Sec. 7	T46N R12E	6/2/1975	200	Gravel
155	Sec. 7	T46N R12E	11/29/1978	94	Sand-Gravel
156	Sec. 7	T46N R12E	10/11/1985	171	Sand
157	Sec. 8	T46N R12E	3/8/1994	112	Sand and Gravel
158	Sec. 8	T46N R12E	9/25/1930	220	Limestone
159	Sec. 8	T46N R12E	10/24/1930	180	Limestone
160	Sec. 8	T46N R12E	11/25/1985	141	Sand
161	Sec. 8	T46N R12E	1/2/1986	170	Limestone
162	Sec. 8	T46N R12E	2/15/1986	186	Limestone
163	Sec. 8	T46N R12E	8/28/1986	109	Sand
164	Sec. 8	T46N R12E	11/27/1987	197	Sand
165	Sec. 8	T46N R12E	11/29/1986	94	Sand
166	Sec. 8	T46N R12E	10/5/1990	94	Sand
167	Sec. 8	T46N R12E	3/9/1977	150	Limestone
168	Sec. 8	T46N R12E	8/11/1992	77	Sand
169	Sec. 8	T46N R12E	6/1/1989	76	Sand
170	Sec. 8	T46N R12E	8/24/1979	76	Gravel
171	Sec. 8	T46N R12E	7/1/1977	120	Sand and Gravel
172	Sec. 8	T46N R12E	5/3/1990	194	Limestone
173	Sec. 8	T46N R12E	11/17/1989	125	Gravel
174	Sec. 8	T46N R12E	11/11/1978	71	Sand
175	Sec. 8	T46N R12E	2/23/1978	198	Limestone
176	Sec. 8	T46N R12E	7/9/1984	103	Sand
177	Sec. 8	T46N R12E	12/17/2002	76	Gravel
178	Sec. 8	T46N R12E	6/23/1987	118	Sand
179	Sec. 8	T46N R12E	9/1/2006	81	Sand
180	Sec. 8	T46N R12E	9/21/1977	91	Sand
181	Sec. 8	T46N R12E	8/13/1987	100	Mixed Sand and Gravel
182	Sec. 8	T46N R12E	9/12/1979	285	Limestone
183	Sec. 8	T46N R12E	10/5/1990	93	Sand
184	Sec. 8	T46N R12E	3/13/1991	90	Sand
185	Sec. 8	T46N R12E	1/24/1989	173	Limestone
186	Sec. 8	T46N R12E	10/3/1991	136	Sand
187	Sec. 8	T46N R12E	11/29/1986	78	Sand and Gravel
188	Sec. 8	T46N R12E	3/20/1997	200	Limestone
189	Sec. 8	T46N R12E	9/5/2002	94	Sand
190	Sec. 8	T46N R12E	6/5/1987	120	Gravel
191	Sec. 8	T46N R12E	6/30/1972	85	Fine Gravel

APTIM

SUMMARY OF WATER WELL REPORTS (continued)

Log #	Location		Date	Total Depth (ft)	Lithology
192	Sec. 8	T46N R12E	11/7/1975	89	Gravel and Sand
193	Sec. 8	T46N R12E	11/11/1975	86	Gravel and Sand
194	Sec. 8	T46N R12E	5/17/1978	193	Limestone
195	Sec. 8	T46N R12E	5/17/1978	128	Sand
196	Sec. 8	T46N R12E	11/17/1986	168	Limestone
197	Sec. 8	T46N R12E	3/25/1997	204	Limestone
198	Sec. 8	T46N R12E	6/6/1969	127	Gravel
199	Sec. 8	T46N R12E	9/15/1988	132	Sand
200	Sec. 8	T46N R12E	6/2/1992	98	Sand
201	Sec. 8	T46N R12E	3/20/1992	85	Gravel
202	Sec. 8	T46N R12E	10/9/1996	205	Limestone
203	Sec. 8	T46N R12E	5/14/1988	173	Sand
204	Sec. 8	T46N R12E	5/9/1988	81	Sand
205	Sec. 8	T46N R12E	5/24/2005	83	Sand and Gravel
206	Sec. 8	T46N R12E	10/11/1983	257	Limestone
207	Sec. 8	T46N R12E	10/14/1976	183	Limestone
208	Sec. 8	T46N R12E	8/1/1978	215	Limestone
209	Sec. 8	T46N R12E	9/6/1978	218	Limestone
210	Sec. 8	T46N R12E	4/5/1979	97	Gravel-Sand
211	Sec. 8	T46N R12E	4/5/1978	218	Limestone
212	Sec. 8	T46N R12E	9/14/1987	125	Gravel
213	Sec. 8	T46N R12E	9/20/1978	215	Limestone
214	Sec. 8	T46N R12E	2/24/1978	198	Limestone
215	Sec. 8	T46N R12E	10/25/1978	98	Uniform Sand and Gravel
216	Sec. 8	T46N R12E	10/26/1978	94	Gravel
217	Sec. 8	T46N R12E	12/17/1991	104	Sand
218	Sec. 8	T46N R12E	6/28/2004	114	Fine Sand
219	Sec. 8	T46N R12E	9/19/1977	177	Gravel
220	Sec. 8	T46N R12E	3/26/1979	122	Clay
221	Sec. 8	T46N R12E	7/17/1986	85	Gravel-Clay
222	Sec. 8	T46N R12E	2/10/1978	230	Limestone
223	Sec. 8	T46N R12E	8/27/1991	220	Limestone
224	Sec. 8	T46N R12E	8/25/1999	106	Sand and Gravel
225	Sec. 8	T46N R12E	2/28/1979	218	Limestone
226	Sec. 8	T46N R12E	1/20/1981	210	Limestone
227	Sec. 8	T46N R12E	2/28/1979	218	Limestone
228	Sec. 8	T46N R12E	8/1/1979	195	Limestone
229	Sec. 8	T46N R12E	9/17/1979	217	Limestone
230	Sec. 8	T46N R12E	4/13/1979	98	Sand and Gravel
231	Sec. 8	T46N R12E	10/14/1978	66	Gravel
232	Sec. 8	T46N R12E	5/29/1984	218	Limestone
233	Sec. 8	T46N R12E	10/14/1978	69	Gravel
234	Sec. 8	T46N R12E	9/8/1992	72	Sand and Gravel
235	Sec. 8	T46N R12E	5/20/1997	215	Rock
236	Sec. 8	T46N R12E	1963	105	Sand
237	Sec. 8	T46N R12E	10/24/1978	96	Sand and Gravel
238	Sec. 8	T46N R12E	6/14/2001	126	Fine Sand
239	Sec. 8	T46N R12E	11/1/2001	128	Fine Sand

APTIM

SUMMARY OF WATER WELL REPORTS (continued)

Log #	Location		Date	Total Depth (ft)	Lithology
240	Sec. 8	T46N R12E	9/30/1977	230	Rock
241	Sec.8	T46N R12E	3/13/1998	200	Limestone
242	Sec. 8	T46N R12E	3/13/1998	200	Limestone
243	Sec. 8	T46N R12E	1/5/1993	93	Sand
244	Sec. 8	T46N R12E	9/25/1992	95	Sand
245	Sec. 8	T46N R12E	2/26/1973	190	Limestone
246	Sec. 8	T46N R12E	1/16/2001	54	Sand and Gravel
247	Sec. 8	T46N R12E	10/23/1970	190	Gravel and Limestone
248	Sec. 8	T46N R12E	8/16/1979	187	Limestone
249	Sec. 8	T46N R12E	9/10/1985	192	Limestone
250	Sec. 8	T46N R12E	10/17/1996	78	Sand and Gravel
251	Sec. 8	T46N R12E	1962	109	Sand
252	Sec. 8	T46N R12E	6/13/2001	131	Sand
253	Sec. 8	T46N R12E	2/14/1977	135	Sand
254	Sec. 8	T46N R12E	2/17/1977	132	Sand
255	Sec. 8	T46N R12E	6/26/1992	110	Gravel
256	Sec. 8	T46N R12E	10/3/2001	131	Sand
257	Sec. 8	T46N R12E	1963	225	Limestone
258	Sec. 8	T46N R12E	10/27/1978	208	Limestone
259	Sec. 8	T46N R12E	10/14/1978	212	Coarse Gravel
260	Sec. 8	T46N R12E	11/2/1978	214	Limestone
261	Sec. 8	T46N R12E	6/24/1994	112	Sand and Gravel
262	Sec. 8	T46N R12E		220	
263	Sec. 17	T46N R12E	6/19/1984	148	Limestone
264	Sec. 8	T46N R12E	6/12/2001	124	Sand and Gravel
265	Sec. 8	T46N R12E			
266	Sec. 8	T46N R12E		220	
267	Sec. 9	T46N R12E	10/15/1990	140	
268	Sec. 9	T46N R12E	4/1/1991	154	
269	Sec. 9	T46N R12E	9/10/1994	151	
270	Sec. 9	T46N R12E	9/15/1989	151	
271	Sec. 18	T46N R12E	5/24/1984	202	Limestone
272	Sec. 18	T46N R12E			
273	Sec. 18	T46N R12E	7/1/1943	75	Gravel
274	Sec. 18	T46N R12E			
275	Sec. 17	T46N R12E	8/9/1991	198	Limestone
276	Sec. 17	T46N R12E	3/27/1985	52	Sand and Gravel
277	Sec. 17	T46N R12E	10/5/1967	277	Limestone
278	Sec. 17	T46N R12E	11/11/1999	58	Sand
279	Sec. 17	T46N R12E	6/11/1969	78	Fine Gravel
280	Sec. 17	T46N R12E	6/6/2005	77	Sand and Gravel
281	Sec. 17	T46N R12E	12/24/1930	185	Rock
282	Sec. 34	T1N R22E	1/26/1990	270	Limestone
283	Sec. 34	T1N R22E	7/29/2004	246	Limestone
284	Sec. 34	T1N R22E	7/31/1981	214	Gravel
285	Sec. 34	T1N R22E	9/24/1962	243	Limestone
286	Sec. 35	T1N R22E	8/6/1989	248	Gravel
287	Sec. 35	T1N R22E	11/3/1989	191	Gravel

APTIM

SUMMARY OF WATER WELL REPORTS (continued)

Log #	Location		Date	Total Depth (ft)	Lithology
288	Sec. 35	T1N R22E	2/22/1991	113	Sand and Gravel
289	Sec. 35	T1N R22E	7/24/1991	259	Sand
290	Sec. 35	T1N R22E	3/10/1993	231	Limestone
291	Sec. 35	T1N R22E	8/17/1990	224	Gravel
292	Sec. 35	T1N R22E	1/19/1990	109	Sand
293	Sec. 35	T1N R22E	5/23/1991	107	Sand and Gravel
294	Sec. 35	T1N R22E	8/30/1994	100	Gravel
295	Sec. 35	T1N R22E	10/27/1994	130	Sand and Gravel
296	Sec. 35	T1N R22E	5/6/1995	108	Sand and Gravel
297	Sec. 35	T1N R22E	1/9/1995	106	Sand and Gravel
298	Sec. 35	T1N R22E	3/17/1997	109	Sand and Gravel
299	Sec. 35	T1N R22E	2/4/1990	115	Sand
300	Sec. 35	T1N R22E	7/30/2001	258	Limestone
301	Sec. 35	T1N R22E	10/19/2001	260	Limestone
302	Sec. 35	T1N R22E	7/7/2003	280	Limestone
303	Sec. 35	T1N R22E	8/30/2007	220	Limestone
304	Sec. 35	T1N R22E	2/24/2010	215	Boulders
305	Sec. 35	T1N R22E	3/26/1975	110	Sand and Gravel
306	Sec. 35	T1N R22E	3/26/1980	108	Sand and Gravel
307	Sec. 35	T1N R22E	10/4/1968	202	Limestone
308	Sec. 35	T1N R22E	10/13/1971	211	Gravel
309	Sec. 35	T1N R22E	8/22/1969	114	Gravel
310	Sec. 35	T1N R22E	2/20/1981	116	Sand
311	Sec. 35	T1N R22E	10/25/1973	214	Limestone
312	Sec. 36	T1N R22E	11/14/1989	165	Sand and Gravel
313	Sec. 36	T1N R22E	2/2/1990	305	Limestone
314	Sec. 36	T1N R22E	8/16/1991	142	Sand & Gravel
315	Sec. 36	T1N R22E	8/8/2003	62	Sand & Gravel
316	Sec. 5	T46N R12E	7/23/2007	220	Limestone
317	Sec. 8	T46N R12E	11/7/2008	97	Sand
318	Sec. 8	T46N R12E	9/8/2006	81	Sand
319	Sec. 11	T46N R11E	8/21/2008	118	Fine Gravel
320	Sec. 12	T46N R11E	8/13/2008	92	Sand & Gravel
321	Sec. 8	T46N R12E	9/10/2007	220	Limestone
322	Sec. 8	T46N R12E	11/30/2009	178	Limestone
323	Sec. 12	T46N R11E		227	Limestone
324	Sec. 12	T46N R11E		74	
325	Sec. 4	T46N R12E		39	
326	Sec. 5	T46N R12E			
327	Sec. 5	T46N R12E		57	
328	Sec. 5	T46N R12E		165	
329	Sec. 8	T46N R12E		146	
330	Sec. 18	T46N R12E		196	
331	Sec. 7	T46N R12E		240	Rock
332	Sec. 8	T46N R12E		227	Limestone
333	Sec. 1	T46N R11E		15	Gravel
334	Sec. 1	T46N R11E			

APTIM

LOG # 1

Wel. 6-30M-(6-50)

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Kenosha — Town [X] Village [ ] City [ ] Pleasant Prairie (Check one and give name)

2. Location NE of SW¼ of sec 34 T 1N R 22 E
Name of street and number of premise or Section, Town and Range numbers

3. Owner [X] or Agent [ ] Kaiser Bros
Name of individual, partnership or firm

4. Mail Address Rt 1 Kenosha Wis
Complete address required

5. From well to nearest: Building none ft; sewer none ft; drain none ft; septic tank none ft; dry well or filter bed none ft; abandoned well none ft.

6. Well is intended to supply water for: Kaiser Home

7. **DRILLHOLE:**

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	30	7	0	215
			6	215	235

8. **CASING AND LINER PIPE OR CURBING:**

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
7	Standard weight steel pipe	0	215

9. **GROUT:**

Kind	From (ft.)	To (ft.)
Puddled clay fill	0	30

10. **FORMATIONS:**

Kind	From (ft.)	To (ft.)
top soil	0	10
blue clay	15	150
sand	150	160
blue clay	160	200
sand	200	215
lime stone	215	235

Construction of the well was completed on: 10/26 19 55

The well is terminated 12 inches [X] above, below [ ] the permanent ground surface.

Was the well disinfected upon completion? Yes ✓ No

Was the well sealed watertight upon completion? Yes ✓ No

11. **MISCELLANEOUS DATA:**

Yield test: 6 Hrs. at 15 GPM.

Depth from surface to water-level: 70 ft.

Water-level when pumping: 130 ft.

Water sample was sent to the state laboratory at: Madison City on 2/1 1956

Signature Roy Pritchen
Registered Well Driller

4300 Victory ave Racine Wis
Complete Mail Address

Please do not write in space below

Rec'd No

Ans'd

Interpretation KE 7394

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner

JUN 1 1976

LOG # 2

WELL CONSTRUCTOR'S REPORT

FORM 3300-15

JAN 29 1976

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

KE-803-D

1. COUNTY: KENOSHA

CHECK ONE: ☑ Town ☐ Village ☐ City

NAME: Pleasant Prairie

2. LOCATION – ¼ Section: SE, SE SW | Section: SW | Township: 34 | Range: 1N 22E

OR – Grid or street no: 6822 | Street name: 128 th St

AND – If available subdivision name, lot & block no.:

3. OWNER AT TIME OF DRILLING: William Royce

ADDRESS: 6822 128 th St

POST OFFICE: Pleasant Prairie

4. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C.I.	SANITARY SEWER TILE	FLOOR DRAIN C.I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C.I.	WASTE WATER DRAIN TILE
20	None	None	None	None	None	None	None	None

CLEAR WATER DRAIN C.I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
None	None	45	None	None	80	None	None	None	None

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for: Home Use

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	27'			
8	27'	190'			

7. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
	New API 5A 20 lb/ft	Surface	190'
	T&C Pipe – Youngstown		

KE7393

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Puddle Grout Slurry	Surface	190'

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Top Soil	Surface	3
Brown Clay	3	15
Blue Clay	15	85
Clay and Gravel	85	87
Blue Clay	87	187
Gravel	187	190
Limestone	190	198

10. TYPE OF DRILLING MACHINE USED

☐ Cable Tool ☐ Direct Rotary ☐ Reverse Rotary
☒ Rotary – air w/drilling mud ☐ Rotary – hammer with drilling mud & air ☐ Jetting with ☐ Air ☐ Water

Well construction completed on: JANUARY 24 19 76

Well is terminated 12 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 4 Hrs. at 18 GPM

Depth from surface to normal water level: 53 ft.

Depth to water level when pumping: 55 ft.

Water sample sent to STATE LAB OF HYGIENE, MADISON laboratory on: JANUARY 27 19 76

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Boysen Company
Harry Haisma No 629 Registered Well Driller

COMPLETE MAIL ADDRESS: PETERSON GILBERTSVILLE, ILL 61442
RR1 Box 164A TREVOR WIS 53179

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS	CONFIRMED	REMARKS
				PLOT

REV. 3–71

WISCONSIN UNIQUE WELL NUMBER **QY332**

Source: WELL CONSTRUCTION

State of Wi-Private Water Systems-DG/2
Department Of Natural Resources, Box 7
Madison, WI 53707

LOG # 3

Depth **173** FT

Property Owner: BROWN, STEVE — Telephone Number: 847-244-3130

Mailing Addr: 38405 CREEK CT

City: BEACH PARK | State: IL | Zip Code: 60087

County of Well Location: 30 KENOSHA | Co Well Permit No W | Well Completion Date: June 20, 2002

Well Constructor: BEACH PUMP & WELL SERVICE INC | License #: 6124

Address: 10453 W BOYCE LN

City: BEACH PARK | State: IL | Zip Code: 60087

Hcap Permanent Well # | Common Well #

Facility ID (Public)

Public Well Plan Approval#

Date Of Approval

Specific Capacity: gpm/ft

Well Serves: P (# of homes and or (eg: barn, restaurant, church, school, industry, etc.))

M=Munic O=OTM N=NonCom P=Private Z=Other X=NonPot A=Anode L=Loop H=Drillhole

High Capacity: Well? N Property? N

1. Well Location

T=Town C=City V=Village: T of PLEASANT PRAIRIE

Fire#

Street Address or Road Name and Number: 12424 GREEN BAY RD

Subdivision Name: METES & BOUNDS | Lot# | Block #

Gov't Lot or SW 1/4 of SW 1/4 of Section 34 T 1 N;R 22 E

Latitude Deg. 42 Min. 29.7361

Longitude Deg 87 Min. 53.395

2. Well Type 1 (See item 12 below)

1=New 2=Replacement 3=Reconstruction

of previous unique well # _____ constructed in _____

Reason for replaced or reconstructed Well?

Lat/Long Method

1 1=Drilled 2=Driven Point 3=Jetted 4=Other

Is the well located upslope or sideslope and not downslope from any contamination sources, including those on neighboring properties? Y

Well located in floodplain? N

Distance in feet from well to nearest: (including proposed)

1. Landfill
16 2. Building Overhang
81 3. 1=Septic 2= Holding Tank
> 100 4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. 1 1=Shoreline 2= Swimming Pool > 50
18 9. Downspout/ Yard Hydrant > 35
10. Privy
16 11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain 1=Cast Iron or Plastic 2=Other
36 14. Building Sewer 1 1=Gravity 2=Pressure
1 1=Cast Iron or Plastic 2=Other
15. Collector Sewer: ___ units ___ in. diam.
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe 1=Gravity 2=Pressure 1=Cast iron or Plastic 2=Other
23. Other manure Storage
24. Ditch
25. Other NR 812 Waste Source

Drillhole Dimensions and Construction Method

Dia.(in.)	From (ft)	To (ft)
10.0	surface	9
6.0	9	173

Upper Enlarged Drillhole / Lower Open Bedrock

-- 1. Rotary - Mud Circulation
-- 2. Rotary - Air
-- 3. Rotary - Air and Foam
-- 4. Drill-Through Casing Hammer
-- 5. Reverse Rotary
X -- 6. Cable-tool Bit _ n. dia 20
-- 7. Temp. Outer Casing _ in. dia. _____ depth ft. Removed ?
Other

Casing Liner Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6.0	ASTM A-53B 19.45 LBS PGMFT T/C IPSCO	surface	165

Dia.(in.)	Screen type, material & slot size	From	To

Grout or Other Sealing Material

Method SLURRY

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
GRANULAR BENTONITE	surface	9.0	

Geology Codes	8. Geology Type, Caving/Noncaving, Color, Hardness, etc	From (ft.)	To (ft.)
Y_C_	YELLOW CLAY	0	55
U_C_	BLUE CLAY	55	135
__P_	HARDPAN	135	165
__L_	LIMESTONE	165	173

9. Static Water Level
35.0 feet B ground surface
A=Above B=Below

10. Pump Test
Pumping level 100.0 ft. below surface
Pumping at 15.0 GP 4.0 Hrs

11. Well Is: 16 in. A Grade (A=Above B=Below)
Developed? Y
Disinfected? Y
Capped? Y

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
If no, explain

13. Initials of Well Constructor or Supervisory Driller: JB — Date Signed: 7/11/02

Initials of Drill Rig Operator (Mandatory unless same as above): KDB — Date Signed: 7/11/02

Additonal Comments?
Owner Sent Label? Y
Variance Issued?
More Geology?

Batch 799

LOG # 4

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

W-2-6

RECEIVED
NOV 29 1963
SANITARY ENGINEERI

See Instructions on Reverse Side

1. County Kenosha (Town ☐ Village ☐ City ☐) Pleasant Prairie — Check one and give name

2. Location SW, SW, Sec. 34 T1N R22E — Hy 31 — State Line Road
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☑ or Agent ☐ Claire Frye
Name of individual, partnership or firm

4. Mail Address R.R. Kenosha, Wis.
Complete address required

RECEIVED
DEC 4 1963
SANITARY ENGINEERIN

5. From well to nearest: Building 6' ft; sewer ____ ft; drain ____ ft; septic tank ____ ft; dry well or filter bed ____ ft; abandoned well ____ ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	44			
6	44	204			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6"	Steel 1945	0	204

9. GROUT:

Kind	From (ft.)	To (ft.)
Puddled clay	0	44

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Red clay + gravel	0	17
Blue clay	17	102
Sand coarse	102	154
Sand + stony	154	170
Sand - fine	170	180
Sandy clay	180	197
Water gravel	197	204

Construction of the well was completed on: Sept 28 19 61

The well is terminated 18" inches ☑ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No ____

Was the well sealed watertight upon completion? Yes X No ____

11. MISCELLANEOUS DATA:

Yield test: 10 Hrs. at 600 GPM.

Depth from surface to water-level: 50 ft.

Water-level when pumping: 61 ft.

Water sample was sent to the state laboratory at: Madison on Oct 2 19 61
City

Signature E. G. Aschauer
Registered Well Driller

P.O Bx 206 Kansasville Wisc
Complete Mail Address

Please do not write in space below

Rec'd ____ No. ____

Ans'd ____

Interpretation ____

KE 7392

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner ____

LOG # 5

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County KENOSHA (SW, Sec. 34) ✓ Town [X] Village [ ] City [ ] PLEASANT PRAIRIE — Check one and give name

2. Location ~~SEAT 15~~, RANGE 22E ON HIGHWAY 31. NEAR ILL. STATE LINE — Name of street and number of premise or Section, Town and Range numbers T-1 T1N R22E

3. Owner [X] or Agent [ ] MR GILPIN. — Name of individual, partnership or firm

4. Mail Address RFD NO 1 KENOSHA WIS. — Complete address required

RECEIVED JUL 18 1955 ENVIRONMENTAL SANITATION

5. From well to nearest: Building NONE ft; sewer NONE ft; drain NONE ft; septic tank NONE ft; dry well or filter bed NONE ft; abandoned well ____ ft. NONE

6. Well is intended to supply water for: MINK FARM

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	230			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
6	black iron	0	230

9. GROUT:

Kind	From (ft.)	To (ft.)
clay	0	10

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
top soil	0	3
red clay	3	79
blue clay	79	150
hard pan	150	195
sand	195	223
hard pan	223	228
gravel	228	230

11. MISCELLANEOUS DATA:

Yield test: 11 Hrs. at 10 GPM.

Depth from surface to water-level: 142 ft.

Water-level when pumping: 160 ft.

Water sample was sent to the state laboratory at: MADISON City on JULY 11 19 55

Construction of the well was completed on: July 9th 1955

The well is terminated 8 inches [X] above, below [ ] the permanent ground surface.

Was the well disinfected upon completion? Yes ____ No X

Was the well sealed watertight upon completion? Yes X No ____

Signature Arnold J. Gohlke — Registered Well Driller

BRISTOL WIS. — Complete Mail Address

Please do not write in space below

Rec'd JUL 12 1955 No. 20560

Ans'd

Interpretation

KE 7391

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.	+	+	+	+	+
48 hrs.					
Confirm	+	+	+	+	+
B. Coli	5				
	5				

Examiner

LOG # 6

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

RECEIVED
APR 22 1954
SANITATION

1. County Kenosha (Town ☐ Village ☐ City ☐) Check one and give name

SW, Sec. 34 T 1N R 22E

2. Location 31 - 4th house in Kenosha County SW 34 1N-22E
Name of street and number of premise or Section, Town and Range number

3. Owner ☐ or Agent ☐ Don Redman
Name of individual, partnership or firm

4. Mail Address R# 4 Box 456 Kenosha Wis
Complete address required

5. From well to nearest: Building 300 ft; sewer ____ ft; drain ____ ft; septic tank 250 ft; dry well or filter bed ____ ft; abandoned well ____ ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	45	6	45	190

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel 20 #	0	168

9. GROUT:

Kind	From (ft.)	To (ft.)

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
B Lmst	0	3
B Clay	3	20
Gravel & Sand	20	30
B Clay	30	110
B Clay & Gravel	110	130
Sand	130	150
B Clay, Sand	150	158
Hard Pan	158	168

Construction of the well was completed on: April 14 1954

The well is terminated 6 inches ☒ above, ☐ below the permanent ground surface.

Was the well disinfected upon completion? Yes X No ____

Was the well sealed watertight upon completion? Yes X No ____

11. MISCELLANEOUS DATA:

Yield test: 20 Hrs. at 10 GPM.

Depth from surface to water-level: 60 ft.

Water-level when pumping: 60 ft.

Water sample was sent to the state laboratory at: Madison City on April 15 1954

Signature Leonard De Windt (Registered Well Driller) R 2 Box 12 Pleasant Prairie (Complete Mail Address)

Please do not write in space below

Rec'd Apr 16 1954 No. 7680

Ans'd ____

Interpretation SAFE

KE 7390

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.	0				
48 hrs.	0				
Confirm					
B. Coli	0/5				

Examiner ____

LOG # 7

Vol 6

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County KENOSHA — Town ☑ / Village ☐ / City ☐ PLEASANT PRAIRIE (Check one and give name)

2. Location RTE 31 & STATE LINE RD. SW 34 1N-22E — SW, Sec. 34 T1N R22E
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☑ or Agent ☐ HENRY SMITH
Name of individual, partnership or firm

4. Mail Address 2315 Elizabeth Ave. Zion Ill
Complete address required

5. From well to nearest: Building 10 ft; sewer ____ ft; drain ____ ft; septic tank 50 ft; dry well or filter bed ____ ft; abandoned well ____ ft.

6. Well is intended to supply water for: RESIDENCE.

7. **DRILLHOLE:**

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	0	30			
4	30	148'			

8. **CASING AND LINER PIPE OR CURBING:**

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
4	STEEL. 11#	0	148

9. **GROUT:**

Kind	From (ft.)	To (ft.)
CLAY	0	30.

10. **FORMATIONS:**

Kind	From (ft.)	To (ft.)
Top Soil	0	3'
CLAY	3	69
SANDY CLAY	69	133.
SAND FINE	133.	140.
SAND + GRAVEL	140.	148

RECEIVED
OCT 23 1961
SANITARY ENGINEERING

Construction of the well was completed on: SEPT. 30 1961

The well is terminated 8 inches ☑ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No ____

Was the well sealed watertight upon completion? Yes X No ____

11. **MISCELLANEOUS DATA:**

Yield test: 8 Hrs. at 15 GPM.

Depth from surface to water-level: 38' ft.

Water-level when pumping: 38. ft.

Water sample was sent to the state laboratory at: WITH THIS REPORT City 19____

Signature Emil E. Gross Registered Well Driller

Rte 1 Box 1527 Zion Complete Mail Address

Please do not write in space below

Rec'd OCT 17 1961 No. 40900

An [redacted] KE7389

Into [redacted]

SAFE—BACTERIOLOGICALLY

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli	0				

Examiner ____

WELL CONSTRUCTOR'S REPORT

Vol-6

LOG # 8

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

COUNTY	CHECK ONE	NAME
Kenosha	☒ Town ☐ Village ☐ City	Pleasant Prairie

1. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available)

SW¼ Sec 34 T1N R22E

OWNER AT TIME OF DRILLING

KVM, Inc. #2

OWNER'S COMPLETE MAIL ADDRESS

1913 Edgewood, Waukegan, Illinois 60085

2. Distance in feet from well to nearest (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
*	———	—	—	--	———	———	—	--

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
—	—	———	–	———	———	—	—	———	———

3. POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

4. Well is intended to supply water for:

Oakwood Lake Resort

5. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
4-1/2	Surface	153			

6. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
4-1/2	black steel T&C	Surface	153

7. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
?	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Glacial Drift	Surface	153
Sand		153

11. MISCELLANEOUS DATA

Yield test: 4 Hrs. at 11 GPM

Depth from surface to normal water level: 32 ft.

Depth to water level when pumping: 42 ft.

Water sample sent to: laboratory on: 19

Well construction completed on ? 19

Well is terminated 50 inches ☐ above ☒ below final grade

Well disinfected upon completion of test. ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

In your opinion, were there any unusual hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, surface pumps, method of finishing the well, amount of cement used in grouting, blasting, should be given on reverse side.

K E 7 3 8 8

SIGNATURE

Registered Well Driller

COMPLETE MAIL ADDRESS

HOOVER WELL SERVICE
West 33rd Street
Zion, Illinois 60099

Please do not write in space below

UNIFORM TEST RESULT	GAS — 24 HOUR	GAS — 48 HOUR	CONFIRMED	REMARKS

WELL CONSTRUCTOR'S REPORT

Wel-6

WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

DEP

LOG # 9

Box 450
Madison, Wisconsin 53701

S

COUNTY: Kenosha

CHECK ONE: ☒ Town ☐ Village ☐ City

NAME: Pleasant Prairie

LOCATION (Number and street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)
SW¼ Sec 34 T1N R22E

OWNER AT TIME OF DRILLING
KVM, Inc.

OWNER'S COMPLETE MAIL ADDRESS
1913 Edgewood, Waukegan, Illinois

5. Distance in feet from well to nearest (Record answer in appropriate block)

BUILDING	SANITARY SEWER C.I.	SANITARY SEWER TILE	FLOOR DRAIN C.I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C.I.	WASTE WATER DRAIN TILE

CLEAN WATER DRAIN C.I.	CLEAN WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for
Oakwood Lake Project

7. DRILLHOLE

Dia. (in.)	From (Ft.)	To (Ft.)	Dia. (in.)	From (Ft.)	To (Ft.)
10	Surface	20			
6	20	173			

8. CASING, LINER, CURBING, AND SCREEN

Kind	From (Ft.)	To (Ft.)
6 new black steel	Surface	165
18.45 ppf T&C		
6 brass screen	165	173
#15 slot Johnson		

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (Ft.)	To (Ft.)
Clay slurry	Surface	20

10. FORMATIONS

Kind	From (Ft.)	To (Ft.)
Clay	Surface	89
Gravel & clay	89	104
Sand	104	108
Sandy clay	108	120
Clay	120	132
Gravel & clay	132	147
Gravel & sand	147	157
Sand	157	163
Coarse Sand	163	173
Clay	at	173

11. MISCELLANEOUS DATA

Yield tests: 1 Hrs. at 32 GPM

Depth from surface to original water level: 58 ft.

Depth to water level when pumping: 68 ft.

Water sample sent to: laboratory on 19

Well construction completed on March 17, 19 71

Well is terminated 24 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Your opinion on hazards, information concerning difficulties encountered, and data relating to nearby wells, acre joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pu should be given on reverse side.

KE7387

SIGNATURE: Registered Well Driller

COMPLETE MAIL ADDRESS: HOOVER WELL SERVICE
West 33rd Street
Zion, Illinois 60099

Please do not write in space below

FORMATION TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

LOG # 10

Wel 6

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Kenosha — Town ☒ / Village ☐ / City ☐ Pleasant Prairie (Check one and give name)

2. Location SW 1/4 Sect. 34, T 1N R 22E
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Phil Clancy
Name of individual, partnership or firm

4. Mail Address 8735 Cooper Rd.
Complete address required

5. From well to nearest: Building 15 ft; sewer ____ ft; drain ____ ft; septic tank 20' ft; dry well or filter bed ____ ft; abandoned well ____ ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8"	0	170			
6"	170	181			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Stl. Blk Steel	0	170

9. GROUT:

Kind	From (ft.)	To (ft.)
Bentonite	0	170

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	136
Sand + Gravel	136	154
Hardpan	154	167
Limestone	167	181

RECEIVED
OCT 17 1960
SANITARY ENGINEERING

Construction of the well was completed on: 8/2 19 60

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ✓ No ____

Was the well sealed watertight upon completion? Yes ✓ No ____

11. MISCELLANEOUS DATA:

Yield test: 45 min Hrs. at 40 GPM.

Depth from surface to water-level: 60 ft.

Water-level when pumping: 75 ft.

Water sample was sent to the state laboratory at: ____ City on ____ 19____

Signature Richard Berkholtz
Registered Well Driller

ACKER-BERKHOLTZ CO., INC.
16715 W. CRELNFIELD AVE.
NEW BERLIN, Complete Manscriptions

Please do not write in space below

Rec'd ____ No. ____

Ans'd ____

Interpretation ____

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner ____

LOG # 11

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

RECEIVED SEP 12 1950 BUREAU SAN. ENG.

1. County Kenosha — Town ☒ / Village ☐ / City ☐ Pleasant Prairie (Check one and give name)

2. Location Section 34, T 1N, R 22E
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Leon Spitzer
Name of individual, partnership or firm

4. Mail Address Route 3 Box 194 Kenosha Wis
Complete address required

5. From well to nearest: Building 6 ft; sewer ---- ft; drain ---- ft; septic tank 60 ft; dry well or filter bed ---- ft; abandoned well ---- ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia (in.)	From (ft.)	To (ft.)
10	10			6	10

8. CASING AND LINER PIPE OR CURBING:

Dia (in.)	Kind	From (ft.)	To (ft.)
700	Steel casing	0	210

9. GROUT:

Kind	From (ft.)	To (ft.)
Puddle clay fill	0	10

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
clay & stone	0	169
dry gravel	41	210
Limestone	50	260

Construction of the well was completed on: aug 28 1950

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ☒ No ☐

Was the well sealed watertight upon completion? Yes ☒ No ☐

11. MISCELLANEOUS DATA:

Yield test: 2 Hrs. at 20 GPM.

Depth from surface to water-level: 100 ft.

Water-level when pumping: 110 ft.

Water sample was sent to the state laboratory at: Kenosha (City) on aug 30 1950

Signature Ernie Bullington (Registered Well Driller) 1618½ West St Racine Wis (Complete Mail Address)

Please do not write in space below

Rec'd ---- No ----

Ans'd ----

Interpretation ----

K E 7 3 8 5

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner ----

LOG # 12

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

RECEIVED
DEC 3 1963
SANITARY ENGINEERING

See Instructions on Reverse Side

1. County Kenosha — Town ☒ / Village ☐ / City ☐ Pleasant Prairie (Check one and give name)

2. Location Sec 34, T1N, R22E
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Alvin Sarauer
Name of individual, partnership or firm

4. Mail Address Rte 1, Box 22, Kenosha
Complete address required

5. From well to nearest: Building 15 ft; sewer --- ft; drain 15 ft; septic tank 50 ft; dry well or filter bed 50 ft; abandoned well --- ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			
6	20	115			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	std blk 19½ lb	0	115

9. GROUT:

Kind	From (ft.)	To (ft.)
clay slurry	0	20

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
yellow clay	0	13
blue clay	13	91
hard pan	91	113
sand	113	115

11. MISCELLANEOUS DATA:

Yield test: 12 Hrs. at 4 GPM.

Depth from surface to water-level: 65 ft.

Water-level when pumping: 85 ft.

Water sample was sent to the state laboratory at: Madison (City) on 11/21/63 19---

Construction of the well was completed on: November 18 19 63

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No

Was the well sealed watertight upon completion? Yes X No

Signature R. E. Hoover
Registered Well Driller

West 33rd Street, Zion, Illinois
Complete Mail Address

Please do not write in space below

Rec'd ---- No ----

Ans'd ----

Interpretation ----

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

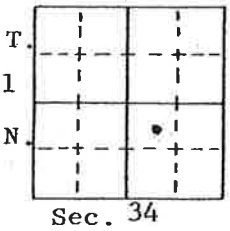
Examiner ----

UNIVERSITY OF WISCONSIN GEOLOGICAL & NATURAL HISTORY SURVEY
1815 University Avenue, Madison, Wisconsin 53706

LOG # 13

Well name Timber Ridge Water System Well
Pleasant Prairie Township
Owner.... Town of Pleasant Prairie
Address.. 9915 39th Ave.
Kenosha, WI 53142
Driller.. Layne-Northwest Co.
Engineer. Jensen & Johnson
Elkhorn, Wisconsin

County: Kenosha
Completed... 11/76
Field check. USGS - H. Young
Altitude.... 719' ETM
Use..... Municipal
Static w.l.. 280'
Spec. cap... 6.3 GPM/ft



Loc: NE¼,NW¼,NW¼,SE¼,NW¼,SE¼,Sec. 34,T. 1N.,R. 22E. Quad. Wadsworth 7½'

Drill Hole						Casing & Liner Pipe or Curbing							
Dia.	from	to	Dia.	from	to	Dia.	Wgt.& Kind	from	to	Dia.	Wgt.& Kind	from	to
28"	0	205'	15"	620'	1962'	20"	API5LB 3/8 wall welded	0	205'	16"	API5LB welded 3/8 wall	+10'	620'
19"	205'	620'											

Grout	from	to
Neat Cement	0	620'

Drilling method: direct rotary
Samples from 0 to 1955' Rec'd: 10/29/76,7/17/78 7/18/78,7/19/78

Studied by: Kathleen Massie
Formations: Drift, Silurian Undifferentiated, Maquoketa Formation, Sinnipee Group, St. Peter Sandstone, Prairie du Chien Group, St. Lawrence Formation (Black Earth Member), Tunnel City Group, Wonewoc Fm, Eau Claire Fm, Mt.Simon Ss.
Issued:10/6/83

Remarks: Well tested for 24 hours at 602 GPM with 96 feet of drawdown.
Driller reports total well depth of 1962'. Samples 370-375' & 375-380' were in unlabeled bags.

LOG OF WELL:

Depths	Graphic Section	Rock Type	Color	Grain Size Mode	Grain Size Range	Miscellaneous Characteristics
0-160		NO SAMPLE. Driller reports Drift.				

Log No.G233-Ke-301

ell name: Timber Ridge Water System Well

Depths	Graphic Section	Rock Type	Color	Grain Size Mode	Grain Size Range	Miscellaneous Characteristics
160–176		NO	SAMPLE. Driller reports Drift.			
176–200		NO	SAMPLE. Driller reports same as following intervals.			
200–205		Dolomite	Mxd gray	M	Fn/M	Trace vugs. Much caved gravel.
205–210		"	Light gray	"	"	Few vugs. Ltl caved gravel. Trace pyrite, fossil fragments.
210–215		"	"	"	"	Same.
215–220		"	"	"	"	Trace vugs, pyrite, caved gravel.
220–225		"	"	"	"	Same.
225–230		"	White	"	"	Trace vugs, pyrite.
230–235		"	"	"	"	Trace pyrite.
235–240		"	"	"	"	Same.
240–245		"	"	"	"	"
245–250		"	Light gray	"	"	Limy. Few vugs. Trace pyrite.
250–255		"	"	Fn	"	Limy. Few vugs. Trace pyrite, fossil molds.
255–260		"	White	"	"	Limy. Few vugs. Trace pyrite.
260–265		"	Light gray	Fn	"	Same plus much caved clay & sand.
265–270		"	"	"	"	Limy. Trace vugs, pyrite.
270–275		"	"	"	"	Limy. Trace pyrite, white chert.
275–280		"	"	"	"	Limy. Trace vugs, pyrite.
280–285		"	"	"	"	Limy. Trace pyrite, fossiliferous white chert.
285–290		"	"	"	"	Same.
290–295		"	"	"	"	"
295–300		"	"	"	"	Limy. Trace pyrite, gray mottling.
[illegible]–305		"	Lt gy&lt br gy	"	"	Same.
[illegible]–310		"	"	"	"	Same plus trace white chert.
310–315		"	Light gray	"	"	Limy. Trace pyrite, gray mottling.
315–320		"	"	"	"	Limy. Trace pyrite, green mottling. gray mottling.
320–325		"	"	"	"	Same but much green mottling, trace white chert.
325–330		"	"	"	"	Limy. Tr pyr, wh cht, green mottling, black speckling, pnk mot.
330–335		"	"	"	"	Same but much green mottling.
335–340		"	"	"	"	Limy. Tr pyr, wh cht, green mottling, pink mottling.
340–345		"	"	M	"	Limy. Tr pyr, bn mottling, white chert, green mottling.
345–350		"	"	"	"	Same.
350–355		"	"	Fn	"	Limy. Trace pyrite, white chert, green mottling.
355–360		"	"	"	"	Same plus trace calcite crystals.
360–365		"	"	"	"	Same.
365–370		"	"	"	"	"
370–375		"	"	M	"	Limy. Much white chert. Trace pyrite, green mottling.
375–380		"	Pale brown	"	"	Limy. Ltl white chert (some fossif). Tr pyrite, bn mottling.
380–385		"	"	"	"	Limy. Trace white chert, pyrite, brown mottling.
385–390		"	V pl brown	"	"	Little brown mottling. Trace white chert, pyrite.
390–395		"	Lt bn gy	"	"	Same.
395–400		"	"	"	"	Same plus trace Fn glauconite.
400–405		"	"	"	"	Same.
405–410		"	"	"	"	"
410–415		"	Brown	"	"	"
415–420		"	Light gray	"	"	Little brown mottling, Fn glauconite.
420–425		"	"	"	"	Trace brown mottling, Fn glauconite.
425–430		"	"	"	"	Same plus trace white chert.
430–435		"	"	"	"	Much fossif dark gray shale. Tr brown mottling, wh chert, pyr.
435–440		Shale	Green gray	—	—	Dolomitic. Much dol. Ltl fossif dark gray shale. Trace pyrite.
440–445		"	"	—	—	Dolomitic. Much dol. Tr fossiliferous dk gray shale, pyrite.
445–450		"	"	—	—	Same but much fossiliferous dolomite.
450–455		Dolomite	Light gray	M	Fn/M	Many fossil fragments. Trace pyrite, green gray shale.
455–460		"	"	"	"	Much gn gy sh. Few foss frags. Tr pyrite, glauconite, wh chert.
[illegible]–465		"	"	"	"	Ltl V fossif wh cht. Few foss frags. Tr pyr, Fn glauc, bl gy sh.
[illegible]–470		"	"	"	"	Tr V fossif wh cht, bl gy sh, pyr, Fn-Mglauc, fossil fragments.
470–475		Shale	Green gray	—	—	Much dol. Tr very fossif white chert, pyrite, fossil fragments.
475–480		"	"	—	—	Much dol. Tr white chert, fossil fragments, pyr, Fn glauconite.
480–485		"	Gray	—	—	Much very fossif dolomite. Many fossif fragments. Trace pyrite.
485–490		Dolomite	"	M	Fn/M	Many fossil fragments. Much shale. Trace pyrite.

Well name: Timber Ridge Water System Well

Depths	Graphic Section	Rock Type	Color	Grain Size		Miscellaneous Characteristics
				Mode	Range	
490-495		Dolomite	Gray	M	Fn/M	Many fossil fragments. Much shale. Tr pyrite, white chert.
495-500		"	"	"	"	Same plus trace M glauconite.
500-505		Dol & Shale	"	"	"	Many fossil fragments. Trace pyrite. Dolomitic (shale).
505-510		Shale	"	—	—	Dolomitic. Much fossiliferous dol. Few foss frags. Tr pyrite.
510-515		"	"	—	—	Same.
515-520		Dolomite	"	M	Fn/M	Many foss frags. Ltl shale. Tr pyrite, finely dissem pyrite.
520-525		"	"	"	"	Same.
525-530		"	"	"	"	Same plus much brown mottling.
530-535		"	"	"	"	Much shale. Many foss frags. Tr pyrite, finely dissem pyrite.
535-540		Shale	Green gray	—	—	Dolomitic. Few foss frags. Ltl fossiliferous dolomite. Tr pyr.
540-545		"	"	—	—	Same.
545-550		"	"	—	—	"
550-555		"	"	—	—	Same plus trace white chert, brown mottling.
555-560		"	"	—	—	Dolomitic. Trace fossil fragments, dolomite, pyrite.
560-565		"	"	—	—	Same.
565-570		Dolomite	Dark gray	M	Fn/M	Mch bn mot. Ltl gy sh. Tr foss frags, pyr, finely dissem pyrite.
570-575		NO SAMPLE. Driller reports same as adjacent intervals.				
575-580		Dolomite	Dark gray	M	Fn/M	Mch bn mot. Mny foss frags. Ltl gy sh. Tr pyrite, fny dissem pyr.
580-585		Shale	Gray	—	—	Dolomitic. Few fossil fragments. Ltl dolomite. Trace pyrite.
585-590		"	"	—	—	Same but trace fossil fragments.
590-595		"	"	—	—	Same.
595-600		"	"	—	—	Dolomitic. Trace fossil fragments, dolomite, pyrite.
600-605		"	"	—	—	Same.
605-610		"	"	—	—	"
610-615		"	Dark gray	—	—	Same plus trace white chert.
615-620		"	"	—	—	Dolomitic. Trace fossil fragments, pyrite, dolomite.
620-625		"	"	—	—	Same.
625-630		"	"	—	—	"
630-635		"	"	—	—	"
635-640		"	Gray	—	—	"
640-645		NO SAMPLE. Driller reports gray to brown limestone.				
645-650		Dolomite	Gray	M	Fn/M	Many metallic fragments from drilling. Few foss frags. Ltl pyr.
650-655		"	"	"	"	Same but trace pyrite. Tr calc rmbs.
655-660		"	"	"	"	Same plus trace brown mottlings.
660-665		"	"	"	"	Trace pyrite, fossil fragments, brown mottling.
665-670		"	Gray brown	M	Fn/M	Trace pyrite, brown mottling, shale, finely disseminated pyrite.
670-675		"	Lt browngray	"	"	Same.
675-680		"	Gray brown	"	"	Trace pyrite, brown mottling, finely dissem pyr, foss fragments.
680-685		"	"	"	"	Same.
685-690		"	"	"	"	"
690-695		"	"	"	"	"
695-700		"	Lt bn gray	"	"	"
700-705		"	Gray brown	"	"	"
705-710		"	"	"	"	"
710-715		"	"	"	"	"
715-720		"	"	"	"	"
720-725		"	"	"	"	"
725-730		"	"	"	"	"
730-735		"	"	"	"	"
735-740		"	"	"	"	Same plus trace gray shale.
740-745		"	"	"	"	Same but no shale.
745-750		"	"	"	"	Trace pyrite, brown mottling, finely dissem pyr, fossil frags.
750-755		"	"	"	"	Same.
755-760		"	"	"	"	"
760-765		"	"	"	"	"
765-770		"	"	"	"	"
770-775		"	"	"	"	"
775-780		"	"	"	"	"
780-785		"	"	"	"	"
785-790		"	"	"	"	"
790-795		"	"	"	"	"
795-800		"	"	"	"	"
800-805		"	Pale brown	"	"	"
805-810		"	"	M	Fn/M	"
810-815		"	"	"	"	"
815-820		"	Lt gray bn	"	"	Trace pyrite, finely dissem pyr, gray mot, fossil fragments.

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815 University Avenue, Madison, Wisconsin 53706

Log No. G233-Ke-301

Well name: Timber Ridge Water System Well

Depths	Graphic Section	Rock Type	Color	Grain Size		Miscellaneous Characteristics
				Mode	Range	
820–825		Dolomite	Lt gray bn	M	Fn/M	Tr pyr, finely dissem pyr, gray mottling, bn mot, foss frags.
825–830		"	"	"	"	Same but few fossil fragments.
830–835		"	Gray	"	"	Many foss frags. Ltl gray mot. Tr pyr, finely dissem pyr, shale.
835–840		"	"	"	"	Same.
840–845		"	Gray & bn	"	"	Few foss frags. Ltl bn mot. Tr gray mottling, pyrite, shale.
845–850		"	Brown	"	"	Ltl brown mottling. Tr foss frags, gray mottling, pyrite.
850–855	Δ	"	Gray & bn	"	"	Ltl brown & gray mot. Few foss frags. Tr pyrite, white chert.
855–860		"	Gray brown	"	"	Ltl brown mot. Tr gray mot, foss frags. Trace pyrite.
860–865		"	"	"	"	Same.
865–870		"	"	"	"	"
870–875		"	Dk gray bn	"	"	Same but little gray mottling.
875–880		"	Gray brown	"	"	Same.
880–885		"	"	"	"	Ltl dk bn & gy mot. Tr pyrite, finely disseminated pyrite.
885–890		"	"	"	"	Same plus trace fossil fragments.
890–895		"	"	"	"	Same.
895–900		"	"	"	"	"
900–905		"	"	"	"	Ltl rd spkl. Tr gy mot, pyr, finely dissem pyr, fossil frags.
905–910		"	"	"	"	Same.
910–915		"	"	"	"	"
915–920		"	"	"	"	Same but trace red speckling.
920–925		"	"	"	"	Same.
925–930		"	Dk gray bn	"	"	Much gy mot. Tr pyrite, finely disseminated pyr, fossil frags.
930–935		"	"	"	"	Same.
935–940		Dol & Ss	Gray brown	M&C	Fn/M & Vfn/VC	Ltl gy mot. Tr pyr, fnly dissem pyr, foss frags. Rnd. Mch dol cem.
940–945		Sandstone	Gray	M	Vfn/VC	Rounded. Much very good dolomite cement, dolomite.
945–950		"	Gray brown	"	"	Same.
950–955		"	"	"	"	"
955–960		"	"	"	"	Same plus trace pyrite.
960–965		"	Light gray	"	"	Rounded. Much V G dol cem, dolomite. Tr pyr, fossil fragments.
965–970		Siltstone	"	—	—	Dolomitic. Mch floating sand. Tr pyr, dolic cemtd sandstone.
970–975		"	"	—	—	Same.
975–980		"	"	—	—	"
980–985		"	"	—	—	"
985–990		"	Lt gn gray	—	—	"
990–995		"	"	—	—	"
995–1000		Sandstone	Pale green	C	Vfn/VC	Rnd. Trace good dolomite cement. Ltl siltstone. Trace pyrite.
1000–1005		"	Light gray	"	"	Same but trace siltstone.
1005–1010	G	"	"	"	"	Rnd. Ltl G dol cem. Tr pyrite cement. Mch siltstone. Tr glauc.
1010–1015	G Δ	Ss & Sts	"	"	"	Rnd. Tr G dol & pyr cem. Tr glauc, white chert. Mch fltg sand.
1015–1020		"	"	"	"	Same.
1020–1025	Δ G	"	"	"	"	"
1025–1030	G	Sandstone	"	"	"	Rnd. Ltl G dol cem. Tr pyr cem. Much siltstone. Tr glauconite.
1030–1035		"	"	"	"	Same.
1035–1040	G	"	"	"	"	"
1040–1045		"	"	"	"	"
1045–1050		"	"	"	"	Rnd. Ltl G dol cem. Tr pyr cem. Much light gray clay. Ltl sts.
1050–1055		"	"	"	"	Same but much siltstone, trace clay.
1055–1060		"	"	"	"	Rnd. Tr dolomite & pyrite cement, siltstone, clay, glauconite.
1060–1065	G	"	"	"	"	Same.
1065–1070	G	"	"	"	"	Rnd. Ltl G dol cem. Tr pyr cem. Much siltstone. Tr glauconite.
1070–1075	G	"	"	"	"	Rnd. Much G dol cem. Tr pyr cem. Much siltstone. Tr glauconite.
1075–1080	Δ G	"	"	"	"	Same plus trace white chert.
1080–1085	G Δ	"	"	"	"	Rnd. Tr dol & pyr cem, siltstone, dolomite, glauc, white chert.
1085–1090	Δ	"	"	"	"	Srnd to rnd. Much G dol cement. Tr pyrite. Little siltstone. Tr
1090–1095	G	"	"	"	"	Same. dol, glauc, cht.
1095–1100	NO SAMPLE. Driller reports sandy limestone with streaks of shale.					
1100–1105		Dolomite		M	Fn/M	Much dolomitic cemented sandstone. Trace green staining, pyrite.
1105–1110		"	"	"	"	Trace sand, siltstone.
1110–1115		"	"	"	"	Much red mottling. Trace pyrite.
1115–1120		"	"	"	"	Little red mottling. Trace pyrite, sandstone.
1120–1125		"	"	"	"	Trace red mottling, green staining, sandstone.
1125–1130	G	"	"	"	"	Trace red mottling, siltstone, glauconite.
1130–1135	G	"	"	"	"	Same plus trace pyrite.
1135–1140	G	"	"	"	"	Same.
1140–1145	G	"	"	"	"	Trace red mottling, glauconite, pyrite.
1145–1150	G	"	"	"	"	Same.

Log No.G233-Ke-301

Well name: Timber Ridge Water System Well

Depths	Graphic Section	Rock Type	Color	Grain Size		Miscellaneous Characteristics
				Mode	Range	
1150–1155		Dolomite	Light gray	M	Fn/M	Much sandstone, Fn–M glauconite. Little red mottling.
1155–1160		Sandstone	Gray	M	Vfn/C	Sang to rnd. Mch dolic cem. Mch dol, Fn–M glauc. Tr pyrite.
1160–1165		"	Red brown	Fn	"	Same plus little siltstone.
1165–1170		"	"	"	"	Same.
1170–1175		"	"	M	"	Sang to rnd. Mch dolic cem, bn clay, Fn–M glauc. Ltl sts.
1175–1180		"	"	"	"	Same.
1180–1185		"	"	Fn	"	Sang to rnd. Much dol cem, red brown silt & clay, Fn–M glauc.
1185–1190		"	"	"	"	Same plus trace dolomite.
1190–1195		"	"	Fn/M	"	Sang to rnd. Mch dol cem, red bn st & cl. Ltl Fn–M glauc. Tr
1195–1200		"	"	"	"	Same. dol.
1200–1205		"	"	"	"	"
1205–1210		"	"	"	Vfn/VC	Same plus trace VC white sand grains.
1210–1215		"	"	"	"	Sang to rnd. Mch dol cem. Ltl rd bn st & cl, Fn–M glauc. Tr dol,
1215–1220		"	"	"	"	Same. wh ss.
1220–1225		"	"	M	"	Same but little white sandstone.
1225–1230		"	Mxd red bn	"	"	Srnd to rnd. Mch G dol cem, wh ss. Ltl cl, st, Fn–M glauc, dol.
1230–1235		"	Pk & rd bn	C	"	Rnd. Tr G dol cem. Ltl dol, T.C., pink clay, glauconite.
1235–1240		"	"	"	"	Same but much pink clay.
1240–1245		"	"	"	"	Rounded. Ltl G dol cem. Much T.C.. Ltl dolomite, Fn–M glauconite.
1245–1250		"	"	"	"	Rounded. Much G dol cem. Trace pyrite cement. Much T.C., dol.
1250–1255		"	"	"	"	Same. Tr M glauc.
1255–1260		"	"	"	"	"
1260–1265		"	Pink	M/C	"	Rnd. Mch G dol cem. Tr pyr cem. Ltl dolomite, "caved" T.C.
1265–1270		"	"	"	"	Rnd. Tr dol & pyr cem, dol, "caved" T.C., Fn glauconite.
1270–1275		"	White	C	"	Rounded. Ltl dol cem. Tr pyr cem, dolomite, "caved" T.C.
1275–1280		"	"	"	"	Same but little "caved" Tunnel City Group.
1280–1285		"	"	"	"	Same.
1285–1290		"	"	"	"	"
1290–1295		"	"	"	"	Same plus trace Fn glauconite.
1295–1300		"	"	M/C	"	Same.
1300–1305		"	"	"	"	Rounded. Ltl dol cem. Tr pyrite cem, dol, "caved" T.C., bl sh.
1305–1310		"	"	"	"	Same plus trace Fn glauconite.
1310–1315		"	Pk & rd bn	"	"	Rnd. Mch dol cem. Tr pyr cem. Ltl bl sh. Tr sts, dol, Fn glauc.
1315–1320		"	"	M	"	Same plus much light red brown shale.
1320–1325		"	"	Fn	"	Srnd to rnd. Mch dol cem. Ltl sts, bl sh. Tr Fn glauc, lt rd
1325–1330		"	"	"	"	Same. bn sh, dol.
1330–1335		"	"	"	"	Srnd to rnd. Mch V G dol cem. Ltl sts, lt rd bn cl. Tr Fn glauc,
1335–1340		"	"	"	"	Same but much siltstone, light red brown clay. pyr, bl sh, dol.
1340–1345		"	"	"	"	Same.
1345–1350		"	"	"	"	"
1350–1355		"	"	"	"	Same but little Fn glauconite.
1355–1360		"	"	"	"	Same.
1360–1365		"	"	"	"	Same plus trace mica.
1365–1370		"	Red brown	"	"	Srnd to rnd. Mch V G dol cem, Fn glauc. Ltl sts, lt rd bn clay.
1370–1375		"	"	"	"	Same. Tr mica, bl sh.
1375–1380		"	Gray	"	"	Same but no light red brown clay.
1380–1385		"	"	"	"	Srnd to rnd. Mch V G dol cem, Fn glauc. Ltl wh cl. Tr sts, dol.
1385–1390		"	"	"	"	Same.
1390–1395		"	"	"	"	"
1395–1400		"	"	"	"	"
1400–1405		"	"	"	"	"
1405–1410		"	"	"	"	"
1410–1415		NO SAMPLE. Driller reports same as adjacent intervals.				
1415–1420		Sandstone	Red brown	Fn	Vfn/VC	Srnd. Mch V G dol cem, Vfn–Fn glauc, rd bn cl. Ltl bl sh, Tr
1420–1425		"	Gy & rd bn	Vfn	Vfn/M	Srnd to rnd. Mch V G dol cem, Vfn glauc, sts. Ltl bl sh. mica.
1425–1430		"	"	"	"	Same plus much silt, clay. Tr mica, dol.
1430–1435		"	"	"	"	Srnd to rnd. Mch V G dol cem, sts. Ltl rd bn cl, Fn glauc. Tr
1435–1440		"	Wh & rd bn	Fn/M	Vfn/VC	Same but clay is pink. mica, dol.
1440–1445		"	"	"	"	Srnd to rnd. Mch V G dol cem. Ltl sts, pk cl. Tr Fn glauc, mica,
1445–1450		"	"	"	"	Same. bl sh.
1450–1455		NO SAMPLE. Driller reports same as adjacent intervals.				
1455–1460		Sandstone	Wh & rd bn	Fn/M	Vfn/VC	Rnd. Mch V G dol cem. Ltl dol, pk clay. Tr Fn glauc, pyr, bl sh,
1460–1465		"	"	"	"	Same but much pink clay. mica.
1465–1470		"	Mxd pink	"	"	Same.
1470–1475		"	"	M	"	Rnd. Ltl G dol cem. Mch pk cl. Ltl dol. Tr Fn glauc. bl shale.
1475–1480		"	"	"	"	Same but much good dolomite cement.

Well name: Timber Ridge Water System Well

Depths	Graphic Section	Rock Type	Color	Grain Size		Miscellaneous Characteristics
				Mode	Range	
1480–1485		Sandstone	Mxd pink	C	Vfn/VC	Rnd. Mch G dol cem. Mch pk clay. Ltl dol. Tr Fn glauc, pyr,
1485–1490		"	"	"	"	Same. bl sh.
1490–1495		"	"	M	"	"
1495–1500		"	"	"	"	"
1500–1505		"	"	"	"	"
1505–1510		"	"	"	"	"
1510–1515		"	"	"	"	"
1515–1520		"	"	"	"	Rnd. Much very good dolomite cement, pink clay. Trace dolomite.
1520–1525		"	"	Fn/M	"	Same plus trace Fn glauconite.
1525–1530		"	"	"	"	Same.
1530–1535		"	"	M	"	"
1535–1540		"	"	"	"	"
1540–1545		"	"	"	"	Rnd. Much V G dol cem, pink clay. Ltl dol. Tr sts, Fn glauc.
1545–1550		"	Pk & rd bn	"	"	Same.
1550–1555		"	"	"	"	"
1555–1560		"	"	Fn/M	"	"
1560–1565		"	"	M	"	"
1565–1570		"	"	"	"	Rnd. Much very good dolomite cement. Tr dol, sts, pink clay.
1570–1575		"	"	Fn/M	"	Rnd. Mch V G dol cem. Tr pyr cem, Ltl pink clay. Tr dol, sts.
1575–1580		"	"	"	"	Same.
1580–1585		"	"	M	"	Rnd. Mch V G dol cem, pink clay. Ltl dol. Tr sts, Fn glauc,
1585–1590		"	"	"	"	Same. bl sh.
1590–1595		"	"	Fn/M	"	Same but little pink clay.
1595–1600		"	"	"	"	Same but much red brown clay.
1600–1605		"	"	"	"	Same.
1605–1610		"	"	"	"	"
1610–1615		"	"	"	"	"
1615–1620		"	"	"	"	"
1620–1625		"	"	"	"	"
1625–1630		"	"	M	"	"
1630–1635		"	"	Fn/M	"	Rnd. Much V G dol cem. Ltl pink clay, dol. Tr sts, pyr, bl sh.
1635–1640		"	"	"	"	Same.
1640–1645		"	"	"	"	Same but much pink clay.
1645–1650		"	"	"	"	Same.
1650–1655		"	"	"	"	"
1655–1660		"	"	"	"	"
1660–1665		"	"	"	"	Rnd. Much V G dol cem, red brown clay. Ltl dol, sts. Tr pyrite.
1665–1670		"	"	Fn	"	Same but much siltstone.
1670–1675		"	"	Fn/M	"	Rnd. Much V G dol cem, pink clay. Ltl sts. Tr dolomite, pyrite.
1675–1680		"	"	"	"	Rnd. Much V G dol cem, red brown clay, sts. Tr dol, pyr, bl sh.
1680–1685		"	"	"	"	Same.
1685–1690		"	"	"	"	Same but pink clay.
1690–1695		"	"	"	"	Same but little siltstone.
1695–1700		"	"	"	"	Same.
1700–1705		"	"	"	"	"
1705–1710		"	"	"	"	"
1710–1715		"	"	"	"	"
1715–1720		"	"	"	"	"
1720–1725		"	Pink	M	"	"
1725–1730		"	"	Fn/M	"	"
1730–1735		"	"	"	"	Rnd. Much V G dol cem, pk clay. Tr sts, ig trap, pyr, bl shale.
1735–1740		"	"	"	"	Same but no trap.
1740–1745		"	"	"	"	Same.
1745–1750		"	"	"	"	"
1750–1755		"	"	"	"	Rnd. Much V G dol cem, pink clay. Tr sts, pyrite, blue shale.
1755–1760		"	"	"	"	Same but little siltstone.
1760–1765		"	"	"	"	Same.
1765–1770		"	"	M	"	"
1770–1775		"	"	"	"	"
1775–1780		"	"	"	"	Rnd. Trace good dolomite cement. Much pink clay. Tr pyr, bl sh.
1780–1785		"	"	"	"	Same.
1785–1790		"	"	"	"	"
1790–1795		"	"	Fn/M	"	"
1795–1800		"	"	"	"	"
1800–1805		"	"	"	"	Rnd. Ltl good dolomite cement. Much pink clay. Tr pyr, bl shale.
1805–1810		"	"	"	"	Same.

UNIVERSITY OF WISCONSIN GEOLOGICAL & NATURAL HISTORY SURVEY
1815 University Avenue, Madison, Wisconsin 53706

Log No.G233-Ke-301

Well name: Timber Ridge Water System Well

Depths	Graphic Section	Rock Type	Color	Grain Size		Miscellaneous Characteristics
				Mode	Range	
1810–1815		Sandstone	Pink	Fn/M	Vfn/VC	Rnd. Ltl good dolomite cement. Much pink clay. Tr pyr, bl shale.
1815–1820		"	"	"	"	Same.
1820–1825		"	"	"	"	"
1825–1830		"	"	"	"	"
1830–1835		"	"	"	"	Same but much good dolomite cement.
1835–1840		"	"	"	"	Same.
1840–1845		"	Pk & rd bn	"	"	Rnd. Ltl G dol cem. Much red bn silt & clay. Tr pyrite, bl sh.
1845–1850		"	Pink	"	"	Same but pink clay.
1850–1855		"	Pk & rd bn	"	"	Rnd. Mch G dol cem, rd bn silt, pk clay. Tr pyr, bl shale, dol.
1855–1860	G	"	"	"	"	Same plus trace Vfn glauconite.
1860–1865		"	Lt red bn	"	"	Same plus trace mica.
1865–1870	G	"	"	"	"	Same.
1870–1875		"	"	"	"	"
1875–1880	G M	"	"	"	"	Rnd. Mch G dol cem, rd bn cl. Ltl sts, mica. Tr pyr, dol, Vfn glauc.
1880–1885	M	"	"	"	"	Same but trace siltstone.
1885–1890		"	"	"	"	Same.
1890–1895	G	"	Red brown	"	"	Same but little siltstone.
1895–1900	M	"	"	"	"	Same.
1900–1905	G	"	"	"	"	Rnd. Mch G dol cem. Ltl pk cl, sts. Tr mica, Vfn glauconite.
1905–1910	G	"	"	"	"	Same plus much silt.
1910–1915		"	"	"	"	Same.
1915–1920	M	"	"	"	"	Rnd. Much G dol cem, red brown silt & clay. Little mica.
1920–1925		"	"	"	"	Same.
1925–1930		"	"	"	"	"
1930–1935	M	"	"	"	"	"
1935–1940	M	"	"	"	"	"
1940–1945		"	"	"	"	"
1945–1950		"	"	"	"	"
1950–1955	M	"	"	"	"	"

END OF LOG

WUWN = 86086

WELL CONSTRUCTOR'S REPORT
FORM 3300–15

NOV 15 1976

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

KE-301-G

1 COUNTY: Kenosha

CHECK ONE: [X] Town [ ] Village [ ] City

NAME: Pleasant Prairie

2 LOCATION – ¼ Section: ~~NE¼ SE¼~~ | Section: 34 | Township: 1N | Range: 22E

OR – Grid or street no: | Street name: NE, NW, NW, SE, NW, SE, Sec 34

AND – If available subdivision name lot & block no:

3 OWNER AT TIME OF DRILLING: Town of Pleasant Prairie

ADDRESS: Kenosha, Wi.

POST OFFICE: Kenosha, Wi.

4. Distance in feet from well to nearest. (Record answer in appropriate block)

BUILDING	SANITARY SEWER C I	SANITARY SEWER TILE	FLOOR DRAIN C I	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C I.	WASTE WATER DRAIN TILE

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for: Municipality

6. DRILLHOLE

Dia (in.)	From (ft.)	To (ft.)	Dia (in.)	From (ft.)	To (ft.)
28"	Surface	205'	15"	620'	1962'
19"	200'	620'			

7. CASING, LINER, CURBING, AND SCREEN

Dia (in.)	Kind and Weight	From (ft.)	To (ft.)
2	API5LB 3/8 wall welded	Surface	205'
16"	API5LB welded 3/8 wall	10'+ surface-620'	

KE 7400

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Neat Cement	Surface	620'

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Drift	Surface	176'
Limestone	176'	390'
Limestone w/Shale Streaks	390	474'
Shale	474'	567'
Shale s/Limestone Streaks	567'	605'
Gray to Brown Limestone	605'	941'
Sandstone with/Shale Streaks	941'	1080'
Sandy Limestone Streaks of Shale	1080'	1320'
Sandstone with Limestone & Shale Streaks	1320'	1500'
Sandstone Fine to medium	1500'	1962'

Perm Well # 80501

10. TYPE OF DRILLING MACHINE USED
[ ] Cable Tool [X] Direct Rotary [ ] Reverse Rotary
[ ] Rotary – air w/drilling mud [ ] Rotary – hammer with drilling mud & air [ ] Jetting with [ ] Air [ ] Water

11. MISCELLANEOUS DATA
Yield test: 24 Hrs at 602 GPM
Depth from surface to normal water level 280 ft
Depth to water level when pumping 376 ft.

Well construction completed on November 19 76
Well is terminated 120 inches [X] above [ ] below final grade
Well disinfected upon completion [X] Yes [ ] No
Well sealed watertight upon completion [XX] Yes [ ] No

Water sample sent to State of Wisconsin Lab laboratory on. 10/19/76 19

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: T. E. Seicht
Layne-Northwest Registered Well Driller

COMPLETE MAIL ADDRESS: Layne-Northwest Div. of Layne-Western Co. Inc. 6005 W. Martin d Milwaukee, Wi. 53213

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS	GAS – 48 HRS.	CONFIRMED	REMARKS
cc: SE Dist, SGS, PWS				PLOT

REV 3–71

WELL CONSTRUCTOR'S REPORT

Wel-6

WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE
PARTMENT O:
Box 450
Madison, Wisconsin 53701

LOG # 14

COUNTY: Kenosha

CHECK ONE: ☒ Town ☐ Village ☐ City

NAME: Pleasant Prairie

LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)
SE¼ Sec 34 T1N R22E

OWNER AT TIME OF DRILLING
KVM, Inc.

OWNER'S COMPLETE MAIL ADDRESS
1913 Edgewood, Waukegan, Illinois

5. Distance in feet from well to nearest (Record answer in appropriate block)

BUILDING	SANITARY SEWER C.I.	SANITARY SEWER TILE	FLOOR DRAIN C.I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C.I.	WASTE WATER DRAIN TILE

CLEAR WATER DRAIN C.I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Oakwood Lake Resort

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)
10	Surface	20
6	20	149

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	new black steel	Surface	141
	19.45 ppf T&C		
6	Brass screen	141	149
	#25 & #30 slot		

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Clay slurry	Surface	20

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Yellow clay	Surface	19
Blue clay	19	43
Gravel & clay	43	68
Clay	68	123
Gravel & clay	123	136
Sandy clay	136	141
Sand and gravel	141	149
Clay	at	149

11. MISCELLANEOUS DATA

Yield test: 1 hrs. at 30 GPM

Depth from surface to normal water level: 52 ft.

Depth to water level when pumping: 75 ft.

Water sample sent to: laboratory on: 19

Well construction completed on: March 1971

Well is terminated: 20 inches ☒ above ☐ below final grade

Well disinfected upon completion: ☒ Yes ☐ No

Well sealed watertight upon completion: ☒ Yes ☐ No

Your opinion concerning difficulties encountered, and data relating to nearby wells, screens, seal, method of finishing the well, amount of cement used in grouting, blasting, subsurface pumprooms, etc., information concerning difficulties encountered, and data relating to nearby wells, screens, seal, method of finishing the well, amount of cement used in grouting, blasting, subsurface pumprooms, etc., are given on reverse side.

KE 7399

SIGNATURE

Registered Well Driller

COMPLETE MAIL ADDRESS: HOOVER WELL SERVICE
West 33rd Street
Zion, Illinois 60099

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

LOG # 15

WELL CONSTRUCTOR'S REPORT

Wis.-6

WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

COUNTY: Kenosha

CHECK ONE: ☒ Town ☐ Village ☐ City

NAME: Pleasant Prairie

LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)

SE¼ Sec 34 T1N R22E

OWNER AT TIME OF DRILLING

KVM, Inc.

OWNER'S COMPLETE MAIL ADDRESS

1913 Edgewood, Waukegan, Illinois

1. Distance in feet from well to nearest (Record answer in appropriate blank)

BUILDING	SANITARY SEWER C.I.	SANITARY SEWER TILE	FLOOR DRAIN C.I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C.I.	WASTE WATER DRAIN TILE

STORM WATER DRAIN C.I.	STORM WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE

OTHER POLLUTION SOURCES (Also description such as dump, quarry, drainage well, stream, pond, lake, etc.)

2. Well is intended to supply water for: Oakwood Lake Project

3. DRILLHOLE

Dia. (in.)	From (Ft.)	To (Ft.)	Dia. (in.)	From (Ft.)	To (Ft.)
10	Surface	20			
6	20	168			

4. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
6	new black steel	Surface	168
	19.45 ppf T&C		

5. GROUT OR OTHER SEALING MATERIAL

Kind	From (Ft.)	To (Ft.)
clay slurry	Surface	20

6. MISCELLANEOUS DATA

Yield test: none Hrs. at GPM

Depth from surface to normal water level: 45 ft.

Depth to water level when pumping: ft.

Water sample sent to: Laboratory on: 19

10. FORMATIONS

Kind	From (Ft.)	To (Ft.)
Yellow clay	Surface	17
Sandy clay	17	28
Gravel & clay	28	40
Clay	40	68
Gravel & clay	68	80
Clay	80	125
Sandy clay	125	127
Sand	127	135
Sandy clay	135	138
Gravel & clay	138	160
Gravel	160	168
Clay	at	168

Well construction completed on April 30, 19 71

Well is terminated 24 Inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

In your opinion, were there any hazards, information concerning difficulties encountered, and data relating to nearby wells, screen intake, method of finishing the well, amount of cement used in grouting, blasting, submersible pump, etc. should be given on reverse side.

K E 7 3 9 8

SIGNATURE: Registered Well Driller

COMPLETE MAIL ADDRESS: HOOVER WELL SERVICE
West 33rd Street
Zion, Illinois 60099

Please do not write in space below

COLIFORM TEST RESULTS	GAL — 24 HRS.	GAL — 48 HRS.	CONFIRMED	REMARKS

ELL CONSTRUCTOR'S REPORT

WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE ... PARTMENT OF ... Bu...
Madison, Wisconsin 53701

LOG # 16

COUNTY: Kenosha

CHECK ONE: ☒ Town ☐ Village ☐ City

NAME: Pleasant Prairie

LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)
SE¼ Sec 34 T1N R22E

OWNER AT TIME OF DRILLING
KVM, Inc. #1

OWNER'S COMPLETE MAIL ADDRESS
1913 Edgewood – Waukegan, Illinois

Distance in feet from well to nearest (Record answer in appropriate block)	BUILDING SANITARY SEWER C. I.	BUILDING SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE

CLEAN WATER DRAIN C. I.	CLEAN WATER DRAIN TILE	SEPTIC TANK	PRIVY	SURFACE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

1. Well is intended to supply water for:
Oakwood Lake Resort

2. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
4½	Surface	210			

3. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
4½	black steel	Surface	200±
	T & C		

4. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Unknown	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Glacial Drift	Surface	200±
Limestone	200	210±

11. MISCELLANEOUS DATA

Yield test: 4 Hrs. at 10 GPM

Depth from surface to normal water level: 75 ft.

Depth to water level when pumping: 168 ft.

Water sample sent to

Well construction completed on ? 19

Well is terminated 50 inches ☐ above ☒ below final grade

Well disinfected upon completion of test ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

laboratory on: 19

Your opinion of ... hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, ... method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumps ... should be given on reverse side.

KE 7397

SIGNATURE

Registered Well Driller

COMPLETE MAIL ADDRESS HOOVER WELL SERVICE
West 33rd Street
Zion, Illinois 60099

Please do not write in space below

TELEPHONE TEST RESULTS	GAL — 24 HRS.	GAL — 48 HRS.	CONFIRMED	REMARKS

LOG # 17

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

AUG 29 1946

1. County Kenosha { Town / ~~Village~~ / City } Pleasant Prairie

2. Location S.E. 1/4, Sec. 34, T 1 N, Range 22 E T/N

3. Owner or Agent Clarence Boseman

4. Address 6611 - 22nd Ave. Kenosha, Wis.

5. From well to nearest: Building_____ft; sewer_____ft; drain_____ft; septic tank_____ft; dry well or filter bed_____ft; abandoned well_____ft.

VACANT PROPERTY

6. Well is intended to supply water for: Domestic use

7. DRILLHOLE OR EXCAVATION:

Dia. (in.)	From (ft.)	To (ft.)
8"	0	12

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
6"	Std. Weight Steel		
	Pipe	0	198'

9. GROUT:

Kind	From (ft.)	To (ft.)
Puddled Clay	0	12'

10. FORMATIONS:

Kind	Thickness (ft.)	Total Depth (ft.)
Sub oil & red clay	21	21
Blue clay	17	38
Hard Pan	12	50
Sand	22	72
Hard Pan	16	88
Hard Blue Clay	10	98
Hard Pan	14	112
Sand	19	131
Hard Pan & Boulders	26	157
Sand & gravel (dry)	14	171
Hard Pan	4	175
~~Sand~~ Hard Blue Clay	10	185
Sand	12	198
Limestone	32	230

11. MISCELLANEOUS DATA:

Yield test: 12 Hrs. at 15 GPM.

Depth from surface to water: 60 ft.

Water-level when pumping: 90 ft.

Water sample sent to laboratory at Kenosha on ~~5/7~~ 5/14 19 46

Signature Wm F Brattle
Registered Well Driller

Construction of the well was completed on 5/7/ 19 46

The well is terminated 10 inches (above) ~~(below)~~ the permanent grade.

Was the well disinfected upon completion? Yes X No

Was the well sealed watertight upon completion? Yes X No

Route #1
Complete Mail Address
Kenosha, Wisconsin.

LOG # 18

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Kenosha — Town ☒ / Village ☐ / City ☐ Pleasant Prairie (Check one and give name)

2. Location South East sec 34, Range 22E T 1N
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Ernie Dittbrandt
Name of individual, partnership or firm

4. Mail Address Route 3 Box 610 Kenosha county Wis
Complete address required

5. From well to nearest: Building 4 ft; sewer 20 ft; drain 20 ft; septic tank 35 ft; dry well or filter bed — ft; abandoned well — ft.

RECEIVED
FEB 14 1950
BUREAU OF SAN. ENG.

6. Well is intended to supply water for:

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	0				10
6	0				225

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
6	Steel Pipe		199

9. GROUT:

Kind	From (ft.)	To (ft.)
Puddle clay fill		10

10. FORMATIONS:

Kind	From	To
clay & stone	0	199
Lime rock	26	225

Construction of the well was completed on: Feb 2 19 50

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ✓ No

Was the well sealed watertight upon completion? Yes ✓ No

11. MISCELLANEOUS DATA:

Yield test: 2 Hrs. at 10 GPM.

Depth from surface to water-level: 84 ft.

Water-level when pumping: 124 ft.

Water sample was sent to the state laboratory at: Kenosha (City) on Feb 4 1950

Signature Ernie Billington (Registered Well Driller) 1618 1/2 West St Racine (Complete Mail Address) Apt 2

Please do not write in space below

Rec'd No.

Ans'd

Interpretation

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner

LOG # 19

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

Wel 6

See Instructions on Reverse Side

1. County Kenosha — Town ☒ / Village ☐ / City ☐ — Pleasant Prairie (Check one and give name)

2. Location Sec. 35, T. 1N, R. 22E
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Michael Russo
Name of individual, partnership or firm

4. Mail Address 5316-21st Ave., Kenosha, Wis.
Complete address required

RECEIVED JUL 8 1965 SANITARY ENGINEERING

5. From well to nearest: Building 50 ft; sewer -- ft; drain 50 ft; septic tank 60 ft; dry well or filter bed 70 ft; abandoned well -- ft.

6. Well is intended to supply water for: Home

7. **DRILLHOLE:**

Dia (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			
6	20	105			

8. **CASING AND LINER PIPE OR CURBING:**

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Std. Steel 19.45	0	105

9. **GROUT:**

Kind	From (ft.)	To (ft.)
Clay Slurry	0	20

10. **FORMATIONS:**

Kind	From (ft.)	To (ft.)
Yellow Clay	0	17
Blue Clay	17	38
Hardpan	38	89
Sand	89	99
Gravel	99	105

11. **MISCELLANEOUS DATA:**

Yield test: 3 Hrs. at 10 GPM.

Depth from surface to water-level: 75 ft.

Water-level when pumping: 75 ft.

Water sample was sent to the state laboratory at: Madison City on 6/21/ 1965

Construction of the well was completed on: March 21, 1965

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes x No

Was the well sealed watertight upon completion? Yes x No

Signature R. C. Hoover
Registered Well Driller

West 33rd Street, Zion, Ill
Hoover Water Well Service
Complete Mail Address

Please do not write in space below

Rec'd ____ No. ____

Ans'd ____

Interpretation ____ KE 7415

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

RECEIVED JUL 16 1965 SANITARY ENGINEERING

Examiner ____

LOG # 20

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

Wel 6

See Instructions on Reverse Side

RECEIVED JUL 8 1965 SANITARY ENGINEERING

1. County Kenosha — Town ☒ / Village ☐ / City ☐ Pleasant Prairie (Check one and give name)

2. Location Sec. 35, T 1N, R. 22E
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Robert Cantway
Name of individual, partnership or firm

4. Mail Address Rt. 1, Box 447B, Kenosha, Wis.
Complete address required

5. From well to nearest: Building 15 ft; sewer --- ft; drain 15 ft; septic tank 50 ft; dry well or filter bed 50 ft; abandoned well --- ft.

6. Well is intended to supply water for: Home use

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			
6	20	108			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6"	Std. Steel 19.45	0	108

9. GROUT:

Kind	From (ft.)	To (ft.)
Clay slurry	0	20

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Yellow Clay	0	11
Blue sandy clay	11	94
Sand	94	108

Construction of the well was completed on:
March 25, 1965
Pump installed June18, 1965

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?
Yes X No

Was the well sealed watertight upon completion?
Yes X No

11. MISCELLANEOUS DATA:

Yield test: 2 Hrs. at 20 GPM.

Depth from surface to water-level: 80 ft.

Water-level when pumping: 80 ft.

Water sample was sent to the state laboratory at:
Madison City on 6/21/ 1965

Signature R. C. Hoover
Registered Well Driller

West 33rd Street, Zion, Ill.
Complete Mail Address

Please do not write in space below

Rec'd ---- No. ----

Ans'd ----

Interpretation ----

KE 7 4 1 6

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

RECEIVED JUL 16 1965 SANITARY ENGINEERING

Examiner ----

LOG # 21

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

Wel 6

See Instructions on Reverse Side

RECEIVED JUL 8 1965 SANITARY ENGINEERING

1. County Kenosha — Town [X] Village [ ] City [ ] Pleasant Prairie (Check one and give name)

2. Location Sec. 35, T. 1N, R. 22E
Name of street and number of premise or Section, Town and Range numbers

3. Owner [X] or Agent [ ] Martin Poteet
Name of individual, partnership or firm

4. Mail Address 2610-24th Ave., Kenosha
Complete address required

5. From well to nearest: Building 10 ft; sewer -- ft; drain 15 ft; septic tank 50 ft; dry well or filter bed 50 ft; abandoned well -- ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			
6	20	114			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Std. Steel 19.45	0	114

9. GROUT:

Kind	From (ft.)	To (ft.)
Clay Slurry	0	20

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Yellow Clay	0	17
Blue Clay	17	43
Hard Pan	43	86
Sand	86	112
Gravel	112	114

Construction of the well was completed on: February 8, 1965

The well is terminated 8 inches [X] above, below [ ] the permanent ground surface.

Was the well disinfected upon completion? Yes x No

Was the well sealed watertight upon completion? Yes x No

11. MISCELLANEOUS DATA:

Yield test: 3 Hrs. at 10 GPM.

Depth from surface to water-level: 85 ft.

Water-level when pumping: 105 ft.

Water sample was sent to the state laboratory at: Madison (City) on 6/21/19 65

Signature R. C. Hoover (Registered Well Driller)

West 33rd Street, Zion, Illinois (Complete Mail Address)

Please do not write in space below

Rec'd ____ No. ____

Ans'd ____

Interpretation ____

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

RECEIVED JUL 16 1965 SANITARY ENGINEERING

Examiner ____

KE7417

LOG # 22

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300–15 Rev 12-76

1111 1 1978

1 COUNTY: Kenosha

CHECK (✓) ONE: ☒ Town ☐ Village ☐ City

Name: PLEASANT PRAIRIE

2 LOCATION: ¼ Section: SE | Section: 35 | Township: 1N | Range: 22E

OR – Grid or Street No | Street Name

AND – If available subdivision name, lot & block No

3 NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE: Neil Smith

ADDRESS: R.R. Box Holder

POST OFFICE: Pleasant Prairie Wis.

4 Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain		Sanitary Bldg Sewer		Floor Drain Connected To		Storm Bldg. Drain		Storm Bldg Sewer	
	C.I.	Other	C.I	Other	C.I Sewer	Other Sewer	C.I	Other	C.I.	Other

Street Sewer		Other Sewers		Foundation Drain Connected to:				Sewage Sump		Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit
San.	Storm	C.I	Other	Sewer		Sewage Sump		C.I	Other				Seepage Pit
				Clearwater Dr		Clearwater Sump							Seepage Bed
													Seepage Trench

Privy	Pet Waste Pit	Pit Nonconforming Existing		Subsurface Pumproom	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit
		Well		Nonconforming Existing							
		Pump									
		Tank									

Temporary Manure Stack	Watertight Liquid Manure Tank	Solid Manure Storage Structure	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Other (Give Description)
					septic not in yet

5 Well is intended to supply water for: Private home

6 DRILLHOLE

Dia (in)	From (ft)	To (ft.)	Dia. (in)	From (ft)	To (ft)
10	Surface	20	6	20	91

7. CASING, LINER, CURBING AND SCREEN

Dia. (in)	Material, Weight, Specification & Method of Assembly	From (ft)	To (ft)
6	new T+C	Surface	91
	Black Steel		
	ASTM A53		
	19.45 Lbs/Ft		
	Schmoto Steel Co.		

8 GROUT OR OTHER SEALING MATERIAL

Kind	From (ft)	To (ft)
Puddle Clay	Surface	20

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Subsoil	Surface	15
Blue clay	15	54
Hard Pan	54	82
Gravel	82	91

KE7418

10 TYPE OF DRILLING MACHINE USED

☒ Cable Tool
☐ Rotary-air w/drilling mud
☐ Rotary-w/drilling mud
☐ Rotary-hammer w/drilling mud & air
☐ Rotary-hammer & air
☐ Reverse Rotary
☐ Jetting with: ☐ Air ☐ Water

Well construction completed on 5 May 1977

11. MISCELLANEOUS DATA

Yield Test: 3 Hrs. at 30 GPM

Depth from surface to normal water level 55 Ft.

Depth of water level when pumping 55 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 8 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Wis State Lab of Hyg; Parklaboratory on to be sent 19

will install

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of [illegible]ing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: William J. Goll Registered Well Driller

Complete Mail Address: Rt 1 Box 117 Bristol Wis

DEC 14 1977 LOG # 23

WELL CONSTRUCTOR'S REPORT
FORM 3300-15

NOV 7 1977

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1 COUNTY: KENOSHA

CHECK ONE: ☒ Town ☐ Village ☐ City NAME: PLEASANT PRAIRIE

2. LOCATION – ¼ Section: SE¼SW¼ | Section: Sec. 35 | Township: 1 N | Range: 22 E

OR – Grid or street no: 4334 | Street name: 128th STREET

AND – If available subdivision name, lot & block no:

3. OWNER AT TIME OF DRILLING: Mr. BERNIE MIKS

ADDRESS: 2487 NORTHWESTERN AVE

POST OFFICE: GURNEE, ILLINOIS 60031

4. Distance in feet from well to nearest – (Record answer in appropriate block)

BUILDING	SANITARY SEWER C I	SANITARY SEWER TILE	FLOOR DRAIN C I	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C I	WASTE WATER DRAIN TILE
14	25				50	14		

CLEAR WATER DRAIN C.I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
NONE	NONE	70	NONE	NONE		NONE	NONE	NONE	NONE

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.): NONE

5. Well is intended to supply water for: SINGLE FAMILY RESIDENCE

6. DRILLHOLE

Dia (in.)	From (ft.)	To (ft.)	Dia (in.)	From (ft.)	To (ft.)
10	Surface	25			
5	25	108			

7 CASING, LINER, CURBING, AND SCREEN

Dia (in.)	Kind and Weight	From (ft.)	To (ft.)
5	NEW TOC 18#/FT ASTM-A53 U.S. STEEL	Surface	105
5	STAINLESS NEW JOHNSON WELL SCREEN	105	108

K E 7 4 1 9

9. FORMATIONS

Kind	From (ft.)	To (ft.)
YELLOW CLAY	Surface	18
BLUE CLAY	18	48
BLUE CLAY SANDY	48	65
BLUE CLAY SOFT	65	82
CLAY HARD	82	92
CLAY SANDY	92	105
GRAVEL	105	108

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
PUDDLE CLAY	Surface	25

10. TYPE OF DRILLING MACHINE USED

☒ Cable Tool ☐ Direct Rotary ☐ Reverse Rotary
☐ Rotary – air w/drilling mud ☐ Rotary – hammer with drilling mud & air ☐ Jetting with ☐ Air ☐ Water

Well construction completed on: 10-15 19 77

Well is terminated: 13 inches ☒ above ☐ below final grade

Well disinfected upon completion: ☒ Yes ☐ No

Well sealed watertight upon completion: ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 4 Hrs. at 15 GPM

Depth from surface to normal water level: 70 ft.

Depth to water level when pumping: 74 ft.

Water sample sent to STATE LABORATORY OF HYGIENE AT MADISON laboratory on: 10-31 19 77

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: HENRY BOYSEN COMPANY
Kenneth Behrens
Registered Well Driller

COMPLETE MAIL ADDRESS: 192 PETERSON RD LIBERTYVILLE, ILL
P.O. BOX 664 TWIN LAKES, WIS

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS	GAS – 48 HRS	CONFIRMED	REMARKS

REV 3-71

plat

LOG # 24

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

Wel 6

See Instructions on Reverse Side

KE-815-D

1. County Kenosha — Town ☒ / Village ☐ / City ☐ Pleasant Prairie (Check one and give name)

2. Location SE, SE, SW, SE¼ sec 35, T1N, R22E
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Richard Schlitz
Name of individual, partnership or firm

NOV 22

4. Mail Address 7929 - 45th Ave., Kenosha
Complete address required

5. From well to nearest: Building 15 ft; sewer --- ft; drain 15 ft; septic tank 60 ft; dry well or filter bed 60 ft; abandoned well --- ft.

6. Well is intended to supply water for: home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			
6	20	210			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	std blk 19½ lb	0	187

9. GROUT:

Kind	From (ft.)	To (ft.)
clay slurry	0	20

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
yellow clay	0	17
blue clay	17	117
hard pan	117	187
limestone	187	210

Construction of the well was completed on: October 5 19 63

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No

Was the well sealed watertight upon completion? Yes X No

11. MISCELLANEOUS DATA:

Yield test: 2 Hrs. at 20 GPM.

Depth from surface to water-level: 65 ft.

Water-level when pumping: 80 ft.

Water sample was sent to the state laboratory at: Madison (City) on Nov. 5 1963

Signature R. E. Hoover (Registered Well Driller)

West 33rd Street, Zion, Illinois (Complete Mail Address)

Please do not write in space below

Rec'd No.

Ans'd

Interpretation

KE 7420

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner

WISCONSIN UNIQUE WELL NUMBER **ME956**

Source: WELL CONSTRUCTION

State of Wi-Private Water Systems-DG/2
Department Of Natural Resources, Box 79:
Madison, WI 53707

LOG # 25

Depth 217 FT

Property Owner: WRIGHT, DONALD | Telephone Number: - -

Mailing Address: 4220 128TH ST

City: KENOSHA | State: WI | Zip Code: 53142

County of Well Location: 30 KENOSHA | Co Well Permit No W | Well Completion Date: October 21, 1997

Well Constructor: AQUA WELL @ PUMP SYSTEMS INC | License #: 427 | Facility ID (Public)

Address: PO BOX 187 | Public Well Plan Approval#

City: NORTH PRAIRIE | State: WI | Zip Code: 53153 | Date Of Approval

Hicap Permanent Well # | Common Well # | Specific Capacity gpm/ft

Well Serves: P (# of homes and or HOME; eg: barn, restaurant, church, school, industry, etc.)

P=Munic O=OTM N=NonCom P=Private Z=Other X=NonPot A=Anode L=Loop H=Drillhole

High Capacity: Well? N | Property? N

1. Well Location

T=Town C=City V=Village: T of PLEASANT PRAIRIE | Fire#

Street Address or Road Name and Number: 4220 128TH ST

Subdivision Name | Lot# | Block #

Gov't Lot or SE 1/4 of SE 1/4 of Section 35 T 1 N;R 22 E

Latitude Deg. 42 Min. 29.7008

Longitude Deg 87 Min. 51.3205

2. Well Type 1 (See item 12 below) | Lat/Long Method

1=New 2=Replacement 3=Reconstruction

of previous unique well # _____ constructed in 0

Reason for replaced or reconstructed Well?

1 1=Drilled 2=Driven Point 3=Jetted 4=Other

Is the well located upslope or sideslope and not downslope from any contamination sources, including those on neighboring properties? Y

Well located in floodplain? N

Distance in feet from well to nearest: (including proposed)

1. Landfill
7 2. Building Overhang
26 3. 1=Septic 2= Holding Tank
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. 1=Shoreline 2= Swimming Pool
15 9. Downspout/ Yard Hydrant
10. Privy
9 11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
15 13. Building Drain 2 (1=Cast Iron or Plastic 2=Other)
14. Building Sewer 1=Gravity 2=Pressure (1=Cast Iron or Plastic 2=Other)
15. Collector Sewer: ___ units ___ in. diam.
31 16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe 1=Gravity 2=Pressure (1=Cast iron or Plastic 2=Other)
23. Other manure Storage
24. Ditch
25. Other NR 812 Waste Source

Drillhole Dimensions and Construction Method

Dia.(in.)	From (ft)	To (ft)
13.0	surface	20
6.0	20	217

Upper Enlarged Drillhole
-- 1. Rotary - Mud Circulation
X – 2. Rotary - Air
– 3. Rotary - Air and Foam
– 4. Drill-Through Casing Hammer
-- 5. Reverse Rotary
– 6. Cable-tool Bit _ in. dia
– 7. Temp. Outer Casing _ in. dia. _____ depth ft. Removed ?
Other

Lower Open Bedrock

Casing Liner Screen Material, Weight, Specification, Manufacturer & Method of Assembly

Dia. (in.)	Material, Weight, Specification, Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6.0	STEEL 19 LB ASTM A53 SAWHILL WELDED	surface	184

Dia.(in.)	Screen type, material & slot size	From	To

Grout or Other Sealing Material

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
GRANULAR BENTONITE	surface	20.0	

Geology Codes	8. Geology Type, Caving/Noncaving, Color, Hardness, etc	From (ft.)	To (ft.)
T_C_	BROWN CLAY	0	58
__Z_	CLAY GRAVEL	58	86
__Y_	SAND GRAVEL	86	91
__Z_	CLAY GRAVEL	91	110
__Y_	SAND GRAVEL	110	118
__P_	HARD PAN	118	168
__Y_	SAND GRAVEL	168	183
__L_	LIMESTONE	183	217

9. Static Water Level 61.0 feet B ground surface (A=Above B=Below)

10. Pump Test Pumping level 126.0 ft. below surface; Pumping at 15.0 GP M 1.5 Hrs

11. Well Is: 28 in. A Grade (A=Above B=Below)

Developed? Y
Disinfected? Y
Capped? Y

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property? N

If no, explain NA

13. Initials of Well Constructor or Supervisory Driller: RM | Date Signed: 10/23/97

Initials of Drill Rig Operator (Mandatory unless same as above): TR | Date Signed: 10/23/97

Additonal Comments? | Variance Issued?

Owner Sent Label? Y | More Geology?

Batch 486

LOG # 26

WELL CONSTRUCTOR'S REPORT
FORM 3300–15

NOV 2 7 1974

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

KE - 814 - D

1 COUNTY: Kenosha

CHECK ONL: [X] Town [ ] Village [ ] City

NAME: Pleasant Prairie

2 LOCATION – ¼ Section: SE, SW SE, SE | Section: 35 | Township: 1N | Range: 22E

OR – Grid or street no: 4206 | Street name: 128th Street State Line Road

AND – If available subdivision name, lot & block no:

3 OWNER AT TIME OF DRILLING: D. M. Straley (Dale's Concrete)

ADDRESS: 2311 Galilee

POST OFFICE: Zion, Illinois 60099

STATE 11/26/74
OWNER 11/26/74
TWP.. 11/26/74

4. Distance in feet from well to nearest. (Record answer in appropriate block)

BUILDING	SANITARY SEWER C I	SANITARY SEWER TILE	FLOOR DRAIN C I	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C I.	WASTE WATER DRAIN TILE
20	--	-	-	-	--	20	-	-

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
-	-	-	-	-	-	-	-	-	-

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for: home use

6. DRILLHOLE

Dia (in.)	From (ft.)	To (ft.)	Dia (in.)	From (ft.)	To (ft.)
10	Surface	20			
6	20	205			

7. CASING, LINER, CURBING, AND SCREEN

Dia (in.)	Kind and Weight	From (ft.)	To (ft.)
6	new galv. steel T&C 19.45 ppf	Surface	181

9. FORMATIONS

Kind	From (ft.)	To (ft.)
yellow clay	Surface	13
blue clay	13	124
hard pan	124	156
blue clay	156	181
limestone	181	205

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
clay slurry	Surface	20

10 TYPE OF DRILLING MACHINE USED

[X] Cable Tool [ ] Direct Rotary [ ] Reverse Rotary
[ ] Rotary – air w/drilling mud [ ] Rotary – hammer with drilling mud & air [ ] Jetting with [ ] Air [ ] Water

Well construction completed on 10/18/74 19

11. MISCELLANEOUS DATA

Yield test: 3 Hrs. at 20 GPM

Depth from surface to normal water level 70 ft.

Depth to water level when pumping 90 ft.

Well is terminated 12 inches [X] above [ ] below final grade

Well disinfected upon completion [X] Yes [ ] No

Well sealed watertight upon completion [X] Yes [ ] No

Wa MADISON laboratory on: 11/18/74 19

Yo K E 7 4 2 2
typ

lution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, nishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: [signature] Registered Well Driller

COMPLETE MAIL ADDRESS
Hoover Water Well Service, Inc.
Rt. 1 Box 100, Zion, Illinois 60099

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS	GAS – 48 HRS	CONFIRMED	REMARKS
SAFE 11/22/74 #34971				

REV 3–71

LOG # 27

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300-15 Rev 12-76

JAN 5 1978

KE-813-D

COUNTY	CHECK (✓) ONE	Name
Kenosha	☒ Town ☐ Village ☐ City	Pleasant Prairie

2 LOCATION: ¼ Section: SE, SW, SE, SE | Section: 35 | Township: 1N | Range: 22E

OR – Grid or Street No: 4132 | Street Name: 128th Street

AND – If available subdivision name, lot & block No

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE: DALE WEBB — STATE 1/3/78

ADDRESS: 1643 Seymour — OWNER 1/3/78

POST OFFICE: North Chicago, IL 60064 — DRILLER 1/3/78

4 Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg Drain C.I.	Sanitary Bldg Drain Other	Sanitary Bldg Sewer C.I.	Sanitary Bldg Sewer Other	Floor Drain Connected To C.I. Sewer	Floor Drain Connected To Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. Sewer C.I.	Storm Bldg. Sewer Other
15	–	50	60	–	40	–	–	–	–	–

Street Sewer San.	Street Sewer Storm	Other Sewers C.I.	Other Sewers Other	Foundation Drain Connected to: Sewer	Sewage Sump	Clearwater Dr	Clearwater Sump	Sewage Sump C.I.	Sewage Sump Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit
–	–	–	–				50	–	–	50	–	70	Seepage Pit / Seepage Bed / Seepage Trench

Privy	Pet Waste Pit	Pit Nonconforming Existing: Well / Pump / Tank	Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit
–	–		–	–	–	–	–	–	–	–

Temporary Manure Stack	Watertight Liquid Manure Tank	Solid Manure Storage Structure	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Other (Give Description)
–	–	–	–	–	–

5 Well is intended to supply water for: Residential

6. DRILLHOLE

Dia (in.)	From (ft)	To (ft)	Dia. (in)	From (ft.)	To (ft)
10	Surface	20			
6	20	206			

7. CASING, LINER, CURBING AND SCREEN

Dia (in)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
6	New Black Steel	Surface	180
	T&C 20 PPF-ASTM		
	A-53 Youngstown		

8 GROUT OR OTHER SEALING MATERIAL

Kind	From (ft)	To (ft)
Clay slurry	Surface	20

9. FORMATIONS

Kind	From (ft)	To (ft.)
Yellow clay	Surface	20
Gray clay	20	90
Sand & gravel	90	105
Hard pan	105	178
Gravel	178	180
Limestone	180	206

KE 7421

10 TYPE OF DRILLING MACHINE USED

☒ Cable Tool
☐ Rotary-air w/drilling mud
☐ Rotary-w/drilling mud
☐ Rotary-hammer w/drilling mud & air
☐ Rotary-hammer & air
☐ Reverse Rotary
☐ Jetting with: ☐ Air ☐ Water

11. MISCELLANEOUS DATA

Yield Test: 3½ Hrs. at 10 GPM

Depth from surface to normal water level 50 Ft.

Depth of water level when pumping 160 Ft. Stabilized ☒ Yes ☐ No

Well construction completed on June 7, 1977

Well is terminated 13 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Kenosha County laboratory on December 20, 1977

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of ...hing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side. Safe 12/21/77

Signature: Tony D. Hoover — Registered Well Driller

Complete Mailing Address:
HOOVER WATER WELL SERVICE, INC.
3700 West 33rd Street
Zion, Illinois 60099

LOG # 28

WELL CONSTRUCTOR'S REPORT SEP 16 1974
FORM 3300-15

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY: KENOSHA
CHECK ONE: ☑ Town ☐ Village ☐ City
NAME: PLEASANT PRAIRIE

2. LOCATION: ¼ Section: SE SE | Section: 36 | Township: 1-N | Range: 22 E
OR – Grid or street no: 128TH ST | Street name: STATE LINE RD
AND – If available subdivision name, lot & block no.:

3. OWNER AT TIME OF DRILLING: JAMES DoHERTY
ADDRESS: 2410 W 128TH ST
POST OFFICE: KENOSHA 53140

4. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
20'						20		

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		80'			100'				

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for: RESIDENCE

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia (in.)	From (ft.)	To (ft.)
10"	Surface	20'	6	20	170

7. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	CAL 19# THREADED JOINT.	Surface	140.

9. FORMATIONS

Kind	From (ft.)	To (ft.)
YELLOW CLAY	Surface	15'
BLUE CLAY	15	125'
HARD PAN	125	140'
LIMESTONE	140	170'

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
CLAY SLURRY	Surface	20

10. TYPE OF DRILLING MACHINE USED
☑ Cable Tool ☐ Direct Rotary ☐ Reverse Rotary
☐ Rotary – air w/drilling mud ☐ Rotary – hammer with drilling mud & air ☐ Jetting with ☐ Air ☐ Water

Well construction completed on 9/11 19 74

11. MISCELLANEOUS DATA
Yield test: / Hrs. at 10 GPM
Depth from surface to normal water level 80 ft.
Depth to water level when pumping 125 ft.

Well is terminated 18 inches ☑ above ☐ below final grade
Well disinfected upon completion ☑ Yes ☐ No
Well sealed watertight upon completion ☑ Yes ☐ No

Water sample sent to MADISON laboratory on: 9/11 19 74

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Earl E Gross Registered Well Driller
COMPLETE MAIL ADDRESS: Rte 1 Box 1527 Zion Ill.

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS	CONFIRMED	REMARKS
				plot

REV. 3–71

LOG # 29

Wel. 6-30M-(6-50)

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Kenosha — Town ☒ / Village ☐ / City ☐ Pleasant Prairie (Check one and give name)

2. Location NE of SW¼ of sec 36, 71 N R 22 E R22E
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Fred Wenzel
Name of individual, partnership or firm

4. Mail Address R 1 Kenosha Wis
Complete address required

5. From well to nearest: Building 16 ft; sewer none ft; drain none ft; septic tank none ft; dry well or filter bed none ft; abandoned well none ft.

6. Well is intended to supply water for: Wenzel Home

7. **DRILLHOLE:**

Dia. (In.)	From (ft.)	To (ft.)	Dia. (In.)	From (ft.)	To (ft.)
10	0	30	7OD	0	128
			6 in	128	135

8. **CASING AND LINER PIPE OR CURBING:**

Dia. (In.)	Kind and Weight	From (ft.)	To (ft.)
7OD	Standard weight steel pipe	0	128

9. **GROUT:**

Kind	From (ft.)	To (ft.)
Puddled clay fill	0	30

10. **FORMATIONS:**

Kind	From (ft.)	To (ft.)
top soil	0	12
blue clay	12	90
sand	90	100
blue clay	100	128
lime stone	128	135

Construction of the well was completed on: 1/26 19 56

The well is terminated 12 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ✓ No

Was the well sealed watertight upon completion? Yes ✓ No

11. **MISCELLANEOUS DATA:**

Yield test: 6 Hrs. at 30 GPM.

Depth from surface to water-level: 35 ft.

Water-level when pumping: 40 ft.

Water sample was sent to the state laboratory at: Madison City on 2/13 1956

Signature Ray Britcher
Registered Well Driller

4306 Victory ave Racine Wis
Complete Mail Address

Please do not write in space below

Rec'd No

Ans'd

Interpretation KE 7 4 5 8

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner

State LOG # 30

Wel 6

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Kenosha — Town ☑ Village ☐ City ☐ Pleasant Prairie (Check one and give name)

2. Location Part of the NE¼ of the SW¼ of Sec 36 Range 22E, T1N
(Name of street and number of premise or Section, Town and Range numbers)

3. Owner ☒ or Agent ☐ Victor & Alvin Nudell
(Name of individual, partnership or firm)

4. Mail Address Rt 1, Box 498 Kenosha, Wisconsin
(Complete address required)

5. From well to nearest: Building 10 ft; sewer 50 ft; drain 25 ft; septic tank 30 ft; dry well or filter bed — ft; abandoned well — ft.

RECEIVED
OCT 17 1956
ENVIRONMENTAL SANITATION

6. Well is intended to supply water for: New Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10"	0	20			
6"	20	125			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
7-00	Wrot Iron Stl.	0	125

9. GROUT:

Kind	From (ft.)	To (ft.)
Puddle Clay	0	20

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Topsoil & Clay	0	14
Blue Clay & Stone	34	48
Dirty Gravel & Sand	10	58
Quick Sand & Joint Clay	15	73
Blue Clay & Stone	27	100
Clay Sand & Dirty Gravel	15	115
Sand & Gravel	10	125

Construction of the well was completed on: Oct. 6th 1956

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No

Was the well sealed watertight upon completion? Yes X No

11. MISCELLANEOUS DATA:

Yield test: 2 Hrs. at 8 GPM.

Depth from surface to water-level: 21 ft.

Water-level when pumping: 21 ft.

Water sample was sent to the state laboratory at: Madison City on Oct. 9th 1956

Signature Ernie Billington (By E. B. Nees) Registered Well Driller

5625 - 16th St. Racine Wisconsin
Complete Mail Address

(Please do not write in space below)

Rec'd OCT 10 1956 No. 37343

Ans'd

Interpretation SAFE

KE7457

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm	O				
B. Coli					

Examiner

LOG # 31

APR 14 1976

WELL CONSTRUCTOR'S REPORT
FORM 3300-15

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

KE-820-D

1. COUNTY: Kenosha

CHECK ONE: [X] Town [ ] Village [ ] City

NAME: Pleasant Prairie

2. LOCATION – ¼ Section: NE, NW, SW, SE, SW | Section: 36 | Township: 1N | Range: 22E

OR – Grid or street no: 12619 | Street name: 39th Avenue

AND – If available subdivision name, lot & block no:

3 OWNER AT TIME OF DRILLING: Rodger R. Larsen

ADDRESS: Rt. 4, Box 526

POST OFFICE: Kenosha, Wisconsin 53140

STATE: OWNER: TWP..

4. Distance in feet from well to nearest (Record answer in appropriate block)

BUILDING	SANITARY SEWER C I	SANITARY SEWER TILE	FLOOR DRAIN C I	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C I.	WASTE WATER DRAIN TILE
40	–	–	50	–	–	40	–	–

CLEAR WATER DRAIN C I	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
–	–	75	–	–	90	–	–	–	–

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5 Well is intended to supply water for: home use

6. DRILLHOLE

Dia (in.)	From (ft.)	To (ft.)	Dia (in.)	From (ft.)	To (ft.)
10	Surface	20			
6	20	185			

7. CASING, LINER, CURBING, AND SCREEN

Dia (in.)	Kind and Weight	From (ft.)	To (ft.)
6	new black steel T&C	Surface	172
	19.45 ppf		

9. FORMATIONS

Kind	From (ft.)	To (ft.)
yellow clay	Surface	16
blue clay=	16	98
hardpan	98	142
blue clay	142	172
limestone	172	185%

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
clay slurry	Surface	20

10. TYPE OF DRILLING MACHINE USED

[X] Cable Tool [ ] Direct Rotary [ ] Reverse Rotary
[ ] Rotary – air w/drilling mud [ ] Rotary – hammer with drilling mud & air [ ] Jetting with [ ] Air [ ] Water

Well construction completed on 12/18/74 19

11 MISCELLANEOUS DATA

Yield test: 2 Hrs. at 20 GPM

Depth from surface to normal water level: 48 ft.

Depth to water level when pumping: 48 ft

Well is terminated 12 inches [X] above [ ] below final grade

Well disinfected upon completion [X] Yes [ ] No

Well sealed watertight upon completion [X] Yes [ ] No

Water sample sent to laboratory on: 19

Your opinion concerning other type of casing joints, method o be given on reverse side

KE 7 4 5 6

concerning difficulties encountered, and data relating to nearby wells, screens, seals, cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should

SIGNATURE: RC Hoover

Registered Well Driller

COMPLETE MAIL ADDRESS
Hoover Water Well Service, Inc.
Rt. 1 Box 100, Zion, Illinois 60099

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS	GAS – 48 HRS	CONFIRMED	REMARKS

REV 3-71

LOG # 32

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300–15 Rev 12-76

KE-821-D

JUN 30 1978

COUNTY	CHECK (✓) ONE	Name
KENOSHA	☒ Town ☐ Village ☐ City	PLEASANT PRAIRIE

2 LOCATION: ¼ Section: LSE, NW, SW, SW | Section: 36 | Township: 1N | Range: 22E

OR – Grid or Street No: 12701 | Street Name: 39th Avenue

AND – If available subdivision name, lot & block No:

3 NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE
JIM LINDERMAN — STATE 6-26-78

ADDRESS
3007 - 85th St., Apt.12 — OWNER 6-26-78

POST OFFICE
Kenosha, WI 53140 — DRILLER 6-26-78

4 Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg Sewer C.I.	Sanitary Bldg Sewer Other	Floor Drain Connected To C.I. Sewer	Floor Drain Connected To Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. Sewer C.I.	Storm Bldg. Sewer Other
25	25	–	55	–	30	–	–	–	–	–

Street Sewer San.	Street Sewer Storm	Other Sewers C.I.	Other Sewers Other	Foundation Drain Connected to				Sewage Sump C.I.	Sewage Sump Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit	
–	–	–	–	Sewer	–	Sewage Sump	–	–	–	30	30	–	Seepage Pit	
				Clearwater Dr.	–	Clearwater Sump	30						Seepage Bed	
													Seepage Trench	80

Privy	Pet Waste Pit	Pit Nonconforming Existing		Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit
–	–	Well		–	–	–	–	–	–	–	–
		Pump									
		Tank									

Temporary Manure Stack	Watertight Liquid Manure Tank	Solid Manure Storage Structure	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Other (Give Description)
–	–	–	–	–	–

5 Well is intended to supply water for:
Residential

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia (in.)	From (ft.)	To (ft.)
10	Surface	20			
6	20	210			

7. CASING, LINER, CURBING AND SCREEN

Dia (in.)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
6	New Black Steel	Surface	180
	T&C 20 PPF-ASTM		
	A-53 Youngstown		

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Clay slurry	Surface	20

9 FORMATIONS

Kind	From (ft.)	To (ft.)
Yellow clay	Surface	14
Blue clay	14	72
Hardpan	72	138
Blue clay	138	175
Sand & clay	175	180
Limestone	180	210

KE7455

10. TYPE OF DRILLING MACHINE USED

☒ Cable Tool
☐ Rotary-air w/drilling mud
☐ Rotary-w/drilling mud
☐ Rotary-hammer w/drilling mud & air
☐ Rotary-hammer & air
☐ Reverse Rotary
☐ Jetting with Air / Water

Well construction completed on March 7, 1978

11 MISCELLANEOUS DATA

Yield Test: 3 Hrs. at 10 GPM

Depth from surface to normal water level 54 Ft.

Depth of water level when pumping 168 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 12½ inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Kenosha County laboratory on June 21, 1978

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side. Safe 6-22-78

Signature
Registered Well Driller

Complete Mail Address
HOOVER WATER WELL SERVICE, INC.
3700 West 33rd Street
Zion, Illinois 60099

plt

WISCONSIN UNIQUE WELL NUMBER **OU475**

Source: WELL CONSTRUCTION

State of Wi-Private Water Systems-DG/2
Department Of Natural Resources, Box 7921
Madison, WI 53707

LOG # 33

Depth 62 FT

Property Owner: ANHOCK, LINDA | Telephone Number: 262-694-3249

Mailing Add: 3310 128TH ST

City: PLEASANT PRAIRIE | State: WI | Zip Code: 53158

County of Well Location: 30 KENOSHA | Co Well Permit No: W | Well Completion Date: August 8, 2003

Well Constructor: GOHLKE WELL DRILLING LLP | License #: 6642 | Facility ID (Public):

Address: 19400 38TH ST | Public Well Plan Approval#:

City: BRISTOL | State: WI | Zip Code: 53104 | Date Of Approval:

Nicap Permanent Well # | Common Well # | Specific Capacity: gpm/ft

Well Serves: P (# of homes and or; eg: barn, restaurant, church, school, industry, etc.)

=Munic O=OTM N=NonCom P=Private Z=Other X=NonPot A=Anode L=Loop H=Drillhole

High Capacity: Well? N | Property? N

1. Well Location

T=Town C=City V=Village: T of PLEASANT PRAIRIE | Fire#:

Street Address or Road Name and Number: 3310 128TH ST

Subdivision Name | Lot# | Block #

Gov't Lot or SW 1/4 of SW 1/4 of Section 36 T 1 N,R 22 E

Latitude Deg. 42 Min. 29.6967

Longitude Deg 87 Min. 51.0253

2. Well Type 2 (See item 12 below) | Lat/Long Method

1=New 2=Replacement 3=Reconstruction

of previous unique well # _____ constructed in _____

Reason for replaced or reconstructed Well?

1 1=Drilled 2=Driven Point 3=Jetted 4=Other

Is the well located upslope or sideslope and not downslope from any contamination sources, including those on neighboring properties? Y

Well located in floodplain? N

Distance in feet from well to nearest: (including proposed)

1. Landfill
40 2. Building Overhang
120 3. 1=Septic 2= Holding Tank
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. 1 1=Shoreline 2= Swimming Pool
9. Downspout/ Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain 1=Cast Iron or Plastic 2=Other
60 14. Building Sewer 1 1=Gravity 2=Pressure 1 1=Cast Iron or Plastic 2=Other
15. Collector Sewer: ___ units ___ in . diam.
50 16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe 1=Gravity 2=Pressure 1=Cast iron or Plastic 2=Other
23. Other manure Storage
24. Ditch
25. Other NR 812 Waste Source

Drillhole Dimensions and Construction Method

Dia.(in.)	From (ft)	To (ft)
9.0	surface	62

Upper Enlarged Drillhole | Lower Open Bedrock

X -- 1. Rotary - Mud Circulation
-- 2. Rotary - Air
-- 3. Rotary - Air and Foam
-- 4. Drill-Through Casing Hammer
-- 5. Reverse Rotary
-- 6. Cable-tool Bit _ n. dia
-- 7. Temp. Outer Casing _ in. dia. _____ depth ft. Removed ?

Other

Casing Liner Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
5.0	PVC NEW CERTAINTEED 1120 SDR21 PWD 2241	surface	57

Dia.(in.)	Screen type, material & slot size	From	To
5.0	5X5X.10 SLOT PVC SDR21 TITAN HI FLO	57	62

Grout or Other Sealing Material

Method: PUMPED

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
GROUT-WELL DF	surface	57.0	5 S

Geology Codes	8. Geology Type, Caving/Noncaving, Color, Hardness, etc	From (ft.)	To (ft.)
_I_	TOP SOIL	0	2
T_C_	BROWN CLAY	2	12
G_C_	GREY CLAY	12	55
_Y_	SAND & GRAVEL	55	62

9. Static Water Level

15.0 feet B ground surface (A=Above B=Below)

10. Pump Test

Pumping level 40.0 ft. below surface

Pumping at 12.0 GP M 1.0 Hrs

11. Well Is: 12 in. A Grade (A=Above B=Below)

Developed? Y

Disinfected? Y

Capped? Y

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property? Y

If no, explain

13. Initials of Well Constructor or Supervisory Driller: TLS | Date Signed: 8/8/03

Initials of Drill Rig Operator (Mandatory unless same as above) | Date Signed

Additonal Comments? | Variance Issued?

Owner Sent Label? Y | More Geology?

Batch 958

LOG # 34

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300–15 Rev 12-76

JUL 30 1979

COUNTY: Kenosha

CHECK (✓) ONE: ☒ Town ☐ Village ☐ City

Name: Pleasant Prairie

2 LOCATION: ¼ Section: S.W. | Section: 36 | Township: 1 N. | Range: 22 E

OR – Grid or Street No | Street Name

AND – If available subdivision name, lot & block No

3 NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE: Ms. Mary Aiello

ADDRESS: 5120 - 28th. Avenue

POST OFFICE: Kenosha, Wisconsin 53140

4 Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain		Sanitary Bldg Sewer		Floor Drain Connected To		Storm Bldg Drain		Storm Bldg Sewer	
	C.I.	Other	C.I.	Other	C.I. Sewer	Other Sewer	C.I	Other	C.I	Other
12										

Street Sewer		Other Sewers		Foundation Drain Connected to:		Sewage Sump		Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit
San	Storm	C.I.	Other	Sewer	Sewage Sump	C.I	Other				Seepage Pit
				Clearwater Dr	Clearwater Sump						Seepage Bed
											Seepage Trench

Privy	Pet Waste Pit	Pit Nonconforming Existing		Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit
		Well									
		Pump									
		Tank									

Temporary Manure Stack	Watertight Liquid Manure Tank	Solid Manure Storage Structure	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Other (Give Description)
					holding tanks not in yet

5. Well is intended to supply water for: private home

6 DRILLHOLE

Dia. (in)	From (ft)	To (ft)	Dia (in.)	From (ft)	To (ft.)
10	Surface	20	6	20	187

CASING, LINER, CURBING AND SCREEN

Dia (in)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
6 I.D.	black steel	Surface	173
	new T&C		
	19.45#/ft.		
	ASTM A 53		
	Schmoto Steel		

8 GROUT OR OTHER SEALING MATERIAL

Kind	From (ft)	To (ft)
puddle clay	Surface	20

9 FORMATIONS

Kind	From (ft)	To (ft)
Brown clay	Surface	15
blue clay	15	30
hard pan	30	100
sand and gravel	100	173
rock (limestone)	173	187

KE7454

10. TYPE OF DRILLING MACHINE USED

☒ Cable Tool
☐ Rotary-air w/drilling mud
☐ Rotary-w/drilling mud
☐ Rotary-hammer w/drilling mud & air
☐ Rotary-hammer & air
☐ Reverse Rotary
☐ Jetting with: ☐ Air ☐ Water

11. MISCELLANEOUS DATA

Yield Test: 5 Hrs. at 18 GPM

Depth from surface to normal water level 60 Ft.

Depth of water level when pumping 120 Ft. Stabilized ☒ Yes ☐ No

Well construction completed on July 9 19 79

Well is terminated 10 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Kenosha Water Dept. laboratory on to be sent - we install

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of ...ing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: William J. Hobbs Registered Well Driller

Complete Mail Address: Rt. 1 Box 117b Bristol, Wisconsin - 53104

WELL CONSTRUCTOR'S REPORT
FORM 3300–15

JAN 16 1973

LOG # 35

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY: Kenosha
CHECK ONE: ☒ Town ☐ Village ☐ City
NAME: Pleasant Prairie

2. LOCATION – ¼ Section: S.W. | Section: 36 | Township: 1N. | Range: 22E
OR – Grid or street no | Street name:
AND – If available subdivision name, lot & block no

3. OWNER AT TIME OF DRILLING: Mike Laland
ADDRESS: Pleasant Prairie
POST OFFICE:

4. Distance in feet from well to nearest (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
10								

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.): Septic system not in yet

5. Well is intended to supply water for: Private Home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	20	6	20	86

7. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	19.45 Lbs./Ft. New T+C Black steel	Surface	86

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
PUDDLE CLAY	Surface	20

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Subsoil	Surface	15
Blue CLAY	15	30
HARD PAN	30	65
SAND	85	85
gravel	85	86

10. TYPE OF DRILLING MACHINE USED
☒ Cable Tool ☐ Direct Rotary ☐ Reverse Rotary
☐ Rotary – air w/drilling mud ☐ Rotary – hammer with drilling mud & air ☐ Jetting with ☐ Air ☐ Water

Well construction completed on: Aug 15 1972

11. MISCELLANEOUS DATA
Yield test: 6 Hrs. at 15 GPM
Depth from surface to normal water level: 52 ft.
Depth to water level when pumping: 55 ft.

Well is terminated 10 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to: Wis State Lab of Hygiene laboratory on: To Be Sent 19

Your opinion concerning other pollution hazards, type of casing joints, method of finishing, difficulties encountered, and data relating to nearby wells, screens, seals, be given on reverse side.

KE 7453

SIGNATURE
William J Gallagher Registered Well Driller

COMPLETE MAIL ADDRESS
Rt 1 Box 117 Bristol, Wis

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS	GAS – 48 HRS	CONFIRMED	REMARKS

REV. 3–71

STATE OF WISCONSIN

WELL CONSTRUCTOR'S REPORT — DEPARTMENT OF RESOURCE DEVELOPMENT

LOG # 36

Wel 6

1 COUNTY: Kenosha

CHECK ONE: ☒ Town ☐ Village ☐ City

NAME: Pleasant Prairie

2 LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)

SW¼ S36 T1N R22E

3. OWNER AT TIME OF DRILLING

Norman Lindahl

4 OWNER'S COMPLETE MAIL ADDRESS

Rte 1, Box 658, Kenosha, Wisc.

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
12								

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		85			85				

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for:

Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	20			
6	20	177			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	std blk 19½ lb	Surface	167

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
clay slurry	Surface	20

10. FORMATIONS

Kind	From (ft.)	To (ft.)
yellow clay	Surface	40
blue clay	40	85
sandy clay	85	127
hard pan	127	167
limestone	167	177

Well construction completed on 12/13/66 19

Well is terminated 8 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 8 Hrs. at 6 GPM

Depth from surface to normal water level 25 ft.

Depth to water level when pumping 65 ft.

Water sample sent to Madison laboratory on: 12/13/66 19

Your well surface ... KE 7452 ... pollution hazards, information concerning difficulties encountered, and data relating to nearby casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub- etc., should be given on reverse side.

SIGNATURE: R E Hoover — Registered Well Driller

COMPLETE MAIL ADDRESS: West 33rd Street, Zionm Illinois

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 95 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 92 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 62 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 7/23/75
5. Permanent Pump Installed? Yes ✓ Date 9/2/75 No ____
   Manufacturer STA RITE Type Subm Location ____
   Capacity 8 gpm. Depth of Setting 63 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type ____
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer Bradley Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 82 gal. Type Galv.
    Location ✓
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

R 313759

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Al Mini Well No. ____
    Address 1325 Belvidere, Zion, Illinois
    Driller L. Hoover License No. 102-78
11. Permit No. 34576 Date 7/23/75
12. Water from Sand (Formation) 13. County Lake
    at depth 85 to 95 ft.
    14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 10

Sec. 2 a
Twp. 46N
Rge. 11E
Elev. ____

SHOW LOCATION IN SECTION PLAT
250' N
450' W
SE of SE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	Galv T+C 14.81 #/ft	0	92

16. Size Hole below casing: 5 in.
17. Static level 43 ft. below casing top which is ____ ft. above ground level. Pumping level 55 ft. when pumping at 22 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	85	85
Sand	10	95

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED L R Hoover DATE 9/22/75
bz

LOG # 37

White [illegible]k Copies:
Ill. Dept. of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

M. Pavelich /

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller BEACH PUMP & WELL License No. 092-006808
10. Well Site Address DELANEY ROAD RUSSELL IL
11. Property Owner LODINGE PAVELICH Well No.
12. Permit No. ISD 92-11-0450 Date Issued 6/22/92
13. Location: County LAKE
Sec. 2
Twp. 46N
Rge. 11E

Show location in section plat

1. Type of Well
a. Bored____ Hole Diam.____in. Depth____ft
Buried Slab: Yes___ No___
b. Driven____ Drive Pipe Diam.____in. Depth____ft
c. Drilled X Finished in Drift X In Rock____

d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
clay slurry	0	20

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 7/9/92
4. Permanent pump installed? Yes X Date 7/22/92 No___
Manufacturer DELTA Type SUBM
Location
Capacity 8 gpm. Depth of setting 68 ft.
5. Well top sealed? Yes X No___ Type
6. Pitless adapter installed? Yes X No___
Manufacturer Williams Model No. B5DACU
How attached to casing?
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

14. Water from SAND at depth 60 ft to 74 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	ASTM A-53	0	71
	T/C TOI		
	15 LBS PER FT		

16. Screen: Diam. 5" in, Length 3' in, Slot Size 10
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 50 ft below casing top which is 7.5 ft. above ground level. Pumping level 55 ft, pumping 1 gpm for 3 hours.

20. Earth Materials Passed Through

	Depth of Top	Depth of Bottom
FILL & BLACK DIRT	0	3
YELLOW CLAY	3	17
BLUE CLAY	17	32
GRAVEL	32	40
BLUE CLAY	40	60
SAND	60	74

Continue on separate sheet if necessary.

Signed Kenneth O. Boyce Date 7/25/92

LOG # 38

RECEIVED
JUL 28 1992
ENVIRONMENTAL HEALTH
DIVISION

IMPORTANT NOTICE
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purposes as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

? 2607320 ✓

097-0607-98(99)

OR PRE IRMLY WITH BLACK INK PEN, THIS
M MUST BE COMPLETED WITHIN 30 DAYS OF COMPLETION
AND SENT TO THE APPROPRIATE HEALTH DEPARTMENT

GE GICAL AND WATER SURVEY WELL RECORD

#097-04-0607-98

1. Date Well Completed 8-21-99
2. Use: [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
   [ ] Monitoring [ ] Other
3. Type of Well:
   a. Bored Well: Hole Diameter ____ in. Depth ____ ft.
   Casing Diameter ____ in. Buried Slab: [ ]Yes [ ]No
   b. Driven Well: Drive Pipe Diameter ____ in. Depth ____ ft.
   (c.) Drilled Well: Well Diameter 4 in. Depth 195 ft.
   Casing Diameter 4 in. Type GALV STEEL Joint T+C

Casing Grout:

Kind	Oversized Drill Hole(In)	From(ft)	To(ft)
CLAY SLURRY	8	0	12
CLAY SLURRY	4	12	195

Finished In: Unconsolidated [ ] Gravel Pack: [ ]Yes [ ]No
Rock [X] Grain Size

4. Well Disinfected? [X]Yes [ ]No
5. Date Permanent Pump Installed 9-1-99
6. Licensed Pump Contractor Michael Gross
   License Number 102-002086
7. Pitless Adapter Installed? [X]Yes [ ]No
   Manufacturer MERRILL Model MCK
   Attached to Casing - How? [ ] Screwed On [ ] Welded [X] Compression
8. Type of Well Cap WATER-TITE Vented
9. Tank Working Cycle 10 gallons Captive Air: [X]Yes [ ]No
10. Pump and Equipment Disinfected? [X]Yes [ ]No

General Comments: (If dry hole, fill out log & indicate how hole was sealed.)

Illinois Department of Public Health
Division of Environmental Health - 525 W. Jefferson
Springfield, IL 62761

CO #.30951

Q326967

IMPORTANT NOTICE. This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

IL 482-0126 Printed by Authority of the State of Illinois P.O. PRT3030244 6.5M 6/98

11. Permit Number WW99-11-0607 Date Issued 7-29-99
12. Property Owner SCOTT PACK Well #
13. Drilling Company Name WACHHOLDER WELL DRILLING
14. Name of Person who drilled the well TOM WACHHOLDER
15. Well Site Address 43327 DEEDY ROAD ZION
16. Twnshp Name NEWPORT Land ID#
17. Subdivision Name Sg Lot Elevation ft.
18. Location: Cnty LAKE Sect 1 Twnshp 46 N Range 11 E
    SW Quarter of the NW Quarter of the NW Quarter
19. Casing and Liner Pipe:

Dia (In)	Type	From(ft)	To (ft)
4	GALV STEEL SCH40	0	172
	ASTM A53B-A589-II		
	SEAM 12 LBS PER FT		

20. Screen:
    Diameter ____ in.
    Length ____ ft.
    Slot Size
    Material
21. Water from LIMESTONE at depth 172 ft. to 195 ft.
22. Static Level 40 ft. below casing top which is 14 in. above ground level.
    Pumping Level 130 ft. Pumping 9 gpm for 2 hours.
23. Earth Materials Passed Through

	Depth Top(ft)	Depth Bottom(ft)
BLK DIRT	0	1
YELLOW CLAY	1	22
BLUE CLAY	22	75
SAND	75	95
TAN CLAY	95	158
GRAVEL+SILT+SAND	158	172
LIMESTONE	172	195

Continue on back of sheet if necessary

Received SEP 1999 Environmental Health Services

LOG # 39

Thomas Wachholder
Licensed Contractor Signature

092-00810
License Number

1

(SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

LOG # 40

2

STATE WATER SURVEY WELL DATA

Date Dec 28 1920.

Recorder H S Gubbe

Authority Fishermans

Owner C & N W R R - City Newport Ind County Lake

When drilled _____ Contractor Fishermans Address Zion

Location (give location from section corner if possible) _____

in Section 1 - T46N - R11E Close to S. Line & on R.R. Right of way

Elevation top of well U.S.G.S. Mon 710 Depth 170 - 162 to rock

Log Fishermans sand on each side. Ice Wm Dick says west end

No water good data. Was drilled for construction camp when RR was

Casing record built

Fishermans Sand 0-161 Drift - 162-170 Boulders

Size hole 170 to 175 rock

Were drill cuttings saved? ___ Were they sent to State Geological Survey? ___ Distance to water when not pumping ___. After pumping at ___ gpm. for ___ hours. Reference point for above measurements

_____

Type of pump _____ Distance to cylinder _____

Length of suction pipe below cylinder _____

Length stroke _____ Speed _____ Hours used per day _____

Type of power _____

Can following be measured: Water level not pumping ___ pumping ___

Discharge _____ Influence on other wells _____

Temperature of water _____ Were water samples collected ___

Date _____ Analysis number _____ Effect of water on meters, hot water coils _____

Cost of well _____

P 1732/61

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 190 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 170 ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 30 Ft. Seepage Tile Field 100
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 75 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 10-4-78
5. Permanent Pump Installed? Yes X Date ____ No ____
   Manufacturer Red Jacket Type Sub Location ____
   Capacity 10 gpm. Depth of Setting 168 Ft.
6. Well Top Sealed? Yes X No ____ Type Meyers
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Meyers Model Number 3PK
   How attached to casing? Clamp on
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes ____ No ____
10. Pressure Tank Size 62 gal. Type Buried galv.
    Location ____
11. Water Sample Submitted? Yes ____ No X

REMARKS:

R313756

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Chris Clements Well No. ____
    Address 13989 Russell Rd. Zion, Ill.
    Driller Emile Gross License No. 102-70
11. Permit No. 79781 Date 9-21-78
12. Water from Limestone Formation 13. County Lake
    at depth 170 to 190 ft.
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
    Sec. 18
    Twp. 46N
    Rge. 11E
    Elev. ____

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv steel 15#	0'	170

SHOW LOCATION IN SECTION PLAT
~~1505 100 W of c~~ 150' NL, 100' EL, NW NW SW

16. Size Hole below casing: 5 in.
17. Static level 20 ft. below casing top which is 1 ft. above ground level. Pumping level 168 ft. when pumping at 9 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay	20	20'
blue clay	60	80
mud sand	30	110'
hard pan	40	150
gravel	20	170
limestone	20	190

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 10/23/78

LOG # 41

White Copy – Ill. Dept. of Public Health
Yellow Copy – Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUIRED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL AND WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 4 in. Depth 78 ft.
   Curb material ____. Buried Slab: Yes____ No____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 74 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:

Building	45 Ft.	Seepage Tile Field	
Cess Pool		Sewer (non Cast iron)	
Privy		Sewer (Cast iron)	
Septic Tank		Barnyard	
Leaching Pit		Manure Pile	

3. Is water from this well to be used for human consumption?
   Yes ✓ No____
4. Date well completed 8/18/71 ✓
5. Permanent Pump Installed? Yes ✓ No____
   Manufacturer Layne Type Submersible
   Capacity 10 gpm. Depth of setting 84 ft.
6. Well Top Sealed? Yes ✓ No____
7. Pitless Adaptor Installed? Yes ✓ No____
8. Well Disinfected? Yes ✓ No____
9. Water Sample Submitted? Yes____ No____

REMARKS:

R 313755
IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Art Hansen Co. Well No. ____
    Address Delaney Rd. Zion
    Driller Hansen License No. 30
11. Permit No. NF 10772 Date 4-30-71
12. Water from Gravel & Sand 13. County Lake
    Formation
    at depth 78 to 78 ft.
14. Screen: Diam. 4 in.
    Length: 3½ ft. Slot 10
    Sec. 18
    Twp. 46N
    Rge. 11E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
1050 'N 1050 'E
SW¼

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
4	Galv. T & C. 10.89 #/ft	0	74

16. Size Hole below casing: 4 in.
17. Static level 47 ft. below casing top which is 1 ft. above ground level. Pumping level 70 ft. when pumping at 12 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow Clay	18	18
Blue Clay	60	78
Gravel & Rock	20	98

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 9/8/71

LOG # 42

Ill. Dept. of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

RECEIVED
SEP 28 1989
DIVISION OF ENVIRONMENTAL HEALTH

1. Type of Well
   a. Bored____ Hole Diam. 4 in. Depth 180 ft
      Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam. 4 in. Depth 180 ft
   c. Drilled X Finished in Drift X In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled September 18, 1989
4. Permanent pump installed? Yes X Date____ No___
   Manufacturer 1 HP Teel Type subm
   Location well
   Capacity ____ gpm. Depth of setting 100 ft.
5. Well top sealed? Yes X No___ Type Merrill
6. Pitless adapter installed? Yes X No___
   Manufacturer Merrill Model No. SPK
   How attached to casing? clamp on
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

RS

IMPORTANT NOTICE

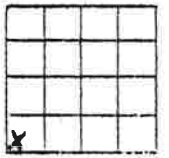
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

R 313754
IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Michael Gross License No. 102-002086
10. Well Site Address 43055 Delany Rd. Zion, Il.
11. Property Owner Earl Jantzi Well No.____
12. Permit No. 13504 Date Issued 8-2-89
13. Location: County Lake
    Sec 01-8a
    SW¼ of the SW¼ of the SW¼
    Twp. 46N
    Rge. 11E



Show location in section plat
SW, SW, SW

14. Water from gravel at depth 176 ft to 180 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
4"	galv. steel	0	180
	11#		

16. Screen: Diam.___ in, Length___ in, Slot Size___
17. Size hole below casing 4 in. 18. Ground Elev.____ ft msl.
19. Static level 60 ft below casing top which is 1 ft. above ground level. Pumping level 60 ft, pumping 15 gpm @60 for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
yellow clay	15	15
~~sandy blue clay~~	~~45~~	~~60~~
blue clay	17	77
mud sand	19	96
fine sand	20	116
blue clay	60	176
gravel	4	180

LOG #43

Continue on separate sheet if necessary.

Signed Michael Gross Date 9-25-89

LOG # 44 N 1

3

STATE WATER SURVEY WELL DATA

Date Dec 25 1930

Recorder H. S. Gerber

Authority Joe Hendrickson

Owner Casterton Bros Farm City Newport Twp. County Lake

When drilled _____ Contractor Chas Sherman Address Zion

Location (give location from section corner if possible) _____

250 E & 300' N. of SW cor SW¼ Sec 1. T46N - R11E.

Elevation top of well U.S.G.S. Mon. 715 Depth 195'

Log 188' to rock Soft water a little iron No sulfur water rests caves -

Casing record _____

Size hole _____

Were drill cuttings saved? ___ Were they sent to State Geological Survey? ___ Distance to water when not pumping ___. After pumping at ___ gpm. for ___ hours. Reference point for above measurements

Type of pump _____ Distance to cylinder _____

Length of suction pipe below cylinder _____

Length stroke _____ Speed _____ Hours used per day _____

Type of power _____

Can following be measured: Water level not pumping ___ pumping ___

Discharge _____ Influence on other wells _____

Temperature of water _____ Were water samples collected ___

Date _____ Analysis number _____ Effect of water on meters, hot water coils _____

Cost of well _____

P313750

White Copy – Illinois Department of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 206 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. 5 in. Depth 203 ft.
   c. Drilled X. Finished in Drift_____. In Rock_____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 15 Ft. Seepage Tile Field 100'
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank 75' Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No_____
4. Date well completed 7-25-79
5. Permanent Pump Installed? Yes X Date _____ No_____
   Manufacturer Red Jacket Type pit Location _____
   Capacity 18 gpm Depth of Setting 140' Ft.
6. Well Top Sealed? Yes X No_____ Type Merrell
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Merrell Model Number SPK
   How attached to casing? Clamped on
8. Well Disinfected? Yes X No_____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 120 gal. Type galvanized
    Location basement
11. Water Sample Submitted? Yes_____ No X

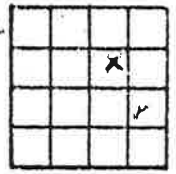
REMARKS:

R313753

IDPH 4.065
1/74 -- KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner John Anderson Well No. _____
    Address 4345 Green Bay Rd, Zion Ill.
    Driller Emil E Gross License No. 012-70
11. Permit No. 87589 Date 7-12-79
12. Water from Limestone Formation 13. County Lake
    at depth 203 to 206 ft.
14. Screen: Diam. _____ in.
    Length: _____ ft. Slot _____
    Sec. 1, 2C
    Twp. 46N
    Rge. 11E
    Elev. _____



SHOW LOCATION IN SECTION PLAT
75' S, 190' W of SW NW SE

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	galv steel	0'	203

16. Size Hole below casing: 5 in.
17. Static level 90 ft. below casing top which is 1 ft. above ground level. Pumping level 90 ft. when pumping at 22 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay - gravel mix	30	30'
Gravel	20	50'
Hard pan	90	140'
Blue clay	30'	170'
Hard pan	27	197'
Gravel	6'	203'
Limestone	3'	206'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Emil E Gross DATE 9-4-79

LOG # 45

White C... Ill. D... Public Health
Yellow C... Well Contractor
Blue Copy ... Well Owner

FILL IN ALL PERTINENT INFORMATION R... ESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 6... STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGI... / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 4 in. Depth 93 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven ✓. Drive Pipe Diam. 4 in. Depth 93 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock _____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

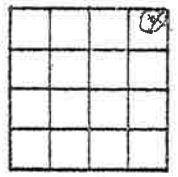
2. Distance to Nearest:
   Building 9 Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Is water from this well to be used for human consumption?
   Yes ✓ No _____
4. Date well completed 10/31/70
5. Permanent Pump Installed? Yes ✓ No _____
   Manufacturer Fairbanks Type: Jet-Mo
   Capacity 5 gpm. Depth of setting 63 ft.
6. Well Top Sealed? Yes ✓ No _____
7. Pitless Adaptor Installed? Yes ✓ No _____
8. Well Disinfected? Yes ✓ No _____
9. Water Sample Submitted? Yes _____ No _____

REMARKS:

R 313751
IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner A. J. Miles Well No. _____
    Address RR 1 - Box 156A - Zion
    Driller Denver License No. 30
11. Permit No. NE 09713 Date [illegible] 9 1970
12. Water from gravel Formation 13. County Lake
    at depth 92 to 93 ft.
14. Screen: Diam. ___ in.
    Length: _____ ft. Slot _____
    Sec. 1 1/4
    Twp. 46 N
    Rge. 11 E
    Elev. _____



SHOW LOCATION IN SECTION PLAT
60's 500'W
NE/C

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
4	galv T + C	0	93
	10.89 ppf		

16. Size Hole below casing: 4 in.
17. Static level 45 ft. below casing top which is 1 ft. above ground level. Pumping level 45 ft. when pumping at 10 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
fill	4	4
black dirt	3	7
yellow till	12	19
blue clay	70	89
runny sand	3	92
gravel	1	93

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 11/17/70

LOG # 46

LOG # 47

STATE WATER SURVEY WELL DATA

Date Sept 25 1930

Recorder W.S. Gorber

Authority

Owner Joliet & Illinois City Waukegan Iowa County Lake

When drilled 1926 Contractor Brauser Address N. Chicago

Location (give location from section corner if possible)

N.W. cor. State Line Rd & Grand Ave = 1200'W + 100'S NE Cor NE 1/4 Sec 12 T46N-R11E

Elevation top of well U.S.G.S. Mag. 708 Depth 193 208'

Log 200' to rock 0-70 Clay 70-120 Sand 120-188 Clay with some

Cemented gravel at base - 188-193 rock -

Casing record

Size hole

Were drill cuttings saved? Were they sent to State Geological Survey? Distance to water when not pumping . After pumping at gpm. for hours. Reference point for above measurements

Type of pump Distance to cylinder

Length of suction pipe below cylinder

Length stroke Speed Hours used per day

Type of power

Can following be measured: Water level not pumping pumping

Discharge Influence on other wells

Temperature of water Were water samples collected

Date Analysis number 67510 Effect of water on meters, hot water coils

Cost of well

D 10019

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 235 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 213 ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 30 Ft. Seepage Tile Field 75
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 50 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed Dec. 14, 1978
5. Permanent Pump Installed? Yes X Date ____ No ____
   Manufacturer Red Jacket Type 3/4 Sub Location ____
   Capacity 10 gpm. Depth of Setting 190 Ft.
6. Well Top Sealed? Yes X No ____ Type Manned
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Manned Model Number 3PK
   How attached to casing? Clamped
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes ____ No X
10. Pressure Tank Size 42 gal. Type Galv.
    Location Basement
11. Water Sample Submitted? Yes ____ No X

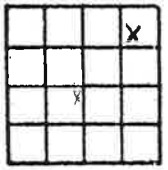
REMARKS:

P316461

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Dino Kaclaris Well No. ____
    Address 2120 - 174th St. Westhaup Hessa. Ill.
    Driller Emil E. Grass License No. 102-70
11. Permit No. 8.20.78 Date 11-17-78
12. Water from Limestone Formation 13. County Lake
    at depth 213 to 235 ft.
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
    Sec. 6.5d
    Twp. 41N
    Rge. 12E
    Elev. ____



SHOW LOCATION IN SECTION PLAT
100'W, 200'E, SW/c NE NE SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv. steel 11#	0'	213

16. Size Hole below casing: 4 in.
17. Static level 100 ft. below casing top which is 1 ft. above ground level. Pumping level 180 ft. when pumping at 7 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
top soil	1'	1'
yellow clay	17'	18'
blue clay	97'	115'
sandy blue clay	55	170'
hard pan	43'	213'
limestone	22'	235'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 12/28/78

LOG # 48

INSTRUCTIONS TO ILLERS

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, HEALTH PROTECTION, ENVIRONMENTAL HEALTH, 525 WEST JEFFERSON, SPRINGFIELD, ILLINOIS 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____in. Depth ____ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____in. Depth ____ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

2. Distance to Nearest:
   Building 20 Ft. — Seepage Tile Field 80
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank 70 — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 8/23/89
5. Permanent Pump Installed? Yes X Date 8/25/89 No ____
   Manufacturer DELTA Type SUB Location ____
   Capacity 8 gpm. Depth of Setting 188' Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer WILLIAMS Model Number B50ACWS
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type LOAV
    Location BASEMENT
11. Water Sample Submitted? Yes X No ____

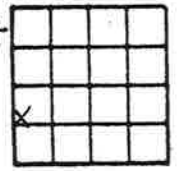
REMARKS:

P 3164466

IDPH 4.065
KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner DAVE SIERASKI Well No. ____
    Address 1840 N. DELANEY ROAD APT 317
    Driller KEN BOYCE License No. 092-000508
11. Permit No. 011905 Date 6.7.89
12. Water from LIMESTONE (Formation) 13. County LAKE
    at depth 206 to 209 ft. Sec. 06.8c
    14. Screen: Diam. ____in. Twp. 41N
    Length: ____ft. Slot ____ Rge. 12E
    Elev. ____



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-53	0	206
	T&C TDI		
	15 lbs PER FT		

SHOW LOCATION IN SECTION PLAT
SW, NW, SW
Lot 5 - Pheasant Knoll

16. Size Hole below casing: 5 in.
17. Static level 95 ft. below casing top which is 1 ft. above ground level. Pumping level 110 ft. when pumping at 15 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
TOP SOIL	2	2
YELLOW CLAY	15	17
BLUE CLAY	58	75
MEALY SAND	15	90
HARDPAN	65	155
BLUE CLAY	32	187
SAND & GRAVEL	19	206
LIMESTONE	3	209

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 9/9/89

LOG # 49

Golden C | Well Owner

Well Completion Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

AL LARSON →

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____

   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
clay Slurry	0	20

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 8/4/92
4. Permanent pump installed? Yes X Date 8/5/92 No___
   Manufacturer DEMA Type SUBM
   Location_____
   Capacity 8 gpm. Depth of setting 148 ft.
5. Well top sealed? Yes X No___ Type_____
6. Pitless adapter installed? Yes X No___
   Manufacturer Williams Model No. BSO ACW
   How attached to casing?_____
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

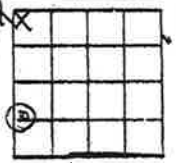
PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

D-26045

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller BEACH PUMP & WELL License No. 092-006808
10. Well Site Address 43367 LYNN OAKE DRIVE ZION
11. Property Owner AL LARSON Well No.____
12. Permit No. ISD 88-03-0315 Date Issued 6/5/92
13. Location: Lot 8, Pheasant Knoll
    County LAKE
    Sec. (a. 8 NW) 8C
    46N Twp. 46N
    Rge. 12E



Show location in section plat

~~NW, NW, NW~~ (per plat BK) SW NW SW

14. Water from SAND at depth 164 ft to 168 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	ASTM A-53	0	165
	T/C TDI		
	15 lbs PER FT		

16. Screen: Diam. 5 in, Length 3' in, Slot Size 10
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 11 ft below casing top which is ____ft. above ground level. Pumping level 16 ft, pumping 8 gpm for ____ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
TOPSOIL & FILL	0	5
YELLOW CLAY	5	20
BLUE CLAY	20	106
HARD PAN	106	135
BLUE CLAY	135	164
SAND	164	168

LOG # 50

Continue on separate sheet if necessary.

Signed Kenneth D. Boone Date 8/5/92

White Copy – Illinois Department of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 173 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 171 ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 15 Ft. — Seepage Tile Field 75
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank 75 — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed Nov. 15, 1979
5. Permanent Pump Installed? Yes X Date ____ No ____
   Manufacturer Ledgerbolt Type Jet Location ____
   Capacity 10 gpm. Depth of Setting 100 Ft.
6. Well Top Sealed? Yes X No ____ Type Merrill
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Merrill Model Number SPK
   How attached to casing? clamps on
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 40 gal. Type galvanized
    Location basement
11. Water Sample Submitted? Yes ____ No X

REMARKS:

P316484

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Michael English Well No. ____ Lot
    Address 831 Hobbridge Ave. Winthrop Harbor
    Driller Emil A. Gross License No. 162-70
11. Permit No. 91454 Date 11-15-79
12. Water from fine gravel Formation 13. County Lake
    at depth 163 to 173 ft.
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot #20
    Sec. 6.8?
    Twp. 46N
    Rge. 12E
    Elev. ____

X			
X			

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv. steel	0'	171

SHOW LOCATION IN SECTION PLAT
150N 300W SE/c
NW/4 NW/4 SW/4

16. Size Hole below casing: 4 in.
17. Static level 63 ft. below casing top which is 1 ft. above ground level. Pumping level 70 ft. when pumping at 9 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
black dirt	1'	1'
yellow clay	14	15'
blue clay	153'	168'
fine graded	5	173'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Emil A. Gross DATE 1-17-80

LOG # 51

INSTRUCTIONS TO DRILLERS

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, HEALTH PROTECTION, ENVIRONMENTAL HEALTH, 525 WEST JEFFERSON, SPRINGFIELD, ILLINOIS 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____in. Depth ____ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____in. Depth ____ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	70

2. Distance to Nearest:
   Building 30 Ft. Seepage Tile Field 80
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 70 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 8/15/89
5. Permanent Pump Installed? Yes X Date 8/16/89 No ____
   Manufacturer DELTA Type SUB Location ____
   Capacity 8 gpm. Depth of Setting 198' Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer WILLIAMS Model Number B30ACUS
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type BLAD
    Location BASEMENT
11. Water Sample Submitted? Yes X No ____

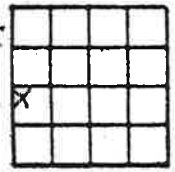
REMARKS:

P316485

IDPH 4.065
KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner AC LARSON CONST. Well No. ____
    Address 1015 SHILOH BLVD ZION, IL. 60099
    Driller KEN BOYCE License No. 017-000408
11. Permit No. 013190 13190 Date 7/21/89
12. Water from LIMESTONE (Formation) 13. County LAKE
    at depth 201 to 204 ft. Sec. 6-8N
14. Screen: Diam. ____in. Twp. 46N
    Length: ____ft. Slot ____ Rge. 12E
    Elev. ____



15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-53	0	201
	T&C TOI		
	15 lbs PER FT		

SHOW LOCATION IN SECTION PLAT
Lot 6 - Pheasant Run
NW, NW, SW

16. Size Hole below casing: 5 in.
17. Static level 85 ft. below casing top which is ABOVE 1 ft. above ground level. Pumping level 105 ft. when pumping at 15 gpm for 3 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
TOPSOIL	2	2
YELLOW CLAY	13	15
BLUE CLAY	70	85
DRY GRAVEL	20	105
HARDPAN	25	130
BLUE CLAY	20	150
SAND	48	198
RUBBLE	3	201
LIMESTONE	3	204

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 9/9/89

LOG # 52

INSTRUCTIONS TO DRILLERS

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, HEALTH PROTECTION, ENVIRONMENTAL HEALTH, 525 WEST JEFFERSON, SPRINGFIELD, ILLINOIS 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____ in. Depth ____ ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

2. Distance to Nearest:
   Building 110 Ft. Seepage Tile Field 185'
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 185 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 9/2/89
5. Permanent Pump Installed? Yes X Date 9/7/89 No ____
   Manufacturer DELTA Type SUB Location ____
   Capacity 8 gpm. Depth of Setting 128 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer WILLIAMS Model Number BSDAXUS
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type GRAV
    Location UTILITY ROOM
11. Water Sample Submitted? Yes X No ____

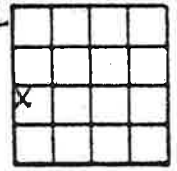
REMARKS:

p316486

IDPH 4.065
KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner JOHN SENDAR Well No. ____
    Address 2233 NORTHWEST HWY AVE WAUCONDA 60085
    Driller KEN BOYCE License No. 092-000508
11. Permit No. 013189 Date 7/21/89
12. Water from SAND (Formation) at depth 130 to 134 ft.
13. County LAKE
    Sec. 01&8d Twp. 44N Rge. 12E Elev. ____
14. Screen: Diam. 5 in. Length: 3 ft. Slot 10



SHOW LOCATION IN SECTION PLAT
NW, NW, SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-53	0	131
	T/C TOI		
	15 lbs PER FT		

16. Size Hole below casing: 5 in.
17. Static level 85 ft. below casing top which is 1 ft. above ground level. Pumping level 90 ft. when pumping at 8 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
TOPSOIL	2	2
YELLOW CLAY	14	16
BLUE CLAY	22	38
GRAVEL	1	39
BLUE CLAY	91	130
SAND & GRAVEL	4	134

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 9/9/89

LOG #53

Copy – Dept. of Public Health
Copy – Well Contractor
Copy – Well Owner

INSTRUCTIONS TO DRILLER:

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 174 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 172 ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 40 Ft. Seepage Tile Field 75
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 50 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed February 18, 1988 RS
5. Permanent Pump Installed? Yes X Date ____ No ____
   Manufacturer RedJacket Type sub Location well
   Capacity 10 gpm. Depth of Setting 100 Ft.
6. Well Top Sealed? Yes X No ____ Type Merrill
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Merrill Model Number SPK
   How attached to casing? clamp on
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type galv.
    Location basement
11. Water Sample Submitted? Yes X No ____

REMARKS: Lo.# 30130

Allen Macki
128 Lyndale Drive
Zion, Illinois

P316487

IDPH 4.065

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Terry Krammer Well No. ____
    Address 42674 Lake Dr., Antioch, Illinois
    Driller Michael Gross License No. 102-002086
11. Permit No. 135667 Date 9-29-87
12. Water from coarse sand (Formation) 13. County Lake
    at depth 170 to 174 ft.
    Sec. 6.8e
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot #15

SHOW LOCATION IN SECTION PLAT
NW, NW, NW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	galv. steel 11#	0	172

16. Size Hole below casing: 4 in.
17. Static level 70 ft. below casing top which is 1 ft. above ground level. Pumping level 90 ft. when pumping at 7½ gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	16	16
blue clay	54	70
hard pan	22	99
blue clay	51	150
mud sand	18	168
blue clay	2	170
coarse sand	4	174

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Michael Gross DATE 3-16-88

LOG #54

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 4 in. Depth 176 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. 4 in. Depth 173 ft.
   c. Drilled X. Finished in Drift X. In Rock_____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 18 Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No_____
4. Date well completed June 15, 1979
5. Permanent Pump Installed? Yes X Date 10/16/79 No_____
   Manufacturer Sta-Rite Type Subm. Location _____
   Capacity 8 gpm. Depth of Setting 126 Ft.
6. Well Top Sealed? Yes X No_____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes X No_____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 42 gal. Type WX-202
    Location _____
11. Water Sample Submitted? Yes_____ No_____

REMARKS:

P3164464

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner JACK SERDAR Well No. _____
    Address Pheasant Knoll Sub., State Line Road
    Driller Lonny R. Hoover License No. 102-783
11. Permit No. 86584 Date June 12, 1979
12. Water from Gravel & sand (Formation)
    at depth 171 to 176 ft.
13. County Lake
    Sec. 6,7?
    Twp. 46N
    Rge. 12E
    Elev. _____
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot #10 Slot
15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	New Galv. Steel	0	173
	T&C 14.81 PPF		

SHOW LOCATION IN SECTION, PLAT
35'S 300W NE¼ NW SW

16. Size Hole below casing: 4 in.
17. Static level 85 ft. below casing top which is 1 ft. above ground level. Pumping level 95 ft. when pumping at 10 gpm for 1½ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	30	30
Gray clay	4	34
Gravel	2	36
Gray clay	42	78
Hardpan	32	110
Gray clay	57	167
Sand & gravel	3	170
Clay	1	171
Sand & gravel	5	176

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R. Hoover/sga DATE 11/9/79

LOG # 55

Yel[illegible]opy: Well Contractor
Golde[illegible]opy: Well Owner

Well Cons[illegible]uction Report

RECEIVED
JUL 17 1991
ENVIRONMENTAL HEALTH

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

GEOLOGICAL AND WATER SURVEYS WELL RECORD

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
      Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift____ In Rock X
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Clay Slurry	0	20

2. Well furnishes water for human consumption? Yes___ No___
3. Date well drilled 7/8/9
4. Permanent pump installed? Yes X Date 7/10/91 No___
   Manufacturer DEEP Type Subs
   Location
   Capacity 8 gpm. Depth of setting 200 ft.
5. Well top sealed? Yes X No___ Type
6. Pitless adapter installed? Yes X No___
   Manufacturer Williams Model No. 350 ACW
   How attached to casing?
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

P268578 ✓

9. Driller BEACH PUMP & WELL License No. 092-005809
10. Well Site Address 43321 LYNN CAMP DELLE ZION
11. Property Owner Well No.
12. Permit No. ISD 88-03-0314 Date Issued 12/31/90
13. Location: County LAKE
    Sec. 6
    Twp. 46 N
    Rge. 12 E

Show location in section plat

14. Water from LIMESTONE at depth 200 ft to 203 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5	ASTM A-53	0	200
	T/C TOI		
	15 lbs PER FT		

16. Screen: Diam.____in, Length____in, Slot Size____
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 85 ft below casing top which is 1 ft. above ground level. Pumping level 105 ft, pumping 1/2 gpm for 4 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
BLACK DIRT & FILL YELLOW CLAY	0 2	2 15
BLUE CLAY GRAVEL	15 84	84 104
HANOPAN BLUE CLAY	104 130	130 149
SAND RUBBLE	149 197	197 200
LIMESTONE	200	204

LOG #56

Continue on separate sheet if necessary.

Signed Kenneth D. Poppe Date 7/15/91

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 187 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 187 ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 15 Ft. Seepage Tile Field 75
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 50 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed May 15, 1978
5. Permanent Pump Installed? Yes X Date ____ No ____
   Manufacturer Red Jacket Type Sub Location ____
   Capacity 10 gpm. Depth of Setting 147 Ft.
6. Well Top Sealed? Yes X No ____ Type Merrill
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Merrill Model Number SPK
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes ____ No ____
10. Pressure Tank Size 82 gal. Type Galv.
    Location basement
11. Water Sample Submitted? Yes ____ No X

REMARKS:

P316465

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Warren T. Goden Well No. ____
    Address 2616 15th St. Winthrop Harbor 100
    Driller Ezell & Sons License No. 102-70
11. Permit No. 71983 Date 5-14-78
12. Water from Lemont Limestone Formation at depth 184 to 187 ft.
13. County Lake
    Sec. 6 Twp. 46N Rge. 12E Elev. ____
14. Screen: Diam. ____ in. Length: ____ ft. Slot ____

SHOW LOCATION IN SECTION PLAT
200W, 250S, SW, NE NW SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv. steel 11#	0'	187'

16. Size Hole below casing: 4 in.
17. Static level 85 ft. below casing top which is / ft. above ground level. Pumping level 115 ft. when pumping at 11 gpm for 10 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay	18'	18'
blue clay	166'	184'
fine black gravel	3	187'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 5-26-78

LOG # 57

IDPH 4.065
1/74 – KNB-1

INSTRUCTIONS TO DRILLERS

Copy – Dept. of Public Health
Copy – Well Contractor
Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND [illegible]L ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

Type of Well

a. Dug____. Bored____. Hole Diam. 5 in. Depth 246 ft.
Curb material _____. Buried Slab: Yes____ No____
b. Driven _____. Drive Pipe Diam. 5 in. Depth 214 ft.
c. Drilled X. Finished in Drift _____. In Rock X.
Tubular _____. Gravel Packed _____.
d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

Distance to Nearest:
Building 20 Ft. Seepage Tile Field 75
Cess Pool _____ Sewer (non Cast iron) _____
Privy _____ Sewer (Cast iron) _____
Septic Tank 50 Barnyard _____
Leaching Pit _____ Manure Pile _____
Well furnishes water for human consumption? Yes X No____
Date well completed February 21, 1987
Permanent Pump Installed? Yes X Date _____ No____
Manufacturer RedJacket Type sub Location well
Capacity 10 gpm. Depth of Setting 220 Ft.
Well Top Sealed? Yes X No____ Type Merrill
Pitless Adapter Installed? Yes X No____
Manufacturer Merrill Model Number SPK
How attached to casing? clamp on
Well Disinfected? Yes X No____
Pump and Equipment Disinfected? Yes X No____
Pressure Tank Size 120 gal. Type epoxy
Location crawl space
Water Sample Submitted? Yes X No ●

County #28510

P316458

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Jack Senter Well No. _____
Address Oak Crest, Zion, Illinois
Driller Michael Gross License No. 102-002086
11. Permit No. 126024 Date 8-18-86
12. Water from Limestone Formation at depth 214 to 246 ft.
13. County Lake
Sec. 6 SW NW NE
Twp. 46N
Rge. 12E
Elev. _____

SHOW LOCATION IN SECTION PLAT
150'SL, 10'EL

14. Screen: Diam. _____ in.
Length: _____ ft. Slot _____

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	galv. steel	0	214

16. Size Hole below casing: 5 in.
17. Static level 90 ft. below casing top which is 1 ft. above ground level. Pumping level 220 ft. when pumping at 7½ gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	21	21
Stoney clay	49	70
Hard pan	95	165
Mud sand	10	175
Hard pan	35	210
Sand-gravel dirty	4	214
Limestone	32	246

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Michael Gross DATE 2-23-87

LOG # 58

DPH 6 Cert.
774 – KNB-1

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift____. In Rock X.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building____Ft. Seepage Tile Field____
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank____ Barnyard____
   Leaching Pit____ Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 11/4/74
5. Permanent Pump Installed? Yes X Date 11/7/74 No____
   Manufacturer Red Jacket Type sub. Location____
   Capacity 10 gpm. Depth of Setting 126 Ft.
6. Well Top Sealed? Yes X No____ Type____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Baker Snappy Model Number____
   How attached to casing? clamp
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 82 gal. Type Well X Trol
    Location house
11. Water Sample Submitted? Yes x No____

REMARKS:

P316463

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

State Line Rd., East of Green Bay, 1/2 mile East of Russell

10. Property owner JOHN GULLY Well No. Russell
    Address 2236 Beverly, Lake Villa, Ill. 60046
    Driller Henry Boysen Co. License No. 102-6
11. Permit No. 32460 Date 8/26/74
12. Water from Limestone Formation 13. County Lake
    at depth 213 to 224 ft. Sec. 6 7d
14. Screen: Diam.____in. Twp. 46N
    Length:____ft. Slot____ Rge. 12E
    Elev.____

	X		

SHOW LOCATION IN SECTION PLAT
120'S 1200'E
NW¼ SW¼

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galvanized	grade	213

16. Size Hole below casing: 5 in.
17. Static level 90 ft. below casing top which is 1 ft. above ground level. Pumping level____ft. when pumping at 15-20 gpm for____hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Till	2	2
Yellow Clay	13	15
Gray Clay	45	60
Gray Clay mixed with Small Gravel	140	200
Gravel - Mixed Little Clay	13	213
Limestone	11	224

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 9-10-75

LOG # 59

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 250 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 10/28/77
5. Permanent Pump Installed? Yes X Date 11/14/77 No ____
   Manufacturer Red Jacket Type subm. Location ____
   Capacity 10 gpm. Depth of Setting 240 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Williams Model Number ____
   How attached to casing? clamp
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type galv.
    Location ____
11. Water Sample Submitted? Yes X No ____

REMARKS:

P3164541

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner MIDDLETON BLDRS. Well No. Lot 3 Oak Crest Subd.
    Address 801 18th St., Zion, IL.
    Driller HENRY BOYSEN CO. License No. 102-6
11. Permit No. 60946 Date 5/19/77
12. Water from Limestone Formation 13. County Lake
    at depth 213 to 250 ft. Sec. 6 (36)
14. Screen: Diam. ____ in. Twp. 46N
    Length: ____ ft. Slot ____ Rge. 12E
    Elev. ____

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	192
5	Black Steel	192	214

SHOW LOCATION IN SECTION PLAT
Lot 3 Oak Crest Subd, 700'W, 200'E, S½, NE NW SE

16. Size Hole below casing: 5 in.
17. Static level ____ ft. below casing top which is ____ ft. above ground level. Pumping level ____ ft. when pumping at 4-6 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	6	6
Blue Clay	64	70
Gravel - Boulders	8	78
Blue Clay - Gravel	129	207
Granite Boulder	2	209
Heavy Gravel - Lt. Clay	4	213
Limestone	37	250

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 1/25/78

LOG # 60

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUIRED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 250 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast Iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 11/1/77
5. Permanent Pump Installed? Yes X Date 11/14/77 No ____
   Manufacturer Red Jacket Type subm. Location ____
   Capacity 10 gpm. Depth of Setting 240 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Williams Model Number ____
   How attached to casing? clamp
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type galv.
    Location ____
11. Water Sample Submitted? Yes X No ____

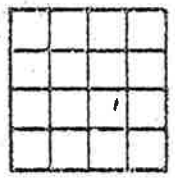
REMARKS:

P316455

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner MIDDLETON BLDRS. Well No. Lot 4 Oak Crest Subd.
    Address 801 18th St., Zion, IL.
    Driller HENRY BOYSEN CO. License No. 102-6
11. Permit No. 60945 Date 5/19/77
12. Water from Limestone (Formation)
    at depth 216 to 250 ft.
13. County Lake
    Sec. 6
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	195
5	Black Steel	195	218

SHOW LOCATION IN SECTION PLAT
Lot 4 Oak Crest Subd., 300N, 300E, S1/2, NE and SE

16. Size Hole below casing: 5 in.
17. Static level 96 ft. below casing top which is 1 ft. above ground level. Pumping level ____ ft. when pumping at 1-2 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Fill	3	3
Brown Clay	7	10
Blue Clay	97	107
Gravel	4	111
Blue Clay - Gravel	105	216
Limestone	34	250

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 1/25/78

LOG # 61

Yellow Copy: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 5 in. Depth 230 ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift____ In Rock X

   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
bentonite	grade	210

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 9/14/92
4. Permanent pump installed? Yes X Date 9/28/92 No___
   Manufacturer Red Jacket Type subm.
   Location_____
   Capacity 2 gpm. Depth of setting 200 ft.
5. Well top sealed? Yes X No___ Type_____
6. Pitless adapter installed? Yes X No___
   Manufacturer Williams Model No. WTV50S
   How attached to casing? clamp
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE

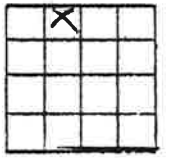
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller GEORGE E. GAFFKE License No. 102-002342
10. Well Site Address Lot 6 Oak Crest Subd., Wadsworth
11. Property Owner KEN HUENNEKENS Well No.____
12. Permit No. ISD91-03-0559 Date Issued 7/23/92
13. Location: County Lake
    Sec. 6.5h
    Benton Twp. 46N
    Rge. 12E



Show location in section plat

NE NE NW Oakcrest Subd lot 6

14. Water from Limestone at depth 210 ft to 230 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	PVC	+1	189
5"	Black Steel	189	210

16. Screen: Diam.____in, Length____in, Slot Size____
17. Size hole below casing 5 in. 18. Ground Elev._____ ft msl.
19. Static level 90 ft below casing top which is 1 ft. above ground level. Pumping level ___ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Brown Clay	0	10
Blue Clay	10	60
Sand & Gravel	60	63
Blue Clay	63	101
Sand	101	103
Blue Clay	103	206
Blue Clay, Gravel	206	210
Limestone	210	230

LOG # 62

Continue on separate sheet if necessary.

Signed George E. Gaffke Date 10/5/92

te Copy –
l. Dept. of Public Health
low Copy – Well Contractor
o Copy – Well Owner

INSTRUCTIONS TO DRILLE

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 236 ft.
      Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 210 ft.
   c. Drilled ✓. Finished in Drift ____. In Rock ✓.
      Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 38 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishas water for human consumption? Yes ✓ No ____
4. Date well completed 1-14-78
5. Permanent Pump Installed? Yes ✓ Date 1-17-78 No ____
   Manufacturer Sta-Rite Type Subm Location ____
   Capacity 8 gpm. Depth of Setting 168' x 1" Ft.
6. Well Top Sealed? Yes ✓ No ____ Type Pitless adapter
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manna
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 82 gal. Type galvanized
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316460

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Smythe Const. Co. Well No. ____
    Address 310 Fairstow Waukegan
    Driller R. R. Hoover License No. 102-78
    -70711 Date 1-11-78
11. Permit No. ____
12. Water from Limestone Formation
    at depth 210 to 236 ft.
    14. Screen: Diam. — in.
    Length: ____ ft. Slot ____
13. County Lake
    Sec. 6-5C
    Twp. 46N
    Rge. 12E
    Elev. ____

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	New Gale. T+C 14.81 ppf	0	210

SHOW LOCATION IN SECTION PLAT
Lot 7, Oak Crest Subd., 300'S, 150'E NW/C, SE NE Sec.

16. Size Hole below casing: 5 in.
17. Static level 110 ft. below casing top which is ____ ft. above ground level. Pumping level 200 ft. when pumping at 7 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	14	14
Blue clay	56	70
Hardpan	56	126
Gravel	4	130
Tan clay	40	170
Sand + gravel	40	210
Limestone	26	236

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Donny R. Hoover/sgm DATE 1-31-78

LOG # 63

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLER

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 229 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven_____. Drive Pipe Diam. _____in. Depth _____ft.
   c. Drilled X. Finished in Drift_____. In Rock X.
   Tubular_____. Gravel Packed_____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool_____ Sewer (non Cast iron)_____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 7/7/77
5. Permanent Pump Installed? Yes X Date 7/21/77 No____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting 180 Ft.
6. Well Top Sealed? Yes X No____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Baker Snappy Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No _____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 42 gal. Type galv. w/float
    Location _____
11. Water Sample Submitted? Yes X No_____

REMARKS:

P316453

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner MIDDLETON BLDRS. Well No. Lot 9 Oak Crest
    Address 801 18th St., Zion, IL.
    Driller HENRY BOYSEN CO. License No. 102-6
11. Permit No. 60948 Date 5/19/77
12. Water from Limestone Formation 13. County Lake
    at depth 207 to 229 ft. Sec. 6
    14. Screen: Diam._____in. Twp. 46N
    Length:_____ft. Slot_____ Rge. 12E
    Elev._____

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	187
5	Black Steel	~~XXX~~ 187	208

SHOW LOCATION IN SECTION PLAT
Lot 1, Oak Crest Subd., 300'W, 100'E, 6w/c, NE and SE

16. Size Hole below casing: 5 in.
17. Static level _____ft. below casing top which is _____ ft. above ground level. Pumping level _____ ft. when pumping at 4-5 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top Soil	1	1
Yellow Clay	~~XX~~ 15	16
Gravel - Clay	3	19
Blue Clay	107	126
Clay Gravel	54	180
Hard Pan	25	205
Gravel	2	207
Limestone	22	229

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED _____ DATE 1/24/78

LOG #64

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 211 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 8/6/76
5. Permanent Pump Installed? Yes X Date 8/20/76 No ____
   Manufacturer Red Jacket Type subm. Location ____
   Capacity 10 gpm. Depth of Setting 117 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Williams Model Number ____
   How attached to casing? clamp
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes X No ____

REMARKS:

P316456

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner MARVIN KLIKUNAS Well No. ____
    Address 12144 43rd Ave., Kenosha, Wisc.
    Driller HENRY BOYSEN CO. License No. 102-6
11. Permit No. 49354 Date 7/7/76
12. Water from Limestone (Formation) 13. County Lake
    at depth 211 to 238 ft.
    Sec. 6 NE
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____

SHOW LOCATION IN SECTION PLAT
150'S 100'E of NW/c NWNWSE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	Black Steel	grade	212

16. Size Hole below casing: 5 in.
17. Static level 91 ft. below casing top which is 1 ft. above ground level. Pumping level ____ ft. when pumping at ____ gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	18	18
Blue Clay	75	93
Gravel	31	124
Blue Clay-Gravel	41	165
Hard Blue Clay-Coarse Gravel	46	211
Limestone	27	238

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 10/29/76

LOG # 65

White C... Public Health
Ill. D...
Yellow Co... – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION ...UESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CO...MER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 266 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 205 ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

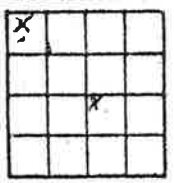
2. Distance to Nearest:
   Building 50 Ft. Seepage Tile Field 140'
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 1000' Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed May 9, 1977
5. Permanent Pump Installed? Yes ____ Date ____ No X
   Manufacturer ____ Type ____ Location ____
   Capacity ____ gpm. Depth of Setting ____ Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No ____
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes ____ No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No X

REMARKS:

P31457

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Arthur Weiler Well No. ____
    Address 1305 Bradford Rd. Deerfield, Ill.
    Driller Emil E. Myers License No. 102-70
11. Permit No. 59214 Date 4-18-77
12. Water from Pinnetree Formation 13. County Lake
    at depth 205 to 266 ft.
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
    Sec. 6, 42
    Twp. 43N
    Rge. 12E
    Elev. ____



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv. steel #15	0'	205

SHOW LOCATION IN SECTION PLAT
100's 250'E NW/c NW NW SE

16. Size Hole below casing: ____ in.
17. Static level 90 ft. below casing top which is 1 ft. above ground level. Pumping level 150 ft. when pumping at 15 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay	20	20
blue clay	80	100
hard pan	55	155
gravel	3	158
quicksand	17	175
med hard pan	15	190
sand	15	205
limestone	61	266

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Emil E. Myers DATE 5-24-78

LOG # 66

IDPH 4.065
1/74 – KNB-1
(50571—12.1KM Sets—6-74)

White Copy — Ill. Dept. of Public Health
Yellow Copy — Well Contractor
Blue Copy — Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 114 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 114 ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 45 Ft. — Seepage Tile Field 125
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank 100 — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 9-13-85
5. Permanent Pump Installed? Yes X Date ____ No ____
   Manufacturer ~~Red Jacket~~ Type ~~sub~~ Location well
   Capacity 10 gpm. Depth of Setting 105 Ft.
6. Well Top Sealed? Yes X No ____ Type Merrill
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Merrill Model Number SPK
   How attached to casing? clamp on
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 120 gal. Type galvanized
    Location basement
11. Water Sample Submitted? Yes ____ No X

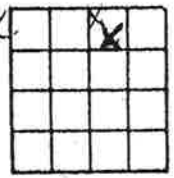
REMARKS: County #27626

P3/6459

IDPH 4.065
1/74 - KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner ~~Ron Newman~~ Well No. ____
    Address Russell Rd. Russell, Illinois
    Driller Michael Cross License No. 182-002086
11. Permit No. 120295 Date 9-13-85
12. Water from sand 13. County Lake
    at depth 113½ Formation to 114 ft.
    Sec. 6
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv. steel 11#	0	114

SHOW LOCATION IN SECTION PLAT
75'N & 50'W SE/c NW NW NE

16. Size Hole below casing: 4 in.
17. Static level 90 ft. below casing top which is 1 ft. above ground level. Pumping level 110 ft. when pumping at 5 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay	16	16
blue clay	81	97
gravel sand mix	16½	113½
sand	½	114

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Michael Cross DATE 10-18-85

LOG #67

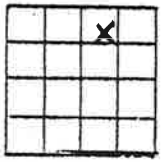
Ill. Dept. of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Michael Gross License No. 102-002086
10. Well Site Address 2247 W. Russell Rd. Zion, IL
11. Property Owner Arthur Weiler Well No.
12. Permit No. WW #91-16-1306 Date Issued 9-29-91
13. Location: County Lake
SE¼ of the NW¼ of the NE¼ Sec. 6 Twp. 46N Rge. 12E


Show location in section plat

SE NW NE
IRR

1. Type of Well
a. Bored____ Hole Diam. 6 in. Depth 290 ft
Buried Slab: Yes___ No___
b. Driven____ Drive Pipe Diam. 6 in. Depth 204 ft
c. Drilled X Finished in Drift____ In Rock X
d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Clay Slurry	0	20

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 1-27-92
4. Permanent pump installed? Yes X Date_____ No___
Manufacturer 3 HP Delta Type Sub
Location well
Capacity 20 gpm. Depth of setting 240 ft.
5. Well top sealed? Yes X No___ Type Merrill
6. Pitless adapter installed? Yes X No___
Manufacturer Merrill Model No. spk
How attached to casing? clmap on
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

RS

IMPORTANT NOTICE
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

14. Water from limestone at depth 204 ft to 290 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
6"	Steel	0	204

16. Screen: Diam.___in, Length___in, Slot Size___
17. Size hole below casing 6 in. 18. Ground Elev._____ ft msl.
19. Static level 95 ft below casing top which is 1 ft. above ground level. Pumping level 240 ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
yellow clay	0	17
blue clay and gravel	17	90
Hard pan and blue clay	90	135
blue clay	135	165
blue clay and gravel	165	175
blue hard pan-tan limestone	175	204
limestone	204	290

Continue on separate sheet if necessary.

LOG #68

RECEIVED
FEB 10 1992
ENVIRONMENTAL HEALTH DIVISION

Signed Michael Gross Date 2-7-92

IL482-0126

Ill. Dept. of Public Health
Yellow Copy — Well Contractor
Blue Copy — Owner

DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761 DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ___. Bored ___. Hole Diam. 5 in. Depth 275 ft.
   Curb material ___. Buried Slab: Yes ___ No ___
   b. Driven ___. Drive Pipe Diam. 5 in. Depth 212 ft.
   c. Drilled X. Finished in Drift ___. In Rock X.
   Tubular ___. Gravel Packed ___.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 100 Ft. Seepage Tile Field 125'
   Cess Pool ___ Sewer (non Cast iron) ___
   Privy ___ Sewer (Cast iron) ___
   Septic Tank 125' Barnyard ___
   Leaching Pit ___ Manure Pile ___
3. Well furnishes water for human consumption? Yes X No ___
4. Date well completed Dec. 15, 1978
5. Permanent Pump Installed? Yes ___ Date ___ No ___
   Manufacturer ___ Type ___ Location ___
   Capacity ___ gpm. Depth of Setting ___ Ft.
6. Well Top Sealed? Yes X No ___ Type steel plug
7. Pitless Adapter Installed? Yes ___ No ___
   Manufacturer ___ Model Number ___
   How attached to casing? ___
8. Well Disinfected? Yes X No ___
9. Pump and Equipment Disinfected? Yes ___ No ___
10. Pressure Tank Size ___ gal. Type ___
    Location ___
11. Water Sample Submitted? Yes ___ No X

REMARKS:

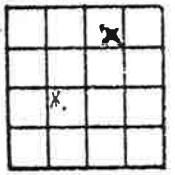
didn't install water system

p316462

IDPH 4.065
1/74 — KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Ray Kaucnick Well No. ___
    Address 3510 Stonegate Rd, Waukegan Ill.
    Driller Emil E. Krohe License No. 102-170
11. Permit No. 82077 Date 11-17-78
12. Water from Limestone Formation
    at depth 212 to 275 ft.
13. County Lake
    Sec. 6, 60
    Twp. 46N
    Rge. 12E
    Elev. ___



SHOW LOCATION IN SECTION PLAT
1000 N 150 W, SE/c NW NW E SW

14. Screen: Diam. ___ in.
    Length: ___ ft. Slot ___
15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv. steel	0'	212

16. Size Hole below casing: 5 in.
17. Static level 95 ft. below casing top which is 1 ft. above ground level. Pumping level 150 ft. when pumping at 10 gpm for ___ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay	20'	20'
blue clay	105	125'
clay, gravel mix	125	212
limestone	63	275

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Emil E. Krohe DATE 11-30-79

LOG # 69

White Copy – Ill. Dept. of Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUEST AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, E OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL TER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled 4". Finished in Drift 128. In Rock____.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 6' Ft. Seepage Tile Field 75
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank 50 Barnyard____
   Leaching Pit____ Manure Pile____
3. Is water from this well to be used for human consumption?
   Yes ✓ No____
4. Date well completed 3-23-76
5. Permanent Pump Installed? Yes ✓ No____
   Manufacturer RED JACKET Type SUB
   Capacity 10 gpm. Depth of setting 105 ft.
6. Well Top Sealed? Yes____ No ✓
7. Pitless Adaptor Installed? Yes ✓ No____
8. Well Disinfected? Yes ✓ No____
9. Water Sample Submitted? Yes____ No ✓

REMARKS:

P316451

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner THOMAS OLEANKETO Well No.____
    Address 714 KENOSHA RD ZION
    Driller EUGENE GROSS License No. 102-71
11. Permit No. 44946 Date 3-23-76
12. Water from SAND Formation
    at depth 120 to 125 ft.
13. County LAKE
    Sec. 5 8h
    Twp. 46 N
    Rge. 12 E
    Elev.____
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot 10

SHOW LOCATION IN SECTION PLAT

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	GALV #11		

16. Size Hole below casing: 4" In.
17. Static level 90 ft. below casing top which is 1 ft. above ground level. Pumping level 95 ft. when pumping at 10 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
TOP BROWN CLAY	10	10
BLUE CLAY & SAND	90	100
CLAY	20	120
SAND	8	128

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Eugene Gross DATE 11-26-79

LOG #70

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 180 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Is water from this well to be used for human consumption?
   Yes ✓ No ____
4. Date well completed 6/21/71
5. Permanent Pump Installed? Yes ✓ No ____
   Manufacturer Sta Rite Type Deep Well
   Capacity 8 gpm. Depth of setting 165 ft.
6. Well Top Sealed? Yes ✓ No ____
7. Pitless Adaptor Installed? Yes ✓ No ____
8. Well Disinfected? Yes ✓ No ____
9. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316450

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Leonard & English Dick Russell Well No. ____
    Address Oakwood Douglas
    Driller Downard License No. 30
11. Permit No. NE 1115 Date 6/21/71
12. Water from Gravel Formation 13. County Edgar
    at depth 170 to 180 ft.
14. Screen: Diam. 5 in.
    Length: 3½ ft. Slot # 20
    Sec. 5 T 14 N R 12 E
    Twp. 14 N
    Rge. 12 E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
1800'S 150'E Dup/c

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	Galv T & C	0	177
	14.81 #/ft		

16. Size Hole below casing: 5 in.
17. Static level 6.5 ft. below casing top which is 1 ft. above ground level. Pumping level 47.5 ft. when pumping at 10 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow Clay	12	12
Blue Clay	103	115
gravel + Clay	64	179
gravel	4	180

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 6/24/71

LOG # 71

White C... Ill. ...f Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM ... STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 125 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 122 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 52 Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Is water from this well to be used for human consumption?
   Yes ✓ No ____
4. Date well completed 12-1-72
5. Permanent Pump Installed? Yes ✓ No ____
   Manufacturer Weber Type Subm
   Capacity 10 gpm. Depth of setting 105 ft.
6. Well Top Sealed? Yes ✓ No ____
7. Pitless Adaptor Installed? Yes ✓ No ____
8. Well Disinfected? Yes ✓ No ____
9. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316449

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Edw. Du Bois Well No. ____
    Address 4431 Linden Ave - Zion
    Driller Hoover Water Well Co. License No. 30
11. Permit No. 20609 Date 10/20/72
12. Water from Sand Formation
    at depth 120 to 125 ft.
13. County Lake
    Sec. 5 18.c
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. 4 in.
    Length 3 1/2 ft. Slot 12
15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	galv. T&C	0	122
	10.89 ppf		

SHOW LOCATION IN SECTION PLAT
50'N 50'E
SW/c NW

16. Size Hole below casing: 4 in.
17. Static level 88 ft. below casing top which is / ft. above ground level. Pumping level 88 ft. when pumping at 10 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow Clay	22	22
Blue Clay	16	38
Gravel & Clay	78	116
Sandy Clay	4	120
sand	5	125

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 12/19/72

LOG # 72

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 115 ft.
      Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
      Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 10/26/77
5. Permanent Pump Installed? Yes X Date 11/11/77 No ____
   Manufacturer Red Jacket Type subm. Location ____
   Capacity 10 gpm. Depth of Setting 100 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Williams Model Number ____
   How attached to casing? clamp
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 82 gal. Type Well-X-Trol
    Location ____
11. Water Sample Submitted? Yes X No ____

REMARKS:

P316445

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner ROBERT KIRKENDOLL Well No. ____
    Address P. O. Box 98, Libertyville, IL.
    Driller HENRY BOYSEN CO. License No. 102-6
11. Permit No. 66543 Date 9/9/77
12. Water from Sand Gravel (Formation) 13. County Lake
    at depth 110 to 115 ft.
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 10
    Sec. 5 18d
    Twp. 46N
    Rge. 12E
    Elev. ____

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	113

SHOW LOCATION IN SECTION PLAT
1735 S, 300 E, NW/c, NW NW Sec

16. Size Hole below casing: 5 in.
17. Static level 87 ft. below casing top which is 1 ft. above ground level. Pumping level ____ ft. when pumping at 8-10 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	10	10
Blue Clay	27	37
Blue Clay - Gravel	73	110
Sand Gravel	5	115

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 1/25/78

LOG # 73

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, HEALTH PROTECTION, ENVIRONMENTAL HEALTH, 525 WEST JEFFERSON, SPRINGFIELD, ILLINOIS 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____ in. Depth ____ ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

2. Distance to Nearest:
   Building 45 Ft. Seepage Tile Field 85
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 75 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 9/18/89
5. Permanent Pump Installed? Yes X Date 9/20/89 No ____
   Manufacturer DELTA Type SUB Location ____
   Capacity 8 gpm. Depth of Setting 108 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer WILLIAMS Model Number B50AWS
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 40 gal. Type GALV
    Location BASEMENT
11. Water Sample Submitted? Yes X No ____

REMARKS:

P316448

IDPH 4.065
KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner JEFF RECTOR Well No. ____
    Address 3442 FLORIDA AVE WAUKEGAN, IL 60087
    Driller KEN BOYCE License No. 092-006805
11. Permit No. 013597 Date 8/4/89
12. Water from SAND Formation
    at depth 114 to 118 ft.
13. County LAKE
    Sec. 05.8a
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 8

SHOW LOCATION IN SECTION PLAT
NW, NW, SW

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-53	0	115
	T/C TOE		
	15 LBS PER FT		

16. Size Hole below casing: 5 in.
17. Static level 88 ft. below casing top which is 8 1 ft. above ground level. Pumping level 98 ft. when pumping at 10 gpm for 3 hours.

18.

FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
TOPSOIL	3	3
YELLOW CLAY	15	18
BLUE CLAY	96	114
SAND	4	118

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 10/11/89

LOG # 74

White Copy –
Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 220 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 183 ft.
   c. Drilled ✓. Finished in Drift ____. In Rock ✓.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:

Building	20 Ft.	Seepage Tile Field	
Cess Pool		Sewer (non Cast iron)	
Privy		Sewer (Cast iron)	
Septic Tank		Barnyard	
Leaching Pit		Manure Pile	

3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 2-22-77
5. Permanent Pump Installed? Yes ✓ Date 3-21-77 No ____
   Manufacturer Sta-Rite Type Subm. Location ____
   Capacity 8 gpm. Depth of Setting 126 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type Pitless adapter
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer Bakr Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 82 gal. Type galv.
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

p316431

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Bill Friend Well No. ____
    Address Oak Lane, Zion
    Driller Hoover License No. 102-78
11. Permit No. 55597 Date 12-22-76
12. Water from Limestone Formation 13. County Lake
    at depth 183 to 220 ft.
14. Screen: Diam. — in.
    Length: ____ ft. Slot ____

Sec. 5
Twp. 46N
Rge. 12E
Elev. ____

SHOW LOCATION IN SECTION PLAT
50'S, 1050'W NW SW

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
4	Galv T+C	0	183
	14.81 ppf		

16. Size Hole below casing: 4 in.
17. Static level 80 ft. below casing top which is 1 ft above ground level. Pumping level 90 ft. when pumping at 20 gpm for 3½ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow till	19	19
Blue clay	81	100
Hardpan	83	183
Limestone	37	220

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Donny R Hoover DATE 4-5-
agn.

LOG # 75

WATER WELL CONSTRUCTION REPORT

097-03-1087-00

Date 9/10/01

CENCULA & SONS BUILDERS LLC - CONTRACTOR-CONST

GEOLOGICAL & WATER SURVEY WELL RECORD

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT

1. Type of Well a. **Driven** Well Casing diam. _____ in. Depth _____ ft.
   b. **Bored** Well Buried Slab [ ] Yes [ ] No
   Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.
   c. **Drilled** Well PVC casing Formation packer set at depth of _____ ft.
   Hole Diameter ____ in. to _____ ft. ____ in. to _____ ft. ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven [X] Yes [ ] No
Hole Diameter 8 in. to 20 ft. ____ in. to _____ ft. ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
granular bentonite	2.5	50#	0	161	none

e. Well finished within [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
NONE			

2. Well Use [x] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
   [ ] Monitoring [ ] Other
3. Date Well Completed 8/30/01 Well Disinfected [x] Yes [ ] No
   Driller's estimated well yield 15 gpm
4. Date Permanent Pump Installed 9/5/01 3/4HP Sta-Rite #10P4D02J-04 220V
5. Pump Capacity 12 gpm Set at (depth) 120 ft.
6. Pitless Adapter Model and Manufacturer Merrill SMCK 4100
7. Well Cap Type and Manufacturer Water Tite Turtle 4WE1
8. Pressure Tank Working Cycle 9.8 gals. Captive Air [x] Yes [ ] No STa-Rite
9. Pump System Disinfected [x] Yes [ ] No SR35-10S-01 (equiv to 80 gal)
10. Name of Pump Company _____
11. Pump Installer SAME License # _____
12. _____ License # _____
    Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

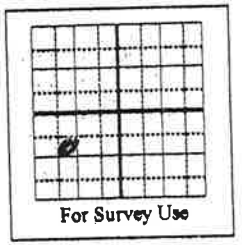
CO# 29328

R335587

DO NOT write on these lines

IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. DISCLOSURE OF THIS INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.

13. Property Owner David Habenicht Well # _____
14. Driller Michael A Madsen License # 102 003530
15. Name of Drilling Co. S.O.S. Service Inc
16. Permit No. ISD00-03-1087 Date Issued 7/18/01
17. Date Drilling Started 8/24/01
18. Well SITE address 11796 West 3rd St. Zion
19. Township Name Benton Land ID # 04-05-304-005
20. Subdivision Name Oak View Estates Lot # 21
21. Location a. County Lake
    b. Township 46N Range 12E Section 5 7c
    c. SE Quarter NW Quarter SW Quarter
    d. Coordinates _____ Site Elevation ____ ft. (msl)



For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
4" GALV	ASTM A53B 11PFT			0	161
OPEN HOLE					
JOINTS = COUPLINGS					

(*) NONE
(List reason for liner, type of upper and lower seals installed)

23. Water from coarse gravel at a depth of 155 ft. to 161 ft.
    a. Static water level 65 ft. below casing which is 12 in. above ground
    b. Pumping level is 120 ft. pumping 8 gpm after pumping for 4 hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
yellow clay	0	20
blue clay	21	60
sand	61	67
clay	68	120
white gravel	121	125
clay	126	154
coarse gravel	155	161

LOG # 76

(If dry hole, fill out log & indicate how hole was sealed)

Michael A Madsen

25. Licensed Water Well Contractor Signature

102 - 003530
License Number

(SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

White – Ill. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, COMMUNITY HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 99 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 11/8/79
5. Permanent Pump Installed? Yes ____ Date ____ No X
   Manufacturer ____ Type ____ Location ____
   Capacity ____ gpm. Depth of Setting ____ Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No ____
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ____ No ____
9. Pump and Equipment Disinfected? Yes ____ No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316430

IDPH 4.065
1/74 – KNB-1
(59571—12.1M Sets—6-74)

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner HADAD CUST. HOME BLDRS. Well No. Lot 14 Oak Ln.
    Address 3733 N. Sheridan Rd., Waukegan, Il.
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 88649 Date 8/13/79
12. Water from Sand-Gravel (Formation) 13. County Lake
    at depth 92 to 99 ft. Sec. 5 7c
    14. Screen: Diam. 5 in. Twp. 46N
    Length: 3 ft. Slot 15 Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
375's 225'w wc 5 c 12w)

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC 2' abv. grd.		96

16. Size Hole below casing: 5 in.
17. Static level 55 ft. below casing top which is 1 ft. above ground level. Pumping level ____ ft. when pumping at 10 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top Soil	2	2
Brown	9	11
Blue	53	64
Gravel	3	67
Blue	25	92
Sand-Gravel	7	99

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Gaffke DATE 1/25/80

LOG # 77

White Copy – Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 108 ft.
      Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
      Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 11/6/79
5. Permanent Pump Installed? Yes X Date 11/7/79 No ____
   Manufacturer Red Jacket Type subm. Location ____
   Capacity 10 gpm. Depth of Setting 95 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Williams Model Number ____
   How attached to casing? clamp
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type galv. w/float
    Location ____
11. Water Sample Submitted? Yes X No ____

REMARKS:

P316438

IDPH 4.065
1/74 – KNB-1
(50571--12½M Sets--6-74)

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner HADAD CUSTOM HOME BLDR Well No. Block Ln. & Prairie
    Address Rt. 2, Box 158, Antioch, Il
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 90842 Date 10/24/79
12. Water from Gravel Formation
    at depth 101 to 108 ft.
13. County Lake
    Sec. 5 Bc
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 10

SHOW LOCATION IN SECTION PLAT
200's, 150'E, NW/c
SW NW SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC 2' abv. grd.		105

16. Size Hole below casing: 5 in.
17. Static level 73 ft. below casing top which is 1 ft. above ground level. Pumping level ____ ft. when pumping at 10 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top Soil	3	3
Brown	9	12
Blue Clay	89	101
Sand-Gravel	7	108

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E Gaffke DATE 1/25/80

LOG # 78

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 4 in. Depth 179 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven____. Drive Pipe Diam. 4 in. Depth 176 ft.
   c. Drilled X. Finished in Drift X. In Rock____.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 35 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed September 28, 1978
5. Permanent Pump Installed? Yes X Date 10-5-78 No____
   Manufacturer Sta-Rite Type Subm Location ____
   Capacity 8 gpm. Depth of Setting 126 Ft.
6. Well Top Sealed? Yes X No____ Type Pitless adapter
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 42 gal. Type Insulated
    Location ____
11. Water Sample Submitted? Yes____ No____

REMARKS:

P316429

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Bruce Sturm Well No. Lot 8
    Address 947 Muirfield, Waukegan
    Driller Lonny R. Hoover License No. 102-783
11. Permit No. 75115 Date June 7, 1978
12. Water from Gravel (Formation) 13. County Lake
    at depth 174 to 179 ft.
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot #20
    Sec. 5.7c
    Twp. 46N
    Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
Lot 8, Oakview Estates Subd
175'S, 300'W, NE/c SE NW SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	Galvanized T&C	0	176
	14.81 ppf		

16. Size Hole below casing: 4 in.
17. Static level 68 ft. below casing top which is 1 ft. above ground level. Pumping level 68 ft. when pumping at 14 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	69	69
Sand	6	75
Clay	34	109
Sand	1	110
Clay	64	174
Gravel	5	179

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R. Hoover/agn DATE 10-20-78

LOG # 79

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift X. In Rock____.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

2. Distance to Nearest:
   Building 30 Ft. Seepage Tile Field 80
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank 70 Barnyard____
   Leaching Pit____ Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 10/14/87
5. Permanent Pump Installed? Yes X Date 10/16/87 No____
   Manufacturer DELTA Type SUB Location____
   Capacity 10 gpm. Depth of Setting 100 Ft.
6. Well Top Sealed? Yes X No____ Type____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer WILLIAMS Model Number B50ACVS
   How attached to casing?____
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 80 gal. Type AIR BLADDER
    Location BASEMENT
11. Water Sample Submitted? Yes____ No X

REMARKS:

Co # 29816

P316386

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner DAVE ASHMORE Well No.____
    Address 1903 EZRA ZION IL. 60099
    Driller KEN BOYCE License No. 092-006808
11. Permit No. 133606 Date 7/21/87
12. Water from GRAVEL & SAND (Formation) 13. County LAKE
    at depth 175 to 185 ft.
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 10
    Sec. 5
    Twp. 46N
    Rge. 12E
    Elev.____

SHOW LOCATION IN SECTION PLAT
Lot 9, Oakview Est., SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-120	0	182
	T&C USPCO		
	15.16 LBS PER FT		

16. Size Hole below casing: 5 in.
17. Static level 50 ft. below casing top which is 1 ft. above ground level. Pumping level 60 ft. when pumping at 12 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
TOP SOIL & FILL	3	3
YELLOW CLAY	13	16
BLUE CLAY	72	88
MEDIUM SAND	7	95
HARDPAN	60	155
BLUE CLAY	20	175
GRAVEL & SAND	10	185

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 10/16/87

LOG # 80

White Copy –
Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 210 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 11/21/85
5. Permanent Pump Installed? Yes X Date 12/10/85 No ____
   Manufacturer Red Jacket Type Subm Location ____
   Capacity 10 gpm. Depth of Setting 120 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Williams Model Number ____
   How attached to casing? clamp
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 82 gal. Type Harvard Champion
    Location ____
11. Water Sample Submitted? Yes X No ____

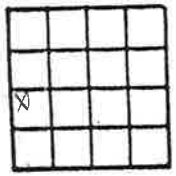
REMARKS: County #27772

P316447

IDPH 4.065
1/74

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Dwayne Adamson Well No. Lot 1 Prairie Est.
    Address 424 44th St. Kenosha, WI
    Driller George E. Gaffke License No. 002-23342
11. Permit No. 912257 Date 11/1/85
12. Water from Limestone (Formation) 13. County Lake
    at depth 207 to 210 ft.
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
    Sec. 5 & 8
    Twp. 46 N
    Rge. 12 E
    Elev. ____



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	+1	187
5	Black	187	208

SHOW LOCATION IN SECTION PLAT
Lot #1 Prairie Estates subd. 250'SE, 225'NE of NW/4 NW/4 SW/4

16. Size Hole below casing: 5 in.
17. Static level 87 ft. below casing top which is + ft. above ground level. Pumping level ____ ft. when pumping at 20 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown clay	0	10
Blue clay	36	46
Sand + Gravel	4	50
Blue Clay	34	84
Sand + Gravel	2	86
Blue Clay	7	93
Sand + Gravel	2	95
Blue Clay	100	195
Broken rock - gravel - clay	12	207
Limestone	3	210

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Gaffke DATE 3/18/86

LOG # 81

White Copy – ... of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____in. Depth ____ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____in. Depth ____ft.
   c. Drilled 4. Finished in Drift 204. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 25 Ft. — Seepage Tile Field 80
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank 100 — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 4-10-79
5. Permanent Pump Installed? Yes ✓ Date 4-15-79 No ____
   Manufacturer RED JACKET Type SUB Location WELL
   Capacity 10 gpm. Depth of Setting 160 Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer MERRILL Model Number SPR4
   How attached to casing? CLAMP
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 42 gal. Type GALV
    Location BASEMENT
11. Water Sample Submitted? Yes ____ No ✓

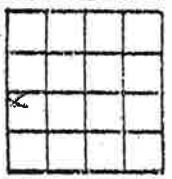
REMARKS:

P316446

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner TIM O'NIEL Well No. ____
    Address PRAIRIE AVE ZION
    Driller EUGENE GROSS License No. 102-71
11. Permit No. 54074 Date 3-22-79
12. Water from GRAVEL (Formation) 13. County LAKE
    at depth 180 to 204 ft. Sec. 5 80
    14. Screen: Diam. ____in. Twp. 46 N
    Length: ____ft. Slot ____ Rge. 12 E
    Elev. ____



SHOW LOCATION IN SECTION PLAT
Lot 46 North Prairie Estat
NW NW SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	GALV #11		

16. Size Hole below casing: 4 in.
17. Static level 120 ft. below casing top which is 1 ft. above ground level. Pumping level 130 ft. when pumping at 10 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
BROWN CLAY	10	10
BLUE CLAY	75	85
CLAY & SANDS	25	110
HARD PAN	40	150
BLUE CLAY	40	190
GRAVEL	14	204

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Eugene Gross DATE 12-12-79

LOG # 82

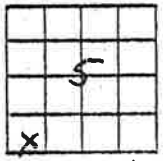
Il[illegible]pt. of Public Health
Yell[illegible]opy: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller BEACH PUMP & WELL License No. 082-006805
10. Well Site Address 328 PRAIRIE AVE WINTHROP HARBOR IL
11. Property Owner MARK MILLER Well No.
12. Permit No. I6094-03-832 Date Issued 11/7/94
13. Location: County LAKE
Sec. 5 18B
Twp. 46N
Rge. 12E



Show location in section plat

NW, SW, SW
LOT 2 NORTH PRAIRIE EST.

1. Type of Well
a. Bored____ Hole Diam.____in. Depth____ft
Buried Slab: Yes___ No___
b. Driven____ Drive Pipe Diam.____in. Depth____ft
c. Drilled X Finished in Drift X In Rock____

d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
clay slurry	0	20

14. Water from SAND at depth 132 ft to 136 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	ASTM A-53	0	133
	T&C TDI		
	15 lbs PER FT		

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 11/17/94
4. Permanent pump installed? Yes X Date 11/18/94 No___
Manufacturer AERMOTOR Type SUBM
Location
Capacity 8 gpm. Depth of setting 128' ft.
5. Well top sealed? Yes X No___ Type
6. Pitless adapter installed? Yes X No___
Manufacturer Williams Model No. BSDACW
How attached to casing?
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

16. Screen: Diam. 5 in, Length 3 in, Slot Size 8
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 101 ft below casing top which is 1 ft. above ground level. Pumping level 111 ft, pumping 8 gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
TOPSOIL	0	2
YELLOW CLAY	2	22
BLUE CLAY	22	66
GRAVEL	66	68
BLUE CLAY	68	115
MEDIUM SAND & GRAVEL	115	117
BLUE CLAY	117	132
SAND	132	136

Continue on separate sheet if necessary.

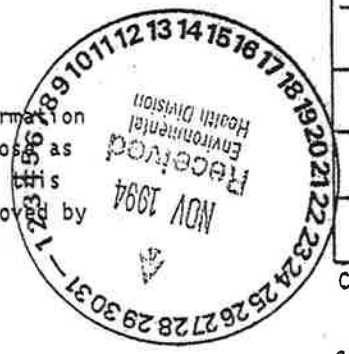
Signed Kenneth D. Bone Date 11/28/94

LOG # 83

IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen



IL482-0126

White & Pink Copies: Ill. L[illegible] of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift____ In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
BENTONITE & Clay Slurry	0	20

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 4/9/96
4. Permanent pump installed? Yes X Date 4/9/96 No___
   Manufacturer Aermotor Type____
   Location____
   Capacity 8 gpm. Depth of setting 188 ft.
5. Well top sealed? Yes X No___ Type____
6. Pitless adapter installed? Yes X No___
   Manufacturer Williams Model No. B80ACW
   How attached to casing?____
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE

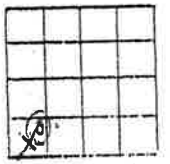
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126
D288767

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller BEACH Pump & Well License No. 092-006808
10. Well Site Address 335 PRAIRIE AVE WINTHROP HARBOR IL.
11. Property Owner LEHMAN BROS CONST. Well No.____
12. Permit No. ISD 95-03-0855 Date Issued 3/13/96
13. Location: * Lot 48 North Prairie Est. County LAKE
    Sec. 5.76
    Twp. 46 N
    Rge. 12 E



Show location in section

14. Water from LIMESTONE at depth 202 ft to 206 ft

15. Casing and Liner Pipe			
Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	ASTM A-53 T/C TDE 15 lbs PER FT	0	206

16. Screen: Diam.___in, Length___in, Slot Size___
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl
19. Static level 75 ft below casing top which is 5 ft. above ground level. Pumping level 140 ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
FILL	0	5
YELLOW CLAY	5	14
BLUE CLAY	14	88
HARD PAN	88	158
	158	185
	185	201
	201	203
	203	206

LOG # 84

Continue on separate sheet if necessary.

Signed Kenneth O. Boyce Date 4/16/96

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUIRED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 230 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 208 ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 86 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed August 29, 1979
5. Permanent Pump Installed? Yes X Date 9/24/79 No ____
   Manufacturer Sta-Rite Type Subm Location ____
   Capacity 20 gpm. Depth of Setting 126 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type WX-202
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P3/6426

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner SMYTHE CONST. Well No. Lot 54
    Address 943 Emerald, Gurnee
    Driller Lonny R. Hoover License No. 102-783
11. Permit No. 88939 Date August 23, 1979
12. Water from Limestone (Formation) 13. County Lake
    at depth 208 to 230 ft.
    14. Screen: Diam. – in.
    Length: – ft. Slot –
    Sec. 5, 7
    Twp. 46N
    Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
Lot 54 North Prairie Subd
200'N, 250'W, SE/c SW Sec 5

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	New Galv. Steel	0	208
	T&C 15 PPF		

16. Size Hole below casing: 5 in.
17. Static level 65 ft. below casing top which is 1 ft. above ground level. Pumping level 120 ft. when pumping at 20 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	12	12
Blue clay	71	83
Hardpan	79	162
Blue clay	28	190
Hardpan	18	208
Limestone	22	230

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R. Hoover/egn DATE 11/9/79

LOG # 85

Ill. .. of Public Health
Yellow .: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 5 in. Depth 189 ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____

d. Grout:	(KIND)	FROM (Ft.)	TO (Ft.)

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 1/10/90
4. Permanent pump installed? Yes X Date 1/16/90 No___
   Manufacturer Red Jacket Type subm.
   Location
   Capacity 10 gpm. Depth of setting 160 ft.
5. Well top sealed? Yes X No___ Type
6. Pitless adapter installed? Yes X No___
   Manufacturer Williams Model No.
   How attached to casing? clamp
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE

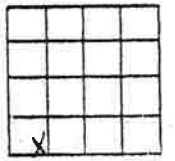
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126 P36397

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller GEORGE E. GAFFKE License No. 102-002342
10. Well Site Address 344 Prairie Ave., No. Prairie Est.
11. Property Owner HAMMOCK CONSTRUCTION Well No.
12. Permit No. 15909 Date Issued 11/15/89
13. Location: Prairie Estates
    County Lake
    Sec. 5 .7A
    Twp. 46N
    Rge. 12E



Show location in section plat
SE, SW, SW

14. Water from sand&fine grave at depth 181 ft to 189 ft

15. Casing and Liner Pipe			
Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	PVC	+1	186

16. Screen: Diam. 5 in, Length 3 ft, Slot Size 15
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 103 ft below casing top which is 1 ft. above ground level. Pumping level ___ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Brown Clay	0	12
Blue Clay	12	80
Sand-Gravel	80	83
Blue Clay	83	92
Sand-Lt.Gravel	92	94
Blue Clay-Gravel	94	181
Sand & Fine Gravel	181	189

LOG # 86

Continue on separate sheet if necessary.

Signed George E. Gaffke Date 4/19/90

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift____. In Rock X.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

2. Distance to Nearest:
   Building 45 Ft. Seepage Tile Field 75
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank 85 Barnyard____
   Leaching Pit____ Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 9/4/87
5. Permanent Pump Installed? Yes X Date 9/8/87 No____
   Manufacturer DELTA Type 5HB Location____
   Capacity 10 gpm. Depth of Setting 170 Ft.
6. Well Top Sealed? Yes X No____ Type____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer WILLIAMS Model Number B50 ACUS
   How attached to casing?____
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 42 gal. Type AIR BLADDER
    Location BASEMENT
11. Water Sample Submitted? Yes____ No X

REMARKS:

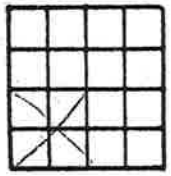
Co # 29658

P316387

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUILDERS REALTY Well No.____
    Address 4719 5TH ST WINTHROP HARBOR IL. 60096
    Driller KEN BOYCE License No. 092-006808
11. Permit No. 132620 Date 6/15/87
12. Water from LIMESTONE (Formation) 13. County LAKE
    at depth 198 to 205 ft.
14. Screen: Diam.____in.
    Length:____ft. Slot____
    Sec. 5. Twp. 46N Rge. 12E Elev.____



SHOW LOCATION IN SECTION PLAT
Lot 53, North Prairie Est. Subd., SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-120	0	198
	TLC USPCO		
	15 lbs PER FT.		

16. Size Hole below casing: 5 in.
17. Static level 126 ft. below casing top which is 1 ft. above ground level. Pumping level 130 ft. when pumping at 12 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
FILL DIRT & BLACK DIRT	3	3
YELLOW CLAY	14	17
BLUE CLAY	113	130
HARD PAN	65	195
RUBBLE	3	198
LIMESTONE	7	205

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 9/10/87

LOG # 87

TYPE OR PR[illegible] FIRMLY WITH BLACK INK PEN, THIS FORM MUST BE COMPLETED WITHIN 30 DAYS OF COMPLETION AND SENT TO THE APPROPRIATE HEALTH DEPARTMENT

1. Date Well Completed 10/1/98
2. Use: [ ] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
   [ ] Monitoring [ ] Other
3. Type of Well:
   a. Bored Well: Hole Diameter ____ in. Depth ____ ft.
      Casing Diameter ____ in. Buried Slab: [ ]Yes [ ]No
   b. Driven Well: Drive Pipe Diameter ____ in. Depth ____ ft.
   c. Drilled Well: Well Diameter ____ in. Depth ____ ft.
      Casing Diameter 5 in. Type STEEL Joint T/C

Casing Grout:

Kind	Oversized Drill Hole(In)	From(ft)	To(ft)
BENTONITE	10"	0	20
NATIVE SOILS	5"	20	191

Finished In: Unconsolidated [ ] Gravel Pack: [ ]Yes [ ]No
Rock [X] Grain Size ____

4. Well Disinfected? [X]Yes [ ]No
5. Date Permanent Pump Installed 10/2/98
6. Licensed Pump Contractor BEACH PUMP
   License Number 101-003325
7. Pitless Adapter Installed? [X]Yes [ ]No
   Manufacturer BAKER Model BPI
   Attached to Casing - How? [ ] Screwed On [ ] Welded [X] Compression
8. Type of Well Cap BAKER VENTED
9. Tank Working Cycle 42 gallons Captive Air: [X]Yes [ ]No
10. Pump and Equipment Disinfected? [X]Yes [ ]No

General Comments: (If dry hole, fill out log & indicate how hole was sealed.)

OCT 1998 Received Environmental Health Services

CO# L0078[illegible]

Illinois Department of Public Health
Division of Environmental Health - 525 W. Jefferson
Springfield, IL 62761

IMPORTANT NOTICE. This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center. R 3054[illegible]

IL 482-0126

C[illegible]LOGICAL AND WATER SURVEY WELL RECORD

R097-0147-97

11. Permit Number IS097-03-0147 Date Issued 9/10/98
12. Property Owner JIM WILLIAMS Well # ____
13. Drilling Company Name BEACH PUMP & WELL
14. Name of Person who drilled the well TED BELLEFEUILLE
15. Well Site Address 43050 N. LEWIS AVE ZION IL 60099
16. Twnshp Name BENTON N. SHORE ACRES 4TH ADD Land ID# ____
17. Subdivision Name BARTLETTS NorthShore Acres 4th Add Lot 77 Elevation ____ ft.
18. Location: Cnty LAKE Sect 5 Twnshp 46N Range 12E
    SE Quarter of the SE Quarter of the SW Quarter
19. Casing and Liner Pipe:

Dia (In)	Type	From(ft)	To (ft)
5"	ASTM A-53B	0	191
	T/C IPSCO		
	15 LBS PER FT		

20. Screen:
    Diameter ____ in.
    Length ____ ft.
    Slot Size ____
    Material ____
21. Water from LIMESTONE at depth 191 ft. to 215 ft.
22. Static Level 65 ft. below casing top which is 15 in. above ground level.
    Pumping Level 170 ft. Pumping 10 gpm for 18 hours.
23. Earth Materials Passed Through

	Depth Top(ft)	Depth Bottom(ft)
YELLOW CLAY	0	34
BLUE CLAY	34	58
HARDPAN	58	82
BLUE CLAY	82	91
HARDPAN	91	180
SAND	180	187
BLUE CLAY	187	190
RUBBLE	190	191
LIMESTONE	191	215

LOG # 88

Continue on back of sheet if necessary

Kenneth O. Boyce
Licensed Contractor Signature

092-006808
License Number

11/9[illegible]

(SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

WATER WELL CONST... CONTRACTOR'S

09-03-0227-03 04-05-401-005 Date 10/16, 3

TYPE OR PRESS ...MLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

GEOLOGICAL AND WATER SURVEY WELL RECORD

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab [ ] Yes [ ] No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well PVC casing Formation packer set at depth of _____ft.
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

d. **Drilled** Well **Steel** Casing--- Mechanically Driven [X] Yes [ ] No
Hole Diameter 10 in. to 20 ft. 5 in. to 193 ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
BENTONITE			0	20	

e. Well finished within [ ] Unconsolidated Materials [X] Bedrock

f. Kind of Gravel Sand Pack Grain Size/Supplier # From (ft.) To (ft.)

2. Well Use [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock [ ] Monitoring [ ] Other
3. Date Well Completed 9/29/03 Well Disinfected [ ] Yes [ ] No
Driller's estimated well yield 5 gpm
4. Date Permanent Pump Installed 10/02/03
5. Pump Capacity 8 gpm Set at (depth) 188 ft.
6. Pitless Adapter Model and Manufacturer CAMPBELL BP10X
7. Well Cap Type and Manufacturer BAKER WTV50
8. Pressure Tank Working Cycle 100 gals. Captive Air [X] Yes [ ] No
9. Pump System Disinfected [X] Yes [ ] No
10. Name of Pump Company BEACH PUMP & WELL
11. Pump Installer JUSTIN BOYCE License #
12. Kenneth O. Boyce License # 101-003335
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

C.# 49207

DO NOT write on these lines

NOV 2003

R363682

IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. **DISCLOSURE OF THIS INFORMATION IS MANDATORY.** This form has been approved by the Forms Management Center.

13. Property Owner Lloyd Wickersheim Well #
14. Driller Josh Petersen License #
15. Name of Drilling Co. Beach Pump & Well
16. Permit No. ISD 03-03-0227 Date Issued 8/18/03
17. Date Drilling Started 9/23/03
18. Well SITE address 43282 N. Lewis Ave. Zion IL.
19. Township Name Benton Land ID #
20. Subdivision Name North Shore Acres 4th Add. Lot #
21. Location a. County Lake
b. Township 46 N Range 12E Section FRACTIONAL 5.4c
c. ~~NW~~ SW Quarter ~~NE~~ NW Quarter ~~SW~~ SE Quarter
d. Coordinates _____ Site Elevation _____ ... (msl)

For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
5"	ASTM A-53B T&C	IPS	40	0	174

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from Limestone at a depth of 174 ft. to 193 ft.
a. Static water level 63 ft. below casing which is 15 in. above ground
b. Pumping level is 154 ft. pumping 15 gpm after pumping for 15 hours

24. Earth Materials Passed Through

	From (ft.)	To (ft.)
top soil	0	4
Blue clay	4	56
hard pan	56	151
Blue clay	151	173
Sand & gravel	173	174
Limestone	174	193

(If dry hole, fill out log and indicate how hole was sealed.)

Kenneth O. Boyce
25. Licensed Water Well Contractor Signature

092-006808
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

LOG # 89

Illinois Department of Public Health

WATER WELL CONSTRUCTION REPORT

Date 7/20/05

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. Driven Well Casing diam. _____ in. Depth _____ ft.
b. Bored Well Buried Slab [ ] Yes [ ] No
c. Hole Diameter _____ in. to _____ ft.; _____ in. to _____ ft.; _____ in. to _____ ft.
d. Drilled Well PVC casing Formation packer set at depth of _____ ft.
e. Hole Diameter _____ in. to _____ ft. _____ in. to _____ ft. _____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

097

d. Drilled Well Steel Casing--- Mechanically Driven [Y] Yes [ ] No
Hole Diameter 10 in. to 20 ft. 5 in. to 184 ft. ____ in. to ____ ft.

According to ISGS 3-15-06

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
LOCAL CLAY			0	20	
BENTONITE					

e. Well finished within [Y] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)

12. Well Use [Y] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
[ ] Monitoring [ ] Other
13. Date Well Completed 6/1/05 Well Disinfected [ ] Yes [ ] No
14. Driller's estimated well yield 6.5 gpm
14. Date Permanent Pump Installed 6/2/05
15. Pump Capacity 8 gpm Set at (depth) 168 ft.
16. Pitless Adapter Model and Manufacturer CAMPBELL BP10X
17. Well Cap Type and Manufacturer BAKER WTVSD
18. Pressure Tank Working Cycle 100 gals. Captive Air [Y] Yes [ ] No
19. Pump System Disinfected [Y] Yes [ ] No
20. Name of Pump Company BEAM PUMP & WELL
21. Pump Installer KEN BOYLE License # 101-003335
22. Kenneth Boyce License # 11
Licensed Pump Contractor Signature G. # 49956

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

Received
Health Services

R372684

DO NOT write on these lines

IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. DISCLOSURE OF THIS INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.

GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner DAN LITEWSKE Well # _____
14. Driller TED BELLEGUELE License # _____
15. Name of Drilling Co. BEAM PUMP & WELL
16. Permit No. 136462-05 Date Issued _____
17. Date Drilling Started 5/25/05
18. Well SITE address 11303 RUSSELL ROAD WINTHROP HARBOR IL.
19. Township Name BENTON Land ID # _____
20. Subdivision Name MEYER & BARNES Lot # _____
21. Location a. County LAKE
b. Township 46N Range 12E Section FRAC 5
c. ~~NW~~ SE Quarter NW Quarter SE Quarter SE
d. Coordinates _____ Site Elevation _____ ft. (msl)

For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
5"	ASTM A53 B	PVC THREADED		0	180

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from LIMESTONE at a depth of 180 ft. to 184 ft.
a. Static water level 45 ft. below casing which is 15 in. above ground
b. Pumping level is 116 ft. pumping 6.5 gpm after pumping for 72 hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
YELLOW CLAY & STONE	0	12
SAND & GRAVEL	12	20
BLUE CLAY	20	85
HARD PAN	85	165
BLUE CLAY	165	180
LIMESTONE	180	184

LOG # 90

(If dry hole, fill out log and indicate how hole was sealed.)

Kenneth Boyce
25. Licensed Water Well Contractor Signature

092-006808
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Ill. Dept. of Public Health
Yellow: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
      Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled ✓ Finished in Drift ✓ In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Well furnishes water for human consumption? Yes ✓ No___
3. Date well drilled 8-19-91
4. Permanent pump installed? Yes ✓ Date 8-20-91 No___
   Manufacturer STA-RITE Type SUB
   Location WELL
   Capacity 10 gpm. Depth of setting 30 ft.
5. Well top sealed? Yes___ No___ Type____
6. Pitless adapter installed? Yes ✓ No___
   Manufacturer MERRIL Model No. S.P.K.
   How attached to casing? SADDLE
7. Well disinfected? Yes ✓ No___
8. Pump and equipment disinfected Yes ✓ No___

IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller EUGENIE GROSS License No. 102-000718
10. Well Site Address 38072 CORNELL WAUKEGAN IL
11. Property Owner JAMES GUSTAFSON Well No.____
12. Permit No. 91-03-1033 Date Issued 8-13-91
13. Location: County LAKE
    Sec. 5-8a
    Twp. 46N
    Rge. 12E

Show location in section plat
SWSWSW
Goldman Bea
View Highla
lot 5

14. Water from SAND at depth 40 ft to 48 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
4	STEEL 11 #	0	45

16. Screen: Diam. 3 in, Length 4' in, Slot Size 25
17. Size hole below casing 3 in. 18. Ground Elev.____ ft msl.
19. Static level 20 ft below casing top which is 1 ft. above ground level. Pumping level 25 ft, pumping gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
CLAY	0	40
CLAY & SAND	40	44
SAND & GRAVEL	44	48

LOG #91

Continue on separate sheet if necessary.

Signed Eugene Gross Date 8-23-91

Ill. ...t. of Public Health
Yell... ...opy: Well Contractor
Golden Copy: Well Owner

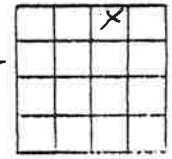
Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

File #

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller EUGIENE GROSS License No. 182-000718
10. Well Site Address 11361 EDGEWOOD BENNETT PARK
11. Property Owner CONDIE CONST. Well No.
12. Permit No. 91-16-1415 Date Issued 10-15-91
13. Location: County LAKE
Sec. 33h
Twp. 46N
Rge. 12E



Show location in section plat

NE NWNE
Goldman's Beach View Highlands Lot 3

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
      Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled ✓ Finished in Drift ✓ In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Well furnishes water for human consumption? Yes ✓ No___
3. Date well drilled 10-20-91
4. Permanent pump installed? Yes ✓ Date 10-22-91 No___
   Manufacturer STA-RITE Type SQ13
   Location WELL
   Capacity 10 gpm. Depth of setting 55 ft.
5. Well top sealed? Yes___ No___ Type
6. Pitless adapter installed? Yes ✓ No___
   Manufacturer WILLIAMS Model No B50AC
   How attached to casing? BOLT ON
7. Well disinfected? Yes ✓ No___
8. Pump and equipment disinfected Yes ✓ No___

14. Water from 65 at depth____ft to____ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	STEEL 15#	0	60

16. Screen: Diam. 4 in, Length 5 in, Slot Size 25
17. Size hole below casing 4 in. 18. Ground Elev.____ ft msl.
19. Static level 30 ft below casing top which is ___ft. above ground level. Pumping level 35 ft, pumping gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
FILL DIRT	0	5
BLACK DIRT	5	10
CLAY	10	50
CLAY & SAND	50	59
SAND & GRAVEL	59	65

Continue on separate sheet if necessary.

LOG #92

IMPORTANT NOTICE
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

RECEIVED
NOV 12 1991
ENVIRONMENTAL HEALTH DIVISION

RECEIVED
NOV 13 1991
ENVIRONMENTAL HEALTH DIVISION

Signed Eugene Gross Date 10-2-91

IL482-0126

WELL CONSTRUCTION REPORT

TYPE OR PRESS FIRMLY WITH BLACK INK PEN
COMPLETE WITHIN 30 DAYS OF WELL COMPLETION
AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT

Date January 12, 2005

1. Type of Well: a. **Driven** Well: Casing diam. _____ in. Depth _____ ft.
b. **Bored** Well: Buried Slab [ ] Yes [ ] No
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.
c. **Drilled** Well: PVC casing Formation packer set at depth of _____ ft.
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft)	To (ft)	Tremie Depth (ft)

d. **Drilled** Well: **Steel** Casing --- Mechanically Driven x Yes [ ] No
Hole Diameter 10 in. to 20 ft.; 5 in. to 77 ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft)	To (ft)	Tremie Depth (ft)
granular bentonite			0	20	

e. Well finished within: [ ] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)

2. Well Use: x Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
[ ] Monitoring [ ] Other
3. Date Well Completed 1/7/2005 Well Disinfected [X] Yes [ ] No
Driller's estimated well yield 12 gpm
4. Date Permanent Pump Installed 1/7/2005
5. Pump Capacity 20 gpm Set at (depth) 45 ft.
6. Bitless Adapter Model and Manufacturer: Campbell BP 10 x
7. Well Cap Type and Manufacturer: Baker WTV 50
8. Pressure Tank: Working Cycle 100 gals. Captive Air: x Yes [ ] No
9. Pump System Disinfected: [X] Yes [ ] No
10. Name of Pump Company Beach Pump and Well Service, Inc.
11. Pump Installer: Justin Boyce License # _____
12. Kenneth O. Boyce License # 101-003325
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson Street
Springfield, IL 62761

Q. # 49957

DO Not write on these lines

8372824

IMPORTANT NOTICE: This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. DISCLOSURE OF THIS INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.
IL 482-0126 rev. 12/98

GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Jeff Yonke Well # _____
14. Driller Joe Krusa License # _____
15. Name of Drilling Company Beach Pump and Well Service, Inc
16. Permit No. 097 ~~03~~-03-0887 -03 Date Issued 11/13/2003
17. Date Drilling Started 12/28/2004
18. Well **SITE** address 11177 Stateline Road
19. Township Name Benton Land ID # _____
20. Subdivision Name Metes and Bounds Lot # _____
21. Location: a. County Lake
b. Township 46N Range 12E Section fractural 5 20
c. ~~SE~~ SW Quarter ~~SE~~ Quarter ~~NE~~ Quarter
d. coordinates: NE Site Elevation SE ft (msl)
According to ISGS 3-13-06

	x		

For Survey Use Only

22. Casings, Liners*, & Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft)	To (ft)
5'ASTM	A53-BTC	IPSCO		0	74
15 lb./ft.					
5' stainless	steel	K packer		74	77

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from gravel and sand at a depth of 71 ft. to 77 ft.
a. static water level 40 ft. below casing which is 15 in. above ground
b. pumping level is 42 ft. pumping 12 gpm after pumping for 3 hrs.

24. Earth Materials Passed Through	From (ft.)	To (ft.)
fill	0	2
yeoolw	2	20
stoney blue clay	20	51
boulder	51	52
hardpan	52	71
gravel and sand	71	77

(IF DRY HOLE, fill out log & indicate how hole was sealed)

Kenneth O. Boyce
25. Licensed Water Well Contractor Signature

092-006808
License Number

LOG # 93

White C... Public Health
Ill. E... -Well Contractor
Yellow... -Well Owner
Blue Copy -Well Owner

FILL IN ALL PERTINENT INFORMATION I... ESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM ... STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOG... /WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 218 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven _____. Drive Pipe Diam. 5 in. Depth 198 ft.
   c. Drilled ✓. Finished in Drift _____. In Rock ✓.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 31 Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Is water from this well to be used for human consumption?
   Yes ✓ No _____
4. Date well completed 5/12/71
5. Permanent Pump Installed? Yes ✓ No _____
   Manufacturer Pacific Type Submersible
   Capacity 10 gpm. Depth of setting 165 ft.
6. Well Top Sealed? Yes ✓ No _____
7. Pitless Adaptor Installed? Yes ✓ No _____
8. Well Disinfected? Yes ✓ No _____
9. Water Sample Submitted? Yes _____ No ✓

REMARKS:

P316434

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner R. Hanaman Well No. _____
    Address 1928 Clark Ave. Champaign
    Driller Hanaman License No. 30
11. Permit No. NE 10555 Date 4/9/71
12. Water from Rock Formation 13. County Champ...
    at depth 198 to 218 ft.
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot _____
    Sec. 5 T.
    Twp. 19 N
    Rge. 7 E.
    Elev. _____

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv T+C	0	198

SHOW LOCATION IN SECTION PLAT
330' S 660' E NW 1/4 Sec

16. Size Hole below casing: 5 in.
17. Static level 65 ft. below casing top which is 1 ft. above ground level. Pumping level 160 ft. when pumping at 11 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay	18	18
blue clay	77	95
gravel & clay	102	197
gravel & sand	1	198
rock	20	218

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED R. Hanaman DATE 6/10/71

LOG # 94

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM [illegible] STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 120 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 117 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 63 Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Is water from this well to be used for human consumption?
   Yes ✓ No ____
4. Date well completed December 1972
5. Permanent Pump Installed? Yes ✓ No ____
   Manufacturer Ureber Type Suction
   Capacity 10 gpm. Depth of setting 84 ft.
6. Well Top Sealed? Yes ✓ No ____
7. Pitless Adaptor Installed? Yes ✓ No ____
8. Well Disinfected? Yes ✓ No ____
9. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316436

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

Wm. Block

10. Property owner May Baldrew Well No. ____
    Address Rt. 12 Richmond
    Driller Hoover, Raymond C. License No. 30
11. Permit No. NE 14001 Date March 24, 1972
12. Water from gravel (Formation) 13. County Lake
    at depth 117 to 120 ft.
14. Screen: Diam. 5 in.
    Length 3 3/4 ft. Slot 25
    Sec. 5 SE
    Twp. 44N
    Rge. 12E
    Elev. ____

(X)

SHOW LOCATION IN SECTION PLAT
1800'N 500'E
SW/4 SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	Gabr T+C 14.81 ppf	0	117

16. Size Hole below casing: 5 in.
17. Static level 80 ft. below casing top which is 1 ft. above ground level. Pumping level 80 ft. when pumping at 15 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow till	14	14
Blue Clay	41	55
hard pan	42	97
sandy Clay	20	117
gravel	3	120

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 12/19/72

LOG # 95

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 113 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 110 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 1.5 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 7/19/76
5. Permanent Pump Installed? Yes ✓ Date 10/11/76 No ____
   Manufacturer STA RITE Type Sub'm Location ____
   Capacity 5 gpm. Depth of Setting 94 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No ✓
   Manufacturer Baker Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 82 gal. Type galv
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P 316439

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner John Hintz Well No. ____
    Address 719 Eastwood, Waukegan, Ill
    Driller Hoover License No. 102-48
11. Permit No. 48778 Date 6/22/76
12. Water from gravel + sand 13. County Lake
    Formation
    at depth 110 to 113 ft.
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 20
    Sec. 5 SW
    Twp. 46N
    Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
1250's 350'e
NW/c SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv T+C 14.81 ppf	0	110

16. Size Hole below casing: 5 in.
17. Static level 85 ft. below casing top which is 1 ft. above ground level. Pumping level 93 ft. when pumping at 15 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	110	110
gravel + sand	3	113

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED L. C. Hoover DATE 10/30/76
Hoover Water Well Service

LOG # 96

INSTRUCTIONS TO DRILLERS

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 118 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 115 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 35 Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast Iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Is water from this well to be used for human consumption?
   Yes ✓ No ____
4. Date well completed 7/30/73
5. Permanent Pump Installed? Yes ✓ No ____
   Manufacturer Star City Type Submer
   Capacity 8 gpm. Depth of setting 85 ft.
6. Well Top Sealed? Yes ✓ No ____
7. Pitless Adaptor Installed? Yes ✓ No ____
8. Well Disinfected? Yes ✓ No ____
9. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316440

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner L. A. Amche Well No. ____
    Address 5205 - 68th St, Kenosha, Wis.
    Driller Hansen License No. 30
11. Permit No. NE 19301 Date 5/30/73
12. Water from Sand (Formation)
    at depth 116 to 118 ft.
13. County Lake
    Sec. 5.8C
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 10
15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	Galv T+C 14.81 PPF	0	115

SHOW LOCATION IN SECTION PLAT
1000'S 350'E NW/C SW

16. Size Hole below casing: 5 in.
17. Static level 69 ft. below casing top which is 1. ft. above ground level. Pumping level 73 ft. when pumping at 20 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Wedford clay	18	18
Kablee clay	20	38
gravel + clay	78	116
Sand	2	118

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED E. Hansen DATE 8/3/73

LOG # 97

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLER

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

c

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 121 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 118 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 33 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 7/15/76
5. Permanent Pump Installed? Yes ✓ Date 8/19/76 No ____
   Manufacturer STA RITE Type Sub-m Location ____
   Capacity 8 gpm. Depth of Setting 105 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type ____
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer Baker Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ____ No ✓
10. Pressure Tank Size 82 gal. Type galv
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316441

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Mark Cook Well No. ____
    Address 3311 Salmon, Waukegan
    Driller Hoover License No. 402-78
11. Permit No. 50390 Date 7/30/76
12. Water from gravel + Sand (Formation) 13. County Lake
    at depth 117 to 121 ft. Sec. 5.8c
    14. Screen: Diam. 4 in. Twp. 46N
    Length: 3 ft. Slot 20 Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
1075'S 35 NW/C SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	galv T + C 10.89 ppf	0	118

16. Size Hole below casing: 4 in.
17. Static level 95 ft. below casing top which is 1 ft. above ground level. Pumping level 100 ft. when pumping at 1.2 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow Clay	20	20
blue clay	65	85
gravel + clay	32	117
gravel + sand	4	121

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED L R Hoover DATE 7/

Oz

LOG # 98

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 114 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 111 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 30 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 7/16/76
5. Permanent Pump Installed? Yes ✓ Date 8/18/76 No ____
   Manufacturer STA RITE Type Subm Location ____
   Capacity 8 gpm. Depth of Setting 95 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type ____
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer Baker Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 82 gal. Type galv
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316442

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Claude Trebeck Well No. ____
    Address 2419 Corona, Waukegan
    Driller Brower License No. 102-78
11. Permit No. 46749 Date 4/29/76
12. Water from Sand (Formation) 13. County Lake
    at depth 108 to 114 ft.
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 12
    Sec. 5 NE
    Twp. 46N
    Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
1150'S 350'E NW/C SW

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv T+C	0	111

16. Size Hole below casing: 5 in.
17. Static level 81 ft. below casing top which is 1 ft. above ground level. Pumping level 90 ft. when pumping at 17 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Glacial drift	108	108
Sand	6	114

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED L.R. Brower DATE 8/23/76
by

LOG # 99

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____, Bored ____, Hole Diam. 5 in. Depth 254 ft.
      Curb material ____, Buried Slab: Yes ____ No ____
   b. Driven ____, Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X, Finished in Drift ____, In Rock X,
      Tubular ____, Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 20 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed May 28, 1981
5. Permanent Pump Installed? Yes X Date 6/22/81 No ____
   Manufacturer Sta-Rite Type Subm. Location ____
   Capacity 10 gpm. Depth of Setting 210 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type WX-202
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

p316443

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner JIM FOUT Well No. ____
    Address 1909 - 2nd Street, Winthrop Harbor
    Driller Lonny R. Hoover License No. 102-783
11. Permit No. 99313 Date April 20, 1981
12. Water from Limestone (Formation)
    at depth 223 to 254 ft.
13. County Lake
    Sec. 5, 8
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. – in.
    Length: – ft. Slot –

SHOW LOCATION IN SECTION PLAT
300' N 175' E SW/c NW SW

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	New Black Steel	0	223
	T&C 15 PPF-ASTM		
	A-53 Youngstown		

16. Size Hole below casing: 5 in.
17. Static level 100 ft. below casing top which is 1 ft. above ground level. Pumping level 200 ft. when pumping at 14 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	20	20
Blue clay	100	120
Boulder & Hardpan	90	210
Hardpan	13	223
Limestone	31	254

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R. Hoover/egm DATE 11/17/81

LOG # 100

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

SEP 09 1988

DIVISION OF ENVIRONMENTAL HEALTH

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

GEOLOGICAL AND WATER SURVEYS WELL RECORD

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____in. Depth ____ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____in. Depth ____ft.
   c. Drilled X. Finished in Drift ____. In Rock ____.
   Tubular ____. Gravel Packed X.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

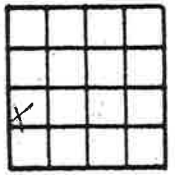
2. Distance to Nearest:
   Building 35 Ft. — Seepage Tile Field 75
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank 65 — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 8/31/88
5. Permanent Pump Installed? Yes X Date 8/31/88 No ____
   Manufacturer DELTA Type SUB Location ____
   Capacity 8 gpm. Depth of Setting 165 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer WILLIAMS Model Number B60ACWS
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 80 gal. Type AMT BLADDER
    Location BASEMENT
11. Water Sample Submitted? Yes ____ No X

REMARKS:

P316444

Co. # 31195

10. Property owner JOHN SCHNEIDER Well No. ____
    Address 36072 NORTH HUNT CLUB LAKEMOOR IL. 60031
    Driller KEN BOYCE License No. 092-006808
11. Permit No. 004018 Date 7/25/88
12. Water from SAND & GRAVEL Formation 13. County LAKE
    at depth 185 to 191 ft. Sec. 05.8C
14. Screen: Diam. ____in. Twp. 46N
    Length: ____ft. Slot ____ Rge. 12E
    Elev. ____



SHOW LOCATION IN SECTION PLAT
SW, NW, SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-120	0	185
	T/C USPCO		
	5 16J PGR FT		

16. Size Hole below casing: 5 in.
17. Static level 85 ft. below casing top which is 1 ft. above ground level. Pumping level 150 ft. when pumping at 5 gpm for 4 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
FILL & BLACK DIRT	2	2
YELLOW CLAY	16	18
BLUE CLAY	76	94
MEAGY SAND	2	96
HARD PAN	89	185
SAND & GRAVEL	6	191

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Hope DATE 9/1/88

LOG # 101

IDPH 4.065
1/74 – KNB-1

White Copy – Ill. Dept. of P... Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUI... AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUM... HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 193 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 193 ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 40 Ft. — Seepage Tile Field 120
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank 100 — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed June 30, 1978
5. Permanent Pump Installed? Yes X Date 7-14-78 No ____
   Manufacturer Red Jacket Type Sub Location ____
   Capacity 10 gpm. Depth of Setting 147 Ft.
6. Well Top Sealed? Yes X No ____ Type Merrill
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Merrill Model Number SPK
   How attached to casing? clamp on
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes ____ No X
10. Pressure Tank Size 42 gal. Type galv.
    Location basement
11. Water Sample Submitted? Yes ____ No X

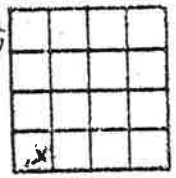
REMARKS:

P3166433

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner FRANK Merlo Well No. ____
    Address 2419 Linden - Wauk... Ill.
    Driller Emil E. Cross License No. 102-70
11. Permit No. 74808 Date 5-26-78
12. Water from gravel Formation 13. County Lake
    at depth 175 to 193 ft.
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
    Sec. 5.80
    Twp. 46N
    Rge. 12E
    Elev. ____



SHOW LOCATION IN SECTION PLAT
150 N, 100 W, SE/c, SW SW SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv. steel 11#	0'	193'

16. Size Hole below casing: 4 in.
17. Static level 90 ft. below casing top which is 1 ft. above ground level. Pumping level 90 ft. when pumping at 15 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top soil	5'	5'
yellow clay	20'	25'
red hardpan	15'	50'
red clay	50'	100'
red hardpan	40'	140'
blue clay	35'	175'
gravel	18	193'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Emil E. Cross DATE 7/15/78

LOG # 102

White Copy – Illinois Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 176 ft.
      Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. 5 in. Depth 174 ft.
   c. Drilled X. Finished in Drift X. In Rock_____.
      Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 40 Ft. Seepage Tile Field 75'
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank 50' Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed Mar. 23, 1984
5. Permanent Pump Installed? Yes X Date _____ No____
   Manufacturer Myers Type 1 HP Sub Location _____
   Capacity 22 gpm. Depth of Setting 120 Ft.
6. Well Top Sealed? Yes X No____ Type Merrill
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Merrill Model Number SPK
   How attached to casing? clamp on
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 220 gal. Type captive air
    Location Basement
11. Water Sample Submitted? Yes_____ No X

REMARKS:

P316432

IDPH 4.065
1/74 – KNB-1
(50571—12½M Sets—6-74)

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Denis Selenak Well No. _____
    Address 1632 Cedar Court, Winthrop Harbor, Ill.
    Driller Michael Gross License No. 102-002086
11. Permit No. 109222 Date 12-8-83
12. Water from fine gravel (Formation)
    at depth 171 to 176 ft.
13. County Lake
    Sec. 5 NE
    Twp. 46N
    Rge. 12E
    Elev. _____
14. Screen: Diam. 5 in.
    Length: _____ ft. Slot #15

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	galvanized	0	174'

SHOW LOCATION IN SECTION PLAT
100'S 200'E
NE/4 NW/4 SW/4

16. Size Hole below casing: 5 in.
17. Static level 85 ft. below casing top which is 1 ft. above ground level. Pumping level 85 ft. when pumping at 11 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Black dirt	1	1'
Yellow clay	14	15'
Blue clay	40	55'
Hard Pan	116	171'
Fine Gravel	5	176'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED _____ DATE 5-4-84

LOG # 103

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift X. In Rock____.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

2. Distance to Nearest:
   Building 35 Ft. — Seepage Tile Field 75
   Cess Pool____ — Sewer (non Cast iron)____
   Privy____ — Sewer (Cast iron)____
   Septic Tank 65 — Barnyard____
   Leaching Pit____ — Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 4/20/88
5. Permanent Pump Installed? Yes X Date 4/26/88 No____
   Manufacturer DELTA Type SUB Location____
   Capacity 8 gpm. Depth of Setting 75 Ft.
6. Well Top Sealed? Yes X No____ Type____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer WILLIAMS Model Number 350ACUS
   How attached to casing?____
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 42 gal. Type AIR BLADDER
    Location BASEMENT
11. Water Sample Submitted? Yes____ No X

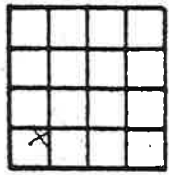
REMARKS: Co. # 30843

P316427

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BOB KOFLER Well No.____
    Address 3894 GRANDVIEW COURT IL. 60031
    Driller KEN BOYCE License No. 092-006828
11. Permit No. 001205 Date 4/15/88
12. Water from SAND (Formation) 13. County LAKE
    at depth 76 to 80 ft. Sec. 5.7b
14. Screen: Diam. 5 in. Twp. 46N
    Length: 3 ft. Slot 12 Rge. 12E
    Elev.____



SHOW LOCATION IN SECTION PLAT
NE, SW, SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-120	0	77
	T/C WELD		
	15 lbs PER FT		

16. Size Hole below casing: 5 in.
17. Static level 62 ft. below casing top which is 1 ft. above ground level. Pumping level 65 ft. when pumping at 8 gpm for 3 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
FILL	1	1
TOP SOIL	2	3
YELLOW CLAY	12	15
BLUE CLAY	61	76
GRAVEL & SAND	4	80

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 4/26/88

LOG # 104

te Copy –
il. Dept. of Public Hea
low Copy – Well Contr
e Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED [illegible] MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HE[illegible] PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT [illegible] ACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 116 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 111 ft.
   c. Drilled xx. Finished in Drift x. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 20 Ft. Seepage Tile Field 100
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 75 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes xx No ____
4. Date well completed 7-15-85
5. Permanent Pump Installed? Yes x Date ____ No ____
   Manufacturer Red Jacket Type sub Location well
   Capacity 10 gpm. Depth of Setting 100 Ft.
6. Well Top Sealed? Yes x No ____ Type Merrill
7. Pitless Adapter Installed? Yes xx No ____
   Manufacturer Merrill Model Number SPK
   How attached to casing? clamp on
8. Well Disinfected? Yes x No ____
9. Pump and Equipment Disinfected? Yes x No ____
10. Pressure Tank Size 42 gal. Type captive air
    Location basement
11. Water Sample Submitted? Yes ____ No x

REMARKS: County #27574

P316396

IDPH 4.065
1/74 – KNB-1
(59571—121/M Sets—6-74)

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Harold Brown Well No. ____
    Address 40233 N. Fox Dr. Antioch, Illinois
    Driller Michael Gross License No. 102-002086
11. Permit No. 119194 Date 7-24-85
12. Water from sand Formation
    at depth 113 to 116 ft.
13. County Lake
    Sec. 5&6
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot #15

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	galvanized steel	0	114
	11#		

SHOW LOCATION IN SECTION PLAT
75'S & 100'E
of the NW/c.
NE Sec

16. Size Hole below casing: 4 in.
17. Static level 85 ft. below casing top which is 1 ft. above ground level. Pumping level 85 ft. when pumping at 10 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay & gravel	15	15
blue clay	15	30
blue clay & sand	35	65
hard pan	20	85
blue clay & sand	28	113
Sand	3	116

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Michael Gross DATE 8-1-85

LOG #105

White Copy – Ill. Dept. Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM [illegible] STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 202 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven _____. Drive Pipe Diam. 5 in. Depth 202 ft.
   c. Drilled ✓. Finished in Drift _____. In Rock ✓.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 8 Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Is water from this well to be used for human consumption?
   Yes ✓ No _____
4. Date well completed 3/10/69
5. Permanent Pump Installed? Yes _____ No By Others
   Manufacturer _____ Type _____
   Capacity _____ gpm. Depth of setting _____ ft.
6. Well Top Sealed? Yes ✓ No _____
7. Pitless Adaptor Installed? Yes ✓ No _____
8. Well Disinfected? Yes ✓ No _____
9. Water Sample Submitted? Yes _____ No _____

REMARKS:

P316395

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner WM. WESTERMAN Well No. _____
    Address RT 1 - BOX 688-1 - ZION, ILL
    Driller HOOVER License No. 30
11. Permit No. 6936 Date 3/6/69
12. Water from LIMESTONE Formation
    at depth 193 to 202 ft.
13. County LAKE
    Sec. 5 (d)
    Twp. 46N
    Rge. 12E
    Elev. _____
14. Screen: Diam. - in.
    Length: _____ ft. Slot _____
15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	14.81 T+C	0	193
	Welded Rings		

SHOW LOCATION IN SECTION PLAT
75'S, 1450'E
NW/c SW

16. Size Hole below casing: 5 in.
17. Static level 74 ft. below casing top which is 1 ft. above ground level. Pumping level 80 ft. when pumping at 25 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH		THICKNESS	DEPTH OF BOTTOM
0-18 yellow clay	Sand & clay	124	130
18-30 blue clay	Blue clay	130	148
30-36 sand & gravel	Hard pan	148	190
36-54 blue clay & gravel	gravel	190	193
54-57 Sand & clay	Limestone	193	202
57-72 Blue clay			
72-84 sandy clay			
84-105 hard pan			
105-124 sandy clay			

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 4/22/69

LOG # 106

White Copy – Illinois Department of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 200 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. 5 in. Depth 194 ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 22 Ft. — Seepage Tile Field _____
   Cess Pool _____ — Sewer (non Cast iron) _____
   Privy _____ — Sewer (Cast iron) _____
   Septic Tank _____ — Barnyard _____
   Leaching Pit _____ — Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed December 12, 1979
5. Permanent Pump Installed? Yes X Date 1/10/80 No____
   Manufacturer Sta-Rite Type Subm. Location _____
   Capacity 8 gpm. Depth of Setting 147 Ft.
6. Well Top Sealed? Yes X No____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes X No _____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 42 gal. Type WX-202
    Location _____
11. Water Sample Submitted? Yes_____ No_____

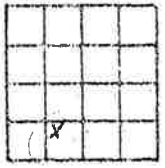
REMARKS:

P316394

IDPH 4.065
1/74 -- KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner CHUCK CASTEEL Well No. _____
    Address 2905 Willow Lane, Apt. B-4, Zion
    Driller Lonny R. Hoover License No. 102-783
11. Permit No. 91900 Date Dec. 5, 1979
12. Water from Limestone (Formation) 13. County Lake
    at depth 194 to 200 ft.
    Sec. 5, 66 Twp. 46N Rge. 12E Elev. _____
14. Screen: Diam. – in.
    Length: – ft. Slot –



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	New Galv. Steel	0	194
	T&C 14.81 PPF		

SHOW LOCATION IN SECTION PLAT
200' S, 75' E, W/L SE SW

16. Size Hole below casing: 5 in.
17. Static level 73 ft. below casing top which is 1 ft. above ground level. Pumping level 115 ft. when pumping at 9 gpm for 1½ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	84	84
Hardpan	43	127
Clay	58	185
Hardpan	8	193
Gravel	1	194
Limestone	6	200

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R Hoover /sgn/ DATE 1/24/80

LOG # 107

White Copy – Ill. Dept. of [illegible] Health
Yellow Copy – [illegible] Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQU[illegible]ED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUM[illegible] HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 212 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 212 ft.
   c. Drilled ✓. Finished in Drift ____. In Rock ✓.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 20 Ft. — Seepage Tile Field 75
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ST — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 8-18-77
5. Permanent Pump Installed? Yes ✓ Date ____ No ____
   Manufacturer Rjacket Type sub Location ____
   Capacity 10 gpm. Depth of Setting 185 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type ____
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer Merrill Model Number 3PK
   How attached to casing? Clamp on
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 42 gal. Type galvanized
    Location basement
11. Water Sample Submitted? Yes ____ No ✓

REMARKS:

P316393

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Terrell Crowley Well No. ____
    Address 18531 Brook Ave. Grayslake
    Driller EF Gross License No. 107-70
11. Permit No. 64692 Date 8-4-77
12. Water from limestone Formation 13. County Lake
    at depth 182 to 212 ft.
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
    Sec. 5, 6
    Twp. 46N
    Rge. 12E
    Elev. ____

	X		

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	Galv 11#	0	182

SHOW LOCATION IN SECTION PLAT
75'S, 160'E, NW(c.) SE SW

16. Size Hole below casing: 4 in.
17. Static level 65 ft. below casing top which is 1 ft. above ground level. Pumping level 75 ft. when pumping at 11 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH		THICKNESS	DEPTH OF BOTTOM
black dirt	2		2
yellow clay	13		15
blue clay	167		182
limestone	30		212

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Emil Gross DATE 5-17-78

LOG # 108

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, HEALTH PROTECTION, ENVIRONMENTAL HEALTH, 525 WEST JEFFERSON, SPRINGFIELD, ILLINOIS 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____ in. Depth ____ ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

2. Distance to Nearest:
   Building 20 Ft. Seepage Tile Field 75
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 53 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 2/24/89
5. Permanent Pump Installed? Yes X Date 2/27/89 No ____
   Manufacturer DELTA Type SUB Location ____
   Capacity 8 gpm. Depth of Setting 180 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer WILLIAMS Model Number B50ACUS
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type AIR BLADDER
    Location BASEMENT
11. Water Sample Submitted? Yes X No ____

REMARKS:

P31639

RECEIVED
MAR 17 1989
DIVISION OF ENVIRONMENTAL HEALTH

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner OLIVIA HELMKAMP Well No. ____
    Address 43360 WILLOW HOLLOW LANE WINTHROP HARBOR 60096
    Driller KEN BOYCE License No. 092-001688
11. Permit No. 008989 Date 1/25/89
12. Water from LIMESTONE (Formation)
    at depth 181 to 203 ft.
13. County LAKE
    Sec. 05
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____

SHOW LOCATION IN SECTION PLAT
SE NW SE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-120	0	181
	T/C USPCO		
	15 lbs PER FT		

16. Size Hole below casing: 5 in.
17. Static level 75 ft. below casing top which is 1 ft. above ground level. Pumping level 79 ft. when pumping at 8 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
FILL & BLACK DIRT	2	2
SAND & YELLOW CLAY	8	10
YELLOW CLAY	6	16
BLUE CLAY	74	90
MOIST SAND	22	112
HARD PAN	43	155
BLUE CLAY	18	173
RUBBLE	8	181
LIMESTONE	22	203

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 2/28/89

LOG # 109

IDPH 4.065
KNB-1

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 190 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____ in. Depth _____ ft.
   c. Drilled _____. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

2. Distance to Nearest:
   Building 50 Ft. — Seepage Tile Field 80
   Cess Pool _____ — Sewer (non Cast iron) _____
   Privy _____ — Sewer (Cast iron) _____
   Septic Tank 60 — Barnyard _____
   Leaching Pit _____ — Manure Pile _____
3. Well furnishes water for human consumption? Yes X No_____
4. Date well completed 5/14/85
5. Permanent Pump Installed? Yes X Date 5/14/85 No_____
   Manufacturer SIMPLEX Type SUB Location _____
   Capacity 10 gpm. Depth of Setting 180 Ft.
6. Well Top Sealed? Yes X No_____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer WILLIAMS Model Number B50AC
   How attached to casing? _____
8. Well Disinfected? Yes X No_____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 82 gal. Type BLK BLADDER
    Location BASEMENT
11. Water Sample Submitted? Yes_____ No X

REMARKS: County #27281

P316390

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner DON GILL Well No. _____
    Address 232 SURREY HILL
    Driller ED GRITZNER License No. 092-006683
11. Permit No. 117571 Date MAY 1 1985
12. Water from LIMESTONE Formation 13. County LAKE
    at depth 179 to 190 ft.
14. Screen: Diam. _____ in.
    Length: _____ ft: Slot _____
    Sec. 5 1/4
    Twp. 46N
    Rge. 12E
    Elev. _____

SHOW LOCATION IN SECTION PLAT
NE NE SE

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	ASTM A-53	0	179
	T/C (WELD)		
	15 LBS PER FOOT		

16. Size Hole below casing: 5 in.
17. Static level 107 ft. below casing top which is 1 ft. above ground level. Pumping level 110 ft. when pumping at 10 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
BLACK DIRT	3	3
YELLOW CLAY	13	16
BLUE CLAY	26	42
~~HARDPAN~~ Hardpan	32	74
GRAVEL & SAND	2	76
~~HARDPAN~~ Hardpan	67	143
BLUE CLAY	31	174
GRAVEL	5	179
LIMESTONE	11	190

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 5/14/85

LOG # 110

Ill. Dept of Public Health
Yellow – Well Contractor
Blue Co. – Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM [illegible] STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 57 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 55½ ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 5 Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Is water from this well to be used for human consumption?
   Yes ✓ No ____
4. Date well completed 8/12/70
5. Permanent Pump Installed? Yes ✓ No ____
   Manufacturer STA RITE Type SUBM
   Capacity 8 gpm. Depth of setting 42 ft.
6. Well Top Sealed? Yes ✓ No ____
7. Pitless Adaptor Installed? Yes ✓ No ____
8. Well Disinfected? Yes ✓ No ____
9. Water Sample Submitted? Yes ____ No ____

REMARKS:

P36389

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner A. J. Schmitt Well No. ____
    Address 6523 - 34th Ave - Kenosha, Wis. -
    Driller Hoover License No. 30
11. Permit No. NF 09057 Date 8/19/70
12. Water from Gravel (Formation)
    at depth 55½ to 57 ft.
13. County Lake
    Sec. 5.1d
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. 5 in.
    Length: 3½ ft. Slot # 20

SHOW LOCATION IN SECTION PLAT

2400'N 250'W
SE/c

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv T + C		
	14.81 ppf		

16. Size Hole below casing: 5 in.
17. Static level 28 ft. below casing top which is 1 ft. above ground level. Pumping level 28 ft. when pumping at 22 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	15	15
Blue clay	40½	55½
Gravel	1½	57

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 8/24/70

LOG # 111

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 68 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 65 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 85 Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 7/14/75
5. Permanent Pump Installed? Yes ✓ Date 8/15/75 No ____
   Manufacturer STA RITE Type SUBM Location ____
   Capacity 8 gpm. Depth of Setting 55 Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer BAKER Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 82 gal. Type galv
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316388

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Larry Richards Well No. ____
    Address 6612 - 94th St, Zion
    Driller Hoover License No. 102-78
11. Permit No. 39270 Date 7/11/75
12. Water from gravel Formation 13. County Lake
    at depth 65 to 68 ft. Sec. 5 NW
    14. Screen: Diam. 4 in. Twp. 46N
    Length: 3 ft. Slot 20 Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
1250'S 400'W
NE/c SE

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
4	galv T+C 10.89 PPF	0	65

16. Size Hole below casing: 4 in.
17. Static level 40 ft. below casing top which is 1 ft. above ground level. Pumping level 40 ft. when pumping at 45 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow till	19	19
blue clay	6	25
gravel	2	27
blue clay	38	65
gravel	3	68

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED L. L. Hoover DATE 8/26/75

LOG # 112

Yello... opy: Well Contractor
Golde... py: Well Owner

Well Con... uction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

GEOLOGICAL AND WATER SURVEYS WELL RECORD

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
      Buried Slab: Yes__ No__
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled ✓ Finished in Drift ✓ In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Well furnishes water for human consumption? Yes ✓ No___
3. Date well drilled 11-11-91
4. Permanent pump installed? Yes ✓ Date 11-13-91 No___
   Manufacturer STA-RITE Type SQ13
   Location WELL
   Capacity 10 gpm. Depth of setting 55 ft.
5. Well top sealed? Yes___ No___ Type___
6. Pitless adapter installed? Yes ✓ No___
   Manufacturer WILLIAMS Model No. 1350HC
   How attached to casing? BOLT ON
7. Well disinfected? Yes ✓ No___
8. Pump and equipment disinfected Yes ✓ No___

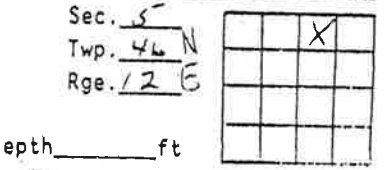
IMPORTANT NOTICE
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

RECEIVED
... 13 1991

9. Driller EUGENE G ROSS License No. 102-000718
10. Well Site Address 11337 EDGEWOOD WHCK.
11. Property Owner CONDIE CONST. Well No.___
12. Permit No. 91-16-1470 Date Issued 10-25-91
13. Location: County LAKE
    Sec. 5
    Twp. 46 N
    Rge. 12 E


Show location in section plat

14. Water from 65 at depth____ft to____ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	STEEL #15	0	60

16. Screen: Diam. 4 in, Length 5 in, Slot Size 25
17. Size hole below casing 4 in. 18. Ground Elev.____ ft msl.
19. Static level 30 ft below casing top which is ___ft. above ground level. Pumping level 35 ft, pumping gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
FILL DIRT	0	5
BLACK DIRT	5	10
CLAY	10	50
CLAY & SAND	50	59
SAND & GRAVEL	59	65

LOG #113

Continue on separate sheet if necessary.

Signed Eugene Ross Date 10-2-91

B 5

LOG # 114

STATE WATER SURVEY DATA.

Date Sept 24 1930

Recorder W.S. Gerber

Authority Wm Smith

Owner Charles Smith City Union Twp. County Lake

When drilled _____ Contractor _____ Address _____

Location (give location from section corner if possible(Str cor intersection Stahlman Road and 29th Ave Road - (60 rods South & 1200' West of Station RR.
2200'N & 100'S of N.E cor Lot ¼ Sec 5 T 36 N - R 12 E

Elevation top of well 1116.4 Mean 690 Depth 57'

Log Water hard. Well bored to use Breakiron tool bro. Water encountered peat in Kettle. Prob. Horned coma cutter bit. Could not detect any odor. Some iron taste

Casing record Bored 8" dia, no iron in water.

Size hole _____

Were drill cuttings saved? ___ Were they sent to the State Geological Survey? ___ Distance to water when not pumping _____. After pumping at ___ gpm. for ___ hours. Reference point for above measurements _____

Type of pump _____ Distance to cylinder _____

Length of suction pipe below cylinder _____

Length stroke _____ Speed _____ Hours used per day _____

Type of power _____

Can following be measured: Water level not pumping _____ Pumping ___

Discharge _____ Influence on other wells _____

Temperature of water _____ Were water samples collected ____

Date _____ Analysis number _____ Effect of water on meters, hot water coils _____

Cost of well _____

P316392

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 182 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 182 ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 20 Ft. — Seepage Tile Field 80'
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank 60' — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 9-20-77
5. Permanent Pump Installed? Yes X Date ____ No ____
   1 HP. Manufacturer Red Jacket Type Sub Location ____
   Capacity 20 gpm. Depth of Setting 126 Ft.
6. Well Top Sealed? Yes X No ____ Type Insert
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Insert Model Number SPK
   How attached to casing? Clamp on
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes ____ No X
10. Pressure Tank Size 82 gal. Type Galvanized
    Location Basement
11. Water Sample Submitted? Yes ____ No X

REMARKS:

P 313874

IDPH 4.065
1/74 – KNB-1
(89571—12½M Sets—6-74)

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Alvin Bennett Well No. ____
    Address 5421 Ninth St. Zion, Ill.
    Driller Michael Grass License No. 102-208
11. Permit No. 56616 Date 8-19-77
12. Water from Gravel Formation
    at depth 179 to 182 ft.
13. County Lake
    Sec. 11 16
    Twp. 46N
    Rge. 11E
    Elev. ____
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____

SHOW LOCATION IN SECTION PLAT
100's, 75'E, NW/c, SE NE NE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	Galv. Steel 11#	0'	182'

16. Size Hole below casing: 4 in.
17. Static level 80 ft. below casing top which is 1 ft. above ground level. Pumping level 60 ft. when pumping at 25 gpm for 3 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay	25	25
Blue clay	5	30
yellow clay & gravel	30	60
gravel & sand	90	150
hard pan	29	179
gravel	3	182

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Michael Grass DATE 6-28-78

LOG # 115

LOG # 116

22

STATE WATER SURVEY WELL DATA

Date Dec 25 1920

Recorder H D Gerber

Authority H D Connell

Owner H D Connell City Munster Dairy County Lake

When drilled _____ Contractor _____ Address _____

Location (give location from section corner if possible) _____

100 W & 1000 S. NE cor Sec 11 T 46 N - R 11 E

Elevation top of well U.S.G.S. Map. 705 Depth 50' Gravel

Log Water Standpipe some iron Abandoned for washing

Casing record _____

Size hole _____

Were drill cuttings saved? ___ Were they sent to State Geological Survey? ___ Distance to water when not pumping ___. After pumping at ___ gpm. for ___ hours. Reference point for above measurements

Type of pump _____ Distance to cylinder _____

Length of suction pipe below cylinder _____

Length stroke _____ Speed _____ Hours used per day _____

Type of power _____

Can following be measured: Water level not pumping ___ pumping ___

Discharge _____ Influence on other wells _____

Temperature of water _____ Were water samples collected ___

Date _____ Analysis number _____ Effect of water on meters, hot water coils _____

Cost of well _____

P 313867

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 185 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 182 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 32 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 8/28/75
5. Permanent Pump Installed? Yes ✓ Date 10/20/75 No ____
   Manufacturer STA RITE Type Subm Location ____
   Capacity 8 gpm. Depth of Setting 105 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type ____
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer BAKER Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 82 gal. Type galv
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

R 313873

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Lotz Constr. Well No. ____
    Address 1404 Fairbanks Zion
    Driller Hoover License No. 102-78
11. Permit No. 36941 Date 4/14/75
12. Water from gravel (Formation) 13. County Lake
    at depth 178 to 185 ft.
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 20

Sec. 11 N 1/4
Twp. 46N
Rge. 11E
Elev. ____

SHOW LOCATION IN SECTION PLAT
700'N 265'W of SE/4 NE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv T+C 14.81 ppf	0	182

16. Size Hole below casing: 5 in.
17. Static level 72 ft. below casing top which is 1 ft. above ground level. Pumping level 78 ft. when pumping at 20 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	18	18
blue clay	134	152
sand	1	153
sandy clay	23	176
gravel & clay	2	178
gravel	7	185

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED L. R. Hoover by ____ DATE 10/31/75

LOG #117

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 81 ft.
   Curb material ____. Buried Slab: Yes____ No____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 50 ft.
   c. Drilled 1. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 40 Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Is water from this well to be used for human consumption?
   Yes ✓ No ____
4. Date well completed 4-21-68
5. Permanent Pump Installed? Yes ✓ No ____
   Manufacturer STA RITE Type SUB.
   Capacity 5 gpm. Depth of setting ____ ft.
6. Well Top Sealed? Yes ✓ No ____
7. Pitless Adaptor Installed? Yes ✓ No ____
8. Well Disinfected? Yes ✓ No ____
9. Water Sample Submitted? Yes ____ No ____

REMARKS:

R 313878

GEOLOGICAL WATER SURVEYS WATER WELL RECORD

10. Dept. Mines and Minerals permit No. NE3518 Year 1968
11. Property owner WAYMON HARRIS Well No. ____
    Address 5TH ST. TH. of DELANEY RD
    Driller HOOVER License No. ____
12. Water from FINE GRAVEL (Formation)
    at depth 78 to 81 ft.
13. County LAKE
    Sec. 11.7a
    Twp. 46N
    Rng. 11E
    Elev. ____
14. Screen: Diam. 5 in.
    Length: 3'9" ft. Slot # 25

SHOW LOCATION IN SECTION PLAT
SW¼ NW¼ NE¼ SE¼ 11E

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	GALV T+C		
	14.81		50

16. Size Hole below casing: 5 in.
17. Static level 18 ft. below casing top which is 1 ft. above ground level. Pumping level 40 ft. when pumping at 7½ gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
DRIFT 0-78		
FINE GRAVEL 78-81		
(CONTINUE ON SEPARATE SHEET IF NECESSARY)		

SIGNED [signature] DATE 4/24/68

LOG # 118

LOG # 119

STATE WATER SURVEY WELL DATA

23

Date June 25

Recorder H S Gerber

Authority A Johnson

Owner A Johnson City Winston Corners County Lake

When drilled _____ Contractor _____ Address _____

Location (give location from section corner if possible) _____

600' S. & 200' W. of N.E. cor of E 1/4 Sec. 11 T 46 N - R 11 E.

Elevation top of well 11 Agonian. 685 Depth 120'

Log Shale & Drift Soft Water from Water used for all purposes. Plenty of Water.

Casing record _____

Gravel

Size hole _____

Were drill cuttings saved? ___ Were they sent to State Geological Survey? ___ Distance to water when not pumping ___. After pumping at ___ gpm. for ___ hours. Reference point for above measurements

_____

Type of pump _____ Distance to cylinder _____

Length of suction pipe below cylinder _____

Length stroke _____ Speed _____ Hours used per day _____

Type of power _____

Can following be measured: Water level not pumping ___ pumping ___

Discharge _____ Influence on other wells _____

Temperature of water _____ Were water samples collected ___

Date _____ Analysis number _____ Effect of water on meters, hot water coils _____

Cost of well _____

P 313868

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 95 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 93 ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 10 Ft. Seepage Tile Field 100
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 150 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed June 8, 1979
5. Permanent Pump Installed? Yes X Date ____ No ____
   1HP. Manufacturer Ed Besbot Type Subb Location ____
   Capacity 18 gpm. Depth of Setting 80 Ft.
6. Well Top Sealed? Yes X No ____ Type Merrill
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Merrill Model Number 3PK
   How attached to casing? clamp
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 82 gal. Type galvanized
    Location well pit
11. Water Sample Submitted? Yes ____ No X

REMARKS:

R 313872

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Paul Richards Well No. ____
    Address Rt. 1, Delaney Rd. Zion, Ill.
    Driller Emil E. Glass License No. 102-70
11. Permit No. 25315 Date 5-22-79
12. Water from gravel Formation 13. County Lake
    at depth 90 to 95 ft. Sec. 11.12
14. Screen: Diam. 4 in. Twp. 46N
    Length: 3 ft. Slot #20 Rge. 11E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
320' S, 100' W, SE/c SE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	galvanized Steel	0'	93

16. Size Hole below casing: 4 in.
17. Static level 20 ft. below casing top which is ____ ft. above ground level. Pumping level 60 ft. when pumping at 15 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay	20'	20'
Sand & gravel	30'	50'
blue clay	25	75'
mud sand	15	90'
gravel	5	95'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Emil E. Glass DATE 7/8/79

LOG # 120

157 - 177 hardpan
177 - 180 gravel - no water
180 - 183 limestone

120970010100 Anzler, Earl D 1 11-46N-11E
Lake Wertz, C. L. SE SE NW
Well Status: WATER - Water Well
Compdate: 04/01/1945 Plugdate: TD: 72
Elevation: Permit #: Permit Date:
Latitude: 42.480448 Longitude: -87.914151

Well Address: Russell, IL Lot: Subd:
Water Bearing Formation: gravel 0 to 0 ft
Static Water Level: 20 ft. below casing top of Hole Diam.:
Pumping Level: 22 ft. when pumping at 10 gpm for hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	4		0	72

Logs Run: Driller's Log

Driller's Log:
0 - 5 topsoil
5 - 70 gray clay
70 - 72 gravel

120972590600 Bennett, Alvin 11-46N-11E
Lake Gross, Michael 100'N line, 75'W line, SE NE NE
Well Status: WATER - Water Well
Compdate: 09/20/1978 Plugdate: TD: 182
Elevation: Permit #: 65616 Permit Date: 08/19/1977
Latitude: 42.484696 Longitude: -87.905056

Owner Address: 5421 Ninth St. Zion IL
Well Type: PRIV - Private Water Well
Water Bearing Formation: gravel 179 to 182 ft
Static Water Level: below casing top of 1 ft. Hole Diam.:
Pumping Level: 60 ft. when pumping at 20 gpm for 3 hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	4	GALV STEEL 11#	0	182

Size hole below casing: 4 in.

Driller's Log:
0 - 25 yellow clay
25 - 30 blue clay
30 - 60 yellow clay & gravel
60 - 150 gravel to sand
150 - 179 hardpan
179 - 182 gravel

LOG # 121

120970270100 Bennett, Ed 1 11-46N-11E
Lake Hoover Water Well Servic 400'S line, 1100'E line, SE
Well Status: WATER - Water Well
Compdate: 10/24/1968 Plugdate: TD: 85
Elevation: Permit #: Permit Date: 10/18/1968
Latitude: 42.473276 Longitude: -87.907236

Well Type: PRIV - Private Water Well
Water Bearing Formation: sand 85 to 85 ft
Static Water Level: 16 ft. below casing top of 1 ft. Hole Diam.:
Screen Diam.: 4 in. Screen Length: 5 ft. Slot: 35.00
Pumping Level: 26 ft. when pumping at 10 gpm for hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	4	GALV T&C	0	81

Size hole below casing: 4 in.

Logs Run: Driller's Log

Driller's Log:

0 -	13	gravel & clay
13 -	32	gravel
32 -	80	sandy clay
80 -	85	gravel & sand
85 -	86	sand

120970278500 Booth, James M. 11-46N-11E
Lake Hoover Water Well Servic 1200'N line, 1100'W line, SW
Well Status: WATER - Water Well
Compdate: 08/13/1968 Plugdate: TD: 149
Elevation: Permit #: Permit Date: 05/23/1968
Latitude: 42.476259 Longitude: -87.918894

Owner Address: 2306 Horeb Ave. Zion IL
Well Address: Hickory Rd. Lot: Subd:
Well Type: PRIV - Private Water Well
Water Bearing Formation: gravel 144 to 149 ft
Static Water Level: 50 ft. below casing top of 1 ft. Hole Diam.:
Screen Diam.: 5 in. Screen Length: 5 ft. Slot: 25.00
Pumping Level: 58 ft. when pumping at 25 gpm for hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	5	GALV T&C 14.81#/'	0	145

Size hole below casing: 5 in.

Logs Run: Driller's Log

Driller's Log:

0 -	19	yellow clay
19 -	134	blue clay
134 -	144	muck
144 -	149	gravel

120973623300 Buchholtz, John & Nadine 11-46N-11E
Lake Gross, Michael SW NW SE
Well Status: WATER - Water Well
Compdate: 06/20/1991 Plugdate: TD: 81
Elevation: 689' Permit #: Permit Date: 04/23/1991
Latitude: 42.477526 Longitude: -87.912058

Owner Address: 42350 Delany Rd. Zion IL
Well Address: 42375 Kilbourne Rd. Lot: Subd:
Well Type: PRIV - Private Water Well
Water Bearing Formation: fine sand 72 to 81 ft
Static Water Level: 35 ft. below casing top of 1 ft. Hole Diam.: 4 in.
Screen Diam.: 4 in. Screen Length: 7 ft. Slot: 8.00
Pumping Level: 42 ft. when pumping at 10 gpm for hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	4	GALV STEEL 11#	0	75

Size hole below casing: 4 in.

LOG # 122

STATE WATER SURVEY WELL DATA

Date Sept 26 1930

Recorder W. D. Gerber

Authority O. E. Nielsen Renter

Owner Ray Flory City Newport Twp County Lake

When drilled Kinnoffa Contractor / Address

Location (give location from section corner if possible) Spencer Bar Hunting Harbor Ave

100' S. 600' W. N.E. Cor. of S.E. 1/4 Sec 12 T 46 N - R 11 E.

Elevation top of well U.S.G.S. map 730 Depth ? 227

Log Anderson says rock at about 220

Slight Indication

Casing record

Size hole

Were drill cuttings saved? Were they sent to State Geological Survey? Distance to water when not pumping . After pumping at gpm. for hours. Reference point for above measurements

Type of pump Distance to cylinder

Length of suction pipe below cylinder

Length stroke Speed Hours used per day

Type of power

Can following be measured: Water level not pumping pumping

Discharge Influence on other wells

Temperature of water Were water samples collected

Date Analysis number 67-506 Effect of water on meters, hot water coils

Cost of well

P 313904

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLER

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

Issued a Sine ✓, License 72-226

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 127 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 124 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 12 Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ✓ Sewer (Cast iron) ✓
   Septic Tank ____ Barnyard ✓
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 10/15/76
5. Permanent Pump Installed? Yes ✓ Date 10/19/76 No ____
   Manufacturer STA RITE Type Subm Location ____
   Capacity 8 gpm. Depth of Setting 84 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type ____
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer Baker Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 82 gal. Type galv
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

R 313905

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Lawrence Meyer Well No. ____
    Address 1303 Green Bay, Winnetka, Ill
    Driller L R Hoover License No. 102-78
11. Permit No. 52890 Date 9/30/76
12. Water from gravel Formation 13. County Lake
    at depth 120 to 127 ft. Sec. 12 SE
    14. Screen: Diam. 5 in. Twp. 42N
    Length: 3 ft. Slot 20 Rge. 11E
    Elev. ____

SHOW LOCATION IN SECTION PLAT

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv T+C	0	124
	14.81 ppf		

16. Size Hole below casing: 5 in.
17. Static level 25 ft. below casing top which is 1 ft. above ground level. Pumping level 45 ft. when pumping at 20 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
gravel & Clay	120	120
gravel	7	127

LOG # 123

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED L R Hoover DATE 10/30/76
for Hoover Water Well

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

correction 1/7/76

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 76 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 73 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 32 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 8/25/75
5. Permanent Pump Installed? Yes ✓ Date 8/30/75 No ____
   Manufacturer STA RITE Type Submr Location ____
   Capacity 8 gpm. Depth of Setting 65 Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No ____
   Manufacturer Baker Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 42 gal. Type Galv
    Location ____
11. Water Sample Submitted? Yes ____ No ____

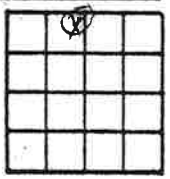
REMARKS:

R 313907

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Corder Realty Well No. ____
    Address 1366 N. Elmer Bay, Waukegan
    Driller Hansen License No. 102-78
11. Permit No. 40081 Date 8/12/75
12. Water from Sand Formation
    at depth 69 to 76 ft.
13. County Lake
    12.5 Sec 12.5
    46N Twp. ____
    11E Rge. 11E
    Elev. ____
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot 15



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	galv T+C 10.89 ppf	0	73

SHOW LOCATION IN SECTION PLAT
450's 500'W NE/c NW

16. Size Hole below casing: 4 in.
17. Static level 36 ft. below casing top which is 1 ft. above ground level. Pumping level 38 ft. when pumping at 15 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow Clay	18	18
Blue Clay	51	69
Sand	7	76

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED L R Hansen DATE 9/22/75
by

LOG # 124

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 171 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 165 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 3 Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 10-11-85
5. Permanent Pump Installed? Yes X Date 10-11-85 No ____
   Manufacturer Sta-Rite Type Subm Location ____
   Capacity 8 gpm. Depth of Setting 126 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type Pitless Adapter
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 1A82 gal. Type Bladder
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Cecos International Well No. ____
    Address 42575 N. Green Bay Road
    Driller Hooker License No. 102-783
11. Permit No. 110736 Date Dec. 5, 1983
12. Water from Sand (Formation) at depth 165 to 171 ft.
13. County Lake 7C
    Sec. 12, TG
    Twp. 46N
    Rge. 11E
    Elev. ____
14. Screen: Diam. 5 in. Length: 4 ft. Slot 8

SHOW LOCATION IN SECTION PLAT
300'N & 150'E of the SW/c
SE NW SW
(Commercial Operation)

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	New Black Steel	0	117
	T&C 15ppf-A53m		
	A-53 Youngstown		

16. Size Hole below casing: 5 in.
17. Static level 85 ft. below casing top which is 1 ft. above ground level. Pumping level 135 ft. when pumping at 6 gpm for 4 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	17	17
Hardpan	84	101
Sand & gravel	5	106
Clay	12	118
Hardpan	47	165
Sand	6	171

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Jonny R. Hooker for DATE 3/26/85

LOG # 125

White - Pink copies: Ill. Dept. of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

GEOLOGICAL AND WATER SURVEYS WELL RECORD

1. Type of Well
   a. Bored____ Hole Diam. 4 in. Depth 102 ft
   Buried Slab: Yes__ No__
   b. Driven____ Drive Pipe Diam. 4 in. Depth 97 ft
   c. Drilled x Finished in Drift x In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
clay slurry	0	20

2. Well furnishes water for human consumption? Yes x No___
3. Date well drilled 5-24-93
4. Permanent pump installed? Yes x Date____ No___
   Manufacturer____ Type subm
   Location well
   Capacity ____gpm. Depth of setting 60 ft.
5. Well top sealed? Yes x No___ Type Merrill
6. Pitless adapter installed? Yes x No___
   Manufacturer Merrill Model No. SPK
   How attached to casing? clamp on
7. Well disinfected? Yes x No___
8. Pump and equipment disinfected Yes x No___

TW

IMPORTANT NOTICE

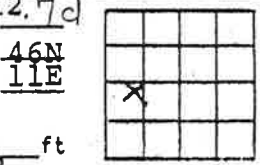
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

RECEIVED
MAY 27 1993
ENVIRONMENTAL HEALTH
DIVISION

9. Driller Michael Gross License No. 102-002086
10. Well Site Address 42309 N. DELANY RD. ZION, IL
11. Property Owner CRAIG SCHNEIDER Well No.____
12. Permit No. ISD 92-11-0989 Date Issued 2/19/93
13. Location: 92-11-0989 County LAKE
NE¼ OF THE NW¼ OF THE SW¼ Sec. 12.7d
Twp. 46N
Rge. 11E



Show location in section plat

14. Water from fine sand at depth 96 ft to 103 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
4"	galv. steel	0	~~102~~ 97
	11#		

10 gpm @3

16. Screen: Diam. 4 in, Length 7' in, Slot Size 8 &6 2 screens
17. Size hole below casing 4 in. 18. Ground Elev.____ ft msl.
19. Static level 27 ft below casing top which is 1 ft. above ground level. Pumping level 37 ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
yellow clay	0	19
blue clay	19	96
fine sand	96	103

Continue on separate sheet if necessary.

Signed Michael Gross Date 5-24-93

LOG # 126

te Copy –
ll. Dept. of Public He
low Copy – Well Cont r
ie Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, BUREAU OF ENVIRONMENTAL HEALTH, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62701. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 152 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 148 ft.
   c. Drilled ✓. Finished in Drift ____. In Rock ✓.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 35 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____

3. Is water from this well to be used for human consumption?
   Yes ✓ No ____
4. Date well completed 8-13-74
5. Permanent Pump Installed? Yes ✓ No ____
   Manufacturer Starkite Type Suburn
   Capacity 5 gpm. Depth of setting 60 ft.
6. Well Top Sealed? Yes ✓ No ____
7. Pitless Adaptor Installed? Yes ✓ No ____
8. Well Disinfected? Yes ✓ No ____
9. Water Sample Submitted? Yes ____ No ____

REMARKS:

IDPH 4.065 P 31908
10-72
KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Donald Kjesbo Well No. ____
    Address 2205 Edgewood, Waukegan
    Driller Hoover Water Well License No. 30
11. Permit No. 29746 Date 5-16-74
12. Water from Limestone Formation
    at depth 148 to 152 ft.
13. County Lake
    Sec. 12
    Twp. 46N
    Rge. 11E
    Elev. ____
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____

SHOW LOCATION IN SECTION PLAT
350'N 350'E SW/4 SW

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv T+C 14.81 #/ft	0	148

16. Size Hole below casing: 5 in.
17. Static level 40 ft. below casing top which is 1 ft. above ground level. Pumping level 40 ft. when pumping at 40 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow Clay	22	22
Gray clay + gravel stone	69	91
Sandy Gray Clay	56	147
limestone gravel	1	148
Gray limestone	4	152

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED L. R. Hoover by DATE 9/5/74

LOG # 127

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 153 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 153 ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 30 Ft. Seepage Tile Field 125
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 100 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed May 12, 1983
5. Permanent Pump Installed? Yes X Date ____ No ____
   Manufacturer Myers Type sub Location ____
   Capacity 11 gpm. Depth of Setting 80 Ft.
6. Well Top Sealed? Yes X No ____ Type Merrill
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Merrill Model Number SPK
   How attached to casing? clamp on
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 80 gal. Type captive air
    Location basement
11. Water Sample Submitted? Yes ____ No X

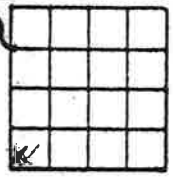
REMARKS:

Q 313909

IDPH 4.065
1/74 – KNR-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Don Bennett Well No. ____
    Address 40590 Crawford Rd, Wadsworth, Il.
    Driller Michael Gordon License No. 102-002086
11. Permit No. 106242 Date 2-22-83
12. Water from fine gravel (Formation)
    at depth 152½" to 153 ft.
13. County Lake
    Sec. 12.8Q
    Twp. 46N
    Rge. 11E
    Elev. ____
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____



SHOW LOCATION IN SECTION PLAT
250'S 250'E
NW/4 SW SW SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv. steel 11 #	0'	153'

16. Size Hole below casing: 4 in.
17. Static level 40 ft. below casing top which is 1 ft. above ground level. Pumping level 75 ft. when pumping at 10 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay	15	15
blue clay	137'6	152'6"
fine gravel	6"	153

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 6-14-83

LOG # 128

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift____. In Rock____.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

2. Distance to Nearest:
   Building 15 Ft. — Seepage Tile Field 95
   Cess Pool____ — Sewer (non Cast iron)____
   Privy____ — Sewer (Cast iron)____
   Septic Tank 85 — Barnyard____
   Leaching Pit____ — Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 12/12/88
5. Permanent Pump Installed? Yes X Date 12/13/88 No____
   Manufacturer OLEM Type SUB Location____
   Capacity 8 gpm. Depth of Setting 48 Ft.
6. Well Top Sealed? Yes X No____ Type____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer WILLIAMS Model Number 350 ACUS
   How attached to casing?____
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 42 gal. Type AIR BLADDER
    Location BASEMENT
11. Water Sample Submitted? Yes____ No X

REMARKS:

Co. # 31847

R 313911

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BRETT SEIBERT Well No.____
    Address 441 SAUWOGA ROAD LAKE FOREST, IL. 60045
    Driller KEN BOYCE License No. 092-006808
11. Permit No. [redacted]008333 Date [redacted] 12/9/88
12. Water from SAND Formation 13. County LAKE
    at depth 38 to 53 ft.
    Sec. 12.8d
    Twp. 44N
    Rge. 11E
    Elev.____
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 10

SHOW LOCATION IN SECTION PLAT
NW, NW, SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-120	0	50
	VSPCO T/C		
	15 lbs PER FT		

16. Size Hole below casing: 5 in.
17. Static level 22 ft. below casing top which is 1 ft. above ground level. Pumping level 22 ft. when pumping at 16 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
TOPSOIL	1	1
SAND & GRAVEL	17	18
BLUE CLAY	20	38
GRAVEL & SAND	11	53

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 12/15/88

LOG # 129

Copy –
Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 128 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven _____. Drive Pipe Diam. 5 in. Depth 128 ft.
   c. Drilled X. Finished in Drift X. In Rock____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

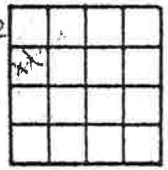
2. Distance to Nearest:
   Building 20 Ft. Seepage Tile Field 150
   Cess Pool _____ Sewer (non Cast Iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank 100 Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 1-21-82
5. Permanent Pump Installed? Yes___ Date _____ No____
   Manufacturer Red Jacket Type sub Location _____
   Capacity____gpm. Depth of Setting _____ Ft.
6. Well Top Sealed? Yes X No____ Type Merrill
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Merrill Model Number SPK
   How attached to casing? clamp on
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 82 gal. Type galvanized
    Location well pit
11. Water Sample Submitted? Yes____ No X

REMARKS:

P 3139 13
IDPH 4.065
1/74 – KNB-1
(59571—12½M Sets—6-74)

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner David Richards Well No. _____
    Address 42645 Delaney Rd., Zion, Illinois
    Driller Michael Gross License No. 102-208
11. Permit No. 102119 Date 11-13-81
12. Water from gravel (Formation) 13. County Lake
    at depth 127 to 128 ft. Sec. 12.8e
14. Screen: Diam. _____ in. Twp. 46N
    Length: _____ ft. Slot _____ Rge. 11E
    Elev. _____



SHOW LOCATION IN SECTION PLAT
75's, 150e, nw/c
sw s w nw

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	steel	0'	128

16. Size Hole below casing: 5" in.
17. Static level 45 ft. below casing top which is 1 ft. above ground level. Pumping level 48 ft. when pumping at 3 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top Soil	1	1
Yellow clay	17	18'
Blue clay	109'	127
Gravel	1'	128

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Michael Gross DATE 8/3/82

LOG # 130

TYPE OR PRESS RMLY WITH BLACK INK PEN, THIS FORM MUST BE COMPLETED WITHIN 30 DAYS OF COMPLETION AND SENT TO THE APPROPRIATE HEALTH DEPARTMENT

GEOLOGICAL AND WATER SURVEY WELL RECORD

1. Date Well Completed 5-28-99
2. Use: [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock [ ] Monitoring [ ] Other
3. Type of Well:
   a. Bored Well: Hole Diameter ____ in. Depth ____ ft. Casing Diameter ____ in. Buried Slab: [ ]Yes [ ]No
   b. Driven Well: Drive Pipe Diameter ____ in. Depth ____ ft.
   (c) Drilled Well: Well Diameter 4 in. Depth 122 ft. Casing Diameter 4 in. Type GALV STEEL Joint T & C

Casing Grout:

Kind	Oversized Drill Hole(In)	From(ft)	To(ft)
CLAY SLURRY	8	0	12
CLAY SLURRY		12	104

Finished In: Unconsolidated [ ] Gravel Pack: [ ]Yes [ ]No Rock [X] Grain Size

4. Well Disinfected? [X]Yes [ ]No
5. Date Permanent Pump Installed 6-3-99
6. Licensed Pump Contractor MICHAEL GROSS License Number 102-002086
7. Pitless Adapter Installed? [X]Yes [ ]No Manufacturer MERRILL Model MCIC Attached to Casing - How? [ ] Screwed On [ ] Welded [X] Compression
8. Type of Well Cap WATER-TITE VENTED
9. Tank Working Cycle 20 gallons Captive Air: [X]Yes [ ]No
10. Pump and Equipment Disinfected? [X]Yes [ ]No

General Comments: (If dry hole, fill out log & indicate how hole was sealed.)

11. Permit Number ISD #097-0117-99 99-11-047 Date Issued 4-23-99
12. Property Owner DALE RICHARDS Well #
13. Drilling Company Name WADSWORTH WELL DRILLING
14. Name of Person who drilled the well TOM WADSWORTH
15. Well Site Address 42645 DEADY ROAD WADSWORTH
16. Twnshp Name NEWPORT Land ID#
17. Subdivision Name METES + BOUNDS Lot Elevation ft.
18. Location: Cnty LAKE Sect 12 Twnshp 46 Range 11 SW Quarter of the SW Quarter of the NW Quarter
19. Casing and Liner Pipe:

Dia (In)	Type	From(ft)	To (ft)
4	GALV STEEL SCH 40		
	ASTM 53-589		
	SEAH		

20. Screen: Diameter ___ in. Length ___ ft. Slot Size Material
21. Water from LIMESTONE at depth 112 ft. to 122 ft.
22. Static Level 30 ft. below casing top which is 16 in. above ground level. Pumping Level 30 ft. Pumping 15 gpm for 5 hours.
23. Earth Materials Passed Through

	Depth Top(ft)	Depth Bottom(ft)
BLK DIRT	0	1
YELLOW CLAY	1	9
STONEY GRAY CLAY	9	30
BLUE CLAY	30	89
SAND	89	90
MUD SAND	90	104
GRAVEL + CLAY	104	105
GRAVEL DRY	105	112
LIMESTONE	112	122

Continue on back of sheet if necessary

Licensed Contractor Signature

092-008101 License Number

LOG # 131

Received JUN 1999 Environmental Health Division

COUNTY No. 42126

Illinois Department of Public Health
Division of Environmental Health - 525 W. Jefferson
Springfield, IL 62761 ☎ 312790

IMPORTANT NOTICE. This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

IL 482-0126

Printed by Authority of the State of Illinois P.O. PRT3030244 6.5M 6/98

(SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

WELL CONSTRUCTION REPORT

TYPE OR PRESS FIRMLY WITH BLACK INK PEN
COMPLETE FORM WITHIN 30 DAYS OF WELL COMPLETION
AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT

1. Type of Well: a. Bored b. Drilled (driven casing) c. Drilled (over drill)

Hole Construction					
Diam. ____ in. to ____ ft.	Diam. ____ in. to ____ ft.	22.00 in. to 123 ft.
Diam. ____ in. to ____ ft.	Diam. ____ in. to ____ ft.	17.00 in. to 1,065 ft.
Diam. ____ in. to ____ ft.	Diam. ____ in. to ____ ft.	13.00 in. to 1,170 ft.

d. Driven Well: Casing Diam. ___ in. depth ___ ft. ___

e. Well finished within: [ ] Unconsolidated Materials [X] Bedrock

f. Hole Annulus Information: Casing Grout, Gravel / Sand Pack

Type of Grout	# of Bags	From (ft.)	To (ft.)	How Placed
Neat Cement	100	0	123	Pressure Grouted
Neat Cement	598	0	1,064	Pressure Grouted

Kind of Gravel/Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)

g. Formation Packer: set at a depth _____ ft.

2. Well Use: [ ] Domestic [ ] Irrigation [X] Commercial [ ] Livestock
[ ] Monitoring [ ] Other _____

3. Date Well Completed: April 5, 2002 Well Disinfected [X] Yes [ ] No
Driller's estimated well yield 650 gpm

4. Date Permanent Pump Installed In Future
5. Pump Capacity ____ gpm Set at (depth) ____ ft.
6. Pitless Adapter Model & Manufacturer: _____
Attachment to Casing: [ ] Threaded [ ] Welded [ ] Compression
7. Well Cap Type & Manufacturer: _____
8. Pressure Tank: Working Cycle ____ gals. Captive Air: [ ] Yes [ ] No
9. Pump System Disinfected: [ ] Yes [ ] No
10. Name of Pump Company _____
11. Pump Installer: _____ License # _____
12. _____ License # _____
Licensed Pump Contractor Signature

General Comments:

Illinois Department of Public Health
Division of Environmental Health – 525 W. Jefferson
Springfield, IL. 62761

DO NOT write on these lines

RCS 0973185 #1

IMPORTANT NOTICE. This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. DISCLOSURE OF THIS INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.

now Calpine Zion Energy Date May 2, 2002

GEOLOGICAL & WATER SURVEY WELL RECORD

13. Property Owner SkyGen Energy Center Well #1
14. Drillers Rick Krabbe License Number _____
15. Name of Drilling Company Layne-Western Company
16. Permit Number Lake County 097-0706-01 Date Issued 12-20-01
17. Date Drilled March 4, 2002 to April 5, 2002
18. Well Site Address 5701 Ninth Street, Zion, Illinois
19. Township Name Zion Land ID # 0312-300-005-0021
20. Subdivision Name _____ Lot # ___
21. Location: a. County Lake
Township 46N. Range 11E. Section 12.5d
b. NE Quarter of the NE Quarter of the SW Quarter
c. coordinates: _____ Site Elev. _____

22. Casings, Liners *, & Screen Information

Diam. (in.)	Material, Joint Type, Slot Size	From (ft.)	To (ft.)	survey use only
18.00 O.D.	0.375" Carbon Steel, Welded	+2	123	
14.00 O.D.	0.375" Carbon Steel, Welded	+2	1,064	

*(list reason for liner, type of upper and lower seals installed)

21. Water from Sandstone
a. static water level 334 ft. below casing which is 24 in. above ground
b. pumping level is 549 ft. pumping 690 gpm

22. Earth Materials Passed Through

	From (ft.)	To (ft.)
Gravel Fill	0	5
Clay with Sandy Gravel	5	30
Sandy Clay with Gravel	30	50
Clay	50	90
Clay with Gravel	90	110
Boulders with Clay	110	116
Limestone	116	290
Red Shale	290	310
Shale with Limestone	310	520
Limestone	520	875
Sandstone with Limestone Streaks	875	980
Gray White Sandy Limestone	980	1000
Gray Reddish Limestone	1000	1010
Red Rock and Shale	1010	1160
Sandstone - Galesville	1160	1170
Sandstone with Limestone Streaks.	1170	1190
Soft White Sandstone	1190	1145
Sandstone with Limestone	1145	1150
Dark Gray Limestone with Shale	1150	1170

(If DRY HOLE, fill out log & indicate how hole was sealed)

Gregory D. Buffington, P.E. 102-003241
23. Licensed Water Well Contractor Signature License Number

LOG # 132

WELL INFORMATION - ROCK WELLS

Layne®-Western

a division of Layne Christensen Company

— PROFESSIONAL SERVICES FOR WATER SYSTEMS —

721 West Illinois Avenue • Aurora, Illinois 60506-2892 • Phone 630/897-6941
229 West Indiana Avenue • Beecher, Illinois 60401 • Phone 708/346-2244

ne Of Job: Skygen Energy Center — Date: April 12, 2002

/: Zion — State: ILLINOIS

ll No.: 1 — Drillers: Rick Krabbe

ll Location: 300 ft. (S) and 300 ft. (W) of the NE corner of

SW 1/4 of Section 12, Twp. 46 (N), Range 11 (E) Lake County

herwise located as: About 75' west of the northwest corner of storm water detention pond

ork Began: March 4, 2002 — Work Completed: April 5, 2002

sing Record:

Amount	Dia.	Wt. or Thickness	Material				
125'	18"	.375	Steel	with Welded	joints from +2	to	123'
1066'	14"	.375	Steel	with Welded	joints from +2	to	1064'
				with	joints from	to	
				with	joints from	to	

ole Record:

22	inch from	0'	to	123'
17	inch from	123'	to	1065'
13	inch from	1065'	to	1170'
	inch from		to	
	inch from		to	bottom of hole

ementing Record: 18" OD and 14" OD casings each pressure grouted in place from bottom to top with neat cement grout.

Well Test Data: Static Level 334 ; pumping level 549 after 24 hours pumping at 690 g.p.m.

ength of test 24 hrs. See Well Test Data Sheet Dated March 17, 2002

Remarks:

Layne Job No. 8774A — Well Permit No.: 097-0706-01 — Chicagoland: Map No. 495

LW-96

SEE OTHER SIDE

TEMPLATE.DOC

WELL CONSTRUCTION REPORT

TYPE OR PRINT FIRMLY WITH BLACK INK PEN
COMPLETE FORM WITHIN 30 DAYS OF WELL COMPLETION
AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT

Calpine Zion Energy owner

Type of Well: a. Bored b. Drilled (driven casing) c. Drilled (over drill)

Hole Construction

Diam. ____ in. to ____ ft. Diam. ____ in. to ____ ft. 22.00 in. to 128 ft.
Diam. ____ in. to ____ ft. Diam. ____ in. to ____ ft. 17.00 in. to 1,032 ft.
Diam. ____ in. to ____ ft. Diam. ____ in. to ____ ft. 13.00 in. to 1,170 ft.

Driven Well: Casing Diam. ___ in. depth ___ ft. ___

Well finished within: [ ] Unconsolidated Materials [X] Bedrock
Hole Annulus Information: Casing Grout, Gravel / Sand Pack

Type of Grout	# of Bags	From (ft.)	To (ft.)	How Placed
Neat Cement	104	0	128	Pressure Grouted
Neat Cement	585	0	1,032	Pressure Grouted

Kind of Gravel/Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)

Formation Packer: set at a depth ____ ft.
Well Use: [ ] Domestic [ ] Irrigation [X] Commercial [ ] Livestock
[ ] Monitoring [ ] Other ____
Date Well Completed: March 1, 2002 Well Disinfected [X] Yes [ ] No
Driller's estimated well yield 650 gpm

Date Permanent Pump Installed In Future
Pump Capacity ____ gpm Set at (depth) ____ ft.
Pitless Adapter Model & Manufacturer: ____
Attachment to Casing: [ ] Threaded [ ] Welded [ ] Compression
Well Cap Type & Manufacturer: ____
Pressure Tank: Working Cycle ____ gals. Captive Air: [ ] Yes [ ] No
Pump System Disinfected: [ ] Yes [ ] No
). Name of Pump Company ____
l. Pump Installer: ____ License # ____
2. ____ License # ____
Licensed Pump Contractor Signature

General Comments:

CO# 47411

DO NOT write on these lines

Illinois Department of Public Health
Division of Environmental Health – 525 W. Jefferson
Springfield, IL. 62761

R ICS 0973010185 #2

IMPORTANT NOTICE. This State Agency is requesting disclosure of information that is necessary to
INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.

Date April 12, 2002

GEOLOGICAL & WATER SURVEY WELL RECORD

13. Property Owner ~~Sta-Gen Energy Center~~ Well #2
14. Drillers Rick Krabbe License Number ____
15. Name of Drilling Company Layne-Western Company
16. Permit Number Lake County 097-0705-01 Date Issued 12-20-01
17. Date Drilled January 23, 2002 to March 1, 2002
18. Well Site Address 5701 Ninth Street, Zion, Illinois
19. Township Name ~~Zion~~ Zion Land ID # 0312-300-005-0021
20. Subdivision Name ____ Lot # ___
21. Location: a. County Lake
Township 46N. Range 11E. Section 12.5c
b. SE Quarter of the NE Quarter of the SW Quarter
c. coordinates: ____ Site Elev. ____

RECEIVED
survey use only
MAY 30 2002
ENVIRONMENTAL HEALTH SERVICES

Casings, Liners *, & Screen Information

Diam. (in.)	Material, Joint Type, Slot Size	From (ft.)	To (ft.)
18.00 O.D.	0.375" Carbon Steel, Welded	+2	128
14.00 O.D.	0.375" Carbon Steel, Welded	+2	1,032

*(list reason for liner, type of upper and lower seals installed)

21. Water from Sandstone
a. static water level 320 ft. below casing which is 24 in. above ground
b. pumping level is 507 ft. pumping 650 gpm

22. Earth Materials Passed Through

	From (ft.)	To (ft.)
Clay	0	40
Clay	40	47
Clay with Gravel	47	117
Limestone	117	290
Red Shale	290	310
Gray Shale and Limestone Mix, Shale was Cavey	310	400
Gray Shale	400	520
Limestone	520	835
White Sandstone	835	955
Brown Sandstone	955	970
Gray, Red Dirty Sandstone and Shale	970	1030
White Sandstone; Ironton-Galesville	1030	1035
Sandstone with Limestone	1035	1065
White Soft Sandstone	1065	1115
White Hard Sandstone	1115	1145
Red Shale and Limestone, T.D.	1145	1170

(If DRY HOLE, fill out log & ~~indicate how~~ hole was sealed)
accomplish the statutory purposes outlined under Public Act 85-0863. DISCLOSURE OF THIS

Gregory D. Buffington, P.E. 102-003241
23. Licensed Water Well Contractor Signature License Number

LOG # 133

WELL INFORMATION - ROCK WELLS

Layne®-Western

a division of Layne Christensen Company

— PROFESSIONAL SERVICES FOR WATER SYSTEMS —

721 West Illinois Avenue • Aurora, Illinois 60506-2892 • Phone 630/897-6941
229 West Indiana Avenue • Beecher, Illinois 60401 • Phone 708/946-2244

ne Of Job SkyGen Energy Center (now Calpine Zion Energy Center) Date March 1, 2002

r Zion State Illinois

ll No. 2 Drillers Rick Krabbe and Rick Treptow

ll Location 800 ft. (S) and 40 ft. (W) of the NE corner of

SW 1/4 of Section 12 ,Twp. 46 (N), Range 11 (E) Lake County

herwise located as About 25' south of storm water detention pond

ork Began: January 23, 2002 Work Completed March 1, 2002

sing Record:

Amount	Dia.	Wt. or Thickness	Material					
130'	18"	.375	Steel	with	Welded	joints from	+2	to 128'
1034'	14"	.375	Steel	with	Welded	joints from	+2	to 1032'
				with		joints from		to
				with		joints from		to

ole Record:

22	inch from	0'	to	128'
17	inch from	128'	to	1032'
13	inch from	1032'	to	1170' TD
	inch from		to	bottom of hole

ementing Record: 18" OD and 14" OD casings each pressure grouted in place from bottom to top with neat cement grout.

Well Test Data: Static Level 320' ; pumping level 507 after 9.33 hours pumping at 675 g.p.m.

ength of test 9.33 hrs. See Well Test Data Sheet Dated March 6, 7, 8, 9, and 11, 2002

Remarks:

Layne Job No. 8774A Well Permit No.: 097-0705-01 Chicagoland: Map No. 494

LW-96

SEE OTHER SIDE

030102

PWS 0971010 5 #2

Yellow Co... Blue Copy ... Public Health / Well Contractor / Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____, Bored ____, Hole Diam. 6 in. Depth 252 ft.
   Curb material ____, Buried Slab: Yes ____ No ____
   b. Driven ____, Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X, Finished in Drift ____, In Rock X,
   Tubular ____, Gravel Packed ____,
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 6/4/77
5. Permanent Pump Installed? Yes X Date 8/16/77 No ____
   Manufacturer RedJacket Type Subm. Location ____
   Capacity 10 gpm. Depth of Setting 180 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Baker Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size ____ gal. Type NONE
    Location ____
11. Water Sample Submitted? Yes X No ____

REMARKS:

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner AMERICAN ADMIXTURES Well No. ____
    Address 5909 N. Rodgers, Chicago, IL.
    Driller HENRY BOYSEN CO. License No. XXX 102-6
11. Permit No. 60910 Date 5/19/77
12. Water from Limestone (Formation)
    at depth 233 to 252 ft.
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
13. County Lake
    Sec. 1 10g
    Twp. 46N
    Rge. 11E
    Elev: ____

SHOW LOCATION IN SECTION PLAT
225'S, 300'E, mk, SW NE NE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
6	Black Steel	grade	205

16. Size Hole below casing: 6 in.
17. Static level 180 ft. below casing top which is 1 ft. above ground level. Pumping level ____ ft. when pumping at 8-10 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Fill	5	5
Blue Clay - Gravel	18	23
~~Blue Clay~~	~~53~~	~~76~~
Gravel	2	78
Blue Clay - Gravel	37	115
~~Blue Clay~~	~~35~~	~~150~~
Gravel	3	153
Blue Clay - Gravel	5	158
~~Blue Clay~~	~~42~~	~~200~~
Gravel	3	203
Limestone	13	226
~~Shale~~	~~4~~	~~230~~
Shale & Limestone	3	233
(CONTINUE ON SEPARATE SHEET IF NECESSARY)		
Limestone	19	252

SIGNED [signature] DATE 12/12/77

LOG # 134

18 18N-1W

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO D[illegible]ERS

FILL IN ALL PERTINENT INFORMATION REQUEST[illegible] AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 6 in. Depth 300 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 6 in. Depth 200 ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 20 Ft.
   Cess Pool ____
   Privy ____
   Septic Tank ____
   Leaching Pit ____
   Seepage Tile Field ____
   Sewer (non Cast iron) ____
   Sewer (Cast iron) ____
   Barnyard ____
   Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed February 7, 1978
5. Permanent Pump Installed? Yes X Date 2-8-78 No ____
   Manufacturer Sta-Rite Type Subm Location ____
   Capacity 65 gpm. Depth of Setting 189' x 2" Ft.
6. Well Top Sealed? Yes X No ____ Type Well seal
7. Pitless Adapter Installed? Yes ____ No X
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner American Admixtures Well No. ____
    Address 43190 Green Bay, Zion
    Driller L. R. Hoover License No. 102-78
11. Permit No. 70762 Date 1-13-78
12. Water from limestone Formation 13. County Lake
    at depth 200 to 300 ft.
14. Screen: Diam. -- in.
    Length: -- ft. Slot --
    Sec. 12
    Twp. 46N
    Rge. 11E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
75'S, 150'E, NW/C, SW NE NE American Admixtures

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
6	New Black Steel	0	200
	T&C 20 PPF-ASTM		
	A-53		

16. Size Hole below casing: 6 in.
17. Static level 80 ft. below casing top which is 1 ft. above ground level. Pumping level 110 ft. when pumping at 25 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	14	14
Blue clay	108	122
Hardpan	56	178
Blue clay	13	191
Hardpan	9	200
Limestone	100	300

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R. Hoover Engr. DATE 3-7-78

LOG # 135

Q-1984

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 6 in. Depth 400 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 6 in. Depth 200 ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 80 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed January 27, 1981
5. Permanent Pump Installed? Yes X Date 2/20/81 No ____
   Manufacturer Sta-Rite Type Subm. Location ____
   Capacity 14 gpm. Depth of Setting 189' Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Baker Model Number Industrial
   How attached to casing? Approved manner
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 220 gal. Type CA-220
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

GEOLOGICAL AND WATER SURVEYS WELL RECORD

AMERICAN FLY

10. Property owner ASH COMPANY Well No. ____
    Address Green Bay Road, Lake County, IL
    Driller Lonny R. Hoover License No. 102-783
11. Permit No. 98105 Date January 9, 1981
12. Water from Limestone (Formation) 13. County Lake
    at depth 200 to 400 ft.
    Sec. 1, 26
    14. Screen: Diam. – in.
    Length: – ft. Slot –
    Twp. 46N
    Rge. 11E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
Lot 1 100'W 150'W SE/4
NW SE SE (commercial operati

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
6	New Black Steel	0	200
	T&C 20 PPF-ASTM		
	A-53 Youngstown		

16. Size Hole below casing: 6 in.
17. Static level 115 ft. below casing top which is 1 ft. above ground level. Pumping level 135 ft. when pumping at 30 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	73	73
Gravel & sand	4	77
Clay	50	127
Hardpan	13	140
Gravel	8	148
Clay	36	184
Hardpan	10	194
Gravel	6	200
limestone	200	400

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R. Hoover/egn DATE 4/17/81

LOG # 136

D-1 0 1 9 5

IDPH 4.065
1/74 – KNB-1

290 -	310	red shale
310 -	520	shale with limestone
520 -	845	limestone
845 -	980	sandstone with limestone streaks
980 -	1000	gray white sandy limestone
1000 -	1010	gray reddish limestone
1010 -	1060	red rock & shale
1060 -	1070	Galesville
1070 -	1090	sandstone with limestone streaks
1090 -	1145	soft white sandstone
1145 -	1150	sandstone with limestone
1150 -	1170	dark gray limestone with shale

120973949700 Voglein, John 12-46N-11E
Lake Gross, Michael NE SW SW
Well Status: WATER - Water Well
Compdate: Plugdate: TD: 0
Elevation: 690' Permit #: Permit Date: 11/14/1995
Latitude: 42.473478 Longitude: -87.90114

Owner Address: 42083 N. Delany Rd. Zion IL
Well Address: same as above Lot: Subd:
Well Type: PRIV - Private Water Well
Water Bearing Formation: dry hole 0 to 0 ft

LOG # 137

Driller's Log: 0 - 0 clay to rock (no intervals reported)

120973363600 Brock, Frank 13-46N-11E
ake Gross, Michael 180'N line, 300'W line,
Well Status: WATER - Water Well
Compdate: 03/17/1980 Plugdate: TD: 144
Elevation: 695' Permit #: 92936 Permit Date: 03/10/1980
Latitude: 42.471636 Longitude: -87.901176

Owner Address: 41925 Delaney Rd. Zion IL
Well Type: PRIV - Private Water Well
Water Bearing Formation: white gravel 143 to 144 ft
Static Water Level: 45 ft. below casing top of 1 ft. Hole Diam.: 4 in.
Pumping Level: 47 ft. when pumping at 10 gpm for hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	4	GALV STEEL	0	144

Size hole below casing: 4 in.

Driller's Log:

0 -	1	black dirt
1 -	20	yellow clay
20 -	143	blue clay
143 -	144	white gravel

120972498500 Klikunas, Marvin 6-46N-12E
Lake Boysen, Henry Co.,Lichter,John 150'N line, 100'W line, NW SE
Well Status: WATER - Water Well
Compdate: 08/06/1976 Plugdate: TD: 238
Elevation: Permit #: Permit Date: 07/07/1976
Latitude: 42.493258 Longitude: -87.882596

WELL CONS' 'CTION REPORT

Date 1/28/98

TYPE OR PRESS FIRMLY WITH BLACK INK PEN, THIS FORM MUST BE COMPLETED WITHIN 30 DAYS OF COMPLETION AND SENT TO THE APPROPRIATE HEALTH DEPARTMENT

1. Date Well Completed 1/22/98
2. Use: [ ] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
   [ ] Monitoring [X] Other Scale House Commercial Truck weighing
3. Type of Well:
   a. Bored Well: Hole Diameter _____ in. Depth _____ ft.
   Casing Diameter _____ in. Buried Slab: [ ]Yes [ ]No
   b. Driven Well: Drive Pipe Diameter _____ in. Depth _____ ft.
   c. Drilled Well: Well Diameter 5 in. Depth 240 ft.
   Casing Diameter 5 in. Type Steel Joint T&C

Casing Grout:

Kind	Oversized Drill Hole(In)	From(ft)	To(ft)
Bentonite Crumbles		0	235

Finished In: Unconsolidated [ ] Gravel Pack: [ ]Yes [ ]No
Rock [X] Grain Size _____

4. Well Disinfected? [X]Yes [ ]No
5. Date Permanent Pump Installed 3-03-98
6. Licensed Pump Contractor HOOVER WATER WELL SERVICE
   License Number 102-000-78
7. Pitless Adapter Installed? [X]Yes [ ]No
   Manufacturer BAKER Model SNAPPY
   Attached to Casing - How? [ ] Screwed On [ ] Welded [X] Compression
8. Type of Well Cap VENTED, VERMIN-PROOF WELL LID
9. Tank Working Cycle 10 gallons Captive Air: [X]Yes [ ]No
10. Pump and Equipment Disinfected? [X]Yes [ ]No

General Comments: (If dry hole, fill out log & indicate how hole was sealed.)

Illinois Department of Public Health
Division of Environmental Health - 525 W. Jefferson
Springfield, IL 62761

CO# 40588
P 302026

IMPORTANT NOTICE. This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

GEOLOGICAL AND WATER SURVEY WELL RECORD

11. Permit Number FEP 097-03-1075 Date Issued 12/9/97
12. Property Owner Browning Ferris Ind. Well # _____
13. Drilling Company Name Hoover Well Drilling Company Inc.
14. Name of Person who drilled the well Steve Gross
15. Well Site Address 701 Green Bay Road Zion, IL 60099
16. Twnshp Name Newport Land ID# _____
17. Subdivision Name M/B Lot _____ Elevation _____ ft.
18. Location: Cnty Lake Sect 12 Twnshp 46 N Range 11 E
    SE Quarter of the SE Quarter of the NE Quarter
19. Casing and Liner Pipe:

Dia (In.)	Type	From(ft)	To (ft)
5	Sawhill Steel	0	235
	ASTM A53B T&C		
	15.00 PPF		

20. Screen: Diameter ___ in. Length ___ ft. Slot Size _____ Material _____
21. Water from Limestone at depth 235 ft. to 240 ft.
22. Static Level 125 ft. below casing top which is 12 in. above ground level.
    Pumping Level 220 ft. Pumping 6 gpm for 4 hours.
23. Earth Materials Passed Through

	Depth Top(ft)	Depth Bottom(ft)
Clay	0	60
Hardpan	60	100
Sand & Gravel	100	130
Clay	130	170
Hardpan	170	200
Gravel	200	235
Limestone	235	240

Continue on back of sheet if necessary

MAR 1998
Receiver
Environmental Health Div

LOG # 138

Licensed Contractor Signature

102-004165
License Number

11/95

(SEE REVERSE SIDE FOR ...)

INSTRUCTIONS TO D ERS

White Copy -- Ill. Dept of Public Health
Yellow Copy – Well Contractor
Blue Copy -- Well Owner

FILL IN ALL PERTINENT INFORMATION REQUES AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, BUREAU OF ENVIRONMENTAL HEALTH, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62701. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 6 in. Depth 127 ft.
   Curb material _____. Buried Slab: Yes____ No____.
   b. Driven _____. Drive Pipe Diam. 6 in. Depth 122 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock____;
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 15 Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Is water from this well to be used for human consumption?
   Yes ✓ No _____
4. Date well completed 9/25/74
5. Permanent Pump Installed? Yes ✓ No _____
   Manufacturer Sta Rite Type Submr
   Capacity 30 gpm. Depth of setting 63 ft.
6. Well Top Sealed? Yes ✓ No _____
7. Pitless Adaptor Installed? Yes ✓ No _____
8. Well Disinfected? Yes ✓ No _____
9. Water Sample Submitted? Yes _____ No _____

REMARKS:

IDPH 4.065
10-72
KNB-1

PICS 0970 4737, #1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner North Shore Sanitary Dist Well No. _____
    Address Dabringer Rd, Waukegan
    Driller L Hoover License No. 30
11. Permit No. 33357 Date 9/25/74
12. Water from sand & gravel 13. County Lake
    Formation
    at depth 118 to 127 ft.
    Sec. 12, 30
    Twp. 44N
    Rge. 11E
    Elev. _____
14. Screen: Diam. 6 in.
    Length: 6 ft. Slot #30 + #20

SHOW LOCATION IN SECTION PLAT
1000's 1000' E NW/c SE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
6	black T+C	0	122
	19.45 ppf		

16. Size Hole below casing: 6 in.
17. Static level 43 ft. below casing top which is 1 ft. above ground level. Pumping level 46 ft. when pumping at 40 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow Clay	18	18
Blue Clay	100	118
sand - gravel	9	127

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED L R Hoover DATE 9/30/74
Or

LOG # 139

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 111 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven_____. Drive Pipe Diam. 5 in. Depth 108 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock_____.
   Tubular_____. Gravel Packed_____.
   d. Grout:

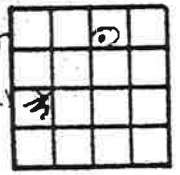
(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 2/15/88
5. Permanent Pump Installed? Yes X Date 4/8/88 No____
   Manufacturer Sta-Rite Type Sub Location _____
   Capacity 14 gpm. Depth of Setting 80 Ft.
6. Well Top Sealed? Yes X No____ Type S.A.
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Baker Model Number Snappy
   How attached to casing? approved manner
8. Well Disinfected? Yes ✓ No____
9. Pump and Equipment Disinfected? Yes ✓ No____
10. Pressure Tank Size 120 gal. Type _____
    Location _____
11. Water Sample Submitted? Yes_____ No_____

REMARKS: Co. # 30444

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner North Shore Sanitary Dist. Well No. _____
    Address 9th Street & Green Bay Rd.
    Driller Hoover License No. 102-783
11. Permit No. 137863 Date 12/3/87
12. Water from Sand (Formation)
    at depth 108 to 111 ft.
13. County Lake
    Sec. 12 Twp. 46N Rge. 11E Elev. _____
14. Screen: Diam. 5 in.
    Length: 3'6" ft. Slot # 10



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	New black steel	0	108
	15.27 ~~#~~ of ASTM		

SHOW LOCATION IN SECTION PLAT
Commercial (Landfill)
Sanitary District
SW, NW, NE

16. Size Hole below casing: 5 in.
17. Static level 55 ft. below casing top which is 1 ft. above ground level. Pumping level 55 ft. when pumping at 18 gpm for 1 hours.

18. FORMATIONS PASSED THROUGH	FROM THICKNESS	DEPTH OF BOTTOM
yellow clay	0	15
sandy clay	15	38
stoney clay	38	42
rubble	42	55
stoney clay	55	62
rubble	62	70
stoney sandy clay	70	104
sand	104	111
clay	111	

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R. Hoover DATE April 88
(job)

IDPH 4.065
1/74 – KNB-1

PICS 09704737, #2

LOG # 140

Ill. of Public Health
Yellow - Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 5 in. Depth 211 ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam. 5 in. Depth 202 ft
   c. Drilled X Finished in Drift X In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled Aug. 25, 1989
4. Permanent pump installed? Yes X Date 10/6/89 No___
   Manufacturer Sta-Rite Type Sub
   Location
   Capacity 14 gpm. Depth of setting 10/6/89 ft.
5. Well top sealed? Yes X No___ Type P/A
6. Pitless adapter installed? Yes X No___
   Manufacturer Baker Model No. Snappy
   How attached to casing? approved manner
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

P404545

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Lonny R. Hoover License No. 102-000783
10. Well Site Address 9th & Greenbay Rd, Lake County
11. Property Owner North Shore Sanit. Dist. Well No. 3
12. Permit No. 013380 Date Issued 7/27/89
13. Location: perm 89 - 13380 County Lake
    Sec. 12
    Twp. 46N
    Rge. 11E

Show location in section plat

SW NW NE

#3

14. Water from ____ at depth____ ft to____ ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	new black steel ASTM A-53	0	202

16. Screen: Diam.___ in, Length___ in, Slot Size___
17. Size hole below casing 5 in. 18. Ground Elev. 710 ft msl.
19. Static level 83 ft below casing top which is 1 ft. above ground level. Pumping level 135 ft, pumping gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
clay	0	80
hardpan	80	114
sand gravel	114	119
clay	119	162
hardpan	162	181
clay	181	200
gravel + clay	200	202
limestone	202	211

Continue on separate sheet if necessary.

Signed Lonny R. Hoover (Jr.) Date Nov. 1989

LOG # 141

Ill[illegible] of Public Health
Yello[illegible] Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 5 in. Depth 200 ft
      Buried Slab: Yes__ No__
   b. Driven ✓ Drive Pipe Diam. 5 in. Depth____ ft
   c. Drilled ✓ Finished in Drift____ In Rock ✓
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Well furnishes water for human consumption? Yes ✓ No____
3. Date well drilled 8/25/89
4. Permanent pump installed? Yes ✓ Date____ No____
   Manufacturer Sta-Rite Type Sub
   Location____
   Capacity 8 gpm. Depth of setting____ ft.
5. Well top sealed? Yes ✓ No____ Type____
6. Pitless adapter installed? Yes ✓ No____
   Manufacturer Baker Model No. Snappy
   How attached to casing? approved manner
7. Well disinfected? Yes X No____
8. Pump and equipment disinfected Yes ✓ No____

IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

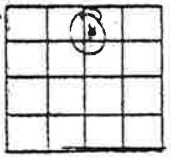
PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

* Same well as the one with 211' as total depth.

SEO IL482-0126 P 404545
4-11-07
PCS 0970437 #3

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Layer Well Service License No. 102-000783
10. Well Site Address 9th st and Green Bay Rd.
11. Property Owner North Shore Sanitary District Well No. 7/27/89
12. Permit No. 013380 Date Issued 7/27/89
13. Location: County Lake
    Sec. 12 4q
    Twp. 46
    Rge. 11



Show location in section plat

14. Water from limestone at depth 202 ft to 211 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	New Black Steel	0	202

16. Screen: Diam.____ in, Length____ in, Slot Size____
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 83 ft below casing top which is 1 ft. above ground level. Pumping level 135 ft, pumping gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
clay	0	80
hardpan	80	114
sand gravel	114	119
clay	119	162
hardpan	162	181
Continue on separate sheet if necessary. clay	181	200
gravel/clay	200	202
limestone	202	

LOG # 142

Signed____ Date____

TYPE RESS FIRMLY WITH BLACK INK PEN
COMPL WITHIN 30 DAYS OF WELL COMPLETION
AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT

Date November 17, 2004

GEOLOGICAL AND WATER SURVEY WELL RECORD

1. Type of Well: a. Driven Well: Casing diam. _____ in. Depth _____ ft.
b. Bored Well: Buried Slab [ ] Yes [ ] No
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.
c. Drilled Well: PVC casing Formation packer set at depth of _____ ft.
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft)	To (ft)	Tremie Depth (ft)

d. Drilled Well: Steel Casing — Mechanically Driven [X] Yes [ ] No
Hole Diameter 22 in. to 195 ft.; 18 in. to 1041 ft.; 14 in. to 1210 ft.

Type of Grout	# of Bags	Grout Weight	From (ft)	To (ft)	Tremie Depth (ft)
Neat Cement			Grade	1041	

e. Well finished within: [ ] Unconsolidated Materials [X] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)

2. Well Use: [ ] Domestic [ ] Irrigation [X] Commercial [ ] Livestock
[ ] Monitoring [ ] Other
3. Date Well Completed 8/12/2004 Well Disinfected [X] Yes [ ] No
Driller's estimated well yield 650 gpm
4. Date Permanent Pump Installed _____
5. Pump Capacity 500 gpm Set at (depth) 650 ft.
6. Pitless Adapter Model and Manufacturer: Baker Sppol Type
7. Well Cap Type and Manufacturer: Baker Vented
8. Pressure Tank: Working Cycle N/A gals. Captive Air: [ ] Yes [ ] No
9. Pump System Disinfected: [X] Yes [ ] No
10. Name of Pump Company Henry Boysen Company, Inc.
11. Pump Installer: George E. Gaffke License # 102-002342

12. _____ License # 102-002342
Licensed Pump Contractor Signature

13. Property Owner North Shore Sanitary District Well # _____
14. Driller George E. Gaffke License # 102-002342
15. Name of Drilling Company Henry Boysen Company, Inc.
16. Permit No. 097-0041-04 Date Issued 2/16/2004
17. Date Drilling Started 6/9/2004
18. Well SITE address 9th Street & Green Bay Road
19. Township Name Zion Land ID # 03-12-400-002/005
20. Subdivision Name _____ Lot # _____
21. Location: a. County Lake
b. Township 46N Range 11E Section 12 26
c. NW Quarter SE Quarter SE Quarter
d. coordinates: _____ Site Elevation _____ ft (msl)

For Survey Use Only

22. Casings, Liners*, & Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft)	To (ft)
18"	A53 Steel	Weld		+1	195
14"	A53 Steel	Weld		1	1041

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from Galesville Sandstone at a depth of 1100 ft. to 1200 ft.
a. static water level 340 ft. below casing which is 12 in. above ground
b. pumping level is _____ ft. pumping 650 gpm after pumping for 1 hrs.

24. Earth Materials Passed Through

	From (ft.)	To (ft.)
Clay Fill	0	4
Brown Clay	4	14
Blue Clay	14	164
Gravel with Clay	164	184
Limestone	184	315
Shale	315	525
Limestone	525	885
Sandstone	885	975
Limestone	975	1035
Gray Sandstone & Shale	1035	1100
Galesville Sandstone	1100	1110
Hard White Sandstone	1110	1130
Soft White Sandstone	1130	1200
Red & Gray Shale	1200	1210

(IF DRY HOLE, fill out log & indicate how hole was sealed)

George E. Gaffke 102-002342
25. Licensed Water Well Contractor Signature License Number

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson Street
Springfield, IL 62761

NOV 2004
Received
Environmental Health Services

Co# 50023

DO Not write on these lines X11961

IMPORTANT: The State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. DISCLOSURE OF THIS INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.
IL 482-0126 rev. 12/98

RICS 09704737 #4

LOG # 143

WATER WELL CONSTR[illegible]TION REPORT

Date _____

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. Driven Well Casing diam. ____ in. Depth ____ ft.
b. Bored Well Buried Slab [ ] Yes [ ] No
Hole Diameter ____ in. to ____ ft.; ____ in. to ____ ft.; ____ in. to ____ ft.
c. Drilled Well PVC casing Formation packer set at depth of ____ ft.
Hole Diameter 10 in. to 680 ft. 6 in. to 1105 ft. ____ in. to ____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland Cement			0	680'	

d. Drilled Well Steel Casing - - - Mechanically Driven [✓] Yes [ ] No
Hole Diameter 10 in. to 680 ft. 6 in. to 1105 ft. ____ in. to ____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland Cement	125	1516 lbs	0	680'	680'

e. Well finished within [ ] Unconsolidated Materials [✓] Bedrock / Sand stone

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)

2. Well Use [ ] Domestic [✓] Irrigation [ ] Commercial [ ] Livestock [ ] Monitoring [ ] Other
3. Date Well Completed 7-6-06 Well Disinfected [✓] Yes [ ] No
Driller's estimated well yield 400 gpm
4. Date Permanent Pump Installed 7-7-06
5. Pump Capacity 200 gpm Set at (depth) ____ ft.
6. Pitless Adapter Model and Manufacturer OVER TOP D.C.
7. Well Cap Type and Manufacturer 1" Thief Flanged Well Head
8. Pressure Tank Working Cycle ____ gals. Captive Air [ ] Yes [ ] No - NA
9. Pump System Disinfected [✓] Yes [ ] No
10. Name of Pump Company Berkely
11. Pump Installer Bill Mandl License # 102-004165
12. [signature] License # ____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

ISWS P# 421986
Facility # 0976900035 Point # 1

DO NOT write on these lines

SCANNED

IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. DISCLOSURE OF THIS INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.

GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Zion Park Dist Well # ____
14. Driller Bill Mandl License # 102-004165
15. Name of Drilling Co. Huemann Well & Pump
16. Permit No. A/P 145063 Date Issued 4-27-06
17. Date Drilling Started 6-6-06
18. Well SITE address 43125 N Green Bay Rd
19. Township Name New Park Land ID # ____
20. Subdivision Name Metes + Bounds Lot # ____
21. Location a. County Lake
b. Township 46 Range 11 Section 12 1/4
c. NE Quarter NE Quarter NE Quarter
d. Coordinates ____ Site Elevation ____ ft. (msl)

For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
10	Black	T+C	NA	0	237
6	Black	T+C	NA	0	680

(*) ____
(List reason for liner, type of upper and lower seals installed)

23. Water from Sandstone at a depth of 913 ft. to 1105 ft.
a. Static water level 420 ft. below casing which is 18 in. above ground
b. Pumping level is 540 ft. pumping 200 gpm after pumping for 12 hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Clay	0	99
Sand	99	104
Hard Pan	104	200
Gravel	200	237
Limestone	237	470
Shale	470	650
Limestone	650	913
Limestone / Sand Stone	913	1080
Sand Stone	1080	1105

(If dry hole, fill out log and indicate how hole was sealed.)

[signature] ____
25. Licensed Water Well Contractor Signature License Number

LOG # 144

Well Status: WATER - Water Well
Compdate: 10/10/1977 Plugdate: TD: 76
Elevation: Permit #: 67275 Permit Date: 09/27/1977
Latitude: 42.482861 Longitude: -87.888193

Owner Address: 3739 Blanchard Rd. Waukegan IL
Well Address: Lot: 5 Subd: North Shore Lands
Well Type: PRIV - Private Water Well
Water Bearing Formation: gravel 65 to 76 ft
Static Water Level: 55 ft. below casing top of 1 ft. Hole Diam.:
Screen Diam.: 4 in. Screen Length: 3 ft. Slot: 20.00
Pumping Level: 60 ft. when pumping at 10 gpm for 2 hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	4	GALV #11	0	0

Size hole below casing: 4 in.

Driller's Log:
0 - 10 brown clay
10 - 65 clay
65 - 76 gravel

LOG # 145

120973122400 Eagle Homes 1 12-46N-11E
Lake Snelten, Jeffrey NE NE SE
Well Status: WATER - Water Well
Compdate: 06/21/2002 Plugdate: TD: 207
Elevation: 721' GL Permit #: Permit Date: 03/21/2002
Latitude: 42.478266 Longitude: -87.88459

Owner Address: %Wadsworth Trails,L.L.C. 40424 Deep Lake Rd. Antioch IL 60002
Well Address: 13391 W. Hidden Springs Tr. Wadsworth, IL Lot: 34 Subd: Wadsworth Trails
Well Type: PRIV - Private Water Well
Water Bearing Formation: sand & gravel 207 to 207 ft
Static Water Level: 123 ft. below casing top of 1 ft. Hole Diam.: 9 in.
Pumping Level: 135 ft. when pumping at 10 gpm for 1 hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	5	PVC ASTM D-2241	0	207

Driller's Log:
0 - 10 brown clay
10 - 191 blue clay
191 - 207 sand & gravel

120970223100 Ferry, Ray 12-46N-11E
Lake I. Ausherman NW NE SE
Well Status: WATER - Water Well
Compdate: Plugdate: TD: 227
Elevation: 730' Permit #: Permit Date:
Latitude: 42.478304 Longitude: -87.887045

Logs Run: Driller's Log

Driller's Log:
0 - 220 drift
220 - 227 limestone

120972426600 Kjesbo, Donald 12-46N-11E
Lake Hoover, L. R. 350'S line, 350'W line,
Well Status: WATER - Water Well
Compdate: 08/13/1974 Plugdate: TD: 152
Elevation: Permit #: Permit Date: 05/16/1974
Latitude: 42.473088 Longitude: -87.901845

White Copy – Ill. Dep. ublic Health
Yellow Copy – ell Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQU ED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616 ATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled 4. Finished in Drift 76. In Rock____.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

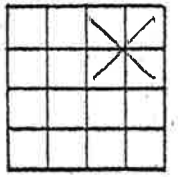
2. Distance to Nearest:
   Building 28 Ft. Seepage Tile Field 75
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank 60 Barnyard____
   Leaching Pit____ Manure Pile____
3. Is water from this well to be used for human consumption?
   Yes ✓ No____
4. Date well completed ~~SEPT~~ OCT 10-10-77
5. Permanent Pump Installed? Yes ✓ No____
   Manufacturer REN JACKET Type SQ 13
   Capacity 10 gpm. Depth of setting 70 ft.
6. Well Top Sealed? Yes____ No____
7. Pitless Adaptor Installed? Yes ✓ No____
8. Well Disinfected? Yes ✓ No____
9. Water Sample Submitted? Yes____ No ✓

REMARKS:

R 313903
IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner CRAFT CONSTRUCTION Well No.____
    Address 3739 ELMHURST RD
    Driller EUGENE GROSS License No. 1012-71
11. Permit No. 67275 Date 10-10-77
12. Water from GRAVEL (Formation)
    at depth 65 to 76 ft.
13. County LAKE
    Sec. 12
    Twp. 46 N
    Rge. 11 E
    Elev.____
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot 20



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	GALV ~~FT~~ 11		

SHOW LOCATION IN SECTION PLAT
Lot 5 Block 68 F.H. Bartlett's North Shore Lands Subd NE

16. Size Hole below casing: 4 in.
17. Static level 55 ft. below casing top which is 1 ft. above ground level. Pumping level 60 ft. when pumping at 10 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
BROWN CLAY	10	10
CLAY	55	65
GRAVEL	11	76

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Eugene Gross DATE 11-27-79

LOG # 146

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled 93 4'. Finished in Drift 86. In Rock____.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 25 Ft. Seepage Tile Field 75
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank 50 Barnyard____
   Leaching Pit____ Manure Pile____
3. Is water from this well to be used for human consumption?
   Yes ✓ No____
4. Date well completed 10-15-79
5. Permanent Pump Installed? Yes ✓ No____
   Manufacturer RED JACKET Type SUB
   Capacity 10 gpm. Depth of setting 90 ft.
6. Well Top Sealed? Yes____ No ✓
7. Pitless Adaptor Installed? Yes ✓ No____
8. Well Disinfected? Yes ✓ No____
9. Water Sample Submitted? Yes____ No ✓

REMARKS:

R 313902
IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner RICHARD MIUSHEK Well No.____
    Address CHEYENNE AVE WAUKEGAN ILL
    Driller EUGENE GROSS License No. 102-71
11. Permit No. 398.57 Date 10-15-79
12. Water from GRAVEL (Formation) 13. County LAKE
    at depth 90 to 96 ft.
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot 10
    Sec. 12
    Twp. 46 N
    Rge. 11-E
    Elev.____

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	GALV #11		

SHOW LOCATION IN SECTION PLAT
Lots Block 60 F.H.B. North Shore Highlands subd above such

16. Size Hole below casing: 4" in.
17. Static level 60 ft. below casing top which is 1 ft. above ground level. Pumping level 70 ft. when pumping at 10 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
TOP BROWN CLAY	10	10
BLUE CLAY	80	90
GRAVEL	6	96

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Eugene Gross DATE 11-26-79

LOG # 147

WELL CONSTRUCTION REPORT

Date April 3, 2000

097-0472 99

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. THIS FORM MUST BE COMPLETED WITHIN 30 DAYS OF COMPLETION AND SENT TO THE APPROPRIATE HEALTH DEPARTMENT

1. Date Well Completed 1/28/00
2. Use: [ ] Domestic [X] Irrigation [ ] Commercial [ ] Livestock [ ] Monitoring [ ] Other
3. Type of Well:
   a. Bored Well: Hole Diameter _____ in. Depth _____ ft. Casing Diameter _____ in. Buried Slab: [ ] Yes [ ] No
   b. Driven Well: Drive Pipe Diameter _____ in. Depth _____ ft.
   c. Drilled Well: Well Diameter 6" in. Depth 1100 ft. Casing Diameter 6" in. Type Steel Joint PL.End Weld

Casing Grout:

Kind	Oversized Drill Hole (In.)	From (ft.)	To (ft.)
Neat Cement	8	0	680

Finished in : Unconsolidated Rock [x] [ ] Gravel Pack: [ ] Yes [ ] No Grain Size _____

4. Well Disinfected? [X] Yes [ ] No
5. Date Permanent Pump Installed 1/31/00
6. Licensed Pump Contractor Henry Boysen Company, Inc. License Number 102-002342
7. Pitless Adapter Installed? [X] Yes [ ] No Manufacturer Whitewater Model _____ Attached to Casing - How? [ ] Screwed On [ ] Welded [X] Compression
8. Type of Well Cap Vented
9. Tank Working Cycle 100+ gallons Captive Air: [ ] Yes [X] No
10. Pump and Equipment Disinfected? [X] Yes [ ] No

General Comments: (If dry hole, fill out log and indicate how hole was sealed.)

Illinois Department of Public Health
Division of Environmental Health - 525 W. Jefferson
Springfield, IL 62761

COUNTY No. 42319

P-322119

IMPORTANT NOTICE. This State Agency is requesting disclosure of information that is necessary to accomplish purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

GEOLOGICAL AND WATER SURVEY WELL RECORD

(WW 99-3-472) ISD89-08-1245

11. Permit Number 097-0472-99 Date Issued 12/10/99
12. Property Owner Bergmann's Country Garden Well # _____
13. Drilling Company Name Henry Boysen Company, Inc
14. Name of Person who drilled the well John Kusch
15. Well Site Address 700 Kenosha Rd.
16. Townshp Name Benton Land ID# 04-07-200-020
17. Subdivision Name M & B Lot _____ Elevation _____ ft.
18. Location: Cnty Lake Sect 07 Twnshp 46N Range 12E SW Quarter of the NE Quarter of the NE Quarter

29

19. Casing and Liner Pipe

Dia (In)	Type	From (ft)	To (ft)
8	A53 P.E.	0	220
6	A53 P.E.	0	680

20. Screen: Diameter _____ in. Length _____ ft. Slot Size _____ Material _____
21. Water from Sandstone at depth 1035 ft. to 1100 ft.
22. Static Level 380 ft. below casing top which is 12 in. above ground level. Pumping Level _____ ft. Pumping 100+ gpm for _____ hours.
23. Earth, Materials Passed Through

	Depth Top (ft)	Depth Bottom (ft)
Brown Clay	0	12
Blue Clay	12	211
Broken Limestone	211	214
Limestone	214	430
Shale	430	670
Limestone	670	965
Sandstone	965	980
Limestone	980	1035
Sandstone	1035	1100

Continue on back of sheet if necessary

Received APR 2000 Environmental Health Division

Licensed Contractor Signature 102-002342 License Number

(SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

LOG # 148

White — Ill. Dept. of Public Health
Yellow Copy — Well Contractor
Blue Copy — Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 280 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 220 ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

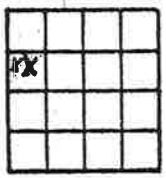
(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 35 Ft. — Seepage Tile Field 75
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank 50 — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 8-21-82
5. Permanent Pump Installed? Yes X Date ____ No ____
   Manufacturer Red Jacket Type sub Location ____
   Capacity 49 gpm. Depth of Setting 210 Ft.
6. Well Top Sealed? Yes X No ____ Type ~~Merritt~~ Williams
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer ~~Merritt~~ Williams Number 503
   How attached to casing? clamp on
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 4-120 gal. Type galvanized
    Location crawl space
11. Water Sample Submitted? Yes ____ No X

REMARKS:

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Browning Ferris Industries Inc Well No. ____
    Address 2230 Ernest Krueger Circle, Waukegan, I
    Driller Michael Gross License No. 102-002086
11. Permit No. 103941 Date 6-26-82
12. Water from limestone Formation 13. County Lake
    at depth ~~220~~ to 280 ft.
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
    Sec. 7 8f
    Twp. 46N
    Rge. 12E
    Elev. ____



15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	blk steel	0	220

SHOW LOCATION IN SECTION PLAT
150'N 150'E SW/c
NW SW NW
INDUSTRY

16. Size Hole below casing: 5 in. (commenced operations)
17. Static level 80 ft. below casing top which is 1 ft. above ground level. Pumping level 155 ft. when pumping at 20 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay	15	15
blue clay	105	120
blue hard pan	45	165
red hard pan	55	220
limestone	60	280

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Michael Gross DATE 10-15-82

LOG # 149

IDPH 4.065
1/74 — KNB-1
(59571—12½M Sets—6-74)

G-1883H

WELL CONSTRUCTION REPORT

Date 6-16-98

TYPE OR PRESS FIRMLY WITH BLACK INK PEN, THIS FORM MUST BE COMPLETED WITHIN 30 DAYS OF COMPLETION AND SENT TO THE APPROPRIATE HEALTH DEPARTMENT

1. Date Well Completed 6-4-98
2. Use: [ ] Domestic [ ] Irrigation [X] Commercial [ ] Livestock
   [ ] Monitoring [ ] Other _____
3. Type of Well: CABLE TOOL
   a. Bored Well: Hole Diameter _____ in. Depth _____ ft.
   Casing Diameter _____ in. Buried Slab: [ ]Yes [ ]No
   b. Driven Well: Drive Pipe Diameter _____ in. Depth _____ ft.
   c. Drilled Well: Well Diameter 5 in. Depth 260 ft.
   Casing Diameter 5 in. Type ASTM-A53B Joint T+C steel

Casing Grout:

Kind	Oversized Drill Hole(In)	From(ft)	To(ft)
Bentonite			

Finished In: Unconsolidated [ ] Gravel Pack: [ ]Yes [ ]No
Rock [X] Grain Size _____

4. Well Disinfected? [X]Yes [ ]No
5. Date Permanent Pump Installed 6-10-98
6. Licensed Pump Contractor 102-000-78
   License Number Hoover Water Well Service
7. Pitless Adapter Installed? [X]Yes [ ]No
   Manufacturer's Name Baker Model Snappy
   Attached to Casing - How? [ ] Screwed On [ ] Welded [X] Compression
8. Type of Well Cap vermin proof - vented
9. Tank Working Cycle 120 gallons Captive Air: [X]Yes [ ]No
10. Pump and Equipment Disinfected? [X]Yes [ ]No

General Comments: (If dry hole, fill out log & indicate how hole was sealed.)

Illinois Department of Public Health
Division of Environmental Health - 525 W. Jefferson
Springfield, IL 62761

CO # 40788

R 305063

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GEOLOGICAL AND WATER SURVEY WELL RECORD

097-0086-98

11. Permit Number WW 98-03-0086 Date Issued _____
12. Property Owner BFI Co. Well # Maint. Bldg.
13. Drilling Company Name [redacted] Hoover Water Well Service
14. Name of Person who drilled the well Jerry KNUTSON
15. Well Site Address 701 Green Bay Rd. Zion, IL. 60099
16. Twnshp Name Benton Land ID# _____
17. Subdivision Name _____ Lot 3e Elevation _____ ft.
18. Location: Cnty Lake Sect 7 Twnshp 46N Range 12E
    SE Quarter of the SW Quarter of the NE Quarter
19. Casing and Liner Pipe:

Dia (In.)	Type	From(ft)	To (ft)
5"	ASTM-A53B	0	223

20. Screen:
    Diameter ___ in.
    Length ___ ft.
    Slot Size _____
    Material _____
21. Water from Lime Stone at depth 223 ft. to 260 ft.
22. Static Level 80 ft. below casing top which is 18 in. above ground level.
    Pumping Level 200 ft. Pumping 5 gpm for 12 hours.
23. Earth Materials Passed Through

	Depth Top(ft)	Depth Bottom(ft)
yellow clay	0	16
Gray clay	16	89
Gravel	89	94
Stoney clay	94	130
Gray clay	130	223
Lime Stone	223	260

LOG # 150

Continue on back of sheet if necessary

Licensed Contractor Signature

102-000-78
License Number

(SEE REVERSE SIDE FOR ...)

11/95

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 222 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 219 ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 15 Ft. — Seepage Tile Field 75
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank 50 — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed Oct. 25, 1979
5. Permanent Pump Installed? Yes X Date ____ No ____
   Manufacturer Red Jacket Type Sub Location ____
   Capacity 10 gpm. Depth of Setting ____ Ft.
6. Well Top Sealed? Yes X No ____ Type Threaded
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Meyer Model Number SPK
   How attached to casing? Clamps on
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type galvanized
    Location basement
11. Water Sample Submitted? Yes ____ No X

REMARKS:

P316492

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Jon Funderburk Well No. ____
    Address RR 2 Maywood Ave Winthrop Harbor Ill.
    Driller Emil Olson License No. 102-70
11. Permit No. 91552 Date 10-12-79
12. Water from Limestone Formation 13. County Lake
    at depth 219 to 222 ft.
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
    Sec. 7 1/4
    Twp. 46N
    Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION, PLAT 100's 200'W, NE¼

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv steel	0'	219

16. Size Hole below casing: 4 in.
17. Static level 95 ft. below casing top which is 1 ft. above ground level. Pumping level 155 ft. when pumping at 7 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Black dirt	1'	1'
yellow clay	17'	18'
Blue clay	52'	70
hard pan	90	160'
Blue clay	20	180'
soapy blue clay	39	219
limestone	3	222

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Emil Olson DATE 11-3-79

LOG # 151

LOG # 152

STATE WATER SURVEY DATA

Date Sept 25 1930

Recorder W. S. Gerber

Authority Connell

Owner J R Connell City Benton Twp County Lake

When drilled _____ Contractor _____ Address _____

Location (give location from section corner if possible) _____

200' S. & 2100' W. NE cor. SE¼ Sec 7 T 44 N - R 12 E.

Elevation top of well U.S.G.S. Map. 743 Depth 140

Log Gravel well. Rock reported at 140' deep here

Soft as rain water. Sept. Suffer one noticed when water is warm

~~Casing record~~ perhaps a little iron. Sim. Thru, scale in kettle

Size hole _____

Were drill cuttings saved? ___ Were they sent to the State Geological Survey? ___ Distance to water when not pumping _____. After pumping at ___ gpm. for ___ hours. Reference point for above measurements

Type of pump _____ Distance to cylinder _____

Length of suction pipe below cylinder _____

Length stroke _____ Speed _____ Hours used per day _____

Type of power _____

Can following be measured: Water level not pumping _____ Pumping ___

Discharge _____ Influence on other wells _____

Temperature of water _____ Were water samples collected ____

Date _____ Analysis number _____ Effect of water on meters, hot water coils _____

Cost of well _____

p316488

White Copy – Ill. Dept. of Pu... Health
Yellow Copy – Well Contractor
Blue Copy – Water Owner

FILL IN ALL PERTINENT INFORMATION REQUEST... AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 615, STA... OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WA... SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 6 in. Depth 105 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. 5 in. Depth 102 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock_____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 24 Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Is water from this well to be used for human consumption?
   Yes ✓ No _____
4. Date well completed 1/2/74 1/2/74?
5. Permanent Pump Installed? Yes ✓ No _____
   Manufacturer Red Jacket Type _____
   Capacity 5 gpm. Depth of setting 21 ft.
6. Well Top Sealed? Yes ✓ No _____
7. Pitless Adaptor Installed? Yes _____ No _____
8. Well Disinfected? Yes _____ No _____
9. Water Sample Submitted? Yes _____ No _____

REMARKS:

P316489

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Ken Farrington Well No. _____
    Address [illegible]
    Driller Howes License No. _____
11. Permit No. NF 21175 Date 1/2/74
12. Water from gravel (Formation) 13. County Lake
    at depth 102 to 105 ft.
    Sec. 9.1E
    Twp. 46N
    Rge. 12E
    Elev. _____
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 25

SHOW LOCATION IN SECTION PLAT
50'N 50'W of SE/c NE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	Galv. [illegible]	0	102
	Plastic [illegible]		

16. Size Hole below casing: 5 in.
17. Static level 75 ft. below casing top which is _____ ft. above ground level. Pumping level 75 ft. when pumping at 30 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	18	18
Blue clay	84	102
gravel	3	105

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 1/5/74

LOG # 153

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 200 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 200 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

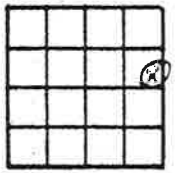
2. Distance to Nearest:
   Building 38 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 6/2/75
5. Permanent Pump Installed? Yes ✓ Date 6/5/75 No ____
   Manufacturer STA RITE Type SUBM Location ____
   Capacity 8 gpm. Depth of Setting 125 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type ____
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer Baker Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 82 gal. Type galv
    Location ____
11. Water Sample Submitted? Yes ✓ No ____

REMARKS:

P316490

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Bill Nikkila (Summit) Well No. ____
    Address 1037 E. Broadway, Winthrop Harbor
    Driller Hoover License No. 30
11. Permit No. 36081 Date 2/18/75
12. Water from gravel (Formation) 13. County Lake
    at depth 199 to 200 ft. Sec. 7. 18
14. Screen: Diam. — in. Twp. 46N
    Length: ____ ft. Slot ____ Rge. 12E
    Elev. ____



SHOW LOCATION IN SECTION PLAT
200'N 150'W SE/c NE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv T+C 14.81 PPF	0	200

16. Size Hole below casing: 5 in.
17. Static level 83 ft. below casing top which is / ft. above ground level. Pumping level 105 ft. when pumping at 10 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	90	90
gravel + clay	19	109
clay	49	158
gravel + clay	15	173
gravel	12	185
gravel + clay	5	190
gravel	5	195
gravel + clay	4	199
gravel	1	200

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED L. R. Hoover by DATE 6/19/75

LOG # 154

IDPH 4.065
1/74 – KNB-1

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 94 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____ in. Depth _____ ft.
   c. Drilled X. Finished in Drift X. In Rock _____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No_____
4. Date well completed 11/29/78
5. Permanent Pump Installed? Yes X Date 12/18/78 No_____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting 84 Ft.
6. Well Top Sealed? Yes X No_____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No_____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 42 gal. Type galv. w/float
    Location _____
11. Water Sample Submitted? Yes X No_____

REMARKS:

P316491

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner MIKE HYLAND Well No. Lot 4 No. Prairie Est.
    Address 2033 Galilee, Zion, IL.
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 74066 Date 5/9/78
12. Water from Sand-Gravel (Formation) 13. County Lake
    at depth 91 to 94 ft. Sec. 7 1/4
14. Screen: Diam. 5 in. Twp. 46N
    Length: 3 ft. Slot 10 Rge. 12E
    Elev. _____

SHOW LOCATION IN SECTION PLAT
100'W, 100'W, S1/4 NE

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	92
5			

16. Size Hole below casing: 5 in.
17. Static level _____ ft. below casing top which is _____ ft. above ground level. Pumping level _____ ft. when pumping at 3-4 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	10	10
Blue Clay	38	48
Gravel	2	50
Blue Clay	41	91
Sand - Gravel	3	94

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Gaffke DATE 2/23/79

LOG # 155

Well Address: same as above Lot: Subd:
Well Type: IRRIG - Irrigation Well
Water Bearing Formation: sandstone 1035 to 1100 ft
Static Water Level: 380 ft. below casing top of 1 ft. Hole Diam.: 8 in.
Pumping Level: ft. when pumping at 100 gpm for hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	8	A53 PE	0	220
	6	A53 PE	0	680

Driller's Log:			
	0 -	12	brown clay
	12 -	211	blue clay
	211 -	214	broken limestone
	214 -	430	limestone
	430 -	670	shale
	670 -	965	limestone
	965 -	980	sandstone
	980 -	1035	limestone
	1035 -	1100	sandstone

120973372300 Browning Ferris Industries 7-46N-12E
Lake Gross, Michael 2490'N line, 2790'W line,
Well Status: WATER - Water Well
Compdate: 08/21/1982 Plugdate: TD: 280
Elevation: Permit #: 103941 Permit Date: 06/28/1982
Latitude: 42.479419 Longitude: -87.872963
Owner Address: 2230 Ernest Krueger Circle Waukegan IL
Well Type: PRIV - Private Water Well
Water Bearing Formation: limestone 220 to 280 ft
Static Water Level: 80 ft. below casing top of 1 ft. Hole Diam.: 5 in.
Pumping Level: 155 ft. when pumping at 20 gpm for hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	5	BLK STEEL	0	220

Size hole below casing: 5 in.

Driller's Log:			
	0 -	15	yellow clay
	15 -	120	blue clay
	120 -	165	blue hardpan
	165 -	220	red hardpan
	220 -	280	limestone

LOG # 156

120973411000 Cecos International 7-46N-12E
Lake Hoover, Lonny R. 300'S line, 150'W line, SE NW SW
Well Status: WATER - Water Well
Compdate: 10/11/1985 Plugdate: TD: 171
Elevation: Permit #: 110736 Permit Date: 12/05/1983
Latitude: 42.476336 Longitude: -87.88042
Owner Address: 42575 N. Green Bay Rd. Zion IL
Well Type: COMM - Water Well for Commercial Operation
Water Bearing Formation: sand 165 to 171 ft
Static Water Level: 85 ft. below casing top of 1 ft. Hole Diam.: 5 in.
Screen Diam.: 5 in. Screen Length: 4 ft. Slot: 8.00
Pumping Level: 135 ft. when pumping at 6 gpm for 2 hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	5	ASTM A-53 T&C 15#/FT	0	117

Size hole below casing: 5 in.

Driller's Log:			
	0 -	17	clay

17 -	101	hardpan
101 -	106	sand & gravel
106 -	118	clay
118 -	165	hardpan
165 -	171	sand

120972414900 Farrington, Ken 7-46N-12E
Lake Hoover, L. R. 50'S line, 50'E line, NE
Well Status: WATER - Water Well
Compdate: 01/02/1974 Plugdate: TD: 105
Elevation: Permit #: Permit Date: 10/02/1973
Latitude: 42.479127 Longitude: -87.864281
Owner Address: 416 Oak Shore Dr. Winthrop Harbor IL
Well Type: PRIV - Private Water Well
Water Bearing Formation: gravel 102 to 105 ft
Static Water Level: 75 ft. below casing top of 1 ft. Hole Diam.:
Screen Diam.: 5 in. Screen Length: 3 ft. Slot: 25.00
Pumping Level: 75 ft. when pumping at 30 gpm for hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	5	GALV T&C 14.81#/'	0	102

Size hole below casing: 5 in.

Logs Run: Driller's Log

Driller's Log:			
0 -	18	yellow clay	
18 -	102	blue clay	
102 -	105	gravel	

.0973372400 Funderburk, Jim 7-46N-12E
Lake Gross, Emil E. 100'N line, 200'E line,
Well Status: WATER - Water Well
Compdate: 10/25/1979 Plugdate: TD: 222
Elevation: Permit #: 90592 Permit Date: 10/12/1979
Latitude: 42.485908 Longitude: -87.864827
Owner Address: 505 Russell Ave. Winthrop Harbor IL
Well Type: PRIV - Private Water Well
Water Bearing Formation: limestone 219 to 222 ft
Static Water Level: 95 ft. below casing top of 1 ft. Hole Diam.: 4 in.
Pumping Level: 155 ft. when pumping at 7 gpm for hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	4	GALV STEEL	0	219

Size hole below casing: 4 in.

Driller's Log:			
0 -	1	black dirt	
1 -	18	yellow clay	
18 -	70	blue clay	
70 -	160	hardpan	
160 -	180	blue clay	
180 -	219	sandy blue clay	
219 -	222	limestone	

120972667800 Hyland, Mike 7-46N-12E
Lake Gaffke, George E. 100'S line, 100'E line, NE
Well Status: WATER - Water Well
Compdate: 11/29/1978 Plugdate: TD: 94
Elevation: Permit #: Permit Date: 05/09/1978
Latitude: 42.479264 Longitude: -87.864467

ILLINOIS STATE GEOLOGICAL SURVEY

LOG # 157

Private Water Well	Top	Bottom
fill & top soil	0	1
yellow clay	1	12
blue clay	12	20
hardpan	20	26
blue clay	26	90
hardpan	90	106
sand & gravel	106	112
Total Depth		112

Casing: 5" ASTM A-53 15#/FT from 0' to 109'

Screen: 3' of 5" diameter 10 slot
Grout: CLAY SLURRY from 0 to 20.
Size hole below casing: 5"

Water from sand at 106' to 112'.
Static level 88' below casing top which is 1' above GL
Pumping level 88' when pumping at 10 gpm for 2 hours

Permanent pump installed at 98' on March 8, 1994, with a capacity of 8 gpm

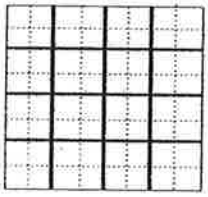
Additional location info: Lot: Subdivision: PIN #04-07-200-021

Address of well: 12674 N. Kenosha Rd.
Zion, IL

Location source: Location from permit

Permit Date: March 2, 1994 **Permit #:**

COMPANY Boyce, Kenneth D.
FARM Kielbasa, Paul
DATE DRILLED March 5, 1994 **NO.**
ELEVATION 0 **COUNTY NO.** 38149
LOCATION SE SE NE
LATITUDE 42.479895 **LONGITUDE** -87.865297
COUNTY Lake **API** 120973814900 **7 - 46N - 12E**



le

P 250757

LOG # 158

STATE WATER SURVEY DATA.

Date Sept 25 1930

Recorder H.S. Fisher

Authority C.A. Foreman

Owner C.A. Foreman City Burton Iowa County Lake

When drilled _____ Contractor _____ Address _____

Location (give location from section corner if possible(_____

200' E & 2405' N of SW cor NW¼ Sec 8 T46N-R12E

Elevation top of well U.S.G.S. Map T42 Depth 220'

Log No sulfur No iron Water is soft. a little bi-carb soda is sufficient to soften. Water used by all purchasers

Casing record

Mr Foreman says 180' to first rock. Five feet under this strata. Coarse rock found at 220'. Get water in that.

Size hole _____

Were drill cuttings saved? ___ Were they sent to the State Geological Survey? ___ Distance to water when not pumping _____. After pumping at ____ gpm. for ___ hours. Reference point for above measurements _____.

Type of pump _____ Distance to cylinder _____

Length of suction pipe below cylinder _____

Length stroke _____ Speed _____ Hours used per day _____

Type of power _____

Can following be measured: Water level not pumping _____ Pumping ___

Discharge _____ Influence on other wells _____

Temperature of water _____ Were water samples collected ___

Date _____ Analysis number _____ Effect of water on meters, hot water coils _____

Cost of well _____

p316547

Blackwell location

LOG # 159

STATE WATER SURVEY DATA.

Date Oct 24 1930

Recorder H. D. Gerber

Authority J. H. Ferguson

Owner Fred Korner City Burton Twp. County Lake

When drilled ____ Contractor J. H. Ferguson Address Zion

Location (give location from section corner if possible) ____

Section 8 - 46 - 12 200 W 800' N - 46 Cor Sec 8.

Elevation top of well 11 ft Above Map 690 Depth 180'.

Log 155' to rock Gulfer.

Casing record ____

Size hole ____

Were drill cuttings saved? ___ Were they sent to the State Geological Survey? ___ Distance to water when not pumping ____. After pumping at ___ gpm. for ___ hours. Reference point for above measurements ____

Type of pump ____ Distance to cylinder ____

Length of suction pipe below cylinder ____

Length stroke ____ Speed ____ Hours used per day ____

Type of power ____

Can following be measured: Water level not pumping ____ Pumping ___

Discharge ____ Influence on other wells ____

Temperature of water ____ Were water samples collected ___

Date ____ Analysis number ____ Effect of water on meters, hot water coils ____

Cost of well ____

P316948

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
      Curb material ____. Buried Slab: Yes____No____
   b. Driven ____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift X. In Rock____.
      Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

2. Distance to Nearest:
   Building 30 Ft. Seepage Tile Field 75
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 108 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 11/25/85
5. Permanent Pump Installed? Yes X Date 12/3/85 No____
   Manufacturer SIMPLEX Type SUB Location ____
   Capacity 4 gpm. Depth of Setting 130 Ft.
6. Well Top Sealed? Yes X No____ Type ____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer WILLIAMS Model Number B50AR
   How attached to casing? ____
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 42 gal. Type PRESSURE
    Location CRAWL SPACE
11. Water Sample Submitted? Yes____ No X

REMARKS: County #37803

P316550

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BOB MIDDLETON Well No. ____
    Address 43323 OAK CREST LANE
    Driller KEN BOYCE License No. DRD-0006553
11. Permit No. 26573 Date 11/15/85
12. Water from SAND Formation
    at depth 139 to 141 ft.
13. County LAKE
    Sec. 8
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 12
15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-120	0	138
	T&C		
	15 lbs PER FOOT		

SHOW LOCATION IN SECTION PLAT
Lot #53 Block #63 E.W. Bartlett's 2nd Shore Acres Shore Addition SW

16. Size Hole below casing: 5 in.
17. Static level 103 ft. below casing top which is 1 ft. above ground level. Pumping level 115 ft. when pumping at 5 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
FILL DIRT	2	2
YELLOW CLAY	13	15
BLUE CLAY	57	72
HARD PAN	6	78
MEDIUM SAND	19	97
HARD PAN	41	138
SAND	3	141

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 12/4/85

LOG # 160

IDPH 4.065

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift____. In Rock X.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

2. Distance to Nearest:
   Building 30 Ft. Seepage Tile Field 80
   Cess Pool____ Sewer (non Cast Iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank 65 Barnyard____
   Leaching Pit____ Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed____
5. Permanent Pump Installed? Yes X Date____ No____
   Manufacturer STARITE Type SUB Location____
   Capacity 4 gpm. Depth of Setting 160 Ft.
6. Well Top Sealed? Yes X No____ Type____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer WILLIAMS Model Number B50AC
   How attached to casing?____
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 42 gal. Type AIR BLADDER
    Location CRAWL SPACE
11. Water Sample Submitted? Yes____ No X

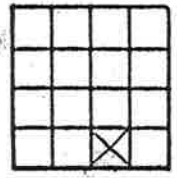
REMARKS:
County #27869

P316551

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner ROBERT MIDDLETON Well No.____
    Address 43327 OAK CREST LANE ZION
    Driller KEN BOYLE License No. 092-006808
11. Permit No. 121902 Date 12/27/85
12. Water from LIMESTONE Formation 13. County LAKE
    at depth 167 to 170 ft. Sec. 8
14. Screen: Diam.____in. Twp. 46N
    Length:____ft. Slot____ Rge. 12E
    Elev.____



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	ASTM A-120 T/C	0	167
	VSCO		
	15 lbs PER FOOT		

SHOW LOCATION IN SECTION PLAT
Lot #54 Block #64 F.H. Bartlett's North Shore Acres Third Addition SW SE

16. Size Hole below casing: 5 in.
17. Static level____ft. below casing top which is 1 ft. above ground level. Pumping level____ft. when pumping at 5 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
BLACK DIRT	2	2
YELLOW CLAY	10	12
GRAVEL	3	15
BLUE CLAY	60	75
HARD PAN	4	79
MOIST SAND	21	100
HARD PAN	28	128
SAND	6	134
BLUE CLAY	31	165
RUBBLE LIMESTONE	3	168
		170

(CONTINUED ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 12/18/86

LOG # 161

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____in. Depth ____ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____in. Depth ____ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.).	TO (Ft.)
CLAY SLURRY	0	30

2. Distance to Nearest:
   Building 40 Ft. Seepage Tile Field 75
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 65 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 2/15/86
5. Permanent Pump Installed? Yes Y Date 2/15/86 No ____
   Manufacturer STUART Type SUB Location ____
   Capacity 8 gpm. Depth of Setting 185' Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer WILLIAMS Model Number B50 AC
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type AMT BLADDER
    Location IN BASEMENT
11. Water Sample Submitted? Yes X No X

REMARKS:

County # 27832

P316553

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner LEHMAN CONSTRUCTION Well No. ____
    Address 14970 W. 21ST ST LYONSWORTH IL 60083
    Driller KEN BOYCE License No. 092-006805
11. Permit No. 121659 Date 11/27/86
12. Water from LIMESTONE (Formation) 13. County LAKE
    at depth 181 to 186 ft.
14. Screen: Diam. ____in.
    Length: ____ft. Slot ____
    Sec. 8
    Twp. 46N
    Rge. 12E
    Elev. ____
15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	ASTM A-120	0	181
	T/C USPCO		
	15 LBS PER FT		

SHOW LOCATION IN SECTION PLAT
Lot # M, Block #63 E.H. Bartlett's North Shore Acres Third Addition SW

16. Size Hole below casing: 5 in.
17. Static level 85 ft. below casing top which is 1 ft. above ground level. Pumping level 110 ft. when pumping at 7 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
BLACK DIRT	2	2
YELLOW CLAY	10	12
GRAVEL	2	14
BLUE CLAY	64	78
HARD PAN	63	141
SANDY GRAVEL	2	143
HARD PAN	38	180
RUBBLE	1	181
LIMESTONE	5	186

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 2/24/86

LOG # 162

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift X. In Rock____.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	70

2. Distance to Nearest:
   Building 40 Ft. Seepage Tile Field 85
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank 75 Barnyard____
   Leaching Pit____ Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 8/28/86
5. Permanent Pump Installed? Yes X Date 8/29/86 No____
   Manufacturer STAMITE Type SUB Location____
   Capacity 8 gpm. Depth of Setting 90 Ft.
6. Well Top Sealed? Yes X No____ Type____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer WILLIAMS Model Number B50AC
   How attached to casing?____
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 80 gal. Type AMERICA
    Location UTILITY ROOM
11. Water Sample Submitted? Yes____ No X

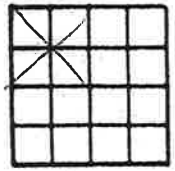
REMARKS: County #28408

316554

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner DENNIS McCRORAY Well No.____
    Address 7606 BEACH ROAD ~~UNINCORPORATED~~ IL 60099
    Driller KEN BOYLE License No. 092-006408
11. Permit No. 125256 Date 7/16/86
12. Water from SAND Formation 13. County LAKE
    at depth 105 to 109 ft. Sec. 8
14. Screen: Diam. 5 in. Twp. 46N
    Length: 4 ft. Slot 10 Rge. 12E
    Elev.____



SHOW LOCATION IN SECTION PLAT
Lot #34 North Prairie Estates, NW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	ASTM A-120 T/C	0	105
	VSPCC		
	15 LBS PER FT.		

16. Size Hole below casing: 5 in.
17. Static level 60 ft. below casing top which is 1 ft. above ground level. Pumping level 109 ft. when pumping at 10 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
BLACK DIRT & FILL	3	3
YELLOW CLAY	15	18
BLUE CLAY	49	67
HARDPAN	38	105
SAND	4	109

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyle DATE 8/29/86

LOG # 163

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRIL[illegible]RS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift X. In Rock____.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

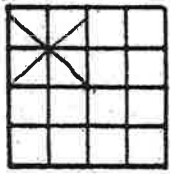
2. Distance to Nearest:
   Building 20 Ft. Seepage Tile Field 80
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank 70 Barnyard____
   Leaching Pit____ Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 11/27/87
5. Permanent Pump Installed? Yes X Date 12/1/87 No____
   Manufacturer RED JACKET Type SUB Location____
   Capacity 10 gpm. Depth of Setting 180 Ft.
6. Well Top Sealed? Yes X No____ Type____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer WILLIAMS Model Number B50ACUS
   How attached to casing?____
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 80 gal. Type AIR BLADDER
    Location BASEMENT
11. Water Sample Submitted? Yes____ No X

REMARKS:

P316555 Co. # 29269

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner CAL SCHNEIDER (BUILDER) Well No.____
    Address 2606 BEACH ROAD WAUKEGAN, IL. 60087
    Driller KEN BOYCE License No. D92-006808
11. Permit No. 130093 Date 3/23/87
12. Water from SAND (Formation) 13. County LAKE
    at depth 190 to 197 ft. Sec. 8.
14. Screen: Diam. 5 in. Twp. 46N
    Length: 3 ft. Slot 10 Rge. 12E
    Elev.____



SHOW LOCATION IN SECTION PLAT
Lot 55, North Prairie Est. NW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-120	0	194
	T&C USPCO		
	15 lbs PER FT		

16. Size Hole below casing: 5 in.
17. Static level 95 ft. below casing top which is 1 ft. above ground level. Pumping level 125 ft. when pumping at 60 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
FILL & BLACK DIRT	2	2
YELLOW CLAY	15	17
BLUE CLAY	81	98
HARDPAN	5	103
GRAVEL	41	144
BLUE CLAY	54	190
SAND	7	197

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 12/2/87

LOG # 164

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLER

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift X. In Rock____.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

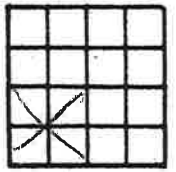
2. Distance to Nearest:
   Building 40 Ft. Seepage Tile Field 75
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank 65 Barnyard____
   Leaching Pit____ Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 11/29/86
5. Permanent Pump Installed? Yes X Date 11/29/86 No____
   Manufacturer DELTA Type SUB Location____
   Capacity 10 gpm. Depth of Setting 90 Ft.
6. Well Top Sealed? Yes X No____ Type____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer WILLIAMS Model Number B50AC
   How attached to casing?____
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 80 gal. Type AIR CHARGER
    Location CRAWL SPACE
11. Water Sample Submitted? Yes____ No X

REMARKS: County # 28872

P316556

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner WILLIAM NIKKILA Well No.____
    Address 421 HH FOSSLAND AVE ZION IL. 60099
    Driller KEN BOYCE License No. 092-006908
11. Permit No. 128429 Date 11/25/86
12. Water from SAND (Formation)
    at depth 87 to 94 ft.
13. County LAKE
    Sec. 8
    Twp. 46N
    Rge. 12E
    Elev.____
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 10



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	ASTM A-120 T/C	0	91
	USPCO		
	15 lbs PER FOOT		

SHOW LOCATION IN SECTION PLAT
Lot 2 Block 1 63
F. H. Bartlett's Beach Shore Tract
Lloyd Addn. SW

16. Size Hole below casing:____in.
17. Static level 63 ft. below casing top which is____ft. above ground level. Pumping level 63 ft. when pumping at 20 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
YELLOW CLAY		8
BLUE CLAY		58
GRAY SAND		63
HARDPAN		84
BLUE CLAY		87
SAND		94

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 12/3/86

LOG # 165

IDPH 4.065
1/74 – KNB-1

Ill. : of Public Health
Yellow : Well Contractor
Golden Copy: Well Owner

ISD# ~~89-03-1965~~
P.I.N. ~~#04-05-303-009~~

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

RECEIVED
OCT 15 1990
ENVIRONMENTAL HEALTH DIVISION

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Clay Slurry	0	20

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 10/5/90
4. Permanent pump installed? Yes X Date 10/11/90 No___
   Manufacturer DECTA Type 548
   Location
   Capacity 8 gpm. Depth of setting 88 ft.
5. Well top sealed? Yes X No___ Type
6. Pitless adapter installed? Yes X No___
   Manufacturer WILLIAMS Model No. B50ACW
   How attached to casing?
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller BEACH PUMP & WELL License No. 092-006808
10. Well Site Address HAYNER AVE ZION, IL. 60099
11. Property Owner ROLAND RUNYON Well No.
12. Permit No. ISD 90-03-0087 Date Issued 1/31/90
13. Location: County LAKE
    Sec. 8
    Twp. 46N
    Rge. 12E

Show location in section plat

14. Water from SAND at depth 88 ft to 94 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5	ASTM A-120	0	91
	T/C TOI		
	15 lbs PER FT		

16. Screen: Diam. 5 in, Length 3 in, Slot Size 10
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 58 ft below casing top which is 1 ft. above ground level. Pumping level 60 ft, pumping 11 gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
TOP SOIL	0	1
SAND	1	4
YELLOW CLAY	4	14
BLUE CLAY	14	88
SAND	88	94

LOG # 166

Continue on separate sheet if necessary.

Signed Kenneth D. Boyce Date 10/10/90

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 80 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven____. Drive Pipe Diam. 5 in. Depth 80 ft.
   c. Drilled ✓. Finished in Drift____. In Rock ✓.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 110 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No____
4. Date well completed 3-9-77
5. Permanent Pump Installed? Yes ✓ Date 3-10-77 No____
   Manufacturer Sta Rite Type Subm. Location ____
   Capacity 8 gpm. Depth of Setting 63 x 10 Ft.
6. Well Top Sealed? Yes ✓ No____ Type Pitless adapter
7. Pitless Adapter Installed? Yes ✓ No____
   Manufacturer Bakar Model Number SP4C02E
   How attached to casing? Approved manner
8. Well Disinfected? Yes ✓ No____
9. Pump and Equipment Disinfected? Yes ✓ No____
10. Pressure Tank Size 82 gal. Type galv.
    Location ____
11. Water Sample Submitted? Yes____ No____

REMARKS:

P316557

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Charles Davidson Well No. ____
    Address 1112 Dr. Broadway, Winthrop Harbor
    Driller Hoover License No. 102-78
11. Permit No. 57356 Date 3-3-77
12. Water from Limestone Formation 13. County Lake
    at depth 62 to 150 ft.
14. Screen: Diam. ___ in.
    Length: ____ ft. Slot ____
    Sec. 8 NW
    Twp. 46N
    Rge. 12E
    Elev. ____

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv. T&C	0	80
	14.81 ppf		

SHOW LOCATION IN SECTION PLAT
200'N, 250'E of S/C, NE SE SE

16. Size Hole below casing: 5 in.
17. Static level 60 ft. below casing top which is 1 ft. above ground level. Pumping level 68 ft. when pumping at 9 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	18	18
Blue clay	44	62
Gravel & clay	88	150
Limestone	–	150

LOG # 167

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Donny L. Hoover DATE 3-18-77
ew

Ill. Dept. Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
      Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Clay Slurry	0	20

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 8/11/92
4. Permanent pump installed? Yes X Date 8/12/92 No___
   Manufacturer OLIVA Type SUBM
   Location
   Capacity 8 gpm. Depth of setting 74 ft.
5. Well top sealed? Yes X No___ Type
6. Pitless adapter installed? Yes X No___
   Manufacturer Williams Model No. B50AC
   How attached to casing?
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

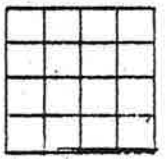
PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

P- 1201420

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller BEACH PUMP & WELL License No. 093-006808
10. Well Site Address 3703 11TH ST ZION, IL. 60099
11. Property Owner RICK WOODS Well No.
12. Permit No. ISD92-03-0028 Date Issued 7/23/92
13. Location: County LAKE
F. H. Bartletts North Shore Acres Subdn
Sec. 8 1b
Twp. 46N
Rge. 12E



Show location in section plat
NESESE
private

14. Water from SAND at depth 73 ft to 77 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5	ASTM A-53	0	74
	T/C TOI		
	15 lbs PER FT		

16. Screen: Diam. 5 in, Length 3' in, Slot Size 10
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 52 ft below casing top which is 1 1/2 ft. above ground level. Pumping level 52 ft, pumping 8 gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
FILL & BLACK DIRT	0	3
YELLOW CLAY	3	20
BLUE CLAY	20	73
SAND	73	77

Continue on separate sheet if necessary.

Signed Kenneth D. Boone Date 8/13/92

LOG # 168

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, HEALTH PROTECTION, ENVIRONMENTAL HEALTH, 525 WEST JEFFERSON, SPRINGFIELD, ILLINOIS 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____ in. Depth ____ ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

2. Distance to Nearest:
   Building 35 Ft. Seepage Tile Field 80
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 70 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 6/1/89
5. Permanent Pump Installed? Yes X Date 6/5/89 No ____
   Manufacturer DELTA Type SUB Location ____
   Capacity 8 gpm. Depth of Setting 70 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer WILLIAMS Model Number B50ACUS
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type GALV
    Location BASEMENT
11. Water Sample Submitted? Yes X No ____

REMARKS:

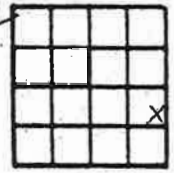
RECEIVED
JUN 08 1989

IDPH 4.065
KNB-1

IL 482-0126 DIVISION OF ENVIRONMENTAL HEALTH

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner MICHAEL BRAIM Well No. ____
    Address 3713 11TH ST WINTHROP HARBOR IL. 60096
    Driller KEN BOYCE License No. 082-000802
11. Permit No. 010308 Date 4/3/89
12. Water from SAND (Formation)
    at depth 71 to 76 ft.
13. County LAKE
    Sec. 08.1
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 12



SHOW LOCATION IN SECTION PLAT
SE, NE, SE

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-53	0	73
	T/C TOI		
	15 lbs PER FT		

16. Size Hole below casing: 5 in.
17. Static level 52 ft. below casing top which is 1 ft. above ground level. Pumping level 52 ft. when pumping at 15 gpm for 1 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
BLACK DIRT	2	2
YELLOW CLAY	14	16
BLUE CLAY	55	71
SAND	5	76

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 6/5/89

LOG # 169

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 76 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven_____. Drive Pipe Diam. _____in. Depth _____ft.
   c. Drilled X. Finished in Drift X. In Rock _____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No _____
4. Date well completed 8/24/79
5. Permanent Pump Installed? Yes X Date 8/27/79 No _____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting _____ Ft.
6. Well Top Sealed? Yes X No _____ Type _____
7. Pitless Adapter Installed? Yes X No _____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No _____
9. Pump and Equipment Disinfected? Yes X No _____
10. Pressure Tank Size 42 gal. Type galv.
    Location _____
11. Water Sample Submitted? Yes X No _____

REMARKS:

p316558

IDPH 4.065
1/74 – KNB-1
(59571—12.5M Sets—6-74)

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner ED OSBORN Well No. _____
    Address 508 Whitney, Winthrop Harbor, Il
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 87505 Date 7/10/79
12. Water from Gravel (Formation) 13. County Lake
    at depth 70 to 76 ft. Sec. 8 NE
    14. Screen: Diam. 5 in. Twp. 46N
    Length: 3 ft. Slot 15 Rge. 12E
    Elev. _____

SHOW LOCATION IN SECTION PLAT
150'N, 125'W, SE/c NE SE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC 2	abv.grd.	73

16. Size Hole below casing: 5 in.
17. Static level 50 ft. below casing top which is 1 ft. above ground level. Pumping level _____ ft. when pumping at 10 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top Soil	2	2
Blue	17	19
Sand & Gravel	7	26
Blue Clay	44	70
Gravel	6	76

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Gaffke DATE 12/20/79

LOG # 170

Copy – Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 120 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 117 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 10 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 7-1-77
5. Permanent Pump Installed? Yes ✓ Date 7-14-77 No ____
   Manufacturer Sta Rite Type Sub. Location ____
   Capacity 13 gpm. Depth of Setting 84 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type Pitless adapter
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 82 gal. Type galv.
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

p316559

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Joe Rushforth Well No. ____
    Address 915 Fulton St. Winthrop Harbor
    Driller D. L. Hoover License No. 102-78
11. Permit No. 57324 Date 3-3-77
12. Water from Sand & gravel (Formation) 13. County Lake
    at depth 105 to 120 ft.
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot #20
    Sec. 8 2b
    Twp. 46 N
    Rge. 12 E
    Elev. ____

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	New Galv. T&C	0	117
	14.81 ppf		

SHOW LOCATION IN SECTION PLAT
100W, 2SSW, SEC, W SE SE

16. Size Hole below casing: 4 in.
17. Static level 60 ft. below casing top which is 1 ft. above ground level. Pumping level 60 ft. when pumping at 20 gpm for 3 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay & hardpan	65	65
Sand	3	68
Hardpan	24	92
Sand	3	95
Hardpan	10	105
Sand & gravel	15	120

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Donny L. Hoover / Regn. DATE 9-19-77

LOG # 171

Ill. Dept. of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 4 in. Depth 194 ft
      Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam. 4 in. Depth 191 ft
   c. Drilled x Finished in Drift____ In Rock x
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Well furnishes water for human consumption? Yes x No___
3. Date well drilled May 3, 1990
4. Permanent pump installed? Yes x Date_____ No___
   Manufacturer Aeromotor Type subm
   Location well
   Capacity _____ gpm. Depth of setting 160 ft.
5. Well top sealed? Yes x No___ Type Merrill
6. Pitless adapter installed? Yes x No___
   Manufacturer Merrill Model No. Spk
   How attached to casing? Clamp on
7. Well disinfected? Yes x No___
8. Pump and equipment disinfected Yes x No___

RS

IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

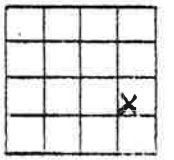
PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

0 23021 7

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Michael Gross License No. 102-00208
10. Well Site Address 42263 N. Broecker, Zion, IL
11. Property Owner Lake Co. Construction Well No.____
12. Permit No. 89-03-1564 Date Issued 4-25-90
13. Location: County Lake
    Sec. 8 .2C
    SW¼ of the NE¼ of the SE ¼ Twp. 46N
    Rge. 12E



Show location in section plat

SW, NE, SE

14. Water from limestone at depth 191 ft to 194 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
4"	galv steel	0	191
	11#		

7 gpm @ 14

16. Screen: Diam.___in, Length___in, Slot Size___
17. Size hole below casing 4 in. 18. Ground Elev._____ ft msl.
19. Static level 85 ft below casing top which is 1 ft. above ground level. Pumping level 140 ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
yellow clay	14	14
blue clay & gravel	31	45
hard pan	75	120
sandy blue clay	20	140
blue clay	45	185
sandy blue clay	6	191
limstone	3	194

LOG # 172

Continue on separate sheet if necessary.

Signed Michael Gross Date 5-23-90

Ill. ... t. of Public Health
Yellow ... y: Well Contractor
Golden ... y: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 4 in. Depth 125 ft
   Buried Slab: Yes__ No__
   b. Driven____ Drive Pipe Diam. 4 in. Depth 123 ft
   c. Drilled x Finished in Drift x In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Well furnishes water for human consumption? Yes x No___
3. Date well drilled November 17, 1989
4. Permanent pump installed? Yes x Date_____ No___
   Manufacturer_____ Type subm
   Location well
   Capacity _____gpm. Depth of setting 120 ft.
5. Well top sealed? Yes x No___ Type Merrill
6. Pitless adapter installed? Yes x No___
   Manufacturer Merrill Model No. SPK
   How attached to casing? clamp on
7. Well disinfected? Yes x No___
8. Pump and equipment disinfected Yes x No___

RS

IMPORTANT NOTICE

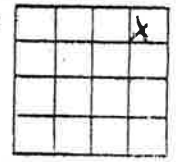
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Michael Gross License No. 102-002086
10. Well Site Address 42314 N. Fossland, Zion, Illinoi
11. Property Owner Billy Brown Well No.____
12. Permit No. 13786 Date Issued 8-14-89
13. Location: County Lake
SW¼ of the NE¼ of the NE ¼ Sec. 08.2g Twp. 46N Rge. 12E



Show location in section plat
Sw, ne, ne

14. Water from gravel at depth 121 ft to 125 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
4"	galv. steel	0	123
	11#		

9 gpm @120'

16. Screen: Diam. 4 in, Length 3'7in, Slot Size 15
17. Size hole below casing 4 in. 18. Ground Elev._____ ft msl.
19. Static level 70ft below casing top which is 1 ft. above ground level. Pumping level 120ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
yellow clay	19	19
blue clay	36	55
blue clay and gravel	64	119
dirty gravel	2	121
gravel	4	125

LOG #173

Continue on separate sheet if necessary.

Signed Michael Gross Date 12-14-89

White Copy – Illinois Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 71 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. 5 in. Depth 68 ft.
   c. Drilled X. Finished in Drift X. In Rock _____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 65 Ft. — Seepage Tile Field _____
   Cess Pool _____ — Sewer (non Cast Iron) _____
   Privy _____ — Sewer (Cast iron) _____
   Septic Tank _____ — Barnyard _____
   Leaching Pit _____ — Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed November 11, 1978
5. Permanent Pump Installed? Yes X Date 12/21/78 No____
   Manufacturer Sta-Rite Type Subm. Location _____
   Capacity 8 gpm. Depth of Setting 42 Ft.
6. Well Top Sealed? Yes X No____ Type Pitless adapter
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes X No_____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 82 gal. Type Galvanized
    Location _____
11. Water Sample Submitted? Yes_____ No_____

REMARKS:

P316560

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner ROBERT ARIVETT Well No. _____
    Address 4104 West 13th Street, Winthrop Harbor
    Driller Lonny R. Hoover License No. 102-783
11. Permit No. 81599 Date November 3, 1978
12. Water from Coarse sand (Formation) 13. County Lake
    at depth 69 to 71 ft.
14. Screen: Diam. 5 in.
    Length: 3½ ft. Slot #20
    Sec. 8, 3a
    Twp. 46N
    Rge. 12E
    Elev. _____

SHOW LOCATION IN SECTION PLAT
50'N 75'E, SW/c SESWSE

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	Galvanized T&C	0	68
	14.81 PPF		

16. Size Hole below casing: 5 in.
17. Static level 49 ft. below casing top which is 1 ft. above ground level. Pumping level 49 ft. when pumping at 25 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top soil	15	15
Gray clay	54	69
Coarse sand	2	71

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R Hoover Legs. DATE 2/2/79

LOG # 174

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO OWNERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 198 ft.
      Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
      Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 2/23/78
5. Permanent Pump Installed? Yes X Date 3/3/78 No ____
   Manufacturer Red Jacket Type subm. Location ____
   Capacity 10 gpm. Depth of Setting 120 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Williams Model Number ____
   How attached to casing? clamp
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type Well-X-Trol
    Location ____
11. Water Sample Submitted? Yes X No ____

REMARKS:

P316561

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. 4801 11th St.
    Address 1015 Shiloh Blvd., Zion, IL.
    Driller JOHN P. LICHTER License No. 102-6
11. Permit No. 70072 Date 12/8/77
12. Water from limestone Formation 13. County Lake
    at depth 176 to 198 ft. Sec. 8 T36
14. Screen: Diam. ____ in. Twp. 46N
    Length: ____ ft. Slot ____ Rge. 12E
    Elev. ____

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	166
5	Black Steel	166	178

SHOW LOCATION IN SECTION PLAT
125'S, 175'E, NW/C, NE SW SE

16. Size Hole below casing: 5 in.
17. Static level 85 ft. below casing top which is 1 ft. above ground level. Pumping level ____ ft. when pumping at 8-10 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	16	16
Blue Clay	79	95
Blue Clay - Gravel	45	140
Hard Pan	36	176
Limestone	22	198

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED J Lichter DATE 6/30/78

LOG # 175

hite Copy – Ill. Dept. of Public He
llow Copy – Well Contractor
lue Copy – Well Owner

INSTRUCTIONS TO DRILL[illegible]

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 103 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 101 ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 65 Ft. Seepage Tile Field 75*
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast Iron) ____
   Septic Tank 50 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 7-9-84
5. Permanent Pump Installed? Yes X Date ____ No ____
   Manufacturer [illegible] Type Jet Location ____
   Capacity 10 gpm. Depth of Setting 80 Ft.
6. Well Top Sealed? Yes X No ____ Type Merrill
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Merrill Model Number SPK
   How attached to casing? clamp on
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type Captive air
    Location basement
11. Water Sample Submitted? Yes ____ No X

REMARKS:

P316562

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Roger Laflamme Well No. ____
    Address 3017 Ninth St Winthrop Harbor Ill.
    Driller Michael Gross License No. 102-002086
11. Permit No. 112246 Date 5-9-84
12. Water from sand (Formation)
    at depth 98 to 103 ft.
13. County Lake
    Sec. 8.36
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot # 10

SHOW LOCATION IN SECTION PLAT
100'N & 50'E of the SW/c
NE SW SE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv. steel 11#	0'	101'

16. Size Hole below casing: 4 in.
17. Static level 55 ft. below casing top which is 1 ft. above ground level. Pumping level 60 ft. when pumping at 11 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top Soil	1	1'
Yellow Clay	17	18'
Blue Clay	52	70'
Hard Pan	28	98'
Sand	5	103'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Michael Gross DATE 9-6-84

LOG # 176

WATER WELL CONSTRUCTION REPORT

State ID 097-1067-02 Date 12-16-02

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____ in. Depth _____ ft.
b. **Bored** Well Buried Slab [ ] Yes [ ] No
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.
c. **Drilled** Well PVC casing Formation packer set at depth of _____ ft.
Hole Diameter ____ in. to _____ ft. ____ in. to _____ ft. ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

d. **Drilled** Well **Steel** Casing - - - Mechanically Driven [X] Yes [ ] No
Hole Diameter 8 in. to 10 ft. 4 in. to 76 ft. ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
CLAY SLURRY			0	65	

e. Well finished within [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack Grain Size/Supplier # From (ft.) To (ft.)

2. Well Use [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock [ ] Monitoring [ ] Other
3. Date Well Completed 12-17-02 Well Disinfected [X] Yes [ ] No
Driller's estimated well yield 30 gpm
4. Date Permanent Pump Installed 12-19-02
5. Pump Capacity 12 gpm Set at (depth) 72 ft.
6. Pitless Adapter Model and Manufacturer SMCK 410 MERRILL
7. Well Cap Type and Manufacturer WATERTITE VENTED CAP
8. Pressure Tank Working Cycle 10 gals. Captive Air [ ] Yes [X] No
9. Pump System Disinfected [X] Yes [ ] No
10. Name of Pump Company E.E. GROSS WELL DRILLING
11. Pump Installer MICHAEL GROSS License # 102-000086
12. Michael Gross License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

COH# 47933
P-347541

DO NOT write on these lines

2003 Received Environmental Health Services

IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. **DISCLOSURE OF THIS INFORMATION IS MANDATORY.** This form has been approved by the Forms Management Center.

GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner ROBERT ARNETT Well # 2
14. Driller TOM WACHHOLDER License # 092-008101
15. Name of Drilling Co. WACHHOLDER WELL DRILLING
16. Permit No. WN-02-03-1067 Date Issued 11-18-02
17. Date Drilling Started 12-16-02
18. Well SITE address 4202 13TH ST WINTHROP HARBOR
19. Township Name _____ Land ID # 04-08-402-026
20. Subdivision Name NORTH SHORE ACRES Lot # W 140' BLK 84
21. Location a. County LAKE
b. Township 46 Range 12 Section 8.4a
c. SW Quarter SW Quarter SE Quarter
d. Coordinates _____ Site Elevation ____ ft. (msl)

PBK

For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
4"	GALV STEEL	T+C	SCH 40	0	73
ADAPTER	53-B	SEDH	11 CAS PER FT		
3 3/4"	STAINLESS STEEL	TECH SCREEN	25	73	76

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from GRAVEL at a depth of 70 ft. to 76 ft.
a. Static water level 52 ft. below casing which is 14 in. above ground
b. Pumping level is 52 ft. pumping 16 gpm after pumping for 2 hours

24. Earth Materials Passed Through

	From (ft.)	To (ft.)
BLK SOIL	0	1
YELLOW CLAY	1	7
GRAVEL + SAND	7	14
GRAY & CLAY STONEY	14	46
GRAVEL	46	47
HARD PAN (GRAY)	47	70
GRAVEL	70	76

(If dry hole, fill out log and indicate how hole was sealed.)

Thomas Wachholder 092-008101
25. Licensed Water Well Contractor Signature License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION

LOG # 177

White Copy – Ill. Dept. of Public
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift X. In Rock____.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

2. Distance to Nearest:
   Building 15 Ft. — Seepage Tile Field 75
   Cess Pool____ — Sewer (non Cast iron)____
   Privy____ — Sewer (Cast iron)____
   Septic Tank 65 — Barnyard____
   Leaching Pit____ — Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 6/23/87
5. Permanent Pump Installed? Yes X Date 6/23/87 No____
   Manufacturer DELTA Type SUB Location____
   Capacity 10 gpm. Depth of Setting 100 Ft.
6. Well Top Sealed? Yes X No____ Type____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer WILLIAMS Model Number B350 ACUS
   How attached to casing?____
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 42 gal. Type AIR BLADDER
    Location BASEMENT
11. Water Sample Submitted? Yes____ No X

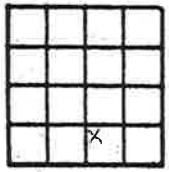
REMARKS:
County #20678

P316563

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUD SCHNEIDER Well No.____
    Address 1001 EAST BROADWAY WINTHROP HARBOR 60096
    Driller KEN BOYCE License No. 092-006808
11. Permit No. 13285 Date 6/19/87
12. Water from SAND Formation
    at depth 115 to 118 ft.
13. County LAKE
    Sec. 8.46
    Twp. 46N
    Rge. 12E
    Elev.____
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 10



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-120 T&C	0	115
	USED		
	15 LBS PER FT		

SHOW LOCATION IN SECTION PLAT
Block #60 F.H. Bartlett's Northfield Acres Third Addition NW SW SE

16. Size Hole below casing: 5 in.
17. Static level 59 ft. below casing top which is 1 ft. above ground level. Pumping level 59 ft. when pumping at 10 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
BLACK DIRT	2	2
YELLOW CLAY & SAND	16	18
BLUE CLAY	41	59
MEDIUM SAND	6	65
BLUE CLAY	25	90
MEDIUM SAND	24	114
BLUE CLAY	1	115
SAND	3	118

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 6/23/87

LOG # 178

0408 402 027

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

Date 9/13/06

1. Type of Well a. Driven Well Casing diam. ____ in. Depth ____ ft.
b. Bored Well Buried Slab [ ] Yes [ ] No
Hole Diameter ____ in. to ____ ft.; ____ in. to ____ ft.; ____ in. to ____ ft.
c. Drilled Well PVC casing Formation packer set at depth of ____ ft.
Hole Diameter ____ in. to ____ ft. ____ in. to ____ ft. ____ in. to ____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

d. Drilled Well Steel Casing - - Mechanically Driven [X] Yes [ ] No
Hole Diameter 10 in. to 20 ft. 5 in. to 81 ft. ____ in. to ____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
BENTONITE					

e. Well finished within [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack

Grain Size/Supplier #	From (ft.)	To (ft.)

2. Well Use [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock [ ] Monitoring [ ] Other
3. Date Well Completed 9/11/06 Well Disinfected [X] Yes [ ] No
Driller's estimated well yield ____ gpm
4. Date Permanent Pump Installed 9/18/06
5. Pump Capacity 8 gpm Set at (depth) 68 ft.
6. Pitless Adapter Model and Manufacturer CAMPBELL BP10X
7. Well Cap Type and Manufacturer BAKER WTV 50
8. Pressure Tank Working Cycle 100 gals. Captive Air [X] Yes [ ] No
9. Pump System Disinfected [X] Yes [ ] No
10. Name of Pump Company BEACH Pump & WELL
11. Pump Installer CHAD BOYCE License #
12. Kenneth C Boyce License # 101-003325
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

DO NOT write on these lines

P420592

IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0853. DISCLOSURE OF THIS INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.

GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner JOHN RICKERT Well # ____
14. Driller DON KELLOUGH License # ____
15. Name of Drilling Co. BEACH PUMP & WELL
16. Permit No. 147879-06 Date Issued 8/24/06
17. Date Drilling Started 8/29/06
18. Well SITE address 4208 11TH ST. WINTHROP HARBOR IL. 60083
19. Township Name BENTON Land ID # ____
20. Subdivision Name N. SHORE ACRES Lot # 45
21. Location a. County LAKE
b. Township 46N Range 12E Section 8
c. NW Quarter SW Quarter SE Quarter
d. Coordinates ____ Site Elevation ____ ft. (msl)

For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
5"	ASTM A-530	T&C	10SLO	0	77
5"	STAINLESS STEEL	FACTORY	#10	77	81

(*) ____
(List reason for liner, type of upper and lower seals installed)

23. Water from SAND at a depth of 75 ft. to 81 ft.
a. Static water level 54 ft. below casing which is 15 in. above ground
b. Pumping level is 72 ft. pumping 9 gpm after pumping for 1 hours

24. Earth Materials Passed Through

	From (ft.)	To (ft.)
FILL	0	2
YELLOW CLAY	2	14
BLUE CLAY	14	37
MIXED PAN	37	55
LEMONT & BLUE CLAY	55	75
SAND	75	81

(If dry hole, fill out log and indicate how hole was sealed.)

Kenneth C Boyce 092-006808
25. Licensed Water Well Contractor Signature License Number

LOG # 179

White Copy – Ill. Dept. of Public
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUEST[illegible] MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HE[illegible]H PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 4 in. Depth 91 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven____. Drive Pipe Diam. 4 in. Depth 89 ft.
   c. Drilled X. Finished in Drift X. In Rock____.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 50 Ft. Seepage Tile Field 75
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank 50 Barnyard____
   Leaching Pit____ Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 9-21-77
5. Permanent Pump Installed? Yes X Date____ No____
   Manufacturer Red Jacket Type Sub. Location____
   Capacity 10 gpm. Depth of Setting 75 Ft.
6. Well Top Sealed? Yes X No____ Type Merrill
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Merrill Model Number SPK
   How attached to casing? clamps on
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes____ No X
10. Pressure Tank Size 42 gal. Type galvanized
    Location basement
11. Water Sample Submitted? Yes____ No X

REMARKS:

P316564

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Richard Rhodes Well No.____
    Address 4735 North Lawler Chicago, Ill
    Driller Emil E. Gross License No. 102-70
11. Permit No. 66679 Date 9-12-77
12. Water from Sand (Formation)
    at depth 85 to 91 ft.
13. County Lake
    Sec. 8 14 | Twp. 46N | Rge. 12E | Elev.____
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot #20

SHOW LOCATION IN SECTION PLAT
300'S, 200'W, NE¼, NW¼ SE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	galv. steel 11#	0'	89'

16. Size Hole below casing: 4 in.
17. Static level 60 ft. below casing top which is 1 ft. above ground level. Pumping level 65 ft. when pumping at 10 gpm for____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
top soil	2	2
yellow clay	18	20
blue clay	55	75
sand & clay	10	85
sand	6	91

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Emil E. Gross DATE 5-24-78

LOG # 180

IDPH 4.065
1/74 – KNB-1
(39571—12½M Sets—6-74)

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 100 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 97 ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast-iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 8/13/87
5. Permanent Pump Installed? Yes X Date 8/19/87 No ____
   Manufacturer Sta-Rite Type Sub Location ____
   Capacity 8 gpm. Depth of Setting 80 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved Manner
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 82 gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

Ca. # 29879

P316565

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner John Krempley Well No. ____
    Address 11401 W. 9th Street
    Driller Hoover License No. 102-783
11. Permit No. 134075 Date 7/31/87
12. Water from drift Formation 13. County Lake
    at depth ____ to ____ ft.
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
    Sec. 8 ¼
    Twp. 46N
    Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
SW, SW, NE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PPF Standard	0	97
	5.27 PPF A-53		

16. Size Hole below casing: 5 in.
17. Static level 55 ft. below casing top which is 1 ft. above ground level. Pumping level 59 ft. when pumping at 8 gpm for 1 hours.

18. FORMATIONS PASSED THROUGH

FROM ~~THICKNESS~~	DEPTH OF BOTTOM
0	47
47	52
52	68
68	100

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R. Hoover DATE Sept. 3, 1987
jjk

LOG # 181

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 285 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 180 ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 24 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast Iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed September 12, 1979
5. Permanent Pump Installed? Yes X Date 9/21/79 No ____
   Manufacturer Sta-Rite Type Subm. Location ____
   Capacity 8 gpm. Depth of Setting 189 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 82 gal. Type DP-82
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316566

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BOB WALLDAN Well No. ____
    Address 1903 Sheridan Road, Zion
    Driller Lonny R. Hoover License No. 102-783
11. Permit No. 89299 Date August 30, 1979
12. Water from Limestone (Formation) 13. County Lake
    at depth 180 to 285 ft.
    14. Screen: Diam. – in.
    Length: – ft. Slot –
    Sec. 8, 5A
    Twp. 46N
    Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION, PLAT 50W, 150E, 5A/L. SE SE SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	New Galv. Steel	0	180
	T&C 14.81 PPF		

16. Size Hole below casing: 5 in.
17. Static level 77 ft. below casing top which is 1 ft. above ground level. Pumping level 170 ft. when pumping at 6 gpm for 1½ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	60	60
Sandy clay	35	95
Clay	85	180
Limestone	105	285

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R. Hoover/sign DATE 11/9/79

LOG # 182

Ill. of Public Health
Yellow C Well Contractor
Golden Copy: Well Owner

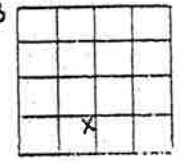
Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

RECEIVED
OCT 10 1990
ENVIRONMENTAL HEALTH
DIVISION

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller BEACH Pump & Well License No. 092-006308
10. Well Site Address N. Fosselman Ave Zion
11. Property Owner William Nikella Well No.
12. Permit No. ISD 90-03-0945 (9794590) Date Issued 10/2/90
13. Location: County LAKE
Sec. 8.5B
Twp. 46N
Rge. 12E



Show location in section plat
NE, SE, SW
LOT 1 NORTH SHORE 3RD SUBD

PIN # 04-08-317-009

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth ENFt
   Buried Slab: Yes__ No__
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Clay Slurry	0	20

2. Well furnishes water for human consumption? Yes X No__
3. Date well drilled 10/5/90
4. Permanent pump installed? Yes X Date 10/8/90 No__
   Manufacturer DELTA Type SUB
   Location
   Capacity 8 gpm. Depth of setting 88 ft.
5. Well top sealed? Yes X No__ Type
6. Pitless adapter installed? Yes X No__
   Manufacturer Williams Model No. B50ACW
   How attached to casing?
7. Well disinfected? Yes X No__
8. Pump and equipment disinfected Yes X No__

IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

14. Water from SAND at depth 87 ft to 93 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	ASTM A-120		
	T/C TOI		
	15 lbs PER FT		

16. Screen: Diam. 5 in, Length 3 in, Slot Size 8
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 65 ft below casing top which is 1 ft. above ground level. Pumping level 70 ft, pumping gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
BLACK DIRT	0	2
YELLOW CLAY	2	14
BLUE CLAY	14	58
MEDIUM SAND	58	63
HARDPAN	63	84
BLUE CLAY	84	87
SAND	87	93

LOG # 183

Continue on separate sheet if necessary.

Signed Kenneth D. Boyle Date 10/8/90

Il ...ept. of Public Health
Yel... ...py: Well Contractor
Golden Copy: Well Owner

PIN # 04-08-318-004

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
      Buried Slab: Yes__ No__
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Clay Slurry	0	20

2. Well furnishes water for human consumption? Yes X No____
3. Date well drilled 3/13/91
4. Permanent pump installed? Yes X Date 3/15/91 No____
   Manufacturer DELTA Type SUB
   Location____
   Capacity 8 gpm. Depth of setting 85 ft.
5. Well top sealed? Yes X No____ Type____
6. Pitless adapter installed? Yes X No____
   Manufacturer Williams Model No. B50ACD
   How attached to casing?____
7. Well disinfected? Yes X No____
8. Pump and equipment disinfected Yes X No____

IMPORTANT NOTICE

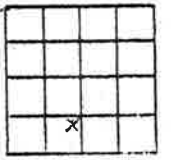
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller BEACH PUMP & WELL License No. 092-00682
10. Well Site Address 42163 N. FOSSLAND AVE ZION
11. Property Owner WILLIAM NIKKICA Well No.____
12. Permit No. 90-03-1238 Date Issued 10/25/90
13. Location: Lot #2 North Shore Acres
    County LAKE
    Sec. 8.5
    Twp. 46
    Rge. 12



Show location in section plat

NE, SE, SW

14. Water from SAND at depth 86 ft to 90 ft

15. Casing and Liner Pipe			
Diam.(in)	Kind and Weight	From (ft)	To (ft)
5	ASTM A-53	0	87
	T/C TOI		
	15 lbs PER FT		

16. Screen: Diam. 5 in, Length 3 in, Slot Size 8
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 56 ft below casing top which is 8 1/2 ft. above ground level. Pumping level 68 ft, pumping 8 gpm for ____ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
BLACK DIRT	0	2
YELLOW CLAY	2	17
BLUE CLAY	17	86
SAND	86	90

LOG # 184

Continue on separate sheet if necessary.

Signed Kenneth D Boyce Date 3/15/91

D-72011

Ill. Dept. of Public Health
Yellow: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 5 in. Depth 191 ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam. 5 in. Depth 173 ft
   c. Drilled x Finished in Drift____ In Rock X
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 1-24-89
4. Permanent pump installed? Yes X Date 1-31-89 No___
   Manufacturer Sta-Rite Type Sub
   Location
   Capacity 8 gpm. Depth of setting 160 ft.
5. Well top sealed? Yes X No___ Type P/A
6. Pitless adapter installed? Yes X No___
   Manufacturer Baker Model No. Snappy
   How attached to casing? approved manner
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

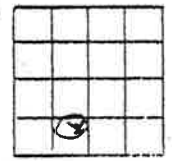
PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

?-228826

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Lonny R. Hoover License No. 102-000783
10. Well Site Address Foxland Ave & 12th Street, Zion
11. Property Owner Ronald R. Staffel Well No.
12. Permit No. 004606 Date Issued 3/9/88
13. Location: County Lake
    Sec. 8.5p
    Twp. 46N
    Rge. 12E



Show location in section plat
NE, SE, SW

14. Water from ____ at depth____ ft to____ ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5	new black steel T&C 15.27 ppf		
	ASTM A-53		

16. Screen: Diam. — in, Length — in, Slot Size —
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 83 ft below casing top which is 2 ft. above ground level. Pumping level 150 ft, pumping gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
yellow clay	0	20
Blue clay	20	78
Hardpan	78	115
clay	115	130
Hardpan	130	173
limestone	173	

LOG #185

Continue on separate sheet if necessary.

Signed Lonny R. Hoover (jlh) Date Dec. 1989

Ill. Dept. of Public Health
Yellow (1) Well Contractor
Golden Copy. Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
      Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Clay Slurry	0	20

2. Well furnishes water for human consumption? Yes___ No___
3. Date well drilled 10/3/91
4. Permanent pump installed? Yes X Date 10/3/91 No___
   Manufacturer DEEP Type SUBM.
   Location
   Capacity 8 gpm. Depth of setting 128 ft.
5. Well top sealed? Yes X No___ Type
6. Pitless adapter installed? Yes X No___
   Manufacturer Williams Model No. BSDACW
   How attached to casing?
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE

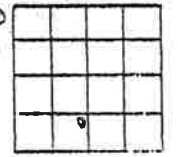
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller BEACH PUMP & WELL License No. 092-006808
10. Well Site Address FOSSLAND AVE ZION
11. Property Owner William N. KKELLA JR Well No.
12. Permit No. 91-03-0363 Date Issued 10/2/91
13. Location: County LAKE
    Sec. 8.5 b
    Twp. 46 N
    Rge. 12 E



Show location in section plat

NE SE SW
F.H. Bartletts
N.S Acres
3rd Addn.
Lot 1

14. Water from SAND at depth 126 ft to 136 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	ASTM A-53	0	133
	T/C TOI		
	15 lbs PG/FT		

16. Screen: Diam. 5 in, Length 3 in, Slot Size 8
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 68 ft below casing top which is 1 ft. above ground level. Pumping level 113 ft, pumping 7 gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
FILL & BLACK DIRT	0	2
YELLOW CLAY	2	19
BLUE CLAY	19	83
SAND	83	89
HARDPAN	89	99
BLUE CLAY	99	115
MEAVY SAND	115	126
SAND	126	136

LOG # 186

Continue on separate sheet if necessary.

Signed Kenneth D. Boyle Date 10/4/91

Q 240570

Copy – Dept. of Public Health
Copy – Well Contractor
Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

. Type of Well
a. Dug____. Bored____. Hole Diam. 4 in. Depth 78 ft.
Curb material _____. Buried Slab: Yes_____ No_____
b. Driven _____. Drive Pipe Diam. 4 in. Depth 76 ft.
c. Drilled X. Finished in Drift X. In Rock _____.
Tubular _____. Gravel Packed _____.
d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

. Distance to Nearest:
Building 40 Ft. Seepage Tile Field 75
Cess Pool _____ Sewer (non Cast iron) _____
Privy _____ Sewer (Cast iron) _____
Septic Tank 50 Barnyard _____
Leaching Pit _____ Manure Pile _____
. Well furnishes water for human consumption? Yes X No _____
. Date well completed Nov. 29, 1986
. Permanent Pump Installed? Yes X Date _____ No _____
Manufacturer Red Jacket Type sub Location well
Capacity 10 gpm. Depth of Setting 74 Ft.
. Well Top Sealed? Yes X No _____ Type Merrill
. Pitless Adapter Installed? Yes X No _____
Manufacturer Merrill Model Number SPK
How attached to casing? clamp on
. Well Disinfected? Yes X No _____
. Pump and Equipment Disinfected? Yes X No _____
. Pressure Tank Size 42 gal. Type captive air
Location basement
. Water Sample Submitted? Yes _____ No X

EMARKS: County #28777

42162 Fago Avenue
Winthrop Harbor, Illinois

P316567

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Paul Bricco Well No. _____
Address 39327 Green Bay Rd. Waukegan, Illinois
Driller Michael Gross License No. 102-002086
11. Permit No. 127725 Date 10-27-86
12. Water from sand & gravel (Formation) 13. County Lake
at depth 74 to 78 ft. Sec. 8 SE
14. Screen: Diam. 4 in. Twp. 46N
Length: 3 ft. Slot #12 Rge. 12E
Elev. _____

SHOW LOCATION IN SECTION PLAT
250'NL, 50'WL
NE SE SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv. steel	0	76
	~~11#~~		

16. Size Hole below casing: 4 in.
17. Static level 64 ft. below casing top which is 1 ft. above ground level. Pumping level 65 ft. when pumping at 10 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	15	15
Blue clay	53	68
Hard Pan	6	74
Sand & gravel	4	78

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Michael Gross DATE 1-10-87

LOG # 187

Ill. D[illegible] of Public Health
Yellow [illegible]: Well Contractor
Golden [illegible]: Well Owner

Well Construction Report

WW 97-03-0209

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

MAR 1997 Received Environmental Health Division

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller BEACH Pump & Well License No. 092-006803
10. Well Site Address W2715 N. FAGO ZION FL. 60099
11. Property Owner LONE OAK ELECTRIC Well No.
12. Permit No. 97-03-0209 Date Issued 3-6-97
13. Location: County LAKE
Sec. 8 S
Twp. 46 N
Rge. 12 E

NE/SE/SW

Show location in section plat

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift____ In Rock X
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Clay Slurry	0	170
& BENTONITE		

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 3/20/97
4. Permanent pump installed? Yes X Date 3/24/97 No___
   Manufacturer J-LINE Type SUBM
   Location
   Capacity 8 gpm. Depth of setting 195 ft.
5. Well top sealed? Yes X No___ Type
6. Pitless adapter installed? Yes X No___
   Manufacturer Williams Model No. B50ACW
   How attached to casing?
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

F.H. Bartlett's N. Shore Acres 3rd Add.

14. Water from LIMESTONE at depth 183 ft to 200 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	ASTM A-53B	0	183
	THA STATE TUBULAR		
	IPSCO T&C 15 LBS PER FT		

16. Screen: Diam.___in. Length___in, Slot Size___
17. Size hole below casing 5" in. 18. Ground Elev.____ ft msl.
19. Static level 88 ft below casing top which is 2.3 ft. above ground level. Pumping level 145 ft, pumping 4 gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
TOPSOIL YELLOW CLAY	0 2	2 17
BLUE CLAY SAND / BLUE CLAY	17 59 71	59 71 93
GRAVEL & SAND HARDPAN	93 106	106 140
GRAVEL HARD PAN	140 144	144 180
RUBBLE LIMESTONE	180 183	183 200

LOG # 188

Continue on separate sheet if necessary.

Signed Kenneth O. Boyce Date 3/25/97

WATER WELL CONSTRUCTION REPORT

#097-03-0313-02 Date 9/24/

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____ in. Depth _____ ft.
b. **Bored** Well Buried Slab [ ] Yes [ ] No
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ ft.
Hole Diameter ____ in. to _____ ft. ____ in. to _____ ft. ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

d. **Drilled** Well **Steel** Casing - - - Mechanically Driven [X] Yes [ ] No
Hole Diameter 10 in. to 20 ft. 5 in. to 94 ft. ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
BENTONITE & CLAY SLURRY			0	20	

e. Well finished within [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack

Grain Size/Supplier #	From (ft.)	To (ft.)

2. Well Use [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock [ ] Monitoring [ ] Other
3. Date Well Completed 9/5/02 Well Disinfected [X] Yes [ ] No
Driller's estimated well yield 7.5 gpm
4. Date Permanent Pump Installed 9/11/02
5. Pump Capacity 8 gpm Set at (depth) 90 ft.
6. Pitless Adapter Model and Manufacturer CAMPBELL BP 10X
7. Well Cap Type and Manufacturer BAKER WTV 50
8. Pressure Tank Working Cycle 42 gals. Captive Air [X] Yes [ ] No
9. Pump System Disinfected [X] Yes [ ] No
10. Name of Pump Company BEACH PUMP & WELL
11. Pump Installer KEN BOYCE License # 101-003325
12. Kenneth O Boyce License # 11
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

CO # 47419

R 346119

DO NOT write on these lines

IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. **DISCLOSURE OF THIS INFORMATION IS MANDATORY.** This form has been approved by the Forms Management Center.

GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner CHRIS KANUK Well # _____
14. Driller TED BELLEFEUILLE License # _____
15. Name of Drilling Co. BEACH PUMP & WELL
16. Permit No. FSD-02-03-0313 Date Issued 7/9/02
17. Date Drilling Started 9/4/02
18. Well **SITE** address 4228 N. FOSSLAND AVE
19. Township Name BENTON Land ID # _____
20. Subdivision Name F.H. BARTLETTS N. SHORE ACRES Lot # _____
21. Location a. County LAKE
b. Township 46N Range 12E Section 8
c. NE Quarter SE Quarter SW Quarter .56
d. Coordinates _____ Site Elevation ____ ft. (msl)

PBK

For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
5" ASTM	A-53 BTC	IPSCO	15/105 BGN FT	0	92
5"	STAINLESS STEEL	K-PACKER	10	92	94

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from SAND at a depth of 92 ft. to 94 ft.
a. Static water level 73 ft. below casing which is 15 in. above ground
b. Pumping level is 90 ft. pumping 7.5 gpm after pumping for 15 hours

24. Earth Materials Passed Through

	From (ft.)	To (ft.)
YELLOW CLAY	0	16
BLUE CLAY	16	35
HARD PAN	35	92
SAND	92	94

LOG # 189

(If **dry hole**, fill out log and indicate how hole was sealed.)

Kenneth O. Boyce
25. Licensed Water Well Contractor Signature

092-006808
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

...y –
...t of Public Health
...py – Well Contractor
... – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND M... ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH P... TECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

Type of Well
1. Dug____. Bored____. Hole Diam. 4 in. Depth 120 ft.
Curb material _____. Buried Slab: Yes____ No____
2. Driven _____. Drive Pipe Diam. 4 in. Depth 120 ft.
3. Drilled X. Finished in Drift X. In Rock_____.
Tubular _____. Gravel Packed _____.
4. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

Distance to Nearest:
Building 28 Ft. — Seepage Tile Field 75
Cess Pool _____ — Sewer (non Cast iron) _____
Privy _____ — Sewer (Cast iron) _____
Septic Tank 60 — Barnyard _____
Leaching Pit _____ — Manure Pile _____
Well furnishes water for human consumption? Yes X No____
Date well completed June 5, 1987
Permanent Pump Installed? Yes X Date _____ No____
Manufacturer RedJacket Type sub Location well
Capacity 10 gpm. Depth of Setting 100 Ft.
Well Top Sealed? Yes X No____ Type Merrill
Pitless Adapter Installed? Yes X No____
Manufacturer Merrill Model Number SPK
How attached to casing? clamp on
Well Disinfected? Yes X No____
Pump and Equipment Disinfected? Yes X No____
Pressure Tank Size 42 gal. Type galv.
Location basement
Water Sample Submitted? Yes X No____
MARKS:

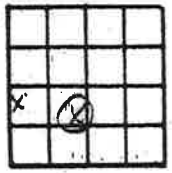
P316568

Co. #29480

PH 4.065
4 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Ron Conde Well No. _____
Address 9714 W. 16th Street, Zion, Il.
Driller Michael Gross License No. 102-002086
11. Permit No. 131655 Date 5-14-87
12. Water from gravel (Formation) 13. County Lake
at depth 118 to 120 ft.
14. Screen: Diam. _____ in.
Length: _____ ft. Slot _____
Sec. 8,5C
Twp. 46N
Rge. 12E
Elev. _____



SHOW LOCATION IN SECTION PLAT
150'NL, 100'EL
SE NE SW

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv. steel	0-	120
	11#		

16. Size Hole below casing: 4 in.
17. Static level 70 ft. below casing top which is 1 ft. above ground level. Pumping level 70 ft. when pumping at 5 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay	15	15
hard pan	45	60
blue clay	22 ~~12~~	82
mud sand	12	94
gravel, sand, clay mix	24	118
gravel	2	120

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Michael Gross DATE 7-30-87

LOG # 190

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____ in. Depth ____ ft.
      Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth 105 ft.
   c. Drilled 1. Finished in Drift ✓. In Rock ____.
      Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

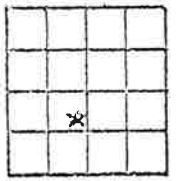
2. Distance to Nearest:
   Building 10 Ft. Seepage Tile Field 75
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 60 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Is water from this well to be used for human consumption?
   Yes ✓ No ____
4. Date well completed 6/30/72
5. Permanent Pump Installed? Yes ✓ No ____
   Manufacturer RED JACKET Type SUB
   Capacity 10 gpm. Depth of setting 90' ft.
6. Well Top Sealed? Yes ✓ No ____
7. Pitless Adaptor Installed? Yes ____ No ✓
8. Well Disinfected? Yes ____ No ✓
9. Water Sample Submitted? Yes ____ No ✓

REMARKS:

P316569

GEOLOGICAL WATER SURVEYS WATER WELL RECORD

10. Dept. Mines and Minerals permit No. NF 15263 Year: ____
11. Property owner CARLES VITTORIO Well No. ____
    Address 254 ORCHARD DR FOX LAKE ILL
    Driller E.E. GLOSS License No. 291
12. Water from GRAVEL Formation 13. County LAKE
    at depth 100 to 105 ft.
14. Screen: Diam. 4 in.
    Length: 3' ft. Slot 15 ____
    Sec. 8.5C
    Twp. 46N
    Rng. 12E
    Elev. ____



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	GAL 11#	0	103

SHOW LOCATION IN SECTION PLAT
Block 59
Bartlett's North Shore Acres SE NE SW

16. Size Hole below casing: 4 in.
17. Static level 70 ft. below casing top which is 1 ft. above ground level. Pumping level 85 ft. when pumping at 10 gpm for 4 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
TOP SOIL	0	1
RED CLAY	1	18
BLUE CLAY	18	62
HARD PAN	62	75
BLUE CLAY	75	100
FINE GRAVEL	100	105
(CONTINUE ON SEPARATE SHEET IF NECESSARY)		

SIGNED E E Gloss DATE 7/6/72

LOG # 191

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 89 ft.
      Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 86 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
      Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 26 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 11/7/75
5. Permanent Pump Installed? Yes ✓ Date 11/10/75 No ____
   Manufacturer Sta Rite Type Submer Location ____
   Capacity 8 gpm. Depth of Setting 84 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type ____
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer Baker Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 82 gal. Type Galv
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316570

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Modern Home Bldrs. Well No. ____
    Address 2111 Washington, Waukegan
    Driller Howe License No. 162-78
11. Permit No. 42611 Date 11/3 7.5
12. Water from gravel + sand (Formation) 13. County Lake
    at depth 72 to 89 ft.
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot 10
    Sec. 8 S
    Twp. 46N
    Rge. 12E
    Elev. ____

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	galv T+C	0	86
	10.89 ppf		

SHOW LOCATION IN SECTION PLAT
995'S 325'W of NE/c SW

16. Size Hole below casing: 4 in.
17. Static level 69 ft. below casing top which is 1 ft. above ground level. Pumping level 85 ft. when pumping at 7 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow Clay	18	18
Blue Clay	42	60
Gravel Clay	12	72
Gravel + Sand	17	89

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED L. R. Howe DATE 11/19/75

LOG # 192

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 4 in. Depth 86 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven _____. Drive Pipe Diam. 4 in. Depth 83 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 26 Ft. — Seepage Tile Field _____
   Cess Pool _____ — Sewer (non Cast iron) ~~_____~~
   Privy ~~_____~~ — Sewer (Cast iron) ~~_____~~
   Septic Tank _____ — Barnyard _____
   Leaching Pit _____ — Manure Pile _____
3. Well furnishes water for human consumption? Yes ✓ No____
4. Date well completed 11/11/75
5. Permanent Pump Installed? Yes ✓ Date 11/12/75 No____
   Manufacturer STA RITE Type SUBM Location _____
   Capacity 8 gpm. Depth of Setting 80 Ft.
6. Well Top Sealed? Yes ✓ No____ Type _____
7. Pitless Adapter Installed? Yes ✓ No____
   Manufacturer BAKER Model Number _____
   How attached to casing? _____
8. Well Disinfected? Yes ✓ No____
9. Pump and Equipment Disinfected? Yes ✓ No____
10. Pressure Tank Size 82 gal. Type GALV
    Location _____
11. Water Sample Submitted? Yes____ No____

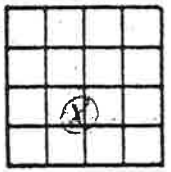
REMARKS:

P316571

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Peter Capp Well No. _____
    Address 114 St & Winthrop Harbor
    Driller Hoover License No. 102-78
11. Permit No. 43063 Date 11/14/75
12. Water from Gravel + Sand Formation 13. County ~~LAKE~~ LAKE
    at depth 76 to 86 ft.
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot 1.5
    Sec. 8.5c
    Twp. 46N
    Rge. 12E
    Elev. _____



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	galv T + C 10.89 jtg	0	83

SHOW LOCATION IN SECTION PLAT
1000's 350'W of NE/c SW

16. Size Hole below casing: 4 in.
17. Static level 67 ft. below casing top which is 1 ft. above ground level. Pumping level 82 ft. when pumping at 12 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	76	76
gravel + sand	10	86

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED L R Hoover DATE 12/4/75
bc

LOG # 193

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO CLERKS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 193 ft.
      Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 188 ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
      Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 30 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed May 17, 1978
5. Permanent Pump Installed? Yes X Date 5-19-78 No ____
   Manufacturer Sta-Rite Type Subm. Location ____
   Capacity 8 gpm. Depth of Setting 168 Ft.
6. Well Top Sealed? Yes X No ____ Type Pitless adapter
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type Galvanized
    Location ____
11. Water Sample Submitted? Yes ____ No ____

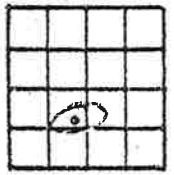
REMARKS:

P316573

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Ruth E. Malmstrom Well No. ____
    Address 4600 - 11th Street, Zion
    Driller Lonny R. Hoover License No. 102-783
11. Permit No. 73989 Date May 9, 1978
12. Water from Limestone Formation 13. County Lake
    at depth 188 to 193 ft.
14. Screen: Diam. -- in.
    Length: - ft. Slot -
    Sec. 8
    Twp. 46N
    Rge. 12E
    Elev. ____



SHOW LOCATION IN SECTION PLAT
300'S, 50'W, NE/c, SE NE SW.

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	New Galv. T&C	0	188
	14.81 PPF		

16. Size Hole below casing: 4 in.
17. Static level 75 ft. below casing top which is 1 ft. above ground level. Pumping level 145 ft. when pumping at 10 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	75	75
Sand	1	76
Clay	70	146
Gravel	1	147
Clay	21	168
Gravel	1	169
Hard pan	17	186
Limestone	7	193

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R. Hoover/Engr. DATE 5-22-78

LOG # 194

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 128 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 125 ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

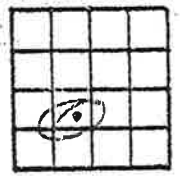
2. Distance to Nearest:
   Building 68 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed May 17, 1978
5. Permanent Pump Installed? Yes X Date 5-18-78 No ____
   Manufacturer Sta-Rite Type Subm Location ____
   Capacity 8 gpm. Depth of Setting 105' + 10 Ft.
6. Well Top Sealed? Yes X No ____ Type Pitless adapter
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type Galvanized
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316572

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Jerry Taylor Well No. ____
    Address 2206 - 13th Street, Winthrop Harbor
    Driller Lonny R. Hoover License No. 102-783
11. Permit No. 71485 Date Feb. 23, 1978
12. Water from sand (Formation) 13. County Lake
    at depth 125 to 128 ft. Sec. 8 SE
    14. Screen: Diam. 4 in. Twp. 46N
    Length: 3 ft. Slot #12 Rge. 12E
    Elev. ____



SHOW LOCATION IN SECTION PLAT
330'S, 200'W, NE/c, SE NE Sec

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	New Galv. T&C	0	125
	14.81 PPF		

16. Size Hole below casing: 4 in.
17. Static level 67 ft. below casing top which is 1 ft. above ground level. Pumping level 69 ft. when pumping at 4 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	69	69
Sand	12	81
Clay	44	125
Sand	3	128

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonney R. Hoover Legn. DATE 5-23-78

LOG # 195

IDPH 4.065
1/74 – KNB-1
(59571—12 ½M Sets—6-74)

ite Copy –
III. Dept of Public H
llow Copy – Well Cont
ue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTE D MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER H H PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT TACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ___. Bored ___. Hole Diam. 5 in. Depth 163 ft.
   Curb material ___. Buried Slab: Yes ___ No ___
   b. Driven ___. Drive Pipe Diam. 5 in. Depth 153 ft.
   c. Drilled X. Finished in Drift ___. In Rock X.
   Tubular ___. Gravel Packed ___.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 20 Ft. Seepage Tile Field ___
   Cess Pool ___ Sewer (non Cast iron) ___
   Privy ___ Sewer (Cast iron) ___
   Septic Tank ___ Barnyard ___
   Leaching Pit ___ Manure Pile ___
3. Well furnishes water for human consumption? Yes X No ___
4. Date well completed 11-17-86
5. Permanent Pump Installed? Yes X Date 11/30/86 No ___
   Manufacturer Sta-Rite Type Sub Location ___
   Capacity 8 gpm. Depth of Setting 140 Ft.
6. Well Top Sealed? Yes X No ___ Type P.A.
7. Pitless Adapter Installed? Yes X No ___
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved Manner
8. Well Disinfected? Yes X No ___
9. Pump and Equipment Disinfected? Yes X No ___
10. Pressure Tank Size 42 gal. Type ___
    Location ___
11. Water Sample Submitted? Yes ___ No ___

REMARKS: County #28837

P316574

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Jim Hunt Well No. ___
    Address 42340 N. Lewis Ave., Zion
    Driller Hoover Well License No. 102-783
11. Permit No. 128151 Date Nov. 3 1986
12. Water from limestone Formation 13. County Lake
    at depth ___ to ___ ft. Sec. 32
    14. Screen: Diam. ___ in. Twp. 46N
    Length: ___ ft. Slot ___ Rge. 12E
    Elev. ___

SHOW LOCATION IN SECTION PLAT
SE NE SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	Black (T&C)		153

16. Size Hole below casing: 5 in.
17. Static level 66 ft. below casing top which is / ft. above ground level. Pumping level 110 ft. when pumping at 10 gpm for 1 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS FROM	DEPTH OF BOTTOM
Clay	0	36
sand	36	42
hardpan	42	92
sand & gravel	92	140
Mucky sand	140	153
limestone	153	168

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Tommy R. Hoover DATE Feb. 87
jsk

LOG # 196

Ill. t. of Public Health
Yellow : Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

Received MAR 1997 Environmental Health Services

GEOLOGICAL AND WATER SURVEYS WELL RECORD

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift____ In Rock X
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
GRANULAR Bentonite	0	179

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 3-25-97
4. Permanent pump installed? Yes X Date 3-25-97 No___
   Manufacturer Red Jacket Type Sub
   Location WELL
   Capacity 10 gpm. Depth of setting 160 ft.
5. Well top sealed? Yes X No___ Type Watertite
6. Pitless adapter installed? Yes X No___
   Manufacturer MERRILL Model No. MC K4100
   How attached to casing? CLAMPON
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

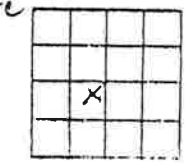
IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

9. Driller Michael Gross License No. 102-002086
10. Well Site Address 42282 N. Thorpe Ave., Winthrop Harbor, IL
11. Property Owner LARRY JONES Well No.____
12. Permit No. WW97-03-0058 Date Issued 1-31-97
13. Location: NE¼ OF THE NE¼ OF THE SW¼ County LAKE
    Sec. 08 Twp. 46N Rge. 12E



Show location in section plat

Lot 2, Blk 34 North Shore Acres.

14. Water from LIMESTONE at depth 179 ft to 204 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
4"	galv. steel	0	179

16. Screen: Diam.—in, Length—in, Slot Size—
17. Size hole below casing 4 in. 18. Ground Elev.____ ft msl.
19. Static level 85 ft below casing top which is 1 ft. above ground level. Pumping level 130 ft, pumping gpm for 15 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
YELLOW CLAY	0	15
BLUE CLAY & GRAVEL	15	130
Sandy BLUE CLAY	130	179
LIMESTONE	179	204

LOG # 197

Continue on separate sheet if necessary.

Signed Michael Gross Date 3-26-97

White Copy – Ill. Dept. of Pub[illegible]lth
Yellow Copy – Well [illegible]actor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED. MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____ Bored ____ Hole Diam. 5 in. Depth 127 ft.
   Curb material ____ Buried Slab: Yes ____ No ____
   b. Driven ____ Drive Pipe Diam. 5 in. Depth 123 ft.
   c. Drilled ✓ Finished in Drift ✓ In Rock ____
   Tubular ____ Gravel Packed ____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 28 Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Is water from this well to be used for human consumption?
   Yes ✓ No ____
4. Date well completed 6/6/67
5. Permanent Pump Installed? Yes ✓ No ____
   Manufacturer STAR RITE Type SUBM.
   Capacity 8 gpm. Depth of setting 87 ft.
6. Well Top Sealed? Yes ✓ No ____
7. Pitless Adaptor Installed? Yes ✓ No ____
8. Well Disinfected? Yes ✓ No ____
9. Water Sample Submitted? Yes ____ No ____

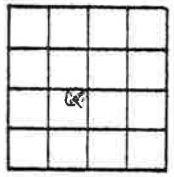
REMARKS:

P316575

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner DICK WESTERMAN Well No. ____
    Address 7TH-ST - WINTHROP HARBOR
    Driller HOOVER Water Well Service License No. 30
11. Permit No. NF 06243 Date 5-11-67
12. Water from GRAVEL Formation
    at depth 116 to 127 ft.
13. County LAKE
    Sec. 8
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. 5 in.
    Length: 4'6" ft. Slot 25



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	GALV T+C 14.81	C	123

SHOW LOCATION IN SECTION PLAT
250'S 250'W NE/C SW

16. Size Hole below casing: 5 in.
17. Static level 5 ft. below casing top which is 1 ft. above ground level. Pumping level 65 ft. when pumping at 25 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
0-116 Glacial drift		
116-127 Gravel		

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 7-24-67

LOG # 198

White Copy –
Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO [illegible]

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____in. Depth ____ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____in. Depth ____ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

2. Distance to Nearest:
   Building 30 Ft. Seepage Tile Field 75
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 65 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 9/15/88
5. Permanent Pump Installed? Yes X Date 9/15/88 No ____
   Manufacturer GOULDS Type SUB Location ____
   Capacity 8 gpm. Depth of Setting 128 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer WILLIAMS Model Number B50ACWS
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type AIR BLADDER
    Location BASEMENT UNDER STAIRS
11. Water Sample Submitted? Yes ____ No X

REMARKS:

R316576

C. # 31490

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner N&S BUILDERS Well No. ____
    Address 2033 GALILEE AVE ZION, IL. 60099
    Driller KEN BOYCE License No. 092-006808
11. Permit No. D05512 Date 9/7/88
12. Water from SAND Formation 13. County LAKE
    at depth 129 to 132 ft. Sec. 08
    14. Screen: Diam. 5 in. Twp. 46N
    Length: 3 ft. Slot 10 Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
NE, NE, SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-120	0	129
	T/C USPCO		
	15 LBS PER FT		

16. Size Hole below casing: 5 in.
17. Static level 25 ft. below casing top which is 1 ft. above ground level. Pumping level 79 ft. when pumping at 5 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
FILL & BLACK DIRT	2	2
YELLOW CLAY	16	18
BLUE CLAY	52	70
MEDIUM SAND	17	87
HARDPAN	32	119
MEDIUM SAND	10	129
SAND	3	132

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 9/21/88

LOG # 199

IDPH 4.065
1/74 – KNB-1

Ill. D[illegible] of Public Health
Yellow [illegible]: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

Dennis LaBelle

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
   Buried Slab: Yes__ No__
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Clay Slurry	0	20

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 6/2/92
4. Permanent pump installed? Yes X Date 6/6/92 No___
   Manufacturer DELTA Type SUBM
   Location
   Capacity 8 gpm. Depth of setting 88 ft.
5. Well top sealed? Yes X No___ Type
6. Pitless adapter installed? Yes X No___
   Manufacturer Williams Model No. B50ACV
   How attached to casing?
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller BEACH PUMP & WELL License No. 092-006808
10. Well Site Address 12313 N. PAGO AVE ZION, IL 60099
11. Property Owner DENNIS LABELLE Well No.
12. Permit No. ISD92-03-0122 Date Issued 2/25/92
13. Location: County LAKE
Lot 1 & 2 Sec. 35d
Bartletts Northshore Acres Twp. 46
Rge. 12

Show location in section plat
NENESW private

14. Water from SAND at depth 91 ft to 98 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5	ASTM A-53	0	95
	T/C TDI		
	15 lbs per ft		

16. Screen: Diam. 5 in, Length 3' in, Slot Size 8
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 70 ft below casing top which is 1 ft. above ground level. Pumping level 73 ft, pumping 1/2 gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
FILL & BLACK DIRT	0	3
YELLOW CLAY	3	17
BLUE CLAY	17	32
MEDIUM SAND	32	35
HARDPAN	35	91
SAND	91	98

Continue on separate sheet if necessary.

Signed Kenneth D. Bourke Date 6/18/92

LOG # 200

[Illegible] Copy: Well Owner

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
      Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled V Finished in Drift V In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
SLER	0	20

2. Well furnishes water for human consumption? Yes V No___
3. Date well drilled 3-26-92
4. Permanent pump installed? Yes V Date 3-26-92 No___
   Manufacturer STA-RITE Type SQ 3
   Location WELL
   Capacity 10 gpm. Depth of setting 80' ft.
5. Well top sealed? Yes___ No___ Type___
6. Pitless adapter installed? Yes V No___
   Manufacturer WILLIAMS Model No. 350 AC
   How attached to casing? BOLT ON
7. Well disinfected? Yes V No___
8. Pump and equipment disinfected Yes V No___

IMPORTANT NOTICE

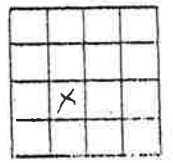
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller EUGENE GROSS License No. 102-000718
10. Well Site Address 42216 N. Lewis
11. Property Owner ROBERT SCHWAB Well No.___
12. Permit No. ISD90-03-1465 Date Issued 2/18/92
13. Location: County LAKE
    Sec. 8.5d
    Twp. 46 N
    Rge. 12 E



Show location in section plat

NE NE SW
FHB
North shore
Acres 3 Rd.
Lot 7

14. Water from GRAVEL at depth 0 ft to 85 ft

15. Casing and Liner Pipe			
Diam.(in)	Kind and Weight	From (ft)	To (ft)
5	STEEL 15#	0	81

16. Screen: Diam. 4 in, Length 5' in, Slot Size 25
17. Size hole below casing 4 in. 18. Ground Elev.___ ft msl.
19. Static level 60 ft below casing top which is 1 ft. above ground level. Pumping level 60 ft, pumping gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
CLAY	0	50
CLAY + SAND	50	80
GRAVEL	80	85

Continue on separate sheet if necessary.

Signed Eugene Gross Date 6-2-92

LOG # 201

0 329767

Yellow — Well Contractor
Golden Co — Well Owner

State ID# 097-[illegible]-96

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS OF WELL COMPLETION AND SENT TO THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH DIVISION OF ENVIRONMENTAL HEALTH 525 WEST JEFFERSON STREET SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
   Buried Slab: Yes__ No__
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled ✓ Finished in Drift____ In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
GRAVLAN	0	140
BENTONITE		

2. Well furnishes water for human consumption? Yes ✓ No____
3. Date well drilled 10-9-96
4. Permanent pump installed? Yes ✓ Date 11-20-96 No____
   Manufacturer STA-RITE Type SUB
   Location WELL
   Capacity 8 gpm. Depth of setting 140 ft.
5. Well top sealed? Yes ✓ No____ Type____
6. Pitless adapter installed? Yes____ No ✓
   Manufacturer MERRILL Model No. MEK4100
   How attached to casing? CLAMP ON
7. Well disinfected? Yes ✓ No____
8. Pump and equipment disinfected Yes ✓ No____

IMPORTANT NOTICE

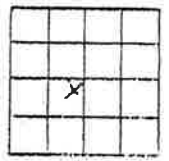
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Michael Gross License No. 102-002582
10. Well Site Address 3723 S WEST Winthrop Harbor
11. Property Owner Harold Soderstrom Well No.____
12. Permit No. WW 96-03-0827 Date Issued 10-3-96
13. Location: County LAKE
    Sec 8 SD
    Twp. 46 N
    Rge. 12 E



Show location in section plat
NE NE SW

14. Water from Limestone at depth____ft to 205 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
4"	GALVANIZED STEEL		
	11#PF	0	140

16. Screen: Diam.—in, Length—in, Slot Size—
17. Size hole below casing 4 in. 18. Ground Elev.____ ft msl.
19. Static level 43 ft below casing top which is 1 ft. above ground level. Pumping level 140 ft, pumping 7 gpm for 4 hours.

20. Earth Materials Passed Through

	Depth of Top	Depth of Bottom
BROWN CLAY	0	18
BLUE CLAY	18	50
HARDPAN	50	109
CLAY (BLUE)	109	133
SAND	133	140
[illegible]	140	205

Continue on separate sheet if necessary.

Signed Michael Gross Date 11-22-96

LOG # 202

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ___. Bored ___. Hole Diam. ___ in. Depth ___ ft.
   Curb material ___. Buried Slab: Yes ___ No ___
   b. Driven ___. Drive Pipe Diam. ___ in. Depth ___ ft.
   c. Drilled X. Finished in Drift X. In Rock ___.
   Tubular ___. Gravel Packed ___.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

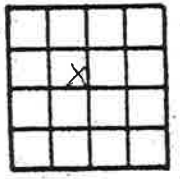
2. Distance to Nearest:
   Building 30 Ft. Seepage Tile Field 150
   Cess Pool ___ Sewer (non Cast iron) ___
   Privy ___ Sewer (Cast iron) ___
   Septic Tank 95 Barnyard ___
   Leaching Pit ___ Manure Pile ___
3. Well furnishes water for human consumption? Yes X No ___
4. Date well completed 5/14/88
5. Permanent Pump Installed? Yes X Date 5/16/88 No ___
   Manufacturer DELTA Type SUB Location ___
   Capacity 5 gpm. Depth of Setting 160 Ft.
6. Well Top Sealed? Yes X No ___ Type ___
7. Pitless Adapter Installed? Yes X No ___
   Manufacturer WILLIAMS Model Number B.50 ACUS
   How attached to casing? ___
8. Well Disinfected? Yes X No ___
9. Pump and Equipment Disinfected? Yes X No ___
10. Pressure Tank Size 80 gal. Type AIR BLADDER
    Location BASEMENT
11. Water Sample Submitted? Yes ___ No X

REMARKS: Co. # 30845

P316578

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner ROBIN LARSON Well No. ___
    Address 3310 KEHM BLVD. PARK CITY, IL. 60085
    Driller KEN BOYCE License No. 092-006808
11. Permit No. 001203 Date 4/15/88
12. Water from SAND (Formation) at depth 169 to 173 ft.
13. County LAKE
14. Screen: Diam. 5 in. Length: 3 ft. Slot 15
    Sec. 08Se Twp. 46N Rge. 12E Elev. ___



SHOW LOCATION IN SECTION PLAT
Se, Se, NW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-120	0	170
	T/C USACO (LAP)		
	15.16 S PER FT		

16. Size Hole below casing: 5 in.
17. Static level 80 ft. below casing top which is 1 ft. above ground level. Pumping level 90 ft. when pumping at 14 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
TOP SOIL YELLOW CLAY	2 26	2 28
MEDIUM SAND BLUE CLAY	3 31	30 61
HARDPAN BLUE CLAY	22 12	83 95
DRY GRAVEL	2	97
BLUE CLAY	3	100
DRY GRAVEL	4	104
HARDPAN	53	157
BLUE CLAY	12	169
GRAVEL	4	173

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyce DATE 5/16/88

LOG # 203

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ___. Bored ___. Hole Diam. ___ in. Depth ___ ft.
   Curb material ___. Buried Slab: Yes ___ No ___
   b. Driven ___. Drive Pipe Diam. ___ in. Depth ___ ft.
   c. Drilled X. Finished in Drift X. In Rock ___.
   Tubular ___. Gravel Packed ___.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
CLAY SLURRY	0	20

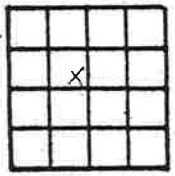
2. Distance to Nearest:
   Building 80 Ft. — Seepage Tile Field 130
   Cess Pool ___ — Sewer (non Cast iron) ___
   Privy ___ — Sewer (Cast iron) ___
   Septic Tank 120 — Barnyard ___
   Leaching Pit ___ — Manure Pile ___
3. Well furnishes water for human consumption? Yes X No ___
4. Date well completed 5/9/88
5. Permanent Pump Installed? Yes X Date 5/10/88 No ___
   Manufacturer DELTA Type SUB Location ___
   Capacity 8 gpm. Depth of Setting 78 Ft.
6. Well Top Sealed? Yes X No ___ Type ___
7. Pitless Adapter Installed? Yes X No ___
   Manufacturer WILLIAMS Model Number B50ACWS
   How attached to casing? ___
8. Well Disinfected? Yes X No ___
9. Pump and Equipment Disinfected? Yes X No ___
10. Pressure Tank Size 80 gal. Type AIR BLANKET
    Location BASEMENT
11. Water Sample Submitted? Yes ___ No X

REMARKS: Co. # 30844

P316579

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner ROGER LANSON Well No. ___
    Address 3310 KEHM BLVD PARK CITY IL 60085
    Driller KEN BOYLE License No. 092-006408
11. Permit No. 001202 Date 4/15/88
12. Water from SAND (Formation)
    at depth 77 to 81 ft.
13. County LAKE
    Sec. 08.5e
    Twp. 46N
    Rge. 12E
    Elev. ___
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 10



SHOW LOCATION IN SECTION PLAT
Se, Se, NW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A-120	78	81
	T/C USPCO (GALV)		
	15 lbs PER FT		

16. Size Hole below casing: 5 in.
17. Static level 56 ft. below casing top which is 1 ft. above ground level. Pumping level 58 ft. when pumping at 11 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
TOP SOIL	2	2
YELLOW CLAY	15	17
BLUE CLAY	17	34
MEAN SAND	2	36
HARD PAN	9	45
BLUE CLAY	32	77
SAND & GRAVEL	4	81

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kenneth D. Boyle DATE 5/16/88

LOG # 204

Illinois Departmer Public Health
WATER WELL CONS TION REPORT

Date 6/24/10

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____ in. Depth _____ ft.
b. **Bored** Well Buried Slab [ ] Yes [ ] No
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.
c. **Drilled** Well PVC casing Formation packer set at depth of _____ ft.
Hole Diameter ____ in. to _____ ft. ____ in. to _____ ft. ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

d. **Drilled** Well **Steel** Casing - - - Mechanically Driven [X] Yes [ ] No
Hole Diameter 10 in. to 20 ft. 2 in. to 83 ft. ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
BENTONITE			0	70	

e. Well finished within [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack Grain Size/Supplier # From (ft.) To (ft.)

2. Well Use [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
[ ] Monitoring [ ] Other
3. Date Well Completed 5/24/05 Well Disinfected [ ] Yes [ ] No
Driller's estimated well yield 15 gpm
4. Date Permanent Pump Installed 5/24/05
5. Pump Capacity 8 gpm Set at (depth) 80 ft.
6. Pitless Adapter Model and Manufacturer CAMPBELL BP10X
7. Well Cap Type and Manufacturer BMCO WTV50
8. Pressure Tank Working Cycle 10 gals. Captive Air [X] Yes [ ] No
9. Pump System Disinfected [X] Yes [ ] No
10. Name of Pump Company BEACH PUMP & WELL
11. Pump Installer KEN BOYCE License # 101-0033?5
12. Kenneth O Boyce License # 17
Licensed Pump Installer Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St
Springfield, IL 62761

JUN 2005
Received
Environmental Health Services

49958

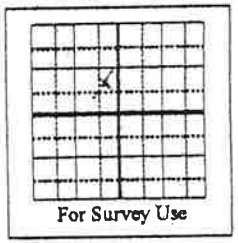
P 377608

DO NOT write on these lines

IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. **DISCLOSURE OF THIS INFORMATION IS MANDATORY.** This form has been approved by the Forms Management Center.

GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner ROGER STRIGO Well # _____
14. Driller TED BEAUFEUILLE License # _____
15. Name of Drilling Co. BEACH PUMP & WELL
16. Permit No? 997-13676-05 Date Issued 5/16/05
17. Date Drilling Started 5/23/05
18. Well SITE address 42736 N. LEWIS AVE WINTHROP HARBOR IL
19. Township Name BENTON Land ID # _____
20. Subdivision Name METES & BOUNDS Lot # _____
21. Location a. County LAKE
b. Township 46N Range 12E Section 8
c. NE Quarter SE Quarter NW Quarter .5f
d. Coordinates _____ Site Elevation ____ ft. (msl)



22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
5"	ASTM A-53B	TE	10 SLOT	0	83

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from SAND & GRAVEL at a depth of 82 ft. to 83 ft.
a. Static water level 63 ft. below casing which is 15 in. above ground
b. Pumping level is 72 ft. pumping 15 gpm after pumping for 3 hours

24. Earth Materials Passed Through

	From (ft.)	To (ft.)
YELLOW CLAY	0	34
GRAY CLAY & STONE	34	52
BLUE CLAY	52	70
HARDPAN	70	79
BLUE CLAY	79	82
SAND & GRAVEL	82	83

LOG # 205

(If drywhole, fill out log and indicate how hole was sealed.)
Kenneth O. Boyce
25. Licensed Water Well Contractor Signature

092-006808
License Number

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 257 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 10/11/83
5. Permanent Pump Installed? Yes X Date 10/13/83 No ____
   Manufacturer Red Jacket Type subm. Location ____
   Capacity 10 gpm. Depth of Setting 160 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Williams Model Number ____
   How attached to casing? clamp
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type galv. w/float
    Location ____
11. Water Sample Submitted? Yes X No ____

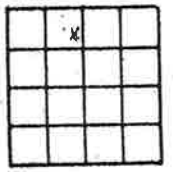
REMARKS:

P316580

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner AL LARSON Well No. 525 Meadow Ln., WinHar
    Address 1015 Shiloh Dr., Zion, IL
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 109352 Date 9/13/83
12. Water from Limestone Formation 13. County Lake
    at depth 212 to 257 ft.
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
    Sec. 8,5 Q
    Twp. 46N
    Rge. 12E
    Elev. ____



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	+2	191
5	Black	191	212

SHOW LOCATION IN SECTION PLAT
DTE 330' E
NW. SE NE
NW

16. Size Hole below casing: 5 in.
17. Static level 90 ft. below casing top which is 2 ft. above ground level. Pumping level ____ ft. when pumping at 7-8 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	7	7
Blue Clay	68	75
Gravel	1	76
Blue Clay	5	81
Sand-Lt. Clay	16	97
Blue Clay	112	209
Broken Rock	3	212
Limestone	45	257

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 3/26/84

LOG # 206

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 183 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 178 ft.
   c. Drilled ✓. Finished in Drift ____. In Rock ✓.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 20 Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 10/14/76
5. Permanent Pump Installed? Yes ✓ Date 10/18/76 No ____
   Manufacturer STA RITE Type Submer Location ____
   Capacity 8 gpm. Depth of Setting 126 Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No ____
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ____ No ✓
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 82 gal. Type galv
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P 16581

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Jack Walton Well No. ____
    Address 291 Oakdale Crown Point Harbor
    Driller Hoover Water Well Service Inc. License No. 102-78
11. Permit No. 53294 Date 10/8/76
12. Water from Limestone Formation 13. County Lake
    at depth 178 to 183 ft. Sec. 8 16a
    14. Screen: Diam. — in. Twp. 46N
    Length: ____ ft. Slot ____ Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
250'N 1000'W of SE/c SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv T+C 14.81 ppf	0	178

16. Size Hole below casing: 5 in.
17. Static level 78 ft. below casing top which is 1 ft. above ground level. Pumping level 130 ft. when pumping at 9 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	67	67
Gravel & Sand	5	72
Gravel & Clay	106	178
Limestone	5	183

LOG # 207

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED L R Hoover DATE 10/30/76
Inc

White Copy – Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 215 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____ in. Depth _____ ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast Iron) _____
   Privy _____ Sewer (Cast Iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No_____
4. Date well completed 8/1/78
5. Permanent Pump Installed? Yes X Date 8/9/78 No_____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting 160 Ft.
6. Well Top Sealed? Yes X No_____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No_____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 42 gal. Type galv.
    Location _____
11. Water Sample Submitted? Yes X No_____

REMARKS:

P 316582

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. 1142 Hanks
    Address 1015 Shiloh Blvd., Zion, IL.
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 76486 Date 7/6/78
12. Water from Limestone Formation 13. County Lake
    at depth 172 to 215 ft.
14. Screen: Diam. _____ in.
    Length: _____ ft. Slot _____
    Sec. 8 NW¼
    Twp. 46N
    Rge. 12E
    Elev. _____

SHOW LOCATION IN SECTION PLAT
250' S 100' E NW/c
SW SE SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	152
5	Black	152	173

16. Size Hole below casing: 5 in.
17. Static level 82 ft. below casing top which is 1 ft. above ground level. Pumping level _____ ft. when pumping at 1-2 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	8	8
Blue Clay	109	117
Hard Pan	23	140
Hard Hard Pan	25	165
Blue Clay - Lt. Gravel	7	172
Limestone	43	215

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Gaffke DATE 12/14/78

LOG # 208

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 218 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____in. Depth _____ft.
   c. Drilled _____. Finished in Drift _____. In Rock _____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast Iron) _____
   Privy _____ Sewer (Cast Iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No_____
4. Date well completed 9/6/78
5. Permanent Pump Installed? Yes X Date 9/7/78 No_____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting 180 Ft.
6. Well Top Sealed? Yes X No_____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No_____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 42 gal. Type _____
    Location _____
11. Water Sample Submitted? Yes X No_____

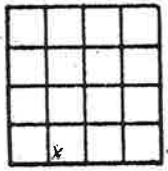
REMARKS:

P316583

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. 1104 Hanks
    Address 1015 Shiloh Blvd., Zion, Il
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 76485 Date 7/6/78
12. Water from Limestone Formation 13. County Lake
    at depth 185 to 218 ft.
14. Screen: Diam._____in.
    Length:_____ft. Slot _____
    Sec. 8,6a
    Twp. 46N
    Rge. 12E
    Elev. _____



SHOW LOCATION IN SECTION PLAT
300'S, 50'E, NW/c SW SE SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	167
5	Black Steel	167	187

16. Size Hole below casing: 5 in.
17. Static level _____ft. below casing top which is _____ ft. above ground level. Pumping level _____ ft. when pumping at 2 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	8	8
Blue Clay	48	56
Sand (Dry)	14	60
Blue Clay	25	85
Sandy Gravel - Lt. Clay	12	97
Blue Clay	88	185
Limestone	33	218

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Gaffke DATE 1/15/79

LOG # 209

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRI[illegible]RS

FILL IN ALL PERTINENT INFORMATION REQUESTE[illegible]ND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 97 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____ in. Depth _____ ft.
   c. Drilled X. Finished in Drift X. In Rock _____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 4/5/79
5. Permanent Pump Installed? Yes X Date 4/10/79 No____
   Manufacturer Red Jacket Type sub. Location _____
   Capacity 10 gpm. Depth of Setting 80 Ft.
6. Well Top Sealed? Yes X No____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No_____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 42 gal. Type galv.
    Location _____
11. Water Sample Submitted? Yes X No_____

REMARKS:

p316584

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner ALLEN ENTERPRISES Well No. 42163 Hanks
    Address 3300 Sheridan Rd., Zion, IL.
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 84269 Date 3/28/79
12. Water from Gravel-Sand (Formation) 13. County Lake
    at depth 94 to 97 ft.
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 10
    Sec. 8.6a
    Twp. 46N
    Rge. 12E
    Elev. _____

SHOW LOCATION IN SECTION PLAT
150's, 50'E, N½ SW SE SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	97

16. Size Hole below casing: 5 in.
17. Static level 75 ft. below casing top which is 1 ft. above ground level. Pumping level _____ ft. when pumping at 6-8 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Soft Black	4	4
Yellow	7	11
Blue Clay	83	94
Gravel - Sand	3	97

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED _____ DATE 6/21/79

LOG # 210

White Copy – Ill. Dept. of Public Health
Yellow Copy – Driller Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 218 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven _____. Drive Pipe Diam. _____ in. Depth _____ ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 4/5/78
5. Permanent Pump Installed? Yes X Date 4/21/78 No____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting 140 Ft.
6. Well Top Sealed? Yes X No____ Type _____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 42 gal. Type galv. w/float
    Location _____
11. Water Sample Submitted? Yes X No____

REMARKS:

P316585

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. 1114 Hanks
    Address 1015 Shiloh Blvd., Zion, IL.
    Driller GEORGE E. GAFFKE License No. 101-234
11. Permit No. 71259 Date 2/15/78
12. Water from Limestone Formation
    at depth 195 to 218 ft.
13. County Lake
    Sec. 8 (6th)
    Twp. 46N
    Rge. 12E
    Elev. _____
14. Screen: Diam. _____ in.
    Length: _____ ft. Slot _____
15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	175

SHOW LOCATION IN SECTION PLAT
This 3000' Way NW SE SW

16. Size Hole below casing: 5 in.
17. Static level _____ ft. below casing top which is _____ ft. above ground level. Pumping level _____ ft. when pumping at 3-4 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	8	8
Blue Clay	67	75
Sand - Gravel - Lt. Clay	5	80
Blue Clay	77	157
Hard Pan	33	190
Gravel	5	195
Limestone	23	218

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Gaffke DATE 7/28/78

LOG # 211

py –
pt. of Public Health
opy – Well Contractor
y – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AN[illegible] ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH [illegible]TECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

Type of Well

a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 125 ft.
Curb material ____. Buried Slab: Yes ____ No ____

b. Driven ____. Drive Pipe Diam. 4 in. Depth 123 ft.

c. Drilled X. Finished in Drift X. In Rock ____.
Tubular ____. Gravel Packed ____.

d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

Distance to Nearest:

Building 30 Ft. — Seepage Tile Field 75
Cess Pool ____ — Sewer (non Cast iron) ____
Privy ____ — Sewer (Cast iron) ____
Septic Tank 50 — Barnyard ____
Leaching Pit ____ — Manure Pile ____

Well furnishes water for human consumption? Yes X No ____
Date well completed September 14, 1987
Permanent Pump Installed? Yes X Date ____ No ____
Manufacturer RedJacket Type sub Location well
Capacity 10 gpm. Depth of Setting 100 Ft.
Well Top Sealed? Yes X No ____ Type Merrill
Pitless Adapter Installed? Yes X No ____
Manufacturer Merrill Model Number SPK
How attached to casing? clamp on
Well Disinfected? Yes X No ____
Pump and Equipment Disinfected? Yes X No ____
Pressure Tank Size 42 gal. Type captive air
Location basement
Water Sample Submitted? Yes X No ____

MARKS:

Co # 29619

p216586

DPH 4.065
'74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Ron Conde Well No. ____
Address 42315 Fossland Ave, Winrheop Harbor, IL
Driller Michael Gross License No. 102-002086
11. Permit No. 132499 Date 6-12-87
12. Water from gravel Formation
at depth 122 to 125 ft.
13. County Lake
Sec. 8
Twp. 46N
Rge. 12E
Elev. ____

14. Screen: Diam. 4 in.
Length: 3 ft. Slot #20

SHOW LOCATION IN SECTION PLAT
75'SL, 200'EL
NW, SE, SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv. steel 11#	0	123

16. Size Hole below casing: 4 in.
17. Static level 68 ft. below casing top which is 1 ft. above ground level. Pumping level 68 ft. when pumping at 10 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay	19	19
blue clay	33	52
stoney clay	23	75
blue clay	42	117
sand	2	119
clay	3	122
gravel	3	125

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Michael Gross DATE 9-19-87

.66

LOG # 212

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DI[illegible]ERS

FILL IN ALL PERTINENT INFORMATION REQUE[illegible] AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 6 in. Depth 215 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven X. Drive Pipe Diam. 4 in. Depth 195 ft.
   c. Drilled X. Finished in Drift____. In Rock X.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 30 Ft. Seepage Tile Field 75
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank 65 Barnyard____
   Leaching Pit____ Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed Sept. 20, 1978
5. Permanent Pump Installed? Yes X Date 9-25-78 No____
   Manufacturer Red Jacket Type Sub Location____
   Capacity 5 gpm. Depth of Setting 195 Ft.
6. Well Top Sealed? Yes X No____ Type Merrill
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Merrill Model Number SPK
   How attached to casing? clamps on
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes____ No X
10. Pressure Tank Size 42 gal. Type galvanized
    Location Crawl space
11. Water Sample Submitted? Yes____ No X

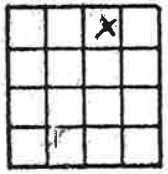
REMARKS:

P316587

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Gary Allen Well No.____
    Address 1226 - 67th St. Zion, Ill.
    Driller Emil E. Grosa License No. 102-70
11. Permit No. 77626 Date 7-31-1978
12. Water from Limestone Formation 13. County Lake
    at depth 175 to 215 ft.
    14. Screen: Diam.____ in.
    Length:____ ft. Slot____
    Sec. 8.6b
    Twp. 46N
    Rge. 12E
    Elev.____



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	Galv. Steel	0'	195'
	11-#		

SHOW LOCATION IN SECTION PLAT
300'S 250'W of N/4
NW SE SW

16. Size Hole below casing: 4 in.
17. Static level 75 ft. below casing top which is / ft. above ground level. Pumping level 180 ft. when pumping at 5 gpm for____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
top soil	1'	1'
yellow clay	17'	18'
blue clay	177'	195'
limestone	20'	215'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Emil E. Gross DATE 9-25-78

LOG # 213

ite Copy –
ll. Dept. of Public H...
llow Copy – Well Contractor
ue Copy – Well Owner

INSTRUCTIONS TO DRILL...

FILL IN ALL PERTINENT INFORMATION REQUESTED... MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEA...H PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 198 ft.
   Curb material _____. Buried Slab: Yes_____No_____
   b. Driven_____. Drive Pipe Diam. _____in. Depth _____ft.
   c. Drilled X. Finished in Drift_____. In Rock X.
   Tubular_____. Gravel Packed_____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No_____
4. Date well completed 2/24/78
5. Permanent Pump Installed? Yes X Date 3/6/78 No_____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting 140 Ft.
6. Well Top Sealed? Yes X No_____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No_____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 42 gal. Type Well-X-Trol
    Location _____
11. Water Sample Submitted? Yes X No_____

REMARKS:

P316588

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. 1134 Hanks
    Address 1015 Shiloh Blvd., Zion, IL.
    Driller JOHN P. LICHTER License No. 102-6
11. Permit No. 70068 Date 12/8/77
12. Water from Limestone (Formation)
    at depth 176 to 198 ft.
13. County Lake
    Sec. 8, bb
    Twp. 46N
    Rge. 12E
    Elev. _____
14. Screen: Diam._____in.
    Length:_____ft. Slot_____

	X		

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	158
5	Black Steel	158	178

SHOW LOCATION IN SECTION PLAT
50'S, 300'E, 50' NW/c, SE

16. Size Hole below casing: 5 in.
17. Static level 85 ft. below casing top which is 1 ft. above ground level. Pumping level _____ ft. when pumping at 10 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	13	13
Blue Clay	87	100
Blue Clay - Gravel	76	176
Limestone	22	198

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED J. Richter DATE 6/30/78

LOG # 214

IDPH 4.065
1/74 – KNB-1

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 98 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven _____. Drive Pipe Diam. _____ in. Depth _____ ft.
   c. Drilled X. Finished in Drift X. In Rock _____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 10/25/78
5. Permanent Pump Installed? Yes X Date 10/25/78 No____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting 80 Ft.
6. Well Top Sealed? Yes X No____ Type _____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 42 gal. Type Well-X-Trol
    Location _____
11. Water Sample Submitted? Yes X No____

REMARKS:

P316589

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. 42177 N. Hanks
    Address 1015 Shiloh Blvd., Zion, IL.
    Driller George E. Gaffke License No. 102-234
11. Permit No. 80063 Date 9/28/78
12. Water from Sand & Gravel Formation at depth 84 to 98 ft.
13. County Lake
    Sec. 8, 6b
    Twp. 46N
    Rge. 12E
    Elev. _____
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 10

SHOW LOCATION IN SECTION PLAT
150'S, 225'E, NW/c S E S W

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	98

16. Size Hole below casing: 5 in.
17. Static level 70 ft. below casing top which is 1 ft. above ground level. Pumping level _____ ft. when pumping at 10 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top Soil	2	2
Yellow	15	17
Blue	44	61
Sand	2	63
Blue	14	77
Blue-Sand-Gravel	7	84
Uniform Sand & Gravel	14	98

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Gaffke DATE 2/19/79

LOG # 215

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 94 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____ in. Depth _____ ft.
   c. Drilled X. Finished in Drift X. In Rock_____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No_____
4. Date well completed 10/26/78
5. Permanent Pump Installed? Yes X Date 10/26/78 No_____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting 80 Ft.
6. Well Top Sealed? Yes X No_____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No_____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 42 gal. Type Well-X-Trol
    Location _____
11. Water Sample Submitted? Yes X No_____

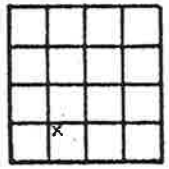
REMARKS:

P316590

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. 42145 N. Hanks
    Address 1015 Shiloh Blvd., Zion, IL.
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 80069 Date 9/28/78
12. Water from Gravel (Formation)
    at depth 77 to 94 ft.
13. County Lake
    Sec. 8.66
    Twp. 46N
    Rge. 12E
    Elev. _____
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 15



SHOW LOCATION IN SECTION PLAT
250's, 250'E, NW/c SE SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	~~Grade~~ PVC	grade	94

16. Size Hole below casing: 5 in.
17. Static level 70 ft. below casing top which is 1 ft. above ground level. Pumping level _____ ft. when pumping at 10 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top Soil	2	2
Yellow	14	16
Blue Clay	61	77
Gravel	17	94

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Gaffke DATE 2/19/79

LOG # 216

Yel[illegible]oy: Well Contractor
Golde[illegible]y: Well Owner

Well Cons[illegible]uction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

RECEIVED
DEC 26 1991
ENVIRONMENTAL HEALTH
DIVISION

GEOLOGICAL AND WATER SURVEYS WELL RECORD

[illegible] Driller Hoover Well Svc. License No. 102-000783
10. Well Site Address 11622 W. 11th St. Zion 60099
11. Property Owner Mr. Jim Johnson Well No.
12. Permit No. WW 91-03-1623 Date Issued 12/16/91
13. Location: County Lake
Sec. 8.68
Twp. 46N
Rge. 12E

Show location in section plat
NW, SE, SW
PARCEL 2
BARTLETTS
N. SHORE ACR

1. Type of Well
   a. Bored____ Hole Diam. 5 in. Depth____ft
   Buried Slab: Yes__ No__
   b. Driven____ Drive Pipe Diam. 5 in. Depth____ft
   c. Drilled X Finished in Drift ✓ In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Well furnishes water for human consumption? Yes ✓ No____
3. Date well drilled 12/17/91
4. Permanent pump installed? Yes ✓ Date 12/19/91 No____
   Manufacturer Sta-Rite Type Sub
   Location
   Capacity 8 gpm. Depth of setting 84 ft.
5. Well top sealed? Yes ✓ No____ Type
6. Pitless adapter installed? Yes ✓ No____
   Manufacturer Baker Model No. Snappy
   How attached to casing? approved manner
7. Well disinfected? Yes ✓ No____
8. Pump and equipment disinfected Yes ✓ No____

14. Water from SAND at depth 102 ft to 104 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
	ASTM A-53		
5"	Steel	0	102
	New Black Steel		
	Tand C 15.27 PPF		

16. Screen: Diam. 5 in, Length 36 in, Slot Size 15
17. Size hole below casing____in. 18. Ground Elev.____ ft msl.
19. Static level 73 ft below casing top which is 1 ft. above ground level. Pumping level 90 ft, pumping gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
~~Sand~~ CLAY	2	102
~~Clay~~ SAND	102	104

Continue on separate sheet if necessary.

IMPORTANT NOTICE
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

Signed Tommy R Hoover Date 12/23/91

IL482-0126

LOG # 217

P_2311650

WATER WELL CONSTRUCTION REPORT

TYPE OR PRINT FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

03-0031-03

Date 6-20-04

GEOLOGICAL AND WATER SURVEY WELL RECORD

1. Type of Well a. **Driven** Well Casing diam. _____ in. Depth _____ ft.
   b. **Bored** Well Buried Slab [ ] Yes [ ] No
   Hole Diameter ____ in. to ____ ft.; ____ in. to ____ ft.; ____ in. to ____ ft.
   c. **Drilled** Well PVC casing Formation packer set at depth of _____ ft.
   Hole Diameter ____ in. to ____ ft. ____ in. to ____ ft. ____ in. to ____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

d. **Drilled** Well **Steel** Casing - - - Mechanically Driven [X] Yes [ ] No
Hole Diameter 8 in. to 111 ft. 4 in. to 114 ft. ____ in. to ____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
CLAY SLURRY			0	90	

e. Well finished within [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack Grain Size/Supplier # From (ft.) To (ft.)

2. Well Use [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
   [ ] Monitoring [ ] Other
3. Date Well Completed 6-15-04 Well Disinfected [X] Yes [ ] No
   Driller's estimated well yield 12 gpm
4. Date Permanent Pump Installed 6-28-04
5. Pump Capacity 12 gpm Set at (depth) 80 ft.
6. Pitless Adapter Model and Manufacturer SMCK410 MERRILL
7. Well Cap Type and Manufacturer WATER TITE VENTED BAKE-
8. Pressure Tank Working Cycle 60 gals. Captive Air [X] Yes [ ] No
9. Pump System Disinfected [X] Yes [ ] No
10. Name of Pump Company E.E. GROSS WELL DRILLING
11. Pump Installer MICHAEL GROSS License # 102-002086
12. Michael Gross License # _____
    Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
535 W. Jefferson St.
Springfield, IL 62761

Received JUL 2004 Environmental Health Services

48857

P374650 DO NOT write on these lines

IMPORTANT: The [illegible] agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. **DISCLOSURE OF THIS INFORMATION IS MANDATORY.** This form has been approved by the Forms Management Center.

13. Property Owner BOB SCHWAB Well # 1
14. Driller TOM WACHHOLDER License # 092-006101
15. Name of Drilling Co. WACHHOLDER WELL DRILLING
16. Permit No. FSD03-03-0031 Date Issued 6-30-03
17. Date Drilling Started 6-14-04
18. Well SITE address 4216 HAYNER
19. Township Name BENTON Land ID # _____
20. Subdivision Name NORTH SHORE ACRES Lot # 8
21. Location a. County LAKE
    b. Township 46N Range 12E Section 8
    c. NW Quarter SE Quarter SW Quarter 6B
    d. Coordinates _____ Site Elevation _____ ft. (msl)

For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
4"	GALV STEEL	T+C	SCH40	0	111
ASTM-A-53-B		SEAM	11 SLOTS PER FT		
3 3/4"	STAINLESS STEEL	TELESCOPING	#10	111	114

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from SAND at a depth of 111 ft. to 114 ft.
    a. Static water level 50 ft. below casing which is 14 in. above ground
    b. Pumping level is 80 ft. pumping 12 gpm after pumping for 2 hours

24. Earth Materials Passed Through

	From (ft.)	To (ft.)
YELLOW CLAY (STONEY)	0	6
STONEY BLUE CLAY	6	29
GRAY CLAY	29	111
FINE SAND	111	114

(If dry hole, fill out log and indicate how hole was sealed.)

25. Licensed Water Well Contractor Signature 092-006101 License Number

LOG # 218

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

White – Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION ESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 117 ft.
      Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 114 ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
      Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 56 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 9-19-77
5. Permanent Pump Installed? Yes X Date 9-28-77 No ____
   Manufacturer Sta-Rite Type Subm. Location ____
   Capacity 8 gpm. Depth of Setting 105 Ft.
6. Well Top Sealed? Yes X No ____ Type Pitless adapter
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type Squatty
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316591

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Jerry Taylor Well No. ____
    Address 2206 - 13th St., Winthrop Harbor
    Driller L. R. Hoover License No. 102-78
11. Permit No. 66456 Date 9-8-77
12. Water from clay (Formation) 13. County Lake
    at depth 112 to 117 ft.
14. Screen: Diam. 4 in.
    Length: 3½ ft. Slot #20
    Sec. 8 (NW)
    Twp. 46N
    Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
50'S, 300'W, NE, SW NE SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	New Galv. T&C	0	114
	14.81 ppf		

16. Size Hole below casing: 4 in.
17. Static level 83 ft. below casing top which is 1 ft. above ground level. Pumping level 90 ft. when pumping at 12 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	20	20
Blue clay	59	79
Gravel & clay	33	112
Gravel	5	117
Clay	-	117

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Donny R. Hoover / Engr. DATE 11-8-77

LOG # 219

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 4 in. Depth 122 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven____. Drive Pipe Diam. 4 in. Depth 119 ft.
   c. Drilled X. Finished in Drift X. In Rock____.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 18 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast Iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed March 26, 1979
5. Permanent Pump Installed? Yes X Date 3/30/79 No____
   Manufacturer Sta-Rite Type Subm. Location ____
   Capacity 8 gpm. Depth of Setting 105 Ft.
6. Well Top Sealed? Yes X No____ Type P.A.
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 42 gal. Type WX-202
    Location ____
11. Water Sample Submitted? Yes____ No____

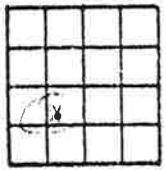
REMARKS:

p316592

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner JIM STRANE Well No. ____
    Address Hanks & 10th Street, Winthrop Harbor
    Driller Lonny R. Hoover License No. 102-783
11. Permit No. 83426 Date February 2, 1979
12. Water from Clay (Formation) 13. County Lake
    at depth 120 to 122 ft. Sec. 8.bc
14. Screen: Diam. 4 in. Twp. 46N
    Length: 3½ ft. Slot #15 Rge. 12E
    Elev. ____



SHOW LOCATION IN SECTION PLAT
25's, 300'E, n+/c
SW NE SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	New Galvanized	0	119
	Steel T&C 11PPF		
	ASTM - A-53 Youngstown		

16. Size Hole below casing: 4 in.
17. Static level 81 ft. below casing top which is 1 ft. above ground level. Pumping level 90 ft. when pumping at 14 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	17	17
Blue clay	31	48
Hardpan	55	103
Sand	17	120
Clay	2	122

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R. Hoover/cgx DATE 4/23/79

LOG # 220

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 85 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 83 ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 30 Ft. Seepage Tile Field n/installed
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank n/installed Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed July 17, 1986
5. Permanent Pump Installed? Yes X Date ____ No ____
   Manufacturer Red Jacket Type sub Location well
   Capacity 10 gpm. Depth of Setting 80 Ft.
6. Well Top Sealed? Yes X No ____ Type Merrill
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Merrill Model Number SPK
   How attached to casing? clamp on
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type captive air
    Location basement
11. Water Sample Submitted? Yes ____ No X

REMARKS: County #28251

P316593

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Ron Conde Well No. ____
    Address 9714 West 16th St., Zion, Illinois
    Driller Michael Gross License No. 102-002086
11. Permit No. 124254 Date 6-3-86
12. Water from gravel-clay Formation 13. County Lake
    at depth 78 to 85 ft.
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot #20
    Sec. 8.6e
    Twp. 46N
    Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
100'SL, 75'WL NE SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv. steel	0	83
	11#		

16. Size Hole below casing: 4 in.
17. Static level 65 ft. below casing top which is 1 ft. above ground level. Pumping level 65 ft. when pumping at 10 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay	17	17
stoney clay	30	47
blue clay	31	78
gravel-clay	7	85

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Michael Gross DATE 8-1-86

LOG # 177

INSTRUCTIONS TO DRI[illegible]S

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 230 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 202 ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 45 Ft.
   Cess Pool ____
   Privy ____
   Septic Tank ____
   Leaching Pit ____
   Seepage Tile Field ____
   Sewer (non Cast iron) ____
   Sewer (Cast iron) ____
   Barnyard ____
   Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed February 10, 1978
5. Permanent Pump Installed? Yes X Date 2-20-78 No ____
   Manufacturer Sta-Rite Type Subm. Location ____
   Capacity 8 gpm. Depth of Setting 189' x 1" Ft.
6. Well Top Sealed? Yes X No ____ Type Pitless adapter
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 82 gal. Type galvanized
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316594

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Jerry Taylor Well No. ____
    Address 10th & Hayner, Winthrop Harbor
    Driller L. R. Hoover License No. 102-78
11. Permit No. 67862 Date 10-7-77
12. Water from limestone (Formation) 13. County Lake
    at depth 202 to 230 ft.
14. Screen: Diam. -- in.
    Length: -- ft. Slot --
    Sec. 8 160
    Twp. 46N
    Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION PLAT

175 N, 300 W, SE/c, NW NE SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	New Galv. T&C	0	202
	14.81 ppf		

16. Size Hole below casing: 4 in.
17. Static level 88 ft. below casing top which is 1 ft. above ground level. Pumping level 150 ft. when pumping at 4 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow clay	19	19
Blue clay	60	79
Gravel & clay	31	110
Sand	6	116
Gravel & clay	6	122
Sandy clay	38	160
Clay	40	200
Gravel & sand	2	202
Limestone	28	230

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R. Hoover Engr. DATE 3-7-78

LOG # 222

White Pink Copies: Ill. Dept. of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Well Construction Report

ISD 91-03-0158
PIN# 04-05-307-013

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 4 in. Depth 220 ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam. 4 in. Depth 202 ft
   c. Drilled X Finished in Drift____ In Rock X
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 8-27-91
4. Permanent pump installed? Yes X Date_____ No___
   Manufacturer Myers Type subm
   Location well
   Capacity _____gpm. Depth of setting 160 ft.
5. Well top sealed? Yes X No___ Type Merrill
6. Pitless adapter installed? Yes X No___
   Manufacturer Merrill Model No. SPK
   How attached to casing? clamp on
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

TW

IMPORTANT NOTICE

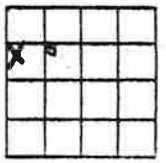
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller MICHAEL GROSS License No. 102-00208
10. Well Site Address & 415 Prairie Ave. Winthrop Harb
11. Property Owner Steve Murphy Well No.____
12. Permit No. 91-03-0#58 Date Issued 6-10-91
13. Location: Computer permit 90-9715891 County Lake
    NW¼ of the SE¼ of the NW¼ Sec 8.6 E Twp. 46N Rge. 12E



Show location in section plat

NW SE NW
North Prairie Estates
Lot 47

14. Water from limestone at depth 202 ft to 220 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
4"	galv. steel	0	202
	11#		

8 gpm @140'

16. Screen: Diam.___in, Length___in, Slot Size___
17. Size hole below casing 4 in. 18. Ground Elev._____ ft msl.
19. Static level 70 ft below casing top which is 1 ft. above ground level. Pumping level 140 ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
yellow clay	0	22
blue clay	22	70
hard pan	70	140
blue clay	140	202
limestone	202	220

LOG # 223

Continue on separate sheet if necessary.

Signed Michael Gross per cg Date 8-29-91

TYPE OR PR[illegible] FIRMLY WITH BLACK INK PEN, THIS FORM MUS[illegible] COMPLETED WITHIN 30 DAYS OF COMPLETION AND SENT TO THE APPROPRIATE HEALTH DEPARTMENT

1. Date Well Completed 7-23-99
2. Use: [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
   [ ] Monitoring [ ] Other
3. Type of Well:
   a. Bored Well: Hole Diameter ____ in. Depth ____ ft.
   Casing Diameter ____ in. Buried Slab: [ ]Yes [ ]No
   b. Driven Well: Drive Pipe Diameter ____ in. Depth ____ ft.
   c. Drilled Well: Well Diameter 4 in. Depth 106 ft.
   Casing Diameter 4 in. Type GALV STEEL Joint T & C

Casing Grout:

Kind	Oversized Drill Hole(In)	From(ft)	To(ft)
CLAY SLURRY	8	0	12
CLAY SLURRY	4	12	106

Finished In: Unconsolidated [X] Gravel Pack: [ ]Yes [X]No
Rock [ ] Grain Size

4. Well Disinfected? [X]Yes [ ]No
5. Date Permanent Pump Installed 8-25-99
6. Licensed Pump Contractor MIKE GROSS
   License Number 102-002086
7. Pitless Adapter Installed? [X]Yes [ ]No
   Manufacturer MERRILL Model MCK
   Attached to Casing - How? [ ] Screwed On [ ] Welded [X] Compression
8. Type of Well Cap WATER-TITE Vented
9. Tank Working Cycle 60 gallons Captive Air: [X]Yes [ ]No
10. Pump and Equipment Disinfected? [X]Yes [ ]No

General Comments: (If dry hole, fill out log & indicate how hole was sealed.)

(Illinois Department of Public Health P-318478
Division of Environmental Health - 525 W. Jefferson
Springfield, IL 62761

COUNTY No. 42141

IMPORTANT NOTICE. This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

IL 482-0126 Printed by Authority of the State of Illinois P.O. PRT3030244 6.5M 6/98

Date 8-1-99

GEOLOGICAL AND WATER SURVEY WELL RECORD

11. Permit Number FSD98-03-1065 Date Issued 7-[illegible]99
12. Property Owner STEVE TJADER Well #
13. Drilling Company Name WACHHOLDER WELL DRILLING
14. Name of Person who drilled the well TOM WACHHOLDER
15. Well Site Address 42340 FAGO AVE 2,10N
16. Twnshp Name BENTON Land ID#
17. Subdivision Name North Shore Acres Lot Elevation ft.
18. Location: Cnty LAKE Sect 8 Twnshp 46 Range 12
SW Quarter of the NE Quarter of the NW Quarter of the SW Quarter 6q
19. Casing and Liner Pipe:

Dia (In)	Type	From(ft)	To (ft)
4	GALV STEEL SCH 40	0	103
	ASTM A-53-B S89		
	11 LBS PER FOOT SEAH		

20. Screen:
Diameter 3.5 in.
Length 3.6 ft.
Slot Size #15
Material STAINLESS STEEL
21. Water from SAND + GRAVEL at depth 103 ft. to 106 ft.
22. Static Level 70 ft. below casing top which is 14 in. above ground level.
Pumping Level 75 ft. Pumping 10 gpm for 2 hours.
23. Earth Materials Passed Through

	Depth Top(ft)	Depth Bottom(ft)
YELLOW CLAY	0	19
STONEY BLUE CLAY	19	35
SANDY BLUE CLAY	35	70
BLUE CLAY	70	103
SAND + GRAVEL	103	106

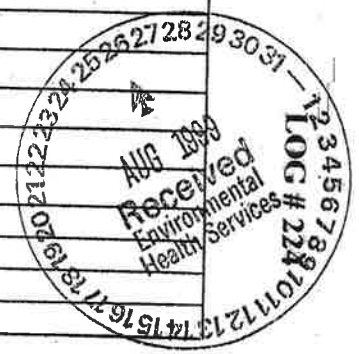
Continue on back of sheet if necessary

Thomas Wachholder
Licensed Contractor Signature

092-008101
License Number

(SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

11/95



White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 218 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____ in. Depth _____ ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 2/28/79
5. Permanent Pump Installed? Yes X Date 3/15/79 No____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting 180 Ft.
6. Well Top Sealed? Yes X No____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No _____
9. Pump and Equipment Disinfected? Yes X No _____
10. Pressure Tank Size 42 gal. Type galv. w/float
    Location _____
11. Water Sample Submitted? Yes X No _____

REMARKS:

p316595

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. 42215 Hayner
    Address 1015 Shiloh Blvd., Zion, IL.
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 82724 Date 12/5/78
12. Water from Limestone Formation 13. County Lake
    at depth 181 to 218 ft. Sec. 8 T a
    14. Screen: Diam. _____ in. Twp. 46N
    Length: _____ ft. Slot _____ Rge. 12E
    Elev. _____

SHOW LOCATION IN SECTION PLAT
250'W, 200'N, SE/c SW SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	162
5	Black Steel	162	183

16. Size Hole below casing: 5 in.
17. Static level 80 ft. below casing top which is 1 ft. above ground level. Pumping level _____ ft. when pumping at 3-4 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	7	7
Blue Clay	174	181
Limestone	37	218

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED _____ DATE 5/24/79

LOG # 225

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 210 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 190 ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 30 Ft. Seepage Tile Field 100'
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 75' Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed January 20, 1981
5. Permanent Pump Installed? Yes X Date ____ No ____
   Manufacturer Ed Jacket Type Sub- Location ____
   Capacity 5 gpm. Depth of Setting 190 Ft.
6. Well Top Sealed? Yes X No ____ Type Merriel
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Merriel Model Number SPK
   How attached to casing? clamp on
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 82 gal. Type galvanized
    Location basement
11. Water Sample Submitted? Yes ~ No X

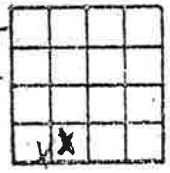
REMARKS:

p316596

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Doris Davis Well No. ____
    Address 2322 Eglinton Blvd, Gurnee, Ill.
    Driller Michael Grosso License No. 102-208
11. Permit No. 97451 Date 12-22-80
12. Water from Limestone Formation 13. County Lake
    at depth 190 to 210 ft.
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
    Sec. 8 T
    Twp. 46 N
    Rge. 12 E
    Elev. ____



SHOW LOCATION IN SECTION PLAT
250'N, 150'E SW/c SE SW SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	Galv. steel 11 #	0'	190'

16. Size Hole below casing: 4 in.
17. Static level 95 ft. below casing top which is 1 ft. above ground level. Pumping level 190 ft. when pumping at 1 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top soil	1'	1'
Yellow clay	17'	18'
Blue clay	57	75'
Hard pan	75'	150'
Blue clay	40'	190'
limestone	20'	210'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Michael Grosso DATE 3-6-81

LOG # 226

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRI[illegible]

FILL IN ALL PERTINENT INFORMATION REQUESTE[illegible]D MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 218 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven _____. Drive Pipe Diam. ____in. Depth ____ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 2/28/79
5. Permanent Pump Installed? Yes X Date 3/14/79 No____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting 180 Ft.
6. Well Top Sealed? Yes X No____ Type _____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 42 gal. Type galv. w/float
    Location _____
11. Water Sample Submitted? Yes X No____

REMARKS:

p 316597

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. 42177 Havner
    Address 1015 Shiloh Blvd., Zion, Il.
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 83611 Date 2/22/79
12. Water from Limestone Formation 13. County Lake
    at depth 187 to 218 ft. Sec. 8 T 7 b
14. Screen: Diam. _____in. Twp. 46N
    Length: ____ft. Slot _____ Rge. 12E
    Elev. _____

	X		

SHOW LOCATION IN SECTION PLAT
200'S, 200'W, N½ SWSW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	168
5	Black Steel	168	189

16. Size Hole below casing: 5 in.
17. Static level 80 ft. below casing top which is 1 ft. above ground level. Pumping level ____ ft. when pumping at 1-2 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	8	8
Blue Clay	179	187
Limestone	31	218

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED _____ DATE 5/24/79

LOG # 227

Ill. [illegible] of Public Health
Yellow [illegible]y.—Well Contractor
Blue [illegible]—Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, [illegible]UMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, [illegible]1. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 195 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____in. Depth _____ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No_____
4. Date well completed 8/1/79
5. Permanent Pump Installed? Yes X Date 8/2/79 No_____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting 160 Ft.
6. Well Top Sealed? Yes X No_____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No_____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 42 gal. Type galv.
    Location _____
11. Water Sample Submitted? Yes X No_____

REMARKS:

P316598

IDPH 4.065
1/74 — KNB-1
(59571—12½M Sets—6-74)

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. 11795 W.11th
    Address 1015 Shiloh Blvd., Zion, IL.
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 85337 Date 5/8/79
12. Water from Limestone Formation 13. County Lake
    at depth 172 to 195 ft. Sec. 8.76
    14. Screen: Diam. _____in. Twp. 46N
    Length: _____ft. Slot _____ Rge. 12E
    Elev. _____

X			

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC 2	abv.grd.	151
5	BlackSteel	151	172

SHOW LOCATION IN SECTION PLAT
50'S 250'E NW/c NE SW SW

16. Size Hole below casing: 5 in.
17. Static level 90 ft. below casing top which is 1 ft. above ground level. Pumping level _____ ft. when pumping at 7-9 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	18	18
Blue Clay	154	172
Limestone	23	195

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Gaffke DATE 11/28/79

LOG # 228

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 217 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____ in. Depth _____ ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No_____
4. Date well completed 9/17/79
5. Permanent Pump Installed? Yes X Date 9/18/79 No_____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting 180 Ft.
6. Well Top Sealed? Yes X No_____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No_____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 42 gal. Type Hv. w/float
    Location _____
11. Water Sample Submitted? Yes X No_____

REMARKS:

P316599

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. 2145 N. Haynor
    Address 1015 Shiloh Blvd., Zion, Il.
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 86572 Date 6/12/79
12. Water from Limestone Formation 13. County Lake
    at depth 176 to 217 ft. Sec. 8, 7b
14. Screen: Diam. _____ in. Twp. 46N
    Length: _____ ft. Slot _____ Rge. 12E
    Elev. _____

SHOW LOCATION IN SECTION, PLAT
2SO's, 2SW, NE¼ SW SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC 1	abv. grd.	155
5	Black Steel	155	176

16. Size Hole below casing: 5 in.
17. Static level _____ ft. below casing top which is _____ ft. above ground level. Pumping level _____ ft. when pumping at 2 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	8	8
Blue Clay	64	72
Gravel	2	74
Blue Clay	20	94
Hard Pan	76	170
Blue Clay	6	176
Limestone	41	217

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Gaffke DATE 12/20/79

LOG # 229

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 98 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:

Building	____ Ft.	Seepage Tile Field	____
Cess Pool	____	Sewer (non Cast iron)	____
Privy	____	Sewer (Cast iron)	____
Septic Tank	____	Barnyard	____
Leaching Pit	____	Manure Pile	____

3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 4/13/79
5. Permanent Pump Installed? Yes X Date 4/23/79 No ____
   Manufacturer Red Jacke Type subm Location ____
   Capacity 10 gpm. Depth of Setting 80 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Williams Model Number ____
   How attached to casing? clamp
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type Well-x-trol
    Location ____
11. Water Sample Submitted? Yes X No ____

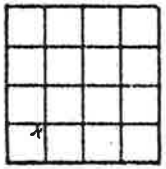
REMARKS:

P316600

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. haynor & 11th
    Address 1015 Shiloh Blvd., Zion, Il 60099
    Driller George E Gaffke License No. 102-234
11. Permit No. 84674 Date 4/16/79
12. Water from Sand & Gravel (Formation) 13. County Lake
    at depth 91 to 98 ft.
    14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 10
    Sec. 8.76
    Twp. 46N
    Rge. 12E
    Elev. ____



SHOW LOCATION IN SECTION PLAT
75'S, 75'W, NE/c SW SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	98

16. Size Hole below casing: 5 in.
17. Static level 58 ft. below casing top which is 2 ft. above ground level. Pumping level ____ ft. when pumping at 10± gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top	2	2
Yellow	7	9
Soft Blue	82	91
Sand & Gravel	7	98

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED ____ DATE 7/10/79

LOG # 230

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 66 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven_____. Drive Pipe Diam._____ in. Depth_____ ft.
   c. Drilled X. Finished in Drift X. In Rock_____.
   Tubular_____. Gravel Packed_____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No_____
4. Date well completed 10/14/78
5. Permanent Pump Installed? Yes X Date 10/17/78 No_____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting 55 Ft.
6. Well Top Sealed? Yes X No_____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No_____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 42 gal. Type Well-X-Trol
    Location _____
11. Water Sample Submitted? Yes X No_____

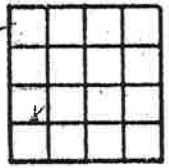
REMARKS:

P316601

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. 3804 11th
    Address 1015 Shiloh Blvd., Zion, IL.
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 72924 Date 4/12/78
12. Water from Gravel Formation 13. County Lake
    at depth 62 to 66 ft.
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 10
    Sec. 8
    Twp. 46N
    Rge. 12E
    Elev. _____



SHOW LOCATION IN SECTION PLAT
100'W, 330'E SW/c NE/4 NW/4 SW/4
100'S/L, 330'E/L SE/4 NW/4 SW/4

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	64

16. Size Hole below casing: 5 in.
17. Static level _____ ft. below casing top which is _____ ft. above ground level. Pumping level _____ ft. when pumping at 10 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	10	10
Blue Clay	52	62
Gravel	4	66

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Gaffke DATE 1/19/79

LOG # 231

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 218 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 5/29/84
5. Permanent Pump Installed? Yes X Date 6/20/84 No ____
   Manufacturer Keddeket Type Subm Location ____
   Capacity 10 gpm. Depth of Setting 200 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No X
   Manufacturer Dickens Model Number ____
   How attached to casing? clamp
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 120 gal. Type Well-X-Trol
    Location ____
11. Water Sample Submitted? Yes X No ____

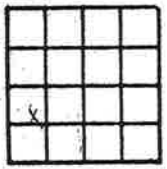
REMARKS:

P316602

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Dick Walsh Well No. 104 & Hayner
    Address 2620 Cheyenne, Waukegan, IL
    Driller George E. Ehrke License No. 102-234
11. Permit No. 111456 Date 4/6/84
12. Water from Limestone Formation 13. County Lake
    at depth 189 to 218 ft. Sec. 8, 7c
    14. Screen: Diam. ____ in. Twp. 46N
    Length: ____ ft. Slot ____ Rge. 12E
    Elev. ____



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	PVC	+1	170
5"	Black	170	191

SHOW LOCATION IN SECTION PLAT
75'S & 50'W
NE/c
SE NW SW

16. Size Hole below casing: 5 in.
17. Static level 100 ft. below casing top which is +1 ft. above ground level. Pumping level ____ ft. when pumping at 6-8 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown clay	0	10
Blue Clay	10	92
Sand	9	101
Clay	2	103
~~Sand & Lt. Gravel~~	12	115
Hard Pan	14	129
Gravel	2	131
Blue Clay	55	186
Broken Rock	3	189
Lime Stone	29	218

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Ehrke DATE 8/24/84

LOG # 232

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 69 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift X. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 10/14/78
5. Permanent Pump Installed? Yes X Date 10/17/78 No ____
   Manufacturer Red Jacket Type Subm. Location ____
   Capacity 10 gpm. Depth of Setting 60 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Williams Model Number ____
   How attached to casing? clamp
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type Well-X-Trol
    Location ____
11. Water Sample Submitted? Yes X No ____

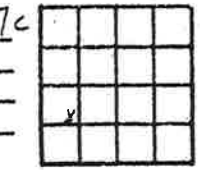
REMARKS:

p316603

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. 3716 11th
    Address 1015 Shiloh Blvd., Zion, IL.
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 72925 Date 4/12/78
12. Water from Gravel (Formation)
    at depth 64 to 69 ft.
13. County Lake
    Sec. 8, 7c
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 10



SHOW LOCATION IN SECTION PLAT
100'S, 200'W, SE NW SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	grade	67

16. Size Hole below casing: 5 in.
17. Static level ____ ft. below casing top which is ____ ft. above ground level. Pumping level ____ ft. when pumping at 10 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	8	8
Blue Clay	29	37
Sand-Gravel	2	39
Blue Clay	25	64
Gravel	5	69

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Geo. E. Gaffke DATE 1/19/79

LOG # 233

I... of Public Health
Yellow ...: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 5 in. Depth 72 ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
bentonite	grade	69

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 9/8/92
4. Permanent pump installed? Yes X Date 9/8/92 No___
   Manufacturer Red Jacket Type subm.
   Location
   Capacity 10 gpm. Depth of setting 63 ft.
5. Well top sealed? Yes X No___ Type
6. Pitless adapter installed? Yes X No___
   Manufacturer Williams Model No. WTV50S
   How attached to casing? clamp
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

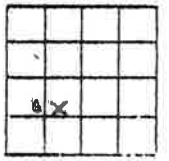
IMPORTANT NOTICE
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller GEORGE E. GAFFKE License No. 102-002342
10. Well Site Address 42314 Lewis Ave., Zion
11. Property Owner PAUL BUSCH CONST. Well No.
12. Permit No. ISD92-03-0355 Date Issued 9/1/92
13. Location: County Lake
    Benton Sec. 8 Twp. 46N Rge. 12E



Show location in section plat

SE NW SW
P. H. Bartlett
North Shore Acres

14. Water from Sand & Gravel at depth 60 ft to 72 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	PVC	+1	69

16. Screen: Diam. 5 in, Length 3 ft, Slot Size 15
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 65 ft below casing top which is 1 ft. above ground level. Pumping level ___ft, pumping ___gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Brown Clay	0	10
Blue Clay	10	60
Sand & Gravel	60	72

Continue on separate sheet if necessary.

Signed [signature] Date 9/10/92

LOG # 234

Ill. Dept. of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Well Construction Report

ISD 96-03-10

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller EUGENE GROSS License No. 102-006718
10. Well Site Address 42313 THORPE ZION IL 60099
11. Property Owner DOUGLAS TAUBER Well No.
12. Permit No. 04-08-307-003 Date Issued 4-23-97
13. Location: County LAKE
BLK 55 Sec. 8 T
F.H. Bartletts North Shore Acres Twp. 46 N
Rge. 12 E

Show location in section plat
SE NW SW

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled ✓ Finished in Drift____ In Rock ✓
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
BENTONITE	0	20

2. Well furnishes water for human consumption? Yes ✓ No___
3. Date well drilled 5-20-97
4. Permanent pump installed? Yes ✓ Date 5-27-97 No___
   Manufacturer STA-RITE Type SQ3
   Location WELL
   Capacity 5 gpm. Depth of setting 180 ft.
5. Well top sealed? Yes___ No___ Type
6. Pitless adapter installed? Yes ✓ No___
   Manufacturer WILLIAMS Model No. 150AC
   How attached to casing? BOLT ON
7. Well disinfected? Yes ✓ No___
8. Pump and equipment disinfected Yes ✓ No___

14. Water from ROCK at depth 189 ft to 215 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	STEEL 15#	0	189

16. Screen: Diam.___in, Length___in, Slot Size___
17. Size hole below casing 5" in. 18. Ground Elev.____ ft msl.
19. Static level 105 ft below casing top which is 2 ft. above ground level. Pumping level 140 ft, pumping gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
CLAY	0	90
CLAY & GRAVEL	90	142
CLAY	142	189
ROCK	189	215

Continue on separate sheet if necessary.

LOG # 235

IMPORTANT NOTICE
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

Signed Eugene Gross Date 7-29-97

P-296625 ✓
IL482-0126

LOG # 236

LOG OF WATER WELL

Property owner B. Wiemer Well No. 13

Drilled by R. C. Hamm Year 1963

Formations passed through	Thickness	Depth of Bottom
Yellow clay	20	20
Sand & Blue clay	32	52
Sand, Gravel & clay	5	57
Stony Blue clay	44	101
Sand # 13	4	105

[Continue on back if necessary]

Finished in Sand at 103 to 105 ft.

Cased with 4 inch Galv from 0 to 103 ft.

and inch from to ft.

Size hole below casing 4 inch. Static level from surf. 80 ft.

Tested capacity 10 gal. per min. Temperature °F.

Water lowered to 80 ft. in. in hrs. min.

Length of test hrs. min. Screen

Slot Diam. Length Bottom set at ft.

[Show location in Section Plat]

Township name Elev. 730 Sec.

Description of location Twp.

16N 12E - 8.7d Rge.

Signed Jerry K. County LAKE

Copy for Illinois State Water Survey Index: P3166604

P3166604

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 96 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven _____. Drive Pipe Diam. ____in. Depth ____ft.
   c. Drilled X. Finished in Drift X. In Rock____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 10/24/78
5. Permanent Pump Installed? Yes X Date 10/25/78 No____
   Manufacturer Red Jacket Type subm. Location _____
   Capacity 10 gpm. Depth of Setting 80 Ft.
6. Well Top Sealed? Yes X No____ Type _____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Williams Model Number _____
   How attached to casing? clamp
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 42 gal. Type Well-X-Trol
    Location _____
11. Water Sample Submitted? Yes X No____

REMARKS:

P316605

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner BUSCH & LARSON Well No. 11859 W. 9th St.
    Address 1015 Shiloh Blvd., Zion, IL.
    Driller GEORGE E. GAFFKE License No. 102-234
11. Permit No. 80070 Date 9/28/78
12. Water from Sand & Gravel (Formation)
    at depth 92 to 96 ft.
13. County Lake
    Sec. 8, 7
    Twp. 46N
    Rge. 12E
    Elev. _____
14. Screen: Diam. 5 in.
    Length: 3 ft. Slot 15

SHOW LOCATION IN SECTION PLAT
150'S, 125'W, NE/4 NW 1/4

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	S PVC	grade	96

16. Size Hole below casing: 5 in.
17. Static level 70 ft. below casing top which is 1 ft. above ground level. Pumping level ____ ft. when pumping at 10 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top Soil	2	2
Yellow	10	12
Soft Blue	80	92
Sand & Gravel	4	96

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Gaffke DATE 2/19/79

LOG # 237

Well Construction Report

097-03-0369-00 Date 6/20/01

E OR PRESS FIRMLY WITH BLACK INK PEN
COMPLETE WITHIN 30 DAYS OF WELL COMPLETION
AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT

1. Type of Well: a. **Driven** Well: Casing diam. _____ in. Depth _____ ft.
b. **Bored** Well: Buried Slab [ ] Yes [ ] No
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.
c. **Drilled** Well: PVC casing Formation packer set at depth of _____ ft.
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

d. **Drilled** Well: **Steel** Casing- - - Mechanically Driven [X] Yes [ ] No
Hole Diameter 10" in. to 20 ft.; 5" in. to 126 ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
BENTONITE &			0	20	
CLAY SLURRY					

e. Well finished within: [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)

2. Well Use: [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
[ ] Monitoring [ ] Other _____
3. Date Well Completed: 6/14/01 Well Disinfected [X] Yes [ ] No
Driller's estimated well yield 7.5 gpm
4. Date Permanent Pump Installed _____
5. Pump Capacity 8 gpm Set at (depth) 120 ft.
6. Pitless Adapter Model and Manufacturer: MARTINSON BRICK
7. Well Cap Type and Manufacturer BAKER WTV50
8. Pressure Tank: Working Cycle 42 gals. Captive Air: [X] Yes [ ] No
9. Pump System Disinfected: [X] Yes [ ] No
10. Name of Pump Company BEACH PUMP & WELL
11. Pump Installer: KEN BOYCE License # 101-003325
12. Kenneth O Boyce License # 11
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson Street
Springfield, IL 62761

CO # 43159

R 336741

DO Not write on these lines

IMPORTANT NOTICE: This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. DISCLOSURE OF THIS INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.
IL 482-0126 rev. 12/98

GEOLOGICAL & WATER SURVEY WELL RECORD

13. Property Owner DOUG TSAOUR Well # _____
14. Driller TED BELLEFEUILLE License # _____ 15.
Name of Drilling Company BEACH PUMP & WELL 16.
Permit No. FSD 00-03-0369 Date Issued 6/21/01
17. Date Drilling Started 6/12/01
18. Well **SITE** address BROEKER AVE ZION IL. 60099 19.
Township Name BENTON Land ID # _____ 20.
Subdivision Name FHB NORTH SHORE ACRES Lot # 1 21.
Location: a. County LAKE
b. Township 46N Range 12E Section 8.7d
c. NE Quarter NW Quarter SW Quarter
d. coordinates: _____ Site Elevation _____ ft.(msl)

For Survey Use Only

22. Casings, Liners*, & Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
5"	ASTM A-53B T/C		15 LBS/SCH 40	0	122
5"	STAINLESS	K-PACKER	10	122	126

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from SAND at a depth of 121 ft. to 126 ft.
a. static water level 28 ft. below casing which is 18 in. above ground
b. pumping level is 120 ft. pumping 7.5 gpm after pumping for 3 hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
YELLOW CLAY	0	29
BLUE CLAY	29	87
HARDPAN	87	96
BLUE CLAY & SAND	96	121
FINE SAND	121	126

JUL 2001 Received Environmental Health Services

(If DRY HOLE, fill out log & indicate how hole was sealed)

Kenneth O Boyce
25. Licensed Water Well Contractor Signature

092-006808
License Number

LOG # 238

WATER WELL CONSTRUCTION REPORT

097-03-0412-01

Date 11/12/01

TYPE OR PRES...RMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab [ ] Yes [ ] No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

d. **Drilled** Well **Steel** Casing--- Mechanically Driven [X] Yes [ ] No
Hole Diameter 10 in. to 20 ft. 5 in. to 128 ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
BENTONITE & CLAY SLURRY			0	20	

e. Well finished within [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack Grain Size/Supplier # From (ft.) To (ft.)

2. Well Use [ ] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock [ ] Monitoring [ ] Other
3. Date Well Completed 11/7/01 Well Disinfected [X] Yes [ ] No
Driller's estimated well yield 10 gpm
4. Date Permanent Pump Installed 11/16/01
5. Pump Capacity 8 gpm Set at (depth) 108 ft.
6. Pitless Adapter Model and Manufacturer MACRIVSON BP10X
7. Well Cap Type and Manufacturer BARCO WTV50
8. Pressure Tank Working Cycle 42 gals. Captive Air [X] Yes [ ] No
9. Pump System Disinfected [X] Yes [ ] No
10. Name of Pump Company BEACH PUMP & WELL
11. Pump Installer KEN BOYCE License # 101-003325
12. Kenneth O. Boyce License # "
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

R422525

DO NOT write on these lines

IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. **DISCLOSURE OF THIS INFORMATION IS MANDATORY.** This form has been approved by the Forms Management Center.

DEC 2001
Received
Environmental
Health Services

GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner DOUG TJAARDA Well # _____
14. Driller TED BELLEVILLE License # _____
15. Name of Drilling Co. BEACH PUMP & WELL
16. Permit No. FSP 01-03-0412 Date Issued 10/31/01
17. Date Drilling Started 11/6/01
18. Well **SITE** address 42421 W BROECKER AVE ZION IL.
19. Township Name BENTON Land ID # _____
20. Subdivision Name F.H.B. N. SHORE ACRES Lot # 1
21. Location a. County LAKE
b. Township 46 N Range 08 E Section 12
c. NE Quarter NW Quarter SW Quarter
d. Coordinates _____ Site Elevation ____ ft. (msl)

For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
5"	ASTM A-53B	T&C	10 SLOT	0	124
5"	STAINLESS	K-PACKER	10	124	128

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from SAND at a depth of 123 ft. to 128 ft.
a. Static water level 80 ft. below casing which is 16 in. above ground
b. Pumping level is 95 ft. pumping 10 gpm after pumping for 2 hours

24. Earth Materials Passed Through

	From (ft.)	To (ft.)
YELLOW CLAY & STONE	0	28
BLUE CLAY	28	89
HARD PAN	89	99
FINE SAND	99	123
	123	128

(If dry hole, fill out log and indicate how hole was sealed.)

Kenneth O Boyce 092-006808
25. Licensed Water Well Contractor Signature License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

LOG # 239

White – Illinois Department of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 230 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 5 in. Depth 215 ft.
   c. Drilled ✓. Finished in Drift ____. In Rock ✓.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:

Building	50 Ft.	Seepage Tile Field	
Cess Pool		Sewer (non Cast iron)	
Privy		Sewer (Cast iron)	
Septic Tank		Barnyard	
Leaching Pit		Manure Pile	

3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 9-30-77
5. Permanent Pump Installed? Yes ✓ Date 10-4-77 No ____
   Manufacturer Sta-Rite Type Sub. Location ____
   Capacity 10 gpm. Depth of Setting 189 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type Pitless adapter
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner.
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 82 gal. Type galv.
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P 316606

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Dave Sandratto Well No. ____
    Address 306 N. Greenbay Rd, Waukegan
    Driller D. R. Hoover License No. 1020-78
11. Permit No. 65570 Date 8-19-77
12. Water from rock (Formation) 13. County Lake
    at depth 215 to 230 ft.
14. Screen: Diam. — in.
    Length: ____ ft. Slot ____
    Sec. 8 17e
    Twp. 46N
    Rge. 12E
    Elev. ____

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	New Galv. T+C	0	215
	14.81 ppf.		

SHOW LOCATION IN SECTION PLAT
100'N, 50'E, SW/c, SE SW NW

16. Size Hole below casing: 5 in.
17. Static level 98 ft. below casing top which is 1 ft. above ground level. Pumping level 168 ft. when pumping at 9 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	18	18
Hardpan	72	90
Sandy clay	15	105
Hardpan	49	154
Rock ledge	2	156
Hardpan	42	198
Sandy clay	17	215
Rock	15	230

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Donny R. Hoover (Reg) DATE 11-8-77

LOG # 240

SE 14 OF SW 14 NW 14

TYPE OR PRINT FIRMLY WITH BLACK INK PEN, THIS FORM MUST BE COMPLETED WITHIN 30 DAYS OF COMPLETION AND SENT TO THE APPROPRIATE HEALTH DEPARTMENT

1. Date Well Completed 3-4-98
2. Use: [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock [ ] Monitoring [ ] Other
3. Type of Well:
   a. Bored Well: Hole Diameter ____ in. Depth ____ ft. Casing Diameter ____ in. Buried Slab: [ ]Yes [ ]No
   b. Driven Well: Drive Pipe Diameter ____ in. Depth ____ ft.
   (c) Drilled Well: Well Diameter 4 in. Depth 200 ft. Casing Diameter 4 in. Type GALV Joint T+C

Casing Grout:

Kind	Oversized Drill Hole(In)	From(ft)	To(ft)
GRANULAR		0	190

Finished In: Unconsolidated [ ] Gravel Pack: [ ]Yes [ ]No Rock [X] Grain Size

4. Well Disinfected? [X]Yes [ ]No
5. Date Permanent Pump Installed March 13, 1998
6. Licensed Pump Contractor Michael Gross License Number 102-002086
7. Pitless Adapter Installed? [X]Yes [ ]No Manufacturer Merrill Model MCK Attached to Casing - How? [ ] Screwed On [ ] Welded [X] Compression
8. Type of Well Cap WATER TIGHT CAP
9. Tank Working Cycle 6 gallons Captive Air: [ ]Yes [ ]No
10. Pump and Equipment Disinfected? [X]Yes [ ]No

General Comments: (If dry hole, fill out log & indicate how hole was sealed.)

Illinois Department of Public Health
Division of Environmental Health - 525 W. Jefferson
Springfield, IL 62761 X 302289 CO# 40599

IMPORTANT NOTICE. This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

IL 482-0126

GEOLOGICAL AND WATER SURVEY WELL RECORD IDPH 3-20-2

11. Permit Number 097-0203-97 Date Issued 2-18-98
12. Property Owner DOUG TRAPER Well #
13. Drilling Company Name WACHHOLDER WELL DRILLING
14. Name of Person who drilled the well TOM WACHHOLDER
15. Well Site Address 42361 THORPE ZION ILLINOIS
16. Twnshp Name BEATON Land ID# 04-08-307-001
17. Subdivision Name Bartletts N. Shore Acres Lot 1 Elevation ____ ft.
18. Location: Cnty LAKE Sect 8 Twnshp 46N Range 12E SE Quarter of the SW Quarter of the NW Quarter
19. Casing and Liner Pipe: TE

Dia (In.)	Type	From(ft)	To (ft)
4	GALV T+C	0	190
	ASTM A 53		

20. Screen: Diameter ____ in. Length ____ ft. Slot Size ____ Material ____
21. Water from Limestone at depth 190 ft. to 200 ft.
22. Static Level 95 ft. below casing top which is 16 in. above ground level. Pumping Level 110 ft. Pumping 12 gpm for 10 hours.
23. Earth Materials Passed Through

Earth Materials Passed Through	Depth Top(ft)	Depth Bottom(ft)
CLAY FILL	0	2
YELLOW CLAY	2	14
BLUE CLAY	14	120
GRAY CLAY	120	130
MUD SAND	130	150
SANDY BLUE CLAY	150	185
GRAVEL + CLAY	185	190
LIMESTONE	190	200

Continue on back of sheet if necessary

Michael Gross
Licensed Contractor Signature

102-002086
License Number

11/95

(SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

LOG # 241

TYPE OR PR FIRMLY WITH BLACK INK PEN, THIS FORM MUST BE COMPLETED WITHIN 30 DAYS OF COMPLETION AND SENT TO THE APPROPRIATE HEALTH DEPARTMENT

1. Date Well Completed 3-11-98
2. Use: [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock [ ] Monitoring [ ] Other
3. Type of Well:
   a. Bored Well: Hole Diameter ____ in. Depth ____ ft. Casing Diameter ____ in. Buried Slab: [ ]Yes [ ]No
   b. Driven Well: Drive Pipe Diameter ____ in. Depth ____ ft.
   c. Drilled Well: Well Diameter 4 in. Depth 200 ft. Casing Diameter 4 in. Type GALV Joint TTC

Casing Grout:

Kind	Oversized Drill Hole(In)	From(ft)	To(ft)
GRANULAR		0	130

Finished In: Unconsolidated [ ] Gravel Pack: [ ]Yes [ ]No Rock [X] Grain Size

4. Well Disinfected? [X]Yes [ ]No
5. Date Permanent Pump Installed March 13, 1998
6. Licensed Pump Contractor Michael Gross License Number 102-002086
7. Pitless Adapter Installed? [X]Yes [ ]No Manufacturer Merrill Model MCK Attached to Casing - How? [ ] Screwed On [ ] Welded [ ] Compression
8. Type of Well Cap Water Tight Vented
9. Tank Working Cycle 60 gallons Captive Air: [ ]Yes [ ]No
10. Pump and Equipment Disinfected? [X]Yes [ ]No

General Comments: (If dry hole, fill out log & indicate how hole was sealed.)

Illinois Department of Public Health
Division of Environmental Health - 525 W. Jefferson
Springfield, IL 62761

CO# 40598

R 302288

IMPORTANT NOTICE. This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

IL 482-0126

G OGICAL AND WATER SURVEY WELL RECORD ISD 1-3

11. Permit Number 0-97-0123-97 Date Issued 2-18-98
12. Property Owner DOUG TJADER Well #
13. Drilling Company Name WACHHOLDER WELL DRILLING
14. Name of Person who drilled the well TOM WACHHOLDER
15. Well Site Address 42339 N THORPE ZION ILLINOIS
16. Twnshp Name Bartletts Nishore Acres Land ID# 04-08-301-102
17. Subdivision Name Benton Lot 2 Elevation ____ ft.
18. Location: Cnty LAKE Sect 8 Twnshp 46N Range 12E SE Quarter of the SW Quarter of the NW Quarter
19. Casing and Liner Pipe:

Dia (In.)	Type	From(ft)	To (ft)
4	GALV TTC	0	189
	ASTM A 53		

20. Screen: Diameter ____ in. Length ____ ft. Slot Size ____ Material ____
21. Water from LIMESTONE at depth 189 ft. to 200 ft.
22. Static Level 94 ft. below casing top which is 16 in. above ground level. Pumping Level 112 ft. Pumping 10 gpm for 10 hours.
23. Earth Materials Passed Through

	Depth Top(ft)	Depth Bottom(ft)
CLAY FILL	0	2
YELLOW CLAY	2	14
BLUE CLAY	14	119
GRAY CLAY	119	130
MUD SAND	130	147
SANDY BLUE CLAY	147	184
CLAY & GRAVEL	184	189
LIMESTONE	189	200

Continue on back of sheet if necessary

Received MAR 1998 Environmental Health Division

LOG # 242

Michael Gross
Licensed Contractor Signature

102-002086
License Number

11/95

(SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Ill. D[illegible] of Public Health
Yellow [illegible]: Well Contractor
Golden [illegible]: Well Owner

Well Construction Report

JAN 14 1993

ENVIRONMENTAL HEALTH DIVISION

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 5 in. Depth 93 ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____

   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
bentonite	grade	90

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 12/31/92
4. Permanent pump installed? Yes X Date 1/5/93 No___
   Manufacturer Red Jacket Type subm.
   Location
   Capacity 12 gpm. Depth of setting 80 ft.
5. Well top sealed? Yes X No___ Type
6. Pitless adapter installed? Yes X No___
   Manufacturer Williams Model No. WTV50S
   How attached to casing? clamp
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

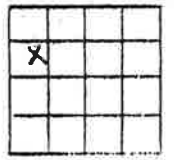
PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

D 930171

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller GEORGE E. GAFFKE License No. 102-002342
10. Well Site Address Fago Ave., F.H.B. NorthshoreXXAcres
11. Property Owner PAUL BUSCH CONST. Well No.
12. Permit No. ISD 92-03-0982 Date Issued 11/19/92
13. Location: County Lake
    Benton Sec. 8.7f Twp. 46N Rge. 12E



Show location in section plat

NE SW NW

14. Water from Sand & Lt.Gravel at depth 76 ft to 93 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	PVC	+1	90

16. Screen: Diam. 5 in, Length 3 ft, Slot Size 10
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 12 ft below casing top which is 1 ft. above ground level. Pumping level ___ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Brown Clay	0	10
Blue Clay	10	18
Sand - Gravel	18	21
Blue Clay	21	39
Sand - Gravel	39	42
Blue Clay	42	61
Sand	61	63
Blue Clay	63	68
Sand	68	76
Sand - Lt. Gravel	76	93

Continue on separate sheet if necessary.

Signed George E. Gaffke Date 1/11/93

LOG # 243

Ill. Dept. of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled ✓ Finished in Drift ✓ In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
SLER	0	18

2. Well furnishes water for human consumption? Yes ✓ No___
3. Date well drilled 9-25-92
4. Permanent pump installed? Yes ✓ Date 10-1-92 No___
   Manufacturer STA-RITE Type SUB
   Location WELL
   Capacity 10 gpm. Depth of setting 80 ft.
5. Well top sealed? Yes ✓ No___ Type____
6. Pitless adapter installed? Yes ✓ No___
   Manufacturer WILLIAM Model No. B50AC
   How attached to casing? BOLT ON
7. Well disinfected? Yes ✓ No___
8. Pump and equipment disinfected Yes ✓ No___

IMPORTANT NOTICE

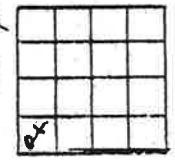
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller EUGENE G ROSS License No. 192-000718
10. Well Site Address THORPE HUE ZION, IL 60099
11. Property Owner DIANE NIEBUE Well No.____
12. Permit No ISD92-03-0377 Date Issued 8/10/92
13. Location: County LAKE
    Sec. 8.BA
    Twp. 46N
    Rge. 12E



Show location in section plat

SW SW SW
Frederick Bartlett's North Shore Acres Lot 1

14. Water from SAND at depth 0 ft to 95 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	STEEL 15#	0	91

16. Screen: Diam. 4 in, Length 4' in, Slot Size 20
17. Size hole below casing 4 in. 18. Ground Elev.____ ft msl.
19. Static level 60 ft below casing top which is 1 ft. above ground level. Pumping level 70 ft, pumping gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
CLAY	0	60
SAND & CLAY	60	90
SAND	90	95

LOG # 244

Continue on separate sheet if necessary.

Signed Eugene Gross Date 10-6-92

D 214825

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____ in. Depth ____ ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth ____ ft.
   c. Drilled ✓. Finished in Drift ____. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 30. Ft. Seepage Tile Field 75
   Cess Pool NONE Sewer (non Cast Iron) NONE
   Privy NONE Sewer (Cast Iron) NONE
   Septic Tank 60. Barnyard NONE
   Leaching Pit NO. Manure Pile NONE
3. Is water from this well to be used for human consumption?
   Yes ✓ No ____
4. Date well completed 2/26/73
5. Permanent Pump Installed? Yes ✓ No ____
   Manufacturer REDJACKET Type SOS
   Capacity 10. gpm. Depth of setting 147 ft.
6. Well Top Sealed? Yes ✓ No ____
7. Pitless Adaptor Installed? Yes ✓ No ____
8. Well Disinfected? Yes ____ No ✓
9. Water Sample Submitted? Yes ____ No ✓

REMARKS:

P316607

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner EULA HARTNESS Well No. ____
    Address RTE 1, 1513 EDWARDS ST
    Driller E E Co Ross License No. 291
11. Permit No. 21552 Date 1/22/73
12. Water from LIMESTONE (Formation) 13. County LAKE
    at depth 185 to 190 ft.
    14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
    Sec. 8, 18
    Twp. 46N
    Rge. 12E
    Elev. ____
    ✓

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	GAL. 11 oz	0	185

SHOW LOCATION IN SECTION PLAT
Lot 2 Block 69 F.H. Bartlett's North Shore Acres Sub. SW SW SW

16. Size Hole below casing: 4 in.
17. Static level 90 ft. below casing top which is 8" ft. above ground level. Pumping level 125 ft. when pumping at 6 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top Soil	0	2
YELLOW CLAY	2	18.
BLUE CLAY	18	185
LIMESTONE	185	190

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED E E Ross DATE 3/10/73

LOG # 245

Well Construction Report

097-03-1081-99

Date 1/26/01

PRINT OR PRESS FIRMLY WITH BLACK INK PEN
COMPLETE WITHIN 30 DAYS OF WELL COMPLETION
AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT

1. Type of Well: a. **Driven** Well: Casing diam. _____ in. Depth _____ ft.
b. **Bored** Well: Buried Slab [ ] Yes [ ] No
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.
c. **Drilled** Well: PVC casing Formation packer set at depth of _____ ft.
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

d. **Drilled** Well: **Steel** Casing- - - Mechanically Driven [X] Yes [ ] No
Hole Diameter 10 in. to 20 ft.; 5" in. to 54 ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
BENTONITE &			0	20	
CLAY SLURRY					

e. Well finished within: [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)

2. Well Use: [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
[ ] Monitoring [ ] Other _____
3. Date Well Completed: 1/16/01 Well Disinfected [ ] Yes [ ] No
Driller's estimated well yield 18 gpm
4. Date Permanent Pump Installed 1/25/01
5. Pump Capacity 12 gpm Set at (depth) 48 ft.
6. Pitless Adapter Model and Manufacturer: CAMPBELL BP 10X
7. Well Cap Type and Manufacturer VOTV 50
8. Pressure Tank: Working Cycle 100 gals. Captive Air: [X] Yes [ ] No
9. Pump System Disinfected: [X] Yes [ ] No
10. Name of Pump Company Beard Pump & Well
11. Pump Installer KEN BOYLE License # 101-003325
12. Kenneth O. Boyle License # W
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson Street
Springfield, IL 62761

CO # 43164

R 330770

DO Not write on these lines

IMPORTANT NOTICE: This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. DISCLOSURE OF THIS INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.

IL 482-0126 rev. 12/98

GEOLOGICAL & WATER SURVEY WELL RECORD

Well # _____

13. Property Owner BRETT DOMKE
14. Driller TED BEARD Well License # _____ 15.
Name of Drilling Company BEARD PUMP & WELL 16.
Permit No. F50 99-03-1081 Date Issued _____
17. Date Drilling Started 1/16/01
18. Well SITE address 3414 137th ST WINTHROP HARBOR IL. 60096 19.
Township Name BENTON Land ID # _____ 20.
Subdivision Name FAIRGREENS N-S Lot # Block 77 21.
Location: a. County LAKE
b. Township 46N Range 12E Section 8 . 8a
c. SW Quarter SW Quarter SW Quarter
d. coordinates: _____ Site Elevation _____ ft.(msl)

For Survey Use Only

22. Casings, Liners*, & Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
5" ASTM	A-53B	T/C IPSCO		0	51
5" STAINLESS			30	51	54

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from SAND at a depth of 51 ft. to 54 ft.
a. static water level 39 ft. below casing which is 18 in. above ground
b. pumping level is 39 ft. pumping 18 gpm after pumping for 3 hours

24. Earth Materials Passed Through

	From (ft.)	To (ft.)
YELLOW CLAY	0	23
BLUE CLAY	23	51
SAND & GRAVEL	51	54

FEB 2001 Received Environmental Health Services

(If DRY HOLE, fill out log & indicate how hole was sealed)

Kenneth O. Boyle
25. Licensed Water Well Contractor Signature

092-006808
License Number

LOG # 246

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material _____. Buried Slab: Yes_____No_____
   b. Driven _____. Drive Pipe Diam._____in. Depth _____ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock _____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Is water from this well to be used for human consumption?
   Yes ✓ No _____
4. Date well completed 10-23-70
5. Permanent Pump Installed? Yes ✓ No _____
   Manufacturer Red Jacket Type Submersible
   Capacity 10 gpm. Depth of setting 147 ft.
6. Well Top Sealed? Yes _____ No _____
7. Pitless Adaptor Installed? Yes ✓ No _____
8. Well Disinfected? Yes ✓ No _____
9. Water Sample Submitted? Yes ✓ No _____

REMARKS:

P316608

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Leon Stacy Well No. 1
    Address Winthrop Harbor, Ill
    Driller Henry Pumping Co License No. 92-480
11. Permit No. 8499 Date 10-4-69
12. Water from Gravel Formation 13. County Lake
    at depth _____ to _____ ft. Sec. 8 ~~7~~ 8
14. Screen: Diam._____in. Twp. 46N
    Length:_____ft. Slot _____ Rge. 12E
    Elev. _____

SHOW LOCATION IN SECTION PLAT
800'N 400'E SW/c

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv.	0	187

16. Size Hole below casing:_____in.
17. Static level _____ft. below casing top which is _____ ft. above ground level. Pumping level _____ ft. when pumping at _____ gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay and gravel	25	25
Rock part & boulders	150	175
Clay	10	185
Gravel & weathered lime	5	190

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Jack LaPorte DATE 3/12/70

LOG # 247

White C... Ill. Dep... ublic Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS ... DRILLERS

FILL IN ALL PERTINENT INFORMATION RE... ESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 4 in. Depth 187 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven _____. Drive Pipe Diam. 4 in. Depth 186 ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 30 Ft. Seepage Tile Field 75
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank 60 Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed August 16, 1979
5. Permanent Pump Installed? Yes X Date _____ No____
   Manufacturer Red Jacket Type Deep Location _____
   Capacity 10 gpm. Depth of Setting 160 Ft.
6. Well Top Sealed? Yes X No____ Type Screwed
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Merrill Model Number SPK
   How attached to casing? clamped
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 42 gal. Type galvanized
    Location Basement
11. Water Sample Submitted? Yes____ No X

REMARKS:

P316609

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Gordon Beach Well No. _____
    Address 15419 S. Sheridan Rd. Winthrop Harbor
    Driller Emil E. Gross License No. 103-70 Vir
11. Permit No. 88635 Date 5-7-79
12. Water from Limestone Formation 13. County Lake
    at depth 186 to 187 ft. Sec. 8 8b
14. Screen: Diam. _____ in. Twp. 46 N
    Length: _____ ft. Slot _____ Rge. 12 E
    Elev. _____

SHOW LOCATION IN SECTION PLAT 75'N, 100'W, 3E/2 NW¼SW¼

15. Casing and Liner Pipe

Diam. (in.)	Kind, and Weight	From (Ft.)	To (Ft.)
4"	galvanized	0'	186
	Steel 11 ft		

16. Size Hole below casing: 4 in.
17. Static level 45 ft. below casing top which is 1 ft. above ground level. Pumping level 135 ft. when pumping at 4½ gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay	18'	18'
blue clay	168'	186'
limestone	1"	187'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Emil E. Gross DATE 8-29-79

LOG # 248

hite Copy – Ill. Dept. of Publ[illegible]h
allow Copy – Well[illegible]actor
lue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUEST[illegible]ND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER[illegible]LTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO [illegible] DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 199 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 197 ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

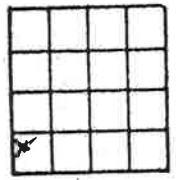
2. Distance to Nearest:
   Building 30 Ft. — Seepage Tile Field 75
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank 50 — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 9-10-85
5. Permanent Pump Installed? Yes X Date ____ No ____
   Manufacturer Red Jacket Type sub Location well
   Capacity 10 gpm. Depth of Setting 180 Ft.
6. Well Top Sealed? Yes X No ____ Type Merrill
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Merrill Model Number SPK
   How attached to casing? clamp on
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type captive air
    Location basement
11. Water Sample Submitted? Yes ____ No X

REMARKS: County #27516

p316610

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Donald Sponenburg Well No. ____
    Address 1101 Park Ave. Apt. 16 Winthrop Harbor
    Driller Michael Gross License No. 102-002086 IL
11. Permit No. 119254 Date 7-25-85
12. Water from limestone (Formation)
    at depth 197 to 199 ft.
13. County Lake
    Sec. 8.86
    Twp. 46N
    Rge. 12E
    Elev. ____
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____



SHOW LOCATION IN SECTION PLAT
150'S & 250'E
NW/c SW SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv. steel	0	197
	11#		

16. Size Hole below casing: 4 in.
17. Static level 115 ft. below casing top which is 1 ft. above ground level. Pumping level 135 ft. when pumping at 5 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
yellow clay & gravel	18	18
blue clay	74	92
hard pan	30	122
blue clay	75	197
limestone	2	199

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Michael Gross DATE 9-28-85

LOG # 249

IDPH 4.065
1/74 — KNB-1

Ill. [illegible] of Public Health
Yellow [illegible] Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
      Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift____ In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Bentonite & clay slurry	0	30

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 10/17/96
4. Permanent pump installed? Yes X Date 10/18/96 No___
   Manufacturer Aermotor Type Sucker
   Location
   Capacity 8 gpm. Depth of setting 73 ft.
5. Well top sealed? Yes X No___ Type
6. Pitless adapter installed? Yes X No___
   Manufacturer Williams Model No. BSOAEE
   How attached to casing?
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

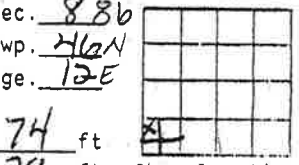
PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

OCT 1996 Received Environmental Health Division

IL482-0126
P 291238

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller BEACH Pump & Well License No. 092-006808
10. Well Site Address 13TH ST WINTHROP HARBOR IL
11. Property Owner PETE KRAMER Well No.
12. Permit No. FSD 96-03-0576 Date Issued 9/27/96
13. Location: County LAKE
    NW/SW/SW
    Sec. 886
    Twp. 46N
    Rge. 12E



Show location in section plat

14. Water from SAND at depth 74 ft to 78 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	ASTM A-53	0	75
	T/C TDI		
	15 lbs PER FT		

Block 83 North Shore Acres

16. Screen: Diam. 5 in, Length 3' in, Slot Size 15
17. Size hole below casing 5 in. 18. Ground Elev.____ ft msl.
19. Static level 55 ft below casing top which is 1 ft. above ground level. Pumping level 59 ft, pumping 10 gpm for 3 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
TOPSOIL	0	2
YELLOW CLAY	2	19
BLUE CLAY	19	74
SAND & GRAVEL	74	78

Continue on separate sheet if necessary.

Signed Kenneth O. Booke Date 10/23/96

LOG # 250

LOG # 251

LOG OF WATER WELL

Property owner Walter Bales Well No. 45

Drilled by Howard Wickens Year 1962

Formations passed through	Thickness	Depth of Bottom
Black dirt	2	2
Yellow clay	13	15
Blue clay	89	104
sand	5	109

[Continue on back if necessary]

Finished in sand at 104 to 109 ft.

Cased with 4 inch Tile pipe from 0 to 106 ft.

and inch from to ft.

Size hole below casing inch. Static level from surface 80 ft.

Tested capacity 11 gal. per min. Temperature °F.

Water lowered to 83 ft. in. in hrs. min.

Length of test hrs. min. Screen Johnson

Slot 12 Diam. 4" Length 45" Bottom set at 109 ft.

[Show location in Section Plat]

Township name Elev. 737 Sec.

Description of location Twp.

8-8-C Rge.

Signed County Lake

Copy for Illinois State Water Survey Index: P316611

P316611

Well Const tion Report

E OR PRESS FIRMLY WITH BLACK INK PEN
COMPLETE WITHIN 30 DAYS OF WELL COMPLETION
AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT

*097-03-1140-99

Date 6/13/01

1. Type of Well: a. **Driven** Well: Casing diam. _____ in. Depth _____ ft.
b. **Bored** Well: Buried Slab [ ] Yes [ ] No
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.
c. **Drilled** Well: PVC casing Formation packer set at depth of _____ ft.
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

d. **Drilled** Well: **Steel** Casing- - - Mechanically Driven [X] Yes [ ] No
Hole Diameter 10 in. to 20 ft.; 5 in. to 131 ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
BENTONITE &			0	20	
CLAY SLURRY					

e. Well finished within: [ ] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)

2. Well Use: [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
[ ] Monitoring [ ] Other _____
3. Date Well Completed: 6/12/01 Well Disinfected [X] Yes [ ] No
Driller's estimated well yield 7.5 gpm
4. Date Permanent Pump Installed 6/13/01
5. Pump Capacity 8 gpm Set at (depth) 126 ft.
6. Pitless Adapter Model and Manufacturer: MARTINSON BP10X
7. Well Cap Type and Manufacturer BAKER WTV 50
8. Pressure Tank: Working Cycle 42 gals. Captive Air: [X] Yes [ ] No
9. Pump System Disinfected: [X] Yes [ ] No
10. Name of Pump Company BOREL PUMP & WELL
11. Pump Installer: KEN BOYCE License # 101-003325
12. Kenneth Q Boyce License # 11
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson Street
Springfield, IL 62761

CO # 43158

DO Not write on these lines

8 335575

IMPORTANT NOTICE: This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. DISCLOSURE OF THIS INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.
IL 482-0126 rev. 12/98

GEOLOGICAL & WATER SURVEY WELL RECORD

13. Property Owner DOUG TOPPEN Well # _____
14. Driller TED BELLEVILLE License # _____ 15.
Name of Drilling Company BOREL PUMPS WELL 16.
Permit No. IS0 99-03-1140 Date Issued 5/31/01
17. Date Drilling Started 6/8/01
18. Well **SITE** address 43461 N. LAKEREN AVE ZION IL. 60099 19.
Township Name BENTON Land ID # _____ 20.
Subdivision Name FHG DOUGH STONE ACRES Lot # 1 21.
Location: a. County LAKE
b. Township 46N Range 12E Section 8 8C
c. SW Quarter NW Quarter SW Quarter
d. coordinates: _____ Site Elevation _____ ft.(msl)

For Survey Use Only

22. Casings, Liners*, & Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
5" ASTM	A-53B	T/C	10 SLOT	0	128
5"	STAINLESS	K-PACK	10	128	131

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from SAND at a depth of 126 ft. to 131 ft.
a. static water level 70 ft. below casing which is 1.5 in. above ground
b. pumping level is 110 ft. pumping 7.5 gpm after pumping for 3 hours

24. Earth Materials Passed Through

	From (ft.)	To (ft.)
YELLOW CLAY	0	26
BLUE CLAY	26	95
HARDPAN	95	115
BLUE CLAY	115	126
SAND	126	131

JUL 2001
Received
Environmental
Health Services

(If DRY HOLE, fill out log & indicate how hole was sealed)

Kenneth Q Boyce
25. Licensed Water Well Contractor Signature

092-006808
License Number

LOG # 252

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLER

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 135 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 132 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 40 Ft. — Seepage Tile Field ____
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank ____ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 2-14-77
5. Permanent Pump Installed? Yes ✓ Date 2-15-77 No ____
   Manufacturer Sta-Rite Type Subm Location ____
   Capacity 5 gpm. Depth of Setting 105 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type Pitless Adapter
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer Baker Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 42 gal. Type galv.
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316612

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Jerry Taylor Well No. 1
    Address 10a Street, E. Winthrop Harbor
    Driller Hoover License No. 102-78
11. Permit No. 56242 Date 1-7-77
12. Water from Sand Formation 13. County Lake
    at depth 125 to 135 ft.
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot #12
    Sec. 8
    Twp. 46N
    Rge. 12E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
600'S, 600'E NW/CSW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	Galv T+C	0	132
	10.99 ppf		

16. Size Hole below casing: 4 in.
17. Static level 90 ft. below casing top which is 1 ft. above ground level. Pumping level 90 ft. when pumping at 15 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow till	19	19
Blue clay	91	110
Stoney clay	15	125
Sand	10	135

LOG #153

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Donny L. Hoover DATE 4/5/77
agn

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 132 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 129 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:

Building	50 Ft.	Seepage Tile Field	
Cess Pool		Sewer (non Cast iron)	
Privy		Sewer (Cast iron)	
Septic Tank		Barnyard	
Leaching Pit		Manure Pile	

3. Well furnishes water for human consumption? Yes ✓ No ____
4. Date well completed 2-17-77
5. Permanent Pump Installed? Yes ✓ Date 2-18-77 No ____
   Manufacturer Sta-Rite Type Submr Location ____
   Capacity 5 gpm. Depth of Setting 105 Ft.
6. Well Top Sealed? Yes ✓ No ____ Type ____
7. Pitless Adapter Installed? Yes ✓ No ____
   Manufacturer Dake Model Number Snappy
   How attached to casing? Approved manner
8. Well Disinfected? Yes ✓ No ____
9. Pump and Equipment Disinfected? Yes ✓ No ____
10. Pressure Tank Size 42 gal. Type galv.
    Location ____
11. Water Sample Submitted? Yes ____ No ____

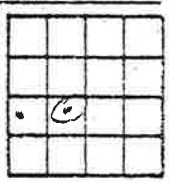
REMARKS:

P316613

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Jerry Taylor Well No. 2
    Address 10th Street, Winthrop Harbor
    Driller Hoover License No. 102-78
11. Permit No. 56243 Date 1-7-77
12. Water from Sand Formation 13. County Lake
    at depth 125 to 132 ft.
14. Screen: Diam. 4 in.
    Length: 3 ft. Slot #15
    Sec. 8
    Twp. 46N
    Rge. 12E
    Elev. ____



SHOW LOCATION IN SECTION PLAT
600'S, 250'E NW/C Sec

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
4	Galv T+C	0	129
	10.89 #/ft		

16. Size Hole below casing: 4 in.
17. Static level 90 ft. below casing top which is 1 ft. above ground level. Pumping level 90 ft. when pumping at 15 gpm for 2½ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow till	19	19
Blue clay	106	125
Sand	7	132

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R Hoover agn DATE 4/5/77

LOG #254

Ill. ɔt. of Public Health
Yellow y: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled ✓ Finished in Drift ✓ In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
SLER	0	18

2. Well furnishes water for human consumption? Yes ✓ No___
3. Date well drilled 6-26-92
4. Permanent pump installed? Yes ✓ Date 7-2-92 No___
   Manufacturer STA-RITE Type SUB
   Location WELL
   Capacity 10 gpm. Depth of setting 100 ft.
5. Well top sealed? Yes___ No___ Type____
6. Pitless adapter installed? Yes ✓ No___
   Manufacturer WILLIAMS Model No. B50AC
   How attached to casing? BOLT ON
7. Well disinfected? Yes ✓ No___
8. Pump and equipment disinfected Yes ✓ No___

IMPORTANT NOTICE

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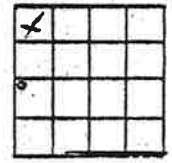
PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller EUGENE GROSS License No. 102-000718
10. Well Site Address 4011 9TH ST WINTHROP HARBOR
11. Property Owner FRED DUDINK Well No.____
12. Permit No. ISD91-03-1494 Date Issued 6/17/92
13. Location: County LAKE
    Sec. 8.8d
    Twp. 46N
    Rge. 12E



Show location in section plat

NW NW SW
Bartlett's
North Shore
Acres

14. Water from GRAVEL at depth 0 ft to 110 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5	STEEL 15#	0	105

16. Screen: Diam. 4 in, Length 5 in, Slot Size 20
17. Size hole below casing 4 in. 18. Ground Elev.____ ft msl.
19. Static level 60 ft below casing top which is 1 ft. above ground level. Pumping level 85 ft, pumping gpm for 2 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
CLAY & SAND	0	30
CLAY	30	90
GRAVEL	90	110

LOG # 255

Continue on separate sheet if necessary.

Signed Eugene Gross Date 7-9-92

WATER WELL CONSTRUCTION REPORT

097-03-0252-01 Date 10/18/01

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____ in. Depth _____ ft.
b. **Bored** Well Buried Slab [ ] Yes [ ] No
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.
c. **Drilled** Well PVC casing Formation packer set at depth of _____ ft.
Hole Diameter ____ in. to _____ ft. ____ in. to _____ ft. ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

d. **Drilled** Well **Steel** Casing - - - Mechanically Driven [X] Yes [ ] No
Hole Diameter 10 in. to 20 ft. 5 in. to 131 ft. ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
BENTONITE & CLAY SLURRY			0	20	

e. Well finished within [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack Grain Size/Supplier # From (ft.) To (ft.)

2. Well Use [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock [ ] Monitoring [ ] Other
3. Date Well Completed 10/13/01 Well Disinfected [X] Yes [ ]
Driller's estimated well yield 7.5 gpm
4. Date Permanent Pump Installed 10/3/01
5. Pump Capacity 8 gpm Set at (depth) 118 ft.
6. Pitless Adapter Model and Manufacturer MANNIKEN BP10X
7. Well Cap Type and Manufacturer BAKER WTV50
8. Pressure Tank Working Cycle 42 gals. Captive Air [X] Yes [ ] No
9. Pump System Disinfected [X] Yes [ ] No
10. Name of Pump Company BEACH PUMP & WELL
11. Pump Installer KEN BOYCE License # 101-003325
12. Kenneth O Boyce License # ll
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

CO# 29146

DO NOT write on these lines

Q340649

IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. **DISCLOSURE OF THIS INFORMATION IS MANDATORY.** This form has been approved by the Forms Management Center.

NOV 2001 Received Environmental Health Division

GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner DOUG TAYLOR Well # _____
14. Driller TED BELLEFEUILLE License # _____
15. Name of Drilling Co. BEACH Pump & Well
16. Permit No. ISD 01-03-0252 Date Issued 8/30/01
17. Date Drilling Started 10/1/01
18. Well **SITE** address 42437 BROOKER AVE ZION IL. 60099
19. Township Name BENTON Land ID # _____
20. Subdivision Name F.H. CRAFTS N. STONEMANS Lot # 8
21. Location a. County LAKE
b. Township 46N Range 12E Section 8 Pt
c. NW Quarter NW Quarter SW Quarter
d. Coordinates _____ Site Elevation ____ ft. (msl)

For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
5"	ASTM A-53B	TK JOINT		0	127
5"	STAINLESS	K. PACKER	8	127	131

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from SAND at a depth of 125 ft. to 131 ft.
a. Static water level 80 ft. below casing which is 15 in. above ground
b. Pumping level is 110 ft. pumping 7.5 gpm after pumping for ____ hours

24. Earth Materials Passed Through

	From (ft.)	To (ft.)
YELLOW CLAY	0	31
BLUE CLAY & STONE	31	55
BLUE CLAY	55	95
HARDPAN	95	110
BLUE CLAY	110	125
SAND	125	131

(If dry hole, fill out log and indicate how hole was sealed.)

Kenneth O Boyce 092-006808
25. Licensed Water Well Contractor Signature License Number

LOG # 256

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

LOG # 257

LOG OF WATER WELL

Property owner Bob Grubes Well No. 12

Drilled by R C Hoover Year 1963

Formations passed through	Thickness	Depth of Bottom
Yellow clay	20	20
Blue clay	72	92
Sand & Gravel	8	100
Blue clay	112	212
Gravel with some blue clay	2	214
Limestone	11	225

[Continue on back if necessary]

Finished in Limestone at 214 to 225 ft.

Cased with 4 inch Galv. from 0 to 214 ft.

and inch from to ft.

Size hole below casing 4 inch. Static level from surf 90 ft.

Tested capacity 10 gal. per min. Temperature °F.

Water lowered to 155 ft in. in hrs. min.

Length of test hrs. min. Screen

Slot Diam. Length Bottom set at ft.

[Show location in Section Plat]

Township name Elev. 738 Sec.

Description of location Twp.

46NW E - 88 W Rge.

Signed Jerry Knutson County LAKE

Copy for Illinois State Water Survey Index- P316614

0316614

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRIL[illegible]S

FILL IN ALL PERTINENT INFORMATION REQUESTE[illegible]ND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 4 in. Depth 208 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven ____. Drive Pipe Diam. 4 in. Depth 205 ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 20 Ft. Seepage Tile Field 75
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank 52' Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed Oct. 27, 1975
5. Permanent Pump Installed? Yes X Date _____ No ____
   Manufacturer Red Jacket Type Deep Location _____
   Capacity ____ gpm. Depth of Setting _____ Ft.
6. Well Top Sealed? Yes X No ____ Type Drenrite
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Merrell Model Number SPK
   How attached to casing? clamp on
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes ____ No X
10. Pressure Tank Size 42 gal. Type galvanized
    Location basement
11. Water Sample Submitted? Yes ____ No X

REMARKS:

p 316615

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Paul Karoly Well No. _____
    Address 31 Oxford Drive, Lincolnshire, Ill.
    Driller Emil E. Cross License No. 102-20
11. Permit No. 80053 Date 9-23-78
12. Water from Limestone Formation 13. County Lake
    at depth 205 to 208 ft. Sec. 8 SW
    14. Screen: Diam. _____ in. Twp. 46N
    Length: _____ ft. Slot _____ Rge. 12E
    Elev. _____

SHOW LOCATION IN SECTION PLAT
Sec 8, T 43 N, R 12 E, NE/4 NW 1/4 NW 1/4

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv. steel 11#	0'	205

16. Size Hole below casing: _____ in.
17. Static level _____ ft. below casing top which is _____ ft. above ground level. Pumping level _____ ft. when pumping at _____ gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
black dirt	1'	1'
yellow clay	14'	15'
blue clay	65'	80'
hard pan	70	150'
blue clay	49	199
white gravel	1	200'
hard pan	4'	204'
white gravel	1'	205'
limestone	3'	208'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 11/13/78

LOG # 258

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRIL

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 4 in. Depth 212 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. 4 in. Depth 212 ft.
   c. Drilled X. Finished in Drift X. In Rock_____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 15 Ft. Seepage Tile Field 75
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank 50 Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed Oct 14, 1978
5. Permanent Pump Installed? Yes X Date _____ No____
   Manufacturer Pedrollet Type Jet Location _____
   Capacity 10 gpm. Depth of Setting 120 Ft.
6. Well Top Sealed? Yes X No____ Type Meneer
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Meneer Model Number SPK
   How attached to casing? Clamp on
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes____ No X
10. Pressure Tank, Size 42 gal. Type Galv.
    Location Basement
11. Water Sample Submitted? Yes____ No X

REMARKS:

P316616

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Paul Kanik Well No. _____
    Address 31 Oxford Drive, Lincolnshire, Ill
    Driller Ernest A. Gross License No. 103-76
11. Permit No. 300552 Date 9-28-78
12. Water from Coarse gravel Formation
    at depth 210 to 212 ft.
13. County Lake
    Sec. 8, 8½
    Twp. 44 N
    Rge. 12 E
    Elev. _____
14. Screen: Diam. _____ in.
    Length: _____ ft. Slot _____

SHOW LOCATION IN SECTION PLAT
Lot 14, 125' S, 300' W, NE/4 NW¼ NW¼

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
4	galv. steel 11 ft	0'	212

16. Size Hole below casing: 4 in.
17. Static level 90 ft. below casing top which is 1 ft. above ground level. Pumping level 93 ft. when pumping at 7 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Black dirt	2'	2'
yellow clay	15'	17'
Blue clay	83'	100'
hard pan	50'	150'
Blue clay	37	187'
fine sand	1'	188'
Blue clay	3'	191'
fine sand	5'	196'
gravel & clay mixed	14'	210'
coarse gravel	2	212

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Ernest A. Gross DATE 11/13/78

LOG # 259

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRI

FILL IN ALL PERTINENT INFORMATION REQUESTED .D MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 4 in. Depth 214 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven _____. Drive Pipe Diam. 4 in. Depth 211 ft.
   c. Drilled X. Finished in Drift _____. In Rock _____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 145 Ft. Seepage Tile Field 75
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank 50 Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed May 2 1975
5. Permanent Pump Installed? Yes X Date _____ No____
   Manufacturer Red Jacket Type Jet Location _____
   Capacity 10 gpm. Depth of Setting 105 Ft.
6. Well Top Sealed? Yes X No____ Type Meriam
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Meriam Model Number 3PK
   How attached to casing? clamp on
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes____ No X
10. Pressure Tank Size 42 gal. Type galv.
    Location basement
11. Water Sample Submitted? Yes____ No X

REMARKS:

P316617

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Paul Karak Well No. _____
    Address 31 Alford Drive, Lawrenceville, Ill.
    Driller Emil E. Strain License No. _____
11. Permit No. Ill. 81078 Date 10-30-75
12. Water from Pennsylvanian (Formation) 13. County Lawrence
    at depth 211 to 214 ft. Sec. 8 SW
    14. Screen: Diam. _____ in. Twp. 4N
    Length: _____ ft. Slot _____ Rge. 12E
    Elev. _____

SHOW LOCATION IN SECTION PLAT
1445 2005, 100 W, NE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4"	galv. Steel 11 #	0'	211

16. Size Hole below casing: 4 in.
17. Static level 50 ft. below casing top which is 1 ft. above ground level. Pumping level 80 ft. when pumping at 10 gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Black dirt	1'	1'
yellow clay	17'	18'
Brown clay	64	82
hard pan	68	150
Blue clay	50	200
clay & gravel mix	11'	211'
Limestone	3	214

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Emil Strain DATE 11/13/75

LOG # 260

Ill ot. of Public Health
Yello y: Well Contractor
Golden copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Clay Slurry	0	20

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 6/20/94
4. Permanent pump installed? Yes X Date 6/24/94 No___
   Manufacturer AERMOTOR Type 5406M
   Location_____
   Capacity 8 gpm. Depth of setting 108' ft.
5. Well top sealed? Yes X No___ Type_____
6. Pitless adapter installed? Yes X No___
   Manufacturer Williams Model No. B50ACW
   How attached to casing?_____
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126
P 254540

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller BEACH PUMP & WELL License No. 092-006808
10. Well Site Address 42890 N. KENOSHA ROAD ZION IL.
11. Property Owner KERRY SMITH Well No. ~~5/31/94~~
12. Permit No. ~~WSD~~ 90-03-1684 Date Issued_____
13. Location: County LAKE
    Sec. 8 8h
    Twp. 46N
    Rge. 12E

X			

Show location in section plat
NW NW, NW

14. Water from SAND at depth 105 ft to 112 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	ASTM A-53	0	109
	T/C TOE		
	15 lbs PER FT		

LOT 4 FOREMAN SUBD

16. Screen: Diam. 5 in, Length 3' in, Slot Size 10
17. Size hole below casing 5 in. 18. Ground Elev._____ ft msl.
19. Static level 86 ft below casing top which is 1 ft. above ground level. Pumping level 90 ft, pumping 10 gpm for 3 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
TOPSOIL	0	3
YELLOW CLAY	3	17
BLUE CLAY	17	61
MEALY SAND	61	67
BLUE CLAY	67	105
SAND & GRAVEL	105	112

Continue on separate sheet if necessary.

Signed Kenneth O. Boyce Date 6/24/94

LOG # 261

Well Status: WATER - Water Well
Compdate: 06/26/1992 Plugdate: TD: 110
Elevation: Permit #: Permit Date: 06/17/1992
Latitude: 42.478081 Longitude: -87.862889

Owner Address: 38703 Sheridan Rd. Zion IL
Well Address: 4011 9th St. Winthrop Harbor, IL Lot: Subd: Bartletts NShore Acr
Well Type: PRIV - Private Water Well
Water Bearing Formation: gravel 0 to 110 ft
Static Water Level: 80 ft. below casing top of 1 ft. Hole Diam.:
Screen Diam.: 4 in. Screen Length: 5 ft. Slot: 20.00
Pumping Level: 85 ft. when pumping at gpm for 2 hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	5	STEEL 15#	0	105

Size hole below casing: 4 in.

Driller's Log:
0 - 30 clay & sand
30 - 90 clay
90 - 110 gravel

LOG # 262

120970228000 Foreman E A 8-46N-12E
Lake Alco Oil & Gas Corp. NW NW NW
Well Status: WATER - Water Well
Compdate: Plugdate: TD: 210
Elevation: 735' GL Permit #: Permit Date:
Latitude: 42.485267 Longitude: -87.862874

Logs Run: Driller's Log

120972883700 Fout, Jim 8-46N-12E
Lake Hoover, Lonny R. SE NE SW
Well Status: WATER - Water Well
Compdate: 11/17/1986 Plugdate: TD: 163
Elevation: Permit #: 128151 Permit Date: 11/17/1986
Latitude: 42.476229 Longitude: -87.855648

Owner Address: 43172 N. Kenosha Rd. Zion IL
Well Address: 42340 N. Lewis Ave. Lot: Subd:
Well Type: PRIV - Private Water Well
Water Bearing Formation: limestone 0 to 0 ft
Static Water Level: 66 ft. below casing top of 1 ft. Hole Diam.: 5 in.
Pumping Level: 110 ft. when pumping at 10 gpm for 1 hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	5	BLACK (T&C)	0	153

Size hole below casing: 5 in.

Driller's Log:
0 - 36 clay
36 - 42 sand
42 - 92 hardpan
92 - 140 sand & gravel
140 - 153 mucky sand
153 - 163 limestone

120970261000 Gudes Bob 8-46N-12E
Lake Hoover Water Well Servic NW SW NW

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 148 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____in. Depth _____ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 35 Ft. — Seepage Tile Field 75
   Cess Pool _____ — Sewer (non Cast iron) _____
   Privy _____ — Sewer (Cast iron) _____
   Septic Tank 65 — Barnyard _____
   Leaching Pit _____ — Manure Pile _____
3. Well furnishes water for human consumption? Yes X No_____
4. Date well completed 3/28/84
5. Permanent Pump Installed? Yes X Date 4/6/84 No____
   Manufacturer Meyers Type sub. Location _____
   Capacity 10 gpm. Depth of Setting 140 Ft.
6. Well Top Sealed? Yes X No____ Type _____
7. Pitless Adapter Installed? Yes X No_____
   Manufacturer Williams Model Number _____
   How attached to casing? _____
8. Well Disinfected? Yes X No_____
9. Pump and Equipment Disinfected? Yes X No_____
10. Pressure Tank Size 42 gal. Type Clayton Mark
    Location _____
11. Water Sample Submitted? Yes_____ No X

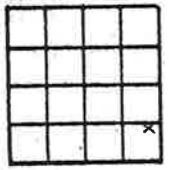
REMARKS:
NOTE: OWNER INSTRUCTED TO TAKE SAMPLE.

P316853

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Leonard Jumisko Well No. _____
    Address 110 W. Broadway - Winthrop Harbor, Ill.
    Driller Kurt Kuehn License No. 92-117
11. Permit No. 111559 Date 3/19/84
12. Water from Limestone Formation 13. County Lake
    at depth ____ to ____ft.
14. Screen: Diam. _____in.
    Length: _____ft. Slot _____
    Sec. 12/6
    Twp. 46N
    Rge. 12E
    Elev. _____



SHOW LOCATION IN SECTION PLAT
NE SE SE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A120 T/C	0	145
	14.98 (steel)		

16. Size Hole below casing: 5 in.
17. Static level 70 ft. below casing top which is 1 ft. above ground level. Pumping level 105 ft. when pumping at 8 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
BLACK DIRT	2	2
YELLOW CLAY	13	15
BLUE CLAY	25	40
HARD PAN	37	87
BLUE CLAY	32	119
HAND PAN	23	142
GRAVEL	3	145
LIMESTONE	3	148

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED _____ DATE 4/19/84

LOG # 263

Well Constr on Report

TY OR PRESS FIRMLY WITH BLACK INK PEN
COMPLETE WITHIN 30 DAYS OF WELL COMPLETION
AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT

097-03-1000-00 Date 6/12/01

GEOLOGICAL & WATER SURVEY WELL RECORD

1. Type of Well: a. **Driven** Well: Casing diam. _____ in. Depth _____ ft.
b. **Bored** Well: Buried Slab [ ] Yes [ ] No
Hole Diameter ____ in. to ____ ft.; ____ in. to ____ ft.; ____ in. to ____ ft.
c. **Drilled** Well: PVC casing Formation packer set at depth of _____ ft.
Hole Diameter ____ in. to ____ ft.; ____ in. to ____ ft.; ____ in. to ____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

d. **Drilled** Well: **Steel** Casing- - - Mechanically Driven [X] Yes [ ] No
Hole Diameter 10 in. to 20 ft.; 5 in. to 124 ft.; ____ in. to ____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
BENTONITE &			0	20	
DRILL CUTTINGS					

e. Well finished within: [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)

2. Well Use: [ ] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
[ ] Monitoring [X] Other _____
3. Date Well Completed: 6/7/01 Well Disinfected [ ] Yes [ ] No
Driller's estimated well yield 24 gpm
4. Date Permanent Pump Installed 6/12/01
5. Pump Capacity 20 gpm Set at (depth) ~~80~~ 88 ft.
6. Pitless Adapter Model and Manufacturer: MANSON / CAMPBELL BPIOX
7. Well Cap Type and Manufacturer BAKER WTU 50
8. Pressure Tank: Working Cycle 70 gals. Captive Air: [X] Yes [ ] No
9. Pump System Disinfected: [X] Yes [ ] No
10. Name of Pump Company BEACH PUMP & WELL SERVICE INC.
11. Pump Installer: KEN BOYCE License # 101-003325
12. Kenneth O. Boyce License # U
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson Street
Springfield, IL 62761

co #29866

DO Not write on these lines

8 342115

IMPORTANT NOTICE: This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. DISCLOSURE OF THIS INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.
IL 482-0126 rev. 12/98

13. Property Owner NORTH POINT COMMUNITY CHURCH Well # _____
14. Driller TED BELLEFEUILLE License # _____ 15.
Name of Drilling Company BEACH PUMP & WELL SERVICE INC. 16.
Permit No. FSD 00-03-1000 Date Issued 4/5/01
17. Date Drilling Started 6/4/01
18. Well **SITE** address 400 N. LEWIS AVE 19.
Township Name BENTON Land ID # _____ 20.
Subdivision Name _____ Lot # _____ 21.
Location: a. County LAKE
b. Township 46N Range 12E Section 8.5d
c. NE Quarter NE Quarter SW Quarter
d. coordinates: _____ Site Elevation _____ ft.(msl)

For Survey Use Only

22. Casings, Liners*, & Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
5"	ASTM A53B	T/C	10SLO	0	124

(*) _____
(List reason for liner, type of upper and lower seals installed)
23. Water from SAND & GRAVEL at a depth of 120 ft. to 124 ft.
a. static water level 58 ft. below casing which is 18 in. above ground
b. pumping level is 75 ft. pumping 24 gpm after pumping for 96 hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
YELLOW CLAY	0	29
BLUE CLAY	29	73
HARDPAN	73	95
MEDIUM SAND W/ CLAY	95	120
SAND & GRAVEL	120	124

(If DRY HOLE, fill out log & indicate how hole was sealed)

Kenneth O. Boyce
25. Licensed Water Well Contractor Signature

092-006808
License Number

LOG # 264

Well Address: 42404 N. Hayner Winthrop Harbor, IL Lot: #3 Subd: North Shore Acres
Well Type: PRIV - Private Water Well
Water Bearing Formation: sand 82 to 97 ft
Static Water Level: 63 ft. below casing top of 2 ft. Hole Diam.:
Screen Diam.: 5 in. Screen Length: 3 ft. Slot: 12.00
Pumping Level: 65 ft. when pumping at 7 gpm for 3 hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	5	ASTM A53A T&C 15#/FT	0	97

Size hole below casing: 5 in.

Driller's Log:			
	0 -	15	yellow clay
	15 -	18	gravel
	18 -	37	blue clay
	37 -	82	hardpan
	82 -	97	sand

120972986600 North Point Community Church 8-46N-12E
Lake Boyce, Kenneth D. NE NE SW
Well Status: WATER - Water Well
Compdate: 06/07/2001 Plugdate: TD: 124
Elevation: Permit #: Permit Date: 04/05/2001
Latitude: 42.478028 Longitude: -87.855641
Owner Address: 900 N. Lewis Ave. Winthrop Harbor IL 60096
Well Address: same as above Lot: Subd:
Well Type: NCPUB - Noncommunity - Public Water Well
Water Bearing Formation: sand & gravel 120 to 124 ft
Static Water Level: 58 ft. below casing top of 2 ft. Hole Diam.: 10 in.
Pumping Level: 75 ft. when pumping at 24 gpm for 96 hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	5	ASTM A53B T/C	0	124

Driller's Log:			
	0 -	29	yellow clay
	29 -	73	blue clay
	73 -	95	hardpan
	95 -	120	mealy sand w/clay
	120 -	124	sand & gravel

120974517400 North Prairie Methodist Church 8-46N-12E
Lake SW SW NW LOG # 265
Well Status: WATER - Water Well
Compdate: Plugdate: TD: 0
Elevation: Permit #: Permit Date:
Latitude: 42.479877 Longitude: -87.862886
Well Address: IEPA Well #09704214 Lot: Subd:
Well Type: NCPUB - Noncommunity - Public Water Well

120973373400 Osborn, Ed 8-46N-12E
Lake Gaffke, George E. 150'S line, 125'E line, NE SE
Well Status: WATER - Water Well
Compdate: 08/24/1979 Plugdate: TD: 76
Elevation: Permit #: 87505 Permit Date: 07/10/1979
Latitude: 42.475666 Longitude: -87.845246

140 - 202 blue clay
202 - 220 limestone

120973149000 N & A Builders 8-46N-12E
Lake Boyce, Kenneth D. NE NE SW
Well Status: WATER - Water Well
Compdate: 09/15/1988 Plugdate: TD: 132
Elevation: Permit #: 005512 Permit Date: 09/07/1988
Latitude: 42.478028 Longitude: -87.855641
Owner Address: 2033 Galilee Zion IL
Well Address: Lewis Lot: Subd:
Well Type: PRIV - Private Water Well
Water Bearing Formation: sand 129 to 132 ft
Static Water Level: 75 ft. below casing top of 1 ft. Hole Diam.:
Screen Diam.: 5 in. Screen Length: 3 ft. Slot: 10.00
Pumping Level: 79 ft. when pumping at 5 gpm for 2 hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	5	ASTM A-120 T&C 15#FT	0	129

Size hole below casing: 5 in.

Driller's Log:
0 - 2 fill & black dirt
2 - 18 yellow clay
18 - 70 blue clay
70 - 87 mealy sand
87 - 119 hardpan
119 - 129 mealy sand
129 - 132 sand

120970228300 N Prairie School 8-46N-12E LOG # 266
Lake SW NW NW
Well Status: WATER - Water Well
Compdate: Plugdate: TD: 220
Elevation: 735' GL Permit #: Permit Date:
Latitude: 42.483471 Longitude: -87.862877

Logs Run: Driller's Log

120973742100 Neeve, Diane 8-46N-12E
Lake Gross, Eugene J. SW SW SW
Well Status: WATER - Water Well
Compdate: 09/25/1992 Plugdate: TD: 95
Elevation: Permit #: Permit Date: 08/10/1992
Latitude: 42.472688 Longitude: -87.862901
Owner Address: 118-39 W. Dodson St. Zion IL
Well Address: Thorpe Ave. Lot: #1 Subd: Northshore Acres
Well Type: PRIV - Private Water Well
Water Bearing Formation: sand 0 to 95 ft
Static Water Level: 60 ft. below casing top of 1 ft. Hole Diam.:
Screen Diam.: 4 in. Screen Length: 4 ft. Slot: 20.00
Pumping Level: 70 ft. when pumping at gpm for 2 hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	5	STEEL 15#	0	91

Size hole below casing: 4 in.

Driller's Log:
0 - 60 clay
60 - 90 sand & clay
90 - 95 sand

120972470600 Krohn Craig
Lake Hoover, L. R.
Well Status: WATER - Water Well
Compdate: 03/01/1976 Plugdate:
Elevation: Permit #:
4-46N-12E
50'N line, 1000'W line, SE
TD: 159
Permit Date:
Latitude: 42.492864 Longitude: -87.840912

120972667200 Middleton Bldrs 1
Lake
Well Status: WATER - Water Well
Compdate: 09/01/1978 Plugdate:
Elevation: Permit #:
4-46N-12E
50'N line, 125'W line, NE NW SE
TD: 158
Permit Date:
Latitude: 42.492903 Longitude: -87.844167

120972667300 Middleton Bldrs 2
Lake
Well Status: WATER - Water Well
Compdate: 09/01/1978 Plugdate:
Elevation: Permit #:
4-46N-12E
50'N line, 350'W line, NE NW SE
TD: 177
Permit Date:
Latitude: 42.492891 Longitude: -87.84333

120973108500 Smoan, William
Lake Boyce, Kenneth D.
Well Status: WATER - Water Well
Compdate: 07/23/1988 Plugdate:
Elevation: Permit #: 002639
9-46N-12E
NW
TD: 165
Permit Date: 06/17/1988
Latitude: 42.482435 Longitude: -87.839862

120973061000 A & L Construction
Lake Boyce, Kenneth D.
Well Status: WATER - Water Well
Compdate: 03/10/1988 Plugdate:
Elevation: Permit #: 138403
9-46N-12E
NW
TD: 142
Permit Date: 12/28/1987
Latitude: 42.482435 Longitude: -87.839862

120973373700 Anderson, Dave
Lake Gross, Michael
Well Status: WATER - Water Well
Compdate: 12/03/1984 Plugdate:
Elevation: Permit #: 116094
9-46N-12E
150'N line, 100'E line, SW NW
TD: 66
Permit Date: 12/11/1984
Latitude: 42.482024 Longitude: -87.840237

120973373800 Bartz, Don
Lake Hoover, Lonny R.
Well Status: WATER - Water Well
Compdate: 03/20/1984 Plugdate:
Elevation: Permit #: 110339
9-46N-12E
2210'N line, 1050'W line, SW NW
TD: 110
Permit Date: 11/09/1983
Latitude: 42.476353 Longitude: -87.840872

120973598500 Cencula & Sons Builders
Lake Madsen, Charles E.
Well Status: WATER - Water Well
Compdate: 10/15/1990 Plugdate:
Elevation: Permit #:
9-46N-12E
SW NW NW
LOG # 267
TD: 140
Permit Date: 09/26/1990
Latitude: 42.483344 Longitude: -87.843517

120973598600 Cencula & Sons Builders
Lake Madsen, Michael A.
Well Status: WATER - Water Well
Compdate: 04/01/1991 Plugdate:
Elevation: Permit #:

9-46N-12E
SW NW NW LOG # 268

TD: 154
Permit Date: 03/08/1991
Latitude: 42.483344 Longitude: -87.843517

120973598700 Cusimano, Terry
Lake Gross, Michael
Well Status: WATER - Water Well
Compdate: 10/26/1989 Plugdate:
Elevation: Permit #: 014159

9-46N-12E
SE NW NW

TD: 152
Permit Date: 08/25/1989
Latitude: 42.483339 Longitude: -87.841076

120972499000 English Constr
Lake Hoover, L. R.
Well Status: WATER - Water Well
Compdate: 10/01/1976 Plugdate:
Elevation: Permit #:

9-46N-12E
750'S line, 1050'W line,

TD: 164
Permit Date:
Latitude: 42.473703 Longitude: -87.840885

120973374000 English, Ron Construction
Lake Hoover, Lonny R.
Well Status: WATER - Water Well
Compdate: 05/08/1979 Plugdate:
Elevation: Permit #: 84848

9-46N-12E
115'N line, 380'W line, NW NW

TD: 170
Permit Date: 04/24/1979
Latitude: 42.485727 Longitude: -87.843309

120973849900 Graham, Danny
Lake Hoover, Lonny R.
Well Status: WATER - Water Well
Compdate: 09/10/1994 Plugdate:
Elevation: Permit #:

9-46N-12E
SW SW NW LOG # 269

TD: 151
Permit Date: 08/24/1994
Latitude: 42.479744 Longitude: -87.843538

120974860400 Hook, Donald & Norma
Lake Boyce, Kenneth D.
Well Status: WATER - Water Well
Compdate: 06/13/2003 Plugdate:
Elevation: Permit #:

9-46N-12E
SW SW SW

TD: 55
Permit Date: 03/13/2003
Latitude: 42.472547 Longitude: -87.843582

120972848300 Japuntich, Mark
Lake Boyce, Kenneth D.
Well Status: WATER - Water Well
Compdate: 07/06/2001 Plugdate:
Elevation: Permit #:

9-46N-12E
SW SW SW

TD: 49
Permit Date: 05/09/2001
Latitude: 42.472547 Longitude: -87.843582

120973374100 McDaniel, John
Lake Gaffke, George E.
Well Status: WATER - Water Well
Compdate: 10/15/1979 Plugdate:
Elevation: Permit #: 90155

9-46N-12E
2240'N line, 750'W line, SW NW

TD: 44
Permit Date: 10/09/1979
Latitude: 42.476272 Longitude: -87.841987

120972669600 Ron English Const
Lake Hoover, L. R.
Well Status: WATER - Water Well
Compdate: 11/01/1978 Plugdate:
Elevation: Permit #:
9-46N-12E
200'N line, 175'W line, SE SW NW
TD: 173
Permit Date:
Latitude: 42.480091 Longitude: -87.841666

120972669300 Ron English Construction
Lake Hoover, L. R.
Well Status: WATER - Water Well
Compdate: 06/01/1978 Plugdate:
Elevation: Permit #: 73992
9-46N-12E
200'N line, 300'W line, SE NW NW
TD: 180
Permit Date: 05/09/1978
Latitude: 42.483687 Longitude: -87.841179

120970349900 Smith, M.
Lake Hoover Water Well Servic
Well Status: WATER - Water Well
Compdate: 03/02/1972 Plugdate:
Elevation: Permit #: 16569
9-46N-12E
1250'N line, 500'W line, SW
TD: 147
Permit Date: 02/23/1972
Latitude: 42.475403 Longitude: -87.842923

120973598900 Stream Construction
Lake Boyce, Kenneth D.
Well Status: WATER - Water Well
Compdate: 09/15/1989 Plugdate:
Elevation: Permit #: 014582
9-46N-12E
NW SW NW LOG # 270
TD: 151
Permit Date: 09/14/1989
Latitude: 42.481545 Longitude: -87.843528

120973374200 Strean, William
Lake Kuehn, Kurt
Well Status: WATER - Water Well
Compdate: 04/12/1984 Plugdate:
Elevation: Permit #: 111562
9-46N-12E
600'N line, 804'W line, NW NW
TD: 180
Permit Date: 03/19/1984
Latitude: 42.484389 Longitude: -87.841738

120972956400 Stupar, John
Lake Boyce, Kenneth D.
Well Status: WATER - Water Well
Compdate: 12/20/2001 Plugdate:
Elevation: Permit #:
9-46N-12E
SW SW SW
TD: 133
Permit Date: 12/12/2001
Latitude: 42.472547 Longitude: -87.843582

120974866300 Tipton, Bonnie/Maki, Spencer
Lake Glenn, James E.
Well Status: WATER - Water Well
Compdate: 09/26/2003 Plugdate:
Elevation: Permit #:
9-46N-12E
SE NW NW
TD: 169
Permit Date: 08/13/2003
Latitude: 42.483339 Longitude: -87.841076

White Copy – Ill. Dept. of Publ...
Yellow Copy – Well ...tractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUEST... ND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER ...LTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO N... DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 6 in. Depth 202 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven _____. Drive Pipe Diam. 6 in. Depth 202 ft.
   c. Drilled ✓. Finished in Drift _____. In Rock ✓.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 20 Ft. — Seepage Tile Field _____
   Cess Pool _____ — Sewer (non Cast iron) _____
   Privy _____ — Sewer (Cast iron) _____
   Septic Tank _____ — Barnyard _____
   Leaching Pit _____ — Manure Pile _____
3. Well furnishes water for human consumption? Yes ✓ No____
4. Date well completed 12-9-83
5. Permanent Pump Installed? Yes ✓ Date 12-10-83 No____
   Manufacturer STA-RITE Type SUBM Location _____
   Capacity 30 gpm. Depth of Setting 105 Ft.
6. Well Top Sealed? Yes ✓ No____ Type PITLESS ADAPTER
7. Pitless Adapter Installed? Yes ✓ No____
   Manufacturer BAKER Model Number SNAPPY
   How attached to casing? APPROVED MANNER
8. Well Disinfected? Yes ✓ No____
9. Pump and Equipment Disinfected? Yes ✓ No____
10. Pressure Tank Size 92 gal. Type _____
    Location _____
11. Water Sample Submitted? Yes____ No____

REMARKS:

P316900

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner JOHN LEINICK Well No. _____
    Address 984 CHARLES ST, GURNEE IL
    Driller L.R. HOOVER License No. 102-783
11. Permit No. 102474 Date 11-18-83
12. Water from Limestone (Formation) at depth 195 to 202 ft.
13. County LAKE
14. Screen: Diam. _____ in.
    Length: _____ ft. Slot _____
    Sec. 18,8e
    Twp. 46N
    Rge. 12E
    Elev. _____

SHOW LOCATION IN SECTION PLAT
50'N & 100'E of the SW/c NW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
6	Black T & C	0	202
	20 ppf		

16. Size Hole below casing: 6 in.
17. Static level 90 ft. below casing top which is 3 ft. above ground level. Pumping level 95 ft. when pumping at 30 gpm for 2 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	198	198
Limestone Gravel	4	202

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Lonny R. Hoover/er DATE 5-24-84

LOG # 271

Static Water Level: 55 ft. below casing top of Hole Diam.:
Screen Diam.: Screen Length: ft. Slot: 15.00
Pumping Level: 55 ft. when pumping at 12 gpm for hours.
Casing and Liner Pipe: Diam. (in.) Kind and Weight From(ft)
4 GALVANIZED 0 95

Logs Run: Driller's Log

Driller's Log:
0 - 1 topsoil
1 - 11 yellow clay
11 - 93 blue clay
93 - 97 fine gravel

120970010600 Frazen, Frank 1 18-46N-12E
Lake Wertz, C. L. SE SW NE
Well Status: WATER - Water Well
Compdate: 07/01/1943 Plugdate: TD: 75
Elevation: Permit #: Permit Date:
Latitude: 42.465488 Longitude: -87.870227
Well Address: Rt.173,East of Green Bay Rd. Lot: Subd:
Water Bearing Formation: gravel 0 to 0 ft
Static Water Level: 45 ft. below casing top of Hole Diam.:
Pumping Level: 48 ft. when pumping at 10 gpm for hours.
Casing and Liner Pipe: Diam. (in.) Kind and Weight From(ft)
4 0 75

Logs Run: Driller's Log

Driller's Log:
0 - 10 brown clay
10 - 73 blue clay
73 - 75 gravel

LOG # 272

120974517800 Fritz's Corner 18-46N-12E
Lake SW SW NW
Well Status: WATER - Water Well
Compdate: Plugdate: TD: 0
Elevation: Permit #: Permit Date:
Latitude: 42.465592 Longitude: -87.882409
Well Address: IEPA Well #09702689 Lot: Subd:
Well Type: NCPUB - Noncommunity - Public Water Well

120973084600 Henry, Jim 18-46N-12E
Lake Hoover, Lonny R. NW NW SW
Well Status: WATER - Water Well
Compdate: 05/31/1988 Plugdate: TD: 122
Elevation: Permit #: 1239 Permit Date: 04/15/1988
Latitude: 42.463785 Longitude: -87.882456
Owner Address: 12583 West Beach Road Waukegan IL
Well Address: 42175 N. Green Bay Road Zion, IL Lot: Subd:
Well Type: PRIV - Private Water Well
Water Bearing Formation: sand-clay 120 to 122 ft
Static Water Level: 57 ft. below casing top of 1 ft. Hole Diam.: 5 in.
Screen Diam.: 5 in. Screen Length: 4 ft. Slot: 12.00
Pumping Level: 88 ft. when pumping at 10 gpm for 1 hours.
Casing and Liner Pipe: Diam. (in.) Kind and Weight From(ft)
5 STL T&C 15#/FT A-53 0 120
Size hole below casing: 5 in.

LOG # 273

(13210—20M—3-55) 2

Page 1

ILLINOIS GEOLOGICAL SURVEY, URBANA

Strata	Thickness	Top	Bottom
Brown clay		0	10
Blue clay		10	73
Gravel		73	75
			80

Finished in gravel (stream 1' wide).
Casing: 4" from 0 to 75'
Static level from surface: 45'
Tested capacity: 10 gallons per minute.
Water lowered: 3'

Route 173, East of Green Bay Road

COMPANY C. E. Marks
FARM Preston, Frank
DATE DRILLED July 1943
AUTHORITY C. E. Marks
ELEVATION
LOCATION SE SW NE
COUNTY Lake

NO. 1
COUNTY NO.

P316864

18-46N-12E

P316864

210 - 221 sand, very dirty, fine, brown
221 - 228 dolomite

LOG # 274

120974517900 Mt. Carmel Baptist Church 18-46N-12E
Lake SE SW NW

Well Status: WATER - Water Well
Compdate: Plugdate: TD: 0
Elevation: Permit #: Permit Date:
Latitude: 42.46557 Longitude: -87.879972

Well Address: IEPA Well #09705302 Lot: Subd:
Well Type: NCPUB - Noncommunity - Public Water Well

120973376100 Pounder, Claude 18-46N-12E
Lake Gaffke, George E. 25'S line, 100'W line, NE NE SE

Well Status: WATER - Water Well
Compdate: 09/08/1983 Plugdate: TD: 146
Elevation: Permit #: 108792 Permit Date: 08/16/1983
Latitude: 42.462796 Longitude: -87.866222

Owner Address: Box 693 Zion IL
Well Address: 18th St. & Thompson Lot: Subd:
Well Type: PRIV - Private Water Well
Water Bearing Formation: limestone 146 to 196 ft
Static Water Level: 95 ft. below casing top of 2 ft. Hole Diam.: 5 in.
Pumping Level: ft. when pumping at 2 gpm for hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	5	PVC	-1	100
	5	BLACK STEEL	100	121

Size hole below casing: 5 in.

Driller's Log:
0 - 8 brown sandy clay
8 - 122 hard blue clay
122 - 196 limestone

120973140100 Rachuy, Brad 18-46N-12E
Lake Boyce, Kenneth D. SW SW SW

Well Status: WATER - Water Well
Compdate: 09/20/2002 Plugdate: TD: 101
Elevation: Permit #: Permit Date: 09/19/2002
Latitude: 42.458374 Longitude: -87.882593

Owner Address: 12952 21st St. Wadsworth IL 60083
Well Address: same as above Lot: 15 Subd: Minoque
Well Type: PRIV - Private Water Well
Water Bearing Formation: gravel & sand 96 to 101 ft
Static Water Level: 63 ft. below casing top of 1 ft. Hole Diam.: 10 in.
Screen Diam.: 5 in. Screen Length: 3 ft. Slot: 20.00
Pumping Level: 63 ft. when pumping at 22 gpm for 3 hours.

Casing and Liner Pipe:	Diam. (in.)	Kind and Weight	From(ft)	
	5	ASTM A53B T/C 15#/'	0	98
	5	STAINLESS STL SCREEN	98	101

Driller's Log:
0 - 24 yellow clay
24 - 39 gravel & blue clay
39 - 96 blue clay
96 - 101 gravel & sand

120970230300 Scott, Wm. 18-46N-12E
Lake Ausherman, Isaac SW

White - Pink Copies: Ill... of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 5 in. Depth____ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam. 5 in. Depth____ft
   c. Drilled X Finished in Drift____ In Rock X
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 6-18-91
4. Permanent pump installed? Yes L Date 7-2-91 No___
   Manufacturer STA-RITE Type 6GB
   Location
   Capacity 4 gpm. Depth of setting 147 ft.
5. Well top sealed? Yes X No___ Type
6. Pitless adapter installed? Yes X No___
   Manufacturer BAKER Model No. SNAPPY
   How attached to casing? APPROVED MANOR
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE

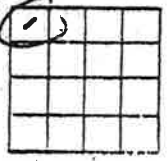
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller LONNY R HOOVER License No. 102-000785
10. Well Site Address 1315 KENOSHA RD
11. Property Owner NORMAN RICHARDS Well No.
12. Permit No. ~~90-[illegible]~~3 Date Issued 6-10-91
13. Location: 91-03-0704 County LAKE
    computer perm 90-9770491
    Sec. 17 8N
    Twp. 4LN
    Rge. 12E



Show location in section plat
NW NW NW

14. Water from _____ at depth_____ft to_____ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	NEW BLACK STEEL T&C 15.27 PAF	0'	195
	ASTM-A53		

16. Screen: Diam.— in, Length— in, Slot Size—
17. Size hole below casing 5 in. 18. Ground Elev._____ ft msl.
19. Static level 110 ft below casing top which is 1 ft. above ground level. Pumping level 140 ft, pumping gpm for 3 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
CLAY	0'	90'
GRAVEL & SAND	90'	93'
HARDPAN	93'	125
CLAY	125	169
GRAVEL & CLAY	169	195
LIMESTON	195	198

LOG # 275

Continue on separate sheet if necessary.

Signed Lonny R Hoover II Date 8/4/91

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ___. Bored ___. Hole Diam. 5 in. Depth 52 ft.
   Curb material ___. Buried Slab: Yes ___ No ___
   b. Driven ___. Drive Pipe Diam ___ in. Depth ___ ft.
   c. Drilled X. Finished in Drift X. In Rock ___.
   Tubular ___. Gravel Packed ___.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ___ Ft. Seepage Tile Field ___
   Cess Pool ___ Sewer (non Cast iron) ___
   Privy ___ Sewer (Cast iron) ___
   Septic Tank ___ Barnyard ___
   Leaching Pit ___ Manure Pile ___
3. Well furnishes water for human consumption? Yes X No ___
4. Date well completed 12/20/84
5. Permanent Pump Installed? Yes X Date 12/21/84 No ___
   Manufacturer Red Jacket Type Subm Location ___
   Capacity 10 gpm. Depth of Setting 40 Ft.
6. Well Top Sealed? Yes X No ___ Type ___
7. Pitless Adapter Installed? Yes X No ___
   Manufacturer Williams Model Number ___
   How attached to casing? clamp
8. Well Disinfected? Yes X No ___
9. Pump and Equipment Disinfected? Yes X No ___
10. Pressure Tank Size 42 gal. Type Harvard Champion
    Location ___
11. Water Sample Submitted? Yes X No ___

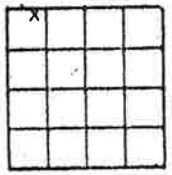
REMARKS:

P 316861

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Al Larson Well No. 13th st, Winthrop Harb
    Address 1015 Shiloh Zion
    Driller George E. Gaffke License No. 102-0034
11. Permit No. 116191 Date 12/17/84
12. Water from Sand + Gravel Formation
    at depth 49 to 52 ft.
13. County Lake
    Sec. 17.7h
    Twp. 46N
    Rge. 12E
    Elev. ___
14. Screen: Diam. 3 in.
    Length: 4 ft. Slot 10



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	PVC	+1	49

SHOW LOCATION IN SECTION PLAT
50's 325'E
NW/c NE NW NW

16. Size Hole below casing: 5 in.
17. Static level 30 ft. below casing top which is +1 ft. above ground level. Pumping level ___ ft. when pumping at 15 gpm for ___ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Topsoil	0	1
Brown Clay	9	10
Blue Clay	39	49
Sand + Gravel	3	52

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Gaffke DATE 3/27/85

LOG # 276

WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug_____. Bored_____. Hole Diam. 5 in. Depth 227 ft.
   Curb material_____. Buried Slab: Yes_____No_____
   b. Driven_____. Drive Pipe Diam._____in. Depth_____ft.
   c. Drilled ✓. Finished in Drift_____. In Rock_____.
   Tubular_____. Gravel Packed_____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Neat clay	0	20

2. Distance to Nearest:
   Building 12 Ft. Seepage Tile Field 100
   Cess Pool_____ Sewer (non Cast iron)_____
   Privy ✓ Sewer (Cast iron)_____
   Septic Tank 75 Barnyard ✓
   Leaching Pit_____ Manure Pile ✓

3. Is water from this well to be used for human consumption?
   Yes ✓ No_____

4. Date well completed Sept. 15-67

5. Permanent Pump Installed? Yes ✓ No_____
   Manufacturer Flint & Walling Type Submersible
   Capacity 7 gpm. Depth of setting 200 ft.

6. Well Top Sealed? Yes ✓ No_____

7. Pitless Adaptor Installed? Yes ✓ No_____

8. Well Disinfected? Yes ✓ No_____

9. Water Sample Submitted? Yes ✓ No_____

REMARKS:

P316859

10. Dept. Mines and Minerals permit No. NF 2623 Loc. 62
11. Property owner W. Schneider Well No._____
    Address Rural Route - Wadsworth, O.
    Driller E. Wertz License No. 52
12. Water from Limestone Formation
    at depth 254 to 277 ft.
13. County Lake
    Sec. 17.55
    Twp. 4N
    Rng. 12E
    Elev. 750
14. Screen: Diam._____in.
    Length:_____ft. Slot_____

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	15 lb. Galv. Steel	0	254

SHOW LOCATION IN SECTION PLAT
Permit: 250'N, 150'W of SE/c NW

16. Size Hole below casing: 5 in.
17. Static level 70 ft. below casing top which is 1 ft. above ground level. Pumping level 115 ft. when pumping at 7 gpm for 4 hours.

18. FORMATIONS PASSED THROUGH		THICKNESS	DEPTH OF FORMATION
Brown clay	0-16		
Blue "	16-50		
Soft clay	50-80		
Gravel & clay	80-200		
Black fine sand	200-225		
Red clay	225-240		
Lime gravel & limestone	240-254 / 254-277		
(CONTINUE ON SEPARATE SHEET IF NECESSARY)			

SIGNED C Wertz DATE Oct. 5-67

LOG # 277

Well Construction Report

E OR PRESS FIRMLY WITH BLACK INK PEN
PLETE WITHIN 30 DAYS OF WELL COMPLETION
AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT

097-03-0380-99

Date 11/14/99

GEOLOGICAL & WATER SURVEY WELL RECORD

1. Type of Well: a. **Driven** Well: Casing diam. _____ in. Depth _____ ft.
b. **Bored** Well: Buried Slab [ ] Yes [ ] No
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.
c. **Drilled** Well: PVC casing Formation packer set at depth of _____ ft.
Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

d. **Drilled** Well: **Steel** Casing- - - Mechanically Driven [X] Yes [ ] No
Hole Diameter 10 in. to 20 ft.; 5 in. to 58 ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within: [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)

2. Well Use: [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
[ ] Monitoring [ ] Other _____
3. Date Well Completed: 11/10/99 Well Disinfected [X] Yes [ ] No
Driller's estimated well yield 15 gpm
4. Date Permanent Pump Installed 11/11/99
5. Pump Capacity 12 gpm Set at (depth) 54 ft.
6. Pitless Adapter Model and Manufacturer: BAKER IBP
7. Well Cap Type and Manufacturer BAKER WITU SD
8. Pressure Tank: Working Cycle 42 gals. Captive Air: [X] Yes [ ] No
9. Pump System Disinfected: [X] Yes [ ] No
10. Name of Pump Company BEACH PUMP & WELL
11. Pump Installer: KEN BOYCE License # 101-003335
12. Kenneth O. Boyce License # "
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson Street
Springfield, IL 62761

co# 28491

R339314

DO Not write on these lines

IMPORTANT NOTICE: This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. DISCLOSURE OF THIS INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.

IL 482-0126 rev. 12/98

13. Property Owner RONALD UPCHURCH Well # _____
14. Driller GEORGE BELEFELDT License # _____ 15.
Name of Drilling Company BEACH PUMP & WELL 16.
Permit No. ESD99-03-0380 Date Issued 10/18/99
17. Date Drilling Started 11/3/99
18. Well **SITE** address 1305 LEWIS AVE WINTHROP HARBOR IL 49.
Township Name BENTON Land ID # 04-17-201 20.
Subdivision Name UPCHURCH'S RESUB Lot # 001
Location: a. County LAKE
b. Township 46 N Range 12E Section 17 4H
c. NW Quarter NW Quarter NE Quarter
d. coordinates: NW Site Elevation _____ ft.(msl)

NW

For Survey Use Only

22. Casings, Liners*, & Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
5"	STEEL	T&C		0	55
5"	STAINLESS		15	55	58

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from SAND at a depth of 53 ft. to 58 ft.
a. static water level 43 ft. below casing which is 18 in. above ground
b. pumping level is 46 ft. pumping 15 gpm after pumping for 4 hours

24. Earth Materials Passed Through

	From (ft.)	To (ft.)
YELLOW ~~BLUE~~ CLAY	0	18
LOAMY & BLUE CLAY	18	53
SAND	53	58

(If DRY HOLE, fill out log & indicate how hole was sealed)

Kenneth O. Boyce
25. Licensed Water Well Contractor Signature

092-006808
License Number

Received Environmental Health Services NOV 1999

LOG # 278

White Copy – Ill. Dept. of Pu... alth
Yellow Copy – We... ractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUEST... ND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, STA... OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WA... SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 4 in. Depth 78 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ✓. Drive Pipe Diam. 4 in. Depth 78 ft.
   c. Drilled ✓. Finished in Drift ✓. In Rock ____.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 22 Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Is water from this well to be used for human consumption?
   Yes ✓ No ____
4. Date well completed 9-5-69 ✓
5. Permanent Pump Installed? Yes ✓ No ____
   Manufacturer STA RITE Type SUBM.
   Capacity 8 gpm. Depth of setting 63 ft.
6. Well Top Sealed? Yes ✓ No ____
7. Pitless Adaptor Installed? Yes ✓ No ____
8. Well Disinfected? Yes ✓ No ____
9. Water Sample Submitted? Yes ____ No ____

REMARKS:

P316858

IDPH 4,065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Harold Osborn Well No. ____
    Address 13th St Winthrop Harbor
    Driller Hanover License No. 30
11. Permit No. 66372 Date 6-11-69
12. Water from fine sand (Formation) 13. County Lake
    at depth 77 to 78 ft.
14. Screen: Diam. — in.
    Length: ____ ft. Slot ____
    Sec. 17 4th
    Twp. 46N
    Rge. 12E
    Elev. ____

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
4	GALV T+C 10.89	0	78

SHOW LOCATION IN SECTION PLAT

16. Size Hole below casing: 4 in.
17. Static level 43 ft. below casing top which is 1 ft. above ground level. Pumping level 54 ft. when pumping at 8 gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow Clay	6	6
Ivory Sandy Clay	16	22
Blue Clay	55	77
fine Gravel	1	78

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED ____ DATE 6-30-69

LOG # 279

TYPE OR PRESS FIRMLY WITH BLACK INK PEN
COMPLETE WITHIN 30 DAYS OF WELL COMPLETION
AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT

Date July 1, 2005

GEOLOGICAL AND WATER SURVEY WELL RECORD

1. Type of Well: a. **Driven** Well: Casing diam. _____ in. Depth _____ ft.
   b. **Bored** Well: Buried Slab [ ] Yes [ ] No
   Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.
   c. **Drilled** Well: PVC casing Formation packer set at depth of _____ ft.
   Hole Diameter 9 in. to 77 ft.; ____ in. to _____ ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft)	To (ft)	Tremie Depth (ft)
Bentonite			Grade	74	

   d. **Drilled** Well: Steel Casing — Mechanically Driven [ ] Yes [ ] No
   Hole Diameter ____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft)	To (ft)	Tremie Depth (ft)

   e. Well finished within: [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)

2. Well Use: [X] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
   [ ] Monitoring [ ] Other
3. Date Well Completed 6/8/2005 Well Disinfected [X] Yes [ ] No
   Driller's estimated well yield 20 gpm
4. Date Permanent Pump Installed 6/29/2005
5. Pump Capacity 10 gpm Set at (depth) 60 ft.
6. Pitless Adapter Model and Manufacturer: Baker
7. Well Cap Type and Manufacturer: Lunde
8. Pressure Tank: Working Cycle 9 gals. Captive Air: [X] Yes [ ] No
9. Pump System Disinfected: [X] Yes [ ] No
10. Name of Pump Company Henry Boysen Company, Inc.
11. Pump Installer: George E. Gaffke License # ~~102-002342~~
12. _____ License # 102-002342
    Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson Street
Springfield, IL 62761

JUL 2005
Received

6# 50030

DO Not write on those lines

IMPORTANT NOTICE: The agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined in Section 85-0827. DISCLOSURE OF THIS INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.
IL 482-0126 rev 12/98

R373156

13. Property Owner Modern Homes Well # _____
14. Driller George E. Gaffke License # 102-002342
15. Name of Drilling Company Henry Boysen Company, Inc.
16. Permit No. 097-137235-05 Date Issued 6/6/2005
17. Date Drilling Started 6/7/2005
18. Well SITE address 4007 13th Street
19. Township Name Benton Land ID # 04-17-201-060
20. Subdivision Name Northshore Acres Lot # _____
21. Location: a. County Lake
    b. Township 46N Range 12E Section 17 34
    c. NE Quarter NW Quarter NE Quarter
    d. coordinates: _____ Site Elevation _____ ft (msl)

For Survey Use Only

22. Casings, Liners*, & Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft)	To (ft)
5"	SDR21 PVC	Certalok		+1	74
4"	StainlessSteel		15	74	77

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from Sand & Gravel at a depth of 72 ft. to 77 ft.
    a. static water level 30 ft. below casing which is 12 in. above ground
    b. pumping level is _____ ft. pumping 20 gpm after pumping for 1 hrs.

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Yellow Clay	0	10
Blue Clay	10	48
Sand	48	52
Blue Clay	52	72
Sand & Gravel	72	77

(If DRY HOLE, fill out log & indicate how hole was sealed)

25. Licensed Water Well Contractor Signature 102-002342 License Number

LOG # 280

LOG # 281

Check location

STATE WATER SURVEY DATA.

Date Oct 24 1920

Recorder H D Gurley.

Authority J H Ferguson.

Owner Ed Peterson City Benton Twp. County Lake

When drilled ____ Contractor J H Ferguson Address Zion

Location (give location from section corner if possible) ____

Sec 17 T 46 N - R 12 E. 800' W + 200' S of NE cor Sec 17.

Elevation top of well U.S.G.S. Mean 705 Depth 185'

Log 178½' to rock. ground water

Casing record ____

Size hole ____

Were drill cuttings saved? ___ Were they sent to the State Geological Survey? ___ Distance to water when not pumping ____. After pumping at ____ gpm. for ___ hours. Reference point for above measurements ____

Type of pump ____ Distance to cylinder ____

Length of suction pipe below cylinder ____

Length stroke ____ Speed ____ Hours used per day ____

Type of power ____

Can following be measured: Water level not pumping ____ Pumping ____

Discharge ____ Influence on other wells ____

Temperature of water ____ Were water samples collected ____

Date ____ Analysis number ____ Effect of water on meters, hot water coils ____

Cost of well ____

D31.250

LOG # 282

Well Construction Report For *WISCONSIN UNIQUE WELL NUMBER* AE516

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A (R 8/00)

Property Owner: **DONALD SCOTT** | Telephone Number: **414-694-8256**

Mailing Address: **6106 SPRINGBROOK RD**

City: **KENOSHA** | State: **WI** | Zip Code: **53142**

County of Well Location: **Kenosha** | County Well Permit No.: **W** | Well Completion Date: **01/26/1990**

1. Well Location: [ ] Town [ ] City [X] Village of **PLEASANT PRAIRIE** | Fire # (if available):

Grid or Street Address or Road Name and Number: **6106 SPRING BROOK RD**

Subdivision Name | Lot # | Block #

Well Constructor (Business Name): **GROSS E E WELL DRILLING INC** | License #: **387** | Facility ID Number (Public Wells):

Address: **43320 N HWY 41** | Public Well Plan Approval #: W--

City: **ZION** | State: **IL** | Zip Code: **60099-9425** | Date of Approval (mm/dd/yyyy):

Hicap Permanent well # | Common Well # | Specific Capacity: **.2** gpm/ft

Gov't Lot # | or **NW** 1/4 of **NE** 1/4 of Section **34** T **1** N; R **22** [X] E [ ] W

Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [X] New [ ] Replacement [ ] Reconstruction | Lat/Long Method: **GPS008**

of previous unique well # constructed in
Reason for replaced or Reconstructed Well?: **NEW HOME**

3. Well serves **1** # of homes and or (e.g. barn, restaurant, church, school, industry, etc.)

High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [ ] Yes [X] No

Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:

Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
18 2. Building Overhang
93 3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
27 9. Downspout/Yard Hydrant
10. Privy
18 11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
35 13. Building Drain [X] Cast Iron or Plastic [ ] Other
60 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
23 16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)	Upper Enlarged Drillhole	Lower Open Bedrock
12	**0**	**20**		
6	**20**	**208**		

[ ] 1. Rotary - Mud Circulation
[ ] 2. Rotary - Air
[ ] 3. Rotary - Air and Foam
[ ] 4. Drill-Through Casing Hammer
[ ] 5. Reverse Rotary
[X] 6. Cable-tool Bit **12** in. dia
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
Y-C- YELLOW CLAY	**0**	**15**
U-CG BLUECLAY @ GRAVEL	**15**	**40**
--P- HARDPAN	**40**	**85**
U-CG BLUE CLAY @ GRAVEL	**85**	**145**
U-C- BLUE CLAY	**145**	**191**
--GC GRAVEL @ RED CLAY	**191**	**208**
--L- LIMESTONE	**208**	**270**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6	**6.625 X .280 WALL 19.45 LB TYPE EW US PCO EQUIV.TO ASTM A120 HYDRO TESTED 1200 PSI**	**0**	**208**

Dia. (in.)	Screen type, material & slot size		

9. Static Water Level
ft. above ground surface
90 ft. below ground surface

10. Pump Test
Pumping Level **140** ft. below surface
Pumping at **11** GPM for **4** hours

11. Well is: [X] Above Grade **16** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
CLAY SLURRY	**0**	**20**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[X] Yes [ ] No If no, explain: **NO OLD WELLS**

13. Signature of the Well Constructor or Supervisory Driller | Date signed: **02/07/1990**

Signature of Drill Rig Operator (Mandatory unless same as above): **MG** | Date signed: **02/03/1990**

Make additional comments on reverse side about geology, additional screens, water quality, etc.

Variance issued [ ] Yes [X] No

LOG # 283

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER QP630

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **HUEBNER, CHRIS**
Telephone Number: **262-694-3017**
Mailing Address: **6326 SPRING BROOK RD**
City: **PLEASANT PRAIRIE** State: **WI** Zip Code: **53158**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **07/29/2004**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **6326 SPRING BROOK RD**
Subdivision Name: Lot #: Block #:

Well Constructor (Business Name): **GROSS E E WELL DRILLING INC** License #: **387**
Facility ID Number (Public Wells):
Address: **43320 N HWY 41**
Public Well Plan Approval #: W--
City: **ZION** State: **IL** Zip Code: **60099**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **.3** gpm/ft

Gov't Lot #: or **SE** 1/4 of **NW** 1/4 of
Section **34** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] New [X] Replacement [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well? **NEEDED MORE WATER**

3. Well serves **1** # of homes and or
(e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:
1. Landfill
74 2. Building Overhang
64 3. Septic [ ] Holding Tank [X]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
76 9. Downspout/Yard Hydrant
10. Privy
75 11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
14. Building Sewer [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
6	**0**	**246**

Upper Enlarged Drillhole / Lower Open Bedrock
[ ] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
--I- TOPSOIL	**0**	**1**
Y-C- YELLOW CLAY	**1**	**22**
U-CG STONEY BLACK CLAY	**22**	**90**
G-PC GRAY CLAY HARDPAN	**90**	**155**
G-C- GRAY CLAY	**155**	**185**
--Z- GRAVEL & CLAY	**185**	**190**
--G- GRAVEL	**190**	**192**
I-L- LIMESTONE WHITE	**192**	**246**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6	**BLK STEEL 19 LBS PER FT ASTM A53B IPSCO BUTT WELD**	**0**	**192**

Dia. (in.)	Screen type, material & slot size		

9. Static Water Level
ft. above ground surface
55 ft. below ground surface

10. Pump Test
Pumping Level **110** ft. below surface
Pumping at **15** GPM for **2** hours

11. Well is: [X] Above Grade **24** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:
Method: **GRAVITY**
Kind of Sealing Material

	From (ft.)	To (ft.)	# Sacks Cement
GRANULAR BENTONITE	**0**	**150**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[X] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **MG** Date signed: **08/04/2004**
Signature of Drill Rig Operator (Mandatory unless same as above): **TW** Date signed: **08/02/2004**

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 284

239089

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT

Form 3300–15 Rev. 12-76

AUG 25 1981

1. COUNTY Kenosha | CHECK (✓) ONE: ☑ Town ☐ Village ☐ City | Name Pleasant Prairie

2. LOCATION | ¼ Section: W½, NE | Section: 34 | Township: 1N | Range: 22E

3. NAME ☑ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE: Lucille Kelley

OR – Grid or Street No.: 6100 | Street Name: Spring Brook Rd

ADDRESS: 4671 Grand Ave

AND – If available subdivision name, lot & block No.: Kenosha W,

POST OFFICE: Burnett Ill. 60031

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain		Sanitary Bldg. Sewer		Floor Drain Connected To:		Storm Bldg. Drain		Storm Bldg. Sewer	
	C.I.	Other	C.I.	Other	C.I. Sewer	Other Sewer	C.I.	Other	C.I.	Other
20										

Street Sewer		Other Sewers		Foundation Drain Connected to:				Sewage Sump		Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit	
San.	Storm	C.I.	Other	Sewer		Sewage Sump		C.I.	Other		60		Seepage Pit	
				Clearwater Dr.		Clearwater Sump							Seepage Bed	75
													Seepage Trench	

Privy	Pet Waste Pit	Pit: Nonconforming Existing		Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit
		Well									
		Pump									
		Tank									

Temporary Manure Stack	Watertight Liquid Manure Tank	Solid Manure Storage Structure	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Other (Give Description)

5. Well is intended to supply water for: Residence

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	21			
6	21	214			

7. CASING, LINER, CURBING AND SCREEN

Dia. (in.)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
6	10 X 280 Wall New black steel P.E. 18.97 # per ft Union Steel A53	Surface	214

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
drill cuttings Bentonite base	Surface	21

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Red clay	Surface	17
Sandy Blue Clay	17	207
gravel	207	214

10. TYPE OF DRILLING MACHINE USED

☐ Cable Tool
☐ Rotary-air w/drilling mud
☑ Rotary-w/drilling mud
☐ Rotary-hammer w/drilling mud & air
☐ Rotary-hammer & air
☐ Reverse Rotary
☐ Jetting with: ☐ Air ☐ Water

Well construction completed on July 31 19 81

11. MISCELLANEOUS DATA

Yield Test: 3 Hrs. at 15 GPM

Depth from surface to normal water level 75 Ft.

Depth of water level when pumping 112 Ft. Stabilized ☑ Yes ☐ No

Well is terminated 24 inches ☑ above ☐ below final grade

Well disinfected upon completion ☑ Yes ☐ No

Well sealed watertight upon completion ☑ Yes ☐ No

Water sample sent to Madison laboratory on July 31 – 19 81

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature
510 E.L. Aschauer + Sons Inc
E.L. Aschauer
Registered Well Driller

Complete Mail Address
Kansasville, Wi 53139

plf

LOG # 285

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

Wel 6

RECEIVED

See Instructions on Reverse Side

1. County Kenosha ✓ Town [X] Village [ ] City [ ] Pleasant Prairie
Check one and give name

2. Location E½ of NW¼ of sec 34, T1N, R22E of 4th PM
Name of street and number of premise or Section, Town and Range numbers

3. Owner [X] or Agent [ ] Sam Eldridge
Name of individual, partnership or firm

4. Mail Address Rte 1, Box 341, Kenosha, Wisconsin
Complete address required

RECEIVED

5. From well to nearest: Building 15 ft; sewer 60 ft; drain 20 ft; septic tank 80 ft; dry well or filter bed 80 ft; abandoned well --- ft.

JAN 7 1963

6. Well is intended to supply water for: home use

SANITARY ENGINEERING

7. DRILLHOLE:

Dia. (in.)	From (ft)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10"	0	20			
6	20	243			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft)	To (ft.)
6	std blk steel	0	220

9. GROUT:

Kind	From (ft.)	To (ft.)
clay slurry	0	20

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
yellow clay	0	13
blue clay	13	187
hard pan	187	220
limestone	220	243

Construction of the well was completed on:

September 24 1962

The well is terminated 12 inches [X] above, below [ ] the permanent ground surface.

Was the well disinfected upon completion?

Yes X No

Was the well sealed watertight upon completion?

Yes X No

11. MISCELLANEOUS DATA:

Yield test: 3 Hrs. at 10 GPM.

Depth from surface to water-level: 65 ft.

Water-level when pumping: 140 ft.

Water sample was sent to the state laboratory at:

Madison City on Dec 10 1962

Signature R. C. Hoerr
Registered Well Driller

Wets 33rd Street, Zion, Illinois
Complete Mail Address

Please do not write in space below

Rec'd No.

Ans'd

Interpretation

KE 7405

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner

LOG # 286

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER CQ676

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **JOE MITCHEN**
Telephone Number: **312-872-5603**
Mailing Address: **806 GEDDES**
City: **WINTHROP HARBOR**
State: **IL**
Zip Code: **60096**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **08/06/1989**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number:
Subdivision Name / Lot # / Block #:

Well Constructor (Business Name): **GOHLKE WILLIAM J**
License #: **693**
Facility ID Number (Public Wells):
Address: **R 1 BOX 117**
Public Well Plan Approval #: W--
City: **BRISTOL**
State: **WI**
Zip Code: **53104**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **.1** gpm/ft

Gov't Lot # or **NE** 1/4 of **SW** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [X] New [ ] Reconstruction [ ] Replacement
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?

3. Well serves **1** # of homes and or
(e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:
1. Landfill
11 2. Building Overhang
60 3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
14. Building Sewer [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
9	**0**	**248**

Upper Enlarged Drillhole / Lower Open Bedrock
[X] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
T-C- BROWN CLAY	**0**	**11**
--P- HARD PAN	**11**	**82**
--PG GRAVEL HARD PAN	**82**	**100**
--S- SAND	**100**	**102**
--PG GRAVEL HARD PAN	**102**	**140**
--S- SAND	**140**	**158**
--P- HARD PAN	**158**	**227**
--G- GRAVEL	**227**	**248**

6. Casing, Liner, Screen Dia. (in.) / Material, Weight, Specification Manufacturer & Method of Assembly / From (ft.) / To (ft.)

5 NEW P.V.C. 200 PSI CERTAIN TEED F480 NSF WC PWD2241 1120 SDR 21	**0**	**244**
4 PVC SLOTTED	**244**	**248**

9. Static Water Level
ft. above ground surface
80 ft. below ground surface

10. Pump Test
Pumping Level **220** ft. below surface
Pumping at **10** GPM for **1** hours

11. Well is: [X] Above Grade [ ] Below Grade
10 in.
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:
Method: **GRAVITY**
Kind of Sealing Material

	From (ft.)	To (ft.)	# Sacks Cement
CUTTINGS-HOLE PLUG-QUICK GEL	**0**	**244**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[X] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **WJG** Date signed: **08/11/1989**
Signature of Drill Rig Operator (Mandatory unless same as above): **DBG** Date signed: **08/11/1989**

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 287

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER CQ696

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **TONY ALESCI**
Telephone Number: **414-552-7278**
Mailing Address: **3044 S 92ND ST**
City: **WEST ALLIS** State: **WI** Zip Code: **53227**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **11/03/1989**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available)
Grid or Street Address or Road Name and Number
Subdivision Name Lot # Block #

Well Constructor (Business Name): **GOHLKE WILLIAM J**
License #: **693**
Facility ID Number (Public Wells)
Address: **R 1 BOX 117**
Public Well Plan Approval # W--
City: **BRISTOL** State: **WI** Zip Code: **53104**
Date of Approval (mm/dd/yyyy)
Hicap Permanent well #
Common Well #
Specific Capacity: **.1** gpm/ft

Gov't Lot # or **SE** 1/4 of **NE** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] Replacement [X] New [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?

3. Well serves **1** # of homes and or (e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:
1. Landfill
18 2. Building Overhang
80 3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
14. Building Sewer [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
9	**0**	**239**

Upper Enlarged Drillhole / Lower Open Bedrock
[X] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
T-S- SANDY BROWN	**0**	**11**
--S- SAND	**11**	**22**
--P- HARD PAN	**22**	**72**
--S- SAND	**72**	**83**
--P- HARD PAN	**83**	**127**
--S- SAND	**127**	**136**
--P- HARD PAN	**136**	**171**
--PG GRAVEL HARD PAN	**171**	**191**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
	5 ID NEW PVC 200 PSI CERTAIN TEED F480 NSF WC PWD2241 1120 SDR 21	**0**	**235**
4	**PVC SLOTTED**	**235**	**239**

9. Static Water Level
ft. above ground surface
ft. below ground surface

10. Pump Test
Pumping Level **234** ft. below surface
Pumping at **15** GPM for **1** hours

11. Well is: [X] Above Grade **10** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:
Method: **GRAVITY**
Kind of Sealing Material

	From (ft.)	To (ft.)	# Sacks Cement
CUTTINGS-HOLE P	**0**	**235**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[X] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **WG** Date signed: **11/15/1989**
Signature of Drill Rig Operator (Mandatory unless same as above): **DG** Date signed: **11/15/1989**

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 288

Well Construction Report For *WISCONSIN UNIQUE WELL NUMBER* DN457

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **PAT SMITH**
Telephone Number: **414-843-3853**
Mailing Address: **6244 236TH AVE**
City: **SALEM** State: **WI** Zip Code: **53168**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **02/22/1991**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **4514 121ST ST**
Subdivision Name / Lot # / Block #:

Well Constructor (Business Name): **GOHLKE WILLIAM J**
License #: **693**
Facility ID Number (Public Wells):
Address: **R 1 BOX 117**
Public Well Plan Approval #: W--
City: **BRISTOL** State: **WI** Zip Code: **53104**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **.6** gpm/ft

Gov't Lot # or **SW** 1/4 of **NE** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [X] New [ ] Reconstruction [ ] Replacement
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?

3. Well serves **1** # of homes and or
(e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
15 2. Building Overhang
100 3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
15 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
9	**0**	**113**

Upper Enlarged Drillhole / Lower Open Bedrock

[X] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
T-C- BROWN CLAY	**0**	**21**
--P- HARD PAN	**21**	**55**
--GP GRAVEL HARD PAN	**55**	**96**
--SG SAND/GRAVEL	**96**	**113**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
	5 NEW PVC 200 PSI CERTAIN TEED F480 NSF WC PWD 22411120 SDR 21	**0**	**109**
4	**PVC SLOTTED**	**109**	**113**

9. Static Water Level
ft. above ground surface
82 ft. below ground surface

10. Pump Test
Pumping Level **113** ft. below surface
Pumping at **20** GPM for **2** hours

11. Well is: [X] Above Grade **10** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:
Method: **GRAVITY**
Kind of Sealing Material

	From (ft.)	To (ft.)	# Sacks Cement
CUTTINGS-HOLE PLUG QUICK GEL	**0**	**109**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[X] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **WJG** Date signed: **03/08/1991**
Signature of Drill Rig Operator (Mandatory unless same as above): **DBG** Date signed: **03/08/1991**

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 289

Well Construction Report For *WISCONSIN UNIQUE WELL NUMBER* DN461

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **KEVIN SMITH**
Telephone Number: **414-857-9579**
Mailing Address: **10400 168TH AVE**
City: **BRISTOL**
State: **WI**
Zip Code: **53104**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **07/24/1991**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **11817 45TH AVE**
Subdivision Name / Lot # / Block #:

Well Constructor (Business Name): **WILLIAM J GOHLKE**
License #: **693**
Facility ID Number (Public Wells):
Address: **19400 38TH ST**
Public Well Plan Approval #: W--
City: **BRISTOL**
State: **WI**
Zip Code: **53104-9740**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **.1** gpm/ft

Gov't Lot # / or **NE** 1/4 of **NE** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] Replacement [X] New [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?

3. Well serves **1** # of homes and or
(e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:
1. Landfill
20 2. Building Overhang
60 3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
14. Building Sewer [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
9	**0**	**259**

Upper Enlarged Drillhole / Lower Open Bedrock
[X] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
T-C- BROWN CLAY	**0**	**14**
U-C- BLUE CLAY	**14**	**48**
--P- HARD PAN	**48**	**122**
--S- SAND	**122**	**130**
--P- HARD PAN	**130**	**191**
--GP GRAVEL HEARD PAN	**191**	**246**
--S- SAND	**246**	**259**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
	5 ID NEW PVC 200 PSI CERTAIN TEED F180 WSF WC PND2241 1120 SDR 21	**0**	**254**
5	**PVC SLOTTED**	**254**	**259**

9. Static Water Level
ft. above ground surface
55 ft. below ground surface

10. Pump Test
Pumping Level **240** ft. below surface
Pumping at **15** GPM for **1** hours

11. Well is: [ ] Above Grade **10** in. [X] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:
Method: **GRAVITY**
Kind of Sealing Material

	From (ft.)	To (ft.)	# Sacks Cement
CUTTINGS-HOLE PLUG-QUICK GEL	**0**	**254**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[X] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **WFG** Date signed: **07/25/1991**
Signature of Drill Rig Operator (Mandatory unless same as above): **WFG** Date signed: **08/14/1991**

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 290

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER DO128

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **BILL CARVER**
Telephone Number: **708-746-3173**
Mailing Address: **4604 121ST ST**
City: **PLEASANT PRAIRIE** State: **WI** Zip Code: **53158**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **03/10/1993**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **4604 121ST ST**
Subdivision Name: **CSM 109** Lot # Block #

Well Constructor (Business Name): **GROSS E E WELL DRILLING INC** License #: **387**
Facility ID Number (Public Wells):
Address: **43320 N HWY 41**
Public Well Plan Approval #: **W--**
City: **ZION** State: **IL** Zip Code: **60099-9425**
Date of Approval (mm/dd/yyyy):

Gov't Lot # or **NW** 1/4 of **NE** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] Replacement [X] New [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?: **NEW HOME**

Hicap Permanent well #:
Common Well #:
Specific Capacity: **.1** gpm/ft

3. Well serves **1** # of homes and or
(e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
28 2. Building Overhang
3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
30 11. Foundation Drain to Clearwater
45 12. Foundation Drain to Sewer
30 13. Building Drain [X] Cast Iron or Plastic [ ] Other
33 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
110 15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
6	**0**	**231**

Upper Enlarged Drillhole / Lower Open Bedrock
[ ] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
Y-C- YELLOW CLAY	**0**	**19**
U-G- BLUE CLAY	**19**	**45**
--P- HARDPAN	**45**	**110**
-WS- RUNNY SAND	**110**	**112**
R-CP RED CLAY/HARDPAN	**112**	**204**
--GI DIRTY GRAVEL	**204**	**205**
--L- LIMESTONE	**205**	**231**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6.625	**O.D. X .280 WALL 19.45 LB TYPO EWO SPCO ASTM A53B HYDROTESTED 1780 PSI 21.0**	**0**	**205**

Dia. (in.)	Screen type, material & slot size		

9. Static Water Level
ft. above ground surface
100 ft. below ground surface

11. Well is: [X] Above Grade **18** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

10. Pump Test
Pumping Level **190** ft. below surface
Pumping at **10** GPM for **4** hours

7. Grout or Other Sealing Material. Method:
Method: **MOUNDED AROUND PIPE**
Kind of Sealing Material

	From (ft.)	To (ft.)	# Sacks Cement
GRANULAR BENTONITE #8 MESH	**0**	**205**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [X] No If no, explain: **NO OLD WELLS**

13. Signature of the Well Constructor or Supervisory Driller: **MG** Date signed: **03/15/1993**
Signature of Drill Rig Operator (Mandatory unless same as above): **RS** Date signed: **03/15/1993**

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 291

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER DO312

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **EDWARD WENDELL**
Telephone Number: **414-694-0141**
Mailing Address: **4511 118TH ST**
City: **KENOSHA**
State: **WI**
Zip Code: **53142-6629**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **08/17/1990**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **4511 118TH ST**
Subdivision Name / Lot # / Block #:

Well Constructor (Business Name): **GOHLKE WILLIAM J**
License #: **693**
Facility ID Number (Public Wells):
Address: **R 1 BOX 117**
Public Well Plan Approval #: W--
City: **BRISTOL**
State: **WI**
Zip Code: **53104**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **.2** gpm/ft

Gov't Lot # / or **NW** 1/4 of **NE** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] Replacement [X] New [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?

3. Well serves **1** # of homes and or
(e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:
1. Landfill
15 2. Building Overhang
50 3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
14. Building Sewer [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
9	**0**	**224**

Upper Enlarged Drillhole / Lower Open Bedrock
[X] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
T-C- BROWN CLAY	**0**	**11**
U-C- BLUE CLAY	**11**	**32**
--P- HARD PAN	**32**	**91**
--Y- SAND/GRAVEL	**91**	**114**
--P- HARD PAN	**114**	**217**
--G- GRAVEL	**217**	**224**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
	5 ID NEW PVC 200 PSI CERTAIN TEED F480 NSFWC PND 2241 1120 SDR 21	**0**	**220**
4	**PVC SLOTTED**	**220**	**224**

9. Static Water Level
ft. above ground surface
95 ft. below ground surface

10. Pump Test
Pumping Level **224** ft. below surface
Pumping at **20** GPM for **2** hours

11. Well is: [X] Above Grade **10** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:
Method: **GRAVITY**
Kind of Sealing Material

	From (ft.)	To (ft.)	# Sacks Cement
CUTTINGS-HOLE PLUG-QUICK GEL	**0**	**220**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[X] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **WJG** Date signed: **08/24/1990**
Signature of Drill Rig Operator (Mandatory unless same as above): **DBG** Date signed: **08/24/1990**

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 292

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER DT330

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A (R 8/00)

Property Owner: **LAWRENCE RASCH**
Telephone Number: **414-657-6542**
Mailing Address: **10736 TYLER RD**
City: **KENOSHA** State: **WI** Zip Code: **53142**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **01/19/1990**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **11801 45TH AVE**
Subdivision Name / Lot # / Block #:

Well Constructor (Business Name): **HOOVER WATER WELL SERVICI**
License #: **554**
Facility ID Number (Public Wells):
Address: **12188 W 33RD ST**
Public Well Plan Approval #: W--
City: **ZION** State: **IL** Zip Code: **60099-9604**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **1.4** gpm/ft

Gov't Lot # or **SW** 1/4 of **NE** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [X] New [ ] Replacement [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?: **DOMESTIC WATER SUPPLY**

3. Well serves **1** # of homes and or (e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:
- 1. Landfill
- **20** 2. Building Overhang
- **80** 3. Septic [ ] Holding Tank [ ]
- 4. Sewage Absorption Unit
- 5. Nonconforming Pit
- 6. Buried Home Heating Oil Tank
- 7. Buried Petroleum Tank
- 8. Shoreline [ ] Swimming Pool [ ]
- **20** 9. Downspout/Yard Hydrant
- 10. Privy
- **20** 11. Foundation Drain to Clearwater
- 12. Foundation Drain to Sewer
- **20** 13. Building Drain [X] Cast Iron or Plastic [ ] Other
- **60** 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
- 15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
- **>60** 16. Clearwater Sump
- 17. Wastewater Sump
- 18. Paved Animal Barn Pen
- 19. Animal Yard or Shelter
- 20. Silo
- 21. Barn Gutter
- 22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
- 23. Other Manure Storage
- 24. Ditch
- 25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
10	**0**	**20**
6	**20**	**109**

Upper Enlarged Drillhole / Lower Open Bedrock
- [ ] ---1. Rotary - Mud Circulation----------
- [ ] ---2. Rotary - Air----------
- [ ] ---3. Rotary - Air and Foam----------
- [ ] ---4.Drill-Through Casing Hammer
- [ ] ---5. Reverse Rotary
- [X] ---6. Cable-tool Bit **10** in. dia------
- [ ] 7. Dual Rotary
- [ ] 8. Temp. Outer Casing in. dia. depth (ft)
  Removed? [ ] Yes [ ] No
  If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.		From (ft.)	To (ft.)
Y-CG	**YELLOW STONEY CLAY**	**0**	**26**
G-C-	**GRAY CLAY**	**26**	**72**
--CG	**STONEY CLAY**	**72**	**106**
--S-	**SAND**	**106**	**109**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
	6 LTV STEEL T@C ASTM A53B 19.45 PPF	**0**	**106**

Dia. (in.)	Screen type, material & slot size		
6	**JOHNSON STAINLESS STEEL**	**106**	**109**

9. Static Water Level
ft. above ground surface
77 ft. below ground surface

10. Pump Test
Pumping Level **87** ft. below surface
Pumping at **14** GPM for **3** hours

11. Well is: [X] Above Grade **14** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:
Method: **BAILER**

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
CLAY SLURRY	**0**	**20**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [ ] No If no, explain: **UNKNOWN**

13. Signature of the Well Constructor or Supervisory Driller: **JDK** Date signed: **02/20/1992**
Signature of Drill Rig Operator (Mandatory unless same as above) Date signed

Make additional comments on reverse side about geology, additional screens, water quality, etc. **Variance issued** [ ] Yes [X] No

LOG # 293

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER DT489

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A (R 8/00)

Property Owner: **MASTER CRAFT BUILDERS** | Telephone Number: --

Mailing Address: **5008 GREEN BAY AVE**

City: **KENOSHA** | State: **WI** | Zip Code: **53142**

County of Well Location: **Kenosha** | County Well Permit No.: **W** | Well Completion Date: **05/23/1991**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE** | Fire # (if available):

Grid or Street Address or Road Name and Number: **4500 121ST ST**

Subdivision Name | Lot # | Block #

Well Constructor (Business Name): **MICHAEL HARTMAN** | License #: **436** | Facility ID Number (Public Wells)

Address: **W82 N28280 MARSHALL** | Public Well Plan Approval #: W--

City: **HARTLAND** | State: **WI** | Zip Code: **53029** | Date of Approval (mm/dd/yyyy)

Hicap Permanent well # | Common Well # | Specific Capacity: **1.3** gpm/ft

Gov't Lot # | or **NE** 1/4 of **NE** 1/4 of Section **35** T **1** N; R **22** [X] E [ ] W

Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] Replacement [X] New [ ] Reconstruction | Lat/Long Method: **GPS008**

of previous unique well # constructed in
Reason for replaced or Reconstructed Well?: **HOME**

3. Well serves **1** # of homes and or (e.g. barn, restaurant, church, school, industry, etc.)

High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No

Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:

Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
12 2. Building Overhang
3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
20 11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
35 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
35 16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
10	**0**	**20**
6	**20**	**104**
5	**104**	**107**

Upper Enlarged Drillhole / Lower Open Bedrock

[ ] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
--C- CLAY	**0**	**100**
--GS GRAVEL @ SAND	**100**	**107**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6	**0.280 A-53 GR. B SAWHILL STEEL WELDED**	**0**	**104**

Dia. (in.)	Screen type, material & slot size		
5	**#15 SLOT JOHNSON**	**104**	**107**

9. Static Water Level
ft. above ground surface
68 ft. below ground surface

10. Pump Test
Pumping Level **80** ft. below surface
Pumping at **15** GPM for **4** hours

11. Well is: [X] Above Grade **12** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
CLAY SLURRY	**0**	**20**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [X] No If no, explain: **NO WELLS**

13. Signature of the Well Constructor or Supervisory Driller: **MH** Date signed: **05/23/1991**

Signature of Drill Rig Operator (Mandatory unless same as above) Date signed

Make additional comments on reverse side about geology, additional screens, water quality, etc. **Variance issued** [ ] Yes [X] No

LOG # 294

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER HX332

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A (R 8/00)

Property Owner: **MASTERCRAFT BUILD**
Telephone Number: --
Mailing Address: **5008 GREENBAY AVE**
City: **KENOSHA** State: **WI** Zip Code: **53144**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **08/30/1994**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **11606 47TH AVE**
Subdivision Name / Lot # / Block #:

Well Constructor (Business Name): **MICHAEL HARTMAN**
License #: **436**
Facility ID Number (Public Wells):
Address: **W82 N28280 MARSHALL**
Public Well Plan Approval #: W--
City: **HARTLAND** State: **WI** Zip Code: **53029**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **5** gpm/ft

Gov't Lot # / or **NW** 1/4 of **NW** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] Replacement [X] New [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?: **NEW HOME**

3. Well serves **1** # of homes and or (e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No
[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
11 2. Building Overhang
3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
23 11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
25 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
95 15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
20 16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
6	**0**	**100**

Upper Enlarged Drillhole / Lower Open Bedrock
[ ] ---1. Rotary - Mud Circulation----------
[X] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
--S- SAND	**0**	**5**
--C- CLAY	**5**	**99**
--G- GRAVEL	**99**	**100**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6	**0 280 A 53 GRB SAWHILL STEEL WELDED**	**0**	**100**

Dia. (in.)	Screen type, material & slot size		

9. Static Water Level
ft. above ground surface
81 ft. below ground surface

10. Pump Test
Pumping Level **85** ft. below surface
Pumping at **20** GPM for **4** hours

11. Well is: [X] Above Grade **20** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
CRUMBLES	**0**	**0**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [X] No If no, explain: **NO WELL**

13. Signature of the Well Constructor or Supervisory Driller: **MH** Date signed: **09/01/1994**
Signature of Drill Rig Operator (Mandatory unless same as above): **TW** Date signed

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 295

Well Construction Report For *WISCONSIN UNIQUE WELL NUMBER* HX869

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **AYRES, JAMES**
Telephone Number: **414-697-3554**
Mailing Address: **12214 41ST AVE**
City: **KENOSHA** State: **WI** Zip Code: **53142**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **10/27/1994**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number:
Subdivision Name: Lot #: Block #:

Well Constructor (Business Name): **WILLIAM J GOHLKE**
License #: **693**
Facility ID Number (Public Wells):
Address: **19400 38TH ST**
Public Well Plan Approval #: W--
City: **BRISTOL** State: **WI** Zip Code: **53104-9740**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **.7** gpm/ft

Gov't Lot #: or **NE** 1/4 of **NW** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] Replacement [X] New [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?

3. Well serves **1** # of homes and or
(e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
18 2. Building Overhang
3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
10 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
180 15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
9	**0**	**130**

Upper Enlarged Drillhole / Lower Open Bedrock
[X] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
T-C- BROWN CLAY	**0**	**21**
--S- SAND	**21**	**24**
T-C- BROWN CLAY	**24**	**30**
G-C- GRAY CLAY	**30**	**79**
--Y- SAND GRAVEL	**79**	**83**
-BG- BROKEN ROCK	**83**	**85**
--S- SAND	**85**	**119**
--Y- SAND GRAVEL	**119**	**130**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
4	**PVC SLOTTED**	**126**	**130**

9. Static Water Level
ft. above ground surface
62 ft. below ground surface

10. Pump Test
Pumping Level **90** ft. below surface
Pumping at **20** GPM for **2** hours

11. Well is: [X] Above Grade **12** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:
Method: **GRAVIT**
Kind of Sealing Material

	From (ft.)	To (ft.)	# Sacks Cement
CUTTINGS HOLE PLUG QUICK GEL	**0**	**126**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [ ] No If no, explain: **NA**

13. Signature of the Well Constructor or Supervisory Driller: **WFG** Date signed: **10/28/1994**
Signature of Drill Rig Operator (Mandatory unless same as above): **WFG** Date signed: **10/28/1994**

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 296

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER ID444

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **YOHAS, JEFF**
Telephone Number: **414-552-0032**
Mailing Address: **3619 15TH ST APT 1D**
City: **KENOSHA** State: **WI** Zip Code: **53144**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **05/16/1995**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number:
Subdivision Name: Lot #: Block #:

Well Constructor (Business Name): **WILLIAM J GOHLKE**
License #: **693**
Facility ID Number (Public Wells):
Address: **19400 38TH ST**
Public Well Plan Approval #: W--
City: **BRISTOL** State: **WI** Zip Code: **53104**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **2** gpm/ft

Gov't Lot #: or **NE** 1/4 of **NW** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] Replacement [X] New [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?

3. Well serves **1** # of homes and or
(e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
15 2. Building Overhang
3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
60 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
100 15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
9	**0**	**18**

Upper Enlarged Drillhole
[X] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?
Lower Open Bedrock

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
--F- FILL	**0**	**5**
T-C- BROWN CLAY	**5**	**18**
G-C- GRAY CLAY	**18**	**64**
G-P- GRAY HARD PAN	**64**	**98**
--Y- GRAVEL SAND	**98**	**108**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
5	**1D NEW PVC 200 PSI CERTAIN TEEDF480 NSF WC PWD 2241 1120 SDR 24**	**0**	**103**

Dia. (in.)	Screen type, material & slot size		
5	**ENVIRONMENTAL WELL PVC SLOTTED**	**103**	**108**

9. Static Water Level
ft. above ground surface
70 ft. below ground surface

10. Pump Test
Pumping Level **80** ft. below surface
Pumping at **20** GPM for **2** hours

11. Well is: [X] Above Grade **12** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:
Method: **GRAVITY**
Kind of Sealing Material

	From (ft.)	To (ft.)	# Sacks Cement
CUTTINGS QUICK GEL	**0**	**103**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **WFG** Date signed:
Signature of Drill Rig Operator (Mandatory unless same as above): **WFG** Date signed:

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 297

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER IF022

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **WEST, GREG**
Telephone Number: --
Mailing Address: **6316 53RD ST**
City: **KENOSHA**
State: **WI**
Zip Code: **53144**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **01/09/1995**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **11616 47TH AVE**
Subdivision Name: **CSM 1685**
Lot #: **2**
Block #:

Well Constructor (Business Name): **MICHAEL HARTMAN**
License #: **436**
Facility ID Number (Public Wells):
Address: **W82 N28280 MARSHALL**
Public Well Plan Approval #: W--
City: **HARTLAND**
State: **WI**
Zip Code: **53029**
Date of Approval (mm/dd/yyyy):

Gov't Lot # or **NE** 1/4 of **NW** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [X] New [ ] Replacement [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?: **NEW HOME**

Hicap Permanent well #:
Common Well #:
Specific Capacity: **3** gpm/ft

3. Well serves **1** # of homes and or **HOME** (e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
13 2. Building Overhang
3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
14 11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
10 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
65 15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
16 16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
10	**0**	**5**
6	**5**	**106**

Upper Enlarged Drillhole / Lower Open Bedrock
[ ] ---1. Rotary - Mud Circulation----------
[X] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
--C- CLAY	**0**	**85**
--CG STONEY CLAY	**85**	**100**
--Y- SAND @ GRAVEL	**100**	**106**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6	**0 280 A 53 GRB SAWHILL STEEL WELDED**	**0**	**106**

Dia. (in.)	Screen type, material & slot size		

9. Static Water Level
ft. above ground surface
80 ft. below ground surface

10. Pump Test
Pumping Level **90** ft. below surface
Pumping at **30** GPM for **4** hours

11. Well is: [X] Above Grade **18** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
CRUMBLES	**0**	**0**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [X] No If no, explain: **NO WELL**

13. Signature of the Well Constructor or Supervisory Driller: **MH** Date signed: **01/12/1995**
Signature of Drill Rig Operator (Mandatory unless same as above) Date signed

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 298

Well Construction Report For *WISCONSIN UNIQUE WELL NUMBER* LH081

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A (R 8/00)

Property Owner: **ARCHIBALD, KEVIN** | Telephone Number: **414-694-9296**

Mailing Address: **12001 45TH AVE**

City: **KENOSHA** | State: **WI** | Zip Code: **53142**

County of Well Location: **Kenosha** | County Well Permit No.: **W** | Well Completion Date: **03/17/1997**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE** | Fire # (if available):

Grid or Street Address or Road Name and Number: **12001 45TH AVE**

Subdivision Name: **TERRA HEIGHTS** | Lot #: **28** | Block #:

Well Constructor (Business Name): **ASCHAUER E G @ SONS INC** | License #: **66** | Facility ID Number (Public Wells):

Address: **PO BOX 206** | Public Well Plan Approval #: **W--**

City: **KANSASVILLE** | State: **WI** | Zip Code: **53139-0206** | Date of Approval (mm/dd/yyyy):

Gov't Lot # | or **SW** 1/4 of **NE** 1/4 of Section **35** T **1** N; R **22** [X] E [ ] W

Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [X] New [ ] Replacement [ ] Reconstruction | Lat/Long Method: **GPS008**

Hicap Permanent well # | Common Well # | Specific Capacity: **3** gpm/ft

of previous unique well # constructed in
Reason for replaced or Reconstructed Well?: **NEW CONST**

3. Well serves **1** # of homes and or (e.g. barn, restaurant, church, school, industry, etc.)

High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No

Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:

Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
16 2. Building Overhang
3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
>20 9. Downspout/Yard Hydrant
10. Privy
20 11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
20 13. Building Drain [X] Cast Iron or Plastic [ ] Other
15 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
>200 15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
50 16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
10	**0**	**20**
6	**20**	**109**

Upper Enlarged Drillhole / Lower Open Bedrock

[ ] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[X] ---6. Cable-tool Bit **10** in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.		From (ft.)	To (ft.)
R-CS	**SANDY RED CLAY**	**0**	**16**
U-SC	**SANDY BLUE CLAY**	**16**	**35**
U-SG	**STONY BLUE CLAY**	**35**	**97**
--XG	**SAND CLAY GRAVEL**	**97**	**104**
--Y-	**SAND @ GRAVEL**	**104**	**109**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6	**STEEL 18 97 LBS PER FT A53B IPSCO P E B WELD JTS**	**0**	**106**

Dia. (in.)	Screen type, material & slot size		
	NOM 6 TELE 304 SS NO 30	**106**	**109**

9. Static Water Level
ft. above ground surface
70 ft. below ground surface

10. Pump Test
Pumping Level **75** ft. below surface
Pumping at **15** GPM for **3** hours

11. Well is: [X] Above Grade **18** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:
Method: **FULL HOLE**
Kind of Sealing Material

	From (ft.)	To (ft.)	# Sacks Cement
CRUMBLES DRILL CUTTINGS @ BENT	**0**	**20**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [X] No If no, explain: **NONE**

13. Signature of the Well Constructor or Supervisory Driller: **EA** Date signed: **03/17/1997**

Signature of Drill Rig Operator (Mandatory unless same as above): **MA** Date signed: **03/17/1997**

Make additional comments on reverse side about geology, additional screens, water quality, etc.

Variance issued [ ] Yes [X] No

LOG # 299

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER LW474

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **DUCTS UNLIMITED**
Telephone Number: **847-625-6300**
Mailing Address: **3895 CLEARWATER CT**
City: **GURNEE** State: **IL** Zip Code: **60031**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **02/04/1998**

1. Well Location: [ ] Town [ ] City [X] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **12121 47TH AVE**
Subdivision Name / Lot # / Block #:

Well Constructor (Business Name): **HOOVER WELL DRILLING**
License #: **6448**
Facility ID Number (Public Wells):
Address: **21445 DURAND AV**
Public Well Plan Approval #: W--
City: **UNION GROVE** State: **IL** Zip Code: **53182**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: gpm/ft

Gov't Lot # or **SW** 1/4 of **NE** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [X] New [ ] Replacement [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?: **DOMESTIC USE**

3. Well serves **0** # of homes and or (e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
2. Building Overhang
55 3. Septic [ ] Holding Tank [ ]
100 4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
15 11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
50 13. Building Drain [X] Cast Iron or Plastic [ ] Other
45 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
40 16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
9	**0**	**9**
5	**9**	**115**

Upper Enlarged Drillhole / Lower Open Bedrock
[ ] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[X] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
--C- CLAY	**0**	**83**
--Z- GRAVEL @ CLAY	**83**	**100**
--X- SAND @ CLAY	**100**	**107**
--S- SAND	**107**	**115**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
	5 SAWHILL STEEL 19 00 PPF T@C A53B ASTM	**0**	**112**
5	**TELESCOPIC SS 10 SLOT**	**112**	**115**

9. Static Water Level
ft. above ground surface
75 ft. below ground surface

10. Pump Test
Pumping Level **75** ft. below surface
Pumping at **12** GPM for **6** hours

11. Well is: [X] Above Grade **12** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:
Method: **STARTER HOLE**
Kind of Sealing Material

From (ft.)	To (ft.)	# Sacks Cement
0	**0**	

GRANULAR BENTON

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [X] No If no, explain: **NON OBSERVED**

13. Signature of the Well Constructor or Supervisory Driller: **WM** Date signed: **02/16/1998**
Signature of Drill Rig Operator (Mandatory unless same as above) Date signed

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 300

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER OT245

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A (R 8/00)

Property Owner: **ARDERS, ROGER**
Telephone Number: --
Mailing Address: **12115 47TH AVE**
City: **PLEASANT PRAIRIE**
State: **WI**
Zip Code: **53158**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **07/30/2001**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **12115 47TH AVE**
Subdivision Name / Lot # / Block #:

Well Constructor (Business Name): **KENNETH R SWEENEY**
License #: **583**
Facility ID Number (Public Wells):
Address: **11221 W ST MARTINS RD**
Public Well Plan Approval #: W--
City: **FRANKLIN**
State: **WI**
Zip Code: **53132-2331**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **.1** gpm/ft

Gov't Lot # or **SW** 1/4 of **NE** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] Replacement [X] New [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?

3. Well serves **1** # of homes and or **HOME** (e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
9 2. Building Overhang
68 3. Septic [ ] Holding Tank [ ]
80 4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
29 11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
66 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
6	**0**	**258**

Upper Enlarged Drillhole / Lower Open Bedrock

[ ] ---1. Rotary - Mud Circulation----------
[X] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[X] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
T-C- **BROWN CLAY**	**0**	**17**
U-CS **SANDY BLUE CLAY**	**17**	**186**
U-C- **BLUE CLAY**	**186**	**215**
U-CG **STONY BLUE CLAY**	**215**	**220**
--L- **LIMESTONE**	**220**	**258**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6	**18.97#/FT. ASTM A53B IPSCO WELDED**	**0**	**220**

Dia. (in.)	Screen type, material & slot size		

9. Static Water Level
ft. above ground surface
88 ft. below ground surface

10. Pump Test
Pumping Level **160** ft. below surface
Pumping at **10** GPM for **2** hours

11. Well is: [X] Above Grade **36** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
BENTONITE CRUMBLES MOUNDED AR	**0**		

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **KRS** Date signed: **07/31/2001**
Signature of Drill Rig Operator (Mandatory unless same as above) Date signed

Make additional comments on reverse side about geology, additional screens, water quality, etc.

Variance issued [ ] Yes [X] No

LOG # 301

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER OT279

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **RUFFALO, ROB**
Telephone Number: --
Mailing Address: **12026 47TH AVE**
City: **KENOSHA**
State: **WI**
Zip Code: **53158**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **10/19/2001**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **12026 47TH AVE**
Subdivision Name / Lot # / Block #:

Well Constructor (Business Name): **KENNETH R SWEENEY**
License #: **583**
Facility ID Number (Public Wells):
Address: **11221 W ST MARTINS RD**
Public Well Plan Approval #: W--
City: **FRANKLIN**
State: **WI**
Zip Code: **53132-2331**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **.3** gpm/ft

Gov't Lot # / or **SE** 1/4 of **NW** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] Replacement [X] New [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?

3. Well serves **1** # of homes and or **HOME** (e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
11 2. Building Overhang
3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
12 11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
11 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
185 15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
14 16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
6	**0**	**260**

Upper Enlarged Drillhole / Lower Open Bedrock
[ ] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
T-C- BROWN CLAY	**0**	**22**
U-C- BLUE CLAY	**22**	**157**
U-CS SANDY BLUE CLAY	**157**	**230**
--L- LIMSTONE	**230**	**260**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6	**18.97#/FT. ASTM A53B IPSCO WELDED**	**0**	**230**

Dia. (in.)	Screen type, material & slot size		

9. Static Water Level
ft. above ground surface
95 ft. below ground surface

10. Pump Test
Pumping Level **140** ft. below surface
Pumping at **15** GPM for **2** hours

11. Well is: [X] Above Grade **18** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
BENTONITE CRUMBLES MOUNDED ARO	**0**		

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **KRS** Date signed: **10/31/2001**
Signature of Drill Rig Operator (Mandatory unless same as above) Date signed

Make additional comments on reverse side about geology, additional screens, water quality, etc.

Variance issued [ ] Yes [X] No

LOG # 302

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER SA226

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A (R 8/00)

Property Owner: **MASTERCRAFT BUILDERS**
Telephone Number: **262-539-2399**
Mailing Address: **5008 GREEN BAY RD**
City: **KENOSHA** State: **WI** Zip Code: **53144**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **07/07/2003**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **11934 47TH AVE**
Subdivision Name / Lot # / Block #:

Well Constructor (Business Name): **TODD HUEMANN**
License #: **6138**
Facility ID Number (Public Wells):
Address: **T HUEMANN WELL & PUMP INC**
Public Well Plan Approval #: W--
City: **BURLINGTON** State: **WI** Zip Code: **53105**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **2** gpm/ft

Gov't Lot # or **NE** 1/4 of **NW** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] Replacement [X] New [ ] Reconstruction
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?
Lat/Long Method: **GPS008**

3. Well serves **1** # of homes and or
(e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
2. Building Overhang
3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
35 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
70 15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
6	**0**	**280**

Upper Enlarged Drillhole / Lower Open Bedrock

[ ] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[X] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [X] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
--C- Clay	**0**	**134**
--Z- Clay & Gravel	**134**	**234**
--L- Limestone/Dolomite	**234**	**280**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
	6 STEEL ASTM A 53B TRI -STATE TUBULAR T X C 19.45LB/FT PRESSURE TESTED 1780 PSI	**0**	**234**

Dia. (in.)	Screen type, material & slot size		

9. Static Water Level
ft. above ground surface
100 ft. below ground surface

10. Pump Test
Pumping Level **105** ft. below surface
Pumping at **10** GPM for **5** hours

11. Well is: [X] Above Grade **12** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
Granular bentonite	**0**	**280**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **TH** Date signed: **07/09/2003**
Signature of Drill Rig Operator (Mandatory unless same as above): **AP** Date signed: **07/09/2003**

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 303

Well Construction Report For *WISCONSIN UNIQUE WELL NUMBER* UK603

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **VILLANI, PERRY**
Telephone Number: --
Mailing Address: **11911 45TH AVE**
City: **PLEASANT PRAIRIE**
State: **WI**
Zip Code: **53142**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **08/30/2007**

1. Well Location: [ ] Town [ ] City [X] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **11911 45TH AVE**
Subdivision Name / Lot # / Block #:

Well Constructor (Business Name): **KENNETH R SWEENEY**
License #: **583**
Facility ID Number (Public Wells):
Address: **KEN SWEENEY WELL DRILLING & PUMPS**
Public Well Plan Approval #: W--
City: **FRANKLIN**
State: **WI**
Zip Code: **53132-2331**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **.3** gpm/ft

Gov't Lot # / or **NW** 1/4 of **NE** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [X] New [ ] Replacement [ ] Reconstruction
Lat/Long Method
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?

3. Well serves **1** # of homes and or
(e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [ ] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [X] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
11 2. Building Overhang
3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
12 11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
8 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
110 15. Collector or Street Sewer: [ ] Sanitary units in. diam. [X] Storm [ ] =< 6 [ ] > 6
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
6	**0**	**220**

Upper Enlarged Drillhole / Lower Open Bedrock

[ ] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[X] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
T-C- BROWN CLAY	**0**	**22**
U-C- BLUE CLAY	**22**	**186**
--Y- SAND & GRAVEL	**186**	**200**
--L- LIMESTONE	**200**	**220**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6	**18.97#/FT. ASTM A53B ARCELOR CANADA WELDED**	**0**	**200**

Dia. (in.)	Screen type, material & slot size		

9. Static Water Level
ft. above ground surface
75 ft. below ground surface

10. Pump Test
Pumping Level **140** ft. below surface
Pumping at **20** GPM for **2** hours

11. Well is: [X] Above Grade **20** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
BENTONITE CRUMBLES MOUNDED AROUND SHOE AS DRIVEN	**0**		

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **KRS** Date signed: **09/06/2007**
Signature of Drill Rig Operator (Mandatory unless same as above) Date signed

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 304

Well Construction Report For *WISCONSIN UNIQUE WELL NUMBER* UV108

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **CHIANELIO, AL**
Telephone Number: **847-938-1923**
Mailing Address: **11643 47TH AVE**
City: **PLEASANT PRAIRIE**
State: **WI**
Zip Code: **53158**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **02/24/2010**

1. Well Location: [ ] Town [ ] City [X] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **11643 47TH AVE**
Subdivision Name: **TERRA HEIGHTH**
Lot #: **3**
Block #:

Well Constructor (Business Name): **KENNETH D BOYCE**
License #: **6123**
Facility ID Number (Public Wells):
Address: **BEACH PUMP & WELL SERV INC**
Public Well Plan Approval #: **W--**
City: **BEACH PARK**
State: **IL**
Zip Code: **60087**
Date of Approval (mm/dd/yyyy):

Gov't Lot #: or 1/4 of **NE** 1/4 of
Section **35** T **1** N; R **22** [X] E [ ] W
Latitude Deg. **42** Min. **30.409**
Longitude Deg. **87** Min. **51.757**

2. Well Type: [X] New [ ] Replacement [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?

Hicap Permanent well #:
Common Well #:
Specific Capacity: **.4** gpm/ft

3. Well serves **1** # of homes and or (e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [ ] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [X] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:

1. Landfill
10 2. Building Overhang
3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
13 9. Downspout/Yard Hydrant
10. Privy
19 11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
14 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
>100 15. Collector or Street Sewer: [ ] Sanitary units in. diam. [X] Storm [ ] =< 6 [ ] > 6
26 16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
100 24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
11	**0**	**9**
6	**9**	**218**

Upper Enlarged Drillhole / Lower Open Bedrock
[ ] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[X] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
Y-C- YELLOW CLAY	**0**	**33**
U-C- BLUE CLAY	**33**	**58**
--P- HARDPAN	**58**	**70**
--G- GRAVEL	**70**	**80**
--P- HARDPAN	**80**	**123**
--G- BOULDERS	**123**	**125**
--P- HARDPAN	**125**	**213**
--G- BOULDERS	**213**	**215**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6	**ASTM A-53B T/C TIAN JIN 19.45 LBS PER FT**	**0**	**218**

Dia. (in.)	Screen type, material & slot size		

9. Static Water Level
ft. above ground surface
110 ft. below ground surface

10. Pump Test
Pumping Level **135** ft. below surface
Pumping at **10** GPM for **4** hours

11. Well is: [X] Above Grade **20** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method: **SLURRY**
Kind of Sealing Material

From (ft.)	To (ft.)	# Sacks Cement
0	**9**	

GRANULAR BENTONITE

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **KDB** Date signed: **03/16/2010**
Signature of Drill Rig Operator (Mandatory unless same as above): **TB** Date signed: **03/16/2010**

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 305

WELL CONSTRUCTOR'S REPORT
FORM 3300–15

OCT 29 1975

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1 COUNTY: Kenosha

CHECK ONE: [X] Town [ ] Village [ ] City — NAME: Pleasant Prairie

2 LOCATION — ¼ Section: S½, NE | Section: 35 | Township: 1N | Range: 22E

OR – Grid or street no: 12115 | Street name: 47th Avenue

AND – If available subdivision name, lot & block no: Lot 1, Pleasant Home Subdivision

3 OWNER AT TIME OF DRILLING STATE 10/27/75
Tom Carver
ADDRESS OWNER 10/27/75
12115 - 47th Avenue
POST OFFICE TWP.. 10/27/75
Kenosha, Wisconsin 53140

4. Distance in feet from well to nearest. (Record answer in appropriate block)

BUILDING	SANITARY SEWER C I.	SANITARY SEWER TILE	FLOOR DRAIN C I	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C I.	WASTE WATER DRAIN TILE
20	-	-	30	-	--	--	-	-

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
-	-	45	-	-	59	-	-	- -	--

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for: home use

6. DRILLHOLE

Dia (in.)	From (ft.)	To (ft.)	Dia (in.)	From (ft.)	To (ft.)
9	Surface	20			
5 &	20	110			

7. CASING, LINER, CURBING, AND SCREEN

Dia (in.)	Kind and Weight	From (ft.)	To (ft.)
5	new galv. steel T&C	Surface	107
	& 14.81 ppf.		
5	Johnson SS well screen	107	110
	#15 slot		

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
clay slurry	Surface	20

9. FORMATIONS

Kind	From (ft.)	To (ft.)
yellow clay	Surface	19
blue clay	19	85
hard pan	85	107
sand & gravel	107	110

10. TYPE OF DRILLING MACHINE USED

[X] Cable Tool [ ] Direct Rotary [ ] Reverse Rotary
[ ] Rotary – air w/drilling mud [ ] Rotary – hammer with drilling mud & air [ ] Jetting with [ ] Air [ ] Water

11. MISCELLANEOUS DATA

Yield test: 2½ Hrs. at 15 GPM
Depth from surface to normal water level 85 ft.
Depth to water level when pumping 90 ft.

Well construction completed on 3/26 19 75
Well is terminated 12 inches [X] above [ ] below final grade
Well disinfected upon completion [X] Yes [ ] No
Well sealed watertight upon completion [X] Yes [ ] No

Water sample sent to Kenosha laboratory on 10/16 19 75

KE 7 4 3 1

Your opinion concerning other pollution hazards, informatic ntered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount o ing, sub-surface pumprooms, access pits, etc., should be given on reverse side

SIGNATURE RC Hoover
Registered Well Driller

COMPLETE MAIL ADDRESS
Hoover Water Well Service, Inc.
Zion, Illinois 60099

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS	GAS – 48 HRS	CONFIRMED	REMARKS
SAFE 10/17/75				

REV 3–71

LOG # 306 MAY 5 1980

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300–15 Rev. 12-76

1. COUNTY: KENOSHA

CHECK (✓) ONE: ☒ Town ☐ Village ☐ City

Name: PLEASANT PRAIRIE

2. LOCATION: SW¼NE¼ | ¼ Section: ~~SW~~ | Section: 35 | Township: 1N | Range: 22E

OR – Grid or Street No.: 12146 | Street Name: 45th Avenue

AND – If available subdivision name, lot & block No.:

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE
DON BAKER — STATE 5/1/80

ADDRESS
12432 - 41st Avenue — OWNER 5/1/80

POST OFFICE
Kenosha, WI 53140 — DRILLER 5/1/80

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain		Sanitary Bldg. Sewer		Floor Drain Connected To:		Storm Bldg. Drain		Storm Bldg. Sewer	
	C.I.	Other	C.I.	Other	C.I. Sewer	Other Sewer	C.I.	Other	C.I.	Other
12	–	–	45	–	–	–	12	–	–	–

Street Sewer		Other Sewers		Foundation Drain Connected to:				Sewage Sump		Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit	
San.	Storm	C.I.	Other	Sewer	–	Sewage Sump	–	C.I.	Other				Seepage Pit	–
				Clearwater Dr.	12	Clearwater Sump	–					80	Seepage Bed	–
–	–	–	–					–	–	–	–		Seepage Trench	–

Privy	Pet Waste Pit	Pit: Nonconforming Existing		Subsurface Pumproom	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit
		Well	–	Nonconforming Existing							
–	–	Pump	–	–	–	–	–	–	–	–	–
		Tank	–								

Temporary Manure Stack	Watertight Liquid Manure Tank	Solid Manure Storage Structure	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Other (Give Description)
–	–	–	–	–	Creek 50'

5. Well is intended to supply water for:
Residence

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
9	Surface	20			
5	20	108			

7. CASING, LINER, CURBING AND SCREEN

Dia. (in.)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
5	New Black Steel	Surface	106
	T&C 15 PPF-ASTM		
	A-53 Youngstown		
5	Johnson s/s well		
	screen	106	108

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Clay slurry	Surface	20

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Yellow clay	Surface	20
Blue clay	20	70
Sandy clay & gravel	70	94
Sand & gravel	94	108

10. TYPE OF DRILLING MACHINE USED

☒ Cable Tool
☐ Rotary-air w/drilling mud
☐ Rotary-w/drilling mud
☐ Rotary-hammer w/drilling mud & air
☐ Rotary-hammer & air
☐ Reverse Rotary
☐ Jetting with: ☐ Air ☐ Water

Well construction completed on March 26, 19 80

11. MISCELLANEOUS DATA

Yield Test: 2 Hrs. at 20 GPM

Depth from surface to normal water level 78 Ft.

Depth of water level when pumping 80 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 12 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Inter-City Milk Control laboratory on April 10, 1980

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.
Safe 4/12/80

Signature 5/4 D. Hoover
Registered Well Driller

Complete Mail Address
HOOVER WATER WELL SERVICE, INC.
3700 West 33rd Street
Zion, Illinois 60099

LOG # 307

STATE OF WISCONSIN

WELL CONSTRUCTOR'S REPORT — DEPARTMENT OF RESOURCE DEVELOPMENT — W.O. 8187 — Wel 6

1 COUNTY: Kenosha

CHECK ONE: ☒ Town ☐ Village ☐ City

NAME: Pleasant Prairie

KE-809-D

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)

39th Avenue NE 1/4 Sec 35 T1N R22E / NE, SE, SE, NE, Sec. 35

3. OWNER AT TIME OF DRILLING: Robert Morgan

4. OWNER'S COMPLETE MAIL ADDRESS: 1817 McQueen Road Kenosha, Wis

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
10	--	--	--	--	--	--	--	--

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
--	--	50	--	--	50	--	--	--	--

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

-- above indicates none

6. Well is intended to supply water for: home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8-3/4	Surface	183			
6	183	202			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	New Std. Black Steel	Surface	
	P.E. 18.97#		183

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Bentonite & cuttings	Surface	183

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Clay	Surface	170
Hardpan	170	182
Limestone	182	202

11. MISCELLANEOUS DATA

Yield test: 1 Hrs. at 8 GPM

Depth from surface to normal water level 70 ft.

Depth to water level when pumping 100 ft.

Well construction completed on 10/4/ 19 68

Well is terminated 8 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Madison laboratory on: 10/4 19 68

Your o[illegible] lution hazards, information concerning difficulties encountered, and data relating to nearby wells, [illegible]g joints, method of finishing the well, amount of cement used in grouting, blasting, subsurface [illegible]., should be given on reverse side.

KE7433

SIGNATURE: Richard Berkholtz

Richard Berkholtz — Registered Well Driller

COMPLETE MAIL ADDRESS: Berkholtz Drilling Co., Inc.
1170 Forest Lane, Brookfield, Wisconsin 53005

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

LOG # 308 APR 13 1972

DEC 1 1971

WELL CONSTRUCTOR'S REPORT

Wel–6

WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY • Kenosha

CHECK ONE ☒ Town ☐ Village ☐ City

NAME Pleaseant Prariie

2 LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available)

N.W. ¼ of Section 35 T. I N, R. 22 E. NW, Sec 35

3. OWNER AT TIME OF DRILLING MR Tom Wells

4. OWNER'S COMPLETE MAIL ADDRESS PLEASANT PRAIRIE W.S.

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
10								

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		52			81				

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Private Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	20	6	20	211

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	19.45 lbs.	Surface	211
	new T&C		
	black steel		

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
puddle clay	Surface	20

10. FORMATIONS

Kind	From (ft.)	To (ft.)
clay fill	Surface	22
hardpan	22	42
blue clay	42	68
hardpan	68	128
sand	128	140
hardpan	140	158
blue clay	158	204
gravel	204	211

Well construction completed on 13 Oct. 71 19

11. MISCELLANEOUS DATA

Yield test: 16 Hrs. at 10 GPM

Well is terminated 8 inches ☒ above ☐ below final grade

Depth from surface to normal water level 95 ft.

Well disinfected upon completion ☒ Yes ☐ No

Depth to water level when pumping 95 ft.

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Wis. State Lab of Hygiene laboratory on: To be Sent in 19

Your wells surfa KE7423 pollution hazards, information concerning difficulties encountered, and data relating to nearby asing joints, method of finishing the well, amount of cement used in grouting, blasting, sub- etc., should be given on reverse side.

SIGNATURE William J. Gobble Registered Well Driller

COMPLETE MAIL ADDRESS Rt. 1 Box 117 Bristol, Wis.

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS
				SEE 12-29-71 LETTER IN FILE

REV. 11-68

LOG # 309

STATE OF WISCONSIN

WELL CONSTRUCTOR'S REPORT — DEPARTMENT OF RESOURCE DEVELOPMENT — Wel 6

1 COUNTY: Kenosha

CHECK ONE: ☒ Town ☐ Village ☐ City — NAME: Pleasant Prairie

2 LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)

NE - 1/4 S35 T1N R22E

State 9/25/69
Owner 9/25/69
Township 9/25/69
Driller

3. OWNER AT TIME OF DRILLING: Rick Varvil

4. OWNER'S COMPLETE MAIL ADDRESS: P. O. Box 31, Woodworth, Wisconsin

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
15	--	--	--	-	---	15	--	--

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
--	--	---	--	--	-----	---	--	---	-----

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Home use

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10"	Surface	20			
6"	20	113			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6"	New steel 19-45/100 lbs. per ft. T&C	Surface	114

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
clay slurry	Surface	20'

10. FORMATIONS

Kind	From (ft.)	To (ft.)
yellow clay	Surface	17
blue clay	17	92
hard pan	92	108
gravel	108	114

RECEIVED
OCT 01 1969
Dept. Nat. Res.
OCT 22 1969
Dept. Nat. Res.

Well construction completed on August 22 19 69

11. MISCELLANEOUS DATA

Yield test: 2 Hrs. at 10 GPM

Depth from surface to normal water level 92 ft.

Depth to water level when pumping 105 ft.

Well is terminated 8 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Madison laboratory on: Aug. 26, 19 69

You [KE74427] pollution hazards, information concerning difficulties encountered, and data relating to nearby well ... casing joints, method of finishing the well, amount of cement used in grouting, blasting, subsurface ..., etc., should be given on reverse side.

SIGNATURE: [signature] Registered Well Driller

COMPLETE MAIL ADDRESS: HOOVER WELL SERVICE, West 33rd Street, Zion, Illinois 60099

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS
SAFE - #15812 - 8/29/69				

LOG # 310

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300–15 Rev. 12-76

APR 21 1981

1. COUNTY: KENOSHA
CHECK (✓) ONE: ☒ Town ☐ Village ☐ City
Name: PLEASANT PRAIRIE

2. LOCATION: ¼ Section: NE, NW | Section: 35 | Township ✓: 1N | Range: 22E
OR – Grid or Street No. | Street Name: 47th Ave. & 116th St.
AND – If available subdivision name, lot & block No.

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE
PETER GULATZ CONST. STATE 4/9/81
ADDRESS
6823 - 27th Avenue OWNER 4/9/81
POST OFFICE
Kenosha, WI 53140 DRILLER 4/9/81

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain		Sanitary Bldg. Sewer		Floor Drain Connected To:		Storm Bldg. Drain		Storm Bldg. Sewer	
	C.I.	Other	C.I.	Other	C.I. Sewer	Other Sewer	C.I.	Other	C.I.	Other
12	–	–	50	–	50	–	–	–	–	–

Street Sewer		Other Sewers		Foundation Drain Connected to:				Sewage Sump		Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit	
San.	Storm	C.I.	Other	Sewer	–	Sewage Sump	–	C.I.	Other				Seepage Pit	
–	–	–	–	Clearwater Dr.	–	Clearwater Sump	30	–	–	30	70	–	Seepage Bed	85
													Seepage Trench	

Privy	Pet Waste Pit	Pit: Nonconforming Existing		Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit
–	–	Well	–	–	–	–	–	–	–	–	–
		Pump	–								
		Tank	–								

Temporary Manure Stack	Watertight Liquid Manure Tank	Solid Manure Storage Structure	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Other (Give Description)
–	–	–	–	–	–

5. Well is intended to supply water for:
Residential

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
9	Surface	20			
5	20	116			

7. CASING, LINER, CURBING AND SCREEN

Dia. (in.)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
5	New Black Steel	Surface	113
	T&C 15 PPF-ASTM		
	A-53 Youngstown.		
5	Johnson s/s screen		
	#20 Slot	113	116

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Clay slurry	Surface	20

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Yellow clay	Surface	17
Blue clay	17	106
sand	106	116

10. TYPE OF DRILLING MACHINE USED
☒ Cable Tool
☐ Rotary-air w/drilling mud
☐ Rotary-w/drilling mud
☐ Rotary-hammer w/drilling mud & air
☐ Rotary-hammer & air
☐ Reverse Rotary
☐ Jetting with: ☐ Air ☐ Water

Well construction completed on February 20, 1981

11. MISCELLANEOUS DATA
Yield Test: 1½ Hrs. at 20 GPM
Depth from surface to normal water level 85 Ft.
Depth of water level when pumping 87 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 12 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Inter-City Milk Control laboratory on March 3, 1981

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side. Safe 3/5/81

Signature S13 Registered Well Driller

Complete Mail Address
HOOVER WATER WELL SERVICE, INC.
3700 West 33rd Street
Zion, Illinois 60099

LOG # 311

NOV 07 1978

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT

Form 3300–15 Rev 12-76

KE-808-D

1 COUNTY: Kenosha

CHECK (✓) ONE: ☒ Town ☐ Village ☐ City

Name: Pleasant Prairie

2 LOCATION: SE, NW, NW | ¼ Section: N.E. | Section: 35 | Township: 1 N. | Range: 22 E.

OR – Grid or Street No | Street Name

AND – If available subdivision name, lot & block No

3 NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE: Mr. Terry Rice

ADDRESS: 4510 113th. Street

POST OFFICE: Kenosha, Wisconsin - 53140

4 Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg Drain		Sanitary Bldg Sewer		Floor Drain Connected To		Storm Bldg. Drain		Storm Bldg Sewer	
	C.I	Other	C I	Other	C I. Sewer	Other Sewer	C.I	Other	C I.	Other
18										

Street Sewer		Other Sewers		Foundation Drain Connected to:				Sewage Sump		Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit	
San.	Storm	C I	Other	Sewer		Sewage Sump		C I	Other				Seepage Pit	
				Clearwater Dr		Clearwater Sump						100	Seepage Bed	
													Seepage Trench	

Privy	Pet Waste Pit	Pit Nonconforming Existing		Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit
		Well									
		Pump									
		Tank									

Temporary Manure Stack	Watertight Liquid Manure Tank	Solid Manure Storage Structure	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Other (Give Description)

5. Well is intended to supply water for: private home

6 DRILLHOLE

Dia. (in.)	From (ft)	To (ft)	Dia. (in)	From (ft.)	To (ft)
10	Surface	20	6	20	214

7. CASING, LINER, CURBING AND SCREEN
Material, Weight, Specification & Method of Assembly

Dia (in)		From (ft)	To (ft)
6"L.J.	19.45#/ft.	Surface	204
	new T&C		
	black steel		
	ASTM A53		
	Schmoto steel		

8 GROUT OR OTHER SEALING MATERIAL

Kind	From (ft)	To (ft)
puddle clay	Surface	20

9 FORMATIONS

Kind	From (ft)	To (ft)
brown clay	Surface	14
hard pan	14	100
sand and gravel	100	140
hard pan	140	204
limestone (rock)	204	214

KE7444

10 TYPE OF DRILLING MACHINE USED

☒ Cable Tool
☐ Rotary-air w/drilling mud
☐ Rotary-w/drilling mud
☐ Rotary-hammer w/drilling mud & air
☐ Rotary-hammer & air
☐ Reverse Rotary
☐ Jetting with: ☐ Air ☐ Water

Well construction completed on October 25 19 73

11 MISCELLANEOUS DATA

Yield Test: 3 Hrs. at 25 GPM

Depth from surface to normal water level 100 Ft.

Depth of water level when pumping 140 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 10 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to State lab. of Hygiene laboratory on to be sent we install

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: William L. Hohlfeld Registered Well Driller

Complete Mail Address: Rt. 1 Box 117 Bristol, Wisconsin - 53104

plot

LOG # 312

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER AR796

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A (R 8/00)

Property Owner: **ROBERT STYLES**
Telephone Number: **414-694-6780**
Mailing Address: **12135 39TH AVE**
City: **KENOSHA** State: **WI** Zip Code: **53142**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **11/14/1989**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number:
Subdivision Name: Lot #: Block #:

Well Constructor (Business Name): **HOOVER WATER WELL SERVICI**
License #: **554**
Facility ID Number (Public Wells):
Address: **12188 W 33RD ST**
Public Well Plan Approval # W--
City: **ZION** State: **IL** Zip Code: **60099-9604**
Date of Approval (mm/dd/yyyy):

Gov't Lot #: or **SW** 1/4 of **NW** 1/4 of
Section **36** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] New [X] Replacement [ ] Reconstruction
Lat/Long Method: **GPS008**

Hicap Permanent well #:
Common Well #:
Specific Capacity: **7.5** gpm/ft

of previous unique well # constructed in
Reason for replaced or Reconstructed Well?: **NEW WELL FOR HOUSE ONLY**

3. Well serves **1** # of homes and or (e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:
- 1. Landfill
- **>10** 2. Building Overhang
- **>50** 3. Septic [ ] Holding Tank [ ]
- **>75** 4. Sewage Absorption Unit
- 5. Nonconforming Pit
- 6. Buried Home Heating Oil Tank
- 7. Buried Petroleum Tank
- 8. Shoreline [ ] Swimming Pool [ ]
- **>10** 9. Downspout/Yard Hydrant
- 10. Privy
- 11. Foundation Drain to Clearwater
- **>25** 12. Foundation Drain to Sewer
- **>50** 13. Building Drain [X] Cast Iron or Plastic [ ] Other
- **>50** 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
- 15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
- 16. Clearwater Sump
- 17. Wastewater Sump
- 18. Paved Animal Barn Pen
- 19. Animal Yard or Shelter
- 20. Silo
- 21. Barn Gutter
- 22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
- 23. Other Manure Storage
- 24. Ditch
- 25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
10	**0**	**20**
6	**20**	**165**

Upper Enlarged Drillhole / Lower Open Bedrock
- [ ] ---1. Rotary - Mud Circulation----------
- [ ] ---2. Rotary - Air----------
- [ ] ---3. Rotary - Air and Foam----------
- [ ] ---4.Drill-Through Casing Hammer
- [ ] ---5. Reverse Rotary
- [X] ---6. Cable-tool Bit **10** in. dia------
- [ ] 7. Dual Rotary
- [ ] 8. Temp. Outer Casing in. dia. depth (ft)
  Removed? [ ] Yes [ ] No
  If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
Y-C- YELLOW @ BLUE CLAY	**0**	**68**
--GS GRAVEL AND SAND	**68**	**90**
--P- HARDPAN	**90**	**112**
--CS SANDY CLAY	**112**	**130**
--GC GRAVEL AND CLAY	**130**	**149**
--Y- SAND AND GRAVEL	**149**	**165**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6	**SUMITOMO STEEL T@C ASTM 19.45 PPF A53B**	**0**	**162**

Dia. (in.)	Screen type, material & slot size		
6	**JOHNSON STAINLESS 3'X6 INCH**	**162**	**165**

9. Static Water Level
ft. above ground surface
68 ft. below ground surface

10. Pump Test
Pumping Level **72** ft. below surface
Pumping at **30** GPM for **6** hours

11. Well is: [X] Above Grade **12** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:
Method: **BAILER**

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
CLAY SLURRY	**0**	**20**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [X] No If no, explain: **WELL USED FOR GARDEN**

13. Signature of the Well Constructor or Supervisory Driller: **LH** Date signed: **03/11/1991**
Signature of Drill Rig Operator (Mandatory unless same as above): **JK** Date signed:

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 313

Well Construction Report For *WISCONSIN UNIQUE WELL NUMBER* DD917

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **EDWARD BECKER/BIELINSKI BROS**
Telephone Number: **414-694-3090**
Mailing Address: **6211 72ND ST**
City: **KENOSHA** State: **WI** Zip Code: **53142**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **02/02/1990**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **3815-120TH PL**
Subdivision Name / Lot # / Block #:

Well Constructor (Business Name): **HERR WELL DRILLING INC**
License #: **672**
Facility ID Number (Public Wells):
Address: **W295 HERR RD**
Public Well Plan Approval #: W--
City: **DOUSMAN** State: **WI** Zip Code: **53118**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **.3** gpm/ft

Gov't Lot # or **SW** 1/4 of **NW** 1/4 of
Section **36** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] Replacement [X] New [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?: **WATER SUPPLY FOR A NEW HO**

3. Well serves **1** # of homes and or
(e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:
1. Landfill
11 2. Building Overhang
3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
14. Building Sewer [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
8.75	**0**	**187**
6	**187**	**305**

Upper Enlarged Drillhole / Lower Open Bedrock
[X] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
--C- CLAY	**0**	**187**
--L- LIMESTONE	**187**	**305**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6	**18.97 LBS. PER FOOT NEW STEEL PLAIN END ASTM A120VALLEY STEEL PRODUCTS**	**0**	**187**

Dia. (in.)	Screen type, material & slot size		

9. Static Water Level
ft. above ground surface
101 ft. below ground surface

10. Pump Test
Pumping Level **145** ft. below surface
Pumping at **15** GPM for **5** hours

11. Well is: [X] Above Grade **12** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method:

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
CLAY SLURRY @ DRILLING MUD	**0**	**187**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[ ] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **JH** Date signed: **02/15/1990**
Signature of Drill Rig Operator (Mandatory unless same as above): **RD** Date signed: **02/15/1990**

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

LOG # 314

Well Construction Report For *WISCONSIN UNIQUE WELL NUMBER* DT312

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **C@S BUILDERS**
Telephone Number: **708-244-5019**
Mailing Address: **38468 NORTH SHORE**
City: **WAUKEGAN** State: **IL** Zip Code: **60087**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **08/16/1991**

1. Well Location: ☐ Town ☐ City ☒ Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **12007 39TH AVE**
Subdivision Name: Lot #: Block #:

Well Constructor (Business Name): **HOOVER WATER WELL SERVICI**
License #: **554**
Facility ID Number (Public Wells):
Address: **12188 W 33RD ST**
Public Well Plan Approval #: W--
City: **ZION** State: **IL** Zip Code: **60099-9604**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **.3** gpm/ft

Gov't Lot #: or **SW** 1/4 of **NW** 1/4 of
Section **36** T **1** N; R **22** ☒ E ☐ W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: ☒ New ☐ Replacement ☐ Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?: **NEW HOME**

3. Well serves **1** # of homes and or (e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? ☐ Yes ☒ No
Property? ☐ Yes ☒ No

☒ Drilled ☐ Driven Point ☐ Jetted ☐ Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? ☒ Yes ☐ No
Well located within 1,200 feet of a quarry? ☐ Yes ☐ No If yes, distance in feet from quarry:
Well located in floodplain? ☐ Yes ☒ No

Distance in Feet from Well to Nearest:

1. Landfill
40 2. Building Overhang
70 3. Septic ☐ Holding Tank ☐
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline ☐ Swimming Pool ☐
35 9. Downspout/Yard Hydrant
10. Privy
>50 11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
40 13. Building Drain ☒ Cast Iron or Plastic ☐ Other
70 14. Building Sewer ☒ Gravity ☐ Pressure ☒ Cast Iron or Plastic ☐ Other
70 15. Collector or Street Sewer: ☐ Sanitary units in. diam. ☐ Storm ☐ =< 6 ☐ > 6
40 16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe ☐ Gravity ☐ Pressure ☐ Cast Iron or Plastic ☐ Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
10	**0**	**20**
5	**20**	**142**

Upper Enlarged Drillhole / Lower Open Bedrock

☐ ---1. Rotary - Mud Circulation----------
☐ ---2. Rotary - Air----------
☐ ---3. Rotary - Air and Foam----------
☐ ---4.Drill-Through Casing Hammer
☐ ---5. Reverse Rotary
☒ ---6. Cable-tool Bit **10** in. dia------
☐ 7. Dual Rotary
☒ 8. Temp. Outer Casing **10** in. dia. depth (ft)
Removed? ☒ Yes ☐ No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
--C- CLAY	**0**	**37**
--P- HARDPAN	**37**	**51**
--C- CLAY	**51**	**81**
--S- SAND	**81**	**84**
--CS SANDY CLAY	**84**	**96**
--P- HARDPAN	**96**	**140**
--Y- SAND @ GRAVEL	**140**	**142**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
	5 LTV STEEL T@C ASTM A-53-B 15.45 PPF (PP PIPE)	**0**	**140**

Dia. (in.)	Screen type, material & slot size		
5	**JOHNSON STAINLESS STEEL**	**140**	**142**

9. Static Water Level
ft. above ground surface
68 ft. below ground surface

10. Pump Test
Pumping Level **105** ft. below surface
Pumping at **12** GPM for **6** hours

11. Well is: ☒ Above Grade **12** in. ☐ Below Grade
Developed? ☒ Yes ☐ No
Disinfected? ☒ Yes ☐ No
Capped? ☒ Yes ☐ No

7. Grout or Other Sealing Material. Method:
Method: **BAILER**
Kind of Sealing Material

	From (ft.)	To (ft.)	# Sacks Cement
CLAY SLURRY	**0**	**26**	

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
☐ Yes ☐ No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **JDK** Date signed: **09/06/1991**
Signature of Drill Rig Operator (Mandatory unless same as above) Date signed

Make additional comments on reverse side about geology, additional screens, water quality, etc. **Variance issued** ☐ Yes ☒ No

LOG # 315

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER OU475

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: **ANHOCK, LINDA**
Telephone Number: **262-694-3249**
Mailing Address: **3310 128TH ST**
City: **PLEASANT PRAIRIE**
State: **WI**
Zip Code: **53158**
County of Well Location: **Kenosha**
County Well Permit No.: **W**
Well Completion Date: **08/08/2003**

1. Well Location: [X] Town [ ] City [ ] Village of **PLEASANT PRAIRIE**
Fire # (if available):
Grid or Street Address or Road Name and Number: **3310 128TH ST**
Subdivision Name / Lot # / Block #:

Well Constructor (Business Name): **GOHLKE WELL DRILLING LLP**
License #: **6642**
Facility ID Number (Public Wells):
Address: **19400 38TH ST**
Public Well Plan Approval #: W--
City: **BRISTOL** State: **WI** Zip Code: **53104**
Date of Approval (mm/dd/yyyy):
Hicap Permanent well #:
Common Well #:
Specific Capacity: **.5** gpm/ft

Gov't Lot # / or **SW** 1/4 of **SW** 1/4 of
Section **36** T **1** N; R **22** [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [ ] New [X] Replacement [ ] Reconstruction
Lat/Long Method: **GPS008**
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?

3. Well serves **1** # of homes and or
(e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [ ] Yes [X] No
Property? [ ] Yes [X] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [X] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [X] No

Distance in Feet from Well to Nearest:
1. Landfill
40 2. Building Overhang
120 3. Septic [X] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
60 14. Building Sewer [X] Gravity [ ] Pressure [X] Cast Iron or Plastic [ ] Other
15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
50 16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
9	**0**	**62**

Upper Enlarged Drillhole / Lower Open Bedrock
[X] ---1. Rotary - Mud Circulation----------
[ ] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4.Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc.	From (ft.)	To (ft.)
--I- TOP SOIL	**0**	**2**
T-C- BROWN CLAY	**2**	**12**
G-C- GREY CLAY	**12**	**55**
--Y- SAND & GRAVEL	**55**	**62**

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
5	**PVC NEW CERTAINTEED 1120 SDR21 PWD 2241**	**0**	**57**

Dia. (in.)	Screen type, material & slot size	From (ft.)	To (ft.)
5	**5X5X.10 SLOT PVC SDR21 TITAN HI FLO**	**57**	**62**

9. Static Water Level
15 ft. above ground surface
ft. below ground surface

10. Pump Test
Pumping Level **40** ft. below surface
Pumping at **12** GPM for **1** hours

11. Well is: [X] Above Grade **12** in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method: **PUMPED**

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
GROUT-WELL DF	**0**	**57**	**5**

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property? [X] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: **TLS** Date signed: **08/08/2003**
Signature of Drill Rig Operator (Mandatory unless same as above) Date signed

Make additional comments on reverse side about geology, additional screens, water quality, etc.
Variance issued [ ] Yes [X] No

ILLINOIS STATE GEOLOGICAL SURVEY

LOG # 316

Private Water Well	Top	Bottom
brown clay	0	2
black dirt	2	3
yellow clay	3	13
gray clay	13	192
gray clay & gravel	192	195
limestone	195	220
Total Depth		**220**

Casing: 5" PVC from 0' to 174'
5" STEEL from 174' to 195'

Grout: WYOBEN 20% from 0 to 192.

Water from limestone at 195' to 220'.
Static level 60' below casing top which is 1' above GL
Pumping level 78' when pumping at 10 gpm for 6 hours
Permanent pump installed at 80'
on July 23, 2007, with a capacity of 10 gpm
Remarks: Driller's Estimated Well Yield 20 gpm

Owner Address: 460 N. Main St. Antioch, IL
Address of well: 328 Clearview Ct.
Winthrop Harbor, IL
Add'l loc. info: Lot: 52 Subdivision: North Prairie Est.

Location source: Digital Orthophoto Quad Verified by: VJA on April 22, 2009.

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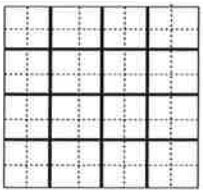
GET FILE Related File -

Permit Date: July 9, 2007 **Permit #:** 097-157

COMPANY Huemann, Joseph J.
FARM Maki Construction
DATE DRILLED July 23, 2007 **NO.**
ELEVATION **COUNTY NO.** 51583
LOCATION NE SW SW
LATITUDE 42.48855 **LONGITUDE** -87.859165
COUNTY Lake **API** 120975158300 **5 - 46N - 12E**



ILLINOIS STATE GEOLOGICAL SURVEY

LOG # 317

Private Water Well	Top	Bottom
yellow clay	0	28
hardpan	28	55
blue clay	55	85
hardpan	85	94
sand	94	97
Total Depth		**97**

Casing: 5" ASTM A53B 15#/' from 0' to 93'
" STAINLESS STL SCREEN from 93' to 97'

Screen: 4' of " diameter 15 slot

Grout: BENTONITE from 0 to 20.

Water from sand at 94' to 97'.
Static level 65' below casing top which is 1' above GL
Pumping level 80' when pumping at 10 gpm for 2 hours
Permanent pump installed at 80'
on November 7, 2008, with a capacity of 10 gpm
Remarks: Driller's Estimated Well Yield 10 gpm

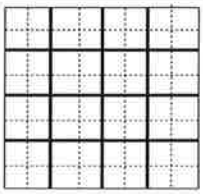
Owner Address: 2319 Gilboa Zion, IL
Address of well: 43262 N. Thorpe Ave.
Zion, IL
Add'l loc. info: Lot: 2 Blk 54 Subdivision: North Shore Acres

Location source: Global Positioning System verified Verified by: VJA on April 22, 2009.

Image viewing help: New users please read this.
GET FILE Related File -

Permit Date: September 10, 2008 **Permit #:** 097-168

COMPANY Boyce, Kenneth D.
FARM Masters Touch Const
DATE DRILLED November 4, 2008 **NO.**
ELEVATION **COUNTY NO.** 51584
LOCATION SE NW SW
LATITUDE 42.475517 **LONGITUDE** -87.860733
COUNTY Lake **API** 120975158400 **8 - 46N - 12E**



ILLINOIS STATE GEOLOGICAL SURVEY

LOG # 318

Private Water Well	Top	Bottom
fill	0	2
yellow clay	2	14
blue clay	14	37
hardpan	37	55
gravel & blue clay	55	75
sand	75	81
Total Depth		**81**

Casing: 5" ASTM A53B from 0' to 77'
5" STAINLESS STL SCREEN from 77' to 81'

Screen: 4' of 5" diameter 10 slot

Grout: BENTONITE from to .

Water from sand at 75' to 81'.
Static level 54' below casing top which is 1' above GL
Pumping level 72' when pumping at 9 gpm for 12 hours

Permanent pump installed at 68'
on September 8, 2006, with a capacity of 8 gpm

Remarks: Driller's Estimated Well Yield 9 gpm

Owner Address: 1136 Park Ave. Winthrop Harbor, IL

Address of well: 4208 11th St.
Winthrop Harbor, IL

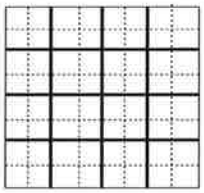
Add'l loc. info: Lot: 45 Subdivision: North Shore Acres

Location source: Digital Orthophoto Quad Verified by: AMD on August 31, 2007.

Image viewing help: New users please read this.

GET FILE Related File -

Permit Date: August 24, 2006 **Permit #:** 097-147



COMPANY Boyce, Kenneth D.

FARM Rickert, Jonathan D.

DATE DRILLED September 1, 2006 **NO.**

ELEVATION **COUNTY NO.** 50685

LOCATION NW SW SE

LATITUDE 42.474566 **LONGITUDE** -87.852264

COUNTY Lake **API** 120975068500 **8 - 46N - 12E**

ILLINOIS STATE GEOLOGICAL SURVEY

LOG # 319

Private Water Well	Top	Bottom
yellow clay	0	12
gray clay	12	48
gravel & boulder	48	50
gray clay w/gravel	50	100
gray sandy clay	100	115
fine gravel	115	118
Total Depth		**118**

Casing: 5" PVC SDR 21 from -1' to 115'
4" STAINLESS STL SCREEN from 115' to 118'

Screen: 3' of 4" diameter .015 slot

Grout: QUICK from 0 to 100.

Water from gravel at 115' to 118'.
Static level 35' below casing top which is 1' above GL

Permanent pump installed at 100'
on August 21, 2008, with a capacity of 20 gpm

Remarks: Driller's Estimated Well Yield 20 gpm

Owner Address: 42645 Delany Rd. Zion, IL

Address of well: 14067 W. Heritage Trl.
Zion, IL

Add'l loc. info: Lot: 24 Subdivision: Heritage Trails

Location source: Aerial Photograph verified Verified by: VJA on April 22, 2009

Image viewing help: New users please read this.

GET FILE Related File -

Permit Date: August 7, 2008 **Permit #:** 097-168

COMPANY Snelten, A & C

FARM Richards, Michael

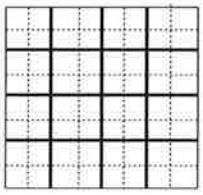
DATE DRILLED August 19, 2008 **NO.**

ELEVATION **COUNTY NO.** 51582

LOCATION SE NE SE

LATITUDE 42.47625 **LONGITUDE** -87.903923

COUNTY Lake **API** 120975158200 **11 - 46N - 11E**



ILLINOIS STATE GEOLOGICAL SURVEY

LOG # 320

Private Water Well	Top	Bottom
sand & gravel	0	18
blue clay	18	44
sand & gravel	44	45
blue clay	45	87
sand & gravel	87	92
Total Depth		**92**

Casing: 5" ASTM A53B 15LB/FT from 0' to 89'
5" STAINLESS STL SCREEN from 89' to 92'

Screen: 3' of 5" diameter 15 slot

Grout: GRANULAR BENTONITE from 0 to 20.

Water from sand / gravel at 87' to 92'.
Static level 29' below casing top which is 1' above GL
Pumping level 33' when pumping at 30 gpm for 3 hours

Permanent pump installed at 40'
on August 13, 2008, with a capacity of 10 gpm

Remarks: Driller's Estimated Well Yield 30 gpm

Owner Address: 1963 N Amber Prairie Way Lake Villa, IL

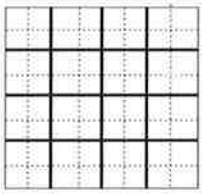
Address of well: 13845 W 9th St
Wadsworth, IL

Add'l loc. info: Subdivision: Metes Bounds 9th St

Location source: Location from permit

Permit Date: June 5, 2008 **Permit #:** 097-166

COMPANY Boyce, Kenneth D.
FARM Castillo, Joel
DATE DRILLED July 11, 2008 **NO.**
ELEVATION **COUNTY NO.** 51708
LOCATION NW NW SW
LATITUDE 42.478367 **LONGITUDE** -87.90005
COUNTY Lake **API** 120975170800 **12 - 46N - 11E**



ILLINOIS STATE GEOLOGICAL SURVEY

LOG # 321

Private Water Well	Top	Bottom
yellow clay	0	14
blue clay	14	86
gravel / sand	86	89
blue clay	89	106
hardpan	106	115
blue clay / gravel	115	147
blue clay	147	189
rubble	189	190
limestone	190	220
Total Depth		**220**

Casing: 5" ASTM A53B 15#/' from 0' to 190'

Water from limestone at 190' to 220'.

Static level 116' below casing top which is 1' above GL

Pumping level 200' when pumping at 10 gpm for 5 hours

Permanent pump installed at 208'

on September 10, 2007, with a capacity of 10 gpm

Remarks: Driller's Estimated Well Yield 10 gpm

Owner Address: 40264 N. Kenosha Rd. Zion, IL

Address of well: 11879 W. 12th St.
Zion, IL

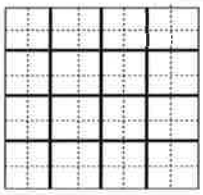
Add'l loc. info: Lot: 1 Blk 69 Subdivision: N. Shore Acres

Location source: Digital Orthophoto Quad Verified by: VJA on March 5, 2009.

Image viewing help: New users please read this.

GET FILE Related File -

Permit Date: July 30, 2007 **Permit #:** 097-158



COMPANY Boyce, Kenneth D.

FARM Richards, Dwight

DATE DRILLED September 11, 7 **NO.**

ELEVATION **COUNTY NO.** 51474

LOCATION SW SW SW

LATITUDE 42.473361 **LONGITUDE** -87.861713

COUNTY Lake **API** 120975147400 **8 - 46N - 12E**

ILLINOIS STATE GEOLOGICAL SURVEY

LOG # 322

Private Water Well	Top	Bottom
topsoil	0	1
brown clay	1	8
gray clay	8	104
sand, dust	104	115
gray clay	115	143
limestone	143	178
Total Depth		**178**

Casing: 5" PVC from 0' to 122'
5" STEEL from 122' to 143'

Grout: WYOBEN GROUT from 0 to 100.

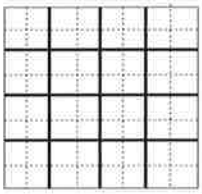
Water from limestone at 143' to 178'.
Static level 70' below casing top which is 1' above GL
Pumping level 95' when pumping at 10 gpm for 6 hours
Permanent pump installed at 120'
on November 30, 2009, with a capacity of 10 gpm
Remarks: Driller's Estimated Well Yield 15-20 gpm

Owner Address: 3707 9th St Winthrop Harbor, IL
Address of well: same as above
Add'l loc. info: Subdivision: N Shore Acres

Location source: Location from permit Verified by: VJA on April 20, 2010.

Permit Date: March 11, 2009 **Permit #:** 097-172

COMPANY Huemann, Joseph J.
FARM Laffredi, L
DATE DRILLED November 30, 2009 **NO.**
ELEVATION **COUNTY NO.** 51742
LOCATION NE NE SE
LATITUDE 42.47825 **LONGITUDE** -87.847444
COUNTY Lake **API** 120975174200 **8 - 46N - 12E**



ILLINOIS STATE GEOLOGICAL SURVEY

LOG # 323

Water Well	Top	Bottom
drift	0	220
limestone	220	227
Total Depth		**227**

Remarks: Probably no sulphur in water

Driller's Log filed

Owner Address: ,

Location source: Location from the driller

Permit Date: **Permit #:**

COMPANY owner

FARM Ferry, Ray

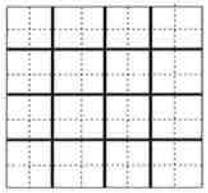
DATE DRILLED **NO.**

ELEVATION 730 **COUNTY NO.** 02231

LOCATION NW NE SE

LATITUDE 42.478304 **LONGITUDE** -87.887045

COUNTY Lake **API** 120970223100 **12 - 46N - 11E**



Domestic Wells Database

Domestic Wells Database

Records for Lake county, 46N township, 11E range, 12 section.

Well ID	Plot	Depth	Record Type	Well Use	Well Type	Aquifer Type	Driller	Date Drilled	Static Level	Pumping Level	Pumping GPM	Pumping Hours	ISGS No.
260833	7D	103	RG	DO	DL	UN	GROSS	05/24/1993	26	37	10		37716
Owner: Craig Schneider													
288769	7B	-999	RG	DO	--	--	GROSS	11/ /1995					39497
Owner: John Voglein													
312790	8E	122	RG	DO	DL	BR	WACHHOLDER DRILLING	05/28/1999	29	29	15	5	42126
Owner: Dave Richards													
313901		-999	O	DO	~~	~~							
Owner: Henry Hansen													
313902		96	RG	DO	DL	UN	EUGENE GROSS	10/15/1979	59	69	10	2	33634
Owner: Richard Niusher													
313903		76	RG	DO	DL	UN	EUGENE GROSS	10/10/1977	54	59	10	2	33633
Owner: Craft Construction													
313904	1D	227	OGC	DO	DL	BR	AUSHERMAN						02231
Owner: Ray Ferry													
313905	5C	127	RG	DO	DL	UN	HOOVER SERVICE	10/15/1976	24	44	20		24981
Owner: Lawrence Meyer													
313907	5H	76	RG	DO	DL	UN	HOOVER SERVICE	08/25/1975	35	37	15		24590
Owner: Corder Realty													
313908	8A	152	RG	DO	DL	BR	HOOVER SERVICE	08/13/1974	39	39	40		24266
Owner: Donald Kiesbo													
313909	8A	153	RG	DO	DL	UN	MICHAEL GROSS	05/12/1983	39	74	10		33632
Owner: Don Bennett													
313911	8D	53	RG	DO	DL	UN	KEN BOYCE	12/12/1988	21	21	16	2	31848
Owner: Brett Seibert													
313913	8E	128	RG	DO	DL	UN	MICHAEL GROSS	01/21/1982	44	47	3		33635
Owner: David Richards													
447271	8D	92	RG	DO	DL	UN	TED BELLEFEULLE	07/11/2008	27.66	31.66	30	3	51708

Owner: Joel Castillo

LOG # 324

457161	1C	74	A	DO	DL		KENNETH BOYCE	//	66				

Owner: Lee Fischer

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Domestic Wells Database

Domestic Wells Database

Records for Lake county, 46N township, 12E range, 04 section.

Well ID	Plot	Depth	Record Type	Well Use	Well Type	Aquifer Type	Driller	Date Drilled	Static Level	Pumping Level	Pumping GPM	Pumping Hours	ISGS No.
195961		148	A	DO	--	--	BOYSEN	1989	100				
Owner: Christopher Gerov													
228182	1D	160	RG	DO	DL	BR	BOYCE	11/08/1989	89	119	15	2	35975
Owner: Bill Mcdermott Lot 445													
245658	1D	139	RG	DO	--	BR	HOOVER	09/ /1993	34	90		4	
Owner: James Funderburk													
260712	2B	156	RG	DO	DL	BR	GROSS	09/10/1990	29	99			35976
Owner: Donald J. Scanlon													
301002	1B	137	RG	DO	DL	UN	BEACH P&W/TED B.	01/23/1998	18	33	25	12	40463
Owner: James Fundenburke													
316330		169	OG	DO	~~	BR	L. JERESON						
Owner: Peter Lassur													
316331		158	OG	DO	~~	BR							
Owner: Mitchell													
316332		158	OG	DO	~~	BR	FERGUSON						
Owner: Windorf													
316333		145	A	DO	DL	~~	HOOVER		140		0		
Owner: Ford													
316334	1C	149	RG	DO	DL	BR	KEN BOYCE	02/01/1988	11	15	15	2	30445
Owner: Butch Davis													
316335	3A	133	RG	DO	DL	BR	KEN BOYCE	12/04/1987	24	39	20	2	30206
Owner: Gary Wilson													
316336	1B	165	RG	DO	DL	BR	HOOVER	08/12/1968	29	125	5		
Owner: Ralph Collie													
316337	1C	152	RG	DO	DL	BR	HOOVER	01/24/1977	44	44	20	3	
Owner: (william?) Koepsel Jr.													
316338	1C	165	RG	DO	DL	BR	HOOVER	11/15/1977	42	84	15	2	
Owner: Rosa Perez / Funderburk													
316339	1D	152	RG	DO	DL	BR	HOOVER	07/11/1977	54	119	9	3	

Owner: Mike Ruadle / Funderburk													
316340	1D	155	RG	DO	DL	BR	HOOVER	07/16/1973	59	89	15		
Owner: Funderburk Bldrs													
316341	2A	144	RG	DO	DL	BR	HOOVER	06/04/1969	24	74	11		
Owner: Wm. Wachowiak													
316342	2A	150	RG	DO	DL	BR	HOOVER	03/11/1974	39	74	20		
Owner: Larry Brean													
316343	2A	148	RG	DO	DL	BR	HOOVER	07/10/1970	67	99	9		
Owner: Funderburk													
316344	2B	132	RG	DO	DL	BR	HOOVER	11/02/1971	29	74	15		
Owner: Lawrence Brean													
316345	2B	143	RG	DO	DL	BR	HOOVER	08/24/1976	24	49	12		
Owner: James Fout													
316346	2B	140	RG	DO	DL	BR	HOOVER	08/19/1976	23	23	30		
Owner: James Fout													
316347	2B	172	RG	DO	DL	BR	HOOVER	06/01/1976	29	39	22		
Owner: James Fout													
316348	2C	143	RG	DO	DL	BR	HOOVER	09/26/1968	26	99	9		
Owner: Jim Lallaman													
316350	2C	138	RG	DO	DL	UN	HOOVER	08/ /1972	24	39	25		
Owner: Funderburk Bldrs.													
316351	2C	150	RG	DO	DL	BR	HOOVER	03/20/1978	39	79	10	2	
Owner: Jim Fout													
316352	2C	143	RG	DO	DL	BR	HOOVER	03/15/1978	39	64	12	2	
Owner: Jim Fout													
316353	2C	159	RG	DO	DL	BR	HOOVER	04/19/1978	48	104	15	1.5	
Owner: Teak Construction													
316354	2C	32	RG	DO	DL	UN	E. E. GROSS	03/10/1977	14	14	10	2	
Owner: Mike Hyland Const.													
316355	2D	150	RG	DO	DL	BR	L. R. HOOVER	02/02/1978	32	99	14	1.5	
Owner: Funderburk Bldrs.													
316356	2E	152	RG	DO	DL	BR	HOOVER	01/ /1973	44	44	15		
Owner: Mattson Const/ Country Squire													
316357	2E	157	RG	DO	DL	BR	L. R. HOOVER		27	129	8	2	

								02/22/1978					
Owner: Funderburk Bldrs													
316358	2E	152	RG	DO	DL	UN	L. R. HOOVER	09/15/1977	39	64	14	1.5	
Owner: Jim Fout													
316359	2E	157	RG	DO	DL	BR	HOOVER	12/06/1973	44	49	10		
Owner: Funderburk Bldrs.													
316360	3A	150	RG	DO	DL	BR	HOOVER	06/ /1972	21	59	12		
Owner: Jim Funderburk Bldrs													
316361	3A	155	RG	DO	DL	BR	HOOVER	12/ /1972	24	29	15		
Owner: Funderburk Bldrs.													
316362	3A	159	RG	DO	DL	BR	HOOVER	03/03/1976	24	99	12		
Owner: Craig Krohn													
316363	3B	153	RG	DO	DL	BR	HOOVER	07/31/1973	26	94	8		
Owner: Vern Lee													
316364	3C	169	RG	DO	DL	BR	HOOVER	05/31/1977	44	129	11	1.5	
Owner: Len Cagle / Funderburk													
316365	3D	161	RG	DO	DL	BR	HOOVER	06/ /1971	26	74	15		
Owner: Luther Harris													
316366	3D	120	RG	DO	DL	UN	HENRY BOYSEN	09/23/1977	24		50		
Owner: Busch & Larson													
316367	3D	155	RG	DO	DL	BR	L. R. HOOVER	08/08/1977	29	54	12	2	
Owner: John Rich / Funderburk													
316368	3D	158	RG	DO	DL	BR	GEORGE E. GAFFKE	09/22/1978	26		10		
Owner: Middleton Bldrs.													
316369	3D	177	RG	DO	DL	BR	GEORGE E. GAFFKE	09/27/1978			4		
Owner: Middleton Bldrs.													
316370	3D	162	RG	DO	DL	BR	GEORGE E. GAFFKE	09/27/1978	34		10		
Owner: Middleton Bldrs.													
316371	4A	155	RG	DO	DL	BR	HOOVER	06/ /1972	59	79	12		
Owner: Jim Funderburk Bldrs.													
316372	4A	151	RG	DO	DL	BR	KEN BOYCE	09/29/1985	33	56	8	2	27661
Owner: Butch Jasper													
316373	4A	151	RG	DO	DL	BR	KEN BOYCE	01/31/1986	54	54	8	2	27914

Owner: Buutch Jasper													
316374	4B	158	RG	DO	DL	BR	HOOVER	07/ /1972	39	39	20		
Owner: Jim Funderburk													
316375	4C	43	RG	DO	DL	UN	L. R. HOOVER	11/08/1977	22	24	7	2	
Owner: Robert Lindelof / Funderburk													
316376	4D	46	RG	DO	DL	UN	L. R. HOOVER	11/07/1977	24	34	5	1.5	
Owner: Reed Nelson / Funderburk													
316377	4D	141	RG	DO	DL	UN	LONNY R. HOOVER	08/04/1978	30	129	12	2	
Owner: Jim Fout													
316378	4D	142	RG	DO	DL	BR	L. R. HOOVER	08/29/1977	37	39	15	3	
Owner: Phillip Mohr / Funderburk													
316379	4D	153	RG	DO	DL	BR	L. R. HOOVER	08/08/1977	44	124	9	3	
Owner: Bill Koski													
316380	4D	162	RG	DO	DL	BR	HOOVER	12/16/1975	26	77	12		
Owner: James Fout													
316381	4D	156	RG	DO	DL	BR	HOOVER	04/06/1976	23	23	24		
Owner: James Fout													
316382	4D	47	RG	DO	DL	UN	EMIL E. GROSS	07/ /1977	29	44	8		
Owner: Joslun Builders													
316383	4D	153	RG	DO	DL	BR	LONNY R. HOOVER	05/04/1978	69	102	10	1.5	
Owner: Jim Fout													
316384	4D	145	RG	DO	DL	BR	LONNY R. HOOVER	11/01/1978	39	69	15	2	
Owner: Jim Fout													
332175	1B	155	RG	DO	DL	BR	WACHHOLDER DRILLING	06/04/2001	29	49	15	2	45395
Owner: Jim Funnerburg #1													
356866	1B	160	RG	DO	DL	BR	BEACH PUMP & WELL /JOSH PETERSON	06/04/2003			7	18	48603
Owner: Ivo Krizek													
LOG # 325 360086	8D	39	A	DO	DL		MICAHEL GROSS		25				
Owner: Blaze Hunter													
362771	2B	146	RG	DO	DL	BR	E.H. GLENN SONS/ARIE BAKKER	12/04/2003	18	43	12	4	49177
Owner: Erica Heyl													
367000	1A	147	RG	DO	DL	BR		10/07/2004	18.75	28.75	20	2	49574

							BEACH PUMP & WELL/JOSH PETERESEN						
Owner: Holub Development													
373679	4A	147	A	DO	DL		BEACH PUMP & WELL/KENNETH BOYCE		21				
Owner: Thomas Hanna													
383945	1D	162	RG	DO	DL	BR	BEACH PUMP & WELL SERVICE/JOE KRUSA	11/02/2004	26.5	105.5	8	72	
Owner: Marvin Engright													
420650	1A	139	RG	DO	DL	BR	TED BELLEFEUILLE	09/01/2005	34	36	30	5	50684
Owner: Holub Development													

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Domestic Wells Database

Records for Lake county, 46N township, 12E range, 05 section.

Well ID	Plot	Depth	Record Type	Well Use	Well Type	Aquifer Type	Driller	Date Drilled	Static Level	Pumping Level	Pumping GPM	Pumping Hours	ISGS No.
240440	6A	220	RG	DO	DL	BR	GROSS	08/27/1991	69	139	8		36242
Owner: Steve Murphy													
240460	8A	48	RG	DO	--	UN	GROSS	08/19/1991	19	25		2	
Owner: James Gustafson													
263519	8B	136	RG	DO	DL	UN	BEACH PUMP & WELL	11/17/1994	100	110	8	2	
Owner: Mark Miller													
288767	6A	206	RG	DO	DL	BR	BEACH PUMP & WELL	04/09/1996	73	138	15	6	39499
Owner: Lehman Bros. Const.													
305473	4A	215	RG	DO	DL	BR	BEACH P&W/TED B.	10/01/1998	64	169	10	18	40787
Owner: Jim Wilkins													
LOG # 326 316385	4H		A	DO	~~	~~	GROSS & SCHMIDT						
Owner: Susan Wing													
316386	7B	185	RG	DO	DL	UN	KEN BOYCE	10/14/1987	49	59	12	2	29816
Owner: Dave Ashmore													
316387	7B	205	RG	DO	DL	BR	KEN BOYCE	09/04/1987	125	129	12	2	29658
Owner: Builders Realty													
316388	1C	68	RG	DO	DL	UN	HOOVER	07/14/1975	39	39	15		
Owner: Larry Richards													
316389	1D	57	RG	DO	DL	UN	HOOVER	08/12/1970	27	27	22		
Owner: A. J. Schmitt													
316390	1D	190	RG	DO	DL	BR	ED GRITZNER	05/04/1985	106	109	6	2	27281
Owner: Don Gill													
316391	2B	203	RG	DO	DL	BR	KEN BOYCE	02/24/1989	74	78	8	2	31925
Owner: Olivia Helmkamp													
LOG # 327 316392	4D	57	O	DO	~~	~~							
Owner: Charles Smith													
316393	6B	212	RG	DO	DL	BR	E. E. GROSS	08/18/1977	64	74	11	2	
Owner: Terrell Crowley													
316394	6B	200	RG	DO	DL	BR			72	114	9	1.5	

							LONNY R. HOOVER	12/12/1979					
Owner: Chuck Casteel													
316395	6D	202	RG	DO	DL	UN	HOOVER	03/10/1969	73	79	25		
Owner: Wm. Westerman													
316396	6D	116	RG	DO	DL	UN	MICHAEL GROSS	07/15/1985	84	84	10		27514
Owner: Harold Brown													
316397	7A	189	RG	DO	DL	UN	GEORGE E. GAFFKE	01/10/1990	102				
Owner: Hammock Construction													
316426	7B	230	RG	DO	DL	BR	LONNY R. HOOVER	08/29/1979	64	119	20	2	34081
Owner: Smythe Const.													
316427	7B	80	RG	DO	DL	UN	KEN BOYCE	04/20/1988	61	62	8	2	30843
Owner: Bob Kofler													
316429	7C	179	RG	DO	DL	UN	LONNY R. HOOVER	09/28/1978	67	67	14	2	
Owner: Bruce Sturm													
316430	6C	99	RG	DO	DL	UN	GEORGE E. GAFFKE	11/08/1979	54		10		33716
Owner: Hadad Cust. Home Bldrs													
316431	7D	220	RG	DO	DL	BR	HOOVER	02/22/1977	79	89	20	3.5	
Owner: Bill Friend													
316432	8B	176	RG	DO	DL	UN	MICHAEL GROSS	03/23/1984	84	84	11		34150
Owner: Denis Selenak													
316433	8A	193	RG	DO	DL	UN	EMIL E. GROSS	06/30/1978	89	89	15		
Owner: Frank Merlo													
316434	8C	218	RG	DO	DL	BR	HOOVER	05/27/1971	64	159	11		
Owner: R. Hanaman													
316436	8C	120	RG	DO	DL	UN	HOOVER	12/ /1972	79	79	15		
Owner: May Bldrs													
316438	8C	108	RG	DO	DL	UN	GEORGE E. GAFFKE	11/06/1979	72		10		
Owner: Hadad Custom Home Bldrs													
316439	8C	113	RG	DO	DL	UN	HOOVER	07/19/1976	84	92	15		
Owner: John Hintz													
316440	8C	118	RG	DO	DL	UN	HOOVER	07/30/1973	68	72	20		
Owner: L. A. Amichi													
316441	8C	121	RG	DO	DL	UN	HOOVER	07/15/1976	94	99	12		
Owner: Mark Cook													

316442	8C	114	RG	DO	DL	UN	HOOVER	07/16/1976	80	80	17		
Owner: Claude Trebeck													
316443	8C	254	RG	DO	DL	BR	LONNY R. HOOVER	05/28/1981	99	199	14	2	
Owner: Jim Fout													
316444	4B	191	RG	DO	DL	UN	KEN BOYCE	08/31/1988	84	149	5	4	31195
Owner: John Schneider													
316445	8D	115	RG	DO	DL	UN	HENRY BOYSEN	10/26/1977	86		10		
Owner: Robert Kirkendoll													
316446	6A	204	RG	DO	DL	UN	EUGENE GROSS	04/10/1979	119	129	10	2	34109
Owner: Tim Oniel													
316447	8D	210	RG	DO	DL	UN	GEORGE E. GAFFKE	11/21/1985	86		20		27772
Owner: Dwayne Adamson													
316448	8C	118	RG	DO	DL	UN	KEN BOYCE	09/18/1989	87	87	10	3	35978
Owner: Jeff Rector													
316449	8E	125	RG	DO	DL	UN	HOOVER	12/01/1972	87	87	10		
Owner: Edw. Dubois													
316450	8F	180	RG	DO	DL	UN	HOOVER	06/04/1971	64	74	10		
Owner: Dick Geiser / Lehman & English													
316451	8H	128	RG	DO	DL	UN	EUGENE GROSS	03/23/1973	89	94	10	2	
Owner: Thomas Oilanketo (?)													
316491	7B	94	RG	DO	DL	UN	GEORGE E. GAFFKE	11/29/1978			4		26678
Owner: Mike Hyland													
316555	7B	197	RG	DO	DL	UN	KEN BOYCE	11/27/1987	94	124	6	2	29269
Owner: Cal Schneider Builders													
LOG # 328 326386	1E	165	O	DO	~~	BR							
Owner: Casterton													
335587	7C	161	RG	DO	DL	UN	S.O.S. SERVICE	08/30/2001	64	119	8	4	29328
Owner: David Habenicht													
363682	4C	193	RG	DO	DL	BR	BEACH WELL & PUMP/JOSH PETERESON	09/29/2003	62	152.75	5	15	49207
Owner: Lloyd Wickersheim													
372684	3C	184	RG	DO	DL	BR	BEACH PUMP & WELL/TED BELLEFEUILLE	06/01/2005			6.5	72	49956
Owner: Dan Litgwski													
372824	2C	77	RG	DO	DL	UN	BEACH PUMP & WELL	01/07/2005			12	3	49957

							SERVICE/JOE KRUSA						
Owner: Jeff Yonke													
443511	7B	220	RG	DO	DL	BR	MIKE HOLLINGSWORTH	07/23/2007	59	77	10	6	51583
Owner: Maki Constrctuion													

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Domestic Wells Database

Domestic Wells Database

Records for Lake county, 46N township, 12E range, 08 section.

Well ID	Plot	Depth	Record Type	Well Use	Well Type	Aquifer Type	Driller	Date Drilled	Static Level	Pumping Level	Pumping GPM	Pumping Hours	ISGS No.
210269	1C	76	RG	DO		UN	BOYCE	06/01/1989	52				
Owner: Michael Graim													
228183	1B	76	RG	DO	DL	UN	BOYCE	06/01/1989	51	51	15	1	35980
Owner: Michael Braim													
228184	5C	125	RG	DO	DL	UN	GROSS	11/17/1989	69	119	9		35981
Owner: Billy Brown													
228830	5B	191	RG	DO	--	--	HOOVER	01/24/1989	81	150		2	31334
Owner: Ronald R.shaffer													
229285	5B	93	RG	DO	--	UN	BEACH PUMP & WELL	10/05/1990	64	70	8	2	35984
Owner: William Nikklla Lot 1													
230211	5B	90	RG	DO	--	UN	BEACH PUMP & WELL	03/13/1991	55	68	8		35983
Owner: William Nikkica Lot 2													
230312	7C	194	RG	DO	DL	BR	GROSS	05/03/1990	84	139	7		35982
Owner: Lake Co. Const.													
231165	6C	104	RG	DO	DL	UN	HOOVER	12/17/1991	72	89		2	36480
Owner: Jim Johnson													
239271	6B	93	RG	DO	--	UN	GAFFKE	12/31/1992	11				37420
Owner: Paul Busch Const													
239648	1B	77	RG	DO	--	UN	BEACH PUMP	08/11/1992	51	52	12	2	37092
Owner: Rick Woods													
239767	5B	85	RG	DO	DL	UN	GROSS	03/20/1992	59	59		2	37091
Owner: Robert Schwab													
240034	3D	110	RG	DO	DL	UN	GROSS	06/26/1992	59	84		2	36772
Owner: Fred Dudink													
240535	7B	95	RG	DO	DL	UN	GROSS	09/25/1992	59	69		2	37421
Owner: Diane Neeve													
240570	5B	136	RG	DO	--	UN	BEACH PUMP & WELL	10/03/1991	67	113	7	2	36292
Owner: William Nikkila, Jr.													
241521	5C	72	RG	DO	--	UN	GAFFKE	09/08/1992	64				37089
Owner: Paul Busch Const.													

254540	8H	112	RG	DO	DL	UN	BEACH PUMP & WELL	06/20/1994	85	90	10	3	
Owner: Kerry Smith													
286847		94	RG	DO	DL	UN	BEACH PUMP & WELL	10/05/1990	57	59	11	2	27215
Owner: Roland Runyon													
291238	3A	78	RG	DO	DL	UN	BEACH PUMP & WELL	10/17/1996	54	58	10	3	39823
Owner: Pete Kramer													
291847	6D	205	RG	DO	DL	BR	GROSS	10/09/1996	42	139	7	4	
Owner: Harold Soderstrom													
293691	5B	200	RG	DO	DL	BR	BEACH PUMP & WELL	03/20/1997	86	142.2	4	2	39971
Owner: Lone Oak Electric													
293886	7C	204	RG	DO	DL	BR	MICHAEL GROSS	03/25/1997	84	129		15	39970
Owner: Larry Jones													
296625	7C	215	RG	DO	DL	BR	EUGENE GROSS	05/20/1997	103	138		2	27216
Owner: Douglas Tjader													
302288	7C	200	RG	DO	DL	BR	WACHHOLDER DLG/TOM W	03/11/1998	93	110.5	10	10	40598
Owner: Doug Tjader													
302289	7C	200	RG	DO	DL	BR	WACHHOLDER DLG/TOM W	03/04/1998	94	108.5	12	10	40599
Owner: Doug Tjader													
316546		132	A	DO	DL	~~			122				
Owner: D. Peterson													
316547		220	OG	DO	DL	BR							02280
Owner: E. A. Foreman													
316548		180	OG	DO	DL	BR	F. H. FERGUSON						02281
Owner: Fred Korner													
316550	5B	141	RG	DO	DL	UN	KEN BOYCE	11/25/1985	102	114	5	2	27803
Owner: Bob Middleton													
316551	6B	170	RG	DO	DL	BR	KEN BOYCE	12/ /1985			5	2	27869
Owner: Robert Middleton													
316553	5B	186	RG	DO	DL	BR	KEN BOYCE	02/15/1986	84	109	7	2	27832
Owner: Lehman Construction													
316554		109	RG	DO	DL	UN	KEN BOYCE	08/28/1986	59	68	10	2	28408
Owner: Dennis Mccroary													
316556	5B	94	RG	DO	DL	UN	KEN BOYCE	11/27/1986	62	62	20	2	28872
Owner: William Nikkila													
316557	1B	80	RG	DO	DL	BR	HOOVER	03/09/1977	59	67	9	2	25151
Owner: Charles Davidson													
316558	1C	76	RG	DO	DL	UN	GEORGE E. GAFFKE		49		10		

								08/24/1979					33734
Owner: Ed Osborn													
316559	2B	120	RG	DO	DL	UN	L. R. HOOVER	07/01/1977	59	59	20	3	25466
Owner: Joe Rushforth													
316560	3A	71	RG	DO	DL	UN	LONNY R. HOOVER	11/11/1978	48	48	25	2	34160
Owner: Robert Arivett													
316561	3B	198	RG	DO	DL	BR	JOHN P. LICHTER	02/23/1978	84		10		25936
Owner: Busch & Larson													
316562	3B	103	RG	DO	DL	UN	MICHAEL GROSS	07/09/1984	54	59	11		33732
Owner: Roger Lallamon													
316563	4B	118	RG	DO	DL	UN	KEN BOYCE	06/23/1987	58	58	10	2	29678
Owner: Bud Schnider													
316564	3D	91	RG	DO	DL	UN	EMIL E. GROSS	09/21/1977	59	64	10		25938
Owner: Richard Rhodes													
316565	4E	100	RG	DO	DL	UN	HOOVER	08/03/1987	54	58	8	1	29879
Owner: John Krempley													
316566	6A	285	RG	DO	DL	BR	LONNY R. HOOVER	09/12/1979	76	169	6	1.5	33735
Owner: Bob Walldan													
316567	5B	78	RG	DO	DL	UN	MICHAEL GROSS	11/29/1986	63	64	10		28777
Owner: Paul Bricco													
316568	5C	120	RG	DO	DL	UN	MICHAEL GROSS	06/05/1987	69	69	5		29480
Owner: Ron Conde													
316569	5C	105	RG	DO	DL	UN	E. E. GROSS	06/30/1972	69	84	10	4	
Owner: Charles Vittorio													
316570	5C	89	RG	DO	DL	UN	HOOVER	11/07/1975	68	84	7		24708
Owner: Modern Home Builders													
316571	5C	86	RG	DO	DL	UN	HOOVER	11/11/1975	66	81	12		24707
Owner: Peter Capp													
316572	5C	128	RG	DO	DL	UN	LONNY R. HOOVER	05/17/1978	66	68	4	2	
Owner: Jerry Taylor													
316573	5C	193	RG	DO	DL	BR	LONNY R. HOOVER	05/17/1978	74	144	10	2	25937
Owner: Ruth E. Malmstrom													
316574		163	RG	DO	DL	BR	HOOVER	11/17/1986	65	109	10	1	28837
Owner: Jim Fout													
316575	5D	127	RG	DO	DL	UN	HOOVER	06/06/1969	4	64	25		
Owner: Dick Westerman													

316576	5D	132	RG	DO	DL	UN	KEN BOYCE	09/15/1988	74	78	5	2	31490
Owner: N & S Builders														
LOG # 329 316577	5E	146	A	DO	DL	~~	HOOVER						
Owner: Irving Rootberg														
316578	5E	173	RG	DO	DL	UN	KEN BOYCE	05/14/1988	79	89	14	2	30845
Owner: Roger Larson														
316579	5E	81	RG	DO	DL	UN	KEN BOYCE	05/09/1988	55	57	11	2	30844
Owner: Roger Larson														
316580	7H	257	RG	DO	DL	BR	GEORGE E. GAFFKE	10/11/1983	88		8		33733
Owner: Al Larson														
316581	6A	183	RG	DO	DL	BR	HOOVER	10/14/1976	77	129	9		24986
Owner: Jack Walton														
316582	6A	215	RG	DO	DL	BR	GEORGE E. GAFFKE	08/01/1978	81		2		26684
Owner: Busch & Larson														
316583	6A	218	RG	DO	DL	BR	GEORGE E. GAFFKE	09/06/1978			2		26683
Owner: Busch & Larson														
316584	6A	97	RG	DO	DL	UN	GEORGE E. GAFFKE	04/05/1979	74		8		33725
Owner: Allen Enterprises														
316585	6B	218	RG	DO	DL	BR	GEORGE E. GAFFKE	04/05/1978			4		26680
Owner: Busch & Larson														
316586	5C	125	RG	DO	DL	UN	MICHAEL GROSS	09/14/1987	67	67	10		29619
Owner: Ron Conde														
316587	6B	215	RG	DO	DL	BR	EMIL E. GROSS	09/20/1978	84	179	5		26679
Owner: Gary Allen														
316588	6B	198	RG	DO	DL	BR	JOHN P. LICHTER	02/24/1978	84		10		25935
Owner: Busch & Larson														
316589	6B	98	RG	DO	DL	UN	GEORGE E. GAFFKE	10/25/1978	69		10		26685
Owner: Busch & Larson														
316590	6B	94	RG	DO	DL	UN	GEORGE E. GAFFKE	10/26/1978	69		10		26686
Owner: Busch & Larson														
316591	6C	117	RG	DO	DL	UN	L. R. HOOVER	09/19/1977	82	89	12	2	
Owner: Jerry Taylor														
316592	6C	122	RG	DO	DL	UN	LONNY R. HOOVER	03/26/1979	80	89	14	2	26817
Owner: Jim Strane														
316593	6C	85	RG	DO	DL	UN	MICHAEL GROSS	07/17/1986	64	64	10		28251
Owner: Ron Conde														
316594	6D	230	RG	DO	DL	BR	L. R. HOOVER		87	149	4	2	

								02/10/1978					
Owner: Jerry Taylor													
316595	6B	218	RG	DO	DL	BR	GEORGE E. GAFFKE	02/28/1979	79		4		26816
Owner: Busch & Larson													
316596	7A	210	RG	DO	DL	BR	MICHAEL GROSS	01/20/1981	94	189	1		
Owner: Doug Davis													
316597	6B	218	RG	DO	DL	BR	GEORGE E. GAFFKE	02/28/1979	79		2		26815
Owner: Busch & Larson													
316598	7B	195	RG	DO	DL	BR	GEORGE E. GAFFKE	08/01/1979	89		9		33728
Owner: Busch & Larson													
316599	6B	217	RG	DO	DL	BR	GEORGE E. GAFFKE	09/17/1979			2		33729
Owner: Busch & Larson													
316600	7B	98	RG	DO	DL	UN	GEORGE E. GAFFKE	04/13/1979	56		10		33727
Owner: Busch & Larson													
316601	7C	66	RG	DO	DL	UN	GEORGE E. GAFFKE	10/14/1978			10		26681
Owner: Busch & Larson													
316602	7C	218	RG	DO	DL	BR	GEORGE E. GAFFKE	05/29/1984	99		8		33736
Owner: Dick Walsh													
316603	7C	69	RG	DO	DL	UN	GEORGE E. GAFFKE	10/14/1978			10		26682
Owner: Busch & Larson													
316604	7D	105	RG	DO	~~	UN	HOOVER	1963	80	80	10		02611
Owner: B. Weaver													
316605	7D	96	RG	DO	DL	UN	GEORGE E. GAFFKE	10/24/1978	69		10		26687
Owner: Busch & Larson													
316606	7E	230	RG	DO	DL	BR	HOOVER	09/30/1977	97	167	9	2	25467
Owner: Dave Sandretts													
316607	8A	190	RG	DO	DL	BR	E. E. GROSS	02/26/1973	89	124.4	6	2	03879
Owner: Eula Hartness													
316608	8B	190	RG	DO	DL	UN	HENRY BOYSEN	10/23/1970					00735
Owner: Lean Statz													
316609	8B	187	RG	DO	DL	BR	EMIL E. GROSS	08/16/1979	94	134	4.5		33726
Owner: Gordon Beach													
316610	8B	199	RG	DO	DL	BR	MICHAEL GROSS	09/10/1985	114	134	5		27516
Owner: Donald Sponenburg													
316611	8C	109	RG	DO	DL	UN	HOWARD WISKUR	1962	80	83	11		
Owner: Walter Bade													

316612	8D	2	RG	DO	DL	UN	HOOVER	02/14/1977	89	89	15	0	
Owner: Jerry Taylor													
316613	8D	132	RG	DO	DL	UN	HOOVER	02/17/1977	89	89	15	2.5	
Owner: Jerry Taylor													
316614	8F	225	RG	DO	DL	BR	HOOVER	1963	90	155	10		02610
Owner: Bob Gudes													
316615	8H	208	RG	DO	DL	BR	EMIL E. GROSS	10/27/1978					26689
Owner: Paul Karsh													
316616	8H	212	RG	DO	DL	UN	EMIL E. GROSS	10/14/1978	89	92	9		26688
Owner: Paul Karsh													
316617	7H	214	RG	DO	DL	BR	EMIL E. GROSS	11/02/1978	79	79	9		26690
Owner: Paul Karsh													
318478	6G	106	RG	DO	DL	UN	WACHHOLDER	07/23/1999	69	74	10	2	42141
Owner: Steve Tjader													
330773	3B	83	RG	DO	DL	UN	KENNETH O BOYCE	11/28/2000	38.33	44.33	15	4	42746
Owner: Lyle Arnst													
335575	8C	131	RG	DO	DL	UN	BEACH PUMP & WELL	06/12/2001	69	109	7.5	3	43158
Owner: Doug Tjader													
336741	7D	126	RG	DO	DL	UN	BEACH PUMP & WELL	06/14/2001	76.5	118.5	7.5	3	43159
Owner: Doug Tjaden													
340649	7D	131	RG	DO	DL	UN	BEACH PUMP & WELL	10/03/2001	78.75	108.75	7.5		29146
Owner: Doug Tjader													
346119	5C	94	RG	DO	DL	UN	BEACH PUMP & WELL/T.BELLEFEUILLE	09/05/2002	71.75	88.75	7.5	15	47419
Owner: Chris Kanvik													
347541	4A	76	RGA	DO	DL	UN	WACHHOLDER	12/17/2002	51	50.83	16	2	47933
Owner: Robert Arivett Well #2													
371608	5F	83	RG	DO	DL	UN	BEACH PUMP & WELL/TED BEFFEFEULLE	05/24/2005	61.75	70.75	15	3	49958
Owner: Roger Stried													
374650	6B	114	RG	DO	DL	UN	TOM WACHHOLDER/ WACHHOLDER WELL DRILLING	06/15/2004	48.83	78.83	12	2	48857
Owner: Bob Schwab													
420592	4B	81	RG	DO	DL	UN	DON KELLOUGH	09/01/2006	52.75	70.75	9	12	50685
Owner: John Rickert													
422525	7D	128	RG	DO	DL	UN	TED BEFFEUILLE	11/07/2001	78.66	93.66	10	2	45425
Owner: Doug Tjadga													
424237	8D	191	RG	DO	DL	UN	TED BELLEFEUILLE	09/09/2005	103.75	108.75	15	120	50813

Owner: Buck Fletcher													
441358	8A	220	RG	DO	DL	BR	DON KELLOUGH	09/11/2007	115	199	10	4.5	51474
Owner: Dwight Richards													
443194	7D	97	RG	DO	DL	UN	KENNETH BOYCE	01/24/1996	61	63	7	3	39373
Owner: Nikkiva Builders													
443495	7C	97	RG	DO	DL	UN	TED BELLEFEUILLE	11/04/2008	63.66	78.66	10	2	51584
Owner: Masters Touch Construction / Julia Arenas													
448927	1D	178	RG	DO	DL	BR	MIKE SCHMITT	11/30/2009	69	94	10	6	51742
Owner: J Maki Construction / L Laffredi													

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Domestic Wells Database

Domestic Wells Database

Records for Lake county, 46N township, 12E range, 18 section.

Well ID	Plot	Depth	Record Type	Well Use	Well Type	Aquifer Type	Driller	Date Drilled	Static Level	Pumping Level	Pumping GPM	Pumping Hours	ISGS No.
316862		25	A	DO	~~	~~			20				
Owner: Stan Binning													
316863		233	OG	DO	~~	BR							02303
Owner: W. W. G. Scott													
316864		75	RG	DO	~~	UN	WERTZ	07/ /1943	45	48	10		00106
Owner: Frank Frazen													
316865		218	RG	DO	DL	UN	EUGENE GROSS	05/14/1979	119	124	10	2	33762
Owner: James Taylor													
316867	8A	97	RG	DO	DL	UN	HOOVER	1963	55		12		02621
Owner: Ronnie Erving													
316896	8A	116	RG	DO	DL	UN	E. E. GROSS	03/30/1972	54	54	12	4	03884
Owner: Anzley Miles													
316897	8A	116	RG	DO	DL	UN	E. E. GROSS	10/04/1972	54	54	18	2	03885
Owner: Wm. Wolf													
316898	8D	250	RG	DO	DL	BR	MICHAEL GROSS	11/16/1985	99	99	14		27517
Owner: Norman Ergisk													
316899	8D	122	RG	DO	DL	UN	HOOVER	05/ /1988	56	87	10	1	30846
Owner: Jim Henry													
316900	8E	202	RG	DO	DL	UN	HOOVER	12/09/1983	87	92	30	2	33760
Owner: John Leivick													
344217	8A	101	RG	DO	DL	UN	BEACH PUMP & WELL/GEORGE BELLEFEUILLE	09/20/2002	62	61.67	22	3	31401
Owner: Brad Rachuy													
LOG # 330 431421	8E	196	A	DO	DL			//	103				
Owner: Berger Excavating													

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ILLINOIS STATE GEOLOGICAL SURVEY

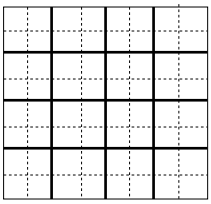
LOG # 331

Water Well	Top	Bottom
depth to rock	0	240
Total Depth		**240**

Owner Address: ,
Location source: Digital Orthophoto Quad Verified by: VJA on September 15, 2008.

Permit Date: **Permit #:**

COMPANY owner
FARM Connell, J.R.
DATE DRILLED **NO.**
ELEVATION 740 **COUNTY NO.** 34744
LOCATION NW NW SE
LATITUDE 42.478016 **LONGITUDE** -87.872137
COUNTY **Lake** **API 120973474400** **7 - 46N - 12E**



ILLINOIS STATE GEOLOGICAL SURVEY

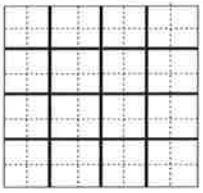
LOG # 332

Water Well	Top	Bottom
drift	0	218
limestone	218	227
Total Depth		**227**

Driller's Log filed

Permit Date: **Permit #:**

COMPANY
FARM Lovesky, Jess
DATE DRILLED **NO.**
ELEVATION 0 **COUNTY NO.** 02282
LOCATION
LATITUDE 42.478918 **LONGITUDE** -87.854428
COUNTY **Lake** **API 120970228200** **8 - 46N - 12E**



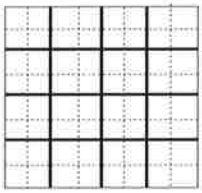
ILLINOIS STATE GEOLOGICAL SURVEY

LOG # 333

	Top	Bottom
silt,some sand,trace clay & gravel,brown,dense	0	2
silt,some clay,trace sand & gravel,brown,very dense	2	4
silt,some clay,trace sand & gravel,brown,dense	4	9
clay,some silt,trace sand & gravel,gray,very tough	9	15
Total Depth		**15**

Permit Date: **Permit #:**

COMPANY Soil Testing Services
FARM Commonwealth Edison
DATE DRILLED January 29, 1963 **NO.** 105
ELEVATION 0GL **COUNTY NO.** 45754
LOCATION SE SW SW
LATITUDE 42.487626 **LONGITUDE** -87.899107
COUNTY Lake **API** 120974575400 **1 - 46N - 11E**



ILLINOIS STATE GEOLOGICAL SURVEY

LOG # 334

Noncommunity - Public Water Well	Top	Bottom
Total Depth		

Permit Date: **Permit #:**

COMPANY

FARM R & R Crossing

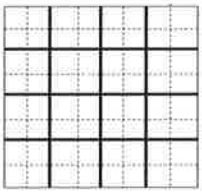
DATE DRILLED **NO.**

ELEVATION 0 **COUNTY NO.** 45132

LOCATION NW NE SW

LATITUDE 42.489816 **LONGITUDE** -87.896591

COUNTY Lake **API** 120974513200 **1 - 46N - 11E**



Domestic Wells Database

Domestic Wells Database

Records for Lake county, 46N township, 11E range, 02 section.

Well ID	Plot	Depth	Record Type	Well Use	Well Type	Aquifer Type	Driller	Date Drilled	Static Level	Pumping Level	Pumping GPM	Pumping Hours	ISGS No.
240506	3D	190	RG	DO	--	BR	GROSS	09/20/1992	64	65			37397
Owner: Kelly Bartlett													
241007	3C	165	RG	DO	--	UN	GROSS	03/04/1992	44	45			37059
Owner: Rod Macgregor													
245715	6B	208	RG	DO	--	BR	GROSS	08/03/1993	11	160			37865
Owner: Rich Schultz													
260730		74	RG	DO	DL	UN	BEACH PUMP & WELL	07/09/1992	49	55	7.5	3	36770
Owner: M./george Pavelich													
292835	6D	147	RG	DO	DL	UN	MICHAEL GROSS	12/03/1996	14	129	6		39961
Owner: Harold Smoger													
305475	4C	170	RG	DO	DL	UN	GROSS DRLG/WAGENBACH	09/21/1998	29	118.5	3.5	24	40783
Owner: Connie Reynolds													
313757		150	OG	DO	DL	UN							
Owner: J.h. Kelly													
313758		200	RG	DO	DL	UN	EUGENE GROSS	09/10/1981	109	159	5	2	33611
Owner: James Collins													
313759	1A	95	RG	DO	DL	UN	HOOVER	07/23/1975	42	54	22		24587
Owner: Al Mini													
313760	2B	108	RG	DO	DL	UN	MICHAEL GROSS	09/23/1982	39	10			33612
Owner: Michael Geraldi													
313761	2B	178	RG	DO	DL	BR	MICHAEL GROSS	06/13/1989	54	54			34457
Owner: Jon Mini													
313762	5C	218	RG	DO	DL	BR	HOOVER SERIVCE	11/20/1972	29	184	6		03740
Owner: John Kunz													
313763	5G	165	RG	DO	DL	BR	MICHAEL GROSS	07/28/1986	24	26	15		28428
Owner: Douglas Moeller													
313764	7C	147	RG	DO	DL	UN	LONNY R. HOOVER	06/25/1979	26	74	7	2	33613
Owner: Paul Plapp													
328519	8B	196	RG	DO	DL	DH	WACHHOLDER DRILLING	//					42737

Owner: Charles Corder													
328520	8B	202	RG	DO	DL	BR	WACHHOLDER DRILLING	09/19/2000	54	159	12	8	42929
Owner: Charles Corder #2													
350416	5D	162	RG	DO	DL	UN	WACHHOLDER WELL DRILLING/TOM	08/13/1999	12	17	20	2	48425
Owner: Roy Stom Building Corp.													
356821	5D	162	A	DO	DL	~~	MICHAEL GROSS						
Owner: Roy Strom													
375938		152	A	DO	DL	~~	E.E. GROSS		13				
Owner: George Volakis													
378771	8B	126	RG	DO	DL	UN	HENRY BOYSEN/GEORGE GAFFKE	05/27/2005	7		25	1	50240
Owner: George Volakis													

Search for a different Section

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Column headings link to data explanations.

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Illinois State Water Survey

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217-244-5459
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Domestic Wells Database

Domestic Wells Database

Records for Lake county, 46N township, 11E range, 11 section.

Well ID	Plot	Depth	Record Type	Well Use	Well Type	Aquifer Type	Driller	Date Drilled	Static Level	Pumping Level	Pumping GPM	Pumping Hours	ISGS No.
240491	4C	81	RG	DO	--	UN	GROSS	06/20/1991	34	42			36233
Owner: John Buchholtz													
313863		25	OG	DO	~~	UN							
Owner: Roger Parks													
313866		20	OG	DO	~~	UN							
Owner: Nels Johnson													
313867		20	OG	DO	~~	UN							
Owner: W. D. Connell													
313868		130	RG	DO	~~	UN							
Owner: H. Johnson													
313869		210	RG	DO	DL	UN							02230
Owner: John Noll													
313870	5E	72	RG	DO	DL	UN	C. L. WERTZ	04/ /1945	20	22	10		00101
Owner: Earl C. Ansler #1													
313871		166	RG	DO	DL	UN	EUGENE GROSS	09/09/1975	69	74	10	2	33630
Owner: Ronald Khluer													
313872	1D	95	RG	DO	DL	UN	EMIL E. GROSS	06/08/1979	19	59	15		33631
Owner: Paul Richards													
313873	1F	185	RG	DO	DL	UN	HOOVER	08/28/1975	71	77	20		24589
Owner: Lotz Construction													
313874	1G	182	RG	DO	DL	UN	MICHAEL GROSS	09/20/1977		59	20	3	25906
Owner: Alvin Bennett													
313875	2A	85	RG	DO	DL	UN	HOOVER SERVICE	10/24/1968	15	25	10		02701
Owner: Warren Edwards													
313876	5C	156	RG	DO	DL	UN	HOOVER SERVICE	01/15/1969	41	62	20		02881
Owner: Walter Wolf													
313877	6C	145	RG	DO	DL	UN	HOOVER SERVICE	08/29/1974	64	64	25		24265
Owner: G. Connell, Jr.													
313878	7A	81	RG	DO	DL	UN	HOOVER SERVICE	04/21/1968	17	39	7.5		02786

Owner: Waymon Harris													
313879	7B	146	RG	DO	DL	UN	HOOVER SERVICE	02/01/1988	64	64	28	1	30606
Owner: Pat Witkiewicz													
313880	7C	149	RG	DO	DL	UN	HOOVER SERVICE	08/13/1968	49	57	25		02785
Owner: James Booth													
342594	5B	90	RG	DO	DL	UN	WACHHOLDER WELL DRILLING	05/03/2001	49	49	30	2	29888
Owner: Kathy Mcelmurey #1													
345349	4B	107	RG	DO	DL	UN	WACHHOLDER DRILLING/TOM	10/11/2002	51.83	51.83	15	2	47410
Owner: Dale Richards #1													
362772	8D	175	RG	DO	DL	BR	WACHHOLDER WELL DRILLING/TOM	04/10/2004	48.83	68.83	15	2	49171
Owner: Chuck Garrett #1													
366689	4C	130	RG	DO	DL	UN	WACHHOLDER WELL DRILLING/TOM	10/20/2004	58.83	60.83	15	2	50677
Owner: Bruce Laughlin #1													
420645	7C	160	RGA	DO	DL	DH	TED BELLEFEUILLE	06/27/2005					50675
Owner: William Dill													
420646	7C	110	RG	DO	DR	UN	TED BELLEFEUILLE	07/07/2005	66.75	101.75	6	110	50676
Owner: William Dill													
443497	1C	118	RG	DO	DL	UN	CORNELIUS J SNELTEN III	08/19/2008	34				51582
Owner: Mike Richards													
487324	3B	130	RG	DO	DL	UN	TED BELLEFEVILLE	11/18/2013	54	74	25	4	52175
Owner: Tim/chris Clark													

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Domestic Wells Database

Domestic Wells Database

Records for Lake county, 46N township, 12E range, 07 section.

Well ID	Plot	Depth	Record Type	Well Use	Well Type	Aquifer Type	Driller	Date Drilled	Static Level	Pumping Level	Pumping GPM	Pumping Hours	ISGS No.
250757	1F	112	RG	DO	DL	UN	BEACH PUMP & WELL	03/05/1994	87	87	10	2	38149
Owner: Paul Kielbasa/buschman Ent.													
316488		140	OG	DO	~~	BR							
Owner: J. R. Connell													
316489	1E	105	RG	DO	DL	UN	HOOVER	01/02/1974	74	74	30		24149
Owner: Ken Farrington													
316490	1E	200	RG	DO	DL	UN	HOOVER	06/02/1975	82	104	10		24429
Owner: Bill Nikkila / Summitt													
316492	1H	222	RG	DO	DL	BR	EMIL GROSS	10/25/1979	94	154	7		33724
Owner: Jim Funderburk													

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G.3 – USCS Classification Chart and Boring Logs

USCS CLASSIFICATION CHART

APTIM

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests[A]				Soil Classification: Group Symbol	Soil Classification: Group Name[B]
COARSE-GRAINED SOILS More than 50 % retained on No. 200 sieve	Gravels More than 50 % of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5 % fines[C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$[E]	GW	Well-graded gravel[F]
			$Cu < 4$ and/or $1 > Cc > 3$[E]	GP	Poorly graded gravel[F]
		Gravels with Fines More than 12 % fines[C]	Fines classify as ML or MH	GM	Silty gravel[F,G,H]
			Fines classify as CL or CH	GC	Clayey gravel[F,G,H]
	Sands 50 % or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5 % fines[D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$[E]	SW	Well-graded sand[I]
			$Cu < 6$ and/or $1 > Cc > 3$[E]	SP	Poorly graded sand[I]
		Sands with Fines More than 12 % fines[D]	Fines classify as ML or MH	SM	Silty sand[G,H,I]
			Fines classify as CL or CH	SC	Clayey sand[G,H,I]
FINE-GRAINED SOILS 50 % or more passes the No. 200 sieve	Silts and Clays Liquid limit less than 50	Inorganic	PI > 7 and plots on or above "A" line[J]	CL	Lean clay[K,L,M]
			PI < 4 or plots below "A" line[J]	ML	Silt[K,L,M]
		organic	Liquid limit – oven dried / Liquid limit – not dried < 0.75	OL	Organic clay[K,L,M,N] / Organic silt[K,L,M,O]
	Silts and Clays Liquid limit 50 or more	Inorganic	PI plots on or above "A" line	CH	Fat clay[K,L,M]
			PI plots below "A" line	MH	Elastic silt[K,L,M]
		organic	Liquid limit – oven dried / Liquid limit – not dried < 0.75	OH	Organic clay[K,L,M,P] / Organic silt[K,L,M,Q]
HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-in. (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12 % fines require dual symbols:
GW-GM well-graded gravel with silt
GW-GC well-graded gravel with clay
GP-GM poorly graded gravel with silt
GP-GC poorly graded gravel with clay

[D] Sands with 5 to 12 % fines require dual symbols:
SW-SM well-graded sand with silt
SW-SC well-graded sand with clay
SP-SM poorly graded sand with silt
SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15 % sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15 % gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29 % plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30 % plus No. 200, predominantly sand, add "sandy" to group name.

[M] If soil contains ≥ 30 % plus No. 200, predominantly gravel, add "gravelly" to group name.

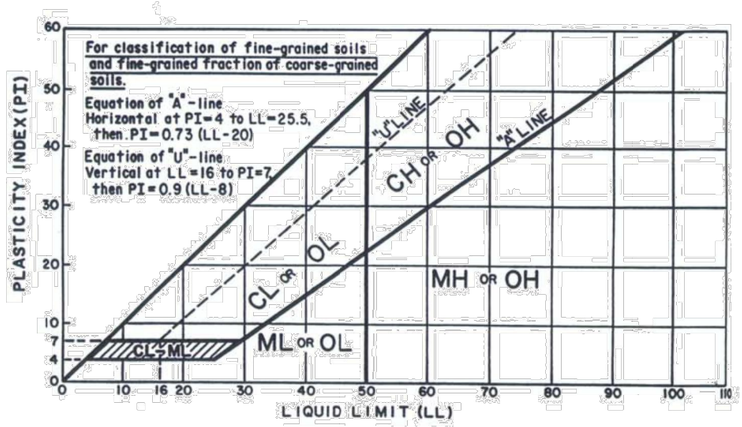
[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.

PLASTICITY CHART



LOCAL SOIL DESCRIPTION TERMINOLOGY

Soils are visually identified and classified on the boring logs and described in this report according to the Unified Soil Classification System with the following modifications.[1]

RELATIVE DENSITY OF GRANULAR SOILS

Description	Blows Per Foot
Very Loose	0 to 4
Loose	4 to 10
Medium Dense	10 to 30
Dense	30 to 50
Very Dense	50 to 80
Extremely Dense	80 and Above

PARTICLE SIZES

Components		Size or Sieve No.
Boulders	-	Over 12 in.
Cobbles	-	3 in. to 12 in.
Gravel	- Coarse	0.75 in. to 3 in.
	- Fine	No. 4 to 0.75 in.
Sand	- Coarse	No. 10 to No. 4
	- Medium	No. 40 to No. 10
	- Fine	No. 200 to No. 40
Fines	- (Silt and Clay)	Below No. 200

RELATIVE PLASTICITY

Descriptive Term	Liquid Limit
Low (Lean)[2]	0 to 30
Medium (Lean)[2]	30 to 50
High (Fat)[2]	50 and Above

CONSISTENCY OF COHESIVE SOILS

Description	Std. Penetration No.	qu (tsf.)
Very Soft	0 to 2	0 to 0.25
Soft	2 to 4	0.25 to 0.5
Medium Stiff	4 to 8	0.5 to 1.0
Stiff	8 to 16	1.0 to 2.0
Very Stiff	16 to 32	2.0 to 4.0
Hard	32	4.0 to 8.0
Very Hard		8.0 and Above

SOIL MOISTURE

Descriptive Term	
Dry	- Dry or Standard Proctor Optimum
Moist	- Near Standard Proctor Optimum
Wet	- Wet of Standard Proctor
Saturated	- Free Water in Sample

RELATIVE PROPORTIONS

(In lieu of "with")

Descriptive Term	Percent by Weight
Trace	1 to 10
Few	10 to 20
Little	20 to 30
Some	30 to 40
And[3]	40 to 50

1 Visual Classifications are Approximate.
2 "And" may be used in lieu of "sandy" or "gravelly".
3 "Silty Clay" may be used in lieu of "Lean" or "Fat" clay with the appropriate plasticity modifier.

ROCK QUALITY DESIGNATION

Drill core quality is rated according to the rock quality designation (RQD) introduced by Deere (1963). If the core is broken as a result of handling or from the drilling processes, the broken pieces are put back together as one piece to determine if it meets the requisite length criteria.

$$RQD = \frac{\sum \text{Length of rock recovered having lengths greater than twice the diameter of the core}}{\text{Total Length of Core Run}} \times 100\%$$

RELATIONSHIP BETWEEN RQD AND ROCK QUALITY

RQD (%)	Description of Rock Quality
0 to 25	Very Poor
25 to 50	Poor
50 to 75	Fair
75 to 90	Good
90 to 100	Excellent

REV. NO.	DATE	DESCRIPTION

APTIM Environmental & Infrastructure, LLC

ZION LANDFILL SITE 2 NORTH EXPANSION HYDROGEOLOGIC INVESTIGATION

UNIFIED SOIL CLASSIFICATION SYSTEM SOIL DESCRIPTION TERMINOLOGY

DRAWN BY:	NV	APPROVED BY:	TFA	PROJ. NO.:	631020105	DATE:	MAY 2022

T:\Jobs\Zion\Projects\Advanced Disposal\Zion\01-Local\Engr\01-Submittal\Hydrogeol\Figures\USCS Figure.dwg, 11/17/2022 9:48:32 AM

BORING LOGS FROM THE MOST RECENT INVESTIGATION AND FROM PREVIOUS INVESTIGATIONS FOR BORINGS USED IN DEVELOPMENT OF CROSS SECTIONS AND SURFACE AND ISOPACH MAPS (DRAWING NOS. G5 THROUGH G20)

APTIM

APTIM

SURFACE ELEVATION: 731.99
NORTHING: 13129.54
EASTING: 11523.43

PROJECT: Zion Landfill Site 2 North Expansion
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-01-18

Depth in Feet	Surf. Elev. 731.99	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0									
1	731		Black (10YR 2/1) to Brown (10YR 5/3) Organic SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	OL	SS-1 (0-2') Rec. = 14"	1 2 8	4.5+		N=10
2	730		Dark Yellowish Brown (10YR 4/4 to 4/6) with Yellowish Brown (10YR 5/8) and Light Greenish Gray (GLEY 1 7/1 10Y) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL		7	4.0		
3	729				SS-2 (2-4') Rec. = 21"	8 9 10	4.5+		N=19
4	728					11	2.0		
5	727				SS-3 (4-6') Rec. = 21"	6 11 11	4.5+		N=22
6	726		Brown (10YR 4/3) with trace Dark Yellowish Brown (10YR 4/6) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL		19	2.5		
7	725				SS-4 (6-8') Rec. = 24"	7 10 15	4.5+		N=25
8	724					17	4.5+		
9	723		Dark Grayish Brown (10YR 4/3) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL	SS-5 (8-10') Rec. = 23"	7 13 15	4.5+ 4.5+		N=28
10	722		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL		19	4.5+		
11	721				SS-6 (10-12') Rec. = 24"	8 11 20	4.5+		N=31
12	720					22	4.5+		
13	719				SS-7 (12-14') Rec. = 22"	11 18 24	4.5+		N=42
14	718					32	4.5+		
15	717				SS-8 (14-16') Rec. = 12"	16 24 36	3.0		N=60 (Pushing rock)
16	716					37			
17	715				SS-9 (16-18') Rec. = 24"	10 21 24	4.5+ 4.5+		N=45
18	714					28			
19	713				SS-10 (18-20') Rec. = 24"	7 13 15	4.5+ 3.25		N=28
20	712		(Continued on next page)			21			

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/15/2019 ENDED: 1/16/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-01-18SD(0-92') into boring upon completion of drilling. Installed Piezometer P-01-18IT (0-42') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 731.99
NORTHING: 13129.54
EASTING: 11523.43

PROJECT: Zion Landfill Site 2 North Expansion
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-01-18

Depth in Feet	Surf. Elev. 731.99	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
20			(Continued from previous page) SILTY CLAY, stiff to very stiff.						
21	711				SS-11 (20-22') Rec. = 22"	10 11 13 16	3.0 3.5		N=24
22	710								
23	709				SS-12 (22-24') Rec. = 13"	7 8 13 17	1.75 --		N=21 (Pushing rock)
24	708								
25	707				SS-13 (24-26') Rec. = 17"	9 11 13 15	1.25 1.5		N=24 (Pushing rock)
26	706								
27	705				SS-14 (26-28') Rec. = 24"	5 9 12 16	2.5 2.25		N=21
28	704								
29	703		@28.8'; Fine to medium sand pocket, wet.	CL	SS-15 (28-30') Rec. = 24"	6 14 16 18	3.5 3.5		N=30
30	702								
31	701				SS-16 (30-32') Rec. = 23"	5 9 11 12	3.5 2.0		N=20
32	700								
33	699				SS-17 (32-34') Rec. = 14"	8 10 16 18	1.25 --		N=26 (Pushing rock)
34	698								
35	697				SS-18 (34-36') Rec. = 14"	8 13 17 20	1.5 -- --		N=30 (Pushing rock)
36	696								
37	695		Dark Olive Gray (5Y 3/2) to Olive Gray (5Y 4/2) CLAYEY SANDY SILT, medium stiff, low plasticity, saturated.	ML	SS-19 (36-38') Rec. = 23"	6 12 21 15	3.0 0.5		N=33
38	694								
39	693		Very Dark Grayish Brown (2.5Y 3/2) to Dark Grayish Brown (2.5Y 4/2) CLAYEY SANDY SILT, trace fine to coarse sand and gravel, stiff to very stiff, low plasticity, saturated. (Continued on next page)	ML	SS-20 (38-40') Rec. = 21"	5 10 10 20	2.25 1.75		N=20
40	692								

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/15/2019 ENDED: 1/16/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-01-18SD(0-92') into boring upon completion of drilling. Installed Piezometer P-01-18IT (0-42') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 731.99
NORTHING: 13129.54
EASTING: 11523.43

PROJECT: Zion Landfill Site 2 North Expansion
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-01-18

Depth in Feet	Surf. Elev. 731.99	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40			(Continued from previous page)	ML					
			CLAYEY SANDY SILT, hard.	SM		10	4.5+		
41	691		Dark Grayish Brown (10YR 4/2) Fine to Medium SILTY SAND, trace coarse sand and fine to coarse gravel, trace clay, poorly graded, medium dense, saturated.	ML	SS-21 (40-42') Rec. = 18"	12 17 14	4.5+		N=29
42	690					7			
43	689		Dark Gray (2.5Y 4/1) CLAYEY SILT, trace fine to coarse sand and fine gravel, hard, low plasticity, moist.		SS-22 (42-44') Rec. = 24"	14 18 20	4.5+ 2.0		N=32
44	688		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plastisity, moist.			4	2.25		
45	687				SS-23 (44-46') Rec. = 24"	9 13 16	2.0		N=22
46	686					15	--		
47	685				SS-24 (46-48') Rec. = 2"	21 27 32	--		N=48 (Pushing rock-low recovery)
48	684			CL		14	2.25		
49	683				SS-25 (48-50') Rec. = 17"	22 23 27	--		N=45 (Pushing rock)
50	682					--	--		
51	681				ST-26 (50-52') Rec. = 24"	--	--		@50-52'(Pushed Shelby Tube); ST-26/B-01-18(50-52');Rec.=24"(CL), 1/15/19(1515).
52	680					10	2.0		
53	679				SS-27 (52-54') Rec. = 24"	20 22 32	2.5		N=42
54	678					11	4.5+		
55	677		Dark Grayish Brown (10YR 4/2) SILTY CLAY, some fine to coarse sand, trace fine to coarse gravel, hard, medium plasticity, moist to wet.	CL	SS-28 (54-56') Rec. = 24"	19 23 25	4.5+		N=42
56	676		@ 54.6-54.8' fine silty sand seam, saturated.	CL		13	2.5		
57	675		Dark Grayish Brown (2.5Y 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.		SS-29 (56-58') Rec. = 24"	20 20 22	1.5		N=40
58	674					13	3.0		
59	673		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, stiff to very stiff, medium plasticity, moist. (Continued on next page)	CL	SS-30 (58-60') Rec. = 18"	20 27 33	2.5		N=47
60	672								

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/15/2019 ENDED: 1/16/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-01-18SD(0-92') into boring upon completion of drilling. Installed Piezometer P-01-18I (0-42') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 731.99
NORTHING: 13129.54
EASTING: 11523.43

PROJECT: Zion Landfill Site 2 North Expansion
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-01-18

Depth in Feet	Surf. Elev. 731.99	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
60			(Continued from previous page) SILTY CLAY.			--	--		@60-62'(Pushed Shelby Tube); ST-31/B-01-18(60-62');Rec.=20"(CL), 1/16/19(0745).
61	671				ST-31 (60-62') Rec. = 20"	--	--		
62	670			CL		14	4.5+		
63	669		Same, very stiff to hard.		SS-32 (62-64') Rec. = 24"	21 41	3.0		N=62
64	668					50			
65	667		Dark Brown (10YR 4/3) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL	SS-33 (64-66') Rec. = 24"	10 16	3.25		N=54
66	666					38 49	4.5+		
67	665		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse and and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-34 (66-68') Rec. = 24"	10 22	4.5+		N=63
68	664					41 48	4.5+		
69	663				ST-35 (68-70') Rec. = 24"	--	--		@68-70'(Pushed Shelby Tube); ST-35/B-01-18(68-70');Rec.=24"(CL), 1/16/19(0815).
70	662					--	--		
71	661				SS-36 (70-72') Rec. = 24"	12 20	2.75		N=52
72	660					32 40	3.5		
73	659				SS-37 (72-74') Rec. = 24"	24 36	3.0		N=83 (Pushing rock)
74	658					47 54	3.25		
75	657		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, stiff, medium plasticity, very moist.	CL	SS-38 (74-76') Rec. = 24"	15 17	3.5 1.25		N=49
76	656		Dark Gray (7.5Y 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL		32 45	4.5+		
77	655		Same, very stiff to hard.		SS-39 (76-78') Rec. = 24"	14 26	4.5+ 3.25		N=58
78	654					32 36	4.5+		
79	653		Dark Gray (10YR 4/1) SILTY CLAY, trace fine sand, trace laminations, very stiff, medium plasticity, moist.	CL	SS-40 (78-80') Rec. = 22"	17 25	3.25		N=66
80	652		@79-79.2' fine to medium silty sand seam, saturated.	ML		41 35	2.0		

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/15/2019 ENDED: 1/16/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-01-18SD(0-92') into boring upon completion of drilling. Installed Piezometer P-01-18IT (0-42') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 731.99
NORTHING: 13129.54
EASTING: 11523.43

PROJECT: Zion Landfill Site 2 North Expansion
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-01-18

Depth in Feet	Surf. Elev. 731.99	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80			(Continued from previous page @79.2')	ML		17			
			Dark Grayish Brown (2.5Y 4/2) with Olive Gray (5Y 4/2) CLAYEY SANDY SILT, very	CL		22	4.5+		
81	651		stiff, low plasticity, saturated.	ML	SS-41 (80-82') Rec. = 16"	25	2.25		N=47
82	650		Dark Grayish Brown (10YR 4/2) grading to Reddish Brown (2.5YR 5/3) grading to Dark Greenish Gray (GLEY 1 4/1 10Y) SILTY CLAY, trace fine to coarse sand and fine gravel, hard, medium plasticity, moist.	ML		18			
					SS-42 (82-84') Rec. = 24"	10	2.75		
83	649					13			N=40
						27	4.5+		
84	648		Olive Gray (5Y 4/2) CLAYEY SANDY SILT, very stiff, low plasticity, saturated.			35			
			Dark Gray (5Y 4/1) with Olive Gray (5Y 4/2) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, low plasticity, saturated.	ML		25	4.5+		
85	647				SS-43 (84-86') Rec. = 22"	23			N=50
						27	4.5+		
86	646					29			
			Dark Gray (10YR 4/1) CLAYEY SILT, trace fine to coarse sand and gravel, hard, low plasticity, moist to very moist.			22	4.5+		
87	645				SS-44 (86-88') Rec. = 21"	26			N=58
				CL		32	4.5+		
88	644		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand, trace laminations, hard, medium plasticity, moist.	SM		37			
						24			
89	643		Dark Grayish Brown (10YR 4/2) with Grayish Brown (2.5Y 5/2) Fine to Medium SILTY SAND, trace coarse sand and fine gravel, trace clay, poorly graded, very dense, saturated.		SS-45 (88-90') Rec. = 22"	38			N=74
						36	4.5+		
90	642					31			
				CL/ML		28	4.5+		
91	641		Dark Grayish Brown (10YR 4/2) SILTY CLAY with Grayish Brown (2.5Y 5/2) CLAYEY SANDY SILT, interbedded, very stiff to hard, low to medium plasticity, moist to saturated.		SS-46 (90-92') Rec. = 23"	29			N=57
						28	3.0		
92	640					28			
93	639		End of Boring @ 92.0'						
94	638								
95	637								
96	636								
97	635								
98	634								
99	633								
100	632								

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/15/2019 ENDED: 1/16/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-01-18SD(0-92') into boring upon completion of drilling. Installed Piezometer P-01-18IT (0-42') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 743.07
NORTHING: 13121.34
EASTING: 12417.76

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-02-18

Depth in Feet	Surf. Elev. 743.07	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0	743		Very Dark Brown (10YR 2/2) Organic SILTY CLAY, trace fine to coarse sand, very stiff, medium plasticity, moist.	OL		WOH	2.5		WOH = Weight of Hammer
1	742			CL	SS-1 (0-2') Rec. = 16"	3 4 6	2.25		N=7
2	741		Dark Brown (10YR 4/3) with Dark Yellowish Brown (10YR 3/6) and trace Very Dark Brown (10YR 2/2) SILTY CLAY, trace fine to coarse sand, very stiff, medium plasticity, moist.		SS-2 (2-4') Rec. = 19"	3 5 7 8	4.5 3.0		N=12
3	740								
4	739		Dark Yellowish Brown (10YR 4/6) with Grayish Brown (10YR 5/2) and trace Greenish Gray (GLEY 1 6/1 10Y) SILTY CLAY, trace fine to coarse sand and fine gravel, very stiff to hard, medium plasticity, moist.	CL	SS-3 (4-6') Rec. = 22"	5 9 11 12	4.0 4.5+		N=20
5	738								
6	737		Grayish Brown (10YR 5/2) with Dark Yellowish Brown (10YR 4/6) and trace Greenish Gray (GLEY 1 6/1 10Y) SILTY CLAY, trace fine to coarse sand and fine gravel, very stiff to hard, medium plasticity, moist.		SS-4 (6-8') Rec. = 24"	6 10 14 16	4.5+ 3.0		N=24
7	736								
8	735								
9	734		@8.8'-9.0'; trace very thin wet fine sand seams.		SS-5 (8-10') Rec. = 24"	6 11 20 18	3.25 4.0		N=31
10	733		Dark Gray (7.5YR 4/1) with Gray (7.5YR 5/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.		SS-6 (10-12') Rec. = 24"	5 11 15 15	3.0 4.5+		N=26
11	732								
12	731		@12'-12.8'; trace Reddish Brown (2.5YR 5/4) banding.		SS-7 (12-14') Rec. = 24"	7 11 20 21	4.5+ 4.5+		N=31
13	730								
14	729								
15	728			CL	SS-8 (14-16') Rec. = 24"	11 17 24 28	4.5+ 4.5+		N=41
16	727								
17	726				SS-9 (16-18') Rec. = 24"	9 15 22 28	4.5+ 4.5+		N=37
18	725								
19	724				SS-10 (18-20') Rec. = 23"	7 12 18 23	4.5+ 4.5+		N=30
20			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/8/2019 ENDED: 1/9/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Boring B-02-18 was sealed(0-98') with portland cement grout utilizing tremie pipe upon completion of drilling.

APTIM

SURFACE ELEVATION: 743.07
NORTHING: 13121.34
EASTING: 12417.76

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-02-18

Depth in Feet	Surf. Elev. 743.07	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
20	723		(Continued from previous page) SILTY CLAY.			9	--		
21	722				SS-11 (20-22') Rec. = 4"	15 21 25	--		N=36 (Pushing rock- low recovery)
22	721					9	3.75		
23	720				SS-12 (22-24') Rec. = 22"	15 25 27	3.25		N=40
24	719					10	4.5+		
25	718				SS-13 (24-26') Rec. = 24"	15 20 25	4.0		N=35
26	717					8	4.0		
27	716				SS-14 (26-28') Rec. = 22"	13 18 20	3.0		N=31
28	715					8	3.5		
29	714				SS-15 (28-30') Rec. = 24"	13 20 24	4.5+		N=33
30	713			CL		8	3.5		
31	712				SS-16 (30-32') Rec. = 23"	14 21 27	3.75		N=35
32	711					8	3.25		
33	710				SS-17 (32-34') Rec. = 19"	14 19 23	2.25		N=33 (Pushing rock)
34	709					8	3.5		
35	708				SS-18 (34-36') Rec. = 23"	13 18 21	2.5 3.0		N=31
36	707					6	2.75		
37	706				SS-19 (36-38') Rec. = 24"	11 18 21	3.5		N=29
38	705					10	4.25		
39	704				SS-20 (38-40') Rec. = 24"	17 25 29	3.0		N=42
40			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/8/2019 ENDED: 1/9/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Boring B-02-18 was sealed(0-98') with portland cement grout utilizing tremie pipe upon completion of drilling.

APTIM

SURFACE ELEVATION: 743.07
NORTHING: 13121.34
EASTING: 12417.76

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-02-18

Depth in Feet	Surf. Elev. 743.07	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40	703		(Continued from previous page) SILTY CLAY.			6			
						13	3.0		
41	702				SS-21 (40-42') Rec. = 23"	21			N=34
						22	3.75		
42	701					11			
						15	2.75		
43	700				SS-22 (42-44') Rec. = 24"	22			N=37
						30	4.5+		
44	699					25			
						42	--		
45	698			CL	SS-23 (44-46') Rec. = 9"	58			N=100 (Pushing rock)
						13	--		
46	697					19			
						26	3.5		
47	696		@47-47.05'; Very Dark Gray (2.5Y 3/1) to Dark Gray (2.5Y 4/1) fine to medium sand seam, wet.		SS-24 (46-48') Rec. = 24"	28			N=45
						10	3.5		
48	695					16			
						25	3.25		
49	694				SS-25 (48-50') Rec. = 22"	35			N=41
						33	3.5		
50	693		Dark Gray (2.5Y 4/1) and Gray (2.5Y 5/1) Fine SILTY SAND, trace medium to coarse sand, dense, saturated.	SM					
				CL					
51	692		Dark Gray (10YR 4/1) SILTY SANDY CLAY, trace fine to coarse gravel, very stiff, medium plasticity, moist.		SS-26 (50-52') Rec. = 9"	24	2.25		N=76 (Pushing gravel)
						52			
52	691					12			
						13	4.5+		
53	690		Dark Grayish Brown (10YR 4/2) SILTY CLAY with Dark Gray (10YR 4/1) CLAYEY SILT, trace fine to coarse sand and gravel, very stiff to hard, low to medium plasticity, moist to wet.	CL/ML	SS-27 (52-54') Rec. = 19"	13			N=26
						14	3.75		
54	689					3			
						11	3.0		
55	688		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.		SS-28 (54-56') Rec. = 24"	14	3.25		N=25
						18	2.5		
56	687					--	--		@56-58'(Pushed Shelby Tube); ST-29/B-02-18(56-58');Rec.=24"(CL), 1/8/19(1315).
57	686			CL	ST-29 (56-58') Rec. = 24"	--	--		
58	685					15			
						26	3.0		
59	684				SS-30 (58-60') Rec. = 24"	33			N=59
						37	3.5		
60			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/8/2019 ENDED: 1/9/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Boring B-02-18 was sealed(0-98') with portland cement grout utilizing tremie pipe upon completion of drilling.

APTIM

SURFACE ELEVATION: 743.07
NORTHING: 13121.34
EASTING: 12417.76

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-02-18

Depth in Feet	Surf. Elev. 743.07	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
60	683		(Continued from previous page) SILTY CLAY.	CL	SS-31 (60-62') Rec. = 8"	11 17 27 33	-- --		N=40 (Pushing rock)
61	682								
62	681		Dark Grayish Brown (10YR 4/2) CLAYEY SILT and SILTY CLAY, trace fine to coarse sand and gravel, stiff to hard, low to medium plasticity, moist to very moist.	ML/CL	SS-32 (62-64') Rec. = 23"	8 15 15 14	4.5 1.5		N=30
63	680								
64	679				SS-33 (64-66') Rec. = 24"	7 10 13 15	2.0 1.5		N=23
65	678								
66	677				SS-34 (66-68') Rec. = 24"	5 11 20 37	1.5 3.5		N=31
67	676		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and fine gravel, very stiff to hard, medium plasticity, moist.	CL					
68	675				SS-35 (68-70') Rec. = 24"	8 16 20 27	3.5 3.5		N=36
69	674								
70	673				SS-36 (70-72') Rec. = 24"	13 19 27 33	4.5+ 4.5+		N=46
71	672								
72	671				SS-37 (72-74') Rec. = 24"	14 18 25 32	4.5+ 3.5		N=43
73	670								
74	669				ST-38 (74-76') Rec. = 20"	-- --	-- --		@74-76'(Pushed Shelby Tube); ST-38/B-02-18(74-76');Rec.=20"(CL), 1/8/19(1445)
75	668								
76	667				SS-39 (76-78') Rec. = 24"	15 26 32 40	2.5 3.5		N=58
77	666								
78	665				SS-40 (78-80') Rec. = 23"	8 25 37 45	4.5+ 4.5+		N=62
79	664								
80			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/8/2019 ENDED: 1/9/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Boring B-02-18 was sealed(0-98') with portland cement grout utilizing tremie pipe upon completion of drilling.

APTIM

SURFACE ELEVATION: 743.07
NORTHING: 13121.34
EASTING: 12417.76

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-02-18

Depth in Feet	Surf. Elev. 743.07	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80	663		(Continued from previous page) SILTY CLAY.			10	3.5		
81	662				SS-41 (80-82') Rec. = 24"	32 45			N=77
82	661					52	3.5		
83	660			CL	ST-42 (82-84') Rec. = 20"	-- --	-- --		@82-84'(Pushed Shelby Tube); ST-42/B-02-18(82-84');Rec.=20"(CL), 1/8/19(1530).
84	659								
85	658		@ 85.6' coarse gravel		SS-43 (84-86') Rec. = 22"	24 39 50	4.0 4.5+		N=89
86	657		Brown (7.5YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL					
87	656		@86.8-86.9'; Fine to medium sand seam, wet.	ML	SS-44 (86-88') Rec. = 12"	46 57	4.0 4.5+		N=103
88	655		Dark Gray (2.5Y 4/1) with Dark Grayish Brown (2.5Y 4/2) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, low plasticity, moist.			52	4.5+		
89	654				SS-45 (88-90') Rec. = 23"	20 17 18	2.0		N=37
90	653		Dark Gray (2.5Y 4/1) CLAYEY SILT with trace Olive Gray (5Y 5/2) wet silt pockets, little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, low plasticity, moist to wet.	ML					
91	652				SS-46 (90-92') Rec. = 12"	41 62	4.5+		N=103
92	651					46	4.5+		
93	650		Dark Grayish Brown (2.5Y 4/2) Fine to Medium SAND, trace coarse sand, trace silt and clay, poorly graded, extremely dense, saturated.	SP	SS-47 (92-94') Rec. = 23"	53 48 36	4.5+		N=101
94	649		Dark Gray (2.5Y 4/1) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, low plasticity, moist.	ML					
95	648				SS-48 (94-96') Rec. = 24"	29 29 29 35	4.5+ 4.5+		N=58
96	647								
97	646				SS-49 (96-98') Rec. = 24"	6 15 23 53	4.0 4.5+		N=38
98	645		Dark Grayish Brown (10YR 4/2) SILTY CLAY with little lenses of Olive Gray (5Y 5/2) wet silt, trace fine sand, hard, low to medium plasticity, moist to wet.	CL					
99	644		End of Boring @ 98'						
100									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/8/2019 ENDED: 1/9/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Boring B-02-18 was sealed(0-98') with portland cement grout utilizing tremie pipe upon completion of drilling.

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APTIM

SURFACE ELEVATION: 745.58
NORTHING: 13129.62
EASTING: 13038.69

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-03-18

Depth in Feet	Surf. Elev. 745.58	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0	745		Very Dark Brown (10YR 2/2) Organic SILTY CLAY, trace fine to coarse sand, stiff, medium plasticity, moist.	OL	SS-1 (0-2') Rec. = 20"	WOH 2 3	1.0 1.25		WOH = Weight of Hammer N=5
1									
2	744		Dark Yellowish Brown (10YR 3/6) with Brown (10YR 5/3), Greenish Gray (GLEY 1 6/1 10Y), and Black (10YR 2/1) SILTY CLAY, stiff to very stiff, medium plasticity, moist.	CL		5	3.5		
3	743				SS-2 (2-4') Rec. = 22"	5 6 10	3.5 3.25		N=16
4	742		Dark Yellowish Brown (10YR 4/6) with Gray (GLEY 1 6/N to 5/N) and Greenish Gray (GLEY 1 6/1 10Y) SILTY CLAY, trace fine to coarse sand, very stiff, medium plasticity, moist.	CL		12			
5	741			SC/SM	SS-3 (4-6') Rec. = 22"	5 6 7	2.5 --		N=13
6	740		Yellowish Brown (10YR 5/4) with Greenish Gray (GLEY 1 6/1 10Y) SILTY CLAYEY Fine SAND, poorly graded, medium dense, wet.	SP/GP		8			
7	739				SS-4 (6-8') Rec. = 21"	6 10 13	4.0 3.0		N=23
8	738		Dark Yellowish Brown (10YR 4/6) Fine to Coarse SAND and GRAVEL, trace silt and clay, poorly graded, medium dense, wet.	CL		18			
9	737		Brown (10YR 4/3) with trace Strong Brown (7.5YR 4/6) SILTY CLAY, trace wet silt in lenses, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist to wet.		SS-5 (8-10') Rec. = 20"	6 8 12 15	2.5 4.5+		N=20
10	736								
11	735		Brown (10YR 4/3) grading to Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL	SS-6 (10-12') Rec. = 22"	6 12 18 19	4.5+ 4.5+ 4.5+		N=30
12	734								
13	733		Dark Gray (10YR 4/1) with trace Dark Yellowish Brown (10YR 4/4)(12-12.5') SILTY CLAY, trace fine to coarse sand and gravel, stiff to hard, medium plasticity, moist.		SS-7 (12-14') Rec. = 22"	7 9 13 15	4.5+ 3.5		N=22
14	732								
15	731				SS-8 (14-16') Rec. = 20"	5 9 22 22	3.0 3.0		N=31
16	730			CL					
17	729				SS-9 (16-18') Rec. = 23"	5 9 6 17	3.0 3.0		N=15
18	728								
19	727				SS-10 (18-20') Rec. = 4"	9 13 18 25	3.0		N=31 (Pushing coarse gravel)
20	726		(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/20/2018 ENDED: 12/26/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-03-18SD(0-104') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 745.58
NORTHING: 13129.62
EASTING: 13038.69

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-03-18

Depth in Feet	Surf. Elev. 745.58	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
20			(Continued from previous page)						
	725		SILTY CLAY.			6	2.25		
21					SS-11 (20-22') Rec. = 22"	9			N=23
	724					14	2.5		
22						17			
	723					7	2.75		
23					SS-12 (22-24') Rec. = 24"	10			N=25
	722					15	3.0		
24						20			
	721					7	2.5		
25					SS-13 (24-26') Rec. = 24"	9			N=22
	720					13	2.5		
26						15			
	719					5	1.75		
27					SS-14 (26-28') Rec. = 23"	8			N=22
	718					14	3.0		
28						14			
	717					8	1.75		
29			Same, coarse gravel @29'.		SS-15 (28-30') Rec. = 22"	13			N=33
	716					20	4.5+		
30				CL		27			
	715					8	4.5+		
31					SS-16 (30-32') Rec. = 24"	15			N=38
	714					23	4.5+		
32						26			
	713					9	3.5		
33					SS-17 (32-34') Rec. = 24"	12			N=30
	712					18	4.0		
34						20			
	711					3	4.5+		
35					SS-18 (34-36') Rec. = 20"	12			N=33
	710					21	4.0		
36						24			
	709					10	4.5+		
37					SS-19 (36-38') Rec. = 24"	14			N=34
	708					20	3.25		
38						23			
	707					15			
39					SS-20 (38-40') Rec. = 5"	24	3.25		N=50 (Pushing rock)
	706					26			
40			(Continued on next page)			28			

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/20/2018 ENDED: 12/26/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-03-18SD(0-104') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 745.58
NORTHING: 13129.62
EASTING: 13038.69

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-03-18

Depth in Feet	Surf. Elev. 745.58	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40	705		(Continued from previous page) SILTY CLAY.		SS-21 (40-42') Rec. = 22"	10 16 23 29	4.0 3.5		N=39
41	704								
42	703				SS-22 (42-44') Rec. = 24"	11 18 24 27	4.5+ 3.0		N=42
43	702			CL					
44	701				SS-23 (44-46') Rec. = 23"	6 13 20 25	3.0 4.5+		N=33
45	700								
46	699				SS-24 (46-48') Rec. = 14"	14 16 21 24	3.0		N=37 (Pushing rock)
47	698								
48	697		Dark Gray (2.5Y 4/1) SILTY CLAY with trace Gray (2.5Y 6/1) very thin wet silt seams, trace fine sand, very stiff, medium plasticity, moist.	CL	SS-25 (48-50') Rec. = 24"	6 11 15 22	3.0 3.5 4.5+		N=26
49	696								
50	695		Dark Gray (2.5Y 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL	SS-26 (50-52') Rec. = 24"	5 9 17 25	4.5+ 2.5 4.5+		N=26
51	694		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL					
52	693			SC/SM	SS-27 (52-54') Rec. = 24"	8 16 21 25	2.75 2.75		N=37
53	692		Dark Grayish Brown (2.5Y 4/2) Fine to Coarse SILTY CLAYEY SAND, trace fine gravel, poorly graded, medium dense, wet.						
54	691		Dark Grayish Brown (2.5Y 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.		SS-28 (54-56') Rec. = 24"	10 15 21 25	2.25 2.5		N=36
55	690								
56	689			CL	SS-29 (56-58') Rec. = 24"	11 27 32 39	2.5 4.0		N=59
57	688								
58	687				SS-30 (58-60') Rec. = 24"	16 26 30 36	3.0 4.0		N=56
59	686		(Continued on next page)						
60									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/20/2018 ENDED: 12/26/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-03-18SD(0-104') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 745.58
NORTHING: 13129.62
EASTING: 13038.69

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-03-18

Depth in Feet	Surf. Elev. 745.58	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
60			(Continued from previous page)						
	685		SILTY CLAY.			14	4.5+		
61					SS-31 (60-62') Rec. = 20"	25			N=75
	684					50	4.5+		
62						10			
	683					21	4.5+		
63					SS-32 (62-64') Rec. = 24"	27			N=48
	682					34	2.75		
64						46			
	681			CL			2.5		
65					SS-33 (64-66') Rec. = 6"	35			N=98 (Pushing gravel)
	680					63			
66						--	--		@66-68'(Pushed Shelby Tube); ST-34/B-03-18(66-68');Rec.=24"(CL), 12/20/18(1330).
	679				ST-34 (66-68') Rec. = 24"				
67						--	--		
	678								
68			@68-68.8'; Dark Reddish Gray (5YR 4/2) and Gray (GLEY 1 5/N to 6N) banding.			15			
	677					16	3.5		
69			Dark Gray (2.5Y 4/1) SILTY CLAY, trace fine to coarse sand and gravel, stiff to hard, medium plasticity, moist.		SS-35 (68-70') Rec. = 24"	18			N=34
	676					25	1.5		
70						3			
	675					11	2.5		
71					SS-36 (70-72') Rec. = 24"	13			N=24
	674					16	2.0		
72						16			
	673					20	4.5+		
73				CL	SS-37 (72-74') Rec. = 24"	32			N=52
	672					35	4.5+		
74						11			
	671					18	4.5+		
75					SS-38 (74-76') Rec. = 24"	19			N=37
	670					29	4.5+		
76			Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and fine gravel, very stiff to hard, medium plasticity, moist.			--	--		@76-78'(Pushed Shelby Tube); ST-39/B-03-18(76-78');Rec.=21"(CL), 12/20/18(1415).
	669				ST-39 (76-78') Rec. = 21"				
77						--	--		
	668		Dark Gray (2.5Y 4/1) Fine to Coarse SAND and GRAVEL, trace clay, poorly graded, very dense, saturated.						
78				CL		18	2.0		
	667					27	4.5+		
79			Olive Gray (5Y 5/2) CLAYEY SILT, trace fine to coarse sand and gravel, very stiff, low plasticity, wet.	SM/GM	SS-40 (78-80') Rec. = 24"	35			N=62
	666			ML		33	2.25		
80									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/20/2018 ENDED: 12/26/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-03-18SD(0-104') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 745.58
NORTHING: 13129.62
EASTING: 13038.69

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-03-18

Depth in Feet	Surf. Elev. 745.58	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80									
81	665		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL	SS-41 (80-82') Rec. = 22"	18 27 25 33	2.5 3.0		N=49
82	664		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.						
83	663				SS-42 (82-84') Rec. = 24"	17 30 53	4.5+ 4.5+		N=83
84	662								
85	661				SS-43 (84-86') Rec. = 24"	17 29 42 53	4.5+ 4.5+		N=71
86	660			CL					
87	659				SS-44 (86-88') Rec. = 24"	20 31 42 33	4.5+ 3.5		N=73
88	658								
89	657		@89-89.2' fine to medium silty sand seam, saturated.		SS-45 (88-90') Rec. = 24"	10 22 43 39	4.5+ 2.0 4.5+		N=65
90	656		@89.2-89.4' clayey silt seam, wet. @89.4-89.6' fine silty sand seam, saturated.	CL					
91	655		Dark Reddish Brown (5YR 3/2) SILTY CLAY, trace fine to coarse sand, hard, medium plasticity, moist.	SM/GM	SS-46 (90-92') Rec. = 21"	35 50 47 38	-- 3.5		N=97
92	654		Very Dark Gray (10YR 3/1) to Dark Gray (10YR 4/1) Fine to Coarse SILTY SAND and Fine GRAVEL, trace clay, poorly graded, extremely dense, saturated.						
93	653				SS-47 (92-94') Rec. = 24"	18 10 20 42	2.0 4.5+		N=30
94	652		Dark Gray (10YR 4/1) CLAYEY SILT, trace fine to coarse sand and gravel, very stiff to hard, low plasticity, moist.	ML					
95	651				SS-48 (94-96') Rec. = 12"	70 73	4.5+		N=143 (Coarse gravel in split spoon sample)
96	650		Dark Grayish Brown (2.5Y 4/2) Fine SILTY SAND, poorly graded, extremely dense, saturated.	SM					
97	649		Very Dark Grayish Brown (2.5Y 3/2) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.		SS-49 (96-98') Rec. = 17"	66 55 50/5"	4.5+		N=105+
98	648			CL					
99	647				SS-50 (98-100') Rec. = 24"	26 42 50 50/5"	4.5+ 4.5+		N=92
100	646		(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/20/2018 ENDED: 12/26/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-03-18SD(0-104') into boring upon completion of drilling.

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APTIM

SURFACE ELEVATION: 745.58
NORTHING: 13129.62
EASTING: 13038.69

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-03-18

Depth in Feet	Surf. Elev. 745.58	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
100			(Continued from previous page)						
	645		SILTY CLAY.	CL		28	4.5+		
101			Olive (5Y 4/3) to Dark Grayish Brown (2.5Y 4/2) SILT and Fine SILTY SAND, bedded, trace clay, stiff to very stiff,extremely dense, saturated.	ML/SM	SS-51 (100-102') Rec. = 16"	50	1.0		N=100+
	644					50/4"	2.5		
102						36	4.5+		
	643		Very Dark Grayish Brown (2.5Y 3/2) SILTY CLAY with Olive Gray (5Y 4/2) SILT lenses, trace fine sand, very stiff to hard, low plasticity, moist to wet.		SS-52 (102-104') Rec. = 15"	53	2.0		N=106+
103				CL/ML		53/3"	4.5+		
	642					53	3.5		
104									
	641								
105			Same, trace laminations.		SS-53 (104-106') Rec. = 18"	62			N=137
	640					75	3.0		
106			End of Boring @ 106'						
	639								
107									
	638								
108									
	637								
109									
	636								
110									
	635								
111									
	634								
112									
	633								
113									
	632								
114									
	631								
115									
	630								
116									
	629								
117									
	628								
118									
	627								
119									
	626								
120									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/20/2018 ENDED: 12/26/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-03-18SD(0-104') into boring upon completion of drilling.

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APTIM

SURFACE ELEVATION: 731.18
NORTHING: 13615.89
EASTING: 11614.85

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-04-18

Depth in Feet	Surf. Elev. 731.18	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0	731		Black (10YR 2/1) Organic SILTY CLAY, trace fine to coarse sand, very stiff, medium plasticity, moist.	OL		2	3.0		
1	730				SS-1 (0-2') Rec. = 16"	5 8 10	3.75		N=13
2	729		Greenish Gray (GLEY 1 6/1 10Y) with Yellowish Brown (10YR 5/8) and trace Black (10YR 2/1) mottled SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL	SS-2 (2-4') Rec. = 19"	3 5 6 11	3.75 3.75		N=11
3	728								
4	727		Dark Yellowish Brown (10YR 4/4 to 3/4) with little Strong Brown (7.5YR 5/6) and Gray (10YR 6/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-3 (4-6') Rec. = 24"	5 10 14 18	3.5 4.0		N=24
5	726								
6	725		Dark Brown (10YR 3/3) to Brown (10YR 4/3) with trace Strong Brown (7.5YR 5/6) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL	SS-4 (6-8') Rec. = 24"	10 14 19 20	4.0 3.0		N=33
7	724								
8	723		Dark Grayish Brown (10YR 4/2) SILTY CLAY with some Olive (5Y 4/4) silt pockets, trace fine to coarse sand and fine gravel, stiff to very stiff, low to medium plasticity, moist to very moist.	CL	SS-5 (8-10') Rec. = 23"	3 9 14 17	2.5 1.0 4.0		N=23
9	722								
10	721		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-6 (10-12') Rec. = 24"	7 9 16 17	3.75 2.5		N=25
11	720								
12	719		Dark Gray (7.5YR 4/1) SILTY CLAY, trace Gray (7.5YR 5/1) silt pockets, trace fine to coarse sand and gravel, stiff to very stiff, medium plasticity, moist.	CL	SS-7 (12-14') Rec. = 22"	4 7 9 13	2.75 3.0		N=16
13	718								
14	717				SS-8 (14-16') Rec. = 24"	4 6 8 11	1.25 2.5		N=14
15	716								
16	715		Dark Gray (7.5YR 4/1) CLAYEY SILT, trace fine to coarse sand and gravel, stiff to very stiff, low plasticity, moist.	ML	SS-9 (16-18') Rec. = 23"	6 10 13 11	2.25 1.75 3.0 3.0		N=23
17	714								
18	713		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, stiff to very stiff, medium plasticity, moist.	CL	SS-10 (18-20') Rec. = 24"	5 9 10 14	2.5 2.5		N=19
19	712								
20			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/12/2018 ENDED: 12/13/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-04-18LSD(0-112') into boring upon completion of drilling. Installed Piezometer P-04-18USD (0-94') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 731.18
NORTHING: 13615.89
EASTING: 11614.85

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-04-18

Depth in Feet	Surf. Elev. 731.18	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
20	711		(Continued from previous page) SILTY CLAY.						
21	710				SS-11 (20-22') Rec. = 8"	8 12 18 20	2.5		N=30 (Low recovery-pushing rock)
22	709					6			
23	708				SS-12 (22-24') Rec. = 22"	11 16 19	3.5 2.75		N=27
24	707					11			
25	706				SS-13 (24-26') Rec. = 16"	16 20 23	2.0 2.0		N=36 (Pushing rock)
26	705					6			
27	704				SS-14 (26-28') Rec. = 23"	16 17 18	3.75 3.25		N=33
28	703					7			
29	702			CL	SS-15 (28-30') Rec. = 24"	10 14 13	2.5 2.75		N=24
30	701					6			
31	700				SS-16 (30-32') Rec. = 24"	11 15 17	2.5 2.25		N=26
32	699					7			N=22 @32-34';Adjacent (within 10') blind-drilled boring (Pushed Shelby Tube); ST-17/B-04-18(32-34');Rec.=24"(CL), 12/14/18(0815).
33	698				SS-17 (32-34') Rec. = 24"	10 12 14	2.5 3.0		
34	697					5			
35	696				SS-18 (34-36') Rec. = 24"	8 10 11	2.75 1.5		N=18
36	695					3			
37	694				SS-19 (36-38') Rec. = 24"	6 7 10	2.5 2.25		N=13
38	693		Dark Gray (10YR 4/1) with Gray (10YR 5/1) CLAYEY SILT, trace fine sand, hard, low plasticity, wet.	ML		10	1.75		
39	692		@38.6-38.8' fine silty sand seam, wet.	CL	SS-20 (38-40') Rec. = 20"	7 7 12	4.5+ 1.5		N=14
40									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/12/2018 ENDED: 12/13/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-04-18LSD(0-112') into boring upon completion of drilling. Installed Piezometer P-04-18USD (0-94') into adjacent(within 10') blind-drilled boring.

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APTIM

SURFACE ELEVATION: 731.18
NORTHING: 13615.89
EASTING: 11614.85

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-04-18

Depth in Feet	Surf. Elev. 731.18	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40	691		(Continued from previous page @38.8') Dark Gray (5YR 4/1) with Dark Reddish Gray (5YR 4/2) SILTY CLAY, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, low to medium plasticity, moist.	CL		6	4.5+		
41	690				SS-21 (40-42') Rec. = 21"	7 10 14	2.75		N=17
42	689			CL		7	2.5		
43	688		Dark Grayish Brown (2.5Y 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.		SS-22 (42-44') Rec. = 23"	10 17 18	3.25		N=17
44	687		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.			7	3.25		
45	686				SS-23 (44-46') Rec. = 24"	11 17 19	3.25		N=28
46	685					9	2.0		
47	684				SS-24 (46-48') Rec. = 22"	12 14 16	2.0		N=26
48	683					10	3.0		
49	682				SS-25 (48-50') Rec. = 21"	17 27 23	3.25		N=44
50	681					11	4.5+		
51	680				SS-26 (50-52') Rec. = 24"	17 22 32	3.5		N=39
52	679			CL		--	--		@52-54'(Pushed Shelby Tube); ST-27/B-04-18(52-54');Rec.=24"(CL), 12/12/18(1040)
53	678				ST-27 (52-54') Rec. = 24"	--	--		
54	677					14	3.75		
55	676				SS-28 (54-56') Rec. = 24"	15 23 25	2.5		N=38
56	675					8	2.5		
57	674				SS-29 (56-58') Rec. = 24"	12 17 22	3.5		N=29
58	673					10	3.0		
59	672				SS-30 (58-60') Rec. = 24"	15 31 25	2.75		N=45
60			@59.5';fine to coarse sand lens, wet. (Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/12/2018 ENDED: 12/13/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-04-18LSD(0-112') into boring upon completion of drilling. Installed Piezometer P-04-18USD (0-94') into adjacent(within 10') blind-drilled boring.

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APTIM

SURFACE ELEVATION: 731.18
NORTHING: 13615.89
EASTING: 11614.85

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-04-18

Depth in Feet	Surf. Elev. 731.18	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
60	671		(Continued from previous page) SILTY CLAY.			4			
						10	2.75		
61	670				SS-31 (60-62') Rec. = 24"	18			N=28
						23	2.5		
62	669			CL		--	--		@62-64'(Pushed Shelby Tube); ST-32/B-04-18(62-64');Rec.=24"(CL) 12/12/18(1215)
					ST-32 (62-64') Rec. = 24"				
63	668					--	--		
64	667					18			
			@64.5';fine to coarse sand and gravel pocket, wet.			29	4.5+		
65	666				SS-33 (64-66') Rec. = 24"	38			N=67
			Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.			40	3.75		
66	665			CL		11			
						21	4.5+		
67	664			ML	SS-34 (66-68') Rec. = 22"	32	3.5		N=53
			Dark Gray (2.5Y 4/1) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine gravel, very stiff, low plasticity, wet.			36	3.5		
68	663					10	4.25		
			Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.			17			
69	662				SS-35 (68-70') Rec. = 24"	21	2.0		N=38
						24	4.0		
70	661		@69.5';Dark Gray (2.5Y 4/1) clayey silt pocket, coarse gravel, very moist.	CL		22	2.5		
						36			
71	660				SS-36 (70-72') Rec. = 17"	37	2.25		N=73 (Pushing rock)
						47			
72	659					11	3.0		
						13			
73	658				SS-37 (72-74') Rec. = 24"	29	2.0		N=42
			Olive Gray (5Y 4/2) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, low plasticity, very moist.			31	4.5+		
74	657			ML		11			
						10	2.5		
75	656				SS-38 (74-76') Rec. = 24"	12			N=22
			Dark Gray (2.5Y 4/1) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, low plasticity, moist to very moist.			14	2.5		
76	655					14			
						19	4.5+		
77	654			ML	SS-39 (76-78') Rec. = 23"	32			N=51
						33	3.75		
78	653					35			
						24	4.5+		
79	652				SS-40 (78-80') Rec. = 20"	24			N=48
			(Continued on next page)			23	4.5+		
80									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/12/2018 ENDED: 12/13/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-04-18LSD(0-112') into boring upon completion of drilling. Installed Piezometer P-04-18USD (0-94') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 731.18
NORTHING: 13615.89
EASTING: 11614.85

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-04-18

Depth in Feet	Surf. Elev. 731.18	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80	651		(Continued from previous page) CLAYEY SILT.			14	4.5+		
81	650				SS-41 (80-82') Rec. = 21"	36 38	4.5+		N=74
82	649			ML		38 14	4.5+		
83	648				SS-42 (82-84') Rec. = 18"	34 53	4.5+		N=87
84	647		Dark Grayish Brown (2.5Y 4/2) SILT with Olive Gray (5Y 4/2) Fine SILTY SAND, trace medium sand and clay, poorly graded, extremely dense to very stiff to hard, low plasticity, saturated.			84	4.5+		
85	646				SS-43 (84-86') Rec. = 9"	50/3"	3.5		N=134+
86	645					67			
87	644			ML/SM	SS-44 (86-88') Rec. = 12"	59	3.75		N=126
88	643					40	4.5+		
89	642				SS-45 (88-90') Rec. = 20"	37 49 37	4.5+		N=86
90	641		Dark Grayish Brown (2.5Y 4/2) with Gray (2.5Y 5/1) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine gravel, very stiff to hard, low plasticity, wet to saturated.			40	4.5+		
91	640			ML	SS-46 (90-92') Rec. = 21"	42 26	2.5		N=68
92	639					32	4.5+		
93	638		Dark Grayish Brown (2.5Y 4/2) Fine SILTY SAND, trace medium to coarse sand, trace clay, poorly graded, very dense, saturated.	SM ML	SS-47 (92-94') Rec. = 23"	36 34 45	4.5+		N=79
94	637		Dark Gray (7.5YR 4/1) with trace Reddish Brown (5YR 4/3) CLAYEY SILT, trace fine sand, hard, moist to wet.			37	4.5+		
95	636		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.		SS-48 (94-96') Rec. = 19"	15 23 26	2.5 4.5+		N=49
96	635					30	2.5		
97	634			CL	SS-49 (96-98') Rec. = 18"	23 41 52	4.5+ 4.0		N=93
98	633					35	2.5		
99	632				SS-50 (98-100') Rec. = 14"	42 68	4.0		N=110 (Pushing rock)
100			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/12/2018 ENDED: 12/13/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-04-18LSD(0-112') into boring upon completion of drilling. Installed Piezometer P-04-18USD (0-94') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 731.18
NORTHING: 13615.89
EASTING: 11614.85

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-04-18

Depth in Feet	Surf. Elev. 731.18	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
100	631		(Continued from previous page) SILTY CLAY.			27	3.5		
101	630				SS-51 (100-102') Rec. = 23"	43 53 53	4.5+		N=96
102	629					42	--		
103	628			CL	SS-52 (102-104') Rec. = 3"	57 75	--		N=129 (Low recovery - pushing rock)
104	627					36	2.75		
105	626				SS-53 (104-106') Rec. = 24"	48 56	3.5		N=104
106	625					52	2.5		
107	624		Dark Grayish Brown (2.5Y 4/2) with Grayish Brown (2.5Y 5/2) Fine SILTY SAND, trace clay, poorly graded, extremely dense, saturated.	SM	SS-54 (106-108') Rec. = 17"	63 53			N=116
108	623			CL		14	2.5		
109	622		Dark Gray (10YR 4/1) SILTY CLAY, trace fine sand, very stiff, medium plasticity, moist.	ML	SS-55 (108-110') Rec. = 22"	20 29	2.0		N=49
110	621		Dark Gray (2.5Y 4/1) with Gray (2.5Y 5/1) CLAYEY SILT, little fine sand, very stiff, low plasticity, saturated.	SP		41			
111	620		Dark Grayish Brown (10YR 4/2) Fine SAND, trace medium sand, trace silt and clay, poorly graded, dense, saturated.	CL	SS-56 (110-112') Rec. = 21"	19 18 36	3.0		N=54
112	619		Dark Gray (2.5Y 4/1) SILTY CLAY, little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff, medium plasticity, moist.	CL		35			
113	618				SS-57 (112-1114') Rec. = 24"	18 21 29	3.75		N=50
114	617		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.			33	3.75		
115	616		End of Boring @ 114'						
116	615								
117	614								
118	613								
119	612								
120									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/12/2018 ENDED: 12/13/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-04-18LSD(0-112') into boring upon completion of drilling. Installed Piezometer P-04-18USD (0-94') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 742.54
NORTHING: 13628.73
EASTING: 12391.54

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-05-18

Depth in Feet	Surf. Elev. 742.54	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0	742		Very Dark Brown (10YR 2/2) Organic SILTY CLAY, trace fine to coarse sand, stiff, medium plasticity, moist.	OL	SS-1 (0-2') Rec. = 15"	4 7	1.5		N=15
1	741		Yellowish Brown (10YR 5/4) with Brown (10YR 3/3), Gray (10YR 6/1), and Greenish Gray (GLEY 1 6/1 10Y) mottled SILTY CLAY, trace fine to medium sand, trace roots, very stiff to hard, medium plasticity, moist.	CL		8 8	2.5		
2	740				SS-2 (2-4') Rec. = 23"	4 7	2.25		N=17
3	739					10 10	3.0		
4	738				SS-3 (4-6') Rec. = 24"	6 10	4.5+		N=23
5	737					13 18	4.5+		
6	736				SS-4 (6-8') Rec. = 23"	5 9	4.0		N=25
7	735					16 18	4.5+		
8	734		Grayish Brown (10YR 5/2) with Yellowish Brown (10YR 5/4) SILTY CLAY, very stiff to hard, medium plasticity, moist.	CL	SS-5 (8-10') Rec. = 24"	6 7	4.5+ 2.5		N=20
9	733		Grayish Brown (10YR 5/2) with Yellowish Brown (10YR 5/4) Fine to Medium SILTY SAND and SILTY CLAY, poorly graded, medium dense, stiff, low plasticity, moist to wet.	SM/CL		13 24	1.5		
10	732			SM	SS-6 (10-12') Rec. = 18"	5 16	--		N=32
11	731		Dark Yellowish Brown (10YR 4/4) Fine to Medium SILTY SAND, little clay, trace coarse sand, poorly graded, dense, wet.			16 19	--		
12	730				SS-7 (12-14') Rec. = 22"	13 18	--		N=34
13	729					16 20	4.5+		
14	728		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine sand, hard, medium plasticity, moist.	CL	SS-8 (14-16') Rec. = 17"	8 12	4.0		N=28
15	727		Dark Grayish Brown (2.5Y 4/2) with trace Olive Brown (2.5Y 4/3) SILTY CLAY, trace fine to coarse sand and fine gravel, hard, medium plasticity, moist.	CL		16 20	4.5+		
16	726		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-9 (16-18') Rec. = 21"	9 11	4.0		N=28
17	725					17 19	4.5+		
18	724				SS-10 (18-20') Rec. = 22"	5 11	4.25		N=26
19	723		(Continued on next page)			15 22	4.0		
20									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/21/2018 ENDED: 11/29/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-05-18SD(0-120') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 742.54
NORTHING: 13628.73
EASTING: 12391.54

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-05-18

Depth in Feet	Surf. Elev. 742.54	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
20	722		(Continued from previous page) SILTY CLAY.			7 11 15 19	2.5 3.0		
21	721				SS-11 (20-22') Rec. = 24"				N=26
22	720					7 10 17 20	3.5 3.25		
23	719			CL	SS-12 (22-24') Rec. = 24"				N=27
24	718					9 15 20 25	3.5 2.5		
25	717				SS-13 (24-26') Rec. = 24"				N=35
26	716					10 9 17 21	2.5 2.0		
27	715		Gray (2.5Y 5/1) CLAYEY SILT, very stiff to hard, low plasticity, moist to wet.	ML	SS-14 (26-28') Rec. = 22"				N=26
28	714					8 8 13 15	4.0 2.5		
29	713		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, stiff to hard, medium plasticity, moist.		SS-15 (28-30') Rec. = 23"				N=21
30	712					5 9 13 17	3.0 2.5		
31	711		Same, with little Gray (2.5Y 5/1) silt lenses, very moist.		SS-16 (30-32') Rec. = 23"				N=22
32	710					5 10 13 14	2.75 2.5		
33	709				SS-17 (32-34') Rec. = 24"				N=23
34	708			CL		5 10 18 22	2.5 2.75		
35	707				SS-18 (34-36') Rec. = 24"				N=28
36	706					9 14 23 26	3.0 3.0		
37	705				SS-19 (36-38') Rec. = 23"				N=37
38	704					11 12 18 20	4.0 3.5 2.0		
39	703				SS-20 (38-40') Rec. = 21"				N=30
40			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/21/2018 ENDED: 11/29/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-05-18SD(0-120') into boring upon completion of drilling.

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APTIM

SURFACE ELEVATION: 742.54
NORTHING: 13628.73
EASTING: 12391.54

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-05-18

Depth in Feet	Surf. Elev. 742.54	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40	702		(Continued from previous page) SILTY CLAY.			10	3.75		
41	701				SS-21 (40-42') Rec. = 24"	15 17 23	2.75		N=32
42	700			CL		8	1.5		
43	699				SS-22 (42-44') Rec. = 18"	12 18 24	1.75		N=30
44	698					11	3.5		
45	697				SS-23 (44-46') Rec. = 24"	19 29 41	4.0 2.0		N=48
46	696		Gray (2.5Y 5/1) with Dark Gray (2.5Y 4/1) CLAYEY SILT, trace fine sand, trace laminations, stiff to very stiff, low plasticity, very moist to wet.	ML	SS-24 (46-48') Rec. = 22"	19 17 20 33	3.75 1.75 3.0		N=37
47	695								
48	694				SS-25 (48-50') Rec. = 24"	13 17 24 24	2.5 3.5		N=41
49	693		Dark Gray (10YR 4/1) Fine to Medium CLAYEY SILTY SAND, poorly graded, dense, wet.	SC/SM ML/CL					
50	692		Gray (10YR 5/1) with Dark Brownish Gray (10YR 4/2) CLAYEY SILT and SILTY CLAY, trace laminations, trace fine sand, very stiff, low to medium plasticity, moist to wet.	CL	SS-26 (50-52') Rec. = 24"	10 8 9 14	3.0 1.5 1.75		N=17
51	691								
52	690		Dark Grayish Brown (10YR 4/2) SILTY CLAY, little fine sand, trace medium to coarse sand and fine to coarse gravel, stiff, medium plasticity, moist.		SS-27 (52-54') Rec. = 22"	8 14 24 34	4.0 4.5+		N=38
53	689		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.						
54	688				SS-28 (54-56') Rec. = 22"	10 20 24 32	3.0 3.5		N=44
55	687			CL					
56	686				SS-29 (56-58') Rec. = 24"	10 12 24 39	3.0 2.75 4.5+		N=36
57	685		@57.2-57.4'; fine to medium sand seam, wet.						
58	684				SS-30 (58-60') Rec. = 23"	21 22 23 34	4.5+ 3.5		N=45
59	683		(Continued on next page)						
60									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/21/2018 ENDED: 11/29/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-05-18SD(0-120') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 742.54
NORTHING: 13628.73
EASTING: 12391.54

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-05-18

Depth in Feet	Surf. Elev. 742.54	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
60	682		(Continued from previous page) SILTY CLAY.	CL	SS-31 (60-62') Rec. = 24"	16 20 26 32	3.5 3.5		N=46
61	681								
62	680					8	3.5		
63	679		Dark Grayish Brown (10YR 4/2) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, low plasticity, moist to very moist.	ML	SS-32 (62-64') Rec. = 21"	19 23 26	3.5		N=42
64	678				ST-33 (64-66') Rec. = 12"	--	--		@64-66'(Pushed Shelby Tube); ST-33/B-05-18(64-66');Rec.=12"(ML), 11/27/18(1120)
65	677					--	--		
66	676					7	4.5+		
67	675		Dark Grayish Brown (10YR 4/2) SILTY CLAY, little fine sand, trace medium to coarse sand and fine gravel, hard, medium plasticity, moist.	CL	SS-34 (66-68') Rec. = 18"	12 21 17	4.5+		N=33
68	674		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and fine gravel, very stiff, medium plasticity, moist.	CL	SS-35 (68-70') Rec. = 24"	10 14 15 22	2.0 3.0		N=29
69	673								
70	672					8	2.75		
71	671				SS-36 (70-72') Rec. = 24"	18 20 26	2.25		N=38
72	670				ST-37 (72-74') Rec. = 24"	--	--		@72-74'(Pushed Shelby Tube); ST-37/B-05-18(72-74');Rec.=24"(CL), 11/27/18(1300)
73	669					--	--		
74	668					16	3.0		
75	667		Dark Grayish Brown (10YR 4/2) SILTY CLAY, little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff, medium plasticity, moist.		SS-38 (74-76') Rec. = 24"	16 23 28	2.75		N=39
76	666					10	2.75		
77	665			CL	SS-39 (76-78') Rec. = 24"	20 34 37	2.25		N=54
78	664				ST-40 (78-80') Rec. = 16"	--	--		@78-80'(Pushed Shelby Tube); ST-40/B-05-18(78-80');Rec.=16"(CL), 11/27/18(1300)
79	663		(Continued on next page)			--	--		
80									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/21/2018 ENDED: 11/29/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-05-18SD(0-120') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 742.54
NORTHING: 13628.73
EASTING: 12391.54

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-05-18

Depth in Feet	Surf. Elev. 742.54	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80			(Continued from previous page)						
	662		SILTY CLAY.	CL		11	3.75		
81			Dark Gray (2.5Y 4/1) SILTY CLAY, little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff, medium plasticity, moist.	CL	SS-41 (80-82') Rec. = 24"	18 25	2.5		N=43
	661					33	4.5+		
82				CL		10	3.0		
	660		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.		SS-42 (82-84') Rec. = 16"	32			N=90
83	659					58	4.5+		
84			Dark Gray (2.5Y 4/1) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, low plasticity, moist.			28	4.5+		
	658				SS-43 (84-86') Rec. = 23"	40			N=82
85	657					42 44	4.5+		
86						35	4.5+		
	656					40			
87	655			ML	SS-44 (86-88') Rec. = 23"	45 52	4.5+		N=85
88						21	4.5+		
	654					28			
89	653				SS-45 (88-90') Rec. = 24"	33 46	4.5+		N=61
90						21	4.5+		
	652		@90.5-90.7'; Gray (2.5Y 5/1) sandy silt, very moist.			52			
91	651				SS-46 (90-92') Rec. = 18"	75	4.5+		N=127
92			Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.			14	2.75		
	650					32			
93	649			CL	SS-47 (92-94') Rec. = 24"	40 37	4.5+		N=72
94						14	4.5+		
	648					28	3.5		
95	647		Olive Gray (5Y 4/2) CLAYEY SILT and Very Dark Grayish Brown (2.5Y 3/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, low to medium plasticity, moist to very moist.	ML/CL	SS-48 (94-96') Rec. = 18"	55	4.5+		N=83
96						51	2.5		
	646								
97	645		Olive Gray (5Y 4/2) SANDY SILT, little Very Dark Grayish Brown (2.5Y 3/2) silty clay, trace fine to coarse gravel, very stiff, low plasticity, moist to wet.	ML	SS-49 (96-98') Rec. = 12"	64			N=115
98						42	3.25		
	644					43			
99	643		Dark Gray (2.5YR 4/1) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, low plasticity, moist to very moist.	ML	SS-50 (98-100') Rec. = 18"	43	4.0		N=86
100				CL		44			

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/21/2018 ENDED: 11/29/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
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APTIM

SURFACE ELEVATION: 742.54
NORTHING: 13628.73
EASTING: 12391.54

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-05-18

Depth in Feet	Surf. Elev. 742.54	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
100	642		(Continued from previous page @99.8') Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL	SS-51 (100-102') Rec. = 18"	20 40 55	4.5+ 4.5+		N=95
101	641								
102	640				SS-52 (102-104') Rec. = 8"	31 49 54	4.5+		N=103 (Pushing rock)
103	639								
104	638				SS-53 (104-106') Rec. = 18"	19 37 52	4.5+ 4.5+		N=89
105	637								
106	636				SS-54 (106-108') Rec. = 24"	16 33 48 64	4.25 4.5+		N=81
107	635								
108	634				SS-55 (108-110') Rec. = 9"	41 75/4"	4.5+		N=116+ (Pushing rock)
109	633								
110	632				SS-56 (110-112') Rec. = 24"	23 49 63	4.5+ 4.5+		N=112
111	631		Dark Reddish Brown (5YR 3/2) with Dark Gray (10YR 4/1) SILTY CLAY, trace fine to medium sand, hard, medium plasticity, moist.						
112	630				SS-57 (112-1114') Rec. = 18"	35 57 68	4.5+ 4.5+		N=125 (Pushing rock)
113	629								
114	628		Same, trace fine to coarse sand and fine gravel.		SS-58 (114-116') Rec. = 24"	26 45 85	4.5+ 4.5+		N=130
115	627								
116	626		Dark Grayish Brown (10YR 4/2) Fine SAND, trace medium sand, trace silt, poorly graded, extremely dense, saturated.	SP	SS-59 (116-118') Rec. = 12"	61 87	-- --		N=148
117	625								
118	624		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-60 (118-120') Rec. = 24"	25 33 48 57	3.0 4.5+		N=81
119	623								
120			End of Boring @ 120'						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/21/2018 ENDED: 11/29/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
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APTIM

SURFACE ELEVATION: 745.01
NORTHING: 13632.77
EASTING: 13043.36

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-06-18

Depth in Feet	Surf. Elev. 745.01	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0	745		Black (10YR 2/1) Organic SILTY CLAY, trace fine to coarse sand and fine gravel, very stiff, medium plasticity, moist.	OL / CL	SS-1 (0-2') Rec. = 21"	3, 4, 6, 6	2.0, 1.5		N=10
1	744								
2	743		Very Dark Gray (10YR 3/1) with Olive Brown (2.5Y 4/3) SILTY CLAY, little fine sand, trace organics, stiff, medium plasticity, moist.	CL	SS-2 (2-4') Rec. = 22"	5, 8, 7, 6	4.5, 1.75		N=15
3	742								
4	741		Yellowish Brown (10YR 5/8) with Brown (10YR 5/3), Gray (10YR 6/1), and Greenish Gray (GLEY 1 6/1 10Y) Mottled SILTY CLAY, trace fine to coarse sand and gravel, stiff to hard, medium plasticity, moist.		SS-3 (4-6') Rec. = 23"	3, 10, 15, 18	1.5, 4.0		N=25
5	740			SC/SM					
6	739		Dark Yellowish Brown (10YR 3/6) with Gray (GLEY 1 6/N) Fine to Coarse SILTY CLAYEY SAND, trace fine gravel, poorly graded, medium dense, wet.	CL	SS-4 (6-8') Rec. = 22"	9, 16, 22, 26	2.5, 4.5+		N=38
7	738		Brown (10YR 4/3) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.						
8	737		Dark Gray (10YR 4/1) with trace Dark Reddish Gray (5YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.		SS-5 (8-10') Rec. = 22"	8, 14, 17, 23	4.5+, 4.5+		N=31
9	736								
10	735				SS-6 (10-12') Rec. = 22"	10, 18, 25, 27	4.5+, 4.5+		N=43
11	734								
12	733				SS-7 (12-14') Rec. = 23"	8, 14, 23, 25	4.5+, 4.5+		N=37
13	732			CL					
14	731				SS-8 (14-16') Rec. = 23"	8, 14, 20, 22	3.75, 4.5+		N=34
15	730								
16	729				SS-9 (16-18') Rec. = 24"	9, 15, 22, 24	4.5+, 3.5		N=37
17	728								
18	727		@17.8'; Gray (10YR 5/1) silt pocket, very moist.		SS-10 (18-20') Rec. = 23"	9, 11, 17, 21	4.0, 4.25		N=28
19	726								
20			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/17/2018 ENDED: 12/19/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-06-18LSD(0-132') into boring upon completion of drilling. Installed Piezometer P-06-18USD (0-110') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 745.01
NORTHING: 13632.77
EASTING: 13043.36

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-06-18

Depth in Feet	Surf. Elev. 745.01	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
20	725		(Continued from previous page) SILTY CLAY.			7			
21	724				SS-11 (20-22') Rec. = 24"	12 16 23	3.0 3.25		N=28
22	723					10	4.5+		
23	722				SS-12 (22-24') Rec. = 24"	13 19 23	3.5		N=32
24	721					8	4.5+		
25	720				SS-13 (24-26') Rec. = 22"	14 22 24	3.75		N=36
26	719					8	4.5+		
27	718			CL	SS-14 (26-28') Rec. = 21"	14 19 23	4.0 3.75		N=33
28	717		@ 27.5-28'; trace Greenish Gray (GLEY 1 5/1 10Y) silt pockets, wet.			6	3.0		
29	716				SS-15 (28-30') Rec. = 24"	12 15 19	2.5 4.0		N=27
30	715					9	4.5+		
31	714				SS-16 (30-32') Rec. = 24"	19 26 30	4.5+		N=45
32	713					13	4.5+		
33	712				SS-17 (32-34') Rec. = 22"	19 33 34	2.5		N=52
34	711		Dark Gray (5Y 4/1) to Gray (5Y 5/1) SILT, trace fine sand and clay, very stiff, low plasticity, wet.	ML		19	2.5		
35	710		Dark Gray (10YR 4/1) with Gray (5Y 5/1) and Very Dark Gray (5Y 3/1) SANDY SILT, trace fine gravel and clay, very stiff, low plasticity, wet.	ML	SS-18 (34-36') Rec. = 23"	11 15 20	3.25		N=26
36	709		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.			7	3.75		
37	708			CL	SS-19 (36-38') Rec. = 22"	13 20 24	4.5+		N=33
38	707		@ 37'; trace silt pockets, wet.			11	3.5		
39	706				SS-20 (38-40') Rec. = 24"	18 23 24	4.5 3.5		N=41
40			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/17/2018 ENDED: 12/19/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-06-18LSD(0-132') into boring upon completion of drilling. Installed Piezometer P-06-18USD (0-110') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 745.01
NORTHING: 13632.77
EASTING: 13043.36

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-06-18

Depth in Feet	Surf. Elev. 745.01	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40	705		(Continued from previous page) SILTY CLAY.			5	3.0		
41	704				SS-21 (40-42') Rec. = 19"	14			N=38
42	703					24	3.5		
43	702			CL	SS-22 (42-44') Rec. = 23"	24			
44	701					15	4.5+		
45	700				SS-23 (44-46') Rec. = 24"	18			N=41
46	699		Gray (2.5Y 5/1) SILT, trace fine sand and clay, very stiff, low plasticity, wet.	ML	ST-24 (46-48') Rec. = 15"	23	3.75		
47	698					24			
48	697					11	2.5		
49	696		Olive Gray (5Y 4/2) to Olive (5Y 4/4) Fine to Medium SILTY SAND and SANDY SILT, bedded, trace corase sand and fine gravel, trace clay, poorly graded, very dense, stiff, low plasticity, wet.	SM/ML	SS-25 (48-50') Rec. = 20"	15			N=36
50	695					21	4.0		
51	694		Dark Grayish Brown (2.5Y 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL	SS-26 (50-52') Rec. = 24"	30			
52	693					--	--		@46-48'(Pushed Shelby Tube); ST-24/B-06-18(46-48');Rec.=15"(ML), 12/17/18(1045).
53	692				SS-27 (52-54') Rec. = 24"	--	--		
54	691		Dark Gray (10YR 4/1) and Dark Grayish Brown (10YR 4/2) SILTY CLAY and CLAYEY SILT, trace fine to coarse sand and gravel, stiff, low to medium plasticity, moist to wet.	CL/ML	SS-28 (54-56') Rec. = 8"	28	2.75		
55	690					23			N=50
56	689					27	1.75		
57	688		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-29 (56-58') Rec. = 24"	23			
58	687					7	3.0		
59	686		Dark Gray (10YR 4/1) Fine to Medium SILTY SAND, trace coarse sand and gravel, poorly graded, dense, wet.	SM	SS-30 (58-60') Rec. = 22"	12			N=39
60			SILTY CLAY (Continued on next page)	CL		17	3.0		
						23			
						8	2.5		
						11			
						14	2.0		N=25
						19	1.25		
						15	1.5		
						17			
						20			N=37 (Pushing rock)
						23			
						10	2.75		
						15			N=30
						15	2.75		
						18			
						16	4.5+		
						18			
						20	4.5+		N=38
						25			

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/17/2018 ENDED: 12/19/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-06-18LSD(0-132') into boring upon completion of drilling. Installed Piezometer P-06-18USD (0-110') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 745.01
NORTHING: 13632.77
EASTING: 13043.36

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-06-18

Depth in Feet	Surf. Elev. 745.01	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
60	685		(Continued from previous page @58.7') Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, stiff to hard, medium plasticity, moist.			13	4.5+		
61	684				SS-31 (60-62') Rec. = 24"	22 38			N=60
62	683					44	4.5+		
63	682				SS-32 (62-64') Rec. = 23"	16 24 38	4.5+		N=62
64	681					52	4.5+		
65	680			CL	SS-33 (64-66') Rec. = 24"	7 14 18 22	3.5 3.25		N=32
66	679					10	3.5		
67	678				SS-34 (66-68') Rec. = 24"	13 19 22	1.75 2.5		N=32
68	677					9	3.25		
69	676				SS-35 (68-70') Rec. = 24"	16 19 50	2.75		N=35
70	675		Dark Gray (10YR 4/1) FIne to Medium SILTY SAND, trace clay, poorly graded, dense, wet.	SM		13	4.5+		
71	674		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL	SS-36 (70-72') Rec. = 24"	13 15 24	4.0 4.5+		N=28
72	673					22 30	4.5+		
73	672		Dark Gray (7.5YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.		SS-37 (72-74') Rec. = 24"	46 55	4.5+		N=76
74	671					--	--		@74-76'(Pushed Shelby Tube); ST-38/B-06-18(74-76');Rec.=18"(CL), 12/17/18(1330).
75	670			CL	ST-38 (74-76') Rec. = 18"				
76	669					--	--		
77	668		@77.5'; Fine to coarse sand and gravel (greenish shale), wet pocket.		SS-39 (76-78') Rec. = 24"	15 29 35	4.5+ 3.0		N=64
78	667		Dark Grayish Brown (10YR 4/2) to Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, stiff to hard, medium plasticity, moist.			45	4.5+		
79	666			CL	SS-40 (78-80') Rec. = 24"	13 19 28	4.5+ 3.0		N=47
80			(Continued on next page)			35	4.5+		

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/17/2018 ENDED: 12/19/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-06-18LSD(0-132') into boring upon completion of drilling. Installed Piezometer P-06-18USD (0-110') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 745.01
NORTHING: 13632.77
EASTING: 13043.36

PROJECT: Zion Landfill Site 2 North
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PROJECT NO.: 003211
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BORING NO. B-06-18

Depth in Feet	Surf. Elev. 745.01	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80	665		(Continued from previous page) SILTY CLAY.			5	2.75		
81	664				SS-41 (80-82') Rec. = 24"	11 23	1.25		N=34
82	663					30	4.5+		
83	662				SS-42 (82-84') Rec. = 24"	16 26	4.5+		N=59
84	661			CL		33 42	4.5+		
85	660				SS-43 (84-86') Rec. = 24"	15 26	4.5+		N=59
86	659		Same, Dark Gray (10YR 4/1) to Dark Grayish Brown (10YR 4/2).			33 43	3.0 4.5+		
87	658				SS-44 (86-88') Rec. = 24"	16 20	3.5		N=50
88	657		Same, trace laminations.			30 38	4.0 4.5+		
89	656		Brown (7.5YR 4/2 to 5/2) SILTY CLAY, trace fine to coarse sand, hard, medium plasticity, moist.	CL	SS-45 (88-90') Rec. = 22"	27 38	4.5+ 4.5+		N=78
90	655		Dark Grayish Brown (2.5Y 4/2) Fine to Medium SILTY SAND and SANDY SILT, trace coarse sand and clay, poorly graded, very dense to hard, low plasticity, wet.	SM/ML		40 40	4.5+ 4.5+		
91	654			ML	SS-46 (90-92') Rec. = 15"	48 42	4.5+		N=100
92	653		Very Dark Grayish Brown (2.5Y 3/2) to Dark Grayish Brown (2.5Y 4/2) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine gravel, hard, low plasticity,			58 35	4.5+ 4.5+		
93	652		moist to wet in sand pockets.	SM	SS-47 (92-94') Rec. = 18"	52 66	4.5+		N=118
94	651		Dark Grayish Brown (2.5Y 4/2) Fine SILTY SAND, poorly graded, extremely dense, saturated.			25 30	3.5		
95	650		Dark Gray (2.5Y 4/1) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, low		SS-48 (94-96') Rec. = 24"	33 38	4.5+		N=63
96	649		plasticity, moist.	ML		17 42	4.5+		
97	648		Olive (5Y 4/3) CLAYEY SILT, trace fine to coarse sand and fine gravel, hard, low plasticity, moist.		SS-49 (96-98') Rec. = 18"	70	4.5+		N=112
98	647		Very Dark Grayish Brown (2.5Y 3/2) SILTY CLAY, trace fine to coarse sand and	ML		55	4.5+ 4.5+		
99	646		gravel, hard, medium plasticity moist.	CL	SS-50 (98-100') Rec. = 12"	82	4.5+		N=137
100			(Continued on next page)	ML/SM					

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DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/17/2018 ENDED: 12/19/2018

WATER LEVEL (FT.)

REMARKS
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APTIM

SURFACE ELEVATION: 745.01
NORTHING: 13632.77
EASTING: 13043.36

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-06-18

Depth in Feet	Surf. Elev. 745.01	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
100	645		(Continued from previous page @99.5') Olive (5Y 4/3) to Dark Grayish Brown (2.5Y 4/2) SILT and Fine SILTY SAND, bedded, trace clay, trace medium sand, poorly graded, very stiff, extremely dense, low plasticity, saturated.	ML/SM		70	3.0		
101	644				SS-51 (100-102') Rec. = 12"	86	--		N=156
102	643			SP		41	--		
103	642		Dark Grayish Brown (2.5Y 4/2) Fine SAND, little medium sand, trace coarse sand and fine gravel, trace silt, poorly graded, extremely dense, saturated.		SS-52 (102-104') Rec. = 21"	40 42 43	--		N=82
104	641					24	--		
105	640		Dark Grayish Brown (10YR 4/2) Fine to Medium SAND, trace coarse sand and fine gravel, trace silt, poorly graded, very dense, saturated.	SP	SS-53 (104-106') Rec. = 21"	27 28 29	--		N=55
106	639					35	--		
107	638		Dark Grayish Brown (2.5Y 4/2) Fine SAND, little medium sand, trace coarse sand and fine gravel, trace silt, poorly graded, very dense to extremely dense, saturated.	SP	SS-54 (106-108') Rec. = 22"	36 45 37	--		N=81
108	637					27	--		
109	636				SS-55 (108-110') Rec. = 6"	33 43	--		N=76 (Pushing rock-low recovery)
110	635		@110-110.1'; Dark Red (10R 3/6) quartzite gravel.	CL		50/3"			
111	634		Dark Gray (10YR 4/1) with Dark Reddish Gray (5YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.		SS-56 (110-112') Rec. = 20"	52 31 40	4.5+ 4.5+		N=71
112	633					56			
113	632		@112.5'; trace Greenish Gray (GLEY 1 5/1 10GY) shale gravel.		SS-57 (112-1114') Rec. = 14"	33 43 50/2"	4.5+ 4.5+		N=93+ (Pushing rock)
114	631					39	4.5+		
115	630				SS-58 (114-116') Rec. = 18"	59 70	4.5+		N=129
116	629					39	4.5+		
117	628		@116.5' and @117.8'; trace Weak Red (10YR 4/3) coarse quartzite gravel.		SS-59 (116-118') Rec. = 22"	56 68	4.5+		N=124
118	627		Dark Grayish Brown (10YR 4/2) to Grayish Brown (10YR 5/2) SANDY SILT and SILTY CLAY, trace laminations, very stiff to hard, low to medium plasticity, saturated.	ML/CL		98	4.5+		
119	626			SP	SS-60 (118-120') Rec. = 15"	68 50/3"	2.5		N=118+
120			Fine SAND (Continued on next page)						

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DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/17/2018 ENDED: 12/19/2018

WATER LEVEL (FT.)

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APTIM

SURFACE ELEVATION: 745.01
NORTHING: 13632.77
EASTING: 13043.36

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-06-18

Depth in Feet	Surf. Elev. 745.01	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
120	625		(Continued from previous page @119') Dark Grayish Brown (2.5Y 4/2) Fine SAND, little medium sand, trace silt, poorly graded, extremely dense, saturated.	SP	SS-61 (120-122') Rec. = 23"	55 55	--		N=100
121	624					45 45	--		
122	623				SS-62 (122-124') Rec. = 20"	35 38	--		N=82
123	622		Same, trace coarse sand and fine gravel.			44 46	--		
124	621		Dark Grayish Brown (10YR 4/2) Fine to Medium SAND, trace coarse sand and fine gravel, trace silt, poorly graded, very dense, saturated.	SP	SS-63 (124-126') Rec. = 18"	28 17	--		N=57
125	620			SP		40 46	--		
126	619		Dark Grayish Brown (10YR 4/2) to Grayish Brown (10YR 5/2) Fine SAND, little medium sand, trace silt, poorly graded, very dense, saturated.	SP	SS-64 (126-128') Rec. = 12"	68 90	--		N=158
127	618						4.5+		
128	617		Dark Grayish Brown (10YR 4/2) to Grayish Brown (10YR 5/2) Fine SAND, trace silt, poorly graded, extremely dense, saturated.	ML	SS-65 (128-130') Rec. = 6"	120	1.5 --		N=120+
129	616		Dark Gray (2.5Y 4/1) CLAYEY SILT, trace fine to coarse sand and gravel, hard, low plasticity, moist.	ML					
130	615		Dark Gray (2.5Y 4/1) SILT, trace clay, trace fine sand, stiff, low plasticity, saturated.	SM	SS-66 (130-132') Rec. = 11"	68 75/5"	-- --		N=143+
131	614		Gray (2.5Y 5/1) Fine SILTY SAND, poorly graded, extremely dense, saturated.						
132	613		Dark Gray (2.5Y 4/1) SANDY SILT, trace fine to coarse sand and gravel, trace clay, hard, low plasticity, very moist.	ML	SS-67 (132-132.5') Rec. = 6"	100/6"	4.5+		N=100+
133	612		End of Boring @132.5'						
134	611								
135	610								
136	609								
137	608								
138	607								
139	606								
140									

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DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/17/2018 ENDED: 12/19/2018

WATER LEVEL (FT.)

REMARKS
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APTIM

SURFACE ELEVATION: 732.59
NORTHING: 14162.75
EASTING: 11601.29

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-07-18

Depth in Feet	Surf. Elev. 732.59	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0	732		Black (10YR 2/1) Organic SILTY CLAY, trace fine to medium sand, very stiff, medium plasticity, moist.	OL	SS-1 (0-2') Rec. = 18"	3 6 7 8	3.5 2.25		N=13
1	731		Greenish Gray (GLEY 1 6/1 10Y) with Yellowish Brown (10YR 5/8) and trace Black (10YR 2/1) Mottled SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL					
2	730				SS-2 (2-4') Rec. = 19"	3 5 5 9	2.5 2.0 4.5+		N=10
3	729		Dark Yellowish Brown (10YR 4/6) with Greenish Gray (GLEY 1 6/1 10Y) and trace Black (10YR 2/1) Mottled SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL					
4	728				SS-3 (4-6') Rec. = 20"	5 7 8 11	4.0 3.75		N=15
5	727								
6	726		Brown (10YR 4/3) with little Dark Yellowish Brown (10YR 4/6) and trace Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and fine gravel, hard, medium plasticity, moist.	CL					
7	725				SS-4 (6-8') Rec. = 22"	8 9 16 21	4.5+ 4.5+		N=25
8	724								
9	723		Dark Gray (7.5YR 4/1) with trace Strong Brown (7.5YR 4/6) SILTY CLAY, trace fine to coarse sand and gravel, hard medium plasticity, moist.	CL	SS-5 (8-10') Rec. = 24"	6 15 20 19	4.5+ 4.5+		N=35
10	722		Dark Gray (7.5YR 4/1) SILTY CLAY, trace fine to coarse and and gravel, stiff to very stiff, medium plasticity, moist.						
11	721				SS-6 (10-12') Rec. = 23"	5 9 13 20	3.5 3.5		N=22
12	720								
13	719				SS-7 (12-14') Rec. = 24"	5 9 10 15	3.25 2.5		N=19
14	718								
15	717		@15' and 15.4'; fine to coarse sand lens/pocket, wet.	CL	SS-8 (14-16') Rec. = 24"	5 8 10 14	3.0 2.75		N=18
16	716								
17	715				SS-9 (16-18') Rec. = 22"	5 8 10 12	2.25 1.75		N=18
18	714								
19	713				SS-10 (18-20') Rec. = 24"	4 6 9 11	2.5 1.5		N=15
20			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
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DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/7/2018 ENDED: 12/11/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid FLight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-07-18LSD(0-116') into boring upon completion of drilling. Installed Piezometer P-07-18USD (0-88') into adjacent(within 10') blind-drilled boring.

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APTIM

SURFACE ELEVATION: 732.59
NORTHING: 14162.75
EASTING: 11601.29

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-07-18

Depth in Feet	Surf. Elev. 732.59	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
20	712		(Continued from previous page) SILTY CLAY.			2			
					SS-11 (20-22') Rec. = 24"	10	2.25		N=21
21	711					11	2.5		
						15			
22	710			CL		7	2.5		
					SS-12 (22-24') Rec. = 24"	9			N=22
23	709					13	2.5		
						16			
24	708					4	2.5		
					SS-13 (24-26') Rec. = 23"	11			
25	707					32	3.5		N=43
26	706		Dark Gray (2.5Y 4/1) with Gray (2.5Y 5/1) SANDY SILT, little clay, very stiff, low plasticity, wet.	ML		29	2.25		
				CL		16			
					SS-14 (26-28') Rec. = 24"	18	4.5+		
27	705		Dark Gray (7.5YR 4/1) SILTY CLAY, trace fine to coarse sand and fine gravel, hard, medium plasticity moist.	ML		31	2.0		N=49
						30	4.5+		
28	704		Dark Gray (2.5Y 4/1) with Gray (2.5Y 5/1) SANDY SILT, little clay, very stiff, low plasticity, wet.	CL		10	3.0		
					SS-15 (28-30') Rec. = 24"	13			
29	703			CL		17	1.0		N=30
			Dark Gray (7.5YR 4/1) SILTY CLAY trace fine to coarse sand and fine gravel, very stiff to hard, medium plasticity, moist.			17	2.5		
30	702					7	2.25		
					SS-16 (30-32') Rec. = 24"	12			
31	701		Dark Gray (2.5Y 4/1) with Gray (2.5Y 5/1) SANDY SILTY CLAY, stiff, low to medium plasticity, saturated.			13	3.0		N=25
						15			
32	700		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, stiff to very stiff, medium plasticity, moist.			7	2.5		
					SS-17 (32-34') Rec. = 24"	11			
33	699					15	2.75		N=26
						17			
34	698					9	2.5		
				CL	SS-18 (34-36') Rec. = 16"	8			
35	697					18			N=26 (Pushing rock)
						23			
36	696					7	3.0		
					SS-19 (36-38') Rec. = 24"	12			
37	695					19	2.5		N=31
						22			
38	694					6	2.0		
					SS-20 (38-40') Rec. = 24"	10			
39	693					15	1.75		N=25
40			(Continued on next page)			17	3.0		

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DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/7/2018 ENDED: 12/11/2018

WATER LEVEL (FT.)

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APTIM

SURFACE ELEVATION: 732.59
NORTHING: 14162.75
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PROJECT: Zion Landfill Site 2 North
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PROJECT NO.: 003211
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BORING NO. B-07-18

Depth in Feet	Surf. Elev. 732.59	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40			(Continued from previous page)						
	692		SILTY CLAY.			5	2.5		
41					SS-21 (40-42') Rec. = 24"	11			N=26
	691					15	2.5		
42						18			
	690					6	2.75		
43					SS-22 (42-44') Rec. = 24"	12	1.5		N=25
	689					13			
44						18	2.5		
	688					9	3.0		
45					SS-23 (44-46') Rec. = 24"	12	1.5		N=26
	687					14			
46						22	2.5		
	686			CL		4	2.5		
47					SS-24 (46-48') Rec. = 24"	13			N=28
	685					15	2.5		
48						22			
	684					11	2.0		
49					SS-25 (48-50') Rec. = 20"	14			N=37 (Pushing rock)
	683					23	2.0		
50						23			
	682					12	3.75		
51					SS-26 (50-52') Rec. = 24"	14	1.75		N=34
	681		Same, hard.			20			
52						32	4.5+		
	680		Dark Gray (10YR 4/1) CLAYEY SILT, little			33	4.5+		
53			fine sand, hard, low plasticity, wet.		SS-27 (52-54') Rec. = 21"	37	4.5+		N=83
	679			ML		46			
54						47	4.5+		
	678		Dark Grayish Brown (10YR 4/2) to Dark			20			
55			Gray (10YR 4/1) SILTY CLAY, trace fine to		SS-28 (54-56') Rec. = 24"	26	4.5+		N=54
	677		coarse sand and gravel, very stiff to hard,			28	4.5+		
56			medium plasticity, moist.			37			
	676					--	--		@56-58'(Pushed Shelby Tube); ST-29/B-07-18(56-58');Rec.=15"(CL), 12/10/18(0815).
57				CL	ST-29 (56-58') Rec. = 15"				
	675					--	--		
58						18			
	674					20	3.25		
59					SS-30 (58-60') Rec. = 24"	28			N=48
	673		(Continued on next page)			32	3.0		
60									

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DRILLING STARTED: 12/7/2018 ENDED: 12/11/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid FLight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-07-18LSD(0-116') into boring upon completion of drilling. Installed Piezometer P-07-18USD (0-88') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 732.59
NORTHING: 14162.75
EASTING: 11601.29

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-07-18

Depth in Feet	Surf. Elev. 732.59	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
60			(Continued from previous page)						
	672		SILTY CLAY.			11	--		
61					SS-31 (60-62') Rec. = 1"	20			N=48
	671					28	--		(Pushing rock-
62						32			low recovery)
	670					11	3.5		
63					SS-32 (62-64') Rec. = 22"	25			N=60
	669					35	2.5		
64						42			
	668					14	2.5		
65					SS-33 (64-66') Rec. = 24"	23			N=48
	667					25	2.0		
66						35			
	666			CL		--	--		@66-68'(Pushed Shelby Tube);
67					ST-34 (66-68') Rec. = 24"				ST-34/B-07-18(66-68');Rec.=24"(CL),
	665					--	--		12/10/18(0900)
68						19			
	664					29	2.25		
69					SS-35 (68-70') Rec. = 24"	35			N=64
	663					46	3.25		
70						18			
	662					30	4.0		
71					SS-36 (70-72') Rec. = 24"	46			N=76
	661					51	3.5		
72									
	660					16	4.5+		
73			Dark Gray (5Y 4/1) to Olive Gray (5Y 4/2) CLAYEY SILT, little fine sand, trace fine gravel, stiff to hard, low plasticity, moist to very moist.		SS-37 (72-74') Rec. = 12"				N=110
	659					94	4.5+		
74				ML		9	1.75		
	658					10			
75					SS-38 (74-76') Rec. = 24"	10	4.5+		N=20
	657		@75.8-76' fine silty sand seam, wet.			46			
76			Dark Gray (2.5Y 4/1) SANDY SILT, trace fine gravel, trace clay, hard, low plasticity, wet.	ML		58	4.5+		
	656				SS-39 (76-78') Rec. = 11'				N=138
77						80			
	655		Dark Gray (2.5Y 4/1) SANDY SILT and Fine SILTY SAND, trace fine gravel and clay, hard, extremely dense, poorly graded, low plasticity, wet.	ML/SM		53	4.5+		
78					SS-40 (78-80') Rec. = 10"				N=117
	654					57			
79						60			
	653		(Continued on next page)	ML					
80									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/7/2018 ENDED: 12/11/2018

WATER LEVEL (FT.)

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APTIM

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PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-07-18

Depth in Feet	Surf. Elev. 732.59	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80			(Continued from previous page @79.42') Dark Gray (2.5Y 4/1) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine gravel, hard, low plasticity, moist.	ML	SS-41 (80-82') Rec. = 12"	33 35 70	4.5+		N=105
81	652								
82	651		Dark Gray (10YR 4/1) Fine to Medium SILTY SAND, trace coarse sand and fine gravel, trace clay, poorly graded, extremely dense, saturated.	SM	SS-42 (82-84') Rec. = 3"	20 37 55 50/5"			N=92
83	650								
84	649								
85	648		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL	SS-43 (84-86') Rec. = 12"	22 37 75/5"	4.5+		N=112+
86	647		Dark Grayish Brown (10YR 4/2) SANDY SILT, little clay, trace fine gravel, hard, low plasticity, very moist.	ML	SS-44 (86-88') Rec. = 15"	26 39 50/3"	4.5+ 4.5+		N=89+
87	646		Dark Grayish Brown (10YR 4/2) Fine to Medium SILTY SAND, trace coarse sand and fine gravel, poorly graded, extremely dense, saturated.	SM ML					
88	645		Dark Gray (10YR 4/1) SANDY SILT, little clay, trace fine gravel, hard, low plasticity, moist.	SM/ML	SS-45 (88-90') Rec. = 20"	48 48 46 45	2.5 2.0		N=94
89	644								
90	643		Dark Gray (10RY 4/1) with Gray (10YR 5/1) and Dark Grayish Brown (10YR 4/2) Fine SILTY SAND with SANDY SILT, trace clay and fine gravel, poorly graded, extremely dense to dense, very stiff to stiff, low plasticity, very moist to saturated.		SS-46 (90-92') Rec. = 20"	32 26 22 29	1.5		N=48
91	642								
92	641		Dark Gray (2.5Y 4/1) with Gray (2.5Y 5/1) SANDY SILT, trace clay, very stiff to hard, low plasticity, saturated.	ML	SS-47 (92-94') Rec. = 16"	37 60 60	4.0 3.5		N=120
93	640								
94	639		Dark Gray (2.5Y 4/1) with Gray (2.5Y 5/1) CLAYEY SILT, trace fine to coarse sand and gravel, very stiff to hard, low plasticity moist.	ML	SS-48 (94-96') Rec. = 24"	22 16 23 33	2.75 4.5+		N=39
95	638								
96	637								
97	636		Dark Gray (2.5Y 4/1) SILTY CLAY, trace fine to coarse and and gravel, hard, medium plasticity, moist.	CL	SS-49 (96-98') Rec. = 24"	33 31 40 47	4.5+ 4.5+		N=71
98	635								
99	634		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL	SS-50 (98-100') Rec. = 23"	24 37 60 50/5"	4.5+ 4.5+		N=97
100	633		(Continued on next page)						

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DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/7/2018 ENDED: 12/11/2018

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APTIM

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NORTHING: 14162.75
EASTING: 11601.29

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-07-18

Depth in Feet	Surf. Elev. 732.59	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
100			(Continued form previous page) SILTY CLAY.	CL		17	4.5+		
101	632		@101'; coarse limestone gravel, pyrite nodule.		SS-51 (100-102') Rec. = 18"	37	4.5+		N=91
102	631		Dark Gray (5YR 4/1) with trace Dark Reddish Gray (5YR 4/2) SILTY CLAY, trace fine to coarse gravel, hard, medium plasticity, moist.	CL		54			
103	630				SS-52 (102-104') Rec. = 24"	26	4.5+		N=83
104	629		Dark Reddish Gray (5YR 4/2) with trace Dark Gray (5YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL		35			
105	628				SS-53 (104-106') Rec. = 17"	48	4.5+		N=110+
106	627		Dark Gray (7.5YR 4/1) SILT, trace clay and fine sand, hard, low plasticity, saturated.	ML		53			
107	626		Dark Reddish Gray (5YR 4/2) with Dark Gray (5YR 4/1) SlITY CLAY, trace fine to medium sand, hard, medium plasticity, moist.	CL		17	4.5+		
108	625		Dark Gray (7.5YR 4/1) with Gray (7.5YR 5/1) CLAYEY SILT, trace fine sand, very stiff, low plasticity, very moist to wet.	ML	SS-54 (106-108') Rec. = 24"	60	4.5+		N=55
109	624		Dark Gray (7.5YR 4/1) SILT, trace fine sand and clay, stiff, low plasticity, saturated.	ML		50/5"			
110	623		Dark Gray (7.5YR 4/1) with trace Gray (7.5YR 5/1) SILTY CLAY, trace fine sand, laminated, very stiff, medium plasticity, moist.	CL		17	4.5+		
111	622			CL/ML		20	2.5		
112	621		Dark Gray (2.5Y 4/1) and Gray (2.5Y 5/1) SILTY CLAY and CLAYEY SILT, trace fine to coarse sand and fine gravel, stiff, low to medium plasticity, very moist to saturated.	SM	SS-55 (108-110') Rec. = 24"	35	1.5		N=46
113	620			SP/GP		38	1.5		
114	619		Dark Grayish Brown (2.5Y 4/2) Fine SILTY SAND, trace clay, poorly graded, dense, saturated.	CL/ML		19			
115	618		Very Dark Gray (2.5Y 3/1) to Gray (2.5Y 4/1) Fine to Coarse SAND and Fine GRAVEL, trace silt and clay, poorly graded, dense, saturated.	CL	SS-56 (110-112') Rec. = 24"	20	1.5		N=45
116	617					26			
117	616		Dark Gray (2.5Y 4/1) and Gray (2.5Y 5/1) SILTY CLAY and CLAYEY SILT, trace fine to coarse sand and gravel, very stiff to hard, low to medium plasticity, moist to saturated.			27	3.0		
118	615					11	2.5		
119	614		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.		SS-57 (112-114') Rec. = 23"	15	1.5		N=58
120	613		End of Boring @ 116'			30	--		
						45			
						36	--		
						26			
						32	4.5+		
						35	2.0		
							4.5+		
					SS-58 (114-116') Rec. = 24"	19			
						35	4.5+		N=95
						60			

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DRILLING STARTED: 12/7/2018 ENDED: 12/11/2018

WATER LEVEL (FT.)

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APTIM

SURFACE ELEVATION: 742.94
NORTHING: 14134.91
EASTING: 12383.73

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-08-18

Depth in Feet	Surf. Elev. 742.94	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0			Dark Grayish Brown (10YR 4/3) Organic SILTY CLAY, trace fine to medium sand, stiff to very stiff, medium plasticity, moist.	OL		2	1.0		
1	742				SS-1 (0-2') Rec. = 24"	5	2.0		N=11
2	741		Yellowish Brown (10YR 5/4) to Gray (10YR 6/1) and Greenish Gray (GLEY 6/1 10Y) Mottled SILTY CLAY, trace fine to medium sand, trace roots, very stiff to hard, medium plasticity, moist.			6	3.5		
3	740				SS-2 (2-4') Rec. = 24"	11			
4	739			CL		5	4.5+		
5	738				SS-3 (4-6') Rec. = 24"	9			N=21
6	737					12	3.25		
7	736				SS-4 (6-8') Rec. = 24"	14			
8	735					6	4.0		
9	734		Grayish Brown (10YR 5/2) with Yellowish Brown (10YR 5/4) and Gray (10YR 6/1) SILTY CLAY, trace fine to medium sand, very stiff, medium plasticity, moist.	CL	SS-5 (8-10') Rec. = 24"	10			N=16
10	733		Same, little fine to coarse sand and fine gravel lenses/pockets..			6	3.0		
11	732				SS-6 (10-12') Rec. = 24"	13			
12	731		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL		3	4.5+		
13	730				SS-7 (12-14') Rec. = 24"	10			N=22
14	729					12	3.0		
15	728		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.		SS-8 (14-16') Rec. = 24"	12			
16	727			CL		5	3.5		
17	726				SS-9 (16-18') Rec. = 24"	7			N=18
18	725					11	3.0		
19	724		Dark Gray (10YR 4/1) to Gray (10YR 5/1) SILTY CLAY, trace fine to coarse sand, stiff to very stiff, medium plasticity, moist.	CL	SS-10 (18-20') Rec. = 24"	13			
20	723		(Continued on next page)			8	2.5		
						14			
						14	3.25		N=28
						19			
						7	3.0		
						10			
						15	3.75		N=25
						20			
						7	4.5+		
						16			
						28	4.5+		N=44
						21			
						7	3.75		
						10			
						19	3.0		N=29
						22			
						6	2.0		
						9	1.75		N=21
						12			
						15	2.25		

DRILLING CONTRACTOR: Strata Earth Services, LLC
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DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/12/2018 ENDED: 11/19/2018

WATER LEVEL (FT.)

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Installed Piezometers P-08-18SD(0-122') and P-08-IT
(0-58') into adjacent(within 10') blind-drilled borings.

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BORING NO. B-08-18

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20			(Continued from previous page) SILTY CLAY.			3			
21	722			CL	SS-11 (20-22') Rec. = 24"	7 10 13	1.5 1.5		N=17
22	721		Dark Gray (10YR 4/1) SILTY CLAY, little fine to coarse sand and gravel, very stiff, medium plasticity, moist.			4			
23	720				SS-12 (22-24') Rec. = 24"	14 15 20	2.5 2.5		N=29
24	719					6			
25	718		Same, trace fine to coarse sand and gravel.	CL	SS-13 (24-26') Rec. = 17"	9 14 18	2.0 2.5		N=23
26	717					14			
27	716				SS-14 (26-28') Rec. = 24"	16 22	3.75 2.0		N=38
28	715		Gray (2.5Y 5/1) CLAYEY SILT, trace fine sand, very stiff, low plasticity, wet.	ML		23	2.0		
29	714		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, stiff to hard, medium plasticity, moist.		SS-15 (28-30') Rec. = 24"	9 13 20 21	2.5 2.5		N=33
30	713					9			
31	712				SS-16 (30-32') Rec. = 24"	10 18 23	2.5 4.5+		N=28
32	711					5			
33	710				SS-17 (32-34') Rec. = 24"	10 14 18	3.25 3.5		N=24
34	709			CL		4			
35	708				SS-18 (34-36') Rec. = 24"	8 11 14	1.5 2.75		N=19
36	707					8			
37	706				SS-19 (36-38') Rec. = 24"	17 18 27	4.0 3.5		N=35
38	705					10			
39	704				SS-20 (38-40') Rec. = 24"	18 28 30	4.5+ 3.75		N=46
40	703		(Continued on next page)						

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2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/12/2018 ENDED: 11/19/2018

WATER LEVEL (FT.)

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APTIM

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PROJECT: Zion Landfill Site 2 North
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PROJECT NO.: 003211
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BORING NO. B-08-18

Depth in Feet	Surf. Elev. 742.94	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40			(Continued from previous page) SILTY CLAY.			10			
41	702				SS-21 (40-42') Rec. = 24"	15	3.0		N=40
						25			
42	701					27	2.75		
						9			
43	700				SS-22 (42-44') Rec. = 24"	20	3.75		N=41
						21			
44	699					30	3.75		
						12			
45	698				SS-23 (44-46') Rec. = 24"	19	3.75		
						28	4.5+		N=47
46	697			CL		31	3.5		
						10			
47	696				SS-24 (46-48') Rec. = 24"	21	4.5+		N=53
						32			
48	695					39	3.5		
						11			
49	694				SS-25 (48-50') Rec. = 24"	19	4.0		N=50
						31			
50	693					38	3.5		
						29			
51	692				SS-26 (50-52') Rec. = 17"	30	3.5		N=69 (Pushing gravel)
						39			
52	691					50			
			Very Dark Gray (10YR 3/1) Fine to Medium SAND, trace coarse sand, poorly graded, dense, wet.	SP		21	2.25		
53	690			SM	SS-27 (52-54') Rec. = 24"	19			N=39
			Gray (10YR 5/1) to Very Dark Gray (10YR 3/1) Fine to Medium SILTY SAND, poorly graded, dense, wet.			20			
54	689					13	2.5		
						14			
55	688		Dark Gray (2.5Y 4/1) SILTY CLAY, trace fine sand, trace laminations, very stiff to hard, medium plasticity, moist.	CL	SS-28 (54-56') Rec. = 24"	16	4.0		N=32
						16			
56	687		@54-54.2'; Gray (2.5Y 5/1) SILT, wet.			24	3.5		
						10			N=42 @56-58';Adjacent (within 10') blind-drilled boring (Pushed Shelby Tube); ST-2/B-08-18(56-58');Rec.=10"(CL), 11/21/18(0800).
57	686				SS-29 (56-58') Rec. = 24"	24	2.75		
			Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, stiff to very stiff, medium plasticity, moist.			18			
58	685					22	3.75		
						9			
59	684			CL	SS-30 (58-60') Rec. = 24"	15	3.5		
						20			
60	683		(Continued on next page)			30	2.5		N=35

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BORING NO. B-08-18

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60			(Continued from previous page) SILTY CLAY.			10	2.5		
61	682				SS-31 (60-62') Rec. = 13"	24 40 50	2.0		N=64 (Pushing rock)
62	681					11	3.0		
63	680			CL	SS-32 (62-64') Rec. = 24"	18 27 33	2.5		N=45
64	679					6	2.75		
65	678				SS-33 (64-66') Rec. = 24"	13 17 25	1.5		N=30
66	677					7	1.25		
67	676				SS-34 (66-68') Rec. = 24"	7 12 16	1.5		N=19
68	675		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, stiff to very stiff, medium plasticity, moist.			3	1.25		
69	674				SS-35 (68-70') Rec. = 24"	6 8 14	1.25		N=14
70	673			CL		1	1.75		
71	672				SS-36 (70-72') Rec. = 23"	11 15 25	2.25		N=26
72	671					15	1.5		
73	670		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to medium sand, trace laminations, stiff to very stiff, medium placticity, moist.		SS-37 (72-74') Rec. = 14"	22 29 37	1.75		N=51 (Pushing rock)
74	669					10	1.5		
75	668		Same, trace fine to coarse sand and fine gravel.	CL	SS-38 (74-76') Rec. = 24"	16 22 29	3.5		N=38
76	667		Same, trace fine to coarse sand, trace laminations.			15	1.5		
77	666				SS-39 (76-78') Rec. = 6"	25 27 29			N=52 (Pushing rock)
78	665		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.			12	2.75		
79	664			CL	SS-40 (78-80') Rec. = 23"	17 26 38	4.5+		N=43
80	663								

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/12/2018 ENDED: 11/19/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube; Installed Piezometer P-08-18D(0-206') into boring upon completion of drilling. Installed Piezometers P-08-18SD(0-122') and P-08-IT (0-58') into adjacent(within 10') blind-drilled borings.

APTIM

SURFACE ELEVATION: 742.94
NORTHING: 14134.91
EASTING: 12383.73

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-08-18

Depth in Feet	Surf. Elev. 742.94	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80			(Continued from previous page @ 79.95') Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-41 (80-82') Rec. = 24"	20 20 33 46	4.5+ 4.5+		N=53 @80-82';Adjacent (within 10') blind-drilled boring (Pushed Shelby Tube); ST-1/B-08-18(80-82');Rec.=4"(CL), 11/20/18(1020)
81	662								
82	661				SS-42 (82-84') Rec. = 18"	16 28 57	3.25 4.5+		N=85
83	660								
84	659				SS-43 (84-86') Rec. = 22"	15 24 40 42	4.5+ 3.5		N=64
85	658								
86	657				SS-44 (86-88') Rec. = 8"	52 50/1"	3.5		N=102+ (Pushing rock)
87	656								
88	655		Dark Gray (10YR 4/1) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, low to medium plasticity, moist.	ML	SS-45 (88-90') Rec. = 24"	21 25 45 42	4.5+ 4.5+		N=70
89	654								
90	653				SS-46 (90-92') Rec. = 22"	19 23 37 57	4.5+ 4.5+		N=60
91	652								
92	651				SS-47 (92-94') Rec. = 15"	17 27 50 50/3"	4.5+ 4.5+		N=77
93	650								
94	649				SS-48 (94-96') Rec. = 14"	30 53 60/5"	4.5+ 4.5+		N=113+
95	648								
96	647				SS-49 (96-98') Rec. = 19"	39 40 65	4.5+ 4.5+		N=105
97	646								
98	645				SS-50 (98-100') Rec. = 18"	28 42 60	4.5+ 4.5+		N=102
99	644								
100	643		(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/12/2018 ENDED: 11/19/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube; Installed Piezometer P-08-18D(0-206') into boring upon completion of drilling.
Installed Piezometers P-08-18SD(0-122') and P-08-IT (0-58') into adjacent(within 10') blind-drilled borings.

APTIM

SURFACE ELEVATION: 742.94
NORTHING: 14134.91
EASTING: 12383.73

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-08-18

Depth in Feet	Surf. Elev. 742.94	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
100			(Continued from previous page) CLAYEY SILT.	ML		35	4.5+		
101	642				SS-51 (100-102') Rec. = 24"	42			N=92
			Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL		50	4.5+		
102	641					72			
			Dark Gray (10YR 4/1) and Gray (10YR 5/1) SILTY CLAY and CLAYEY SILT, trace fine sand, very stiff to hard, low to medium plasticity, moist to wet.	CL/ML	SS-52 (102-104') Rec. = 24"	48	4.5+		
103	640					44	3.5		N=94
						50			
104	639					50/5"	2.5		
					SS-53 (104-106') Rec. = 18"	24	2.75		
105	638					35	3.0		N=93
			Very Dark Gray (10YR 3/1) to Dark Gray (10YR 4/1) Fine to Coarse SAND and GRAVEL, trace silt, poorly graded, very dense, saturated.	SP/GP		58			
106	637					48			
					SS-54 (106-108') Rec. = 24"	18	4.5+		N=52
107	636		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.			34			
						51	4.5+		
108	635					17	4.5+		
					SS-55 (108-110') Rec. = 23"	31			N=88
109	634					57	4.5+		
						50/5"			
110	633			CL		18	4.0		
					SS-56 (110-112') Rec. = 18"	42			N=95
111	632					53	4.5+		
						23	4.5+		
112	631				SS-57 (112-1114') Rec. = 23"	40			N=89
						49	4.5+		
113	630					50/5"			
						26	4.5+		
114	629				SS-58 (114-116') Rec. = 18"	44	4.5+		N=110
			Dark Reddish Brown (5YR 3/2) with trace Dark Gray (10YR 4/1) SILTY CLAY, trace fine to medium sand, hard, medium plasticity, moist.	CL		66			
115	628						4.5+		
					SS-59 (116-118') Rec. = 12"	39	2.0		N=103 (Split Spoon bouncing on rock)
116	627		Brown (7.5YR 4/2) SILTY CLAY and Gray (10YR 5/1) SANDY SILT, interbedded, laminated, very stiff to hard, low to medium plasticity, moist to wet.	CL/ML		64			
117	626								
						50	4.5+		
118	625		Gray (2.5Y 5/1) SANDY SILT and Fine SILTY SAND, trace clay, poorly graded, extremely dense, saturated.	ML/SM	SS-60 (118-120') Rec. = 12"				N=117
				SP		67			
119	624								
120	623		Fine SAND (Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/12/2018 ENDED: 11/19/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube; Installed Piezometer
P-08-18D(0-206') into boring upon completion of drilling.
Installed Piezometers P-08-18SD(0-122') and P-08-IT
(0-58') into adjacent(within 10') blind-drilled borings.

APTIM

SURFACE ELEVATION: 742.94
NORTHING: 14134.91
EASTING: 12383.73

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-08-18

Depth in Feet	Surf. Elev. 742.94	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
120			(Continued from previous page) Gray (2.5Y 5/1) Fine SAND, trace medium sand, trace silt, poorly graded, extremely dense, saturated.	SP	SS-61 (120-122') Rec. = 18"	47 49 63			N=112
121	622								
122	621		Dark Gray (2.5Y 4/1) SANDY CLAY, some silt, trace fine to coarse gravel, very stiff to hard, medium plasticity, moist.	CL	SS-62 (122-124') Rec. = 24"	37 38 47 50	3.75 3.5		N=85
123	620								
124	619				SS-63 (124-126') Rec. = 24"	26 24 27 50	4.5+ 2.5 4.5+		N=51
125	618		@125-125.5'; pockets of wet silt.						
126	617								
127	616		@127-127.2' fine to medium sand seam, saturated.		SS-64 (126-128') Rec. = 24"	44 43 41 45	4.5+ 4.5+		N=84
128	615		Dark Gray (2.5Y 4/1) SILTY CLAY, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, medium plasticity, moist.	CL					
129	614				SS-65 (128-130') Rec. = 18"	29 40 66	4.5+ 4.5+		N=114
130	613		Dark Gray (2.5Y 4/1) with trace Gray (2.5Y 5/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL					
131	612				SS-66 (130-132') Rec. = 18"	35 48 74	4.5+ 4.5+		N=122
132	611								
133	610		@133.4-133.6' fine silty sand seam, saturated.		SS-67 (132-134') Rec. = 18"	33 48 70	4.5+ 4.5+ 4.5+		N=118
134	609		Dark Gray (7.5YR 4/1) with trace Gray (10YR 6/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.						
135	608				SS-68 (134-136') Rec. = 18"	32 41 67	4.5+ 4.5+		N=108
136	607			CL					
137	606				SS-69 (136-138') Rec. = 18"	36 46 55	4.5+ 4.5+		N=101
138	605								
139	604				SS-70 (138-140') Rec. = 18"	20 31 39 40	4.5+ 3.25 1.5 4.5+		N=70
140	603		Gray (7.5YR 5/1) CLAYEY SILT, very dense, saturated.	ML CL					

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/12/2018 ENDED: 11/19/2018

WATER LEVEL (FT.)

REMARKS
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APTIM

SURFACE ELEVATION: 742.94
NORTHING: 14134.91
EASTING: 12383.73

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-08-18

Depth in Feet	Surf. Elev. 742.94	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
140			(Continued from previous page @139.6') Dark Gray (7.5YR 4/1) SILTY CLAY, little lenses/pockets of Gray (7.5YR 5/1) wet silt, trace fine to medium sand, very stiff to hard, medium plasticity, moist.						
141	602				SS-71 (140-142') Rec. = 24"	14 34 40 48	3.75 2.0 4.25		N=74
142	601								
143	600		Same, with trace Gray (7.5YR 3/1).		SS-72 (142-144') Rec. = 24"	26 30 40 40	3.5 3.75		N=70
144	599								
145	598		Same, trace fine to coarse sand and gravel.		SS-73 (144-146') Rec. = 24"	27 29 36 53	3.75 3.0		N=65
146	597			CL					
147	596				SS-74 (146-148') Rec. = 23"	22 34 48 50/5"	3.0 3.5		N=82
148	595								
149	594				SS-75 (148-150') Rec. = 22"	24 35 42 50/4"	2.75 2.5		N=77
150	593								
151	592				SS-76 (150-152') Rec. = 18"	22 42 56	2.25 3.0		N=98
152	591		Dark Gray (5YR 4/1) and Dark Reddish Gray (5YR 4/2) with trace Gray (7.5YR 5/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL					
153	590				SS-77 (152-154') Rec. = 15"	19 59 50/3"	4.5+ 4.5+		N=109+
154	589		Gray (5Y 5/1) SILT, little clay, trace fine sand, hard, low plasticity, wet.	ML					
155	588				SS-78 (154-156') Rec. = 9"	73 50/3"	4.5+		N=123+
156	587		Dark Gray (2.5Y 4/1) SILTY CLAY, little fine sand, trace medium to coarse sand and gravel, very stiff, medium plasticity, moist.						
157	586			CL	SS-79 (156-158') Rec. = 23"	23 33 43 50/5"	3.5 3.0		N=76
158	585								
159	584				SS-80 (158-160') Rec. = 18"	21 33 79	3.0 2.5		N=112
160	583		(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/12/2018 ENDED: 11/19/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube; Installed Piezometer
P-08-18D(0-206') into boring upon completion of drilling.
Installed Piezometers P-08-18SD(0-122') and P-08-IT
(0-58') into adjacent(within 10') blind-drilled borings.

APTIM

SURFACE ELEVATION: 742.94
NORTHING: 14134.91
EASTING: 12383.73

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-08-18

Depth in Feet	Surf. Elev. 742.94	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
160			(Continued from previous page) SILTY CLAY.						
161	582				SS-81 (160-162') Rec. = 23"	20 42 45 50/5"	3.0 2.5		N=66
162	581			CL					
163	580				SS-82 (162-164') Rec. = 6"	23 45 89	2.5		N=63 (Pushing rock or dense silt)
164	579		Gray (5Y 5/1) CLAYEY SILT, trace fine sand, very stiff, low plasticity, wet.	ML					
165	578		Dark Gray (2.5Y 4/1) SILTY CLAY, little fine sand, trace medium to coarse sand and fine to coarse gravel, stiff to hard, medium plasticity, moist.		SS-83 (164-166') Rec. = 24"	51 44 42 47	2.5 3.5		N=86
166	577								
167	576				SS-84 (166-168') Rec. = 18"	32 37 60	4.5+ 2.0		N=97
168	575								
169	574				SS-85 (168-170') Rec. = 4"	33 57 43 50/5"	2.5		N=100 (Pushing rock)
170	573								
171	572				SS-86 (170-172') Rec. = 23"	29 39 43 50/5"	3.5 2.5		N=82
172	571			CL					
173	570				SS-87 (172-174') Rec. = 24"	19 23 28 43	2.75 2.75		N=51
174	569								
175	568				SS-88 (174-176') Rec. = 10"	29 45 63	2.5		N=108 (Pushing rock)
176	567								
177	566				SS-89 (176-178') Rec. = 24"	19 25 29 54	4.0 3.75		N=54
178	565								
179	564		Same, trace fine to coarse sand and gravel.		SS-90 (178-180') Rec. = 24"	20 29 35 43	3.5 2.5		N=64
180	563		(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/12/2018 ENDED: 11/19/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube; Installed Piezometer
P-08-18D(0-206') into boring upon completion of drilling.
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(0-58') into adjacent(within 10') blind-drilled borings.

APTIM

SURFACE ELEVATION: 742.94
NORTHING: 14134.91
EASTING: 12383.73

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-08-18

Depth in Feet	Surf. Elev. 742.94	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
180			(Continued from previous page) SILTY CLAY, little fine sand, trace medium to coarse sand and fine to coarse gravel.	CL	SS-91 (180-182') Rec. = 24"	18 26 40 44	3.75 2.5		N=66
181	562								
182	561				SS-92 (182-184') Rec. = 24"	28 28 35 50	3.0 3.0		N=63
183	560								
184	559				SS-93 (184-186') Rec. = 8"	27 19 32 37	3.0		N=51 (Pushing rock)
185	558								
186	557				SS-94 (186-188') Rec. = 24"	13 21 40 50	3.0 3.5		N=61
187	556								
188	555				SS-95 (188-190') Rec. = 10"	18 30 53	3.5		N=83 (Pushing rock)
189	554								
190	553				SS-96 (190-192') Rec. = 22"	12 22 31 39	1.75 1.5		N=53
191	552								
192	551				SS-97 (192-194') Rec. = 14"	11 19 30 36	1.5 1.25		N=49
193	550								
194	549				SS-98 (194-196') Rec. = 9"	16 75/3"	3.0 4.5+		N=91+
195	548		@195.3'; Cobble. Dark Gray (2.5Y 4/1) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, low plasticity, moist.	ML					
196	547				SS-99 (196-198') Rec. = 16"	20 37 80/4.5"	4.5+ 4.5+		N=117+
197	546								
198	545								
199	544				SS-100 (198-200') Rec. = 3.5"	100/3.5"	--		N=100+
200	543		(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/12/2018 ENDED: 11/19/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube; Installed Piezometer
P-08-18D(0-206') into boring upon completion of drilling.
Installed Piezometers P-08-18SD(0-122') and P-08-IT
(0-58') into adjacent(within 10') blind-drilled borings.

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APTIM

SURFACE ELEVATION: 742.94
NORTHING: 14134.91
EASTING: 12383.73

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-08-18

Depth in Feet	Surf. Elev. 742.94	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
200			(Continued from previous page)	ML			4.5+		
			Same, CLAYEY SILT.	CL			4.5+		
201	542		Very Dark Gray (2.5Y 3/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, low to medium plasticity, moist.		SS-101 (200-202') Rec.= 6"	115/6"			N=115+
202	541		Dark Gray (2.5Y 4/1) with little Very Dark Gray (2.5Y 3/1) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, low plasticity, moist.	ML			4.5+		N=75+ (Coarse dolomite gravel in bottom of split spoon)
203	540				SS-102 (202-204') Rec.= 5"	75/5"	--		
204	539		Light Gray (GLEY 1 7/N) to Light Greenish Gray (GLEY 1 7/1 5GY to 5G7/1) coarse DOLOMITE Gravel.	DOL			--		N=75+ (@204 - 206'; Roller bit and split spoon bouncing on dolomite)
205	538		@204'; No recovery, dolomite residue in tip of split spoon shoe.		SS-103 (204-206') Rec.= 0"	75/0"			
206	537		@206'; No recovery, dolomite residue in tip of split spoon shoe.				--		
207	536		End of Boring @ 206'						
208	535								
209	534								
210	533								
211	532								
212	531								
213	530								
214	529								
215	528								
216	527								
217	526								
218	525								
219	524								
220	523								

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/12/2018 ENDED: 11/19/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube; Installed Piezometer
P-08-18D(0-206') into boring upon completion of drilling.
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(0-58') into adjacent(within 10') blind-drilled borings.

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APTIM

SURFACE ELEVATION: 738.27
NORTHING: 14125.68
EASTING: 13178.87

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-09-18

Depth in Feet	Surf. Elev. 738.27	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0	738		Black (10YR 2/1) Organic SILTY CLAY, trace fine to coarse sand, stiff to very stiff, medium plasticity, moist.	OL	SS-1 (0-2') Rec. = 14"	3 4 5 6	2.0 1.25		N=9
2	736		Dark Yellowish Brown (10YR 3/1) with Light Greenish Gray (GLEY 1 7/1 10Y) and Brown (10YR 4/3) SILTY CLAY, trace fine to coarse sand and gravel, medium stiff to very stiff, medium plasticity, moist.	CL	SS-2 (2-4') Rec. = 12"	3 2 2 3	2.0		N=4 (Pushing rock)
4	734				SS-3 (4-6') Rec. = 24"	WOH 3 6 10	1.25 0.5 2.5 3.0		WOH=Weight of Hammer N=9
6	732		Dark Yellowish Brown (10YR 4/4) with Brown (10YR 4/3) and trace Yellowish Brown (10YR 5/8) SILTY CLAY, trace fine to coarse sand and fine gravel, very stiff, medium plasticity, moist.	CL	SS-4 (6-8') Rec. = 24"	5 19 16 21	3.0 4.5+		N=25
8	730		Dark Grayish Brown (10YR 4/2) to Brown (10YR 4/3) with trace Strong Brown (7.5YR 4/6) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL	SS-5 (8-10') Rec. = 24"	6 15 20 21	4.5+ 4.5+		N=35
10	728		Dark Grayish Brown (10YR 4/2) with Dark Gray (10YR 4/1) and trace Strong Brown (7.5YR 4/6) SILTY CLAY, trace to little fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-6 (10-12') Rec. = 23"	8 12 14 19	3.0 4.5+		N=26
12	726		@10.3-10.4'; Olive Brown (2.5Y 4/3) fine to medium SILTY SAND seam, wet. Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse and and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-7 (12-14') Rec. = 19"	8 13 22 23	4.5+ 4.5+		N=35
14	724				SS-8 (14-16') Rec. = 20"	8 16 18 23	4.5+ 2.75		N=34
16	722				SS-9 (16-18') Rec. = 24"	7 12 18 22	4.5+ 3.25 1.25		N=30
18	720		@ 17.8-18' clayey silt seam, saturated. Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, stiff to hard, medium plasticity, moist.	CL	SS-10 (18-20') Rec. = 14"	5 10 10 12	2.5		N=20 (Pushing rock)
20			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/3/2019 ENDED: 1/7/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-09-18SD(0-104') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 738.27
NORTHING: 14125.68
EASTING: 13178.87

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-09-18

Depth in Feet	Surf. Elev. 738.27	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
20	718		(Continued from previous page) SILTY CLAY.			3	2.25		
21	717				SS-11 (20-22') Rec. = 21"	8 15 16	1.5		N=23
22	716					6	3.0		
23	715				SS-12 (22-24') Rec. = 24"	11 15 17	2.5 4.5+		N=26
24	714					11	4.5+		
25	713				SS-13 (24-26') Rec. = 24"	16 20 28	3.0		N=36
26	712					9	3.75		
27	711				SS-14 (26-28') Rec. = 24"	15 23 27	4.5+ 3.0		N=38
28	710					7	2.75		
29	709				SS-15 (28-30') Rec. = 24"	12 15 18	2.75		N=27
30	708			CL		6	3.5		
31	707				SS-16 (30-32') Rec. = 24"	11 14 18	3.0		N=25
32	706		Same, with several fine to medium wet sand pockets.			10	3.0		
33	705				SS-17 (32-34') Rec. = 24"	15 21 19	4.5+		N=36
34	704					8	3.75		
35	703				SS-18 (34-36') Rec. = 24"	18 21 26	3.0		N=39
36	702		@35.5-36'; Same, with trace Gray (2.5Y 5/1) wet silt pockets.			7	3.75		
37	701				SS-19 (36-38') Rec. = 24"	13 20 23	3.0		N=33
38	700					8	3.5		
39	699				SS-20 (38-40') Rec. = 24"	15 18 21	3.5		N=33
40			(Contiuned on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/3/2019 ENDED: 1/7/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-09-18SD(0-104') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 738.27
NORTHING: 14125.68
EASTING: 13178.87

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-09-18

Depth in Feet	Surf. Elev. 738.27	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40	698		(Continued from previous page) SILTY CLAY.	CL	SS-21 (40-42') Rec. = 24"	10 17 22 27	3.0 3.25		N=39
42	696		Dark Grayish Brown (10YR 4/2) SILTY CLAY and Gray (2.5Y 5/1) CLAYEY SILT, trace fine to medium sand, laminated, stiff, low to medium plasticity, very moist to wet.	CL/ML	SS-22 (42-44') Rec. = 22"	16 16 17 23	2.75 2.5		N=33
43	695			SM					
44	694		Very Dark Grayish Brown (10YR 3/2) and Dark Grayish Brown (10YR 4/2) Fine SILTY SAND, trace medium sand, poorly graded, dense, saturated.	CL/ML	SS-23 (44-46') Rec. = 24"	10 12 8 10	4.5+ 1.5 3.5		N=20
46	692		Dark Grayish Brown (10YR 3/2) and Gray (2.5Y 6/1) CLAYEY SILT, alternating, laminated, trace fine sand, stiff to hard, low to medium plasticity, very moist to saturated.		SS-24 (46-48') Rec. = 24"	6 11 14 16	3.0 3.0 1.75		N=25
48	690		Dark Reddish Gray (5YR 4/2) grading to Dark Grayish Brown (10YR 4/2) SANDY SILTY CLAY, trace fine to coarse gravel, stiff to very stiff, medium plasticity, moist to very moist.	CL	ST-25 (48-50') Rec. = 20"	-- --	-- --		@48-50'(Pushed Shelby Tube); ST-25/B-09-18(48-50');Rec.=20"(CL), 1/3/19(1045)
50	688		Dark Grayish Brown (10YR 4/2) with trace Dark Reddish Gray (5YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.		SS-26 (50-52') Rec. = 24"	8 11 16 22	2.75 3.0		N=37
52	686		@52.3': 0.5" fine silty sand seam, wet.		SS-27 (52-54') Rec. = 24"	6 9 14 18	3.25 2.25		N=23
54	684			CL	SS-28 (54-56') Rec. = 24"	8 15 21 27	2.5 3.5		N=36
56	682				SS-29 (56-58') Rec. = 14"	6 13 25 32	3.25 2.5		N=38
58	680				SS-30 (58-60') Rec. = 0"	17 31 44 57	-- --		N=75 (No recovery - pushing rock)
60			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/3/2019 ENDED: 1/7/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-09-18SD(0-104') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 738.27
NORTHING: 14125.68
EASTING: 13178.87

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-09-18

Depth in Feet	Surf. Elev. 738.27	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
60	678		(Continued from previous page) Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL	ST-31 (60-62') Rec. = 15"	--			@60-62'(Pushed Shelby Tube); ST-31/B-09-18(60-62');Rec.=15"(CL), 1/3/19(1330).
61	677					--			
62	676				SS-32 (62-64') Rec. = 23"	13	2.25		N=44
63	675		@62.5'; Fine silty sand pocket, wet.			20			
64	674		Dark Grayish Brown (10YR 4/2) to Grayish Brown (10YR 5/2) Fine SILTY SAND, poorly graded, dense, saturated.	SM		24	2.25		
65	673			SP	SS-33 (64-66') Rec. = 22"	28			N=48
66	672		Very Dark Grayish Brown (10YR 3/2) to Dark Grayish Brown (10YR 4/2) Fine to Medium SAND, trace silt, poorly graded, dense, saturated.	CL		19	2.0		
67	671			SP		23			
68	670		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.			25			
69	669		Very Dark Grayish Brown (10YR 3/2) Fine to Medium SAND, trace coarse sand and fine to coarse gravel, poorly graded, very dense, saturated.		SS-34 (66-68') Rec. = 17"	30	3.5		N=71
70	668			CL		23			
71	667		Dark Reddish Gray (5YR 4/2) with Dark Gray (5YR 4/1) SILTY CLAY, trace fine to coarse sand and fine gravel, very stiff to hard, medium plasticity, moist.			40			
72	666					31	2.5		
73	665		Very Dark Grayish Brown (10YR 3/2) Fine to Coarse SAND, trace fine gravel, trace silt, poorly graded, extremely dense, saturated.	SP	SS-35 (68-70') Rec. = 20"	31	4.0		N=35
74	664					11	4.5+		
75	663		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.			15			
76	662					20	4.5+		
77	661			CL	SS-36 (70-72') Rec. = 24"	26			N=43
78	660					10	2.5		
79	659		(Continued on next page)			18			
80						25	4.5+		
						32			N=82
					SS-37 (72-74') Rec. = 24"	10	3.5		
						32			
						50			
						34	4.5+		N=68
					SS-38 (74-76') Rec. = 24"	15	4.5+		
						26			
						42	4.5+		
						50			
					ST-39 (76-78') Rec. = 8"	--	--		@76-78'(Pushed Shelby Tube); ST-39/B-09-18(76-78');Rec.=8"(CL), 1/3/19(1445).
						--	--		
					SS-40 (78-80') Rec. = 20"	32	4.5+		
						44			N=101
						57	4.0		
						50/5"			

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/3/2019 ENDED: 1/7/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
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APTIM

SURFACE ELEVATION: 738.27
NORTHING: 14125.68
EASTING: 13178.87

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-09-18

Depth in Feet	Surf. Elev. 738.27	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80	658		(Continued from previous page) SILTY CLAY.	CL	SS-41 (80-82') Rec. = 24"	11 22 26 31	3.5 4.0		N=48
82	656		Dark Olive Brown (2.5Y 3/3) Fine to Coarse SAND, little fine to coarse gravel and silt, trace clay, poorly graded, extremely dense, saturated.	SP	SS-42 (82-84') Rec. = 20"	26 63 36 22	4.5+ 2.0		N=99
84	654		Very Dark Grayish Brown (10YR 3/2) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, low plasticity, moist.	ML	SS-43 (84-86') Rec. = 24"	14 17 22 30	4.5+ 4.5+		N=39
86	652		Very Dark Grayish Brown (10YR 3/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-44 (86-88') Rec. = 24"	14 17 23 23	3.0 4.5+		N=40
88	650				SS-45 (88-90') Rec. = 14"	12 43 50/2"	4.5+ 4.5+		N=93+
90	648		Olive Gray (5Y 4/2) CLAYEY SILT, trace fine to coarse sand and fine gravel, hard, low plasticity, moist.	ML	SS-46 (90-92') Rec. = 6"	92/6"	4.5+		N=92+
92	646		Dark Grayish Brown (10YR 4/2) CLAYEY SILT, trace fine to coarse sand and gravel, very stiff to hard, low plasticity, very moist.	ML	SS-47 (92-94') Rec. = 24"	28 28 24 19	4.5+ 3.5		N=52
94	644				SS-48 (94-96') Rec. = 17"	18 37 48 50/5"	4.5+ 4.5+		N=85
96	642		@95'; Fine to medium sand pocket, wet.		SS-49 (96-98') Rec. = 17"	19 32 50/4"	4.5+ 4.5+		N=79
98	640		@97.5-97.6'; Coarse dolomite gravel.		SS-50 (98-100') Rec. = 22"	31 44 63 41	2.5 2.0		N=107
100			Dark Grayish Brown (10YR 4/2) with Grayish Brown (2.5Y 5/2) CLAYEY SILT, trace fine sand, very stiff, low plasticity, moist to wet.	CL/ML					

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/3/2019 ENDED: 1/7/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-09-18SD(0-104') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 738.27
NORTHING: 14125.68
EASTING: 13178.87

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-09-18

Depth in Feet	Surf. Elev. 738.27	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
100	638		(Continued from previous page @ 99.92') Grayish Brown (2.5Y 5/2) CLAYEY SILT, trace Dark Grayish Brown (10YR 4/2) silty clay, trace fine sand, stiff to very stiff, low plasticity, saturated.	ML	SS-51 (100-102') Rec. = 24"	16 13 22 37	1.75 3.0		N=35
101	637								
102	636					29	2.5		
103	635		Dark Gray (2.5Y 4/1) with Dark Gray (5YR 4/1) and Dark Reddish Gray (5YR 4/2) SILTY CLAY, little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, medium plasticity, moist.	CL	SS-52 (102-104') Rec. = 24"	24 35 36	4.5+ 2.0		N=59
104	634		End of Boring @ 104'						
105	633								
106	632								
107	631								
108	630								
109	629								
110	628								
111	627								
112	626								
113	625								
114	624								
115	623								
116	622								
117	621								
118	620								
119	619								
120									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/3/2019 ENDED: 1/7/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-09-18SD(0-104') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 732.64
NORTHING: 14652.76
EASTING: 11602.68

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-10-18

Depth in Feet	Surf. Elev. 732.64	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0									
1	732		Dark Yellowish Brown (10YR 4/4 to 4/6) with Brown (10YR 4/3) and trace Light Greenish Gray (GLEY 1 7/1 10Y) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL	SS-1 (0-2') Rec. = 16"	WOH 4 7 11	4.5+ 4.0		WOH=Weight of Hammer N=11
2	731								
3	730				SS-2 (2-4') Rec. = 24"	12 18 24 28	4.5+ 4.5+		N=42
4	729								
5	728				SS-3 (4-6') Rec. = 23"	11 23 27 36	4.5+ 4.5+		N=50
6	727								
7	726				SS-4 (6-8') Rec. = 22"	10 20 30 37	4.5+ 4.5+		N=50
8	725								
9	724				SS-5 (8-10') Rec. = 23"	11 22 29 30	4.5+ 4.5+		N=51
10	723								
11	722				SS-6 (10-12') Rec. = 24"	9 18 23 33	4.5+ 4.5+		N=47
12	721								
13	720		Brown (10YR 4/3) with trace Dark Grayish Brown (10YR 4/2), Dark Yellowish Brown (10YR 4/4) and Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL	SS-7 (12-14') Rec. = 22"	13 19 23 28	4.5+ 4.5+		N=42
14	719								
15	718		Dark Gray (10YR 4/1) with Dark Yellowish Brown (10YR 4/4) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL	SS-8 (14-16') Rec. = 24"	7 13 15 16	2.5 2.25		N=28
16	717								
17	716		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL	SS-9 (16-18') Rec. = 23"	4 6 9 10	2.0 2.0		N=15
18	715								
19	714				SS-10 (18-20') Rec. = 24"	3 7 7 11	2.75 2.0		N=14
20	713		(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/9/2019 ENDED: 1/11/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-10-18SD(0-100') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 732.64
NORTHING: 14652.76
EASTING: 11602.68

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-10-18

Depth in Feet	Surf. Elev. 732.64	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
20			(Continued from previous page)						
	712		SILTY CLAY.			4			
21					SS-11 (20-22') Rec. = 24"	5	2.25		N=15
	711					10	2.0		
22						12			
	710					4	2.0		
23					SS-12 (22-24') Rec. = 24"	5			N=15
	709					10	3.5		
24						14			
	708					5	3.5		
25				CL	SS-13 (24-26') Rec. = 24"	12			N=27
	707					15	2.5		
26						17			
	706					5	2.25		
27					SS-14 (26-28') Rec. = 24"	10			N=23
	705					13	3.5		
28						16			
	704		@28.3'; Gray (2.5Y 5/1) silt pocket, very moist.			7	2.0		
29					SS-15 (28-30') Rec. = 24"	9			N=21
	703					12	3.0		
30			@30.5'; Coarse gravel.			15			
	702		Gray (2.5Y 5/1) CLAYEY SILT, trace fine sand, hard, low plasticity, wet.	ML		8	3.0		
31				SM	SS-16 (30-32') Rec. = 15"	13	4.5+		N=30
	701		Dark Gray (10YR 4/1) Fine SILTY SAND, poorly graded, medium dense, wet.			17			
32						21			
	700		Dark Gray (2.5Y 4/1) CLAYEY SILT, hard, low plasticity, wet.	ML		5	4.5+		
33					SS-17 (32-34') Rec. = 23"	15			N=34
	699		Very Dark Grayish Brown (2.5Y 3/2) Fine to Medium SAND, trace coarse sand, trace silt, poorly graded, dense, wet.	SP		19			
34						20	3.5		
	698		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine sand, very stiff, medium plasticity, moist.			11	3.25		
35					SS-18 (34-36') Rec. = 17"	9			N=26
	697					17	3.0		
36						20			
	696					5	2.5		
37				CL	SS-19 (36-38') Rec. = 24"	9			N=21
	695					12	3.0		
38						13			
	694		Same, trace laminations.			5	2.75		
39					SS-20 (38-40') Rec. = 24"	8			N=19
	693		(Continued on next page)			11	3.0		
40						13			

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/9/2019 ENDED: 1/11/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
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SURFACE ELEVATION: 732.64
NORTHING: 14652.76
EASTING: 11602.68

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-10-18

Depth in Feet	Surf. Elev. 732.64	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40			(Continued from previous page) SILTY CLAY.			6	3.0		
41	692		@41-41.4'; trace Gray (2.5Y 5/1) very thin wet silt seams.	CL	SS-21 (40-42') Rec. = 23"	10 17	3.5		N=27
42	691		Dark Grayish Brown (10YR 4/2) with trace Olive Brown (2.5Y 4/3) SILTY CLAY, little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, medium plasticity, moist.			14	1.5		
43	690				SS-22 (42-44') Rec. = 24"	7 8 17	2.75		N=25
44	689			CL		24	3.5		
45	688				SS-23 (44-46') Rec. = 24"	18 20 23	4.5+		N=43
46	687					31	4.5+		
47	686		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, stiff to hard, medium plasticity, moist.		SS-24 (46-48') Rec. = 22"	6 15 18 23	3.0 2.75		N=33
48	685								
49	684				SS-25 (48-50') Rec. = 24"	12 15 23 24	3.5 3.25		N=38
50	683								
51	682			CL	SS-26 (50-52') Rec. = 22"	9 13 20 24	1.75 2.5		N=33
52	681								
53	680				ST-27 (52-54') Rec. = 18"	-- --	-- --		@52-54';(Pushed Shelby Tube); ST-27/B-10-18(52-54');Rec.=18"(CL), 1/10/19(0915).
54	679								
55	678				SS-28 (54-56') Rec. = 24"	13 21 24 28	4.5+ 4.0		N=45
56	677								
57	676		Grayish Brown (10YR 5/2) Fine SILTY SAND, trace clay, poorly graded, dense, wet.	SM	SS-29 (56-58') Rec. = 24"	15 30 20 18	4.5+ 2.5		N=50
58	675		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL					
59	674				ST-30 (58-60') Rec. = 17"	--	--		@58-60';(Pushed Shelby Tube); ST-30/B-10-18(58-60');Rec.=18"(CL), 1/10/19(0940).
60	673		(Continued on next page)	ML/CL		--	--		

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/9/2019 ENDED: 1/11/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-10-18SD(0-100') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 732.64
NORTHING: 14652.76
EASTING: 11602.68

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-10-18

Depth in Feet	Surf. Elev. 732.64	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
60			(Continued from previous page @59.71') Grayish Brown (10YR 5/2) CLAYEY SILT and Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to medium sand, hard, low to medium plasticity, moist to wet.	ML/CL	SS-31 (60-62') Rec. = 17"	32 42 75/5"	4.5+ 4.5+		N=117+
61	672								
62	671		Grayish Brown (10YR 5/2) CLAYEY SILT with trace Grayish Brown (10YR 5/2) silty clay, trace fine to coarse sand and fine gravel, very stiff to hard, medium plasticity, moist.	ML	SS-32 (62-64') Rec. = 12"	48 59	4.5+ 3.0		N=107
63	670								
64	669		Dark Grayish Brown (10YR 4/2) SILTY CLAY with trace Grayish Brown (10YR 5/2) silt, trace fine to coarse sand and fine gravel, hard, medium plasticity, moist.	CL	SS-33 (64-66') Rec. = 18"	23 45 62	4.5+ 4.5+		N=107
65	668								
66	667				SS-34 (66-68') Rec. = 12"	29 59	4.5+ 4.5+		N=88
67	666		Same, with little Dark Reddish Gray (5YR 4/2) silty clay and Grayish Brown (10YR 5/2) silt.						
68	665		@ 68.5-68.7' fine silty sand, saturated.		SS-35 (68-70') Rec. = 18"	38 43 54	4.5+ 4.5+		N=97
69	664		@69.2': 1" sand seam. Grayish Brown (10YR 5/2) CLAYEY SILT with Dark Grayish Brown (10YR 4/2) SILTY CLAY, little fine sand, trace dark Reddish Gray (5YR 4/2) silty clay, trace medium to coarse sand and fine gravel, hard, low to medium plasticity, moist to wet.	ML/CL	ST-36 (70-72') Rec. = 9"	-- --	-- --		@70-72';(Pushed Shelby Tube); ST-36/B-10-18(70-72');Rec.=9"(ML/CL),1/10/19(1045).
70	663								
71	662								
72	661				SS-37 (72-74') Rec. = 22"	29 33 33 32	4.5+ 4.5+		N=66
73	660								
74	659		Dark Grayish Brown (10YR 4/2) Fine SILTY SAND, trace medium sand, poorly graded, very dense, saturated.	SM	SS-38 (74-76') Rec. = 23"	16 27 43 50	2.25 4.5+		N=70
75	658		Dark Grayish Brown (10YR 4/2) to Grayish Brown (2.5Y 5/2) CLAYEY SANDY SILT, very stiff, low plasticity, saturated.	ML SM ML					
76	657		Dark Grayish Brown (10YR 4/2) Fine SILTY SAND, trace medium sand, poorly graded, very dense, saturated.		SS-39 (76-78') Rec. = 23"	37 31 34 37	4.5+ 4.5+		N=65
77	656		Dark Grayish Brown (10YR 4/2) to Grayish Brown (2.5Y 5/2) CLAYEY SANDY SILT, hard, low plasticity, saturated.	CL					
78	655				SS-40 (78-80') Rec. = 24"	11 13 25 24	2.5 3.5		N=38
79	654		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, stiff to hard, medium plasticity, moist. (Continued on next page)						
80	653								

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/9/2019 ENDED: 1/11/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-10-18SD(0-100') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 732.64
NORTHING: 14652.76
EASTING: 11602.68

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-10-18

Depth in Feet	Surf. Elev. 732.64	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80			(Continued from previous page) SILTY CLAY.			6			
81	652			CL	SS-41 (80-82') Rec. = 23"	11 35 45	1.5 2.5		N=46
82	651		@ 81.8-82' fine to medium sand seam, saturated.	CL		26	4.5+		
83	650		Olive Brown (2.5Y 4/3) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.		SS-42 (82-84') Rec. = 23"	54 32 24	2.75		N=86
84	649		Dark Gray (2.5Y 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-43 (84-86') Rec. = 24"	15 19 30 31	3.75 4.0		N=49
85	648								
86	647								
87	646		@85.1-85.8'; very sandy, wet sand pockets.		SS-44 (86-88') Rec. = 4"	40 45 50/4"	--		N=95+ (Pushing rock)
88	645		Dark Grayish Brown (2.5Y 4/2) to Olive Brown (2.5Y 4/3) Fine SILTY SAND and CLAYEY SILT, trace medium sand, poorly graded, very stiff, very dense, low plasticity, saturated.	SM/ML	SS-45 (88-90') Rec. = 23"	30 31 31 35	2.0 2.5		N=62
89	644								
90	643								
91	642		Dark Grayish Brown (2.5Y 4/2) to Olive Brown (2.5Y 4/3) CLAYEY SILT with interbedded fine silty sand seams, hard, low plasticity, saturated.	ML	SS-46 (90-92') Rec. = 19"	28 28 38 40	4.5+ --		N=66
92	641		Dark Grayish Brown (2.5Y 4/2) to Olive Gray (5Y 4/2) Fine to Medium SAND with Silt, alternating layers, trace coarse sand and fine gravel, poorly graded, very dense, saturated.	SM/SP	SS-47 (92-94') Rec. = 17"	18 26 29 30	-- --		N=55
93	640								
94	639		@94-95'; Same, with little clayey silt and trace Reddish Gray (5YR 4/2) silty clay.		SS-48 (94-96') Rec. = 19"	23 30 33 40	-- --		N=63
95	638								
96	637		Dark Grayish Brown (2.5Y 4/2) and Grayish Brown (2.5Y 5/2) Fine SAND, trace medium sand and silt, poorly graded, very dense, saturated.	SP	SS-49 (96-98') Rec. = 18"	25 31 34 36	-- --		N=65
97	636								
98	635								
99	634		Dark Grayish Brown (2.5Y 4/2) to Grayish Brown (2.5Y 5/2) Fine to Medium SAND with Silt, poorly graded, very dense, saturated.	SM/SP	SS-50 (98-100) Rec. = 16"	22 27 34 40	-- --		N=61
100	633		End of Boring @100'						

DRILLING CONTRACTOR: Strata Earth Services, LLC
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DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/9/2019 ENDED: 1/11/2019

WATER LEVEL (FT.)

REMARKS
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APTIM

SURFACE ELEVATION: 733.76
NORTHING: 14545.78
EASTING: 12392.18

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-11-18

Depth in Feet	Surf. Elev. 733.76	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0									
1	733		Black (10YR 2/1) Organic SILTY CLAY FILL, trace fine to coarse sand and fine gravel, very stiff, medium plasticity, moist.	OL-FL	SS-1 (0-2') Rec. = 20"	WOH 3 5 6	2.75 2.75		WOH=Weight of Hammer N=8
2	732								
3	731		Yellowish Brown (10YR 4/4) with Gray (10YR 5/1) and trace Black (10YR 2/1) SILTY CLAY FILL, some fine to coarse sand and fine gravel, stiff, medium plasticity, moist.	CL-FL	SS-2 (2-4') Rec. = 20"	WOH 1 3 4	1.75 1.75		N=4
4	730								
5	729		Olive Brown (2.5Y 4/3) with Yellowish Brown (10YR 5/4) and Gray (10YR 5/1) SILTY CLAY, some fine to coarse sand and fine gravel, very stiff, medium plasticity, moist.	CL	SS-3 (4-6') Rec. = 22"	WOH 3 5 7	1.5 2.25		N=8
6	728								
7	727		Olive Brown (2.5Y 4/3) Fine to Coarse SILTY SAND, little clay, trace fine gravel, poorly graded, medium dense, wet.	SM	SS-4 (6-8') Rec. = 22"	1 7 7 11	1.5 4.5+		N=14
8	726		Brown (10YR 4/3) SILTY CLAY, trace fine to coarse sand and fine gravel, very stiff to hard, medium plasticity, moist.	CL					
9	725				SS-5 (8-10') Rec. = 20"	5 6 9 11	3.5 4.5+		N=15
10	724		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL					
11	723				SS-6 (10-12') Rec. = 0"	6 9 14 16	-- --		N=23 (Pushing rock-no recovery)
12	722								
13	721				SS-7 (12-14') Rec. = 14"	9 15 19 22	2.75		N=34 (Pushing rock)
14	720								
15	719				SS-8 (14-16') Rec. = 23"	6 10 14 20	4.5+ 4.5+		N=24
16	718								
17	717				SS-9 (16-18') Rec. = 23"	4 8 12 15	3.0 4.5+		N=20
18	716								
19	715		Gray (2.5Y 5/1) SILT, little clay, trace fine sand, very stiff, low plasticity, wet.	ML	SS-10 (18-20') Rec. = 23"	9 12 12 14	2.25 4.5+		N=24
20	714		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace silt, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL					

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/29/2018 ENDED: 12/6/2018

WATER LEVEL (FT.)

REMARKS
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ST=3" Dia. x 30" Long Shelby Tube
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APTIM

SURFACE ELEVATION: 733.76
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PROJECT: Zion Landfill Site 2 North
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PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-11-18

Depth in Feet	Surf. Elev. 733.76	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
20			(Continued from previous page @ 19.95') Dark Gray (2.5Y 4/1) SANDY SILT, little clay, very stiff, low plasticity, wet.	ML	SS-11 (20-22') Rec. = 24"	11 13 15 17	2.0 2.5		N=28
21	713								
22	712		Dark Gray (2.5Y 4/1) Fine to Medium SILTY SAND, trace coarse sand, trace clay, poorly graded, medium dense, saturated.	SM	SS-12 (22-24') Rec. = 21"	8 11 12 15	-- --		N=23
23	711								
24	710				SS-13 (24-26') Rec. = 18"	10 12 17 15	-- --		N=29
25	709		Same, little clay, trace fine gravel.						
26	708		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-14 (26-28') Rec. = 21"	5 10 16 18	4.5+ 4.5+		N=26
27	707								
28	706				SS-15 (28-30') Rec. = 22"	7 9 12 17	2.5 3.0		N=21
29	705								
30	704				SS-16 (30-32') Rec. = 23"	5 10 16 18	4.0 4.0		N=26
31	703								
32	702				SS-17 (32-34') Rec. = 24"	5 10 13 17	4.25 3.0		N=23
33	701								
34	700				SS-18 (34-36') Rec. = 24"	6 10 12 14	2.5 4.0 3.5		N=22
35	699								
36	698				SS-19 (36-38') Rec. = 22"	4 8 11 13	3.75 3.0		N=19
37	697								
38	696				SS-20 (38-40') Rec. = 22"	6 7 10 12	2.75 2.75		N=17
39	695								
40	694		(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/29/2018 ENDED: 12/6/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-11-18SD(0-120') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 733.76
NORTHING: 14545.78
EASTING: 12392.18

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-11-18

Depth in Feet	Surf. Elev. 733.76	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40			(Continued from previous page) SILTY CLAY.	CL		5	2.5		
41	693		Gray (2.5Y 5/1) with Dark Gray (10YR 4/1) and little Very Dark Gray (10YR 3/1) CLAY and SILT with interbedded lenses of Fine to Coarse silty sand, very stiff silt, poorly graded sand, low plasticity, wet to saturated.	CL-ML	SS-21 (40-42') Rec. = 18"	10 17 16	3.5		N=27 (Pushing rock)
42	692					5	3.75		
43	691				SS-22 (42-44') Rec. = 24"	7 10 12	2.75		N=17
44	690								
45	689		Very Dark Gray (2.5Y 3/1) Fine to Coarse SILTY SAND, trace clay, poorly graded, medium dense, saturated.	SM	SS-23 (44-46') Rec. = 22"	5 6 8	-- 3.5		N=14
46	688		Gray (2.5Y 5/1) to Dark Gray (2.5Y 4/1) CLAYEY SILT, trace fine sand, stiff to very stiff, low plasticity, wet.	ML		7	1.0		
47	687		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine sand, very stiff, medium plasticity, moist.	CL	SS-24 (46-48') Rec. = 24"	5 6 8 9	2.5 2.0		N=14
48	686								
49	685				SS-25 (48-50') Rec. = 24"	4 5 8 11	3.0 3.5		N=13
50	684		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL					
51	683				SS-26 (50-52') Rec. = 24"	7 11 16 18	3.5 3.5		N=27
52	682								
53	681		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL	SS-27 (52-54') Rec. = 24"	4 8 11 13	3.0 2.5		N=19
54	680								
55	679				SS-28 (54-56') Rec. = 24"	3 7 9 11	2.5 2.5		N=16
56	678								
57	677				ST-29 (56-58') Rec. = 24"	--	--		@56-58'(Pushed Shelby Tube); ST-29/B-11-18(56-58');Rec.=24"(CL), 11/30/18(0930).
58	676					--	--		
59	675				SS-30 (58-60') Rec. = 24"	6 10 14	2.75 3.0		N=24
60	674		(Continued on next page)			20			

DRILLING CONTRACTOR: Strata Earth Services, LLC
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3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/29/2018 ENDED: 12/6/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
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APTIM

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PROJECT: Zion Landfill Site 2 North
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BORING NO. B-11-18

Depth in Feet	Surf. Elev. 733.76	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
60			(Continued from previous page) SILTY CLAY.			9			
61	673				SS-31 (60-62') Rec. = 14"	12 16 17	2.5		N=28 (Pushing rock)
62	672			CL		6			
63	671				SS-32 (62-64') Rec. = 20"	7 11 13	2.0 2.5		N=18
64	670					6	2.5		
65	669		Dark Gray (10YR 4/1) CLAYEY SILT, stiff, low plasticity, saturated.		SS-33 (64-66') Rec. = 24"	7 6 9	1.25		N=13
66	668			ML					
67	667				ST-34 (66-68') Rec. = 22"	-- --	-- --		@66-68'(Pushed Shelby Tube); ST-34/B-11-18(66-68');Rec.=22"(ML/CL),11/30/18(1015)
68	666		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.			8			
69	665			CL	SS-35 (68-70') Rec. = 24"	10 14 17	2.5 2.5		N=24
70	664					8	3.75		
71	663				SS-36 (70-72') Rec. = 9"	14 14 17			N=28 (Pushing rock)
72	662		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, stiff to hard, medium plasticity, moist.			8	4.5+		
73	661			CL	SS-37 (72-74') Rec. = 24"	13 22 29	4.5+		N=35
74	660					6	4.5+		
75	659		@74.75-75.75'; Boulder.		SS-38 (74-76') Rec. = 12"	45 50/0"	1.5		N=95+
76	658		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.			10	4.5		
77	657				SS-39 (76-78') Rec. = 23"	29 26 28	3.5		N=45
78	656			CL		6	4.5+		
79	655				SS-40 (78-80') Rec. = 24"	11 29 31	4.5+		N=40
80	654		CLAYEY SILT (Continued on next page)	ML					

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/29/2018 ENDED: 12/6/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-11-18SD(0-120') into boring upon completion of drilling.

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APTIM

SURFACE ELEVATION: 733.76
NORTHING: 14545.78
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PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-11-18

Depth in Feet	Surf. Elev. 733.76	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80			(Continud from previous page @ 79.6') Dark Olive Brown (2.5Y 3/3) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, low plasticity, moist.	ML					
81	653				SS-41 (80-82') Rec. = 24"	10 12 26 30	4.5+ 4.5+		N=38
82	652		Dark Gray (2.5Y 4/1) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, low plasticity, moist.	ML	SS-42 (82-84') Rec. = 24"	12 17 22 24	4.5+ 4.5+		N=39
83	651								
84	650								
85	649				SS-43 (84-86') Rec. = 2"	9 15 21 27	-- --		N=36 (Pushing rock)
86	648		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL					
87	647				SS-44 (86-88') Rec. = 24"	11 15 33 35	4.5+ 4.5+		N=48
88	646								
89	645				SS-45 (88-90') Rec. = 24"	11 17 24 27	4.5+ 4.5+		N=41
90	644								
91	643				SS-46 (90-92') Rec. = 19"	13 22 25 37	4.5+ 4.5+		N=47 (Pushing rock)
92	642		Dark Olive Brown (2.5Y 3/3) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, low plasticity, moist.	ML					
93	641				SS-47 (92-94') Rec. = 24"	14 14 19 23	4.5+ 4.5+		N=33
94	640		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL					
95	639				SS-48 (94-96') Rec. = 0"	16 21 28 40	-- --		N=49 (Pushing rock-no recovery)
96	638								
97	637				SS-49 (96-98') Rec. = 24"	10 18 23 31	4.5+ 4.5+		N=41
98	636								
99	635				SS-50 (98-100') Rec. = 24"	10 20 27 30	4.5+ 4.5+		N=47
100	634		(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/29/2018 ENDED: 12/6/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-11-18SD(0-120') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 733.76
NORTHING: 14545.78
EASTING: 12392.18

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-11-18

Depth in Feet	Surf. Elev. 733.76	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
100			(Continued from previous page) SILTY CLAY.			9			
						18	4.5+		
101	633				SS-51 (100-102') Rec. = 24"	25			N=43
						31	4.5+		
102	632			CL		17			
						20	4.5+		
103	631				SS-52 (102-104') Rec. = 24"	25			N=45
						50	4.5+		
104	630		Gray (10YR 5/1) Fine to Coarse SILTY SAND and Fine GRAVEL, little clay, poorly graded, dense, saturated.	SM/GM		31			
						23	4.5+		
105	629				SS-53 (104-106') Rec. = 24"	21			N=44
			Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.			23	4.5+		
106	628					11	2.5		
						15	4.5+		
107	627				SS-54 (106-108') Rec. = 24"	27			N=42
				CL		27	3.75		
108	626		Same, trace Dark Reddish Brown (5YR 3/2).			15			
						23	4.5+		
109	625				SS-55 (108-110') Rec. = 24"	27			N=50
						38	4.5+		
110	624		@109.9'; trace Gray (10YR 5/1) sandy silt seam.			36			
						53	1.5		
111	623				SS-56 (110-112') Rec. = 18"	55			N=108
			Gray (2.5Y 5/1) SILT, trace fine sand and clay, hard, low placticity, wet.	ML			4.5+		
112	622		Brown (7.5YR 4/2) SILTY CLAY, trace fine sand, very stiff to hard, medium palsticity, moist.	CL		10			
						12	4.5+		
113	621				SS-57 (112-1114') Rec. = 24"	21	3.5		N=33
			Gray (2.5Y 5/1) SANDY SILT, trace clay, very stiff, low plasticity, saturated.	ML		32	2.5		
114	620		Gray (2.5Y 5/1) Fine SILTY SAND, trace clay, dense, saturated.	SM		15	--		
						17			
115	619				SS-58 (114-116') Rec. = 24"	17			N=34
						21	--		
116	618		Gray (2.5Y 5/1) SANDY SILT, trace clay, very stiff, low plasticity, saturated.			16			
				ML		9	2.5		
117	617		Dark Gray (2.5Y 3/1) SILTY CLAY, trace fine sand, hard, medium plasticity, moist.	CL	SS-59 (116-118') Rec. = 24"	13	4.5+		N=32
						23	2.5		
118	616		Gray (2.5Y 5/1) SANDY SILT, trace clay, very stiff, low plasticity, saturated.	ML		8			
						9	2.5		
119	615		Dark Gray (10YR 4/1) SILTY CLAY, little fine sand, hard, medium plasticity, moist.		SS-60 (118-120') Rec. = 24"	11			N=20
			End of Boring @ 120'	CL		22	4.5+		
120	614								

DRILLING CONTRACTOR: Strata Earth Services, LLC
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3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 11/29/2018 ENDED: 12/6/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-11-18SD(0-120') into boring upon completion of drilling.

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APTIM

SURFACE ELEVATION: 741.32
NORTHING: 14646.46
EASTING: 13209.63

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-12-18

Depth in Feet	Surf. Elev. 741.32	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0	741		Dark Grayish Brown (10YR 4/2) with trace Dark Yellowish Brown (10YR 3/6) and trace Black (10YR 2/1) SILTY CLAY, trace fine to coarse sand and fine gravel, trace organics, very stiff, medium plasticity, moist.	CL	SS-1 (0-2') Rec. = 22"	3 2	2.5		
1	740			CL		3 6	2.5		N=5
2	739		Dark Yellowish Brown (10YR 3/6) with Brown (10YR 4/3) and trace Black (10YR 2/1) SILTY CLAY, trace fine to coarse sand and fine gravel, very stiff, medium plasticity, moist.	CL	SS-2 (2-4') Rec. = 22"	4 10	2.5		
3	738					14 19	4.5+		N=24
4	737		Dark Yellowish Brown (10YR 4/6) with Light Greenish Gray (GLEY 7/1 10Y) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-3 (4-6') Rec. = 24"	8 15	4.5+		
5	736					20 22	4.5+		N=35
6	735		Dark Yellowish Brown (10YR 4/4 to 4/6) with Olive Brown (2.5Y 4/4) and trace Light Gray (GLEY 1 7/N) and Yellowish Red (5YR 5/8) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.		SS-4 (6-8') Rec. = 24"	9 12	4.5+		
7	734					19 21	4.5+		N=31
8	733				SS-5 (8-10') Rec. = 24"	7 15	4.5+		
9	732					26 32	4.5+		N=41
10	731		Brown (10YR 4/3) with trace Grayish Brown (10YR 4/2) and Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL	SS-6 (10-12') Rec. = 20"	9 17	3.0		
11	730					25 36	3.0		N=42
12	729		Dark Gray (10YR 4/1) SILTY CLAY, trace Dark Yellowish Brown (10YR 4/6) staining (11-11.5'), and trace Olive Brown (2.5Y 4/3) silt pocket (11'), trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL	SS-7 (12-14') Rec. = 10"	9 13	2.75		
13	728					21 26	--		N=34 (Pushing rock)
14	727				SS-8 (14-16') Rec. = 24"	7 11	3.0		
15	726					14 18	3.75		N=25
16	725		Dark Gray (2.5Y 4/1) CLAYEY SILT, trace fine to coarse sand and gravel, hard, low plasticity, very moist to wet.	ML	SS-9 (16-18') Rec. = 24"	10 12	4.5+		
17	724					15 18	3.0		N=27
18	723		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-10 (18-20') Rec. = 24"	6 10	3.75		
19	722		@19.4-19.5'; Dark Gray (2.5Y 4/1) fine to medium sand seam, trace coarse sand, wet.			18 20	3.25		N=28
20			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/28/2018 ENDED: 01/02/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid FLight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-12-18SD(0-106') into boring upon completion of drilling. Installed Piezometer P-12-18IT (0-59') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 741.32
NORTHING: 14646.46
EASTING: 13209.63

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-12-18

Depth in Feet	Surf. Elev. 741.32	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
20	721		(Continued from previous page) SILTY CLAY, little fine to coarse sand and gravel.						
					SS-11 (20-22') Rec. = 18"	8 13 38 25	3.25 3.5		N=51 (Pushing gravel)
21	720								
22	719				SS-12 (22-24') Rec. = 24"	8 12 14 22	2.75 3.75		N=26
23	718								
24	717				SS-13 (24-26') Rec. = 20"	7 9 15 23	3.0 3.75		N=24
25	716								
26	715				SS-14 (26-28') Rec. = 20"	4 13 28 33	2.5 3.0		N=41
27	714								
28	713				SS-15 (28-30') Rec. = 19"	9 19 25 33	4.5+ 4.5+		N=44 (Pushing coarse gravel)
29	712								
30	711			CL	SS-16 (30-32') Rec. = 24"	8 15 20 26	3.0 3.25		N=35
31	710								
32	709				SS-17 (32-34') Rec. = 0"	14 17 25 27	-- --		N=42 (No recovery, pushing rock)
33	708								
34	707				SS-18 (34-36') Rec. = 24"	10 14 19 29	4.5+ 4.5+		N=33
35	706								
36	705				SS-19 (36-38') Rec. = 4"	13 20 27 31	-- --		N=47 (Low recovery, pushing rock)
37	704								
38	703				SS-20 (38-40') Rec. = 21"	12 20 35 24	3.0 3.0		N=55
39	702								
40			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/28/2018 ENDED: 01/02/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid FLight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-12-18SD(0-106') into boring upon completion of drilling. Installed Piezometer P-12-18IT (0-59') into adjacent(within 10') blind-drilled boring.

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APTIM

SURFACE ELEVATION: 741.32
NORTHING: 14646.46
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PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-12-18

Depth in Feet	Surf. Elev. 741.32	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40	701		(Continued from Previous page) SILTY CLAY.			5			
						11	3.0		
41	700				SS-21 (40-42') Rec. = 24"	20			N=31
						24	3.25		
42	699					10			
						16	3.5		
43	698			CL	SS-22 (42-44') Rec. = 24"	25			N=41
						31	2.5		
44	697					10			
						14	2.75		
45	696				SS-23 (44-46') Rec. = 24"	20			N=34
						27	2.5		
46	695					10			
						34	3.75		
47	694		Gray (10YR 5/1 to 6/1) CLAYEY SILT, trace fine sand, trace laminations, very stiff, low plasticity, wet.	ML	SS-24 (46-48') Rec. = 22"	27	2.75		N=61
48	693			SM		27			
			Very Dark Gray (2.5Y 3/1) Fine to Medium SILTY SAND, trace coarse sand, trace clay, poorly graded, very dense, saturated.			16			
49	692			CL	SS-25 (48-50') Rec. = 24"	16	3.75		N=36
			Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.			20			
50	691			ML		25	4.5+		
						17	3.5		
51	690		Gray (2.5Y 4/1) SILT, little clay, hard, low plasticity, wet.		SS-26 (50-52') Rec. = 22"	19	3.5		N=38
						19			
52	689		Dark Grayish Brown (2.5Y 4/2) SILTY CLAY, with trace Gray (2.5Y 4/1) wet silt pockets, trace fine to coarse sand and fine gravel, very stiff, medium plasticity, moist.	CL		19	3.25		
						7			
53	688				SS-27 (52-54') Rec. = 24"	13	2.75		N=34
						21	3.5		
54	687		@ 54.4-54.6' fine to medium silty sand seam, saturated.			23			
						13	3.25		
55	686		Dark Grayish Brown (2.5Y 4/2) SILTY SANDY CLAY, trace fine gravel, trace fine to medium silty sand lens (55.1-55.2', wet), very stiff, low to medium plasticity, moist to wet.	CL	SS-28 (54-56') Rec. = 20"	12			N=30
						18	--		
56	685			SM/GM		22			
						23			
57	684		Dark Grayish Brown (2.5Y 4/2) Fine to Coarse SILTY SAND and GRAVEL, trace clay, poorly graded, dense, saturated.	CL	SS-29 (56-58') Rec. = 21"	20	4.5+		N=39
						19			
58	683					15	2.5		
						8			
59	682		Dark Gray (10YR 4/1) SILTY SANDY CLAY, trace f-c gravel, hard, low to medium plasticity, moist.	CL	SS-30 (58-60') Rec. = 24"	11	2.5		N=30
						19			
60			(Continued on next page)			21			

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/28/2018 ENDED: 01/02/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid FLight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-12-18SD(0-106') into boring upon completion of drilling. Installed Piezometer P-12-18IT (0-59') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 741.32
NORTHING: 14646.46
EASTING: 13209.63

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-12-18

Depth in Feet	Surf. Elev. 741.32	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
60	681		(Continued from previous page @58.4') Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-31 (60-62') Rec. = 10"	12 21 28 31	2.25 --		N=49 (Pushing rock)
61	680								
62	679				SS-32 (62-64') Rec. = 24"	16 19 24 28	3.75 4.5+		N=43
63	678								
64	677				SS-33 (64-66') Rec. = 24"	17 28 44 38	4.5+ 2.5		N=72
65	676								
66	675				ST-34 (66-68') Rec. = 16"	-- --	-- --		@66-68'(Pushed Shelby Tube); ST-34/B-12-18(66-68');Rec.=16"(CL/ML),12/28/18 (0845)
67	674								
68	673		Very Dark Grayish Brown (2.5Y 3/2) CLAYEY SILT, trace fine to coarse sand and gravel, hard, low plasticity, moist.	ML	SS-35 (68-70') Rec. = 22"	15 18 25 21	4.5+ 2.5		N=43
69	672		@69-69.1'; Olive (5Y 4/3) silt, wet. Very Dark Grayish Brown (2.5Y 3/2) CLAYEY SILT, trace fine to coarse sand and gravel, very stiff, low plasticity, moist.	ML					
70	671				SS-36 (70-72') Rec. = 24"	10 11 13 15	2.25 2.5 1.0 2.5		N=24
71	670		Dark Grayish Brown (2.5Y 4/2) SILTY CLAY, trace fine to coarse sand and gravel, stiff to very stiff, medium plasticity, moist to very moist.	CL					
72	669				SS-37 (72-74') Rec. = 24"	9 18 24 28	3.5 4.5+		N=42
73	668		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL					
74	667				SS-38 (74-76') Rec. = 24"	8 21 30 32	3.5 3.5		N=51
75	666								
76	665				ST-39 (76-78') Rec. = 21'	-- --	-- --		@76-78'(Pushed Shelby Tube); ST-39/B-12-18(76-78');Rec.=21"(CL), 12/28/18(0930)
77	664								
78	663				SS-40 (78-80') Rec. = 24"	16 25 35 43	4.5+ 4.5+		N=60
79	662								
80			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/28/2018 ENDED: 01/02/2019

WATER LEVEL (FT.)

REMARKS
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APTIM

SURFACE ELEVATION: 741.32
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PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-12-18

Depth in Feet	Surf. Elev. 741.32	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80	661		(Continued from previous page) SILTY CLAY.	CL		10			
						16	3.5		
81	660		Dark Gray (2.5Y 4/1) CLAYEY SILT, very stiff, low plasticity, wet.	ML	SS-41 (80-82') Rec. = 23"	25	3.5		N=41
						28	4.5+		
82	659		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL		15	4.5		
					SS-42 (82-84') Rec. = 24"	28			
83	658					39	3.75		N=67
						41			
84	657					11	4.25		
					SS-43 (84-86') Rec. = 22"	21	2.25		N=59
85	656		@85.3'; Coarse gravel piece, some sand.	ML		38	2.75		
86	655		Olive Gray (5Y 4/2) CLAYEY SILT, trace fine to coarse sand and gravel, very stiff, low plasticity, moist.	CL		23	2.5		
					SS-44 (86-88') Rec. = 10"	29			N=63
87	654		Dark Gray (2.5Y 4/1) SILTY CLAY, trace fine to coarse sand and gravel, stiff to hard, medium plasticity, moist.			34	--		(Pushing rock)
88	653					37			
						12	3.5		
89	652				SS-45 (88-90') Rec. = 16"	15			N=33
						18	1.5		
90	651					19			
						13	4.0		
91	650		Olive Gray (5Y 4/2) CLAYEY SILT, trace fine to coarse sand and gravel, hard, low plasticity, moist.	ML	SS-46 (90-92') Rec. = 24"	23			N=61
						38	4.5+		
92	649		@92.2'; Fine to medium silty sand seam, wet.			40			
						24	4.5+		
93	648		Dark Grayish Brown (10YR 4/2) CLAYEY SILT, trace fine to coarse sand and gravel, hard, low plasticity, moist.	ML	SS-47 (92-94') Rec. = 24"	15	4.0		N=32
						17			
94	647			CL		17	3.0		
						10	3.25		
95	646		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.		SS-48 (94-96') Rec. = 24"	12	3.5		N=37
						25			
96	645		Dark Grayish Brown (10YR 4/2) CLAYEY SILT, trace fine to coarse sand and gravel, very stiff to hard, low plasticity, moist to very moist.	ML		27	4.5+		
						13	4.0		
97	644				SS-49 (96-98') Rec. = 24"	17			N=42
						25	3.5		
98	643		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL		21			
						13	3.0		
99	642				SS-50 (98-100') Rec. = 6"	21			N=49
						28	--		(Pushing rock)
100			(Continued on next page)			32			

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/28/2018 ENDED: 01/02/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid FLight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-12-18SD(0-106') into boring upon completion of drilling. Installed Piezometer P-12-18IT (0-59') into adjacent(within 10') blind-drilled boring.

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APTIM

SURFACE ELEVATION: 741.32
NORTHING: 14646.46
EASTING: 13209.63

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-12-18

Depth in Feet	Surf. Elev. 741.32	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
100	641		(Continued from previous page) SILTY CLAY.	CL		12	3.5		
101	640		Dark Grayish Brown (10YR 4/2) SILT, little clay, very stiff, low plasticity, saturated.	ML	SS-51 (100-102') Rec. = 24"	33 40	3.5		N=73
102	639					42 17	3.75		
103	638		Dark Grayish Brown (10YR 4/2) SILTY CLAY with CLAYEY SILT, trace fine sand, stiff to very stiff, low to medium plasticity, very moist to saturated.	CL/ML	SS-52 (102-104') Rec. = 24"	6 5 16	1.5		N=11
104	637			SP		28	2.5		
105	636		Dark Reddish Brown (5YR 3/2) Fine to Medium SAND, trace coarse sand, poorly graded, extremely dense, saturated.		SS-53 (104-106') Rec. = 20"	44 39 50	4.5+		N=83
106	635		Dark Grayish Brown (10YR 4/2) CLAYEY SILT, trace fine to coarse sand and gravel, hard, low plasticity, moist to very moist.	ML		59	4.0		
107	634				SS-54 (106-108') Rec. = 22"	39 34	4.5+		N=73
108	633		End of boring @ 108'			23			
109	632								
110	631								
111	630								
112	629								
113	628								
114	627								
115	626								
116	625								
117	624								
118	623								
119	622								
120									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/28/2018 ENDED: 01/02/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid FLight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-12-18SD(0-106') into boring upon completion of drilling. Installed Piezometer P-12-18IT (0-59') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 730.31
NORTHING: 15112.47
EASTING: 11532.48

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-13-18

Depth in Feet	Surf. Elev. 730.31	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0	730		Very Dark Grayish Brown (10YR 3/2) Organic SILTY CLAY, trace fine to coarse sand, very stiff, medium plasticity, moist.	OL		2	3.5		
1	729				SS-1 (0-2') Rec. = 16"	2 4 7	3.0		N=6
2	728		Dark Yellowish Brown (10YR 4/4 to 4/6) with Brown (10YR 5/3) and trace Light Greenish Gray (GLEY 1 7/1 10Y) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.		SS-2 (2-4') Rec. = 23"	11 13 18 23	4.5+ 4.5+		N=31
3	727								
4	726			CL	SS-3 (4-6') Rec. = 24"	11 24 26 36	4.5+ 4.5+		N=50
5	725								
6	724				SS-4 (6-8') Rec. = 24"	12 15 22 32	4.5+ 4.5+		N=37
7	723								
8	722		Brown (10YR 5/3) with trace Dark Yellowish Brown (10YR 4/4 to 4/6) and Light Greenish Gray (GLEY 1 7/1 10Y) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.		SS-5 (8-10') Rec. = 24"	8 18 25 33	4.5+ 4.5+		N=43
9	721								
10	720			CL	SS-6 (10-12') Rec. = 20"	11 17 23 26	4.5+		N=40
11	719								
12	718		Dark Grayish Brown (10YR 4/2) with trace Dark Yellowish Brown (10YR 4/4) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.		SS-7 (12-14') Rec. = 8"	10 14 21 22	2.5		N=35 (Pushing rock-low recovery)
13	717			CL					
14	716				SS-8 (14-16') Rec. = 22"	5 10 11 14	2.25 1.75		N=21
15	715		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, stiff to very stiff, medium plasticity, moist.						
16	714				SS-9 (16-18') Rec. = 14"	5 7 10 13	1.75 1.5		N=17 (Pushing rock)
17	713			CL					
18	712				SS-10 (18-20') Rec. = 14"	4 8 11 13	1.25 1.5		N=19 (Pushing rock)
19	711								
20			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/11/2019 ENDED: 1/14/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-13-18SD(0-96') into boring upon completion of drilling. Installed Piezometer P-13-18IT (0-50') into adjacent(within 10') blind-drilled boring.

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APTIM

SURFACE ELEVATION: 730.31
NORTHING: 15112.47
EASTING: 11532.48

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-13-18

Depth in Feet	Surf. Elev. 730.31	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
20	710		(Continued from previous page) SILTY CLAY.			3			
						9	1.75		
21	709				SS-11 (20-22') Rec. = 22"	10			N=19
						11	1.75		
22	708					7			
						11	1.75		
23	707				SS-12 (22-24') Rec. = 14"	15			N=26 (Pushing rock)
						17	1.5		
24	706			CL		4			
						8	1.75		
25	705				SS-13 (24-26') Rec. = 24"	9			N=17
						12	1.75		
26	704					6			
						10	3.25		
27	703				SS-14 (26-28') Rec. = 24"	11			N=21
						13	2.5		
28	702		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, stiff, medium plasticity, moist.			4			
						6	1.75		
29	701			CL	SS-15 (28-30') Rec. = 23"	9			N=15
						9	1.5		
30	700		Same, with Dark Grayish Brown (10YR 4/2).			4			
						9	1.5		
31	699		@31'; Coarse gravel.		SS-16 (30-32') Rec. = 24"	13			N=22
			Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL		13	2.5		
32	698					8	4.0		
			Dark Grayish Brown (2.5Y 4/2) to Grayish Brown (2.5Y 5/2) CLAY and SILT, trace fine sand, very stiff to hard, low plasticity, saturated.	CL-ML	SS-17 (32-34') Rec. = 23"	20	2.75		N=40
33	697					20			
						15	2.5		
34	696		@32.9-33'; Very Dark Grayish Brown (2.5Y 3/2) fine sand seam, saturated.			8	4.5+		
						14			
35	695		Dark Gray (7.5YR 4/1) FAT CLAY, some laminations, trace silt, trace fine sand, stiff to hard, high plasticity, moist.		SS-18 (34-36') Rec. = 22"	17	1.75		N=31
						18	2.25		
36	694					5			
						8	2.75		
37	693			CH	SS-19 (36-38') Rec. = 24"	9			N=17
						10	2.5		
38	692					6			
						8	2.5		
39	691				SS-20 (38-40') Rec. = 24"	10			N=18
						13	2.75		
40			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/11/2019 ENDED: 1/14/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-13-18SD(0-96') into boring upon completion of drilling. Installed Piezometer P-13-18IT (0-50') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 730.31
NORTHING: 15112.47
EASTING: 11532.48

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-13-18

Depth in Feet	Surf. Elev. 730.31	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40	690		(Continued from previous page) FAT CLAY.	CH	SS-21 (40-42') Rec. = 22"	5 8 10 11	2.5 2.25		N=18
41	689								
42	688		Dark Gray (7.5YR 4/1) FAT CLAY with little thin lenses of Gray (7.5YR 5/1) CLAYEY SILT, trace fine sand, stiff, low to high plasticity, moist to wet.	CH/ML	SS-22 (42-44') Rec. = 24"	4 5 11 13	2.0 1.5 1.5		N=16
43	687			CH/ML					
44	686		Dark Gray (7.5YR 4/1) FAT CLAY with Dark Grayish Brown (2.5Y 4/2) CLAYEY SANDY SILT, stiff, low to high plasticity, saturated.	ML	SS-23 (44-46') Rec. = 18"	11 24 22 20	1.5 1.5		N=46
45	685								
46	684		Dark Grayish Brown (2.5Y 4/2) CLAYEY SANDY SILT, little Dark Gray (7.5YR 4/1) fat clay, stiff, low plasticity, saturated.	SP	ST-24 (46-48') Rec. = 13"	--	--		@46-48'(Pushed Shelby Tube); ST-24/B-13-18(46-48');Rec.=13"(SP/ML),1/11/19(1415).
47	683		Very Dark Grayish Brown (2.5Y 3/2) to Dark Grayish Brown (2.5Y 4/2) Fine to Coarse SAND, trace fine to coarse gravel, trace silt, poorly graded, dense, saturated.			--	--		
48	682			ML	SS-25 (48-50') Rec. = 19"	16 16 19 24	4.5+ 4.0		N=35
49	681		Dark Gray (2.5Y 4/1) CLAYEY SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, low plasticity, moist to wet.						
50	680		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, stiff to very stiff, medium plasticity, moist.	CL	SS-26 (50-52') Rec. = 23"	11 16 20 25	3.75 2.0		N=36
51	679								
52	678				SS-27 (52-54') Rec. = 1"	12 17 20 24	-- --		N=37 (Pushing rock-low recovery)
53	677								
54	676				SS-28 (54-56') Rec. = 24"	8 13 15 18	3.0 2.0		N=28
55	675								
56	674				ST-29 (56-58') Rec. = 24"	-- --	-- --		@56-58'(Pushed Shelby Tube); ST-29/B-13-18(56-58');Rec.=24"(CL), 1/14/19(0815).
57	673								
58	672				SS-30 (58-60') Rec. = 24"	10 14 17 20	1.75 1.75		N=31
59	671		(Continued on next page)						
60									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/11/2019 ENDED: 1/14/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-13-18SD(0-96') into boring upon completion of drilling. Installed Piezometer P-13-18IT (0-50') into adjacent(within 10') blind-drilled boring.

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APTIM

SURFACE ELEVATION: 730.31
NORTHING: 15112.47
EASTING: 11532.48

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-13-18

Depth in Feet	Surf. Elev. 730.31	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
60	670		(Continued from previous page) SILTY CLAY.						
61	669				SS-31 (60-62') Rec. = 24"	6 12 15 16	1.75 2.25		N=27
62	668					8	--		
63	667				SS-32 (62-64') Rec. = 1"	13 18 21	--		N=31 (Pushing rock-low recovery)
64	666					8	2.0		
65	665				SS-33 (64-66') Rec. = 23"	12 17 20	2.25		N=29
66	664					--	--		@66-68'(Pushed Shelby Tube); ST-34/B-13-18(66-68');Rec.=24"(CL), 1/14/19(0900)
67	663				ST-34 (66-68') Rec. = 24"	--	--		
68	662					15	2.25		
69	661				SS-35 (68-70') Rec. = 24"	20 28 29	2.25		N=48
70	660			CL		9	2.25		
71	659				SS-36 (70-72') Rec. = 24"	16 19 24	2.5		N=35
72	658					9	2.5		
73	657				SS-37 (72-74') Rec. = 23"	15 21 25	3.0		N=36
74	656					13	2.5		
75	655				SS-38 (74-76') Rec. = 24"	15 22 27	2.75		N=37
76	654					10	3.25		
77	653				SS-39 (76-78') Rec. = 24"	16 20 24	3.0		N=36
78	652					8	2.25		
79	651				SS-40 (78-80') Rec. = 24"	11 11 18	1.25		N=22
80			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/11/2019 ENDED: 1/14/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-13-18SD(0-96') into boring upon completion of drilling. Installed Piezometer P-13-18IT (0-50') into adjacent(within 10') blind-drilled boring.

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APTIM

SURFACE ELEVATION: 730.31
NORTHING: 15112.47
EASTING: 11532.48

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-13-18

Depth in Feet	Surf. Elev. 730.31	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80	650		(Continued from previous page) SILTY CLAY.	CL	SS-41 (80-82') Rec. = 14"	15 21 29 29	3.75 2.25		N=50 (Pushing rock)
81	649								
82	648				SS-42 (82-84') Rec. = 24"	8 12 17 22	3.5 2.25		N=29
83	647								
84	646		Dark Grayish Brown (2.5Y 4/2) SILTY CLAY with Olive Gray (5Y 4/2) CLAYEY SILT, trace fine to medium sand, hard, low to medium plasticity, moist to wet.	CL/ML	SS-43 (84-86') Rec. = 24"	12 20 29 32	4.5+ 4.5+		N=49
85	645								
86	644		Dark Reddish Gray (5YR 4/2) SILTY CLAY, trace Dark Grayish Brown (2.5Y 4/2) silty clay and Olive Gray (5Y 4/2) clayey silt, trace fine to medium sand, hard, medium plasticity, moist to wet.	CL		32	4.5+		
87	643				SS-44 (86-88') Rec. = 17"	60 50/5"	--		N=110+
88	642		Dark Grayish Brown (2.5Y 4/2) Fine to Coarse SAND and GRAVEL, trace silt, poorly graded, extremely dense, saturated.	SP/GP			--		
89	641		Same, with coarse dolomite gravel.		SS-45 (88-90') Rec. = 6"	85/6"	--		N=85+ (Pushing coarse gravel)
90	640					56	--		
91	639				SS-46 (90-92') Rec. = 15"	49 34 32	--		N=83
92	638					43	--		
93	637				SS-47 (92-94') Rec. = 18"	44 41 40	--		N=85
94	636					41	--		
95	635				SS-48 (94-96') Rec. = 20"	46 32 33	--		N=78
96	634		End of boring @ 96'						
97	633								
98	632								
99	631								
100									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/11/2019 ENDED: 1/14/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-13-18SD(0-96') into boring upon completion of drilling. Installed Piezometer P-13-18IT (0-50') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 739.10
NORTHING: 15154.58
EASTING: 12405.35

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-14-18

Depth in Feet	Surf. Elev. 739.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0	739		GRAVEL FILL.	GP-FL		6	--		
1	738		Black (10YR 2/1) Organic SILTY CLAY FILL, trace fine to coarse sand, very stiff, medium plasticity, moist.	OL-FL	SS-1 (0-2') Rec. = 18"	8 8 8	2.5		N=16
2	737		Dark Olive Gray (5Y 3/2) grading to Olive (5Y 4/3) with Light Olive Brown (2.5Y 5/6) SILTY CLAY, trace fine to coarse sand and fine gravel, very stiff, medium plasticity, moist.	CL	SS-2 (2-4') Rec. = 16"	2 4 4	2.75 2.5		N=8
3	736					5			
4	735		Yellowish Brown (10YR 4/4) with Gray (GLEY 1 6/N) and Brown (10YR 4/3) SILTY CLAY, trace fine to coarse sand and fine gravel, stiff, medium plasticity, moist.	CL	SS-3 (4-6') Rec. = 18"	3 3 9	1.75 1.75		N=12
5	734					6			
6	733		Brown (10YR 4/3) with trace Gray (GLEY 1 6/N) and Yellowish Brown (10YR 5/4) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-4 (6-8') Rec. = 24"	5 9 13	3.0 4.5+		N=22
7	732					15			
8	731				SS-5 (8-10') Rec. = 24"	8 14 21	4.5+ 4.5+		N=35
9	730					24			
10	729				SS-6 (10-12') Rec. = 22"	7 11 14	2.25 4.5+		N=25
11	728		Dark Gray (7.5YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL		18	2.5		
12	727		@11.7'; Fine silty sand lens, wet.		SS-7 (12-14') Rec. = 23"	6 10 11	3.75 3.5		N=21
13	726					14			
14	725				SS-8 (14-16') Rec. = 24"	5 7 10	3.75 3.5		N=17
15	724					14			
16	723				SS-9 (16-18') Rec. = 24"	4 7 10	2.0 2.0		N=17
17	722					12			
18	721				SS-10 (18-20') Rec. = 19"	3 7 11	2.25 2.5		N=18
19	720		@19-20'; Little fine to coarse sand and gravel. (Continued on next page)			14			
20									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/03/2018 ENDED: 12/05/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-14-18SD(0-122') into boring upon completion of drilling. Installed Piezometer P-14-18IT (0-84') into adjacent(within 10') blind-drilled boring.

04-09-2019 T:\Projects\2018\Advanced Zion Landfill Expansion\Hydrogeo\Boring Logs\B-14-18.bor

APTIM

SURFACE ELEVATION: 739.10
NORTHING: 15154.58
EASTING: 12405.35

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-14-18

Depth in Feet	Surf. Elev. 739.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
20	719		(Continued from previous page) SILTY CLAY.			2			
21	718				SS-11 (20-22') Rec. = 24"	6 8 10	2.25 2.25		N=14
22	717					4	2.0		
23	716			CL	SS-12 (22-24') Rec. = 24"	9 10 13	2.0		N=19
24	715					3	2.0		
25	714				SS-13 (24-26') Rec. = 21"	8 15 17	2.5		N=23
26	713		Dark Gray (10YR 4/1) Fine to Medium SILTY SAND, trace coarse sand and fine gravel, poorly graded, medium dense, wet.	SM		6			
27	712		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, stiff to very stiff, medium plasticity, moist.		SS-14 (26-28') Rec. = 22"	8 14 18	3.0 2.5		N=22
28	711					5	2.5		
29	710				SS-15 (28-30') Rec. = 23"	10 12 13	1.75		N=22
30	709					--	--		@30-32'(Pushed Shelby Tube); ST-16/B-14-18(30-32');Rec.= 24"(CL), 12/3/18(1300).
31	708				ST-16 (30-32') Rec. = 24"	--	--		
32	707					7	2.5		
33	706			CL	SS-17 (32-34') Rec. = 24"	13 19 20	2.5		N=32
34	705					6	2.5		
35	704				SS-18 (34-36') Rec. = 24"	6 10 15	1.75 2.25		N=16
36	703					4	2.25		
37	702				SS-19 (36-38') Rec. = 24"	10 12 17	2.0		N=22
38	701					8	1.5		
39	700				SS-20 (38-40') Rec. = 14"	14 20 22	2.0		N=34 (Pushing rock)
40			(Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/03/2018 ENDED: 12/05/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-14-18SD(0-122') into boring upon completion of drilling. Installed Piezometer P-14-18IT (0-84') into adjacent(within 10') blind-drilled boring.

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APTIM

SURFACE ELEVATION: 739.10
NORTHING: 15154.58
EASTING: 12405.35

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-14-18

Depth in Feet	Surf. Elev. 739.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40	699		(Continued from previous page) SILTY CLAY. @40-41'; Trace thin sandy silt lenses, wet, trace Greenish Gray (GLEY 1 5/1 5GY) shale gravel.	CL	SS-21 (40-42') Rec. = 24"	20 20 18 28	3.75 3.75		N=38
41	698								
42	697				SS-22 (42-44') Rec. = 24"	12 17 26 29	3.5 2.5		N=43
43	696								
44	695				SS-23 (44-46') Rec. = 24"	9 22 31 36	3.25 4.0		N=53
45	694		@ 44.8-45'; fine to medium sand seam, wet.						
46	693		Gray (2.5Y 5/1) with Dark Gray (2.5Y 4/1) CLAYEY SILT, little fine sand, little laminations, very stiff to hard, low plasticity, wet.	ML	SS-24 (46-48') Rec. = 24"	16 19 22 15	4.0 3.5 1.5		N=41
47	692								
48	691		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine sand, stiff, medium plasticity, moist.	CL	SS-25 (48-50') Rec. = 24"	5 7 14 16	2.25 3.5		N=21
49	690		Dark Gray (7.5YR 4/1) SILTY CLAY, trace fine sand, very stiff, medium plasticity, moist.	CL					
50	689		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine sand, little laminations, very stiff, medium plasticity, moist.		SS-26 (50-52') Rec. = 24"	7 11 15 16	3.5 3.0		N=26
51	688								
52	687				SS-27 (52-54') Rec. = 24"	7 10 14 17	2.0 3.5		N=24
53	686			CL					
54	685				SS-28 (54-56') Rec. = 24"	8 15 18 21	3.0 2.5		N=33
55	684								
56	683				SS-29 (56-58') Rec. = 24"	7 9 12 31	2.5 3.0		N=21
57	682								
58	681		Dark Gray (2.5Y 4/1) SILTY CLAY, trace fine sand, very stiff, medium plasticity, moist.	CL					
59	680		@ 57.8-58'; fine to medium silty sand seam, wet.	CL-ML	SS-30 (58-60') Rec. = 19"	8 14 15 19	4.5+ 2.5		N=29
60			CLAY and SILT (Continued on next page)						

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/03/2018 ENDED: 12/05/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-14-18SD(0-122') into boring upon completion of drilling. Installed Piezometer P-14-18IT (0-84') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 739.10
NORTHING: 15154.58
EASTING: 12405.35

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-14-18

Depth in Feet	Surf. Elev. 739.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80	659		(Continued from previous page @79.75') Grayish Brown (10YR 5/2) with Dark Grayish Brown (10YR 4/2) SANDY SILT, little clay, hard, low plasticity, very moist to wet.	ML	SS-41 (80-82') Rec. = 9"	43 66	4.5+		N=109+
81	658								
82	657					31	4.5+		
83	656		Dark Grayish Brown (10YR 4/2) Fine SILTY SAND, trace clay, poorly graded, very dense, saturated.	SM	SS-42 (82-84') Rec. = 22"	41 34 26	4.5+		N=75
84	655		Very Dark Grayish Brown (10YR 3/2) SILTY CLAY, trace to little Gray (10YR 5/1) sandy silt pockets, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist to wet.	CL	SS-43 (84-86') Rec. = 24"	11 19 29 47	3.25 4.5+ 3.0		N=48
85	654								
86	653					31			
87	652				SS-44 (86-88') Rec. = 24"	36 37	4.5+		N=73
88	651		Very Dark Grayish Brown (2.5Y 4/2) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL		37	4.5+		
89	650		Gray (10YR 5/1) with Dark Grayish Brown (10YR 4/2) SILT, little clay and fine sand, hard, low plasticity, very moist to wet.	ML	SS-45 (88-90') Rec. = 18"	27 49 53	4.5+ 4.5+		N=102
90	649								
91	648		Dark Gray (10YR 4/1) SILTY CLAY with trace Gray (10YR 5/1) silt, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-46 (90-92') Rec. = 18"	35 39 50	4.5+ 4.5+		N=89
92	647								
93	646				SS-47 (92-94') Rec. = 24"	22 30 42 47	4.5+ 3.75		N=72
94	645								
95	644				SS-48 (94-96') Rec. = 24"	15 25 38 47	3.75 3.75		N=63
96	643								
97	642		@97.5-98.2'; Dark Gray (2.5Y 4/1).		SS-49 (96-98') Rec. = 24"	11 20 39 49	3.0 4.5+		N=59
98	641					26	4.5+		
99	640		Dark Grayish Brown (10YR 4/2) with Gray (10YR 5/1) SILTY CLAY and CLAYEY SILT, little fine sand, very stiff to hard, low to medium plasticity, moist to wet.	CL/ML SM	SS-50 (98-100') Rec. = 24"	31 39 49	3.5		N=70
100									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/03/2018 ENDED: 12/05/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-14-18SD(0-122') into boring upon completion of drilling. Installed Piezometer P-14-18IT (0-84') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 739.10
NORTHING: 15154.58
EASTING: 12405.35

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-14-18

Depth in Feet	Surf. Elev. 739.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
60	679		Continued from previous page @ 58') Dark Grayish Brown (2.5Y 4/2) to Olive Brown (2.5Y 4/3) CLAY and SILT, little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, low plasticity, moist to very moist.	CL-ML	SS-31 (60-62') Rec. = 22"	7 12 15 16	2.0 2.0		N=27
61	678								
62	677		@61.2' and 61.8'; 1" sandy silt lenses, wet.		SS-32 (62-64') Rec. = 22"	6 14 14 16	1.75 2.75 2.0		N=28
63	676								
64	675		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL	ST-33 (64-66') Rec. = 24"	-- --	-- --		@64-66'(Pushed Shelby Tube); ST-33/B-14-18(64-66');Rec.=24"(CL), 12/3/18(1515).
65	674								
66	673								
67	672				SS-34 (66-68') Rec. = 24"	9 16 26 30	2.0 2.75 3.5		N=42
68	671		Dark Grayish Brown (10YR 4/2) CLAYEY SILT, trace fine to coarse sand and fine gravel, hard, low plasticity, moist.	ML	SS-35 (68-70') Rec. = 18"	21 42 53	4.5+ 4.5+		N=95
69	670								
70	669		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse and and fine gravel, hard, medium plasticity, moist.	CL	SS-36 (70-72') Rec. = 24"	28 33 47 53	4.5+ 4.5+		N=80
71	668								
72	667				SS-37 (72-74') Rec. = 24"	16 26 38 52	4.5+ 4.5+		N=64
73	666								
74	665				ST-38 (74-76') Rec. = 13"	-- --	-- --		@74-76'(Pushed Shelby Tube); ST-38/B-14-18(74-76');Rec.=13"(CL), 12/4/18(0800).
75	664								
76	663				SS-39 (76-78') Rec. = 23"	18 26 41 50/5"	4.5+ 4.5+		N=67
77	662								
78	661		Grayish Brown (10YR 5/2) SANDY SILT, little clay, very stiff to hard, low plasticity, very moist to wet.	ML	SS-40 (78-80') Rec. = 18"	45 52 50	4.5+ 4.5+		N=102
79	660		Dark Grayish Brown (10YR 4/2) Fine SILTY SAND, trace clay, poorly graded, extremely dense, wet.	SM ML					
80									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/03/2018 ENDED: 12/05/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-14-18SD(0-122') into boring upon completion of drilling. Installed Piezometer P-14-18IT (0-84') into adjacent(within 10') blind-drilled boring.

APTIM

SURFACE ELEVATION: 739.10
NORTHING: 15154.58
EASTING: 12405.35

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-14-18

Depth in Feet	Surf. Elev. 739.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
100	639		(Continued from previous page @99.3') Dark Grayish Brown (10YR 4/2) Fine to Coarse SILTY SAND, little clay, poorly graded, saturated.	SM CL/ML SM	SS-51 (100-102') Rec. = 24"	17 33 26 37	3.5 2.0 4.5+		N=59
101	638								
102	637		Dark Grayish Brown (10YR 4/2) with Gray (10YR 5/1) SILTY CLAY and CLAYEY SILT, little fine sand, very stiff, low to medium plasticity, moist to wet.	CL CL/ML	SS-52 (102-104') Rec. = 24"	17 22 26 30	4.0 4.5+		N=48
103	636								
104	635		Dark Grayish Brown (10YR 4/2) Fine to Medium SILTY SAND, little clay, trace coarse sand and fine gravel, poorly graded, very dense, saturated.	CL	SS-53 (104-106') Rec. = 24"	18 25 32 34	4.5+ 3.5		N=57
105	634		Dark Grayish Brown (10YR 4/2) and Dark Reddish Gray (5YR 4/2) SILTY CLAY, trace fine to medium sand, very stiff to hard, medium plasticity, moist.						
106	633								
107	632		Dark Grayish Brown (10YR 4/2) with Gray (10YR 5/1) SILTY CLAY and CLAYEY SILT, little fine sand, little laminations, hard, low to medium plasticity, moist to wet.	CL	SS-54 (106-108') Rec. = 21"	8 17 22 50/3"	3.5 3.5		N=29
108	631			CL					
109	630		Dark Reddish Gray (5YR 4/2) and Dark Gray (5YR 4/1) SILTY CLAY, trace fine to coarse sand, very stiff to hard, medium plasticity, moist.	CL	SS-55 (108-110') Rec. = 24"	77 40 31 32	3.5 3.5		N=71
110	629		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace Gray (10YR 5/1) silt, trace fine sand, laminated, very stiff, medium plasticity, moist.						
111	628				SS-56 (110-112') Rec. = 3"	29 34 51 50/5"	3.5		N=85 (Pushing rock)
112	627		Brown (7.5YR 4/2) with Dark Gray (7.5YR 4/1) SILTY CLAY, trace Gray (10YR 5/1) silt, trace fine sand and coarse gravel, laminated, very stiff, medium plasticity, moist.	CL	SS-57 (112-114') Rec. = 24"	17 21 39 52	4.5+ 4.5+		N=60
113	626								
114	625		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.		SS-58 (114-116') Rec. = 24"	19 33 47 56	4.5+ 4.5+		N=80
115	624								
116	623		Dark Grayish Brown (10YR 4/2) with Gray (10YR 5/1) CLAYEY SILT, trace fine sand, hard, low plasticity, moist to wet.	ML	SS-59 (116-118') Rec. = 22"	26 39 49 53	4.5+ 4.5+		N=88
117	622								
118	621								
119	620		Very Dark Gray (2.5Y 3/1) SANDY CLAY, some silt, trace fine gravel, stiff, medium plasticity, moist.	CL CL	SS-60 (118-120') Rec. = 24"	26 8 23 39	1.5 4.5+ 4.5+		N=31
120									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/03/2018 ENDED: 12/05/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-14-18SD(0-122') into boring upon completion of drilling. Installed Piezometer P-14-18IT (0-84') into adjacent(within 10') blind-drilled boring.

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APTIM

SURFACE ELEVATION: 739.10
NORTHING: 15154.58
EASTING: 12405.35

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-14-18

Depth in Feet	Surf. Elev. 739.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
120	619		(Continued from previous page @119')	CL		35	4.5+		
121	618		Dark Gray (2.5Y 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	ML/CL	SS-61 (120-122') Rec. = 18"	70	4.5+		N=125
122	617		Grayish Brown (10YR 5/2) CLAYEY SILT and Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand, hard, low to medium plasticity, moist to wet.			55			
123	616		End of boring @ 122'						
124	615								
125	614								
126	613								
127	612								
128	611								
129	610								
130	609								
131	608								
132	607								
133	606								
134	605								
135	604								
136	603								
137	602								
138	601								
139	600								
140									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 12/03/2018 ENDED: 12/05/2018

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-14-18SD(0-122') into boring upon completion of drilling. Installed Piezometer P-14-18IT (0-84') into adjacent(within 10') blind-drilled boring.

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APTIM

SURFACE ELEVATION: 736.70
NORTHING: 15144.13
EASTING: 13213.52

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-15-18

Depth in Feet	Surf. Elev. 736.70	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
0	736		Very Dark Brown (10YR 2/2) Organic SILTY CLAY, trace fine to coarse sand, very stiff, medium plasticity, moist.	OL	SS-1 (0-2') Rec. = 18"	WOH 2 6 4	3.0 2.0		WOH=Weight of Hammer N=18
2	735								
3	734		Dark Yellowish Brown (10YR 4/4 to 4/6) with Light Greenish Gray (GLEY 1 7/1 10Y) and trace Very Dark Brown (10YR 3/1) SILTY CLAY, trace fine to coarse sand and fine gravel, very stiff, medium plasticity, moist.	CL	SS-2 (2-4') Rec. = 24"	4 6 7 8	2.25 2.0		N=13
4	733								
5	732				SS-3 (4-6') Rec. = 21"	2 3 3 2	2.0		N=6
6	731		Dark Yellowish Brown (10YR 4/4 to 4/6) with Light Greenish Gray (GLEY 1 7/1 10Y) Fine to Medium SILTY SAND, some clay, poorly graded, loose, saturated.	SM					
7	730		Yellowish Brown (10YR 5/6) with Gray (GLEY 1 6/N) CLAYEY SILT, trace fine sand, stiff to very stiff, low plasticity, saturated.	ML	SS-4 (6-8') Rec. = 22"	WOH 4 5 2	3.0 1.0		N=9
8	729								
9	728		Yellowish Brown (10YR 5/4 to 5/6) with trace Dark Yellowish Brown (10YR 4/6) and Gray (GLEY 1 6/N) SILT, little clay, trace fine sand, stiff to very stiff, low plasticity, saturated.	ML	SS-5 (8-10') Rec. = 23"	6 7 12 15	1.75 3.0		N=19
10	727								
11	726				SS-6 (10-12') Rec. = 22"	14 17 25 26	3.0 1.5 2.25		N=42
12	725		Gray (2.5Y 5/1) with trace Light Olive Brown (2.5Y 5/6) SILT, little clay, trace fine sand, very stiff, low plasticity, saturated.	ML	SS-7 (12-14') Rec. = 20"	15 15 12 14	2.5 4.5+		N=27
13	724								
14	723		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.	CL	SS-8 (14-16') Rec. = 24"	7 12 20 21	4.5+ 3.5		N=32
15	722								
16	721				SS-9 (16-18') Rec. = 24"	7 11 19 17	3.5 3.5		N=30
17	720								
18	719								
19	718				SS-10 (18-20') Rec. = 23"	7 17 32 29	4.5+		N=49
20	717		Dark Gray (2.5Y 4/1) Fine to Coarse SILTY SAND, little clay, trace fine gravel, poorly graded, dense, wet. (Cont'd on next page)	SM					

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/23/2019 ENDED: 1/24/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-15-18SD(0-100') into boring upon completion of drilling.

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APTIM

SURFACE ELEVATION: 736.70
NORTHING: 15144.13
EASTING: 13213.52

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-15-18

Depth in Feet	Surf. Elev. 736.70	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
20			(Continued from previous page) SILTY SAND.	SM		17			
21	716		Gray (2.5Y 5/1) CLAYEY SILT, trace fine sand, hard, low plasticity, very moist to wet.	ML	SS-11 (20-22') Rec. = 23"	21 30	4.5+		N=51
22	715		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.	CL		29	4.5+		
23	714		Dark Gray (2.5Y 4/1) Fine to Coarse SILTY SAND, little clay, trace fine gravel, poorly graded, dense, wet.	SM	SS-12 (22-24') Rec. = 22"	12 23 19 24	4.5+ 4.5+		N=42
24	713					7	4.0		
25	712		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.		SS-13 (24-26') Rec. = 24"	17 22 25	3.0		N=39
26	711					7	3.5		
27	710				SS-14 (26-28') Rec. = 24"	12 18 21	2.25		N=30
28	709					8	3.25		
29	708				SS-15 (28-30') Rec. = 24"	11 16 21	3.0		N=27
30	707					5	2.75		
31	706				SS-16 (30-32') Rec. = 24"	24 29	4.5+		N=53
32	705			CL		30			
33	704				SS-17 (32-34') Rec. = 24"	12 20 23 28	4.0 3.5		N=43
34	703					8	4.0		
35	702				SS-18 (34-36') Rec. = 23"	17 26 37	4.0		N=43
36	701					--	--		@36-38'(Pushed Shelby Tube); ST-19/B-15-18;(36-38');Rec.=24"(CL), 1/23/19(1015).
37	700				ST-19 (36-38') Rec. = 24"	--	--		
38	699					13	4.5+		
39	698				SS-20 (38-40') Rec. = 24"	23 31	4.5+		N=54
40	697		(Continued on next page)			39			

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/23/2019 ENDED: 1/24/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-15-18SD(0-100') into boring upon completion of drilling.

APTIM

SURFACE ELEVATION: 736.70
NORTHING: 15144.13
EASTING: 13213.52

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-15-18

Depth in Feet	Surf. Elev. 736.70	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
40			(Continued from previous page) SILTY CLAY.			12			
41	696				SS-21 (40-42') Rec. = 24"	18	3.75		N=45
42	695					27	3.5		
43	694			CL	SS-22 (42-44') Rec. = 13"	31			
44	693					18	3.0		
45	692					29			N=64 (Pushing rock)
46	691		Dark Gray (10YR 4/1) CLAYEY SANDY SILT, trace fine to coarse gravel, very stiff, low plasticity, wet.	ML	SS-23 (44-46') Rec. = 22"	35			
				SM		36			
47	690		Dark Gray (2.5Y 5/1) Fine to Medium SILTY SAND, trace coarse sand and fine gravel, trace clay, poorly graded, dense, saturated.			14	3.75		
48	689		Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist.	CL		21			N=44
49	688		@49.1-49.3'; silt pocket, wet			23	2.0		
50	687					25			
51	686		Gray (10YR 5/1) CLAYEY SILT and Dark Grayish Brown (10YR 4/2) Laminated SILTY CLAY, interbedded, trace fine sand, very stiff to hard, low to medium plasticity, moist clay, saturated silt.	ML/CL	SS-24 (46-48') Rec. = 23"	12	2.0		
52	685					17			N=40
53	684					23	3.0		
54	683					25			
55	682		Gray (10YR 5/1) CLAYEY SILT, trace fine sand, stiff to hard, low plasticity, saturated.	ML	SS-25 (48-50') Rec. = 24"	15	4.5+		
56	681					23	1.75		N=51
57	680		Dark Grayish Brown (10YR 4/2) SILTY CLAY, little laminations, trace fine sand, stiff to hard, medium plasticity, moist.			28			
58	679		@57.5-57.6'; Gray (10YR 5/1) wet silt pocket.	CL		34	4.5+		
59	678					11	3.5		
60	677		(Continued on next page)		SS-26 (50-52') Rec. = 24"	17	2.5		N=40
						23			
						27	2.5		
					SS-27 (52-54') Rec. = 22"	11	4.5+		
						15			N=36
						21	4.0		
						28			
					SS-28 (54-56') Rec. = 22"	14	4.0		
						22			
						18	1.75		N=40
						20	4.5+		
					SS-29 (56-58') Rec. = 24"	11	4.5+		
						20			
						25	1.0		N=45
						26	2.5		
					ST-30 (58-60') Rec. = 24"	--	--		@58-60'(Pushed Shelby Tube); ST-30/B-15-18(58-60');Rec.=24"(CL), 1/23/19(1140).
						--	--		

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/23/2019 ENDED: 1/24/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-15-18SD(0-100') into boring upon completion of drilling.

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APTIM

SURFACE ELEVATION: 736.70
NORTHING: 15144.13
EASTING: 13213.52

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-15-18

Depth in Feet	Surf. Elev. 736.70	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
60			(Continued from previous page)						
	676		SILTY CLAY, with trace Gray (2.5Y 5/1) wet silt pockets.	CL		14	4.5+		
61					SS-31 (60-62') Rec. = 24"	20	3.5		N=42
	675		Dark Gray (10YR 4/1) CLAYEY SANDY SILT, trace fine gravel, hard, low plasticity, moist.	ML		22	4.5+		
62						29	4.5+		
	674		Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, medium plasticity, moist.			9	4.5+		
63					SS-32 (62-64') Rec. = 20"	15			N=47
	673					32	4.5+		
64						39			
	672					29	4.5+		
65					SS-33 (64-66') Rec. = 17"	39			N=89
	671					50	4.5+		
66									
	670				ST-34 (66-68') Rec. = 15"	--	--		@66-68'(Pushed Shelby Tube); ST-34/B-15-18(66-68');Rec.=15"(CL), 1/23/19(1330).
67						--	--		
	669								
68						10			
	668		@68.5'; wet sand pocket.			18	3.75		
69					SS-35 (68-70') Rec. = 24"	32			N=50
	667					34	4.5+		
70						12			
	666			CL		17	3.0		
71					SS-36 (70-72') Rec. = 24"	20			N=37
	665					24	2.5		
72						13			
	664					15	2.0		
73					SS-37 (72-74') Rec. = 24"	21			N=36
	663					27	2.5		
74						14			
	662					24	3.75		
75					SS-38 (74-76') Rec. = 24"	39			N=63
	661					42	3.0		
76						17			
	660					20	3.75		
77					SS-39 (76-78') Rec. = 24"	37			N=57
	659					39	3.5		
78						14	3.5		
	658					21			
79					SS-40 (78-80') Rec. = 22"	26	4.5+		N=47
	657		(Continued on next page)			46	3.0		
80									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/23/2019 ENDED: 1/24/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-15-18SD(0-100') into boring upon completion of drilling.

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APTIM

SURFACE ELEVATION: 736.70
NORTHING: 15144.13
EASTING: 13213.52

PROJECT: Zion Landfill Site 2 North
CLIENT: Advanced Disposal
PROJECT NO.: 003211
LOGGED BY: RWB

BORING NO. B-15-18

Depth in Feet	Surf. Elev. 736.70	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS(tsf) Using Pocket Penetrometer	RQD	REMARKS
80			(Continued from previous page) SILTY CLAY.			11			
	656					28	4.0		
81					SS-41 (80-82') Rec. = 12"	35			N=63 (Pushing rock)
	655					38	2.5		
82						18			
	654			CL		26	--		
83					SS-42 (82-84') Rec. = 3"	38			N=64 (Pushing rock)
	653					48	--		
84						18			
	652						3.0		
85					SS-43 (84-86') Rec. = 6"	52			N=127 (Pushing coarse quartzite gravel)
	651		Dark Grayish Brown (2.5Y 4/2) CLAYEY SILT, trace fine to coarse sand and gravel, hard, low plasticity, very moist.	ML		75			
86						34	4.5+		
	650			ML		52			
87			Light Olive Brown (2.5Y 5/3) SILT, little clay, trace fine sand, stiff, low plasticity, saturated.		SS-44 (86-88') Rec. = 19"	28	1.0		N=80
	649					34	4.5+		
88			Dark Gray (10YR 4/1) CLAYEY SILT and SILTY CLAY, trace fine to coarse sand and gravel, very stiff to hard, low to medium plasticity, moist to very moist.	ML/CL		17			
	648					26	3.5		
89					SS-45 (88-90') Rec. = 22"	30			N=56
	647					25	4.5+		
90			Dark Gray (10YR 4/1) CLAYEY SILT, trace fine to coarse sand and gravel, hard, low plasticity, very moist.			18			
	646					24	4.5+		
91				ML	SS-46 (90-92') Rec. = 21"	30			N=54
	645					32	4.5+		
92						17			
	644					17	4.5+		
93			Dark Gray (10YR 4/1) SILTY CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, moist.		SS-47 (92-94') Rec. = 22"	16			N=33
	643			CL		23	4.5+		
94						14			
	642		@ 94.8-95'; clayey silt seam, saturated.			24	3.0		
95			Dark Grayish Brown (10YR 4/2) SILTY CLAY, trace fine sand, very stiff, medium plasticity, moist.		SS-48 (94-96') Rec. = 24"	29	1.75		N=53
	641					32	2.5		
96				CL		19			
	640					29	2.0		
97					SS-49 (96-98') Rec. = 14"	33			N=62 (Pushing rock-fell in from above)
	639					39			
98			Dark Gray (2.5Y 4/1) CLAYEY SILT, trace Dark Grayish Brown (10YR 4/2) silty clay, trace fine sand, very stiff to hard, low plasticity, saturated.			13	2.5		
	638			ML		24			
99					SS-50 (98-100') Rec. = 24"	36	3.5		N=60
	637		End of Boring @100'			38	4.5+		
100									

DRILLING CONTRACTOR: Strata Earth Services, LLC
DRILLING METHOD: 6" Dia. SFA;5" Dia. PX Casing
3.875"/4.875" Dia. TRB
2" Dia. x 2' Long SS

DRILLING EQUIPMENT: Mobile B-57 ATV Drill Rig
DRILLING STARTED: 1/23/2019 ENDED: 1/24/2019

WATER LEVEL (FT.)

REMARKS
SFA=Solid Flight Auger;TRB=Tricone Roller Bit;SS=Split Spoon
ST=3" Dia. x 30" Long Shelby Tube
Installed Piezometer P-15-18SD(0-100') into boring upon completion of drilling.

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SURFACE ELEVATION: 742.90
NORTHING: 12494.15
EASTING: 12422.13

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-01-07

Depth in Feet	Surf. Elev. 742.90	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
0	743								
1	742		Dark Gray (10YR 4/1) Silty CLAY FILL, little fine sand, trace medium to coarse sand and fine to coarse gravel, stiff to hard, medium plasticity, moist	FILL	SS-1 0.0-2.0 Rec =16	3 2 2 3	1.0 1.5		N=4
2	741								
3	740				SS-2 2.0-4.0 Rec =18	2 2 2 3	4.5+ 2.5		N=4
4	739		Dark Gray (5Y 4/1) to Olive Gray (5Y 4/2) Silty CLAY, trace fine to medium sand, very stiff, medium plasticity, moist	CL					
5	738		Gray (Gley 1 5/N) to Greenish Gray (GLEY 1 5/10Y) Silty CLAY, trace fine to medium sand, very stiff, medium plasticity, moist	CL	SS-3 4.0-6.0 Rec = 20	2 7 9 8	3.5 2.5 2.0		N=16
6	737								
7	736				SS-4 6.0-8.0 Rec = 20	2 3 4 5	2.5 2.0		N=7
8	735		Brown (10YR 4/3) Silty SAND, trace coarse sand and fine gravel, trace clay, poorly graded, medium dense, saturated	SM					
9	734		Dark Yellowish Brown (10YR 4/6) to Light Olive Brown (2.5Y 5/4) SILT, trace fine sand, low plasticity, medium dense, moist	ML	SS-5 8.0-10.0 Rec = 22	8 12 12 16	4.5+ 4.5+		N=24
10	733								
11	732		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand and fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL	SS-6 10.0-12.0 Rec = 20	2 5 7 12	4.5+ 4.5+		N=12
12	731								
13	730				SS-7 12.0-14.0 Rec = 21	4 5 8 11	3.5 2.5 3.0		N=13
14	729								
15	728				SS-8 14.0-16.0 Rec = 22	4 7 9 12	3.75 4.25		N=16
16	727								
17	726				SS-9 16.0-18.0 Rec = 21	5 7 10 13	3.5 3.5		N=17
18	725								
19	724				SS-10 18.0-20.0 Rec =20	4 5 8 13	3.0 2.75		N=13
20									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA. 10" Boring (0-10') Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G170 was completed within B-1-07.

SURFACE ELEVATION: 742.90
NORTHING: 12494.15
EASTING: 12422.13

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO.
B-01-07

Depth in Feet	Surf. Elev. 742.90	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
20	723		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL	SS-11 20.0-22.0 Rec = 21	3 6 9 15	2.75 2.75		N=15
21	722								
22	721				SS-12 22.0-24.0 Rec = 22	4 6 7 12	2.25 3.0		N=13
23	720								
24	719				SS-13 24.0-26.0 Rec =21	3 7 8 15	2.75 2.75		N=15
25	718								
26	717				SS-14 26.0-28.0 Rec = 22	6 8 11 16	2.5 2.5		N=19
27	716								
28	715				SS-15 28.0-30.0 Rec = 20	4 7 9 14	2.5 3.0		N=16
29	714								
30	713				SS-16 30.0-32.0 Rec = 23	4 6 9 13	3.0 4.5+ 2.25		N=15
31	712								
32	711				SS-17 32.0-34.0 Rec = 21	4 7 8 12	2.5 3.25		N=15
33	710								
34	709				SS-18 34.0-36.0 Rec = 20	5 6 8 8	2.25 3.5 2.25		N=14
35	708								
36	707				SS-19 36.0-38.0 Rec = 21	4 8 11 11	2.75 2.5		N=19
37	706								
38	705				SS-20 38.0-40.0 Rec = 21	5 5 5 9	3.0 2.5		N=10
39	704								
40									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "SS" - Split Spoon
3.785" Tricone Roller Bit. 2" O.D. 2' Long Split Spoon
Monitoring Well G170 was completed within B-1-07.

SURFACE ELEVATION: 742.90
NORTHING: 12494.15
EASTING: 12422.13

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-01-07

Depth in Feet	Surf. Elev. 742.90	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
40	703		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, medium plasticity, moist See Remarks See Remarks See Remarks See Remarks	CL	SS-21 40.0-42.0 Rec = 22	6 8 11 14	3.5 2.75		N=19
41	702								
42	701				SS-22 42.0-44.0 Rec = 24	6 10 14 17	3.5 3.75		N=24
43	700								
44	699				SS-23 44.0-46.0 Rec = 22	5 8 13 18	3.0 4.5+ 4.5+		N=21
45	698		0.4' SILT seam @ 45.4'						
46	697		Gray (10YR 5/1) SILT, some clay, trace fine sand, medium dense, low plasticity, very moist	ML	See Remarks	7 9	4.5+		SS-24 46.0-46.6 Rec = 4
47	696		Dark Gray (10YR 4/1) to Very Dark Gray (10YR 3/1) Silty SAND, trace coarse sand and fine gravel, poorly graded, medium dense, saturated	SM	See Remarks	8			N=17 SS-24A 46.6-47.2 Rec = 8
48	695				See Remarks	14	1.75		SS-24B 47.2-48.0 Rec = 8
49	694		0.1' SILT seam @ 46.9'	SP	SS-25 48.0-50.0 Rec = 20	17 18 19 16			N=37
50	693		Dark Gray (10YR 4/1) Fine to Coarse SAND, some fine gravel, little silt, trace clay, dense, saturated		See Remarks	10 5			SS-26 50.9-52.0 Rec = 6
51	692		Dark Grayish Brown (10YR 4/2) Silty CLAY, some fine sand, trace medium to coarse sand and fine to coarse gravel, stiff to very stiff, medium plasticity, moist 0.1' Fine silty sand @ 53.1'	CL	SS-26A 50.9-52.0 Rec = 13	18 13	1.75 3.25		N=23
52	691				SS-27 52.0-53.3 Rec = 12	8 13 23	3.25 2.25		N=36
53	690								
54	689		Dark Gray (2.5Y 4/1) Silty SAND, trace medium sand, trace clay, poorly graded, dense, saturated	SM	See Remarks	15			SS-27A 53.3-54.0 Rec = 8
55	688				SS-28 54.0-55.3 Rec = 14	6 12 10			N=22 SS-28A 55.3-56.0 Rec = 8
56	687		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, very stiff to hard, medium plasticity, moist	CL	See Remarks	15	2.25		
57	686				SS-29 56.0-58.0 Rec = 20	9 16 18 24	4.25 4.5+		N=34
58	685								
59	684				SS-30 58.0-60.0 Rec = 24	9 12 23 26	4.5+ 4.5+		N=35
60									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G170 was completed within B-1-07.

SURFACE ELEVATION: 742.90
NORTHING: 12494 15
EASTING: 12422.13

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-01-07

Depth in Feet	Surf. Elev. 742.90	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
60	683		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist	CL	SS-31 60.0-62.0 Rec = 24	8 12 14 20	2.75 3.5		N=26
61	682								
62	681								
63	680				ST-32 62.0-64.0 Rec = 20				SS-33 64.0-64.8 Rec = 6
64	679				See Remarks	11 13	4.5+		
65	678		0.1' Fine silty sand seam @ 64.8'						
			Dark Gray (2.5Y 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, very stiff to medium stiff, low to medium plasticity, moist to very moist	CL	SS-33A 64.8-66.0 Rec = 14	10 9	2.25 0.5		N=23
66	677			CL	SS-34 66.0-67.5 Rec = 14	6 9 13	2.5		N=22
67	676		Very Dark Grayish Brown (2.5Y 3/2) Silty CLAY, some fine sand, trace medium to coarse sand and fine gravel, very stiff, medium plasticity, moist						
68	675			CL	See Remarks	15	3.75		SS-34A 67.5-68.0 Rec = 6
69	674		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, trace fine to coarse sand, trace fine gravel, very stiff, medium plasticity, moist		ST-35 68.0-70.0 Rec = 20				
70	673		Dark Gray (2.5Y 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, medium plasticity, moist			6	3.5		
71	672				SS-36 70.0-72.0 Rec = 24	8 14 20	4.5+		N=22
72	671			CL		10	3.0		
73	670				SS-37 72.0-74.0 Rec = 24	14 18 21	2.25		N=32
74	669					6	3.75		
75	668				SS-38 74.0-76.0 Rec = 24	8 13 15	3.5		N=21
76	667		Dark Gray (10YR 4/1) Silty CLAY, fine to coarse sand, little fine gravel, very stiff to hard, medium plasticity, moist			8	4.5+		
77	666				SS-39 76.0-78.0 Rec = 24	12 16 18	3.25		N=28
78	665			CL		8			
79	664		0.1' Fine to medium silty sand seam @ 79.2'		SS-40 78.0-79.2 Rec = 14	10 23	3.75		N=33 SS-40A 79.2-80.0 Rec = 10
80					See Remarks	23	3.0		

DRILLING CONTRACTOR: RDmP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA. 10" Boring (0-10') Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05 01 07 ENDED: 05/03 07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G170 was completed within B-1-07.

SURFACE ELEVATION: 742.90
NORTHING: 12494.15
EASTING: 12422.13

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-01-07

Depth in Feet	Surf. Elev. 742.90	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
80	663		Dark Gray (10YR 4/1) Silty CLAY, fine to coarse sand, little fine gravel, very stiff to hard, medium plasticity, moist	CL	SS-41 80.0-82.0 Rec = 24	15 24 24 28	3.75 3.75 4.5+		N=48
81	662								
82	661								
83	660				SS-42 82.0-84.0 Rec = 24	15 21 25 31	3.75 4.5+ 4.5+ 3.0		N=46
84	659								
85	658				SS-43 84.0-86.0 Rec = 23	22 23 26 37	4.5+ 4.5+		N=49
86	657								
87	656				SS-44 86.0-88.0 Rec = 24	9 15 22 28	4.5+ 3.5		N=37
88	655				SS-45 88.0-89.0 Rec = 12	10 52	3.0		N=92 SS-45A 89.0-89.8 Rec = 9 SS-45B 89.8-90.0 Rec = 2
89	654		Dark Grayish Brown (2.5Y 4/2) Silty SAND, trace medium to coarse sand, trace clay, poorly graded, extremely dense, saturated	SM	See Remarks	40			
90	653		0.3' Fine sand seam @ 89.5'	ML	See Remarks SS-46 90.0-91.0 Rec = 12	47 22 26	4.5+ 4.5+		
91	652		Reddish Brown (2.5YR 4/3) to Dark Grayish Brown (2.5Y 4/2) SILT, some clay, little fine sand, trace medium to coarse sand and fine to coarse gravel, extremely dense, very moist to wet	CL	SS-46A 91.0-92.0 Rec = 12	16 18	4.5+		N=42
92	651				SS-47 92.0-93.0 Rec = 10	11 55	4.5+		
93	650		Dark Gray (10YR 4/1) Silty CLAY, some fine sand, trace medium to coarse sand and fine to coarse gravel, hard, low to medium plasticity, moist	SP	SS-47A 93.0-94.0 Rec = 10	52 42			N=107
94	649								
95	648		Dark Gray (2.5Y 4/1) SAND with GRAVEL, little silt, trace coarse gravel, trace clay, poorly graded, extremely dense, saturated	SP	SS-48 94.0-96.0 Rec = 20	24 33 69 100/3"			N=102
96	647		Dark Grayish Brown (2.5Y 4/2) SAND, little medium sand, trace coarse sand, trace silt, poorly graded, extremely dense, saturated			50			
97	646		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, moist	CL	SS-49 96.0-98.0 Rec = 16	30 48 88	4.5+		N=78
98	645								
99	644		Dark Grayish Brown (2.5Y 4/2) Sandy SILT, extremely dense, low plasticity, wet to saturated	ML	SS-50 98.0-100.0 Rec = 10	52 78 125 50/1"			N=203
100									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G170 was completed within B-1-07.

SURFACE ELEVATION: 742.90
NORTHING: 12494.15
EASTING: 12422.13

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-01-07

Depth in Feet	Surf. Elev. 742.90	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
100	643		Dark Grayish Brown (2.5Y 4/2) Sandy SILT, extremely dense, low plasticity, wet to saturated	ML	See Remarks	87			SS-51 100.0-100.5 Rec = 3
101	642			CL	SS-51A 100.5-102.0 Rec = 7	157	4.5+	207+	
102	641		Dark Gray (10YR 4/1) Sandy Silty CLAY, trace fine gravel, hard, low to medium plasticity, moist			50/0.5"			
103	640		END OF BORING @ 102.0'						
104	639								
105	638								
106	637								
107	636								
108	635								
109	634								
110	633								
111	632								
112	631								
113	630								
114	629								
115	628								
116	627								
117	626								
118	625								
119	624								
120									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G170 was completed within B-1-07.

SURFACE ELEVATION: 743.30
NORTHING: 12,592.20
EASTING: 13,052.60

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: MW

Shaw® Shaw Environmental, Inc.

BORING NO. B-2-07 / EB-8

Depth in Feet	Surf. Elev. 743.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
0	743		Black Clayey TOPSOIL	OL		24			
1	742		Brown Silty CLAY, little sand, moist	CL	SS-1 0.0-2.0 Rec = 12	2 22 3	1.5		
2	741					4			
3	740				SS-2 2.0-4.0 Rec = 8	6 6 7	1.5		
4	739		Gray Clayey Fine SAND, trace gravel, soft, moist	SC	SS-3 4.0-6.0 Rec = 10	3 5 10 13	1.0		
6	737		Brown and Gray Silty CLAY, little sand, trace gravel,hard, moist	CL		4			
7	736		Gray Silty CLAY, little to some sand, trace gravel, very stiff to hard	CL	SS-4 6.0-8.0 Rec = 20	11 16 21	2.5 4.5+		
8	735								
9	734				ST-5 8.0-10.0 Rec = 14		1.75 4.5+		
10	733					7			
11	732				SS-6 10.0-12.0 Rec = 18	6 10 23	3.75		
12	731					8			
13	730				SS-7 12.0-14.0 Rec = 24	8 12 19	2.25 4.5+		
14	729					5			
15	728				SS-8 14.0-16.0 Rec = 24	7 12 14	2.5		
16	727					7			
17	726				SS-9 16.0-18.0 Rec = 18	12 15 21	3.75		
18	725					6			
19	724				SS-10 18.0-20.0 Rec = 24	11 19 25	2.5		
20									

DRILLING CONTRACTOR: Precon Drilling, Inc.
DRILLING METHOD: TSC (EB-8) 0-66.0' 3.25" I.D. HSA (66.0'-102.0')
DRILLING EQUIPMENT: CME 75 (ATV)
DRILLING STARTED: 05/15/07 ENDED: 05/16/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "CS" - Continous sampler
"SS" - Split Spoon
0.0'-66.0' Taken from EB-8 located within 10' of B-2-07.
66.0'-102.0' Logged by E.I.L.

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SURFACE ELEVATION: 743.30
NORTHING: 12,592.20
EASTING: 13,052.60

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: MW

Shaw® Shaw Environmental, Inc.

BORING NO. B-2-07 / EB-8

Depth in Feet	Surf. Elev. 743.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
20	723		Gray Silty CLAY, little to some sand, trace gravel, very stiff to hard	CL	SS-11 20.0-22.0 Rec = 24	8 12 15 25	2.25		
21	722								
22	721				SS-12 22.0-24.0 Rec = 24	9 14 19 22	3.25		
23	720								
24	719				ST-13 24.0-26.0 Rec = 14				
25	718								
26	717				SS-14 26.0-28.0 Rec = 24	6 7 12 14	1.25 3.25		
27	716								
28	715				SS-15 28.0-30.0 Rec = 12	6 8 12 15	1.25		
29	714								
30	713				SS-16 30.0-32.0 Rec = 24	8 11 12 15	2.75		
31	712								
32	711				SS-17 32.0-34.0 Rec = 24	5 7 12 15	2.25		
33	710								
34	709				ST-18 34.0-36.0 Rec = 10		1.25		
35	708								
36	707				SS-19 36.0-38.0 Rec = 24	7 12 24 27	2.75		
37	706								
38	705				SS-20 38.0-40.0 Rec = 24	6 10 15 22	2.5		
39	704								
40									

DRILLING CONTRACTOR: Precon Drilling, Inc.
DRILLING METHOD: TSC (EB-8) 0-66.0' 3.25" I.D. HSA (66.0'-102.0')
DRILLING EQUIPMENT: CME 75 (ATV)
DRILLING STARTED: 05/15/07 ENDED: 05/16/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
0.0'-66.0' Taken from EB-8 located within 10' of B-2-07.
66.0'-102.0' Logged by E.I.L.

SURFACE ELEVATION: 743.30
NORTHING: 12,592.20
EASTING: 13,052.60

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: MW

Shaw® Shaw Environmental, Inc.

BORING NO. B-2-07 / EB-8

Depth in Feet	Surf. Elev. 743.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
40	703		Gray Silty CLAY, little to some sand, trace gravel, very stiff to hard	CL	SS-21 40.0-42.0 Rec = 24	5 10 12 15	3.0		
41	702								
42	701				SS-22 42.0-44.0 Rec = 24	6 11 15 20	2.75		
43	700								
44	699				ST-23 44.0-46.0 Rec = 18		2.5		
45	698								
46	697		Gray Clayey SILT, little sand, dense, moist	CL-ML	SS-24 46.0-48.0 Rec = 24	6 16 24 33			
47	696								
48	695		Gray Silty CLAY, little sand, trace gravel, very stiff, moist	CL	SS-25 48.0-50.0 Rec = 24	8 11 16 20	2.0		
49	694								
50	693		Gray Clayey SILT, little sand, dense, moist	CL-ML					
51	692		Gray Silty CLAY, little sand, trace gravel, very stiff, moist	CL	SS-26 50.0-52.0 Rec = 24	12 16 19 25	3.0		
52	691								
53	690				SS-27 52.0-54.0 Rec = 24	7 7 7 8	1.0 0.75		
54	689								
55	688				SS-28 54.0-56.0 Rec = 24	5 6 12 18	1.0 1.75		
56	687								
57	686		Gray Silty CLAY, little sand, trace gravel, moist	CL	SS-29 56.0-58.0 Rec = 24	6 15 18 28	2.75		
58	685								
59	684				SS-30 58.0-60.0 Rec = 24	6 18 27 38	1.25		
60									

DRILLING CONTRACTOR: Precon Drilling, Inc.
DRILLING METHOD: TSC (EB-8) 0-66.0' 3.25" I.D. HSA (66.0'-102.0')
DRILLING EQUIPMENT: CME 75 (ATV)
DRILLING STARTED: 05/15/07 ENDED: 05.16/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
0.0'-66.0' Taken from EB-8 located within 10' of B-2-07.
66.0'-102.0' Logged by E.J.L.

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SURFACE ELEVATION: 743.30
NORTHING: 12,592.20
EASTING: 13,052.60

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: MW

Shaw® Shaw Environmental, Inc.

BORING NO. B-2-07 / EB-8

Depth in Feet	Surf. Elev. 743.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
60	683		Gray Silty CLAY, little sand, trace gravel, moist	CL	SS-31 60.0-62.0 Rec = 24	8 21 27 38	4.5+		
61	682								
62	681				SS-32 62.0-64.0 Rec = 24	7 12 24 33	4.5+		
63	680								
64	679				SS-33 64.0-66.0 Rec = 24	4 6 11 15	4.5+		
65	678								
66	677		Olive Gray (5Y 4/1) Silty CLAY, trace coarse to fine sand, little coarse to fine gravel, stiff, low plasticity, moist,	CL	SS-1 66.0-68.0 Rec = 2	17 18 20 24			
67	676		Olive Gray (5Y 4/1) Silty SAND, coarse to fine sand, coarse to fine gravel, medium dense, moist	SM					
68	675				SS-2 68.0-70.0 Rec = 24	10 10 11 13	1.7		
69	674		Olive Gray (5Y 4/1) Silty CLAY, trace fine sand, stiff to very stiff, moist	CL					
70	673				ST-3 70.0-72.0 Rec = 14.4		3.0		
71	672								
72	671				SS-4 72.0-74.0 Rec = 24	7 18 20 27	3.4		
73	670								
74	669				SS-5 74.0-76.0 Rec = 24	18 16 22 30	4.5+		
75	668								
76	667				SS-6 76.0-78.0 Rec = 24	6 12 16 19	3.5		
77	666								
78	665				SS-7 78.0-79.2 Rec = 24	6 11 15 18	3.5		
79	664								
80									

DRILLING CONTRACTOR: Precon Drilling, Inc.
DRILLING METHOD: TSC (EB-8) 0-66.0' 3.25" I.D. HSA (66.0'-102.0')
DRILLING EQUIPMENT: CME 75 (ATV)
DRILLING STARTED: 05/15/07 ENDED: 05/16/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "CS" - Continous sampler
"SS" - Split Spoon
0.0'-66.0' Taken from EB-8 located within 10' of B-2-07.
66.0'-102.0' Logged by E.I.L.

SURFACE ELEVATION: 743.30
NORTHING: 12,592.20
EASTING: 13,052.60

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: MW

Shaw® Shaw Environmental, Inc.

BORING NO. B-2-07 / EB-8

Depth in Feet	Surf. Elev. 743.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
80	663		Olive Gray (5Y 4/1) Silty CLAY, trace fine to sand, stiff to very stiff, moist	CL	SS-8 80.0-82.0 Rec = 24	3 7 11 12	3.7		
81	662								
82	661				SS-9 82.0-84.0 Rec = 24	6 12 17 34	4.0		
83	660								
84	659				SS-10 84.0-86.0 Rec = 0	12 22 32 46			
85	658								
86	657				SS-11 86.0-88.0 Rec = 16	8 15 20 30	4.0		
87	656								
88	655				SS-12 88.0-90.0 Rec = 0	50/1"			
89	654								
90	653				SS-13 90.0-92.0 Rec =24	11 19 33 40	4.0		
91	652		Gray (5Y 5/1) Coarse to Fine SAND, little silt, trace fine gravel, trace clay, very dense, saturated	SW					
92	651				SS-14 92.0-94.0 Rec = 16	11 18 33 51			
93	650								
94	649		Olive Gray (5Y 4/1) Silty CLAY, some fine coarse sand, trace fine gravel, moist	CL-ML	SS-15 94.0-96.0 Rec = 19	26 24 20 20	4.5+		
95	648								
96	647				SS-16 96.0-98.0 Rec =15	14 24 49 50/3"	4.5+		
97	646								
98	645				SS-17 98.0-100.0 Rec = 1	50/1"			
99	644								
100									

DRILLING CONTRACTOR: Precon Drilling, Inc.
DRILLING METHOD: TSC (EB-8) 0-66.0' 3.25" I.D. HSA (66.0'-102.0')
DRILLING EQUIPMENT: CME 75 (ATV)
DRILLING STARTED: 05/15/07 ENDED: 05/16/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
0.0'-66.0' Taken from EB-8 located within 10' of B-2-07.
66.0'-102.0' Logged by E.I.L.

SURFACE ELEVATION: 743.30
NORTHING: 12,592.20
EASTING: 13,052.60

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: MW

Shaw® Shaw Environmental, Inc.

BORING NO. B-2-07 / EB-8

Depth in Feet	Surf. Elev. 743.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
100	643		Olive Gray (5Y 4/1) Silty CLAY, little coarse to fine sand, little coarse to fine gravel, moist	CL-ML	SS-18 100.0-102.0 Rec = 20	27 30 46 50/5"	4.5+		
101	642								
102	641		END of BORING @ 102.0'						
103	640								
104	639								
105	638								
106	637								
107	636								
108	635								
109	634								
110	633								
111	632								
112	631								
113	630								
114	629								
115	628								
116	627								
117	626								
118	625								
119	624								
120									

DRILLING CONTRACTOR: Precon Drilling, Inc.
DRILLING METHOD: TSC (EB-8) 0-66.0'
3.25" I.D. HSA
(66.0'-102.0')
DRILLING EQUIPMENT: CME 75 (ATV)
DRILLING STARTED: 05/15/07 ENDED: 05/16/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
0.0'-66.0' Taken from EB-8 located within 10' of B-2-07.
66.0'-102.0' Logged by E.J.L.

SURFACE ELEVATION: 740.60
NORTHING: 12039.70
EASTING: 13077.93

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-3-07

Depth in Feet	Surf. Elev. 740.60	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
0	740		Black (2.5Y 2.5/1) organic Silty CLAY, trace fine to coarse sand, very stiff, medium plasticity, moist	OL	SS-1 0.0-2.0 Rec = 20	1 2 4 4	2.5 2.0		N=6
1	739		Dark Grayish Brown (2.5Y 4/2) to Gray (2.5Y 5/1) Silty CLAY, trace fine to coarse sand, very stiff, medium plasticity, moist	CL	SS-2 2.0-4.0 Rec = 21	4 6 6 5	2.5 2.5		N=12
2	738								
3	737								
4	736		Brown (10YR 4/3) to Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine to coarse sand and fine gravel, hard, medium plasticity, moist See Remarks	CL	SS-3 4.0-6.0 Rec = 24	5 9 12 16	4.5+ 4.5+		N=21
5	735								
6	734				SS-4 6.0-7.3 Rec = 15	15 12 14	4.5+ 3.5		N=26
7	733		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand and gravel, very stiff to hard, medium plasticity, moist	CL	See Remarks	17	4.5+		SS-4A 7.3-8.0 Rec = 8
8	732				SS-5 8.0-10.0 Rec = 24	6 9 13 15	4.5+ 3.5 4.5+		N=22
9	731								
10	730				SS-6 10.0-12.0 Rec = 22	7 9 13 21	4.5+ 3.0 4.5+		N=22
11	729								
12	728				SS-7 12.0-14.0 Rec = 22	6 11 17 20	4.5+ 4.5+ 3.5		N=28
13	727								
14	726				SS-8 14.0-16.0 Rec = 23	4 11 11 16	3.0 2.25 3.0		N=22
15	725								
16	724				SS-9 16.0-18.0 Rec = 24	4 7 10 12	3.0 3.0		N=17
17	723								
18	722				SS-10 18.0-20.0 Rec =21	4 8 11 12	3.5 2.5		N=19
19	721								
20									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA. 10" Boring (0-10') *Rotary (10-98')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/17/07 ENDED: 04/19/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "CS" - Continous sampler
"SS" - Split Spoon
*3.875" Tricone Roller Bit. 2" O.D. 2' Long Split Spoon
MW-3-07 was completed within B-3-07

SURFACE ELEVATION: 740.60
NORTHING: 12039.70
EASTING: 13077.93

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-3-07

Depth in Feet	Surf. Elev. 740.60	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
20			Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand and fine to coarse gravel, stiff to hard, medium plasticity, moist	CL					
21	720				SS-11 20.0-22.0 Rec = 24	5 7 11 14	3.25 2.75		N=18
22	719								
23	718				SS-12 22.0-24.0 Rec = 24	6 8 13 19	3.5 3.75		N=21
24	717								
25	716				SS-13 24.0-26.0 Rec =24	6 8 10 14	2.5 2.75		N=18
26	715								
27	714				SS-14 26.0-28.0 Rec = 24	7 8 10 13	2.25 1.75 2.5		N=18
28	713								
29	712				SS-15 28.0-30.0 Rec = 20	9 9 11 15	2.25 2.25		N=20
30	711								
31	710				SS-16 30.0-32.0 Rec = 24	6 7 11 15	2.5 2.5		N=18
32	709								
33	708				SS-17 32.0-34.0 Rec = 22	4 14 18 22	4.5+ 4.5+		N=32
34	707								
35	706				SS-18 34.0-36.0 Rec = 20	5 13 17 23	4.5+ 3.25		N=30
36	705								
37	704				SS-19 36.0-38.0 Rec = 20	8 10 12 14	2.75 2.0		N=22
38	703								
39	702				SS-20 38.0-40.0 Rec = 23	6 9 12 16	1.75 3.0		N=21
40	701								

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA. 10" Boring (0-10') *Rotary (10-98')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04-17-07 ENDED: 04-19-07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "CS" - Continous sampler
"SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-3-07 was completed within B-3-07

SURFACE ELEVATION: 740.60
NORTHING: 12039.70
EASTING: 13077.93

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-3-07

Depth in Feet	Surf. Elev. 740.60	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
40	700		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand and fine to coarse gravel, stiff to hard, medium plasticity, moist	CL	SS-21 40.0-42.0 Rec = 24	7 10 15 26	3.75 2.25		N=25
41									
42	699					4 7	2.5		
43	698				SS-22 42.0-44.0 Rec = 21	8 12	3.5		N=15
44	697		0.1' Silt seam @ 44.2'		SS-23 44.0-45.0 Rec = 10	7 7	2.25		
45	696		Dark Gray (10YR 4/1) Silty SAND, trace medium to coarse sand, poorly graded, medium dense, saturated	SM ML	SS-23A 45.0-46.0 Rec = 12	10 16	1.5		N=17
46	695		Gray (10YR 5/1) SILT, some clay, fine to medium silty sand, medium dense, low plasticity, wet	SM ML	SS-24 46.0-47.5 Rec = 18	11 12 12	1.5		N=24
47	694		Dark Gray (10YR 4/1) Silty SAND, poorly graded, medium dense, saturated		See Remarks	17	2.5		SS-24A 47.5-48.0 Rec = 4
48	693		Gray (10YR 5/1) SILT, some clay, trace fine sand, medium dense, low plasticity, very moist	CL	SS-25 48.0-49.0 Rec = 11	6 12	3.25		
49	692		Dark Gray (10YR 4/1) Silty CLAY, trace fine sand, very stiff, medium plasticity, moist		SS-25A 49.0-50.0 Rec = 12	15 31	2.25		N=27
50	691		0.2 fine silty SAND seam @ 48.8'	SM	SS-26 50.0-52.0 Rec = 23	11 15 23			N=38
51	690		Dark Gray (2.5Y 4/1) to Dark Grayish Brown (2.5Y 4/2) Silty SAND, trace medium sand, trace clay, poorly graded, medium dense to dense, saturated			18			
52	689		Dark Gray (2.5Y 4/1) Sandy Silty CLAY, trace fine gravel, very stiff, medium plasticity, moist	CL	See Remarks	6	2.25		SS-27 52.0-52.5 Rec = 5
53	688		Brown (7.5YR 4/2) Sandy Silty CLAY, trace fine to coarse sand, trace fine gravel, very stiff, medium plasticity, moist	CL	SS-27A 52.5-54.0 Rec = 15	7 8 13	2.25		N=15
54	687								
55	686		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, very stiff , moist	CL	ST-28 54.0-56.0 Rec = 23				
56	685		See Remarks See Remarks		SS-29 56.0-58.0 Rec = 24	9 16 25 23	3.0 4.5+		N=41
57	684								
58	683				SS-30 58.0-60.0 Rec = 22	11 20 44 31	4.5+ 4.5+		N=64
59	682								
60	681								

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') *Rotary (10-98')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/17/07 ENDED: 04/19/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-3-07 was completed within B-3-07

SURFACE ELEVATION: 740.60
NORTHING: 12039.70
EASTING: 13077.93

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-3-07

Depth in Feet	Surf. Elev. 740.60	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
60						10			
	680		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, very stiff, moist See Remarks			16	4.5+		
61					SS-31 60.0-62.0 Rec = 24	19			N=35
	679					29	4.5+		
62						10			
	678					12	3.5		
63					SS-32 62.0-64.0 Rec = 24	15			N=27
	677			CL		14	4.0		
64						7			
	676					13	4.5+		
65					SS-33 64.0-66.0 Rec = 24	16			N=29
	675					22	4.5+		
66					SS-34 66.0-67.2 Rec = 7	10	2.5		
67						18			N=44
	674					26			SS-34A 67.2-68.0 Rec = 9
68	673		Very Dark Gray (10YR 3/1) Silty SAND with GRAVEL, some clay, poorly graded, dense, very moist	SM	See Remarks	20			
	672				SS-35 68.0-69.0 Rec = 10	14			
69						9			N=18
	671		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, trace fine gravel, stiff to hard, medium plasticity, moist		SS-35A 69.0-70.0 Rec = 10	9			
70						15	1.75		
	670					12			
71					SS-36 70.0-72.0 Rec = 24	14	3.0		N=33
	669					19	4..5+		
72						23			
	668					4			
73					SS-37 72.0-74.0 Rec = 22	10	3.0		N=25
	667					15	4.25		
74				CL-ML		23			
	666					8	3.5		
75					SS-38 74.0-76.0 Rec = 22	20			N=37
	665					17	3.5		
76						25			
	664					5	2.75		
77					SS-39 76.0-78.0 Rec = 21	10			N=23
	663					13	2.75		
78						18			
	662					8	3.5		
79					SS-40 78.0-80.0 Rec = 24	16			N=34
	661		Dark Grayish Brown (10YR 4/2) Silty CLAY	CL		18	3.5		
80						21			

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') *Rotary (10-98')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/17/07 ENDED: 04/19/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-3-07 was completed within B-3-07

12-18-20 ...eistcfps00\data\Projects\2006\122150 - Zion Landfill Expansion\Hydrogeo\Boring Logs\B-3-07 - mod pg 3,4

SURFACE ELEVATION: 740.60
NORTHING: 12039.70
EASTING: 13077.93

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-3-07

Depth in Feet	Surf. Elev. 740.60	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
80						9	3.5		
81	660		Dark Grayish Brown (10YR 4/2) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, , very stiff to hard, medium plasticity, moist		SS-41 80.0-82.0 Rec = 24	12 19 24	3.5		N=31
82	659					5	2.75		
83	658			CL	SS-42 82.0-84.0 Rec = 24	9 13 28	4.5+		N=22
84	657					13	4.5+		
85	656				SS-43 84.0-86.0 Rec = 22	21 30 48	4.5+		N=51
86	655		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, laminated, moist			26	4.5+		
87	654			CL	SS-44 86.0-88.0 Rec = 16	15 20 28	4.5+		N=35
88	653				SS-45 88.0-89.0 Rec = 10	40 38	4.5+		
89	652		Grayish Brown (2.5Y 5/2) Silty SAND, trace medium to coarse sand and fine gravel, poorly graded, very dense, saturated	SM	See Remarks	26			N=64 SS-45A 89.0-89.3 Rec = 3 SS-45B 89.3-90.0 Rec = 7
90	651			SW	See Remarks	38			
91	650		Dark Gray (2.5Y 4/1) SAND, little fine gravel, well graded, very dense, saturated	SP	SS-46 90.0-92.0 Rec = 18	17 27 29 36			N=56
92	649		Dark Grayish Brown (2.5Y 4/2) Fine to Coarse SAND, trace silt, trace clay, trace fine gravel, very dense, saturated			27			
93	648		Dark Gray (2.5Y 4/1) SAND, little coarse sand, little silt, trace fine gravel, very dense, saturated	SP	SS-47 92.0-94.0 Rec = 17	37 28 49			N=65
94	647					29			
95	646		Gray (2.5Y 5/1) Sandy SILT, little clay, trace fine gravel, dense, low plasticity, moist	ML	SS-48 94.0-96.0 Rec = 12	18 15 27	4.5+		N=33
96	645		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand and fine gravel, hard, medium plasticity, moist	CL		18			
97	644				SS-49 96.0-98.0 Rec = 20	30 61 81	4.5+		
98	643		END OF BORING @ 98.0'						
99	642								
100	641								

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') *Rotary (10-98')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/17/07 ENDED: 04/19/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-3-07 was completed within B-3-07

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
0	738		Dark Gray (10YR 4/1) Silty CLAY FILL, little fine to coarse sand, fine to coarse gravel, hard, low to medium plasticity, dry to moist	FILL	CS-1 0.0-5.0 Rec = 58		4.5+		
1	737								
2	736								
3	735						4.5+		
4	734		0.2' Black organic Silty Clay TOPSOIL @ 4.6'				1.5		
5	733		Dark Grayish Brown (10YR 4/2) Silty CLAY, little fine to coarse sand, fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL	CS-2 5.0-6.0 Rec = 12		3.25 4.5+		
6	732			SC	CS-2A 6.0-7.0 Rec = 12				
7	731		Brown (10YR 4/3) to Dark Yellowish Brown (10YR 4/5) Clayey SAND with GRAVEL, little silt, poorly graded, very dense, moist						
8	730		Brown (10YR 4/3) to Dark Yellowish Brown (10YR 4/5) SAND, little silt and clay, trace coarse sand, fine gravel, poorly graded, very dense, moist	SP	CS-2B 7.0-10.0 Rec = 26				
9	729								
10	728				CS-3 10.0-11.0 Rec = 12				
11	727		Dark Gray (10YR 4/1) Silty CLAY, some fine to coarse sand, fine gravel, medium stiff, medium plasticity, moist	CL			0.5		
12	726		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff, medium plasticity, moist	CL	CS-3A 11.0-14.0 Rec = 31		2.5		
13	725								
14	724		0.17' clayey silt seam @ 14.4'		CS-3B 14.0-15.0 Rec = 12				
15	723		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist						
16	722						3.5		
17	721			CL	CS-4 15.0-20.0 Rec = 60				
18	720								
19	719						4.0		
20									

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC. Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
20	718		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist				4.5+		
21	717								
22	716								
23	715				CS-5 20.0-25.0 Rec = 60		4.5+		
24	714								
25	713						4.5+		
26	712								
27	711						4.5+		
28	710			CL	CS-6 25.0-30.0 Rec = 60				
29	709						2.25		
30	708								
31	707						2.25		
32	706								
33	705				CS-7 30.0-35.0 Rec = 60				
34	704						2.25		
35	703		Olive Brown (2.5Y 4/3) Silty CLAY, trace to little fine to coarse sand and fine gravel, stiff, medium plasticity, moist				1.25		
36	702								
37	701			CL	CS-8 35.0-39.0 Rec = 50		1.25		
38	700								
39	699						1.25		
40			Dark Gray (10YR 4/1) SILT	ML	CS-8A 39.0-40.0 Rec = 8		1.5		

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA. 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit. 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC. Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
40	698		Dark Gray (10YR 4/1) SILT, some clay, little fine sand, trace medium to coarse sand, fine gravel, dense, low to medium plasticity, very moist	ML	CS-9 40.0-41.0 Rec = 12		1.5		
41	697								
42	696		Dark Gray (10YR 4/1) Silty SAND, trace coarse sand, fine gravel, trace clay, poorly graded, dense, saturated	SM	CS-9A 41.0-43.5 Rec = 18				
43	695								
44	694		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, stiff to very stiff, medium plasticity, moist		CS-9B 43.5-45.0 Rec = 18		3.0 3.5		
45	693			CL			1.75		
46	692				CS-10 45.0-47.5 Rec = 25				
47	691		0.2' Silty SAND seam @ 47.5'						
48	690		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, fine gravel, very stiff, low to medium plasticity, moist		CS-10A 47.5-50.0 Rec = 25		2.5		
49	689			CL-ML					
50	688								
51	687				ST-11 50.0-52.5 Rec = 6				
52	686		Dark Gray (10YR 4/1) to Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist						
53	685			CL			3.75		
54	684				CS-12 52.5-55 Rec = 30		4.0		
55	683								
56	682		Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine to coarse sand, fine gravel, stiff, medium plasticity, moist		ST-13 55-57.5 Rec = 6				
57	681			CL					
58	680								
59	679				ST-14 57.5-60 Rec =16				
60									

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC. Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
60	678		Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine to coarse sand, fine gravel, stiff, medium plasticity, moist	CL			1.5		
61	677		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, stiff to hard, medium plasticity, moist				2.5		
62	676				CS-15 60.0-65.0 Rec = 58		2.5		
63	675						4.0		
64	674						1.5		
65	673			CL					
66	672						1.0		
67	671				CS-16 65.0-68.5 Rec = 33		1.0		
68	670								
69	669		Dark Gray (10YR 4/1) SILT, some clay, trace fine to coarse sand, fine gravel, very dense, low plasticity, moist	ML	CS-16A 68.5-70.0 Rec = 15		4.5+		
70	668		Dark Gray (10YR 4/1) Silty CLAY, little fine gravel, little fine to coarse sand, very stiff to hard, medium plasticity, moist			10	3.75		
71	667				SS-17 70.0-72.0 Rec = 22	17 22 50	3.5		N=39
72	666					5	4.0		
73	665				SS-18 72.0-74.0 Rec = 22	15 33 35	4.5+		N=48
74	664					13	4.5+		
75	663			CL	SS-19 74.0-76.0 Rec = 24	22 28 28			N=50
76	662					8	4.5+		
77	661				SS-20 76.0-78.0 Rec = 24	12 22 27	3.75 4.5+		N=34
78	660					6	4.5+		
79	659				SS-21 78.0-80.0 Rec = 24	12 22 24	4.5+		N=34
80									

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA. 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

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SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
80	658		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist See Remarks	CL	SS-22 80.0-82.0 Rec = 24	17 17 21 26	3.75		N=38
81	657						3.5		
82	656				See Remarks	22	3.5		SS-23 82.0-82.4 Rec = 4
83	655		Dark Gray (2.5Y 4/1) SILT, little clay and fine sand, trace medium to coarse sand, fine gravel, extremely dense, low plasticity, moist	ML	SS-23A 82.4-84.0 Rec = 12	47 50/4"	4.5 3.0		N=97+
84	654			SP	See Remarks	42			SS-24 84.0-84.4 Rec = 4
85	653		Dark Grayish Brown (2.5Y 4/2) SAND, trace medium to coarse sand, trace silt, poorly graded, extremely dense, saturated	ML	See Remarks	50			SS-24A N=100+ 84.4-85.0 Rec = 7
86	652		Dark Gray (2.5Y 4/1) Sandy SILT, extremely dense, low plasticity, saturated	SP	SS-24B 85.0-86.0 Rec = 5	50/4"			
87	651		Dark Grayish Brown (2.5Y 4/2) SAND, trace coarse sand, trace to little silt, poorly graded, extremely dense, saturated		SS-25 86.0-88.0 Rec = 14	40 45 50/5"			N=95+
88	650		Dark Grayish Brown (2.5Y 4/2) Fine to Coarse SAND, little silt, trace clay, extremely dense, saturated	SP	See Remarks	25			SS-26 88.0-88.5 Rec = 6
89	649				SS-26A 88.5-90.0 Rec = 13	32 50 50/4"			N=82
90	648		Gray SILT, trace fine sand, some clay seams, very dense	ML	6SS 90.0-92.0 Rec = 10.8	57 100/6"			N=157+
91	647								
92	646		Brownish Gray Fine Silty SAND, trace clay seams, very dense	SM	7SS 92.0-94.0 Rec = 16.8	57 68 102/6"			N=170+
93	645								
94	644		Gray SILT, very dense	ML	8SS 94.0-96.0 Rec = 18	30 33 39 41			N=72
95	643								
96	642		Brownish Gray Clayey SILT, wtih clay seams, laminated, very dense	CL-ML	9SS 96.0-98.0 Rec = 16.8	24 33 36 40			N=69
97	641								
98	640				10SS 98.0-100.0 Rec = 16.8	25 37 39 41			N=76
99	639								
100			Gray SILT, trace fine sand partings	ML					

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
100	638		Gray SILT, trace fine sand partings, very dense	ML	11SS 100.0-102.0 Rec = 12	24 53 73			N=126
101	637								
102	636		Brownish Gray CLAY, trace silt, fine to coarse sand and small gravel, laminated to foliated in areas, hard to very stiff			90			
					12SS 102.0-104.0 Rec = 24	16 25 37	4.5+		N=62
103	635					42			
104	634				13SS 104.0-106.0 Rec = 24	21 29 36	3.0		N=65
105	633					43			
106	632				14SS 106.0-108.0 Rec = 24	11 22 30	4.5		N=52
107	631			CL		38			
108	630		Trace large gravel at 108.0-110.0'		15SS 108.0-110.0 Rec = 22.8	9 15 19	3.0		N=34
109	629					24			
110	628		Reddish coloring and numerous silt partings at 110.0-112.0'		16SS 110.0-112.0 Rec = 24	15 20 27	3.5		N=47
111	627					34			
112	626				17SS 112.0-114.0 Rec = 0.0	18 24 29			N=53
113	625					35			
114	624		Gray Silty CLAY, trace fine to coarse sand and small gravel, laminated, soft			18			
					18SS 114.0-116.0 Rec = 0.0	8 12 12			N=20
115	623								
116	622				19SS 116.0-118.0 Rec = 24	9 12 14	0.5		N=26
117	621			CL		16			
118	620				20SS 118.0-120.0 Rec = 24	10 14 15	0.5		N=29
119	619					17			
120									

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
120	618		Brownish Gray Silty CLAY, trace fine to coarse sand and small gravel, several silt partings and inclusions, very stiff	CL	21SS 120.0-122.0 Rec = 24	18 28 32 43	2.5		N=60
122	616		Gray Silty CLAY, trace fine to coarse sand and small gravel, hard	CL	22SS 122.0-124.0 Rec = 24	28 60 62 68	4.5+		N=122
124	614				23SS 124.0-126.0 Rec = 24	15 26 33 40	4.5+		N=59
126	612		Foliated with interfoliated silt partings and inclusions below 126.0'		24SS 126.0-128.0 Rec = 24	13 31 46 52	4.5+		N=77
128	610				25SS 128.0-130.0 Rec = 24	19 34 50 67	4.5+		N=84
130	608				26SS 130.0-132.0 Rec = 9.6	51 100/3"	4.5+		N=151+
132	606				27SS 132.0-134.0 Rec = 10.8	71 100/6"	4.5+		N=171+
134	604				28SS 134.0-136.0 Rec = 21.6	29 37 40 46	4.5+		N=77
136	602		Gray SILT with Brownish Gray fine to coarse sand seams, very dense	ML	29SS 136.0-138.0 Rec = 12	29 71 100/2"			N=171+
138	600								
139	599		Brownish Gray Fine to Medium SAND, very dense	SW	30SS 138.0-140.0 Rec = 10.8	89 103/6"			N=192+
140			Brownish Gray Silty CLAY, trace to rare small gravel, trace hairline silt partings	CL					

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
140	598		Brownish Gray Silty CLAY, trace to rare small gravel, trace hairline silt partings, hard	CL	31SS 140.0-142.0 Rec = 19.2	28 44 56 68	4.5+		N=100
141	597								
142	596		Trace medium to large gravel, trace fine sand and silt partings at 142.0-144.0'		32SS 142.0-144.0 Rec = 10.8	68 103/6"			N=171+
143	595								
144	594		Laminated below 144.0'		33SS 144.0-146.0 Rec = 24	25 48 63 81	4.5+		N=111
145	593								
146	592		Interfoliated silt partings and inclusions below 146.0'		34SS 146.0-148.0 Rec = 24	18 30 44 32	4.5+		N=74
147	591								
148	590				35SS 148.0-150.0 Rec = 24	15 20 54 43	4.5+		N=74
149	589								
150	588				36SS 150.0-152.0 Rec = 24	26 33 37 41	4.5+		N=70
151	587								
152	586		Interfoliated fine sand and silt below 152.0'		37SS 152.0-154.0 Rec = 24	40 20 22 26	4.5+		N=42
153	585								
154	584				38SS 154.0-156.0 Rec = 0.0	100/4"			N=100+
155	583								
156	582		Interlayered silt below 156.0'		39SS 156.0-158.0 Rec = 3.6	131/4"			N=131+
157	581		Gray SILT, trace to some clay, laminated, very dense	ML					
158	580								
159	579		Gray Clayey SILT, laminated, very dense	CL-ML	40SS 158.0-160.0 Rec = 7.2	120/5"			N=120+
160									

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
160	578		(Continued) Gray Clayey SILT, laminated, very dense	CL-ML					
161	577								N=130+
162	576		Brownish Gray SILTY CLAY, trace silt partings, laminated, hard to very stiff						
163	575								N=63
164	574		Thinly laminated below 164.0'						
165	573			CL					N=77
166	572								
167	571								N=74
168	570		Brownish Gray very SILTY CLAY to very CLAYEY SILT, laminated, very stiff	CL-ML					
169	569								N=138
170	568		Brownish Gray SILTY CLAY, trace hairline silt partings, deeply thinly laminated, very stiff to very soft						
171	567								N=39
172	566								
173	565								N=34
174	564			CL					
175	563								N=12
176	562								
177	561								N=14
178	560								
179	559		Gray SILTY CLAY, trace sand and small to large gravel, with fine to coarse sand seams, stiff	CL					N=24
180									

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC. Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.2	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
180	558		Grayish Brown Silty CLAY, trace sand and small to large gravel, with fine to coarse sand seams, hard	CL	51SS 180.0-182.0 Rec = 22.8	0 19 17 47	4.0		N=36
182	556		Brownish Gray Silty CLAY, laminated, trace hairline silt partings and seams, hard	CL	52SS 182.0-184.0 Rec = 12	20 57 103/2"	4.0		N=160+
184	554		Brownish Gray Fine Sandy SILT, very dense	ML	53SS 184.0-186.0 Rec = 4.8	103/5"			N=103+
186	552				54SS 186.0-188.0 Rec = 10.8	58 104/5"			N=162+
188	550		Gray SILT with clay seams and fine sand seams, very dense	ML	55SS 188.0-190.0 Rec = 18	66 48 100/2"			N=148+
190	548				56SS 190.0-192.0 Rec = 18	21 61 92/6"			N=153+
192	546		Gray Silty CLAY with small to medium gravel, some fine sand, very dense	CL	57SS 192.0-194.0 Rec = 4.8	101/5"			N=101+
194	544		Boulder @ 194.8 - 196.0'		58SS 194.0-196.0 Rec = 6	65 100/1"			N=165+
196	542		Brownish Gray Silty CLAY, laminated, with hairline silt partings and inclusions, some foliation, very stiff	CL	59SS 196.0-198.0 Rec = 24	0 19 38 47	3.0		N=57
198	540				60SS 198.0-200.0 Rec = 24	0 14 20 25	2.5		N=34
200									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA.
3" O.D. x 5' CS (0-70')
*Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0' - 224.0' Taken from TB-1 located within 10' of B-4-07.

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SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.2	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
200	538		Gray Silty CLAY, feathery to foliated with hairline silt partings and inclusions, very stiff	CL	61SS 200.0-202.0 Rec = 24	0 6 10 9	2.5		N=16
201	537								
202	536		Small to large GRAVEL and COBBLES, with some fine to coarse sand, trace silt and clay, very dense Boulder @ 204.0 - 206.0'	GW	62SS 202.0-204.0 Rec = 7.2	45 101/6"			N=146+
203	535								
204	534				63SS 204.0-206.0 Rec = 0	123/3"			N=123+
205	533								
206	532				64SS 206.0-208.0 Rec = 2.4	150/3"			N=150+
207	531		Gray Silty SAND and small GRAVEL in clay matrix	SM					
208	530				65SS 208.0-210.0 Rec = 2.4	142/3"			N=142+
209	529								
210	528				66SS 210.0-212.0 Rec = 2.4	137/1.5"			N=137+
211	527		Gray Fine Sandy SILT, trace clay, with small to medium gravel	ML					
212	526				67SS 212.0-214.0 Rec = 3.6	140/3"			N=140+
213	525		Fractured DOLOMITE, trace clay and silt	DO					
214	524				68SS 214.0-216.0 Rec = 3.6	150/3"			N=150+
215	523								
216	522				69SS 216.0-218.0 Rec = 0	100/0"			N=100+
217	521								
218	520				70SS 218.0-220.0 Rec = 1.2	128/1"			N=128+
219	519								
220									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED:03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0' - 224.0' Taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.2	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
220	518		DOLOMITE (Siluran Dolomite Bedrock)						
221	517								
222	516			DO	NO SAMPLES BLIND DRILL TO VERIFY BEDROCK				TB-1 grouted on completion with Volclay Grout tremied into hole from bottom upwards. (RLJ)
223	515								
224	514		END OF BORING @ 224.0'						
225	513								
226	512								
227	511								
228	510								
229	509								
230	508								
231	507								
232	506								
233	505								
234	504								
235	503								
236	502								
237	501								
238	500								
239	499								
240									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0' - 224.0' Taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 739.26
NORTHING: 11410.70
EASTING: 12621.00

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (TSC) 0-64'
RWB (Shaw) 64-106'

Shaw® Shaw Environmental, Inc.

BORING NO. B-5-07 / EB-11

Depth in Feet	Surf. Elev. 739.26	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
0	739		Black and Dark Brown Clayey TOPSOIL, very moist	OL		2			
1	738		Brown Silty CLAY, little sand, trace gravel, tough to hard, moist		1SS 0.0-2.0 Rec=24	2 3 6	3.25		N=5
2	737				2SS 2.0-4.0 Rec=24	6 7 7	4.5+		N=14
3	736			CL		10 7 7			
4	735				3SS 4.0-6.0 Rec=24	7 7 12	1.5 3.25		N=14
5	734								
6	733		Brown and Gray Silty to Very Silty CLAY, little sand, trace gravel, very tough to tough, moist		4SS 6.0-8.0 Rec=24	4 6 9 10	2.25 3.25		N=15
7	732								
8	731			CL	5SS 8.0-10.0 Rec=24	4 4 4 4	1.5		N=8
9	730								
10	729								
11	728		Gray Clayey SILT, little sand, trace gravel, firm, moist	CL-ML	6SS 10.0-12.0 Rec=24	4 12 9	3.5		N=16
12	727		Gray Silty CLAY, little sand, trace gravel, very tough to tough, moist						
13	726			CL	7SS 12.0-14.0 Rec=24	5 8 10 15	1.5 3.75		N=18
14	725								
15	724		Gray Clayey SILT, little sand, trace gravel, firm, moist		8SS 14.0-16.0 Rec=24	4 8 10 18	1.75		N=18
16	723			CL-ML					
17	722		Gray SILT, firm, moist	ML	9SS 16.0-18.0 Rec=24	5 9 11 14	3.75		N=20
18	721		Gray Silty CLAY, little sand, trace gravel, very tough to tough, moist						
19	720			CL	10SS 18.0-20.0 Rec=24	7 9 9 13	2.25		N=18
20									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (Shaw)
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') Rotary (10-106')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/03/07 ENDED: 05/07/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-64.0' Taken from EB-11 located within 10' of B-5-07

SURFACE ELEVATION: 739.26
NORTHING: 11410.70
EASTING: 12621.00

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (TSC) 0-64'
RWB (Shaw) 64-106'

Shaw® Shaw Environmental, Inc.

BORING NO. B-5-07 / EB-11

Depth in Feet	Surf. Elev. 739.26	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
20	719		Gray Silty CLAY, little sand, trace gravel, very tough to tough, moist	CL	11SS 20.0-22.0 Rec=24	5 8 11 11	1.75		N=19
22	717				12SS 22.0-24.0 Rec=24	7 9 9 14	1.75 3.25		N=18
24	715		Gray Clayey SILT and Silty SAND, wet	SM	13SS 24.0-26.0 Rec=24	3 5 5 8			N=10
26	713		Gray Silty CLAY, little sand, trace gravel, tough to very tough, moist	CL	14SS 26.0-28.0 Rec=24	5 9 12 14	2.5		N=21
28	711				15SS 28.0-30.0 Rec=24	5 7 13 13	2.0		N=20
30	709				16ST 30.0-32.0 Rec=24				
32	707				17SS 32.0-34.0 Rec=24	3 5 9 9	2.25		N=14
34	705				18SS 34.0-36.0 Rec=24	5 9 12 14	2.0		N=21
36	703				19SS 36.0-38.0 Rec=24	6 12 16 16	1.25 2.0		N=28
38	701				20SS 38.0-40.0 Rec=24	7 9 12 14	1.75		N=21
40									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (Shaw)
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') Rotary (10-106')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/03/07 ENDED: 05/07/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-64.0' Taken from EB-11 located within 10' of B-5-07

SURFACE ELEVATION: 739.26
NORTHING: 11410.70
EASTING: 12621.00

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (TSC) 0-64'
RWB (Shaw) 64-106'

Shaw® Shaw Environmental, Inc.

BORING NO. B-5-07 / EB-11

Depth in Feet	Surf. Elev. 739.26	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
40	699		Gray Silty CLAY, little sand, tough, moist	CL		6			
41	698		Layers of Gray Silty CLAY, Clayey SILT and SILT, moist	ML	21SS 40.0-42.0 Rec=24	10 16 12	2.0		N=26
42	697				22SS 42.0-44.0 Rec=24	36 26 23 19	1.0		N=49
43	696								
44	695		Gray Clayey SILT, trace sand, dense, very moist to wet	CL-ML	23SS 44.0-46.0 Rec=24	16 25 30 32			N=55
45	694								
46	693				24SS 46.0-48.0 Rec=24	16 13 15 14			N=28
47	692		Gray Clayey SILT, firm, very moist	CL-ML					
48	691				25SS 48.0-50.0 Rec=20	16 12 12 9			N=24
49	690								
50	689				26SS 50.0-52.0 Rec=24	6 10 13 11	1.5		N=23
51	688		Gray Clayey SILT, little sand, trace gravel, tough to very tough, moist	CL-ML					
52	687		CLAY with silt seams	CL	27SS 52.0-54.0 Rec=24	6 11 15 18	1.25 2.0		N=26
53	686								
54	685				28SS 54.0-56.0 Rec=24	12 16 22 30	1.25 2.5		N=38
55	684								
56	683		Gray Silty CLAY, trace sand and gravel	CL	29SS 56.0-58.0 Rec=20	10 14 22 28	2.75		N=36
57	682								
58	681				30SS 58.0-60.0 Rec=24	16 23 27 43	2.75 4.0		N=50
59	680								
60									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (Shaw)
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') Rotary (10-106')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/03/07 ENDED: 05/07/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-64.0' Taken from EB-11 located within 10' of B-5-07

SURFACE ELEVATION: 739.26
NORTHING: 11410.70
EASTING: 12621.00

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (TSC) 0-64'
RWB (Shaw) 64-106'

Shaw® Shaw Environmental, Inc.

BORING NO. B-5-07 / EB-11

Depth in Feet	Surf. Elev. 739.26	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
60	679		Gray Silty CLAY, trace fine to coarse sand, trace fine gravel, moist						
61	678		Shaw-SHELBY TUBE ST-1 obtained from 60.0-62.0', Rec=24"		31ST 60.0-62.0 Rec=24		3.5		
62	677			CL		7			
63	676				32SS 62.0-64.0 Rec=24	9 11 12	2.0		N=20
64	675		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, very stiff to stiff, medium plasticity, moist to very moist			9	3.0		
65	674				SS-2 64.0-66.0 Rec = 20	8 15			N=23
66	673			CL		9 4			
67	672				SS-3 66.0-68.0 Rec = 24	5 7	1.75 1.0		N=12
68	671		Brown (7.5YR 4/3) Silty CLAY, little to fine sand, trace medium to coarse sand, fine gravel, stiff to very stiff, medium plasticity, moist	CL		7	1.5		
69	670				SS-4 68.0-70.0 Rec = 20	5 7 6	3.0 0.75		N=13
70	669		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, medium stiff to stiff, medium plasticity, moist			9	0.75		
71	668				SS-5 70.0-72.0 Rec = 22	4 5 9 8	1.5 1.25		N=14
72	667					3			
73	666				SS-6 72.0-74.0 Rec = 23	5 6 6	1.5 1.5		N=11
74	665					2			
75	664			CL	SS-7 74.0-76.0 Rec =21	4 6 7	1.0 1.5		N=10
76	663					5			
77	662				SS-8 76.0-78.0 Rec = 23	5 8 10	1.75 1.75		N=13
78	661		0.1' Fine SAND seam @ 78.5'			4	3.0		
79	660				SS-9 78.0-79.6 Rec = 20	9 9	3.5 1.5 3.5		N=18 SS-9A 79.6-80.0 Rec = 4
80					See Remarks	14			

DRILLING CONTRACTOR: RDnP Drilling, Inc. (Shaw)
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
Rotary (10-106')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 05/03/07 ENDED: 05/07/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-64.0' Taken from EB-11 located within 10' of B-5-07

SURFACE ELEVATION: 739.26
NORTHING: 11410.70
EASTING: 12621.00

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (TSC) 0-64'
RWB (Shaw) 64-106'

Shaw® Shaw Environmental, Inc.

BORING NO. B-5-07 / EB-11

Depth in Feet	Surf. Elev. 739.26	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
80	659		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, medium stiff to stiff, medium plasticity, moist	CL	See Remarks	6	3.0		SS-10 80.0-80.3 Rec = 3
81	658		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine sand, trace medium to coarse sand, fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL	SS-10A 80.3-82.0 Rec = 21	12 19 25	3.0 4.5+		N=31
82	657					12	4.5+		
83	656		Dark Gray (2.5Y 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL	SS-11 82.0-84.0 Rec = 24	22 30 34	4.0 4.5+		N=52
84	655				SS-12 84.0-85.5 Rec = 17	4 7 19	3.5		N=26
85	654								
86	653		Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine to coarse sand, fine gravel, hard, medium plasticity, moist	CL	See Remarks	33	4.5+		SS-12A 85.5-86.0 Rec = 5
87	652		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff, medium plasticity, moist	CL	SS-13 86.0-88.0 Rec = 24	16 20 23	4.5+ 3.0		N=43
88	651				SS-14 88.0-89.0 Rec = 12	23 38	2.0		
89	650		Dark Grayish Brown (2.5Y 4/2) Silty SAND, poorly graded, extremely dense, saturated	SM		55	1.75		N=108
				ML	SS-14A 89.0-90.0 Rec = 12	53			
90	649		Dark Grayish Brown (2.5Y 4/2) Sandy SILT, extremely dense, low plasticity, saturated	SM		69			
91	648		Dark Grayish Brown (2.5Y 4/2) fine SILTY SAND, trace medium sand, poorly graded, extremely dense, saturated 0.2' Sandy SILT seam @ 91.1'		SS-15 90.0-92.0 Rec = 18	22 45 70	4.0		N=115
92	647					80/4"			
93	646		Dark Gray (10YR 4/2) SAND, little fine gravel, litte silt, poorly graded, extremely dense, saturated	SP	SS-16 92.0-94.0 Rec = 18	42 80 36			N=116
94	645		Dark Gray (5Y 5/1) Sandy Silty CLAY, trace fine to coarse gravel, very stiff to hard, low to medium plasticity, moist to very moist	CL	SS-17 94.0-95.7 Rec = 19	16 14 12	4.5+ 3.5		N=18
95	644					6	2.75		SS-17A 95.7-96.0 Rec = 3
96	643		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand and fine gravel, very stiff, medium plasticity, moist	CL	See Remarks	7 10	2.75		
97	642		Grayish Brown (2.5Y 5/2) SILT, trace fine sand, dense to extremely dense, low plasticitiy, very moist to wet	ML	SS-18 96.0-98.0 Rec = 20	14 16 23	3.0		N=30
98	641					14	2.0		
99	640		Grayish Brown (2.5Y 5/2) SILT, little clay trace fine to medium sand, extremely dense, low plasticitiy, very moist to wet	ML	SS-19 98.0-100.0 Rec = 19	27 35 42	2.0		N=62
100									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (Shaw)
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
Rotary (10-106')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 05/03/07 ENDED: 05/07/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-64.0' Taken from EB-11 located within 10' of B-5-07

SURFACE ELEVATION: 739.26
NORTHING: 11410.70
EASTING: 12621.00

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (TSC) 0-64'
RWB (Shaw) 64-106'

Shaw® Shaw Environmental, Inc.

BORING NO. B-5-07 / EB-11

Depth in Feet	Surf. Elev. 739.26	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
100	639		Grayish Brown (2.5Y 5/2) SILT, little clay trace fine to medium sand, extremely dense, low plasticitiy, very moist to wet	ML	SS-20 100.0-102.0 Rec = 20	32 44 50 82	2.0 2.0		N=94
101	638								
102	637					58	2.0		
103	636				SS-21 102.0-104.0 Rec = 17	127 100/5"	2.0		N=227+
104	635		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine to coarse gravel, hard, medium plasticity, moist	CL		15 17	4.5+		
105	634				SS-22 104.0-106.0 Rec = 20	23 35	4.5+		N=40
106	633		END OF BORING @ 106.0'						
107	632								
108	631								
109	630								
110	629								
111	628								
112	627								
113	626								
114	625								
115	624								
116	623								
117	622								
118	621								
119	620								
120									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (Shaw)
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') Rotary (10-106')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/03/07 ENDED: 05/07/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-64.0' Taken from EB-11 located within 10' of B-5-07

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) (0-100')
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
0	744		Brown Silty CLAY, little sand, trace gravel, very tough, moist			2			
1	743				1SS 0.0-2.0 Rec = 16	2 4 4	2.25		N=6
2	742			CL		3			
3	741				2SS 2.0-4.0 Rec = 24	4 8 10	2.75		N=12
4	740		Closed gray joint traces observed between 4 to 6 feet.			8			
5	739		Brown and Gray Silty CLAY, little sand, trace gravel, very tough, moist		3SS 4.0-6.0 Rec = 24	11 15 17	3.5		N=26
6	738			CL		5			
7	737				4SS 6.0-8.0 Rec = 12	50/6"	2.0		N=55+
8	736		Sand seam @ 7.5'			7	3.5		
9	735		Gray Silty CLAY, little to some sand, trace gravel, tough to very tough, moist		5SS 8.0-10.0 Rec = 23	11 16 19	3.5		N=27
10	734					7			
11	733				6SS 10.0-12.0 Rec = 22	8 12 13	1.0		N=20
12	732					4			
13	731				7SS 12.0-14.0 Rec = 20	6 9 12			N=15
14	730			CL-ML					
15	729				8ST 14.0-16.0 Rec = 23		2.5		
16	728					8			
17	727				9SS 16.0-18.0 Rec = 24	12 15 17	1.25 3.5		N=27
18	726					8	1.5		
19	725				10SS 18.0-20.0 Rec =21	9 16 20	2.75		N=25
20									

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA (0-20')
*Rotary 0-100' (Shaw)

DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig (Shaw)

DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) (0-100')
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
20	724		Gray Silty CLAY, little to some sand, trace gravel, tough to very tough, moist	CL & CL-ML	11SS 20.0-22.0 Rec = 17	8 10 16 20	2.25		N=26
22	722				12SS 22.0-24.0 Rec = 20	6 6 8 9	1.25		N=14
24	720				13ST 24.0-26.0 Rec = 19		3.25		
26	718				14SS 26.0-28.0 Rec = 24	4 6 9 10	1.5		N=15
28	716				15SS 28.0-30.0 Rec = 24	9 14 20 31	2.5		N=34
30	714				16SS 30.0-32.0 Rec = 24	7 11 12 13	3.0		N=23
32	712				17SS 32.0-34.0 Rec = 24	6 10 12 19	2.25		N=22
34	710				18SS 34.0-36.0 Rec = 20		1.75		
36	708				19SS 36.0-38.0 Rec = 24	4 8 12 15	1.25		N=20
38	706				20SS 38.0-40.0 Rec = 24	5 8 12 15	2.25		N=20
40									

DRILLING CONTRACTOR: RDnP Drilling. Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA (0-20')
*Rotary 0-100' (Shaw)
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig (Shaw)
DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

06-26-2007

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SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) (0-100')
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
40	704		Gray Silty CLAY, little to some sand, trace gravel, tough to very tough, moist	CL-ML	21SS 40.0-42.0 Rec = 22	6 10 12 19	3.75		N=22
41	703								
42	702				22SS 42.0-44.0 Rec = 24	5 8 19 19	1.75		N=27
43	701								
44	700				23SS 44.0-46.0 Rec = 24	5 7 12 17	3.0		N=19
45	699								
46	698				24SS 46.0-48.0 Rec = 24	10 20 24 28	1.75 3.5		N=44
47	697		Gray Fine Clayey SAND, trace gravel, wet	SC					
48	696		Layers of Gray SILT and Clayey SILT, wet	ML	25SS 48.0-50.0 Rec = 24	14 17 19 24			N=36
49	695								
50	694				26SS 50.0-52.0 Rec = 24	9 11 12 15	1.5		N=23
51	693								
52	692		Gray Very Silty CLAY, SILT seams, trace gravel, very tough moist	CL-ML	27SS 52.0-54.0 Rec = 24	8 12 14 21	2.25 3.0		Shaw's ST-1 52.5'-54.5' N=26
53	691		Gray Silty CLAY, silt layers, little sand, trace gravel, very tough, moist to wet	CL					
54	690				28SS 54.0-56.0 Rec = 24	5 13 21 24	2.5 2.25		N=34
55	689								
56	688				29SS 56.0-58.0 Rec = 24	15 15 20 23	2.75		N=35
57	687								
58	686				30SS 58.0-60.0 Rec = 24	8 21 12 14	3.75 2.25		N=33
59	685		Gray Fine Sandy SILT, trace clay and gravel, dense, moist	ML					
60			Gray Silty CLAY, little sand, trace gravel, very tough, moist	CL					

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA (0-20')
*Rotary 0-100' (Shaw)
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig (Shaw)
DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) (0-100')
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
60	684		Gray Silty CLAY, little sand, trace gravel, very tough, moist						
61	683				31SS 60.0-62.0 Rec = 24	10 24 25 39	4.0		N=49
62	682								
63	681			CL	32SS 62.0-64.0 Rec = 22	5 16 31 32	2.75		N=47
64	680								
65	679				33SS 64.0-66.0 Rec = 24	12 25 33 36	3.25		N=58
66	678								
67	677		Layers of Gray Silty CLAY, Gray SILT and Silty SAND, wet		34SS 66.0-68.0 Rec = 24	13 17 17 21	1.5		N=34
68	676								
69	675			SM	35SS 68.0-70.0 Rec = 24	12 11 21 33			N=32
70	674								
71	673				36SS 70.0-72.0 Rec = 24	17 11 7 13			N=18
72	672		Gray Silty CLAY, little sand, trace gravel, tough to hard, moist						
73	671		Layers of clayey fine sand @74.0-74.5' and 78.0-78.5 (SC)		37SS 72.0-74.0 Rec = 24	10 13 31 18	1.5		N=44
74	670								
75	669				38SS 74.0-76.0 Rec = 6	25 23 26 25			N=49
76	668			CL					
77	667				39SS 76.0-78.0 Rec = 24	12 17 19 24	1.75		N=36
78	666								
79	665				40SS 78.0-80.0 Rec = 24	16 35 33 33	2.0 4.25		N=68
80									

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA (0-20')
*Rotary 0-100' (Shaw)

DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig (Shaw)

DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) (0-100')
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
80	664		Gray Silty CLAY, little sand, trace gravel, tough to hard, moist	CL	41SS 80.0-82.0 Rec = 24	20 32 38 50	3.0		N=70
81	663								
82	662				42SS 82.0-84.0 Rec = 24	21 36 47 43	2.75		N=83
83	661								
84	660				43SS 84.0-86.0 Rec = 24	10 19 26 28	2.25		N=45
85	659								
86	658				44SS 86.0-88.0 Rec = 24	14 26 27 36	15.7		N=53
87	657								
88	656				45SS 88.0-90.0 Rec = 24	13 21 33 44	2.5		N=54
89	655								
90	654				46SS 90.0-92.0 Rec = 17	32 58 50/5"	18.4		N=108+
91	653								
92	652				47SS 92.0-94.0 Rec = 24	20 34 36 55	1.5 4.25		N=70
93	651								
94	650				48SS 94.0-96.0 Rec = 17	17 36 50/5"	4.25		N=86+
95	649		Layers of Gray SILT, very Silty CLAY and Sandy SILT, wet	SM					
96	648				49SS 96.0-98.0 Rec = 12	61 50/6"			N=111+
97	647		Sand and gravel seams						
98	646				50SS 98.0-100.0 Rec = 24	42 23 30 53	4.5+ 4.5+		N=53
99	645		Gray Silty CLAY, little sand, trace gravel, hard, moist	CL					
100			Gray Clayey SILT, very dense, moist to wet	ML					

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA (0-20')
*Rotary 0-100' (Shaw)
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig (Shaw)
DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) (0-100')
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
100	644		Dark Gray (2.5Y 4/1) SILT, some clay, little fine sand, trace medium to coarse sand, fine gravel, dense, low to medium plasticity, moist	ML	SS-2 100.0-102.0 Rec = 20	13 16 17 16	2.5 2.75		N=33
101	643								
102	642		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine gravel, very stiff to stiff, medium plasticity, moist	CL	See Remarks	11	1.5		SS-3 102.0-104.0 Rec = 6
103	641			ML	SS-3A 102.0-104.0 Rec = 18	60 83/6"	4.5+		N=143
104	640		Dark Gray (5Y 4/1) to Olive Gray (5Y 4/2) SILT, some clay, trace fine sand, extremely dense, low plasticity, very moist			29 46 46 50/5"			
105	639		Dark Gray (5Y 4/1) to Olive Gray (5Y 4/2) Fine to Coarse SAND, little silt, little clay, trace fine gravel, extremely dense, saturated	SP	SS-4 104.0-106.0 Rec = 20				N=92
106	638					50			
107	637				SS-5 106.0-108.0 Rec = 18	70 79/6"			N=149
108	636		Dark Gray (2.5Y 4/1) SILT, some clay, trace fine sand, dense, low plasticity, very moist	ML		24	3.75		
109	635		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand and gravel, hard, medium plasticity, moist	CL	SS-6 108.0-110.0 Rec = 20	18 22 37	4.5+		N=40
110	634		Dark Gray (5Y 4/1) SILT, some clay, little fine to coarse sand and gravel, very dense, low plasticity, moist	ML		18	3.75		
111	633				SS-7 110.0-112.0 Rec = 20	27 32 36			N=59
112	632		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, hard, medium plasticity, moist			19	4.5+		
113	631		Interbedded silt seams from 113.0 - 113.6'		SS-8 112.0-114.0 Rec = 22	30 31 38	4.5+		N=61
114	630					22	4.5+		
115	629			CL	SS-9 114.0-116.0 Rec = 20	31 50 50/5"	4.5+		N=81
116	628					18	4.5+		
117	627				SS-10 116.0-118.0 Rec = 22	36 50 50/4"	4.5+		N=86
118	626					30	4.5+		
119	625				SS-11 118.0-120.0 Rec = 21	54 70 50-3"	4.5+		N=124
120				CL					

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA (0-20')
*Rotary 0-100' (Shaw)
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig (Shaw)
DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) (0-100')
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
120	624		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, hard, medium plasticity, moist	CL	SS-12 120.0-122.0 Rec = 12	65 100/6"	4.5+		N=165+
121	623								
122	622		Gray (2.5Y 5/1) SILT, some clay, little fine sand, trace medium to coarse sand, fine gravel, extremely dense, low plasticity, moist to very moist	ML	SS-13 122.0-124.0 Rec = 9	83 100/3"	3.0		N=183+
123	621								
124	620				SS-14 124.0-126.0 Rec = 20	49 95 87 50/2"	4.5+		N=182
125	619								
126	618				SS-15 126.0-128.0 Rec = 11	67 100/5"	4.5+		N=167+
127	617								
128	616		Dark Gray (2.5Y 4/1) SILT, some clay, little fine sand, trace medium to coarse sand, fine gravel, extremely dense, low plasticity, moist to very moist	ML	SS-16 128.0-130.0 Rec = 5	150/5"	4.5+		N=150+
129	615								
130	614				SS-17 130.0-132.0 Rec = 6	120 100/1"	4.5+		N=220+
131	613								
132	612				SS-18 132.0-134.0 Rec = 14	94 88 200/5"	4.5+		N=288+
133	611								
134	610		Dark Gray (2.4Y 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, hard, medium plasticity, moist	CL	SS-19 134.0-136.0 Rec = 24	29 39 60 126	4.5+ 4.5+		N=99
135	609								
136	608				SS-20 136.0-138.0 Rec = 24	20 47 65 81	4.5+ 4.5+		N=112
137	607								
138	606				SS-21 138.0-140.0 Rec = 24	25 53 70 86	4.5+ 4.5+		N=123
139	605								
140									

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA (0-20')
*Rotary 0-100' (Shaw)

DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig (Shaw)
DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) 0-100'
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
140	604		Dark Gray (2.5Y 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, hard, medium plasticity, moist						
141	603				SS-22 140.0-142.0 Rec = 24	26 46 63 90	4.5+ 4.5+		N=109
142	602					32	4.5+		
143	601				SS-23 142.0-144.0 Rec = 23	60 77 100/5"	4.5+		N=137
144	600					37	4.5+		
145	599				SS-24 144.0-146.0 Rec = 24	57 72 91	4.5+		N=129
146	598					32	4.5+		
147	597				SS-25 146.0-148.0 Rec = 17	87 100/5"	4.5+		N=187+
148	596					34	4.5+		
149	595				SS-26 148.0-150.0 Rec = 24	56 71 102	4.5+		N=127
150	594			CL	See Remarks				ST-27 105.0-150.5 Rec = 4
151	593				SS-28 150.5-152.0 Rec = 18	33 48 69	4.5+ 4.5+		N=117
152	592					34	4.5+		
153	591				SS-29 152.0-154.0 Rec = 23	54 80 100/5"	4.5+		N=134
154	590					32	4.5+		
155	589				SS-30 154.0-156.0 Rec = 23	54 77 100/5"	4.5+		N=131
156	588					69	4.5+		
157	587				SS-31 156.0-158.0 Rec = 17	83 100/5"	4.5+		N=183+
158	586					21	4.5+		
159	585				SS-32 158.0-160.0 Rec = 24	50 90 99	4.5+		N=140
160									

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA - (0-20')
*Rotary 0-100 (Shaw)
DRILLING EQUIPMENT: Acker Soil Max Track Mounted Drill Rig (Shaw)
DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) 0-100'
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
160	584		Dark Gray (2.5Y 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, hard, medium plasticity, moist	CL	SS-33 160.0-162.0 Rec = 23	46 67 87 100/5"	4.5+ 4.5+		N=154
161	583								
162	582		Dark Gray (5Y 4/1) Silty CLAY, trace fine to coarse sand, trace fine gravel, hard to very stiff, medium plasticity, moist	CL	SS-34 162.0-164.0 Rec = 24	30 52 65 98	4.5+ 4.5+		N=117
163	581								
164	580				SS-35 164.0-166.0 Rec = 24	26 43 62 100	4.5+		N=105
165	579								
166	578				SS-36 166.0-168.0 Rec = 24	21 29 40 70	4.5+ 4.5+		N=69
167	577								
168	576				ST-37 168.0-170.0 Rec = 18		4.5+		
169	575								
170	574				SS-38 170.0-172.0 Rec = 24	16 20 25 44	3.0 2.5		N=45
171	573								
172	572				SS-39 172.0-174.0 Rec = 24	26 19 19 30	3.25 2.75		N=38
173	571								
174	570		Gray (5Y 5/1) SILT, some clay, trace fine sand, dense, low plasticity, very moist	ML	See Remarks	18	2.75		SS-40 174.0-174.7 Rec = 8
175	569		Dark Gray (5Y 4/1) Silty CLAY, trace fine sand, stiff to very stiff, medium plasticity, moist to very moist	CL	SS-40A 174.7-176.0 Rec = 16	20 22 36	1.5		N=42
176	568								
177	567				SS-41 176.0-178.0 Rec = 24	12 14 19 29	2.25 1.75		N=33
178	566								
179	565				SS-42 178.0-180.0 Rec = 24	7 14 16 28	2.0 2.5		N=30
180									

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA - (0-20')
*Rotary 0-100 (Shaw)
DRILLING EQUIPMENT: Acker Soil Max Track Mounted Drill Rig (Shaw)
DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

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06-26-2007

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) 0-100'
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
180	564		Dark Gray (5Y 4/1) Silty CLAY, trace fine sand, stiff to very stiff, medium plasticity, moist to very moist	CL	SS-43 180.0-182.0 Rec = 24	8 14 17 29	2.0 2.5		N=31
181	563								
182	562				SS-44 182.0-184.0 Rec = 24	13 15 16 28	1.75 2.0		N=31
183	561								
184	560				SS-45 184.0-186.0 Rec = 24	9 12 14 23	2.0 1.5		N=26
185	559								
186	558				SS-46 186.0-188.0 Rec = 24	11 12 16 23	1.5 1.5		N=28
187	557								
188	556				SS-47 188.0-190.0 Rec = 24	10 13 17 23	2.75 1.75 2.5		N=30
189	555								
190	554				SS-48 190.0-192.0 Rec = 24	10 16 18 26	2.5 2.5		N=34
191	553								
192	552				SS-49 192.0-194.0 Rec = 24	10 14 17 27	2.5 2.25		N=31
193	551								
194	550				SS-50 194.0-196.0 Rec = 24	11 16 19 33	2.25 2.25		N=35
195	549								
196	548				SS-51 196.0-198.0 Rec = 24	Pushed SS	2.5 2.75		
197	547								
198	546				SS-52 198.0-200.0 Rec = 24	Pushed SS	2.25 1.5		
199	545								
200									

DRILLING CONTRACTOR: RDnP Drilling. Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA - (0-20')
*Rotary 0-100 (Shaw)
DRILLING EQUIPMENT: Acker Soil Max Track Mounted Drill Rig (Shaw)
DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

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SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) 0-100'
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
200	544		Dark Gray (5Y 4/1) Silty CLAY, trace fine sand, stiff to very stiff, medium plasticity, moist to very moist	CL	SS-53 200.0-202.0 Rec = 20	8 21 37 47	1.5 1.5		N=58
201	543								
202	542				SS-54 202.0-204.0 Rec = 22	8 15 24 39	1.25 2.5		N=39
203	541								
204	540		Dark Gray (2.5Y 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, stiff to very stiff, medium plasticity, moist	CL	SS-55 204.0-206.0 Rec = 24	17 19 27 32	1.75 2.5		N=46
205	539								
206	538				SS-56 206.0-208.0 Rec = 24	10 17 24 33	2.25 2.25		N=41
207	537								
208	536				SS-57 208.0-210.0 Rec = 24	17 25 40 51	2.25 2.25		N=65
209	535								
210	534				SS-58 210.0-212.0 Rec = 24	8 16 20 30	2.5 2.5		N=36
211	533								
212	532		Dark Gray (2.5Y 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, hard, low to medium plasticity, moist	CL-ML	SS-59 212.0-214.0 Rec = 16	23 55 100/4"	4.5+ 4.5+		N=155+
213	531								
214	530		Gray (2.5Y 5/1) Fine to Coase SAND with GRAVEL, little silt, trace clay, well graded, extremely dense, saturated (WEATHERED BEDROCK)	SW	SS-60 214.0-216.0 Rec = 6	143/6"			N=143+
215	529								
216	528		Grayish Brown (2.5Y 5/2) DOLOMITE BEDROCK	DO	SS-61 216.0-218.0 Rec = 0	100/2"			N=100+
217	527								
218	526				SS-62 218.0-220.0 Rec = 0	100/<1"			N=100+
219	525								
220			END OF BORING @ 220.0'						

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA - (0-20')
*Rotary 0-100 (Shaw)

DRILLING EQUIPMENT: Acker Soil Max Track Mounted Drill Rig (Shaw)

DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

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SURFACE ELEVATION: 734.75
NORTHING: 10879.55
EASTING: 11825.30

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-85'
JM (Golder Assoc.) 85-97'

Shaw® Shaw Environmental, Inc.

BORING NO. B-7-07 / G178

Depth in Feet	Surf. Elev. 734.75	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
0			GRAVEL FILL (on gravel road)	FILL					
1	734		Dark Grayish Brown (10YR 4/2) to Brown (10YR 4/3) Silty CLAY FILL, little fine to coarse sand, fine gravel, hard, low to medium plasticity, dry to moist						
2	733						4.5+		
3	732				CS-1 0.0-5.0 Rec = 48				
4	731						4.5+		
5	730			FILL					
6	729						4.5+		
7	728								
8	727				CS-2 5.0-10.0 Rec = 40				
9	726						4.5+		
10	725								
11	724		Olive Brown (2.5Y 4/3) Silty CLAY, some fine to coarse sand, fine gravel, stiff to very stiff, medium plasticity, moist				3.0		
12	723						1.5		
13	722			CL	CS-3 10.0-15.0 Rec = 60		2.0		
14	721						1.5		
15	720								
16	719		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, fine gravel, hard to very stiff, medium plasticity, moist				4.5+		
17	718								
18	717			CL	CS-4 15.0-20.0 Rec = 60		4.5+		
19	716								
20	715								

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 4.25" I.D.-HSAShaw 3"O.D.x5'CS (0-75') *Rotary (75-85')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/26/07 ENDED: 03/27/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
"CS" - Continous Sampler CS = 3" O.D. x 5' (0-75')
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
85.0'-97.0' Taken from G178 located within 10' of B-7-07.

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SURFACE ELEVATION: 734.75
NORTHING: 10879.55
EASTING: 11825.30

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-85'
JM (Golder Assoc.) 85-97'

Shaw® Shaw Environmental, Inc.

BORING NO. B-7-07 / G178

Depth in Feet	Surf. Elev. 734.75	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
20									
21	714		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, fine gravel, very stiff to stiff, medium plasticity, moist				3.5		
22	713						2.5		
23	712				CS-5 20.0-25.0 Rec =60		3.5		
24	711						3.5		
25	710								
26	709						3.0		
27	708								
28	707				CS-6 25.0-30.0 Rec = 60		3.0		
29	706			CL					
30	705								
31	704						3.25		
32	703						3.25		
33	702				CS-7 30.0-35.0 Rec =60		2.0		
34	701						2.0		
35	700								
36	699						1.0		Description for 38.5-40 ft. : Dark Gray (10YR 5/1) to Dark Grayish Brown (2.5Y 4/2) Silty Fine to Coarse SAND, some fine to coarse gravel, trace clay, extremely dense, moist
37	698						1.5		
38	697				CS-8 35.0-40.0 Rec =58		1.0		
39	696		Silty Fine to Coarse SAND (See Remarks for full description)	SM			4.5+		
40	695								

DRILLING CONTRACTOR: RDNP Drilling. Inc.
DRILLING METHOD: 4.25" I.D.-HSAShaw 3"O.D.x5'CS (0-75') *Rotary (75-85')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/26/07 ENDED: 03/27/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
"CS" - Continous Sampler CS = 3" O.D. x 5' (0-75')
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
85.0'-97.0' Taken from G178 located within 10' of B-7-07.

SURFACE ELEVATION: 734.75
NORTHING: 10879.55
EASTING: 11825.30

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-85'
JM (Golder Assoc.) 85-97'

Shaw® Shaw Environmental, Inc.

BORING NO. B-7-07 / G178

Depth in Feet	Surf. Elev. 734.75	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
40			Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist	CL					
41	694						4.5+		
42	693						3.5		
43	692				CS-9 40.0-45.0 Rec = 60				
44	691						2.5		
45	690								
46	689						4.5+		
47	688								
48	687				CS-10 45.0-50.0 Rec = 60				
49	686						4.5+		
50	685								
51	684				ST-11 50.0-52.5 Rec = 24				
52	683								
53	682						3.5		
54	681				CS-12 52.5-55.0 Rec = 30		2.0		
55	680						2.5		
56	679						3.5		
57	678								
58	677				CS-13 55.0-60.0 Rec = 60		3.75		
59	676								
60	675						3.0		

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 4.25" I.D.-HSAShaw 3"O.D.x5'CS (0-75') *Rotary (75-85')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03:26/07. ENDED: 03:27:07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
"CS" - Continous Sampler CS = 3" O.D. x 5' (0-75')
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
85.0'-97.0' Taken from G178 located within 10' of B-7-07.

06-26-2007 T... :\ts\2006\122150 - Zion Landfill Expansion\Hydrogeo\Boring Logs\B-7-07.bor

SURFACE ELEVATION: 734.75
NORTHING: 10879.55
EASTING: 11825.30

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-85'
JM (Golder Assoc.) 85-97'

Shaw® Shaw Environmental, Inc.

BORING NO. B-7-07 / G178

Depth in Feet	Surf. Elev. 734.75	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
60			Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, stiff to hard, medium plasticity, moist	CL			1.5		
61	674								
62	673						1.25		
63	672				CS-14 60.0-65.0 Rec = 50				
64	671						3.75		
65	670						4.5+		
66	669						4.5+		
67	668								
68	667				CS-15 65.0-70.0 Rec = 48				
69	666						2.5		
70	665								
71	664						2.0		
72	663								
73	662				CS-16 70.0-75.0 Rec = 55				
74	661						2.25		
75	660					9			
76	659				SS-17 75.0-77.0 Rec = 24	15 21	1.25		N=36
77	658					25	1.75 1.25		
78	657				SS-18 77.0-79.0 Rec = 24	8 10 21	2.25		N=31
79	656					24	3.5		
80	655				SS-19 79.0-81.0 Rec =24	17 22	4.5+		

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 4.25" I.D.-HSAShaw 3"O.D.x5'CS (0-75') *Rotary (75-85')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/26/07 ENDED: 03/27/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
"CS" - Continous Sampler CS = 3" O.D. x 5' (0-75')
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
85.0'-97.0' Taken from G178 located within 10' of B-7-07.

06-26-2007

SURFACE ELEVATION: 734.75
NORTHING: 10879.55
EASTING: 11825.30

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-85'
JM (Golder Assoc.) 85-97'

Shaw® Shaw Environmental, Inc.

BORING NO. B-7-07 / G178

Depth in Feet	Surf. Elev. 734.75	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
80									
81	654		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, gravel, stiff to hard, medium plasticity, moist	CL	SS-19 79.0-81.0 Rec = 24	41 45	4.5+ 2.25		N=63
82	653		0.2' Fine to medium silty sand seam @ 82.2'		SS-20 81.0-82.4 Rec = 15	8 16 50	2.75		N=66
83	652		Reddish Brown (5YR 4/3) to Olive Gray (5Y 4/2) Silty CLAY, little fine to coarse sand, fine gravel, dense, low plasticity, moist	CL	See Remarks	44 23	4.5+		SS-20A 82.4-83.0 Rec = 7
84	651				SS-21 83.0-85.0 Rec = 24	22 23 25	4.5+ 4.5+		N=45
85	650								
86	649		Olive Gray Clayey SILT, some to fine to coarse sand, fine gravel, very stiff, moist	SM	20SS 85.0-87.0 Rec = 21.6	0 15 17 16			N=32
87	648		Olive Gray SILT, trace fine to coarse sand, fine gravel, moist	ML	21SS 87.0-89.0 Rec = 24	20 20 20 21			N=40
88	647								
89	646								
90	645		Olive Gray Silty CLAY, trace fine to coarse sand, fine gravel, very stiff, moist	CL	22SS 89.0-91.0 Rec = 24	17 17 17 19			N=34
91	644		Olive Gray Fine to Medium SAND, dense, wet	SP					
92	643		Olive Gray Fine Silty SAND, very dense, wet	SM	23SS 91.0-93.0 Rec = 1.2	39 41 42 38			N=83
93	642		Olive Gray SILT, some fine sand, trace fine gravel, very stiff, moist	ML					
94	641				24SS 93.0-95.0 Rec = 9.6	28 30 27 28			N=57
95	640		Olive Gray SILT, trace fine sand, very stiff, moist	ML	25SS 95.0-96.0 Rec = 6	54 56			N=110
96	639				26SS 96.0-97.0 Rec = 12	51 47			N=98
97	638		END OF BORING @ 97.0'						
98	637								
99	636								
100	635								

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 4.25" I.D.-HSAShaw 3"O.D.x5'CS (0-75') *Rotary (75-85')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/26/07 ENDED: 03/27/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
"CS" - Continous Sampler CS = 3" O.D. x 5' (0-75')
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
85.0'-97.0' Taken from G178 located within 10' of B-7-07.

SURFACE ELEVATION: 737.20
NORTHING: 10868.75
EASTING: 12490.36

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

BORING NO. B-8-07

Depth in Feet	Surf. Elev. 737.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
0	737		Black (10YR 2/1) Organic Silty CLAY TOPSOIL, trace fine to coarse sand, stiff, medium plasticity, moist	OH	See Remarks	2	1.25		
1	736		Dark Yellowish Brown (10YR 4/4) to Gray (10YR 5/1) Silty CLAY, trace fine sand, very stiff, medium plasticity, moist	CL	SS-1A 0.5-2.0 Rec = 15	2 4 5	2.5		SS-1 0.0-0.5 Rec = 6 N=6
2	735					5	3.5		
3	734				SS-2 2.0-4.0 Rec = 16	6 9 7	3.0		N=15
4	733					3	2.5		
5	732				SS-3 4.0-6.0 Rec = 23	3 5 8	3.25		N=8
6	731		Brown (10YR 4/3) to Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine sand, very stiff, medium plasticity, moist	CL		5	3.5		
7	730		Brown (10YR 5/3) to Yellowish Brown (10YR 5/4) Silty CLAY, trace fine to coarse sand, very stiff to stiff, medium plasticity, moist	CL	SS-4 6.0-8.0 Rec = 22	5 6 8	2.5 1.25		N=11
8	729				See Remarks	7			SS-5 8.0-8.3 Rec = 3
9	728		Brown (10YR 4/3) Fine to Coarse SAND, little fine gravel, little silt, trace clay, medium dense, saturated	SW	SS-5A 8.3-10.0 Rec = 20	6 7 9	1.5 1.25		N=13
10	727		0.3' Silty CLAY seam @ 9.2'	SM	SS-6 10.0-11.4 Rec = 16.8	3 9 7	2.5		N=16
11	726		Brown (10YR 4/3) Silty SAND, trace coarse sand, fine gravel, trace clay, medium dense, saturated		See Remarks	8	3.5		SS-6A 11.4-12.0 Rec = 7.2
12	725		Dark Grayish Brown (10YR 4/2) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, very stiff, medium plasticity, moist	CL	SS-7 12.0-14.0 Rec = 20	12 10 12 17	3.5 3.0		N=22
13	724								
14	723		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, very stiff, medium plasticity, moist	CL		20			
15	722				SS-8 14.0-16.0 Rec = 12	23 18 9	2.5		N=41
16	721					4	3.25		
17	720				SS-9 16.0-18.0 Rec = 20	7 13 17	4.0		N=20
18	719		Olive Brown (2.5Y 4/3) to Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, hard, medium plasticity, moist	CL		5	3.5		
19	718				SS-10 18.0-20.0 Rec =20	6 10	2.25		N=16
20				CL		13	4.5+		

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-14') *Rotary (14-94')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/20/07 ENDED: 04/24/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-8-07 completed within B-8-07.

SURFACE ELEVATION: 737.20
NORTHING: 10868.75
EASTING: 12490.36

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-8-07

Depth in Feet	Surf. Elev. 737.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
20	717		Dark Gray (10YR 4/1) SILTY CLAY, little fine sand, trace medium to coarse sand, gravel, very stiff to hard, medium plasticity, moist	CL	SS-11 20.0-22.0 Rec = 23	6 11 13 19	4.25 3.5		N=24
22	715				SS-12 22.0-24.0 Rec = 20	4 6 10 14	3.25 3.5		N=16
24	713		Dark Gray (10YR 4/1) Silty SAND, trace coarse sand, fine to coarse gravel, medium dense, saturated	SM	SS-13 24.0-25.7 Rec = 17	12 11 8	4.5+		N=19 SS-13A 25.7-26.0 Rec = 2
25	712				See Remarks	6			
26	711		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, stiff to very stiff, medium plasticity, moist	CL	SS-14 26.0-28.0 Rec = 16	5 6 9 10	1.75 1.75		N=15
28	709				SS-15 28.0-30.0 Rec = 24	4 6 9 11	2.0 2.75		N=15
30	707				SS-16 30.0-32.0 Rec = 20	3 5 7 11	1.5 1.5		N=12
32	705				SS-17 32.0-34.0 Rec = 24	4 6 6 8	1.5 1.75		N=12
34	703				SS-18 34.0-36.0 Rec = 20	5 6 8 12	1.75		N=14
36	701				SS-19 36.0-38.0 Rec = 23	2 3 5 8	1.25 1.5		N=8
38	699				SS-20 38.0-40.0 Rec = 24	4 7 8 10	1.75 1.75		N=15
40									

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-14') *Rotary (14-94')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/20/07 ENDED: 04/24/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-8-07 completed within B-8-07.

SURFACE ELEVATION: 737.20
NORTHING: 10868.75
EASTING: 12490.36

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-8-07

Depth in Feet	Surf. Elev. 737.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
40	697		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, stiff to very stiff, medium plasticity, moist	CL	SS-21 40.0-42.0 Rec = 20	4 5 8 7	2.0 2.0		N=13
41	696								
42	695		Gray (10YR 5/1) SILT, some clay, little fine sand, medium dense, low plasticity, very moist	ML	SS-22 42.0-43.0 Rec = 11	5 7	1.25 1.25		
43	694		0.2' Silty clayey sand seam @ 42.6'	CL	SS-22A 43.0-44.0 Rec = 11	9 7	2.0 2.5		N=16
44	693		Dark Gray (10YR 4/1) Silty CLAY, trace fine sand, very stiff, medium plasticity, moist, laminated			8 14	3.5		
45	692		Dark Gray (10YR 4/1) Silty SAND, trace coarse sand, fine gravel, poorly graded, medium dense, saturated	SM	SS-23 44.0-46.0 Rec = 22	6 7	1.25		N=20
46	691								
47	690		Dark Grayish Brown (10YR 4/2) Silty CLAY, little fine to coarse sand, trace fine gravel, stiff, medium plasticity, moist	CL-ML	ST-24 46.0-48.0 Rec = 24				
48	689				See Remarks	6	1.5		SS-25 48.0-48.5 Rec = 6
49	688		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, hard to very stiff, medium plasticity, moist	CL	SS-25A 48.5-50.0 Rec = 18	12 16 21	4.5+		N=28
50	687					5			
51	686				SS-26 50.0-52.0 Rec = 23	8 13 16	4.5+ 3.0		N=21
52	685					8			
53	684				SS-27 52.0-54.0 Rec = 24	11 13 18	3.0 2.75		N=24
54	683					4			
55	682				SS-28 54.0-56.0 Rec = 24	8 10 12	2.5 2.25		N=18
56	681					5			
57	680				SS-29 56.0-58.0 Rec = 24	8 10 13	2.5 2.0		N=18
58	679		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine to medium sand, trace coarse sand, fine to coarse gravel, stiff, medium plasticity, moist			3			
59	678			CL	SS-30 58.0-60.0 Rec = 22	7 9 12	1.5 1.75		N=16
60									

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-14') *Rotary (14-94')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/20/07 ENDED: 04/24/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-8-07 completed within B-8-07.

SURFACE ELEVATION: 737.20
NORTHING: 10868.75
EASTING: 12490.36

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-8-07

Depth in Feet	Surf. Elev. 737.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
60	677		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine to medium sand, trace coarse sand, fine to coarse gravel, stiff, medium platicity, moist	CL	SS-31 60.0-62.0 Rec = 24	4 7 9 11	1.75 1.75		N=16
61	676								
62	675		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, trace fine gravel, stiff to hard, medium plasticity, moist	CL	SS-32 62.0-64.0 Rec = 24	6 6 9 11	2.25 1.75		N=15
63	674								
64	673				SS-33 64.0-66.0 Rec = 24	8 9 11 12	1.5 1.5		N=20
65	672								
66	671				SS-34 66.0-68.0 Rec = 24	6 9 13 15	1.5 3.0 4.5+		N=22
67	670								
68	669				SS-35 68.0-70.0 Rec = 24	7 16 24 27	4.5+ 3.0 3.0		N=40
69	668								
70	667				SS-36 70.0-72.0 Rec = 20	9 13 30 34	4.5+ 4.5+		N=43
71	666								
72	665				SS-37 72.0-74.0 Rec = 24	12 13 19 27	4.5+ 4.5+		N=32
73	664								
74	663				SS-38 74.0-76.0 Rec = 24	14 15 18 16	3.75 3.5		N=33
75	662								
76	661				SS-39 76.0-78.0 Rec = 24	8 9 11 15	2.25 2.75		N=20
77	660								
78	659				SS-40 78.0-80.0 Rec = 24	7 11 13 17	3.0 3.0		N=24
79	658								
80									

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA. 10" Boring (0-14') *Rotary (14-94')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/20/07 ENDED: 04/24/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "SS" - Split Spoon
*3.875" Tricone Roller Bit. 2" O.D. 2' Long Split Spoon
MW-8-07 completed within B-8-07.

SURFACE ELEVATION: 737.20
NORTHING: 10868.75
EASTING: 12490.36

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-8-07

Depth in Feet	Surf. Elev. 737.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
80	657		Very Dark Gray (10YR 3/1) Silty SAND, little coarse sand, trace clay, trace fine gravel, medium dense, saturated	SM	See Remarks	10			SS-41 80.0-80.4 Rec = 3
81	656				SS-41A 80.4-82.0 Rec = 15	7 11 15	2.5 3.0		N=18
82	655		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine to medium sand, trace coarse sand, fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL	SS-42 82.0-84.0 Rec = 20	10 16 26 38	2.0 2.25		N=42
83	654								
84	653		0.3' Silty SAND seam @ 84.7'		SS-43 84.0-85.0 Rec = 12	9 14	4.5+		
85	652		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace coarse sand, fine gravel, hard, medium plasticity, moist	CL	SS-43A 85.0-86.0 Rec = 12	18 33	4.5+		N=32
86	651				SS-44 86.0-87.5 Rec = 18	12 15 52	4.5+		N=67 SS-44A 87.5-88.0 Rec = 6
87	650								
88	649		Dark Grayish Brown (2.5Y 4/2) Silty SAND, trace clay, poorly graded, extremely dense, saturated	SM	See Remarks	60 32			
89	648				SS-45 88.0-90.0 Rec = 12	48 60			N=128
90	647		Dark Gray (2.5Y 4/1) Silty CLAY, some fine to coarse sand, little fine gravel, hard to very stiff, medium plasticity, moist	CL-ML		80 20	4.5+		
91	646				SS-46 90.0-92.0 Rec = 22	18 16 17	2.5		N=34
92	645					8	4.5+		
93	644				SS-47 92.0-94.0 Rec = 24	13 16 24	4.5+		N=29
94	643		END OF BORING @ 94.0'						
95	642								
96	641								
97	640								
98	639								
99	638								
100									

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-14') *Rotary (14-94')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/20/07 ENDED: 04/24/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-8-07 completed within B-8-07.

SURFACE ELEVATION: 739.50
NORTHING: 10924.54
EASTING: 12901.47

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-9-07

Depth in Feet	Surf. Elev. 739.50	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
0	739		CRUSHED STONE and GRAVEL FILL	FILL	SS-1 0.0-2.0 Rec = 8	3 6 2			N=8
2	738		Dark Yellowish Brown (10YR 4/4 to 4/6) to Gray (10YR 5/1) Silty CLAY, trace fine sand, stiff to hard, medium plasticity, moist	CL	SS-2 2.0-4.0 Rec =20	2 3 4 4 7	1.5 2.25 4.5+		N=8
4	735		Brown (10YR 4/3) and Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine to medium sand, hard, medium plasticity, moist	CL	SS-3 4.0-6.0 Rec = 24	4 5 6 8	4.5+ 4.5+		N=11
6	733			CL	SS-4 6.0-8.0 Rec = 24	3 5 6 9	3.5 2.75		N=11
8	731			CL	SS-5 8.0-10.0 Rec = 24	2 4 4 5	2.5 1.75 1.5		N=8
9	730		Olive Brown (2.5Y 4/3) to Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine to medium sand, stiff, medium plasticity, moist	CL	SS-6 10.0-11.5 Rec = 17	1 1 2	0.5 0.5 1.5		N=3
10	729		Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, medium stiff, high plasticity, moist	CL	See Remarks SS-7 12.0-13.0 Rec = 10	5 3 7	0.5		SS-6A 11.5-12.0 Rec = 5 N=9
12	727		Dark Gray (10YR 4/1) Sandy Silty CLAY, trace fine gravel, stiff to medium stiff, medium plasticity, moist to wet	CL	SS-7A 13.0-14.0 Rec = 9	2 3	1.25		
14	725		Olive Brown (2.5Y 4/3) to Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine to medium sand, trace coarse sand, fine gravel, stiff, medium plasticity, moist	CL	SS-8 14.0-16.0 Rec = 20	3 4 6 9	1.25 1.25		N=10
16	723		Olive Brown (2.5Y 4/3) to Dark Grayish Brown (2.5Y 4/2) Fine to Coarse Clayey SAND, trace fine gravel, well graded, medium dense, saturated	SC	SS-9 16.0-18.0 Rec = 10	2 8 7 7			N=15
18	721		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, stiff, medium plasticity, moist	CL	SS-10 18.0-20.0 Rec =20	5 6 9 9	1.75 1.5		N=15
20									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') *Rotary (10-100')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/24/07 ENDED: 04/30/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-9-07 completed within B-9-07.

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SURFACE ELEVATION: 739.50
NORTHING: 10924.54
EASTING: 12901.47

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-9-07

Depth in Feet	Surf. Elev. 739.50	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
20	719		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, stiff, medium plasticity, moist	CL	SS-11 20.0-22.0 Rec = 24	2 5 7 8	1.75 2.0		N=12
22	717				SS-12 22.0-24.0 Rec = 20	2 4 5 8	1.5 2.5		N=9
24	715		Gray (2.5Y 5/1) Sandy SILT, trace fine gravel, trace clay, medium dense, low plasticity, very moist	ML	SS-13 24.0-25.7 Rec = 18	8 9 9	2.25 1.75		N=18
26	713		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand and fine gravel, stiff, medium plasticity, moist	CL / ML	See Remarks SS-14 26.0-27.0 Rec = 11	8 5 5	1.5 2.5		SS-13A 25.7-26.0 Rec = 3 N=14
27	712		Gray (2.5Y 5/1) Sandy SILT, trace medium sand, medium dense, low plasticity, very moist		SS-14A 27.0-28.0 Rec = 11	9 10	2.25 2.5		
28	711		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff to stiff, medium plasticity, moist		SS-15 28.0-30.0 Rec = 18	4 5 7 7	1.5 1.75		N=12
30	709				SS-16 30.0-32.0 Rec = 22	6 6 9 9	2.0 2.0		N=15
32	707			CL	SS-17 32.0-34.0 Rec = 22	3 6 14 9	1.75 1.75		N=20
34	705				SS-18 34.0-36.0 Rec = 22	4 6 8 11	2.25 3.0		N=14
36	703				SS-19 36.0-38.0 Rec = 24	5 13 14 21	1.5 2.5		N=27
38	701				SS-20 38.0-40.0 Rec = 24	4 7 11 16	1.75 2.25		N=18
40									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') *Rotary (10-100')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/24/07 ENDED: 04/30/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-9-07 completed within B-9-07.

06-26-2007 ...\Projects\2006\122150 - Zion Landfill Expansion\Hydrogeo\Boring Logs\B-9-07.bor

SURFACE ELEVATION: 739.50
NORTHING: 10924.54
EASTING: 12901.47

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-9-07

Depth in Feet	Surf. Elev. 739.50	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
40	699		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff to stiff, medium plasticity, moist	CL	SS-21 40.0-42.0 Rec = 24	7 11 14 20	2.0 2.25		N=25
41	698								
42	697				SS-22 42.0-44.0 Rec = 22	5 13 14 16	1.5 2.25		N=27
43	696								
44	695				SS-23 44.0-46.0 Rec = 18	7 9 9 12	2.0 2.0		N=18 SS-24 46.0-46.3 Rec = 3
45	694								
46	693		Gray (2.5Y 5/1) Silty CLAY, little fine to coarse sand, dense, low plasticity, very moist └0.3' Fine to med. Silty SAND seam @ 46.7' └0.2' Fine to med. Silty SAND seam @ 47.5'	CL-ML	See Remarks See Remarks SS-24B 47.0-48.0 Rec = 12	18 20 22	2.25 3.25 1.5		SS-24A 46.3-47.0 Rec = 9 N=42
47	692					27	3.5		
48	691				SS-25 48.0-49.5 Rec = 15	15 22 16	3.5		N=38 SS-25A 49.5-50.0 Rec = 5
49	690		0.3' Fine to medium SAND seam @ 49.5'						
50	689		Dark Gray (10YR 4/1) to Dark Yellowish Brown (10YR 4/4) Silty CLAY, trace fine to coarse sand, medium stiff to stiff, medium plasticity, moist	CL	See Remarks See Remarks	21 11	2.0 0.5-2.0		
51	688				SS-26A 50.0-52.0 Rec = 15	17 26 30	3.75 4.0		N=43 SS-26 50.0-52.0 Rec = 5
52	687		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine sand, trace medium to coarse sand, fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL					
53	686				SS-27 52.0-54.0 Rec = 21	10 14 19 23	3.0 3.0		N=33
54	685								
55	684		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, hard, medium plasticity, moist	CL	ST-28 54.0-56.0 Rec = 13				
56	683				SS-29 56.0-58.0 Rec = 22	20 25 35 39	4.5 4.5		N=60
57	682								
58	681								
59					ST-30 58.0-60.0 Rec = 13				
60									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') *Rotary (10-100')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/24/07 ENDED: 04/30/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-9-07 completed within B-9-07.

06-26-2007

SURFACE ELEVATION: 739.50
NORTHING: 10924.54
EASTING: 12901.47

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-9-07

Depth in Feet	Surf. Elev. 739.50	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
60	679		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, hard, medium plasticity, moist	CL	SS-31 60.0-62.0 Rec = 17	13 19 21 22	3.0 3.0		N=40
61	678								
62	677				SS-32 62.0-64.0 Rec = 24	9 13 18 18	2.5 2.5		N=31
63	676								
64	675				SS-33 64.0-66.0 Rec = 24	10 14 16 19	2.25 2.25		N=30
65	674								
66	673		0.1' Fine to Med. Silty SAND seam @ 67.3'		SS-34 66.0-67.3 Rec = 16	12 14 18	2.25		N=32
67	672		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, very stiff, medium plasticity, moist	CL	See Remarks	19	1.75		SS-34A 67.3-68.0 Rec = 8
68	671		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, stiff to very stiff, medium plasticity, moist	CL	SS-35 68.0-70.0 Rec = 24	13 14 18 23	1.75 1.75		N=32
69	670								
70	669				SS-36 70.0-72.0 Rec = 24	5 11 16 17	1.25 1.5		N=27
71	668								
72	667				SS-37 72.0-74.0 Rec = 24	3 7 13 18	1.5 2.5		N=20
73	666								
74	665				SS-38 74.0-76.0 Rec = 20	10 13 19 28	2.0 2.25		N=32
75	664								
76	663				SS-39 76.0-78.0 Rec = 24	15 20 24 25	3.0 3.25 2.5		N=44
77	662								
78	661				SS-40 78.0-80.0 Rec = 24	9 12 19 27	2.5 3.5		N=31
79									
80									

DRILLING CONTRACTOR: RDnP Drilling. Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') *Rotary (10-100')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/24/07 ENDED: 04/30/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "CS" - Continous sampler
"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-9-07 completed within B-9-07.

SURFACE ELEVATION: 739.50
NORTHING: 10924.54
EASTING: 12901.47

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-9-07

Depth in Feet	Surf. Elev. 739.50	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
80	659		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, stiff to very stiff, medium plasticity, moist	CL	SS-41 80.0-81.0 Rec = 12	13 19	3.25 4.5		N=47
81	658				SS-41A 81.0-82.0 Rec = 12	28 29	4.5		
82	657		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, hard, medium plasticity, moist	CL	SS-42 82.0-83.0 Rec = 12	11 16	3.5		N=44
83	656				SS-42A 83.0-84.0 Rec = 12	28 35	2.5		
84	655		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist	CL	SS-43 84.0-86.0 Rec = 20	12 34 41 59	4.0 4.0		N=75
86	653				SS-44 86.0-88.0 Rec = 20	21 39 106 70	4.5+ 4.5+		N=145
87	652								
88	651				SS-45 88.0-90.0 Rec = 22	17 41 66 58	4.5+ 2.5		N=107
89	650		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist	CL					
90	649		Dark Grayish Brown (2.5Y 4/2) SAND, little coarse sand, trace fine gravel, trace silt, poorly graded, dense, saturated	SP	SS-46 90.0-92.0 Rec = 18	21 23 22 22			N=45
92	647		Dark Gray (10YR 4/1) Silty CLAY, some fine sand, trace medium to coarse sand and fine gravel, stiff to hard, medium plasicity, moist	CL	SS-47 92.0-93.8 Rec = 22	5 13 25 33	0.5 4.5+		N=38 SS-47A 93.8-94.0 Rec = 2
93	646		0.4' Fine to medium SAND seam @ 93.2'		See Remarks				
94	645				SS-48 94.0-96.0 Rec = 20	8 10 15 15	1.75 2.5		N=25
95	644								
96	643		Dark Gray (10YR 4/1) Silty Fine to Coarse Sand, trace fine to little fine gravel, dense, moist	SM	SS-49 96.0-97.0 Rec = 11	11 20	4.5+		N=50
97	642				SS-49A 97.0-98.0 Rec = 11	30 32	4.5+		
98	641		Dark Gray (10YR 4/1) SILT, some sand, little clay, trace medium to coarse sand, fine gravel, very dense, low plasticity, moist	ML	SS-50 98.0-100.0 Rec = 20	20 38 28 35	4.5+ 4.5+		N=66
99			0.2' Fine to med. Silty SAND seam @ 99.6'						
100			END OF BORING @ 100.0'						

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') *Rotary (10-100')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/24/07 ENDED: 04/30/07

WATER LEVEL (FT.)

REMARKS
"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-9-07 completed within B-9-07.

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SURFACE ELEVATION: 737.40
NORTHING: 11485.09
EASTING: 12154.43

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-10-07

Depth in Feet	Surf. Elev.	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
0	737		Dark Gray (10YR 4/1) Silty CLAY FILL, trace fine to coarse sand, fine gravel, hard, medium plasticity, moist	FIll	SS-1 0.0-2.0 Rec =12	2 1 1 2	4.0		N=2
2	735		Brown (10YR 5/3) to Grayish Brown (10YR 5/2) Silty CLAY, trace fine sand, very stiff, medium plasticity, moist	CL	SS-2 2.0-4.0 Rec =18	2 1 2 4	4.0 2.75		N=3
4	733				SS-3 4.0-6.0 Rec = 24	5 4 7 9	2.75 3.75 3.75		N=11
6	731				SS-4 6.0-7.7 Rec = 21	3 5 5	2.0 2.0		N=10
8	729		Dark Gray (10YR 4/1) Silty CLAY, trace fine sand, stiff to very stiff, medium plasticity, moist 0.3' Fine to coarse SAND seam @ 9.7'	CL	See Remarks SS-5 Rec = 21 8.0-9.7	7 2 3 4	1.25 2.0 2.5		SS-4A 7.7-8.0 Rec = 3 N=7
10	727		Gray (10YR 5/1) Silty CLAY, little fine sand, very stiff, medium plasticity, moist 0.2' Fine to coarse SAND seam @ 10.7'	CL	See Remarks SS-6 10.0-10.9 Rec = 9	13 4 8	2.25		SS-5A 9.7-10.0 Rec = 3 N=18
12	725		Dark Gray (2.5Y 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine to coarse gravel, hard, medium plasticity, moist	CL	SS-6A 10.9-12.0 Rec = 13 SS-7 12.0-14.0 Rec = 21	10 13 5 9 12 19	4.5+ 4.5+ 4.5+		N=21
14	723		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, some fine to coarse gravel, very stiff to hard, medium plasticity, moist See Remarks See Remarks	CL	SS-8 14.0-16.0 Rec = 20	6 10 19 29	4.0 4.25		N=29
16	721				SS-9 16.0-18.0 Rec = 20	7 11 18 27	4.25 4.5+		N=29
18	719				SS-10 18.0-20.0 Rec =22	6 12 19 27	4.5+ 4.5+		N=31
20	718								

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') *Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G175 was completed within borehole.

jects\2006\122150 - Zion Landfill Expansion\Hydrogeo\Boring Logs\B-175 - mod pg 5.bor
05-13-2005

SURFACE ELEVATION: 737.40
NORTHING: 11485.09
EASTING: 12154.43

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-10-07

Depth in Feet	Surf. Elev.	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
20	717		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, some fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL	SS-11 20.0-22.0 Rec = 22	5 11 17 24	4.5+ 4.5+		N=28
22	715				SS-12 22.0-24.0 Rec = 20	3 9 13 20	3.5 4.5+		N=22
24	713				SS-13 24.0-26.0 Rec =24	6 10 14 19	4.0 4.5+ 3.75		N=24
26	711				SS-14 26.0-28.0 Rec = 24	7 7 11 16	2.75 2.5 2.5		N=18
27	710		0.2' Silt seam @ 27.0'						
28	709				See Remarks	5	3.0		SS-15 28.0-28.5 Rec = 4
29	708		Gray (10YR 5/1) Sandy SILT, some clay, trace fine gravel, medium dense, low plasticity, moist to very moist	ML	SS-15A 28.5-30.0 Rec = 18	11 8 14	2.25 2.5		N=19
30	707				SS-16 30.0-32.0 Rec = 18	9 10 7 8	2.25 2.25		N=17
32	705		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, very stiff to hard medium plasticity, moist	CL	SS-17 32.0-34.0 Rec = 24	5 7 10 14	2.5 2.5		N=17
34	703				SS-18 34.0-36.0 Rec = 22	8 8 13 16	2.0 2.0		N=21
36	701				See Remarks	9	2.0		SS-19 36.0-36.5 Rec = 6
37	700		Olive Brown (2.5Y 4/3) Silty CLAY, little fine sand, trace medium to coarse sand, very stiff, medium plasticity, very moist	CL	SS-19A 36.5-38.0 Rec = 18	11 11 14	4.5+ 2.0 3.5 2.0		N=22
38	699		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, trace fine gravel, stiff to very stiff, medium plasticity, moist	CL	SS-20 38.0-40.0 Rec = 21	5 8 10 12	1.75 2.5		N=18
39	698								
40									

DRILLING CONTRACTOR: RDNP Drilling. Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
*Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G175 was completed within borehole.

SURFACE ELEVATION: 737.40
NORTHING: 11485.09
EASTING: 12154.43

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-10-07

Depth in Feet	Surf. Elev.	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
40	697		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, trace fine gravel, stiff to very stiff, medium plasticity, moist	CL	SS-21 40.0-42.0 Rec = 22	3 7 9 13	2.0 2.0		N=16
41	696								
42	695				SS-22 42.0-44.0 Rec = 20	5 7 10 11	2.5 2.5 1.75		N=17
43	694								
44	693				SS-23 44.0-46.0 Rec = 20	3 6 8 10	1.75 1.75		N=14
45	692								
46	691				SS-24 46.0-48.0 Rec = 19	5 6 10 11	1.5 1.5		N=16
47	690								
48	689				SS-25 48.0-50.0 Rec = 20	6 8 13 17	2.0 3.0		N=21
49	688								
50	687				SS-26 50.0-52.0 Rec = 20	8 12 16 21	2.5 3.25		N=28
51	686								
52	685		0.2' Fine to Coarse Silty Clayey SAND seam @ 51.8		SS-27 52.0-54.0 Rec = 24	7 11 15 21	2.5 3.0		N=26
53	684								
54	683				SS-28 54.0-56.0 Rec = 24	12 19 17 20	4.5+ 2.25 1.5 2.5		N=36
55	682								
56	681				SS-29 56.0-58.0 Rec = 23	4 7 12 15	2.0 2.5		N=19
57	680								
58	679				SS-30 58.0-60.0 Rec = 20	11 12 15 20	2.25 1.75		N=27
59	678								
60									

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
*Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G175 was completed within borehole.

SURFACE ELEVATION: 737.40
NORTHING: 11485.09
EASTING: 12154.43

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-10-07

Depth in Feet	Surf. Elev.	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
60	677		(Continued)	CL	See Remarks	8 10	2.5 2.5		SS-31 60.0-61.0 Rec = 12 N=23
61	676		Dark Grayish Brown (10YR 4/2) Silty CLAY, some fine sand, trace medium to coarse sand, fine to coarse gravel, stiff to very stiff, medium plasticity, moist	CL	SS-31A 61.0-62.0 Rec = 12	13 24	1.0		
62	675				See Remarks	8	1.25		SS-32 62.0-62.5 Rec = 6
63	674		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist		SS-32A 62.5-64.0 Rec = 18	8 11 14	2.0 2.0		N=19
64	673					8	1.5		
65	672				SS-33 64.0-66.0 Rec = 24	11 15 17	2.0 2.5		N=26
66	671					8	2.25		
67	670				SS-34 66.0-68.0 Rec = 24	8 13 17	3.0		N=21
68	669					7	2.25		
69	668				SS-35 68.0-70.0 Rec = 24	11 16 18	3.75 4.5+		N=27
70	667					5	3.5		
71	666			CL	SS-36 70.0-72.0 Rec = 24	8 11 13	2.5		N=19
72	665					8	3.0		
73	664				SS-37 72.0-74.0 Rec = 24	9 12 16	2.5 3.0		N=21
74	663					6	4.5+		
75	662				SS-38 74.0-76.0 Rec = 21	13 14 19	3.25		N=27
76	661					11	3.0		
77	660				SS-39 76.0-78.0 Rec = 24	15 17 25	4.5+ 3.0 4.5+		N=32
78	659					9	2.25		
79	658				SS-40 78.0-80.0 Rec = 24	17 21 30	3.0 2.5		N=38
80									

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
*Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G175 was completed within borehole.

SURFACE ELEVATION: 737.40
NORTHING: 11485.09
EASTING: 12154.43

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-10-07

Depth in Feet	Surf. Elev.	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
80	657		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist	CL	SS-41 80.0-82.0 Rec = 24	14 15 18 27	3.75 4.5+		N=33
81	656								
82	655				SS-42 82.0-84.0 Rec = 24	14 25 25 29	4.5+ 3.0 3.5		N=50
83	654								
84	653				SS-43 84.0-85.0 Rec = 12	6 11	2.5		N=31
85	652		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, trace to little fine sand, stiff to very stiff, low to medium plasticity, very moist to saturated 0.1' Fine to medium silty sand seams @ 85.0', 85.6', 85.9', 86.8' 0.3' Fine to medium Silty SAND seam @ 87.2	CL-ML	SS-43A 85.0-86.0 Rec = 12	20 20	2.0 1.5		
86	651				SS-44 86.0-87.5 Rec = 15	8 16 27	1.0 3.0 1.5 1.75		N=43
87	650								
88	649		Dark Gray (2.5Y 4/1) SILT, some clay, trace fine to coarse sand, fine gravel, dense, low plasticity, moist	ML	See Remarks	24	3.0		SS-44A 87.5-88.0 Rec = 6
89	648		Dark Grayish Brown (2.5Y 4/2) Fine to Medium Silty SAND, trace coarse sand, fine gravel, trace silt, poorly graded, extremely dense, moist 0.3' gray silty CLAY seam @ 89.2'	SM	SS-45 88.0-89.2 Rec = 11	30 34 61	4.5+		N=95 SS-45A 89.2-90.0 Rec = 9
90	647				See Remarks	72	4.5+		
91	646				SS-46 90.0-92.0 Rec = 22	37 63 82 100/4.5"			N=145
92	645				SS-47 92.0-93.6 Rec = 16	46 45 53			N=98
93	644								
94	643		Grayish Brown (2.5Y 5/2) SILT, trace clay, trace fine to coarse sand, extremely dense, low plasticity, saturated		See Remarks	75	1.5		SS-47A 93.6-94.0 Rec = 4
95	642				SS-48 94.0-96.0 Rec = 13	28 56 85 99	1.75		N=141
96	641			ML		32			
97	640				SS-49 96.0-98.0 Rec = 20	36 41 62	1.5		N=77
98	639					39			
99	638				SS-50 98.0-100.0 Rec = 16	60 63	1.25		N=123
100			See description on next page	CL		38			

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA. 10" Boring (0-10') *Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G175 was completed within borehole.

05-13-2009 ...ojects\2006\122150 - Zion Landfill Expansion\Hydrogeo\Boring Logs\B-175 - mod pg 5.bor

SURFACE ELEVATION: 737.40
NORTHING: 11485.09
EASTING: 12154.43

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-10-07

Depth in Feet	Surf. Elev.	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
100	637		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, medium plasticity, moist	CL	SS-50 100.0-102.0 Rec = 23	16 32 41 58	4.5+ 4.5+	o	N=73
101	636								
102	635		END OF BORING @ 102'.						
103	634								
104	633								
105	632								
106	631								
107	630								
108	629								
109	628								
110	627								
111	626								
112	625								
113	624								
114	623								
115	622								
116	621								
117	620								
118	619								
119	618								
120									

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
*Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G175 was completed within borehole.

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-24

BORING EB-6 DATE STARTED 3-25-86 DATE COMPLETED 3-25-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 738.0

END OF BORING 635.0

WATER TABLE

AT END OF BORING

24 HOURS WELLS INSTALLED

WHILE DRILLING -5.5 Feet

SHEET 1 OF 3

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS		3-4 7-12	23.1	3.0*		1'2"	736.8	Black to dark brown clayey TOPSOIL (OL)
2	SS		9-12 18.31	18.7 16.6	3.5* 4.5+*				Very tough to hard dark brown silty CLAY, little sand, trace gravel, moist (CL)
3	SS		12-18 24-35	15.7	4.5+*		4.5	733.5	Dense to very dense gray silty SAND, very moist (SM)
4	SS		18-28 38-42				7.0	731.0	
5	SS		8-15 20-28	16.1 17.0	4.5+* 3.5*		8.0	730.0	Layers of gray SILT and clayey SILT, moist (ML-SC)
6	SS		10-20 28-29	18.3 17.5	4.5+* 2.0*				
7	SS		8-8 11-12	17.3	1.75*				Hard to tough gray silty CLAY, little sand, trace gravel, moist (CL)
8	SS		5-8 12-12	19.8	1.75*				
9	SS		6-8 11-14	18.7	2.5*				
10	SS		7-10 13-15	19.9	2.25*				
11	SS		7-12 15-18	17.9	2.5*				
12	SS		7-11 18-21	17.1 18.2	4.5+* 2.25*				
13	SS		7-12 17-20	16.2	3.75*				
14	SS		35-39 15-15	21.1 15.1	1.75*		26.5 27.5	711.5 710.5	Very dense brown silty SAND, trace gravel, wet (SM)
15	SS		7-8 11-15	15.6	1.25*				
16	ST 2"			14.4	2.0*	120.0			Tough gray silty CLAY, little to some sand, trace gravel, moist (CL)
17	SS		5-6 9-12	14.5	1.5*				
18	SS		5-7 7-8	14.9	1.0*				
19	SS		5-10 12-15	14.6	2.0*				
20	SS		4-7 11-14	14.6	1.75*				

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

PROJECT BEL ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-25

BORING EB -6 Cont. DATE STARTED 3-25-86 DATE COMPLETED 3-25-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 738.0

END OF BORING 636.0

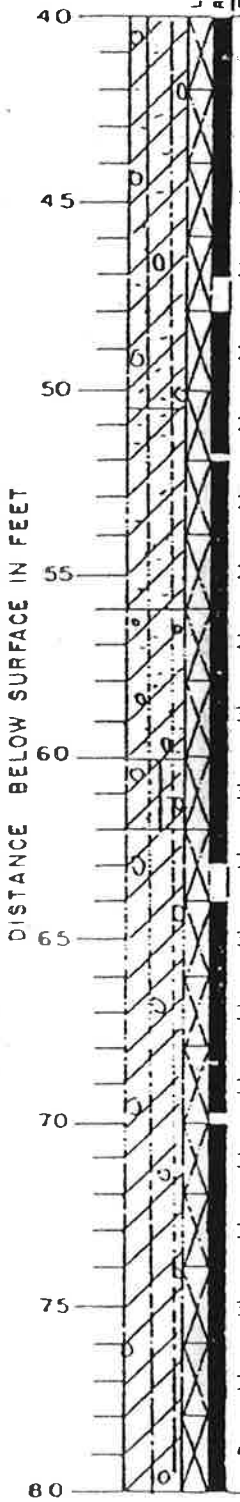
WATER TABLE

AT END OF BORING

24 HOURS WELLS INSTALLED

WHILE DRILLING -5.5 Feet

SHEET 2 OF 3



LENGTH RECOVERY	SAMPLE NO	SAMPLE TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
	21	SS	5-6 6-10	15.4	1.25*				Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
	22	SS	5-9 12-15	14.4	1.5*				
	23	SS	5-11 13-14	20.1	1.5*				
	24	SS	9-12 16-21	19.1					
	25	SS	7-12 15-17	19.0	3.5*				
	26	SS	20-25 23-25				50.5	687.5	Dense to firm gray silty and clayey SAND, wet (SC & SM) (Fine sand w/silt & clay interlayered)
	27	SS	20-23 25-24	16.1					
	28	SS	16-10 8-7						
	29	SS	4-6 9-12	13.6 13.9	2.5* 1.75*		56.0	682.0	Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL) Very silty below 57'
	30	SS	7-12 14-22	14.7	2.0*				
	31	ST 2"		23.4		123.8	60.0	678.0	Firm gray clayey SILT, little sand, trace gravel, moist (CL-ML)
	32	SS	13-19 25-37	16.3	1.5*		62.0	676.2	Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
	33	SS	17-30 36-43	15.6	4.5+*				
	34	SS	11-15 16-24	16.8	2.75*				
	35	SS	14-21 36-40	22.6					
	36	SS	13-23 30.41	15.9	3.75*				
	37	SS	12-20 23-30	16.0	2.75*				
	38	SS	10-14 22-26	17.0 16.5	2.75* 2.75*				
	39	SS	12-27 36-46	15.5	3.75*				
	40	SS	14-26 32-53	14.5	3.0*				

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-26

BORING EB-6 DATE STARTED 3-25-86 DATE COMPLETED 3-25-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 738.0

END OF BORING 638.0

WATER TABLE

AT END OF BORING

24 HOURS WELLS INSTALLED

WHILE DRILLING -5.5 Feet

SHEET 3 OF 3

SAMPLE NO	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γDRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
41	SS		14-22 30-31	14.8	3.25*				Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
42	SS		15-28 38-40	15.6 16.4	1.75* 3.25*		83.0	655.0	Silty, Sandy Till - Diamicton
43	SS		16-52 60/5"	16.4 11.1	3.25* 4.5+*		85.0	653.0	
44	SS		28-30 39-30	11.2 13.0	4.25*		87.5	650.5	Very dense gray SILT, trace clay, moist (ML)
45	SS		20-28 50/5"	24.7	4.5+*		89.0	649.0	Hard gray silty CLAY, little sand, trace gravel, moist (CL)
46 45A	SS ST 2"		47 50/5"	17.6			92.0	646.0	Very dense gray SILT, trace clay, moist (ML)
47	SS		67/6"				93.0	645.0	fi-med Sand Very dense gray silty SAND, wet (SM)
48	SS		73- 50/5"				96.0	642.0	fi-co sand & gravel
49	SS		28- 50/2"	21.7			98.0	640.0	Very dense gray clayey SILT, little sand, moist (ML)
50	SS		24-41 50/4"	14.4	4.5+*				Hard gray silty CLAY, little sand, trace gravel, moist (CL)
			End of Boring at -100.0 Feet						

DISTANCE BELOW SURFACE IN FEET

80 85 90 95 100 105 110 115 120

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

41

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-7 DATE STARTED 3-27-86 DATE COMPLETED 3-28-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 743.1

END OF BORING 668.1

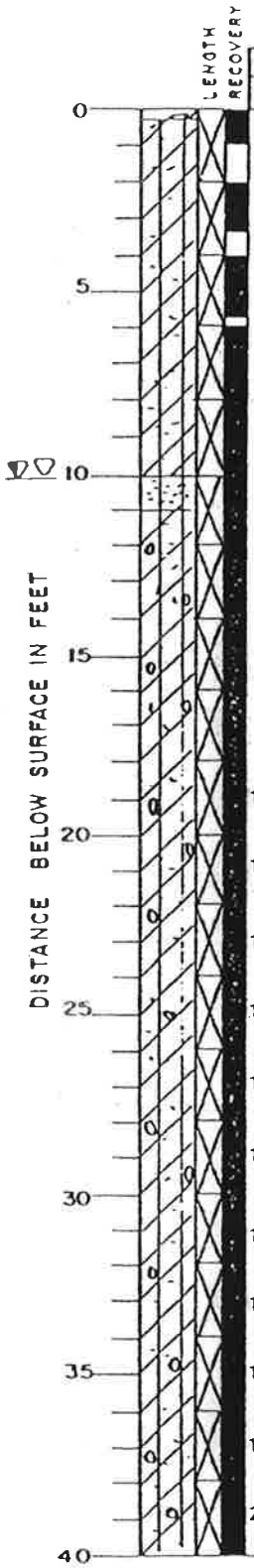
WATER TABLE

AT END OF BORING -12.0 Feet

24 HOURS - 3.2 Feet

WHILE DRILLING -10.0 Feet

SHEET 1 OF 2



SAMPLE NO.	SAMPLE TYPE	N	WC	Q_u	%DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
						0'3"	742.8	Black clayey TOPSOIL (OL)
1	SS	1-3 4-6	31.9 22.0	0.75± 3.75*				
2	SS	4-5 6-9	22.0	2.75±				Tough to very tough brown and gray silty CLAY, trace sand, moist (CL)
3	SS	5-11 11-13	22.2	3.0*				Closed gray joint traces observed between 2 to 6 feet
4	ST 3"		20.5	2.5*	107.2			
5	SS	5-4 5-9	19.9 18.1	1.5* 0.75±				
						10.0	733.1	
6	SS	8-11 16-16	16.0 23.5	3.0*		11.0	732.1	Firm gray silty SAND, trace gravel, wet, (SM)
7	SS	3-9 13-16	21.4	3.0*				
8	SS	7-12 15-17	17.1	2.25*				
9	SS	5-9 10-15	17.3	2.5*				Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
10	SS	5-8 12-17	17.5	2.0±				
11	SS	11-12 16-21	17.3	2.5*				
12	SS	6-8 11-15	17.6 16.8	1.75* 2.75*				
13	SS	4-8 10-16	16.7	4.5+±				
14	SS	8-11 16-21	18.2 18.0	1.75* 2.75*				
15	SS	7-8 10-14	18.4	2.0*				
16	SS	13-15 19-24	18.6	1.5*				
17	SS	5-7 11-15	19.0 19.8	1.0* 2.0*				
18	SS	6-7 12-13	17.8	2.0*				
19	SS	14-15 19-21	17.5	1.5*				
20	SS	10-16 20-20	17.9 15.8	1.0* 2.5*				

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-28

BORING EB-7 Cont. DATE STARTED 3-27-86 DATE COMPLETED 3-25-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 743.1

END OF BORING 668.1

WATER TABLE

AT END OF BORING -12.0 Feet

24 HOURS - 3.7 Feet

WHILE DRILLING -10.0 Feet

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	% DRY	DEPTH	ELEV	SOIL DESCRIPTIONS
21	ST 3"			15.5	4.5+*	118.9			Hard to tough gray silty CLAY, little sand, trace gravel, moist (CL)
22	SS		8-9 14-18	18.9 18.2	1.25* 2.0*				
23	SS		4-10 15-22	18.6 14.8	2.0* 2.75*				
							46.0	697.1	
24	SS		6-12 18-22	20.8 17.8			47.0	696.1	Firm gray clayey SILT, little sand, moist (CL-ML)
							48.0	695.1	Dense gray fine SAND and SILT, wet (SM-ML)
25	SS		6-8 10-16						
							50.0	693.1	Layers of clayey SILT, silty CLAY and silty SAND, moist (ML-CL-SM)
26	SS		10-12 18-22	13.1 14.7	2.25* 2.75*				
27	SS		12-18 20-24	19.9	4.5+*				
28	SS		12-16 19-42	12.3	2.75*				Very tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
29	SS		10-22 33-50	16.4	4.5+*				
30	SS		11-16 24-33	16.6	4.5+*				
31	SS		19-22 27-33	16.0	3.25*				
32	SS		16-12 25-30	16.0 16.7	2.5* 2.75*				
33	SS		9-11 13-15	17.3 12.1	2.25*		65.0	678.1	
							66.0	677.1	Dense gray clayey SILT, little sand, moist (ML-CL)
34	SS		7-16 24-40	13.0	2.5*				
35	SS		7-14 18-26	13.3	2.25*				Very tough gray silty CLAY, little sand, trace gravel, moist (CL)
36	SS		6-13 25-38	13.2 15.4	2.0* 4.0*				
37	SS		12-16 32-40	15.7	3.0*				
38	SS		7-8	15.0	2.75*				
			End of Boring at -75.0 Feet						

*Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-12 DATE STARTED 3-20-86 DATE COMPLETED 3-21-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 740.4

END OF BORING 665.4

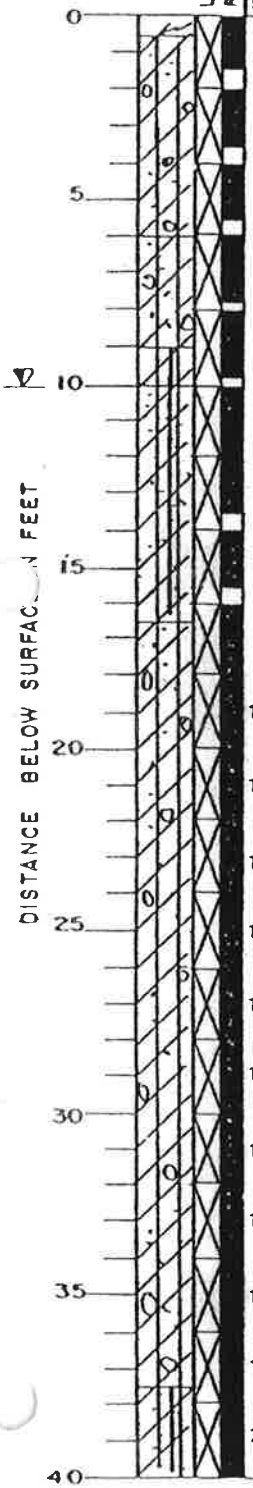
WATER TABLE

AT END OF BORING —

24 HOURS - 4.5 Feet

WHILE DRILLING -10.0 Feet

SHEET 1 OF 2



SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0'6"	739.4	Dark brown clayey TOPSOIL (OL)
1	SS		4-4 4-6	40.4 21.6	1.25*				Tough to very tough brown silty CLAY, little sand, trace gravel, moist (CL)
2	SS		5-5 8-8	25.3	3.25*				
3	SS		3-3 4-5	31.3	1.25*				Closed gray joint traces observed between 2 to 6 feet
							6.0	734.4	
4	SS		4-4 6-7	24.7	1.25*				Tough to very tough brown very silty CLAY, little sand, trace gravel, moist (CL)
5	SS		5-5 5-5	22.0 21.3	2.5*		9.0	731.4	
							10.0	730.4	Firm gray clayey SILT, moist (CL-ML)
6	ST 3"			18.4		111.5			
7	SS		4-4 6-8	19.1 19.3					Layers of very silty CLAY, silty SAND, clayey SILT and silty CLAY (CL-ML-SM)
8	SS		8-9 10-11	15.3 16.5	4.0*				
							16.5	723.9	
9	SS		8-14 16-25	15.6	3.25*				
10	SS		7-14 20-30	16.7	2.0*				
11	SS		10-14 20-30	15.8	4.5+*				Hard to tough gray silty CLAY, little sand, trace gravel, moist (CL)
12	SS		10-18 28-30	15.8	4.5+*				
13	SS		10-14 22-25	15.7	3.75*				
14	SS		9-11 17-18	17.1	2.75*				
15	SS		8-10 13-15	16.5	2.0*				
16	SS		7-11 14-17	16.3	1.75*				
17	SS		6-8 12-15	17.6	1.25*				
18	SS		10-12 18-17	18.3 15.2	1.75*				
19	SS		10-10 23-22	14.9 15.4	1.0* 1.5*				
							37.5	702.5	
20	SS		7-6 8-10	16.2 14.1					Layers of silty CLAY, silty SAND, clayey SILT and SILT (CL-ML-SM-ML)

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-39

BORING EB-12 Cont. DATE STARTED 3-20-86 DATE COMPLETED 3-21-86 JOB 22,455

ELEVATIONS

GROUND SURFACE 740.4

END OF BORING 665.4

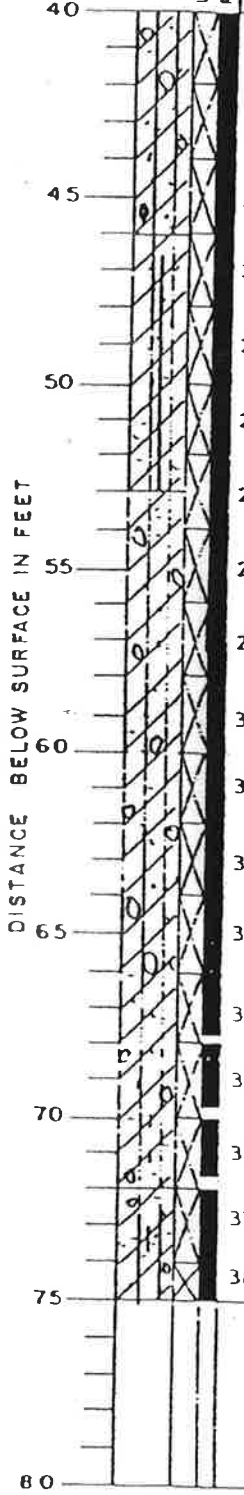
WATER TABLE

AT END OF BORING

24 HOURS - 4.5 Feet

WHILE DRILLING -10.0 Feet

SHEET 2 OF 2



LENGTH RECOVERY	SAMPLE NO	SAMPLE TYPE	N	WC	q_u	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
	21	SS	6-6 10-14	17.8 14.3	1.75*				Tough gray silty to very silty CLAY, little sand, trace gravel, moist (CL)
	22	SS	6-8 12-18	14.0	1.25*				
	23	ST 3"		19.5	1.75*	110.5			
							46.0	694.4	
	24	SS	6-13 17-20	18.5 17.3	1.0*				very si clay Firm gray clayey SILT, little sand, wet (CL-ML) till fabric
	25	SS	7-13 14-13	17.8					
	26	SS	8-11 15-16	15.9 15.3	2.0* 3.0*				
	27	SS	7-10 15-20	18.3 14.7	2.75* 2.75*		53.0	687.4	
	28	SS	10-11 15-22	17.2	1.5*				Tough to hard gray silty CLAY, little to some sand, trace gravel, moist to wet (CL)
	29	SS	12-13 24-30	16.9 19.2	1.5* 2.0*				
	30	SS	17-21 25-35	9.3					
	31	SS	11-16 19-22	14.4	2.0*				
	32	SS	6-10 12-15	14.0	1.75*				
	33	SS	9-13 26-30	13.4	2.5*				
	34	SS	13-21 37-60	11.8	4.5**				
	35	SS	9-21 32-38	15.0 16.0	2.0* 4.0*				
	36	SS	7-13 31-30	16.1 16.2	2.25*				(3" Silt seam at 71 1/4')
	37	SS	11-25 26-26	20.7 19.1	3.25* 2.5*		72.0	668.4	Very tough gray silty CLAY, sandy silt layer, some sand, trace gravel, moist (CL)
	38	SS	13-13	20.8	3.25*				
			End of Boring at -75.0 Feet						

*Approximate unconfined compression strength based on measurements a calibrated pocket penetrometer.

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING 89-14 DATE STARTED 3-28-86 DATE COMPLETED 3-29-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 740.9

END OF BORING 665.9

WATER TABLE

AT END OF BORING -10.0 Feet

24 HOURS - 3.7 Feet

WHILE DRILLING -10.0 Feet

SHEET 1 OF 2

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0		
1	SS		2-5 5-5	24.9 23.6	4.0*		1.0	739.9	Black clayey TOPSOIL (OL)
2	SS		2-6 6-10	22.7 22.0	2.25* 3.25*				Very tough brown to brown and gray silty CLAY, little sand, trace gravel, moist (CL)
3	SS		2-5 12-15	22.8	3.5*				
4	SS		5-8 12-16	24.1	3.75*				
5	SS		7-13 12-14	18.5 16.0	3.75* 4.0*		8.0	732.9	Very tough gray silty CLAY, layer very silty CLAY and sandy SILT, moist (CL-ML)
6	SS		8-8 10-19	10.9 17.3	3.0* 4.0*		11.0	729.9	
7	SS		9-9 12-19	15.6	3.75*				Very tough gray silty CLAY, little sand, trace gravel, moist (CL)
8	SS		7-10 10-20	15.9	3.75*				
9	SS		8-11 17-24	16.4 16.3	3.75* 3.5*		17.5	723.4	
10	SS		8-10 9-9	16.1 14.2	3.75*				Very tough gray silty CLAY, layers gray SILT and sandy SILT, moist (CL-ML)
11	ST 2"			17.1	3.5*	113.5	20.0	720.9	
12	SS		5-10 11-24	16.4	2.75*				
13	SS		5-8 12-16	18.1	2.25*				Very tough to tough gray silty CLAY, little sand, trace gravel, moist (CL)
14	SS		5-8 13-15	15.9	2.5*				
15	SS		5-6 8-12	18.0	1.5*				
16	ST 3"			17.6	3.5*	114.3			
17	SS		6-8 8-13	18.5	1.5*				
18	SS		8-11 15-20	18.6 16.0	1.0* 3.5*				
19	SS		10-11 17-19	18.0	1.75*				
20	SS		8-8 16-18	15.9	2.25*				

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING SB-14 Cont. DATE STARTED 3-28-96 DATE COMPLETED 3-28-96 JOB 22.453

ELEVATIONS

GROUND SURFACE 740.9

END OF BORING 665.9

WATER TABLE

AT END OF BORING -10.0 Feet

24 HOURS - 3.7 Feet

WHILE DRILLING -10.0 Feet

SHEET 2 OF 2

SAMPLE NO	TYPE	LENGTH RECOVERY	N	WC	Q_U	% DRY	DEPTH	ELEV	SOIL DESCRIPTIONS
21	ST 3"			17.4	2.0*	113.8			
22	SS		9-11 13-20	17.3	2.25*				Very tough to tough gray silty CLAY, little sand, trace gravel, moist (CL)
23	SS		5-11 12-19	17.5	2.25*				
24	SS		9-16 21-22	13.6	1.75*				
25	SS		7-11 17-28	14.2	2.0*				
							50.0	690.9	
26	SS		25-25 50/3"	9.0					Dense gray sandy SILT, little clay, damp (ML)
27	SS		8-32 40-50	12.9	4.5+*		53.0	687.9	
28	SS		14-16 30-40	12.1 14.7	4.5+* 4.0*				Hard to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
29	SS		9-14 23-25	19.7 19.7	2.0* 2.25*				
30	SS		11-13 15-25	13.8 11.8	2.25*		58.0	682.9	
31	SS		9-13 26-25	14.5 13.6					Layers of clayey SILT and silty CLAY, moist (CL-ML)
									Till Fabric (clayey, sandy silt)
32	SS		5-7 13-14	14.6 12.3			62.0	678.9	Firm gray clayey SILT, little sand, moist (ML)
33	SS		8-10 14-30	13.1	2.25*		64.0	676.9	
							66.0	674.9	
34	SS		10-16 29-34	13.2	2.25*				Tough hard gray silty and very silty CLAY, little sand, trace gravel, moist (CL)
35	SS		11-24 36-50	9.2	1.5*				
36	SS		13-21 46-49	13.2	3.75*				
37	SS		16-29 40-50	11.2 16.3	4.5+* 3.75*				
38	SS		10-20	13.8	3.0*				
			End of Boring at -75.0 Feet						

DISTANCE BELOW SURFACE IN FEET

40 45 50 55 60 65 70 75 80

*Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-15 DATE STARTED 3-21-86 DATE COMPLETED 3-21-86 JOB 22,455

ELEVATIONS

GROUND SURFACE 733.1

END OF BORING 658.1

WATER TABLE

AT END OF BORING -36.0 Feet

24 HOURS - 0.5 Feet

WHILE DRILLING AT SURFACE

SHEET 1 OF 2

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS		1-2 2-2	22.6 23.6	1.25*		1.5	731.6	Black to dark brown clayey TOPSOIL (OL)
2	SS		2-2 9-5	20.7	2.25*				Tough to very tough brown and gray silty CLAY, little sand, trace gravel, moist (CL)
3	SS		2-6 3-11	19.7	3.5*				
4	SS		6-17 15-15	17.7	4.5+*		6.0	727.1	
5	ST			14.7	4.0*	120.5			
6	SS		6-12 15-17	15.9					
7	SS		6-12 13-17	16.5	4.25*				Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
9	SS		9-9 15-14	22.0 16.3	1.0* 2.25*				
9	SS		6-10 13-13	21.1 17.2	2.5*				
10	SS		3-5 8-9	18.8	1.5*				
11	SS		3-5 5-7	20.7	1.25*				
12	SS		3-6 5-7	20.6 18.6	1.75*				
13	ST 3"			14.8	1.25*	120.5			
14	SS		3-7 11-11	17.6 16.3	1.75*				
15	SS		10-52 15-14	17.0 14.2	3.5*				
16	SS		4-6 7-9	14.0 12.7	2.0* 3.5*				
17	SS		4-5 7-9	15.2					
18	SS		4-6 9-14	15.4 15.4	1.5*				
19	SS		6-16 31-27	15.6 14.3	1.0* 3.75*				
20	SS		8-24 30-37	14.4 13.9	4.5+*				

DISTANCE BELOW SURFACE FEET

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-15 Cont. DATE STARTED 3-21-86 DATE COMPLETED 3-21-86 JOB 22,450

ELEVATIONS

GROUND SURFACE 733.1

END OF BORING 658.1

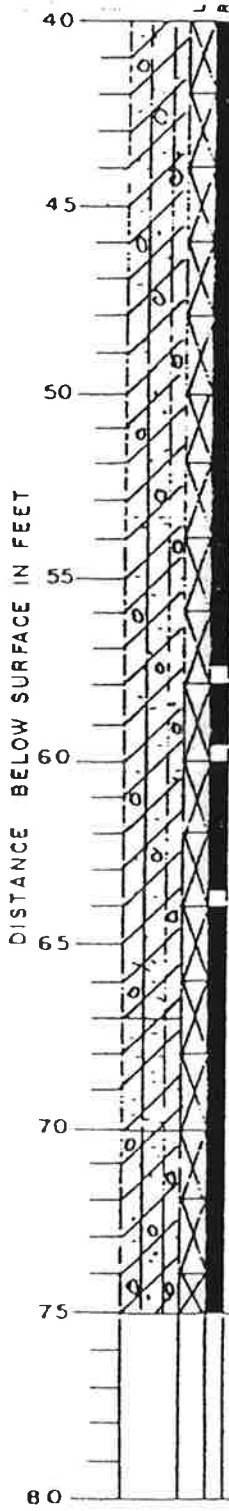
WATER TABLE

AT END OF BORING -36.0 Feet

24 HOURS - 0.5 Feet

WHILE DRILLING AT SURFACE

SHEET 2 OF 2



SAMPLE NO.	TYPE	N	WC	Q_U	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
21	SS	6-24 31-50	14.9	4.5+*				
22	SS	25-27 30-34	16.0	2.0*				
23	SS	6-10 12-21	16.4	2.75*				Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
24	SS	6-10 12-15	20.6	1.5*				
25	SS	9-11 12-11	17.4	3.5*				
26	SS	6-10 10-14	13.6	2.0*				
27	SS	5-8 9-13	16.8	1.0*				
28	SS	4-8 10-19	10.7 18.3	4.0*				
29	SS	9-14 21-25	17.1	3.25*				
30	SS	12-15 23-24	17.5 17.1	1.5* 2.5*				
31	SS	8-10 14-13	19.6	2.25*				
32	SS	12-13 18-18	20.0 22.0	1.5* 3.25*				
33	SS	10-15 27-30	15.6	4.0*				
34	SS	18-21 27-35	16.2 13.8	2.25* 4.5+*		67.0	666.1	
35	SS	18-21 24-33	17.2 14.2	4.5+*				Layers of gray silty CLAY and gray silty SAND, moist (CL & SM)
36	SS	10-15 20-30	14.5 14.4	2.75* 4.0*		70.0	663.1	
37	SS	17-38 30-42	14.3	4.5+*				Very tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
38	SS	8-13	17.6	3.0*				
		End of Boring at -75.0 Feet						

*-Approximate unconfined compress strength based on measurements a calibrated pocket penetrometer.

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

GEOLOGIC LOG OF BORING F-38

G172

PROJECT BFI-Zion USEPA/RFI Monitor Wells

BORING NO. GK9D

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

WATER LEVELS AT COMPLETION _____ HOURS _____ WHILE DRILLING _____

G.S. ELEVATION 742.4 DATE STARTED 10/12/89

T.O.B. ELEVATION 643.4 DATE COMPLETED 10/18/89

Well finished 10/19/89

SHEET 1 OF 5

Top of Pipe 744.51

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
					Dark grey clayey TOPSOIL w/organics	Surficial Sorted Sediments
					741.4	
1SS	6 7 8 9	2"		1.6	Brown and grey CLAY, highly laminated, tr. silt seams, greyed along fracture traces, oxidized along laminae, stiff-hard-very stiff	
2SS	4 6 11 13	15"		4.0		
3SS	5 8 9 12	24"		3.2		
4SS	2 3 8 9	20"		2.5	734.8 Grey SILT w/clay and fine brown sand laminae 734.2	
5SS	3 3 8 9	15"			Brown fine-coarse SAND and small GRAVEL w/clay laminae, dry, med. dense 732.9	
6SS	3 3 4 5	24"			Grey fine-coarse SAND with small-med. gravel and silt laminae, moist, medium dense 731.4 Grey SILT w/interbedded fine-co.SAND 730.4 Grey and black SILT grading to fine SAND 729.4	
7SS	2 2 4 5	24"		1.3	Black and grey fairly silty CLAY w/ some interbedded silt and fine sand, stiff fine-medium sand seam 14.6-14.8' thin fine-coarse sand seam 14.9'	
8SS	2 5 6 7	14"			725.4	
9SS	4 5 6 7	24"			Dark grey fine-coarse SAND and small-medium GRAVEL, wet, medium dense interbedded silt below 19.8'	
10SS	5 8	24"			722.4	

Cement Plug

Steel Casing

Volclay Grout

PVC Pipe

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 #440
IND. CPG 237

JOB NO. 88-105

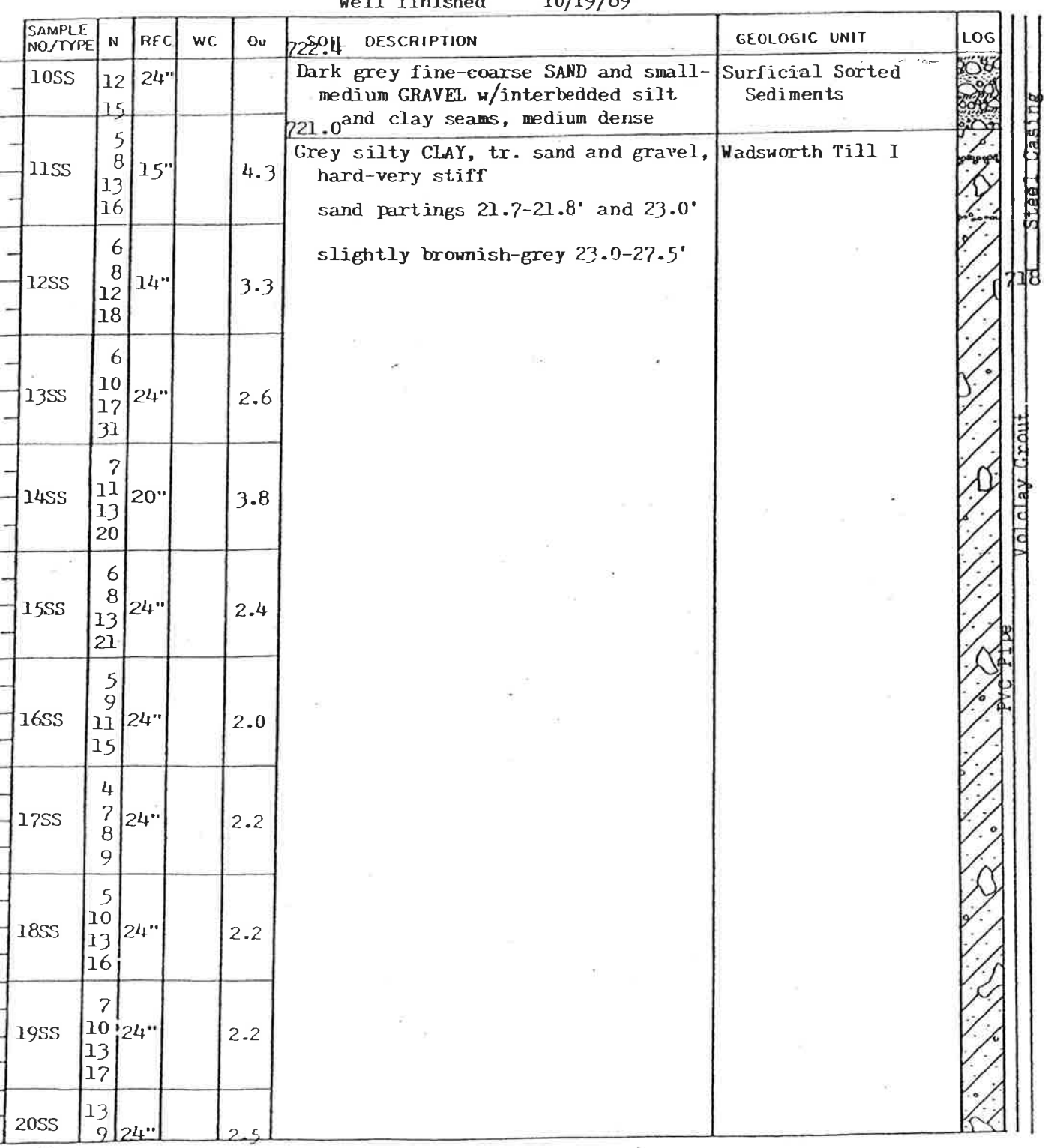
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING
F-39

PROJECT BFI-Zion USEPA/RFI Monitor Wells
DRILLER Patrick Engineering, Inc.
RIG CME-75 METHOD Hollow Stem Auger
G.S. ELEVATION 742.4 DATE STARTED 10/12/89
T.O.B. ELEVATION 643.4 DATE COMPLETED 10/18/89
Well finished 10/19/89

BORING NO. GK9D
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 2 OF 5

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					722.4		
10SS	12 15	24"			Dark grey fine-coarse SAND and small-medium GRAVEL w/interbedded silt and clay seams, medium dense	Surficial Sorted Sediments	
					721.0		
11SS	5 8 13 16	15"		4.3	Grey silty CLAY, tr. sand and gravel, hard-very stiff sand partings 21.7-21.8' and 23.0'	Wadsworth Till I	
12SS	6 8 12 18	14"		3.3	slightly brownish-grey 23.0-27.5'		
13SS	6 10 17 31	24"		2.6			
14SS	7 11 13 20	20"		3.8			
15SS	6 8 13 21	24"		2.4			
16SS	5 9 11 15	24"		2.0			
17SS	4 7 8 9	24"		2.2			
18SS	5 10 13 16	24"		2.2			
19SS	7 10 13 17	24"		2.2			
20SS	13 9	24"		2.5			



ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
3026 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG-5 6440
IND. CPG 237

JOB NO. 88-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING F-40

PROJECT BFI-Zion USEPA/RFI Monitor Wells

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G. S. ELEVATION 742.4 DATE STARTED 10/12/89

T.O.B. ELEVATION 643.4 DATE COMPLETED 10/18/89

Well finished 10/19/89

BORING NO. GK9D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 3 OF 5

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20SS	11 15	24"		2.5	Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till I	
21SS	25 27 35 54	NR	pushed rock				
22SS	4 6 12 19	24"		2.5			
23SS	7 10 17 19	24"		2.5			
24SS	8 12 13 14	20"		2.5	694.9 Grey interbedded CLAY, SILT, fine and finecoarse SAND seams, very stiff	Intratill Sorted Sediments	
25SS	11 21 26 14	24"		3.0	693.4 Slightly brownish-grey silty CLAY, tr. sand and gravel, very stiff		
				2.2	692.4 692.1 Grey fine-coarse SAND		
26SS	8 17 13 16	24"		2.0	Olive brown, silty CLAY, tr. sand and gravel, very stiff dark brown 51.7-52.0' shale fragments 52.0'-52.3'		
27SS	9 14 21 34	24"		2.2	689.4 Slightly brownish-grey silty CLAY, tr. sand and gravel, very stiff-stiff	Wadsworth Till II	
28SS	15 23 32 49	24"		2.2			
29ST		24"		3.1	11% sand, 47% silt, 42% clay (CL) 1.6×10^{-8} cm/sec.		
30SS	11 16	24"		1.8			

Volclay Grout

PVC Pipe

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2024 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 #440
IMD CPG 237

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

F-41

PROJECT BFI-Zion USEPA/RFI Monitor Wells

BORING NO. GK9D

DRILLER Patrick Engineering, Inc.

WATER LEVELS

RIG CME-75 METHOD Hollow Stem Auger

AT COMPLETION

HOURS

G. S. ELEVATION 742.4 DATE STARTED 10/12/89

WHILE DRILLING

T.O.B. ELEVATION 643.4 DATE COMPLETED 10/18/89

SHEET 4 OF 5

Well finished 10/19/89

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
30SS	28 34	24"		1.8	Slightly brownish-grey silty CLAY, tr. sand and gravel, stiff-very stiff	Wadsworth Till II	
31SS	8 13 22 40	24"		2.5	feathery texture below 61.0' foliated texture with uneven silt partings 62.4-62.6'		
32SS	9 13 22 23	24"		2.2			
33SS	0 10 15 30	24"		1.8			
34SS	0 14 15 30	24"		1.5			
35SS	8 14 19 24	24"		1.0			
36SS	10 26 29 36	24"		3.0			
37SS	5 13 00/2"	24"	rock	3.5 4.5+	rock @ 74.0' 668.4 Brownish-grey silty CLAY, tr. sand and gravel, hard-very stiff	Wadsworth Till II	
38SS	21 30 40 37	24"		2.8	feathery texture foliated 76.0-80.5'		
39SS	11 18 21 22	24"		3.0			
40SS	11 15	24"		3.3			

LOG: 80. Stainless Steel Pipe PVC Pipe Volclay Grout

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
7928 N. SHOREWOOD DRIVE
NICHENAY, ILLINOIS 60030
815/344-0017
AIPG CPG3 6440
IND CPG 337

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING F-42

PROJECT BFI-Zion USEPA/RFI Monitor Wells

BORING NO. GK9D

DRILLER Patrick Engineering, Inc.

WATER LEVELS

RIG CME-75 METHOD Hollow Stem Auger

AT COMPLETION

HOURS

G. S. ELEVATION 742.4 DATE STARTED 10/12/89

WHILE DRILLING

T.O.B. ELEVATION 643.4 DATE COMPLETED 10/18/89

SHEET 5 OF 5

Well finished 10/19/89

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
80	40SS	22 34	24"		3.3	Brownish-grey silty CLAY, tr. sand and gravel, very stiff-hard	Wadsworth Till II	
81								
82	41SS	10 15 28 35	24"		2.8			
83								
84	42SS	20 31 44 56	24"		4.1			
85								
86	43SS	5 19 36 50	24"		3.3	5 horizontal fractures ± 1/2" apart 85.7-86.4'		
87								
88	44SS	6 15 28 31	24"		4.2			
89								
90	45SS	19 24 13 47	24"		2.5	652.0		
91						651.4 Thin seam fi-co.SAND, 4" pinkishbr.CLAY, tr. sa & grv. 3" fine SAND	Diamicton	
92	46SS	66 64 37 39	6"	rock		Rock @ 91.0', Grey fine-coarse SAND and small-large GRAVEL, very dense coarsens downward	Shallow Drift Aquifer Sediments	
93								
94	47SS	27 23 33 36	12"					
95						rock @ 95.0' (Rotary wash used to penetrate)		
96	48SS	7 9 43 34	20"	rotary wash		645.7		
97						645.4 Grey clayey SILT, tr. gravel		
98	49SS	11 23 55 118	24"			Brown fine-coarse SAND, very dense 644.7 Brown coarse SAND and small-medium GRAVEL, very dense 643.6		
99						643.4 Brown fine SAND T.O.B. 99.0' Monitor well installed in hole at completion		
0								

LOG: Stainless Steel Pipe, Volclay Grout, Cement, Stainless Steel Screen, Silica Sand

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2026 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG 5440
IND CPG 237

JOB NO. 88-105

LOGGED BY R.L.Jennings

BOREHOLE ABANDONMENT FORMS (MOST RECENT INVESTIVATION)

APTIM

Print Form

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 W. JEFFERSON ST.
SPRINGFIELD, IL 62761

WATER WELL SEALING FORM

PDF FILLABLE/SAVABLE

RETURN ALL COPIES TO IDPH OR LOCAL HEALTH DEPARTMENT

This form shall be submitted to this Department or the local health department not more than 30 days after a water well, boring or monitoring well is sealed. Such wells are to be sealed not more than 30 days after they are abandoned in accordance with the sealing requirements in the Illinois Water Well Construction Code. THE LOCAL HEALTH DEPARTMENT OR REGIONAL PUBLIC HEALTH DEPARTMENT MUST BE NOTIFIED AT LEAST 48 HOURS PRIOR TO SEALING.

1. Ownership (Name of Controlling Party) Advanced Disposal

2. Well Location: Well Site Address 12247 West Russell Road City Zion Zip 60099

Lot # NA Land I.D.# NA County Lake Township T46N

Range R12E Section 6 SW Quarter of the SE Quarter of the SE Quarter

GPS: North Degrees 42 Minutes 29 Seconds 15.2544 West Degrees -87 Minutes 52 Seconds 2.2032

Report decimal minutes to minutes and seconds by multiplying the decimal part of the minutes by 60, e.g. latitude 38 degrees 46.07 minutes N would be latitude 38 degrees 46 minutes 4.2 seconds (0.07 x 60 = 4.2) N. Report GPS coordinates to the nearest 0.1 second.

3. Year Drilled 2019

4. Drilling Permit Number (and date, if known NoPermit;Boring;B-02-18

5. Type of Well Drilled

6. Total Depth (ft.) 98 Diameter (in.) 4

7. Formation clear of obstruction Yes

8. Detains of Plugging (bentonite, neat cement or other materials)

Filled with	Cement-Bentonite Grout	From (ft.)	0	to (ft.)	98
Kind of plug		From (ft.)		to (ft.)	
Filled with		From (ft.)		to (ft.)	
Kind of plug		From (ft.)		to (ft.)	
Filled with		From (ft.)		to (ft.)	
Kind of plug		From (ft.)		to (ft.)	

9. CASING RECORD Upper 2 feet of casing removed NA

10. Date well was sealed Jan 9, 2019

11. Licensed water well driller or other person approved by the Department performing well sealing

Name Strata Earth Services, LLC Complete License Number NA

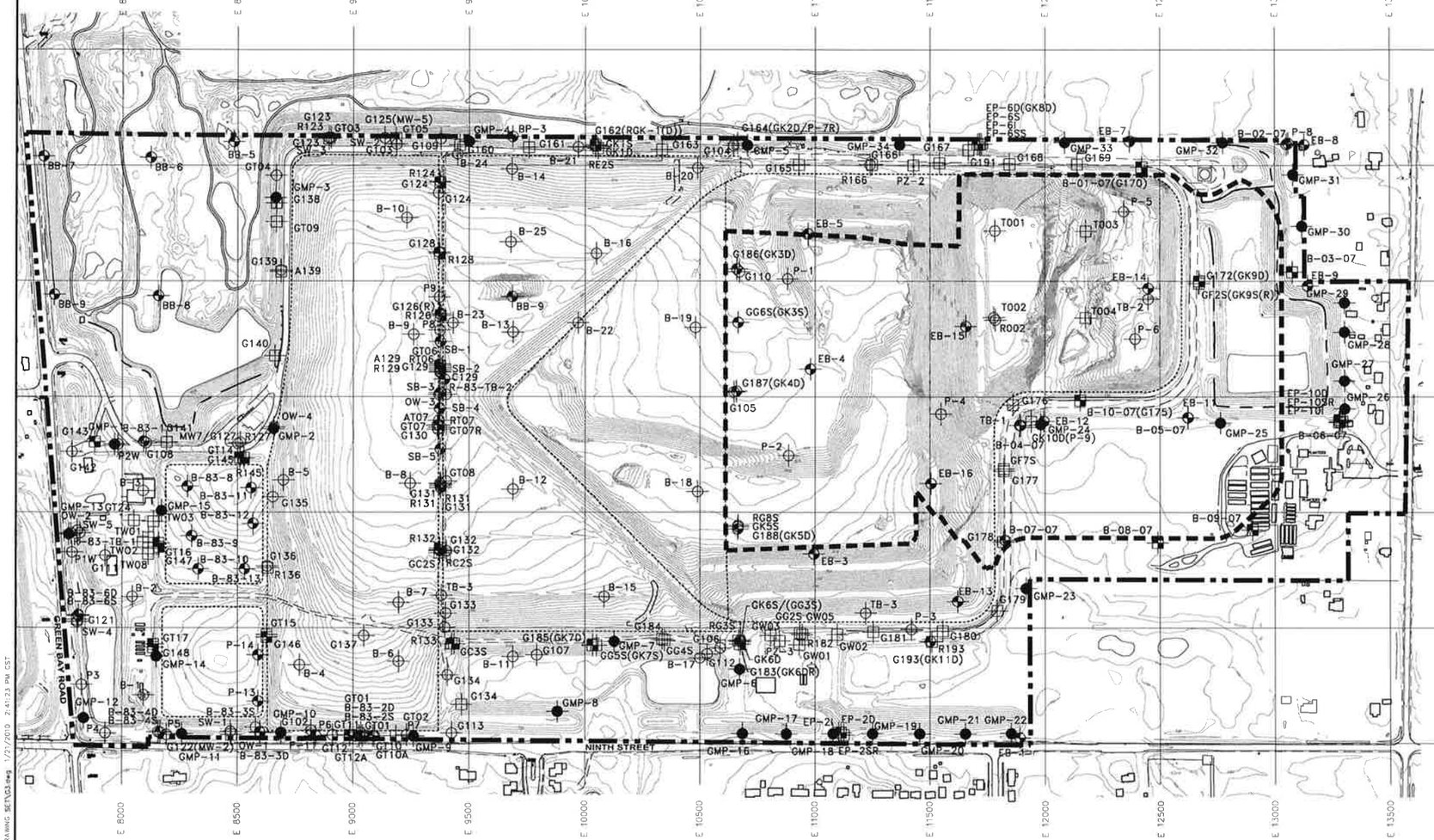
Address 530 W. Colfax Street City Palatine State Illinois Zip Code 60067

This state agency is requesting discolsure of information that is necessary to accomplish the statutory purpose as outlined under Public Act-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center. IL 482-0631- Revised 5/09

Questions regarding the completion of this form should be directed to the local health department or the Illinois Department of Public Health 217-782-5830, TTY (for hearing impaired only) 800-547-0466.

BORING LOCATION MAP FOR EXISTING FACTIILITY (DATED FEBRUARY 2010)

APTIM



N

GRAPHIC SCALE

200' 0 200'

LEGEND

- APPROXIMATE PROPOSED FACILITY BOUNDARY
- PROPOSED EXPANSION WASTE AREA
- EXISTING PERMITTED LIMIT OF WASTE AREAS
- P-6 — CONTINUOUSLY SAMPLED BORING LOCATION
- T001 — NON-CONTINUOUSLY SAMPLED BORING LOCATION
- GC3S — EXISTING MONITORING WELL OR PIEZOMETER/ CONTINUOUSLY SAMPLED BORING LOCATION
- P-8 — EXISTING MONITORING WELL OR PIEZOMETER/ NON-CONTINUOUSLY SAMPLED BORING LOCATION
- GMP-1 — EXISTING LANDFILL GAS PROBE/CONTINUOUSLY SAMPLED BORING LOCATION

NOTES:

1. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY MARTINEZ CORPORATION ON 4/16/07.
2. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
3. EXISTING LANDFILL GAS MONITORING PROBES DESIGNATED WITH A GMP PREFIX ON THIS DRAWING CORRESPOND TO BORING LOGS AND/OR AS-BUILT DIAGRAMS IN APPENDIX G WHICH ARE DESIGNATED WITH EITHER A GP, MP, OR GMP PREFIX.
4. DOUBLE LABELS DEPICTED ON THIS DRAWING INDICATE THE PRESENCE OF TWO SEPARATE BORINGS AND/OR MONITORING WELLS WHICH WERE GIVEN THE SAME NAME.

I:\AutoCAD\Projects\122150\cwa\Geosyn\FINAL DRAWING SET\G3.dwg 1/31/2010 2:41:23 PM CST

REV. NO.	DATE	DESCRIPTION

VEOLIA ENVIRONMENTAL SERVICES

Shaw® Shaw Environmental, Inc.

VEOLIA E.S. ZION LANDFILL-SITE 2 EAST EXPANSION
CITY OF ZION, ILLINOIS

BORING LOCATION MAP

PROJ. NO.:	122150
DESIGNED BY:	MNF
DRAWN BY:	BWM
CHECKED BY:	DJD
APPROVED BY:	DAM

DATE: FEBRUARY 2010

DRAWING NO. **G3**

3 OF 28 SHEETS

ALL OTHER BORING LOGS

DEPTH HOLE	102.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G207
GEOLOGIST	Joseph Miller	DRILLING RIG	Mobile B-61	SHEET	1 OF 7
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	744.3' MSL	STARTED	2019-08-19 11:00	COMPLETED	2019-08-21 09:15

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
1	(0.0' - 5.8') Stiff to very stiff, grayish brown (5YR 3/2) to very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f sand, moist, mottled, (CL)	17	1	SS	19 10 7 6	0.0' 2.0'	---	0.0' - 2.0' No Recovery
2								
3		22	2	SS	8 11 11 7	1.2' 2.0'	3.0	2.0' - 3.2' Very stiff, grayish brown (5YR 3/2), SILTY CLAY, trace f sand, moist, (CL)
4								
5		11	3	SS	7 4 7 8	1.8' 2.0'	1.5	4.0' - 5.8' Stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, moist, mottled, (CL)
6	(5.8' - 13.2') Stiff to very stiff, very light gray (N8) to light brown (5YR 5/6) to pale brown (5YR 5/2), SILTY CLAY and CLAYEY SILT, trace f sand, moist, some organics, mottled, (CL)	14	4	SS	4 6 8 11	2.0' 2.0'	1.75	6.0' - 8.0' Stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, moist, some organics, mottled, (CL)
7								
8								
9		17	5	SS	10 7 10 11	2.0' 2.0'	3.0	8.0' - 10.0' Very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f sand, moist, mottled, (CL)
10								
11		12	6	SS	4 4 8 11	2.0' 2.0'	3.5	10.0' - 12.0' Very stiff, pale brown (5YR 5/2) to light brown (5YR 5/6), SILTY CLAY and CLAYEY SILT, moist, mottled, (CL)
12								
13		13	7	SS	4 5 8 12	1.2' 2.0'	3.0	12.0' - 13.2' Very stiff, pale brown (5YR 5/2) to light brown (5YR 5/6) SILTY CLAY, moist, mottled, (CL)
14	(13.2' - 16.0') Stiff to very stiff, pale brown (5YR 5/2) to light brown (5YR 5/6) to medium dark gray (N4), SILTY CLAY, some f sand lenses, moist, mottled, (CL)	5	8	SS	1 2	2.0' 2.0'	1.75	14.0 - 16.0' Stiff, medium dark gray (N4) SILTY CLAY, some f sand in lenses, moist, mottled, (CL)

DEPTH HOLE	102.0'	PROJECT	Cell 10 Well Installation			BORING NO.	G207	
GEOLOGIST	Joseph Miller	DRILLING RIG	Mobile B-61			SHEET	2 OF 7	
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary					
SURFACE ELEV.	744.3' MSL	STARTED	2019-08-19 11:00			COMPLETED	2019-08-21 09:15	

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
16	(13.2' - 16.0') Stiff to very stiff, pale brown (5YR 5/2) to light brown (5YR 5/6) to medium dark gray (N4), SILTY CLAY, some f sand lenses, moist, mottled, (CL)	5	8	SS	3 6	2.0' 2.0'	1.75	
17	(16.0' - 17.4') Compact, medium gray (N5), F SAND, trace to some clay, wet, (SM)	12	9	SS	2 4 8 10	1.4' 2.0'	---	16.0' - 17.4' Compact, medium gray (N5), F SAND, trace to some clay, wet, (SM)
18	(17.4' - 20.5') Compact, medium gray (N5), F-C SAND, trace f gravel, wet, (SW)	18	10	SS	8 10 8 10	1.0' 2.0'	---	18.0' - 19.0' Compact, medium gray (N5), F-C SAND, trace f gravel, wet, (SW)
20		17	11	SS	7 10 7 7	0.9' 2.0'	2.75	20.0' - 20.5' Compact, medium gray (N5), F-C SAND, trace f gravel, wet, (SW) 20.5' - 20.9' Very stiff, grayish brown (5YR 3/2), SILTY CLAY, moist, (CL)
21	(20.5' - 22.8') Very stiff, grayish brown (5YR 3/2) to grayish red (10YR 4/2), SILTY CLAY, trace f gravel, moist, shale fragments, (CL)							
22		16	12	SS	4 7 9 12	0.8' 2.0'	2.5	22.0' - 22.8' Very stiff, grayish brown (5YR 3/2) to grayish red (10YR 4/2), SILTY CLAY, trace f gravel, moist, shale fragments, (CL)
23	(22.8' - 38.0') Stiff to hard, medium dark gray (N4), SILTY CLAY, trace to little f sand and f gravel, moist, (CL)							
24		8	13	SS	2 4 4 7	1.4' 2.0'	1.75	24.0' - 25.4' Stiff, medium dark gray (N4), SILTY CLAY, trace to little f gravel, moist, (CL)
25								
26		14	14	SS	3 6 8 12	2.0' 2.0'	3.25	26.0' - 28.0' Very stiff, medium dark gray (N4), SILTY CLAY, trace to little f gravel, moist, (CL)
27								
28		11	15	SS	2 5 6 8	1.8' 2.0'	3.0	28.0' - 30.0' Very stiff, medium dark gray (N4), SILTY CLAY, trace f gravel, moist, (CL)
29								

DEPTH HOLE	102.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G207
GEOLOGIST	Joseph Miller	DRILLING RIG	Mobile B-61	SHEET	3 OF 7
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	744.3' MSL	STARTED	2019-08-19 11:00	COMPLETED	2019-08-21 09:15

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
31	(22.8' - 38.0') Stiff to hard, medium dark gray (N4), SILTY CLAY, trace to little f sand and f gravel, moist, (CL)	13	16	SS	2 5 8 12	2.0' 2.0'	3.0	30.0' - 32.0' Very stiff, medium dark gray (N4), SILTY CLAY, trace f sand and f gravel, moist, (CL)
32								
33		13	17	SS	3 7 6 10	2.0' 2.0'	2.0	32.0' - 34.0' Very stiff, medium dark gray (N4), SILTY CLAY, trace f sand, moist, (CL)
34								
35		25	18	SS	3 11 14 19	2.0' 2.0'	4.25	34.0' - 36.0' Hard, medium dark gray (N4), SILTY CLAY, trace to little f sand and f gravel, moist, (CL)
36								
37		21	19	SS	3 8 13 14	2.0' 2.0'	4.0	36.0' - 38.0' Very stiff, medium dark gray (N4), SILTY CLAY, trace f sand and f gravel, moist, (CL)
38								
39	(38.0' - 50.8') Very stiff to hard, olive black (5Y 2/1), SILTY CLAY, trace to little f-c sand and f gravel, moist, (CL)	17	20	SS	3 7 10 11	1.5' 2.0'	3.25	38.0' - 39.5' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace f-c sand and f gravel, moist, (CL)
40								
41		17	21	SS	6 8 9 10	1.8' 2.0'	2.75	40.0' - 41.8' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace to little f-c sand and f gravel, moist, (CL)
42								
43		16	22	SS	6 7 9 14	2.0' 2.0'	>4.5	42.0' - 44.0' Hard, olive black (5Y 2/1), SILTY CLAY, little f-c sand and f gravel, moist, (CL)
44		24	23	SS	8 9	2.0' 2.0'	>4.5	44.0' - 46.0' Hard, olive black (5Y 2/1), SILTY CLAY, little f-c sand and f gravel, moist, (CL)

DEPTH HOLE	102.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G207
GEOLOGIST	Joseph Miller	DRILLING RIG	Mobile B-61	SHEET	4 OF 7
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	744.3' MSL	STARTED	2019-08-19 11:00	COMPLETED	2019-08-21 09:15

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
46	(38.0' - 50.8') Very stiff to hard, olive black (5Y 2/1), SILTY CLAY, trace to little f-c sand and f gravel, moist, (CL)	24	23	SS	15 16	2.0' 2.0'	>4.5	
47		36	24	SS	21 24 12 14	1.5' 2.0'	3.75	46.0' - 47.5' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace to little f-c sand and f gravel, moist, (CL)
48								
49		20	25	SS	5 8 12 14	2.0' 2.0'	2.75	48.0' - 50.0' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace f-c sand, moist, (CL)
50								
51	(50.8' - 52.2') Very stiff, olive gray (5Y 4/1), CLAYEY SILT, wet, (CL-ML)	25	26	SS	5 12 13 13	2.0' 2.0'	2.75	50.0' - 50.8' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace f-c sand, moist, (CL) 50.8' - 52.0' Very stiff, olive gray (5Y 4/1), CLAYEY SILT, wet, (CL-ML)
52								
53	(52.2' - 54.0') Very stiff, olive gray (5Y 4/1), CLAYEY SILT and SILTY CLAY, moist, (CL-ML)	14	27	SS	4 8 6 7	2.0' 2.0'	2.75	52.0' - 52.2' Very stiff, olive gray (5Y 4/1), CLAYEY SILT, wet, (CL-ML) 52.2' - 54.0' Very stiff, olive gray (5Y 4/1), CLAYEY SILT and SILTY CLAY, moist, (CL-ML)
54								
55	(54.0' - 54.2') Compact, pale brown (5YR 5/2), F-M SAND, trace f sand, wet, (SW) (54.2' - 94.0') Firm to hard, brownish gray (5YR 4/1), SILTY CLAY, trace to some f-c sand and f gravel, moist, (CL)	10	28	SS	10 5 5 8	1.8' 2.0'	1.75	54.0' - 54.2' Compact, pale brown (5YR 5/2), F-M SAND, trace c sand, wet, (SW) 54.2' - 55.8' Stiff, brownish gray (5YR 4/1), SILTY CLAY, little f-c sand, moist, (CL)
56								
57		19	29	SS	4 6 13 13	0.8' 2.0'	2.5	56.0' - 56.8' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little to some f-m sand and f gravel, moist, (CL)
58								
59		14	30	SS	6 6 8 10	2.0' 2.0'	2.0	58.0' - 60.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little to some f-c sand and f gravel, moist, (CL)

DEPTH HOLE	102.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G207
GEOLOGIST	Joseph Miller	DRILLING RIG	Mobile B-61	SHEET	5 OF 7
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	744.3' MSL	STARTED	2019-08-19 11:00	COMPLETED	2019-08-21 09:15

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
61	(54.2' - 94.0') Firm to hard, brownish gray (5YR 4/1), SILTY CLAY, trace to some f-c sand and f gravel, moist, (CL)	24	31	SS	6 10 14 17	2.0' 2.0'	3.5	60.0' - 62.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace to little f-c sand and f gravel, moist, (CL)
62								
63		18	32	SS	5 7 11 12	2.0' 2.0'	>4.5	62.0' - 64.0' Hard, brownish gray (5YR 4/1), SILTY CLAY, trace f-c sand, moist, (CL)
64								
65		22	33	SS	7 10 12 16	2.0' 2.0'	2.5	64.0' - 66.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f sand and f gravel, moist, (CL)
66								
67		31	34	SS	4 12 19 25	1.8' 2.0'	>4.5	66.0' - 67.8' Hard, brownish gray (5YR 4/1), SILTY CLAY, trace f-c sand, moist, (CL)
68								
69		28	35	SS	11 13 15 31	1.7' 2.0'	3.25	68.0' - 69.7' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f-c sand, moist, (CL)
70								
71		10	36	SS	3 4 6 8	1.8' 2.0'	1.5	70.0' - 71.8' Stiff, brownish gray (5YR 4/1), SILTY CLAY, little f-m sand, moist, (CL)
72								
73		13	37	SS	3 5 8 9	2.0' 2.0'	2.0	72.0' - 74.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little to some f-c sand, moist, (CL)
74								
		5	38	SS	1 2	2.0' 2.0'	0.75	74.0' - 76.0' Firm, brownish gray (5YR 4/1), SILTY CLAY, trace f sand, moist, (CL)

DEPTH HOLE	102.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G207		
GEOLOGIST	Joseph Miller	DRILLING RIG	Mobile B-61	SHEET	6	OF	7
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary				
SURFACE ELEV.	744.3' MSL	STARTED	2019-08-19 11:00	COMPLETED	2019-08-21 09:15		

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
76	(54.2' - 94.0') Firm to hard, brownish gray (5YR 4/1), SILTY CLAY, trace to some f-c sand and f gravel, moist, (CL)	5	38	SS	3 3	2.0' 2.0'	0.75	
77		29	39	SS	3 9 12 17	1.6' 2.0'	3.25	76.0' - 77.6' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace to little f-m sand, moist, (CL)
78					24			
79		27	40	SS	3 11 16 23	2.0' 2.0'	3.75	78.0' - 80.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace to little f-m sand, moist, (CL)
80								
81		16	41	SS	1 5 11 17	1.0' 2.0'	>4.5	80.0' - 81.0' Hard, brownish gray (5YR 4/1), SILTY CLAY, trace to some f-c sand, moist, (CL)
82								
83		26	42	SS	10 11 15 16	2.0' 2.0'	2.5	82.0' - 84.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little f-m sand, moist, (CL)
84								
85		25	43	SS	5 12 13 16	0.5' 2.0'	2.5	84.0' - 84.5' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little to some f-c sand and f gravel, moist, (CL)
86								
87		28	44	SS	6 12 16 21	0.0' 2.0'	---	86.0' - 88.0' Sample obstructed by gravel
88								
89		31	45	SS	3 12 19 27	2.0' 2.0'	>4.5	88.0' - 90.0' Hard, brownish gray (5YR 4/1), SILTY CLAY, little f-m sand, moist, (CL)

DEPTH HOLE	102.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G207
GEOLOGIST	Joseph Miller	DRILLING RIG	Mobile B-61	SHEET	7 OF 7
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	744.3' MSL	STARTED	2019-08-19 11:00	COMPLETED	2019-08-21 09:15

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
91	(54.2' - 94.0') Firm to hard, brownish gray (5YR 4/1), SILTY CLAY, trace to some f-c sand and f gravel, moist, (CL)	33	46	SS	4 13 20 28	2.0' 2.0'	4.0	90.0' - 92.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little f-m sand, moist, (CL)
92								
93		27	47	SS	10 12 15 27	1.2' 2.0'	4.0	92.0' - 93.2' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little m-c sand and f gravel, moist, (CL)
94								
95	(94.0' - 95.1') Very dense, medium dark gray (N4), CLAYEY SILT, some f sand, wet, (SM)	55	48	SS	12 20 35 50	2.0' 2.0'	---	94.0' - 95.1' Very dense, medium dark gray (N4), CLAYEY SILT, some f sand, wet, (SM) 95.1' - 96.0' Very dense, medium dark gray (N4), F SAND, trace to little silt, wet, (SM)
96	(95.1' - 97.1') Very dense, medium dark gray (N4), F SAND, trace to little silt, wet, (SM)							
97		86	49	SS	20 39 47 38	1.7' 2.0'	---	96.1' - 97.1' Very dense, medium dark gray (N4), F SAND, trace to little silt, wet, (SM) 97.1' - 97.7' Very dense, medium gray (N5), F-C SAND and F GRAVEL, wet, (SW)
98	(97.1' - 98.8') Dense to very dense, medium gray (N5), F-C SAND and F GRAVEL, wet, (SW)							
99	(98.8' - 100.0') Dense, dark greenish gray (5G 4/1), CLAYEY SILT, little f-c sand and f gravel, moist, (ML)	32	50	SS	14 14 18 25	1.5' 2.0'	---	98.0' - 98.8' Dense, medium gray (N5), F-C SAND and F GRAVEL, wet, (SW) 98.8' - 99.5' Dense, dark greenish gray (5G 4/1), CLAYEY SILT, little f-c sand and f gravel, moist, (ML)
100								
101	(100.0' - 102.0') Hard, dark greenish gray (5G 4/1), CLAYEY SILT, little f-c sand and f gravel, moist, (CL-ML)	25	51	SS	5 11 14 22	1.5' 2.0'	>4.5	100.0' - 101.5' Hard, dark greenish gray (5G 4/1), CLAYEY SILT, little f-c sand and f gravel, moist, (CL-ML)
102								
	End of Borehole at 102.0'							
103								
104								

DEPTH HOLE	108.0'	PROJECT	Cell 10 Well Installation			BORING NO.	G208
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61			SHEET	1 OF 8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary				
SURFACE ELEV.	745.2' MSL	STARTED	2019-08-22 13:30			COMPLETED	2019-08-27 13:00

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
1	(0.0' - 1.6') Dense, dark yellowish brown (10YR 4/2), SILT, trace f gravel, dry, (ML)	39	1	SS	15 19 20 8	1.1' 2.0'	>4.5	0.0' - 1.1' Dense, dark yellowish brown (10YR 4/2), SILT, trace f gravel, dry, (ML)
2	(1.6' - 6.2') Very stiff to hard, olive gray (5Y 4/1) to dark greenish gray (5G 4/1) to greenish black (5GY 2/1), SILTY CLAY, trace f sand, moist, some organics, mottled, (CL)	17	2	SS	5 6 11 13	1.4' 2.0'	4.5	2.0' - 3.4' Hard, olive gray (5Y 4/1) and dark greenish gray (5G 4/1), SILTY CLAY, trace f sand, moist, (CL)
4		9	3	SS	5 4 5 8	1.8' 2.0'	2.5	4.0' - 4.9' Very stiff, olive gray (5Y 4/1) to dark greenish gray (5G 4/1), SILTY CLAY, trace f sand, moist, (CL) 4.9' - 5.8' Very stiff, greenish black (5GY 2/1), SILTY CLAY, trace f sand, moist, some organics, mottled, (CL)
6	(6.2' - 14.3') Stiff to very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f sand, moist, some organics, mottled, (CL)	11	4	SS	5 5 6 8	2.0' 2.0'	3.75	6.0' - 6.2' Very stiff, greenish black (5GY 2/1), SILTY CLAY, trace f sand, moist, some organics, mottled, (CL) 6.2' - 8.0' Very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, moist, some organics, mottled, (CL)
8		11	5	SS	8 5 6 9	2.0' 2.0'	1.75	8.0' -10.0' Stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, moist, some organics, mottled, (CL)
10		16	6	SS	3 7 9 11	2.0' 2.0'	4.0	10.0' - 12.0' Very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f sand, moist, mottled, (CL)
12		8	7	SS	2 3 5 5	2.0' 2.0'	2.25	12.0' - 14.0' Very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f sand, moist, mottled, (CL)
14	(14.3' - 16.5') Stiff, pale brown (5YR 5/2) to light brown (5YR 5/6) SILTY CLAY, interbedded f sand laminae, moist, mottled, (CL)	4	8	SS	1 1	1.7' 2.0'	1.75	14.3' - 16.0' Stiff, pale brown (5YR 5/2) to light brown (5YR 5/6) SILTY CLAY, interbedded f sand laminae, moist, mottled, (CL)

DEPTH HOLE	108.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G208
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61	SHEET	2 OF 8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	745.2' MSL	STARTED	2019-08-22 13:30	COMPLETED	2019-08-27 13:00

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
16	(14.3' - 16.5') Stiff, pale brown (5YR 5/2) to light brown (5YR 5/6) SILTY CLAY, interbedded f sand laminae, moist, mottled, (CL)	4	8	SS	3 8	1.7' 2.0'	1.75	
17	(16.5' - 17.4') Compact, medium gray (N5), F -M SAND, some clay and silt, trace f gravel, wet, (SC-SM)	13	9	SS	6 8 5 5	1.5' 2.0'	2.25	16.5' - 17.4' Compact, medium gray (N5), F -M SAND, some clay and silt, trace f gravel, wet, (SC-SM) 17.4' - 18.0' Very stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, trace f gravel, moist, (CL)
18	(17.4' - 23.2') Stiff to very stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, trace f gravel, moist, (CL)							
19		10	10	SS	4 5 5 6	1.6' 2.0'	1.25	18.4' - 20.0' Stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, trace f gravel, moist, (CL)
20								
21		10	11	SS	2 4 6 8	1.8' 2.0'	1.5	20.2' - 22.0' Stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, trace f gravel, moist, (CL)
22								
23		15	12	SS	4 6 9 10	1.9' 2.0'	2.0	22.1' - 23.2' Very stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, trace f gravel, moist, (CL) 23.2' - 24.0' Very stiff, medium dark gray (N4), SILTY CLAY, trace f gravel, moist, (CL)
24	(23.2' - 38.1') Stiff to very stiff, medium dark gray (N4), SILTY CLAY, trace f sand and f gravel, moist, (CL)							
25		7	13	SS	2 3 4 5	1.9' 2.0'	1.5	24.1' - 26.0' Stiff, medium dark gray (N4), SILTY CLAY, trace f gravel, moist, (CL)
26								
27		9	14	SS	2 4 5 5	1.2' 2.0'	2.0	26.8' - 28.0' Very stiff, medium dark gray (N4), SILTY CLAY, trace f gravel, moist, (CL)
28								
29		11	15	SS	2 5 6 7	1.3' 2.0'	2.0	28.7' - 30.0' Very stiff, medium dark gray (N4), SILTY CLAY, trace f gravel, moist, (CL)

DEPTH HOLE	108.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G208
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61	SHEET	3 OF 8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	745.2' MSL	STARTED	2019-08-22 13:30	COMPLETED	2019-08-27 13:00

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
31	(23.2' - 38.1') Stiff, medium dark gray (N4), SILTY CLAY, trace f gravel, moist, (CL)	9	16	SS	3 4 5 5	1.9' 2.0'	1.5	30.1' - 32.0' Stiff, medium dark gray (N4), SILTY CLAY, trace f gravel, moist, (CL)
32								
33		9	17	SS	2 3 6 6	2.0' 2.0'	1.5	32.0' - 34.0' Stiff, medium dark gray (N4), SILTY CLAY, trace f gravel, moist, (CL)
34								
35		10	18	SS	2 4 6 6	2.0' 2.0'	1.25	34.0' - 36.0' Stiff, medium dark gray (N4), SILTY CLAY, trace f gravel, moist, (CL)
36								
37		12	19	SS	3 4 8 12	2.0' 2.0'	1.5	36.0' - 38.0' Stiff, medium dark gray (N4), SILTY CLAY, trace f sand and f gravel, moist, (CL)
38								
39	(38.1' - 53.0') Stiff to very stiff, olive black (5Y 2/1), SILTY CLAY, trace f-c sand, trace to little f gravel, moist, (CL)	21	20	SS	4 8 13 17	1.9' 2.0'	3.5	38.1' - 40.0' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace f-c sand and f gravel, moist, (CL)
40								
41		28	21	SS	6 11 17 21	1.9' 2.0'	3.25	40.1' - 42.0' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace to little f gravel, moist, (CL)
42								
43		23	22	SS	5 9 14 15	2.0' 2.0'	2.5	42.0' - 44.0' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace to little f gravel, moist, (CL)
44								
		22	23	SS	7 9	2.0' 2.0'	3.25	44.0' - 46.0' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace to little f gravel, moist, (CL)

DEPTH HOLE	108.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G208		
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61	SHEET	4	OF	8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary				
SURFACE ELEV.	745.2' MSL	STARTED	2019-08-22 13:30	COMPLETED	2019-08-27 13:00		

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
46	(38.1' - 53.0') Stiff to very stiff, olive black (5Y 2/1), SILTY CLAY, trace f-c sand, trace to little f gravel, moist, (CL)	22	23	SS	13 17	2.0' 2.0'	3.25	
47		43	24	SS	10 20 23 31	0.5' 2.0'	2.75	47.5' - 48.0' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace to little f gravel, moist, (CL)
48								
49		15	25	SS	5 7 8 11	1.8' 2.0'	1.5	48.2' - 50.0' Stiff, olive black (5Y 2/1), SILTY CLAY, trace f gravel, moist, (CL)
50								
51		19	26	SS	7 8 11 13	2.0' 2.0'	3.25	50.0' - 52.0' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace f gravel, moist, (CL)
52								
53		14	27	SS	4 5 9 10	2.0' 2.0'	2.25	52.0' - 53.0' Very stiff, olive black (5Y 2/1),SILTY CLAY, trace f gravel, moist, (CL) 53.0' - 54.0' Very stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, moist, (CL)
54	(53.0' - 58.2') Stiff to very stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, trace f gravel, moist, (CL)							
55		12	28	SS	6 7 5 9	2.0' 2.0'	1.25	54.0' - 55.1' Stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, trace f gravel, moist, (CL) 55.1' - 56.0' Stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, trace f gravel, moist, (CL)
56								
57		20	29	SS	4 10 10 16	2.0' 2.0'	2.25	56.0' - 58.0' Very stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, trace f gravel, moist, (CL)
58								
59	(58.2' - 58.8') Dense, olive gray (5Y 4/1), F SAND and SILT, trace gravel, wet, (SM) (58.8' - 60.0') Dense, olive gray (5Y 4/1), SILT, trace gravel, moist, (ML)	42	30	SS	15 20 22 20	1.8' 2.0'	---	58.2' - 58.8' Dense, olive gray (5Y 4/1), F SAND and SILT, trace gravel, wet, (SM) 58.8' - 60.0' Dense, olive gray (5Y 4/1), SILT, trace gravel, moist, (ML)

DEPTH HOLE	108.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G208		
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61	SHEET	5	OF	8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary				
SURFACE ELEV.	745.2' MSL	STARTED	2019-08-22 13:30	COMPLETED	2019-08-27 13:00		

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
	(60.0' - 60.7') Hard, brownish gray (5YR 4/1), SILTY CLAY, trace to little f gravel, moist, (CL)	42	31	SS	5 15 27 35	2.0' 2.0'	4.5	60.0' - 60.7' Hard, brownish gray (5YR 4/1), SILTY CLAY, trace to little f gravel, moist, (CL) 60.7' - 62.0' Hard, brownish gray (5YR 4/1), CLAYEY SILT, trace f gravel, moist, (CL-ML)
61	(60.7' - 64.0') Very stiff to hard, brownish gray (5YR 4/1), CLAYEY SILT, trace f gravel, moist, (CL-ML)							
62		45	32	SS	20 22 23 23	2.0' 2.0'	3.75	62.0' - 64.0' Very stiff, brownish gray (5YR 4/1), CLAYEY SILT, trace f gravel, moist, (CL-ML)
63								
64								
	(64.0' - 72.0') Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace to little f sand and f gravel, moist, (CL)	33	33	SS	7 13 20 23	2.0' 2.0'	3.0	64.0' - 66.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
65								
66								
		23	34	SS	7 10 13 14	2.0' 2.0'	3.25	66.0' - 68.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f sand and f gravel, moist, (CL)
67								
68								
		18	35	SS	3 8 10 14	2.0' 2.0'	2.75	68.0' - 70.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
69								
70								
		19	36	SS	5 9 10 10	2.0' 2.0'	2.25	70.0' - 72.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little f sand and f gravel, moist, (CL)
71								
72								
	(72.0' - 78.2') Firm to stiff, brownish gray (5YR 4/1), SILTY CLAY, trace to little f-c sand and f gravel, moist, (CL)	16	37	SS	6 7 9 10	2.0' 2.0'	1.5	72.0' - 74.0' Stiff, brownish gray (5YR 4/1), SILTY CLAY, trace to little f-c sand and f gravel, moist, (CL)
73								
74								
		10	38	SS	2 4	1.5' 2.0'	1.0	74.5' - 76.0' Stiff, brownish gray (5YR 4/1), SILTY CLAY, trace to little f-c sand, moist, (CL)

DEPTH HOLE	108.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G208
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61	SHEET	6 OF 8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	745.2' MSL	STARTED	2019-08-22 13:30	COMPLETED	2019-08-27 13:00

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
76	(72.0' - 78.2') Firm to stiff, brownish gray (5YR 4/1), SILTY CLAY, trace to little f-c sand and f gravel, moist, (CL)	10	38	SS	6 9	1.5' 2.0'	1.0	
77		11	39	SS	2 5 6 8	2.0' 2.0'	0.75	76.0' - 78.0' Firm, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
78								
79	(78.2' - 86.4') Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f-c sand and f gravel, moist, (CL)	30	40	SS	7 14 16 18	1.8' 2.0'	3.0	78.2' - 80.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
80								
81		33	41	SS	4 10 23 24	1.9' 2.0'	3.75	80.1' - 82.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
82								
83		26	42	SS	8 11 15 16	1.1' 2.0'	2.5	82.9' - 84.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f sand and f gravel, moist, (CL)
84								
85		14	43	SS	3 5 9 11	2.0' 2.0'	2.25	84.0' - 86.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f-c sand and f gravel, moist, (CL)
86								
87	(86.4' - 94.0') Hard, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)	22	44	SS	4 7 15 15	1.6' 2.0'	4.25	86.4' - 88.0' Hard, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
88								
89		53	45	SS	9 22 31 40	0.9' 2.0'	4.5	89.1' - 90.0' Hard, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)

DEPTH HOLE	108.0'	PROJECT	Cell 10 Well Installation			BORING NO.	G208
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61			SHEET	7 OF 8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary				
SURFACE ELEV.	745.2' MSL	STARTED	2019-08-22 13:30			COMPLETED	2019-08-27 13:00

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
91	(86.4' - 94.0') Hard, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)	35	46	SS	7 15 20 24	2.0' 2.0'	4.5	90.0' - 92.0' Hard, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
92								
93		36	47	SS	9 15 21 26	2.0' 2.0'	4.25	92.0' - 94.0' Hard, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
94								
95	(94.0' - 96.8') Stiff to very stiff, brownish gray (5YR 4/1), CLAY, trace silt and f gravel, moist, (CH)	21	48	SS	4 9 12 16	2.0' 2.0'	4.0	94.0' - 96.0' Very stiff, brownish gray (5YR 4/1), CLAY, trace silt and f gravel, moist, (CH)
96								
97	(96.8' - 98.2') Dense to very dense, medium dark gray (N4), F SAND and SILT, wet, (SM)	35	49	SS	4 13 22 35	1.9' 2.0'	1.75	96.1' - 96.8' Stiff, brownish gray (5YR 4/1), CLAY, trace silt and f gravel, moist, (CH) 96.8' - 98.0' Dense, medium dark gray (N4), F SAND and SILT, wet, (SM)
98								
99	(98.2' - 99.9') Very dense, medium dark gray (N4), SILT, little f sand, wet, (ML)	69	50	SS	11 31 38 34	1.8' 2.0'	---	98.2' - 99.9' Very dense, medium dark gray (N4), SILT, little f sand, wet, (ML) 99.9' - 100.0' Very dense, medium dark gray (N4), F-C SAND, trace silt and f gravel, wet, (SP)
100								
101	(99.9' - 101.0') Dense, medium dark gray (N4), F-C SAND, trace silt and f gravel, wet, (SP) (101.0' - 101.8') Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f sand and f gravel, moist, (CL)	31	51	SS	11 16 15 23	1.5' 2.0'	3.25	100.5' - 101.0' Dense, medium dark gray (N4), F-C SAND, trace silt and f gravel, wet, (SP) 101.0' - 101.8' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f sand and f gravel, moist, (CL) 101.8' - 102.0' Dense, medium dark gray (N4), F-M SAND, trace silt and f gravel, wet, (SP)
102	(101.8' - 105.3') Very stiff and dense, medium dark gray (N4) to brownish gray (5YR 4/1), F-C SAND and F GRAVEL and SILTY CLAY and CLAYEY SILT, moist to wet, (CL-ML-SC-SP-SW-GP)	43	52	SS	14 19 24 21	2.0' 2.0'	2.25	102.0' - 103.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little f gravel, moist, (CL) 103.0' - 103.8' Dense, brownish gray (5YR 4/1), SILTY CLAY and F SAND, wet, (SC) 103.8' - 104.0' Dense, medium dark gray (N4), F-C SAND and F GRAVEL, wet, (SW-GP)
103								
104		53	53	SS	12 18	2.0' 2.0'	2.0	104.0' - 104.9' Dense, brownish gray (5YR 4/1), CLAYEY SILT, trace f gravel, moist, (ML)

DEPTH HOLE	108.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G208
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61	SHEET	8 OF 8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	745.2' MSL	STARTED	2019-08-22 13:30	COMPLETED	2019-08-27 13:00

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
106	(105.3' - 108.0') Very dense, medium dark gray (N4), SILT, wet, (ML)	53	53	SS	35 60	2.0' 2.0'	---	104.9' - 105.3' Very dense, medium dark gray (N4), F-C SAND, trace gravel, wet, (SW) 105.3' - 106.0' Very dense, medium dark gray (N4), SILT, wet, (ML)
107		84	54	SS	19 32 52 52	1.8' 2.0'	---	106.2' - 108.0' Very dense, medium dark gray (N4), SILT, wet, (ML)
108	End of Borehole at 108.0'							
109								
110								
111								
112								
113								
114								
115								
116								
117								
118								
119								

DEPTH HOLE	106.0'	PROJECT	Cell 10 Well Installation			BORING NO.	G209
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61			SHEET	1 OF 8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary				
SURFACE ELEV.	746.0' MSL	STARTED	2019-08-29 09:20			COMPLETED	2019-09-03 12:20

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
1	(0.0' - 2.7') Stiff to hard, dark yellowish brown (10YR 4/2) to olive gray (5Y 4/1), SILTY CLAY, trace f sand, some f gravel, dry, (CL)	6	1	SS	1 3 3 3	1.1' 2.0'	1.25	0.9' - 2.0' Stiff, dark yellowish brown (10YR 4/2) to olive gray (5Y 4/1), SILTY CLAY, trace f sand, some f gravel, dry, (CL)
3	(2.7' - 5.1') Very stiff to hard, grayish brown (5YR 3/2) to olive gray (5Y 4/1), SILTY CLAY, trace f gravel, moist, mottled, (CL)	9	2	SS	3 4 5 7	1.3' 2.0'	4.5	2.7' - 4.0' Hard, grayish brown (5YR 3/2) to olive gray (5Y 4/1), SILTY CLAY, trace f gravel, moist, mottled, (CL)
5	(5.1' - 6.9') Very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, moist, mottled, organic, (OL)	21	3	SS	3 9 12 6	1.4' 2.0'	2.75	4.6' - 5.1' Very stiff, grayish brown (5YR 3/2) to olive gray (5Y 4/1), SILTY CLAY, trace f gravel, moist, mottled, (CL) 5.1' - 6.0' Very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, moist, mottled, organic, (OL)
7	(6.9' - 8.5') Very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f gravel, moist, mottled, (CL)	8	4	SS	2 3 5 6	2.0' 2.0'	2.75	6.0' - 6.9' Very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, moist, mottled, organic, (OL) 6.9' - 8.0' Very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f gravel, moist, mottled, (CL)
9	(8.5' - 10.8') Stiff to very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f sand and f gravel, moist, mottled, (CL)	8	5	SS	3 3 5 7	2.0' 2.0'	2.5	8.0' - 8.5' Very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f gravel, moist, mottled, (CL) 8.5' - 10.0' Very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f sand and f gravel, moist, mottled, (CL)
11	(10.8' - 12.4') Stiff to very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f sand, moist, mottled, (CL)	6	6	SS	2 3 3 5	2.0' 2.0'	1.75	10.0' - 10.8' Stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f sand and f gravel, moist, mottled, (CL) 10.8' - 11.6' Stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f sand, moist, mottled, (CL) 11.6' - 12.0' Stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f sand, moist, mottled, (CL)
13	(12.4' - 16.0') Stiff to very stiff, pale yellowish brown (10YR 6/2) to moderate yellowish brown (10YR 5/4), SILTY CLAY, trace f-m sand, moist, mottled, (CL)	9	7	SS	3 4 5 5	2.0' 2.0'	2.5	12.0' - 12.4' Very stiff, very light gray (N8) to light brown (5YR 5/6), SILTY CLAY, trace f sand, moist, mottled, (CL) 12.4' - 14.0' Very stiff, pale yellowish brown (10YR 6/2) to moderate yellowish brown (10YR 5/4), SILTY CLAY, trace f-m sand, moist, mottled, (CL)
		9	8	SS	4 4	1.0' 2.0'	1.25	

DEPTH HOLE	106.0'	PROJECT	Cell 10 Well Installation			BORING NO.	G209
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61			SHEET	2 OF 8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary				
SURFACE ELEV.	746.0' MSL	STARTED	2019-08-29 09:20			COMPLETED	2019-09-03 12:20

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
16	(12.4' - 16.0') Stiff to very stiff, pale yellowish brown (10YR 6/2) to moderate yellowish brown (10YR 5/4), SILTY CLAY, trace f-m sand, moist, mottled, (CL)	9	8	SS	5 6	1.0' 2.0'	1.25	15.0' - 16.0' Stiff, pale yellowish brown (10YR 6/2) to moderate yellowish brown (10YR 5/4), SILTY CLAY, trace f-m sand, moist, mottled, (CL)
17	(16.0' - 17.4') Stiff, pale yellowish brown (10YR 6/2) to moderate yellowish brown (10YR 5/4), SILTY CLAY, trace f sand and f gravel, moist - wet, mottled,(CL)	2	9	SS	1 1 1 1	2.0' 2.0'	1.0	16.0' - 17.4' Stiff, pale yellowish brown (10YR 6/2) to moderate yellowish brown (10YR 5/4), SILTY CLAY, trace f sand and f gravel, moist - wet, mottled, (CL) 17.4' - 18.0' Stiff, olive gray (5Y 4/1), CLAY, trace f sand, wet, (CH)
18	(17.4' - 18.4') Stiff, olive gray (5Y 4/1), CLAY, trace f sand, wet, (CH)							
19	(18.4' - 19.5') Stiff, olive gray (5Y 4/1), CLAYEY SILT and F SAND, moist - wet, interbedded, (ML-SP)	6	10	SS	1 2 4 6	2.0' 2.0'	1.0	18.0' - 18.4' Stiff, olive gray (5Y 4/1), CLAY, trace f sand, wet, (CH) 18.4' - 19.5' Stiff, olive gray (5Y 4/1), CLAYEY SILT and F SAND, moist - wet, interbedded, (ML-SP) 19.5' - 20.0' Compact, dark yellowish brown (10YR 4/2), F-M SAND, wet, (SP)
20	(19.5' - 20.7') Compact, dark yellowish brown (10YR 4/2), F-M SAND, wet, (SP)							
21	(20.7' - 22.4') Compact, dark yellowish brown (5YR 4/2), F-C SAND, little f gravel, trace silt, wet, (SP)	11	11	SS	3 6 5 8	1.3' 2.0'	---	20.7' - 22.0' Compact, dark yellowish brown (10YR 4/2), F-C SAND, little f gravel, trace silt, wet, (SP)
22								
23	(22.4' - 22.7') Compact, dark yellowish brown (5YR 4/2), C SAND and F GRAVEL, wet, (SP-GP)	11	12	SS	4 4 7 10	1.6' 2.0'	2.75	22.4' - 22.7' Compact, dark yellowish brown (10YR 4/2), C SAND and F GRAVEL, wet, (SP-GP) 22.7' - 24.0' Very stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, moist, (CL)
24	(22.7' - 24.8') Very stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, moist, (CL)							
25	(24.8' - 36.9') Stiff to very stiff, medium dark gray (N4), SILTY CLAY, trace to little f sand and f gravel, moist, (CL)	9	13	SS	1 4 5 8	1.2' 2.0'	2.0	24.8' - 26.0' Very stiff, medium dark gray (N4), SILTY CLAY, trace to little f gravel, moist, (CL)
26								
27		14	14	SS	5 6 8 10	1.5' 2.0'	2.5	26.5' - 28.0' Very stiff, medium dark gray (N4), SILTY CLAY, trace to little f gravel, moist, (CL)
28								
29		10	15	SS	3 4 6 6	0.9' 2.0'	2.0	29.1' - 30.0' Very stiff, medium dark gray (N4), SILTY CLAY, trace f gravel, moist, (CL)

DEPTH HOLE	106.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G209
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61	SHEET	3 OF 8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	746.0' MSL	STARTED	2019-08-29 09:20	COMPLETED	2019-09-03 12:20

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
31	(24.8' - 36.9') Stiff to very stiff, medium dark gray (N4), SILTY CLAY, trace to little f sand and f gravel, moist, (CL)	6	16	SS	1 2 4 4	1.5' 2.0'	1.5	30.5' - 32.0' Stiff, medium dark gray (N4), SILTY CLAY, trace f sand and f gravel, moist, (CL)
32								
33		17	17	SS	4 7 10 10	0.6' 2.0'	1.25	33.4' - 34.0' Stiff, medium dark gray (N4), SILTY CLAY, trace f sand, moist, (CL)
34								
35		12	18	SS	2 5 7 7	1.6' 2.0'	1.75	34.4' - 36.0' Stiff, medium dark gray (N4), SILTY CLAY, little f sand and f gravel, moist, (CL)
36								
37	(36.9' - 52.7') Stiff to very stiff, olive black (5Y 2/1), SILTY CLAY, trace to little f-c sand and f gravel, moist, (CL)	14	19	SS	4 6 8 8	1.1' 2.0'	1.5	36.9' - 38.0' Stiff, olive black (5Y 2/1), SILTY CLAY, trace f gravel, moist, (CL)
38								
39		11	20	SS	3 4 7 7	2.0' 2.0'	1.5	38.0' - 40.0' Stiff, olive black (5Y 2/1), SILTY CLAY, trace f-c sand and f gravel, moist, (CL)
40								
41		10	21	SS	3 4 6 8	2.0' 2.0'	2.25	40.0' - 42.0' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace f gravel, moist, (CL)
42								
43		11	22	SS	3 5 6 7	2.0' 2.0'	2.5	42.0' - 44.0' Very stiff, olive black (5Y 2/1), SILTY CLAY, little f gravel, moist, (CL)
44								
		8	23	SS	3 3	0.8' 2.0'	2.0	45.2' - 46.0' Very stiff, olive black (5Y 2/1), SILTY CLAY, little f-c sand and f gravel, moist, (CL)

DEPTH HOLE	106.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G209
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61	SHEET	4 OF 8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	746.0' MSL	STARTED	2019-08-29 09:20	COMPLETED	2019-09-03 12:20

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
46	(36.9' - 52.7') Stiff to very stiff, olive black (5Y 2/1), SILTY CLAY, trace to little f-c sand and f gravel, moist, (CL)	8	23	SS	5 5	0.8' 2.0'	2.0	
47		18	24	SS	6 8 10 12	1.3' 2.0'	2.5	46.7' - 48.0' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace to little f gravel, moist, (CL)
48								
49		22	25	SS	4 10 12 18	1.8' 2.0'	3.5	48.2' - 50.0' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace f-c sand and f gravel, moist, (CL)
50								
51		22	26	SS	4 9 13 16	2.0' 2.0'	3.5	50.0' - 52.0' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace f-c sand and f gravel, moist, (CL)
52								
53	(52.7' - 53.4') Compact, olive gray (5Y 4/1), F SAND and SILT, wet, interbedded, (SP-ML)	25	27	SS	4 11 14 10	2.0' 2.0'	4.0	52.0' - 52.7' Very stiff, olive black (5Y 2/1), SILTY CLAY, trace f-c sand and f gravel, moist, (CL) 52.7' - 53.4' Compact, olive gray (5Y 4/1), F SAND and SILT, wet, interbedded, (SP-ML)
54	(53.4' - 55.1') Very stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, trace f gravel, moist, (CL)							53.4' - 54.0' Very stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, trace f gravel, moist, (CL)
55		22	28	SS	2 9 13 10	2.0' 2.0'	3.25	54.0' - 55.1' Very stiff, dark yellowish brown (10YR 4/2), SILTY CLAY, trace f gravel, moist, (CL) 55.1' - 56.0' Very stiff, light olive gray (5Y 6/1), SILTY CLAY, little f sand and f gravel, moist, (CL)
56	(55.1' - 60.0') Stiff to very stiff, light olive gray (5Y 5/2), SILTY CLAY, little f sand and f gravel, moist, (CL)							
57		15	29	SS	3 8 7 9	2.0' 2.0'	2.0	56.0' - 58.0' Very stiff, light olive gray (5Y 6/1), SILTY CLAY, little f sand and f gravel, moist, (CL)
58								
59		9	30	SS	2 5 4 10	1.8' 2.0'	1.5	58.2' - 60.0' Stiff, light olive gray (5Y 6/1), SILTY CLAY, little f sand and f gravel, moist, (CL)

DEPTH HOLE	106.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G209
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61	SHEET	5 OF 8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	746.0' MSL	STARTED	2019-08-29 09:20	COMPLETED	2019-09-03 12:20

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
61	(60.0' - 70.2') Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f-c sand and f gravel, moist, (CL)	17	31	SS	2 7 10 16	2.0' 2.0'	3.25	60.0' - 62.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
62								
63		32	32	SS	10 14 18 25	1.9' 2.0'	3.75	62.1' - 64.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
64								
65		24	33	SS	4 9 15 17	1.6' 2.0'	3.75	64.4' - 66.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
66								
67		25	34	SS	7 10 15 15	2.0' 2.0'	3.75	66.0' - 68.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f-c sand and f gravel, moist, (CL)
68								
69		22	35	SS	5 10 12 15	0.9' 2.0'	3.0	69.1' - 70.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f-c sand and f gravel, moist, (CL)
70								
71	(70.2' - 73.0') Very stiff to hard, brownish gray (5YR 4/1), CLAY, trace f-c sand and f gravel, moist, (CH)	14	36	SS	3 7 7 8	2.0' 2.0'	2.0	70.0' - 70.2' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f-c sand and f gravel, moist, (CL) 70.2' - 72.0' Very stiff, brownish gray (5YR 4/1), CLAY, trace f-c sand and f gravel, moist, (CH)
72								
73	(73.0' - 87.0') Very stiff to hard, brownish gray (5YR 4/1), SILTY CLAY, trace to some f-c sand and f gravel, moist, (CL)	41	37	SS	11 18 23 26	1.0' 2.0'	>4.5	73.0' - 74.0' Hard, brownish gray (5YR 4/1), SILTY CLAY, trace to little f sand and f gravel, moist, (CL)
74		21	38	SS	6 9	1.8' 2.0'	3.5	74.2' - 76.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace to little f sand and f gravel, moist, (CL)

DEPTH HOLE	106.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G209
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61	SHEET	6 OF 8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	746.0' MSL	STARTED	2019-08-29 09:20	COMPLETED	2019-09-03 12:20

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
76	(73.0' - 87.0') Very stiff to hard, brownish gray (5YR 4/1), SILTY CLAY, trace to some f-c sand and f gravel, moist, (CL)	21	38	SS	12 13	1.8' 2.0'	3.5	
77		16	39	SS	4 6 10 9	2.0' 2.0'	2.25	76.0' - 78.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
78								
79		26	40	SS	4 9 17 22	1.9' 2.0'	2.5	78.1' - 80.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace to little f-m sand and f gravel, moist, (CL)
80								
81		22	41	SS	3 9 13 17	2.0' 2.0'	3.25	80.0' - 82.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace to some f-c sand and f gravel, moist, (CL)
82								
83		16	42	SS	3 6 10 10	2.0' 2.0'	3.0	82.0' - 84.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little f-m sand and f gravel, moist, (CL)
84								
85		16	43	SS	5 8 8 11	0.8' 2.0'	2.25	85.2' - 86.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little to some f-c sand and f gravel, moist, (CL)
86								
87	(87.0' - 88.0') Hard, brownish gray (5YR 4/1), CLAY, trace f gravel, moist, (CH)	28	44	SS	3 12 16 17	1.0' 2.0'	4.25	87.0' - 88.0' Hard, brownish gray (5YR 4/1), CLAY, trace f gravel, moist, (CH)
88								
89	(88.0' - 92.2') Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little to some f-c sand and f gravel, moist, (CL)	15	45	SS	3 6 9 10	2.0' 2.0'	2.5	88.0' - 90.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little to some f-c sand and f gravel, moist, (CL)

DEPTH HOLE	106.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G209
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61	SHEET	7 OF 8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	746.0' MSL	STARTED	2019-08-29 09:20	COMPLETED	2019-09-03 12:20

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
91	(88.0' - 92.2') Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little to some f-c sand and f gravel, moist, (CL)	23	46	SS	6 8 15 18	2.0' 2.0'	2.25	90.0' - 92.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little f-m sand, moist, (CL)
92								
93	(92.2' - 96.5') Hard, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)	48	47	SS	4 19 29 28	1.8' 2.0'	>4.5	92.2' - 94.0' Hard, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
94								
95		40	48	SS	6 15 25 29	2.0' 2.0'	4.5	94.0' - 96.0' Hard, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
96								
97	(96.5' - 96.8') Very dense, medium dark gray (N4), CLAYEY SILT, trace f sand, wet, (ML)	67	49	SS	12 30 37 38	1.5' 2.0'	---	96.5' - 96.8' Very dense, medium dark gray (N4), CLAYEY SILT, trace f sand, wet, (ML)
98	(96.8' - 99.3') Very dense, medium gray (N5), SILT and F SAND, wet, interbedded, (ML-SP)							96.8' - 98.0' Very dense, medium gray (N5), SILT and F SAND, wet, interbedded, (ML-SP)
99		57	50	SS	18 28 29 25	1.4' 2.0'	---	98.6' - 99.3' Very dense, medium gray (N5), SILT and F SAND, wet, interbedded, (ML - SP)
100	(99.3' - 101.4') Compact to very dense, medium gray (N5), F-C SAND, trace silt, wet, (SP)							99.3' - 100.0' Very dense, medium gray (N5), F-C SAND, trace silt, wet, (SP)
101		28	51	SS	14 21 7 8	1.4' 2.0'	2.0	100.6' - 101.4' Compact, medium gray (N5), F-C SAND, trace silt, wet, (SP)
102	(101.4' - 103.1') Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little f-m sand, trace f gravel, moist, (CL)							101.4' - 102.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little f-m sand, trace f gravel, moist, (CL)
103		29	52	SS	6 15 14 11	1.4' 2.0'	2.0	102.6' - 103.1' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, little f-m sand, trace f gravel, moist, (CL)
104	(103.1' - 103.6') Compact, medium gray (N5), F-C SAND and F GRAVEL and CLAYEY SILT, wet, interbedded, (SP-GP-ML)							103.1' - 103.6' Compact, medium gray (N5), F-C SAND and F GRAVEL and CLAYEY SILT, wet, interbedded, (SP-GP-ML)
	(103.6' - 104.3') Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)							103.6' - 104.0' Very stiff, brownish gray (5YR 4/1), SILTY CLAY, trace f gravel, moist, (CL)
		38	53	SS	5 15	1.7' 2.0'	---	104.3' - 106.0' Dense, medium gray (N5), F-C SAND and F GRAVEL, trace silt, wet, (SP-GP)

DEPTH HOLE	106.0'	PROJECT	Cell 10 Well Installation	BORING NO.	G209
GEOLOGIST	A. Michael Hirt	DRILLING RIG	Mobile B-61	SHEET	8 OF 8
DRILLING CO.	Strata Earth Services, LLC	DRILLING METHOD	3 7/8" and 7 7/8" Wash Rotary		
SURFACE ELEV.	746.0' MSL	STARTED	2019-08-29 09:20	COMPLETED	2019-09-03 12:20

DEPTH	DESCRIPTION	BPF	SAMPLES NO.	TYPE	BLOWS	REC.	UCS	SOIL SAMPLE DESCRIPTIONS
106	(104.3' - 106.0') Dense, medium gray (N5), F-C SAND and F GRAVEL, trace silt, wet, (SP-GP)	38	53	SS	23 25	1.8' 2.0'	---	104.3' - 106.0' Dense, medium gray (N5), F-C SAND and F GRAVEL, trace silt, wet, (SP-GP)
	End of Borehole at 106.0'							
107								
108								
109								
110								
111								
112								
113								
114								
115								
116								
117								
118								
119								

GEOLOGIC LOG OF BORING

G-10

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK3D

DRILLER Testing Service Corporation — WATER LEVELS

RIG Mobile B-61 — METHOD Rotary — AT COMPLETION ____ HOURS ____

G. S. ELEVATION 747.6 — DATE STARTED 4/10/90 — WHILE DRILLING ____

T.O.B. ELEVATION 642.6 — DATE COMPLETED 4/11/90 — SHEET 1 OF 6

Top of Pipe 749.92

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
1SS	7 10 20 21	14"		2.0	Dark grey and light grey silty CLAY with silt seams, tr. roots, very stiff	Slopewash	
2SS	9 12 16 20	13"		2.9	brown and grey below 3.0'		
3SS	6 14 22 26	19"		3.5	743.3 Brown silty CLAY, tr. sand and small-large gravel, greyed along joints, very stiff-hard	Wadsworth Till I (weathered)	
4SS	2 13 19 25	13"		4.4			
5SS	7 14 21 27	22"		4.5+			
6SS	8 12 13 20	20"		3.0	1" brown siltier clay seam at 11.0' brownish grey below 11.0' hairline silt parting at 11.3' 1" br.,hard,very si. CLAY at 12.5'		
7SS	7 8 9 11	23"		2.0	735.1 Grey silty CLAY, tr. sand and small-large gravel, stiff	Wadsworth Till I (unweathered)	
8SS	6 7	12"		1.7			
9CS		5'		1.6 1.6 1.7 1.6 1.6	3 hairline fine sandy silt seams at 15.5'		

Bentonite Grout — Sand Pack — Cement Grout — Bent. Pellets — 2" Sch. 40 PVC

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
7026 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-8017
ATP C. CPG3 8440
IND. CPG 237

JOB NO. 88-105a

LOGGED BY R. Jennings

GEOLOGIC LOG OF BORING G-17

PROJECT BFI-Zion IEPA Monitor Wells
DRILLER Testing Service Corporation
RIG Mobile B-61 METHOD Rotary
G.S. ELEVATION 747.6 DATE STARTED 4/10/90
T.O.B. ELEVATION 642.6 DATE COMPLETED 4/11/90

BORING NO. GK3D
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 2 OF 6

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
				2.3	Grey silty CLAY, tr. sand and small-large gravel, stiff	Wadsworth Till I
				1.6	1/2" silt seam at 22.0'	
10CS		4.0'		2.4	silty and slightly fine sandy at 21.0'-22.5'	
					slightly brownish-grey below 25.0'	
				1.0		
				1.4	two sand pockets at 26.6'	
11CS		4.0'		1.3		
				1.5		
				1.9	hairline fine sand parting at 30.6' (does not extend through sample)	
				1.9		
12CS		5.0'		1.7		
				2.0		
				1.9		
				1.4		
				1.5		
13CS		4.5'		2.6	hairline silt parting at 38.2'	
					709.3	
				3.0	Hard, silty sandy CLAY 708.9	Diamicton
					SILT 708.6	Intratill sort.sed.
				1.4	Brownish grey silty CLAY, tr. sand and small-large gravel, stiff	Wadsworth Till II

LOG: TILL

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
CPG 6440
CPG 737

JOB NO. 88-105a
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-18

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK3D

DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION

RIG Mobile B-61 — METHOD Rotary — HOURS

G. S. ELEVATION 747.6 — DATE STARTED 4/10/90 — WHILE DRILLING

T.O.B. ELEVATION 642.6 — DATE COMPLETED 4/11/90 — SHEET 3 OF 6

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				1.6	Brownish grey silty CLAY, tr. sand and small-large gravel, stiff	Wadsworth Till II	
				1.8			
14CS		5.0'		2.5			
				1.7			
				1.6			
				1.7			
				1.4	701.1		
					Grey si.fi.sa.CLAY, tr. grvl. 700.7	Diamicton	
15CS		5.0'		2.4	Brownish grey silty CLAY, tr. sand and small-large gravel, very stiff	Wadsworth Till II	
				2.6			
				1.6			
					2" silt seam at 50.5'		
				2.9			
				2.7			
16CS		5.0'		4.4			
				2.5			
				3.8	3" silt seam at 54.5'		
					laminated 53.0'-54.0'		
				4.5	feathery 55.0'-57.8'		
				4.2	1" silt seam at 56.1'		
17CS		5.0'		4.5	hard below 55.0'		
					laminated at 57.8'		
				4.5			
				2.4			

Volclay Grout

PVC Pipe

ROBERTA L. JENNINGS
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2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017

JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING G-19

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK3D

DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION

RIG Mobile B-61 — METHOD Rotary — HOURS WHILE DRILLING

G.S. ELEVATION 642.6 — DATE STARTED 4/10/90

T.O.B. ELEVATION 642.6 — DATE COMPLETED 4/11/90

SHEET 4 OF 6

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
60					3.5	Brownish grey silty CLAY, tr. sand and small-large gravel, very stiff	Wadsworth Till II	
61					3.6	laminated to 60.2'		
62	18CS		5.0'		4.0	1" coarse sand seam at 60.2' over shale fragments		
63					4.0	greyish brown 60.2-61.1'		
64					4.1			
65					3.5			
66					3.1			
67	19CS		5.0'		3.2	"checkered" 67.0'-68.0'		
68					3.3			
69					3.1			
70					3.4	"checkered" 70.0'-74.0'		
71					2.1			
72	20CS		5.0'		2.9			
73					4.0			
74					3.4	feathery 74.0'-75.0'		
75					3.4	foliated 75.0'-75.5'		
76					3.7	feathery below 75.5'		
77	21CS		5.0'		3.0	horizontal fracture at 78.5'		
78					4.1	hard below 78.0'		
80					4.5			

LOG: PVC Pipe; Volclay Grout; Stainless Steel Pipe; 642.

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815/344-0017
CPGS 0440
CPG 237

JOB NO. 88-105a

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

G-20

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK3D

DRILLER Testing Service Corporation — WATER LEVELS

RIG Mobile B-61 — METHOD Rotary — AT COMPLETION ____ HOURS ____

G.S. ELEVATION 747.6 — DATE STARTED 4/10/90 — WHILE DRILLING ____

T.O.B. ELEVATION 642.6 — DATE COMPLETED 4/11/90 — SHEET 5 OF 6

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				4.4	Brownish grey silty CLAY, tr. sand and small-large gravel, hard	Wadsworth Till II	
				4.7	feathery and laminated		
22CS		4.0"		4.0			
					664.3		
				1.5	Grey silty, sandy, gravelly CLAY, stiff	Diamicton	
					661.8		
				4.4	Brownish grey silty CLAY, tr. sand and small-large gravel, hard	Wadsworth Till II	
				4.2			
23CS		3.5"		4.5+			
					659.5		
					Green fine SAND 659.3	Diamicton	
					Greenish grey silty CLAY/clayey SILT, tr. gravel, stiff		
				1.8			
					656.1		
					Interlayered grey fine, fine-medium, and fine-coarse SAND 655.7	Shallow drift aquifer sediments	
24CS		5.0"			Grey fine-coarse SAND and small-large GRAVEL		
					653.1		
					Grey fine-medium SAND with coarse sand and small gravel 652.1		
					Grey fine-coarse SAND and small-large GRAVEL		
25CS		3.5'					
					648.7		
					Grey fine SAND 648.0		
					Grey SILT, tr. interlayered fine SAND		

Stainless Steel Pipe
Volclay Grout
Pellet Seal
658.6
653.
652.
Stainless Steel Screen
Silica Sand

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JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-21

PROJECT BFI-Zion IEPA Monitor Wells

DRILLER Testing ServiceCorporation

RIG Mobile B-61 METHOD Rotary

G.S. ELEVATION 647.6 DATE STARTED 4/10/90

T.O.B. ELEVATION 642.6 DATE COMPLETED 4/11/90

BORING NO. GK3D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 6 OF 6

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION		GEOLOGIC UNIT	LOG
					Grey fine sandy SILT	647.1	Shallow drift aquifer sediments	
					Gr.fi.-co.SAND, some sm.grvl.	646.7		
					Grey silty fine SAND	645.0		
26CS		5.0'			Grey fine sandy SILT	644.5		
					Grey fine-coarse SAND with small-medium gravel	642.6		
					T.O.B. 105.0'			
					Monitor well installed in hole at completion			

100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 120

Stainless Steel Screen

Silica Sand

642

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A.I.P.G. CPG3 8440
IND. CPG 237

JOB NO. 88-105a

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

G-25

PROJECT BFI-Zion IEPA Monitor Wells

DRILLER Testing Service Corporation

RIG Mobile B-61 METHOD Rotary

G.S. ELEVATION 745.3 DATE STARTED 4/6/90

T.O.B. ELEVATION 635.3 DATE COMPLETED 4/9/90

BORING NO. GK4D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING 6.5'

SHEET 1 OF 6

Top of Pipe 746.20

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Brown and grey silty CLAY, v.soft 745.0	FILL	
					Dark brown clayey TOPSOIL 744.7	Slopewash or surficial sorted sediments	
1SS	13 15 17 17	13"		1.3	Brown and grey mottled silty CLAY, tr. roots, greyed along joints, stiff-hard		
2SS	11 12 15 23	17"		1.7			
3SS	8 11 12 13	19"		4.5 2.0	sand seams, tr. pebbles below 5.8' 739.3		
4SS	7 12 10 7	24"			Brown and grey clayey SAND to sandy CLAY, tr. small-large gravel with occasional sand seams		
5SS	8 13 18 19	24"			735.8		
					Grey fine SAND w/gravel 735.1		
6SS	18 13 25 23	19"		3.6	Slightly brownish grey silty CLAY, tr. sand and small-large gravel, very stiff-stiff grey below 12.0'	Wadsworth Till I (unweathered)	
7SS	10 19 21 34	24"		3.0 2.0			
8SS	11 17	10"		2.5			
9CS		5.0"		2.3 2.3 1.5 2.3 1.3			

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IMD CPG 237

JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-26

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK4D

DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION

RIG Mobile B-61 — METHOD Rotary — HOURS

G.S. ELEVATION 745.3 — DATE STARTED 4/6/90 — WHILE DRILLING 6.5'

T.O.B. ELEVATION 635.3 — DATE COMPLETED 4/9/90 — SHEET 2 OF 6

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				2.0	Grey silty CLAY, tr. sand and small-large gravel, stiff	Wadsworth Till I	
				1.8			
10CS		5.0'		1.5			
				1.5			
				1.8			
				1.1			
				1.6			
11CS		5.0'		1.7			
				1.7			
				1.7			
				1.4			
				1.6	hairline silt parting at 31.5' (does not extend through sample)		
12CS		5.0'		1.7			
				1.8			
				1.7			
				1.6			
				1.7			
					708.1		
13CS		5.0'		1.6	Grey silty CLAY, tr. sand and small-large gravel, very stiff-hard sand pocket at 37.2', 1/8" silt seam at 38.0', med-co sand pocket at 38.1', 1" silt seam at 39.2', hairline silt ptg.at39.4',1/8"silt seam at 39.7'	Wadsworth Till (transitional)	
				3.6			
				4.0			
					705.6		
					sl.br.gr.si.CLAY,tr.sa.&grv.,hard	Wadsworth Till II	

Volclay Grout

PVC Pipe

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JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-27

PROJECT BFI-Zion IEPA Monitor Wells

DRILLER Testing Service Corporation

RIG Mobile B-61 METHOD Rotary

G.S. ELEVATION 745.3 DATE STARTED 4/6/90

T.O.B. ELEVATION 635.3 DATE COMPLETED 4/9/90

BORING NO. GK4D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING 6.5'

SHEET 3 OF 6

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				2.7	Brownish grey silty CLAY, little fine sand, tr. small-large gravel, stiff	Wadsworth Till II	
				1.3			
14CS		4.5'		1.3			
				0.9			
				1.3			
				1.3			
				1.4			
15CS		5.0'		1.4			
				1.5			
				1.2			
				1.0	clayier below 50.0'		
				1.7			
16CS		4.5'		1.9			
				2.0	very stiff-hard below 53.0'		
				2.4			
				2.1			
				4.0	slightly pinkish at 57.0'		
17CS		5.0'		4.4	shale fragment at 57.8' 687.5		
				4.5	Grey CLAY w/occasional silt seams - irregular, occasional pebble, hard	Intratill sorted sediments	
				4.5+			

PVC Pipe

Volclay Grout

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GEOLOGIC LOG OF BORING

G-28

PROJECT BFI-Zion IEPA Monitor Wells

BORING NO. GK4D

DRILLER Testing Service Corporation

RIG Mobile B-61 METHOD Rotary

G.S. ELEVATION 745.3 DATE STARTED 4/6/90

T.O.B. ELEVATION 635.3 DATE COMPLETED 4/9/90

WATER LEVELS AT COMPLETION ____ HOURS ____ WHILE DRILLING 6.5'

SHEET 4 OF 6

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				4.5+	Grey CLAY w/occasional silt seams - irregular, occasional pebble, hard	Intratill sorted sediments	
18CS		2.0'			682.3		
					Brownish grey silty CLAY, tr. sand and small-large gravel, very stiff	Wadsworth Till II	
					laminated 65.0'-70.3'		
				3.1			
				3.1	3" clayey silt seam at 66.5'		
19CS		4.0'		4.0	3" grey sandy silty CLAY, some gravel at 67.5'		
				4.5+	hard 68.0'-70.0'		
				3.3			
				3.2			
20CS		4.0'		2.2			
				3.3	3" silty sandy CLAY seam at 73.0'		
					laminated 75.8'-77.8'		
				3.2			
				3.3	feathery 77.8'-78.0'		
21CS		5.0'		2.3	laminated 78.0'-79.0'		
					foliated 79.0'-79.5'		
				3.0	laminated 79.5'-79.8'		
				3.0	foliated 79.8'-80.0'		

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GEOLOGIC LOG OF BORING

G-29

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK4D

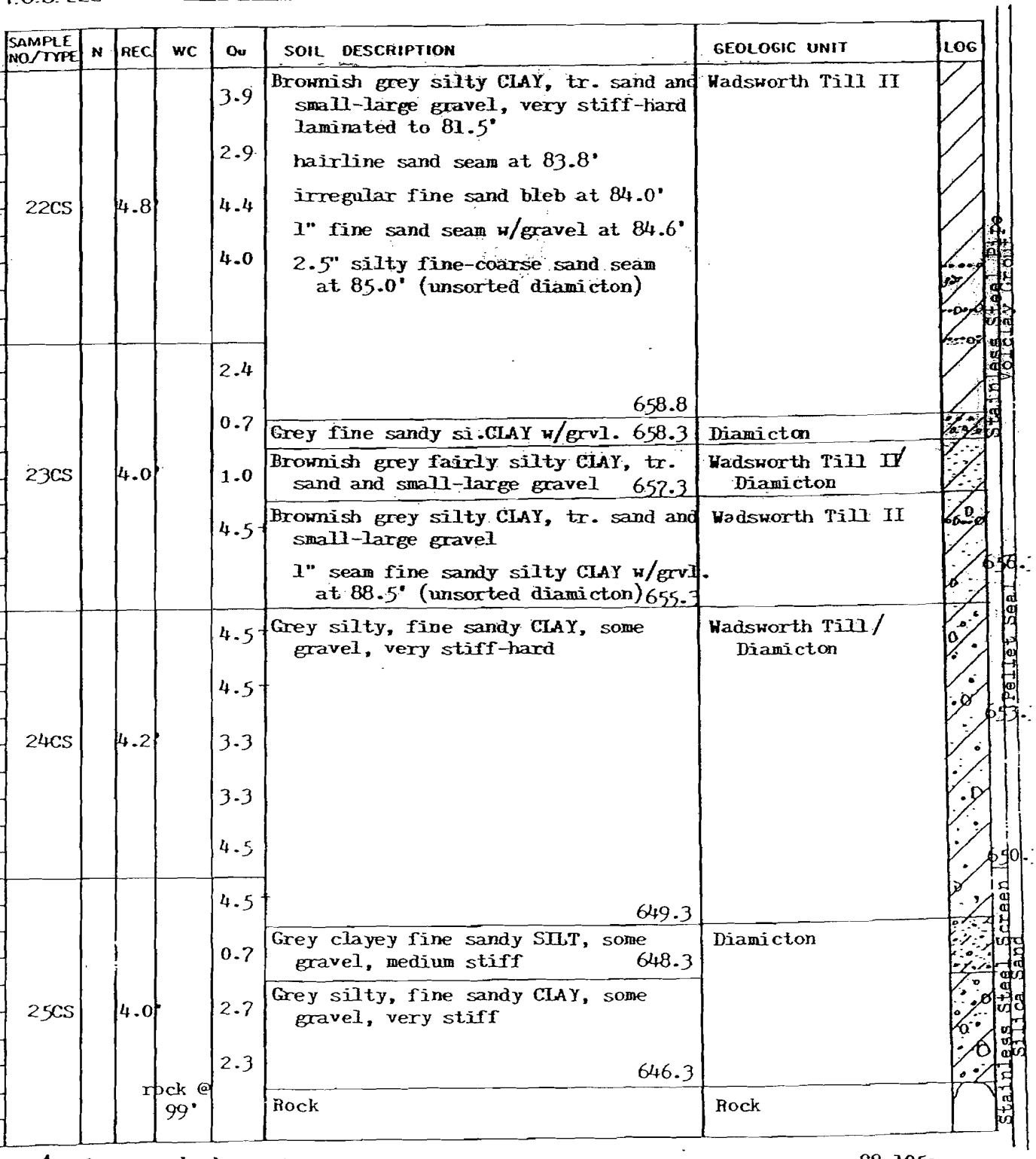
DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION

RIG Mobile B-61 — METHOD Rotary — HOURS

G.S. ELEVATION 745.3 — DATE STARTED 4/6/90 — WHILE DRILLING 6.5'

T.O.B. ELEVATION 635.3 — DATE COMPLETED 4/9/90 — SHEET 5 OF 6

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
				3.9	Brownish grey silty CLAY, tr. sand and small-large gravel, very stiff-hard laminated to 81.5'	Wadsworth Till II
				2.9	hairline sand seam at 83.8'	
22CS		4.8'		4.4	irregular fine sand bleb at 84.0'	
					1" fine sand seam w/gravel at 84.6'	
				4.0	2.5" silty fine-coarse sand seam at 85.0' (unsorted diamicton)	
				2.4		
					658.8	
				0.7	Grey fine sandy si.CLAY w/grvl. 658.3	Diamicton
23CS		4.0'		1.0	Brownish grey fairly silty CLAY, tr. sand and small-large gravel 657.3	Wadsworth Till II/ Diamicton
				4.5	Brownish grey silty CLAY, tr. sand and small-large gravel	Wadsworth Till II
					1" seam fine sandy silty CLAY w/grvl. at 88.5' (unsorted diamicton) 655.3	
				4.5	Grey silty, fine sandy CLAY, some gravel, very stiff-hard	Wadsworth Till/ Diamicton
				4.5		
24CS		4.2'		3.3		
				3.3		
				4.5		
				4.5		
					649.3	
				0.7	Grey clayey fine sandy SILT, some gravel, medium stiff 648.3	Diamicton
25CS		4.0'		2.7	Grey silty, fine sandy CLAY, some gravel, very stiff	
				2.3		
			rock @ 99'		646.3	
					Rock	Rock



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CPG 5440
CPC 337

JOB NO. 88-105a

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GEOLOGIC LOG OF BORING

G-30

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK4D

DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION

RIG Mobile B-61 — METHOD Rotary — HOURS

G.S. ELEVATION 745.3 — DATE STARTED 4/6/90 — WHILE DRILLING 6.5'

T.O.B. ELEVATION 635.3 — DATE COMPLETED 4/9/90 — SHEET 6 OF 6

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					ROCK 645.0	ROCK	
				2.0	Interlayered grey CLAY & fi.SAND 644.6	Shallow drift aquifer sediments	
					Brown fine-medium SAND 644.4		
					Brown fine-coarse SAND and small-large GRAVEL 643.8		
					ROCK 642.8		
26CS					Brown fine-coarse SAND and small-large GRAVEL 641.8		
				4.5	Grey silty, slightly fine sandy CLAY, tr. sand and small-large gravel, hard	Wadsworth Till III	
				4.5	1" silt seam at 104.2'		
				4.5	feathery		
				4.5	angled silt seams at 108.5' and 109.0'		
27CS				4.5	some gravel 109.0'-109.5'		
				4.5			
				4.5	635.3		
					T.O.B. 110.0'		
					Monitor well installed in hole at completion		

640.

635.

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ILPG CPGS 0440
IND CPG 233

JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-31

PROJECT BFI-Zion IEPA Monitor Wells

BORING NO. GK5D

DRILLER Testing Service Corporation

WATER LEVELS

RIG Mobile B-61 METHOD Rotary

AT COMPLETION

HOURS

G. S. ELEVATION 745.7 DATE STARTED 4/3/90

WHILE DRILLING

T.O.B. ELEVATION 645.7 DATE COMPLETED 4/4/90

SHEET 1 OF 5

Top of Pipe 747.44

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
1SS	9 8 6 14	19"		3.1	Brown and grey silty CLAY, tr. sand and gravel, occasional silt seams, tr. oxidation, very stiff-hard	FILL	
2SS	5 8 9 9	18"		4.2	741.7		
3SS	6 6 9 10	20"		1.2	Dark grey very silty CLAY-TOPSOIL Brown very silty CLAY, oxidized, stiff	Slopewash or surficial sorted sediments	
4SS	5 7 8 8	21"		3.0	738.9 Grey and brown silty CLAY, tr. gravel, tr. oxidation, roots, tr. silt seams, very stiff 737.5		
5SS	5 10 17 22	24"		4.5+	Brown mottled silty CLAY, tr. sand small-large gravel, oxidized spots, hard-very stiff	Wadsworth Till I (weathered)	
6SS	12 16 20 20	24"		3.0	733.9		
7SS	9 18 18 22	24"		3.7	Grey silty CLAY, tr. sand and small-large gravel, very stiff	Wadsworth Till I (unweathered)	
8SS	28 33	12"		3.2	slightly brownish-grey below 15.0'		
9CS		5.0		3.1 3.0 2.7 2.5 2.5			

Cement Plug 742.

Volclay Grout

Pipe

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IND. CPG# 237

JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-32

PROJECT BFI-Zion IEPA Monitor Wells

DRILLER Testing Service Corporation

RIG Mobile B-61 METHOD Rotary

G.S. ELEVATION 745.7 DATE STARTED 4/3/90

T.O.B. ELEVATION 645.7 DATE COMPLETED 4/4/90

BORING NO. GK5D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 2 OF 5

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				1.8	Slightly brownish grey silty CLAY, tr. sand and small-large gravel, stiff	Wadsworth Till I	
				1.6			
10CS		5.0'		1.2			
				0.9			
				1.2			
				1.2	hairline silt parting at 26.5' (does not extend through sample)		
				1.6			
11CS		5.0'		1.4			
				1.4			
				1.4			
				1.3			
				1.7	3" seam brownish grey SILT w/blue fi.sandy clay bands at 32.1', two 1/4" silt seams at 32.2' 713.0		
12CS		3.6'		1.3	Brownish grey fine sandy CLAY, tr. gravel, stiff 712.0	Diamicton	
					Brownish grey clayey fine sandy SILT, some small-large gravel 710.4		
				3.6	Greyish brown silty CLAY, tr. sand and small-large gravel, very stiff 708.9	Wadsworth Till	
				2.2			
13CS		3.0'		1.2	Greyish-brown clayey SILT, stiff, horizontal lamination grey below 37.2'	Intratill sorted sediments	

PVC Pipe

Volclay Grout

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A.I.P.G. CPG3 #440
IND CPG 237

JOB NO. 88-105a

LOGGED BY R.L. Jennings

12

GEOLOGIC LOG OF BORING

G-33

PROJECT BFI-Zion IEPA Monitor Wells

DRILLER Testing Service Corporation

RIG Mobile B-61 METHOD Rotary

G.S. ELEVATION 745.7 DATE STARTED 4/3/90

T.O.B. ELEVATION 645.7 DATE COMPLETED 4/4/90

BORING NO. GK5D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 3 OF 5

	SAMPLE NO/TYPE	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40				0.7	Grey clayey SILT, laminated 705.5	Intratill sort.sed.	
41				0.8	Slightly brownish grey silty CLAY, tr. sand and small-large gravel, medium stiff	Wadsworth Till II	
42	14CS	3.5		0.9			
43					1/2" grey clayey silt seam at 43.5'		
44							
45					699.7		
46				0.6	Pinkish grey silty CLAY, tr. sand and small-large gravel, stiff-very stiff	Wadsworth Till II	
47				0.6			
48	15CS	5.0		1.0			
49				2.3			
50				2.9			
51				2.8			
52				2.3	693.7		
53	16CS	5.0		3.5	Brownish grey silty CLAY, tr. sand and small-large gravel, very stiff	Wadsworth Till II	
54				3.3			
55				2.8	sl. feathery below 54.8'		
56				3.0			
57				3.0	laminated between 56.8' and 57.3'		
58	17CS	5.0		3.0	687.6		
				2.4	Brownish grey silty fine sandy CLAY, tr. to some small-large gravel, very stiff-stiff	Diamicton	
60				1.4			

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A.I.P.G. CPG3 #440
IMD CPG 737

JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING G-34

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK5D

DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION

RIG Mobile B-61 — METHOD Rotary — HOURS — WHILE DRILLING

G.S. ELEVATION 745.7 — DATE STARTED 4/3/90

T.O.B. ELEVATION 645.7 — DATE COMPLETED 4/4/90 — SHEET 4 OF 5

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Br.gr.sl.fi.sa.CLAY,some sm-lg-gr. 685.4	Diamicton	
				1.1	Brownish grey silty CLAY, tr. sand and small-medium gravel, very stiff-occasionally hard	Wadsworth Till II	
		rock at 61.0'					
18CS		1.5'					
		(pushed rock)					
				4.0			
				3.5			
19CS		5.0'		3.6	sand pockets at 67.3' tr. small-large gravel below 67.3'		
				3.3	hairline silt parting at 67.9'		
				3.4	clayier below 68.0'		
				3.7			
				4.5	feathery 71.0'-72.0' foliated at 71.7'		
20CS		2.0'					
		pushed rock below 75.5'					
21CS		0.5'					

677

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IND CPG 237

JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-35

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK5D

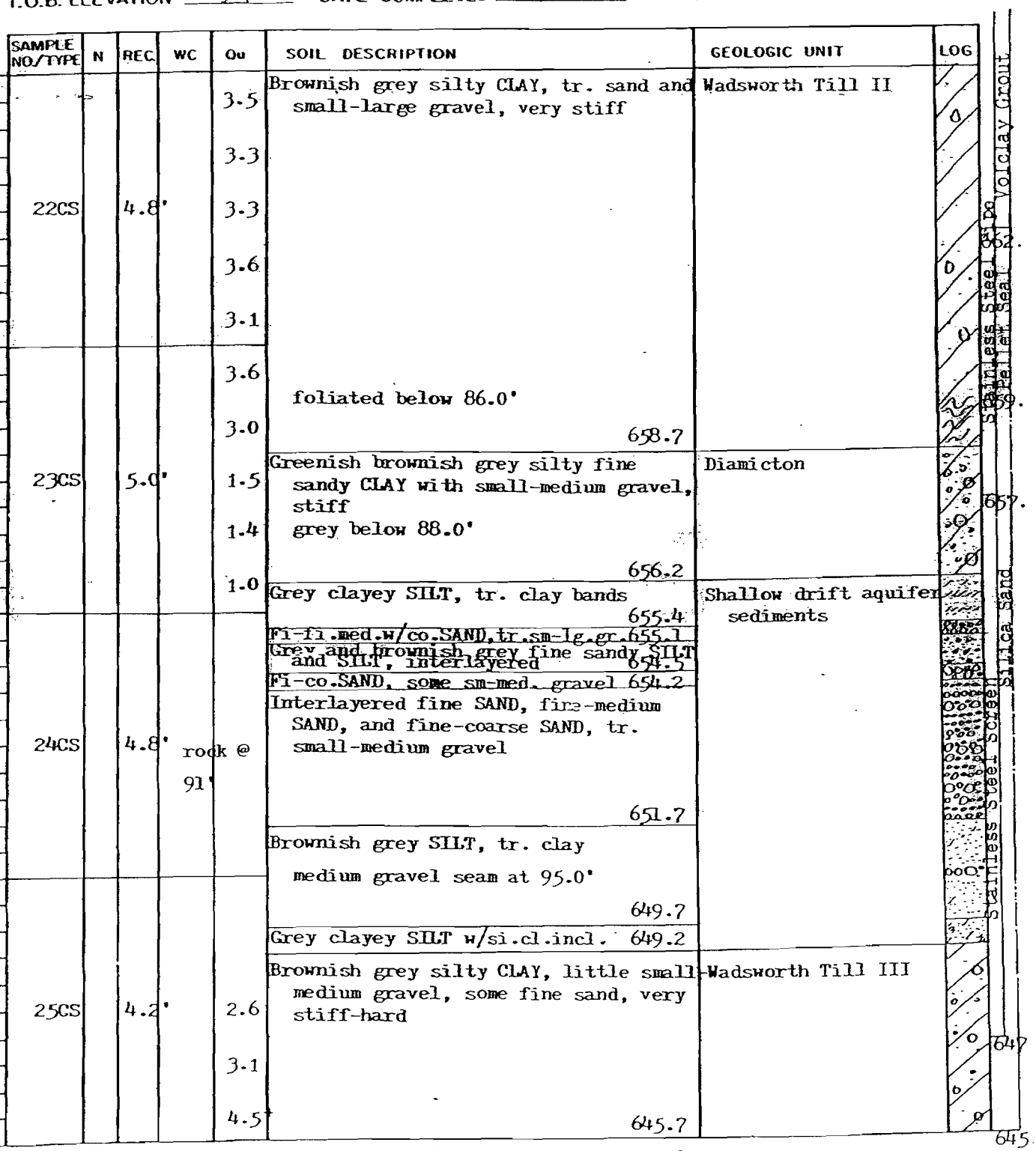
DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION

RIG Mobile B-61 — METHOD Rotary — HOURS

G. S. ELEVATION 745.7 — DATE STARTED 4/3/90 — WHILE DRILLING

T.O.B. ELEVATION 645.7 — DATE COMPLETED 4/4/90 — SHEET 5 OF 5

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
				3.5	Brownish grey silty CLAY, tr. sand and small-large gravel, very stiff	Wadsworth Till II
				3.3		
22CS		4.8'		3.3		
				3.6		
				3.1		
				3.6		
				3.0	foliated below 86.0'	
					658.7	
23CS		5.0'		1.5	Greenish brownish grey silty fine sandy CLAY with small-medium gravel, stiff	Diamicton
				1.4	grey below 88.0'	
					656.2	
				1.0	Grey clayey SILT, tr. clay bands	Shallow drift aquifer sediments
					655.4	
					Fi-fi.med.w/co.SAND,tr.sm-lg.gr. 655.1	
					Grey and brownish grey fine sandy SILT and SILT, interlayered 654.5	
					Fi-co.SAND, some sm-med. gravel 654.2	
24CS		4.8'	rock @ 91'		Interlayered fine SAND, fine-medium SAND, and fine-coarse SAND, tr. small-medium gravel	
					651.7	
					Brownish grey SILT, tr. clay	
					medium gravel seam at 95.0'	
					649.7	
					Grey clayey SILT w/si.cl.incl. 649.2	
25CS		4.2'		2.6	Brownish grey silty CLAY, little small-medium gravel, some fine sand, very stiff-hard	Wadsworth Till III
				3.1		
				4.5+		
					645.7	



ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
I.P.G. CPGS 8440
AND CPC 237

T.O.B. 100.0'

Monitor well installed in hole at completion

JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-18
DRILLER Patrick Engineering, Inc.
RIG CME-75 METHOD Hollow Stem Auger
G.S. ELEVATION 751.8 DATE STARTED 9/18/89
T.O.B. ELEVATION 638.8 DATE COMPLETED 9/20/89
Well finished 9/21/89

BORING NO. GK6D
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 1 OF 6
Top of Pipe 754.05

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
					Brown silty CLAY TOPSOIL, tr. roots, organics	Wadsworth Till 1 (weathered)
					750.3	
1SS	4 6 9 11	18"		3.5	Brown mottled silty CLAY w/silt seams greyed along silt partings and joints, oxidized stains, very stiff, crumbly	
2SS	8 11 13 20	24"		crumbly		
3SS	7 12 15 16	24"		crumbly		
					744.8	
					Brown SILT	
					744.2	
					744.0 Brown SAND and GRAVEL	
4SS	8 12 15 19	24"		4.5+	Brown silty CLAY, tr. sand and gravel, oxidized along joints, hard	
					742.8	
5SS	6 9 14 15	24"		3.1	Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till 1 (unweathered)
6SS	6 7 13 16	24"		3.6		
7SS	5 7 11 11	24"		2.6 1.7	stiff 14.0-15.0'	
8SS	5 6 10 10	24"		2.5		
9SS	4 5 8 12	24"		2.1	fine sand pocket 18.7'	
SS	4 7	24"		3.1		

LOG: Cement Plug; PVC Riser; Volclay Grout

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2826 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 0440
IWD. CPC 237

JOB NO. 88-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-19

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 751.8 DATE STARTED 9/18/89

T.O.B. ELEVATION 638.8 DATE COMPLETED 9/20/89

Well finished 9/21/89

BORING NO. GK6D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 2 OF 6

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20	10SS	11 15	24"		3.1	Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till I	
21						silt pocket 20.6'		
22	11SS	7 8 13 15	24"		2.6	hairline silt parting 21.4'		
23								
24	12SS	7 9 15 17	24"		2.3	fine sand partings 24.8-25.0'		
						726.8		
25						Grey sandy gravelly CLAY, very stiff	Wadsworth Till (diamicton)	
26	13SS	7 12 14 16	22"		2.1			
						724.7		
27						Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till I	
28	14SS	5 9 12 14	21"		2.3	fairly silty w/silt pockets 27.7'-27.9'		
29								
30	15SS	7 10 16 20	21"		2.2			
31								
32	16SS	6 12 19 19	20"		2.7			
33								
34	17SS	8 12 13 19	24"		2.2			
35								
36	18ST		20"		3.3	28% sand, 40% silt, 32% clay (CL) K = 1.7 X 10^{-8} cm/sec. contains wavy silt pockets @ 36.8' and 37.3'		
37								
38	19SS	7 11 14 16	24"		2.8			
						712.8		
						Interbedded olive brown CLAY and SILT	Wadsworth Till (diamicton)	
						712.2		
	20SS	5 7	24"		2.1	Sl.br-grey silty CLAY,tr.sa.&gry. very stiff	Wadsworth Till I	
40								

PVC Pipe

Volclay Grout

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
3928 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG-5 4440
IND. CPG 337

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-20

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 751.8 DATE STARTED 9/18/89

T.O.B. ELEVATION 638.8 DATE COMPLETED 9/20/89

Well finished 9/21/89

BORING NO. GK6D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 3 OF 6

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20SS	10 11	24"		2.1	Sl.brownish-grey silty CLAY, tr. sand and gravel, very stiff - 1" ox. CLAY 710.8 inclusion @ 41.0'	Wadsworth Till I	
21SS	6 10 17 18	12"		2.4	Grey silty CLAY, tr. sand and gravel, very stiff-stiff	Wadsworth Till I	
22SS	6 9 11 11	24"		1.6			
23SS	8 10 12 13	24"		1.2 1.7			
24SS	7 8 12 18	24"		2.0	1/8" coarse sand seam 47.7' 2 hairline fine sand partings 49.0' 702.8		
25SS	21 21 33 40	24"			Grey SILT, dense fine sandy 49.0'49.2 interbedded CLAY 50.0-51.7' 700.1	Intratill Sorted Sediments	
26SS	19 24 29 23	24"			Grey fine sandy SILT 699.5 Grey CLAY w/interbedded silt seams		
27SS	14 26 38 38	24"			698.2 Interbedded grey SILT and fine sandy SILT, very dense		
28SS	7 15 24 33	24"			695.5 Interbedded grey CLAY and SILT, hard		
29SS	30 32 32 62	24"					
30SS	16 40	24"			691.8		

PVC pipe

Volclay Grout

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2024 N. SHOREWOOD DRIVE
SHOREWAY, ILLINOIS 60030
815/344-0017
A.I.P.G. CPG3 #440
IMD. CPG 237

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-21

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 751.8 DATE STARTED 9/18/89

T.O.B. ELEVATION 638.8 DATE COMPLETED 9/20/89

Well finished 9/21/89

BORING NO. GK6D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 4 OF 6

	SAMPLE NO/TYPE	N	REC	WC	Qu	DESCRIPTION	GEOLOGIC UNIT
60						691.8	
	30SS	62 60	24"			Interbedded silty fine SAND and fine sandy SILT, very dense	Intratill Sorted Sediments
61						layers are wavy and off-horizontal	
		29					
62	31SS	38 34	24"				
		62				688.8	
63						Slightly brownish-grey CLAY and SILT, hard	
		19					
64	32SS	28 42	24"		4.5+		
		62					
65							
		10					
66	33SS	15 22	24"		4.1	685.8 Slightly brownish-grey silty, slightly fine sandy CLAY, tr. sand and gravel, hard-very stiff	Wadsworth Till II (diamicton)
		28					
67							
		8					
68	34SS	16 19	24"		3.8		
		23					
69							
		7					
70	35SS	8 17	24"		2.2		
		17				681.4 Interbedded SILT, CLAY and fine SAND	
71							
		5					
72	36SS	7 9	24"		2.0	680.0 Slightly brownish-grey silty CLAY and fine sandy CLAY, tr. sa & grv. very stiff, w/pink color band	
		11				678.8	
73						Brownish-grey silty CLAY, tr. sand and gravel, very stiff-hard	Wadsworth Till II
		10			3.0		
74	37SS	15 23	24"				
		32			4.3	feathery texture	
75							
		6					
76	38SS	13 15	24"		2.3		
		22					
77							
		11			4.5	checkered texture (non-fractured) 77.0-78.0'	
78	39SS	22 37	24"				
		39			3.9		
						foliated 79.0-88.0'	
		7					
	40SS	13	24"		3.2		
80							

LOG: Intratill Sorted Sediments; Wadsworth Till II; Stratified Sediments

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
SHOREWOOD, ILLINOIS 60350
815/744-0017
A.I.P.G. CPG3 8440
IND. CPG 337

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-22
DRILLER Patrick Engineering, Inc.
RIG CME-75 METHOD Hollow Stem Auger
G.S. ELEVATION 751.8 DATE STARTED 9/18/89
T.O.B. ELEVATION 638.8 DATE COMPLETED 9/20/89
Well finished 9/21/89

BORING NO. GK6D
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 5 OF 6

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
40SS	18 24	24"		3.2	Brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till II
41SS	6 12 18 22	24"		2.5	feathery texture foliated 79.0-88.0'	
42SS	12 15 21 23	24"		2.9		
43SS	8 25 35 29	12"	rock	2.4		
44SS	15 22 31 37	24"		3.3		
45SS	19 32 40 49	14"	rock	3.0		
46SS	11 20 31 33	24"		4.1	more homogeneous texture 91.0-93.5' w/tr. horizontal fractures, hard	
47SS	25 25 35 40	24"		2.6	hairline silt partings @ 93.5' 657.5 657.3 Grey SILT	
48SS	18 33 43 36	24"		3.3	Brownish-grey silty, fine sandy CLAY, tr. sand and gravel, pink and olive green color banding, very stiff foliated to 95.5'	Wadsworth Till II (diamicton)
49SS	19 18 20 20	24"		2.9		
50SS	10 12	24"		3.0		

LOG: Stainless Steel Pipe; Volclay Grout; Silica Sand; Bentonite Seal; 655.; 650.

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
I.P.G. CPG 0440
IND. CPG 237

JOB NO. 88-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-23

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G. S. ELEVATION 751.8 DATE STARTED 9/18/89

T.O.B. ELEVATION 638.8 DATE COMPLETED 9/20/89

Well finished 9/21/89

BORING NO. GK6D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 6 OF 6

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
100	50SS	17 22	24"		3.0	Brownish-grey silty, fine sandy CLAY, tr. sand and gravel, very stiff, pink and olive green color banding		
101						650.1		
		7			3.0	649.8 Transitional clayey SILT	Shallow Drift Aquifer Sediments	
102	51SS	20 23 16	24"			Brownish-grey fine sandy SILT, very dense		
103		7						
104	52SS	23 30 20	24"					
105		0						
106	53SS	0 27 45	24"					
107						644.8		
		19				Grey SILT, massive, tr. clay, very dense-dense		
108	54SS	26 40 40	24"					
109		18						
110	55SS	14 19 21	24"					
111						640.8		
		16				Grey silty CLAY, tr. sand and gravel, hard - feathery to foliated texture	Wadsworth Till III?	
112	56SS	20 34 36	24"			1/4" sand and 1/2" silt seams @		
						638.8 111.0' and 111.1'		
113						T.O.B. 113.0'		
114						Monitor well installed in hole at completion		
115								
116								
117								
118								
120								

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
SCHERMT, ILLINOIS 60030
815/344-0017
A.I.P.G. CPG3 6440
IHD. CPG 237

JOB NO. 88-105

LOGGED BY R.L. Jennings

G172

GEOLOGIC LOG OF BORING F-38

PROJECT BFI-Zion USEPA/RFI Monitor Wells

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 742.4 DATE STARTED 10/12/89

T.O.B. ELEVATION 643.4 DATE COMPLETED 10/18/89

Well finished 10/19/89

BORING NO. GK9D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 1 OF 5

Top of Pipe 744.51

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
	--				Dark grey clayey TOPSOIL w/organics	Surficial Sorted Sediments
					741.4	
1SS	6 7 8 9	2"		1.6	Brown and grey CLAY, highly laminated, tr. silt seams, greyed along fracture traces, oxidized along laminae, stiff-hard-very stiff	
2SS	4 6 11 13	15"		4.0		
3SS	5 8 9 12	24"		3.2		
					734.8	
4SS	2 3 8 9	20"		2.5	Grey SILT w/clay and fine brown sand laminae	
					734.2	
					Brown fine-coarse SAND and small GRAVEL w/clay laminae, dry, med. dense	
					732.9	
5SS	3 3 8 9	15"			Grey fine-coarse SAND with small-med. gravel and silt laminae, moist, medium dense	
					731.4	
					Grey SILT w/interbedded fine-co.SAND	
					730.4	
6SS	3 3 4 5	24"			Grey and black SILT grading to fine SAND	
					729.4	
7SS	2 2 4 5	24"		1.3	Black and grey fairly silty CLAY w/ some interbedded silt and fine sand, stiff	
					fine-medium sand seam 14.6-14.8'	
8SS	2 5 6 7	14"			thin fine-coarse sand seam 14.9'	
					725.4	
9SS	4 5 6 7	24"			Dark grey fine-coarse SAND and small-medium GRAVEL, wet, medium dense	
					interbedded silt below 19.8'	
10SS	5 8	24"			722.4	

LOG: Cement Plug; Volclay grout; PVC pipe; Steel Casing

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
1926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 #440
IWD. CPC 237

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING F-39

PROJECT BFI-Zion USEPA/BFI Monitor Wells

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 742.4 DATE STARTED 10/12/89

T.O.B. ELEVATION 643.4 DATE COMPLETED 10/18/89

Well finished 10/19/89

BORING NO. GK9D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 2 OF 5

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
					722.4	
10SS	12 15	24"			Dark grey fine-coarse SAND and small-medium GRAVEL w/interbedded silt and clay seams, medium dense	Surficial Sorted Sediments
					721.0	
11SS	5 8 13 16	15"		4.3	Grey silty CLAY, tr. sand and gravel, hard-very stiff sand partings 21.7-21.8' and 23.0'	Wadsworth Till I
12SS	6 8 12 18	14"		3.3	slightly brownish-grey 23.0-27.5'	
13SS	6 10 17 31	24"		2.6		
14SS	7 11 13 20	20"		3.8		
15SS	6 8 13 21	24"		2.4		
16SS	5 9 11 15	24"		2.0		
17SS	4 7 8 9	24"		2.2		
18SS	5 10 13 16	24"		2.2		
19SS	7 10 13 17	24"		2.2		
20SS	13 9	24"		2.5		

LOG: 21 8" Steel Casing; Volclay Grout; PVC Pipe

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 6440
IMD CPG 237

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING F-40

PROJECT BFI-Zion USEPA/RFI Monitor Wells

BORING NO. GK9D

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING

G.S. ELEVATION 742.4 DATE STARTED 10/12/89

T.O.B. ELEVATION 643.4 DATE COMPLETED 10/18/89
Well finished 10/19/89

SHEET 3 OF 5

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20SS	11 15	24"		2.5	Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till I	
21SS	25 27 35 54	NR	Pushed rock				
22SS	4 6 12 19	24"		2.5			
23SS	7 10 17 19	24"		2.5			
24SS	8 12 13 14	20"		2.5	694.9 Grey interbedded CLAY, SILT, fine and fine-coarse SAND seams, very stiff 693.4	Intratill Sorted Sediments	
25SS	11 21 26 14	24"		3.0 2.2	Slightly brownish-grey silty CLAY, tr. sand and gravel, very stiff 692.4 692.1 Grey fine-coarse SAND		
26SS	8 17 13 16	24"		2.0	Olive brown, silty CLAY, tr. sand and gravel, very stiff dark brown 51.7-52.0' shale fragments 52.0'-52.3' 689.4		
27SS	9 14 21 34	24"		2.2	Slightly brownish-grey silty CLAY, tr. sand and gravel, very stiff-stiff	Wadsworth Till II	
28SS	15 23 32 49	24"		2.2			
29ST		24"		3.1	11% sand, 47% silt, 42% clay (CL) 1.6×10^{-8} cm/sec.		
30SS	11 16	24"		1.8			

Bentonite Pellets

Volclay Grout

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 6440
IMD CPG 237

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

F-41

PROJECT BFI-Zion USEPA/RFI Monitor Wells

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G. S. ELEVATION 742.4 DATE STARTED 10/12/89

T.O.B. ELEVATION 643.4 DATE COMPLETED 10/18/89

Well finished 10/19/89

BORING NO. GK9D

WATER LEVELS

AT COMPLETION

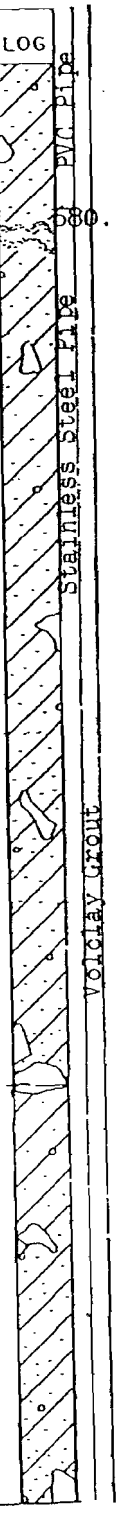
HOURS

WHILE DRILLING

SHEET 4 OF 5

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
30SS	28 34	24"		1.8	Slightly brownish-grey silty CLAY, tr. sand and gravel, stiff-very stiff	Wadsworth Till II
31SS	8 13 22 40	24"		2.5	feathery texture below 61.0'	
					foliated texture with uneven silt partings 62.4-62.6'	
32SS	9 13 22 23	24"		2.2		
33SS	0 10 15 30	24"		1.8		
34SS	0 14 15 30	24"		1.5		
35SS	8 14 19 24	24"		1.0		
36SS	10 26 29 36	24"		3.0		
37SS	5 13 100/2"	24"	rock	3.5	rock @ 74.0'	
				4.5+	668.4 Brownish-grey silty CLAY, tr. sand and gravel, hard-very stiff	Wadsworth Till II
38SS	21 30 40 37	24"		2.8	feathery texture	
					foliated 76.0-80.5'	
39SS	11 18 21 22	24"		3.0		
40SS	11 15	24"		3.3		

LOG



ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2620 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
AIPG CPG3 #440
IND CPG 237

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING
F-42

PROJECT BFI-Zion USEPA/RFI Monitor Wells
DRILLER Patrick Engineering, Inc.
RIG CME-75 METHOD Hollow Stem Auger
G.S. ELEVATION 742.4 DATE STARTED 10/12/89
T.O.B. ELEVATION 643.4 DATE COMPLETED 10/18/89
Well finished 10/19/89

BORING NO. GK9D
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 5 OF 5

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
40SS	22 34	24"		3.3	Brownish-grey silty CLAY, tr. sand and gravel, very stiff-hard	Wadsworth Till II
41SS	10 15 28 35	24"		2.8		
42SS	20 31 44 56	24"		4.1		
43SS	5 19 36 50	24"		3.3	5 horizontal fractures ± 1/2" apart 85.7-86.4'	
44SS	6 15 28 31	24"		4.2		
45SS	19 24 13 47	24"		2.5	652.0 651.4 Thin seam fi-co.SAND, 4" pinkishbr.CLAY, tr. sa & grv, 3" fine SAND	Diamicton
46SS	66 64 37 39	6"	rock		Rock @ 91.0', Grey fine-coarse SAND and small-large GRAVEL, very dense coarsens downward	Shallow Drift Aquifer Sediments
47SS	27 23 33 36	12"				
48SS	7 9 43 34	20"	rotary wash		rock @ 95.0' (Rotary wash used to penetrate) 645.7 645.4 Grey clayey SILT, tr. gravel	
49SS	11 23 55 118	24"			644.7 Brown fine-coarse SAND, very dense Brown coarse SAND and small-medium GRAVEL, very dense 643.6 643.4 Brown fine SAND T.O.B. 99.0' Monitor well installed in hole at completion	

LOG: 6" Stainless Steel Pipe, volclay Grout, 4" Stainless Steel Screen, Silica Sand; 652., 650., 645., 643.

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2026 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPGS #440
IND CPG 237

JOB NO. 88-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING F-46

PROJECT BFI-Zion USEPA/RFI Monitor Wells

BORING NO. GK11 (D)

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING

G.S. ELEVATION 735.1 DATE STARTED 10/ 6/89

T.O.B. ELEVATION 638.1 DATE COMPLETED 10/10/89
Well finished 10/11/89

SHEET 1 OF 5

Top of Pipe 737.33

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
					Dark brown clayey TOPSOIL w/organics	Wadsworth Till I (weathered)
					733.9	
1SS	6 8 12 13	20"		1.7	Brown and grey mottled silty CLAY, tr. sand and gravel, oxidized spots, greyed along joint traces, stiff-very stiff-hard	
2SS	5 10 15 16	24"		3.6		
3SS	6 10 15 21	24"		4.0		
4SS	7 13 15 19	24"		3.9		
5SS	5 7 11 15	24"		3.3		
6SS	7 9 10 15	24"		4.3		
7SS	8 12 15 16	24"		1.6	2" silt seam @ 13.0' 720.6	
8SS	4 6 7 9	12"	rock	1.8	Grey silty CLAY, tr. sand and gravel, stiff 1/8" fine sand seam @ 15.0'	Wadsworth Till I (unweathered)
9SS	4 4 7 10	24"		1.5		
SS	4 5	24"		1.6		

LOG: Cement Plug; Volclay Grout; PVC Pipe

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 6440
IND. CPG 337

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

F-47

PROJECT BFI-Zion USEPA/RFI Monitor Wells

BORING NO. GK11 (D)

DRILLER Patrick Engineering, Inc.

WATER LEVELS

RIG CME-75 METHOD Hollow Stem Auger

AT COMPLETION _____

_____ HOURS _____

G. S. ELEVATION 735.1 DATE STARTED 10/ 6/89

WHILE DRILLING _____

T.O.B. ELEVATION 638.1 DATE COMPLETED 10/10/89

SHEET 2 OF 5

Well finished 10/11/89

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20	10SS	7 10	24"		1.6	Grey silty CLAY, tr. sand and gravel, stiff-very stiff	Wadsworth Till I	
21								
22	11SS	4 5 7 10	24"		1.4	fine sand pocket 22.5'		
23								
24	12SS	5 6 9 11	24"		2.0			
25								
26	13SS	5 7 9 12	24"		2.5			
27								
28	14SS	7 10 14 18	18"		3.0			
29						1/2" silt seam 29.0'		
30	15SS	5 8 10 14	21"		1.6			
31								
32	16SS	6 7 11 12	24"		1.5	sand pocket 32.9'		
33								
34	17SS	4 6 9 14	24"		1.6			
35								
36	18SS	7 8 8 11	24"		1.4			
37								
38	19SS	5 9 12 21	24"		1.2	hairline silt partings below 38.1'		
						696.3		
	20SS	16 11	24"		4.3	Brownish-grey silty CLAY, tr. sand and gravel, hard	Wadsworth Till	
10								

PVC Pipe

Volclay Grout

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2026 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
(815) 344-0017

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

F-48

PROJECT BFI-Zion USEPA/RFI Monitor Wells

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 735.1 DATE STARTED 10/ 6/89

T.O.B. ELEVATION 638.1 DATE COMPLETED 10/10/89

Well finished 10/11/89

BORING NO. GK11(D)

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 3 OF 5

SAMPLE NO/TYPE	N	REC.	WC	Ov	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20SS	12 40	24"		4.3	Brownish-grey silty CLAY, tr. sand and gravel, hard-stiff-very stiff	Wadsworth Till	
21SS	18 13 15 16	24"		1.5	grey below 42.5'		
22ST		24"		1.6	23% sand, 49% silt, 28% clay (CL) $K = 1.7 \times 10^{-8}$ cm/sec.		
23SS	5 6 12 12	24"		1.5			
24SS	4 8 12 18	24"		2.3			
25SS	6 9 16 22	24"		3.5	pebble concentration in clay matrix at base		
					683.4		
26SS	7 14 18 18	24"		3.5	Brownish-grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till II	
27SS	6 9 12 28	20"		1.9	feathery texture		
28SS	3 4 8 13	24"		1.6			
29SS	7 9 13 15	24"		1.6			
					676.0		
30SS	8 10	24"		1.8	Thin interbedded br-grey silty CLAY, tr. sa & grv, and olive-grey silty fine sandy CLAY w/pink banding		

PVC Pipe

Volclay Grout

675.

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
3920 N. SHOREWOOD DRIVE
MORMAT, ILLINOIS 60030
815/344-0017
A.I.P.G. CPG3 0440
IND. CPG 237

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

F-49

PROJECT BFI-Zion USEPA/RFI Monitor Wells

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 735.1 DATE STARTED 10/ 6/89

T.O.B. ELEVATION 638.1 DATE COMPLETED 10/10/89

Well finished 10/11/89

BORING NO. GK11 (D)

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 4 OF 5

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
60	30SS	11 14	24"		1.8	Thin interbedded br.-grey silty CLAY, tr. sa & grv. and olive grey silty, fi.sa CLAY, somegrv. w/pink banding	Wadsworth Till (diamicton)
61						673.8 2 black fine sand ptgs below 60.7'-lg. black shale fgmt @ base	
62	31SS	7 10 13 20	24"		1.6		Wadsworth Till II
63						Brownish-grey silty CLAY, tr. sand and gravel, very stiff	
64	32SS	5 9 13 15	24"		2.6		
65							
66	33SS	5 12 19 25	24"		3.3		
67						hard 67.0-69.0'	
68	34SS	9 14 24 36	24"		4.3	feathery texture below 68.8'	
69							
70	35SS	8 9 14 18	24"		2.2	foliated 70.8-77.0'	
71							
72	36SS	7 10 13 17	24"		2.7		
73							
74	37SS	4 6 12 19	24"		2.3		
75							
76	38SS	10 11 13 16	24"		2.3		
77						feathery texture below 77.0'	
78	39SS	7 40 87 24	24"	rock	3.7		
	40SS	8 11	24"		3.0		
80							

LOG: 675 — Stainless Steel Pipe — Volclay Grout — 657 — 638

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
3926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 6440
IND. CPG 237

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING
F-50

PROJECT BFI-Zion USEPA/RFI Monitor Wells — BORING NO. GK11(D)

DRILLER Patrick Engineering, Inc. — WATER LEVELS AT COMPLETION

RIG CME-75 — METHOD Hollow Stem Auger — HOURS

G.S. ELEVATION 735.1 — DATE STARTED 10/ 6/89 — WHILE DRILLING

T.O.B. ELEVATION 638.1 — DATE COMPLETED 10/10/89 — SHEET 5 OF 5

Well finished 10/11/89

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
40SS	15 21	24"		3.0	Br-grey silty CLAY, tr. sa & grv., very stiff, feathery texture	Wadsworth Till II
					654.3	
					Br-grey fi-co SAND, some sm grv.	Shallow Drift Aquifer Sediments
					654.0	
					Grey SILT, hard	
					653.8	
41SS	38 58 63 47	17"			Grey fine sandy clayey SILT, tr. sand and gravel, very dense	
					2" laminated silt seam 82.8'	
42SS	25 30 32 36	24"				
					649.9	
43SS	4 9 33 36	24"			Grey layered SILT, tr. clay layers, very dense	
					tr. pebbles and pink band @ 87.0'	
44SS	14 27 29 34	20"				
					interbedded clay below 89.3'	
45SS	19 21 43 70	22"			645.2	
					Grey CLAY w/interbedded silt, hard, foliated	
					644.3	
46SS	27 41 36 49	24"			Grey fine-medium SAND, some coarse sand, w/interbedded silt and fine sand (2-4" layers), very dense	
					642.1	
					641.6 Grey silty fi-med SAND, dense	
47SS	15 16 30 33	19"			Grey fine-coarse SAND and small GRAVEL	
					640.8	
					Interbedded grey CLAY and SILT, hard	
48SS	17 16 22 32	20"			tr. gravel below 95.4'	
					638.3	
					638.1 Grey silty CLAY, tr.sa & grv.	
					T.O.B. 97.0'	
					Monitor well installed in hole at completion	
					Note: No shallow well emplaced at this location	

LOG: Stainless Steel Plug; Stainless Steel Screen; Silica Sand; 655; 640; 638

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 #440
IND. CPG 237

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

H-5

PROJECT BFI ZION SANITARY LANDFILL

BORING NO. TB-1

DRILLER Testing Service Corporation

RIG Mobile B53 METHOD Rotary Wash

WATER LEVELS AT COMPLETION _____ HOURS _____ WHILE DRILLING _____

G. S. ELEVATION 737.9 DATE STARTED 11/25/92

T.O.B. ELEVATION 513.9 DATE COMPLETED 12/ 9/92

SHEET 1 OF 12

11377.0 N 11892.9 E

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Blind drilled, with intermittent samples for testing, to 80.0'. For continuous sampling 0.0-80.0', see adjacent boring P-9.		
1ST		1.0'		4.5+	Brownish grey fine-coarse SAND, tr. small-large gravel, tr. silty clay, oxidized stains, very dense	Intratill sorted sediments	

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 20

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHORTWOOD DRIVE
MELROSE PARK, ILLINOIS 60160

JOB NO. 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-6

PROJECT BFI ZION SANITARY LANDFILL

BORING NO. TB-1

DRILLER Testing Service Corporation

RIG Mobile B53 METHOD Rotary Wash

WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING

G. S. ELEVATION 737.9 DATE STARTED 11/25/92

T.O.B. ELEVATION 513.9 DATE COMPLETED 12/ 9/92

SHEET 2 OF 12

	SAMPLE NO/TYPE	N	REC.	WC	Q_u*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20–23							Wadsworth Till I	
23–25	2ST		2.0'		4.0	Grey silty CLAY, tr. fine-coarse sand and small-large gravel, hard		
25–33								
33–35	3ST		1.0'		4.0	Grey silty CLAY, tr. fine-coarse sand and small-large gravel, hard		
35–38								
38–40	4ST		0.9'		1.0	Grey silty CLAY, tr. fine-coarse sand and small-large gravel, stiff		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050

JOB NO 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-7

PROJECT BFI ZION SANITARY LANDFILL

BORING NO. TB-1

DRILLER Testing Service Corporation

WATER LEVELS

RIG Mobile B53 METHOD Rotary Wash

AT COMPLETION

HOURS

G.S. ELEVATION 737.9 DATE STARTED 11/25/92

WHILE DRILLING

T.O.B. ELEVATION 513.9 DATE COMPLETED 12/ 9/92

SHEET 3 OF 12

	SAMPLE NO/TYPE	N	REC.	WC	Qu *	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40							Wadsworth Till	
41								
42								
43								
44								
45								
46								
47								
48								
49	5ST		2.0		4.0	Grey silty CLAY, tr. fine-coarse sand and small gravel, hard		
50								
51								
52								
53								
54								
55								
56								
57								
58								
59	6ST		2.0		3.5	Grey silty CLAY, tr. fine-coarse sand and small-medium gravel, very stiff		
60								

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
3020 W. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050

JOB NO. 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

4-8

PROJECT BFI ZION SANITARY LANDFILL

DRILLER Testing Service Corporation

RIG Mobile B53 METHOD Rotary Wash

G.S. ELEVATION 737.9 DATE STARTED 11/25/92

T.O.B. ELEVATION 513.9 DATE COMPLETED 12/ 9/92

BORING NO. TB-1

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 4 OF 12

SAMPLE NO/TYPE	N	REC	WC	QU*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					No samples 60.0-80.0'	Wadsworth Till	
					At 80.0' begin continuous sampling		

60 61 62 63 64 65 66 67 69 70 71 72 73 74 75 76 77 78 80

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
SCHERMAN, ILLINOIS 60030

JOB NO. 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-9

PROJECT BFI ZION SANITARY LANDFILL — BORING NO. TB-1

DRILLER Testing Service Corporation — WATER LEVELS

RIG Mobile B53 — METHOD Rotary Wash — AT COMPLETION ____ HOURS ____ WHILE DRILLING ____

G.S. ELEVATION 737.9 — DATE STARTED 11/25/92

T.O.B. ELEVATION 513.9 — DATE COMPLETED 12/9/92

SHEET 5 OF 12

	SAMPLE NO/TYPE	N	REC.	WC	Qu *	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
80								
81	1SS	21 29 32 35	2.0'		4.5+	Dark brownish grey CLAY, tr. silt, coarse sand, and small gravel, hard — 655.9	Wadsworth Till	
82								
83	2SS	10 31 42 47	2.0'		1.0	Brownish grey fine-coarse SAND and small GRAVEL, tr. silt and clay seams, very dense	Shallow Drift Aquifer sediments	
84								
85	3SS	25 36 41 45	1.3'			— 651.9		
86								
87	4SS	36 63 100/6"	1.0'			Brownish grey fine SAND, tr. silt, seams of grey clayey silt and fine sandy silt, very dense		
89	5SS	36 51 58 62	1.0'			— 647.9		
90								
91	6SS	57 100/6"	0.9'			Grey SILT, tr. fine sand, some clay seams, very dense — 645.9		
92								
93	7SS	57 68 102/6"	1.4'			Brownish grey silty fine SAND, tr. clay seams, very dense — 643.9		
94								
95	8SS	30 33 39 41	1.5'			Grey SILT, very dense — 641.9		
96								
97	9SS	24 33 36 40	1.4'			Brownish grey clayey SILT, with clay seams, laminated, very dense		
98								
	10SS	25 37 39 41	1.4'			— 637.9		
100								

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
3020 N. SHOREWOOD DRIVE
MCHENRY ILLINOIS 60050

JOB NO. 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING
H-10

PROJECT BFI ZION SANITARY LANDFILL — BORING NO. TB-1

DRILLER Testing Service Corporation — WATER LEVELS

RIG Mobile B53 — METHOD Rotary Wash — AT COMPLETION ____ HOURS ____

G.S. ELEVATION 737.9 — DATE STARTED 11/25/92 — WHILE DRILLING ____

T.O.B. ELEVATION 513.9 — DATE COMPLETED 12/ 9/92 — SHEET 6 OF 12

	SAMPLE NO/TYPE	N	REC.	WC	Qu*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
100						637.9		
	11SS	24 53 73 90	1.0'			Grey SILT, tr. fine sand partings, very dense	Shallow Drift Aquifer sediments	
101						635.9		
102						Brownish grey CLAY, tr. silt, fine-coarse sand, and small gravel, laminated to foliated in areas, hard-very stiff	Lower Till	
	12SS	16 25 37 42	2.0'		4.5+			
103								
104								
	13SS	21 29 36 43	2.0'		3.0			
105								
106								
	14SS	11 22 30 38	2.0'		4.5+			
107								
	15SS	9 15 19 24	1.9'		3.0	tr. large gravel 108.0-110.0'		
109								
110								
	16SS	15 20 27 34	2.0'		3.5	reddish coloring and numerous silt partings 110.0-112.0'		
111								
112								
	17SS	18 24 29 35	NR					
113								
114								
	18SS	18 8 12 12	NR					
115								
116						621.9		
	19SS	9 12 14 16	2.0'		0.5	Grey silty CLAY, tr. fine-coarse sand and small gravel, laminated, soft		
117								
118								
	20SS	10 14 15 17	2.0'		0.5			
119								
120						617.9		

ROBERTA L. JENNINGS
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MCHENRY, ILLINOIS 60050

JOB NO 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING H-11

PROJECT BFI ZION SANITARY LANDFILL

DRILLER Testing Service Corporation

RIG Mobile B53 METHOD Rotary Wash

G.S. ELEVATION 737.9 DATE STARTED 11/25/92

T.O.B. ELEVATION 513.9 DATE COMPLETED 12/ 9/92

BORING NO. TB-1

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 7 OF 12

	SAMPLE NO/TYPE	N	REC	WC	Qu*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
120						617.9		
121	21SS	18 28 32 43	2.0		2.5	Brownish grey silty CLAY, tr. fine-coarse sand and small gravel, several silt partings and inclusions, very stiff	Lower Till	
122						615.9		
123	22SS	28 60 62 68	2.0		4.5+	Grey silty CLAY, tr. fine-coarse sand and small gravel, hard		
124								
125	23SS	15 26 33 40	2.0		4.5+			
126								
127	24SS	13 31 46 52	2.0		4.5+	foliated with interfoliated silt partings and inclusions below 126.0'		
129	25SS	19 34 50 67	2.0		4.5+			
130								
131	26SS	51 100/3"	0.8		4.5+			
132								
133	27SS	71 100/6"	0.9		4.5+			
134								
135	28SS	29 37 40 46	1.8		4.5+			
136						601.9		
137	29SS	29 71 100/2"	1.0			Grey SILT with brownish grey fine-coarse sand seams, very dense	Sorted sediments	
138						599.4		
	30SS	89 100/6"	0.9			Brownish grey fine-medium SAND, very dense		
140						597.9		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHORTWOOD DRIVE
MCHENRY, ILLINOIS 60050

JOB NO 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-12

PROJECT BFI ZION SANITARY LANDFILL — BORING NO. TB-1

DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION ____ HOURS ____ WHILE DRILLING ____

RIG Mobile B53 — METHOD Rotary Wash

G.S. ELEVATION 737.9 — DATE STARTED 11/25/92

T.O.B. ELEVATION 513.9 — DATE COMPLETED 12/9/92 — SHEET 8 OF 12

	SAMPLE NO/TYPE	N	REC	WC	Qu *	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
140						597.9		
141	31SS	28 44 56 68	1.6'		4.5+	Brownish grey silty CLAY, tr. to rare small gravel, tr. hairline silt partings, hard	Lower Till	
142								
143	32SS	68 03/6"	0.9'			tr. medium-large gravel, tr. fine sand and silt partings 142.0-144.0'		
144								
145	33SS	25 48 63 81	2.0'		4.5+	laminated below 144.0'		
146								
147	34SS	18 30 44 32	2.0'		4.5+	interfoliated silt partings and inclusions below 146.0'		
148								
149	35SS	15 20 54 43	2.0'		4.5+			
150								
151	36SS	26 33 37 41	2.0'		4.5+			
152								
153	37SS	40 20 22 26	2.0'		4.5+	interfoliated fine sand and silt below 152.0'		
154								
155	38SS	100/4"	NR					
156								
157	39SS	31/4"	0.3'			interlayered silt below 156.0'		
158						579.9		
	40SS	20/5"	0.6'			Grey SILT, tr. to some clay, laminated, very dense	Sorted sediments	
0								

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
3020 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050

JOB NO. 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING H-13

PROJECT BFI ZION SANITARY LANDFILL

DRILLER Testing Service Corporation

RIG Mobile B53 METHOD Rotary Wash

G.S. ELEVATION 737.9 DATE STARTED 11/25/92

T.O.B. ELEVATION 513.9 DATE COMPLETED 12/ 9/92

BORING NO. TB-1

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 9 OF 12

	SAMPLE NO/TYPE	N	REC.	WC	Qu*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
160								
		20				Grey clayey SILT, laminated, very	Sorted sediments	
161	41SS	27	1.5			dense		
		103/5"						
162						575.9		
		20				Brownish grey silty CLAY, tr. silt		
163	42SS	26	2.0		4.5+	partings, laminated, hard-very		
		37				stiff		
164		45						
		19				thinly laminated below 164.0'		
165	43SS	30	2.0		3.5			
		47						
166		78						
		28						
167	44SS	46	2.0		3.5			
		28						
168		33				569.9		
		10				Brownish grey very silty CLAY/very		
169	45SS	56	1.8		3.0	clayey SILT, laminated, very stiff		
		82						
170		100/2"				567.9		
		13				Brownish grey silty CLAY, tr.		
171	46SS	18	2.0		3.0	hairline silt partings, deeply		
		21				thinly laminated, very stiff-very		
172		26				soft		
		10						
173	47SS	16	2.0		1.5			
		18						
174		22						
		0						
175	48SS	5	2.0		0.5			
		7						
176		9						
		0						
177	49SS	7	2.0		0.2			
		7						
178		9				559.4		
		0						
		9				Grey silty CLAY, tr. sand and small-	Lower Till	
	50SS	15	2.0		1.5	large gravel, w/fine-coarse sand		
		18				seams, stiff		
180								

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2928 N. SHERWOOD DRIVE
MCHENRY, ILLINOIS 60050

JOB NO. 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-14

PROJECT BFI ZION SANITARY LANDFILL — BORING NO. TB-1

DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION

RIG Mobile B53 — METHOD Rotary Wash — HOURS WHILE DRILLING

G. S. ELEVATION 737.9 — DATE STARTED 11/25/92

T.O.B. ELEVATION 513.9 — DATE COMPLETED 12/ 9/92

SHEET 10 OF 12

	SAMPLE NO/TYPE	N	REC	WC	Qu *	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
180								
181	51SS	0 19 17 47	1.9'		4.0	Greyish brown silty CLAY tr. sand and small-large gravel, w/fine-coarse sand seams, hard 555.9	Lower Till	
182								
183	52SS	20 57 103/2"	1.0'		4.0	Brownish grey silty CLAY, laminated, tr. hairline silt partings and seams, hard 553.4		
184								
185	53SS	103/5"	0.4'			Brownish grey fine sandy SILT, very dense	Sorted sediments	
186								
187	54SS	58 104/5"	0.9'			 549.9		
189	55SS	66 48 100/2"	1.5'			Grey SILT with clay seams and fine sand seams, very dense		
190								
191	56SS	21 61 92/6"	1.5'			 545.9		
192								
193	57SS	101/5"	0.4'			Grey silty CLAY with small-medium gravel, some fine sand, very dense	Lower Till	
194								
195	58SS	65 100/1"	0.5'			Boulder 194.8-196.0' 541.9		
196								
197	59SS	0 19 38 47	2.0'		3.0	Brownish grey silty CLAY, laminated, with hairline silt partings and inclusions, some foliation, very stiff		
198								
	60SS	0 14 20 25	2.0'		2.5			
200								

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST

JOB NO 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-15

PROJECT BFI ZION SANITARY LANDFILL — BORING NO. TB-1

DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION ____ HOURS ____ WHILE DRILLING ____

RIG Mobile B53 — METHOD Rotary Wash

G.S. ELEVATION 737.9 — DATE STARTED 11/25/92

T.O.B. ELEVATION 513.9 — DATE COMPLETED 12/ 9/92

SHEET 11 OF 12

	SAMPLE NO/TYPE	N	REC	WC	Qu*	SOIL DESCRIPTION-	GEOLOGIC UNIT	LOG
200								
201	61SS	0 6 10 9	2.0"		2.5	Grey silty CLAY, feathery to foliated, with hairline silt partings and inclusions, very stiff 535.9	Lower Till	
202								
203	62SS	45 101/6"	0.6"			Small-large GRAVEL and COBBLES, with some fine to coarse sand, tr. silt and clay, very dense	Basal Drift Aquifer sediments (bedrock rubble zone)	
204								
205	63SS	123/3"	NR			Boulder 204.0-206.0		
206								
207	64SS	150/3"	0.2"			 529.9		
208								
209	65SS	142/3"	0.2"			Grey silty SAND and small GRAVEL in clay matrix		
210								
211	66SS	137/1.5"	0.2"			 525.9		
212								
213	67SS	140/3"	0.3"			Grey fine sandy SILT, tr. clay, with small-medium gravel 523.9	Bedrock soil zone	
214								
215	68SS	150/3"	0.3"			Fractured DOLOMITE, tr. clay and silt	Silurian Dolomite Bedrock	
216								
217	69SS	100/0"	NR					
218								
219	70SS	128/1"	0.1"					
220								

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 E. SUNNYSIDE DRIVE

JOB NO 86-106a
JFO/RLJ

GEOLOGIC LOG OF BORING

H-16

PROJECT BFI ZION SANITARY LANDFILL

BORING NO. TB-1

DRILLER Testing Service Corporation

WATER LEVELS

RIG Mobile B53 METHOD Rotary Wash

AT COMPLETION

HOURS

G.S. ELEVATION 737.9 DATE STARTED 11/25/92

WHILE DRILLING

T.O.B. ELEVATION 513.9 DATE COMPLETED 12/ 9/92

SHEET 12 OF 12

SAMPLE NO/TYPE	N	REC	WC	Qu*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
No samples, drill to bedrock			blind verify		DOLOMITE 513.9	Silurian Dolomite Bedrock	
					T.O.B. 224.0 Hole grouted on completion with Volclay Grout tremied into hole from the bottom upwards.		

220 221 222 223 224 225 226 227 229 230 231 232 233 234 235 236 237 238 9 240

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST

JOB NO

LOGGED BY

SURFACE ELEVATION: 742.90
NORTHING: 12494.15
EASTING: 12422.13

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-01-07

Depth in Feet	Surf. Elev. 742.90	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
0	743		Dark Gray (10YR 4/1) Silty CLAY FILL, little fine sand, trace medium to coarse sand and fine to coarse gravel, stiff to hard, medium plasticity, moist	FILL	SS-1 0.0-2.0 Rec =16	3 2 2 3	1.0 1.5		N=4
1	742								
2	741								
3	740		Dark Gray (5Y 4/1) to Olive Gray (5Y 4/2) Silty CLAY, trace fine to medium sand, very stiff, medium plasticity, moist	CL	SS-2 2.0-4.0 Rec =18	2 2 2 3	4.5+ 2.5		N=4
4	739		Gray (Gley 1 5/N) to Greenish Gray (GLEY 1 5/10Y) Silty CLAY, trace fine to medium sand, very stiff, medium plasticity, moist	CL	SS-3 4.0-6.0 Rec = 20	2 7 9 8	3.5 2.5 2.0		N=16
5	738								
6	737								
7	736				SS-4 6.0-8.0 Rec = 20	2 3 4 5	2.5 2.0		N=7
8	735		Brown (10YR 4/3) Silty SAND, trace coarse sand and fine gravel, trace clay, poorly graded, medium dense, saturated	SM					
9	734		Dark Yellowish Brown (10YR 4/6) to Light Olive Brown (2.5Y 5/4) SILT, trace fine sand, low plasticity, medium dense, moist	ML	SS-5 8.0-10.0 Rec = 22	8 12 12 16	4.5+ 4.5+		N=24
10	733		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand and fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL	SS-6 10.0-12.0 Rec = 20	2 5 7 12	4.5+ 4.5+		N=12
11	732								
12	731				SS-7 12.0-14.0 Rec = 21	4 5 8 11	3.5 2.5 3.0		N=13
13	730								
14	729				SS-8 14.0-16.0 Rec = 22	4 7 9 12	3.75 4.25		N=16
15	728								
16	727				SS-9 16.0-18.0 Rec = 21	5 7 10 13	3.5 3.5		N=17
17	726								
18	725				SS-10 18.0-20.0 Rec =20	4 5 8 13	3.0 2.75		N=13
19	724								
20									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 05 01 07 ENDED: 05 03 07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G170 was completed within B-1-07.

SURFACE ELEVATION: 742.90
NORTHING: 12494.15
EASTING: 12422.13

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-01-07

Depth in Feet	Surf. Elev. 742.90	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
20	723		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL	SS-11 20.0-22.0 Rec = 21	3 6 9 15	2.75 2.75		N=15
21	722								
22	721				SS-12 22.0-24.0 Rec = 22	4 6 7 12	2.25 3.0		N=13
23	720								
24	719				SS-13 24.0-26.0 Rec =21	3 7 8 15	2.75 2.75		N=15
25	718								
26	717				SS-14 26.0-28.0 Rec = 22	6 8 11 16	2.5 2.5		N=19
27	716								
28	715				SS-15 28.0-30.0 Rec = 20	4 7 9 14	2.5 3.0		N=16
29	714								
30	713				SS-16 30.0-32.0 Rec = 23	4 6 9 13	3.0 4.5+ 2.25		N=15
31	712								
32	711				SS-17 32.0-34.0 Rec = 21	4 7 8 12	2.5 3.25		N=15
33	710								
34	709				SS-18 34.0-36.0 Rec = 20	5 6 8 8	2.25 3.5 2.25		N=14
35	708								
36	707				SS-19 36.0-38.0 Rec = 21	4 8 11 11	2.75 2.5		N=19
37	706								
38	705				SS-20 38.0-40.0 Rec = 21	5 5 5 9	3.0 2.5		N=10
39	704								
40									

DRILLING CONTRACTOR: RDnP Drilling, Inc
DRILLING METHOD: 6.25" I.D. - HSA. 10" Boring (0-10') Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05-01-07 ENDED: 05-03-07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit. 2" O.D. 2' Long Split Spoon
Monitoring Well G170 was completed within B-1-07.

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06-25-2007

SURFACE ELEVATION: 742.90
NORTHING: 12494.15
EASTING: 12422.13

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-01-07

Depth in Feet	Surf. Elev. 742.90	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
40	703		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, medium plasticity, moist See Remarks See Remarks See Remarks See Remarks	CL	SS-21 40.0-42.0 Rec = 22	6 8 11 14	3.5 2.75		N=19
41	702								
42	701				SS-22 42.0-44.0 Rec = 24	6 10 14 17	3.5 3.75		N=24
43	700								
44	699				SS-23 44.0-46.0 Rec = 22	5 8 13 18	3.0 4.5+ 4.5+		N=21
45	698		0.4' SILT seam @ 45.4'						
46	697		Gray (10YR 5/1) SILT, some clay, trace fine sand, medium dense, low plasticity, very moist	ML	See Remarks	7 9	4.5+		SS-24 46.0-46.6 Rec = 4
47	696		Dark Gray (10YR 4/1) to Very Dark Gray (10YR 3/1) Silty SAND, trace coarse sand and fine gravel, poorly graded, medium dense, saturated	SM	See Remarks See Remarks	8 14	1.75		N=17 SS-24A 46.6-47.2 Rec = 8
48	695		0.1' SILT seam @ 46.9'						SS-24B 47.2-48.0 Rec = 8
49	694		Dark Gray (10YR 4/1) Fine to Coarse SAND, some fine gravel, little silt, trace clay, dense, saturated	SP	SS-25 48.0-50.0 Rec = 20	17 18 19 16			N=37
50	693				See Remarks	10 5			SS-26 50.9-52.0 Rec = 6
51	692		Dark Grayish Brown (10YR 4/2) Silty CLAY, some fine sand, trace medium to coarse sand and fine to coarse gravel, stiff to very stiff, medium plasticity, moist 0.1' Fine silty sand @ 53.1'	CL	SS-26A 50.9-52.0 Rec = 13	18 13	1.75 3.25		N=23
52	691				SS-27 52.0-53.3 Rec = 12	8 13 23	3.25 2.25		N=36
53	690								
54	689		Dark Gray (2.5Y 4/1) Silty SAND, trace medium sand, trace clay, poorly graded, dense, saturated	SM	See Remarks	15			SS-27A 53.3-54.0 Rec = 8
55	688				SS-28 54.0-55.3 Rec = 14	6 12 10			N=22 SS-28A 55.3-56.0 Rec = 8
56	687		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, very stiff to hard, medium plasticity, moist	CL	See Remarks	15	2.25		
57	686				SS-29 56.0-58.0 Rec = 20	9 16 18 24	4.25 4.5+		N=34
58	685								
59	684				SS-30 58.0-60.0 Rec = 24	9 12 23 26	4.5+ 4.5+		N=35
60									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G170 was completed within B-1-07.

SURFACE ELEVATION: 742.90
NORTHING: 12494.15
EASTING: 12422.13

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-01-07

Depth in Feet	Surf. Elev. 742.90	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
60	683		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist	CL	SS-31 60.0-62.0 Rec = 24	8 12 14 20	2.75 3.5		N=26
61	682								
62	681								
63	680				ST-32 62.0-64.0 Rec = 20				SS-33 64.0-64.8 Rec = 6
64	679								
65	678		0.1' Fine silty sand seam @ 64.8'		See Remarks	11 13	4.5+		
66	677		Dark Gray (2.5Y 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, very stiff to medium stiff, low to medium plasticity, moist to very moist	CL	SS-33A 64.8-66.0 Rec = 14	10 9	2.25 0.5		N=23
67	676		Very Dark Grayish Brown (2.5Y 3/2) Silty CLAY, some fine sand, trace medium to coarse sand and fine gravel, very stiff, medium plasticity, moist	CL	SS-34 66.0-67.5 Rec = 14	6 9 13	2.5		N=22
68	675			CL	See Remarks	15	3.75		SS-34A 67.5-68.0 Rec = 6
69	674		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, trace fine to coarse sand, trace fine gravel, very stiff, medium plasticity, moist		ST-35 68.0-70.0 Rec = 20				
70	673		Dark Gray (2.5Y 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand and fine to coarse gravel, very stiff to hard, medium plasticity, moist						
71	672				SS-36 70.0-72.0 Rec = 24	6 8 14 20	3.5 4.5+		N=22
72	671			CL					
73	670				SS-37 72.0-74.0 Rec = 24	10 14 18 21	3.0 2.25		N=32
74	669								
75	668				SS-38 74.0-76.0 Rec = 24	6 8 13 15	3.75 3.5		N=21
76	667		Dark Gray (10YR 4/1) Silty CLAY, fine to coarse sand, little fine gravel, very stiff to hard, medium plasticity, moist						
77	666				SS-39 76.0-78.0 Rec = 24	8 12 16 18	4.5+ 3.25		N=28
78	665			CL					
79	664		0.1' Fine to medium silty sand seam @ 79.2'		SS-40 78.0-79.2 Rec = 14	8 10 23	3.75		N=33 SS-40A 79.2-80.0 Rec = 10
80					See Remarks	23	3.0		

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA. 10" Boring (0-10') Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G170 was completed within B-1-07

06-26-2007

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SURFACE ELEVATION: 742.90
NORTHING: 12494.15
EASTING: 12422.13

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-01-07

Depth in Feet	Surf. Elev. 742.90	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
80	663		Dark Gray (10YR 4/1) Silty CLAY, fine to coarse sand, little fine gravel, very stiff to hard, medium plasticity, moist	CL	SS-41 80.0-82.0 Rec = 24	15 24 24 28	3.75 3.75 4.5+		N=48
81	662								
82	661				SS-42 82.0-84.0 Rec = 24	15 21 25 31	3.75 4.5+ 4.5+ 3.0		N=46
83	660								
84	659				SS-43 84.0-86.0 Rec = 23	22 23 26 37	4.5+ 4.5+		N=49
85	658								
86	657				SS-44 86.0-88.0 Rec = 24	9 15 22 28	4.5+ 3.5		N=37
87	656								
88	655				SS-45 88.0-89.0 Rec = 12	10 52	3.0		SS-45A N=92 89.0-89.8 Rec = 9 SS-45B 89.8-90.0 Rec = 2
89	654		Dark Grayish Brown (2.5Y 4/2) Silty SAND, trace medium to coarse sand, trace clay, poorly graded, extremely dense, saturated	SM	See Remarks	40			
90	653		0.3' Fine sand seam @ 89.5'	ML	See Remarks SS-46 90.0-91.0 Rec = 12	47 22 26	4.5+ 4.5+		N=42
91	652		Reddish Brown (2.5YR 4/3) to Dark Grayish Brown (2.5Y 4/2) SILT, some clay, little fine sand, trace medium to coarse sand and fine to coarse gravel, extremely dense, very moist to wet	CL	SS-46A 91.0-92.0 Rec = 12 SS-47 92.0-93.0 Rec = 10	16 18 11 55	4.5+ 4.5+		N=107
92	651								
93	650		Dark Gray (10YR 4/1) Silty CLAY, some fine sand, trace medium to coarse sand and fine to coarse gravel, hard, low to medium plasticity, moist	SP	SS-47A 93.0-94.0 Rec = 10	52 42			
94	649								
95	648		Dark Gray (2.5Y 4/1) SAND with GRAVEL, little silt, trace coarse gravel, trace clay, poorly graded, extremely dense, saturated	SP	SS-48 94.0-96.0 Rec = 20	24 33 69 100/3"			N=102
96	647		Dark Grayish Brown (2.5Y 4/2) SAND, little medium sand, trace coarse sand, trace silt, poorly graded, extremely dense, saturated			50			
97	646		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, moist	CL	SS-49 96.0-98.0 Rec = 16	30 48 88	4.5+		N=78
98	645			ML		52			
99	644		Dark Grayish Brown (2.5Y 4/2) Sandy SILT, extremely dense, low plasticity, wet to saturated		SS-50 98.0-100.0 Rec = 10	78 125 50/1"			N=203
100									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G170 was completed within B-1-07.

SURFACE ELEVATION: 742.90
NORTHING: 12494.15
EASTING: 12422.13

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-01-07

Depth in Feet	Surf. Elev. 742.90	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
100	643		Dark Grayish Brown (2.5Y 4/2) Sandy SILT, extremely dense, low plasticity, wet to saturated	ML	See Remarks	87			SS-51 100.0-100.5 Rec = 3
101	642			CL	SS-51A 100.5-102.0 Rec = 7	157	4.5+	207+	
102	641		Dark Gray (10YR 4/1) Sandy Silty CLAY, trace fine gravel, hard, low to medium plasticity, moist			50/0.5"			
103	640		END OF BORING @ 102.0'						
104	639								
105	638								
106	637								
107	636								
108	635								
109	634								
110	633								
111	632								
112	631								
113	630								
114	629								
115	628								
116	627								
117	626								
118	625								
119	624								
120									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G170 was completed within B-1-07.

12-18-2008

OWNER	LOG OF BORING NUMBER
Browning-Ferris Industries	B-1
PROJECT NAME Preliminary Investigation Proposed Sanitary Landfill	ARCHITECT-ENGINEER Tom Handyside & Associates
SITE LOCATION Green Bay Road & 9th St., Waukegan, Illinois	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE / RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
				SURFACE ELEVATION ±732	
	1	ST		"A"	
	2	SS		"B"	
	3	ST		"C"	
	3A	ST		"D"	
	4	ST		"E"	
		PA		Silty clay, trace sand & gravel - brown & slightly gray - very tough (CL)	
10.0	5	ST		Silty & clayey fine sand, trace gravel - brown & slightly gray - moist (SC)	
		PA			
	6	ST			
		PA			
20.0	7	ST		Silty clay, trace sand & gravel - gray - very tough (CL)	
		PA			
	8	ST			
		PA			
30.0	9	ST			
		PA			
	10	ST			
		PA			
40.0	11	ST			
42.0				End of Boring	

*Calibrated Penetrometer

"A": Silty & clayey topsoil, trace roots - black (OL-OH)
"B": Silty clay, trace roots, gravel & sand - rust brown & slightly gray - very tough (CL-CH)
"C": Silt, trace gravel & clay - light brown & slightly gray - very tough - moist (ML)
"D": Clayey silt, trace gravel - light brown & slightly gray - hard (ML-CL)
"E": Silty clay, trace sand & gravel - light brown & gray - hard (CL)
"F": Clayey silt, trace to some fine sand - light brown & slightly gray - tough - wet (ML-CL)

12" Ø PVC wellpoint and screen installed to 36 ft. A.B.

OWNER: Browning-Ferris Industies	LOG OF BORING NUMBER: B-1
PROJECT NAME: Preliminary Investigation Proposed Sanitary Landfill	ARCHITECT-ENGINEER: Tom Handyside & Associates
SITE LOCATION: Green Bay Road & 9th St., Waukegan, Illinois	

ELEVATION / DEPTH | SAMPLE NO. | SAMPLE TYPE | SAMPLE DISTANCE | RECOVERY | DESCRIPTION OF MATERIAL | UNIT DRY WT. LBS./FT.³

SURFACE ELEVATION ± 732

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)

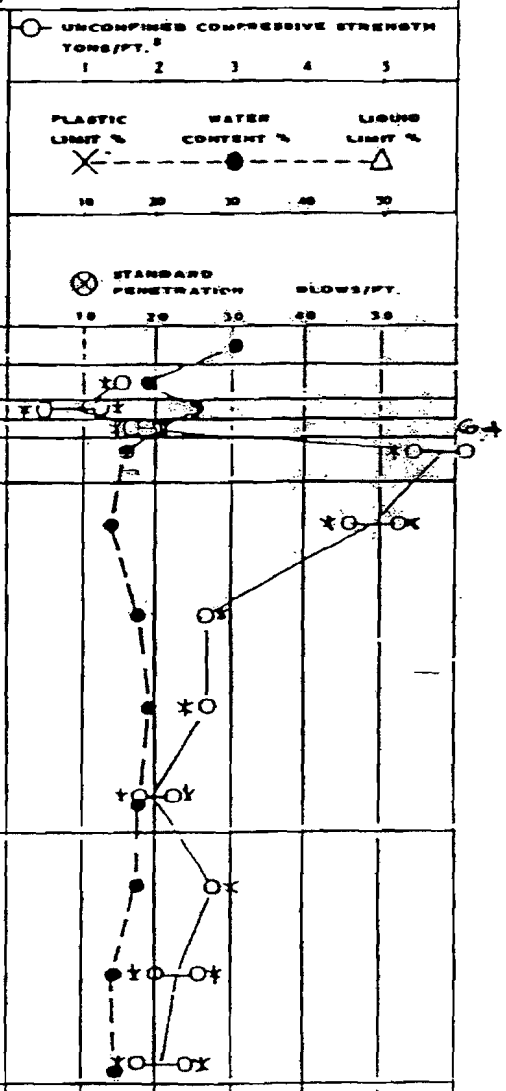
2 of 2

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN SITU, THE TRANSITION MAY BE GRADUAL.

WL 23' WS or WC	BORING STARTED 11-30-74	SOIL TESTING SERVICES, INC.
WL BCR ACR	BORING COMPLETED 11-30-74	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL 23.5' 0 hr. A.B.	RIG SB FOREMAN JD	APPROVED BY CWR STS JOB NO. 17590-A

OWNER	LOG OF BORING NUMBER
Browning-Ferris Industries	B-2
PROJECT NAME Preliminary Investigation Proposed Sanitary Landfill	ARCHITECT-ENGINEER Tom Handyside & Associates
SITE LOCATION Green Bay Road & 9th Street, Waukegan, Illinois	

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION ± 730	
	1	ST			Silty & clayey topsoil, black (OL-OH)	
	2	ST			"A"	
		ST			B	
	3A				C	
	4	ST			Silty clay, trace to some sand, trace gravel - brown & sl. gray - hard (CL)	
10.0		PA				
	5	ST				
		PA			Silty clay with seams of silt, trace to some sand, trace gravel - gray - hard to very tough (CL)	
	6	ST				
20.0		PA				
	7	ST				
		PA				
	8	ST				
30.0		PA				
	9	ST			Silty clay, trace sand & gravel - gray-brown - very tough to tough (CL)	
		PA				
	10	ST				
40.0		PA				
42.0	11	ST				



End of Boring

*Calibrated Penetrometer

"A": Silty clay, trace to some sand, trace gravel - brown & gray - tough (CL-CH)

"B": Silty clay, trace to some gravel, trace sand - brown & gray - stiff (CL)

"C": Silty clay, trace sand, gravel & roots - brown & slightly gray - tough (CL)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

WL 4' WS ∞ WD	BORING STARTED 11-29-74	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL BCR ACR	BORING COMPLETED 11-29-74	
WL 29' 0 hr. A.B. 11.2' on 11-30-74	RIG SB FOREMAN JD	APPROVED BY CWP STS JOB NO. 17590-A

Browning-Ferris Industries	LOG OF BORING NUMBER B-3
PROJECT NAME Preliminary Investigation Proposed Sanitary Landfill	ARCHITECT-ENGINEER Ten Handyside & Associates
SITE LOCATION Green Bay Road & 9th Street, Waukegan, Illinois	

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5) · PLASTIC LIMIT % · WATER CONTENT % · LIQUID LIMIT % (10 20 30 40 50) · STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)
					SURFACE ELEVATION ± 798		
	1A						
	2	ST			Silty clay, trace to some sand, trace gravel & roots - brown - hard (CL-CH)		
	3	ST					
	4	SS			Silt, trace clay - light brown & slightly gray - dense - moist (ML)		
		PA					
	5	ST					
		PA			Silty clay, trace sand & gravel - gray - very tough (CL)		
	6	ST					
		PA					
	7	ST					
		PA					
	8	ST					
		PA					
	9	ST					
	10	ST			Silty clay, trace sand & gravel - gray - very tough (CL-CH)		
	11	ST			Silty clay, trace sand & gravel - gray - very tough (CL)		
					End of Boring		
					"A": Silty & clayey topsoil, trace roots - dark gray (OL-OH)		
					40' of 12" PVC wellpoint installed A.S.		

*Calibrated Penetrometer

WL WS or WD	BORING STARTED 11-27-74	SOIL TESTING SERVICES, INC. 111 SPRINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL BCR ACR	BORING COMPLETED 11-27-74	
WL Dry on 11-27-74	RIG SS FOREMAN JD	APPROVED BY STS JOB NO. 17590-A

OWNER: Browning-Ferris Industries

LOG OF BORING NUMBER: B-4

PROJECT NAME: Preliminary Investigation Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Tom Handyside & Associates

SITE LOCATION: Green Bay Road & 9th Street, Waukegan, Illinois

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION ± 735	
	1A	ST			"A"	
	1B				"B"	
	2	ST			Silt, trace sand, gravel, clay - light brown & gray - hard - moist (HL)	
	3A					
	4	ST				
		PA				
10.0					Silty clay with seams of silt, trace sand & gravel - brown & gray - very tough (CL)	
	5	ST				
		PA				
	6	ST				
		PA				
20.0						
	7	ST			Silty clay with seams of wet sand and silt below 15 ft. - trace to some sand, trace gravel & shale - gray - very tough to tough (CL)	
		PA				
	8	ST				
		PA				
30.0						
	9	ST				
	10	AS				
38.5						

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

±Calibrated Penetrometer

End of Boring

"A": Silty & clayey topsoil, trace roots & sand - dark brown & dark gray (OL-OH)

"B": Silty clay, trace roots & sand - brown & gray & slightly dark gray - hard (CL-CH)

"C": Silty clay with pockets and seams of silt, trace to some sand, trace gravel - light brown & gray - hard (CL)

Bore hole caving from sand seams while drilling below 20 ft.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES; HOWEVER, THE TRANSITION MAY BE GRADUAL.

WL 13' WS on WD	BORING STARTED 11-30-74	SOIL TESTING SERVICES, INC.
WL BCR ACR	BORING COMPLETED 11-30-74	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL 16' 0 hr. A.B.	RIG SB FOREMAN JD	APPROVED BY CWR STS JOB NO 17590-A

OWNER: B. ming-Ferris Industries	LOG OF BORING NUMBER: B-3
PROJECT NAME: Preliminary Investigation Proposed Sanitary Landfill	ARCHITECT-ENGINEER: Tor Wanzyside & Associates
SITE LOCATION: Green Bay Road & 9th Street, Waukegan, Illinois	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT.

ELEVATION	DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERED	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION ±752	
		23	ST		"A"	
			PA		Silty fine sand, trace clay & gravel - light brown & slightly gray - moist (SM)	
	5		ST			
		6	SS		Silty clay with occasional pockets and seams of gray silt, trace sand, gravel & shale - gray - very tough to hard (CL)	
			PA			
		7	ST			
			PA			
		8	ST			
			PA			
		9	ST			
			PA			
		10	ST			
			PA			
		11	ST			
			PA			
		12	ST			
			PA			
		13	ST			

End of Boring

*Calibrated Penetrometer

"A": Silty & clayey topsoil, trace roots - dark brown (CL-OH)

"B": Silty clay, trace roots & sand - brown & slightly gray - very tough (CL-CH)

"C": Silty & clayey fine sand, trace gravel - light brown & slightly gray - moist (SM-SC)

"D": Clayey silt with pockets & seams of gray silt, trace to some sand, trace gravel - light brown & gray - hard (CL-ML)

"E": Silty clay with pockets of light gray silt, trace to some sand trace gravel & shale - brown & gray - hard (CL)

"F": Sandy silt, trace gravel & clay - light brown - moist (ML-SM)

OWNER: Browning-Ferris Industries

LOG OF BORING NUMBER: B-5

PROJECT NAME: Preliminary Investigation Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Tom Handyside & Associates

SITE LOCATION: Green Bay Road & 9th Street, Waukegan, Illinois

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)	PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % (10 20 30 40 50)	STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)
					SURFACE ELEVATION 752				

2 of 2

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL

WL 13' WS on WD	BORING STARTED 11-26-74	SOIL TESTING SERVICES, INC.
WL BCR ACR	BORING COMPLETED 11-26-74	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL Dry 0 hr. A.B. 9.5' on 11-27-74	RIG SB FOREMAN JD	APPROVED BY CWP STS JOB NO 17590-A

ER

wr.ing-Ferris Industries

B-32 B-6

ECT NAME Preliminary Investigation
posed Sanitary Landfill

ARCHITECT-ENGINEER
Tom Handyside & Associates

LOCATION
en ay Road & 9th Street, Waukegan, Illinois

SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION ~~745~~ +741
				"A"
1A				"B"
2	ST			"C"
3	ST			"D"
				"E"
	PA			"G"
5	ST			"H"
	PA			Silty clay, trace to some sand,
6	ST			trace gravel & shale - gray - hard
	PA			to very tough (CL)
7	ST			
	PA			Wet gravel - driller's observation
	ST			Silt, trace sand & clay - gray-
	PA			brown - saturated (ML)
9	ST			
10	AS			Silty clay, trace sand & gravel -
11	AS			gray - tough (CL)

UNIT DRY WT. LBS./FT.³

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.²
1 2 3 4 5

PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50

STANDARD PENETRATION BLOWS/FT.
10 20 30 40 50

End of Boring

*Calibrated Penetrometer

"A": Silty & clayey topsoil, trace roots - dark brown (OL-OH)
"B": Sandy, silty clay, trace roots - rust brown - very tough (CL-CH)
"C": Silty & clayey fine sand, trace gravel - brown & gray - moist (SM-SC)
"D": Silty clay, trace to some sand, brown & slightly gray - tough (CL-ML)
"E": Silty & clayey fine sand, trace gravel - brown & slightly gray - medium dense - moist (SC)
"F": Silty clay, trace to some sand, trace gravel - brown & slightly gray - very tough (CL)
"G": Silty clay, trace sand & gravel - brown - very tough (CL-ML)
"H": Silty clay, trace sand, grave & shale - gray-brown - very tough (CL)

12" PVC wellpoint installed to 40 ft. A.B.
NOTE: Bore hole caved-in while drilling below 24 ft.

NER
Browning-Ferris Industries

B-33 P-6

PROJECT NAME Preliminary Investigation
Proposed Sanitary Landfill

ARCHITECT-ENGINEER
Tom Handyside & Associates

LOCATION
Green Bay Road & 9th Street, Waukegan, Illinois

DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² 1 2 3 4 5	PLASTIC LIMIT %	WATER CONTENT %	LIQUID LIMIT % 10 20 30 40 50	STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50
					SURFACE ELEVATION +741						

2 of 2

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES; IN SITU, THE TRANSITION MAY BE GRADUAL.

24' WS on WD	BORING STARTED 11-26-74	SOIL TESTING SERVICES, INC.	
WL BCR ACR	BORING COMPLETED 11-26-74	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062	
WL 34' 0 hr. A.B. 24.9' on 11-27-74	RIG SB FOREMAN JD	APPROVED BY CWF	STS JOB NO. 17590-A
BLH 13.0' on 2/6/75			

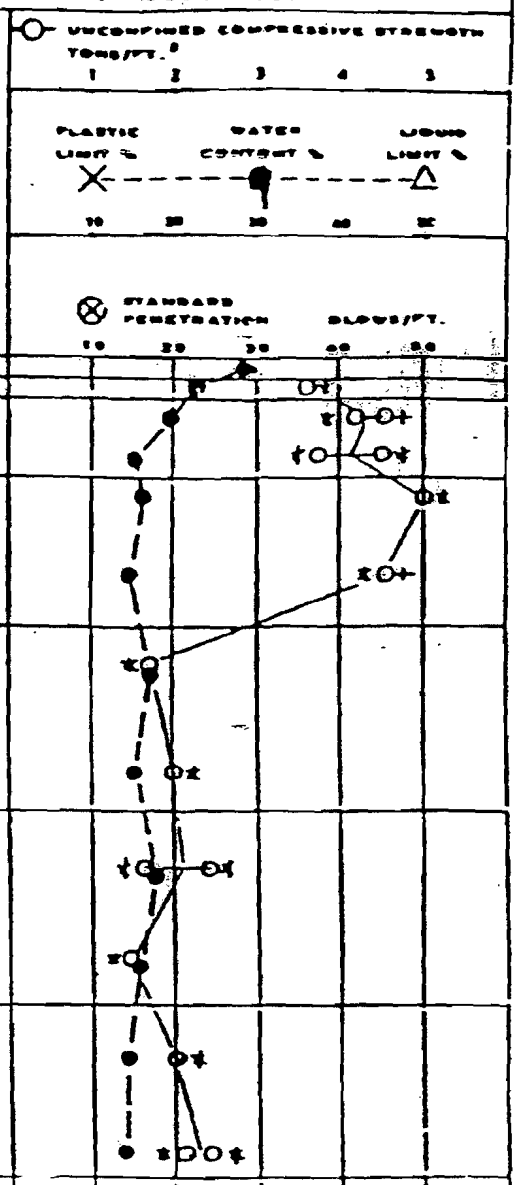
ng-Ferris Industries

T NAME Preliminary Investigation
ed Sanitary Landfill

ARCHITECT-ENGINEER
Tom Handyside & Associates

ICATION
B Road & 9th St., Waukegan, Illinois

SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
				SURFACE ELEVATION ±737	
1	ST			"A"	
1A				"B"	
2	ST			Silty clay with pockets of light gray silt, trace sand & gravel - light brown & gray - hard (CL)	
3	ST				
4	ST			Silty clay, trace to some sand, trace gravel - brown & slightly gray - hard (CL)	
	PA				
5	ST				
	PA				
6	ST			Silty clay, trace sand & gravel - gray - tough (CL)	
	PA				
7	ST				
	PA				
8	ST			Silty clay, trace to some sand, trace gravel - gray - tough (CL)	
	PA				
9	ST				
	PA				
10	ST			Silty clay, trace sand, gravel & shale - gray - very tough (CL)	
	PA				
11	ST				



End of Boring

*Calibrated Penetrometer

"A": Silty & clayey topsoil, trace roots - black (OH-CL)

"B": Silty clay, trace roots & sand - light brown & slightly gray & dark gray - very tough (CL-CH)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL

WS ∞ WD	BORING STARTED 11-22-74	SOIL TESTING SERVICES, INC.	
BCR ACR	BORING COMPLETED 11-22-74	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062	
Dry 0 hr. A.B. 24.1' on 11-27-74	RIG SB FOREMAN JD	APPROVED BY CWF	STS JOB NO. 17550-A

OWNER
Browning-Ferris Industries

LOG OF BORING NUMBER
B-35
E-8

PROJECT NAME Preliminary Investigation
Proposed Sanitary Landfill

ARCHITECT-ENGINEER
Tom Handyside & Associates

PROJECT LOCATION
Green Bay Road & 9th Street, Waukegan, Illinois

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION 754.1 ±	
		ST			"A"	
	2	ST			Silty & sandy clay with pockets of light gray silt, trace gravel - light brown & gray & hard (CL)	
	3	ST				
	4	ST			Silty clay with seams of silt, trace sand & gravel - brown & gray - hard (CL-ML)	
10.0		PA				
	5	ST			Silty clay, trace sand, gravel & shale - gray - hard (CL)	
		PA				
	6	ST				
20.0		PA			Silty clay, trace sand, gravel & shale - gray-brown - very tough (CL)	
	7	ST				
		PA				
	8	ST			Silty clay with seams of light gray silt, trace sand & gravel - gray - tough to very tough (CL)	
30.0		PA				
	9	ST				
		PA				
	10	ST			Silty fine sand, trace coarse sand, gray - (SM)	
40.0		PA				
	11	ST			Silty clay, trace to some sand, trace gravel - gray - very tough (CL)	
		PA				
47.0	12	ST				
					End of Boring	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² — 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT. — 10 20 30 40 50

70+ 70 60

*Calibrated Penetrometer

"A": Silty & clayey topsoil, trace roots - dark gray (OH-OL)
"B": Silty clay, trace roots, gravel & sand - light brown & gray & slightly medium dark gray - hard (CL-CH)

WL 30'	WB on WD	BORING STARTED 11-22-74	SOIL TESTING SERVICES, INC.
WL	BCR ACR	BORING COMPLETED 11-22-74	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL 17.2' 0 hr. A-U on 11-27-74		RIG SB FOREMAN JD	APPROVED BY CWP STS JOB NO. 17590-A

BL:1

LOG OF BORING NUMBER

-les | B-36 B-5

Investigation | ARCHITECT-ENGINEER: Tom Handyside & Associates

Waukegan, Illinois

DESCRIPTION OF MATERIAL

SURFACE ELEVATION +775

UNIT DRY WT. LBS./FT.³

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)

			Silty clay with pockets of light gray silt, trace sand & gravel - light brown & slightly gray - hard (CL)
4	ST		
	PA		
5	ST		Silty & sandy clay with vertical seams of dark brown silt, trace gravel - brown (CL)
	PA		
6	ST		Silty clay, trace to some sand, trace gravel & shale - light brown & sl. gray - hard (CL)
	PA		
7	ST		Silty clay, trace sand & gravel - gray & brown - very tough (CL)
	PA		
	ST		
	PA		
9	ST		Silty clay, trace sand & gravel - gray - very tough (CL)
	PA		
10	ST		Silty clay, trace to some sand, trace gravel - gray - very tough (CL)
	PA		
11	ST		Silty clay, trace sand, gravel & shale - gray - very tough (CL)
	PA		
12	ST		
	PA		
13	ST		

End of Boring

*Calibrated Penetrometer

"A": Silty & clayey topsoil, trace roots - dark brown (OL-OH)

"B": Silty clay, trace roots & sand - brown & slightly gray - hard (CL-CH)

WS or WD	BORING STARTED 11-25-74	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
BCR ACR	BORING COMPLETED 11-25-74	
Dry 0 hr. after B.B. 40.2' on 11-27-74	RIG SB FOREMAN JD	APPROVED BY CWP STS JOB NO 17590-A

OWNER: Browning-Ferris Industries

B-37

LOG OF BORING NUMBER: E-10

PROJECT NAME: Preliminary Investigation
Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Tom Handyside & Associates

LOCATION: Green Bay Road & 9th St., Waukegan, Illinois

SURFACE ELEVATION +754

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
	1	ST			"A"
					"B"
	2	ST			Silty clay with pockets of light gray silt, trace to some sand, trace shale & gravel - light brown & gray - hard (CL)
	3	DL			
	4	ST			
		PA			
10.0	5	ST			Silty clay, with thin horizontal layers of sand, trace sand & gravel - gray - very tough (CL)
		PA			
	6	ST			
		PA			
20.0	7	ST			
		PA			
	8	ST			
		PA			
30.0	9	ST			
		PA			
	10	ST			
		PA			
40.0	11	SS			Silty, clayey, gravelly sand - gray - dense - saturated (SC)
	11A	SS			
		PA			
	12	ST			Silty clay, trace sand & gravel - gray-brown to gray - tough to very tough (CL)
50.0		PA			
52.0	13	ST			
					End of Boring
					"A": Silty & clayey topsoil, trace roots - black (OL-OH)
					"B": Silty clay, trace roots, gravel & sand - brown & slightly gray very tough (CL-CH)
					1½" ϕ PVC wellpoint & screen installed A.B.

UNIT DRY WT. LBS./FT.³

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT ✕ — WATER CONTENT ⊗ — LIQUID LIMIT △ (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)

*Calibrated Penetrometer

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES; HOWEVER, THE TRANSITION MAY BE GRADUAL.

WL 39'	WS ☐ WD	BORING STARTED 11-25-74	SOIL TESTING SERVICES, INC.
WL	BCR ACR	BORING COMPLETED 11-25-74	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL 40.0 hr. A.B. 23.4 on 11-27-74		RIG SB FOREMAN JD	APPROVED BY CWR STS JOB NO. 13590-A

BL:1

PROJECT NAME: Proposed Sanitary Landfill

B-39

ARCHITECT-ENGINEER: Andrews Engineering

B-11

SITE LOCATION:) St. East of Green Bay Rd., Winthrop Harbor, Il.

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION ±739	
0	1	ST			Clayey topsoil, little silt, trace sand and roots - dark brown (OH)	
	1A					
	2	ST			Silty clay, trace sand and roots - light brown and gray, very stiff (CL-CH)	
5.0	3	ST			"A"	
		PA				
	4	ST			Silty clay, trace gravel, sand and shale - brown to grayish brown, hard to very stiff (CL)	
		PA				
	5	ST				
		FT				
15.0					Silty clay, trace gravel, sand and shale - gray, hard (CL) with small pockets of light gray silt	
	6	ST				
		FT				
20.0	7	ST				
		FT				
25.0					Silty clay, little sand, trace gravel and shale - gray, very stiff to hard (CL) with a pocket of gravel at 30 ft.	
	8	ST				
		FT				
30.0						
	9	ST				
35.0						

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)

Continued on next page

ECT NAME
Proposed Sanitary Landfill B-40

ARCHITECT-ENGINEER
Andrews Engineering

LOCATION
SP East of Green Bay Rd., Winthrop Harbor, Il.

SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
				SURFACE ELEVATION +739	
				Continued from previous page	
10	ST			Silty clay, little sand, trace gravel and shale - gray, very stiff to hard (CL) with a pocket of gravel at 30 ft.	
	FT				
11	ST				
UA				Silt, trace sand - gray, moist (ML)	
12	ST			Silty clay, trace gravel, sand and shale - gray, hard (CL-ML)	
	FT				
13	ST			Silty clay, trace gravel, sand and shale - gray, hard (CL)	
				END OF BORING	
				Note: Borehole cement grouted upon completion	
				Casing 10 ft. of 4"	
				"A" Silty clay, trace gravel, sand and shale - brown & slightly gray, hard to very stiff (CL) with a few moist horizontal sand seams	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

*CALIBRATED PENETROMETER

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WATER ering to 12' WK XX NCK	BORING STARTED 11/30/79	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD
BCR ACR	BORING COMPLETED 11/30/79	NORTHBROOK ILLINOIS 60062
	RIG Auger/ Rotary FOREMAN Lehtin	APP'D BY CWP/ba STS JOB NO. 17590-H

OWNER: Browning-Ferris Industries B-41

LOG OF BORING NO.: B-12 745

PROJECT NAME: Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Andrews Engineering

SITE LOCATION: 9th St. East of Green Bay Rd., Winthrop Harbor, Ill.

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
					SURFACE ELEVATION ±740
	1	ST			Clayey topsoil, little silt, trace roots - dark brown (OH)
	1A				
	2	ST			Silty clay, trace gravel, sand, topsoil and roots - dark brown & gray, very stiff (CL-CH)
5.0		PA			
	3	ST			Silty clay, trace gravel, sand & shale - brown and gray, hard (CL)
		PA			
	4	ST			Silt, little sand, trace clay - brown, moist (ML)
10.0	4A				
	5	ST			Silty fine to medium sand, little clay, trace gravel and coarse sand - brown to gray, moist (SM)
	5A				
15.0					Silty clay, trace gravel, sand and shale - gray, very stiff (CL)
	6	ST			
		FT			
20.0					Silt, little clay, trace sand - gray, moist (ML-CL)
	7	ST			
	7A				
					Silty clay, trace gravel, sand and shale - brownish gray, stiff to very stiff (CL)
25.0					
	8	ST			
		FT			
					Silty clay, little sand, trace gravel and shale - gray, hard (CL) with horizontal silt seams
30.0					
	9	ST			
33.0		FT			

UNIT DRY WT. LBS./FT.³

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

Continued on next page

OWNER: Browning-Ferris Industries B-42

LOG OF BORING NUMBER: B-12 (Cont'd)

PROJECT NAME: Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Andrews Engineering

SITE LOCATION: 9th St. East of Green Bay Rd., Winthrop Harbor, Il.

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION ~~574~~ ±740	
					Continued from previous page	
15.0					Silt, little clay - gray, saturated (ML)	
	10	ST				
		FT				
9.0					Silty clay, trace gravel, sand and shale - brownish gray to gray, hard to very stiff (CL)	
	11	ST				
		FT				
	12	ST				
		FT				
2.0	13	ST				
					END OF BORING	
					Note: Borehole cement grouted upon completion	
					Casing 10 ft. of 4"	

Unconfined Compressive Strength Tons/Ft.² (1, 2, 3, 4, 5)

Plastic Limit % (X) — Water Content % (C) — Liquid Limit % (Δ) (10, 20, 30, 40, 50)

Standard Penetration (⊗) — Blows/Ft. (10, 20, 30, 40, 50)

*CALIBRATED PENETROMETER

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES, IN-SITU THE TRANSITION MAY BE GRADUAL

Dry Drill Augering to 12'

WL — BCR — ACR

WL

BORING STARTED 11/30/79

BORING COMPLETED 11/30/79

RIG Auger/Rotary FOREMAN Lentine

SOIL TESTING SERVICES, INC.
111 PFINGSTEN ROAD
NORTHBROOK ILLINOIS 60062

APP'D BY CWP/ba STS JOB NO. 17590-n

B-43

OWNER: Browning-Ferris Industries

LOG OF BORING NUMBER: B-43

PROJECT NAME: Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Andreas Engineering

SITE LOCATION: 5th St. East of Green Bay Rd., Winthrop Harbor, IL

SURFACE ELEVATION: 752

ELEVATION - DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
	1	ST			Clayey topsoil, little silt, trace roots -black (CL)
	2	ST			Silty clay, trace gravel, sand and shale -brown, gray & brown- hard (CL) with pockets of light gray silt in upper portion
	3	ST			
	4	ST			Silty clay, little sand, trace gravel & shale -brown & sl. gray- hard to very stiff (CL)
	5	ST			
13.0		FT			
	6	ST			
		FT			
20.0		FT			Silty clay, trace gravel, sand and shale -brownish gray- very stiff (CL)
	7	ST			
25.0		FT			
	8	ST			
30.0		FT			
32.0	9	ST			
					Continued on Next Page

UNIT DRY WT. LBS./FT.³

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (0 1 2 3 4 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)

OWNER: Browning-Ferris Industries
PROJECT NAME: Proposed Sanitary Landfill
LOG OF BORING NUMBER: B-13 (cont.)
ARCHITECT-ENGINEER: Andrews Engineering
SITE LOCATION: 9th St. East of Green Bay Rd., Winthrop Harbor, IL

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION ± 752	
32.0					Continued from Previous Page	
		FT			Silty clay, trace gravel, sand and shale -brownish gray- very stiff (CL)	
35.0	10	ST				
		FT				
		FT			Clayey silt, little sand, trace shale -brownish gray- moist (ML-CL)	
40.0	11	ST				
	11A				Silty clay, little sand, trace gravel & shale -brownish gray- very stiff (CL)	
		FT				
45.0	12	ST				
		FT				
50.0	13	ST				
52.0					END OF BORING	
					NOTE: Bore hole cement grouted upon completion	
					Casing used: 10' of 4" Ø	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.²: 1 2 3 4 5
PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %: 10 20 30 40 50
STANDARD PENETRATION BLOWS/FT: 10 20 30 40 50

*CALIBRATED PENETROMETER

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES HOWEVER THE TRANSITION MAY BE GRADUAL

WL — WS ▽ WD	BORING STARTED 12/3/79	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL 10' BCR 10' ACR	BORING COMPLETED 12/3/79	
WL	RIG Rotary FOREMAN Lehtinen	APP'D BY C.P. STS JOB NO. 17590-H

OWNER: Browning-Ferris Industries B-45

LOG OF BORING NUMBER: B-14

PROJECT NAME: Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Andreas Engineering

SITE LOCATION: 9th St. East of Green Bay Rd., Winthrop Harbor, IL

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.²

PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT.

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION +741	
	1	ST			Clayey topsoil, little silt, trace roots -black (OH-Fiberous);	
5.0	2	ST			Silty clay, trace sand & roots - brown gray & si. dk. gray- stiff to v. stiff (CL-CH)	
10.	3	ST			Silty clay, little sand, trace gravel & shale -brown & gray- hard (CL) with irregular seams of silt	
	4	ST				
	5	ST				
		PR				
		PR			Silty clay, trace gravel, sand and shale -gray- very stiff (CL)	
	6	ST				
20.0		FT				
	7	ST				
		FT				
25.0		FT			Silty clay, trace gravel, sand and shale -brownish gray- very stiff to hard (CL)	
	8	ST				
30.0		FT				
	9	ST				
35.0		FT				
					Continued on Next Page	

Page 1 of 2

OWNER: Browning-Ferris Industries

B-46

LOG OF BORING NUMBER: B-14 (Cont'd)

PROJECT NAME: Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Andrews Engineering

SITE LOCATION: 9th St. East of Green Bay Rd., Winthrop Harbor, Il

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION [illegible]	
					Continued from Previous Page	
55.0	10	ST			Fine to med. sand, trace clay lumps c. sand & silt -gray- saturated (SP)	
		FT			Boulder - Driller's observation	
	11	ST			Silt, little sand, trace clay and gravel -gray- saturated (ML)	
50.0		FT				
	12	ST			Silt, trace clay & sand -gray- moist (ML) with thin layers of silty clay	
		FT				
45.0		FT			Silty clay, little sand, trace gravel & shale -gray- hard (CL)	
	13	ST				
		FT				
39.0						
37.0	14	ST				
					END OF BORING	
					NOTE: Bore hole cement grouted upon completion	
					Casing used: 10' of 4" Ø	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.²: 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %: 10 20 30 40 50

STANDARD PENETRATION BLOWS/FT.: 10 20 30 40 50

*CALIBRATED PENETROMETER

Page 2 of 2

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES, IN-SITU THE TRANSITION MAY BE GRADUAL

WL 6.5' WS [illegible]	BORING STARTED 12/3/79	SOIL TESTING SERVICES, INC.	
WL 10' BCR 4.0' ACR	BORING COMPLETED 12/3/79	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062	
WL	RIG Auger/Rotary FOREMAN Lehtinen	APP'D BY CHP	STS JOB NO. 17590-H

OWNER: Browning-Ferris Industries | B-15 744

PROJECT NAME: Proposed Sanitary Landfill | B-47 | ARCHITECT-ENGINEER: Andrews Engineering

SITE LOCATION: 9th St. East of Green Bay Rd., Winthrop Harbor, Il.

SURFACE ELEVATION: ~~EST~~ 744

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
	1	ST			"A"
	1A				"B"
	2	ST			Silty clay, trace gravel and sand - brown and gray, hard (CL) with pockets of light gray silt
5.0	3	ST			Silt, trace clay and sand - brown, moist (ML)
	3A				
	4	ST			Silty clay, trace gravel and sand - brown and slightly gray, hard (CL) with irregular seams of silt
10.0	5	ST			Silty clay, little sand, trace gravel and shale - brown to brownish gray, hard to very stiff (CL)
		FT			
15.0	6	ST			
		FT			
20.0					Silty clay, trace gravel, sand and shale - gray to brown, very stiff (CL)
	7	ST			
		FT			
25.0	8	ST			
		FT			
30.0	9				
35.0					

UNIT DRY WT. LBS./FT.³

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² — 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT. — 10 20 30 40 50

Continued on next page

OWNER: Browning-Ferris Industries — B-48

LOG OF BORING NUMBER: B-15 (Cont'd)

PROJECT NAME:)posed Sanitary Landfill

ARCHITECT-ENGINEER: Andrews Engineering

SITE LOCATION: th St. East of Green Bay Rd., Winthrop Harbor, Il.

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION +744	
					Continued from previous page	
5.0	10	ST			Clayey fine sand, little silt, trace coarse sand - gray, saturated (SC)	
8.0		FT			Sandy clay, little silt, trace gravel - gray, wet (CL)	
	12	ST			Silty fine sand, trace clay lumps - brownish gray, moist (SM)	
	12A				Sandy silt, little clay, trace gravel - brownish gray, moist (ML)	
25.0	13	ST				
		FT				
30.0					Silt, little very fine sand, trace clay - brownish gray, moist (ML)	
32.0	14	ST				
					END OF BORING	
					Note: Borehole cement grouted upon completion	
					Casing 10 ft. of 4 in.	
					"A" Clayey topsoil, little silt, trace roots - dark brown (OH)	
					"B" Silty clay, trace gravel, sand and roots - brown, very stiff (CL-CH)	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION — BLOWS/FT. (10, 20, 30, 40, 50)

*CALIBRATED PENETROMETER

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES, IN-SITU THE TRANSITION MAY BE GRADUAL

7.0' WS XXXb — BORING STARTED 12/5/79

WL 12' BCR 12' ACR — BORING COMPLETED 12/5/79

WL — RIG Auger/Rotary — FOREMAN Lehtinen — APP'D BY CWP/ba — STS JOB NO. 17590-H

SOIL TESTING SERVICES, INC.
111 PFINGSTEN ROAD
NORTHBROOK ILLINOIS 60062

OWNER: Browning-Ferris Industries

B-49

LOG OF BORING NUMBER: B-16

PROJECT NAME: Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Andrews Engineering

SITE LOCATION: 9th St. East of Green Bay Rd., Winthrop Harbor, Ill.

SURFACE ELEVATION: ~~1751~~

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
	1	1ST			"A"	
	1A				Silty clay, trace gravel, sand & roots - brown, very stiff (CL-CH)	
	2	ST				
2.0		PA			Silty clay, little sand, trace gravel and roots - brown and slightly gray, hard (CL)	
	3	ST				
		PA			Silty clay, trace gravel, sand and shale - brown and slightly gray, hard (CL) with irregular seams and pockets of silt	
	4	ST				
10.0		PA				
	5	ST				
	5A				Silt, trace clay and sand - grayish brown, moist (ML)	
15.0					Silty clay, trace gravel, sand and shale - gray to brownish gray, very stiff to hard (CL)	
	6	ST				
		FT				
20.0						
	7	ST				
		FT				
25.0						
	8	ST				
		FT				
30.0						
	9	ST				
		FT				
35.0						

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.²: 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %: 10 20 30 40 50

STANDARD PENETRATION — BLOWS/FT.: 10 20 30 40 50

Continued on next page

OWNER: Browning-Ferris Industries B-50

LOG OF BORING NUMBER: B-16 (Cont'd)

PROJECT NAME: Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Andrews Engineering

SITE LOCATION: 9th St. East of Green Bay Rd., Winthrop Harbor, Il.

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION ±751	
					Continued from previous page	
5.0	10	ST			Silty clay, trace gravel, sand and shale - gray to brownish gray, very stiff to hard (CL)	
		FT				
10.0	11	ST			Silty clay, trace gravel, sand and shale - gray, hard (CL) with horizontal silt and fine sand seams	
	11A				Silt, trace clay - brownish gray, moist (ML)	
25.0	12	ST			Clayey silt, little fine sand, trace gravel - gray (ML-CL) with horizontal sand seams	
		FT				
30.0	13	ST			Silty clay, trace gravel, sand and shale - gray, very stiff (CL) with horizontal seams of very fine sand	
52.0					END OF BORING	

Note: Borehole cement grouted upon completion

Casing 10ft. of 4 in ϕ

"A" Silty topsoil, trace clay, sand and roots - dark brown, moist (OL) with layer of dark brown silt

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² — 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

10 20 30 40 50

STANDARD PENETRATION — BLOWS/FT. — 10 20 30 40 50

*CALIBRATED PENETROMETER

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES, HOWEVER THE TRANSITION MAY BE GRADUAL

WS ▽ WD

WS 8.0' BCR 8.0' ACR

WL

BORING STARTED 12/5/79

BORING COMPLETED 12/5/79

RIG Rotary/Auger FOREMAN Lehtinen

SOIL TESTING SERVICES, INC.
111 PFINGSTEN ROAD
NORTHBROOK ILLINOIS 60062

APP'D BY CWP/ba

STS JOB NO 17590-H

OWNER	LOG OF BORING NUMBER
Browning-Ferris Industries	B-17
PROJECT NAME	**ARCHITECT-ENGINEER**
Proposed Sanitary Landfill	Andress Engineering

SITE LOCATION
9th St. East of Green Bay Rd., Winthrop Harbor, IL

SURFACE ELEVATION ± 744

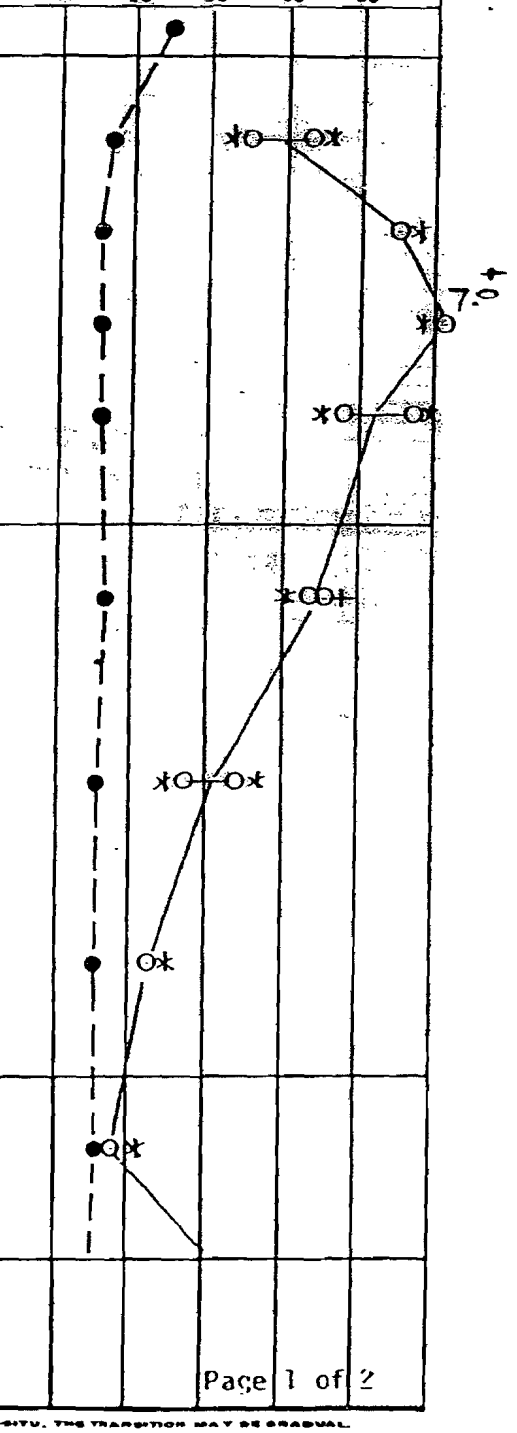
ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
	1	ST			Silty topsoil, little clay, trace sand & roots -dk. brown (CL-CH)
		PA			
5.0	2	ST			Silty clay, trace gravel, sand and shale -brown- very stiff to hard (CL) with occassional silt seams
		PA			
	3	ST			
		PA			
	4	ST			
10.0		PA			
	5	ST			
		FT			
15.0		FT			Silty clay, trace gravel, sand and shale -gray to brownish gray- hard to very stiff (CL)
	6	ST			
		FT			
20.0					
	7	ST			
		FT			
25.0					
	8	ST			
		FT			
30.0		FT			Clayey silt, little sand, trace gravel -brownish gray- saturated (ML-CL)
	9	ST			
34.0		FT			
					Continued on Next Page

UNIT DRY WT. LBS/FT.³

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES AS IN-SITU, THE TRANSITION MAY BE GRADUAL.

BL: 2

OWNER: Browning-Ferris Industries

LOG OF BORING NUMBER: B-28-17 (cont.)

PROJECT NAME: Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Andrews Engineering

SITE LOCATION: 9th St. East of Green Bay Rd., Winthrop Harbor, Il

SURFACE ELEVATION: +14

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
34.0					Continued from Previous Page	
35.0	TD	FT ST FT			Silty clay, trace gravel, sand and shale -gray- hard (CL) with horizontal sand seams	
40.0	TT	FT ST FT			Sandy silt, trace clay -brownish gray- (ML)	
45.0	TZ	FT ST FT			Silty fine sand -brownish gray- moist (SM)	
50.0		FT ST			Sandy silt, trace clay -gray- saturated (ML)	
					END OF BORING NOTE: Bore hole cement grouted upon completion Casing used: 10' of 4" Ø	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

*CALIBRATED PENETROMETER

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WB ⎓ WD

WL 9' SCR 9' ACR

WL

BORING STARTED 12/4/79

BORING COMPLETED 12/4/79

RIG Auger/Rotary FOREMAN Lehtinen

SOIL TESTING SERVICES, INC.
111 PFINGSTEN ROAD
NORTHBROOK ILLINOIS 60062

APP'D BY CHP

STS JOB NO 17590-H

OWNER: Browning-Ferris Industries (B-53)

LOG OF BORING NUMBER: B-18 (735)

PROJECT NAME: Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Andrews Engineering

SITE LOCATION: 9th St. East of Green Bay Rd., Winthrop Harbor, Il.

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT.³
					SURFACE ELEVATION ± 747	
	1	ST			Silty topsoil, little clay, trace sand & roots - dark brown (OL)	
5.0	2	ST			Silty clay, trace gravel, sand & roots - brown and gray, very stiff (CL-CH)	
	3	ST				
10.0	4	ST			Silty clay, trace gravel, sand & shale - brown and slightly gray, hard (CL)	
	5	ST				
15.0	6	ST			Silty clay, trace gravel, sand & shale - gray, very stiff (CL)	
20.0	7	ST			Silty clay, trace gravel, sand & shale - gray, very stiff (CL-ML) with horizontal silt seams	
	7A				Silt, trace clay and sand - gray, saturated to moist (ML) with horizontal sand seams	
25.0	8	ST				
30.0	9	ST			Silty clay, trace gravel, sand & shale - gray to brownish gray, very stiff (CL)	
35.0						

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)

Continued on next page

OWNER
Browning-Ferris Industries

B-54

LOG OF BORING NUMBER
B-18(Cont'd)

PROJECT NAME
Proposed Sanitary Landfill

ARCHITECT-ENGINEER
Andrews Engineering

SITE LOCATION
th St. East of Green Bay Rd., Winthrop Harbor, Il.

SURFACE ELEVATION ±747

DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					Continued from previous page	
35.0	10	ST			Silty clay, trace gravel, sand & shale - gray to brownish gray, very stiff (CL)	
		FT				
39.0	11	ST			Silty clay, trace gravel, sand & shale - gray, very stiff (CL-ML) with irregular silt and fine sand seams	
		FT				
45.0	12	ST			Clayey fine to coarse sand, little gravel & silt, trace shale - gray, moist and wet (SC)	
		FT				
50.0	13	ST			Silty clay, trace gravel, sand & shale - gray, very stiff (CL) with horizontal sand seams	
					END OF BORING	

Note: Borehole cement grouted after completion
Casing 10 ft. of 4 in.

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.²
1 2 3 4 5
PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %
10 20 30 40 50
STANDARD PENETRATION BLOWS/FT
10 20 30 40 50

*CALIBRATED PENETROMETER

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES, HOWEVER THE TRANSITIONS MAY BE GRADUAL.

WS or WD | BORING STARTED 12/4/79
10' BCR 10' ACR | BORING COMPLETED 12/4/79
WL | RIG Rotary FOREMAN Lehtinen

SOIL TESTING SERVICES, INC.
111 PFINGSTEN ROAD
NORTHBROOK ILLINOIS 60062

APP'D BY CWP/ba | STS JOB NO. 17590-H

OWNER: Browning-Ferris Industries

B-19

PROJECT NAME: Proposed Sanitary Landfill

B-55

ARCHITECT-ENGINEER: Andrews Engineering

SITE LOCATION: 9th St. East of Green Bay Rd., Winthrop Harbor, Il.

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION ~~+3~~ +3	
	1	ST			"A"	
		PA			"B"	
	2	ST			Silty clay, trace gravel and sand - brown and slightly gray, very stiff (CL-CH)	
-3.0		PA				
	3	ST			Silty clay, trace gravel, sand and shale - brown and slightly gray, hard (CL)	
		PA				
	4	ST				
-10.0		PA				
	5	ST			Silty clay, trace gravel, sand and shale - grayish brown, hard to very stiff (CL) with seams of silt	
		FT				
15.0						
	6	ST				
		FT				
20.0					Silty clay, trace gravel, sand and shale - gray, very stiff to stiff (CL)	
	7	ST				
		FT				
25.0						
	8	ST				
		FT				
30.0					Silty clay, trace gravel, sand & shale - brownish gray, stiff to very stiff (CL)	
	9	ST				
		FT				
35.0						

Continued on next page

OWNER: Browning-Ferris Industries B-56

LOG OF BORING NUMBER: B-19 (Cont'd)

PROJECT NAME: Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Andrews Engineering

LOCATION: 9th St. East of Green Bay Rd., Winthrop Harbor, Il.

ELEVATION / DEPTH	SAMPLE #	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION 1743	
					Continued from previous page	
35.0	10	ST			Silty clay, trace gravel, sand & shale - brownish gray, stiff to very stiff (CL)	
		FT				
40.0	11	ST				
		FT				
45.0	12	ST			Clayey silt, trace sand - gray, moist (ML-CL) with thin layers of plastic clay	
		FT				
50.0	13	ST			Silty clay, little sand, trace gravel and shale - gray, hard (CL)	
52.0					END OF BORING	

Casing 10 ft. of 4 in. ϕ

"A" Silty topsoil, little clay, trace sand and roots - black (OL-OH)

"B" Silty clay, trace sand and roots - brown to medium dark gray, very stiff (CL-CH)

Note: Borehole cement grouted after completion

*CALIBRATED PENETROMETER

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES, HOWEVER THE TRANSITION MAY BE GRADUAL

WL WB ▽ WD

10' BCR 10' ACR

WL

BORING STARTED 12/4/79

BORING COMPLETED 12/4/79

RIG Auger-Rotary FOREMAN Lehtinen

SOIL TESTING SERVICES, INC.
111 PFINGSTEN ROAD
NORTHBROOK ILLINOIS 60062

APP'D BY CWP/ba STS JOB NO. 17590-H

OWNER: Browning-Ferris Industries

B-57

LOG OF BORING NUMBER: B-20

PROJECT NAME: Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Andrews Engineering

SITE LOCATION: 9th St. East of Green Bay Rd., Winthrop Harbor, Il.

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
					SURFACE ELEVATION 745 "A"
	1	ST			Silty clay, little sand, trace roots - brown and slightly dark gray, very stiff (CL)
		PA			
	2	ST			Silty clay, trace sand and roots - brown and slightly dark gray, hard (CL-CH)
5.0		PS			
	3	ST			Silty clay, little sand, trace gravel and shale - brown & slightly gray, very stiff to hard (CL-ML)
		PS			
	4	ST			Silty clay, trace sand - brown very stiff (CL)
9.0		PS			
	5	ST			
	6A				Silty clay, trace gravel, sand and shale - brown and slightly gray, hard (CL-CM)
11.2					Silty clay, trace gravel, sand and shale - gray & brown, very stiff (CL)
	6	ST			
	6A				Sandy clay, little silt, trace gravel & shale-brown, hard (CL) with irregular pockets and seams of silt and fine sand
20.0					Silty clay, trace gravel, sand and shale - brownish gray, very stiff (CL)
	7	ST			
		FT			Sand & gravel-driller's observation
25.0					Silty clay, trace gravel, sand and shale - brownish gray, very stiff (CL)
	8	ST			
		FT			
30.0					Silty clay, trace gravel, sand and shale - gray, stiff (CL-ML)
	9	ST			
33.0		FT			

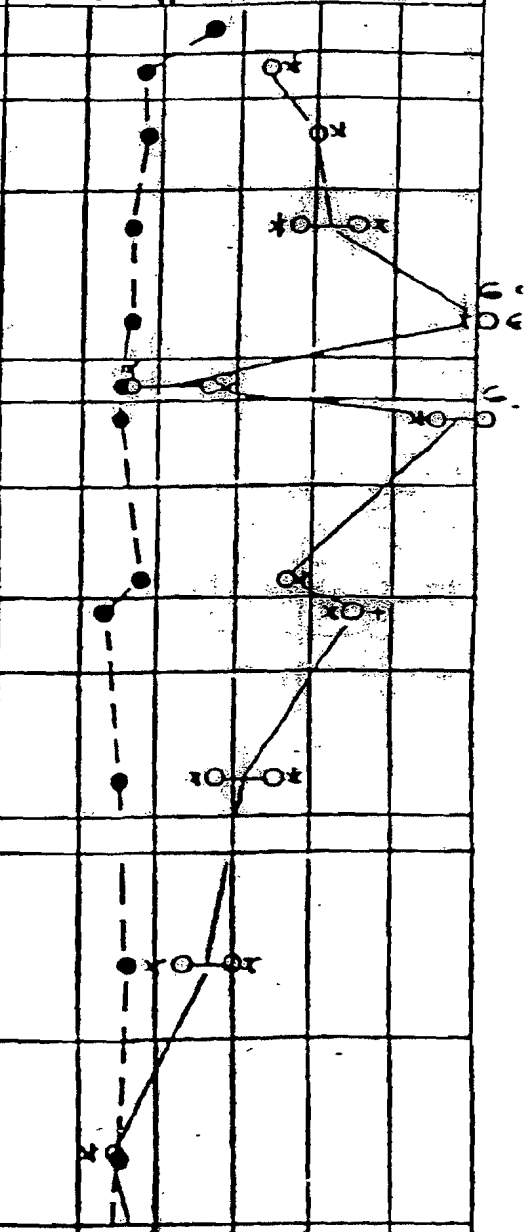
UNIT DRY WT. LBS./FT.³

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50



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OWNER: Browning-Ferris Industries — B-58

LOG OF BORING NUMBER: B-20 (Cont'd)

PROJECT NAME: Proposed Sanitary Landfill

ARCHITECT-ENGINEER: Andrews Engineering

LOCATION: 9th St. East of Green Bay Rd., Winthrop Harbor, Il.

SURFACE ELEVATION: +745

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					Continued from previous page	
33.0						
35.0	10	ST			Silty clay, little sand, trace gravel and sand - brownish gray, very stiff (CL)	
	10A				Silty fine sand, trace clay - brownish gray, moist and wet (SM)	
41.0						
	11	ST			Silty clay, trace gravel, sand and shale - gray, very stiff to hard (CL)	
		FT				
45.0						
	12	ST				
		FT				
50.0						
	13	ST				
52.0						
					END OF BORING	
					Note: Borehole cement grouted upon completion Casing 10 ft. of 4 in. ϕ	
					"A" Silty topsoil, little clay, trace roots - dark brown (OL)	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² — 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

10 20 30 40 50

STANDARD PENETRATION — BLOWS/FT. — 10 20 30 40 50

*CALIBRATED PENETROMETER

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES HOWEVER THE TRANSITION MAY BE GRADUAL

WS ☐ WD | 10' SCR | 10' ACR | WL

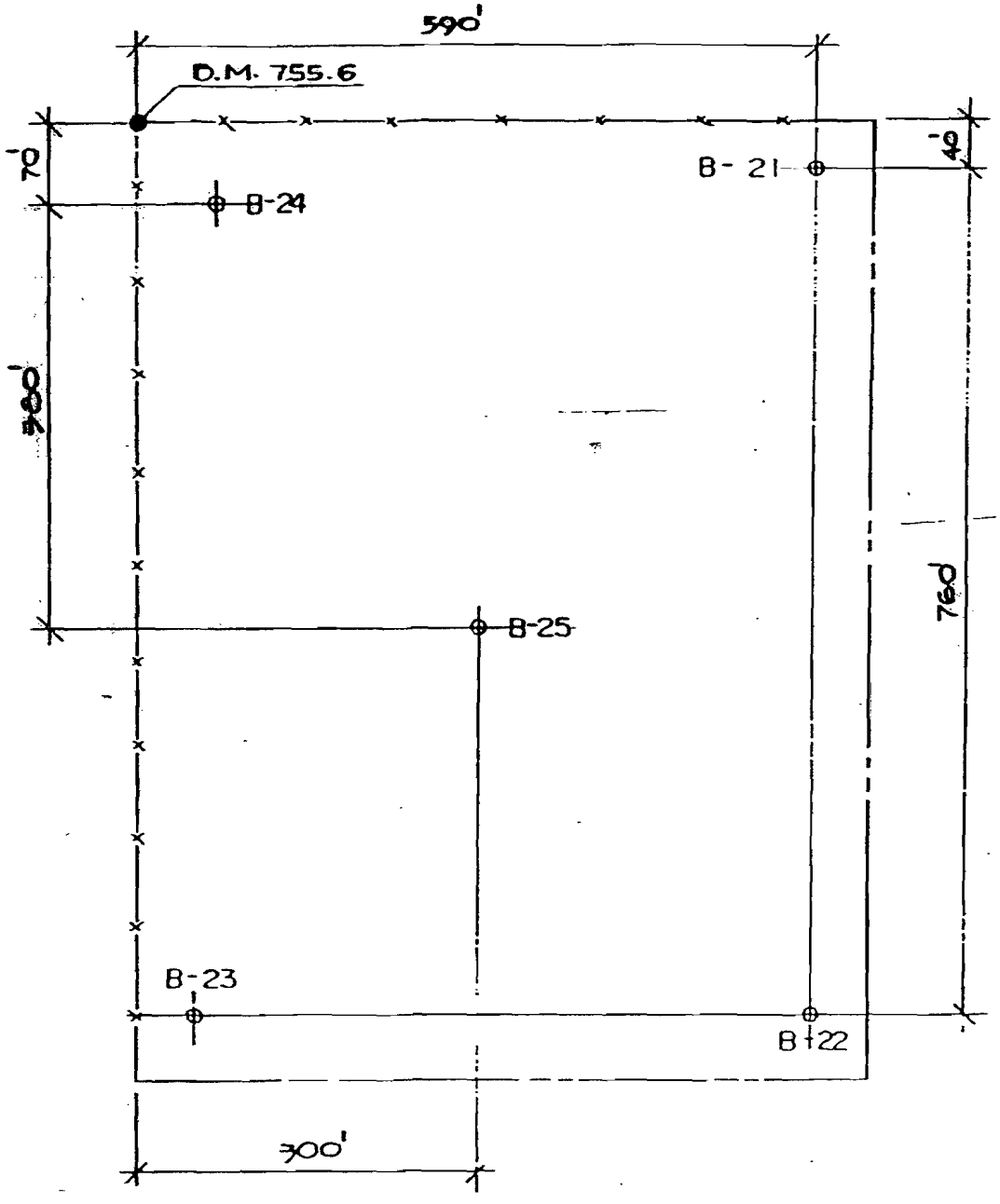
BORING STARTED 12/3/79

BORING COMPLETED 12/4/79

RIG Auger/Rotary FOREMAN Lehting APP'D BY CAP/ba

SOIL TESTING SERVICES, INC.
111 PFINGSTEN ROAD
NORTHBROOK ILLINOIS 60062

STS JOB NO. 17590-H



NOTE :
BORINGS LOCATED IN FIELD BY THE CLIENT.

SOIL BORING LOCATION DIAGRAM
PROPOSED WASTE DISPOSAL SITE for BROWNING—FERRIES INDUSTRIES - 9th ST. & GREEN BAY ROAD
WINTHROP HARBOR ILLINOIS

SOIL TESTING SERVICES, INC.
111 PFINGSTEN ROAD
NORTHBROOK ILLINOIS 60062

APPR.	CWP	12-8-1981	17590-M

OWNER	LOG OF BORING NUMBER
Browning-Ferris Industries	B-21
PROJECT NAME	**ARCHITECT-ENGINEER**
Confidential Study	Andrews Engineering Co.
SITE LOCATION	
9th St. and Green Bay Rd., Winthrop Harbor, IL	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION 743.90	
	1	ST			Silty clay, little fine sand, trace gravel & shale -gray- very stiff to hard (CL)	117
		HS				
3.0		HS			Silty clay, little sand, trace shale -brown & sl. gray (CL) Sample 3: Sl. rust brown	
	2	ST				113
		HS				
10.0		HS				
	3	ST				121
		HS				
15.0		HS			Silty clay, little sand, trace gravel & shale -brownish gray to gray- very stiff to hard (CL)	
	4	ST				113
		HS				
20.0						
	5	ST				119
	6	ST				118
25.0	7	ST				118
	8	ST				119
	9	ST				121
30.0	10	ST				118
	11	ST				119
35.0	12	ST				121
36.0					END OF BORING	
					Continued On Next Page.	

*CALIBRATED PENETROMETER

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES; HOWEVER, THE TRANSITION MAY BE GRADUAL.

OWNER: Browning-Ferris Industries

LOG OF BORING NUMBER: B-21 (cont.)

PROJECT NAME: Confidential Study

ARCHITECT-ENGINEER: Andrews Engineering Co.

SITE LOCATION: 9th St. and Green Bay Rd., Wintrhop Harbor, IL

ELEVATION / DEPTH | SAMPLE NO. | SAMPLE TYPE | SAMPLE DISTANCE | RECOVERY | DESCRIPTION OF MATERIAL | UNIT DRY WT. LBS./FT.³

UNCONFINED COMPRESSIVE STRENGTH TONS/FT² (1 2 3 4 5)

PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %

(10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT (10 20 30 40 50)

SURFACE ELEVATION

Continued from Previous Page

Bore hole backfilled with Portland cement-bentonite grout mix on 12-3-81

Date	WL	WCI
11-19-81	14'	
11-20-81	4.5'	26'2'
11-27-81	1.3'	23'
12-3-81	1.9'	23.7'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

WL 5.0'	WS or WD	BORING STARTED 11/18/81	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL	BCR	ACR	BORING COMPLETED 11/18/81
WL 33'	AB	RIG Auger FOREMAN Pierre	APP'D BY LKA/ms STS JOB NO. 17590-M

OWNER: Browning-Ferris Industries

LOG OF BORING NUMBER: B-22

PROJECT NAME: Confidential Study

ARCHITECT-ENGINEER: Andrews Engineering Co.

SITE LOCATION: 9th St. and Green Bay Rd., Winthron Harbor, IL

SURFACE ELEVATION: 749.15

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
	1	ST			Silty clay, little sand, trace gravel -lt. brown to brown- hard (CL-Fill) Sample 2: Trace sand, horizontal silt seams	118
		HS				
5.0	2	ST				117
		HS				
10.0		HS			Silty clay, little sand, trace gravel -brown- hard (CL)	
	3	ST				120
	3A				Silty clay, trace gravel, sand and shale -brownish gray- v. stiff to hard (CL) Sample 3A: Horizontal silt seams	122
		HS				
		HS			Silty clay,little sand, trace gravel shale -brownish gray to gray- stiff to very stiff (CL)	&
15.0	4	ST				116
		HS				
20.0	5	ST				117
		HS				
25.0					Silty fine to c. sand, trace gravel & clay -gray- moist to wet (SM) Sample 7: Top 4" silty clay -gray	
	6	ST				118
	6A				Silt, trace clay -gray- (ML)	
	7	ST				
	7A					
30.0	7B				Silty fine to coarse sand, little clay, trace gravel -gray- wet (SM) Sample 8: trace clay lumps, horiz. silt seams - top ½" Silty clay	
	8	ST				
	9	ST			Silt -gray- stiff - wet (ML)	119

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)

7.0+ 7.0+ 7.0

Continued on Next Page

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

OWNER: Browning-Ferris Industries

LOG OF BORING NUMBER: B-22 (cont.)

PROJECT NAME: Confidential Study

ARCHITECT-ENGINEER: Andrews Engineering Co.

SITE LOCATION: 9th St. and Green Bay Rd., Winthrop Harbor, IL

ELEVATION / DEPTH	SAMPLE NO	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5) / PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % (10 20 30 40 50) / STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)
SURFACE ELEVATION							
33.0					Continued from Previous Page		
35.0	10	ST / HS			Silty clay, trace sand & shale - brownish gray- stiff (CL) Sample 11: Pocket f-m sand, greenish gray		14
	11	ST / HS					15
	12	ST / HS			Silty clay, trace gravel, sand and shale -brownish gray- soft (CL)		15
40.0	13	ST			"A"	128	
41.0	13A / 13B				Clayey fine to coarse sand, little silt, trace gravel -gray- wet (SC)	121	

END OF BORING

*CALIBRATED PENETROMETER

"A" - Silty clay, trace sand and shale -gray- very stiff (CL)
Sample 13A: Seams silt-gray

Bore hole backfilled with Portland cement-bentonite grout mix on 12-3-81

Date	WL	WCI
11-20-81	23.5'	24'
11-27-81	22'9"	22.9'
12-3-81	22'9"	22.9'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

WL 27'	WS or WD	BORING STARTED 11/19/81	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL	BCR	ACR	BORING COMPLETED 11/19/81
WL 28'	AB	RIG Auger FOREMAN Pierre	APP'D BY LKA/ms STS JOB NO. 17590-M

IER	LOG OF BORING NUMBER
Browning-Ferris Industries	B-23
PROJECT NAME Confidential Study	**ARCHITECT-ENGINEER** Andrews Engineering Co.

SITE LOCATION 9th St. and Green Bay Rd., Winthrop Harbor, IL

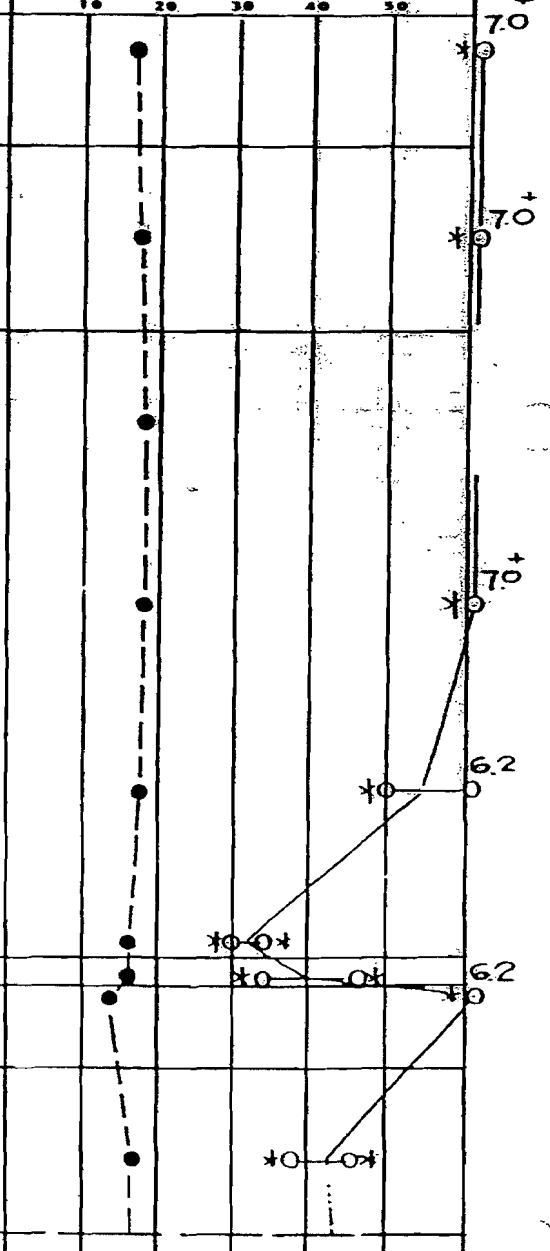
UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)

SURFACE ELEVATION 771.17

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
	1	ST			Silty clay, little sand, trace gravel -brown- hard (ML-Fill)	114
		HS				
5.0		HS			Sandy clay, little silt, trace gravel -brown & sl. medium dark gray- hard (CL)	
	2	ST			Sample 2: Seams of light gray silt	121
		HS				
10.0		HS			Silty clay, little to trace sand, trace shale -brown to grayish brown- very stiff to hard (CL) Sample 5: Pocket of silt, trace gravel, shale & mica	
	3	ST				113
		HS			Sample 4: Trace gravel	
15.0						
	4	ST				115
		HS				
20.0						
	5	ST				118
		HS				
25.0					Silty clay, trace gravel, sand and shale -gray- very stiff to hard (CL)	
	6	ST				116
	6A					122
	6B				Silty clay, little sand, trace gravel, shale & mica -lt. brown and gray- hard (CL)	127
		HS				
30.0		HS			Silty clay, trace gravel, sand and shale -gray to brownish gray- very stiff to hard (CL) Sample 9: Horiz. seams of sand	
	7	ST				120
		HS			Samples 10, 12: Little sand	
					Continued on Next Page	



OWNER: Browning-Ferris Industries

LOG OF BORING NUMBER: B-23 (cont.)

PROJECT NAME: Confidential Study

ARCHITECT-ENGINEER: Andrews Engineering Co.

SITE LOCATION: 9th St. and Green Bay Rd., Winthrop Harbor, IL

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION	
23.0					Continued from Previous Page	
35.0		HS			Silty clay, little sand, trace gravel & shale -gray- to brownish gray- very stiff to hard (CL) Sample 9: Horiz. seams of sand	
	8	ST				122
40.0		HS				
	9	ST				127
		HS				
45.0	10	ST				128
	11	ST				126
	12	ST				127
50.0	13	ST				127
	14	ST				130
	15	ST				126
55.0	16	ST				127
	17	ST				126
59.0					END OF BORING Bore hole backfilled with Portland cement-bentonite mix on 12-4-81	

Date	WL	WCI
11-20-81	33.1'	49'
11-27-81	16.9'	37'
12-4-81	15.9'	35.5'

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT (10 20 30 40 50)

*CALIBRATED PENETROMETER

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES; IN-SITU THE TRANSITION MAY BE GRADUAL

WL 29.0' WS or WD	BORING STARTED 11/18/81	SOIL TESTING SERVICES, INC.	
WL BCR ACR	BORING COMPLETED 11/19/81	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062	
WL None AB	RIG Auger FOREMAN Pierre	APP'D BY LKA/ms	STS JOB NO. 17590-M

OWNER: Browning-Ferris Industries

LOG OF BORING NUMBER: B-24

PROJECT NAME: Confidential Study

ARCHITECT-ENGINEER: Andrews Engineering Co.

SITE LOCATION: 9th St. and Green Bay Rd., Winthrop Harbor, IL

SURFACE ELEVATION 752.40

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
	1	ST			Clayey topsoil, little silt, trace roots -dk. brown (OL-Fill)	
	1A					107
		HS			Silty clay, little sand, trace gravel, topsoil & roots -brown and dk. brown- hard (CL-ML-Fill)	
5.0		HS				
	2	ST			Silty clay, little sand, trace brown & gray to grayish brown- hard (CL)	122
		HS			Sample 2: trace roots	
10.0	3	ST				117
		HS				
		HS			Silty clay, trace gravel & sand - brownish gray to gray- stiff (CL)	
15.0	4	ST				
	4A					131
		HS			Silty clay, little sand, trace gravel -gray--very stiff (ML)	
20.0		HS				
	5	ST			Silty clay, trace gravel & sand - gray- very stiff to hard (CL) Sample 7: little sand	117
		HS				
25.0						
	6	ST				118
	6A				Silty clay, trace gravel, sand and shale -gray- stiff (CL)	
30.0	7A	ST			Sample 7A: Hori. seams of fine sand - moist	122
	7B					
	8	ST			Silty clay, trace gravel and sand -gray- very stiff (CL) Sample 8A: Trace shale	

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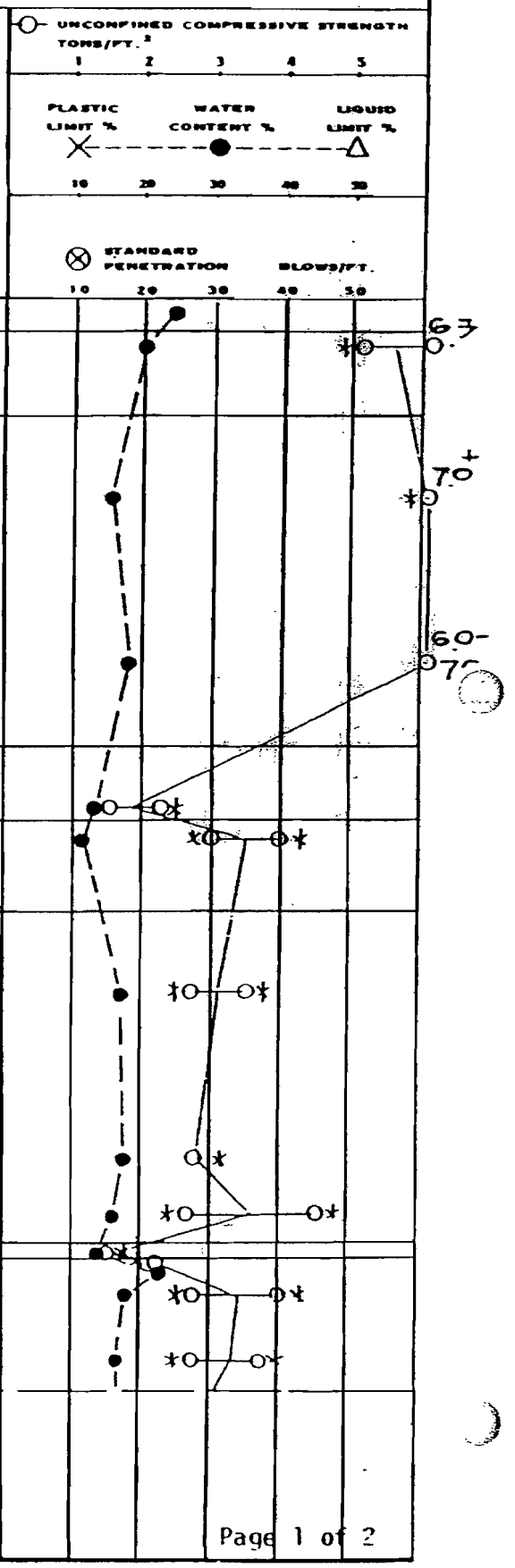

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

OWNER	LOG OF BORING NUMBER
Browning-Ferris Industries	B-24 (cont.)
PROJECT NAME	**ARCHITECT-ENGINEER**
Confidential Study	Andrews Engineering Co.

SITE LOCATION
9th St. and Green Bay Rd., Winthrop Harbor, IL

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION	
33.0					Continued from Previous Page	
35.0	9	ST			Sample 10: Tip ½" silt Sample 9: Little sand	121
	10	ST				121
	10A				Clayey silt, trace gravel and sand -gray- (ML-MH)	
	11	ST				118
40.0	12	ST			Silty clay, trace gravel and sand -gray- stiff to hard (CL) S. 13: tr. sand, tip 1 lg. gravel,	2"
41.0					END OF BORING	

Bore hole backfilled with Portland cement-bentonite grout mix on 12-3-81

Date	WL	HCI
11-18-81	30.5'	
11-20-81	22.0'	35'
11-27-81	0.4'	18.4'
12-3-81	1.3'	18.5'

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT (10 20 30 40 50)

*CALIBRATED PENETROMETER

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

WL None WS or WD	BORING STARTED 11/17/81	SOIL TESTING SERVICES, INC.	
WL BCR ACR	BORING COMPLETED 11/17/81	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062	
WL None AB	RIG Auger FOREMAN Pierre	APP'D BY KA/ms	STS JOB NO. 17590-M

OWNER	LOG OF BORING NUMBER
Browning-Ferris Industries	B-25
PROJECT NAME	**ARCHITECT-ENGINEER**
Confidential Study	Andrews Engineering Co.

SITE LOCATION
9th St. and Green Bay Rd., Winthrop Harbor, IL

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)
PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10 20 30 40 50)
STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION 750.51	
	1	ST			"A"	70
	1A				Clayey topsoil, trace sand & roots -black & sl. brown- very stiff (OL)	
		HS			Silty clay, trace gravel, very fine sand & shale -brown- very stiff (CL-CH)	
5.0						
	2	ST				113
		HS				
		HS			Silty clay, trace gravel, sand and shale -brown- hard (CL)	
10.0						
	3	ST			Sample 3: Irregular seams of silt and clay	117
		HS				
15.0		HS			Silty clay, trace gravel & sand - brown- medium to stiff (CL)	
	4	ST				115
	4A				Silty clay, trace gravel, sand and shale -gray- very stiff to hard (CL) Sample 5: Seams of light gray silt	127
		HS			Sample 7: Horizontal silt seams	
20.0						
	5	ST				129
		HS				
25.0						
	6	ST			Clayey silt, trace sand -lt. gray- very stiff to hard (ML)	119
	7	ST				120
	7A					118
30.0	8	ST			Silty clay, trace gravel, sand and shale -grayish brown to brownish gray- very stiff (CL) Samples 8 & 9: Seams of light gray silt	125
	9	ST			Sample 8: Very silty	
33.0						
					Continued on Next Page	

6.0

OWNER: Browning-Ferris Industries

LOG OF BORING NUMBER: B-25 (cont.)

PROJECT NAME: Confidential Study

ARCHITECT-ENGINEER: Andrews Engineering Co.

SITE LOCATION: 9th St. and Green Bay Rd., Winthrop Harbor, IL

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION	
33.0					Continued from Previous Page	
35.0	10	ST			Silty clay, little sand, trace gravel & shale -gray to brownish gray- very stiff to hard (CL-CH)	121
	11	ST			Sample 12: Horizontal silt seams - lt. gray	119
	12	ST			Silty clay, trace gravel, sand and shale -brownish gray- medium (CL)	123
40.0	13	ST				121
41.0	13A				Silty fine to coarse sand, trace clay -brown- moist (SM) Sample 12A: Disturbed tip	113
					END OF BORING	
					"A" - Topsoil, trace clay, sand and roots -black- stiff (OL)	
					Bore hole backfilled with Portland cement-bentonite grout mix on 12-4-81	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT (10 20 30 40 50)

*CALIBRATED PENETROMETER

Date	WL	WCI
11-19-18	3'	
11-20-81	0.5'	35.8'
11-27-81	0.2'	34.2'
12-4-81	surface	34.8'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

WL 2.0' XXXX WD	BORING STARTED 11/18/81	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062	
WL BCR ACR	BORING COMPLETED 11/18/81		
WL 19' AB	RIG Auger FOREMAN Pierre	APP'D BY LKA/ms	STS JOB NO. 17590-M

SURFACE ELEVATION: 743.30
NORTHING: 12,592.20
EASTING: 13,052.60

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: MW

Shaw® Shaw Environmental, Inc.

BORING NO. B-2-07 / EB-8

Depth in Feet	Surf. Elev. 743.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
0	743		Black Clayey TOPSOIL	OL		24			
1	742		Brown Silty CLAY, little sand, moist	CL	SS-1 0.0-2.0 Rec = 12	2 22 3	1.5		
2	741					4			
3	740				SS-2 2.0-4.0 Rec = 8	6 6 7	1.5		
4	739		Gray Clayey Fine SAND, trace gravel, soft, moist	SC		3	1.0		
5	738				SS-3 4.0-6.0 Rec = 10	5 10 13			
6	737		Brown and Gray Silty CLAY, little sand, trace gravel,hard, moist	CL		4	2.5		
7	736		Gray Silty CLAY, little to some sand, trace gravel, very stiff to hard	CL	SS-4 6.0-8.0 Rec = 20	11 16 21	4.5+		
8	735								
9	734				ST-5 8.0-10.0 Rec = 14		1.75 4.5+		
10	733					7			
11	732				SS-6 10.0-12.0 Rec = 18	6 10 23	3.75		
12	731					8	2.25		
13	730				SS-7 12.0-14.0 Rec = 24	8 12 19	4.5+		
14	729					5			
15	728				SS-8 14.0-16.0 Rec = 24	7 12 14	2.5		
16	727					7			
17	726				SS-9 16.0-18.0 Rec = 18	12 15 21	3.75		
18	725					6			
19	724				SS-10 18.0-20.0 Rec = 24	11 19 25	2.5		
20									

DRILLING CONTRACTOR: Precon Drilling, Inc.
DRILLING METHOD: TSC (EB-8) 0-66.0' 3.25" I.D. HSA (66.0'-102.0')
DRILLING EQUIPMENT: CME 75 (ATV)
DRILLING STARTED: 05.15.07 ENDED: 05.16.07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "CS" - Continous sampler
"SS" - Split Spoon
0.0'-66.0' Taken from EB-8 located within 10' of B-2-07.
66.0'-102.0' Logged by E.J.L.

SURFACE ELEVATION: 743.30
NORTHING: 12.592.20
EASTING: 13.052.60

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BORING NO. B-2-07 / EB-8

Depth in Feet	Surf. Elev. 743.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
20	723		Gray Silty CLAY, little to some sand, trace gravel, very stiff to hard	CL	SS-11 20.0-22.0 Rec = 24	8 12 15 25	2.25		
21	722								
22	721				SS-12 22.0-24.0 Rec = 24	9 14 19 22	3.25		
23	720								
24	719				ST-13 24.0-26.0 Rec = 14				
25	718								
26	717				SS-14 26.0-28.0 Rec = 24	6 7 12 14	1.25 3.25		
27	716								
28	715				SS-15 28.0-30.0 Rec = 12	6 8 12 15	1.25		
29	714								
30	713				SS-16 30.0-32.0 Rec = 24	8 11 12 15	2.75		
31	712								
32	711				SS-17 32.0-34.0 Rec = 24	5 7 12 15	2.25		
33	710								
34	709				ST-18 34.0-36.0 Rec = 10		1.25		
35	708								
36	707				SS-19 36.0-38.0 Rec = 24	7 12 24 27	2.75		
37	706								
38	705				SS-20 38.0-40.0 Rec = 24	6 10 15 22	2.5		
39	704								
40									

DRILLING CONTRACTOR: Precon Drilling, Inc.
DRILLING METHOD: TSC (EB-8) 0-66.0' 3.25" I.D. HSA (66.0'-102.0')
DRILLING EQUIPMENT: CME 75 (ATV)
DRILLING STARTED: 05.15.07 ENDED: 05/16/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
0.0'-66.0' Taken from EB-8 located within 10' of B-2-07.
66.0'-102.0' Logged by E.J.L.

08-28-2007 TW

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SURFACE ELEVATION: 743.30
NORTHING: 12,592.20
EASTING: 13,052.60

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: MW

Shaw® Shaw Environmental, Inc.

BORING NO. B-2-07 / EB-8

Depth in Feet	Surf. Elev. 743.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
40	703		Gray Silty CLAY, little to some sand, trace gravel, very stiff to hard	CL	SS-21 40.0-42.0 Rec = 24	5 10 12 15	3.0		
42	701				SS-22 42.0-44.0 Rec = 24	6 11 15 20	2.75		
44	699				ST-23 44.0-46.0 Rec = 18		2.5		
46	697		Gray Clayey SILT, little sand, dense, moist	CL-ML	SS-24 46.0-48.0 Rec = 24	6 16 24 33			
48	695		Gray Silty CLAY, little sand, trace gravel, very stiff, moist	CL	SS-25 48.0-50.0 Rec = 24	8 11 16 20	2.0		
50	693		Gray Clayey SILT, little sand, dense, moist	CL-ML					
51	692		Gray Silty CLAY, little sand, trace gravel, very stiff, moist	CL	SS-26 50.0-52.0 Rec = 24	12 16 19 25	3.0		
52	691				SS-27 52.0-54.0 Rec = 24	7 7 7 8	1.0 0.75		
54	689				SS-28 54.0-56.0 Rec = 24	5 6 12 18	1.0 1.75		
56	687				SS-29 56.0-58.0 Rec = 24	6 15 18 28	2.75		
57	686		Gray Silty CLAY, little sand, trace gravel, moist	CL	SS-30 58.0-60.0 Rec = 24	6 18 27 38	1.25		
60	684								

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06-26-2007 TAP

DRILLING CONTRACTOR: Precon Drilling, Inc.
DRILLING METHOD: TSC (EB-8) 0-66.0' 3.25" I.D. HSA (66.0'-102.0')
DRILLING EQUIPMENT: CME 75 (ATV)
DRILLING STARTED: 05/15/07 ENDED: 05/16/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "CS" - Continous sampler
"SS" - Split Spoon
0.0'-66.0' Taken from EB-8 located within 10' of B-2-07.
66.0'-102.0' Logged by E.I.L.

SURFACE ELEVATION: 743.30
NORTHING: 12,592.20
EASTING: 13,052.60

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: MW

Shaw® Shaw Environmental, Inc.

BORING NO. B-2-07 / EB-8

Depth In Feet	Surf. Elev. 743.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
60	683		Gray Silty CLAY, little sand, trace gravel, moist	CL	SS-31 60.0-62.0 Rec = 24	8 21 27 38	4.5+		
61	682								
62	681				SS-32 62.0-64.0 Rec = 24	7 12 24 33	4.5+		
63	680								
64	679				SS-33 64.0-66.0 Rec = 24	4 6 11 15	4.5+		
65	678								
66	677		Olive Gray (5Y 4/1) Silty CLAY, trace coarse to fine sand, little coarse to fine gravel, stiff, low plasticity, moist,	CL	SS-1 66.0-68.0 Rec = 2	17 18 20 24			
67	676		Olive Gray (5Y 4/1) Silty SAND, coarse to fine sand, coarse to fine gravel, medium dense, moist	SM					
68	675				SS-2 68.0-70.0 Rec = 24	10 10 11 13	1.7		
69	674		Olive Gray (5Y 4/1) Silty CLAY, trace fine sand, stiff to very stiff, moist	CL					
70	673				ST-3 70.0-72.0 Rec = 14.4		3.0		
71	672								
72	671				SS-4 72.0-74.0 Rec = 24	7 18 20 27	3.4		
73	670								
74	669				SS-5 74.0-76.0 Rec = 24	18 16 22 30	4.5+		
75	668								
76	667				SS-6 76.0-78.0 Rec = 24	6 12 16 19	3.5		
77	666								
78	665				SS-7 78.0-79.2 Rec = 24	6 11 15 18	3.5		
79	664								
80									

DRILLING CONTRACTOR: Precon Drilling, Inc.
DRILLING METHOD: TSC (EB-8) 0-66.0' 3.25" I.D. HSA (66.0'-102.0')
DRILLING EQUIPMENT: CME 75 (ATV)
DRILLING STARTED: 05/15/07 ENDED: 05/16/07

WATER LEVEL (FT.)

REMARKS

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"SS" - Split Spoon
0.0'-66.0' Taken from EB-8 located within 10' of B-2-07.
66.0'-102.0' Logged by E.I.L.

SURFACE ELEVATION: 743.30
NORTHING: 12,592.20
EASTING: 13,052.60

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: MW

Shaw® Shaw Environmental, Inc.

BORING NO. B-2-07 / EB-8

Depth in Feet	Surf. Elev. 743.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
80	663		Olive Gray (5Y 4/1) Silty CLAY, trace fine to sand, stiff to very stiff, moist	CL	SS-8 80.0-82.0 Rec = 24	3 7 11 12	3.7		
81	662								
82	661				SS-9 82.0-84.0 Rec = 24	6 12 17 34	4.0		
83	660								
84	659				SS-10 84.0-86.0 Rec = 0	12 22 32 46			
85	658								
86	657				SS-11 86.0-88.0 Rec = 16	8 15 20 30	4.0		
87	656								
88	655				SS-12 88.0-90.0 Rec = 0	50/1"			
89	654								
90	653				SS-13 90.0-92.0 Rec =24	11 19 33 40	4.0		
91	652		Gray (5Y 5/1) Coarse to Fine SAND, little silt, trace fine gravel, trace clay, very dense, saturated	SW					
92	651				SS-14 92.0-94.0 Rec = 16	11 18 33 51			
93	650								
94	649		Olive Gray (5Y 4/1) Silty CLAY, some fine coarse sand, trace fine gravel, moist	CL-ML	SS-15 94.0-96.0 Rec = 19	26 24 20 20	4.5+		
95	648								
96	647				SS-16 96.0-98.0 Rec =15	14 24 49 50/3"	4.5+		
97	646								
98	645				SS-17 98.0-100.0 Rec = 1	50/1"			
99	644								
100									

DRILLING CONTRACTOR: Precon Drilling, Inc.
DRILLING METHOD: TSC (EB-8) 0-66.0' 3.25" I.D. HSA (66.0'-102.0')
DRILLING EQUIPMENT: CME 75 (ATV)
DRILLING STARTED: 05/15/07 ENDED: 05/16/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
0.0'-66.0' Taken from EB-8 located within 10' of B-2-07.
66.0'-102.0' Logged by E.J.L.

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SURFACE ELEVATION: 743.30
NORTHING: 12,592.20
EASTING: 13,052.60

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: MW

Shaw Shaw Environmental, Inc.

BORING NO. B-2-07 / EB-8

Depth in Feet	Surf. Elev. 743.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
100	643		Olive Gray (5Y 4/1) Silty CLAY, little coarse to fine sand, little coarse to fine gravel, moist	CL-ML	SS-18 100.0-102.0 Rec = 20	27 30 46 50/5"	4.5+		
101	642								
102	641		END of BORING @ 102.0'						
103	640								
104	639								
105	638								
106	637								
107	636								
108	635								
109	634								
110	633								
111	632								
112	631								
113	630								
114	629								
115	628								
116	627								
117	626								
118	625								
119	624								
120									

DRILLING CONTRACTOR: Precon Drilling, Inc.
DRILLING METHOD: TSC (EB-8) 0-66.0' 3.25" I.D. HSA (66.0'-102.0')
DRILLING EQUIPMENT: CME 75 (ATV)
DRILLING STARTED: 05/15/07 ENDED: 05/16/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "CS" - Continous sampler
"SS" - Split Spoon
0.0'-66.0' Taken from EB-8 located within 10' of B-2-07.
66.0'-102.0' Logged by E.J.L.

SURFACE ELEVATION: 740.60
NORTHING: 12039.70
EASTING: 13077.93

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-3-07

Depth In Feet	Surf. Elev. 740.60	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
0	740		Black (2.5Y 2.5/1) organic Silty CLAY, trace fine to coarse sand, very stiff, medium plasticity, moist	OL		1	2.5		
1	739		Dark Grayish Brown (2.5Y 4/2) to Gray (2.5Y 5/1) Silty CLAY, trace fine to coarse sand, very stiff, medium plasticity, moist	CL	SS-1 0.0-2.0 Rec = 20	2 4 4	2.0		N=6
2	738					4 6 6	2.5		N=12
3	737				SS-2 2.0-4.0 Rec = 21	5 5 5	2.5		
4	736		Brown (10YR 4/3) to Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine to coarse sand and fine gravel, hard, medium plasticity, moist See Remarks	CL	SS-3 4.0-6.0 Rec = 24	9 12 16	4.5+		N=21
5	735				SS-4 6.0-7.3 Rec = 15	15 12 14	4.5+ 3.5		N=26
6	734								
7	733		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand and gravel, very stiff to hard, medium plasticity, moist	CL	See Remarks	17	4.5+		SS-4A 7.3-8.0 Rec = 8
8	732				SS-5 8.0-10.0 Rec = 24	6 9 13 15	4.5+ 3.5 4.5+		N=22
9	731								
10	730				SS-6 10.0-12.0 Rec = 22	7 9 13 21	4.5+ 3.0 4.5+		N=22
11	729								
12	728				SS-7 12.0-14.0 Rec = 22	6 11 17 20	4.5+ 4.5+ 3.5		N=28
13	727								
14	726				SS-8 14.0-16.0 Rec = 23	4 11 11 16	3.0 2.25 3.0		N=22
15	725								
16	724				SS-9 16.0-18.0 Rec = 24	4 7 10 12	3.0 3.0		N=17
17	723								
18	722				SS-10 18.0-20.0 Rec =21	4 8 11 12	3.5 2.5		N=19
19	721								
20									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA. 10" Boring (0-10') *Rotary (10-98')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04-17-07 ENDED: 04-19-07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "CS" - Continous sampler
"SS" - Split Spoon
*3.875" Tricone Roller Bit. 2" O.D. 2' Long Split Spoon
MW-3-07 was completed within B-3-07

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06-28-2007

SURFACE ELEVATION: 740.60
NORTHING: 12039.70
EASTING: 13077.93

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-3-07

Depth In Feet	Surf. Elev. 740.60	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
20	720		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand and fine to coarse gravel, stiff to hard, medium plasticity, moist	CL	SS-11 20.0-22.0 Rec = 24	5 7 11 14	3.25 2.75		N=18
21									
22	719								
23	718				SS-12 22.0-24.0 Rec = 24	6 8 13 19	3.5 3.75		N=21
24	717								
25	716				SS-13 24.0-26.0 Rec =24	6 8 10 14	2.5 2.75		N=18
26	715								
27	714				SS-14 26.0-28.0 Rec = 24	7 8 10 13	2.25 1.75 2.5		N=18
28	713								
29	712				SS-15 28.0-30.0 Rec = 20	9 9 11 15	2.25 2.25		N=20
30	711								
31	710				SS-16 30.0-32.0 Rec = 24	6 7 11 15	2.5 2.5		N=18
32	709								
33	708				SS-17 32.0-34.0 Rec = 22	4 14 18 22	4.5+ 4.5+		N=32
34	707								
35	706				SS-18 34.0-36.0 Rec = 20	5 13 17 23	4.5+ 3.25		N=30
36	705								
37	704				SS-19 36.0-38.0 Rec = 20	8 10 12 14	2.75 2.0		N=92
38	703								
39	702				SS-20 38.0-40.0 Rec = 23	6 9 12 16	1.75 3.0		N=21
40	701								

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA. 10" Boring (0-10') *Rotary (10-98')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04 17 07 ENDED: 04 19 07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "CS" - Continous sampler
"SS" - Split Spoon
*3.875" Tricone Roller Bit. 2" O.D. 2' Long Split Spoon
MW-3-07 was completed within B-3-07

SURFACE ELEVATION: 740.60
NORTHING: 12039.70
EASTING: 13077.93

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-3-07

Depth in Feet	Surf. Elev. 740.60	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
40						7			
41	700		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand and fine to coarse gravel, stiff to hard, medium plasticity, moist		SS-21 40.0-42.0 Rec = 24	10 15 26	3.75 2.25		N=25
42	699			CL		4			
43	698				SS-22 42.0-44.0 Rec = 21	7 8 12	2.5 3.5		N=15
44	697		0.1' Silt seam @ 44.2'		SS-23 44.0-45.0 Rec = 10	7 7	2.25		
45	696		Dark Gray (10YR 4/1) Silty SAND, trace medium to coarse sand, poorly graded, medium dense, saturated	SM			1.5		N=17
46	695		Gray (10YR 5/1) SILT, some clay, fine to medium silty sand, medium dense, low plasticity, wet	ML	SS-23A 45.0-46.0 Rec = 12	10 16			
47	694		Dark Gray (10YR 4/1) Silty SAND, poorly graded, medium dense, saturated	SM					
48	693		Gray (10YR 5/1) SILT, some clay, trace fine sand, medium dense, low plasticity, very moist	ML	SS-24 46.0-47.5 Rec = 18	11 12 12	1.5		N=24
49	692		Dark Gray (10YR 4/1) Silty CLAY, trace fine sand, very stiff, medium plasticity, moist	CL	See Remarks	17	2.5		SS-24A 47.5-48.0 Rec = 4
50	691		0.2 fine silty SAND seam @ 48.8'		SS-25 48.0-49.0 Rec = 11	6 12	3.25		
51	690		Dark Gray (2.5Y 4/1) to Dark Grayish Brown (2.5Y 4/2) Silty SAND, trace medium sand, trace clay, poorly graded, medium dense to dense, saturated	SM	SS-25A 49.0-50.0 Rec = 12	15 31	2.25		N=27
52	689				SS-26 50.0-52.0 Rec = 23	11 15 23 18			N=38
53	688		Dark Gray (2.5Y 4/1) Sandy Silty CLAY, trace fine gravel, very stiff, medium plasticity, moist	CL	See Remarks	6			SS-27 52.0-52.5 Rec = 5
54	687		Brown (7.5YR 4/2) Sandy Silty CLAY, trace fine to coarse sand, trace fine gravel, very stiff, medium plasticity, moist	CL	SS-27A 52.5-54.0 Rec = 15	7 8 13	2.25 2.25		N=15
55	686				ST-28 54.0-56.0 Rec = 23				
56	685		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, very stiff , moist						
57	684		See Remarks		SS-29 56.0-58.0 Rec = 24	9 16 25 23	3.0 4.5+		N=41
58	683		See Remarks	CL					
59	682				SS-30 58.0-60.0 Rec = 22	11 20 44 31	4.5+ 4.5+		N=64
60	681								

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') *Rotary (10-98')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/17/07 ENDED: 04/19/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-3-07 was completed within B-3-07

SURFACE ELEVATION: 740.60
NORTHING: 12039.70
EASTING: 13077.93

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-3-07

Depth in Feet	Surf. Elev. 740.60	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
60									
	680		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, very stiff, moist See Remarks			10	4.5+		
61					SS-31 60.0-62.0 Rec = 24	16			N=35
	679					19	4.5+		
62						29			
	678					10	3.5		
63					SS-32 62.0-64.0 Rec = 24	12			N=27
	677			CL		15	4.0		
64						14			
	676					7	4.5+		
65					SS-33 64.0-66.0 Rec = 24	13			N=29
	675					16	4.5+		
66						22			
	674				SS-34 66.0-67.2 Rec = 7	10	2.5		
67						18			N=44
	673		Very Dark Gray (10YR 3/1) Silty SAND with GRAVEL, some clay, poorly graded, dense, very moist		See Remarks	26			SS-34A 67.2-68.0 Rec = 9
68				SM		20			
	672				SS-35 68.0-69.0 Rec = 10	14			
69						9			N=18
	671		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, trace fine gravel, stiff to hard, medium plasticity, moist		SS-35A 69.0-70.0 Rec = 10	9	1.75		
70						15			
	670					12	3.0		
71					SS-36 70.0-72.0 Rec = 24	14			N=33
	669					19	4..5+		
72						23			
	668					4	3.0		
73					SS-37 72.0-74.0 Rec = 22	10			N=25
	667					15	4.25		
74				CL-ML		23			
	666					8	3.5		
75					SS-38 74.0-76.0 Rec = 22	20			N=37
	665					17	3.5		
76						25			
	664					5	2.75		
77					SS-39 76.0-78.0 Rec = 21	10			N=23
	663					13	2.75		
78						18			
	662					8	3.5		
79					SS-40 78.0-80.0 Rec = 24	16			N=34
	661		Dark Grayish Brown (10YR 4/2) Silty CLAY	CL		18	3.5		
80						21			

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') *Rotary (10-98')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/17/07 ENDED: 04/19/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-3-07 was completed within B-3-07

SURFACE ELEVATION: 740.60
NORTHING: 12039.70
EASTING: 13077.93

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-3-07

Depth in Feet	Surf. Elev. 740.60	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
80									
	660		Dark Grayish Brown (10YR 4/2) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, , very stiff to hard, medium plasticity, moist			9	3.5		
81					SS-41 80.0-82.0 Rec = 24	12			N=31
	659					19	3.5		
82						24			
	658					5			
83				CL	SS-42 82.0-84.0 Rec = 24	9	2.75		N=22
	657					13			
84						28	4.5+		
	656					13			
85					SS-43 84.0-86.0 Rec = 22	21	4.5+		N=51
	655					30			
86						48	4.5+		
	654		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand and gravel, hard, medium plasticity, laminated, moist			26			
87					SS-44 86.0-88.0 Rec = 16	15	4.5+		N=35
	653			CL		20			
88						28	4.5+		
	652				SS-45 88.0-89.0 Rec = 10	40			
89						38	4.5+		
	651		Grayish Brown (2.5Y 5/2) Silty SAND, trace medium to coarse sand and fine gravel, poorly graded, very dense, saturated	SM	See Remarks	26			N=64 SS-45A 89.0-89.3 Rec = 3"
90				SW	See Remarks	38			SS-45B 89.3-90.0 Rec = 7
	650		Dark Gray (2.5Y 4/1) SAND, little fine gravel, well graded, very dense, saturated			17			
91				SP	SS-46 90.0-92.0 Rec = 18	27			N=56
	649		Dark Grayish Brown (2.5Y 4/2) Fine to Coarse SAND, trace silt, trace clay, trace fine gravel, very dense, saturated			29			
92						36			
	648		Dark Gray (2.5Y 4/1) SAND, little coarse sand, little silt, trace fine gravel, very dense, saturated			27			
93				SP	SS-47 92.0-94.0 Rec = 17	37			N=65
	647					28			
94						49			
	646					29			
95					SS-48 94.0-96.0 Rec = 12	18			N=33
	645		Gray (2.5Y 5/1) Sandy SILT, little clay, trace fine gravel, dense, low plasticity, moist	ML		15	4.5+		
96						27			
	644		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand and fine gravel, hard, medium plasticity, moist	CL		18			
97					SS-49 96.0-98.0 Rec = 20	30	4.5+		
	643					61			
98						81			
	642		END OF BORING @ 98.0'						
99									
	641								
100									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') *Rotary (10-98')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/17/07 ENDED: 04/19/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-3-07 was completed within B-3-07

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
0	738		Dark Gray (10YR 4/1) Silty CLAY FILL, little fine to coarse sand, fine to coarse gravel, hard, low to medium plasticity, dry to moist	FILL	CS-1 0.0-5.0 Rec = 58		4.5+		
1	737								
2	736								
3	735						4.5+		
4	734		0.2' Black organic Silty Clay TOPSOIL @ 4.6'				1.5		
5	733		Dark Grayish Brown (10YR 4/2) Silty CLAY, little fine to coarse sand, fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL	CS-2 5.0-6.0 Rec = 12		3.25		
6	732		Brown (10YR 4/3) to Dark Yellowish Brown (10YR 4/5) Clayey SAND with GRAVEL, little silt, poorly graded, very dense, moist	SC	CS-2A 6.0-7.0 Rec = 12		4.5+		
7	731								
8	730		Brown (10YR 4/3) to Dark Yellowish Brown (10YR 4/5) SAND, little silt and clay, trace coarse sand, fine gravel, poorly graded, very dense, moist	SP	CS-2B 7.0-10.0 Rec = 26				
9	729								
10	728				CS-3 10.0-11.0 Rec = 12				
11	727		Dark Gray (10YR 4/1) Silty CLAY, some fine to coarse sand, fine gravel, medium stiff, medium plasticity, moist	CL			0.5		
12	726		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff, medium plasticity, moist	CL	CS-3A 11.0-14.0 Rec = 31		2.5		
13	725								
14	724		0.17' clayey silt seam @ 14.4'		CS-3B 14.0-15.0 Rec = 12				
15	723		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist	CL	CS-4 15.0-20.0 Rec = 60		3.5		
16	722								
17	721								
18	720						4.0		
19	719								
20									

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC. Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
20	718		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist				4.5+		
21	717								
22	716								
23	715				CS-5 20.0-25.0 Rec = 60		4.5+		
24	714								
25	713						4.5+		
26	712								
27	711						4.5+		
28	710			CL	CS-6 25.0-30.0 Rec = 60				
29	709						2.25		
30	708								
31	707						2.25		
32	706				CS-7 30.0-35.0 Rec = 60				
33	705						2.25		
34	704								
35	703		Olive Brown (2.5Y 4/3) Silty CLAY, trace to little fine to coarse sand and fine gravel, stiff, medium plasticity, moist				1.25		
36	702								
37	701			CL	CS-8 35.0-39.0 Rec = 50		1.25		
38	700								
39	699		Dark Gray (10YR 4/1) SILT	ML	CS-8A 39.0-40.0 Rec = 8		1.25		
40							1.5		

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA. 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "SS" - Split Spoon
*3.875" Tricone Roller Bit. 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07

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SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
40	698		Dark Gray (10YR 4/1) SILT, some clay, little fine sand, trace medium to coarse sand, fine gravel, dense, low to medium plasticity, very moist	ML	CS-9 40.0-41.0 Rec = 12		1.5		
41	697								
42	696		Dark Gray (10YR 4/1) Silty SAND, trace coarse sand, fine gravel, trace clay, poorly graded, dense, saturated	SM	CS-9A 41.0-43.5 Rec = 18				
43	695								
44	694		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, stiff to very stiff, medium plasticity, moist	CL	CS-9B 43.5-45.0 Rec = 18		3.0 3.5		
45	693						1.75		
46	692				CS-10 45.0-47.5 Rec = 25				
47	691		0.2' Silty SAND seam @ 47.5'						
48	690		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, fine gravel, very stiff, low to medium plasticity, moist	CL-ML	CS-10A 47.5-50.0 Rec = 25		2.5		
49	689								
50	688								
51	687				ST-11 50.0-52.5 Rec = 6				
52	686		Dark Gray (10YR 4/1) to Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist	CL					
53	685						3.75		
54	684				CS-12 52.5-55 Rec = 30		4.0		
55	683								
56	682		Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine to coarse sand, fine gravel, stiff, medium plasticity, moist	CL	ST-13 55-57.5 Rec = 6				
57	681								
58	680								
59	679				ST-14 57.5-60 Rec = 16				
60									

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA. 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
60	678		Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine to coarse sand, fine gravel, stiff, medium plasticity, moist	CL			1.5		
61	677						2.5		
62	676		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, stiff to hard, medium plasticity, moist				2.5		
63	675				CS-15 60.0-65.0 Rec = 58		4.0		
64	674						1.5		
65	673			CL					
66	672						1.0		
67	671				CS-16 65.0-68.5 Rec = 33		1.0		
68	670								
69	669		Dark Gray (10YR 4/1) SILT, some clay, trace fine to coarse sand, fine gravel, very dense, low plasticity, moist	ML	CS-16A 68.5-70.0 Rec = 15		4.5+		
70	668		Dark Gray (10YR 4/1) Silty CLAY, little fine gravel, little fine to coarse sand, very stiff to hard, medium plasticity, moist			10	3.75		
71	667				SS-17 70.0-72.0 Rec = 22	17 22	3.5		N=39
72	666					50 5	4.0		
73	665				SS-18 72.0-74.0 Rec = 22	15 33	4.5+		N=48
74	664					35 13			
75	663			CL	SS-19 74.0-76.0 Rec = 24	22 28	4.5+		N=50
76	662					28 8	4.5+		
77	661				SS-20 76.0-78.0 Rec = 24	12 22	3.75 4.5+		N=34
78	660					27 6			
79	659				SS-21 78.0-80.0 Rec = 24	12 22	4.5+		N=34
80						24	4.5+		

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03-28-07 ENDED: 03-29-07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
80	658		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist See Remarks	CL	SS-22 80.0-82.0 Rec = 24	17 17 21 26	3.75 3.5		N=38
81	657				See Remarks	22	3.5		SS-23 82.0-82.4 Rec = 4
82	656		Dark Gray (2.5Y 4/1) SILT, little clay and fine sand, trace medium to coarse sand, fine gravel, extremely dense, low plasticity, moist	ML	SS-23A 82.4-84.0 Rec = 12	47 50/4"	4.5 3.0		N=97+
83	655			SP	See Remarks	42			SS-24 84.0-84.4 Rec = 4
84	654		Dark Grayish Brown (2.5Y 4/2) SAND, trace medium to coarse sand, trace silt, poorly graded, extremely dense, saturated	ML	See Remarks	50			SS-24A 84.4-85.0 Rec = 7
85	653		Dark Gray (2.5Y 4/1) Sandy SILT, extremely dense, low plasticity, saturated	SP	SS-24B 85.0-86.0 Rec = 5	50/4"			N=100+
86	652		Dark Grayish Brown (2.5Y 4/2) SAND, trace coarse sand, trace to little silt, poorly graded, extremely dense, saturated		SS-25 86.0-88.0 Rec = 14	40 45 50/5"			N=95+
87	651				See Remarks	25			SS-26 88.0-88.5 Rec = 6
88	650		Dark Grayish Brown (2.5Y 4/2) Fine to Coarse SAND, little silt, trace clay, extremely dense, saturated	SP	SS-26A 88.5-90.0 Rec = 13	32 50 50/4"			N=82
89	649								
90	648		Gray SILT, trace fine sand, some clay seams, very dense	ML	6SS 90.0-92.0 Rec = 10.8	57 100/6"			N=157+
91	647								
92	646		Brownish Gray Fine Silty SAND, trace clay seams, very dense	SM	7SS 92.0-94.0 Rec = 16.8	57 68 102/6"			N=170+
93	645								
94	644		Gray SILT, very dense	ML	8SS 94.0-96.0 Rec = 18	30 33 39 41			N=72
95	643								
96	642		Brownish Gray Clayey SILT, wtih clay seams, laminated, very dense	CL-ML	9SS 96.0-98.0 Rec = 16.8	24 33 36 40			N=69
97	641								
98	640				10SS 98.0-100.0 Rec = 16.8	25 37 39 41			N=76
99	639								
100			Gray SILT, trace fine sand partings	ML					

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

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12-18-2006

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
100	638		Gray SILT, trace fine sand partings, very dense	ML	11SS 100.0-102.0 Rec = 12	24 53 73			N=126
101	637								
102	636		Brownish Gray CLAY, trace silt, fine to coarse sand and small gravel, laminated to foliated in areas, hard to very stiff			90			
103	635				12SS 102.0-104.0 Rec = 24	16 25 37 42	4.5+		N=62
104	634								
105	633				13SS 104.0-106.0 Rec = 24	21 29 36 43	3.0		N=65
106	632								
107	631				14SS 106.0-108.0 Rec = 24	11 22 30 38	4.5		N=52
108	630		Trace large gravel at 108.0-110.0'	CL					
109	629				15SS 108.0-110.0 Rec = 22.8	9 15 19 24	3.0		N=34
110	628		Reddish coloring and numerous silt partings at 110.0-112.0'						
111	627				16SS 110.0-112.0 Rec = 24	15 20 27 34	3.5		N=47
112	626								
113	625				17SS 112.0-114.0 Rec = 0.0	18 24 29 35			N=53
114	624		Gray Silty CLAY, trace fine to coarse sand and small gravel, laminated, soft						
115	623				18SS 114.0-116.0 Rec = 0.0	18 8 12 12			N=20
116	622								
117	621			CL	19SS 116.0-118.0 Rec = 24	9 12 14 16	0.5		N=26
118	620								
119	619				20SS 118.0-120.0 Rec = 24	10 14 15 17	0.5		N=29
120									

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
120	618		Brownish Gray Silty CLAY, trace fine to coarse sand and small gravel, several silt partings and inclusions, very stiff	CL	21SS 120.0-122.0 Rec = 24	18 28 32 43	2.5		N=60
122	616		Gray Silty CLAY, trace fine to coarse sand and small gravel, hard	CL	22SS 122.0-124.0 Rec = 24	28 60 62 68	4.5+		N=122
124	614				23SS 124.0-126.0 Rec = 24	15 26 33 40	4.5+		N=59
126	612		Foliated with interfoliated silt partings and inclusions below 126.0'		24SS 126.0-128.0 Rec = 24	13 31 46 52	4.5+		N=77
128	610				25SS 128.0-130.0 Rec = 24	19 34 50 67	4.5+		N=84
130	608				26SS 130.0-132.0 Rec = 9.6	51 100/3"	4.5+		N=151+
132	606				27SS 132.0-134.0 Rec = 10.8	71 100/6"	4.5+		N=171+
134	604				28SS 134.0-136.0 Rec = 21.6	29 37 40 46	4.5+		N=77
136	602		Gray SILT with Brownish Gray fine to coarse sand seams, very dense	ML	29SS 136.0-138.0 Rec = 12	29 71 100/2"			N=171+
138	600								
139	599		Brownish Gray Fine to Medium SAND, very dense	SW	30SS 138.0-140.0 Rec = 10.8	89 103/6"			N=192+
140			Brownish Gray Silty CLAY, trace to rare small gravel, trace hairline silt partings	CL					

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
140	598		Brownish Gray Silty CLAY, trace to rare small gravel, trace hairline silt partings, hard	CL	31SS 140.0-142.0 Rec = 19.2	28 44 56 68	4.5+		N=100
141	597								
142	596		Trace medium to large gravel, trace fine sand and silt partings at 142.0-144.0'		32SS 142.0-144.0 Rec = 10.8	68 103/6"			N=171+
143	595								
144	594		Laminated below 144.0'		33SS 144.0-146.0 Rec = 24	25 48 63 81	4.5+		N=111
145	593								
146	592		Interfoliated silt partings and inclusions below 146.0'		34SS 146.0-148.0 Rec = 24	18 30 44 32	4.5+		N=74
147	591								
148	590				35SS 148.0-150.0 Rec = 24	15 20 54 43	4.5+		N=74
149	589								
150	588				36SS 150.0-152.0 Rec = 24	26 33 37 41	4.5+		N=70
151	587								
152	586		Interfoliated fine sand and silt below 152.0'		37SS 152.0-154.0 Rec = 24	40 20 22 26	4.5+		N=42
153	585								
154	584				38SS 154.0-156.0 Rec = 0.0	100/4"			N=100+
155	583								
156	582		Interlayered silt below 156.0'						
157	581		Gray SILT, trace to some clay, laminated, very dense	ML	39SS 156.0-158.0 Rec = 3.6	131/4"			N=131+
158	580								
159	579		Gray Clayey SILT, laminated, very dense	CL-ML	40SS 158.0-160.0 Rec = 7.2	120/5"			N=120+
160									

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

12-18-2008 c:\pe00\data\Projects\2006\122150 - Zion Landfill Expansion\Hydrogeo\Boring Logs\B-4-07 1-160 - mod pg f

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
160	578		(Continued) Gray Clayey SILT, laminated, very dense	CL-ML					N=130+
161	577								
162	576		Brownish Gray SILTY CLAY, trace silt partings, laminated, hard to very stiff	CL					N=63
163	575								
164	574		Thinly laminated below 164.0'						N=77
165	573								
166	572								N=74
167	571								
168	570		Brownish Gray very SILTY CLAY to very CLAYEY SILT, laminated, very stiff	CL-ML					N=138
169	569								
170	568		Brownish Gray SILTY CLAY, trace hairline silt partings, deeply thinly laminated, very stiff to very soft	CL					N=39
171	567								
172	566								N=34
173	565								
174	564								N=12
175	563								
176	562								N=14
177	561								
178	560								N=24
179	559		Gray SILTY CLAY, trace sand and small to large gravel, with fine to coarse sand seams, stiff	CL					
180									

DRILLING CONTRACTOR: RDNP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0'-224.0' taken from TB-1 located within 10' of B-4-07.

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SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.2	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
180	558		Grayish Brown Silty CLAY, trace sand and small to large gravel, with fine to coarse sand seams, hard	CL	51SS 180.0-182.0 Rec = 22.8	0 19 17 47	4.0		N=36
182	556		Brownish Gray Silty CLAY, laminated, trace hairline silt partings and seams, hard	CL	52SS 182.0-184.0 Rec = 12	20 57 103/2"	4.0		N=160+
184	554		Brownish Gray Fine Sandy SILT, very dense	ML	53SS 184.0-186.0 Rec = 4.8	103/5"			N=103+
186	552				54SS 186.0-188.0 Rec = 10.8	58 104/5"			N=162+
188	550		Gray SILT with clay seams and fine sand seams, very dense	ML	55SS 188.0-190.0 Rec = 18	66 48 100/2"			N=148+
190	548				56SS 190.0-192.0 Rec = 18	21 61 92/6"			N=153+
192	546		Gray Silty CLAY with small to medium gravel, some fine sand, very dense	CL	57SS 192.0-194.0 Rec = 4.8	101/5"			N=101+
194	544		Boulder @ 194.8 - 196.0'		58SS 194.0-196.0 Rec = 6	65 100/1"			N=165+
196	542		Brownish Gray Silty CLAY, laminated, with hairline silt partings and inclusions, some foliation, very stiff	CL	59SS 196.0-198.0 Rec = 24	0 19 38 47	3.0		N=57
198	540				60SS 198.0-200.0 Rec = 24	0 14 20 25	2.5		N=34
200									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70'), Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0' - 224.0' Taken from TB-1 located within 10' of B-4-07

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw® Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.2	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
200	538		Gray Silty CLAY, feathery to foliated with hairline silt partings and inclusions, very stiff	CL	61SS 200.0-202.0 Rec = 24	0 6 10 9	2.5		N=16
201	537								
202	536		Small to large GRAVEL and COBBLES, with some fine to coarse sand, trace silt and clay, very dense Boulder @ 204.0 - 206.0'	GW	62SS 202.0-204.0 Rec = 7.2	45 101/6"			N=146+
203	535								
204	534				63SS 204.0-206.0 Rec = 0	123/3"			N=123+
205	533								
206	532				64SS 206.0-208.0 Rec = 2.4	150/3"			N=150+
207	531		Gray Silty SAND and small GRAVEL in clay matrix	SM	65SS 208.0-210.0 Rec = 2.4	142/3"			N=142+
208	530								
209	529				66SS 210.0-212.0 Rec = 2.4	137/1.5"			N=137+
210	528								
211	527		Gray Fine Sandy SILT, trace clay, with small to medium gravel	ML	67SS 212.0-214.0 Rec = 3.6	140/3"			N=140+
212	526								
213	525		Fractured DOLOMITE, trace clay and silt	DO	68SS 214.0-216.0 Rec = 3.6	150/3"			N=150+
214	524								
215	523				69SS 216.0-218.0 Rec = 0	100/0"			N=100+
216	522								
217	521				70SS 218.0-220.0 Rec = 1.2	128/1"			N=128+
218	520								
219	519								
220									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D. - HSA, 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED:03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0' - 224.0' Taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 738.20
NORTHING: 11377.30
EASTING: 11888.50

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-90'
RLJ (TSC, Driller) 90-224'

Shaw Shaw Environmental, Inc.

BORING NO. B-4-07 / TB-1

Depth in Feet	Surf. Elev. 738.2	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
220	518		DOLOMITE (Siluran Dolomite Bedrock)						
221	517								
222	516			DO	NO SAMPLES BLIND DRILL TO VERIFY BEDROCK				TB-1 grouted on completion with Volclay Grout tremied into hole from bottom upwards. (RLJ)
223	515								
224	514		END OF BORING @ 224.0'						
225	513								
226	512								
227	511								
228	510								
229	509								
230	508								
231	507								
232	506								
233	505								
234	504								
235	503								
236	502								
237	501								
238	500								
239	499								
240									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (0-90')
DRILLING METHOD: 4.25" I.D - HSA. 3" O.D. x 5' CS (0-70') *Rotary (70-90')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/28/07 ENDED: 03/29/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
90.0' - 224.0' Taken from TB-1 located within 10' of B-4-07.

SURFACE ELEVATION: 739.26
NORTHING: 11410.70
EASTING: 12621.00

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (TSC) 0-64'
RWB (Shaw) 64-106'

Shaw® Shaw Environmental, Inc.

BORING NO. B-5-07 / EB-11

Depth in Feet	Surf. Elev. 739.26	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
0	739		Black and Dark Brown Clayey TOPSOIL, very moist	OL	1SS 0.0-2.0 Rec=24	2 2 3 6	3.25		N=5
1	738		Brown Silty CLAY, little sand, trace gravel, tough to hard, moist	CL	2SS 2.0-4.0 Rec=24	6 7 7 10	4.5+		N=14
2	737								
3	736				3SS 4.0-6.0 Rec=24	7 7 7 12	1.5 3.25		N=14
4	735								
5	734								
6	733		Brown and Gray Silty to Very Silty CLAY, little sand, trace gravel, very tough to tough, moist	CL	4SS 6.0-8.0 Rec=24	4 6 9 10	2.25 3.25		N=15
7	732								
8	731				5SS 8.0-10.0 Rec=24	4 4 4 4	1.5		N=8
9	730								
10	729								
11	728		Gray Clayey SILT, little sand, trace gravel, firm, moist	CL-ML	6SS 10.0-12.0 Rec=24	4 4 12 9	3.5		N=16
12	727		Gray Silty CLAY, little sand, trace gravel, very tough to tough, moist	CL	7SS 12.0-14.0 Rec=24	5 8 10 15	1.5 3.75		N=18
13	726								
14	725				8SS 14.0-16.0 Rec=24	4 8 10 18	1.75		N=18
15	724		Gray Clayey SILT, little sand, trace gravel, firm, moist	CL-ML					
16	723				9SS 16.0-18.0 Rec=24	5 9 11 14	3.75		N=20
17	722		Gray SILT, firm, moist	ML					
18	721		Gray Silty CLAY, little sand, trace gravel, very tough to tough, moist	CL	10SS 18.0-20.0 Rec=24	7 9 9 13	2.25		N=18
19	720								
20									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (Shaw)
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') Rotary (10-106')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/03/07 ENDED: 05/07/07

WATER LEVEL (FT.)

REMARKS
"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-64.0' Taken from EB-11 located within 10' of B-5-07

12-18-2008 \\eicfps00\data\Projects\2006\122150 - Zion Landfill Expansion\Hydrogeo\Boring Logs\B-5-07.bor

SURFACE ELEVATION: 739.26
NORTHING: 11410.70
EASTING: 12621.00

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (TSC) 0-64'
RWB (Shaw) 64-106'

Shaw® Shaw Environmental, Inc.

BORING NO. B-5-07 / EB-11

Depth in Feet	Surf. Elev. 739.26	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
20	719		Gray Silty CLAY, little sand, trace gravel, very tough to tough, moist			5			
21	718				11SS 20.0-22.0 Rec=24	8 11 11	1.75		N=19
22	717			CL		7			
23	716				12SS 22.0-24.0 Rec=24	9 9 14	1.75 3.25		N=18
24	715		Gray Clayey SILT and Silty SAND, wet			3			
25	714			SM	13SS 24.0-26.0 Rec=24	5 5 8			N=10
26	713		Gray Silty CLAY, little sand, trace gravel, tough to very tough, moist			5			
27	712				14SS 26.0-28.0 Rec=24	9 12 14	2.5		N=21
28	711					5			
29	710				15SS 28.0-30.0 Rec=24	7 13 13	2.0		N=20
30	709								
31	708				16ST 30.0-32.0 Rec=24				
32	707					3			
33	706			CL	17SS 32.0-34.0 Rec=24	5 9 9	2.25		N=14
34	705					5			
35	704				18SS 34.0-36.0 Rec=24	9 12 14	2.0		N=21
36	703					6			
37	702				19SS 36.0-38.0 Rec=24	12 16 16	1.25 2.0		N=28
38	701					7			
39	700				20SS 38.0-40.0 Rec=24	9 12 14	1.75		N=21
40									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (Shaw)
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') Rotary (10-106')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/03/07 ENDED: 05/07/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-64.0' Taken from EB-11 located within 10' of B-5-07

SURFACE ELEVATION: 739.26
NORTHING: 11410.70
EASTING: 12621.00

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (TSC) 0-64'
RWB (Shaw) 64-106'

Shaw® Shaw Environmental, Inc.

BORING NO. B-5-07 / EB-11

Depth in Feet	Surf. Elev. 739.26	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
40	699		Gray Silty CLAY, little sand, tough, moist	CL		6			
41	698		Layers of Gray Silty CLAY, Clayey SILT and SILT, moist	ML	21SS 40.0-42.0 Rec=24	10 16 12	2.0		N=26
42	697				22SS 42.0-44.0 Rec=24	36 26 23 19	1.0		N=49
43	696								
44	695		Gray Clayey SILT, trace sand, dense, very moist to wet	CL-ML	23SS 44.0-46.0 Rec=24	16 25 30 32			N=55
45	694								
46	693				24SS 46.0-48.0 Rec=24	16 13 15 14			N=28
47	692		Gray Clayey SILT, firm, very moist	CL-ML					
48	691				25SS 48.0-50.0 Rec=20	16 12 12 9			N=24
49	690								
50	689				26SS 50.0-52.0 Rec=24	6 10 13 11	1.5		N=23
51	688		Gray Clayey SILT, little sand, trace gravel, tough to very tough, moist	CL-ML					
52	687		CLAY with silt seams	CL	27SS 52.0-54.0 Rec=24	6 11 15 18	1.25 2.0		N=26
53	686								
54	685				28SS 54.0-56.0 Rec=24	12 16 22 30	1.25 2.5		N=38
55	684								
56	683		Gray Silty CLAY, trace sand and gravel	CL	29SS 56.0-58.0 Rec=20	10 14 22 28	2.75		N=36
57	682								
58	681				30SS 58.0-60.0 Rec=24	16 23 27 43	2.75 4.0		N=50
59	680								
60									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (Shaw)
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') Rotary (10-106')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/03/07 ENDED: 05/07/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-64.0' Taken from EB-11 located within 10' of B-5-07

12-18-2008

SURFACE ELEVATION: 739.26
NORTHING: 11410.70
EASTING: 12621.00

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (TSC) 0-64'
RWB (Shaw) 64-106'

Shaw® Shaw Environmental, Inc.

BORING NO. B-5-07 / EB-11

Depth in Feet	Surf. Elev. 739.26	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
60	679		Gray Silty CLAY, trace fine to coarse sand, trace fine gravel, moist						
61	678		Shaw-SHELBY TUBE ST-1 obtained from 60.0-62.0', Rec=24"	CL	31ST 60.0-62.0 Rec=24		3.5		
62	677					7			
63	676				32SS 62.0-64.0 Rec=24	9 11 12	2.0		N=20
64	675		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, very stiff to stiff, medium plasticity, moist to very moist			9	3.0		
65	674			CL	SS-2 64.0-66.0 Rec = 20	8 15 9			N=23
66	673					4	1.75		
67	672				SS-3 66.0-68.0 Rec = 24	5 7 7	1.0 1.5		N=12
68	671		Brown (7.5YR 4/3) Silty CLAY, little to fine sand, trace medium to coarse sand, fine gravel, stiff to very stiff, medium plasticity, moist	CL		5	3.0		
69	670				SS-4 68.0-70.0 Rec = 20	7 6 9	0.75 0.75		N=13
70	669		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, medium stiff to stiff, medium plasticity, moist			4	1.5		
71	668				SS-5 70.0-72.0 Rec = 22	5 9 8	1.25		N=14
72	667					3	1.5		
73	666				SS-6 72.0-74.0 Rec = 23	5 6 6	1.5		N=11
74	665					2	1.0		
75	664			CL	SS-7 74.0-76.0 Rec =21	4 6 7	1.5		N=10
76	663					5	1.75		
77	662				SS-8 76.0-78.0 Rec = 23	5 8 10	1.75		N=13
78	661		0.1' Fine SAND seam @ 78.5'			4	3.0		
79	660				SS-9 78.0-79.6 Rec = 20	9 9	3.5 1.5		N=18 SS-9A 79.6-80.0 Rec = 4
80					See Remarks	14	3.5		

DRILLING CONTRACTOR: RDnP Drilling, Inc. (Shaw)
DRILLING METHOD: 6.25" I.D. - HSA. 10" Boring (0-10') Rotary (10-106')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/03/07 ENDED: 05/07/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-64.0' Taken from EB-11 located within 10' of B-5-07

SURFACE ELEVATION: 739.26
NORTHING: 11410.70
EASTING: 12621.00

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (TSC) 0-64'
RWB (Shaw) 64-106'

Shaw® Shaw Environmental, Inc.

BORING NO.
B-5-07 / EB-11

Depth In Feet	Surf. Elev. 739.26	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
80	659		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, medium stiff to stiff, medium plasticity, moist	CL	See Remarks	6	3.0		SS-10 80.0-80.3 Rec = 3
81	658		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine sand, trace medium to coarse sand, fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL	SS-10A 80.3-82.0 Rec = 21	12 19 25	3.0 4.5+		N=31
82	657					12	4.5+		
83	656		Dark Gray (2.5Y 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL	SS-11 82.0-84.0 Rec = 24	22 30 34	4.0 4.5+		N=52
84	655				SS-12 84.0-85.5 Rec = 17	4 7 19	3.5		N=26
85	654								
86	653		Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine to coarse sand, fine gravel, hard, medium plasticity, moist	CL	See Remarks	33	4.5+		SS-12A 85.5-86.0 Rec = 5
87	652		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff, medium plasticity, moist	CL	SS-13 86.0-88.0 Rec = 24	16 20 23	4.5+ 3.0		N=43
88	651				SS-14 88.0-89.0 Rec = 12	23 38	2.0		
89	650		Dark Grayish Brown (2.5Y 4/2) Silty SAND, poorly graded, extremely dense, saturated	SM ML	SS-14A 89.0-90.0 Rec = 12	55 53	1.75		N=108
90	649		Dark Grayish Brown (2.5Y 4/2) Sandy SILT, extremely dense, low plasticity, saturated			69			
91	648		Dark Grayish Brown (2.5Y 4/2) fine SILTY SAND, trace medium sand, poorly graded, extremely dense, saturated 0.2' Sandy SILT seam @ 91.1'	SM	SS-15 90.0-92.0 Rec = 18	22 45 70	4.0		N=115
92	647					80/4"			
93	646		Dark Gray (10YR 4/2) SAND, little fine gravel, litte silt, poorly graded, extremely dense, saturated	SP	SS-16 92.0-94.0 Rec = 18	42 80 36			N=116
94	645					16			
95	644		Dark Gray (5Y 5/1) Sandy Silty CLAY, trace fine to coarse gravel, very stiff to hard, low to medium plasticity, moist to very moist	CL	SS-17 94.0-95.7 Rec = 19	14 12 6	4.5+ 3.5 2.75		N=18 SS-17A 95.7-96.0 Rec = 3
96	643		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand and fine gravel, very stiff, medium plasticity, moist	CL	See Remarks	7			
97	642		Grayish Brown (2.5Y 5/2) SILT, trace fine sand, dense to extremely dense, low plasticitiy, very moist to wet	ML	SS-18 96.0-98.0 Rec = 20	10 14 16	2.75 3.0		N=30
98	641					23			
99	640		Grayish Brown (2.5Y 5/2) SILT, little clay trace fine to medium sand, extremely dense, low plasticitiy, very moist to wet	ML	SS-19 98.0-100.0 Rec = 19	14 27 35 42	2.0 2.0		N=62
100									

DRILLING CONTRACTOR: RDnP Drilling, Inc (Shaw)
DRILLING METHOD: 6.25" I.D. - HSA. 10" Boring (0-10') Rotary (10-106')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/03/07 ENDED: 05/07/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-64.0' Taken from EB-11 located within 10' of B-5-07

SURFACE ELEVATION: 739.26
NORTHING: 11410.70
EASTING: 12621.00

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (TSC) 0-64'
RWB (Shaw) 64-106'

Shaw® Shaw Environmental, Inc.

BORING NO. B-5-07 / EB-11

Depth In Feet	Surf. Elev. 739.26	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
100	639		Grayish Brown (2.5Y 5/2) SILT, little clay trace fine to medium sand, extremely dense, low plasticity, very moist to wet	ML	SS-20 100.0-102.0 Rec = 20	32 44 50 82	2.0 2.0		N=94
101	638								
102	637				SS-21 102.0-104.0 Rec = 17	58 127 100/5"	2.0 2.0		N=227+
103	636								
104	635		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine to coarse gravel, hard, medium plasticity, moist	CL	SS-22 104.0-106.0 Rec = 20	15 17 23 35	4.5+ 4.5+		N=40
105	634								
106	633		END OF BORING @ 106.0'						
107	632								
108	631								
109	630								
110	629								
111	628								
112	627								
113	626								
114	625								
115	624								
116	623								
117	622								
118	621								
119	620								
120									

DRILLING CONTRACTOR: RDnP Drilling, Inc. (Shaw)
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
Rotary (10-106')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 05/03/07 ENDED: 05/07/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-64.0' Taken from EB-11 located within 10' of B-5-07

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SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) (0-100')
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
0	744		Brown Silty CLAY, little sand, trace gravel, very tough, moist			2			
1	743				1SS 0.0-2.0 Rec = 16	2 4 4	2.25		N=6
2	742			CL		3			
3	741				2SS 2.0-4.0 Rec = 24	4 8 10	2.75		N=12
4	740		Closed gray joint traces observed between 4 to 6 feet.			8			
5	739		Brown and Gray Silty CLAY, little sand, trace gravel, very tough, moist		3SS 4.0-6.0 Rec = 24	11 15 17	3.5		N=26
6	738			CL		5			
7	737		Sand seam @ 7.5'		4SS 6.0-8.0 Rec = 12	50/6"	2.0		N=55+
8	736					7	3.5		
9	735		Gray Silty CLAY, little to some sand, trace gravel, tough to very tough, moist		5SS 8.0-10.0 Rec = 23	11 16 19	3.5		N=27
10	734					7			
11	733				6SS 10.0-12.0 Rec = 22	8 12 13	1.0		N=20
12	732					4			
13	731				7SS 12.0-14.0 Rec = 20	6 9 12			N=15
14	730			CL-ML					
15	729				8ST 14.0-16.0 Rec = 23		2.5		
16	728					8			
17	727				9SS 16.0-18.0 Rec = 24	12 15 17	1.25 3.5		N=27
18	726					8	1.5		
19	725				10SS 18.0-20.0 Rec =21	9 16 20	2.75		N=25
20									

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA (0-20')
*Rotary 0-100' (Shaw)

DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig (Shaw)
DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

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12-18-2006

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) (0-100')
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth In Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
20	724		Gray Silty CLAY, little to some sand, trace gravel, tough to very tough, moist	CL & CL-ML		8			
21	723				11SS 20.0-22.0 Rec = 17	10 16 20	2.25		N=26
22	722					6			
23	721				12SS 22.0-24.0 Rec = 20	6 8 9	1.25		N=14
24	720								
25	719				13ST 24.0-26.0 Rec = 19		3.25		
26	718					4			
27	717				14SS 26.0-28.0 Rec = 24	6 9 10	1.5		N=15
28	716					9			
29	715				15SS 28.0-30.0 Rec = 24	14 20 31	2.5		N=34
30	714					7			
31	713				16SS 30.0-32.0 Rec = 24	11 12 13	3.0		N=23
32	712					6			
33	711				17SS 32.0-34.0 Rec = 24	10 12 19	2.25		N=22
34	710								
35	709				18SS 34.0-36.0 Rec = 20		1.75		
36	708					4			
37	707				19SS 36.0-38.0 Rec = 24	8 12 15	1.25		N=20
38	706					5			
39	705				20SS 38.0-40.0 Rec = 24	8 12 15	2.25		N=20
40									

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA (0-20')
*Rotary 0-100' (Shaw)

DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig (Shaw)

DRILLING STARTED: 03-30-07 ENDED: 04-13-07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) (0-100')
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
40	704		Gray Silty CLAY, little to some sand, trace gravel, tough to very tough, moist	CL-ML	21SS 40.0-42.0 Rec = 22	6 10 12 19	3.75		N=22
41	703								
42	702				22SS 42.0-44.0 Rec = 24	5 8 19 19	1.75		N=27
43	701								
44	700				23SS 44.0-46.0 Rec = 24	5 7 12 17	3.0		N=19
45	699								
46	698				24SS 46.0-48.0 Rec = 24	10 20 24 28	1.75 3.5		N=44
47	697		Gray Fine Clayey SAND, trace gravel, wet	SC					
48	696		Layers of Gray SILT and Clayey SILT, wet	ML	25SS 48.0-50.0 Rec = 24	14 17 19 24			N=36
49	695								
50	694				26SS 50.0-52.0 Rec = 24	9 11 12 15	1.5		N=23
51	693								
52	692		Gray Very Silty CLAY, SILT seams, trace gravel, very tough moist	CL-ML	27SS 52.0-54.0 Rec = 24	8 12 14 21	2.25 3.0		Shaw's ST-1 52.5'-54.5' N=26
53	691		Gray Silty CLAY, silt layers, little sand, trace gravel, very tough, moist to wet	CL					
54	690				28SS 54.0-56.0 Rec = 24	5 13 21 24	2.5 2.25		N=34
55	689								
56	688				29SS 56.0-58.0 Rec = 24	15 15 20 23	2.75		N=35
57	687								
58	686				30SS 58.0-60.0 Rec = 24	8 21 12 14	3.75 2.25		N=33
59	685		Gray Fine Sandy SILT, trace clay and gravel, dense, moist	ML					
60			Gray Silty CLAY, little sand, trace gravel, very tough, moist	CL					

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA (0-20')
*Rotary 0-100' (Shaw)

DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig (Shaw)

DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

12-18-20

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) (0-100')
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
60	684		Gray Silty CLAY, little sand, trace gravel, very tough, moist			10			
61	683				31SS 60.0-62.0 Rec = 24	24 25	4.0		N=49
62	682					39			
63	681				32SS 62.0-64.0 Rec = 22	5 16 31 32	2.75		N=47
64	680			CL		12			
65	679				33SS 64.0-66.0 Rec = 24	25 33 36	3.25		N=58
66	678					13			
67	677		Layers of Gray Silty CLAY, Gray SILT and Silty SAND, wet		34SS 66.0-68.0 Rec = 24	17 17 21	1.5		N=34
68	676					12			
69	675			SM	35SS 68.0-70.0 Rec = 24	11 21 33			N=32
70	674					17			
71	673				36SS 70.0-72.0 Rec = 24	11 7 13			N=18
72	672		Gray Silty CLAY, little sand, trace gravel, tough to hard, moist			10			
73	671				37SS 72.0-74.0 Rec = 24	13 31 18	1.5		N=44
74	670		Layers of clayey fine sand @74.0-74.5' and 78.0-78.5 (SC)			25			
75	669				38SS 74.0-76.0 Rec = 6	23 26			N=49
76	668			CL		25			
77	667				39SS 76.0-78.0 Rec = 24	12 17 19 24	1.75		N=36
78	666					16	2.0		
79	665				40SS 78.0-80.0 Rec = 24	35 33 33	4.25		N=68
80									

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA (0-20')
*Rotary 0-100' (Shaw)

DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig (Shaw)
DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) (0-100')
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
80	664		Gray Silty CLAY, little sand, trace gravel, tough to hard, moist	CL	41SS 80.0-82.0 Rec = 24	20 32 38 50	3.0		N=70
81	663								
82	662				42SS 82.0-84.0 Rec = 24	21 36 47 43	2.75		N=83
83	661								
84	660				43SS 84.0-86.0 Rec = 24	10 19 26 28	2.25		N=45
85	659								
86	658				44SS 86.0-88.0 Rec = 24	14 26 27 36	15.7		N=53
87	657								
88	656				45SS 88.0-90.0 Rec = 24	13 21 33 44	2.5		N=54
89	655								
90	654				46SS 90.0-92.0 Rec = 17	32 58 50/5"	18.4		N=108+
91	653								
92	652				47SS 92.0-94.0 Rec = 24	20 34 36 55	1.5 4.25		N=70
93	651								
94	650				48SS 94.0-96.0 Rec = 17	17 36 50/5"	4.25		N=86+
95	649		Layers of Gray SILT, very Silty CLAY and Sandy SILT, wet	SM					
96	648				49SS 96.0-98.0 Rec = 12	61 50/6"			N=111+
97	647		Sand and gravel seams						
98	646				50SS 98.0-100.0 Rec = 24	42 23 30 53	4.5+ 4.5+		N=53
99	645		Gray Silty CLAY, little sand, trace gravel, hard, moist	CL					
100			Gray Clayey SILT, very dense, moist to wet	ML					

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA (0-20')
*Rotary 0-100' (Shaw)

DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig (Shaw)

DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) (0-100')
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
100	644		Dark Gray (2.5Y 4/1) SILT, some clay, little fine sand, trace medium to coarse sand, fine gravel, dense, low to medium plasticity, moist	ML	SS-2 100.0-102.0 Rec = 20	13 16 17	2.5		N=33
101	643								
102	642		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine gravel, very stiff to stiff, medium plasticity, moist	CL	See Remarks	16 11	2.75		SS-3 102.0-104.0 Rec = 6
103	641			ML	SS-3A 102.0-104.0 Rec = 18	60 83/6"	1.5 4.5+		N=143
104	640		Dark Gray (5Y 4/1) to Olive Gray (5Y 4/2) SILT, some clay, trace fine sand, extremely dense, low plasticity, very moist						
105	639		Dark Gray (5Y 4/1) to Olive Gray (5Y 4/2) Fine to Coarse SAND, little silt, little clay, trace fine gravel, extremely dense, saturated	SP	SS-4 104.0-106.0 Rec = 20	29 46 46 50/5"			N=92
106	638								
107	637				SS-5 106.0-108.0 Rec = 18	50 70 79/6"			N=149
108	636		Dark Gray (2.5Y 4/1) SILT, some clay, trace fine sand, dense, low plasticity, very moist	ML		24	3.75		
109	635		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand and gravel, hard, medium plasticity, moist	CL	SS-6 108.0-110.0 Rec = 20	18 22 37	4.5+		N=40
110	634		Dark Gray (5Y 4/1) SILT, some clay, little fine to coarse sand and gravel, very dense, low plasticity, moist	ML		18	3.75		
111	633				SS-7 110.0-112.0 Rec = 20	27 32 36			N=59
112	632		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, hard, medium plasticity, moist			19	4.5+		
113	631		Interbedded silt seams from 113.0 - 113.6'	CL	SS-8 112.0-114.0 Rec = 22	30 31 38	4.5+		N=61
114	630					22	4.5+		
115	629				SS-9 114.0-116.0 Rec = 20	31 50 50/5"	4.5+		N=81
116	628					18	4.5+		
117	627				SS-10 116.0-118.0 Rec = 22	36 50 50/4"	4.5+		N=86
118	626					30	4.5+		
119	625				SS-11 118.0-120.0 Rec = 21	54 70 50-3"	4.5+		N=124
120				CL					

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA (0-20')
*Rotary 0-100' (Shaw)

DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig (Shaw)

DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) (0-100')
RWB (Shaw) 100-220'

Shaw* Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
120	624		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, hard, medium plasticity, moist	CL	SS-12 120.0-122.0 Rec = 12	65 100/6"	4.5+		N=165+
121	623								
122	622		Gray (2.5Y 5/1) SILT, some clay, little fine sand, trace medium to coarse sand, fine gravel, extremely dense, low plasticity, moist to very moist	ML	SS-13 122.0-124.0 Rec = 9	83 100/3"	3.0		N=183+
123	621								
124	620				SS-14 124.0-126.0 Rec = 20	49 95 87 50/2"	4.5+		N=182
125	619								
126	618				SS-15 126.0-128.0 Rec = 11	67 100/5"	4.5+		N=167+
127	617								
128	616		Dark Gray (2.5Y 4/1) SILT, some clay, little fine sand, trace medium to coarse sand, fine gravel, extremely dense, low plasticity, moist to very moist	ML	SS-16 128.0-130.0 Rec = 5	150/5"	4.5+		N=150+
129	615								
130	614				SS-17 130.0-132.0 Rec = 6	120 100/1"	4.5+		N=220+
131	613								
132	612				SS-18 132.0-134.0 Rec = 14	94 88 200/5"	4.5+		N=288+
133	611								
134	610		Dark Gray (2.4Y 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, hard, medium plasticity, moist	CL	SS-19 134.0-136.0 Rec = 24	29 39 60 126	4.5+ 4.5+		N=99
135	609								
136	608				SS-20 136.0-138.0 Rec = 24	20 47 65 81	4.5+ 4.5+		N=112
137	607								
138	606				SS-21 138.0-140.0 Rec = 24	25 53 70 86	4.5+ 4.5+		N=123
139	605								
140									

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA (0-20')
*Rotary 0-100' (Shaw)
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig (Shaw)
DRILLING STARTED: 03-30/07 ENDED: 04-13-07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

06-28-2007

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) 0-100'
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
140	604		Dark Gray (2.5Y 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, hard, medium plasticity, moist	CL	SS-22 140.0-142.0 Rec = 24	26 46 63 90	4.5+ 4.5+		N=109
141	603								
142	602				SS-23 142.0-144.0 Rec = 23	32 60 77 100/5"	4.5+ 4.5+		N=137
143	601								
144	600				SS-24 144.0-146.0 Rec = 24	37 57 72 91	4.5+ 4.5+		N=129
145	599								
146	598				SS-25 146.0-148.0 Rec = 17	32 87 100/5"	4.5+ 4.5+		N=187+
147	597								
148	596				SS-26 148.0-150.0 Rec = 24	34 56 71 102	4.5+ 4.5+		N=127
149	595								
150	594				See Remarks				ST-27 105.0-150.5 Rec = 4
151	593				SS-28 150.5-152.0 Rec = 18	33 48 69	4.5+ 4.5+		N=117
152	592								
153	591				SS-29 152.0-154.0 Rec = 23	34 54 80 100/5"	4.5+ 4.5+		N=134
154	590								
155	589				SS-30 154.0-156.0 Rec = 23	32 54 77 100/5"	4.5+ 4.5+		N=131
156	588								
157	587				SS-31 156.0-158.0 Rec = 17	69 83 100/5"	4.5+ 4.5+		N=183+
158	586								
159	585				SS-32 158.0-160.0 Rec = 24	21 50 90 99	4.5+ 4.5+		N=140
160									

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA - (0-20')
*Rotary 0-100 (Shaw)
DRILLING EQUIPMENT: Acker Soil Max Track Mounted Drill Rig (Shaw)
DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "SS" - Split Spoon
*3.785" Tricone Roller Bit. 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

08-26-2007

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) 0-100'
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
160	584		Dark Gray (2.5Y 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, hard, medium plasticity, moist	CL	SS-33 160.0-162.0 Rec = 23	46 67 87 100/5"	4.5+ 4.5+		N=154
162	582		Dark Gray (5Y 4/1) Silty CLAY, trace fine to coarse sand, trace fine gravel, hard to very stiff, medium plasticity, moist	CL	SS-34 162.0-164.0 Rec = 24	30 52 65 98	4.5+ 4.5+		N=117
164	580				SS-35 164.0-166.0 Rec = 24	26 43 62 100	4.5+		N=105
166	578				SS-36 166.0-168.0 Rec = 24	21 29 40 70	4.5+ 4.5+		N=69
168	576				ST-37 168.0-170.0 Rec = 18		4.5+		
170	574				SS-38 170.0-172.0 Rec = 24	16 20 25 44	3.0 2.5		N=45
172	572				SS-39 172.0-174.0 Rec = 24	26 19 19 30	3.25 2.75		N=38
174	570		Gray (5Y 5/1) SILT, some clay, trace fine sand, dense, low plasticity, very moist	ML	See Remarks	18	2.75		SS-40 174.0-174.7 Rec = 8
175	569		Dark Gray (5Y 4/1) Silty CLAY, trace fine sand, stiff to very stiff, medium plasticity, moist to very moist	CL	SS-40A 174.7-176.0 Rec = 16	20 22 36	1.5		N=42
176	568				SS-41 176.0-178.0 Rec = 24	12 14 19 29	2.25 1.75		N=33
178	566				SS-42 178.0-180.0 Rec = 24	7 14 16 28	2.0 2.5		N=30
180	565								

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA - (0-20')
*Rotary 0-100 (Shaw)

DRILLING EQUIPMENT: Acker Soil Max Track Mounted Drill Rig (Shaw)

DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.. 122150
LOGGED BY: RLJ (RJ) 0-100'
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth In Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
180	564		Dark Gray (5Y 4/1) Silty CLAY, trace fine sand, stiff to very stiff, medium plasticity, moist to very moist			8	2.0		
181	563				SS-43 180.0-182.0 Rec = 24	14 17 29	2.5		N=31
182	562					13	1.75		
183	561				SS-44 182.0-184.0 Rec = 24	15 16 28	2.0		N=31
184	560					9	2.0		
185	559				SS-45 184.0-186.0 Rec = 24	12 14 23	1.5		N=26
186	558					11	1.5		
187	557				SS-46 186.0-188.0 Rec = 24	12 16 23	1.5		N=28
188	556					10	2.75		
189	555				SS-47 188.0-190.0 Rec = 24	13 17 23	1.75 2.5		N=30
190	554			CL		10	2.5		
191	553				SS-48 190.0-192.0 Rec = 24	16 18 26	2.5		N=34
192	552					10	2.5		
193	551				SS-49 192.0-194.0 Rec = 24	14 17 27	2.25		N=31
194	550					11	2.25		
195	549				SS-50 194.0-196.0 Rec = 24	16 19 33	2.25		N=35
196	548						2.5		
197	547				SS-51 196.0-198.0 Rec = 24	Pushed SS	2.75		
198	546						2.25		
199	545				SS-52 198.0-200.0 Rec = 24	Pushed SS	1.5		
200									

DRILLING CONTRACTOR: RDnP Drilling. Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA - (0-20')
*Rotary 0-100 (Shaw)
DRILLING EQUIPMENT: Acker Soil Max Track Mounted Drill Rig (Shaw)
DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

06-26-2007

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SURFACE ELEVATION: 744.10
NORTHING: 11400.75
EASTING: 13283.41

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RLJ (RJ) 0-100'
RWB (Shaw) 100-220'

Shaw® Shaw Environmental, Inc.

BORING NO. B-6-07 / EB-10

Depth in Feet	Surf. Elev. 744.10	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
200	544		Dark Gray (5Y 4/1) Silty CLAY, trace fine sand, stiff to very stiff, medium plasticity, moist to very moist	CL	SS-53 200.0-202.0 Rec = 20	8 21 37 47	1.5 1.5		N=58
201	543								
202	542				SS-54 202.0-204.0 Rec = 22	8 15 24 39	1.25 2.5		N=39
203	541								
204	540		Dark Gray (2.5Y 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, stiff to very stiff, medium plasticity, moist	CL	SS-55 204.0-206.0 Rec = 24	17 19 27 32	1.75 2.5		N=46
205	539								
206	538				SS-56 206.0-208.0 Rec = 24	10 17 24 33	2.25 2.25		N=41
207	537								
208	536				SS-57 208.0-210.0 Rec = 24	17 25 40 51	2.25 2.25		N=65
209	535								
210	534				SS-58 210.0-212.0 Rec = 24	8 16 20 30	2.5 2.5		N=36
211	533								
212	532		Dark Gray (2.5Y 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, hard, low to medium plasticity, moist	CL-ML	SS-59 212.0-214.0 Rec = 16	23 55 100/4"	4.5+ 4.5+		N=155+
213	531								
214	530		Gray (2.5Y 5/1) Fine to Coase SAND with GRAVEL, little silt, trace clay, well graded, extremely dense, saturated (WEATHERED BEDROCK)	SW	SS-60 214.0-216.0 Rec = 6	143/6"			N=143+
215	529								
216	528		Grayish Brown (2.5Y 5/2) DOLOMITE BEDROCK	DO	SS-61 216.0-218.0 Rec = 0	100/2"			N=100+
217	527								
218	526								
219	525				SS-62 218.0-220.0 Rec = 0	100/<1"			N=100+
220			END OF BORING @ 220.0'						

DRILLING CONTRACTOR: RDnP Drilling, Inc. 100-220'
DRILLING METHOD: 6.25" I.D. - HSA - (0-20')
*Rotary 0-100 (Shaw)

DRILLING EQUIPMENT: Acker Soil Max Track Mounted Drill Rig (Shaw)
DRILLING STARTED: 03/30/07 ENDED: 04/13/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
0.0'-100.0' Taken from EB-10 located within 10' of B-6-07.
MW-6-07-D completed within B-6-07.

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SURFACE ELEVATION: 734.75
NORTHING: 10879.55
EASTING: 11825.30

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-85'
JM (Golder Assoc.) 85-97'

Shaw® Shaw Environmental, Inc.

BORING NO. B-7-07 / G178

Depth In Feet	Surf. Elev. 734.75	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
0			GRAVEL FILL (on gravel road)	FILL					
1	734		Dark Grayish Brown (10YR 4/2) to Brown (10YR 4/3) Silty CLAY FILL, little fine to coarse sand, fine gravel, hard, low to medium plasticity, dry to moist						
2	733						4.5+		
3	732				CS-1 0.0-5.0 Rec = 48				
4	731						4.5+		
5	730			FILL					
6	729						4.5+		
7	728								
8	727				CS-2 5.0-10.0 Rec = 40				
9	726						4.5+		
10	725								
11	724		Olive Brown (2.5Y 4/3) Silty CLAY, some fine to coarse sand, fine gravel, stiff to very stiff, medium plasticity, moist				3.0		
12	723						1.5		
13	722			CL	CS-3 10.0-15.0 Rec = 60		2.0		
14	721						1.5		
15	720								
16	719		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, fine gravel, hard to very stiff, medium plasticity, moist				4.5+		
17	718								
18	717			CL	CS-4 15.0-20.0 Rec = 60		4.5+		
19	716								
20	715								

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 4.25" I.D.-HSAShaw 3"O.D.x5'CS (0-75') *Rotary (75-85')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/26/07 ENDED: 03/27/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
"CS" - Continous Sampler CS = 3" O.D. x 5' (0-75')
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
85.0'-97.0' Taken from G178 located within 10' of B-7-07.

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SURFACE ELEVATION: 734.75
NORTHING: 10879.55
EASTING: 11825.30

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-85'
JM (Golder Assoc.) 85-97'

Shaw® Shaw Environmental, Inc.

BORING NO. B-7-07 / G178

Depth in Feet	Surf. Elev. 734.75	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
20			Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, fine gravel, very stiff to stiff, medium plasticity, moist	CL	CS-5 20.0-25.0 Rec =60		3.5		
21	714						2.5		
22	713								
23	712						3.5		
24	711						3.5		
25	710								
26	709				CS-6 25.0-30.0 Rec = 60		3.0		
27	708								
28	707						3.0		
29	706								
30	705								
31	704						3.25		
32	703						3.25		
33	702				CS-7 30.0-35.0 Rec =60		2.0		
34	701						2.0		
35	700								
36	699						1.0		Description for 38.5-40 ft. : Dark Gray (10YR 5/1) to Dark Grayish Brown (2.5Y 4/2) Silty Fine to Coarse SAND, some fine to coarse gravel, trace clay, extremely dense, moist
37	698						1.5		
38	697				CS-8 35.0-40.0 Rec =58		1.0		
39	696		Silty Fine to Coarse SAND (See Remarks for full description)	SM			4.5+		
40	695								

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 4.25" I.D.-HSAShaw 3"O.D.x5'CS (0-75') *Rotary (75-85')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/26/07 ENDED: 03/27/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "SS" - Split Spoon
"CS" - Continous Sampler CS = 3" O.D. x 5' (0-75')
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
85.0'-97.0' Taken from G178 located within 10' of B-7-07.

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SURFACE ELEVATION: 734.75
NORTHING: 10879.55
EASTING: 11825.30

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-85'
JM (Golder Assoc.) 85-97'

Shaw® Shaw Environmental, Inc.

BORING NO.
B-7-07 / G178

Depth in Feet	Surf. Elev. 734.75	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
40			Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist	CL					
41	694						4.5+		
42	693						3.5		
43	692				CS-9 40.0-45.0 Rec = 60				
44	691						2.5		
45	690								
46	689						4.5+		
47	688								
48	687				CS-10 45.0-50.0 Rec = 60				
49	686						4.5+		
50	685								
51	684				ST-11 50.0-52.5 Rec = 24				
52	683								
53	682						3.5		
54	681				CS-12 52.5-55.0 Rec = 30		2.0		
55	680						2.5		
56	679						3.5		
57	678								
58	677				CS-13 55.0-60.0 Rec = 60		3.75		
59	676								
60	675						3.0		

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 4.25" I.D.-HSAShaw 3"O.D.x5'CS (0-75') *Rotary (75-85')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/26/07 ENDED: 03/27/07

WATER LEVEL (FT.)

REMARKS
"ST" - Shelby Tube, "SS" - Split Spoon
"CS" - Continous Sampler CS = 3" O.D. x 5' (0-75')
*3.875" Tricone Roller Bit. 2" O.D. 2' Long Split Spoon
85.0'-97.0' Taken from G178 located within 10' of B-7-07.

SURFACE ELEVATION: 734.75
NORTHING: 10879.55
EASTING: 11825.30

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-85'
JM (Golder Assoc.) 85-97'

Shaw® Shaw Environmental, Inc.

BORING NO. B-7-07 / G178

Depth in Feet	Surf. Elev. 734.75	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
60									
61	674		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, stiff to hard, medium plasticity, moist				1.5		
62	673						1.25		
63	672				CS-14 60.0-65.0 Rec = 50				
64	671						3.75		
65	670						4.5+		
66	669						4.5+		
67	668								
68	667				CS-15 65.0-70.0 Rec = 48				
69	666						2.5		
70	665			CL					
71	664						2.0		
72	663								
73	662				CS-16 70.0-75.0 Rec = 55				
74	661						2.25		
75	660					9			
76	659				SS-17 75.0-77.0 Rec = 24	15 21 25	1.25 1.75		N=36
77	658					8	1.25		
78	657				SS-18 77.0-79.0 Rec = 24	10 21 24	2.25 3.5		N=31
79	656				SS-19 79.0-81.0 Rec =24	17	4.5+		
80	655					22			

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 4.25" I.D.-HSAShaw 3"O.D.x5'CS (0-75') *Rotary (75-85')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/26/07 ENDED: 03/27/07

WATER LEVEL (ET.)

REMARKS

"ST" - Shelby Tube. "SS" - Split Spoon
"CS" - Continous Sampler CS = 3" O.D. x 5' (0-75')
*3.875" Tricone Roller Bit. 2" O.D. 2' Long Split Spoon
85.0'-97.0' Taken from G178 located within 10' of B-7-07.

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SURFACE ELEVATION: 734.75
NORTHING: 10879.55
EASTING: 11825.30

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB (Shaw) 0-85'
JM (Golder Assoc.) 85-97'

Shaw® Shaw Environmental, Inc.

BORING NO. B-7-07 / G178

Depth in Feet	Surf. Elev. 734.75	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
80									
81	654		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, gravel, stiff to hard, medium plasticity, moist	CL	SS-19 79.0-81.0 Rec = 24	41 45	4.5+		N=63
82	653		0.2' Fine to medium silty sand seam @ 82.2'		SS-20 81.0-82.4 Rec = 15	8 16 50	2.25 2.75		N=66
83	652		Reddish Brown (5YR 4/3) to Olive Gray (5Y 4/2) Silty CLAY, little fine to coarse sand, fine gravel, dense, low plasticity, moist	CL	See Remarks	44	4.5+		SS-20A 82.4-83.0 Rec = 7
84	651				SS-21 83.0-85.0 Rec = 24	23 22 23 25	4.5+ 4.5+		N=45
85	650		Olive Gray Clayey SILT, some to fine to coarse sand, fine gravel, very stiff, moist	SM	20SS 85.0-87.0 Rec = 21.6	0 15 17 16			N=32
87	648		Olive Gray SILT, trace fine to coarse sand, fine gravel, moist	ML	21SS 87.0-89.0 Rec = 24	20 20 20 21			N=40
89	646		Olive Gray Silty CLAY, trace fine to coarse sand, fine gravel, very stiff, moist	CL	22SS 89.0-91.0 Rec = 24	17 17 17 19			N=34
91	644		Olive Gray Fine to Medium SAND, dense, wet	SP					
92	643		Olive Gray Fine Silty SAND, very dense, wet	SM	23SS 91.0-93.0 Rec = 1.2	39 41 42 38			N=83
93	642		Olive Gray SILT, some fine sand, trace fine gravel, very stiff, moist	ML					
94	641				24SS 93.0-95.0 Rec = 9.6	28 30 27 28			N=57
95	640		Olive Gray SILT, trace fine sand, very stiff, moist	ML	25SS 95.0-96.0 Rec = 6	54 56			N=110
96	639				26SS 96.0-97.0 Rec = 12	51 47			N=98
97	638		END OF BORING @ 97.0'						
98	637								
99	636								
100	635								

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 4.25" I.D.-HSAShaw 3"O.D.x5'CS (0-75') *Rotary (75-85')
DRILLING EQUIPMENT: Diedrich D-120 Truck-mounted Drill Rig
DRILLING STARTED: 03/26/07 ENDED: 03/27/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
"CS" - Continous Sampler CS = 3" O.D. x 5' (0-75')
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
85.0'-97.0' Taken from G178 located within 10' of B-7-07.

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SURFACE ELEVATION: 737.20
NORTHING: 10868.75
EASTING: 12490.36

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

BORING NO. B-8-07

Depth in Feet	Surf. Elev. 737.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
0	737		Black (10YR 2/1) Organic Silty CLAY TOPSOIL, trace fine to coarse sand, stiff, medium plasticity, moist	OH	See Remarks	2	1.25		SS-1 0.0-0.5 Rec = 6
1	736		Dark Yellowish Brown (10YR 4/4) to Gray (10YR 5/1) Silty CLAY, trace fine sand, very stiff, medium plasticity, moist	CL	SS-1A 0.5-2.0 Rec = 15	2 4 5	2.5		N=6
2	735					5	3.5		
3	734				SS-2 2.0-4.0 Rec = 16	6 9 7	3.0		N=15
4	733					3	2.5		
5	732				SS-3 4.0-6.0 Rec = 23	3 5 8	3.25		N=8
6	731		Brown (10YR 4/3) to Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine sand, very stiff, medium plasticity, moist	CL		5	3.5		
7	730				SS-4 6.0-8.0 Rec = 22	5 6 8	2.5		N=11
8	729		Brown (10YR 5/3) to Yellowish Brown (10YR 5/4) Silty CLAY, trace fine to coarse sand, very stiff to stiff, medium plasticity, moist	CL	See Remarks	7	1.25		SS-5 8.0-8.3 Rec = 3
9	728		Brown (10YR 4/3) Fine to Coarse SAND, little fine gravel, little silt, trace clay, medium dense, saturated	SW	SS-5A 8.3-10.0 Rec = 20	6 7 9	1.5 1.25		N=13
10	727		0.3' Silty CLAY seam @ 9.2'	SM	SS-6 10.0-11.4 Rec = 16.8	3 9 7	2.5		N=16
11	726		Brown (10YR 4/3) Silty SAND, trace coarse sand, fine gravel, trace clay, medium dense, saturated		See Remarks	8	3.5		SS-6A 11.4-12.0 Rec = 7.2
12	725		Dark Grayish Brown (10YR 4/2) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, very stiff, medium plasticity, moist	CL	SS-7 12.0-14.0 Rec = 20	12 10 12 17	3.5 3.0		N=22
13	724								
14	723		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, very stiff, medium plasticity, moist	CL	SS-8 14.0-16.0 Rec = 12	20 23 18 9	2.5		N=41
15	722								
16	721				SS-9 16.0-18.0 Rec = 20	4 7 13 17	3.25 4.0		N=20
17	720								
18	719		Olive Brown (2.5Y 4/3) to Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, hard, medium plasticity, moist	CL	SS-10 18.0-20.0 Rec =20	5 6 10 13	3.5 2.25 4.5+		N=16
19	718								
20				CL					

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-14') *Rotary (14-94')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/20/07 ENDED: 04/24/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-8-07 completed within B-8-07.

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12-18-200

SURFACE ELEVATION: 737.20
NORTHING: 10868.75
EASTING: 12490.36

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-8-07

Depth in Feet	Surf. Elev. 737.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
20	717		Dark Gray (10YR 4/1) SILTY CLAY, little fine sand, trace medium to coarse sand, gravel, very stiff to hard, medium plasticity, moist	CL	SS-11 20.0-22.0 Rec = 23	6 11 13 19	4.25 3.5		N=24
22	715				SS-12 22.0-24.0 Rec = 20	4 6 10 14	3.25 3.5		N=16
24	713		Dark Gray (10YR 4/1) Silty SAND, trace coarse sand, fine to coarse gravel, medium dense, saturated	SM	SS-13 24.0-25.7 Rec = 17	12 11 8	4.5+		N=19 SS-13A 25.7-26.0 Rec = 2
26	711		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, stiff to very stiff, medium plasticity, moist	CL	See Remarks	6			
27	710				SS-14 26.0-28.0 Rec = 16	5 6 9 10	1.75 1.75		N=15
29	708				SS-15 28.0-30.0 Rec = 24	4 6 9 11	2.0 2.75		N=15
31	706				SS-16 30.0-32.0 Rec = 20	3 5 7 11	1.5 1.5		N=12
33	704				SS-17 32.0-34.0 Rec = 24	4 6 6 8	1.5 1.75		N=12
35	702				SS-18 34.0-36.0 Rec = 20	5 6 8 12	1.75		N=14
37	700				SS-19 36.0-38.0 Rec = 23	2 3 5 8	1.25 1.5		N=8
39	698				SS-20 38.0-40.0 Rec = 24	4 7 8 10	1.75 1.75		N=15

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA. 10" Boring (0-14') *Rotary (14-94')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/20/07 ENDED: 04/24/07

WATER LEVEL (FT.)

REMARKS
"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-8-07 completed within B-8-07.

SURFACE ELEVATION: 737.20
NORTHING: 10868.75
EASTING: 12490.36

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-8-07

Depth in Feet	Surf. Elev. 737.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
40	697		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, stiff to very stiff, medium plasticity, moist	CL	SS-21 40.0-42.0 Rec = 20	4 5 8 7	2.0 2.0		N=13
41	696								
42	695		Gray (10YR 5/1) SILT, some clay, little fine sand, medium dense, low plasticity, very moist	ML	SS-22 42.0-43.0 Rec = 11	5 7	1.25 1.25		
43	694		0.2" Silty clayey sand seam @ 42.6'	CL	SS-22A 43.0-44.0 Rec = 11	9 7	2.0 2.5		N=16
44	693		Dark Gray (10YR 4/1) Silty CLAY, trace fine sand, very stiff, medium plasticity, moist, laminated			8 14	3.5		
45	692		Dark Gray (10YR 4/1) Silty SAND, trace coarse sand, fine gravel, poorly graded, medium dense, saturated	SM	SS-23 44.0-46.0 Rec = 22	6 7	1.25		N=20
46	691								
47	690		Dark Grayish Brown (10YR 4/2) Silty CLAY, little fine to coarse sand, trace fine gravel, stiff, medium plasticity, moist	CL-ML	ST-24 46.0-48.0 Rec = 24				
48	689				See Remarks	6	1.5		SS-25 48.0-48.5 Rec = 6
49	688		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, hard to very stiff, medium plasticity, moist	CL	SS-25A 48.5-50.0 Rec = 18	12 16 21	4.5+		N=28
50	687				SS-26 50.0-52.0 Rec = 23	5 8 13 16	4.5+ 3.0		N=21
51	686								
52	685				SS-27 52.0-54.0 Rec = 24	8 11 13 18	3.0 2.75		N=24
53	684								
54	683				SS-28 54.0-56.0 Rec = 24	4 8 10 12	2.5 2.25		N=18
55	682								
56	681				SS-29 56.0-58.0 Rec = 24	5 8 10 13	2.5 2.0		N=18
57	680								
58	679		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine to medium sand, trace coarse sand, fine to coarse gravel, stiff, medium plasticity, moist	CL	SS-30 58.0-60.0 Rec = 22	3 7 9 12	1.5 1.75		N=16
59	678								
60									

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-14')
*Rotary (14-94')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/20/07 ENDED: 04/24/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-8-07 completed within B-8-07.

SURFACE ELEVATION: 737.20
NORTHING: 10868.75
EASTING: 12490.36

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-8-07

Depth in Feet	Surf. Elev. 737.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
60	677		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine to medium sand, trace coarse sand, fine to coarse gravel, stiff, medium platicity, moist	CL	SS-31 60.0-62.0 Rec = 24	4 7 9 11	1.75 1.75		N=16
62	675		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, trace fine gravel, stiff to hard, medium plasticity, moist		SS-32 62.0-64.0 Rec = 24	6 6 9 11	2.25 1.75		N=15
64	673				SS-33 64.0-66.0 Rec = 24	8 9 11 12	1.5 1.5		N=20
66	671				SS-34 66.0-68.0 Rec = 24	6 9 13 15	1.5 3.0 4.5+		N=22
68	669				SS-35 68.0-70.0 Rec = 24	7 16 24 27	4.5+ 3.0 3.0		N=40
70	667				SS-36 70.0-72.0 Rec = 20	9 13 30 34	4.5+ 4.5+		N=43
72	665			CL	SS-37 72.0-74.0 Rec = 24	12 13 19 27	4.5+ 4.5+		N=32
74	663				SS-38 74.0-76.0 Rec = 24	14 15 18 16	3.75 3.5		N=33
76	661				SS-39 76.0-78.0 Rec = 24	8 9 11 15	2.25 2.75		N=20
78	659				SS-40 78.0-80.0 Rec = 24	7 11 13 17	3.0 3.0		N=24
80									

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-14')
*Rotary (14-94')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/20/07 ENDED: 04/24/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-8-07 completed within B-8-07.

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SURFACE ELEVATION: 737.20
NORTHING: 10868.75
EASTING: 12490.36

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-8-07

Depth In Feet	Surf. Elev. 737.20	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
80	657		Very Dark Gray (10YR 3/1) Silty SAND, little coarse sand, trace clay, trace fine gravel, medium dense, saturated	SM	See Remarks	10			SS-41 80.0-80.4 Rec = 3
81	656				SS-41A 80.4-82.0 Rec = 15	7 11 15	2.5 3.0		N=18
82	655		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine to medium sand, trace coarse sand, fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL	SS-42 82.0-84.0 Rec = 20	10 16 26	2.0		N=42
83	654						2.25		
84	653				SS-43 84.0-85.0 Rec = 12	38 9 14	4.5+		
85	652		0.3' Silty SAND seam @ 84.7'						N=32
86	651		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace coarse sand, fine gravel, hard, medium plasticity, moist	CL	SS-43A 85.0-86.0 Rec = 12	18 33	4.5+		
87	650				SS-44 86.0-87.5 Rec = 18	12 15 52	4.5+		N=67
88	649		Dark Grayish Brown (2.5Y 4/2) Silty SAND, trace clay, poorly graded, extremely dense, saturated	SM	See Remarks	60 32			SS-44A 87.5-88.0 Rec = 6
89	648				SS-45 88.0-90.0 Rec = 12	48 60			N=128
90	647		Dark Gray (2.5Y 4/1) Silty CLAY, some fine to coarse sand, little fine gravel, hard to very stiff, medium plasticity, moist	CL-ML		80 20	4.5+		
91	646				SS-46 90.0-92.0 Rec = 22	18 16	2.5		N=34
92	645					17 8	4.5+		
93	644				SS-47 92.0-94.0 Rec = 24	13 16	4.5+		N=29
94	643		END OF BORING @ 94.0'			24			
95	642								
96	641								
97	640								
98	639								
99	638								
100									

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-14')
*Rotary (14-94')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 04/20/07 ENDED: 04/24/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "SS" - Split Spoon
*3.875" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-8-07 completed within B-8-07.

SURFACE ELEVATION: 739.50
NORTHING: 10924.54
EASTING: 12901.47

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-9-07

Depth in Feet	Surf. Elev. 739.50	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
0	739		CRUSHED STONE and GRAVEL FILL	FILL	SS-1 0.0-2.0 Rec = 8	3 6 2			N=8
2	738		Dark Yellowish Brown (10YR 4/4 to 4/6) to Gray (10YR 5/1) Silty CLAY, trace fine sand, stiff to hard, medium plasticity, moist	CL	SS-2 2.0-4.0 Rec =20	2 3 4 4 7	1.5 2.25 4.5+		N=8
4	736								
5	735		Brown (10YR 4/3) and Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine to medium sand, hard, medium plasticity, moist	CL	SS-3 4.0-6.0 Rec = 24	4 5 6 8	4.5+ 4.5+		N=11
7	732				SS-4 6.0-8.0 Rec = 24	3 5 6 9	3.5 2.75		N=11
8	731								
9	730		Olive Brown (2.5Y 4/3) to Dark Grayish Brown (10YR 4/2) Silty CLAY, trace fine to medium sand, stiff, medium plasticity, moist	CL	SS-5 8.0-10.0 Rec = 24	2 4 4 5	2.5 1.75 1.5		N=8
10	729		Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, medium stiff, high plasticity, moist	CL	SS-6 10.0-11.5 Rec = 17	1 1 2	0.5 0.5		N=3
12	727		Dark Gray (10YR 4/1) Sandy Silty CLAY, trace fine gravel, stiff to medium stiff, medium plasticity, moist to wet	CL	See Remarks SS-7 12.0-13.0 Rec = 10	5 3 7	1.5 0.5		SS-6A 11.5-12.0 Rec = 5
13	726		Olive Brown (2.5Y 4/3) to Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine to medium sand, trace coarse sand, fine gravel, stiff, medium plasticity, moist	CL	SS-7A 13.0-14.0 Rec = 9	2 3	1.25		N=9
15	724				SS-8 14.0-16.0 Rec = 20	3 4 6 9	1.25 1.25		N=10
16	723		Olive Brown (2.5Y 4/3) to Dark Grayish Brown (2.5Y 4/2) Fine to Coarse Clayey SAND, trace fine gravel, well graded, medium dense, saturated	SC	SS-9 16.0-18.0 Rec = 10	2 8 7 7			N=15
18	721		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, stiff, medium plasticity, moist	CL	SS-10 18.0-20.0 Rec =20	5 6 9 9	1.75 1.5		N=15
20									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') *Rotary (10-100')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/24/07 ENDED: 04/30/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-9-07 completed within B-9-07.

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SURFACE ELEVATION: 739.50
NORTHING: 10924.54
EASTING: 12901.47

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-9-07

Depth in Feet	Surf. Elev. 739.50	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
20	719		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, stiff, medium plasticity, moist	CL	SS-11 20.0-22.0 Rec = 24	2 5 7 8	1.75 2.0		N=12
22	717				SS-12 22.0-24.0 Rec = 20	2 4 5 8	1.5 2.5		N=9
24	715		Gray (2.5Y 5/1) Sandy SILT, trace fine gravel, trace clay, medium dense, low plasticity, very moist	ML	SS-13 24.0-25.7 Rec = 18	8 9 9	2.25 1.75		N=18
26	713		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand and fine gravel, stiff, medium plasticity, moist	CL / ML	See Remarks SS-14 26.0-27.0 Rec = 11	8 5 5	1.5 2.5		SS-13A 25.7-26.0 Rec = 3 N=14
27	712		Gray (2.5Y 5/1) Sandy SILT, trace medium sand, medium dense, low plasticity, very moist		SS-14A 27.0-28.0 Rec = 11	9 10	2.25 2.5		
28	711		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff to stiff, medium plasticity, moist	CL	SS-15 28.0-30.0 Rec = 18	4 5 7 7	1.5 1.75		N=12
30	709				SS-16 30.0-32.0 Rec = 22	6 6 9 9	2.0 2.0		N=15
32	707				SS-17 32.0-34.0 Rec = 22	3 6 14 9	1.75 1.75		N=20
34	705				SS-18 34.0-36.0 Rec = 22	4 6 8 11	2.25 3.0		N=14
36	703				SS-19 36.0-38.0 Rec = 24	5 13 14 21	1.5 2.5		N=27
38	701				SS-20 38.0-40.0 Rec = 24	4 7 11 16	1.75 2.25		N=18
40									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
*Rotary (10-100')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 04/24/07 ENDED: 04/30/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-9-07 completed within B-9-07.

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SURFACE ELEVATION: 739.50
NORTHING: 10924.54
EASTING: 12901.47

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-9-07

Depth in Feet	Surf. Elev. 739.50 - 700	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
40	699		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, fine gravel, very stiff to stiff, medium plasticity, moist	CL	SS-21 40.0-42.0 Rec = 24	7 11 14 20	2.0 2.25		N=25
41	698								
42	697				SS-22 42.0-44.0 Rec = 22	5 13 14 16	1.5 2.25		N=27
43	696								
44	695				SS-23 44.0-46.0 Rec = 18	7 9 9 12	2.0 2.0		N=18 SS-24 46.0-46.3 Rec = 3
45	694								
46	693		Gray (2.5Y 5/1) Silty CLAY, little fine to coarse sand, dense, low plasticity, very moist 0.3' Fine to med. Silty SAND seam @ 46.7' 0.2' Fine to med. Silty SAND seam @ 47.5'	CL-ML	See Remarks See Remarks	18 20	2.25 3.25		SS-24A 46.3-47.0 Rec = 9
47	692				SS-24B 47.0-48.0 Rec = 12	22 27	1.5 3.5		N=42
48	691				SS-25 48.0-49.5 Rec = 15	15 22 16	3.5		N=38 SS-25A 49.5-50.0 Rec = 5
49	690		0.3' Fine to medium SAND seam @ 49.5'						
50	689		Dark Gray (10YR 4/1) to Dark Yellowish Brown (10YR 4/4) Silty CLAY, trace fine to coarse sand, medium stiff to stiff, medium plasticity, moist	CL	See Remarks See Remarks	21 11	2.0 0.5-2.0		
51	688				SS-26A 50.0-52.0 Rec = 15	17 26 30	3.75 4.0		N=43 SS-26 50.0-52.0 Rec = 5
52	687		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine sand, trace medium to coarse sand, fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL		10	3.0		
53	686				SS-27 52.0-54.0 Rec = 21	14 19 23	3.0		N=33
54	685								
55	684		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, hard, medium plasticity, moist	CL	ST-28 54.0-56.0 Rec = 13				
56	683					20 25	4.5		
57	682				SS-29 56.0-58.0 Rec = 22	35 39	4.5		N=60
58	681								
59					ST-30 58.0-60.0 Rec = 13				
60									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
*Rotary (10-100')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 04/24/07 ENDED: 04/30/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-9-07 completed within B-9-07.

SURFACE ELEVATION: 739.50
NORTHING: 10924.54
EASTING: 12901.47

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-9-07

Depth in Feet	Surf. Elev. 739.50	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
60	680								
61	679		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, hard, medium plasticity, moist	CL	SS-31 60.0-62.0 Rec = 17	13 19 21 22	3.0 3.0		N=40
62	678								
63	677				SS-32 62.0-64.0 Rec = 24	9 13 18 18	2.5 2.5		N=31
64	676								
65	675				SS-33 64.0-66.0 Rec = 24	10 14 16 19	2.25 2.25		N=30
66	674		0.1' Fine to Med. Silty SAND seam @ 67.3'						
67	673				SS-34 66.0-67.3 Rec = 16	12 14 18	2.25		N=32
68	672		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, very stiff, medium plasticity, moist	CL	See Remarks	19	1.75		SS-34A 67.3-68.0 Rec = 8
69	671		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand, stiff to very stiff, medium plasticity, moist	CL	SS-35 68.0-70.0 Rec = 24	13 14 18 23	1.75 1.75		N=32
70	670								
71	669				SS-36 70.0-72.0 Rec = 24	5 11 16 17	1.25 1.5		N=27
72	668								
73	667				SS-37 72.0-74.0 Rec = 24	3 7 13 18	1.5 2.5		N=20
74	666								
75	665				SS-38 74.0-76.0 Rec = 20	10 13 19 28	2.0 2.25		N=32
76	664								
77	663				SS-39 76.0-78.0 Rec = 24	15 20 24 25	3.0 3.25 2.5		N=44
78	662								
79	661				SS-40 78.0-80.0 Rec = 24	9 12 19 27	2.5 3.5		N=31
80									

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA. 10" Boring (0-10') *Rotary (10-100')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 04/24/07 ENDED: 04/30/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube. "CS" - Continous sampler
"SS" - Split Spoon
*3.785" Tricone Roller Bit. 2" O.D. 2' Long Split Spoon
MW-9-07 completed within B-9-07.

SURFACE ELEVATION: 739.50
NORTHING: 10924.54
EASTING: 12901.47

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-9-07

Depth in Feet	Surf. Elev. 739.50	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
80	659		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, stiff to very stiff, medium plasticity, moist	CL	SS-41 80.0-81.0 Rec = 12	13	3.25		
81	658				SS-41A 81.0-82.0 Rec = 12	19 28	4.5		N=47
82	657		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, hard, medium plasticity, moist	CL	SS-42 82.0-83.0 Rec = 12	29 11	4.5 3.5		
83	656				SS-42A 83.0-84.0 Rec = 12	16 28			N=44
84	655		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist			35 12	2.5 4.0		
85	654				SS-43 84.0-86.0 Rec = 20	34 41			N=75
86	653			CL		59	4.0		
87	652				SS-44 86.0-88.0 Rec = 20	21 39 106	4.5+		N=145
88	651					70	4.5+		
89	650		Dark Gray (10YR 4/1) Silty CLAY, trace fine to coarse sand and gravel, very stiff, medium plasticity, moist	CL	SS-45 88.0-90.0 Rec = 22	17 41 66	4.5+ 2.5		N=107
90	649		Dark Grayish Brown (2.5Y 4/2) SAND, little coarse sand, trace fine gravel, trace silt, poorly graded, dense, saturated	SP	SS-46 90.0-92.0 Rec = 18	58 21 23 22 22			N=45
92	647		Dark Gray (10YR 4/1) Silty CLAY, some fine sand, trace medium to coarse sand and fine gravel, stiff to hard, medium plasicity, moist 0.4' Fine to medium SAND seam @ 93.2'	CL	SS-47 92.0-93.8 Rec = 22	5 13 25	0.5 4.5+		N=38
93	646				See Remarks	33			SS-47A 93.8-94.0 Rec = 2
94	645				SS-48 94.0-96.0 Rec = 20	8 10 15	1.75 2.5		N=25
95	644					15			
96	643		Dark Gray (10YR 4/1) Silty Fine to Coarse Sand, trace fine to little fine gravel, dense, moist	SM	SS-49 96.0-97.0 Rec = 11	11 20	4.5+		N=50
97	642				SS-49A 97.0-98.0 Rec = 11	30 32	4.5+		
98	641		Dark Gray (10YR 4/1) SILT, some sand, little clay, trace medium to coarse sand, fine gravel, very dense, low plasticity, moist 0.2' Fine to med. Silty SAND seam @ 99.6'	ML	SS-50 98.0-100.0 Rec = 20	20 38 28	4.5+ 4.5+		N=66
99						35			
100			END OF BORING @ 100.0'						

DRILLING CONTRACTOR: RDnP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
*Rotary (10-100')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 04/24/07 ENDED: 04/30/07

WATER LEVEL (FT.)

REMARKS

"ST" - Shelby Tube, "CS" - Continous sampler
"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
MW-9-07 completed within B-9-07.

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SURFACE ELEVATION: 737.40
NORTHING: 11485.09
EASTING: 12154.43

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-10-07

Depth in Feet	Surf. Elev.	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
0	737		Dark Gray (10YR 4/1) Silty CLAY FILL, trace fine to coarse sand, fine gravel, hard, medium plasticity, moist	Fill	SS-1 0.0-2.0 Rec =12	2 1 1 2	4.0		N=2
3	735		Brown (10YR 5/3) to Grayish Brown (10YR 5/2) Silty CLAY, trace fine sand, very stiff, medium plasticity, moist	CL	SS-2 2.0-4.0 Rec =18	2 1 2 4	4.0 2.75		N=3
5	732				SS-3 4.0-6.0 Rec = 24	5 4 7 9	2.75 3.75 3.75		N=11
7	730				SS-4 6.0-7.7 Rec = 21	3 5 5	2.0 2.0		N=10
8	729		Dark Gray (10YR 4/1) Silty CLAY, trace fine sand, stiff to very stiff, medium plasticity, moist 0.3' Fine to coarse SAND seam @ 9.7'	CL	See Remarks SS-5 Rec = 21 8.0-9.7	7 2 3 4	1.25 2.0 2.5		SS-4A 7.7-8.0 Rec = 3 N=7
10	727		Gray (10YR 5/1) Silty CLAY, little fine sand, very stiff, medium plasticity, moist 0.2' Fine to coarse SAND seam @ 10.7'	CL	See Remarks SS-6 10.0-10.9 Rec = 9	13 4 8	2.25		SS-5A 9.7-10.0 Rec = 3
11	726		Dark Gray (2.5Y 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine to coarse gravel, hard, medium plasticity, moist	CL	SS-6A 10.9-12.0 Rec = 13	10 13	4.5+		N=18
13	724				SS-7 12.0-14.0 Rec = 21	5 9 12 19	4.5+ 4.5+		N=21
14	723		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, some fine to coarse gravel, very stiff to hard, medium plasticity, moist See Remarks See Remarks						
15	722				SS-8 14.0-16.0 Rec = 20	6 10 19 29	4.0 4.25		N=29
17	720			CL	SS-9 16.0-18.0 Rec = 20	7 11 18 27	4.25 4.5+		N=29
19	718				SS-10 18.0-20.0 Rec =22	6 12 19 27	4.5+ 4.5+		N=31
20									

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA, 10" Boring (0-10') *Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G175 was completed within borehole.

SURFACE ELEVATION: 737.40
NORTHING: 11485.09
EASTING: 12154.43

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-10-07

Depth in Feet	Surf. Elev.	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
20	717		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, some fine to coarse gravel, very stiff to hard, medium plasticity, moist	CL	SS-11 20.0-22.0 Rec = 22	5 11 17 24	4.5+ 4.5+		N=28
21	716								
22	715				SS-12 22.0-24.0 Rec = 20	3 9 13 20	3.5 4.5+		N=22
23	714								
24	713				SS-13 24.0-26.0 Rec =24	6 10 14 19	4.0 4.5+ 3.75		N=24
25	712								
26	711				SS-14 26.0-28.0 Rec = 24	7 7 11 16	2.75 2.5 2.5		N=18
27	710		0.2' Silt seam @ 27.0'						
28	709				See Remarks	5	3.0		SS-15 28.0-28.5 Rec = 4
29	708		Gray (10YR 5/1) Sandy SILT, some clay, trace fine gravel, medium dense, low plasticity, moist to very moist	ML	SS-15A 28.5-30.0 Rec = 18	11 8 14	2.25 2.5		N=19
30	707				SS-16 30.0-32.0 Rec = 18	9 10 7 8	2.25 2.25		N=17
31	706								
32	705		Dark Gray (10YR 4/1) Silty CLAY, trace to little fine sand, trace medium to coarse sand, fine to coarse gravel, very stiff to hard medium plasticity, moist	CL	SS-17 32.0-34.0 Rec = 24	5 7 10 14	2.5 2.5		N=17
33	704								
34	703				SS-18 34.0-36.0 Rec = 22	8 8 13 16	2.0 2.0		N=21
35	702								
36	701				See Remarks	9	2.0		SS-19 36.0-36.5 Rec = 6
37	700		Olive Brown (2.5Y 4/3) Silty CLAY, little fine sand, trace medium to coarse sand, very stiff, medium plasticity, very moist	CL	SS-19A 36.5-38.0 Rec = 18	11 11 14	4.5+ 2.0 3.5 2.0		N=22
38	699		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, trace fine gravel, stiff to very stiff, medium plasticity, moist	CL	SS-20 38.0-40.0 Rec = 21	5 8 10 12	1.75 2.5		N=18
39	698								
40									

DRILLING CONTRACTOR: RDNP Drilling. Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
*Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G175 was completed within borehole.

SURFACE ELEVATION: 737.40
NORTHING: 11485.09
EASTING: 12154.43

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-10-07

Depth in Feet	Surf. Elev.	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
40	697		Dark Gray (10YR 4/1) Silty CLAY, little fine to coarse sand, trace fine gravel, stiff to very stiff, medium plasticity, moist	CL	SS-21 40.0-42.0 Rec = 22	3 7 9 13	2.0 2.0		N=16
41	696								
42	695				SS-22 42.0-44.0 Rec = 20	5 7 10 11	2.5 2.5 1.75		N=17
43	694								
44	693				SS-23 44.0-46.0 Rec = 20	3 6 8 10	1.75 1.75		N=14
45	692								
46	691				SS-24 46.0-48.0 Rec = 19	5 6 10 11	1.5 1.5		N=16
47	690								
48	689				SS-25 48.0-50.0 Rec = 20	6 8 13 17	2.0 3.0		N=21
49	688								
50	687				SS-26 50.0-52.0 Rec = 20	8 12 16 21	2.5 3.25		N=28
51	686								
52	685		0.2' Fine to Coarse Silty Clayey SAND seam @ 51.8		SS-27 52.0-54.0 Rec = 24	7 11 15 21	2.5 3.0		N=26
53	684								
54	683				SS-28 54.0-56.0 Rec = 24	12 19 17 20	4.5+ 2.25 1.5 2.5		N=36
55	682								
56	681				SS-29 56.0-58.0 Rec = 23	4 7 12 15	2.0 2.5		N=19
57	680								
58	679				SS-30 58.0-60.0 Rec = 20	11 12 15 20	2.25 1.75		N=27
59	678								
60									

DRILLING CONTRACTOR: RDNP Drilling. Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
*Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G175 was completed within borehole.

SURFACE ELEVATION: 737.40
NORTHING: 11485.09
EASTING: 12154.43

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-10-07

Depth in Feet	Surf. Elev.	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
60			(Continued)	CL					
	677				See Remarks	8	2.5		SS-31 60.0-61.0 Rec = 12
61			Dark Grayish Brown (10YR 4/2) Silty CLAY, some fine sand, trace medium to coarse sand, fine to coarse gravel, stiff to very stiff, medium plasticity, moist			10	2.5		N=23
	676			CL	SS-31A 61.0-62.0 Rec = 12	13	1.0		
62						24			SS-32 62.0-62.5 Rec = 6
	675				See Remarks	8	1.25		
63			Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist			8	2.0		N=19
	674				SS-32A 62.5-64.0 Rec = 18	11	2.0		
64						14			
	673					8	1.5		
65					SS-33 64.0-66.0 Rec = 24	11	2.0		N=26
	672					15	2.5		
66						17			
	671					8	2.25		
67					SS-34 66.0-68.0 Rec = 24	8			N=21
	670					13	3.0		
68						17			
	669					7	2.25		
69					SS-35 68.0-70.0 Rec = 24	11	3.75		N=27
	668					16	4.5+		
70						18			
	667					5	3.5		
71					SS-36 70.0-72.0 Rec = 24	8			N=19
	666			CL		11	2.5		
72						13			
	665					8	3.0		
73					SS-37 72.0-74.0 Rec = 24	9	2.5		N=21
	664					12	3.0		
74						16			
	663					6	4.5+		
75					SS-38 74.0-76.0 Rec = 21	13			N=27
	662					14	3.25		
76						19			
	661					11	3.0		
77					SS-39 76.0-78.0 Rec = 24	15	4.5+		N=32
	660					17	3.0		
78						25	4.5+		
	659					9	2.25		
79					SS-40 78.0-80.0 Rec = 24	17	3.0		N=38
	658					21	2.5		
80						30			

DRILLING CONTRACTOR: RDNP Drilling. Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
*Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G175 was completed within borehole.

05-13-2009 \\Projects\2006\122150 - Zion Landfill Expansion\Hydrogeo\Boring Logs\B-175 - mod pg 5.bor

SURFACE ELEVATION: 737.40
NORTHING: 11485.09
EASTING: 12154.43

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-10-07

Depth in Feet	Surf. Elev.	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content (0 10 20 30 40 50)	REMARKS
80	657		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand, fine gravel, very stiff to hard, medium plasticity, moist	CL	SS-41 80.0-82.0 Rec = 24	14 15 18 27	3.75 4.5+		N=33
81	656								
82	655				SS-42 82.0-84.0 Rec = 24	14 25 25 29	4.5+ 3.0 3.5		N=50
83	654								
84	653				SS-43 84.0-85.0 Rec = 12	6 11	2.5		N=31
85	652		Dark Grayish Brown (2.5Y 4/2) Silty CLAY, trace to little fine sand, stiff to very stiff, low to medium plasticity, very moist to saturated	CL-ML	SS-43A 85.0-86.0 Rec = 12	20 20	2.0 1.5		
86	651		0.1' Fine to medium silty sand seams @ 85.0', 85.6', 85.9', 86.8'		SS-44 86.0-87.5 Rec = 15	8 16 27	1.0 3.0 1.5 1.75		N=43
87	650		0.3' Fine to medium Silty SAND seam @ 87.2		See Remarks	24	3.0		SS-44A 87.5-88.0 Rec = 6
88	649		Dark Gray (2.5Y 4/1) SILT, some clay, trace fine to coarse sand, fine gravel, dense, low plasticity, moist	ML	SS-45 88.0-89.2 Rec = 11	30 34 61	4.5+		N=95
89	648		Dark Grayish Brown (2.5Y 4/2) Fine to Medium Silty SAND, trace coarse sand, fine gravel, trace silt, poorly graded, extremely dense, moist	SM	See Remarks	72	4.5+		SS-45A 89.2-90.0 Rec = 9
90	647		0.3' gray silty CLAY seam @ 89.2'		SS-46 90.0-92.0 Rec = 22	37 63 82 100/4.5"			N=145
91	646								
92	645				SS-47 92.0-93.6 Rec = 16	46 45 53			N=98
93	644				See Remarks	75	1.5		SS-47A 93.6-94.0 Rec = 4
94	643		Grayish Brown (2.5Y 5/2) SILT, trace clay, trace fine to coarse sand, extremely dense, low plasticity, saturated	ML	SS-48 94.0-96.0 Rec = 13	28 56 85 99	1.75		N=141
95	642								
96	641				SS-49 96.0-98.0 Rec = 20	32 36 41 62	1.5		N=77
97	640								
98	639				SS-50 98.0-100.0 Rec = 16	39 60 63 38	1.25		N=123
99	638								
100			See description on next page	CL					

DRILLING CONTRACTOR: RDNP Drilling. Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
*Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G175 was completed within borehole.

05-13-2009 T:\Projects\2006\122150 - Zion Landfill Expansion\Hydrogeo\Boring Logs\B-175 - mod pg 5.bor

SURFACE ELEVATION: 737.40
NORTHING: 11485.09
EASTING: 12154.43

PROJECT: Veolia E.S. Zion Landfill Expansion
CLIENT: Veolia E.S. Zion Landfill Inc.
PROJECT NO.: 122150
LOGGED BY: RWB

Shaw® Shaw Environmental, Inc.

BORING NO. B-10-07

Depth in Feet	Surf. Elev.	Strata	DESCRIPTION	USCS	Sample Type & No. Depth (ft) Recovery (in)	Blow Count	UCS (tsf)	Water Content 0 10 20 30 40 50	REMARKS
100	637		Dark Gray (10YR 4/1) Silty CLAY, little fine sand, trace medium to coarse sand and fine to coarse gravel, hard, medium plasticity, moist	CL	SS-50 100.0-102.0 Rec = 23	16 32 41 58	4.5+ 4.5+	o	N=73
101	636								
102	635		END OF BORING @ 102'.						
103	634								
104	633								
105	632								
106	631								
107	630								
108	629								
109	628								
110	627								
111	626								
112	625								
113	624								
114	623								
115	622								
116	621								
117	620								
118	619								
119	618								
120									

DRILLING CONTRACTOR: RDNP Drilling, Inc.
DRILLING METHOD: 6.25" I.D. - HSA.
10" Boring (0-10')
*Rotary (10-102')
DRILLING EQUIPMENT: Acker Soil Max
Track-Mounted Drill Rig
DRILLING STARTED: 05/01/07 ENDED: 05/03/07

WATER LEVEL (FT.)

REMARKS

"SS" - Split Spoon
*3.785" Tricone Roller Bit, 2" O.D. 2' Long Split Spoon
Monitoring Well G175 was completed within borehole.

WS WILLIAMS ENGINEERING CONSULTING ENGINEERS

BORING NO. B 88-1

PROJECT: [illegible] Water Waste Management
CLIENT: Cecil Industrial
DRILLING CONTRACTOR: [illegible]
SHEET NO. 1 OF [illegible]
JOB NO. 02[illegible]
ELEVATION 752.1
DATE STARTED [illegible]
DATE FINISHED [illegible]
DRILLER [illegible]
INSPECTOR [illegible]

GROUND WATER					MUD	SAMP	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE	[illegible]	[illegible]		[illegible]
				DIA.	4	2		3
				WT.	300±	140±		[illegible]
				FALL	[illegible]	[illegible]		

WELL CONSTRUCTION	DEPTH (FEET)	SAMPLE NO.	SAMPLE TYPE	SAMPLE BLOWS PER 6 INCHES	CLASSIFICATION	ELEV.	REMARKS
Cement Grout	0	1	SS	15-19	WADSWORTH TILL MEM. (WEATHERED CLAYEY TILL) Mottled brn & gray SILT & CLAY, little to and f Sand, little f Gravel		
	5	2	SS	-10			
				11-			
		3	SS	9-5	@3', becomes mottled brn SILT & CLAY, little to and f SAND, little f Gravel, frequent joints		
		4	SS	-0			
				9-			
	10	5	SS	-12	@13', becomes mottled CLAY & SILT, little f Sand, occ f Sand laminations, no apparent joints		
				20-28			
				[illegible]			
		6	SS	12-5		738.6	
	15			2-7	(SANDY TILL)		
		7	SS	[illegible]	c GRAVEL, little mf Sand, little Clay & Silt		
				37-42			
		8	SS	[illegible]	@ 18': becomes gray SAND some to and Clay & Silt, little to and mf Gravel, non-stratified		
				[illegible]			
	20	9	SS	[illegible]			
				19-26			
		10	SS	16-26			
				26-29		729.1	
		11	SS	21-28	(CLAYEY TILL)		
	25			28-26			
		12	SS	19-15	@23', grading to gray SILT some mf Sand, trace f Gravel		U.C.: 1.7
				17-15			
		UD-1	ST	[illegible]	@26', becomes mid-gray CLAY & SILT, trace mf Sand trace f Gravel		U.C.: 2.6
	30	13	SS	8-10			U.C.: 2.5
				17-22			
		14	SS	8-15			U.C.: 2.0
				26-30			
		15	SS	22-22			U.C.: 2.5
				33-42			
	35	16	SS	12-11			U.C.: 2.8
				22-23			
		17	SS	17-22			
				24-20			U.C.: 2.0
	40	18	SS	20-24			
				30-30			
		19	SS	24-24			
				36-32			
		20	SS	17-22			
				23-34			
	45	21	SS	5-[illegible]			

WEHRAN ENGINEERING
CONSULTING ENGINEERS

B-97

BORING NO. B-53-1

PROJECT: I-11 Hoan Cutoff Management [redacted]

SHEET NO. 2 OF 2

CLIENT: Corps of Engineers

JOB NO. 02353216

WELL CONSTRUCTION	DEPTH (FEET)	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement Grout (596')	85	21	SS	9-11 17-22	Med. gray, CLAY & Silt, trace of Gravel, trace of Coal	UC: 1.7
		22	SS	25-22 25-31		UC 1.5
		UC-2	ST	push -12		UC 3.2 Tor Jar: 2.0
	90	23	SS	13-24 36-15		UC: 1.5
		24	SS	24-24 29		UC: 1.5
	95	25	SS	14-15 22-24	@ 95: grading to Silty CLAY, trace of Gravel, trace of Sand	UC: 2.5
		26	SS	16-22 22-25		UC: 2.0
		27	SS	14-19 22-28		
	100	28	SS	9-12 16-27		UC: 1.7
		29	SS	26-28 33-25		UC: 2.5
	105	30	SS	12-19 24-30		UC: 2.0
		31	SS	22-22 26-26	@ 105: [illegible] SAND, and CLAY & Silt	UC: 1.5
	110	32	SS	9-12 20-25	111	
					End of boring	
	115					
	120					
	125					
	130					
	135					

WESTON ENGINEERING
CONSULTING ENGINEERS

B-98

BORING NO. B-S-20

PROJECT: [illegible] Hot Cubic Mercury Co.
CLIENT: [illegible] Technical
BORING CONTRACTOR: Cubic Engineering Madison, WI

SHEET NO. 1 OF 2
JOB NO. 07353316
ELEVATION 740.9
DATE STARTED 7/15/87
DATE FINISHED 7/16/87
DRILLER K. [illegible]
INSPECTOR Rec. M.H.

GROUND WATER					CAS	SAMP	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE	HSA	SS		ST
				DIA.	2 1/4 ID	2"		3"
				WT.		140 lb.		300 lb.
				FALL		30"		

WELL CONSTRUCTION	DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement Grout; 1¼" PVC Casing	0				WADSWORTH MEMBER (WEATHERED CLAYEY TILL)	
					Med. brn. silty SAND and CLAY & SILT, interbedded w/ CLAY & SILT, little to some fine Sand, occasional fine gravel, jointed	
	5	1	SS	4-4 6-8		
		2	SS	3-8 7-9	@ 9', becomes med. brn. SILT & CLAY, little f Gravel, trace f Sand, no apparent jointing	UC = 1.3
	10	3	SS	4-4 7-9		UC = 20.3.0
					12' CLAYEY TILL	
		4	SS	3-5 7-9	@ 12', grading to med. gray CLAY & SILT, little f Gravel, trace - little f Sand, trace f Sand layers becoming less frequent with depth	UC = 2.0
	15	5	SS	3-6 9-1		UC = 2.7
		UC-1	ST	PUSH		UC = 2.2
		6	SS	2-2 11-17		UC = 2.2
	20	7	SS	5-13 3-7	19' (GLACIO-FLUVIAL DEP.) Gray, stratified medium GRAVEL and SAND, little Clay & Silt 21' (CLAYEY TILL)	
		8	SS	7-10 11-16		UC = 2.2
	25	9	SS	5-7 10-12	@ 21', grading to gray CLAY & SILT, little f Gravel, trace to little f SAND	UC = 2.2
		10	SS	8-10 12-11		UC = 1.5
		11	SS	4-6 8-8		UC = 1.2
	30	12	SS	10-11 12-14		UC = 1.7
		13	SS	5-6 10-11		UC = 2.0
		14	SS	3-4 6-7		UC = 1.3
	35	UD-2	ST	PUSH		
		2				
		UD-2	ST	PUSH		
		3				
	40	15	SS	5-6 7-9	@ 40', grading to gray CLAY & SILT, little f Sand, trace f Gravel	UC = 1.5
		16	SS	7-10 11-10		UC = 2.2
	45	17	SS	7-10 12-12		UC = 3.5

WESTERN [illegible]
CONSULTING ENGINEERS

B-99

BORING NO. [illegible]
SHEET NO. 2 OF 2
JOB NO. 0235331.6

PROJECT: [illegible] Hay Creek Monument
CLIENT: Corps Federal

CONSTRUCTION	DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Grout	25					
		18	SS	9-10		UC = 2.5
				13-17		
		19	SS	7-9		UC = 1.5
				11-15		
	30	20	SS	9-10		UC = 2.0
				11-16		
		21	SS	7-10	@ 52; occ ∫ SAND lenses	
				23-36	54' (GLACIO-FLUVIAL DEP.) Gray, stratified layers of SILT, CLAY & SILT, occ ∫ SAND, trace ∫ Gravel	UC = 1.2
		22	SS	7-9		UC = 2.0
				9-12		
		23	SS	8-11		
				16-17		UC = 2.2
		24	SS	5-9	@ 56, grading to stratified Clayey, SILT, little ∫ Sand lenses ∫ Gravel	
				14-14	59' @ 59' (Clayey grading to) CLAY & SILT, little ∫ Sand, trace ∫ Gravel 60'	
					End of Boring	
	65					
	70					
	75					
	80					
	85					
	90					
	95					

1¼" pvc Screen
Bentonite Seal

WESTERN ENGINEERS
COSULTING ENGINEERS

B-100

BORING NO. B-83-25
SHEET NO. 1 OF 1
JOB NO. 0255331
ELEVATION 7407
DATE STARTED 7/6/83
DATE FINISHED 7/6/83
DRILLER Kaiser
INSPECTOR Mac Mill

PROJECT: [illegible] Monitoring
CLIENT: Cedar Island
DRILLING CONTRACTOR: Western Engineering Madison, WI

	CAS	SAMP	CORE	TUBE
TYPE	HSA			
DIA.	2 1/4 ID			
WT.				
FALL				

GROUND WATER

DATE	TIME	WATER EL.	SCREEN

WELL CONSTRUCTION	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	DEPTH IN FEET	CLASSIFICATION	REMARKS
Cuttings; 1½" PVC Csg.; Cement				0	WADSWORTH MEMBER (WEATHERED CLAYEY TILL)	For detailed classifications see log of B-83-20
				10		
					(CLAYEY TILL) 12'	
Sand Pack; Bentonite Seal				15		
					(GLACIO-FLUVIAL DEP.) 19'	
				20	(CLAYEY TILL) 21'	
					26'	
Cuttings; 1½" PVC Screen				25	End of boring	
				30		
				35		
				40		
				45		

WEHRAN ENGINEERING
CONSULTING ENGINEERS

B-103

TEST BORING LOG
BOR[redacted] 3-83-30
SHEET [illegible] OF 3
JOB NO. 02353316

PROJECT: [illegible] Hot Work Monitoring For
LIT[illegible] Creek Industrial Park

WELL CONSTRUCTION	ABBREVIATIONS	SAMPLE NO.	SAMPLE TYPE	SAMPLE BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Soil Pipe						
				29-30	6364 97'	
		-16	SS	6/6	(LOWER INTER-GLACIAL SAND) @97' grading to grey, stratified SILT some fine Sand interbedded with layers of SAND little Silt and layers CLAY & SILT 100'	
		-17	SS	6/5		
					End of boring	

1½" PVC Screen

WVS CONSULTING ENGINEERS

BORING NO. B-83-30

PROJECT: Fill Haz Waste Mgt Fac B-104

SHEET NO. 1 OF 1

CLIENT: Cerro International

JOB NO. 023-5516

BORING CONTRACTOR: Colorado Foundation Medium (M)

ELEVATION 7336

DATE STARTED 7/8/83

DATE FINISHED 7/9/83

DRILLER Sevcik

INSPECTOR Mac Mill

UND WATER					CAS.	SAMP	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE	HSA			
				DIA.	4.50			
				WT.				
				FALL				

WELL CONSTRUCTION	DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cuttings	0				WADSWORTH MEMBER (WEATHERED SANDY TILL)	For detailed classification see log of B-83-30
Cement	5				6' (WEATHERED CLAYEY TILL)	
1¼" PVC Casing	10					
Sand Pack	15				15' End of boring	
1¼" PVC Screen	20					
Bentonite Seal	25					
	30					
	35					
	40					
	45					

WS WILSON ENGINEERING
CONSULTING ENGINEERS

B-105

BORING NO. [illegible]
SHEET NO. 1 OF [illegible]
JOB NO. [illegible]
ELEVATION 731.0
DATE STARTED [illegible]
DATE FINISHED [illegible]
DRILLER [illegible]
INSPECTOR [illegible]

PROJECT Tri Hwy Work Measurement Eq.
CLIENT: Corps Engineers
CONTRACTOR: Wilson Engineering
GROUND WATER

DATE	TIME	WATER EL.	SCREEN

	CAS	SAMP	CORE	TUBE
TYPE	DCA	SS		
DIA.	2½ I.D.	?		3"
WT.		140±		
FALL		30"		

WELL CONSTRUCTION: Cement Grout; 2" PVC Casing

ELEV.	NO.	TYPE	SAMPLE BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
0				ORGANIC TOPSOIL	
				2.5	
	1	SS	5-7	WADSWORTH MEMBER (WEATHERED CLAYEY TILL)	
			4-5	Mottled brn and gray SILT & CLAY, 1 Hic(-) to some f Sand, trace to 1 Hic -f Gravel, frequent joints to 90°	
5	2	SS	6-10		UC: 2.5
			10-13		
	3	SS	5-10		
			14-15		
	4	SS	10-9		
10			11-11		
	5	SS	5-7	(CLAYEY TILL) Gray SILT & CLAY 1:Hic -f to some f Sand, trace to 1 Hic -f Gravel as apparent joints	
	6	SS	[illegible]		
			[illegible]	@13.5, grading to thin lens -f SAND some Silt & Clay, 1 Hic -f Gravel	
15	7	SS	[illegible]		
			[illegible]		
	8	SS	[illegible]		
			[illegible]		
	9	SS	8-6	@14, Become gray Silty CLAY, some f Sand 1:Hic f Gravel	
20			12-14		UC: 2.5
	10	SS	5-6		
			7-9		
	11	SS	7-9	(SANDY TILL ?) 22'	
			13-16	@22, SILT, some (+) fine SAND, trace Gravel	?
25	UC-4 1	SS	push		
			1.5 minutes		
	12	SS	7-9	(CLAYEY TILL) 26'	
			9-11	@26, grading to CLAY & SILT, 1:Hic f Sand, trace to 1 Hic f Gravel	UC: 2.0
	13	SS	9-10		
30			14-17		UC: 2.0
	14	SS	5-6		
			9-10		UC: 1.0
	15	SS	5-6		
			9-10		
35	16	SS	7-8		
			12-16		UC: 2.5
	17	SS	9-10		
			14-17		UC: 2.7
	18	SS	7-7		
40			9-14		UC: 1.5
	19	SS	7-8		
			12-16		
	20	SS	7-9		UC: 2.0
			11-15		
45	UD-4 2	ST	push		
			60 minutes		

WEHRAN ENGINEERING
CONSULTING ENGINEERS

BORING NO. [illegible]
SHEET NO. 2 OF 2
JOB NO. [illegible]

PROJECT: [illegible]
CLIENT: [illegible]

WELL CONSTRUCTION	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Soil Park 2" PVC Cuttings 2" PVC Screen Backfill Soil	UC-3	SS	[illegible]	med. gray CLAY & SILT, little sand, little Gravel	
	21	SS	[illegible]		UC: 2.0
	22	SS	6-5 11-15		UC: 2.0
	UC-4	ST	[illegible]		
	23	SS	6-9 10-16		UC: 3.5
	24	SS	7-5 13-16		UC: 3.0
	25	SS	12-12 15-16		
	26	SS	5-10 13-15	[illegible] FILL — 62.5' Gray fine to medium SAND, and CLAY & SILT, some fine Gravel [illegible] FILL — 65.5' Gray, CLAY & SILT, [illegible] Gravel	
				End of boring	

60
65
70
75
80
85
90
95

WOOD ENGINEERING
CONSULTING ENGINEERS

B-107

BORING NO. B-93-4S
SHEET NO. 1 OF 1
JOB NO. 02253316
ELEVATION 731.0
DATE STARTED 7/7/93
DATE FINISHED 7/7/93
DRILLER Kaiser
INSPECTOR Mac Mill

PROJECT: I-1 Hor Vehicle Management Inc
CLIENT: Cecil Industrial
CONTRACTOR: Woodward Engineers Malvern PA

WATER TIME	WATER EL.	SCREEN

	CAS	SAMP	CORE	TUBE
TYPE	HSA			
DIA.	8.25 ID			
WT.				
FALL				

WELL CONSTRUCTION	DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Sand Pack; 2" PVC Casing; Cement; 2" PVC Screen; Bentonite Seal	0				ORGANIC TOPSOIL — 2.5'	For detailed classifications see log of B-93-4C
	5				WADSWORTH MEMBER (WEATHERED CLAYEY TILL) — 9.0'	
	10				(CLAYEY TILL)	
	15					
	20				— 22' (SANDY TILL)? — 23'	
	25				End of boring	
	30					
	35					
	40					
	45					

B-108

WEHRAN ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG
BORING NO. S 83.5
SHEET NO. 1 OF
JOB NO.
ELEVATION 7
DATE STARTED
DATE FINISHED
DRILLER
INSPECTOR

PROJECT
CLIENT:
BORING CONTRACTOR:

GROUND WATER			
DATE	TIME	WATER EL.	SCREEN

	CAS.	SAMP	CORE	TUBE
TYPE	H.S.A.	C		
DIA.	2 1/4 O	2"		
WT.		140#		
FALL		30"		

WELL CONSTRUCTION	DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
	0				Miscellaneous fill	
					2.5'	
		1	SS	6-... 13-15	WADSWORTH MEMBER (WEATHERED CLAYEY TILL)	
	5	2	SS	7-11 15-17	Medium brown & gray SILTY CLAY some f Sand ...	UC: 3.0
		3	SS	7-11 14-16	... Seams frequent ... 6' (WEATHERED GLACIO-FLUVIAL DEP)	
		4	SS	5-7 5-5	Medium brown fine SAND and SILT, poorly stratified frequent ...	
	10	5	SS	4-7 ...	10' ... seams & layers of (GLACIO-FLUVIAL DEP)	
		6	SS	... ...	Interbedded, gray, SILT, little f Sand, poorly stratified	
	15	7	SS	5-6 4-5		
		8	SS	5-6 6-10	21'	
		9	SS	5-6 8-10	(CLAYEY TILL) Med. gray SILTY CLAY some ... of G; some f-c Sand	
	20	10	SS	5-6 6-7		
		11	SS	4-7 7-9	@ 23', grading to very SILTY some f Sand ± 24' (SANDY T)	UC: 1.5
	25	UDS 1	ST	Pushed 2 inches		UC: 1.5 UC: 4.0
		12	SS	10-10 18-23	Interbedded coarse SAND some to and SILT, SILT ... of GRAVELLY SILT, Clay, little CLAY & SILT, little f Sand stratified	
		13	SS	9-12 16-23		
	30	14	SS	10-23 20-37		
		15	SS	12-27 35-50/6"		
	35	16	SS	12-17 23-26	36'	
		17	SS	7-8 10-14	(CLAYEY SILT) CLAY & SILT Gravelly SAND some to little ...	UC: 1.5
		18	SS	6-9 13-17		
	40	19	SS	6-9 13-16	@ 40' becomes CLAY & SILT little f ... some ...	UC: 2.0
		UDS 2	ST	Pushed 10 inches	Gravel	
	45	20	SS	0-11 10-14	45' (GLACIOFLUVIAL DEP)	

Cement Grout

WS CONSULTING ENGINEERS

B-109

BORING NO. E-835

PROJECT: I-11 Hoz Wood. Monument Co.

SHEET NO. 2 OF 2

CLIENT: [redacted]

JOB NO. 0725-33

WELL CONSTRUCTION	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement Grout [redacted]				(GLACIO-FLUVIAL DEP)	
				@ 45' grading to poorly graded SAND w/	
	21	SS	7-12		
			11-12		
	22	SS	6-7		
			9-11		
			5-6	@ 48' Decr. CLAY & SILT,	UC: 2.5
	23	SS	13-15	1 ft. layer of Sand, trace of Gravel	UC: 2.5
	24	SS	7-10		
			11-13		
	JC-5	ST	0-30		
			no recovery		
			7-7		
	25	SS	5-11		UC: 2.0
				58'	
				End of Boring	

WESTAN ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG

BORING NO. B-[illegible]-50

PROJECT: I-[illegible] Hazardous Waste N.
CLIENT: Cera[illegible]
DRILLING CONTRACTOR: [illegible]

SHEET NO. 1 OF
JOB NO. [illegible]
ELEVATION 722.0
DATE STARTED [illegible]
DATE FINISHED [illegible]
DRILLER [illegible]
INSPECTOR [illegible]

GROUND WATER					CAS	SAMP	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE	SSA	SS		
				DIA.	4-3/4	2"		4"
				WT.		140#		
				FALL		30"		

WELL CONSTRUCTION	DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
	0	1	SS	5-6 9-10	[illegible] (WADSWORTH MEMBER (WEATHERED CLAYEY TILL) Med. to. CLAY & SILT, little f Sand, little f Gravel	U.C. = 2.0
		2		5-7 8-12		U.C. = 3.5
	5	3		5-5 [illegible]-15	@ 7', becom. [illegible], [illegible] joints	U.C. = 3.3
		4		17-14 24-34	@ 6', becom. [illegible] bro[illegible] 8'	U.C. = >4
		5		7-16 27-24	(CLAYEY TILL) Med gray CLAY & SILT, little f Sand, little f Gravel, [illegible]	U.C. = >4
	10	6		5-12 [illegible]-27	@ 12.5' SILT & CLAY, some f SAND, occ f Sand lenses	U.C. = >4
		7		9-11 [illegible]		U.C. = 3.3
		8		6-7 12-17	@ 14.5', becom. CLAY & SILT, little f-m Sand, little f Gravel	
	15	9		7-9 12-18		U.C. = 1.5
		UDC 1	ST	recv'd [illegible]		U.C. = 3.0
	20	10		5-5 10-12		U.C. = 2.5
		11		15-16 16-19	24'	U.C. = 2.0
		12		7-8 11-27	(SANDY TILL) as above [illegible] with gray f SAND, trace S.H.	U.C. = 1.8
		13		11-16 12-16	@ 26', becom f SAND, trace S.H., poorly to non-stratified 27'	U.C. = 1.8
		14		6-6 9-11	(CLAYEY TILL)	U.C. = 1.3
	30	15		11-13 16-16	Gray CLAY & SILT, little f-m Sand, trace f Gravel	U.C. = 1.5
		16		10-10 12-14		U.C. = 1.2
		17		10-12 16-24	@ 34', grading to CLAY & SILT, little f-m Sand, little f-m Gravel	U.C. = 1.0
		18		14-18 16-16		U.C. = 1.5
		UDC 2		recv'd		U.C. = 1.8
	40	19		14-18 16-19		U.C. = 1.8
		20		16-24 24-24		U.C. = 1.5
		21		18-22 22-26		U.C. = 1.5

2" PVC Casing

Bentonite Seal

WEHRAN ENGINEERING
CONSULTING ENGINEERS

B-111

TEST BORING LOG
BORING NO. B-83-6E
SHEET NO. 2 OF 2
JOB NO. 27353316

OJECT: III Hc: Weir Monument Fr.
IENT: Corps Engineers

WELL INSTRUCTION	DEPTH (feet)	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Pack	45					
		22	SS	19-18		
				16-20		U.C. = 1.5
		UW 3	ST	Cuts	55'	U.C. = 1.5
	50				E.J of boring	
	55					
	60					
	65					
	70					
	75					
	80					
	85					
	90					
	95					

2" PVC Screen
Bentonite Seal

WESTRAN ENGINEERING
CONSULTING ENGINEERS

B-112

BORING NO. B-[illegible]

PROJECT: [illegible]
CLIENT: [illegible]
BORING CONTRACTOR: [illegible]

SHEET NO. 1 OF 2
JOB NO. 223-2316
ELEVATION 724.1
DATE STARTED [illegible]
DATE FINISHED [illegible]
DRILLER [illegible]
INSPECTOR [illegible]

GROUND WATER					CAS	SAMP	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE	[illegible]			
				DIA.	- 2L			
				WT.				
				FALL				

WELL CONSTRUCTION

Cuttings

Grout

2" pvc Casing

Sand Pack

2" PVC Screen

Bentonite Seal

SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
			ORGANIC TOPSOIL [illegible]	For detailed classification see log of B-83-6C
			WADSWORTH MEMBER (WEATHERED CLAYEY TILL)	
			(CLAYEY TILL)	
			17'	
			End of boring	

0
5
10
15
20
25
30
35
40
45

WOOLPERT ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG
BORING NO. B-23-7
SHEET NO. 1 OF 2
JOB NO. 23353314
ELEVATION 734.5'
DATE STARTED 7-[illegible]
DATE FINISHED 7-[illegible]
DRILLER [illegible]
INSPECTOR [illegible]

JECT: [illegible] Hot Water Memorial Estates
NT: Cedar [illegible]
ING CONTRACTOR: Woolpert Engineers
UND WATER

E	TIME	WATER EL.	SCREEN		CAS	SAMP	CORE	TUBE
				TYPE	HSA	SS		ST
				DIA.	10" OD	2"		3"
				WT.		140#		[illegible]
				FALL		30"		

WELL CONSTRUCTION

Cement Grout

DEPTH (FEET)	SAMPLE NO.	TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
0	1	SS	11-11 / 11-27	(WEATHERED CLAYEY TILL) Mottled brn & gray CLAY & SILT, little Gravel, little f-- Sand	
	2	SS	10-12 / 14-16		
5	3	SS	12-15 / 22-25	@4', becomes brn SILT & CLAY, some f Sand, little f Gravel, frequent joints	
	4	SS	12-15 / 19-23		
	5	SS	7-9 / 10-14	@8', grading to gray SILT & CLAY, little to some f Sand, little f-- Gravel, occ joints	
10	6	SS	6-11 / 14-16		
				13'	
	7	SS	6-12 / 12-14	(CLAYEY TILL) Gray CLAY & SILT, little f-- Sand, little f-- Gravel, occ apparent joints	
15	8	SS	10-12 / 12-12		
	UC-1	ST	push		
	9	SS	0-6 / 3-6		
20	10	SS	7-7 / 9-10		
				22'	
	11	SS	5-6 / 5-5	(GLACIO-FLUVIAL DEP) Gray f-- SAND, some to occ SILT, poorly stratified	
25	12	SS	6-6 / 9-9		
				27'	
	13	SS	6-10 / 5-7	(SANDY TILL) Gray f-- GRAVEL and SAND, some Silt & Clay, poorly sorted, interbedded w/ f SAND & SILT	
	14	SS	5-7 / 8-10		
30	15	SS	6-8 / 5-8		
	16	SS	5-5 / 8-14		
				33'	
				(CLAYEY TILL)	
35	17	SS	8-12 / 12-17	CLAY & SILT, little to some f-- Sand, little f Gravel	
	18	SS	12-14 / 15-19		
	UC-2	ST	push		
40				@40', becomes CLAY & SILT, little f Sand, little f Gravel	
	19	SS	13-17 / 22-24		
				41.5'	
				(GLACIO-FLUVIAL DEP)	
	20	SS	12-13 / 26-32	Gray f-- SAND, some to occ SILT, poorly stratified w/	
45	21	SS	7-8 / 11-20	(CLAYEY TILL)	

WOODWARD-CLYDE CONSULTANTS

TEST BORING LOG

BORING NO. B-83-7

PROJECT: [illegible]

SHEET NO. 2 OF 2

CLIENT: [illegible]

JOB NO. 0235-3316

WELL CONSTRUCTION	NO.	TYPE	SAMPLE BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement Grout	22	SS	14-20 / 20-21	Gray, CLAY & SILT, little f. Sand, little f. Gravel	
	23	SS	14-15 / 22-27		
	24	SS	10-15 / 21-24		
	25	SS	12-17 / 17-22	@54': brown CLAY & SILT, some f. Sand, little f. Gravel	
	26	SS	18-24 / 29-36		
	27	SS	14-18 / 23-24	(GLACIO-FLUVIAL DEP.) SILT grading to f. SAND and SILT (SANDY TILL)	
	28	SS	13-17 / 11-9		
				Gray-brown SAND, some Gravel, little to some Clay & Silt	
				@ 82.5': brown SILTY SAND, some f. Gravel	
				End of boring	

WE-RAN ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG
BORING NO. B-17-P
SHEET NO. 1 OF 2
JOB NO. 027577.16
ELEVATION 725.1±
DATE STARTED 7/11/83
DATE FINISHED 7/12/83
DRILLER J. Vannoy
INSPECTOR T. Bryant

PROJECT:
CLIENT: Corps Engineers
BORING CONTRACTOR: Wakefield Engineering

GROUND WATER				CAS.	SAMP.	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE	S.S.		ST
				DIA.	2"		3"
				WT.	140 lbs		Hyd.
				FALL	30"		

WELL CONSTRUCTION	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement - Bentonite grout				Wadsworth Till Member	
				brown SILT & CLAY, Trace F-C Sand, Trace F Gravel	
	1	SS	7 9 / 19 21		UC = 4.0
	2	SS	5 6 / 6 7		
	3	SS	4 6 / 8 8	C.S.; becomes gray Silty CLAY Trace F-C Sand, Trace F Gravel	UC = 1.5
	4	SS	7 7 / 7 7		UC = 1.5
	5	SS	6 8 / 9 10	Interbedded Silt & F Sand lense	UC = 1.5
	6	SS	5 10 / 11 14	(GLACIO-FLUVIAL DEP)	
	7	SS	4 6 / 7 9	Somewhat layered & SAND and Silt lenses	UC = 2.5
	8	SS	7 9 / 12 11	(CLAYEY FILL)	
	9	SS	11 / 7 8	gray SILTY CLAY, Trace F Sand, Trace F Gravel	UC = 1.5
	10	SS	11 13 / 12 15		
	11	SS	8 11 / 13 11	Interbedded S & Lenses	
	12	SS	6 9 / 10 11		UC = 2.0
	13	SS	5 8 / 12 14		
	14	SS	12 15 / 23 19		UC > 4.0
	15	SS	9 10 / 12 15	gray SILTY CLAY, Little to Trace F-C Sand, Trace F Gravel	UC = 3.0
	16	SS	14 23 / 23 19		
	17	SS	9 12 / 15		UC = 1.0
	18	SS	12 22 / 21		
	T 1	ST	Push		UC = 1.0
	19	SS	14 16 / 19 22		
	20	SS	12 10 / 11 10		
			6		* Driller over Drilled
	21	SS	5 7		

WE-RAN ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG
BORING NO. B-P3-P
SHEET NO. 2 OF 2
JOB NO. 2-253316

PROJECT:
CLIENT: Corps Enforcement

WELL CONSTRUCTION	DEPTH	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement - Bentonite grout	50					
		22	SS	6 10 15	gray silty CLAY, little to To Trace f-c Sand, Trace F Gravel	
		23	SS	4 6 9 10		UC = 1.0
	60			17 26		
		24	SS	23 27		
				9 13		
		25	SS	15 14		UC = 1.5
				10 13		
	65	26	SS	12 15		UC = 1.0
		T 2	ST	Push		
				13 17		
		27	SS	17 21		UC = 3.0
	70			6 14		
		28	SS	17 20		UC = 2.0
				6 7		
		29	SS	8 9		UC = 1.5
				5 7		
	75	30	SS	8 13		
				17 16		
		31	SS	22 20		UC = 2.0
				21 27	gray silty CLAY, little F Gravel, little to f-c Sand	
		32	SS	24 26		UC = 3.0
	80			12 15		
		33	SS	22 25		UC = 2.5
				25 24		
		34	SS	25 26		
				9 17		UC = 3.5
	85	35	SS	17 24		
				26 40		
		36	SS	41 53		UC = 3.5
				13 20		
		37	SS	25 32		UC = 4.0
	90				End of Boring 90'	
	95					
	100					

WESTERN ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG
BORING NO. B-83-9
SHEET NO. 1 OF 2
JOB NO. 82-C-176
ELEVATION 2296
DATE STARTED 8/22/83
DATE FINISHED 9/22/83
DRILLER C. Nielsen
INSPECTOR T. Snyder

PROJECT:
CLIENT: CF&I International
BORING CONTRACTOR: Western Engineering

GROUND WATER					CAS.	SAMP.	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE		SS		3"
				DIA.		2"		3"
				WT.		140 lbs		Auto
				FALL		30"		

WELL CONSTRUCTION	DEPTH (Ft.)	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement - Bentonite grout	0				Undifferentiated Till Alluvium	
					brown & black CLAY & SILT with fine sand, Trace of Gravel	U.C. = 2.5
		1	SS	5 6 12 17		
	5	2	SS	7 8 10 15	brown - grey mottled SILTS & CLAYS with fine to coarse Sand, Trace of Gravel (SANDY TILL)	U.C. = 3.0
		3	SS	4 9 11 15		
		4	SS	8 13 13 17	brown fine SAND, Some SILT & Clay, Trace of Gravel grading to brown SILT & CLAY, with fine SAND, Trace of Gravel (GLACIO-FLUVIAL DEP)	U.C. = 4.0
	10	5	SS	10 9 10 11		
		6	SS	11 14 17 22		U.C. = 2.5
		7	SS	11 14 17 [illegible]	Alternating lenses of clayey SILT, some to trace of fine SAND with lenses of grey fine SAND, some to little SILT, grading to interbedded fine SILT, grading to SILT and fine SAND	U.C. = 3.5
	15	8	SS	13 13 16 22		
		9	SS	6 6 13 14		
	20	10	SS	7 13 21 [illegible]	(CONIFER TILL)	
		11	SS	[illegible] 8 13	Dark brown SILT to SILTY CLAY with little to Some fine SAND, Trace of Gravel	U.C. = 2.0
	25	12	SS	[illegible] [illegible]		U.C. = 2.5
		13	SS	7 10 13		U.C. = 2.0
		14	SS	[illegible] [illegible]	grading to CLAY & SILT, Trace of fine Sand, Trace of Gravel	
	30	15	SS	12 11 [illegible]		U.C. = 2.5
		16	SS	50/1"	Boulder 32.3' - 32.9'	
	35	17	SS	[illegible] 13 11		U.C. = 2.0
			SS	12 16 17 17		U.C. = 1.5
		T 1	ST	Push		
	40					
		19	SS	7 12 17 [illegible]	grading to Silty CLAY, Trace of fine Sand, Trace of Gravel	U.C. = 2.5
		20	SS	[illegible] 8 14		U.C. = 2.0
	45	21	SS	7 10 12 [illegible]		U.C. = 2.5

WE-RAN ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG
BORING NO. B-53-9
SHEET NO. 2 OF 2
JOB NO. 0275-22-15

PROJECT:
CLIENT: Recon International

WELL CONSTRUCTION	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement - Bentonite grout			9 24	(CLAYEY FILL)	
	22	SS	13 [illegible]		U.C = 3.0
			[illegible]		
	23	SS	47 [illegible]	(SANDY TILL)	
			14 10	10 brown f - c SAND, Trace f gravel Trace Silt, Grading To f-c SAND	
	24	SS	[illegible]	1 Mile Silt, Trace f Gravel	
	25	SS	5 12	(CLAYEY TILL)	
			28 24		
	26	SS	12 30	gray SANDY CLAY, Trace f-c Sand Trace f Gravel	U.C = 4.0
			[illegible]	@ 53'-53' SANDY Till Some f-c SAND, Little Silt & Clay Trace f Gravel	
	27	SS	24 23		U.C = 2.0
			31 26		
	T 2	ST	Push		
			13 12	gray Silty CLAY, Trace f-c Sand, Trace f Gravel	U.C = 4.5
	28	SS	20 22		
			11 15		
	29	SS	20 [illegible]	gray Silty CLAY, Little To Trace f gravel, Trace f-c Sand	
			[illegible]		U.C = 4.5
	30	SS	12 [illegible]		
			9 12		
	31	SS	12 17		U.C = 2.5
			5 13		
	32	SS	13 15		U.C = 2.0
	T 3	ST	Push		U.C = 3.0
			[illegible]		
	33	SS	12 [illegible]		U.C = 3.0
			7 15		
	34	SS	19 21		U.C = 2.5
			[illegible]		
	35	SS	[illegible]		U.C = 2.5
			30 30		
	36	SS	50 [illegible]		U.C = 1.5
				END of Boring 80'	

WEHRAN ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG
BORING NO. B-23-10
SHEET NO. 1 OF 2
JOB NO. 02353316
ELEVATION 775 ±
DATE STARTED 7/10/73
DATE FINISHED 7/11/73
DRILLER [illegible]
INSPECTOR [illegible]

PROJECT:
CLIENT: CECO Corporation
DRILLING CONTRACTOR: [illegible]

GROUND WATER				CAS.	SAMP	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE		SS	
				DIA.	3"		3"
				WT.	140 lbs		
				FALL	30"		

WELL CONSTRUCTION	DEPTH	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement - Bentonite grout	0				Weathered Rock Fill	
		1	SS	7 11	black - brown Clayey SILT,	
				17 18	Trace f c Sand	
	5	2	SS	4 5	brown - gray mottled SILT &	
				6 5	clay, little f-c Sand, Trace	
		3	SS	3 3	f gravel	
				6 8		
		4	SS	9 11		
	10			14 19		
		5	SS	13 14		
				12 17		
		6	SS	13 13	@ 13' becomes gray SILT & CLAY	
				7 11	little f-c Sand, Trace f gravel	
	15	7	SS	9 10		
				13 16		
		8	SS	13 13	@ 16-17' becomes C-F SAND	
				6 20	some f gravel, little SILT &	
		9	SS	7 10	CLAY	
	20			13 13	gray CLAY & SILT, little f	
		10	SS	20 20	sand, Trace c f Sand	
				8 11		
		11	SS	7 10		
				13 14		
	25	12	SS	12 15		
				14 22		
		13	SS	20 30		
				50/5"	(SANDY TILL)	
		14	SS	20 22	gray clay & SILT, some f c Sand	
	30			21 17	little f gravel, occasional SILT	
		15	SS	7 10	& c Sand, little SILT	
				20 20		
		16	SS	11 12	(CLAYEY TILL)	
				12 21	gray clay & SILT to SILTY CLAY	
	35	17	SS	2 5	little f Sand, Trace c Sand, Trace	
				12 19	f gravel	
		18	SS	14 22		
				10 21		
		19	SS	5 8		
	40			11 16		
		20	SS	10 21		
				20 19		
		21	SS	7 10		
				15 17		
	45	22	SS	12 16	interspersed very thin F SAND and	
				16 22	SILT lenses	

WEHRAN ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG
BORING NO. A-83-10
SHEET NO. 2 OF 2
JOB NO. 02323316

PROJECT:
CLIENT: CECOS International

WELL CONSTRUCTION	SAMPLE NO.	SAMPLE TYPE	SAMPLE BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement - Bentonite grout	23	SS		gray Silty CLAY, Trace f-c Sand, Trace f Gravel	U.C. = 2.0
	24	SS			U.C. = 1.5
	25	SS			U.C. = 2.0
	26	SS			U.C. = 2.0
	27	SS		(SANDY TILL)	U.C. > 4.0
	28	SS		6" of f-c SAND, little Silt, Trace f Gravel	
	29	SS		(CLAYEY TILL) gray Silty CLAY, little to and f-c Sand, Trace f Gravel	U.C. = 2.0
	30	SS			U.C. = 4.0
	31	SS		(SANDY TILL) gray f-c SAND, little f Gravel, little to Silt. Unstratified	U.C. = 1.5
	32	SS		(CLAYEY TILL)	
	33	SS		gray Silty CLAY, Trace to Trace f-c Sand, Trace to Trace f Gravel	U.C. = 2.5
	34	SS			
	35	SS			U.C. = 1.5
	36	SS			U.C. = 2.5
	37	SS			U.C. = 5
	*				* Driller over sampled mixed samples
	38	SS			U.C. = 1.5
				END OF BORING @ 82'	

WEHRAN ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG

BORING NO. B-22-11

SHEET NO. 1 OF 2

JOB NO. [illegible]

ELEVATION [illegible]

CLIENT: RECO Intercontinental

DRILLING CONTRACTOR: Wehran Engineering

GROUND WATER					CAS.	SAMP	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE		SS		ST
				DIA.		2"		3"
				WT.		140 lbs		[illegible]
				FALL		30"		

DATE STARTED 3/11/83
DATE FINISHED 3/14/83
DRILLER [illegible]
INSPECTOR [illegible]

WELL CONSTRUCTION	DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement - Bentonite Grout	0				Wadsworth Till Mem.	
		1	SS	6 9 9 13	Gray & brown mottled CLAY & SILT, Trace f-m Gravel Interspersed silt lense	
	5	2	SS	8 12 7 7	3" lense of F-C SAND, little F Gravel	
		3	SS	6 7 15 18	@ 7.3' - 8.3' Brown F-m SAND little Silt	
		4	SS	13 12 13 12	@ 8.3 grades to Gray CLAY - SILT, Trace F Gravel	
	10	5	SS	5 [illegible] 6 6	Occasional f-c sand lens (Sandy Till)	
		6	SS	9 9 10 11	Gray f-m SAND and SILT - 1" lense of brown f-m sand, little silt	
	15	7	SS	4 7 9 10	Gray silty CLAY, little f-c Sand Trace F Gravel	
		8	SS	7 7 7 8	Grades to silty clay, Trace f-c F Gravel, Trace f-c Sand	
		9	SS	3 4 6 7		
	20	10	SS	10 10 11 12		
		11	SS	4 4 6 8	Gray Silty CLAY, little f-c Sand To Trace F Gravel	
	25	12	SS	11 10 9 11		
		13	SS	6 7 9 10		
		14	SS	13 11 9 10		
	30	T 1	ST	Push		
		15	SS	3 5 7 9		
	35	16	SS	5 5 7 7		
		17	SS	7 7 7 9		
		18	SS	7 6 12 13		
	40	19	SS	13 18 23 20		
		20	SS	[illegible] 12 13		
	45	21	SS	13 14 14 14	Interspersed silt lenses	

WEHRAN ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG
BORING NO. B-83-11
SHEET NO. 2 OF 2
JOB NO. 03-3-3211

PROJECT:
CLIENT: CECOS Engineering

WELL CONSTRUCTION	DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement-Bentonite grout	50	22	SS	9 15 22 21	Gray Silty CLAY, little to Trace (+) f-c Sand, Trace F Gravel	
		23	SS	12 18 15 15		
	60	24	SS	5 6 9 10		
		25	SS	12 16 12 [illegible]		
	65	T 2	S.T	Push		
		26	SS	7 10 12 21		
		27	SS	7 12 32 [illegible]	Grading to CLAY & SILT, Trace f-c Sand, Trace	
	80	28	SS	7 18 14 17	Grading to clayey SILT, [illegible] f-c Sand, little [illegible]	
		29	SS	13 15 12 17	[illegible] SAND, little	
	85	30		[illegible]	Gray CLAY & SILT, little to [illegible] f-c Sand, Trace	
		31		[illegible]	[illegible] @ 85' to 87' [illegible]	
		32		[illegible]	f-c SAND, little silt	
	90	33		[illegible]	Grading to [illegible] CLAY, Trace f-c Sand, Trace f-m Gravel	
		T 3	S.T	[illegible]		
		34	SS	20 17 22 32	Gray Silty CLAY, Trace to Sand, Trace to Gravel	
	95	35	SS	7 [illegible] [illegible]		
		36	SS	17 17 20 21		
	100				END OF BORING AT 100'	

WEHRAN ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG
BORING NO. B-73-12
SHEET NO. 1 OF 2
JOB NO. 9235-73-16
ELEVATION 737.4
DATE STARTED 2/13/73
DATE FINISHED 2/14/73
DRILLER
INSPECTOR

PROJECT:
EXT: Deep Interceptor
RING CONTRACTOR: Pleasant Valley Drilling

OUND WATER				CAS.	SAMP.	CORE	TUBE
TE	TIME	WATER EL.	SCREEN	TYPE	S.S.		
				DIA.	2"		
				WT.	140 lbs		
				FALL	30"		

WELL CONSTRUCTION	ELEV.	NO.	TYPE	SAMPLE BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement - Bentonite grout	0	1	SS	3 3 3 3	Wadsworth Till Member Weathered brown SILT - CLAY, little f-c Sand, Trace f Gravel	
	5	2	SS	14 11 13 12		
		3	SS	11 14 10 12	@ 7' becomes Gray CLAY - SILT, little f-c Sand, Trace f Gravel	
		4	SS	5 6 7 8		
	10	5			@ 9' 2" of Brown f-c SAND, some f Silt	
		6	SS	7 8 10 12	Wisconsinan Gray CLAY - SILT, little f-c Sand, Trace f Gravel; frequent Silt lenses	
	15	7	SS	9 10 10 12		
		8	SS	4 5 7 8	Gray CLAY - SILT, little f-c Sand, Trace f Gravel	
		9	SS	5 6 7 8	@ 19' 1" lense of m-c SAND, some Silt, little f Gravel	
	20	10	SS	5 6 7 7	@ 22' 6" of Gray CLAY - SILT, little f-c Sand, Trace f Gravel	
		11	SS	7 9 10 11	@ 24' 3" lense of m-c SAND, little Silt	
	25	12	SS	3 5 7 7		
		13	SS	6 8 9 10	Gray CLAY - SILT, Trace f-c Sand	
		14	SS	5 6 8 10		
	30	15		11 13 14 12	Gray Silty CLAY, Trace f, f-c Sand, Trace f Gravel	
		16		6 8 9 10		
	35	17		11 12 13 12		
		18		6 8 9 11		
		19		9 10 11 12		
	40	T				
		1				
		20		7 8 9 10		
	45	21		8 9 11 12	Intermittent Silt lenses	

WE-RAN ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG
BORING NO. B-33-12
SHEET NO. 1 OF 2
JOB NO. 0233-22-15

PROJECT: [illegible]
CLIENT: [illegible]

WELL CONSTRUCTION	DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement - Bentonite grout	0					
		22	SS	11 11		
				13 15		
		23	SS	2 2	Gray Silty CLAY, Trace f-c Sand, Trace f Gravel	
				11 17		
	50			19 21		
		24	SS	21 29		
				2 2		
		25	SS	11 17		
				6 17		
		26	SS	16 22		
				9 15		
		27	SS	16 [illegible]		
				16 17		
		28	SS	22 31		
		T	ST	[illegible]		
		2				
				[illegible]		
				11 19		
	65	29	SS	6 11		
				19 11		
		31	SS	21 [illegible]		
				12 20		
				[illegible]	Grading to SILT - CLAY, little F Sand (Soft)	
		32	SS	[illegible]		
	70			12 15		
		33	SS	16 19	@ 71' becomes Gray Silty CLAY Trace f-c Sand, Trace f Gravel	
				32 [illegible]		
		34	SS	16 19	3" parting of brown CLAY & SILT	
				20 23	little f-c sand, Trace f Gravel (Hard)	
	75	35	SS	50 [illegible]		
				50		
		36	SS	17 29		
				26 41	Gray CLAY & SILT to Silty CLAY	
		37	SS	20 31	little f-c Sand, Trace f Gravel	
	80			34 32		
					END of Boring at 80'	
	85					
	90					
	95					

WESTERN ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG
BORING NO. S-[illegible]-13
SHEET NO. 1 OF 2
JOB NO. 02353315
ELEVATION
DATE STARTED 7/19/13
DATE FINISHED 7/20/13
DRILLER [illegible]
INSPECTOR T. [illegible]

PROJECT:
CLIENT: CECOS International
BORING CONTRACTOR: Western Engineering

GROUND WATER					CAS.	SAMP.	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE		SS		ST
				DIA.		2"		3"
				WT.		140 lbs		140 lbs
				FALL		30"		

WELL CONSTRUCTION	DEPTH (FEET)	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement - Bentonite grout	0				Wadsworth Till Plain. Brown and gray, mottled SILTY CLAY to CLAY - SILT, little F to C Sand, Trace F Gravel	
		1	SS	7 7		
				5 6		
	5	2	SS	7 10		
				12 17		
		3	SS	7 10		
				12 16		
		4	SS	12 18	@ 9.6 brownish Gray SILTY CLAY to CLAY - SILT, little F to C Sand, Trace F Gravel	
	10			24 50/5"		
		5	SS	5 6		
				8 10		
		6	SS	9 11	F layer of F - SAND, little F Gravel, little SILT	
				12 50/5"		
	15	7	SS	6 9		
				9 11		
		8	SS	9 13	F layer of F SAND, Trace	
				14 16		
		9	SS	4 6		
	20			8 10		
		10	SS	10 12		
				14 16		
		11	SS	5 7		
				7 10		
	25	12	SS	10 11	F layer of F SAND, little SILT to CLAY - SILT, Trace F Gravel	
				14 16		
		13	SS	7 9	Brownish SILTY Ionics	
				11 14		
		14	SS	12 14	@ [illegible] to Gray SILTY CLAY, Trace F - C Sand, Trace to little F Gravel	
	30			7 9		
		15	SS	11 13		
				20 50/5"		
		16	SS	8 10		
				12 15		
	35	17	SS	5 7	@ [illegible] ons & F-m GRAVEL [illegible] some SILT - CLAY	
				10 12		
		18	SS	12 15		
				17 50/5"		
		19	SS	8 10		
	40			12 15		
		20	SS	11 12		
				17 20		
		21	SS	5 7	[illegible] to SILT, little F Sand, Trace to little F Gravel	
				9 11		
	45	22	SS	10 12		
				13 16		

WE WEHRAN ENGINEERING
CONSULTING ENGINEERS

TEST BORING LOG
BORING NO. R-23-15
SHEET NO. 2 OF 2
PROJECT :
CLIENT : Corp. Engineering
JOB NO. 0[illegible]

WELL CONSTRUCTION	DEPTH IN FEET	NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Cement - Bentonite grout	50	T 1	S.T.	Push	Gray [illegible] CLAY, little F to Trace F-C Sand, Trace to No F Gravel	
		23		9 13		
				14 21		
	60	T 2	S.T.	Push		
		24		11 14		
				17 [illegible]		
	65	25		7 14		
				19 24		
		26		26 [illegible]		
				19 40		
		27		[illegible]		
	80			[illegible]		
		28		[illegible]	[illegible] Gray Silty CLAY, some F-C Sand, Trace F Gravel	
				[illegible]		
		29		[illegible]		
				21 32		
	85	30		24 [illegible]		U.C = 3.5
				[illegible]		
		31		12 15		
				14 17		
		32		12 20	Stiff to very stiff gray Silty CLAY Some F Gravel, little F-C Sand	U.C = 2.5
	70			15 17		
		T 3	S.T.	Push		Sticky Tube sent beyond use.
		33		10 12	Gray Silty CLAY, little to Trace F-C Sand, Trace to No F Gravel	U.C = 3.0
				14 [illegible]		
	75	34		9 [illegible]		U.C = 2.5
				15 17		
		35		9 14		U.C = 3.0
				12 14		
		36		11 12		U.C = 2.0
				14 22		
	90				END OF BORING 80	
	95					
	100					

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-1
DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
RIG CME 75 METHOD Hollow Stem Auger
HOURS
G.S. ELEVATION 736.9 DATE STARTED 3/6/89
WHILE DRILLING 32.5'
T.O.B. ELEVATION 661.9 DATE COMPLETED 3/7/89
SHEET 1 OF 4

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Brown silty clay TOPSOIL, tr. organics	Wadsworth Till Ia (weathered)	
					735.9		
1SS	1 4 10	11"		3.6	Brown silty CLAY, tr. sand and gravel, oxidized spots and stains, mottled, greyed along joints, tr. roots, hard		
2SS	15 18 15	15"		4.5+			
3SS	7 19 22	18"		4.5+			
4SS	8 18 25	18"		4.5+			
5SS	9 17 26	18"		4.5+			
6SS	8 15 19	18"		4.5+			
7SS	7 13 20	18"		4.0			
					725.2		
8SS	6 11 13	18"		3.8	Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till Ia (unweathered)	
9SS	4 10 16	18"		3.5			
10SS	5 8 13	18"		3.7			
11SS	4 6 12	18"		4.0			
12SS	5 9 12	18"		2.0			
13SS	3 5	18"		2.5			

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHORELWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0013

JOB NO. 89-105
LOGGED BY R.L.Jennings

E-8

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-1

DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
HOURS

RIG CME 75 METHOD Hollow Stem Auger
WHILE DRILLING 32.5'

G.S. ELEVATION 736.9 DATE STARTED 3/6/89
T.O.B. ELEVATION 661.9 DATE COMPLETED 3/7/89
SHEET 2 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
13SS	11				Grey silty CLAY, tr. sand and gravel, very stiff-stiff	Wadsworth Till Ia	
14SS	5 5 9	18"		2.0	tr. hairline silt partings 21.5' - 23.0'		
15SS	5 8 16	18"		2.7			
16SS	4 6 11	18"		1.7			
17SS	3 5 10	18"		1.2	15% sand, 39% silt, 46% clay (CL)		
18SS	4 7 10	18"		1.8			
19SS	5 9 10	18"		2.2			
20SS	5 7 10	18"		1.2			
21SS	7 17 22	17"		2.8	tr. hairline silt partings, laminated below 31.0'		
					705.1 Grey silty fine SAND, med.dense		
					704.2 Grey fine-medium SAND, some small gravel, dense	Intratill Sorted Sediments (coarse-medium)	
22SS	6 12 13	17"			703.3 Grey silty fine SAND, dense		
23SS	7 10 9	16"			702.2 Gr.fi-med.SAND.w/sm.gravel 702.0 Grey fine sandy SILT, med. dense		
24SS	11 11 15	16"		2.8	700.7 Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till I (transitional)	
25SS	7 12 17	18"		2.8	699.1 Grey clayey SILT, tr. sand and gravel 698.4		
26SS	6 13 16	18"		1.9	Grey silty CLAY, tr. sand and gravel 1/2" silt seams @ 39.0' and 39.5' stiff		

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MORMAN, ILLINOIS 60030
815/744-0017

JOB NO. 89-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-1
WATER LEVELS
DRILLER Patrick Engineering, Inc.
AT COMPLETION
RIG CME 75 METHOD Hollow Stem Auger
HOURS
G.S. ELEVATION 736.9 DATE STARTED 3/6/89
WHILE DRILLING 32.5'
T.O.B. ELEVATION 661.9 DATE COMPLETED 3/7/89
SHEET 3 OF 4

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40								
41	27SS	5 10 13	18"		2.8	Grey silty CLAY, tr. sand and gravel, very stiff 17% sand, 39% silt, 44% clay (CL)	Wadsworth Till I (transitional)	
						695.2		
42	28SS	8 9 13	17"			Grey fine-medium SAND, some small-large gravel, medium dense	Intratill Sorted Sediments (coarse-medium)	
						694.1		
43						Grey clayey SILT, med. dense		
		10				693.2		
44	29SS	10 12	17"			692.8 Grey fi-co.SAND, some sm. gravel 692.5 Grey clayey SILT, med. dense		
						692.0 Grey fi-co.SAND, w/sm-lg. gravel		
45	30SS	7 8 7	17"			Grey laminated SILT w/clay seams, loose -medium dense		
46								
47	31SS	3 3 7	18"					
	32SS	5 13 11	0"			687.9		
49								
50	33SS	11 20 25	18"		4.5+	Grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till Ib	
51	34SS	7 9 13	18"		1.2			
52								
53	35ST		19"		1.5	21% sand, 51% silt, 28% clay (CL) $K = 4.7 \times 10^{-8}$ cm/sec.		
54								
55	36SS	9 13 20	13"		disturbed by rock			
56	37SS	5 19 22	18"		1.5			
57								
58	38SS	7 11 15	18"		1.5			
59	39SS	9 18 19	18"		1.5			
60								

ROBERTA L. JENNINGS
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2020 N. SHOREWOOD DRIVE
SHOREWOOD, ILLINOIS 60530
(815) 725-0017

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-1
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 736.9 DATE STARTED 3/6/89
WHILE DRILLING 32.5'
T.O.B. ELEVATION 661.9 DATE COMPLETED 3/7/89
SHEET 4 OF 4

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
60	40SS	8 12 18	18"		1.3	Grey silty CLAY, tr. sand and gravel, stiff-very stiff	Wadsworth Till Ib	
61								
62	41SS	7 12 14	18"		2.0			
63								
64	42SS	12 14 24	18"		1.8	hairline fine sand partings @64.0'	Wadsworth Till II(?)	
65	43SS	7 10 14	18"		2.4			
66								
67	44SS	9 13 20	18"		3.6	slight lamination 67.4' - 69.5'		
	45SS	13 16 18	18"		3.0			
69								
70	46SS	5 8 14	18"		1.3			
71	47SS	5 7 14	18"		1.4			
72								
73	48SS	9 14 16	18"		2.7			
74	49SS	9 12 15	18"		1.7	661.9		
75						T.O.B. 75.0' Grouted upon completion w/cement/ bentonite grout		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
3826 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017

JOB NO. 89-105
LOGGED BY R.L. Jennings

E-11

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-2

DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
HOURS

RIG CME 75 METHOD Hollow Stem Auger
WHILE DRILLING 30.0'

G.S. ELEVATION 753.0 DATE STARTED 3/7/89
T.O.B. ELEVATION 678.0 DATE COMPLETED 3/8/89
SHEET 1 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					752.5 Brown silty clay TOPSOIL, tr. organics	Wadsworth Till Ia (transitional) (weathered)	
1SS	3 6 10	10"		4.1	Brown silty CLAY, tr. sand and gravel, oxidized spots and stains, mottled, laminated, greyed along joints and partings, hairline silt partings, hard-very stiff		
2SS	5 13 25	13"		3.8	749.2		
3SS	13 18 31	14"		4.5+	Brown silty CLAY and SILT, tr. sand and gravel, oxidized and greyed along joints and partings, hard	Intratill Sorted Sediments (medium-fine) (weathered)	
4SS	9 15 20	15"		4.5+			
					745.7		
5SS	6 16 21	16"		4.5+	Brown silty CLAY, tr. sand and gravel, oxidized spots, sl. lamination to 10.0', hard	Wadsworth Till Ia (weathered)	
6SS	8 15 20	17"		4.5+	healed joint traces 9.0' - 21.5'		
7SS	7 16 19	16"		4.5+	occasional hairline silt partings below 11.5'		
8SS	9 17 24	16"		4.5+			
9SS	10 16 19	17"		4.5+			
10SS	6 12 20	18"		4.5+			
11SS	9 12 17	18"		4.5+			
12SS	6 11 13	17"		4.3	grey w/tr. oxidation, very stiff, below 18.5'		
13SS	6 8	18"		2.8			

ROBERTA L. JENNINGS
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3020 N. THORNWOOD DRIVE
ARLINGTON HEIGHTS, ILLINOIS 60004
815/344-0011
IPG CPG 0440
IWD CPG 333

JOB NO. 89-105
LOGGED BY R.L.Jennings

E-12

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-2
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 753.0 DATE STARTED 3/7/89
WHILE DRILLING 30.0'
T.O.B. ELEVATION 678.0 DATE COMPLETED 3/8/89
SHEET 2 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
13SS	10				Grey silty CLAY, tr. sand and gravel, tr. oxidized spots, occasional hairline silt partings, very stiff	Wadsworth Till Ia (weathered)	
14SS	6 10 13	18"		3.8	731.0		
15SS	5 10 9	18"		1.2	Grey silty CLAY, tr. sand and gravel, occasional hairline silt and fine sand partings, stiff	Wadsworth Till Ia (unweathered)	
16SS	6 7 9	18"		1.7			
17SS	6 9 14	18"		1.9	17% sand, 41% silt, 42% clay (CL)		
18ST		17"		1.8	17% sand, 41% silt, 42% clay (CL) 724.8		
					Interlayered grey fine SAND, SILT, and CLAY 724.0	Intratill Sorted Sediments (fine-coarse-medium)	
19SS	9 9 10	14"		1.5	Grey silty CLAY, tr. sand & grv. 723.5		
					Grey clayey fine-coarse SAND, m.dense 722.6		
20SS	9 16 16	14"			Grey SILT, tr. clay, massive, dense 721.4		
21SS	8 10 11	18"		1.6	Grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till Ia	
22SS	6 8 10	18"		1.7			
23SS	5 7 12	18"		1.9			
24SS	5 7 9	18"		1.6	715.5		
25ST		24"		2.2	Grey silty CLAY, tr. sand and gravel, stiff silt seams and brown mottling 37.5-39.5' 25% sand, 52% silt, 23% clay (CL-ML) $K = 2.5 \times 10^{-8}$ cm/sec.	Wadsworth Till Ib	
26SS	5						

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JOB NO. 89-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-2
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 753.0 DATE STARTED 3/7/89
WHILE DRILLING 30.0'
T.O.B. ELEVATION 678.0 DATE COMPLETED 3/8/89
SHEET 3 OF 4

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40	26SS	11 12	18"		1.8	Grey to brownish-grey silty CLAY, tr. sand and gravel, stiff-very stiff	Wadsworth Till Ib	
41						tr. oxidized spots 41.0-43.0'		
42	27SS	9 10 13	18"		2.4			
43	28SS	5 7 14	14"		2.0			
44								
45	29SS	8 13 16	3"	disturbed by rock		greyer between 45.5' and 56.5'		
46	30SS	6 8 11	18"		2.1			
47	31SS	6 8 12	18"		1.1			
49	32SS	4 8 11	18"		1.5			
50								
51	33ST		21"		2.1	20% sand, 45% silt, 35% clay (CL) $K = 1.5 \times 10^{-8}$ cm/sec.		
52								
53	34SS	8 12 18	18"		2.0			
54	35SS	9 12 16	18"		2.3			
55								
56	36SS	8 13 14	18"		2.7			
57	37SS	8 15 18	16"		2.7			
58								
5_	38SS	8 12 14	18"		2.0	silty and fine sandy hairline partings and tr. lamination 58.5' - 61.0'		
60	39SS	8						

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
3020 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION

BORING NO. BB-2

DRILLER Patrick Engineering, Inc.

RIG CME 75 METHOD Hollow Stem Auger

G.S. ELEVATION 753.0 DATE STARTED 3/7/89

T.O.B. ELEVATION 678.0 DATE COMPLETED 3/8/89

WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING 30.0'

SHEET 4 OF 4

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
39SS	14 22	18"		2.2	Brownish-grey silty CLAY, tr. sand & grv., tr. lamination, very stiff 692.0	Wadsworth Till Ib	
40SS	7 9 14	18"		1.4	Greyish-brown fairly silty to very fine sandy CLAY, tr. sand and gravel, stiff	Wadsworth Till II (marker)	
41SS	6 9 13	18"		2.1	brownish grey @ 64.0'		
42SS	9 13 15	18"		2.1	grey, hard, below 65.0'		
43SS	7 12 19	18"		4.2	23% sand, 48% silt, 29% clay (CL)		
44SS	10 16 21	18"		4.2	684.5 — — — grades into — — —		
45SS	8 16 22	18"		3.5	Pinkish-brownish grey silty CLAY, tr. sand and gravel, hard near vertical orientation of laminae below 70.0'	Wadsworth Till II	
46SS	7 21 29	18"		4.5+			
47SS	14 20 24	18"		4.5+	12% sand, 33% silt, 55% clay (CL)		
48SS	8 14 20 24	24"		4.0	678.0		
					T.O.B. 75.0' Grouted upon completion w/cement/bentonite grout		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
MOMENCE, ILLINOIS 60950
815/472-0017

JOB NO. 89-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-3

DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION

RIG CME 75 METHOD Hollow Stem Auger
HOURS
WHILE DRILLING

G.S. ELEVATION 746.8 DATE STARTED 3/9/89
T.O.B. ELEVATION 671.8 DATE COMPLETED 3/10/89
SHEET 1 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Brown silty CLAY, tr. sand and gravel, tr. organics, roots, oxidized, greyed along joints and partings, occasional hairline silt partings, hard	Wadsworth Till Ia (weathered)	
1SS	17 21 14	13"		4.5+			
2SS	9 16 18	14"		4.5+			
3SS	13 18 25	18"		4.5+			
4SS	10 15 18	18"		4.5+			
5SS	9 16 24	17"		4.5+	4" fine sandy silt seam @ 7.2' very stiff below 8.5'		
6SS	9 9 20	18"		3.5			
7SS	8 16 19	17"		3.5			
8SS	6 9 14	16"		3.5	tr. healed joint 13.0' - 16.0'		
9SS	7 9 14	18"		3.5			
10SS	10 12 15	18"		2.8			
11SS	9 12 14	16"		3.3	729.8		
12SS	5 7 9	0"	pushed rock		Grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till Ia (unweathered)	
13SS	6 7	18"		1.3			

ROBERTA L. JENNINGS
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2826 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017

JOB NO. 89-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-3
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 746.8 DATE STARTED 3/9/89
WHILE DRILLING
T.O.B. ELEVATION 671.8 DATE COMPLETED 3/10/89
SHEET 2 OF 4

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
13SS	20				726.2 Grey silty CLAY, tr. sand & grv.	Wadsworth Till Ia	
					725.6 Grey SILT w/1" fi-med sand seam	Intratill Sort.Seds.	
14SS	10 8 8	18"		1.1	Grey silty CLAY, tr. sand and gravel, tr. hairline silt partings, stiff	Wadsworth Till Ia	
15SS	8 7 11	18"		1.3			
16ST		20"		3.0	14% sand, 41% silt, 45% clay (CL) $K = 1.6 \times 10^{-8}$ cm/sec.		
17SS	8 9 12	18"		1.4	thin silt seam @ 26.1' medium stiff w/occasional silt pockets between 26.0' and 28.5'		
18SS	4 5 7	18"		0.8			
19SS	6 9 12	18"		1.5			
20SS	6 7 11	18"		1.7			
21SS	7 7 9	18"		2.2	very stiff below 31.5'		
22SS	7 9 11	18"		3.2			
					711.6		
23SS	3 12 13	18"		1.0	Grey silty CLAY, tr. sand and gravel, several very thin to hairline silt seams and very thin coarse sand seams	Wadsworth Till I (transitional)	
24SS	17 9 19	15"		2.1			
					709.1		
25SS	9 9 11	18"		1.2	Grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till Ib	
26SS	6 9	18"		1.3			

ROBERTA L. JENNINGS
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3926 N. SHOREWOOD DRIVE
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815/344-0012

JOB NO. 89-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-3
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 746.8 DATE STARTED 3/9/89
WHILE DRILLING
T.O.B. ELEVATION 671.8 DATE COMPLETED 3/10/89
SHEET 3 OF 4

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40	26SS	12				Grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till Ib	
41	27SS	6 8 10	18"		2.5			
42								
43	28ST		24"		1.8	22% sand, 43% silt, 35% clay (CL) K = 4.3 X 10^{-8} cm/sec.		
44								
45	29SS	8 9 21	18"		1.5			
46	30SS	5 9 12	18"		1.5			
47	31SS	5 9 14	18"		1.5			
49	32SS	6 8 15	18"		1.5			
50								
51	33SS	6 10 15	18"		1.5			
52	34SS	7 12 16	18"		1.7			
53								
54	35SS	12 12 16	18"		2.2	hairline silt partings and sl. laminated @ 55.0'		
55	36SS	14 17 19	18"		2.7	691.5		
56						Brownish-grey fairly silty to very fine sand CLAY, tr. sand and gravel, stiff	Wadsworth Till II (marker)	
57	37SS	13 10 14	11"	disturbed by rock	1.5	silty CLAY 57.0' - 57.5'		
58	38SS	9 10 14	18"		1.0	grey below 57.5'		
5								
60	39SS	5 8	18"		1.8			

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MCHENRY, ILLINOIS 60050
815/344-0017
I.E.P.C. CPGS 0440
IWD CPG 237

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BPI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-3
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 746.8 DATE STARTED 3/9/89
WHILE DRILLING
T.O.B. ELEVATION 671.8 DATE COMPLETED 3/10/89
SHEET 4 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
39SS	13				Grey fairly silty to very fine sandy CLAY, tr. sand and gravel, stiff	Wadsworth Till II (marker)	
40ST		24"		1.8	685.0 22% sand, 53% silt, 25% clay (CL-ML) ——grades into K = 3.6 X 10-6 cm/sec.		
					Grey silty CLAY, tr. sand and gravel, very stiff		
41SS	13 22 29	18"		3.3	10% sand, 35% silt, 55% clay (CL) K = 4.0 X 10-8 cm/sec.		
42SS	15 28 23	18"		3.7			
43SS	7 16 17	18"		3.1	4" clayey silt seam @ 66.1' thin fine sand and silt seams below 67.5'		
44SS	12 11 18	18"			678.8		
45SS	18 30 38	18"			Pinkish, brownish-grey silty CLAY, tr. sand and gravel, very stiff grey below 70.0'	Wadsworth Till II	
46SS	13 25 32	18"		4.0			
47SS	17 19 27	18"		3.3	15% sand, 41% silt, 44% clay (CL)		
48SS	14 24 34 41	18"		3.9	671.8		
					T.O.B. 75.0' Grouted upon completion w/cement/ bentonite grout		

ROBERTA L. JENNINGS
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2020 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
DRILLER Patrick Engineering, Inc.
RIG CME 75 METHOD Hollow Stem Auger
G.S. ELEVATION 737.7 DATE STARTED 3/13/89
T.O.B. ELEVATION 662.7 DATE COMPLETED 3/14/89

BORING NO. BB-4
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING 28.0'
SHEET 1 OF 4

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				737.2	Brown silty clay TOPSOIL, tr. organics	Wadsworth Till Ia (weathered)	
1SS	6 9 18	9"		2.6	Brown silty CLAY, tr. sand and gravel, sl. laminated, oxidized spots and partings, greyed along joints and partings, tr. hairline silt partings, hard		
2SS	11 26 31	13"		4.5+			
3SS	13 26 36	17"		4.5+			
4SS	9 21 30	18"		4.5+			
5SS	13 22 33	18"		4.5+			
6SS	9 21 26	18"		4.5+	grey w/tr. oxidized spots @ 9.9'		
				727.7			
7SS	9 15 21	18"		4.0	Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till Ia (unweathered)	
8SS	7 11 21	18"		3.6			
9SS	8 13 16	18"		2.2	stiff below 14.5'		
10SS	8 11 14	18"		2.0	sand pocket @ 15.2'		
					sl. tr. lamination 14.5' - 19.5'		
11SS	9 10 14	18"		1.7			
12SS	7 8 12	18"		1.6			
13SS	7 10	18"		1.8	sand pocket @ 20.0'		

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SHOREWAY, ILLINOIS 60030
(815) 344-0017

JOB NO. 89-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-4

DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
HOURS
RIG CME 75 METHOD Hollow Stem Auger
G.S. ELEVATION 737.7 DATE STARTED 3/13/89
WHILE DRILLING 28.0'
T.O.B. ELEVATION 662.7 DATE COMPLETED 3/14/89
SHEET 2 OF 4

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
13SS	13				Grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till Ia	
14SS	8 14 14	18"		2.0			
15SS	12 14 14	18"		1.5	1/8" silt seam @ 22.9'		
16SS	8 9 11	18"		1.1	occasional hairline silt and fine sand partings and tr. lamination below 24.0'		
17SS	7 17 20	18"		1.9			
18SS	10 15 27	18"		3.0 4.0	710.1 709.7 Gr.lam.SILT w/clay seams	Intratill Sorted Sediments (fine w/coarse)	
19SS	24 20 29	16"			Grey CLAY w/seams of fine-coarse sand and small-large gravel 708.2		
20SS	12 13 23	16"			Greyish-brown fine-coarse SAND and small-large GRAVEL w/interlayered clay and silt seams, med. dense		
21SS	9 10 12	9"			705.5		
22SS	11 12 12	18"		2.0	Grey silty CLAY, tr. sand and gravel, laminated, with hairline silt and fine sand partings, stiff 703.7	Wadsworth Till Ib (transitional)	
23SS	6 11 14	18"		2.1	Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till Ib	
24SS	10 13 17	18"		2.7			
25SS	6 12 14	18"		3.5			
26ST		24"		2.0	14% sand, 44% silt, 42% clay (CL) $K = 3.8 \times 10^{-8}$ cm/sec.		

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2020 N. SHOREWOOD DRIVE
MEMBER ILLINOIS 60030
815/385-0001
APPLE CPC) 6440
IMO CPC 333

JOB NO. 89-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-4
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 737.7 DATE STARTED 3/13/89
WHILE DRILLING 28.0'
T.O.B. ELEVATION 662.7 DATE COMPLETED 3/14/89
SHEET 3 OF 4

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40	26ST					Grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till Ib	
41	27SS	13 12 15	18"		1.8			
42								
43	28SS	13 14 18	18"		2.0			
44	29SS	9 20 21	18"		4.5+	sl. brownish-grey below 43.5' hard, 43.5' - 45.0'		
45								
46	30SS	7 9 11	18"		1.1			
47	31SS	11 14 17	18"		1.3			
49	32SS	9 23 29	18"		3.2	688.7		
50	33SS	15 22 27	18"		3.6	Brownish-grey fairly silty and very fine sandy CLAY, tr. sand and gravel, very stiff-stiff	Wadsworth Till II (marker)	
51						very thin fine sand partings 50.0' - 52.0'		
52	34SS	10 10 11	18"		1.2			
53	35SS	8 11 15	18"		1.4			
54						683.7 — — — grades into — — — — — — — —		
55	36SS	26 15 22	18"		1.8	Grey silty CLAY, tr. sand and gravel, stiff-very stiff		
56	37SS	9 17 20	18"		4.0			
57								
58	38SS	10 16 18	18"		1.7			
59	39SS	11 16 16	18"		2.1			
60								

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(815) 744-0011

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-4
DRILLER Pairick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 737.7 DATE STARTED 3/13/89
WHILE DRILLING 28.0'
T.O.B. ELEVATION 662.7 DATE COMPLETED 3/14/89
SHEET 4 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40SS	16 25 33	18"		2.3	Grey silty CLAY, tr. sand and gravel, very stiff 1/8" fine sand seam @ 60.7'	Wadsworth Till II	
					675.7 15% sand, 38% silt, 47% clay (CL)		
41ST		12"		3.1	80% sand, 20% silt & clay (SC-SM)	Intratill Sorted Sediments	
42SS	25 28 18	13"			Interlayered grey fine-medium and fine-coarse SAND, dense clay seam @ 62.5'	(coarse)	
					673.1		
43SS	12 23 30	18"		4.0	Pinkish, brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till II	
44SS	18 26 27	18"		4.3	pinkish coloring alternates randomly w/grey		
45SS	13 17 20	18"		3.6			
46SS	12 18 21	18"		3.1			
47SS	11 16 20	18"		3.5			
48SS	12 17 18	18"		3.0			
49SS	11 18 21 31	24"		2.0			
					662.7		
					T.O.B. 75.0'		
					Grouted 4/20/89 w/Volclay Grout		

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815/344-0017
IDPC (PG) 0440
MO (PG) 337

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-5
DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
RIG CME 75 METHOD Hollow Stem Auger
HOURS
G.S. ELEVATION 758.5 DATE STARTED 3/14/89
WHILE DRILLING 64.5'
T.O.B. ELEVATION 683.5 DATE COMPLETED 3/15/89
SHEET 1 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Brown silty clay TOPSOIL, tr. organics	Wadsworth Till Ia (weathered)	
					757.5		
1SS	6 11 8	7"		4.5+	Brown silty CLAY, mottled, oxidized spots, greyed along joints and partings, tr. roots, occasional hairline silt partings, hard		
2SS	7 9 15	10"		4.5+			
3SS	9 10 16	14"		4.5+			
4SS	9 12 13	14"		4.5+			
5SS	9 18 24	17"		4.5+			
					750.0		
6SS	10 15 20	17"		4.2	Grey silty CLAY, tr. sand and gravel, very stiff-stiff	Wadsworth Till Ia (unweathered)	
7SS	7 12 16	18"		4.2			
8SS	4 9 12	17"		1.1			
9SS	4 6 8	18"		1.7			
10SS	7 10 11	18"		3.2	irregular silt seams @ 15.2' w/ small-medium gravel in clay (disturbed deposit)		
					741.6		
11SS	6 11 12	18"		2.7	Greyish-brown silty CLAY, tr. sand and gravel, tr. hairline fine sand and silt partings, very stiff	Wadsworth Till Ia	
12SS	8 11 14	18"		2.1			
13SS	7 9	18"		3.3			

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JOB NO. 89-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-5
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 758.5 DATE STARTED 3/14/89
WHILE DRILLING 64.5'
T.O.B. ELEVATION 683.5 DATE COMPLETED 3/15/89
SHEET 2 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
13SS	10				Greyish-brown silty CLAY, tr. sand and gravel, tr. hairline fine sand and silt partings, very stiff	Wadsworth Till Ia	
14ST		18"		3.1	oxidized spot @ 20.5'		
15SS	10 10 14	18"		3.1	21% sand, 44% silt, 39% clay (CL) K = 8.1 X 10^{-8} cm/sec.		
					735.0		
16SS	6 8 8	18"		2.6	Brownish-grey below 23.5'		
17SS	6 8 12	18"		2.0			
18SS	7 8 10	18"		1.4			
19SS	6 8 10	18"		1.8			
20SS	6 8 10	18"		2.0			
21SS	5 7 11	18"		1.9			
22SS	8 10 11	18"		2.3			
23SS	8 9 10	18"		1.6			
24SS	9 9 10	18"		1.4			
25ST		20"		2.2	17% sand, 44% silt, 39% clay (CL) K = 2.7 X 10^{-8} cm/sec.		
26SS	8 10	18"		1.3			

ROBERTA L. JENNINGS
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3626 N. SHORE WOOD DRIVE
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JOB NO. 89-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-5
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 758.5 DATE STARTED 3/14/89
WHILE DRILLING 64.5'
T.O.B. ELEVATION 683.5 DATE COMPLETED 3/15/89
SHEET 3 OF 4

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40	26SS	10				Brownish-grey silty CLAY, tr. sand and gravel, tr. hairline fine sand and silt partings, stiff	Wadsworth Till Ib(?)	
41	27SS	9 11 12	18"		1.7			
42	28SS	10 10 12	18"		2.1			
43								
44	29SS	7 8 11	18"		1.9			
45								
46	30SS	4 7 9	18"		1.5			
47	31SS	10 11 15	18"		1.1			
49	32SS	9 12 13	18"		1.1			
50	33SS	8 10 13	18"		1.8			
51	34SS	16 10 15	18"		2.3	fine sand partings 51.0' - 51.5'		
52								
53	35SS	11 16 15	18"		2.5			
54								
55	36SS	7 11 12	18"		2.0			
56	37SS	9 14 16	18"		1.8			
57						701.0		
58	38SS	10 19 14	18"		2.5	Brownish-grey fairly silty to very fine sandy CLAY, tr. sand and gravel, medium stiff	Wadsworth Till II (marker)	
59	39SS	8 11 12	18"		0.7			
60								

ROBERTA L. JENNINGS
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2836 N. SHOREWOOD DRIVE
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(312) 344-0011

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-5
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 758.5 DATE STARTED 3/14/89
WHILE DRILLING 64.5'
T.O.B. ELEVATION 683.5 DATE COMPLETED 3/15/89
SHEET 4 OF 4

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
60								
61	40SS	7 9 12	18"		1.0	Brownish-grey fairly silty to fine sandy CLAY, tr. sand and gravel, stiff-medium stiff	Wadsworth Till II (marker)	
62	41SS	8 12 13	18"		1.6			
63						very silty 63.0' - 65.5'		
64	42SS	7 48 30	18"		0.9			
						694.0		
65	43SS	8 16 40	18"		2.3	693.5 Grey fine sandy SILT Brownish-grey silty CLAY, tr. sand and gravel, stiff	Intratill Sort. Seds Wadsworth Till II	
66								
67	44SS	16 18 25	18"		1.5	23% sand, 47% silt, 30% clay (CL)		
	45SS	12 27 31	18"		4.1	690.0		
69						Brownish-grey CLAY, sl. tr. gravel tr. hairline silt partings, laminated, hard	Intratill Sorted Sediments (fine)	
70	46SS	19 33 45	18"		4.5+	1/2" silt seam @ 70.0'		
71	47SS	7 17 29	18"		4.3			
72						line of small gravel in clay @ 72.4'		
						686.0		
73	48SS	12 14 19	18"		3.2	Brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till II	
74	49SS	9 15 20	18"		3.0			
						683.5		
75						T.O.B. 75.0'		
76						Crouted 4/20/89 w/Volclay Grout		
77								
78								
80								

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-9011

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-6

DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING 39.8'

RIG CME 75 METHOD Hollow Stem Auger

G. S. ELEVATION 758.4 DATE STARTED 3/15/89
T.O.B. ELEVATION 683.4 DATE COMPLETED 3/16/89
SHEET 1 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Brown silty clay TOPSOIL, tr. organics	Wadsworth Till Ia (transitional) (weathered)	
					757.4		
1SS	9 9 16	4"		4.5+	Brown silty CLAY, tr. sand and gravel, oxidized spots and stains, mottled, greyed along joints and partings, tr. roots, tr. hairline silt partings, laminated to 5.1', hard		
2SS	13 18 24	17"		4.5+			
3SS	9 17 21	18"		4.5+			
4SS	10 16 25	16"		4.5+	silt partings 6.5' - 7.5'		
5SS	9 17 24	18"		4.5+	fine sand partings 8.5' - 10.3'		
6SS	11 17 16	18"		4.5+			
					748.1		
7SS	7 11 16	16"		2.7	Grey silty CLAY, tr. sand and gravel	Wadsworth Till Ia (transitional) (unweathered)	
					746.9		
8SS	6 12 12	16"		1.9	~~746.6 Grey clayey SILT, tr. sand & grv.~~ Grey fine sandy CLAY, tr. sand and gravel, stiff		
					745.4		
9SS	8 9 12	16"		1.4	Brownish-grey silty CLAY, tr. sand and gravel, tr. hairline silt and fine sand partings, stiff	Wadsworth Till Ia (unweathered)	
10SS	5 6 9	18"		1.3	sl. lamination @ 13.8'		
11SS	5 8 10	18"		1.5	grey between 17.0' and 20.5'		
12SS	8 9 11	18"		1.5			
13SS	4 8	18"		1.3			

ROBERTA L. JENNINGS
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2020 W. SHOREWOOD DRIVE
SHOREWOOD, ILLINOIS 60435
815/725-0017
A.I.P.G. CPG 5440
IMD CPG 253

JOB NO. 89-105
LOGGED BY R.L.Jennings

E-28

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION

BORING NO. BB-6

DRILLER Patrick Engineering, Inc.

RIG CME 75 METHOD Hollow Stem Auger

G.S. ELEVATION 758.4 DATE STARTED 3/15/89

T.O.B. ELEVATION 683.4 DATE COMPLETED 3/16/89

WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING 39.8'

SHEET 2 OF 4

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20	13SS	8				Brownish-grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till Ia	
21	14SS	6 7 12	18"		1.3			
22								
23	15ST		19"		3.0	33% sand, 40% silt, 27% clay (CL-ML) $K = 1.9 \times 10^{-8}$ cm/sec.		
24								
25	16SS	6 7 11	18"		1.5	fairly silty 22.0' - 24.8'		
26	17SS	5 12 14	18"		1.7			
27								
28	18SS	6 8 12	18"		1.5	1/2" silt seam @ 28.1'		
						729.4		
29	19SS	9 10 12	18"		1.3	Brownish-grey fairly silty and fine sandy CLAY, tr. sand and gravel, stiff	Wadsworth Till Ia (transitional)	
30								
31	20SS	5 0 10	18"		1.2	726.9		
32	21SS	6 8 12	18"		2.6	Brownish-grey silty CLAY, tr. sand and gravel, stiff		
33								
34	22SS	8 9 11	18"		1.6	sand pocket @ 33.8'		
35	23SS	8 10 13	18"		1.6			
36								
37	24SS	9 14 19	18"		1.6	1" sand w/gravel seam @ 37.4'		
						720.9		
38	25SS	10 8 8	18"		0.7	Grey fine sandy, gravelly, clayey SILT 720.1		
						Grey silty CLAY, tr. sand and gravel, tr. fine sand partings, med. stiff 718.6		
39	26SS	6 10	18"					

ROBERTA L. JENNINGS
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3826 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050

JOB NO. 89-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
DRILLER Patrick Engineering, Inc.
RIG CME 75 METHOD Hollow Stem Auger
G.S. ELEVATION 758.4 DATE STARTED 3/15/89
T.O.B. ELEVATION 683.4 DATE COMPLETED 3/16/89

BORING NO. BB-6
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING 39.8'
SHEET 3 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
26SS	8				Brownish-grey fine-medium SAND w/sm-	Lacustrofluvial (coarse)	
					717.6 med. gravel, medium dense		
27SS	5 8 14	18"		1.9	Brownish-grey silty CLAY, tr. sand and gravel, tr. hairline silt partings, stiff	Wadsworth Till Ib	
28SS	13 15 17	18"		1.8			
29SS	7 8 11	18"		1.4			
30SS	8 13 16	18"		1.9			
31ST		24"		1.5	9% sand, 35% silt, 56% clay (CL) K = 2.0 X 10^{-8} cm/sec.		
32SS	9 12 17	18"		2.5			
33SS	6 10 17	18"		1.7			
34SS	7 11 17	18"		1.6	705.9		
					Brownish-grey CLAY, laminated, w/ hairline silt partings	Intratill Sorted Sediments (fine)	
35SS	9 16 19	18"		1.8	705.1 Brownish-grey fairly silty to very fine sandy CLAY, tr. sand and gravel, stiff	Wadsworth Till II (marker)	
36SS	6 8 10	18"		1.3			
37ST		22"		2.1	21% sand, 57% silt, 22% clay (CL)		
38SS	9 8 13	18"		1.5			
39SS	7				22% sand, 54% silt, 24% clay (CL)		

ROBERTA L. JENNINGS
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3826 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG5 #440
IWD CPC 337

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-6
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 758.4 DATE STARTED 3/15/89
WHILE DRILLING 39.8'
T.O.B. ELEVATION 683.4 DATE COMPLETED 3/16/89
SHEET 4 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
39SS	10 12	18"		1.2	Brownish-grey fairly silty to very fine sandy CLAY, tr. sand and gravel, stiff-medium stiff	Wadsworth Till II (marker)	
40SS	6 9 14	18"		1.0	clayier 61.0' - 62.5'		
41SS	12 17 21	15"		1.1	694.9 — — grades into		
42SS	7 9 14	18"		2.2	Brownish-grey fairly silty CLAY, tr. sand and gravel, stiff-very stiff		
43SS	11 17 19	18"		2.6	21% sand, 47% silt, 32% clay (CL) 691.4		
44SS	15 20 26	18"		3.0	Brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till II	
45SS	9 12 23	18"		2.8	thin sand and gravel seam @ 69.8' pinkish 69.5' - 70.0' pinkish areas at random below 70.0'		
46SS	6 13 20	18"		2.5	33% sand, 38% silt, 29% clay (CL)		
47SS	9 11 20	18"		1.8			
48SS	11 19 29 38	23"		2.2	683.4		
					T.O.B. 75.0' Grouted 4/20/89 w/Volclay Grout		

ROBERTA L. JENNINGS
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2020 N. SHORewood DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-7
DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
RIG CME 75 METHOD Hollow Stem Auger
HOURS
G.S. ELEVATION 741.1 DATE STARTED 3/16/89
WHILE DRILLING 52.5'
T.O.B. ELEVATION 666.1 DATE COMPLETED 3/17/89
SHEET 1 OF 4

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Dark brown to black silty clay TOPSOIL w/organics	Colluvium of Till	
1SS	4 6 9	11"			dark grey @ 2.5'		
2SS	7 8 10	13"			737.9		
3SS	7 7 8	14"		2.1	Brown silty CLAY, tr. sand and gravel, mottled, oxidized spots and stains, tr. roots, greyed along joints, very stiff-hard	Wadsworth Till Ia (weathered)	
4SS	5 10 20	11"		4.5+			
5SS	7 14 22	13"		4.5+			
6SS	7 13 16	18"		4.5+			
					tr. hairline fine sand partings @ 9.8'		
7SS	7 12 13	17"		4.5+			
8SS	7 12 13	14"		3.8			
					728.1		
9SS	5 6 10	16"		2.1	Grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till Ia (unweathered)	
					1/2" clayey silt areas @ 14.0'		
10SS	4 6 8	18"		1.2			
11SS	4 7 10	18"		1.5	1.5" clayey, fine sandy silt @ 17.5'		
12SS	5 7 9	18"		1.5			
13SS	6 8	18"		1.4			

ROBERTA L. JENNINGS
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2026 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050

JOB NO. 89-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-7
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G. S. ELEVATION 741.1 DATE STARTED 3/16/89
WHILE DRILLING 52.5'
T.O.B. ELEVATION 666.1 DATE COMPLETED 3/17/89
SHEET 2 OF 4

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
13SS	10				Grey silty CLAY, tr. sand and gravel, stiff - hairline fine sand partings @ 20.5'	Wadsworth Till Ia	
14SS	5 6 8	18"		1.2	719.5		
					719.1 Grey SILT	Wadsworth Till Ia (transitional)	
15SS	5 8 11	18"		1.7	Grey silty CLAY, tr. sand and gravel, stiff		
16SS	4 4 6	18"		1.0	fine sand partings below 24.2'		
					716.1		
17SS	5 6 7	18"		1.7	Brownish-grey CLAY, laminated, stiff 4" silt w/fine sand partings @ 25.6'	Intratill Sorted Sediments (fine)	
18SS	5 7 9	18"		1.8	occasional silt partings		
19SS	6 6 9	18"		1.7	4% sand, 55% silt, 41% clay (CL)		
20SS	4 5 5	18"		1.5	tr. gravel @ 30.6'		
					709.8		
21SS	5 6 10	18"		2.1	Brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till Ib	
22SS	4 7 14	18"		2.0			
23ST		22"		2.0	11% sand, 45% silt, 44% clay (CL) $K = 1.3 \times 10^{-8}$ cm/sec.		
24SS	8 10 14	18"		2.2			
25SS	8 10 13	18"		2.4			
26SS	10 10	18"		2.1			

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
7026 N. SHOREWOOD DRIVE
MEQUON, ILLINOIS 60030

JOB NO. 89-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-7

DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
HOURS

RIG CME 75 METHOD Hollow Stem Auger
WHILE DRILLING 52.5'

G.S. ELEVATION 741.1 DATE STARTED 3/16/89
T.O.B. ELEVATION 666.1 DATE COMPLETED 3/17/89
SHEET 3 OF 4

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40	26SS	14				Brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till Ib	
41	27SS	8 12 16	18"		2.9	tr. hairline silt and fine sand partings		
42	28SS	10 13 16	18"		2.5			
43								
44	29SS	12 14 21	18"		2.5			
45								
46	30SS	8 10 19	18"		2.3			
47	31SS	10 14 22	18"		2.3	laminated below 46.9'		
						1" silt seam @ 48.0'		
	32SS	11 11 12	18"		3.0 1.7	692.4 Brownish-grey clayey SILT, w/fine sand seams	Intratill Sorted Sediments (medium-coarse)	
49								
50	33SS	10 9 13	18"		0.3	690.1		
51						689.5 Brownish-grey fine sandy SILT		
52	34SS	8 13 16	18"			688.8 Brownish-grey very silty CLAY		
53	35SS	6 9 10	18"			Brownish-grey fine-coarse SAND and 687.8 GRAVEL, medium dense		
54						Brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till II	
55	36SS	16 16 25	18"		3.1	tr. fine sand partings to 54.5'		
56	37SS	7 13 20	18"		2.8			
57								
58	38ST		24"		2.9	21% sand, 35% silt, 44% clay (CL) $K = 2.5 \times 10^{-8}$ cm/sec.		
59								
60	39SS	15 23	18"		3.9			

ROBERTA L. JENNINGS
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3928 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-7
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 741.1 DATE STARTED 3/16/89
WHILE DRILLING 52.5'
T.O.B. ELEVATION 666.1 DATE COMPLETED 3/17/89
SHEET 4 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
39SS	19				Brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till II	
40SS	12 14 21	18"		3.0			
41SS	14 17 23	18"		3.3	feathery texture 62.0-66.5'		
42SS	10 17 19	18"		3.5			
43SS	13 16 19	18"		2.8			
44SS	12 17 20	18"		2.8			
45SS	13 17 25	18"		3.0			
46SS	12 14 22	18"		3.2			
47SS	9 14 22 24	24"		3.5			
48SS	13 15 18 27	24"		3.3			
					666.1		
					T.O.B. 75.0'		
					Grouted upon completion w/Volclay Grout		

ROBERTA L. JENNINGS
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2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-8
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 760.6 DATE STARTED 3/20/89
WHILE DRILLING
T.O.B. ELEVATION 685.6 DATE COMPLETED 3/21/89
SHEET 1 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Brown silty clay TOPSOIL, tr. organics	Surficial Sorted Sediments	
					759.6		
1SS	13 9 12	8"		4.5+	Pale brown CLAY, oxidized spots, laminated, greyed along joints and partings, w/silt and fine sand partings, hard	(fine) (weathered)	
2SS	6 7 11	14"		4.5+			
3SS	6 10 12	18"		4.5+			
4SS	9 12 19	18"		4.5+			
5SS	9 10 17	18"		4.5+			
6SS	9 10 16	18"		4.5+	tr. sand and gravel below 9.3'		
					750.6		
7SS	8 9 12	18"		4.5+	Pale brown SILT w/clay and fine sand seams	(medium)	
					749.8		
8SS	7 10 14	18"		4.5+	Pale brown CLAY, tr. gravel, laminated, oxidized and greyed along joints, hard	(fine)	
					747.6		
9SS	8 7 7	13"			Grey clayey SILT w/vertical oxidized joint	(medium) (unweathered)	
					745.6		
10SS	4 6 8	18"		1.3	Grey very silty CLAY, stiff	(fine)	
					744.1		
11SS	5 6 7	18"		1.3	Grey fine sandy CLAY, laminated w/ silt and fine sand partings, stiff		
12SS	6 6 6	18"		1.9			
					741.6		
13SS	4 5	18"			Grey SILT w/clay and fine sand seams	(medium)	

ROBERTA L. JENNINGS
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2320 N. SHORTWOOD DRIVE
JOLIET, ILLINOIS 60435
815/744-0011

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-8
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 760.6 DATE STARTED 3/20/89
WHILE DRILLING
T.O.B. ELEVATION 685.6 DATE COMPLETED 3/21/89
SHEET 2 OF 4

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
13SS	6				740.2		
14SS	8 8 9	18"		1.3	Grey coarse sandy, gravelly CLAY, stiff	Surficial Sorted Sediments (fine)	
					738.3		
15SS	6 4 8	13"			Grey SILT, some clay	(medium)	
					737.1		
16SS	7 7 10	18"		1.3	Grey silty CLAY, laminated, tr. grv. 736.4 tr. hairline silt partings	(fine)	
					Brownish-grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till Ia	
17SS	5 6 9	18"		2.1			
18SS	5 7 10	18"		2.1			
19ST		24"		1.4	14% sand, 49% silt, 37% clay (CL) $K = 2.8 \times 10^{-8}$ cm/sec.		
20SS	7 ° 14	18"		1.7			
21SS	7 8 9	18"		2.0			
					727.5		
22SS	6 7 9	18"		1.8	Brownish-grey silty CLAY, tr. sand and gravel, laminated, w/occasional silt partings	Wadsworth Till I (transitional)	
23SS	6 8 11	18"		1.1	1/2" silt seams @ 33.1' and 33.8'		
					724.6		
24SS	6 7 9	18"		1.7	Brownish-grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till Ib	
25SS	4 6 9	18"		1.1			
26SS	6 6	18"		1.8			

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2026 N. SHOREWOOD DRIVE
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(312) 344-0017

JOB NO. 89-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-8
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 760.6 DATE STARTED 3/20/89
WHILE DRILLING
T.O.B. ELEVATION 685.6 DATE COMPLETED 3/21/89
SHEET 3 OF 4

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40	26SS	9				Brownish-grey silty CLAY, tr. sand and gravel, stiff-very stiff	Wadsworth Till Ib	
41	27SS	6 7 9	18"		1.1			
42	28SS	7 8 13	18"		2.0			
43								
44	29SS	6 10 12	18"		3.4			
45								
46	30ST		24"		3.5	14% sand, 46% silt, 40% clay (CL) $K = 1.6 \times 10^{-8}$ cm/sec.		
47								
	31SS	8 10 12	18"		1.8			
49	32SS	7 8 11	18"		2.1			
50								
51	33SS	8 12 14	18"		2.6			
52	34SS	8 7 10	18"		2.0			
						707.9		
53					0.7	Grey fairly silty to very fine sandy CLAY, tr. s.&grv., silt partings, stiff	Wadsworth Till II (marker)	
		4			1.8	706.8		
54	35SS	6 8	18"		0.2	Grey silty, sandy, gravelly CLAY, variable texture, soft to 55.0', stiff below 55.0'	Diamicton	
55	36SS	5 6 10	13"		0.5 1.7			
56								
57	37SS	7 7 10	18"		1.3			
58	38SS	4 4 6	18"		1.5			
						702.1		
					0.1	Grey clayey SILT interlayered w/ very silty and sandy clay, fine sandy silt, w/fi-med.sand seams	Intratill Sorted Sediments (medium-fine)	
5								
60	39SS	4 5	18"		0.6			

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
3926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC E-38 BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION

BORING NO. BB-8

DRILLER Patrick Engineering, Inc.

RIG CME 75 METHOD Hollow Stem Auger

G. S. ELEVATION 760.6 DATE STARTED 3/20/89

T.O.B. ELEVATION 685.6 DATE COMPLETED 3/21/89

WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING

SHEET 4 OF 4

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
39SS	8				Interlayered grey fine sandy CLAY	Intratill Sorted Sediments (medium-fine)	
		Rod sank night in sediments		over soft	699.1		
40SS	8 13 17	18"		2.1	Brownish-grey silty and sl. fine sandy CLAY, tr. sand and gravel, stiff-very stiff joint trace @ 62.0'	Wadsworth Till II	
41SS	7 13 14	18"		2.2	less silty w/depth		
42SS	6 8 12	18"		1.8			
43ST		24"		4.0	18% sand, 53% silt, 29% clay (CL) $K = 2.9 \times 10^{-8}$ cm/sec.		
44SS	10 12 18	18"		3.5			
45SS	7 12 21	18"		4.4	690.0		
46SS	14 15 16 21	24"		4.0	Grey CLAY, laminated w/numerous hairline silt and fine sand partings, hard very thin sand and sm.grv.seams 687.6 72.5' - 73.0'	Intratill Sorted Sediments (fine)	
47SS	18 13 19 25	24"		2.9	Brownish-grey silty CLAY, tr. sand and gravel, very stiff 685.6	Wadsworth Till II	
					T.O.B. 75.0' Grouted upon completion w/Volclay Grout		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
P.E.P.G. CPGS 4440
and CPC 337

JOB NO. 89-105

LOGGED BY R.L. Jennings

GEOLOGIC E-39 OF BORING

PROJECT B&W ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-9

DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION ____
____ HOURS ____

RIG CME 75 METHOD Hollow Stem Auger
WHILE DRILLING 38.0'

G.S. ELEVATION 739.2 DATE STARTED 3/21/89
T.O.B. ELEVATION 664.2 DATE COMPLETED 3/22/89
SHEET 1 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				739.9	Brown silty clay TOPSOIL, tr. organics	Wadsworth Till Ia (weathered)	
					Brown silty CLAY, tr. sand and gravel, oxidized spots and stains, greyed along joints and partings, hard		
1SS	5 6 7 6	8"		4.5+	occasional hairline silt and fine sand partings		
2SS	5 10 13 16	18"		4.5+			
3SS	5 9 11 15	20"		4.2			
4SS	7 11 17 24	22"		4.5+			
5SS	8 14 17 21	19"		4.5+			
				728.2			
6SS	9 12 12 16	21"		3.4	Grey silty CLAY, tr. sand and gravel, tr. oxidized spots, very stiff		
					healed joint trace 13.0' - 13.5' occasional thin to hairline fine sand and silt partings		
7SS	5 9 13 15	22"		3.2			
				724.2			
8SS	6 8 12 14	24"		2.6	Brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till Ib (unweathered)	
					occasional thin to hairline fine sand and silt partings		
9SS	5 6 8 10	24"		2.7			
10SS	5 8	24"		2.8			

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2520 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0013
A.I.P.G. CPG3 9440
IWD CPC 337

JOB NO. 89-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION — BORING NO. BB-9

DRILLER Patrick Engineering, Inc. — WATER LEVELS

RIG CME 75 — METHOD Hollow Stem Auger — AT COMPLETION ____ HOURS ____

G. S. ELEVATION 739.2 — DATE STARTED 3/21/89 — WHILE DRILLING 38.0'

T.O.B. ELEVATION 664.2 — DATE COMPLETED 3/22/89 — SHEET 2 OF 4

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
10SS	9	24"		2.8	Brownish-grey silty CLAY, tr. sand and gravel, tr. hairline silt partings, very stiff-stiff	Wadsworth Till Ib	
11SS	5 6 7 9	24"		2.6	tr. lamination @ 23.0'		
12SS	4 6 7 8	24"		1.7			
13SS	4 4 6 8	24"		1.7			
14SS	6 6 9 14	24"		1.2			
15SS	5 6 8 11	24"		1.6			
16SS	6 7 11 16	24"		3.1			
17SS	6 10 12 13	24"		1.7			
18ST		20"			9% sand, 47% silt, 44% clay (CL) $K = 1.9 \times 10^{-8}$ cm/sec.		
					702.2		
19SS	5 6 7 9	18"			Brownish-grey SILT, medium dense	Intratill Sorted Sediments (medium-coarse)	
					701.2		
					Brownish-grey fine-medium SAND, tr. coarse sand, medium dense		
					699.9		
SS	10 8	24"			Brownish-grey fine-coarse SAND, medium dense-dense		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2024 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017

JOB NO. 89-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION — BORING NO. BB-9

DRILLER Patrick Engineering, Inc. — WATER LEVELS

RIG CME 75 — METHOD Hollow Stem Auger — AT COMPLETION ____ HOURS ____

G. S. ELEVATION 739.2 — DATE STARTED 3/21/89 — WHILE DRILLING 38.0'

T.O.B. ELEVATION 664.2 — DATE COMPLETED 3/22/89 — SHEET 3 OF 4

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40	20SS	22 24	24"			Brownish-grey fine-coarse SAND, medium dense, dense	Intratill Sorted Sediments (coarse)	
41						697.3		
42	21SS	10 13 11 10	24"		2.7	696.9 Large GRAVEL, medium dense		
43						Brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till II	
44	22SS	13 13 17 23	24"		2.9			
45								
46	23SS	8 10 13 18	24"		2.4			
47								
48	24SS	10 13 17 19	24"		2.2			
49								
50	25SS	5 11 15 21	21"		2.5	1" silt seam @ 50.6'		
51						pinkish banding 50.6' - 55.0'		
52	26SS	11 24 34 39	24"		4.5+	hard below 51.0'		
53								
54	27SS	23 24 34 47	24"		4.5+	20% sand, 36% silt, 44% clay (CL)		
55								
56	28SS	11 23 32 49	24"		1.5			
57								
58	29SS	14 22 33 39	24"		4.5+			
59						680.2		
60	30SS	18 21	24"		4.5+	Brownish-grey SILT, very dense	Intratill Sorted Sediments (medium)	

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
(815) 344-0017

JOB NO. 89-105

LOGGED BY R.L. Jennings

GEOLOGIC E-42 OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BB-9
DRILLER Patrick Engineering, Inc.
RIG CME 75 METHOD Hollow Stem Auger
G.S. ELEVATION 739.2 DATE STARTED 3/21/89
T.O.B. ELEVATION 664.2 DATE COMPLETED 3/22/89
WATER LEVELS AT COMPLETION ____ HOURS ____ WHILE DRILLING 38.0'
SHEET 4 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					679.0 Brownish-grey SILT, very dense		
30SS	33	14"		4.5+	Brownish-grey silty CLAY, tr. sand and gravel, hard to very stiff	Wadsworth Till II	
31SS		24"		4.5+			
32SS		24"		4.5+			
33SS		24"		2.8			
34SS		24"		3.0			
35ST		24"			16% sand, 38% silt, 46% clay (CL) $K = 3.3 \times 10^{-8}$ cm/sec.		
36SS		24"		3.0	1/4" coarse sand and small gravel seams @ 72.0' and 74.0'		
37SS		24"		3.0			
					664.2		
					T.O.B. 75.0'		
					Grouted upon completion w/Volclay Grout		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2820 N. SHOREWOOD DRIVE
MOMENCE, ILLINOIS 60954
815/472-0017
A.I.P.G. CPG# 8440
IMD CPC 337

JOB NO. 89-105
LOGGED BY R.L. Jennings

SOIL BORING LOG

BFI

Golder Associates

SITE NAME AND LOCATION	DRILLING METHOD:	BORING NO.
BROWNING FERRIS INDUSTRIES ZION LANDFILL	0.0-62.0': 3 7/8" WASH/MUD ROTARY 0.0-45.0': 10" WASH/MUD ROTARY	BH-GC3S(A)
	SAMPLING METHOD:	SHEET 1 OF 5
	2.0" O.D., 2.0' LONG SPLIT BARREL SAMPLER	DRILLING

					START	FINISH
WATER LEVEL					TIME	TIME
TIME					9:54	16:10
DATE					DATE	DATE
CASING DEPTH					5/12/97	5/12/97

DATUM GROUND SURFACE ELEVATION 750

DRILL RIG GP 1100 ATV

SURFACE CONDITIONS

ANGLE -90 BEARING NA

SAMPLE HAMMER 140 LBS.

DEPTH IN FEET (ELEVATION)	BLOW/ 6 IN. ON SAMPLER	RECOVERY	SYMBOL	SAMPLER SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER TYPE		REMARKS
1					(0.0' - 16.2') Firn to Very Stiff, grayish brown (5YR 3/2) to light brown (5YR 5/6) to dark yellowish brown (10YR 4/2), homogeneous, SILTY CLAY, trace-little F-C Sand and F Gravel, trace organic matter, strongly mottled, NR-SR, damp-moist, (CL), WEATHERED			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								

DRILLING CONTR TESTING SERVICE CORPORATION GREG DONOVAN

LOGGED BY JOSEPH D. MILLER, P.G. CHK'D BY

DATE

JOB NO.: 973-8375

FILENAME: gc3s-a

SOIL BORING LOG

BFI

Golder Associates

SITE NAME AND LOCATION

BROWNING FERRIS INDUSTRIES
ZION LANDFILL

DATUM GROUND SURFACE ELEVATION 750

DRILLING METHOD:
0.0-62.0': 3 7/8" WASH/MUD ROTARY
0.0-45.0': 10" WASH/MUD ROTARY

SAMPLING METHOD:
2.0" O.D., 2.0' LONG SPLIT BARREL SAMPLER

					DRILLING START	DRILLING FINISH
WATER LEVEL					TIME	TIME
TIME					9:54	16:10
DATE					DATE	DATE
CASING DEPTH					5/12/97	5/12/97

BORING NO. BH-GC3S(A)

SHEET 2 OF 5

DRILL RIG GP 1100 ATV

ANGLE -90 BEARING NA

SAMPLE HAMMER 140 LBS.

SURFACE CONDITIONS

DEPTH IN FEET (ELEVATION)	BLOW/ 6 IN. ON SAMPLER	RECOVERY	SYMBOL	SAMPLER SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER TYPE		REMARKS
16					(0.0' - 16.2') Firm to Very Stiff, grayish brown (5YR 3/2) to light brown (5YR 5/6) to dark yellowish brown (10YR 4/2), homogeneous, SILTY CLAY, trace-little F-C Sand and F Gravel, trace organic matter, strongly mottled, NR-SR, damp-moist, (CL), WEATHERED LODGEMENT TILL (733.8) 16.2			
17								
18					(16.2' - 18.8') Stiff, grayish black (N2), homogeneous, ORGANIC SILTY CLAY, rootlets, NR, damp, (OL), LACUSTRINE/ REWORKED LACUSTRINE (731.2) 18.8			
19					(18.8' - 26.5') Stiff to Very Stiff, medium light gray (N6) to dark yellowish orange (10YR 6/6) to dark yellowish brown (10YR 4/2) to moderate yellowish brown (10YR 5/4), homogeneous, CLAYEY SILT, trace-little F-C Sand and F-M Gravel, strongly mottled, WR-SR, moist, (CL), WEATHERED LODGEMENT TILL			
20								
21								
22								
23								
24								
25								
26								
27					(26.5' - 43.6') Very Stiff, olive gray (5Y 4/1), homogeneous, SILTY CLAY, trace F-C Sand and trace F-M Gravel, unweathered, WR, damp-moist, (CL), LODGEMENT TILL			
28								
29								

DRILLING CONTR TESTING SERVICE CORPORATION GREG DONOVAN

LOGGED BY JOSEPH D. MILLER, P.G. CHK'D BY

DATE

JOB NO.: 973-8375

FILENAME: GC3S-A

SOIL BORING LOG

BFI

Golder Associates

SITE NAME AND LOCATION	DRILLING METHOD:	BORING NO.
	0.0-62.0': 3 7/8" WASH/MUD ROTARY	BH-GC3S(A)
	0.0-45.0': 10" WASH/MUD ROTARY	SHEET
BROWNING FERRIS INDUSTRIES ZION LANDFILL	SAMPLING METHOD:	3 OF 5
	2.0" O.D., 2.0' LONG SPLIT BARREL SAMPLER	DRILLING
		START / FINISH
	WATER LEVEL	TIME / TIME
	TIME	9:54 / 16:10
	DATE	DATE / DATE
DATUM GROUND SURFACE ELEVATION 750	CASING DEPTH	5/12/97 / 5/12/97
DRILL RIG GP 1100 ATV	SURFACE CONDITIONS	
ANGLE -90 BEARING NA		
SAMPLE HAMMER 140 LBS.		

DRILLING CONTR TESTING SERVICE CORPORATION — GREG DONOVAN

LOGGED BY JOSEPH D. MILLER, P.G. — CHK'D BY

DATE

JOB NO.: 973-8375

FILENAME: GC3S-A

DEPTH IN FEET (ELEVATION)	BLOW/ 6 IN. ON SAMPLER	RECOVERY	SYMBOL	SAMPLER SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER TYPE		REMARKS
31					(26.5' - 43.6') Very Stiff, olive gray (5Y 4/1), homogeneous, SILTY CLAY, trace F-C Sand and trace F-M Gravel, unweathered, WR, damp-moist, (CL), LODGEMENT TILL			
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43					(706.4) 43.6			
44					(43.6' - 45.0') Very Stiff, olive gray (5Y 4/1) to light olive gray (5Y 6/1), SILTY CLAY, trace-some F-C Sand and F Gravel, matrix supported - sand lense 43.6'. - 43.8', NR-WR, moist, (CL-SM), LODGEMENT TILL			

SOIL BORING LOG

SITE NAME AND LOCATION	DRILLING METHOD:		BORING NO.
BROWNING FERRIS INDUSTRIES ZION LANDFILL	0.0-62.0': 3 7/8" WASH/MUD ROTARY 0.0-45.0': 10" WASH/MUD ROTARY		BH-GC3S(A)
	SAMPLING METHOD:		SHEET 4 OF 5
	2.0" O.D., 2.0' LONG SPLIT BARREL SAMPLER		DRILLING START TIME 9:54 / FINISH TIME 16:10
	WATER LEVEL / TIME / DATE / CASING DEPTH		DATE 5/12/97 / DATE 5/12/97
DATUM GROUND SURFACE ELEVATION 750			
DRILL RIG GP 1100 ATV	SURFACE CONDITIONS		
ANGLE -90 BEARING NA			
SAMPLE HAMMER 140 LBS.			

DEPTH IN FEET (ELEVATION)	BLOW/ 6 IN. ON SAMPLER	RECOVERY	SYMBOL	SAMPLER SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER TYPE		REMARKS
46					(45.0' - 62.0') Very Stiff, olive gray (5Y 4/1) to light olive gray (5Y 6/1), homogeneous, SILTY CLAY, trace-little F-C Sand and F-M Gravel, unweathered, WR, moist, (CL), LODGEMENT TILL			
47								
48								
49								
50								
51								
52								
53								
54								
55								
56								
57								
58								
59								

DRILLING CONTR TESTING SERVICE CORPORATION GREG DONOVAN

LOGGED BY JOSEPH D. MILLER, P.G.

DATE CHK'D BY

JOB NO.: 973-8375

FILENAME: GC3S-A

SOIL BORING LOG

BFI — Golder Associates

TE NAME AND LOCATION

BROWNING FERRIS INDUSTRIES
ZION LANDFILL

DRILLING METHOD:
0.0-62.0': 3 7/8" WASH/MUD ROTARY
0.0-45.0', 10" WASH/MUD ROTARY

SAMPLING METHOD:
2.0" O.D., 2.0' LONG SPLIT BARREL SAMPLER

BORING NO.: BH-GC3S(A)

SHEET: 5 OF 5

					DRILLING START	DRILLING FINISH
WATER LEVEL					TIME	TIME
TIME					9:54	16:10
DATE					DATE	DATE
CASING DEPTH					5/12/97	5/12/97

DATUM GROUND SURFACE ELEVATION 750

DRILL RIG GP 1100 ATV

SURFACE CONDITIONS

ANGLE -90 BEARING NA

SAMPLE HAMMER 140 LBS.

DEPTH IN FEET (ELEVATION)	BLOW/ 6 IN. ON SAMPLER	RECOVERY	SYMBOL	SAMPLER SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER TYPE		REMARKS
61					(45.0' - 62.0') Very Stiff, olive gray (5Y 4/1) to light olive gray (5Y 6/1), homogeneous, SILTY CLAY, trace-little F-C Sand and F-M Gravel, unweathered, WR, moist, (CL), LODGEMENT TILL			
62					(688.0) 62.0			
					End of Soil Borehole at 62.0'			
					Borehole Grouted to Surface 5-14-97			
63								
64								
65								
66								
67								
68								
69								
70								
71								
72								
73								
74								

DRILLING CONTR TESTING SERVICE CORPORATION GREG DONOVAN

LOGGED BY JOSEPH D. MILLER, P.G. CHK'D BY

DATE

JOB NO.: 973-8375

FILENAME: GC3S-A

SOIL BORING LOG

BFI

Golder Associates

SITE NAME AND LOCATION

BROWNING FERRIS INDUSTRIES
ZION LANDFILL

DRILLING METHOD:
0.0-58.0': 3 7/8" WASH/MUD ROTARY
0.0-58.0': 10" WASH/MUD ROTARY

SAMPLING METHOD:
2.0" O.D., 2.0' LONG SPLIT BARREL SAMPLER

BORING NO.: BH-GC3S(B)

SHEET: 1 OF 2

					DRILLING START	DRILLING FINISH
WATER LEVEL					TIME	TIME
TIME					12:15	16:30
DATE					DATE	DATE
CASING DEPTH					5/13/97	5/13/97

DATUM GROUND SURFACE ELEVATION 753.8

DRILL RIG GP 1100 ATV

ANGLE -90 BEARING NA

SAMPLE HAMMER 140 LBS.

SURFACE CONDITIONS

DRILLING CONTR TESTING SERVICE CORPORATION
GREG DONOVAN

LOGGED BY JOSEPH D. MILLER, P.G.

DATE CHK'D BY

JOB NO.: 973-8375

FILENAME: gc3s-b

DEPTH IN FEET (ELEVATION)	BLOW/ 6 IN. ON SAMPLER	RECOVERY	SYMBOL	SAMPLER SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER TYPE		REMARKS
31					Blind Drilled to 40.0'			
32								
33								
34								
35								
36								
37								
38								
39								
40					(713.8) 40.0			
41					(40.0' - 48.0') Very Stiff, olive gray (5Y 4/1) to light olive gray (5Y 6/1), homogeneous, SILTY CLAY, trace-little F-C Sand and F-M Gravel, unweathered, WR, moist, (CL), LODGEMENT TILL			
42								
43								
44								

SOIL BORING LOG

BFI — Golder Associates

SITE NAME AND LOCATION: BROWNING FERRIS INDUSTRIES, ZION LANDFILL	DRILLING METHOD: 0.0-58.0': 3 7/8" WASH/MUD ROTARY; 0.0-58.0': 10" WASH/MUD ROTARY	BORING NO.: BH-GC3S(B)
	SAMPLING METHOD: 2.0" O.D., 2.0' LONG SPLIT BARREL SAMPLER	SHEET: 2 OF 2
DATUM: GROUND SURFACE — ELEVATION: 753.8	WATER LEVEL / TIME / DATE / CASING DEPTH	DRILLING START: TIME 12:15, DATE 5/13/97 — FINISH: TIME 16:30, DATE 5/13/97
DRILL RIG: GP 1100 ATV	SURFACE CONDITIONS:	
ANGLE: -90 — BEARING: NA		
SAMPLE HAMMER: 140 LBS.		

DRILLING CONTR: TESTING SERVICE CORPORATION — GREG DONOVAN

DEPTH IN FEET (ELEVATION)	BLOW/ 6 IN. ON SAMPLER	RECOVERY	SYMBOL	SAMPLER SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER TYPE		REMARKS
46					(40.0' - 48.0') Very Stiff, olive gray (5Y 4/1) to light olive gray (5Y 6/1), homogeneous, SILTY CLAY, trace-little F-C Sand and F-M Gravel, unweathered, WR, moist, (CL), LODGEMENT TILL			
47								
48					(705.8) 48.0			
49					(48.0' - 49.2') Dense, light olive gray (5Y 6/1), stratified, SILT, trace F Sand, WR, wet, (ML), GLACIOALLUVIAL			
50					(704.6) 49.2			
51					(49.2' - 54.0') Dense, light olive gray (5Y 6/1) to pale yellowish brown (10YR 6/2) to olive gray (5Y 4/1), stratified, F SAND, trace-little Silt and M-C Sand and F Gravel, WR, wet, (SP), GLACIOALLUVIAL			
52								
53								
54					(699.8) 54.0			
55					(54.0' - 58.0') Very Stiff, light olive gray (5Y 6/1), stratified, SILTY CLAY and CLAYEY SILT, trace F-C Sand, unweathered - matrix supported, WR, wet, (ML-CL), REWORKED LODGEMENT TILL			
56								
57								
58					(695.8) 58.0			
59					End of Soil Borehole at 58.0' Monitoring Well GC-3S constructed in Borehole 5-14-97			

LOGGED BY: JOSEPH D. MILLER, P.G. — CHK'D BY: — DATE:

JOB NO.: 973-8375

FILENAME: GC3S-B

GEOLOGIC LE-43DF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-1
DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
HOURS
RIG CME 25 METHOD Hollow Stem Auger
WHILE DRILLING 28.7'
G.S. ELEVATION 726.7 DATE STARTED 4/ 6/89
T.O.B. ELEVATION 601.7 DATE COMPLETED 4/11/89
SHEET 1 OF 7
Top of PVC Riser 729.22

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
Run 1		1.6'			Black clayey organic TOPSOIL	Surficial Sorted Sediments (weathered) (fine)
					725.2	
					Grey and dark grey silty CLAY, tr. organics, tr. oxidation, w/thin sand seams and peaty horizons	
					722.1 — — grades into	
Run 2		2.2'			Grey silty fine-coarse SAND and small-large GRAVEL, some clay seams	(medium)
					718.7	
					Grey silty CLAY, tr. sand and gravel, sl. laminated, jointed, very stiff	Wadsworth Till Ia (weathered)
Run 3		5.0'		3.2-3.6	some silt seams 11.0' - 11.6'	
					brownish-grey below 11.6'	
Run 4		5.0'		3.5-4.5	silt partings @ 15.4'	
					708.7	
					Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till Ia (unweathered)
Run 5		5.0'		2.1		

LOG: Cement Plug; 723.; Volclay grout

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHORewood DRIVE
HOMEWOOD, ILLINOIS 60030
(312/799-0017)

JOB NO. 89-105
LOGGED BY B. Staurowsky

GEOLOGIC E-44 OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-1
DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
RIG CME 75 METHOD Hollow Stem Auger
HOURS
G.S. ELEVATION 726.7 DATE STARTED 4/ 6/89
WHILE DRILLING 28.7'
T.O.B. ELEVATION 601.7 DATE COMPLETED 4/11/89
SHEET 2 OF 7

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
Run 5		5.0'		2.1	Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till Ia	
ST		2.0'		3.0	17% sand, 40% silt, 43% clay (CL) K = 2.1 X 10^{-8} cm/sec.		
Run 6		3.0'		1.8-3.5			
					698.0		
Run 7		3.2'			Grey fine-coarse SAND, w/sm-med.grv. 697.0 Grey SILT w/fine sand 695.5 Grey fine-medium SAND, tr. coarse sand and large gravel, tr. clay 694.1 693.7 Grey SILT, tr. clay	Intratill Sorted Sediments (coarse) (fine)	Volclay grout
Run 8		3.4'		3.8	Brownish-grey and grey CLAY w/silt seams and partings		
					688.4		
Run 9		5.0'		2.5-3.5	Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till Ib	

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JOB NO. 89-105
LOGGED BY B. Staurowsky

GEOLOGIC I E-45F BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-1
DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
RIG CME 75 METHOD Hollow Stem Auger
HOURS
G.S. ELEVATION 726.7 DATE STARTED 4/ 6/89
WHILE DRILLING 28.7'
T.O.B. ELEVATION 601.7 DATE COMPLETED 4/11/89
SHEET 3 OF 7

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
Run 9		5.0'		2.5-3.5	Grey silty CLAY, tr. sand and gravel, very stiff 12% sand, 35% silt, 53% clay (CL)	Wadsworth Till Ib	
					sl. lamination & tr. jointing below 43.0'		
Run 10		5.0'		2.2-3.5			
					679.7		
					Brownish-grey clayey SILT, w/fine sand, tr. gravel 27% sand, 57% silt, 16% clay (ML)	Diamicton (marker)	Vol. y Grout
					677.1		
Run 11		5.0'		1.6	Brownish-grey silty CLAY, tr. sand and gravel, very stiff-stiff	Wadsworth Till II	
SS		2.0'		1.9			
Run 12		3.0'		3.0			
					669.6		
					Interlayered grey fine sandy SILT and silty fine-medium SAND, some clay, grading into fine-coarse	Intratill Sorted Sediments (medium-coarse)	
					667.9 SAND		
Run 13		5.0'			Brownish-pinkish-grey CLAY, blocky, laminated, tr. gravel, stiff 25% sand, 42% silt, 33% clay (CL)	(fine)	

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GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION

BORING NO. BF-1

DRILLER Patrick Engineering, Inc.

RIG CME 75 METHOD Hollow Stem Auger

G.S. ELEVATION 726.7 DATE STARTED 4/ 6/89

T.O.B. ELEVATION 601.7 DATE COMPLETED 4/11/89

WATER LEVELS AT COMPLETION ____ HOURS ____ WHILE DRILLING 28.7'

SHEET 4 OF 7

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					666.5		
Run 13		5.0'		1.7-2.5	Brownish, pinkish-grey silty CLAY, tr. gravel, some fine sand and silt partings, sl. laminated, stiff	Wadsworth Till II	
Run 14		5.0'		1.5-2.2	sand seams below 67.0'		
					659.3		
ST		2.0'		-	Brownish-grey fine sandy, clayey SILT tr. gravel 40% sand, 45% silt, 15% (ML) $K = 7.4 \times 10^{-8}$ cm/sec.	Diamicton	Volo Bluff
Run 15		3.0		2.2	40% sand, 45% silt, 15% clay (ML) 655.2 ——— grades into ———		
					Brownish-grey fairly silty CLAY, tr. lamination, very stiff to hard	Wadsworth Till II (transitional)	
Run 16		5.0'		3.5-4.5+			
					648.4 648.1Br.-grey fine sandy CLAY 647.9Br.-grey SILT		
Run 17		5.0'		3.8	Brownish-grey silty CLAY, tr. sand and grv. w/pink & grey banding	Wadsworth Till II	

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GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-1
WATER LEVELS
DRILLER Patrick Engineering, Inc.
AT COMPLETION
RIG CME 75 METHOD Hollow Stem Auger
HOURS
G.S. ELEVATION 726.7 DATE STARTED 4/ 6/89
WHILE DRILLING 28.7'
T.O.B. ELEVATION 601.7 DATE COMPLETED 4/11/89
SHEET 5 OF 7

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
80						Brownish-grey silty CLAY, tr. sand and gravel, pink and dark grey color banding, very stiff	Wadsworth Till II	
81	Run 17		5.0		2.5-3.3	22% sand, 41% silt, 37% clay (CL) occasional silt and fine sand partings		
82							Diamicton	
83						clayey silt areas between 82.0' and 85.5'	Diamicton	
84	1SS	14 14 20 32	2.0				Diamicton	
85						641.2		
86	2SS	8 11 20 19	2.0		3.4	Brownish-grey CLAY, laminated w/ silt partings, soft to 89.0', then very stiff to stiff	Shallow Drift Aquifer Interglacial Sediments (fine)	
87								
88	3SS	0 0 8 18	2.0		2.2			
89								
90	4SS	9 15 21 25	1.7		2.9			
91								
92	5SS	1 16 19 32	2.0		2.9	fine sand partings 92.4' - 94.0'		
93								
94	6SS	1 16 19 32	2.0		2.5			
95								
96	7SS	6 10 26 35	2.0		2.5			
97								
98	8SS	7 14 21 31	2.0		2.8	silt-filled joints 97.0-98.0' pinkish-grey @ 98.2'		
99								
100	9SS	10 11	2.0		2.0	grey @ 99.0' w/feathery texture		

Volclay Grout

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JOB NO. 89-105
LOGGED BY B. Staurowsky

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-1
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS 1
G. S. ELEVATION 726.7 DATE STARTED 4/ 6/89
WHILE DRILLING 28.7'
T.O.B. ELEVATION 601.7 DATE COMPLETED 4/11/89
SHEET 6 OF 7

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
9SS	16 14	2.0"		2.0	Brownish grey, grey, and pinkish grey CLAY, laminated w/silt partings, very stiff w/stiff and medium stiff areas	Shallow Drift Aquifer Interglacial Sediments (fine)
10SS	10 13 16 24	2.0"		2.5	feathery texture	
11SS	6 9 19 21	2.0"		0.8 2.0		
12SS	7 11 12 22	2.0"		0.8		
13SS	7 8 12 20	2.0"		0.6 1.8		
14SS	10 10 20 22	1.8"		2.6	silt-filled joint @ 109.8'	
					615.4	
15SS	11 24 30 32	2.0"		1.3	614.9 Grey SILT Grey CLAY and SILT alternating	(fine-medium)
16SS	9 10 13 39	2.0"				
17SS	11 13 12 21	2.0"			610.5 Grey SILT, dense 609.7	
18SS	5 11 22 21	2.0"		2.0	Grey CLAY, laminated, very stiff	(fine)
19SS	5 7	1.2"		2.5		

LOG: Volclay Grout; 617.; Pellets; 615.; Silica Sand; 612.; Screen; 607.

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JOB NO. 89-105
LOGGED BY B. Staurowsky

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-1
DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
RIG CME 75 METHOD Hollow Stem Auger
HOURS
G. S. ELEVATION 726.7 DATE STARTED 4/ 6/89
WHILE DRILLING 28.7'
T.O.B. ELEVATION 601.7 DATE COMPLETED 4/11/89
SHEET 7 OF 7

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
19SS	15 20	1.2'		2.5	Grey CLAY, occasional silt seam, very stiff	Shallow Drift Aquifer Interglacial Sediments (fine)	
20SS	20 18 32 59	1.9'		2.8			
21SS	11 13 19 29	2.0'		3.0			
					601.7		
					T.O.B. 125.0' Piezometer set upon completion		

Silica Sand

601.

120 121 122 123 124 125 126 127 129 130 131 132 133 134 135 136 137 138 140

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GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION — BORING NO. BP-2

DRILLER Patrick Engineering, Inc. — WATER LEVELS

RIG CME 75 — METHOD Hollow Stem Auger — AT COMPLETION ____ HOURS 23.0'

G.S. ELEVATION 741.4 — DATE STARTED 4/12/89 — WHILE DRILLING ____

T.O.B. ELEVATION 631.4 — DATE COMPLETED 4/14/89 — SHEET 1 OF 6

Top of PVC Riser 743.80

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
Run 1		5.0'		1.5-2.2	Brown silty CLAY, tr. sand and gravel, tr. organics, roots, laminated w/ silt partings, mottled, jointed, oxidized spots and stains, stiff-very stiff	Wadsworth Till Ia (weathered) (transitional)	Cement Plug
Run 2		5.0'		3.0-3.2			Grout
					731.8		
					731.2 Brown CLAY, laminated	Intratill Sorted Sediments (fine-medium) (weathered)	
					Brown SILT, laminated 730.4		
Run 3		5.0'		4.5+	Greyish-brown silty CLAY, tr. sand and gravel, laminated, hard	Wadsworth Till Ia (transitional) (weathered)	
					727.7		
					Greyish-brown silty clay, tr. sand and gravel, very stiff oxidation along joint @ 15.0' brown and grey 15.0' - 18.4'	Wadsworth Till Ia (weathered)	
Run 4		5.0'		2.0-2.5	723.4		
					Grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till Ia (unweathered)	

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JOB NO. 89-105

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GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-2
DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
RIG [illegible] 75 METHOD Hollow Stem Auger
HOURS
G.S. ELEVATION 741.4 DATE STARTED 4/12/89
WHILE DRILLING 23.0'
T.O.B. ELEVATION 631.4 DATE COMPLETED 4/14/89
SHEET 2 OF 6

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
Run 5		5.0'		2.0 2.3	Grey silty CLAY w/sand and gravel, stiff 718.4	Wadsworth Till Ia	
ST		2.0'		1.8	Brownish-grey silty CLAY, laminated w/hairline silt and fine sand partings, very stiff 12% sand, 41% silt, 47% clay (CL) $K = 1.7 \times 10^{-8}$ cm/sec.	Wadsworth Till Ia (transitional)	
Run 6		3.0'		1.8			
Run 7		5.0'		1.8	709.7 Grey clayey SILT to SILT w/fine sand seams 708.8 Grey SILT w/fine-coarse sand and small gravel w/clay seams 707.2 Grey SILT w/reddish-brown horizons and fine-medium sand seams, tr. small gravel 706.0	Intratill Sorted Sediments (medium)	
Run 8		5.0'		1.8 2.5	Brownish-grey silty CLAY, tr. sand	Wadsworth Till Ib	

Volclay grout

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JOB NO. 89-105
LOGGED BY B. Staurowsky

GEOLOGIC E-52 OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-2
DRILLER Patrick Engineering, Inc.
RIG CME 75 METHOD Hollow Stem Auger
G.S. ELEVATION 741.4 DATE STARTED 4/12/89
T.O.B. ELEVATION 631.4 DATE COMPLETED 4/14/89
WATER LEVELS AT COMPLETION ____ HOURS ____ WHILE DRILLING 23.0
SHEET 3 OF 6

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Brownish-grey silty CLAY, tr. sand and gravel, tr. lamination, tr. hairline silt partings, stiff-very stiff	Wadsworth Till Ib	
Run 9		5.0'		1.5-2.5	22% sand, 44% silt, 34% clay (CL)		
Run 10		5.0'		1.6-2.8			Volclay Grout
					1" fine sandy silt seam @ 50.0'		
					hard below 51.0'		
Run 11		5.0'		3.3-4.2			
					687.4		
					Brownish-grey CLAY, laminated, very stiff	Intratill Sorted Sediments (fine)	
ST		2.0'			6% sand, 24% silt, 70% clay (CL) $K = 1.5 \times 10^{-8}$ cm/sec.		
				3.7	683.2		
					682.9 Br.-grey silty, sandy, gryly CLAY		
Run 12		3.0'			Brownish-grey silty fine SAND, w/ 682.1 clay seam	(medium-coarse)	
					Brownish-grey silty fine-coarse SAND tr. clay, tr. large gravel		

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JOB NO. 89-105
LOGGED BY B. Staurowsky

GEOLOGIC E-53 F BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-2

DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION

RIG CME 75 METHOD Hollow Stem Auger
HOURS

G.S. ELEVATION 741.4 DATE STARTED 4/12/89
WHILE DRILLING 23.0'

T.O.B. ELEVATION 631.4 DATE COMPLETED 4/14/89
SHEET 4 OF 6

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					680.8 Br-gr-silty fi-co.SAND,tr.cl & gr	Intratill SortedSed.	
Run 13		5.0'		2.2-3.2	Brownish-grey silty CLAY, tr. sand and gravel, very stiff 1/4" fine clayey sand seam @ 61.5' sl. laminated above 61.5' 21% sand, 47% silt, 32% clay (CL)	Wadsworth Till Ib	
					675.0		
					674.5 Grey silty, fi-med. SAND	Intratill Sorted Sediments (fine-medium)	
Run 14		5.0'			Interlayered grey CLAY, SILT and fine SAND		Volol Grout
					671.4		
					Brownish-grey silty CLAY, tr. sand and gravel, very stiff-hard	Wadsworth Till II	
Run 15		5.0'		2.8-4.5+	1" silt seams @ 72.0', 72.4', 73.6' and 73.9'		
					laminated below 74.0'		
Run 16		5.0'		3.3-4.5+	blocky @ 78.4'		

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GEOLOGIC LOG OF BORING E-54

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-2
DRILLER Patrick Engineering, Inc.
RIG CME 75 METHOD Hollow Stem Auger
G.S. ELEVATION 741.4 DATE STARTED 4/12/89
T.O.B. ELEVATION 631.4 DATE COMPLETED 4/14/89
WATER LEVELS AT COMPLETION ____ HOURS ____ WHILE DRILLING 23.0'
SHEET 5 OF 6

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
Run 17		5.0'		4.0-4.5+	Brownish-grey silty CLAY, tr. sand and gravel, laminated, hard 24% sand, 40% silt, 36% clay (CL)	Wadsworth Till II	
Run 18		5.0'		4.3	653.4		
					Grey clayey, silty, fine-coarse SAND and GRAVEL, texture varies	Diamicton	Volclay Grout
					650.0		
Run 19		5.0'		3.9-4.5+	Brownish-grey silty CLAY, tr. sand and gravel, laminated, hard tr. 1/4" - 3/4" silt seams	Wadsworth Till II	
					645.8		
Run 20		5.0		2.2-4.5+	Brownish grey CLAY, laminated, interlayered w/pale brown SILT, very stiff-hard	Shallow Drift Aquifer Interglacial Sediments (fine-medium)	642 Pellets

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IMD CPG 337

JOB NO. 89-105
LOGGED BY B. Staurowsky

E-55

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-2

DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION ____
____ HOURS ____

RIG CME 75 METHOD Hollow Stem Auger
WHILE DRILLING 23.0'

G.S. ELEVATION 741.4 DATE STARTED 4/12/89
T.O.B. ELEVATION 631.4 DATE COMPLETED 4/14/89
SHEET 6 OF 6

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
1SS	6, 9, 20, 20	2.0'		2.2	Brownish-grey CLAY, laminated, interlayered w/thin silt seams, very stiff, wet	Shallow Drift Aquifer Interglacial Sediments (fine)
					639.4	
2SS	10, 16, 17, 23	2.0'		4.0	Brownish-grey SILT w/clay and fine sand seams, wet, dense	(medium)
					636.4	
3SS	4, 16, 55, 39	2.0'		4.5+	Brownish-grey CLAY, tr. gravel w/silt and fine sand seams, hard, dry	(fine)
					635.4	
4SS	24, 35, 48, 57	2.0'			Brownish-grey fine-coarse SAND and small GRAVEL, some fine sand seams, tr. clay seams, wet, very dense	(coarse)
					632.9	
5SS	8, 19, 46, 50	2.0'		3.8	Brownish-grey CLAY, laminated, tr. sand and gravel,	(fine)
					631.9 Brownish-grey SILT, very dense	(medium)
					631.4 T.O.B. 110.0'	
					Piezometer set upon completion	

LOG: Volclay Pellets; 640.; Silica Sand; 636.; Screen; 631.

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JOB NO. 89-105
LOGGED BY B. Staurowsky

GEOLOGIC LE-56-F BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-3
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 750.8 DATE STARTED 4/17/89
WHILE DRILLING 36.7'
T.O.B. ELEVATION 626.8 DATE COMPLETED 4/20/89
SHEET 1 OF 7
Top of PVC Riser 753.32

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Dark brown silty clay TOPSOIL w/ organics	Wadsworth Till Ia (weathered)	
Run 1		3.0'		3.2	748.9		
					Brown silty CLAY, tr. sand and gravel, oxidized spots, joints, mottled, tr. silt partings, very stiff-hard		
Run 2		5.0'		2.5 3.5			
Run 3		2.6' pushed rock		4.2			
					grey @ 13.0' w/oxidation along joint trace		
					736.8		
					Grey silty CLAY, tr. sand and gravel, stiff-very stiff	Wadsworth Till Ia (unweathered)	
Run 4		2.5'		1.5 3.2			
Run 5		3.9'		2.0 2.5			

Cement Plug 747.
Volclay Grout

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JOB NO. 89-105
LOGGED BY B. Staurowsky

GEOLOGIC LE-5%F BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-3

DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION

RIG CME 75 METHOD Hollow Stem Auger
HOURS

G.S. ELEVATION 750.8 DATE STARTED 4/17/89
WHILE DRILLING 36.7'

T.O.B. ELEVATION 626.8 DATE COMPLETED 4/20/89
SHEET 2 OF 7

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
Run 5		3.9'		2.0-2.5	Grey silty CLAY, tr. sand and gravel, very stiff-stiff	Wadsworth Till Ia	
ST		2.0'			14% sand, 42% silt, 44% clay (CL) $K = 4.4 \times 10^{-8}$ cm/sec.		
Run 6		3.0'		1.6-1.8	occasional silt and fine sand partings below 25.0'		
Run 7		5.0'		1.6-1.7			
Run 8		5.0'		1.2-1.4			
					714.1 Grey fine-coarse SAND and small gravel, grading to interlayered CLAY, SILT, and fine SAND, dry	Intratill Sorted Sediments (fine-medium)	
Run 9		5.0'		2.3			

Volotay Gr...

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IMD CPG 337

JOB NO. 89-105
LOGGED BY B. Staurowsky

GEOLOGIC E-58 OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION

DRILLER Patrick Engineering, Inc.

RIG CME 75 METHOD Hollow Stem Auger

G.S. ELEVATION 750.8 DATE STARTED 4/17/89

T.O.B. ELEVATION 626.8 DATE COMPLETED 4/20/89

BORING NO. BP-3

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING 36.2'

SHEET 3 OF 7

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					710.5		
Run 9		5.0'		1.9-2.3	Grey to brownish-grey silty CLAY, tr. sand and gravel, sl. laminated, stiff	Wadsworth Till Ib (transitional)	
					fairly silty to fine sandy 43.8' - 44.1'		
Run 10		5.0'		1.5-1.7			
					blocky below 48.0'		
					701.6		
Run 11		3.0'		1.3-1.7	Brownish-grey silty CLAY, tr. hairline silt and fine sand partings, stiff-very stiff	Wadsworth Till II(?)	
Run 12		5.0'		2.3-3.3	sl. laminated below 56.4'		
Run 13		5.0'		2.6			

Volclay G.Cut

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2024 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017

JOB NO. 89-105

LOGGED BY B. Staurowsky

GEOLOGIC E-59 BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION

BORING NO. BP-3

DRILLER Patrick Engineering, Inc.

RIG CME 75 METHOD Hollow Stem Auger

G.S. ELEVATION 750.8 DATE STARTED 4/17/89

T.O.B. ELEVATION 626.8 DATE COMPLETED 4/20/89

WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING 36.7'
SHEET 4 OF 7

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
60	Run 13		5.0'		1.7-2.6	Brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till II	
61								
62						22% sand, 45% silt, 33% clay (CL)		
63								
64								
65	Run 14		5.0'			blocky, laminated below 64.5' w/ feathery texture		
66						683.6		
67					1.5	Grey sandy, gravelly CLAY 49% sand, 21% silt, 30% clay (CL)	Diamicton	
68						682.3		
69						Pinkish, brownish grey silty CLAY, tr. sand and gravel, tr. hairline silt partings, sl. laminated, very stiff	Wadsworth Till II	
70	Run 15		5.0'		2.8-3.6			
71								
72								
73								
74						676.6		
75						Grey silty fine-coarse SAND w/small gravel 675.6	Intratill Sorted Sediments (coarse)	
76	Run 16		3.8'			Brownish-grey CLAY, laminated, m.stiff 674.8	(fine)	
77					2.5	Brownish-grey silty CLAY, tr. sand and gravel, very stiff-hard	Wadsworth Till II	
78						pinkish and dark grey color banding		
79	Run 17		5.0'		3.6-4.0			
80								

Volclay Grout

ROBERTA L. JENNINGS
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MCHENRY, ILLINOIS 60050
815/344-0017

JOB NO. 89-105

LOGGED BY B. Staurowsky

GEOLOGIC LE-60.F BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-3
DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
RIG CME 75 METHOD Hollow Stem Auger
HOURS
G.S. ELEVATION 750.8 DATE STARTED 4/17/89
WHILE DRILLING 36.7'
T.O.B. ELEVATION 626.8 DATE COMPLETED 4/20/89
SHEET 5 OF 7

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
Run 17		5.0'		3.6-4.0	Brownish-grey silty CLAY, tr. sand and gravel, hard pinkish and dark grey color banding 25% sand, 40% silt, 35% clay (CL)	Wadsworth Till II	
				4.5+	668.3 Brownish-grey silty CLAY, laminated, tr. gravel, tr. grey silt partings, hard	Wadsworth Till II (transitional)	
Run 18		5.0'		4.5+	blocky @ 86.0' and 88.4-88.8'		
Run 19		5.0'		4.5+	660.3 Grey clayey SILT, tr. gravel	Shallow Drift Aquifer Interglacial Sediments (medium-fine)	
					659.3 Brownish-grey CLAY, laminated, blocky, hard		
Run 20		5.0'			656.2 Grey SILT, some fine sand, massive, dry, tr. large pebbles, tr. clay seams	(medium)	
SS	21 26 50 39	0.5'		2.0	652.5 Brownish-grey CLAY, laminated, tr. small gravel, tr. silt partings, stiff-very stiff	(fine)	

Volclay Grout

ROBERTA L. JENNINGS
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2030 N. SHOREWOOD DRIVE
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815/344-0017

JOB NO. 89-105
LOGGED BY B. Staurowsky

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-3
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 750.8 DATE STARTED 4/17/89
WHILE DRILLING 36.7'
T.O.B. ELEVATION 626.8 DATE COMPLETED 4/20/89
SHEET 6 OF 7

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
2SS	6, 17, 28, 30	1.5'		4.5+	Brownish-grey CLAY, laminated, tr. small gravel, w/silt partings, stiff-very stiff	Shallow Drift Aquifer Interglacial Sediments (fine)	Volclay Grout
3SS	16, 16, 28, 66	2.0'		3.2	feathery texture 104.0-110.0'		
4SS	18, 15, 26, 53	2.0'		2.0			Peltic
5SS	14, 22, 27, 35	2.0'		3.2			
					642.0		
6SS	10, 11, 22, 43	2.0'		1.8	Brownish-grey CLAY and SILT, interlayered	(fine-medium)	
7SS	16, 22, 25, 59	2.0'		1.8	639.6 Brownish-grey SILT, tr. clay seams		
8SS	20, 33, 44, 60	2.0'		1.9	637.9 637.3 Brownish-grey CLAY, laminated		
9SS	11, 24, 30, 58	1.2'			Brownish-grey SILT w/clay and fine sand seams		Silica Sand
					634.8 634.3 Brownish-grey CLAY, laminated		
10SS	16, 32, 40, 46	2.0'			Brownish-grey fine sandy SILT, very dense		
					632.1		
11SS	11, 27, 60, 73	1.3'			Grey fine-coarse SAND, some small-large gravel, very dense	(coarse)	Screen

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A.I.P.G. CPG3 0440
IND. CPG 237

JOB NO. 89-105
LOGGED BY B. Staurowsky

E-62

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-3

DRILLER Patrick Engineering, Inc.
WATER LEVELS

RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS

G. S. ELEVATION 750.8 DATE STARTED 4/17/89
WHILE DRILLING 36.7'

T.O.B. ELEVATION 626.8 DATE COMPLETED 4/20/89
SHEET 2 OF 2

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
12SS	23 28 42 35	1.1			Grey fine-coarse SAND, some small-large gravel, very dense fine-medium sand 120.0' - 122.0' 628.8	Shallow Drift Aquifer Interglacial Sediments (coarse)	Screen 628.
13SS	14 24 33 51	2.0		3.9	Grey silty CLAY, tr. sand and gravel, very stiff 626.8	Wadsworth Till III	626.
					T.O.B. 124.0' Piezometer set upon completion		

RODERTA L. JENNINGS
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1920 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
A.I.P.G. CPG-3 6660
IHD. CPG 233

JOB NO. 89-105
LOGGED BY B. Staurowsky

GEOLOGIC LE-63_F BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-4
DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
RIG CME 75 METHOD Hollow Stem Auger HOURS
G.S. ELEVATION 748.9 DATE STARTED 3/31/89 WHILE DRILLING 64.5'
T.O.B. ELEVATION 648.9 DATE COMPLETED 4/4/89 SHEET 1 OF 5
Top of PVC Riser 751.20

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
				748.2	Grey silty clay TOPSOIL, w/organics	Wadsworth Till Ia (weathered)
Run 1		3.0'		1.6 3.0	Brown silty CLAY, tr. sand and gravel, oxidized spots along partings and joints, mottled, tr. hairline silt and fine sand partings, stiff-hard	
Run 2		4.5'		2.7 4.4		
				739.9		
Run 3		3.9'		3.5 4.4	Grey silty CLAY, tr. sand and gravel, occasional hairline fine sand partings, hard	Wadsworth Till Ia (unweathered)
				736.7		
					Pinkish-brown and grey CLAY, laminated w/silt seams	Intratill Sorted Sediments (fine)
				735.9		
		upper 1.5' disturbed by rock			Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till Ia (transitional)
				733.9		
Run 4		3.0'			Grey fine sandy SILT	Intratill Sorted Sediments (medium)
				731.9		
				731.7	Grey fine SAND	
					Grey clayey SILT	
				730.9		
Run 5		5.0'		1.0 2.8	Grey silty CLAY, tr. sand and gravel, occasional hairline fine sand partings, stiff-very stiff	Wadsworth Till Ia

LOG: Cement Plug; 745; Volclay Grout

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815/344-0017

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC E-64 OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-4
DRILLER Patrick Engineering, Inc.
RIG CME 75 METHOD Hollow Stem Auger
G.S. ELEVATION 648.9 DATE STARTED 3/31/89
T.O.B. ELEVATION 648.9 DATE COMPLETED 4/4/89
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING 64.5'
SHEET 2 OF 5

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
Run 5		5.0'		1.0-2.8	Grey silty CLAY, tr. sand and gravel, tr. hairline fine sand partings, medium-stiff to very stiff	Wadsworth Till Ia	
Run 6		5.0'		0.7-1.2			
Run 7		5.0'		1.2-2.1			
Run 8		5.0'		1.0-1.5			
Run 9		5.0'		1.0-2.5	709.6 709.1 Grey SILT	Intratill Sort. Seds.	

Volclay Grout

ROBERTA L. JENNINGS
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815/344-0017
A.I.P.G. CPG-3 6440
IMD CPG 227

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-4
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION 748.9 DATE STARTED 3/31/89
WHILE DRILLING 64.5'
T.O.B. ELEVATION 648.9 DATE COMPLETED 4/ 4/89
SHEET 3 OF 5

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
Run 9		5.0		1.0-2.5	Brownish-grey silty CLAY, tr. sand and gravel, sl. laminated, stiff-very stiff sand parting @ 41.0' fine sandy w/gravel 42.8' - 43.0'	Wadsworth Till Ib (transitional)	
					705.9		
ST		2.0		1.8	Brownish-grey silty CLAY, tr. sand and gravel, stiff-very stiff 14% sand, 43% silt, 43% clay (CL) K = 2.7 X 10^{-8} cm/sec.	Wadsworth Till Ib	
Run 10		3.0'		1.5-1.8			
Run 11		5.0'		1.3-2.5	hairline silt parting @ 51.2' sl. lamination 52.8', harder		
				3.6-4.1	crushed rock @ 54.9'		
					693.9		
Run 12		4.2'		0.7-1.0	Brownish-grey fairly silty to fine sandy CLAY, tr. sand and gravel, medium stiff	Wadsworth Till II (marker)	
					690.9 — — grades into — —		
Run 13		5.0'		1.3-2.7	Brownish-grey silty CLAY, tr. sand and gravel, blocky, stiff-very stiff		

Volc. prod.

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SHOREHAM, ILLINOIS 60030
312/344-0017

JOB NO. 89-105
LOGGED BY R. L. Jennings

GEOLOGIC [illegible] E-66c BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-4
DRILLER Patrick Engineering, Inc.
RIG CME 75 METHOD Hollow Stem Auger
WATER LEVELS
AT COMPLETION ____
____ HOURS ____
G.S. ELEVATION 748.9 DATE STARTED 3/31/89
WHILE DRILLING 64.5'
T.O.B. ELEVATION 648.9 DATE COMPLETED 4/4/89
SHEET 4 OF 5

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
Run 13		5.0'		1.3-2.7	Brownish-grey silty CLAY, tr. sand and gravel, laminated, blocky, stiff-very stiff	Wadsworth Till II	
					686.4		
ST		1.5'		3.5	Brownish-grey silty CLAY, tr. sand and gravel, very stiff 11% sand, 36% silt, 53% clay (CL) $K = 8.0 \times 10^{-9}$ cm/sec. (50 psi)		
					684.4		
					Brownish-grey fine-coarse SAND and	Intratill Sorted and Unsorted Sediments (coarse-fine)	
					683.4 small-large GRAVEL		
					Brownish-grey clayey fine-coarseSAND		
					682.7 and SILT, laminated		
Run 14		2.6'		1.0	Brownish-grey fine sandy CLAY w/		
					682.0 small-large gravel, stiff		
					Brownish-grey clayey SILT and fine		
					681.4 SAND, laminated		
					Grey fairly silty CLAY, tr. sand and gravel, medium stiff pinkish, grey, pale olive green color banding	Wadsworth Till II (transitional)	
Run 15		5.0'		0.8			
					677.6		
				2.0-2.3	Grey to brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till II	
Run 16		5.0'		2.0-3.2			
				3.6	670.3		
Run 17		5.0'		0.7	Grey fine sandy CLAY w/small gravel, medium stiff	Diamicton	
					669.0		

Voluntary Grout

ROBERTA L. JENNINGS
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815/744-0017
ARPC CPGS 0440
IWO CPC 337

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-4
DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
RIG CME 75 METHOD Hollow Stem Auger
HOURS
G.S. ELEVATION 748.9 DATE STARTED 3/31/89
WHILE DRILLING 64.5'
T.O.B. ELEVATION 648.9 DATE COMPLETED 4/ 4/89
SHEET 5 OF 5

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
				2.8	668.0 Brownish-grey CLAY, laminated	Wadsworth Till II
				1.0	668.0 Grey fine sandy CLAY, w/gravel	Diamicton
Run 17		5.0'		2.5	Brownish-grey CLAY, laminated	Wadsworth Till II
				1.5	667.4 667.3 Grey fine sandy CLAY w/gravel	Diamicton
				2.8-3.2	Brownish-grey silty CLAY, tr. sand and gravel, very stiff-hard	Wadsworth Till II
					grey sandy clay seam @ 82.3'	
Run 18		5.0'		4.3		
					661.4 661.3 Br-grey coarse SAND &sm-med.GRV.	
	23				Brownish-grey CLAY w/hairline silt partings, laminated, very stiff	Shallow Drift Aquifer Interglacial Sediments (fine)
1SS	30 32 52	2.0'		3.1	659.9 Grey SILT, tr. clay, tr. medium-large gravel	(medium)
	13				658.1	
2SS	21 21 14	2.0'			Grey SILT w/clay seams 657.2	
					656.7 Br.fi-med. SAND, some coarse sand	(coarse)
	13			1.8	Grey silty CLAY, tr. sand and gravel, 655.8 stiff	(fine)
3SS	19 55 45	2.0'		1.8	655.5 Grey fine SAND w/med.sand,clay sm. 655.1 ROCK	(coarse)
	20			4.5+	654.8 Grey SILT, hard 654.1 Br.gr.&gr.si.CLAY,tr.grv., hard	(medium-fine)
4SS	23 31 33	2.0'			654.0 Grey SILT, hard 653.5 Grey sandy, gravelly SILT Brownish-grey CLAY, laminated w/ 652.9 gravelly silt seam	
	22				Grey fairly silty CLAY, tr. sand and gravel, very stiff	~~Wadsworth Till III~~ DIAMICTON
5SS	23 30 39	2.0'		4.0		
	15					
6SS	24 39 44	2.0'		3.5	648.9	

Volclay Grout
Volclay Pellets
Silica Sand
Screen
Silica Sand
665.
663.
656
651
648.

T.O.B. 100.0'
Piezometer set upon completion

ROBERTA L. JENNINGS
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JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG E-68 BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-5
DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
RIG CME 75 METHOD Hollow Stem Auger
HOURS
G.S. ELEVATION 737.3 DATE STARTED 3/27/89
WHILE DRILLING 9.2'
T.O.B. ELEVATION 637.3 DATE COMPLETED 3/29/89
SHEET 1 OF 5
Top of PVC Riser 739.50

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Dark brown silty clay TOPSOIL w/ organics	Surficial Sorted Sediments (weathered) (fine)	Cement Plug
					736.0		
Run 1		3.0'		1.7	Brown silty CLAY, tr. sand and gravel, mottled, tr. roots, stiff		
					734.6		
					Brown SILT, laminated w/clay seams	(medium)	
					733.3		
Run 2		3.0'		4.5+	Brown fine-coarse SAND w/clay, oxidation below 5.5', dry	(coarse)	
					729.3		
Run 3		2.5'		4.5+	Brown fine-medium SAND, silty, some clay and small-large gravel silt seam @ 9.0' wet @ 9.2' alternating brown and grey variable texture, fine-medium and fine-coarse w/small-large gravel, some oxidized spots and bands		Volclay Grout
Run 4		3.0'		4.5+			
Run 5		3.2'					
					717.5		

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815/344-0017
AIPG CPGS 0440
NHD CPG 337

JOB NO. 89-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-5
DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
RIG CME 75 METHOD Hollow Stem Auger
HOURS
G.S. ELEVATION 737.3 DATE STARTED 3/27/89
WHILE DRILLING 9.2'
T.O.B. ELEVATION 637.3 DATE COMPLETED 3/29/89
SHEET 2 OF 5

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
Run 5		3.2'			Grey SILT and silty fine-coarse SAND, interlayered, some clay	Surficial Sorted Sediments (coarse-medium) (unweathered)	
					714.3		
Run 6		5.0'		2.5	Grey silty CLAY, tr. sand and gravel, stiff-very stiff sl. tr. hairline fine sand and silt partings	Wadsworth Till I	
Run 7		5.0'		1.2			
Run 8		5.0'		1.0-3.5			
Run 9		5.0'		2.1			

Volclay Grout

ROBERTA L. JENNINGS
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2020 N. SHOREWOOD DRIVE
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JOB NO. 89-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-5
DRILLER Patrick Engineering, Inc.
WATER LEVELS
AT COMPLETION
RIG CME 75 METHOD Hollow Stem Auger
HOURS
G.S. ELEVATION 737.3 DATE STARTED 3/27/89
WHILE DRILLING 9.2'
T.O.B. ELEVATION 637.3 DATE COMPLETED 3/29/89
SHEET 3 OF 5

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
Run 9		5.0'		2.1	Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till I	
Run 10		5.0'		3.0	coarse sand partings below 47.2'		
					689.6		
					Grey fairly silty to very fine sandy CLAY, tr. sand and gravel, stiff	Wadsworth Till II (marker)	
					687.7 — — grades into — — — — — — — — — —		
Run 11		5.0'		1.8-2.5	Grey silty CLAY, tr. sand and gravel, stiff-very stiff		
					pinkish-grey below 53.0'		
Run 12		2.8'		1.0-1.5	disturbed by rock		
ST		2.0'		2.2	18% sand, 37% silt, 45% clay (CL) K = 1.7 X 10-8 cm/sec.		

Volclay grout

ROBERTA L. JENNINGS
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JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC E-71 F BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION BORING NO. BP-5

DRILLER Patrick Engineering, Inc. WATER LEVELS

RIG CME 75 METHOD Hollow Stem Auger AT COMPLETION ____ HOURS ____

G.S. ELEVATION 737.3 DATE STARTED 3/27/89 WHILE DRILLING 9.2'

T.O.B. ELEVATION 637.3 DATE COMPLETED 3/29/89 SHEET 4 OF 5

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
Run 13		3.0'		2.0-2.5	Pinkish-grey silty CLAY, tr. sand and gravel, stiff-very stiff	Wadsworth Till II	
Run 14		5.0		2.7			
Run 15		5.0		3.7			
				0.7-1.3	664.5		
				0.7	Grey fine sandy silty CLAY w/gravel, 663.7 medium stiff	Diamicton	
				1.3-2.9	Brownish-grey silty CLAY, tr. sand and gravel, stiff-very stiff	Wadsworth Till II	
Run 16		5.0'			661.5		
				0.8	Grey sandy, gravelly CLAY, medium 660.7 stiff	Diamicton	
				3.0	Brownish-grey silty CLAY, tr. sand and gravel, very stiff-hard	Wadsworth Till II	
Run 17		5.0'		4.1			

Grout

Volcl.

ROBERTA L. JENNINGS
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JOB NO. 89-105

LOGGED BY R.L. Jennings

GEOLOGIC LE-72 = BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY NORTH EXPANSION
BORING NO. BP-5
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD Hollow Stem Auger
AT COMPLETION
HOURS
G.S. ELEVATION DATE STARTED 3/27/89
WHILE DRILLING 9.2'
T.O.B. ELEVATION DATE COMPLETED 3/29/89
SHEET 5 OF 5

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
					656.7 Br-grey silty CLAY, tr.sand & grv.	Wadsworth Till II
					656.4 Gr.brown fine SAND w/clay seams	Intratill Sort. Seds.
Run 17		5.0'		3.8-4.2	Pinkish-grey fine sandy CLAY, some small-large gravel, very stiff-hard stiff	Wadsworth Till II
				3.5-4.0		
					653.3	
					652.7 Pinkish-grey clayey SILT	Diamicton
Run 18		3.0		4.0-4.5+	Pinkish-grey fine sandy CLAY, some small-large gravel, hard pink and grey color banding tr. hairline silt partings	Wadsworth Till II
1SS	23 42 55 60	2.0		4.5+		
2SS	26 38 52 77	2.0		4.5+		
					645.3	
3SS	10 25 41 46	2.0'			Grey fine-medium SAND, tr. to some coarse sand, very dense	Shallow Drift Aquifer Interglacial Sediments (coarse)
					643.3	
					642.6 Grey fine-coarse SAND, tr.silt, very dense	
4SS	14 13 15 26	2.0		2.5	Grey CLAY, laminated w/silt and fine sand seams and partings, very stiff	(fine)
					640.8	
					Grey fine-coarse SAND, very dense	(coarse)
5SS	22 31 31 40	2.0'			640.1 Interlayered grey CLAY, SILT, and fine SAND	(fine-medium)
6SS	20 28 30 32	2.0'				
					637.3	

Volclay Grout
Volclay Pellets
646.
645.
Screen
638
637

T.O.B. 100.0'

Piezometer set upon completion

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
3020 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017

JOB NO. 89-105
LOGGED BY R.L. Jennings

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-1 DATE STARTED 3-11-86 DATE COMPLETED 3-12-86 JOB 22,4..

ELEVATIONS

GROUND SURFACE 731.0

END OF BORING 655.0

WATER TABLE

AT END OF BORING -72.0 Feet

24 HOURS - 0.8 Feet

WHILE DRILLING -57.0 Feet

SHEET 1 OF 2

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS		8-5 6-8	68.9 42.2			1'9"	729.1	Black to dark brown clayey TOPSOIL, very moist (OH)
2	SS		6-8 13-15	19.2 16.2	2.25* 4.0*				Very tough to hard brown and gray silty CLAY, some sand, trace gravel, moist (CL)
3	SS		6-8 13-17	16.1 17.5	4.25* 4.5*				
4	SS		8-13 23-88	15.7 16.5	4.25* 4.0*				Closed gray joint traces observed between 6 to 10'
5	SS		10-16 22-24	15.7 13.2	4.5+* 4.5+*				
6	SS		7-13 21-23	15.4	2.75*				
7	SS		5-11 11-19	13.5 15.2	4.5+* 3.75*				
8	SS		4-5 12-31	12.8 14.3	4.0*		14.5	716.5	
							16.0	715.0	Very tough gray silty CLAY, 2-inch sand seam, some sand, trace gravel moist (CL)
9	SS		6-8 15-20	15.1 16.6	2.75* 2.5*				Very tough gray silty CLAY, little sand, trace gravel, moist (CL) 1-inch silt seam at 21.5'
10	SS		6-12 18-22	17.3 18.1	2.5* 2.25*				
11	SS		6-10 10-14	17.2 18.0	2.25* 2.5*				
12	SS		5-8 12-15	16.1 20.2	2.5*		23.0	708.0	
							23.5	707.5	Firm gray clayey SILT, little sand, moist (ML)
13	SS		5-10 15-19	17.5 18.1	2.5* 2.5*				Very tough gray silty CLAY, little sand, trace gravel, moist (CL)
14	SS		5-9 15-21	19.6 17.8	2.25* 2.5*				
15	SS		6-21 25-30	18.0 20.0	2.0* 1.0*				
16	SS		9-13 21-26	15.4 18.7	1.25* 2.75*				
17	SS		6-13 13-21	14.3 18.7	1.75* 2.0*				
18	SS		7-12 17-20	18.7 14.5	1.0* 2.25*				
19	SS		5-11 15-23	17.7 15.0	3.5* 3.0*				
20	SS		14-17 26-33	14.7 14.0	2.5* 2.75*				

DRILL RIG NO. 91

TESTING SERVICE CORPORATION

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-1 Cont. DATE STARTED 3-11-86 DATE COMPLETED 3-12-86 JOB 22,48

ELEVATIONS

GROUND SURFACE 731.0

END OF BORING 655.0

WATER TABLE

AT END OF BORING -72.0 Feet

24 HOURS - 0.8 Feet

WHILE DRILLING -57.0 Feet

SHEET 2 OF 2

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_U	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
21	SS	6	8-12 26-32	16.0 12.7	1.75*				Tough gray silty CLAY with SILT layers, little sand, trace gravel, moist (CL & ML)
							42.0	689.0	
22	SS	6	14-21 39-45	12.4 14.6	4.5+* 3.5*				
23	SS	6	11-21 32-41	15.3 14.2	4.5+* 3.5*				Hard to tough gray silty CLAY, little sand, trace gravel, moist (CL)
24	SS	6	12-17 24-27	15.5 16.9	4.25* 2.25*				
25	SS	6	10-15 23-26	18.2 15.6	1.5* 3.5*				
							50.0	681.0	
26	SS	6	10-16 23-27	14.3 17.0	1.75* 2.5*				Fairly silty below 50.0'
27	SS	6	10-15 18-23	17.7 16.6	2.0* 1.75*				Silt seams @ 53.0'
28	SS	6	5-10 14-18	14.7 17.4	1.75* 2.0*				
29	SS	6	7-12 15-17	20.4 15.6	1.0* 1.75*		56.5 57.0	674.5 674.0	Firm gray silty SAND, moist (SM)
30	SS	6	7-14 21-31	15.8 14.3	2.0* 2.75*				Very tough gray silty CLAY, little to some sand, trace gravel, moist (CL)
31	SS	6	6-13 19-24	13.8 14.6	2.75* 2.0*				
							62.0	669.0	
32	SS	6	12-19 28-34	21.1 24.8	2.5* 3.75*				
33	SS	6	13-21 27-35	24.0 20.2	1.75* 2.25*				Tough to hard gray silty CLAY, trace to little sand, silt seams, trace gravel, moist (CL) 2-inch sand seam at 74.0'
34	SS	6	15-24 31-38	24.1 22.9	4.5+* 4.25*				
35	SS	6	9-10 14-20	23.2 25.1	2.25* 3.25*				
36	SS	6	12-25 35-35	25.2 22.6	3.75* 2.75*				
37	SS	6	16-22 39-41	25.3 12.4	2.25* 2.0*				
38	SS	6	26-30 40-50	25.5 13.1	1.0* 2.75*				
			End of Boring at	76.0	Feet				*-Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer

DISTANCE BELOW SURFACE IN FEET: 40, 45, 50, 55, 60, 65, 70, 75, 0

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT RODERIA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-2 DATE STARTED 3-13-86 DATE COMPLETED 3-17-86 JOB 22,4

ELEVATIONS

GROUND SURFACE 740.2

END OF BORING 638.2

WATER TABLE

AT END OF BORING DRY

24 HOURS WELLS INSTALLED

WHILE DRILLING DRY

SHEET 1 OF 3

SAMPLE NO.	SAMPLE TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
						0'10"	739.4	Dark brown clayey TOPSOIL, moist (OL)
1	SS	8-12	25.9	1.75*				
		15-15	18.3	2.25*		2.0	738.2	Very tough dark brown silty CLAY, little sand, trace gravel, moist (CL)
2	SS	7-13	17.5	2.0*				
		21-29	16.2	4.5+*		3.0	737.2	Hard brown and gray very silty CLAY, little sand, moist (CL)
3	SS	14-20	15.9	4.5+*				
		21-31	17.9	3.75*				
4	SS	10-15	18.0	4.25*				Very tough to hard brown and gray silty CLAY, little to some sand, trace gravel, moist (CL)
		20-29	14.7	4.5+*				
5	SS	15-19	17.2	4.5+*				
		26-35	13.3	4.0*				Closed gray joint traces observed between 2 to 4 feet
6	ST 2"		14.5	2.25*	119.1	11.0	729.2	
7	SS	11-16	17.8	1.75*				
		23-27	15.2	1.75*				
8	SS	11-14	15.3	1.75*				Tough to very tough gray silty CLAY little to some sand, trace gravel moist (CL)
		19-21	14.2	2.0*				
9	SS	10-16	22.8	0.75*				
		23-16	15.5	1.0*				
10	SS	5-10	12.6	1.75*				
		16-18	14.2	2.25*				
11	SS	13-19	14.7	2.25*				
		23-25	13.1	1.75*				
12	SS	7-11	12.8	1.25*				
		20-27	11.5	2.0*				
13	SS	8-11	11.3	2.0*				
		17-20	14.9	1.0*				
14	SS	8-13	19.3	1.75*				
		17-20	17.0	1.50*				
15	SS	7-11	19.6	1.75*				
		14-18	19.7	1.50*				
16	SS	5-11	18.6	2.0*				
		13-17	17.7	3.0*				
17	SS	8-13	16.8	3.0*				
		16-20	14.0	2.0*				
18	ST 2"		16.0	2.5*	114.0			
19	SS	10-17	19.0	1.75*				
		17-19	16.1	2.0*				
20	SS	8-12	21.9					Dense gray SAND, trace small gra trace clay, moist (SP)
		19-21	16.1			39.0	701.2	
						39.5	700.7	Very tough gray silty CLAY, little sand, trace gravel, moist (CL)

DISTANCE BELOW SURFACE IN FEET

0 5 10 15 20 25 30 35 40

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

PROJECT NEW ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 13 MELROSE, ELMHURST, ILLINOIS

BORING EB-7 Cont. DATE STARTED 3-13-96 DATE COMPLETED 3-17-96 JOB 22,459

ELEVATIONS

GROUND SURFACE 740.2

END OF BORING 638.2

WATER TABLE

AT END OF BORING DRY

24 HOURS WELLS INSTALLED

WHILE DRILLING DRY

SHEET 2 OF 3

DISTANCE BELOW SURFACE IN FEET	LENGTH RECOVERY	SAMPLE NO	SAMPLE TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
40		21	SS	8-13 19-26	13.6 25.0	2.5* 2.5*				Very tough gray silty CLAY, little sand, trace gravel, moist (CL)
		22	SS	23-13 6-16	12.6 22.5	1.25*		42.5 43.0	697.7 697.2	Firm brown-gray clayey SILT, little sand, moist (ML) Till fabric inserted
45		23	SS	33-20 20-26						Dense gray, sandy SILT, moist (ML)
		24	SS	32-15 38-13	14.9 15.9	2.75* 2.75*		46.0	694.2	Till fabric inserted
		25	SS	33-17 36-29	14.6 18.3	2.75* 2.5*				Very tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
50		26	SS	7-12 17-24	17.9 15.0	2.75* 3.25*				
		27	SS	5-13 18-25	15.8 18.2	2.75* 2.75*				
55		28	SS	9-20 25-29	13.6 17.6	4.5+* 3.75*				
		29	SS	19-28 25-29	14.9 16.3	3.5* 2.25*				
		30	ST 2"		24.5		119.9	58.0 59.0	682.2 681.2	Firm gray clayey SILT, little sand, moist (CL-ML)
60		31	SS	12-16 24-27	17.2 17.9	2.75* 3.0*				Very tough gray silty CLAY, little sand, trace gravel, moist (CL)
		32	SS	17-17 21-15	20.6 19.6	2.25* 1.75*		63.0	677.2	
65		33	SS	9-12 16-21	15.9 13.8	1.25* 2.25*		64.5	675.7	Tough gray very silty CLAY, little sand, trace gravel, moist (CL)
		34	SS	9-10 14-7	14.4 15.2	2.25* 1.0*				Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
		35	SS	5-16 17-20	15.6 14.1	1.75* 1.75*				
70		36	SS	15-21 25-23	14.5 26.4	1.75* 2.0*				
		37	SS	12-19 20-23	25.4 25.1	2.75* 2.75*				
75		38	SS	15-20 25-26	25.0 23.9	2.5* 1.75*				
		39	SS	17-16 20-50	23.5 24.4	2.75* 2.5*				
80		40	SS	13-19 24-24	15.0 13.8	2.0* 3.25*		78.5	661.7	Layers of silty CLAY, very silty CLAY and clayey SILT, moist (CL-ML)

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERT L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING E3-2 Cont. DATE STARTED 3-13-86 DATE COMPLETED 3-17-86 JOB 22,4'

ELEVATIONS

GROUND SURFACE 740.2

END OF BORING 738.2

WATER TABLE

AT END OF BORING DRY

24 HOURS WELLS INSTALLED

WHILE DRILLING DRY

SHEET 3 OF 3

SAMPLE NO	SAMPLE TYPE	N	WC	Q_u	JOBY	DEPTH	ELEV.	SOIL DESCRIPTIONS
41	SS	14-19 24-31	13.8 13.6	3.0*		81.5	658.7	Very tough gray silty CLAY, little sand, trace gravel, moist (CL)
42	SS	26-29 40-50	14.2 16.3	2.0* 2.75*		82.0	658.2	Dense gray clayey SILT, moist (ML)
43	SS	26-22 32-36	20.6 19.1	4.0* 3.5*				Very tough to hard gray silty CLAY, silt and sand seams, moist (CL)
44	SS	27 50/3"	21.3 21.8	4.5+* 4.5+*				
45	SS	26-28 32-42	16.8 18.9	2.75*				
46	SS	20-18 18-18	12.2 12.7			90.0	650.7	Dense gray sandy SILT, trace clay, moist (ML)
47	SS	23-21 20-18	12.8 16.1					Silty Sandy Till - Diamicton
48	SS	22-19 24-23	11.7					
49	SS	20-55 50/4"	12.5 12.4			96.8	644.2	Very dense gray SILT, little sand, trace small gravel, moist (ML)
50	SS	34/6"	18.1			99.0	641.2	
51	SS	100-100 25-43	14.3 12.9	2.75* 4.5+*		100.0	640.2	Fine-Coarse SAND Very tough to hard gray silty CLAY, some sand, trace gravel, moist (CL)

End of Boring at -102.0 Feet

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

DISTANCE BELOW SURFACE IN FEET

90 95 100 105 110 115 120

TESTING SERVICE CORPORATION

DRILL RIG NO 91

PROJECT BFI - ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING EB-25R DATE STARTED 10-20-86 DATE COMPLETED 10-20-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 739.1

END OF BORING 714.1

LOCATION: 10037.6N 11126.6E

WATER TABLE

AT END OF BORING

24 HOURS PIEZOMETER INSTALLED

WHILE DRILLING DRY

DISTANCE BELOW SURFACE IN FEET	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
0										
5										NO SAMPLES TAKEN FROM 0' TO 15.0'
10										
		A			14.9	2.0*		15.0	724.1	
		1B	SS	46	12.6	4.0*				
		C			--	--				
		A			12.0	3.5*				Very tough to hard gray silty CLAY, trace to little sand, trace gravel, moist (CL)
		2B	SS	21	11.8	2.25*				
		C			--	--				
20		A			13.1	2.75*				
		3B	SS	35	--	--				
		C			--	--				
		A			9.8	4.5+*				
		4B	SS	39	--	--				
		C			--	--				
		A			12.4	2.0*				
25		5B	SS	34	--	--				
		C			--	--				
		End of Boring at 25.0 Feet								
30										
35										
40										

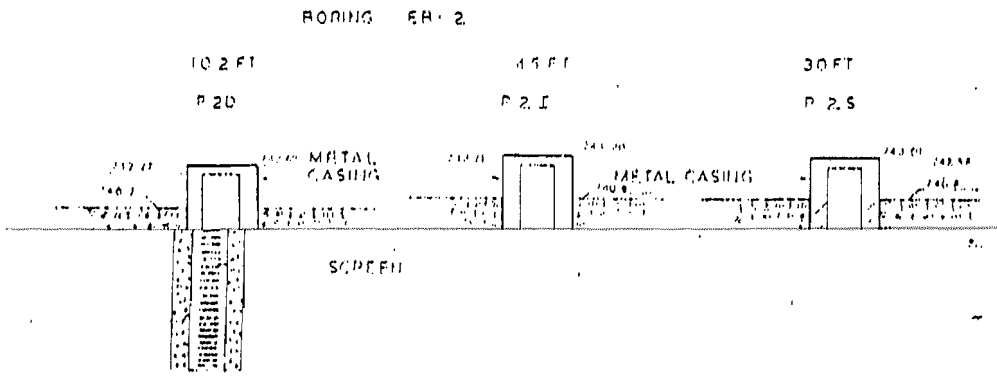
* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

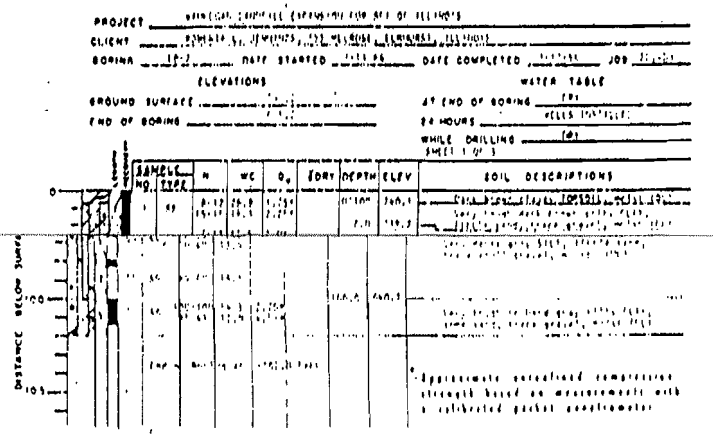
PIEZOMETER INSTALLATION NOTES: 2" PVC CONST.

1). Bore hole made using 3¼" I.D. hollowstem auger
2). Bottom of screen at 25'
3). Top of screen at 20'
4). Gravel pack from 25' to 17'
5). Bentonite pellets from 17' to 13.5'
6). Volclay Grout from 13.5' to surface
7). Steel protector pipe concreted into place over riser pipe

TESTING SERVICE CORPORATION

DRILL RIG NO. 103





TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
JUNE 28 1986 L-22459

C-111

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-3 DATE STARTED 3-19-86 DATE COMPLETED 3-19-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 745.8

END OF BORING 669.8

WATER TABLE

AT END OF BORING DRY

24 HOURS -24.6 Feet

WHILE DRILLING -40.0 & -56.0 Feet

SHEET 1 OF 2

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
									Dark brown clayey TOPSOIL, little sand, moist (OL)
1	SS		8-16 18-22	18.0	4.0*		2.0	743.8	
2	SS		10-18 23-30	17.6	4.5+*				Hard to very tough brown and gray silty CLAY, some sand, trace gravel, moist (CL)
3	ST 2"			15.1	4.5+*	119.8			Closed gray joint traces observed between 4 to 6 feet
4	SS		8-11 15-20	15.7	2.75*				
5	SS		7-8 11-15	14.2 13.8	4.0* 2.75*		10.5	735.3	
6	SS		3-6 7-10	15.4	3.25*				
7	SS		4-7 10-13	16.6 16.3	2.25* 2.0*				Very tough to tough gray silty CLAY, little sand, trace gravel, moist (CL)
8	SS		4-5 7-11	16.7	2.0*				(occasional silt seams 18" to 22(
9	SS		4-6 9-12	18.3	1.75*				
10	SS		5-8 12-12	17.6	2.0≈				
11	SS		4-6 9-11	17.5	2.25*				
12	SS		3-4 5-8	17.5	2.0*				
13	SS		5-7 8-9	16.2	2.5*				
14	SS		3-5 8-14	17.1 13.6	1.75* 2.5*				
15	SS		4-7 10-15	13.8 14.3	2.25* 2.25*		30.5 31.5	715.3 714.3	Very tough gray very silty CLAY, little sand, trace gravel, moist (CL)
16	SS		5-5 12-14	16.0 16.4	1.5≈ 2.75*				Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
17	ST 2"			14.3 20.4	3.0*	121.5	35.0	710.8	
18	SS		4-6 9-13	17.4	2.75*		36.0	709.8	Firm gray clayey SILT, trace sand, moist (ML) Very tough gray silty CLAY, little sand, trace gravel, moist (CL) (
19	SS		5-9 11-13	16.1 26.2	3.25*		39.0	706.8	Firm gray clayey SILT, little sand, moist (CL-ML)

DEPTH BELOW SURFACE IN FEET

DRILL RIG NO. 91

TESTING SERVICE CORPORATION

BORING LOG CONTINUED

PROJECT [illegible]

CLIENT ROBERT L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C39

BORING EB-3 Cont. DATE STARTED 3-19-86 DATE COMPLETED 3-19-86 JOB 22.459

ELEVATIONS

GROUND SURFACE 745.8

END OF BORING 669.8

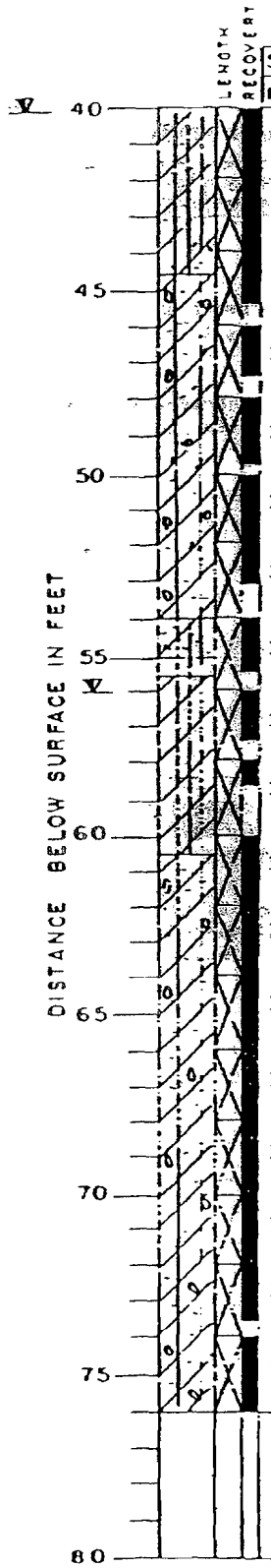
WATER TABLE

AT END OF BORING DRY

24 HOURS -24.6 Feet

WHILE DRILLING -40.0 & -56.0 Feet

SHEET 2 OF 2



SAMPLE NO.	SAMPLE TYPE	N	WC	q_u	% DRY	DEPTH	ELEV	SOIL DESCRIPTIONS
20	SS	5-8 10-11	18.6	1.75*				Layers of clayey SILT and very silty CLAY, little sand, moist (CL-ML)
21	SS	5-7 12-15	19.8 22.4	3.0*				
22	SS	9-9 10-11	17.4 14.8	1.75*		44.5	701.3	
23	SS	5-8 12-14	15.5	1.0*				Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
24	SS	4-10 12-16	15.5	3.0*				
25	SS	8-13 23-8	14.5	4.5+*				
26	SS	5-7 14-25	13.5	3.25*				
						54.0	691.6	
27	SS	14-17 24-27	17.6			55.0	690.8	Dense gray sandy SILT, little clay, very moist (ML)
						55.5	690.3	Very dense gray SILT, moist (ML)
28	SS	16-44 50/6"	16.2 15.4					Layers of gray SILT and silty CL, moist to damp (ML & CL)
29	SS	50 50/3"	14.0 9.9					
30	SS	16-23 25-29	16.8	3.5*		60.5	683.3	
31	SS	7-13 18-20	16.1					Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
32	SS	17-23 26-31	17.3	2.25*				
33	SS	7-12 18-21	14.9	1.75*				Very silty to 66.0'
34	SS	8-13 15-19	13.8	2.0*				
35	SS	7-12 21-55	14.2	2.25*				
36	SS	13-27 55/6"	17.8	2.5*				
37	SS	13-18 34-43	17.2	4.5+*				
		End of Boring at -76.0 Feet						*-Approximate unconfined compression strength based on measurement with a calibrated pocket penetrometer

DRILL RIG NO. 91

TESTING SERVICE CORPORATION

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION C-20

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-4 DATE STARTED 3-19-86 DATE COMPLETED 3-19-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 745.7

END OF BORING 669.7

WATER TABLE

AT END OF BORING DRY

24 HOURS -1.5 Feet

WHILE DRILLING DRY

SHEET 1 OF 2

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0		
1	SS		4-5 6-7	41.3 18.6	1.25*		1.5	744.2	Black to dark gray clayey TOPSOIL, very moist to moist (CL)
2	SS		5-7 12-15	18.8 15.8	2.75* 4.5+*				
3	SS		7-12 15-16	15.9	4.5+*				Tough to hard brown and gray silty CLAY, little sand, trace gravel, moist (CL)
4	SS		7-9 13-15	15.4	3.0*				Closed gray joint traces observed between 6 to 10 feet
5	SS		8-14 18-21	15.8	4.5+*				
6	SS		7-15 19-23	18.9	4.5+*				
7	SS		4-6 9-11	16.8	2.0*				
8	SS		4-6 10-14	17.9	2.25*				
9	ST			15.9 10.5	1.75S		17.0	728.7	
10	SS		7-9 16-17				19.0	726.7	Firm gray silty SAND, little clay, trace gravel (SC-SM)
11	SS		6-8 10-23	17.3 10.5					Layers of sandy SILT, clayey SAND and silty CLAY, moist (SC-SM, ML & CL)
12	SS		7-18 23-32	18.3 8.4					
13	SS		13-14 15-15	10.6 15.1	1.25*		25.5	720.2	
14	SS		15-21 31-32	18.3 17.2	1.25* 2.75*				
15	SS		16-22 23-27	16.6	1.75*				Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
16	SS		10-20 21-25	17.6	2.25*				
17	SS		8-11 18-25	18.2	1.0*				
18	SS		5-9 11-20	17.3	1.5*				
19	SS		5-9 16-19	18.4 10.7	1.0* 1.75*				
20	SS		12-21 25-29	15.3	2.25*				

DISTANCE BELOW SURF IN FEET

0 5 10 15 20 25 30 35 40

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

PROJECT ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-21

BORING EB-4 Cont. DATE STARTED 3-19-86 DATE COMPLETED 3-19-86 JOB 23,459

ELEVATIONS

GROUND SURFACE 745.7

END OF BORING 669.7

WATER TABLE

AT END OF BORING DRY

24 HOURS -1.5 Feet

WHILE DRILLING DRY

SHEET 2 OF 2

DISTANCE BELOW SURFACE IN FEET	SAMPLE NO	SAMPLE TYPE	N	WC	q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40	21	SS	11-17 22-25	15.6	1.75*				
	22	SS	12-17 22-29	16.6 14.3	3.75*				
45	23	ST		16.4	1.75*	116.9			Tough gray silty CLAY, little to some sand, trace gravel, moist (CL)
							47.0	698.7	
	24	SS	7-12 15-19	13.6 13.2	1.25* 1.75*				Very silty, slightly sandy Clay Till
	25	SS	4-8 13-15	15.8	1.5*				
50							50.0	695.7	
	26	SS	15-17 21-26	13.3 11.6	2.25* 1.5*		51.0	694.7	Very tough gray very silty CLAY, little sand, trace gravel, moist (CL)
	27	SS	14-16 19-21	14.2	1.5*		53.0	692.7	
55	28	SS	13-17 19-24	14.0	2.75*				Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
	29	SS	7-14 27-32	13.8	1.75*				
	30	SS	9-18 25-30	14.6	2.75*				
60	31	SS	14-21 32-39	17.3	2.5*				
	32	SS	28-47 50/5"	17.2	1.25*				
							64.0	681.7	
65	33	SS	8-13 25-50	15.8	4.25*		64.5	681.2	Dense gray clayey SILT, little sand, moist (ML)
	34	SS	7-17 26-45	13.9	3.5*				Very tough gray silty CLAY, little sand, trace gravel, moist (CL)
	35	SS	10-23 16-23	12.2	3.25*				
70							70.5	675.2	
	36	SS	35-37 25-32	16.7 12.2	2.0*				
	37	SS	18-25 31-32	11.6 20.9	1.5*				Layers of gray silty CLAY and very silty CLAY, little sand, moist (CL)
75	38	SS	20-30 53/6"	17.4					
			End of Boring at -76.0 Feet						
80									

*-Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

PROJECT [illegible] - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-22

BORING EB-5 DATE STARTED 3-24-86 DATE COMPLETED 3-24-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 744.3

END OF BORING 669.3

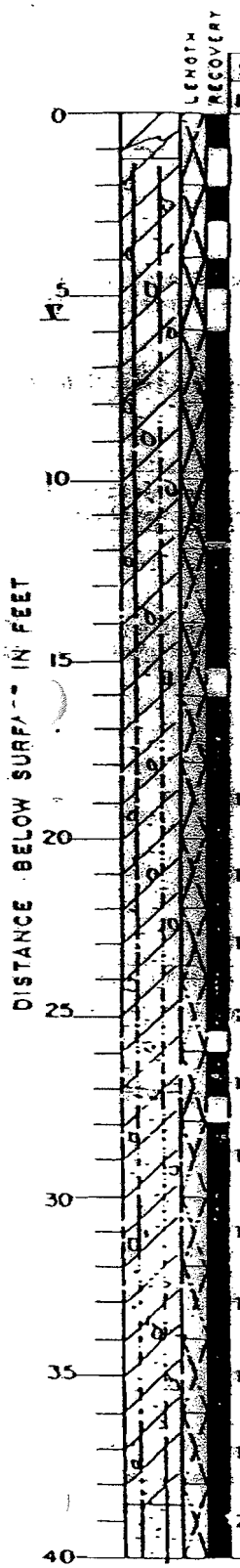
WATER TABLE

AT END OF BORING -38.0 Feet

24 HOURS -37.7 Feet

WHILE DRILLING -5.5 & 38.5 Feet

SHEET 1 OF 2



SAMPLE NO	SAMPLE TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS	3-6 8-10	24.3 24.4	3.0*		1'2"	743.1	Black to dark gray clayey TOPSOIL, moist (OL)
2	SS	8-8 9-9	20.1 20.6	2.25* 1.25*				
3	SS	3-9 17-21	22.6 26.9	1.0*				
4	SS	12-21 23-37	18.2	4.5+*				
5	SS	10-18 19-20	16.5	4.5+*				
6	ST 2"		15.5	3.5*	116.4			Tough to very tough brown and gray to gray silty CLAY, little to some sand, trace gravel, moist (CL)
7	SS	8-11 17-19	18.8	2.0*				(2-inch sand seam at -27.0 feet)
8	SS	9-13 25-15	16.1 18.8	1.75* 1.0*				
9	SS	5-8 11-13	15.5	1.25*				
10	SS	4-6 9-12	18.9	1.25*				
11	SS	4-7 7-9	18.0	1.25*				
12	SS	3-5 7-9	17.5 19.8	1.25*				
13	ST 2"		17.3	1.75*	111.4			
14	SS	4-10 18-16	19.6 17.6	1.25* 2.5*				
15	SS	4-6 12-12	16.5	1.0*				
16	SS	8-14 18-2[illegible]	15.3	2.25*				
17	SS	5-10 10-13	16.7	2.0*				
18	SS	8-10 10-13	23.1 17.3	2.0*				
19	SS	4-8 11-13	16.8 17.7	1.75* 2.25*				
20	SS	18-19 20-20	10.4	1.75*		38.5	705.8	Dense gray silty SAND, wet (SM)

TESTING SERVICE CORPORATION

DRILL RIG NO 91

BORING LOG CONTINUED

PROJECT ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 333 MELROSE, ELMHURST, ILLINOIS C-23

BORING EB-5 Cont. DATE STARTED 3-24-86 DATE COMPLETED 3-24-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 744.3

END OF BORING 666.3

WATER TABLE

AT END OF BORING -38.0 Feet

24 HOURS -37.7 Feet

WHILE DRILLING -5.5 & -38.5 Feet

SHEET 2 OF 2

DISTANCE BELOW SURFACE IN FEET	LENGTH RECOVERY	SAMPLE NO	SAMPLE TYPE	N	WC	Q_U	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40		21	SS	10-13 16-17	13.8 12.5	2.25* 4.0*				
		22	SS	11-14 20-21	12.6	3.25*				
45		23	SS	9-15 20-23	14.2	4.5+*				Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
		24	SS	8-10 15-17	17.9 14.9	1.0*				
		25	SS	8-15 20-24	14.7 15.6	1.0* 2.75*				
50		26	SS	9-17 23-27	17.0 15.9	1.5* 3.25*				
		27	SS	7-16 20-26	17.1	3.5*				
55		28	ST 2"		16.5	2.5*	116.7			
		29	SS	8-14 17-19	18.3	1.75*				
		30	SS	14-19 28-33	17.0	2.5*				
60		31	SS	9-11 19-24	12.6 12.0	2.0* 3.75*		61.5 62.0	682.8 682.3	Firm gray clayey fine SAND, trace gravel, moist (SC)
		32	SS	7-10 13-16	26.5	2.75*				
65		33	SS	7-11 17-20	28.9 27.6	1.0* 2.25*				
		34	SS	9-14 16-19	27.2	1.5*				Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
		35	SS	14-19 26-40	26.6	2.5*				(Layers of wet sand at -61.5' - 62.0')
70		36	SS	21-17 23-36	26.0	1.5*				
		37	SS	15-25 38-42	19.4 25.3	1.25* 1.5*				
75		38	SS	13-19 27-33	22.5 22.4	3.5*				
				End of Boring at -76.0 Feet						*Approximate unconfined compressive strength based on measurements a calibrated pocket penetrometer.
80										

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-24

BORING EB-6 DATE STARTED 3-25-86 DATE COMPLETED 3-25-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 738.0

END OF BORING 635.0

WATER TABLE

AT END OF BORING

24 HOURS WELLS INSTALLED

WHILE DRILLING -5.5 Feet

SHEET 1 OF 3

DISTANCE BELOW SURFACE, FEET

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS		3-4 7-12	23.1	3.0*		1'2"	736.8	Black to dark brown clayey TOPSOIL (OL)
2	SS		9-12 18.31	18.7 16.6	3.5* 4.5+*				Very tough to hard dark brown silty CLAY, little sand, trace gravel, moist (CL)
3	SS		12-18 24-35	15.7	4.5+*		4.5	733.5	
4	SS		18-28 38-42				7.0	731.0	Dense to very dense gray silty SAND, very moist (SM)
5	SS		8-15 20-28	16.1 17.0	4.5+* 3.5*		8.0	730.0	Layers of gray SILT and clayey SILT, moist (ML-SC)
6	SS		10-20 28-29	18.3 17.5	4.5+* 2.0*				
7	SS		8-8 11-12	17.3	1.75*				Hard to tough gray silty CLAY, little sand, trace gravel, moist (CL)
8	SS		5-8 12-12	19.8	1.75*				
9	SS		6-8 11-14	18.7	2.5*				
10	SS		7-10 13-15	19.9	2.25*				
11	SS		7-12 15-18	17.9	2.5*				
12	SS		7-11 18-21	17.1 18.2	4.5+* 2.25*				
13	SS		7-12 17-20	16.2	3.75*				
14	SS		35-35 15-15	21.1 15.1	1.75*		26.5 27.5	711.5 710.5	Very dense brown silty SAND, trace gravel, wet (SM)
15	SS		7-8 11-15	15.6	1.25*				
16	ST 2"			14.4	2.0*	120.0			Tough gray silty CLAY, little to some sand, trace gravel, moist (CL)
17	SS		5-6 9-12	14.5	1.5*				
18	SS		5-7 7-8	14.9	1.0*				
19	SS		5-10 12-15	14.6	2.0*				
20	SS		4-7 11-14	14.6	1.75*				

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

PROJECT BEL ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 335 MELROSE, ELMHURST, ILLINOIS C-25

BORING EB -6 Cont. DATE STARTED 3-25-86 DATE COMPLETED 3-25-86 JOB 27,459

ELEVATIONS

GROUND SURFACE 738.0

END OF BORING 636.0

WATER TABLE

AT END OF BORING

24 HOURS WELLS INSTALLED

WHILE DRILLING -5.5 feet

SHEET 2 OF 3

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO	SAMPLE TYPE	LENGTH OF RECOVERY	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
21	SS		5-6 6-10	15.4	1.25*				Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
22	SS		5-9 12-15	14.4	1.5*				
23	SS		5-11 13-14	20.1	1.5*				
24	SS		9-12 16-21	19.1					
25	SS		7-12 15-17	19.0	3.5*				
26	SS		20-25 23-25				50.5	687.5	Dense to firm gray silty and clayey SAND, wet (SC & SM) (Fine sand w/silt & clay interlayered)
27	SS		20-23 25-24	16.1					
28	SS		16-10 8-7						
29	SS		4-6 9-12	13.6 13.9	2.5* 1.75*		56.0	682.0	Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL) Very silty below 57'
30	SS		7-12 14-22	14.7	2.0*				
31	ST 2"			23.4		123.8	60.0	678.0	Firm gray clayey SILT, little sand, trace gravel, moist (CL-ML)
32	SS		13-19 25-37	16.3	1.5*		62.0	676.2	Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
33	SS		17-30 38-43	15.6	4.5+*				
34	SS		11-15 16-24	16.8	2.75*				
35	SS		14-21 36-40	22.6					
36	SS		13-23 30-41	15.9	3.75*				
37	SS		12-20 23-30	16.0	2.75*				
38	SS		10-14 27-26	17.0 16.5	2.75* 2.75*				
39	SS		12-27 36-46	15.5	3.75*				
40	SS		14-26 32-53	14.5	3.0*				

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-26

BORING EB-6 DATE STARTED 3-25-86 DATE COMPLETED 3-25-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 738.0

END OF BORING 638.0

WATER TABLE

AT END OF BORING

24 HOURS WELLS INSTALLED.

WHILE DRILLING -5.5 Feet

SHEET 3 OF 3

DISTANCE BELOW SURFACE, FEET	LENGTH RECOVERY	SAMPLE NO	SAMPLE TYPE	N	WC	Q_u	γDRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
80										
		41	SS	14-22 30-31	14.8	3.25*				Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
		42	SS	15-28 38-40	15.6 16.4	1.75* 3.25*		83.0	655.0	
85		43	SS	16-52 60/5"	16.4 11.1	3.25* 4.5+*		85.0	653.0	Silty, Sandy Till - Diamicton
		44	SS	28-30 39-30	11.2 13.0	4.25*		87.5	650.5	Very dense gray SILT, trace clay, moist (ML)
		45	SS	20-28 50/5"	24.7	4.5+*		89.0	649.0	Hard gray silty CLAY, little sand, trace gravel, moist (CL)
90		46	SS	47						Very dense gray SILT, trace clay, moist (ML)
		45A	ST 2"	50/5"	17.6			92.0	646.0	
		47	SS	67/6"				93.0	645.0	fi-med Sand Very dense gray silty SAND, wet (SM)
95		48	SS	73- 50/5"						fi-co sand & gravel
		49	SS	28- 50/2"	21.7			96.0	642.0	Very dense gray clayey SILT, little sand, moist (ML)
		50	SS	24-43 50/4"	14.4	4.5+*		98.6	640.0	Hard gray silty CLAY, little sand, trace gravel, moist (CL)
100										
				End of Boring at -100.0 Feet						
105										
110										
115										
120										

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

41

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-7 DATE STARTED 3-27-86 DATE COMPLETED 3-28-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 743.1

END OF BORING 668.1

WATER TABLE

AT END OF BORING -12.0 Feet

24 HOURS - 3.2 Feet

WHILE DRILLING -10.0 Feet

SHEET 1 OF 2

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS		1-3 4-6	31.9 22.0	0.75* 3.75*		0'3"	742.8	Black clayey TOPSOIL (OL)
2	SS		4-5 6-9	22.0	2.75*				Tough to very tough brown and gray silty CLAY, trace sand, moist (CL)
3	SS		5-11 11-13	22.2	3.0*				Closed gray joint traces observed between 2 to 6 feet
4	ST 3"			20.5	2.5*	107.2			
5	SS		5-4 5-9	19.9 18.1	1.5* 0.75*				
							10.0	733.1	
6	SS		8-11 16-16	16.0 23.5	3.0*		11.0	732.1	Firm gray silty SAND, (gravel) wet, (SM)
7	SS		3-9 13-16	21.4	3.0*				
8	SS		7-12 15-17	17.1	2.25*				
9	SS		5-9 10-15	17.3	2.5*				Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
10	SS		5-8 12-17	17.5	2.0*				
11	SS		11-12 16-21	17.3	2.5*				
12	SS		6-8 11-15	17.6 16.8	1.75* 2.75*				
13	SS		4-8 10-16	16.7	4.5+*				
14	SS		8-11 16-21	18.2 18.0	1.75* 2.75*				
15	SS		7-8 10-14	18.4	2.0*				
16	SS		13-15 19-24	18.6	1.5*				
17	SS		5-7 11-15	19.0 19.8	1.0* 2.0*				
18	SS		6-7 12-13	17.8	2.0*				
19	SS		14-15 19-21	17.5	1.5*				
20	SS		10-16 20-20	17.9 15.8	1.0* 2.5*				

DISTANCE BELOW SURFACE IN FEET

0 5 10 15 20 25 30 35 40

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 333 MELROSE, ELMHURST, ILLINOIS C-28

BORING B3-7 Cont. DATE STARTED 3-27-86 DATE COMPLETED 3-25-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 743.1

END OF BORING 668.1

WATER TABLE

AT END OF BORING -12.0 Feet

24 HOURS - 3.7 Feet

WHILE DRILLING -10.0 Feet

SHEET 2 OF 2

DISTANCE BELOW SURFACE, FEET

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_U	% DRY	DEPTH	ELEV	SOIL DESCRIPTIONS
21	ST 3"			15.5	4.5+*	118.9			Hard to tough gray silty CLAY, little sand, trace gravel, moist (CL)
22	SS		8-9 14-18	18.9 18.2	1.25* 2.0*				
23	SS		4-10 15-22	18.6 14.8	2.0* 2.75*				
							46.0	697.1	
24	SS		6-12 18-22	20.8 17.8			47.0	696.1	Firm gray clayey SILT, little sand, moist (CL-ML)
							48.0	695.1	Dense gray fine SAND and SILT, wet (SM-ML)
25	SS		6-8 10-16						
							50.0	693.1	Layers of clayey SILT, silty CLAY and silty SAND, moist (ML-CL-SM)
26	SS		10-12 18-22	13.1 14.7	2.25* 2.75*				
27	SS		12-18 20-24	19.9	4.5+*				
28	SS		12-16 19-42	12.3	2.75*				Very tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
29	SS		10-22 33-50	16.4	4.5+*				
30	SS		11-16 24-33	16.6	4.5+*				
31	SS		15-22 27-33	16.0	3.25*				
32	SS		16-12 25-30	16.0 16.7	2.5* 2.75*				
33	SS		9-11 13-15	17.3 12.1	2.25*		65.0	678.1	
							66.0	677.1	Dense gray clayey SILT, little sand, moist (ML-CL)
34	SS		7-16 24-40	13.0	2.5*				
35	SS		7-14 18-26	13.3	2.25*				Very tough gray silty CLAY, little sand, trace gravel, moist (CL)
36	SS		6-13 25-38	13.2 15.4	2.0* 4.0*				
37	SS		12-16 32-40	15.7	3.0*				
38	SS		7-8	15.0	2.75*				
			End of Boring at -75.0 Feet						

*Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer

TESTING SERVICE CORPORATION

DRILL RIG NO ATV S3

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-29

BORING EB-8 DATE STARTED 3-26-86 DATE COMPLETED 3-28-86 JOB [illegible]59

ELEVATIONS

GROUND SURFACE 743.4

END OF BORING 667.4

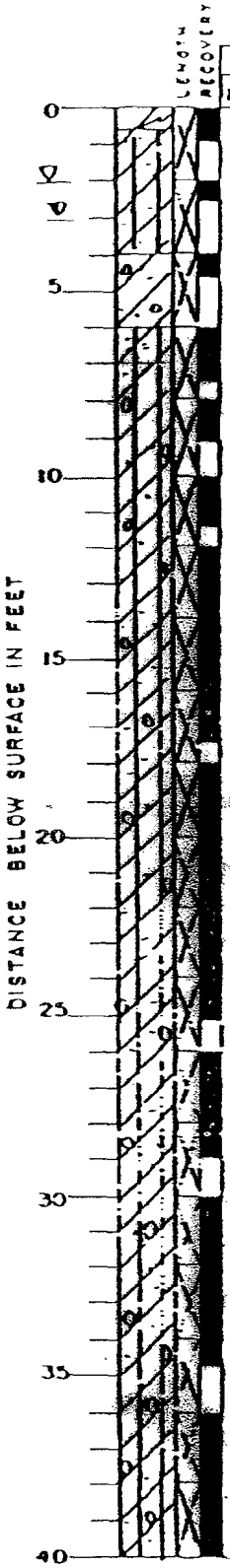
WATER TABLE

AT END OF BORING -3.0 Feet

24 HOURS -2.5 Feet

WHILE DRILLING -4.0 & -48.0 Feet

SHEET 1 OF 7



SAMPLE NO.	SAMPLE TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
						0'7"	742.8	Black clayey TOPSOIL (OL)
1	SS	4-7 7-7	24.2 22.3	1.5*				Tough brown silty CLAY, little sand, moist (CL)
2	SS	4-6 6-7	22.1	1.5*				
						4.0	739.4	
3	SS	3-5 10-13	25.3	1.0*				Firm gray clayey fine SAND, trace gravel, moist (SC)
						6.0	737.4	
4	SS	4-11 16-21	15.4 16.7	2.5* 4.5+*		7.0	736.4	Hard brown and gray silty CLAY, little sand, trace gravel, moist (CL)
5	ST 2"		15.9 17.8	1.75* 4.5*	111.4 113.9			
6	SS	7-6 10-23	15.4	3.75*				
7	SS	8-8 12-19	15.4 15.3	2.25* 4.5+*				Tough to hard gray silty CLAY, little to some sand, trace gravel, moist (CL)
8	SS	5-7 12-14	15.8	2.5*				
9	SS	7-12 15-21	16.4	3.75*				
10	SS	6-11 19-25	16.3	2.5*				
11	SS	8-12 15-25	16.2	2.25*				
12	SS	9-14 19-22	16.3	3.25*				
13	ST 2"		17.5		111.3			
14	SS	6-7 12-14	15.8 17.4	1.25* 3.25*				
15	SS	6-8 12-15	17.2	1.25*				
16	SS	8-11 12-15	16.0	2.75*				
17	SS	5-7 12-15	17.3	2.25*				
18	ST 2"		18.5	1.25*				
19	SS	7-12 24-27	16.3	2.75*				
20	SS	6-10 15-22	14.6	2.5*				

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-30

BORING 58-8 Cont. DATE STARTED 3-28-86 DATE COMPLETED 3-28-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 743.4

END OF BORING 667.4

WATER TABLE

AT END OF BORING -3.0 Feet

24 HOURS -2.5 Feet

WHILE DRILLING -4.0 & -48.0 Feet

SHEET 2 OF 2

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
21	SS		5-10 12-15	13.3	3.0*				Very tough gray silty CLAY, some sand, trace gravel, moist (CL)
22	SS		6-11 15-20	13.2	2.75*				
23	ST 2"			13.1	2.5*	122.9			
24	SS		6-16 24-33	15.7 21.4			45.5	696.9	Dense gray clayey SILT, little sand, moist (CL-ML)
25	SS		8-11 16-20	15.9 20.9	2.0*		48.0	695.4	Tough gray silty CLAY, little sand, trace gravel, moist (CL)
26	SS		12-16 19-25	23.2	3.0*		49.5 50.0	693.9 693.4	Dense gray clayey SILT, little sand, moist (CL-ML)
27	SS		7-7 7-8	21.6 19.0	1.0* 0.75*				Tough gray silty CLAY, little sand, trace gravel, moist (CL)
28	SS		5-6 12-18	13.0 17.3	1.0* 1.75*				(Layers of sandy SILT at -53.0')
29	SS		6-15 18-28	12.2	2.75*		57.0	686.4	
30	SS		6-18 27-38	13.9 13.8	1.25* 4.5+*				Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
31	SS		8-21 37-38	14.5	4.5+*				
32	SS		7-12 24-33	14.4	4.5+*				
33	SS		4-6 11-15	15.6	4.0*				
34	SS		9-24 33-35	15.8 14.4	2.25*		67.0 68.0	676.4 675.4	Layers of very silty CLAY and sandy SILT, very moist (CL & ML)
35	SS		5-17 14-18	12.2	2.75*				Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
36	SS		7-5 15-20	8.6					
37	SS		6-10 24-25	13.6	1.75*				
38	SS		12-22 36-47	12.8 14.2	3.75*				
			End of Boring at -76.0 Feet						*Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.

DISTANCE BELOW SURF. IN FEET

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-31

BORING EB-9 DATE STARTED 3-17-86 DATE COMPLETED 3-17-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 740.3

END OF BORING 665.3

WATER TABLE

AT END OF BORING -20.0 Feet

24 HOURS - 0.4 Feet

WHILE DRILLING -46.0 Feet

SHEET 1 OF 2

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	SAMPLE TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS	6-4 4-6	39.5 25.8	2.75*		1'10"	738.5	Black and dark gray clayey TOPSOIL (CH
2	SS	3-6 6-11	25.2 19.4	3.0* 3.75*				Very tough to hard brown and gray silty CLAY, little sand, trace gravel, moist (CL)
3	SS	3-7 9-15	24.4 16.8	3.25* 4.5+*				
4	SS	7-19 23-30	18.2 16.0	4.5+* 4.5+*		7.5	732.8	
5	SS	7-12 13-16	15.8 13.7	3.75* 3.5*				
6	SS	6-9 11-15	13.5 16.1	2.75* 2.0*				Tough to very tough gray silty CLAY, some sand, trace gravel, moist (CL)
7	SS	6-9 9-11	18.4 18.2	3.0* 2.0*				
8	SS	6-9 9-13	18.2 16.8	2.25* 2.25*				
9	SS	8-10 20-20	18.4 15.9	1.75* 1.75*				
10	SS	8-10 12-14	17.9 15.9	2.25* 2.0*				
11	ST 2"		12.1	3.25*	119.2			
12	SS	7-10 12-16	17.5 17.1	3.0* 2.0*		22.0	718.3	
13	SS	7-9 9-13	17.6 17.7	1.25* 1.5*				Very tough to tough gray very silty CLAY, clayey SILT layers, little sand, moist (CL-ML)
14	SS	6-6 11-13	17.2 15.5	1.75* 2.25*				
15	SS	6-12 12-15	17.1 16.5	1.0* 2.75*		28.0	712.3	
16	SS	7-15 21-27	14.5 16.8	4.0* 4.25*				Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
17	SS	8-16 16-24	15.7 16.7	5.25* 3.75*				
18	SS	3-6 6-10	20.6 18.5	1.75* 2.5*				
19	SS	7-10 10-18	18.9 19.2	1.75* 3.75*				
20	SS	5-15 15-22	17.3 18.2	4.5+* 3.5*				

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

BORING LOG CONTINUED

PROJECT BET ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-32

BORING EB-9 Cont. DATE STARTED 3-17-86 DATE COMPLETED 3-17-86 JOB 27,455

ELEVATIONS

GROUND SURFACE 740.3

END OF BORING 665.3

WATER TABLE

AT END OF BORING -20.0 Feet

24 HOURS - 0.4 Feet

WHILE DRILLING -46.0 Feet

SHEET 2 OF 2

SAMPLE NO.	SAMPLE TYPE	N	WC	q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
21	SS 3"		14.8	4.0*	120.3			
22	SS	10-19 20-25	16.8 17.5	4.5+* 3.75*				Very tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
23	SS	9-10 15-18	16.5	2.25*		44.5	695.8	
24	SS	12-16 16-18	20.1					Layers of gray silty CLAY and sandy SILT, wet (CL-ML)
						48.0	692.3	
25	SS	6-18 20-23	23.4 16.8	1.75*		49.0	691.3	Tough gray silty CLAY, little sand, trace gravel, moist (CL)
26	SS	12-15 16-18	22.8	1.25*				Layers of gray silty CLAY and silty SAND, wet (CL-ML)
						52.0	688.3	
27	SS	6-10 13-13	21.4 13.5	1.0* 1.5*				
28	SS	6-12 19-21	14.3 13.6	1.75* 1.75*				
29	SS	10-15 21-26	16.0 14.8	1.0* 2.75*				Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
30	SS	10-15 26-30	15.7 14.3	2.5* 3.75*				
31	SS	12-12 16-20	15.1 15.4	1.5* 2.75*				
32	SS	10-13 17-17	17.6 16.7	1.75* 2.0*				
33	SS	7-12 17-16	19.6 16.7	2.75* 2.5*		66.0	674.3	
34	SS	7-12 12-14	18.5 15.4	1.75* 1.75*		68.0	672.3	Very Silty
35	SS	5-16 17-22	13.9 13.1	2.0* 2.25*				
36	SS	9-25 50-60	15.3 10.5	3.5* 4.5+*		71.0	669.3	
37	SS	20-30 30-40	14.1 13.2	2.5* 3.0*				Hard to very tough gray very silty CLAY, little sand, trace gravel, moist (CL)
38	SS	9-16	14.4 15.0	2.5* 2.0*		74.0	666.3	Very tough gray silty CLAY, little sand, trace gravel, moist (CL)
		End of Boring at -75.0 Feet						

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer

DISTANCE BELOW SURF IN FEET

40 45 50 55 60 65 70 75 80

TESTING SERVICE CORPORATION

DRILL RIG NO ATV 53

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION C-33

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-10 DATE STARTED 3-31-86 DATE COMPLETED 3-31-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 743.8

END OF BORING 633.8

WATER TABLE

AT END OF BORING

24 HOURS WELLS INSTALLED

WHILE DRILLING -7.5 Feet

SHEET 1 OF 3

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS		2-2 4-4	21.5	2.25*				Very tough brown silty CLAY, little sand, trace gravel, moist (CL)
2	SS		3-4 8-10	21.1	2.75*				Closed gray joint traces observed between 4 to 6 feet
3	SS		8-11 15-17	17.5	3.5*		4.5	739.3	
4	SS		5 50/6"	21.4	2.0*				Very tough brown and gray silty CLAY, little sand, trace gravel, moist (CL) (Sand seam at 7 1/7 feet)
5	SS		7-11 16-19	17.5 15.1	3.5* 3.5*		9.0	734.8	
6	SS		7-8 12-13	18.3	1.0*				
7	SS		4-6 9-12	14.2					
8	ST 2"			16.0 12.7	2.5*	111.1 121.5			Tough to very tough gray silty CLAY, little to some sand, trace gravel. moist (CL & CL-ML)
9	SS		8-12 15-17	19.0 15.8	1.25* 3.5*				
10	SS		8-9 16-20	19.0 17.5	1.5* 2.75*				
11	SS		8-10 16-20	18.0	2.25*				
12	SS		6-6 8-9	18.4	1.25*				
13	ST 2"			17.3	3.25*	109.9			
14	SS		4-6 9-10	19.2	1.5*				
15	SS		9-14 20-31	17.4	2.5*				
16	SS		7-11 12-13	18.7	3.0*				
17	SS		6-10 12-19	19.9	2.25*				
18	ST 2"			17.7	1.75*	110.8			
19	SS		4-8 12-15	20.7	1.25*				
20	SS		5-8 12-15	18.7	2.25*				

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-34

BORING EB-10 Cont. DATE STARTED 3-31-86 DATE COMPLETED 3-31-86 JOB 22.459

ELEVATIONS

GROUND SURFACE 743.8

END OF BORING 633.8

WATER TABLE

AT END OF BORING

24 HOURS WELLS INSTALLED

WHILE DRILLING -7.5 Feet

SHEET 2 OF 3

SAMPLE NO	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_U	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
21	SS		6-10 12-19	16.4	3.75*				Very tough to tough gray silty CLAY, little sand, trace gravel, moist (CL)
22	SS		5-8 19-19	18.2	1.75*				
23	SS		5-7 12-17	18.2	3.0*				
24	SS		10-20 24-28	16.2 12.1	1.75* 3.5*		47.0 47.7	696.8 696.1	Dense gray clayey fine SAND, trace gravel, wet (SC)
25	SS		14-17 19-24	20.2					Layers of gray SILT and clayey SILT, wet (ML & CL)
26	SS		9-11 12-15	20.5	1.5*		51.5	692.3	
27	SS		8-12 14-21	26.0 18.8	2.25* 3.0*		52.5	691.3	Very tough gray very silty CLAY, SILT seams, trace gravel, moist (CL-ML)
28	SS		5-13 21-24	20.0 19.4	2.5* 2.25*				Very tough gray silty CLAY, silt layers, little sand, trace gravel, moist to wet (CL)
29	SS		15-15 20-23	19.2	2.75*				
30	SS		8-21 12-14	12.0 12.7	3.75* 2.25*		58.5 59.0	685.3 684.8	Dense gray fine sandy SILT, trace clay and gravel, moist (ML)
31	SS		10-24 25-39	14.5 16.0	4.0*				Very tough gray silty CLAY, little sand, trace gravel, moist (CL)
32	SS		5-16 31-32	15.3	2.75*				
33	SS		12-25 33-36	16.7	3.25*				
34	SS		13-17 17-21	16.2	1.5*		67.0	676.8	
35	SS		12-17 21-35	17.1 18.8					Layers of gray silty CLAY, gray SILT and silty SAND, wet (CL-ML-SM)
36	SS		7-11 7-13	20.5			70.5 72.0	673.3 671.8	
37	SS		10-13 31-18	13.9 13.5	1.5*				Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
38	SS		25-23 26-25	18.2					(Layers of clayey fine SAND, 74.0 - 74.5 and 78.0 - 76.5) (SC)
39	SS		12-17 19-24	14.1	1.75*				
40	SS		16-35 33-33	13.5 12.6	2.0* 4.25*				

DISTANCE BELOW SURFACE IN FEET

40 45 50 55 60 65 70 75 80

TESTING SERVICE CORPORATION

DRILL RIG NO 91

BORING LOG CONTINUED

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-35

BORING EB-10 Cont. DATE STARTED 3-31-86 DATE COMPLETED 3-31-86 JOB 77.459

ELEVATIONS

GROUND SURFACE 743.8

END OF BORING 633.8

WATER TABLE

AT END OF BORING

24 HOURS WELLS INSTALLED

WHILE DRILLING -7.5 feet

SHEET 3 of 3

SAMPLE NO	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
41	SS		20-32 38-50	13.5	3.0*				Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
42	SS		21-36 47-43	19.4	2.75*				
43	SS		10-19 26-28	23.0	2.25*				
44	SS		14-26 27-36	15.7	2.5*				
45	SS		13-21 33-44	15.2	2.5*				
46	SS		32-58 50/5"	18.4	1.5*				
47	SS		20-34 36-55	22.2	4.25*				
48	SS		17-36 50/5"	15.7 18.7	4.25*		95.0	648.8	
49	SS		61 50/6"						Layers of gray SILT, very silty CL and sandy SILT, wet (ML-CL-SM) Sand & gravel seams
50	SS		42-23 30-53	10.7 10.9	4.5+* 4.5+*		98.5 99.5	645.3 644.3	Hard gray silty CLAY, little sand, trace gravel, moist (CL)
51	SS		31-31 31-37	9.7 17.6			101.5 102.0	642.3 641.8	Very dense gray clayey SILT, moist to wet (ML-CL) Very tough gray very silty CLAY, little sand, trace gravel, moist (CL)
52	SS		20-74 50/3"	13.6			104.0	639.8	Very dense gray SILT, little sand, moist (ML)
53	SS		46- 69						Very dense gray silty SAND, trace gravel, wet (SM) fi-co Sand & Gravel
54	SS		100/6"						
55	SS		63-69 50/4"				109.0 109.5	634.8 633.3	Very dense gray SILT, trace clay, moist (ML)
			End of Boring at -110.0 feet						Grey silty clay (Till) fr. Sa & gvl.

*Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

DISTANCE BELOW SURFACE IN FEET

80 85 90 95 100 105 110 115 120

TESTING SERVICE CORPORATION

DRILL RIG NO 91

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING EB-105R DATE STARTED 10-21-86 DATE COMPLETED 10-21-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 743.7

END OF BORING 711.7

LOCATION: 11392.9N
13294.6E

WATER TABLE

AT END OF BORING

24 HOURS PIEZOMETER INSTALLED

WHILE DRILLING -14.0 Feet

SHEET 1 OF 2

DISTANCE BELOW SURFACE IN FEET	LENGTH & RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	q_u	γ_{dry}	DEPTH	ELEV.	SOIL DESCRIPTIONS
0										
5										
10										NO SAMPLES TAKEN FROM 0' TO 20.0'
15										
20		A 1B C/D	SS	26	17.3 -- --	2.0* -- --		20.0	723.7	
		A 2B C/D	SS	22	18.0 -- --	1.5* -- --				Tough to hard gray silty CLAY, trace sand, moist (CL)
25		A 3B C	SS	27	17.7 -- --	2.0* -- --				
		A 4B** C	SS	27	22.3 -- --	-- -- --				
		A 5B C/D	SS	37	17.3 -- --	4.0* -- --				
30		A 6B C/D	SS	34	17.3 17.2 --	3.0* 3.0* --				
35										End of Boring at -32.0 Feet ** Driving on piece of gravel; Sample disturbed
40										* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

TESTING SERVICE CORPORATION

DRILL RIG NO. 103

SEE SHEET 2 FOR NOTES

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SCHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING EB-10SR DATE STARTED 10-21-86 DATE COMPLETED 10-21-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 743.7

END OF BORING 711.7

LOCATION: 11392.9N
13294.6E

WATER TABLE

AT END OF BORING

24 HOURS PIEZOMETER INSTALLED

WHILE DRILLING -14.0 Feet

SHEET 2 OF 3

LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	%DRY DENSITY	DEPTH	ELEV.	SOIL DESCRIPTIONS
									PIEZOMETER INSTALLATION NOTE: 2" PVC CONST.
									1). Bore hole made using 3¼" I.D. hollowstem auger
									2). Bottom of screen at 32'
									3). Top of screen at 27'
									4). Gravel pack from 32' to 25'
									5). Bentonite pellets from 25' to 21'
									6). Volclay Grout from 21' to surface
									7). Steel protector pipe concreted into place over riser pipe

0
5
10
1.
20
25
30
35
10

TESTING SERVICE CORPORATION

DRILL RIG NO.

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-36

BORING EB-11 DATE STARTED 3-19-86 DATE COMPLETED 3-19-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 740.4

END OF BORING 665.4

WATER TABLE

AT END OF BORING -20.0 Feet

24 HOURS - 3.0 Feet

WHILE DRILLING -15.0 Feet

SHEET 1 OF 2

SAMPLE NO.	SAMPLE TYPE	LENGTH & RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS		2-7 3-6	40.9 23.9	3.25*		1'2"	739.2	Black and dark brown clayey TOPSOIL, very moist (OL)
2	SS		6-7 7-10	22.4	4.5+*				Tough to hard brown silty CLAY, little sand, trace gravel, moist (CL)
3	SS		7-7 7-12	26.3 20.9	1.5* 3.25*		6.0	734.4	
4	SS		4-6 9-10	23.2 23.0	2.25* 3.25*				Very tough to tough brown and gray silty to very silty CLAY, little sand, trace gravel, moist (CL)
5	SS		4-4 4-4	20.4 22.0	1.5*				
6	SS		4-4 12-9	23.9 17.3	3.5*		10.5 11.5	729.9 728.9	Firm gray clayey SILT, little sand, trace gravel, moist (CL-ML)
7	SS		5-8 10-15	15.8 13.5	1.5* 3.75*				Very tough to tough gray silty CLAY, little sand, trace gravel, moist (CL)
8	SS		4-8 10-18	17.6 14.6	1.75*		15.0	725.4	
9	SS		5-9 11-14	16.7 15.8	3.75*		17.0	723.4	Firm gray clayey SILT, little sand, trace gravel, moist (CL-ML)
10	SS		7-9 9-13	17.0	2.25*		18.0	722.4	Firm gray SILT, moist (ML)
11	SS		5-8 11-11	16.5	1.75*				Very tough to tough gray silty CLAY, little sand, trace gravel, moist (CL)
12	SS		7-9 9-14	14.7 14.4	1.75* 3.25*		24.0	716.4	
13	SS		3-5 5-8	23.1 15.1			26.0	714.4	Firm gray clayey SILT and silty SAND, wet (ML & SM)
14	SS		5-9 12-14	17.7	2.5*				
15	SS		5-7 13-13	17.8	2.0*				
16	ST 3"			17.5		112.1			Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
17	SS		3-5 9-9	17.6	2.25*				
18	SS		5-9 12-14	20.3 17.6	2.0*				
19	SS		6-12 16-16	18.7 18.2	1.25* 2.0*				
20	SS		7-9 12-14	18.2	1.75*				

DISTANCE BELOW SURFACE IN FEET

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-37

BORING EB -11 Cont. DATE STARTED 3-19-86 DATE COMPLETED 3-19-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 740.4

END OF BORING 665.4

WATER TABLE

AT END OF BORING -70.0 Feet

24 HOURS - 3.0 Feet

WHILE DRILLING -15.0 Feet

SHEET 2 OF 2

DISTANCE BELOW SURFACE IN FEET	LENGTH RECOVERY	SAMPLE NO	SAMPLE TYPE	N	WC	q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40		21	SS	6-10 16-12	18.4 21.6	2.0*		41.0	699.4	Tough gray silty CLAY, little sand, moist (CL)
		22	SS	36-26 23-19	20.2	1.0*		44.0	696.4	Layers of gray silty CLAY, clayey SILT and SILT, moist (CL & ML)
45		23	SS	16-25 30-32	21.8					Dense gray clayey SILT, trace sand, very moist to wet (CL-ML)
		24	SS	16-13 15-14	16.4 20.2			47.0	693.4	
		25	SS	16-12 12-9	18.3 15.4					Firm gray clayey SILT, very moist (CL-ML)
50		26	SS	6-10 13-11	16.7 13.5	1.5*		50.5 52.0	689.9 688.1	
		27	SS	6-11 15-18	13.4 13.2	1.25* 2.0*				Tough to very tough gray clayey SILT, little sand, trace gravel, moist (CL-ML)
55		28	SS	12-16 22-30	13.3 14.5	1.25* 2.5*		56.0	684.4	Clay w/silt seams
		29	SS	10-14 22-28	13.2 14.8	2.75*				Grey Silty CLAY, tr. Sa & grvl (Till)
		30	SS	16-23 27-43	14.4 15.1	2.75* 4.0*				
60		31	ST 3"		20.2	3.5*		60.0	680.4	
		32	SS	7-9 11-12	18.2 13.8	2.0*				
65		33	SS	8-12 22-23	13.9	1.5*				Very tough to tough gray silty CLAY, little sand, trace gravel, moist (CL)
		34	SS	7-10 14-20	14.8	1.5*				(Occasional silt seams)
		35	SS	6-10 13-15	14.5	1.5*				Slightly Sandy to 720'
70		36	SS	10-10 15-20	14.4 12.5	1.0* 2.0*			668.4	
		37	SS	26-23 30-35	15.6 14.6					
		38	SS	9-12	16.6 18.0	3.0* 3.5*				
75				End of Boring at -75.0 Feet						*Approximate unconfined compression strength based on measurements th a calibrated pocket penetrometer.
80										

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION C-38

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-12 DATE STARTED 3-20-86 DATE COMPLETED 3-21-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 740.4

END OF BORING 665.4

WATER TABLE

AT END OF BORING —

24 HOURS - 4.5 Feet

WHILE DRILLING -10.0 Feet

SHEET 1 OF 2

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0'6"	739.4	Dark brown clayey TOPSOIL (OL)
1	SS		4-4 4-6	40.4 21.6	1.25*				Tough to very tough brown silty CLAY, little sand, trace gravel, moist (CL)
2	SS		5-5 8-8	25.3	3.25*				
3	SS		3-3 4-5	31.3	1.25*				Closed gray joint traces observed between 2 to 6 feet
							6.0	734.4	
4	SS		4-4 6-7	24.7	1.25*				Tough to very tough brown very silty CLAY, little sand, trace gravel, moist (CL)
5	SS		5-5 5-5	22.0 21.3	2.5*		9.0	731.4	
							10.0	730.4	Firm gray clayey SILT, moist (CL-ML)
6	ST 3"			18.4		111.5			
7	SS		4-4 6-8	19.1 19.3					Layers of very silty CLAY, silty SAND, clayey SILT and silty CLAY (CL-ML-SM)
8	SS		8-9 10-11	15.3 16.5	4.0*				
							16.5	723.9	
9	SS		8-14 16-25	15.6	3.25*				
10	SS		7-14 20-30	16.7	2.0*				
11	SS		10-14 20-30	15.8	4.5+*				Hard to tough gray silty CLAY, little sand, trace gravel, moist (CL)
12	SS		10-18 28-30	15.8	4.5+*				
13	SS		10-14 22-25	15.7	3.75*				
14	SS		9-11 17-18	17.1	2.75*				
15	SS		8-10 13-15	16.5	2.0*				
16	SS		7-11 14-17	16.3	1.75*				
17	SS		6-8 12-15	17.6	1.25*				
18	SS		10-12 16-17	18.3 15.2	1.75*				
19	SS		10-10 23-22	14.9 15.4	1.0* 1.5*		37.5	702.5	
20	SS		7-6 8-10	16.2 14.1					Layers of silty CLAY, silty SAND, clayey SILT and SILT (CL-ML-SM-ML)

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-39

BORING EB-12 Cont. DATE STARTED 3-20-86 DATE COMPLETED 3-21-86 JOB 27,455

ELEVATIONS

GROUND SURFACE 740.4

END OF BORING 665.4

WATER TABLE

AT END OF BORING

24 HOURS - 4.5 Feet

WHILE DRILLING -10.0 Feet

SHEET 2 OF 2

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
21	SS		6-6 10-14	17.8 14.3	1.75*				Tough gray silty to very silty CLAY, little sand, trace gravel, moist (CL)
22	SS		6-8 12-18	14.0	1.25*				
23	ST 3"			19.5	1.75*	110.5			
							46.0	694.4	
24	SS		6-13 17-20	18.5 17.3	1.0*				very si clay Firm gray clayey SILT, little sand, wet (CL-ML) till fabric
25	SS		7-13 14-13	17.8					
26	SS		8-11 15-16	15.9 15.3	2.0* 3.0*				
27	SS		7-10 15-20	18.3 14.7	2.75* 2.75*		53.0	687.4	
28	SS		10-11 15-22	17.2	1.5*				Tough to hard gray silty CLAY, little to some sand, trace gravel, moist to wet (CL)
29	SS		12-13 24-30	16.9 19.2	1.5* 2.0*				
30	SS		17-21 25-35	9.3					
31	SS		11-16 19-22	14.4	2.0*				
32	SS		6-10 12-15	14.0	1.75*				
33	SS		9-13 26-30	13.4	2.5*				
34	SS		13-21 37-60	11.8	4.5+*				
35	SS		9-21 37-38	15.0 16.0	2.0* 4.0*				
36	SS		7-13 31-30	16.1 16.7	2.25*				(3" Silt seam at 71 1/4')
							72.0	668.4	
37	SS		11-25 26-26	20.7 19.1	3.25* 2.5*				Very tough gray silty CLAY, sandy silt layer, some sand, trace gravel, moist (CL)
38	SS		13-13	20.8	3.25*				
			End of Boring at -75.0 Feet						

*Approximate unconfined compression strength based on measurements a calibrated pocket penetrometer.

TESTING SERVICE CORPORATION

DRILL RIG NO ATV 53

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-40

BORING EB-13 DATE STARTED 3-26-86 DATE COMPLETED 3-26-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 731.0

END OF BORING 656.0

WATER TABLE

AT END OF BORING — 50.0 Feet

24 HOURS - 0.5 Feet

WHILE DRILLING -28.0 Feet

SHEET 1 OF 7

DISTANCE BELOW SURFACE, FEET

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0		
1	SS		2-6 6-7	35.1 25.1	2.5*		1.5	729.5	Black to dark brown clayey TOPSOIL (OL
2	SS		2-3 3-7	20.8	1.75*				Tough to hard brown and gray silty CLAY, little sand, trace gravel, moist (CL)
3	SS		6-8 11-17	19.2	4.25*				
4	SS		6-11 13-17	14.8	3.5*				
							8.0	723.0	
5	SS		3-11 13-20	13.3	2.0*				Very tough gray silty CLAY, little sand, trace gravel, moist (CL)
6	SS		5-10 10-15	12.9	3.5*				
							12.0	719.0	
7	SS		9-11 13-17	14.6 14.9	3.5*				Layers of gray silty CLAY, gray SILT and gray clayey SILT, moist (CL-ML)
8	SS		5-9 13-20	17.5	2.0*		15.0	716.0	
9	SS		9-11 13-20	14.7	3.25*				Very tough to tough gray silty CLAY, little sand, trace gravel, moist (CL)
10	SS		6-12 14-16	15.7	2.5*				(Occasional silt seams)
11	ST 3"			16.2	2.75*	113.2			
12	SS		7-11 16-22	17.1	2.25*				
13	SS		9-9 12-15	16.8	2.25*				
14	SS		5-8 11-18	18.2	1.5*				
							26.0	703.0	
15	SS		4-6 6-4	13.7 17.4	1.25*				Layers of gray silty CLAY, silty SAND and gray SILT, wet (CL-SM-ML)
							30.0	701.0	
16	SS		2-3 3-7	18.7 16.1					Tough gray silty CLAY, little sand, trace gravel, moist (CL)
17	SS		6-8 8-8	15.6 16.7	1.5* 1.5*				
18	ST 3"			22.4			35.0	696.0	
							36.0	695.0	Tough gray very silty CLAY, silt seams, little sand, trace gravel, moist (CL-ML)
19	SS		3-10	14.5 14.1	1.0* 1.75*				
20	SS		5-8 9-14	14.9	1.5*				Tough gray silty CLAY, little sa trace gravel, moist (CL)

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS C-41

BORING EB-13 Cont. DATE STARTED 3-26-86 DATE COMPLETED 3-26-86 JOB 23,459

ELEVATIONS

GROUND SURFACE 731.0

END OF BORING 656.0

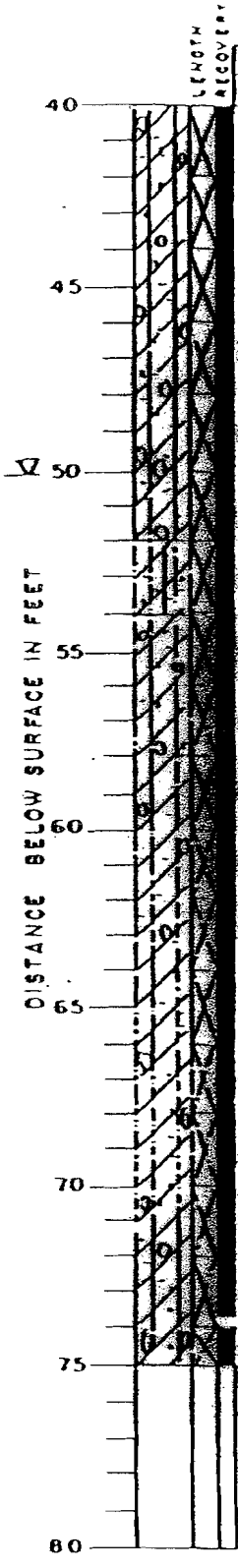
WATER TABLE

AT END OF BORING -50.0 Feet

24 HOURS - 0.5 Feet

WHILE DRILLING -28.0 Feet

SHEET 2 of 7



SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
21	SS		8-7 8-10	15.5	2.5*				
22	SS		8-14 26-30	17.7 13.9	2.5*				Very tough gray silty CLAY, trace sand and gravel, moist (CL)
23	ST 3"			15.5	4.0*	118.9			
24	SS		10-17 19-21	17.2 16.8	3.75* 2.0*				
25	SS		7-10 12-18	21.4	2.0*				
26	SS		9-13 21-30	18.6	2.0*				
							52.0	679.0	
27	SS		11-7 13-20	17.7 13.5	3.0*				Layers of silty CLAY, silty SAND and clayey SILT, very moist (CL-SM-ML)
							54.0	677.0	
28	SS		10-13 15-20	14.9	3.25*				
29	SS		6-8 12-14	14.3	1.0*				
30	SS		10-15 19-27	15.5	1.0*				
31	SS		10-21 27-35	15.8	4.0*				Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
32	SS		16-22 27-40	16.3	1.5*				
33	SS		12-14 18-21	16.6	3.75*				
34	SS		10-12 16-21	23.5	1.5*				
35	SS		12-16 21-19	16.4	2.75*				
36	SS		9-13 17-25	24.2 14.3	2.75* 3.25*				
37	SS		20-26 36-50	19.8	1.0*				
38	SS		19-26	16.7	2.25*				
			End of Boring at -75.0 feet						

*-Approximate unconfined compression strength based on measurement with a calibrated pocket penetrometer

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING 89-14 DATE STARTED 3-28-86 DATE COMPLETED 3-29-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 740.9

END OF BORING 665.9

WATER TABLE

AT END OF BORING -10.0 Feet

24 HOURS - 3.7 Feet

WHILE DRILLING -10.0 Feet

SHEET 1 OF 2

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS		2-5 5-5	24.9 23.6	4.0*		1.0	739.9	Black clayey TOPSOIL (OL)
2	SS		2-6 6-10	22.7 22.0	2.25* 3.25*				Very tough brown to brown and gray silty CLAY, little sand, trace gravel, moist (CL)
3	SS		2-5 12-15	22.8	3.5*				
4	SS		5-8 12-16	24.1	3.75*				
5	SS		7-13 12-14	18.5 16.0	3.75* 4.0*		8.0	732.9	Very tough gray silty CLAY, layer very silty CLAY and sandy SILT, moist (CL-ML)
6	SS		8-8 10-19	10.9 17.3	3.0* 4.0*		11.0	729.9	
7	SS		9-9 12-19	15.6	3.75*				Very tough gray silty CLAY, little sand, trace gravel, moist (CL)
8	SS		7-10 10-20	15.9	3.75*				
9	SS		8-11 17-24	16.4 16.3	3.75* 3.5*		17.5	723.4	
10	SS		8-10 9-9	16.1 14.2	3.75*				Very tough gray silty CLAY, layers gray SILT and sandy SILT, moist (CL-ML)
11	ST 2"			17.1	3.5*	113.5	20.0	720.9	
12	SS		5-10 11-24	16.4	2.75*				
13	SS		5-8 12-16	18.1	2.25*				Very tough to tough gray silty CLAY, little sand, trace gravel, moist (CL)
14	SS		5-8 13-15	15.9	2.5*				
15	SS		5-6 8-12	18.0	1.5*				
16	ST 3"			17.6	3.5*	114.3			
17	SS		6-8 8-13	18.5	1.5*				
18	SS		8-11 15-20	18.6 16.0	1.0* 3.5*				
19	SS		10-11 17-19	18.0	1.75*				
20	SS		8-8 16-18	15.9	2.25*				

DISTANCE BELOW SURFACE IN FEET

0 5 10 20 25 30 35 40

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING 53-14 Cont. DATE STARTED 3-29-96 DATE COMPLETED 3-29-96 JOB 22.455

ELEVATIONS

GROUND SURFACE 740.9

END OF BORING 665.9

WATER TABLE

AT END OF BORING -10.0 Feet

24 HOURS - 3.7 Feet

WHILE DRILLING -10.0 Feet

SHEET 2 OF 2

SAMPLE NO	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ DRY	DEPTH	ELEV	SOIL DESCRIPTIONS
21	ST 3"			17.4	2.0*	113.8			
22	SS		9-11 13-20	17.3	2.25*				Very tough to tough gray silty CLAY, little sand, trace gravel, moist (CL)
23	SS		5-11 12-19	17.5	2.25*				
24	SS		9-16 21-22	13.6	1.75*				
25	SS		7-11 17-28	14.2	2.0*				
							50.0	690.9	
26	SS		25-25 50/3"	9.0					Dense gray sandy SILT, little clay, damp (ML)
27	SS		8-32 40-50	12.9	4.5+*		53.0	687.9	
28	SS		14-16 30-40	12.1 14.7	4.5+* 4.0*				Hard to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
29	SS		9-14 23-25	19.7 19.7	2.0* 2.25*				
							58.0	682.9	
30	SS		11-13 15-25	13.8 11.8	2.25*				Layers of clayey SILT and silty CLAY, moist (CL-ML)
31	SS		9-13 26-25	14.5 13.6					Till Fabric (clayey, fi sandy silt)
							62.0	678.9	
32	SS		5-7 13-14	14.6 12.3					Firm gray clayey SILT, little sand, moist (ML)
							64.0	676.9	
33	SS		8-10 14-30	13.1	2.25*				
							66.0	674.9	
34	SS		10-16 29-34	13.2	2.25*				Tough hard gray silty and very silty CLAY, little sand, trace gravel, moist (CL)
35	SS		11-24 36-50	9.2	1.5*				
36	SS		13-21 46-43	13.2	3.75*				
37	SS		16-29 40-50	11.2 16.3	4.5+* 3.75*				
38	SS		10-20	13.8	3.0*				
			End of Boring at -75.0 Feet						

*Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.

DISTANCE BELOW SURFACE IN FEET

40 45 50 55 60 65 70 75 80

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-15 DATE STARTED 3-21-86 DATE COMPLETED 3-21-86 JOB 22,455

ELEVATIONS

GROUND SURFACE 733.1

END OF BORING 658.1

WATER TABLE

AT END OF BORING -36.0 Feet

24 HOURS - 0.5 Feet

WHILE DRILLING AT SURFACE

SHEET 1 OF 2

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC.	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS		1-2 2-2	22.6 23.6	1.25*		1.5	731.6	Black to dark brown clayey TOPSOIL (OL)
2	SS		2-2 9-5	20.7	2.25*				Tough to very tough brown and gray silty CLAY, little sand, trace gravel, moist (CL)
3	SS		2-6 8-11	19.7	3.5*		6.0	727.1	
4	SS		6-17 15-15	17.7	4.5+*				
5	ST			14.7	4.0*	120.5			
6	SS		6-12 15-17	15.9					
7	SS		6-12 13-17	16.5	4.25*				Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
8	SS		9-9 15-14	22.0 16.3	1.0* 2.25*				
9	SS		6-10 13-13	21.1 17.2	2.5*				
10	SS		3-5 8-9	18.8	1.5*				
11	SS		3-5 5-7	20.7	1.25*				
12	SS		3-6 5-7	20.6 18.6	1.75*				
13	ST	3"		14.8	1.25*	120.5			
14	SS		3-7 11-11	17.6 16.3	1.75*				
15	SS		10-5Z 15-14	17.0 14.2	3.5*				
16	SS		4-6 7-9	14.0 12.7	2.0* 3.5*				
17	SS		4-5 7-9	15.2					
18	SS		4-6 9-14	15.4 15.4	1.5*				
19	SS		6-16 31-27	15.6 14.3	1.0* 3.75*				
20	SS		8-24 30-37	14.4 13.9	4.5+*				

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-15 Cont. DATE STARTED 3-21-86 DATE COMPLETED 3-21-86 JOB 22,450

ELEVATIONS

GROUND SURFACE 733.1

END OF BORING 658.1

WATER TABLE

AT END OF BORING -36.0 Feet

24 HOURS - 0.5 Feet

WHILE DRILLING AT SURFACE

SHEET 2 OF 2

DISTANCE BELOW SURFACE IN FEET	LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Q_U	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40		21	SS	6-24 31-50	14.9	4.5+*				
		22	SS	25-27 30-34	16.0	2.0*				
45		23	SS	6-10 12-21	16.4	2.75*				Tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
		24	SS	6-10 12-15	20.6	1.5*				
		25	SS	9-11 12-11	17.4	3.5*				
50		26	SS	6-10 10-14	13.6	2.0*				
		27	SS	5-8 9-13	16.8	1.0*				
		28	SS	4-8 10-18	10.7 18.3	4.0*				
55		29	SS	9-14 21-25	17.1	3.25*				
		30	SS	12-15 23-24	17.5 17.1	1.5* 2.5*				
		31	SS	8-10 14-13	19.6	2.25*				
60		32	SS	12-13 18-18	20.0 22.0	1.5* 3.25*				
		33	SS	10-15 27-30	15.6	4.0*				
		34	SS	18-21 27-35	16.2 13.8	2.25* 4.5+*		67.0	666.1	
		35	SS	18-21 24-33	17.2 14.2	4.5+*				Layers of gray silty CLAY and gray silty SAND, moist (CL & SM)
70		36	SS	10-15 20-30	14.5 14.4	2.75* 4.0*		70.0	663.1	
		37	SS	17-38 30-42	14.3	4.5+*				Very tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
		38	SS	8-13	17.6	3.0*				
75				End of Boring at -75.0 Feet						
80										

*-Approximate unconfined compress strength based on measurements a calibrated pocket penetrometer.

TESTING SERVICE CORPORATION

DRILL RIG NO ATV 53

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-16 DATE STARTED 3-25-86 DATE COMPLETED 3-26-86 JOB 22,459

ELEVATIONS

GROUND SURFACE 737.8

END OF BORING 662.8

WATER TABLE

AT END OF BORING -31.0 Feet

24 HOURS -21.5 Feet

WHILE DRILLING -30.0 Feet

SHEET 1 OF 2

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0.5	737.3	Black clayey TOPSOIL (OL)
1	SS		2-4 4-3	22.8 21.9	1.75* 1.75*				
2	SS		2-4 5-5	23.9 18.6	2.5*				Tough to hard brown and gray silty CLAY, little sand, trace gravel, moist (CL)
3	SS		4-8 8-16	18.5	2.75*				
4	ST 3"			16.2	4.5+*	117.8			Closed gray joint traces observed between 8 to 10 feet
5	SS		10-15 27-28	18.6	4.5+*				
6	SS		10-16 25-25	15.5	4.5+*				
							12.0	725.8	
7	SS		13-16 20-27	14.8 14.5	4.5+* 4.5+*				Hard to tough gray silty CLAY, some sand, trace gravel, moist (CL)
8	SS		12-16 18-25	13.7	4.5+*				
9	SS		6-12 13-20	13.8	4.5+*				
10	SS		5-7 9-10	16.3	1.75*				
11	SS		3-4 3-10	20.3 19.6	1.0* 1.75*				
12	SS		5-12 13-14	16.5	4.0*				
13	SS		6-12 12-20	14.7	4.5+*				
14	SS		6-11 13-20	12.0					
15	SS		12-13 15-20	15.1 13.2	3.0* 3.5*				
							30.0	707.8	
16	SS		12-13 15-18	14.0 14.6	3.25*		30.5	707.3	Firm gray fine SAND, some silt, wet (SP)
17	SS		12-12 16-17	14.5 14.4	2.25* 2.25*				Very tough to tough gray silty CLAY, little sand, trace gravel, moist (CL)
18	SS		6-9 12-13	15.4	2.25*				
19	SS		5-6 7-9	17.5	1.0*				
20	SS		4-6 6-9	17.9 13.1	1.0*				
							39.0	698.8	Firm gray clayey SILT, some sand, moist (CL-ML)

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV 53

BORING LOG CONTINUED

PROJECT BFI ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 133 MELROSE, ELMHURST, ILLINOIS

BORING EB-16 Cont. DATE STARTED 3-25-86 DATE COMPLETED 3-26-86 JOB 22,

ELEVATIONS

GROUND SURFACE 737.3

END OF BORING 662.3

WATER TABLE

AT END OF BORING -31.0 Feet

24 HOURS -21.5 Feet

WHILE DRILLING -30.0 Feet

SHEET 2 OF 2

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_U	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
21	SS		4-6 7-25	21.0 12.2					Layers of gray very silty CLAY, silty CLAY, silty SAND and sandy SILT, (CL-ML-SM)
22	SS		10-18 16-15	19.5 14.2			43.0	694.3	
23	ST 3"			15.4	3.5*	119.1			
24	SS		10-16 18-25	16.5 15.2	1.5* 3.5*				
25	SS		6-11 13-16	16.2	3.25*				Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
26	SS		9-13 15-16	19.1	1.5*				
27	SS		6-12 12-14	10.1 18.0	2.75*				
28	SS		10-22 27-30	17.7 14.4	4.5+*				
29	SS		13-19 25-29	23.0 21.1	1.0* 3.25*		57.5	680.3	
30	SS		10-19 21-25	15.9 13.1	2.0* 3.5*				Olive grey Fairly silty, Slightly Fine sandy clay Till
31	SS		6-11 15-19	14.7 13.1	1.25* 2.5*				
32	SS		8-35 46-50	16.2 13.7	4.5+*		60.0	677.8	
33	SS		17-32 46-60	16.7	3.0*				
34	SS		17-32 34-45	15.9 16.6	1.25* 4.5+*				
35	SS		10-17 24-20	17.3	2.5*				
36	SS		10-13 17-25	22.4	5.25*				
37	SS		17-28 30-50	20.9 20.9	2.5* 3.0*				
38	SS		13-26	12.2	3.75*				
			End of Boring at -75.0 Feet						

DISTANCE BELOW SURFACE IN FEET

40 45 50 55 60 65 70 75 80

*-Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.

TESTING SERVICE CORPORATION

DRILL RIG NO. ATV S3

WEHRAN ENGINEERING
CONSULTING ENGINEERS

B-101

BORING NO. [illegible]
SHEET NO. 1 OF [illegible]
JOB NO. [illegible]
ELEVATION 732.5
DATE STARTED [illegible]
DATE FINISHED [illegible]
DRILLER [illegible]
INSPECTOR [illegible]

PROJECT: [illegible] Hot Water Measurement Fac
CLIENT: Cedar Intermediate
CONTRACTOR: Wehran Engineering Madison, WI

WATER DATE	TIME	WATER EL.	SCREEN

	CAS	SAMP	CORE	TUBE
TYPE	[illegible]			[illegible]
DIA.	4"	2"		[illegible]
WT.	300#	140#		[illegible]
FALL	30"	30"		

WELL CONSTRUCTION	DEPTH (FEET)	SAMPLE NO.	SAMPLE TYPE	SAMPLE BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Grout Cement 1½" PVC Casing	0	1	SS	3-12 / 17-18	WADSWORTH MEMBER (WEATHERED SAUDT TILL) Medium to SAND and SILT, some to little Gravel, mottled	
		2	SS	14-1 / 26-32	@ 4', becomes poorly stratified	
	5	3	SS	6-6 / 8-8	(WEATHERED CLAYEY TILL) 6'	UC = 2.0
		4	SS	8-8 / 12-20	Medium brown Clayey SILT to SILT & CLAY, some f Sand, trace f Gravel, frozen joints	UC = 2.0
		5	SS	10-14 / 10-20		
	10	6	SS	15-17 / 16-16		
		7	SS	3-5 / 5-12	@ 12', becomes med. gray SILT & CLAY, little to some f Sand, little f Gravel, frozen joints, becomes firm to stiff	UC = 1.5
	15	8	SS	3-4 / 7-10		
		UD-3 1	ST	push	(CLAYEY TILL) ±17'	1168
		9	SS	3-5 / 8-10		UC 1.3
	20	10	SS	5-[illegible] / [illegible]	@ 18', grading to gray CLAY & SILT, little f Sand, trace to little f Gravel, no apparent joints	UC = 1.7
		11	SS	5-6 / 7-10		UC = 1.5
		12	SS	6-9 / 11-12		UC = 1.2
	25	13	SS	17-12 / 10-18		UC = 1.5
		14	SS	9-10 / 15-20		UC = 1.5
	30	15	SS	9-15 / 15-20		UC = 1.3
		16	SS	9-15 / 20-24		UC = 1.5
		17	SS	7-13 / 14-22		UC = 1.5
	35	18	SS	13-20 / 33-24		
		UD-3 2	ST	push / no recovery		
	40	19	SS	10-12 / 14-18		
		20	SS	8-12 / 15-22		
		UD-3 3	ST	push / 1.5 recovery		
	45					

WESTERN ENGINEERING CONSULTING ENGINEERS

B-102

BORING NO. E-73-32

PROJECT: I-[illegible] Hwy Widening Management Co.

SHEET NO. 2 OF 3

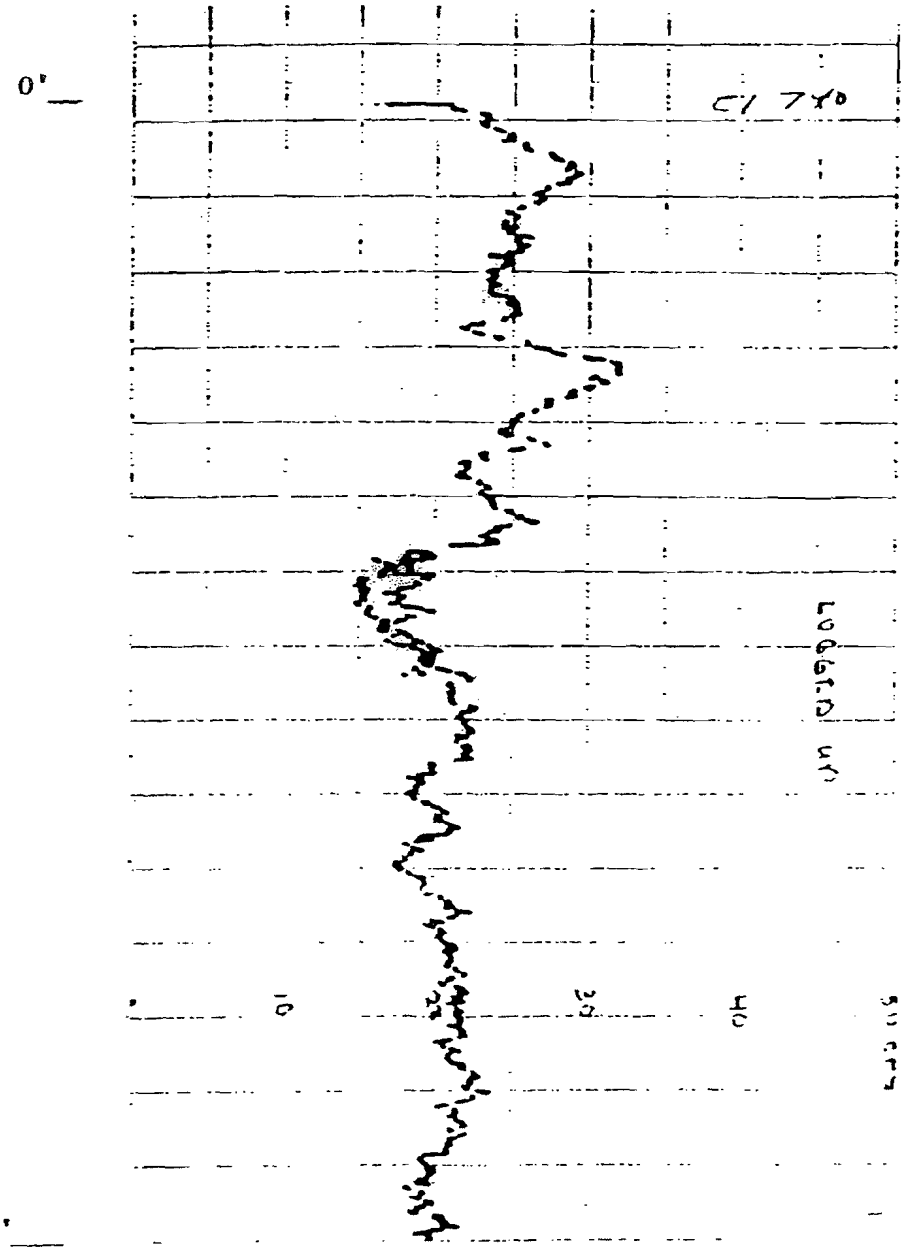
CLIENT: Cecon Interpool

JOB NO. 02353.12

WELL CONSTRUCTION	DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
Sand Backfill / Bentonite Seal / 1½" PVC Casing / Sand Pack	85					
		21	SS	0-10 [illegible]	Med. gray CLAY & SILT [illegible] Sand, some f Gravel	UC: 2.5
		22	SS	[illegible]		UC 2.5
	90	23	SS	[illegible]		UC: 2.5
		24	SS	[illegible] 27-20	679.8 54'	UC: 2.5
					(SANDY TILL)	
	95	25	SS	0-15 [illegible]	Gray SILT, some (+) f. Sand, poorly stratified	
		26	SS	17-20 23-26	@ 56', grading to CLAY & SILT and to some f SAND, little f Gravel, non-stratified	UC: 3.0
		27	SS	5-15 20-32		UC: 3.0
	100	28	SS	23-40 50-50	669.8	UC: 2.5
		29	SS	[illegible]	66'	UC 2.5
					(CLAYEY TILL)	
	105	30	SS	[illegible] 33-50	Gray CLAY & SILT, some to little f Sand, some to little f Gravel	UC: 3.5
		31	SS	[illegible]		UC: 3.5
		32	SS	[illegible] 60/6"		UC: 3.5
	110	33	SS	[illegible] 30-50		UC: 3.3
		34	SS	18-27 30-41		
	115	35	SS	17-20 33-55		UC: 3.5
		36	SS	16-20 28-36		UC: 2.0
		37	SS	23-24 24-25		
	120	38	SS	16-25 28-54		UC: 2.2
		39	SS	24-33 35-51		UC: 2.5
	125	40	SS	17-21 26-30		UC: 3.0
		41	SS	30-40 60/3"		UC: 2.5
		42	SS	29-40 50-60/6"	@ 90', out of Sand layer	UC: 2.5
	130	43	SS	17-24 27-42	643.8	UC: 2.8
		44	SS	20-32 42-56	Drill ?	UC: 2.5
	135	45	SS	7-26 30-55		U.C: 3.0
		46	SS	25-26 [illegible]		

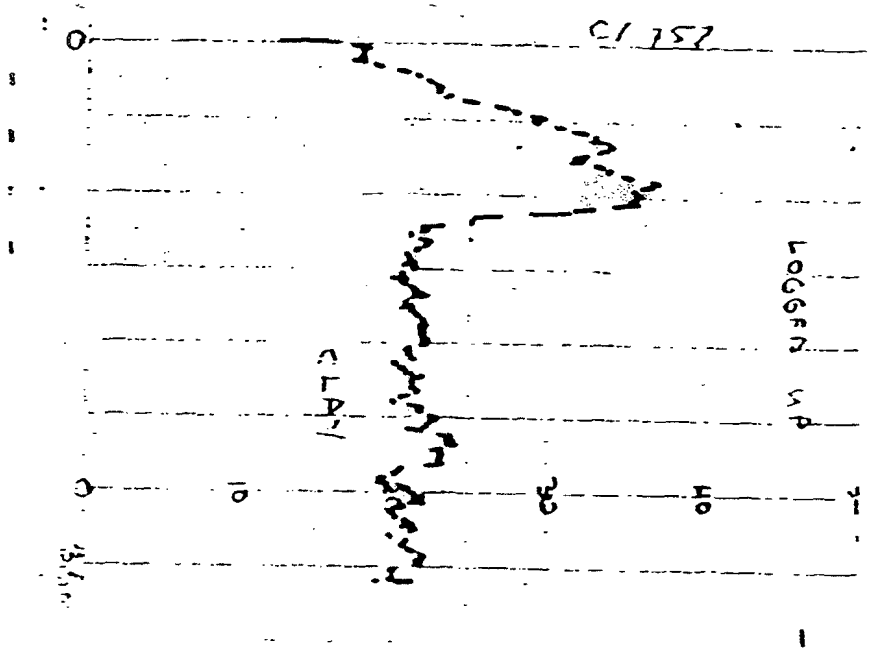
Gamma Log for G102

Depth Below
Ground Surface



Depth Below
Ground Surface

Gamma Log for G103



BORING No. 104 DATE 12/26/80

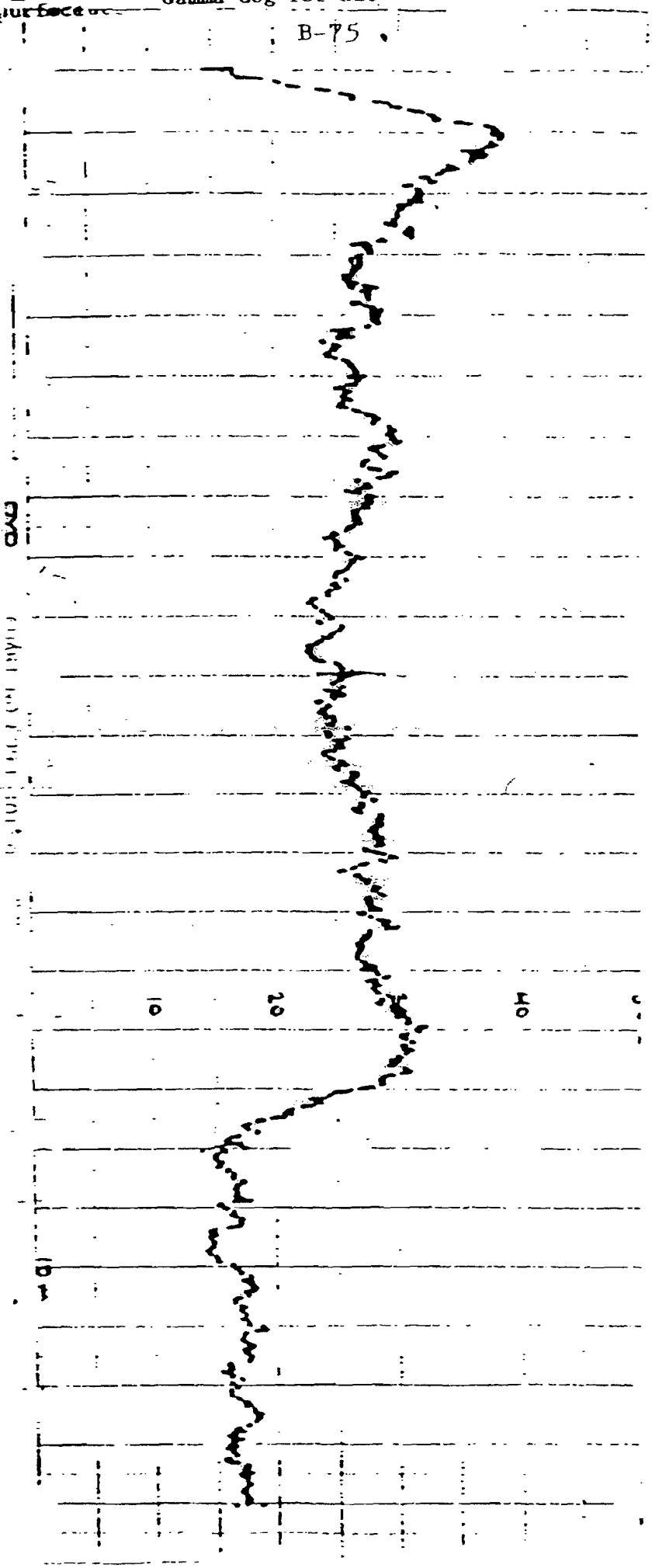
B-74 plw 7425 S"

DEPTH	SOIL DESCRIPTION	WC	UNIFIED SYMBOL
25-26.5'	Silty clay - trace sand, gravel & shale -	17.3	CL
	brownish gray		
30-31.5'	Silty clay - trace sand, gravel & shale -	16.3	CL
	brownish gray		
35-36.5'	Silty clay - trace sand, gravel & shale - gray	14.2	CL
40-41.5'	Silty clay - trace sand, gravel & shale - gray	14.3	CL
45-46'	Silty clay - trace sand - brownish gray	18.0	CL-CH
46-46.5'	Silty clay - trace sand - gray	17.7	CL
50-51.5'	Silty clay - trace sand & shale - gray	15.3	CL
55-56.5'	Silty clay - trace sand, gravel & shale - gray	17.4	CL

depth below ground surface

Gamma Log for G104

B-75



BORING No. 6/5

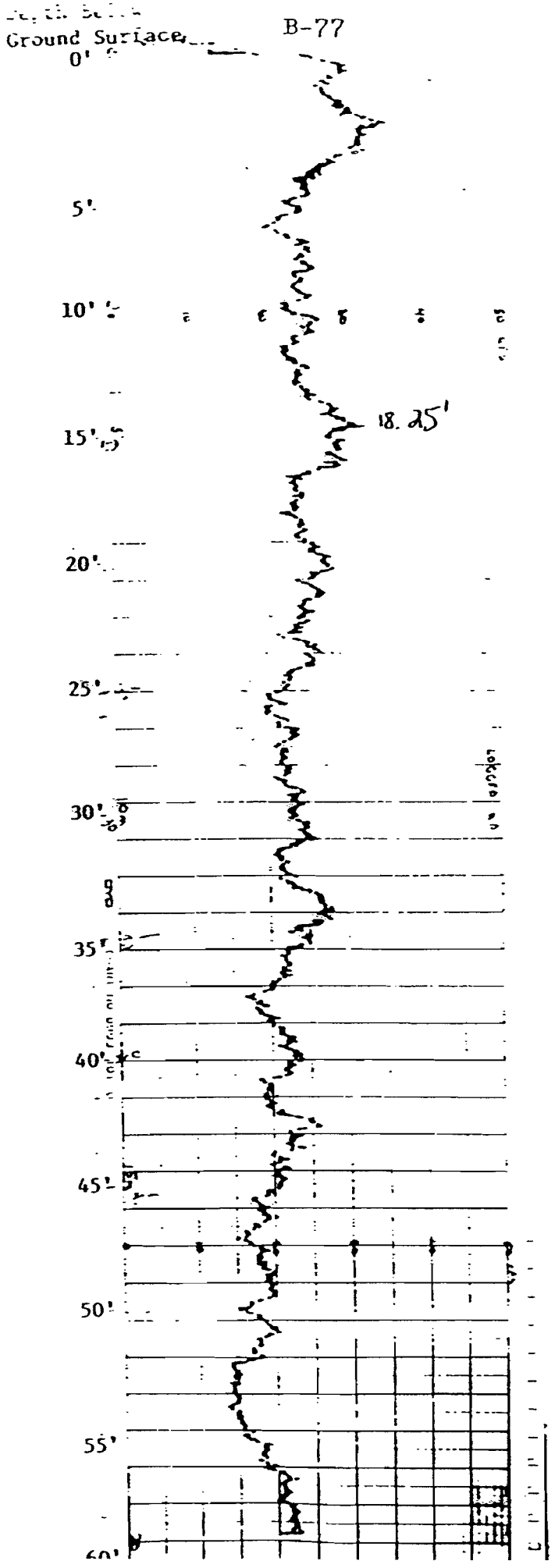
B-76 746.6

Date 12/26/80

By

.E	DEPTH	SOIL DESCRIPTION	MC	UNIFIED SYMBOL
	55-55.5'	Silty clay - trace sand & shale - gray	13.9	CL
	55-56.5'	Silty clay - trace sand & shale - gray	14.6	CL
2A	56-56.5'	Clayey silt - little sand - moist - gray	14.4	ML-CL
3	60-61.5'	Silty clay - little sand - trace shale - gray	11.3	CL

Gamma Log for G105



BORING No. G106

B-78 Elev. 750.4

DATE 12/26/80

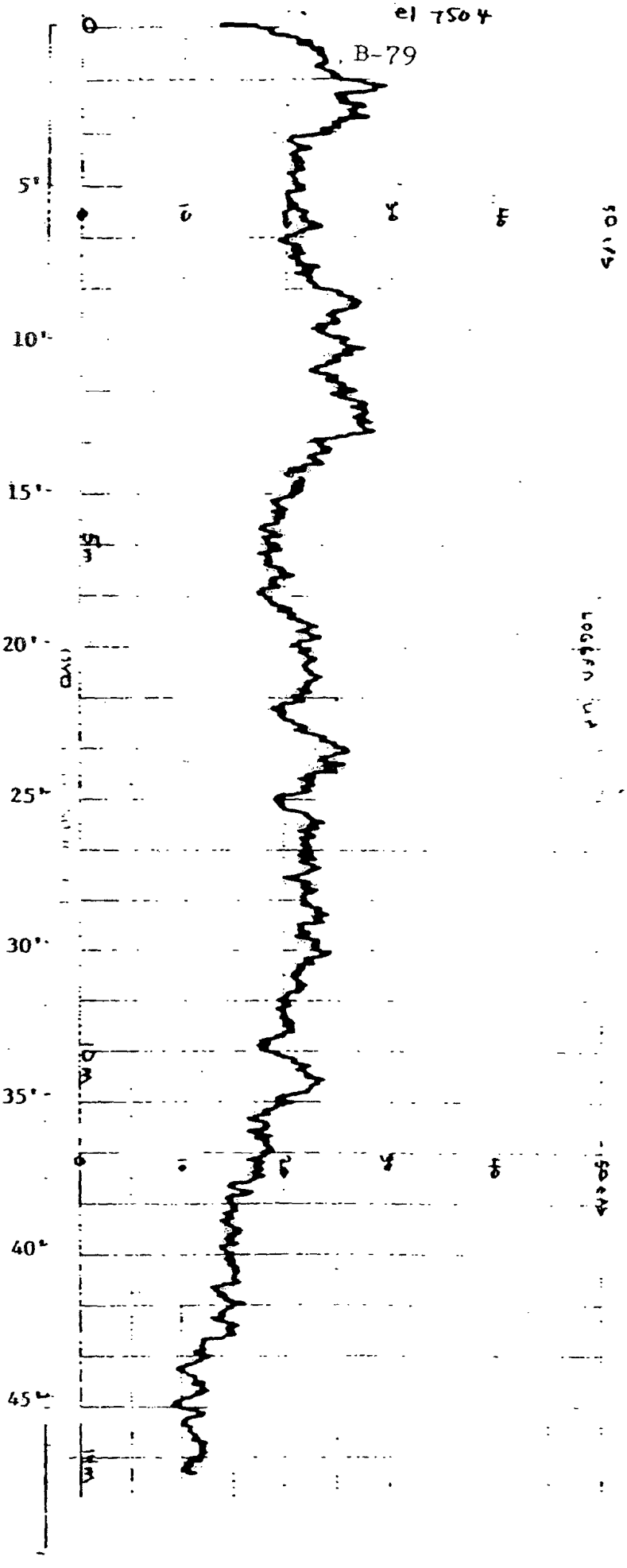
BY

DEPTH	SOIL DESCRIPTION	WC	UNIFIED SYMBOL
30-31.5'	Silty clay - trace sand, gravel & shale - gray -	15.4	CL
	pockets of silt		
35-36.5'	Silty clay - trace sand, gravel & shale -	13.9	CL
	brownish gray		
40-41.5'	Silty clay - trace sand, gravel & shale - gray	14.7	CL
45-46'	Silty very fine sand - trace clay - moist -	14.3	SM-ML
	brownish gray		

Ground Surface

el 750+

B-79



BORING # 6407

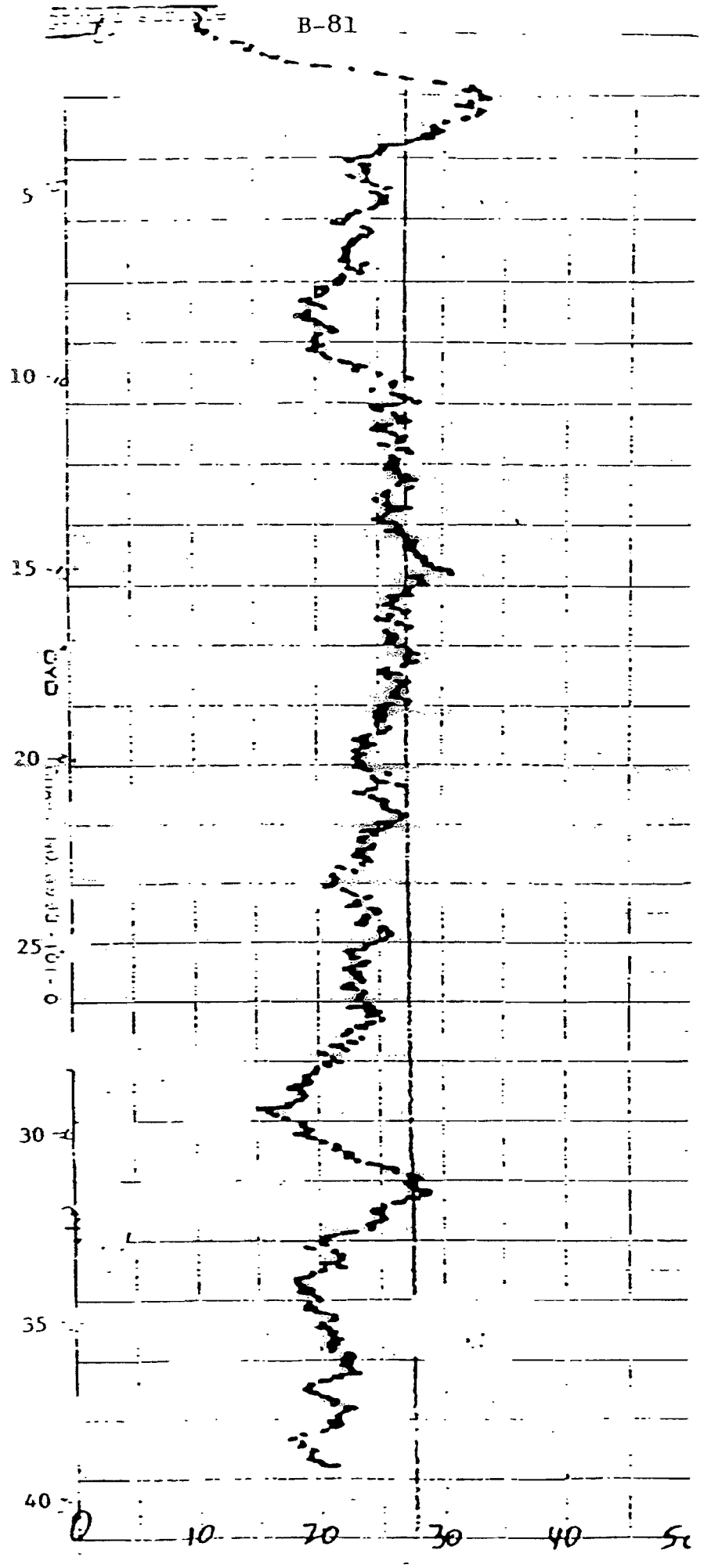
B-80 Elev. 747

12/26/80

DEPTH	SOIL DESCRIPTION		UNIFIED SYMBOL	
25-26.5'	Silty clay - trace sand, gravel & shale - gray	13.5	CL	
				2.5
30-31.5'	Silty clay - trace sand, gravel & shale -	15.3	CL	
	brownish gray			2.5
35-36.5'	Silty clay - trace sand, gravel & shale - gray	16.8	CL	0.5
40-41'	Silty very fine sand - saturated - gray	16.4	SM-ML	

Gamma Log for G107

B-81



OWNER: Browning Ferris Industries | G-103 Elev. 752

PROJECT NAME: tall 5 PVC Monitoring Wells B-82 | ARCHITECT-ENGINEER: Environmental Engineers, Inc.

SITE LOCATION: Browning Ferris Industries, Winthrop Harbor, IL

ELEVATION / DEPTH	SAMPLE NO	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION 752	
		PA			No samples obtained	
					Silty clay, trace gravel, sand and shale -brown & gray (CL) Sample 1:	
	1	SS	1	1	Pockets of light gray silt 741.5	
		PA				
10.0		PA			Sandy silt, trace clay & gravel - brown - moist (ML) 731.5	
	2	SS		1		
		PA			Clayey silt, little sand, trace gravel -gray- saturated (ML-MH)	
	3	SS	1	1	733.5	
		HS				
20.0		HS			Silt, trace clay & sand -gray- moist to wet (ML) 731	
	4	SS				
		HS			Silty clay, trace gravel, sand and shale -gray- (CL) 725.5	
26.5	5	SS	1	1		
					END OF BORING	
					2" PVC wellpoint installed	
					Screen section 15 - 25'	
					Borehole backfilled	
					Silica Sand 13 - 25'	
					Portland cement/bentonite grout mix 13'-0'	
					Steel protector pipe placed	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

10 20 30 40 50

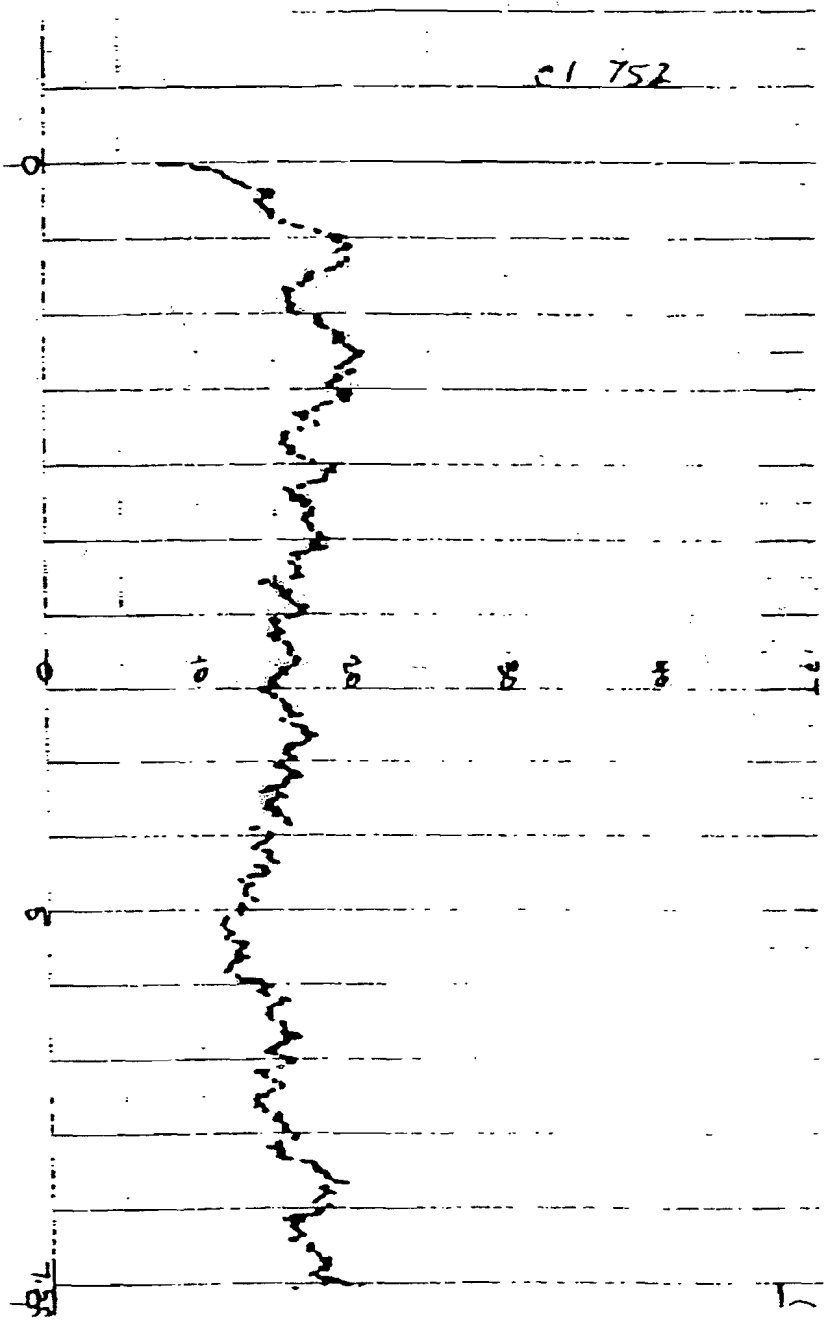
STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES; IN-SITU THE TRANSITION MAY BE GRADUAL.

WL 15.5' WS~~K~~KWD	BORING STARTED 7/12/82	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL 9'10" BCR ACR	BORING COMPLETED 7/12/82	
WL 6'10" AB	RIG ATV FOREMAN Carlson	APP'D BY LKA/ms STS JOB NO. 17590-Q

B-83

Gamma Log for G108



OWNER
Browning-Ferris Industries

G-109 ELEV 756

PROJECT NAME
Install 5 PVC Monitoring Wells B-84

ARCHITECT-ENGINEER
Environmental Engineers, Inc.

SITE LOCATION
Browning Ferris Industries, Wintrhop Harbor, IL

ELEVATION / DEPTH	SAMPLE NO	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT² 1 2 3 4 5	PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % 10 20 30 40 50	STANDARD PENETRATION BLOWS/FT 10 20 30 40 50
					SURFACE ELEVATION 756.0				
		PA			No samples obtained				
	1	SS		1	Silty clay, trace gravel, sand and shale -brown to brown & gray (CL)				
10.0		PA							
	2	SS		1					
		PA							
		PA			Silty clay, trace gravel, sand and shale -gray- (CL)				
	3	SS		1					
		PA							
25.0									
	4	SS		1	Silt, trace clay & sand -gray- saturated (ML)				
		PA							
		PA							
	5	SS	1	1	Silty clay, trace gravel, sand and shale -gray- (CL)				
		HS							
30.5									
	6	SS		1					
		HS							
	7	SS	1	1					
		HS							
40.0									
	8	SS	1	1					
		HS							
	9	SS	1	1					
		HS							
50.0	10	SS							
	10A		1	1	Clayey fine to medium sand, little silt, trace gravel -gray- (SC)				
		HS							
	11	SS	1	1					
		HS			Silty clay, trace gravel, sand and shale -gray- (CL)				
60.0									
61.5	12	SS	1	1	END OF BORING				
					Continued on Next Page				

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES, IN-SITU THE TRANSITION MAY BE GRADUAL

WL 50.5' WS##NW	BORING STARTED 7/13/82	SOIL TESTING SERVICES, INC 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL 35'7" BCR 38'7" ACR	BORING COMPLETED 7/13/82	
WL 31'1" AB	RIG ATV FOREMAN Carlson	APP'D BY LKA/ms STS JOB NO 17590-0

BLH

owning-Ferris Industries

OJECT NAME: Install 5 PVC Monitoring Wells — B-85

ARCHITECT-ENGINEER: Environmental Engineers, Inc. — 4109

CATION: owning Ferris Industries, Winthrop Harbor, IL

DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² 1 2 3 4 5	PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % 10 20 30 40 50	STANDARD PENETRATION BLOWS-FT 10 20 30 40 50
					SURFACE ELEVATION				
					Continued from Previous Page				
					2" PVC wellpoint installed screen section 50-60'				
					Borehole backfilled Silica Sand 48 - 60' Portland cement/bentonite grout mix 48'-0'				
					Steel protector pipe placed				

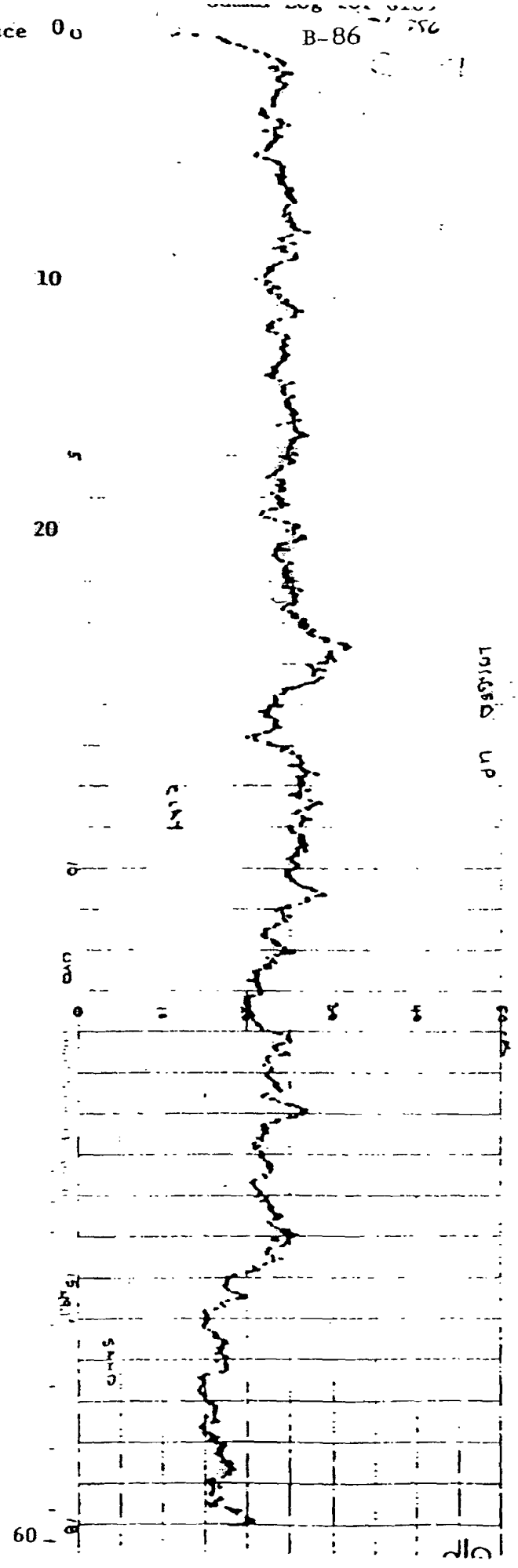
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES BUT THE TRANSITION MAY BE GRADUAL

WL 50.5	WS ~~XXX~~	BORING STARTED 7/13/82	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL 35'7" BCR	38'7" ACR	BORING COMPLETED 7/13/82	
WL 31'1"	AB	RIG ATV FOREMAN Carlson	APP'D BY LKA/ms STS JOB NO. 17590-Q

BL:1

G109

B-86



rowning Ferris Industries B-110

PROJECT NAME: Install 5 PVC Monitoring Wells | B-87 | ARCHITECT-ENGINEER: Environmental Engineers, Inc.

FILE LOCATION: Browning Ferris Industries, Winthrop Harbor, IL

SURFACE ELEVATION: 745.0

DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT² (1 2 3 4 5)	PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % (10 20 30 40 50)	STANDARD PENETRATION BLOWS/FT (10 20 30 40 50)
		PA			No samples obtained				
	1	SS	1	1	Silty clay, little sand, trace gravel & shale -brown & gray- (CL)				
2.0		PA							
	2A	SS	1	1	Silty clay, little sand, trace gravel & shale -brownish gray (CL)				
		PA							
	3	SS	1		Clayey fine, medium & coarse sand, little silt, trace fine gravel - grayish brown- saturated (SC) *				
		PA							
	4	SS	1	1	Silty clay, trace gravel, sand and shale -gray- (CL) Samples 4, 6 & 8: Horizontal seams of silt and fine sand				
		HA							
	5	SS	1						
		HS							
	6	SS	1	1					
		HS							
	7	SS	1	1					
		HS							
	8	SS	1						
		HS							
	9	SS	1	1					
		HS							
	10	SS	1	1	688.5				
		HS							
	11	SS	1	1	Silt, little clay -brownish gray- moist (ML)				
	11A								
60.0		HS							
	12	SS	1		Silty clay, trace gravel, sand and shale -gray- (CL)				
		HS							
56.5	13	SS	1	1					
					END OF BORING				
					Continued On Next Page				

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Browning Ferris Industries

PROJECT NAME: Install 5 PVC Monitoring Wells — B-88

ARCHITECT-ENGINEER: Environmental Engineers, Inc.

SITE LOCATION: Browning Ferris Industries, Winthrop Harbor, IL

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5) / PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % (10 20 30 40 50) / STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)
					SURFACE ELEVATION		
					Continued from Previous Page		
					*Sample 3 - Possible cave-in		
					2" PVC wellpoint installed Screen section 55-65'		
					Borehole backfilled Silica Sand 47.5 - 65.0'		
					Portland cement/bentonite grout mix		47.5'-0'
					Steel protector pipe placed		

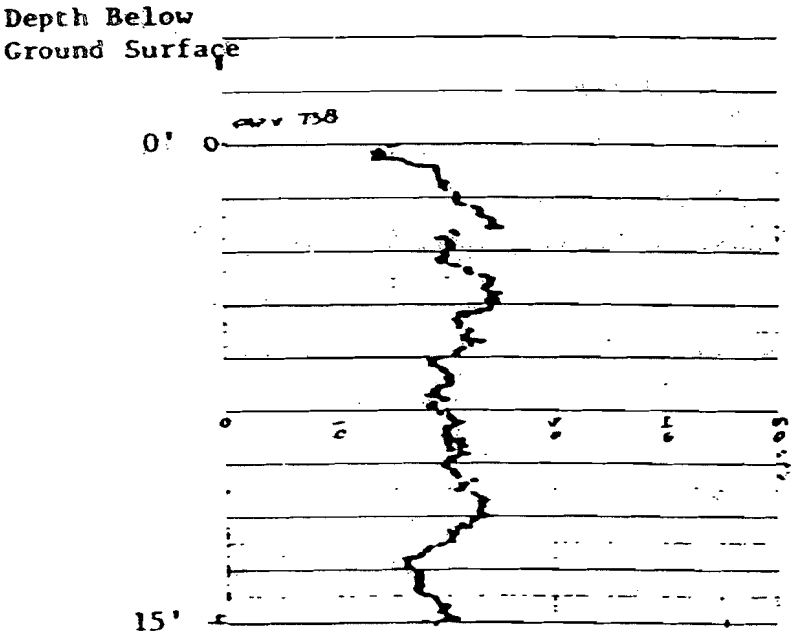
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

L 13.0' XXXXX WD	BORING STARTED 7/14/82	SOIL TESTING SERVICES, INC 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL BCR ACR	BORING COMPLETED 7/15/82	
WL	RIG ATV FOREMAN Carlson	APP'D BY LKA/ms STS JOB NO 17590-Q

BL:1

FOR BORING G-111

B-89



owning Ferris Industries | G

PROJECT NAME | AR

Install 5 PVC Monitoring Wells B-90 | E

LOCATION

owning Ferris Industries, Wintrhop Harbor,

Inc 6112

COMPRESSIVE STRENGTH

DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION 743	
		PA			No samples obtained	
	1	SS	1		Silty clay, little sand, trace gravel & shale -brown to brown and gray (CL)	
1.0		PA				
	2	SS	1	1		
		PA				
	3	SS	1	1	Silty clay, trace gravel, sand and shale -gray- (CL) Driller's observation: Silt with clay seams 36.5-39.0'	
5.0		PA				
	4	SS	1			
		HS				
	5	SS	1			
		HS				
	6	SS	1			
		HS				
	7	SS	1			
40.0		HS				
	8	SS	1			
		HS				
	9	SS	1			
		HS				
50.0		HS			Sandy silt, trace clay -gray- moist (ML)	
	10	SS	1	1		
		HS				
		HS			"A"	
	11A		1		"B"	
		HS			Sandy silt, little clay -gray (ML-MH) Possible cave-in	
60.0		HS				
61.5	12A	SS	1		Silty clay, little fine sand -gray (CL)	
					END OF BORING	
					Continued on Next Page	

BL: 2

Boring Ferris Industries

PROJECT NAME: Install 5 PVC Monitoring Wells — B-91

ARCHITECT-ENGINEER: Environmental Engineers, Inc. 6/12

SITE LOCATION: B ning Ferris Industries, Winthrop Harbor, IL

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)	PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % (10 20 30 40 50)	STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)
					SURFACE ELEVATION				
					Continued from Previous Page				
					"A" - Clayey silt -gray- saturated (ML-MH)				
					"B" - Silty clay, little fine sand, trace gravel and shale - gray (CL)				
					2" PVC wellpoint installed				
					Screen section 50 - 60'				
					Borehole backfilled				
					Silica Sand 47 - 60'				
					Portland cement/bentonite grout mix 47'-0'				
					Steel protector pipe placed				

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES, IN-SITU THE TRANSITION MAY BE GRADUAL

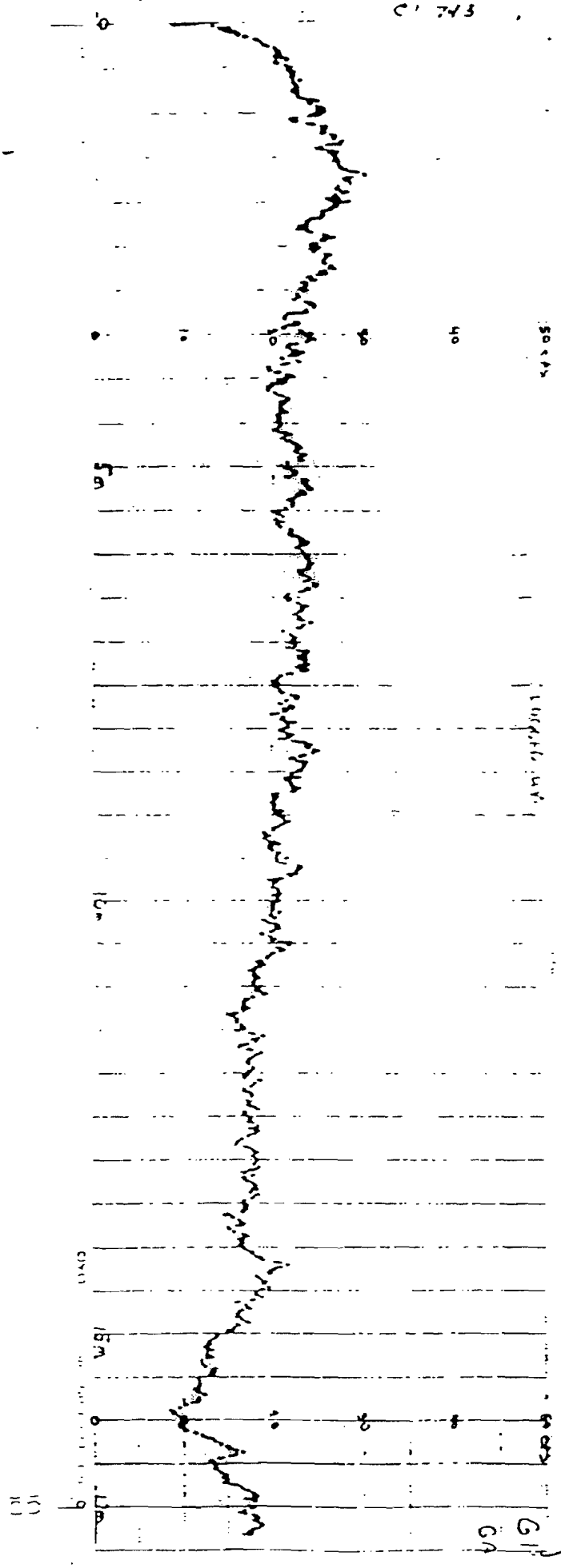
51.0' WS ~~XXXX~~	BORING STARTED 7/14/82	SOIL TESTING SERVICES, INC.	
WL Dry BCR Dry ACR	BORING COMPLETED 7/14/82	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062	
WL 55.0' AB	RIG ATV FOREMAN Carlson	APP'D BY LKA/ms	STS JOB NO. 17590-0

BL:1

Depth Below
Ground Surface

B-92

G 112



57.4

OWNER: Browning-Ferris Industries — B-93

LOG OF BORING NUMBER: G-113 — 7/1/84

PROJECT NAME: Install 5 PVC Monitoring Wells

ARCHITECT-ENGINEER: Environmental Engineers, Inc.

LOCATION: Browning Ferris Industries, Winthrop Harbor, IL

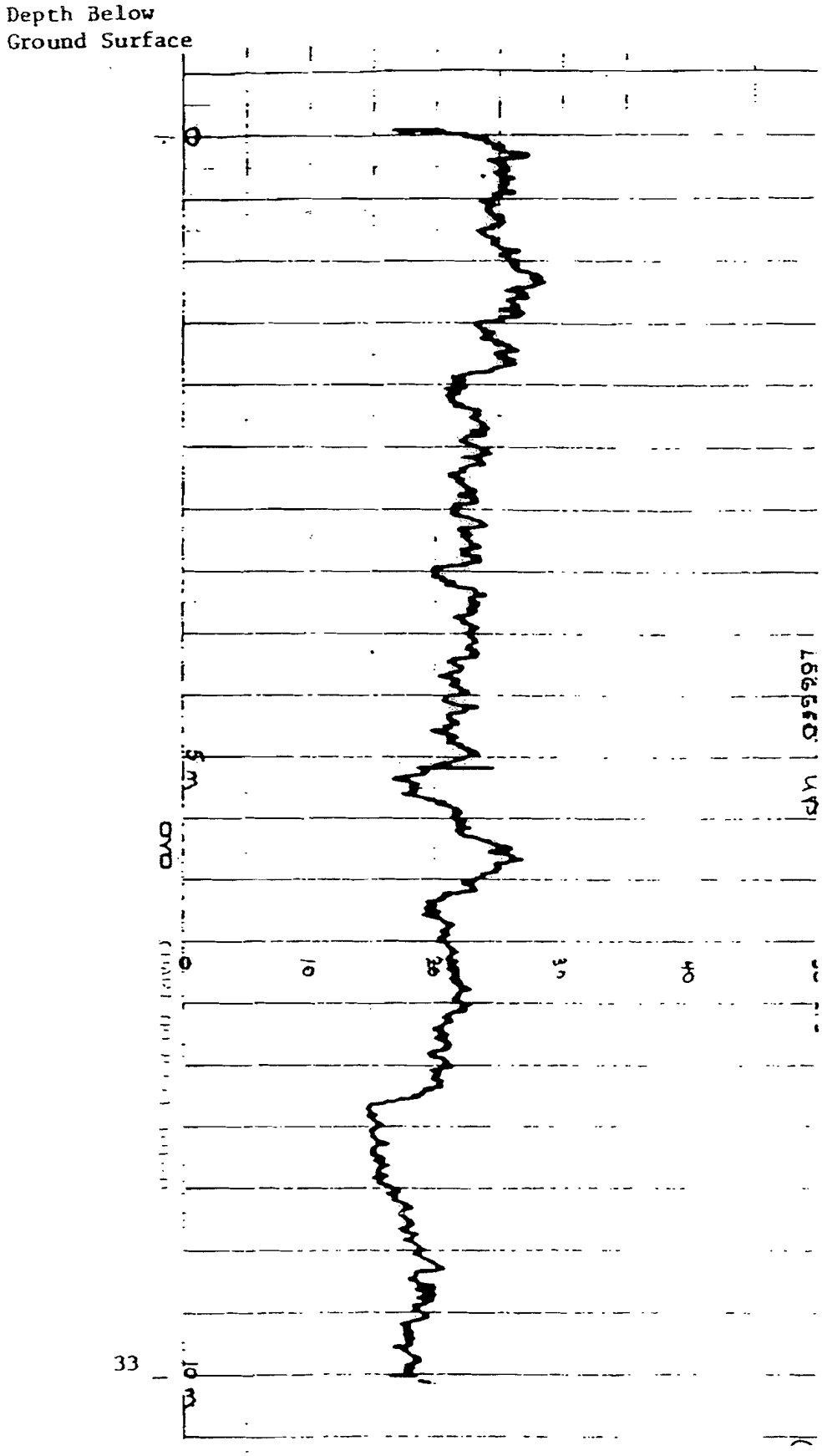
DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT² (1 2 3 4 5) / PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % (10 20 30 40 50) / STANDARD PENETRATION BLOWS/FT (10 20 30 40 50)
					SURFACE ELEVATION		
		PA			No samples obtained		
	1	SS	1		Silty clay, trace gravel, sand and shale -brown & gray to brown (CL)		
		PA			Sample 2: Little sand, seams of		
	2	SS	1	1	sand		
		PA					
		PA					
	3	SS	1	1	Silty clay, trace gravel, sand and shale -grayish brown to gray (CL)		
		HS					
5.5	4	SS	1	1			
		HS					
	5	SS	1	1			
		HS					
15.5	6	SS	1	1			
		HS					
25.5	7	SS	1	1			
					END OF BORING		
					2" PVC wellpoint installed		
					Screen section 25 - 35'		
					Borehole backfilled		
					Silica Sand 22-35'		
					Portland cement/bentonite grout mix		22'-0'
					Steel protector pipe placed		

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES, IN-SITU THE TRANSITION MAY BE GRADUAL

WL Dry	WS on WD	BORING STARTED 7/12/82	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL Dry	BCR ACR	BORING COMPLETED 7/13/82	
WL 22'10"	AB	RIG ATV FOREMAN Carlson	APP'D BY LKA/ms STS JOB NO. 17590-0

BL:1

Gamma Log for G113

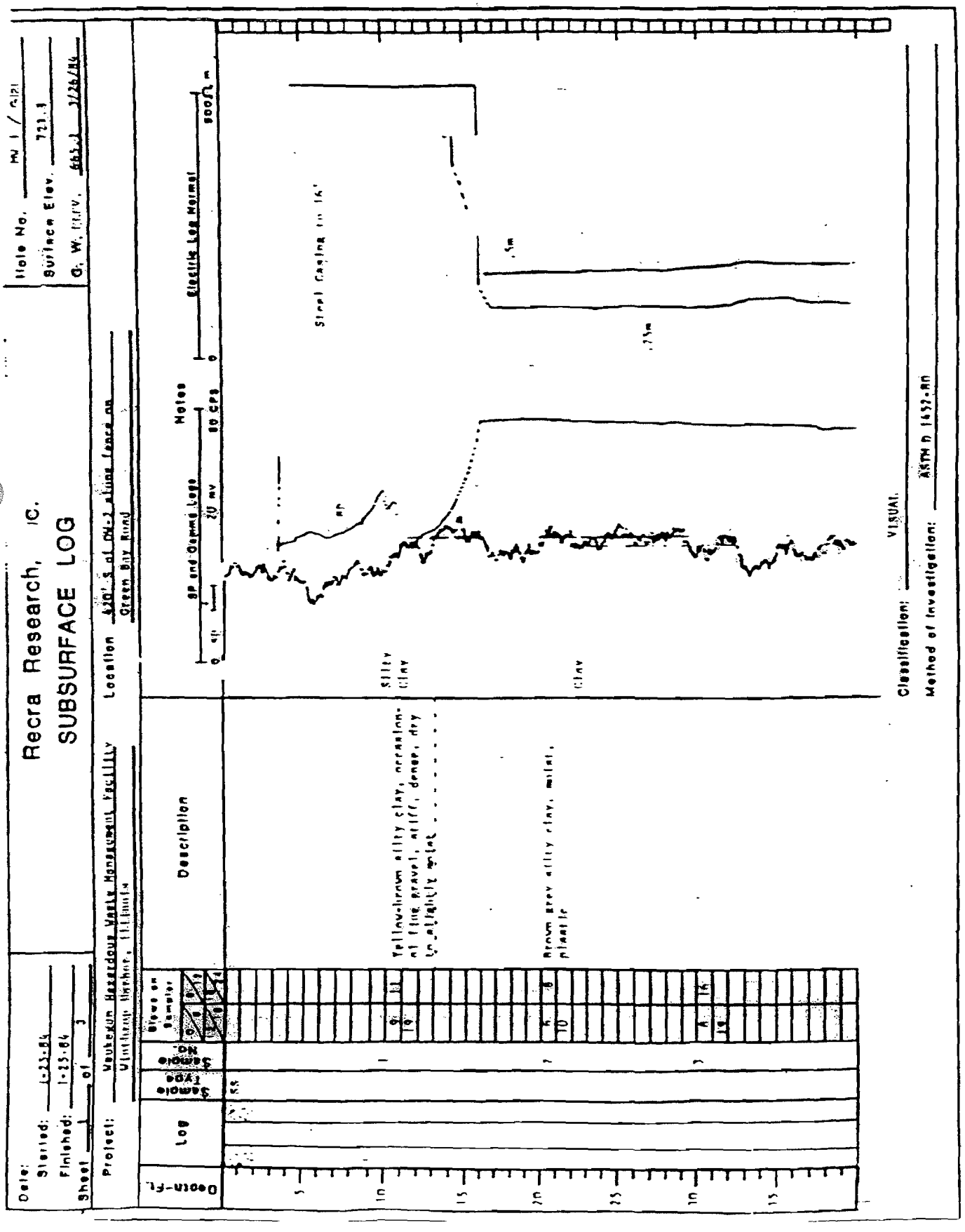


BORINGS/WELLS G121 THROUGH G143

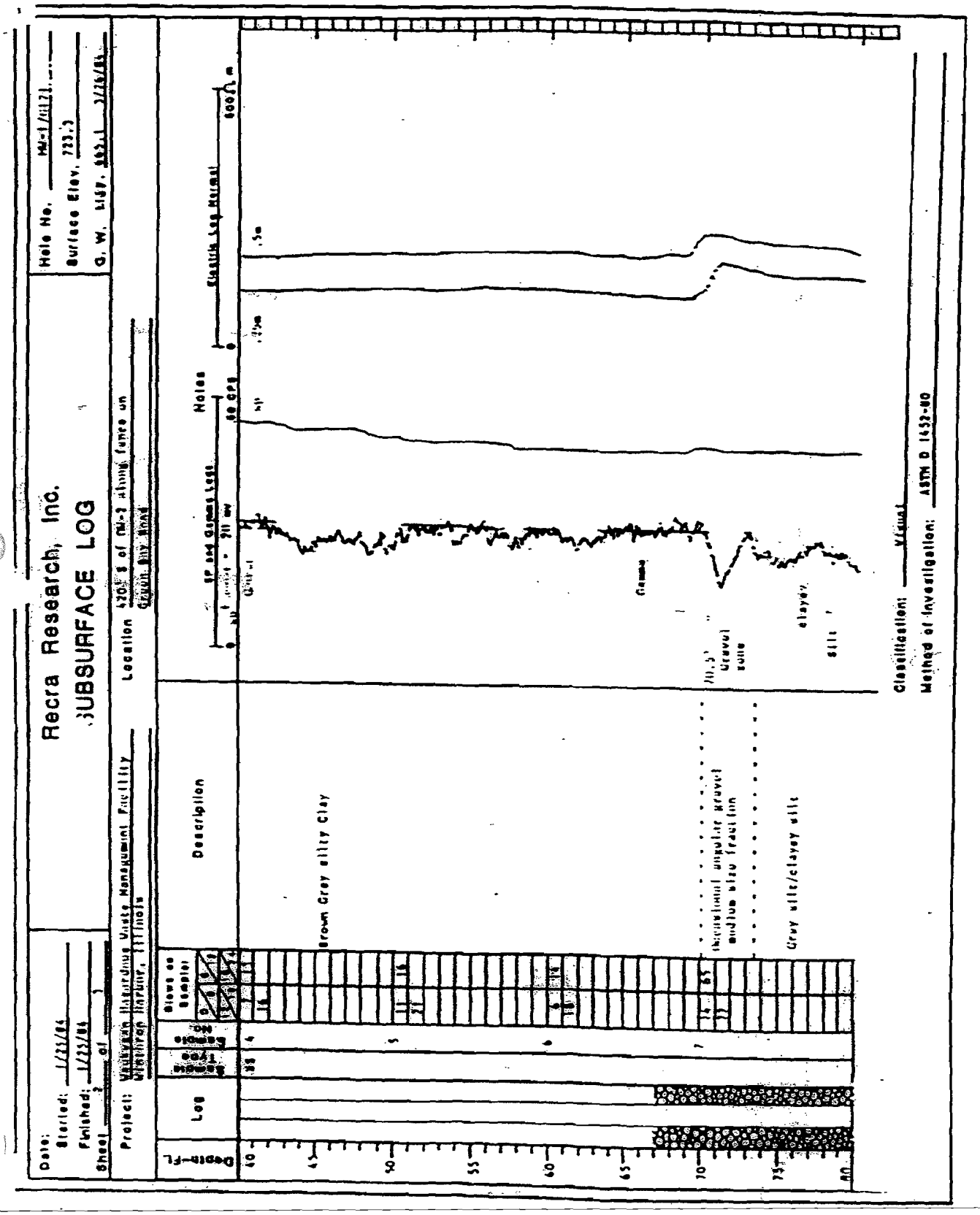
SITE 1

G121	Recra Research	1/84	Replaced Peerless-Midwest 9/85
G122	Recra Research	1/84	
G123	Recra Research	1/84	Replaced Recra Research 10/84 Replaced Peerless-Midwest 10/85
G124	Recra Research	2/84	Replaced Recra Research 10/84 Replaced Peerless-Midwest 10/85 Replaced WW Engineering 8/93
G125	Recra Research	2/84	
G126	Recra Research	2/84	Replaced Recra Research 10/84 Replaced WW Engineering 8/93
G127	Recra Research	2/84	Replaced Peerless-Midwest 10/85
G128	Recra Research	10/84	Replaced WW Engineering 8/93
G129	Recra Research	10/84	Replaced Peerless-Midwest 10/85 Replaced TSC 11/91 Replaced WW Engineering 8/93
G130	Recra Research	10/84	
G131	Recra Research	10/84	Replaced Peerless Midwest 10/85 Replaced TSC 11/91 Replaced WW Engineering 8/93
G132	Recra Research	10/84	Replaced Patrick Engr. 2/89 Replaced WW Engineering 8/93
G133	Recra Research	10/84	Replaced Peerless-Midwest 10/85 Replaced Patrick Engr. 2/89
G134	Recra Research	10/84	Replaced Peerless-Midwest 10/85
G135	Recra Research	10/84	Grouted at Completion
G136	Recra Research	10/84	
G137	Recra Research	9/84	No record, believed grouted
G138	Peerless-Midwest	5/85	
G139	Peerless-Midwest	6/85	
G140	Peerless-Midwest	5/85	
G141	Peerless-Midwest	6/85	
G142	Peerless-Midwest	6/85	Replaced by G143, Patrick 12/87

87


Recra Research, Inc.
SUBSURFACE LOG
Date:
Started: 1-23-84
Finished: 1-25-84
Sheet 1 of 3
Project: Voluntown Hazardous Waste Management Facility
Location 430' S of CR-2 along fence on Green Bay Road
Hole No. MW 1 / OB1
Surface Elev. 721.1
G. W. Elev. 693.1 1/26/84
Depth-ft.
Log
Sample Type
Sample No.
Blows on Sampler
Description
Tellavaltown silty clay, occasional fine gravel, stiff, dense, dry to slightly moist
Brown grey silty clay, moist, plastic
Silty Clay
Clay
SP and Gamma Logs
Notes
Steel Casing to 14'
Electric Log Normal
Classification: VISUAL
Method of Investigation: ASTM D 1452-80

87


Recra Research, Inc.
SUBSURFACE LOG
Project:
Location
Hole No.
Surface Elev.
G. W. Elev.
Started:
Finished:
Sheet
Depth-Ft
Log
Description
Brown Gray silty Clay
Gray silt/clayey silt
Gravel
Silt
Clayey
Classification: Visual
Method of Investigation: ASTM D 1452-80

Date:
Started: 1/25/84
Finished: 1/25/84
Sheet 1 of 1

Hecra Research, Inc.
SUBSURFACE LOG

Units No. IBI-1 /GEI-21
Surface Elev. 723.3
G. W. Elev. 665.1 5/24/84

Project: Waukegan Hazardous Waste Management Facility
Winthrow Harbor, Illinois

Location 430' S of CL-3 along Fence on
Green Bay Road

Depth-Ft	Log	Sample Type	Sample No.	Blows on Sampler	Description
80		SS	8	33 / 55	Gray silt/clayey silt
85					Clay
					Silty clay
90			9	60 / 125/5"	Brown sand, fine-medium grained, slightly clayey, some fine grain alternating with lenses of silt and silty fine sand, poorly sorted
			10		
95			11	75 / 60	Brown-grey silt/clayey silt
			12	33 / 44	Brown fine sand, moist, homogeneous soft, some silt
100			13	15 / 27	Brown fine sandy silt
					Completed to 101.5

SP and Gamma Logs — 0 mv — 20 mv — 80 CPS

Notes

Resistivity Log Normal — 0 — 500 Ω-m

Gamma

83' Clay

85.7' Silty clay

88.4' Sand

93.5' Clay/silt

95.9' Sand

100' Sandy silt

sp

.25m

.5m

Classification: Visual

Method of Investigation: ASTM 1452-80

Date:
Started: 1-27-84
Finished: 1-28-84
Sheet 1 of 1

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-2/OW2
Surface Elev. 735.2
G. W. Elev. 668.91 3/26/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location Near gate on Ninth Street
130' W of OW-1.

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 18/24	Description
0		SS			
5					
10			1	10 11 16	Mottled yellow brown silty clay, clayey silt, occasional coarse gravel
15					
20			2		Gray silty clay, occasional medium to coarse gravel, moist, soft
25					
30			3		
35					
40					

715.2

Notes

Gamma Log 0 cps 60 cps
Electric Log Normal 0 600Ω m

Steel casing to 51 feet

Gamma

.25m

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

Date:
Started: 1/27/84
Finished: 1/28/84
Sheet 2 of 3

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-2 (GL22
Surface Elev. 735.2
G. W. elev. 668.91 3/26/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location Near Gate on Ninth Street
130' W of GM1

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 18/24	Description
40		SH	4	17 / 16	Grey silty fine sand, fine to medium gravel
				17	
					685.2
50			5	18 / 20	Brown grey silty clay, homogeneous, moist very plastic
				24	
55					
60			6	14 / 37	
				52	
					671.4
					63.8'
65			7	23 / 15	Grey clayey sand/clayey gravelly sand, moist, plastic
				17	
70					
					662.0
					73.2'
75					Brown Silty Clay

Notes

Gamma Log: 0 RD TOK — 10 MV — 50 CPS

Electric Log Normal: 0 — 500 Ω m

Gamma

.25m

Casing Interference

Clay

RD

Sandy Clay/clayey sand

Clay

Classification: Visual

Method of Investigation: ASTM 1452-80

B-224

Da' ted: 1/27/84
Finished: 1/28/84
Sheet 1 of 2

Recra Research, Inc.
SUBSURFACE LOG

Surface Elev. 735.2
G. W. Elev. 668.91 3/26/84

Project: Waukegan Hazardous Waste Management Facility
Whiting Harbor, Illinois

Location Near Gate on Ninth Street
130' W of CW1

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0-6 / 6-12 / 12-18	Description	Notes: Gamma Log 0 API Units – 10 MV – 50 CPS; Electric Log Normal 0 – 500 Ohm m
80		SS	A	16 / 12	Brown grey silty clay, dry, stiff, dense	683.9
				20	Sandy clay	651.2
85					Silty clay	645.4
90			9	11 / 23	Gravelly silty clay	643.7
				23	Grey silty clay, saturated very plastic	641.2
95			10	21 / 30	Brown clayey sand, fine-medium grained, homogeneous, grey silt pockets with clay, moist, plastic.	
			11	44 / 38		
				23		
100			12	32 / 54	Grey gravelly sand, medium-fine grained sand, medium-coarse gravel.	135.2
				25 / 50/4"		

Completed to 101.5

Al.3' Sandy clay
84' Clay
A9.8' 90.5 Gravelly silty clay
94' Clay
Silty fine sand with clay

735.2 − 89.8 = 645.4
735.2 − 94 = 641.2

Classification: Visual
Method of Investigation: ASTM 1452-80

B-225

Date:
Started: 1-28-84
Finished: 1-30-84
Sheet 1 of 4

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-3 / GI23
Surface Elev. 760.5
G. W. Elev. 658.81 3/26/84

Project: Waukegan Hazardous Waste Management Facility
Waukegan Harbor, Illinois

Location See Loc Map - Located at proposed point in NW corner of Site 2

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6	6/12	12/18	Description
0		SS					
5							
10			1	27	24		Mottled yellow brown silty clay, occasional fine gravel, slightly weathered, solidified
				40			
15							
20			2	20	17		Brown sandy silt/clayey silty sand, fine-coarse gravel, moist, unconsolidated
				14			
25							
30							
35			3	11	13		Grey silty clay, occasional fine gravel, homogeneous, moist - saturated, very plastic
				17			
40							

Notes

Gamma Log: 0 cps (top) — 1 mv — 80 CPS
Electric Log Normal: 0 — 800 Ω m

Temporary steel casing to 17'

Gamma

sp

Clay

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

Date:
Started: 1-28-84
Finished: 1-111-84
Sheet 2 of 4

Recra Research
SUBSURFACE LOG

Hole No. MW-3 / OW3
Surface Elev. 7611.5
G. W. Elev. 658.81 3/26/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location Located at Proposed outer in NW corner of Site 2

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler	Description
40			4	11 / 21	
45					Grey silty clay, occasional fine gravel, homogeneous, moist saturated, very plastic
50			5	12 / 19	13
55					
60			6	13 / 17	17
65					
70			7	7 / 8	8
75					
80					

Notes

Gamma Log: 0 kn 10k — 1mv; 80 CPS
Electric Log Normal: 0 — 800 Ω m

Clay
.1m
.21m
shift

Classification: Visual

Method of Investigation: ASTM 1452-80

B-227

89

Date:
Started: 1-28-84
Finished: 1-30-84
Sheet 1 of 4

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-3 / 6123
Surface Elev. 740.5
G. W. Elev. 658.81 3/26/84

Project: Waukegan Hazardous Waste Management Facility, Winthrop Harbor, Illinois
Location: Located at Proposed Point (NW Corner of Site)

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler	Description
80		SS	8	20 / 22	Brown/red mottled silty clay
85					
90			9	18 / 22	
95					
100			10	17 / 20	
105					
110			11	66 / 39	Brown silt/fine sandy silt, inhomogeneous, soft, moist - saturated
			12		Sand
115			13	42 / 38	Slightly coarser sand than above
			14	69 / 50	Increasing clay content, grey
120					Clayey sand

Notes

Gamma Log: 0 — 5mg sp log — 50 CPS
107.4' Sandy silt
110.9' Sand

Electric Log Normal: 0 — 600 h m

Classification: VISUAL
Method of Investigation: ASTM D 1452-80

B-228

89

Date:
Started: 12/8-84
Finished: 1-10-84
Sheet 1 of 1

Recra Research, SUBSURFACE LOG

Hole No. MW-3/GW24
Surface Elev. 760.7
G. W. Lev. 65M.81 1/26/84

Project: Waukegan Hazardous Waste Management Facility, Winthrop Harbor, Illinois

Location Located at Proposed Point in NW Corner of Site 2.

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0-6 / 6-12 / 12-18	Description
120			15	50 / 50 / 50	Gray sand, unconsolidated, soft, poorly sorted, coarse grained, little clay, no silt or gravel
			16	42 / 51 / 65	
					Boring completed in 124'

Notes

Gamma Log 0 — 80 CPS

Electric Log Normal 0 — 600 Ω m

Geophysical terminated at 120' for gamma and sp.

Classification: Visual

Method of Investigation: ASTM D 1452-80

STARTED 10/3/84
FINISHED 10/5/84
SHEET 1 OF 1

RECRA RESEARCH, INC. B-23

SUBSURFACE LOG

HOLE NO. G123
SURFACE ELEV. 759.9
G.W. ELEV. 658.71

PROJECT CECOS Waukegan IL
Well Installations, #4C002333

LOCATION N 12620.15
E 8895.19

LOG WELL G123	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
							Wash boring, no samples collected for subsurface information refer to adjacent MW-3. Boring Log (Completed 1/30/84, abandoned 10/26/84)	Boring advanced from 0-60 ft. with 7 in. dia. tri-cone bit, truck mounted rotary drilling rig. 6 in. dia. flush threaded steel casing installed to 60 ft. below grade and grouted. Boring advanced from 6 in. dia. casing with 3 7/8 in dia. tri-cone bit, wash boring.
0								
10							110.0'	
	SB	1	36	37	39		Saturated brownish gray SILTY-(F) SAND/CLAYEY-(F) SAND, uniformly graded, very dense, non- to slightly plastic	
15	SB	2	47	46	43			
120							120.0'	Boring completed at 120.0 ft.

3 7/8"
6"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See notes

Date:
Started 2-1-86
Finished 2-1-86
Sheet 1 of 4

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-4 / 0121
Surface Elev. 763.5
G. W. Elev. 659.36 1/26/86

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location See Loc Map - Located along E. border of Mk Quad in Northern section

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 to 6	6 to 12	12 to 18	18 to 24	Description
5		SS						
10			1	12	10			Yellow brown mottled silty/clay, dry, hard, non-fractured
				6				
15								
20			2	14	17			
				19				
25								
10			3	4	6			Grey brown silty clay, occasional fine-medium subangular gravel, dry, slightly moist, slightly plastic
				10				
35								
40								

Notes

Gamma Log: 0 to 50 CPS

Electric Log Normal: 0 to 800Ω m

Gamma

Temporary Steel Casing to 28'

.5m

.25m

40

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

B-233

40

Date:
Started: 2-1-84
Finished: 2-1-84
Sheet 2 of 4

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-4 / G17d
Surface Elev. 701.5
G. W. Elev. 659.56 3/26/84

Project: Waukegan Hazardous Waste Management Facility
Vicinity Nathan, Illinois

Location Located along E. border of NE quad
In Northern Section

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 6 12 18	Description
45		SS	4	8 / 16	Grey brown silty clay, occasional fine-medium subangular gravel, dry to slightly moist, slightly plastic
50			5	12 / 20	15
55			6	13 / 21	19
70			7	23	26
75					

Notes

Gamma-Log: per log A 5 mv 60 CPS

Electric Log Normal: 0 600Ω m

.75m .5m

Gamma

SP

Classification: Visual

Method of Investigation: ASTM D 1452-80

Start 2/1/84
Finish 2/1/84
Sheet 1 of 4

Recra Research Inc.
SUBSURFACE LOG

Hole No. MW-4 / G1241
Surface Elev. 763.5
G. W. Elev. 659.36 3/26/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location Located along E border of NE quad
in Northern Section

Depth-ft	Log	Sample Type	Sample No.	Blows on Sampler (0/6 | 6/12 | 12/18 | 18/24)	Description	Notes: Gamma Log 0 cps 50 cps; Electric Log Normal 0 500 ft m
80		SS	8	26 | 26	Grey brown silty clay	
				34		
85						
						87.2' Silty Clay/clayey silt
90			9	16 | 19	Mottled red and brown silty clay/ clayey silt	
				27		92.8'
95					Grey brown Silty Clay	Clay
100			10	23 | 32		
				65		Zero shift
105						
110			11	31 | 30		
				125/5"		112.3' Sandy clay
					Sandy clay	113.8' Silt
115			12	22 | 40	Brown silty uniform homogeneous sand	116.4' silty clay
				59	Brown gray mottled red	
			13	29 | 38		119.7'
120				50	Silty clay, dense silt	

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

Date:
Started: 2/1/84
Finished: 2/1/84
Sheet 4 of 4

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-4 / GP14
Surface Elev. 761.5
G. W. Elev. 659.16 3/26/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location Located along N. border of NE quad in Northerly Section

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler	Description
120		SS	14	23 / 30	Mottled brown, grey, red silty clay, dense, stiff
				23 / 34	
			15	28 /	clayey fine
125			16	32 / 23/7	Brown fine sandy clay/clayey fine sand, moist - saturated, soft, very plastic.
130			17		Grey silty clay/clayey silt, moist, homogeneous, poorly sorted
					Completed in 131.5

Notes

Gamma Log: 0 API Units — 1 mv — 60 CPS
Electric Log Normal: 0 — 600Ω m

Clay
121.8' Soft Clayey sand
Gamma
.25m .5m
129.5' silty clay
130.1'

Classification: Visual
Method of Investigation: ASTM D 1452-80

B-236

90

DATE STARTED 10/22/84
FINISHED 10/24/84
SHT 1 OF 1

RECRA RESEARCH, INC. B-238

SUBSURFACE LOG

HOLE NO. G124
SURFACE ELEV. 766.8
G.W. ELEV. 660.31

PROJECT CECOS Waukegan IL
Well Installations #4C002333

LOCATION N 12381.73
E 9367.37

DEPTH-FT	LOG WELL G124	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
0								Wash boring, no samples collected for subsurface information refer to MW-4 boring log (completed 2/1/84, abandoned 10/26/84). 110'	Boring advanced from 0 to 60 ft. with 7 in. dia. tri-cone bit, MOBILE B-61 drilling rig
110		SB	1	25	33	36		Wet brownish-gray SILTY-CLAY, trace SAND and GRAVEL, hard, plastic	6 in. dia. flush threaded steel casing installed to 60 ft. below grade and grouted.
115		SB	2	20	27	31		- some (F) SAND, GRAVEL absent 116.5-120'	Boring advanced from 6 in. dia. casing with 3 7/8 in. dia. tri-cone bit, wash boring.
		SB	3	25	26	36		Wet brownish-gray CLAYEY-SILT, laminated, occasional (F) SAND parting, slightly plastic, hard 121.1'	
								Saturated gray (F-M) SAND, some SILT, very dense 121.3'	
125		SB	4	27	40	48		Saturated gray stratified CLAYEY-SILT and SANDY-SILT, non- to slightly plastic, hard 121.5'-125'	
	3 7/8" 6" 7"							Wet brownish-gray SILTY-CLAY; 0.5 in (F-M) SAND seam at approx 126 ft, 0.25 in. SILT parting at approx 126.4 ft. Deposit is hard, plastic 126.5'	
130									Boring completed at 126.5'

CLASSIFICATION Visual
METHOD OF INVESTIGATION See notes

Date: —
Started: 2-2-84
Finished: 2-3-84
Sheet 1 of 3

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-5 / GI25
Surface Elev. 756.6
G. W. Elev. 658.5 - 2/26/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location See Loc. Map - Located in extreme NE corner of Site 2 along NW running fence

Depth-ft.	Log	Sample Type	Sample No.	Blows on Sampler	Description
0		SS			
5					
10			1	14 / 25	Brown silty clay, occasional medium gravel, dry, slightly moist, slightly fractured, plastic
15					
20			2	7 / 12	Brownish-grey silty clay, occasional fine gravel, slightly moist, non-fractured, very plastic
25					
30			3	8 / 15	Increasing grey, decreasing in brown color
35					
40					

Notes

Gamma Log: 0 to 80 CPS
Electric Log Normal: 0 to 600 Ω m

Temporary Steel Casing to 20'
Gamma
.5m expanded scale
shift

Classification: VISUAL
Method of Investigation: ASTM D 1452-80

B-246

Date:
Started: /84
Finished: 2/3/84
Sheet 2 of 2

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-5 / GI20
Surface Elev. 736.6
G. W. Elev. 658.5 3/26/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location Located in extreme NE corner of Site 2 along NW. running fence

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0-6 / 6-12 / 12-18 / 18-24	Description
40		SS	4	6 / 10 / 12 /	Brown clayey sand, fine sand and gravel, occasional medium-coarse gravel, high clay content, saturated
45					
50			5	12 / 17 / 22 /	Grey silty clay, occasional very fine gravel, dry - slightly moist, slightly fractured, plastic
55					
60			6	18 / 19 / 22 /	
65					
70			7	7 / 12 / 20 /	Brown clayey silt/silty clay Oxidized and unoxidized zones as indicated by brown and grey units are interfingered and gradational here
75					
80					Silty clay

Notes

Gamma Log: 20 log, 5 mv, 80 CPS
Electric Log Normal: 0, 800 Ω m

Clayey Sand
Clay
67.6' silty Clay/ clayey silt
72.1' Clay

.25m .5m

.25m expanded scale
0 to 100 ohm meter full scale

Classification: Visual
Method of Investigation: ASTM D1452-80

Date:
Started: 2/2/84
Finished: 2/3/84
Sheet 1 of 1

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-5 / 6125
Surface Elev. 756.4
G. W. Elev. 658.5 3/26/84

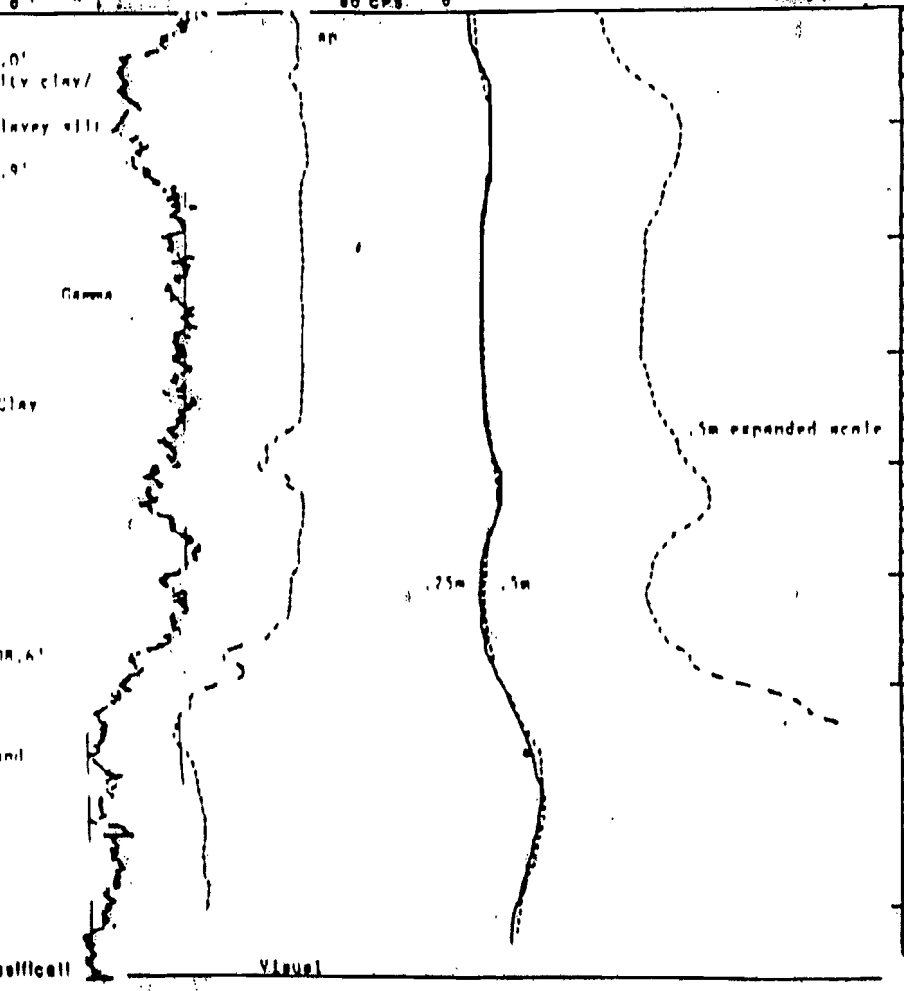
Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location Located in Eastern NE corner of site / along FW running fence

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0-6 / 6-12 / 12-18	Description
80		SS	A	29 / 44	Brown-Grey silty clay
					Brown silty clay/clayey silt
85			9	52 / 77	Dry - slightly moist
90					
95			10	31 / 55	Brownish-grey silty clay/ clayey silt, dry to slightly moist, occasional to moderate well rounded gravel fine to medium size fraction
100			11	65 / 77	
105					
110			12	71 / 60	Brown sand, medium-coarse grained, homogeneous, little to no clay or silt, unconsolidated, poorly sorted, moist - saturated.
			13	72 / 101	
115				74 / 58	Brown grey sand, well sorted, fine-coarse sand, fine to coarse gravel, subangular, unconsolidated, moist.
			14	46	Brown grey sandy gravel/gravelly sand, well sorted, moist, saturated.
			15	38	
120			16	52 / 42	Brown grey sand, well-sorted, some clay, some fine gravel, unconsolidated, saturated.

Completed to 122.5'

Notes



Classificati Visual

Method of Investigation: ASTM D452-80

B-248

41

Date:
Started: 2-3-84
Finished: 2-4-84
Sheet 2 of 4

Recra Research, Inc.
SUBSURFACE LOG

Hole No. HW-6 / GW4
Surface Elev. 776.7
G. W. Elev 657.67 1/26/84

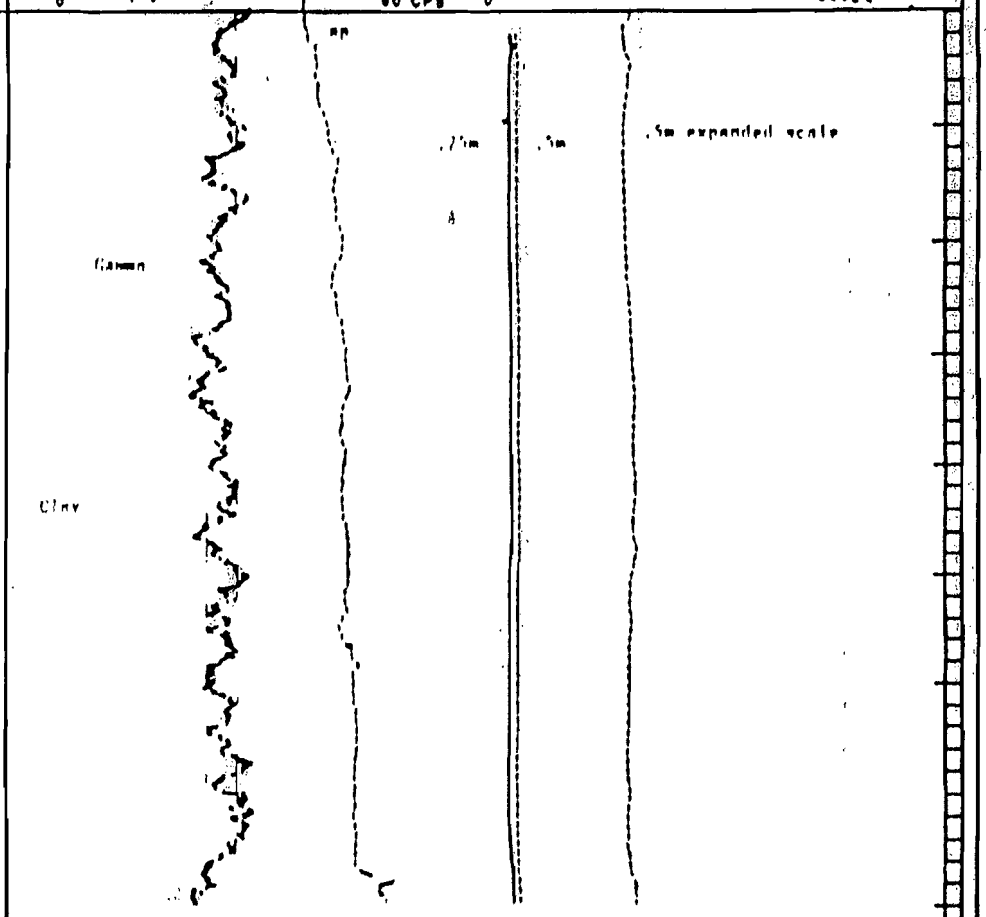
Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location Along Berm boundary of Site 1 and 2
Southern most part, SEmost point of proposed Incinerator

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler	Description
40		SS	4	11 / 17 / 10	Brown grey silty clay occasional fine gravel, moist, plastic
45					
50			5	9 / 14 / 11	Increasing sand content
55					
60			6	9 / 15 / 13	
65					
70			7	13 / 60 / 11	
75					

Notes

Gamma Log: Top 100 CPS, 0 mV, 0 CPS
Electric Log Normal: 0, 600 Ω m



Classification: VISUAL
Method of Investigation: ASTM D 1452-80

B-250

42

Date:
Started: 7/1/84
Finished: 7/4/84
Sheet 1 of 4

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-6 / G125
Surface Elev. 178.7
G. W. Elev. 652.67 1/26/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location Along here boundary of Site 1 and 2
Southern most point SE most point of proposed locations

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler	Description
80		SS	8	11 / 13	Increasing silt content
85					
90			9	18 / 25	Brown gray clayey silt, moist, slightly plastic, poorly sorted, homogeneous
95					
100			10	20 / 29	Grey brown silty clay, occasional fine gravel, poorly sorted, moist, plastic
105					
110			11	23 / 47	
115					
120			12	42 / 516	Brown clayey sand fine to medium grained homogeneous

Notes

Gamma Log: 0 cps to 60 cps
Electric Log Normal: 0 to 800 Ω m

Gamma
Shift
.25m
.1m
.5m expanded scale
0 to 100 ohm meters full scale on expanded scale

90.2' Silty clay
Clayey silt
97.6'
Clay
118' Sand

Classification: VISUAL
Method of Investigation: ASTM D 1452-80

B-251

92

Date:
Started: 2/3/84
Finished: 2/4/84
Sheet 4 of 4

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-6 / G124
Surface Elev. 776.2
G. W. Elev. 657.67 3/26/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location Along berm boundary of cells 1 and 2 southern most point of west water of proposed leachate

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0-6 / 6-12 / 12-18	Description
120		SS	12	62 / 125/3"	Increasing sand content. 25% recovery
			11	97 / 83	5% recovery
				93	
12			14	96 / 76	Grey sand, medium-coarse grained, well sorted, unconsolidated, moist-saturated. Increased gravel content.
				51	
			15	125/5"	
110			16	46 / 41	Grey white gravelly sand/sandy gravel, slightly clayey, moist-saturated.
				80	Completed to 111.5

Notes

Gamma Log: 0 cps 50 cps
Electric Log Normal: 0 500 ft m
.5m expanded scale
.75m
.5m
Sand

Classification: VISUAL
Method of Investigation: ASTM D 1452-80

B-254

DATE STARTED 10/17/84 FINISHED 10/20/84 SHEET 1 OF 1	**RECRA RESEARCH, INC.** **SUBSURFACE LOG**	HOLE NO. G126 SURFACE ELEV. 776.4 G.W. ELEV. 655.09

PROJECT CECOS Waukegan, IL
Well Installations, #4C002333

LOCATION N 11857.80
E 9373.97

DEPTH-FT	LOG WELL G126	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER (0/6, 6/12, 12/18, 18/24)	DESCRIPTION	NOTES
					-776.4	
					Wash boring, no samples collected for subsurface information refer to boring lob MW-6 (completed 2/4/84, abandoned 10/26/84).	Boring advanced from 0 to 60 ft. with 7 in. dia. tri-cone bit, MOBILE B-61 drilling rig 6 in. dia. flush threaded steel casing installed to 60 ft. below grade and grouted
00						
05					110.0'	
		SB	1	25 / 42 / 34	Wet brownish-gray SILTY-CLAY, little SAND and GRAVEL, hard, plastic	Boring advanced from 6 in. dia. casing with 3 7/8 in. dia. tri-cone bit, wash boring
115						
		SB	2	37 / 50 / 37	-trace SAND and GRAVEL	
120					120.2'	656.2
		SB	3	150	Saturated gray (F) SANDY-SILT, uniformly graded, very dense, non-plastic	
125	3 7/8" / 6" / 7"	SB	4	35 / 37 / 17	126.5'	649.5 Boring completed at 126.5 ft.

CLASSIFICATION Visual

METHOD OF INVESTIGATION See notes

Date:
Started: 2-3-86
Finished: 2-4-86
Sheet 1 of 4

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-6 / G124
Surface Elev. 776.3
G. W. Elev. 657.67 3/26/86

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location Along berm boundary of Site 1 and 2
Southern most part, SE most point of proposed location

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler	Description
0		SS			
5					
10			1	8 / 10 / 15	Mottled orange yellow brown silty clay, occasional fine gravel, dry, dense, slightly plastic
15					
20			2	15 / 21 / 20	Brown grey silty clay, occasional fine gravel, moist, plastic
25					
30			3	8 / 13 / 11	
35					

Notes

Gamma Log 0 mR/hr 5 mR/hr 50 CPS

Electric Log Normal 0 500Ω m

Temporary Steel Casing to 18'

Casing Interference

Gamma

.25m

.5m expanded scale

Clay

Shift

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

B-255

92

Date:
Started: 2-6-84
Finished: 2-7-84
Sheet 1 of 4

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-7/G127
Surface Elev. 757.3
G. W. ELEV. 669.51 3/26/84

Project: Waukegan Hazardous Waste Management Facility, Winthrop Harbor, Illinois

Location 250' N of fence corner as illustrated in location map

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 / 6 / 12 / 18	Description
0		SS			
5					
10			1	12 / 17 / 23	Grey silty clay, occasional medium to coarse gravel, laminated dry - slightly moist, plastic
15					
20			2	14 / 18 / 18	High silt content
25					
30			3	11 / 11 / 12	Grey silty clay occasional fine gravel
35					
40					

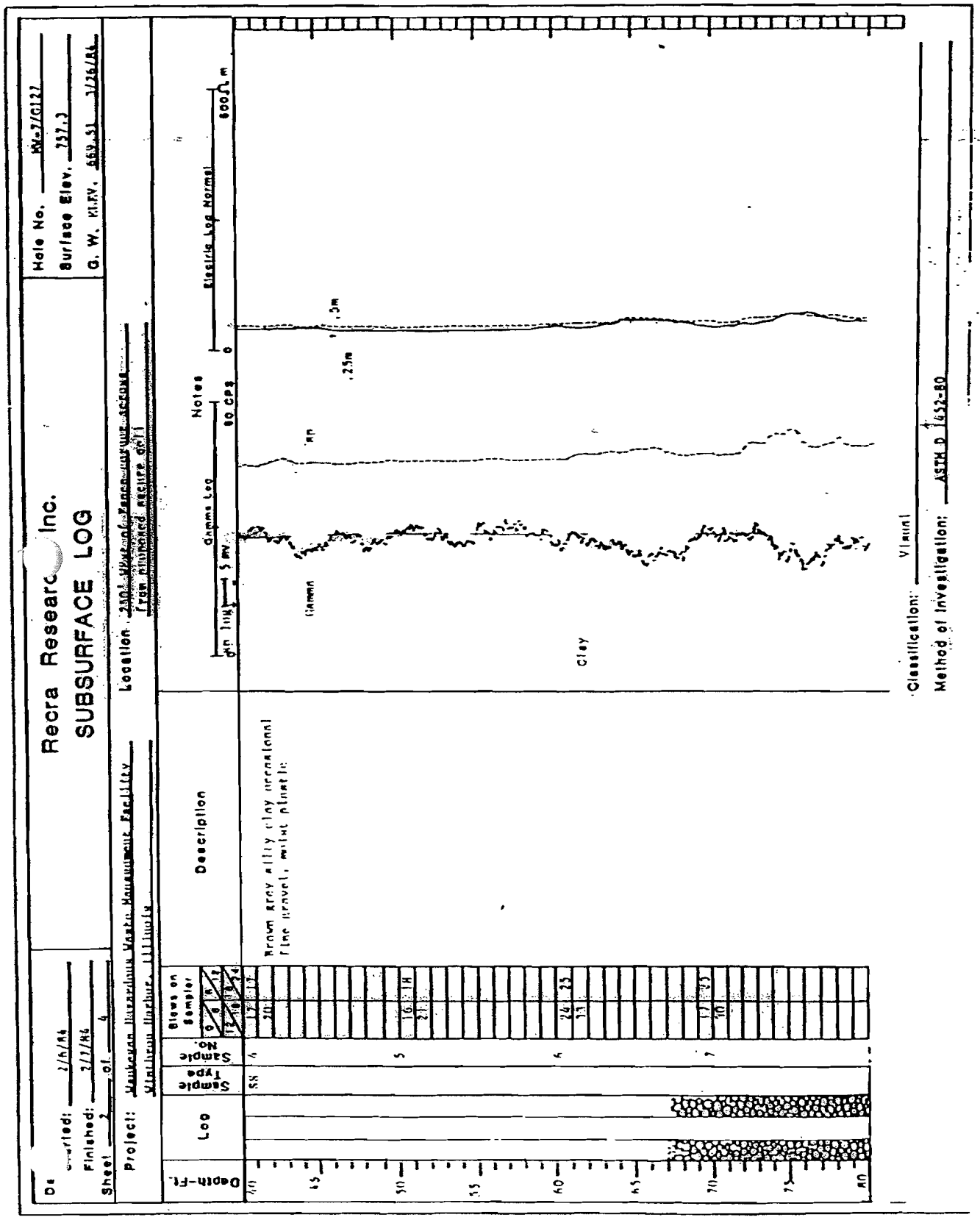
Notes

Gamma Log: 0 to 50 CPS
Electric Log Normal: 0 to 600Ω m

Temporary Steel Casing to 18'

Clay
Scale Shift
Gamma
sp
.25m
.5m

Classification: VISUAL
Method of Investigation: ASTM D 1452-80


Recra Research Inc.
SUBSURFACE LOG
Hole No. MW-7/GI12
Surface Elev. 592.2
G. W. Elev. 588.51 3/26/86
Project: Waukegan Hazardous Waste Management Facility
Location: 2300 Washington Ave. Waukegan, Illinois
Finished: 3/1/86
Sheet 2 of 4
Depth-Ft.
Log
Sample Type
Sample No.
Blows on Sampler
Description
Brown gray silty clay occasional fine gravel, moist plastic
Gamma Log
Notes
Electric Log Normal
Gamm
Clay
Classification: Visual
Method of Investigation: ASTM D 1452-80

Date:
Started: 2/6/84
Finished: 2/7/84
Sheet 1 of 4

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW-7/G127
Surface Elev. 757.3
G. W. Elev. 669.31 3/26/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location 250' N of fence corner as illustrated
in Location Map

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler (0-6 / 6-12 / 12-18)	Description
80		SS	8	7/8	5H
				33	Grey silty clay occasional medium to coarse gravel, dry to slightly moist plastic.
85					
90			9	26	11
				16	
95					
					Gravelly clay Abundant fine to coarse gravel, well rounded
100			10	79	117
			11	140	37
				103	Grey brown silty clay, pockets of silt, occasional fine gravel, moist, plastic
105					
110			12	18	41
				43	
115					
					Sandy silty clay
120					

Notes

Gamma Log: 0 on 10x | 5 MV | 50 CPS
Electric Log Normal: 0 | 500 Ω m

661.4
95.9'
Gravelly clay
102.1'
655.2
Clay
640.2
117.1'
Sandy silty Clay
637.3

Classification: Visual
Method of Investigation: ASTM D 1452-80

Started: 1/6/84
Finished: 1/7/84
Sheet 4 of 4

Recra Research Inc.
SUBSURFACE LOG

Hole No. MW-2/0127
Surface Elev. 757.1
G. W. Elev. 669.51 3/26/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location 700' N of (NW corner of Fenced Disposal Area Cell)

Depth Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0-6	6-12	12-18	18-24	Description
120		SS	13	12	11	16		Grey silt, trace to no clay, homogeneous, slightly moist, dense
125			14	12	17	11		Silty clay, saturated, very plastic.
130								
135			15	23	26			Increasing sand content. Sandy silty clay, occasional fine gravel
								completed to 136.1

Gamma Log: 0 to 100 CPS
Notes
Electric Log Normal: 0 to 800 Ω m

120' Gamma log
SP
Silt
125' 632.3
Silty
126.6' 630.7
Clay
135' 622.3
Sandy silty clay

SP terminated at 133'

Classification: Visual
Method of Investigation: ASTM D 1452-80

B-265

B-267

RE
STARTED 10/27/84
FINISHED 10/29/84
E 1 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G128
SURFACE ELEV. 774.8
G.W. ELEV. 660.82

PROJECT CECOS Waukegan IL
Well Installations #4C002333

LOCATION N 12126.10
E 9369.25

LOG WELL G128	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	BLOWS ON SAMPLER 6/12	BLOWS ON SAMPLER 12/18	BLOWS ON SAMPLER 18/24	DESCRIPTION	NOTES
							Wash boring, no samples collected	Boring advanced with 3 7/8 in. dia. tri-cone bit, truck mounted rotary drilling rig
							30'	
	SB	1	13	16	18		Wet brownish-gray SILTY-CLAY, hard, plastic	
	SB	2	15	25	28		-brown and gray mottled, trace (F-M) GRAVEL	
	SB	3	17	19	23		-brownish-gray, massive	
	SB	4	14	14	18			
	SB	5	11	11	19		-some SAND	
	SB	6	16	20	28			

6"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See notes

DATE STARTED 10/27/84
FINISHED 10/29/84
2 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G128
SURFACE ELEV. 774.8
G.W. ELEV. 660.82

PROJECT CECOS Waukegan IL
Well Installations #4C002333

LOCATION N 12126.10
E 9369.25

DEPTH - FT	LOG WELL G128	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0-6	BLOWS ON SAMPLER 6-12	BLOWS ON SAMPLER 12-18	BLOWS ON SAMPLER 18-24	DESCRIPTION	NOTES
60		SB	7	17	25	26		Some (F-M) GRAVEL	6 in. dia. flush threaded steel casing installed to 60 ft. below grade and grouted Boring advanced from 6 in. dia. casing with 3 7/8 dia. tri-cone bit, wash boring
65									
70		SB	8	7	14	16			
80		SB	9	15	21	32		-Little SAND, trace GRAVEL	
85									
90		SB	10	21	27	29			

3 7/8"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See notes

B-269

STARTED 10/27/84
ED 10/29/84
ET 3 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G128
SURFACE ELEV. 774.8
G.W. ELEV. 660.82

PROJECT CECOS Waukegan IL
Well Installations #4C002333

LOCATION N 12126.10
E 9369.25

LOG WELL G128	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
	SB	11	27	40	60			See sheets 1 and 2 for description
	SB	12	22	30	43			
	SB	13	23	26	29			
							116.5'-120.0' Saturated brownish gray CLAYEY-SILT, two (2)(F) SAND partings. Deposit is hard, slightly plastic	
	SB	14	40	36	49			
							121.5'-125.0' Saturated brownish gray SANDY-SILT, (F) SAND seam at approx 125.3-125.4 ft. Deposit is dense	
3 7/8" 7"	SB	15	54	33	30		125.8'	Boring completed at 125.8 ft.

CLASSIFICATION Visual
METHOD OF INVESTIGATION See notes

B-276

DATE STARTED 10/8/84
ISHED 10/11/84
SHEET 1 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G129
SURFACE ELEV. 771.4
G.W. ELEV. 658.08

PROJECT CECOS Waukegan IL
Well Installations #4C002333

LOCATION N 11625.49
E 9374.71

DEPTH-FT	LOG WELL G129	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
0								Wash boring, no samples collected	Boring advanced with 3 7/8 in. dia. tri-cone bit, truck mounted rotary drilling rig
30								30.0'	
		SB	1	11	14	19		Wet brown and gray mottled SILTY-CLAY, little (F) GRAVEL, deposit is hard, plastic	
35		SB	2	9	14	16			
40		SB	3	11	15	18		-little (F) SAND	
45		SB	4	18	26	31			
50		SB	5	18	25	33			
55		SB	6	11	17	26		-some (F) SAND	

6"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See notes

E STARTED 10/8/84
FI[illegible]ED 10/11/84
E[illegible] 2 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G129
SURFACE ELEV. 771.4
G.W. ELEV. 658.08

PROJECT CECOS Waukegan IL
Well Installations #4C002333

LOCATION N 11625.49
E 9374.71

LOG WELL G129	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
	SB	7	24	33	38			6 in. dia. flush threaded steel casing installed to 60 ft. below grade and grouted Boring advanced from 6 in. dia. casing with 3 7/8 in. dia. tri-cone bit, wash boring
	SB	8	5	15	24			
	SB	9	6	13	21		-little (F) SAND, some (F-M) GRAVEL	
	SB	10	15	23	36		-little (F-M) GRAVEL, occasional (F) SAND parting	

3 7/8"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See notes

ATE STARTED 10/8/84
ISHED 10/11/84
ET 3 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

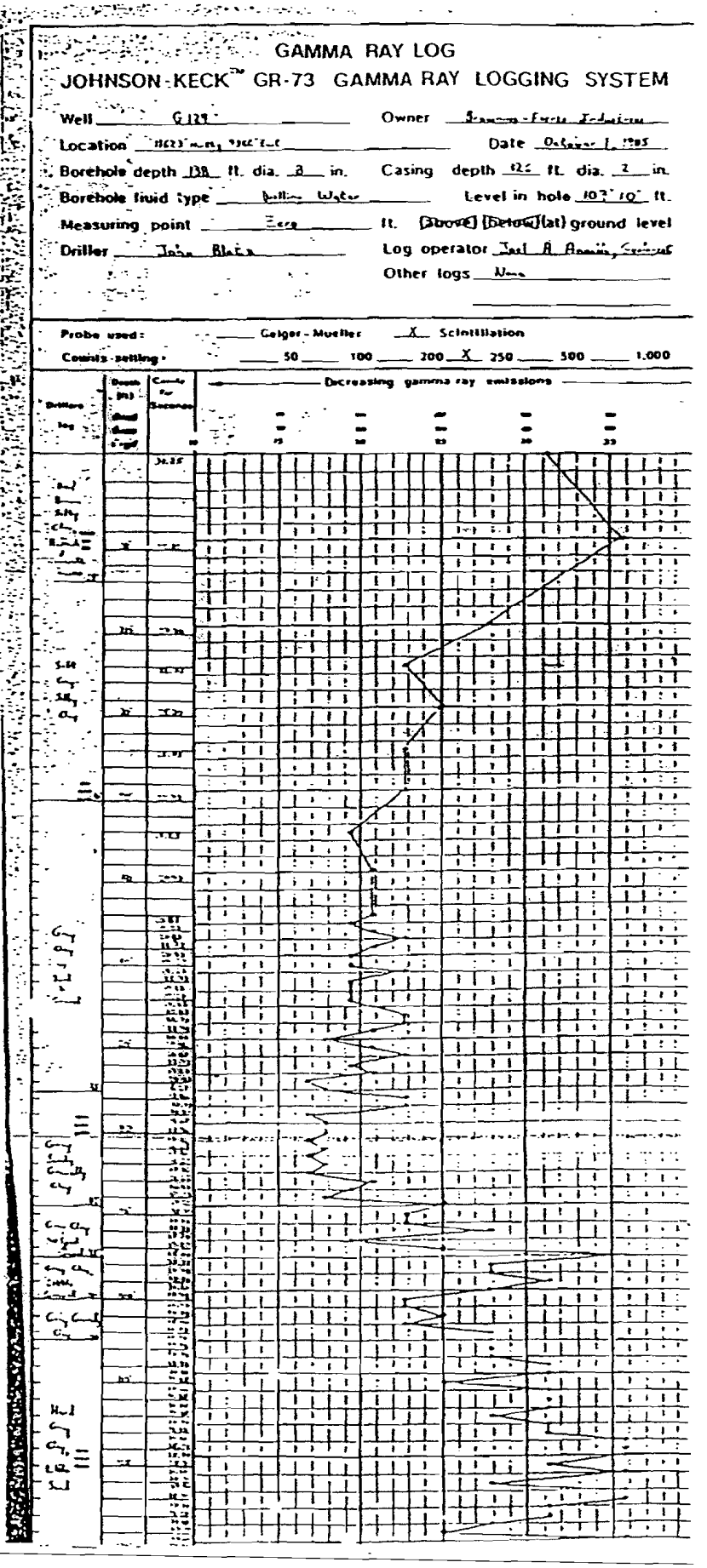
HOLE NO. G129
SURFACE ELEV. 771.4
G.W. ELEV. 658.08

PROJECT CECOS Waukegan IL
Well Installations #4C002333

LOCATION N 11625.49
E 9374.71

DEPTH-FT	LOG WELL G129	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
								91.5'-100.0'	
100		SB	11	24	32	36		Wet reddish brown SILT and CLAY, hard, medium plastic	
								101.5'-105.5'	
105		SB	12	28	35	47		Wet brownish gray SILTY-CLAY, little (F) GRAVEL, hard, plastic	
110		SB	13	32	42	47			
115		SB	14	30	39	43		-little (F-M) GRAVEL	
								116.5'-120.0'	
120		SB	15	93	50	67		Saturated gray stratified SILTY-(F) SAND and CLAYEY-SILT, hard/ very dense	
125		SB	16	85	100			-brownish gray SILTY-(F) SAND, very dense 126.0'	Boring completed at 126.0 ft.

CLASSIFICATION Visual
METHOD OF INVESTIGATION See notes



GAMMA RAY LOG

JOHNSON-KECK™ GR-73 GAMMA RAY LOGGING SYSTEM

Well G-139 Owner Gaseous Effects Technology

Location [illegible] Date October 1, 1985

Borehole depth 138 ft. dia. 8 in. Casing depth 125 ft. dia. 2 in.

Borehole fluid type Drilling Water Level in hole 107.10 ft.

Measuring point Zero ft. (above) (below) (at) ground level

Driller John Blake Log operator Joel A. Hamilton, Geologist

Other logs None

Probe used: ___ Geiger-Mueller X Scintillation

Counts - setting: ___ 50 ___ 100 ___ 200 X 250 ___ 500 ___ 1,000

Decreasing gamma ray emissions

Drillers log

Depth (ft.)

Counts per Second

0 25 50 75 100 125 150

DATE STARTED 10/16/84
FINISHED 10/20/84
SHEET 1 OF 4

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G130
SURFACE ELEV. 763.9
G.W. ELEV. 704.98

PROJECT CECOS Waukegan IL
Well Installations #4C002333

LOCATION N 11359.11
E 9364.93

DEPTH-FT	LOG WELL G130	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	BLOWS ON SAMPLER 6/12	BLOWS ON SAMPLER 12/18	BLOWS ON SAMPLER 18/24	DESCRIPTION	NOTES
0								Wash boring, no samples collected	Boring advanced with 3 7/8 in. dia. tri-cone bit, MOBILE B-61 drilling rig
								733.9	
30								30.0'	
		SB	1	16	8	9		Wet brownish gray SILTY-CLAY, little (F) GRAVEL, subangular. Deposit is very stiff, plastic	
35		SB	2	12	15	17			
		SB	3	12	16	21		-little (C) SAND	
45		SB	4	18	14	15		-some SAND	
50		SB	5	8	15	17			
55		SB	6	14	21	27			

8"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See notes

STARTED 10/16/84
COMPLETED 10/20/84
SHEET 2 OF 4

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G130
SURFACE ELEV. 763.9
G.W. ELEV. 704.98

PROJECT Cecos Waukegan Ill.
Well Installations, #4C002333

LOCATION N11359.11
E 9364.93

LOG Well G130	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6 6/12 12/18 18/24	DESCRIPTION	NOTES
	SB	7	10 / 16 / 20	occasional SILT pockets	6 in. dia. flush threaded steel casing installed to 60 ft. below grade and grouted.
				693.9	Boring advanced from 6 in. dia. casing with 3-1/8 in dia. tri-cone bit.
	SB	8	9 / 13 / 20	massive structured	
	SB	9	13 / 17 / 36		
				x 674	
				81.5-90.0'	
				Saturated gray and brown (M-C) SAND, dense, poorly graded.	
	SB	10	39 / 71 / 48		
				at 95.0 ft.; some GRAVEL.	

3 7/8"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

ATE STARTED 10/16/84
HED 10/20/84
E. 3 OF 4

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G130
SURFACE ELEV. 763.9
G.W. ELEV. 704.98

PROJECT CECOS Waukegan Ill. Well Installations, #4C002333
LOCATION N 11359.11 E 9364.93

DEPTH-FT	LOG Well G130	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
		SB	11	18	22	25		Wet brownish gray SILTY-CLAY, some (C) GRAVEL, hard, palstic	
0		SB	12	35	52	64			
5		SB	13	15	20	31			
10		SB	14	21	25	37			
15		SB	15	12	25	35			
120		SB	16	41	54	78			
125		SB	17	20	36	52		- little GRAVEL.	

668.4
95.5'

3 7/8"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

STARTED 10/16/84
FINISHED 10/20/84
SHEET 4 OF 4

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G130
SURFACE ELEV. 763.9
G.W. ELEV. 704.98

PROJECT CECOS Waukegan Ill.
Well Installations, #4C002333

LOCATION N 11359.11
E 9364.93

LOG Well G130	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6 6/12 12/18 18/24	DESCRIPTION	NOTES
	SB	18	25 39 35	131.5'	See sheet 3 for description Boring completed at 131.5 ft.

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

B-294

DATE STARTED 10/11/84
ISHED 10/13/84
EET 1 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G131
SURFACE ELEV. 755.1
G.W. ELEV. 659.98

PROJECT CECOS Waukegan Ill.
Well Installations, #6C002333

LOCATION N 11125.52
E 9374.01

DEPTH-FT	LOG Well G131	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0-6	BLOWS ON SAMPLER 6-12	BLOWS ON SAMPLER 12-18	BLOWS ON SAMPLER 18-24	DESCRIPTION	NOTES
								Wash boring, no samples collected. 30.0'	Boring advanced with 3-7/8 in. dia. tri-cone bit, MOBILE B-61 drilling rig.
30		SB	1	5	8	10		Wet brownish-gray SILTY-CLAY, trace SAND and GRAVEL, very stiff, plastic, massive.	
35		SB	2	7	9	14			
40		SB	3	14	22	32		- hard	
45	2	SB	4	9	13	19		- little SAND	
50		SB	5	7	14	20			
55		SB	6	8	11	18			

8"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

RTED 10/11/84
ISH 10/13/84
OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G131
SURFACE ELEV. 755.1
G.W. ELEV. 659.98

PROJECT CECOS Waukegan Ill. Well Installations. #4C002333

LOCATION N 11125.52 E 9374.01

LOG Well G131

SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
SB	7	8	13	10		- very stiff	6 in. dia. flush threaded steel casing installed to 60 ft. below grade and grouted. Boring advanced from 6 in. dia. casing with 3-7/8 in. dia. tri-cone bit, wash boring.
SB	8	12	22	22		- trace SAND, hard	
SB	9	9	13	23		- some SAND and GRAVEL	
SB	10	23	30	37			

3 7/8
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

B-296

RECRA RESEARCH, INC.

SUBSURFACE LOG

DATE STARTED 10/11/84
FINISHED 10/13/84
SHEET 3 OF 3

HOLE NO. G131
SURFACE ELEV. 755.1
G.W. ELEV. 659.98

PROJECT CECOS Waukegan Ill. Well Installations, #4C002333

LOCATION N 11125.52
E 9374.01

DEPTH-FT	LOG Well G131	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
100		SB	11	21	40	40			
105		SB	12	26	26	56	61		
		SB	13	28	47	67		– GRAVEL absent 111.5-115.0'	
115		SB	14	80	25/.33'			Saturated greenish-gray stratified SILTY-SAND, little GRAVEL, and SANDY-SILT, very dense. 115.9-120.0'	SB#15: Cobble at end of barrel inhibited complete sample penetration.
120		SB	15	70	25/.25'			Wet brownish-gray CLAYEY-SILT, occasional COBBLE. 120.75'	Boring completed at 120.75 ft.
125	3 7/8" / 7"								

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

GAMMA RAY LOG BY

JOHNSON-KECK GR-73 / GR-81 GAMMA RAY LOGGING SYSTEM

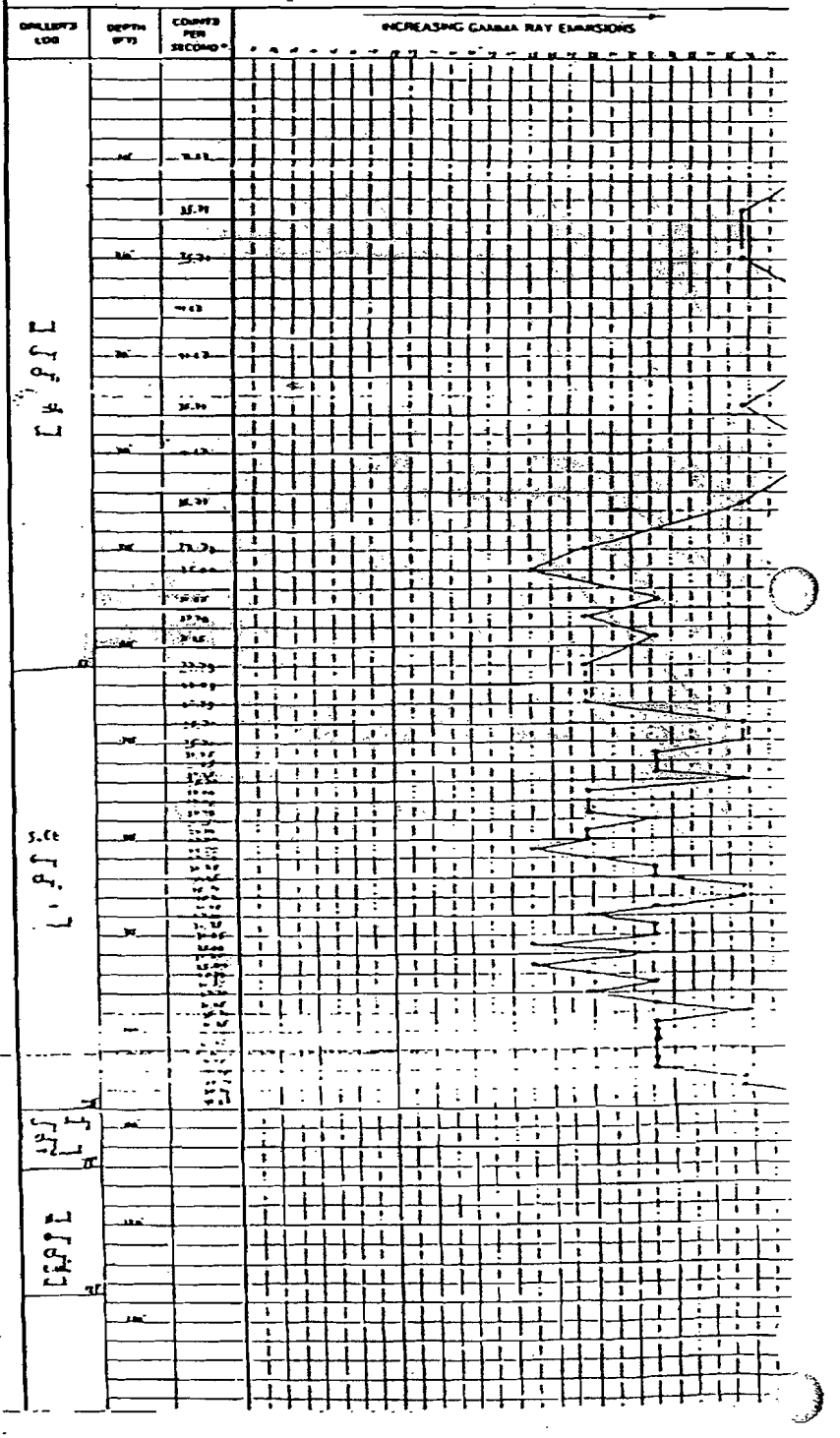
WELL G 131 OWNER [illegible]

MEASURING POINT Zero feet above/below ground level DATE October 19, 1981

DRILLER Al Craig BOREHOLE DEPTH 122 feet, DIAMETER 8 inches

CASING DEPTH 81 feet, DIAMETER 6 inches OPERATOR [illegible]

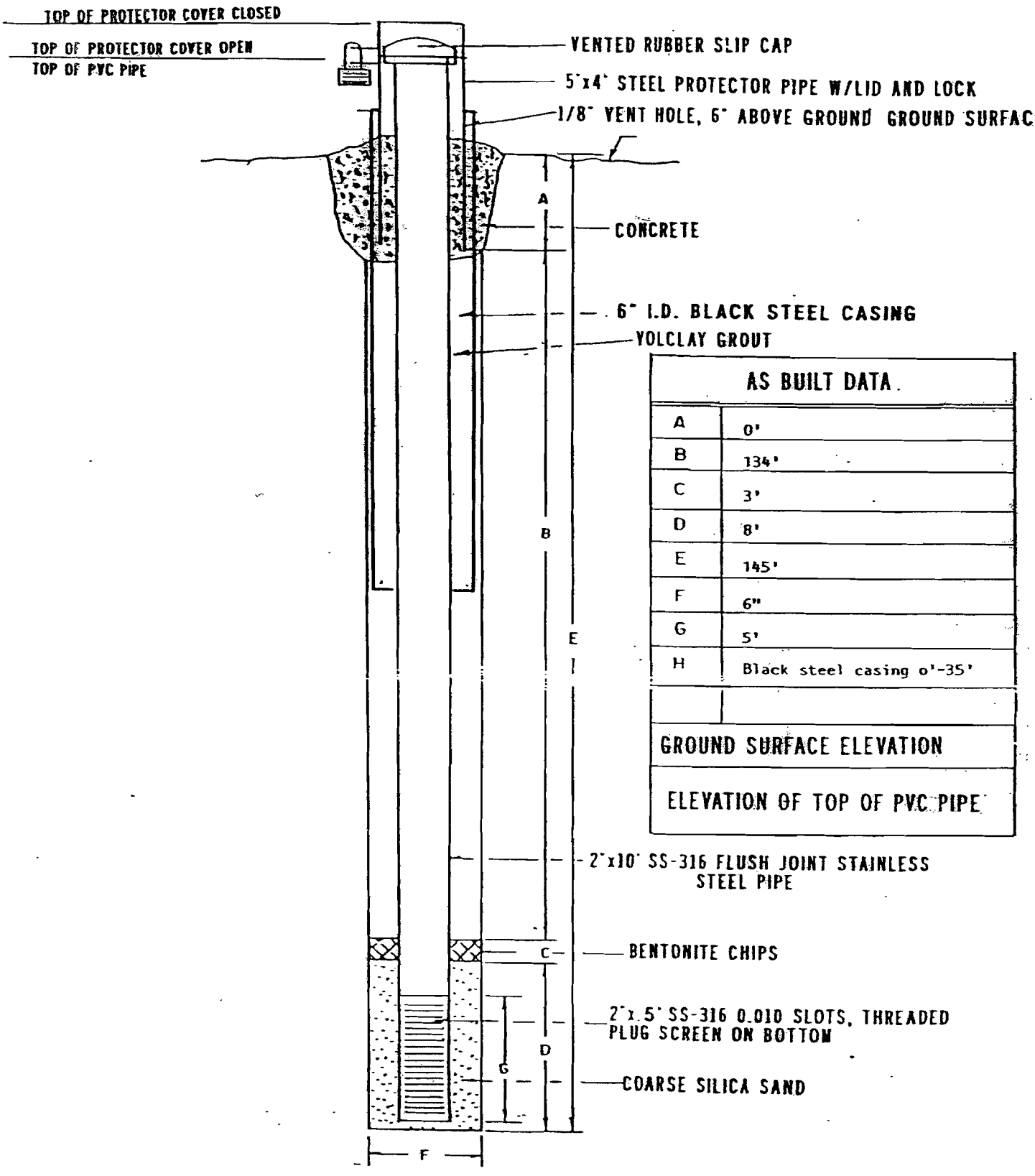
COUNTS SETTING (GR-73) 250 RANGE SETTING (GR-81) _____ TIME CONSTANT (GR-81) _____



GROUNDWATER MONITORING WELL G-131

NOT TO SCALE

B-300



AS BUILT DATA.	
A	0'
B	134'
C	3'
D	8'
E	145'
F	6"
G	5'
H	Black steel casing o'-35'
GROUND SURFACE ELEVATION	
ELEVATION OF TOP OF PVC PIPE	

Illinois Environmental Protection Agency B-301 **Well Completion Report**

#: _____ County LAKE Well # G-131 R-131

N WINTHROP HARBOR Grid Coordinate: Northing _____ Easting _____

lling Contractor: TESTING SERVICE CORPORATION Date Drilled Start: 11-91

ller: Greg Donovan Geologist: Darin Delaney Date Completed: 11-91

lling Method: Wet Rotary Drilling Fluids (type): Bentonite/potable water

nular Space Details

pe of Surface Seal: Concrete

pe of Annular Sealant: bentonite grout

Amount of cement: # of bags 9 lbs. per bag 50

Amount of bentonite: # of bags _____ lbs. per bag _____

pe of Bentonite Seal (Granular, Pellet): Enviroplug Chips

ount of bentonite: # of Bags 1 lbs. per bag 50

pe of Sand Pack: Coarse Grained Silica

rce of Sand: Colorado Silica Co.

Amount of Sand: # of bags 4 lbs. per bag 80

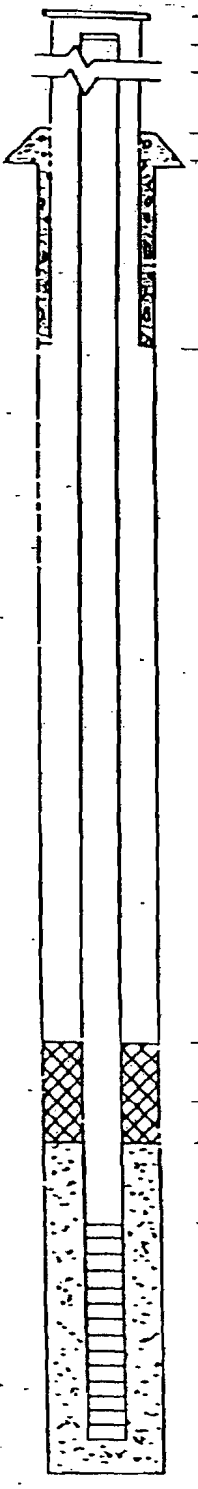
el nstruction Materials

	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint	SS-316			
Riser pipe above w.t.	SS-316			
Riser pipe below w.t.	SS-316			
Screen	SS-316			
Coupling joint screen to riser	SS-316			
Protective casing				Black Steel

Measurements to .01 ft. (where applicable)

Riser pipe length	140.0 feet
Protective casing length	6.0 feet
Screen length	5.0 feet
Bottom of screen to end cap	0.5 inches
Top of screen to first joint	2.0 inches
Total length of casing	145.0 feet
Screen slot size	0.010 inch
# openings in screen	
Diameter of borehole (in)	6.0 inches
ID of riser pipe (in)	2.0 inches

Elevations — .01 ft.



	805.6	MSL Top of Protective Casing
	805.3	MSL Top of Riser Pipe
2.0		ft. Casing Stickup
0	803.1	MSL Ground Surface
		ft. Top of Surface seal
		ft. Top of annular sealant
135.0	668.1	ft. Top of Seal
3		ft. Total Seal Interval
138.0	665.1	ft. Top of Sand
140.0	663.1	ft. Top of Screen
5		ft. Total Screen Interval
145.0	660.1	ft. Bottom of Screen
		ft. Bottom

Completed by: D. Delaney Surveyed by: _____ Ill. registration #: _____

B-308

MAT
RTED 10/3/84
ISHED 10/5/84
ET 1 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G132
SURFACE ELEV. 739.7
G.W. ELEV. 664.45

PROJECT CECOS Waukegan Ill.
Well Installations, #4C002333

LOCATION N 10833.04
E 9401.89

DEPTH-FT	LOG Well G132	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
								Wash boring, no samples collected.	Boring advanced with 3-7/8 in. dia. tri-cone bit, MOBILE B-61 drilling rig.
								30.0'	
30		SB	1	5	11	16		Wet brownish-gray SILTY-CLAY, little SAND and GRAVEL, one (1) SILTY-SAND parting (0.05 ft.) at approx. 31.1 ft. Deposit is very stiff, plastic	
35		SB	2	15	28	22			
40		SB	3	13	19	17		40.5' Saturated brownish-gray (F) SANDY-SILT and SILTY-(F-M) SAND stratified, dense. 41.5-45.0'	
45		SB	4	7	11	13		Saturated brownish-gray CLAYEY-SILT, some (F) SAND, trace GRAVEL, stiff, slightly plastic. 46.5-50.0'	
50		SB	5	7	11	12		Wet brownish-gray SILTY-CLAY, little SAND, trace GRAVEL, very stiff, plastic, massive.	
55		SB	6	12	17	17		- hard	

6"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

STARTED 10/3/84
FINISHED 10/5/84
SHEET 2 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G132
SURFACE ELEV. 739.7
G.W. ELEV. 644.45

PROJECT CECOS Waukegan Ill.
Well Installations, #4C002333

LOCATION N 10833.04
E 9401.89

LOG Well G132	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
	SB	7	14	15	37			6 in. dia. flush threaded steel casing installed to 60 ft. below grade and grouted. Boring advanced from 6 in. dia. casing with 3-7/8 in. dia. tri-cone bit, wash boring.
	SB	8	14	20	21			
	SB	9	17	21	29		- trace SAND, GRAVEL absent	
	SB	10	12	19	43		- little SAND and GRAVEL	

3 7/8"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

B-310

DATE STARTED 10/3/84
FINISHED 10/5/84
SHEET 3 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G132
SURFACE ELEV. 739.7
G.W. ELEV. 664.45

PROJECT CECOS Waukegan Ill. Well installations. #4C002333

LOCATION N 10833.04 E 9401.89

DEPTH-FT	LOG Well G132	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6 6/12 12/18 18/24	DESCRIPTION	NOTES
		SB	11	27 / 34 / 72 /	See sheet 2 for description	
		SB	12	/ 38 / 42 / 65	99.0-100.0'	
100		SB	13	27 / 82 / 82 /	Wet brownish-gray SILTY-CLAY, laminated, hard, plastic. 100.9'	SB#13; stratified clay, sand, and gravel
					Saturated gray SILTY-(F) SAND, uniformly graded, very dense. 101.2'	
105	3 7/8" 7"	SB	14	24 / 28 / 35 /	Saturated gray SANDY-GRAVEL, angular to sub-rounded shale and limestone. Deposit is very dense in-situ. 101.5'	
110					Saturated brownish-gray CLAYEY-SILT, some SAND, trace (F) GRAVEL, hard, non to slightly plastic 106.5'	Boring completed at 106.5 ft.

CLASSIFICATION Visual

METHOD OF INVESTIGATION See Notes

LOG OF BORING

B-311

PROJECT: BFI Winthrop Harbor Landfill

DRILLER: Patrick Engineering START: 2/06/89 COMPLETE: 2/17/89

RIG: CME-75/TRUCK LOCATION: N 10837.38, E 9372.75

GROUND EL.: 751.9 W.L. & TIME: 107' 1 week after drilling.

BORING NO.: G-132

SHEET: 1 OF 7

R132

G	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	751.9	0.0	Gray and brown mixed silty clay, little to some coarse to fine sand, trace to some coarse to fine gravel, stiff to hard, low plasticity, moist, fill CL					Advanced borehole using 4-1/4" I.D. HSA.
				SS-1 1.0-2.5 18"R	6 7 7		Frozen	
				SS-2 2.5-4.0 18"R	5 7 12		4.5+*	
				SS-3 4.0-5.5 12"R	6 7 7		4.5+*	
				SS-4 5.5-7.0 2"R	7 6 10		2.5*	
				SS-5 7.0-8.5 10"R	10 3 6		2.0*	
				SS-6 8.5-10.0 12"R	5 7 9		2.5*	
				SS-7 10.0-11.5 10"R	5 10 10		3.2*	
				SS-8 11.5-13.0 14"R	6 10 12		4.3*	
				SS-9 13.0-14.5 12"R	6 10 12		4.5+*	
				SS-10 14.5-16.0 10"R	7 11 11		3.6*	
				SS-11 16.0-17.5 18"R	7 9 11		4.3*	
				SS-12 17.5-19.0 19"R	5 7 9		4.5+*	
				SS-13 19.0-20.5 18"R	6 10 12		4.0*	

LOG OF BORING

B-312

PROJECT: BFI Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 2/06/89 COMPLETE: 2/17/89
BORING NO.: G-132
SHEET: 2 OF 7

RIG: CME-75/TRUCK LOCATION: N 10837.38, E 9372.75
GROUND EL.: 751.9 W.L. & TIME: 107' 1 week after drilling.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	731.9	20.0						
			Gray and brown mixed silty clay, little to some coarse to fine sand, trace to some coarse to fine gravel, stiff to hard, low plasticity, moist, fill CL	SS-14 20.5-22.0 18"R	9 11 17		4.2*	
				SS-15 22.0-23.5 18"R	13 17 20		4.2*	
				SS-16 23.5-25.0 18"R	10 18 23		3.4*	
				SS-17 25.0-26.5 18"R	19 27 21		3.6*	
				SS-18 26.5-28.0 18"R	12 16 17			
	724.0	27.9						
			Gray clayey silt, little coarse to fine sand, well graded, dense to very dense, low plasticity, saturated ML	SS-19 28.0-29.5 18"R	18 24 28			
				SS-20 29.5-31.0 18"R	10 13 16			
	720.8	31.1						
			Gray silty clay, some coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL	SS-21 31.0-32.5 18"R	10 10 13		3.1*	
				SS-22 32.5-34.0 18"R	10 11 12		2.7*	
				SS-23 34.0-35.5 18"R	7 9 10		2.1*	
				SS-24 35.5-37.0 18"R	7 9 12		2.2*	
				SS-25 37.0-38.5 18"R	8 11 12		2.8*	
				SS-26 39.0-40.5 18"R	9 9 9		2.2*	

LOG OF BORING

B-313

PROJECT: BFI Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 2/06/89 COMPLETE: 2/17/89
RIG: CME-75/TRUCK LOCATION: N 10837.38, E 9372.75
GROUND EL.: 751.9 W.L. & TIME: 107' 1 week after drilling

BORING NO.: G-132
SHEET: 3 OF 7

OG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	711.9	40.0	Gray silty clay, some coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL	SS-27 40.5-42.0 18"R	7 9 11		2.2*	
				SS-28 42.0-43.5 18"R	7 9 11		2.0*	
				SS-29 43.5-45.0 18"R	6 9 17		2.0*	
				SS-30A,B 45.0-46.5 18"R	6 15 15		4.2*	
	705.9	46.0	Gray clayey silt, little coarse to fine sand, well graded, dense, wet ML	SS-31A,B 46.5-48.0 18"R	10 7 8		0.5*	
	704.4	47.5	Gray silty clay, some coarse to fine sand, little coarse to fine gravel, soft to very stiff, low plasticity, moist CL	SS-32 48.0-49.5 18"R	7 10 11		1.4*	
				SS-33 49.5-51.0 18"R	9 11 13		3.2*	
	700.7	51.2	Gray clayey silt, trace coarse to fine sand, well graded, medium dense, wet ML	SS-34 51.0-52.5 18"R	4 7 17			
				SS-35 52.5-54.0 18"R	10 25 40			
	698.4	53.5	Gray clayey and silty coarse to fine sand, some coarse to fine gravel, well graded, medium dense, moist SC	SS-36 54.0-55.5 18"R	9 13 11		2.5*	
	796.6	55.2	Gray silty clay, some coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL	SS-37 55.5-57.0 18"R	6 9 12		2.5*	
				SS-38 57.0-58.5 18"R	4 6 8		3.0*	
				SS-39 59.0-60.0 18"R	6 6 9		0.8*	

LOG OF BORING

PROJECT: BFI Winthrop Harbor Landfill B-314 BORING NO.: G-132
DRILLER: Patrick Engineering START: 2/06/89 COMPLETE: 2/17/89 SHEET: 4 OF 7

RIG: CME-75/TRUCK LOCATION: N 10837.38, E 9372.75
GROUND EL.: 751.9 W.L. & TIME: 107' 1 week after drilling.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	691.9	60.0	Gray silty clay, some coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL	SS-40 60.0-61.5 18"R	4 6 9		1.2*	
				SS-41 61.5-63.0 18"R	8 9 10		1.8*	
				SS-42 63.0-64.5 18"R	9 11 11		1.2*	
				SS-43 64.5-66.0 18"R	11 10 11		1.5*	
				SS-44 66.0-67.5 18"	8 8 8		2.2*	
				SS-45 67.5-69.0 18"R	9 10 14		3.2*	
				SS-46 69.0-70.5 18"R	8 12 16		3.5*	
				SS-47 70.5-72.0 18"R	8 10 14		1.9*	
				SS-48 72.0-73.5 18"R	11 16 18		3.6*	
				SS-49 73.5-75.0 18"R	10 12 15		0.8*	
				SS-50 75.0-76.5 18"R	5 7 8		2.1*	
				SS-51 76.5-78.0 18"R	7 11 12		1.8*	
				SS-52 78.0-79.5 18"R	9 14 19		2.7*	

LOG OF BORING

B-315

PROJECT: BFI Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 2/06/89 COMPLETE: 2/17/89
RIG: CME-75/TRUCK LOCATION: N 10837.38, E 9372.75
GROUND EL.: 751.9 W.L. & TIME: 107' 1 week after drilling

BORING NO.: G-132
SHEET: 5 OF 7

OG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	671.9	80.0	Gray silty clay, some coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL	SS-53 79.5-81.0 18"R	16 16 18		2.5*	
				SS-54 81.0-82.5 18"R	10 15 16		1.7*	
				SS-55 82.5-84.0 18"R	12 14 15		2.2*	
				SS-56 84.0-85.5 18"R	15 24 35		4.5+*	
				SS-57 85.5-87.0 18"R	24 32 37		4.5+*	
				SS-58 87.0-88.5 18"R	11 16 18		4.2*	
				SS-59 88.5-90.0 18"R	13 17 19		2.4*	
				SS-60 90.0-91.5 18"R	18 24 24		4.5+*	
				SS-61 91.5-93.0 18"R	34 36 23		4.5+*	
				SS-62 93.0-94.5 18"R	34 26 36		4.5*	
				SS-63 94.5-96.0 18"R	14 27 32		2.4*	
				SS-64 96.0-97.5 18"R	6 11 18		2.7*	
				SS-65 97.5-99.0 18"R	19 22 29		2.7*	
				SS-66 99.0-100.5 18"R	13 14 15		4.3*	

LOG OF BORING

B-316

PROJECT: BFI Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 2/06/89 COMPLETE: 2/17/89
BORING NO.: G-132
SHEET: 6 OF 7

RIG: CME-75/TRUCK
LOCATION: N 10837.38, E 9372.75
GROUND EL.: 751.9
W.L. & TIME: 107' 1 week after drilling.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	651.9	100.0	Gray silty clay, some coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL	SS-67 100.5-102 18"R	11 18 20		2.0*	
				SS-68 102-103.5 0"R	15 22 28			Pushed cobble
				SS-69 103.5-105 18"R	25 30 32		4.0*	
				SS-70 105-106.5 18"R	20 26 32		3.2*	
				SS-71 106.5-108 18"R	22 34 42		3.4*	
				SS-72 108-109.5 18"R	- 22 29		4.5+*	
				SS-73 109.5-111 18"R	21 25 27		4.2*	
	640.4	111.5		SS-74A,B,C 111-112.5 18"R	50 42 15		4.2* 4.0*	
	639.9	112.0	Gray silty coarse to fine sand, some coarse to fine gravel, well graded, very dense, saturated SM					
			Gray silty clay, some coarse to fine sand, little coarse to fine gravel, stiff to hard, low plasticity, moist CL	SS-75 112.5-114 12"R	12 17 21		1.7*	
				SS-76 114-115.5 18"R	14 23 35		4.5+*	
				SS-77 115.5-117 18"R	17 24 28		4.3*	
	634.4	117.5		SS-78A,B,C 117-118.5 10"R	24 75 95		4.5+*	
	634.0	117.9	Limestone Cobble					
			Gray silty fine sand, trace medium sand, well graded, extremely dense, moist SM	SS-79 118.5-119 6"R	153/6" - -			
	631.8	120.0		SS-80A,B	65			

PATRICK ENGINEERING INC

LOG OF BORING

B-317

PROJECT: BFI Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 2/06/89 COMPLETE: 2/17/89
RIG: CME-75/TRUCK LOCATION: N 10837.38, E 9372.75
GROUND EL.: 751.9 W.L. & TIME: 107' 1 week after drilling.

BORING NO.: G-132
SHEET: 7 OF 7

OG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	631.9	120.0						
	631.4	120.5	Gray silty clay, some coarse to fine sand, some coarse to fine gravel, hard, low plasticity, moist CL	SS-80A,B 119-120.5 18"R	65 65 70		4.5+*	
				Auger from 120.5-122				
	629.9	122.0	End of Boring at 122.0'.					

GEOLOGIC LOG OF BORING

R-132

PROJECT BFI ZION WASTE MANAGEMENT FACILITY I B-318

BORING NO. G-132

DRILLER Patrick Engineering, Inc.

WATER LEVELS

RIG CME 75 METHOD Hollow Stem Auger

AT COMPLETION

HOURS

G.S. ELEVATION 751.9 DATE STARTED 2/ 6/89

WHILE DRILLING

T.O.B. ELEVATION 629.9 DATE COMPLETED 2/17/89

SHEET 1 OF 7

FROM SAMPLE OBSERVATION 2/10/89 Top of PVC Riser: 753.25

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Brown and grey silty CLAY, tr. sand and gravel	Fill (recompacted till)	
1SS							
2SS							
3SS							
4SS							
5SS					paper refuse between 7.0' and 11.5'		
6SS							
7SS							
88SS							
9SS							
10SS							
11SS					black spots 16.0' - 17.5'		
12SS							
13SS					oxidized spots 19.0' - 20.5'		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2929 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG# 8440
IND. CPC 257

JOB NO. 89-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY I B-319

BORING NO. G-132

DRILLER Patrick Engineering, Inc.

RIG CME 75 METHOD Hollow Stem Auger

WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING

G.S. ELEVATION 751.9 DATE STARTED 2/ 6/89

T.O.B. ELEVATION 629.9 DATE COMPLETED 2/17/89

SHEET 2 OF 7

FROM SAMPLE OBSERVATION 2/10/89

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
13SS					Brown and grey silty CLAY, tr. sand and gravel	Fill (recompacted till)	
14SS							
15SS							
16SS					some sand in randomly oriented pockets between 23.5' and 26.5'		
17SS					725.4		
18SS					Brown fine-coarse SAND and small-large GRAVEL	lacustrofluvial (coarse)	
					723.9		
19SS					Grey massive SILT, sl. laminated	(medium)	
20SS					720.8		
21SS					Grey silty CLAY, tr. sand and gravel	Wadsworth Till (unweathered)	
22SS							
23SS							
24SS							
25SS							
26SS							

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2928 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
A.I.P.G. CPG# 8440

JOB NO. 89-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY I B-320
BORING NO. G-132
DRILLER Patrick Engineering, Inc.
WATER LEVELS
RIG CME 75 METHOD ~~Hollow Stem Augur~~
AT COMPLETION
HOURS
G.S. ELEVATION 751.9 DATE STARTED 2/6/89
WHILE DRILLING
T.O.B. ELEVATION 629.9 DATE COMPLETED 2/17/89
SHEET 3 OF 7
FROM SAMPLE OBSERVATION 2/10/89

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40	26SS					Grey silty CLAY, tr. sand and gravel	Wadsworth Till	
41	27SS							
42								
43	28SS							
44	29SS							
45						706.9		
46	30SS					Grey silty CLAY, tr. sand and gravel, laminated w/silt and fine sand hairline partings	Wadsworth Till (transitional)	
47	31SS				705.4	704.9 Grey SILT	Lacustrofluvial (medium-fine)	
48						Grey CLAY, laminated w/silt and fine sand partings		
49	32SS							
50	33SS							
51						700.7		
52	34SS					Grey SILT w/some interlayered clay below 52.5'	(medium)	
53	35SS					698.4		
54						Grey fine-coarse SAND and small-medium gravel, some clay	(coarse)	
55	36SS					696.7		
56	37SS					Grey silty CLAY, tr. sand and gravel w/silt and fine sand hairline partings	Wadsworth Till (transitional)	
57						brownish-grey between 55.5' and 57.0'		
58	38SS					693.4		
59	39SS					Grey silty CLAY, tr. sand and gravel	Wadsworth Till	
60								

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
A.I.P.G. CPG# 6440
IND. CPG 237

JOB NO. 89-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY I B-321

BORING NO. G-132

ILLER Patrick Engineering, Inc.

WATER LEVELS

RIG CME 75 METHOD Hollow Stem Auger

AT COMPLETION _____

_____ HOURS _____

G.S. ELEVATION 751.9 DATE STARTED 2/ 6/89

WHILE DRILLING _____

T.O.B. ELEVATION 629.9 DATE COMPLETED 2/17/89

SHEET 4 OF 7

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40SS					Grey silty CLAY, tr. sand and gravel	Wadsworth Till	6
41SS							9
42SS							
43SS							0
					685.9		
44SS					Grey silty CLAY to clayey SILT	Wadsworth Till (transitional)	
					684.4		
45SS					Grey silty CLAY, tr. sand and gravel tr. hairline silt partings	Wadsworth Till	0
46SS							0
47SS							
48SS							0
49SS							
50SS					w/silt and fine sand 75.0' - 76.5'		0
51SS							
52SS							0
53SS							

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2920 N. SHOREWOOD DRIVE

JOB NO. 89-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY I B-322

DRILLER Patrick Engineering, Inc.

RIG CME 75 METHOD Hollow Stem Auger

G.S. ELEVATION 751.9 DATE STARTED 2/ 6/89

T.O.B. ELEVATION 629.9 DATE COMPLETED 2/17/89

FROM SAMPLE OBSERVATION 2/10/89

BORING NO. G-132

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 5 OF 7

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
80	53SS					Grey silty CLAY, tr. sand and gravel	Wadsworth Till	
81								0
82	54SS							
83	55SS							
84								0
85	56SS							
86	57SS							0
						664.9		
87	58SS					Grey CLAY, laminated w/horizontal partings	Lacustrofluvial (fine)	
89	59SS							
90	60SS							
91						660.4		
92	61SS					Grey silty CLAY, sl. laminated, tr. sand and gravel	Wadsworth Till (transitional)	0
93	62SS							
94								0
95	63SS							
96								
97	64SS							0
98	65SS							
						652.9		
100	66SS					Grey silty CLAY, tr. sand and gravel	Wadsworth Till	0

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG# 6440
IND. CPG 257

JOB NO. 89-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY I B-323

DRILLER Patrick Engineering, Inc.

RIG CME 75 METHOD Hollow Stem Auger

G.S. ELEVATION 751.9 DATE STARTED 2/6/89

T.O.B. ELEVATION 629.9 DATE COMPLETED 2/17/89

FROM SAMPLE OBSERVATION 2/10/89

BORING NO. G-132

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 6 OF 7

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
66SS					Grey silty CLAY, tr. sand and gravel	Wadsworth Till	
67SS							
68SS	Pushed Cobble						
69SS							
70SS							
71SS							
72SS					642.4		
73SS					Grey CLAY, laminated, tr. small white pebbles	Shallow Drift Aquifer Interglacial Sediments (fine)	
					640.4		
74SS				639.9	Grey fi-co. SAND and sm-lg. GRAVEL	(coarse)	
75SS					Grey silty, fine sandy CLAY, w/silt seams	(fine)	
					638.0		
76SS					Grey sandy CLAY, tr. sand and gravel		
77SS					NOTE: Samples below 117' were not observed - from Patrick's logs		
					634.4		
					633.9 COBBLE		
					Grey silty fine SAND, tr. med. sand		
					631.9		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
3928 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG-3 8440
IND. CPG 237

JOB NO. 89-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY I B-32

DRILLER Patrick Engineering, Inc.

RIG CME 75 METHOD Hollow Stem Auger

G. S. ELEVATION 751.9 DATE STARTED 2/ 6/89

T.O.B. ELEVATION 629.9 DATE COMPLETED 2/17/89

FROM SAMPLE OBSERVATION 2/10/89

BORING NO. G-132

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 7 OF 7

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
80SS					631.9 Grey silty CLAY (?)sm.sand&grvl.		
Auger					Unknown		
					629.9		
					T.O.B. 122.0'		

120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 140

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE

JOB NO. 89-105

LOGGED BY R.L. Jennings

B-330

RECRA RESEARCH, INC.

SUBSURFACE LOG

LTE
STARTED 10/1/84
HED 10/3/84
ET 1 OF 3

HOLE NO. G133
SURFACE ELEV. 739.4
G.W. ELEV. 664.99

PROJECT CECOS Waukegan Ill.
Well Installations, #4C002333

LOCATION N 10563.40
E 9398.81

DEPTH-FT	LOG Well G133	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	BLOWS ON SAMPLER 6/12	BLOWS ON SAMPLER 12/18	BLOWS ON SAMPLER 18/24	DESCRIPTION	NOTES
								Wash boring, no samples collected. 709.4 30.0'	Boring advanced with 3-7/8 in. dia. tri-cone bit, MOBILE B-61 drilling rig.
30		SB	1	8	10	15		Wet brownish-gray SILTY-CLAY, little SAND and GRAVEL, very stiff, plastic, massive.	
35		SB	2	9	18	27		- hard	
		SB	3	10	11			698.4 41.0'	
						11		Saturated brownish-gray CLAYEY-SILT, some (F) SAND, trace GRAVEL, stiff, non to slightly plastic. 41.5-45.0'	±696 ±694
45		SB	4	17	19	25		Wet brownish-gray SILTY-CLAY, some SAND, little GRAVEL, hard, medium plastic, massive.	
50		SB	5	12	21	23		- little SAND	
55		SB	6	11	19	16			

8"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

B-331

RECRA RESEARCH, INC.

SUBSURFACE LOG

RT 10/1/84
ISH 10/3/84
2 OF 3

HOLE NO. G133
SURFACE ELEV. 739.4
G.W. ELEV. 664.99

PROJECT CECOS Waukegan Ill.
Well Installations, #4C002333

LOCATION N 10563.40
E 9398.81

LOG Well G133	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
	SB	7	18	17	22			6 in. dia. flush threaded steel casing installed to 60 ft. below grade and grouted.
							± 674	
							61.5-70.0'	
							Saturated brownish-gray CLAYEY-SILT, three (3) SANDY-SILT partings, stratified, non to slightly plastic, hard.	Boring advanced from 6 in. dia. casing with 3-7/8 in. dia. tri-cone bit, wash boring.
	SB	8	17	15	18			
							± 664	
							71.5-80.0'	
							Wet brownish-gray SILTY-CLAY, trace (F) GRAVEL, hard, plastic, massive	
	SB	9	20	23	23			
	SB	10	22	32	28		- little SAND and GRAVEL.	

3 7/8"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

B-332

DATE
STED 10/1/84
NISHED 10/3/84
ET 3 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G133
SURFACE ELEV. 739.4
G.W. ELEV. 664.99

PROJECT CECOS Waukegan Ill.
Well Installations, #4C002333

LOCATION N 10563.40
E 9398.81

DEPTH-FT	LOG Well G133	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6 6/12 12/18 18/24	DESCRIPTION	NOTES
		SB	11	18 31 34	639.3 100.1'	
00		SB	12	30 95 37	Saturated brownish-gray stratified SILTY-SAND, some GRAVEL, CLAYEY-SILT, and GRAVELLY-SAND, very dense. 101.5-105.0' ±636	SB#12; stratified silt, sand, and gravel.
05	3 7/8" 7"	SB	13	21 56 26	Wet brownish-gray CLAYEY-SILT, some SAND, little (F) GRAVEL, slightly plastic, hard. 106.5'	
10						Boring completed at 106.5 ft.

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY I B-342

BORING NO. G-133

DRILLER Patrick Engineering, Inc.

WATER LEVELS

RIG CME 75 METHOD Hollow Stem Auger

AT COMPLETION

HOURS

G.S. ELEVATION 754.0 DATE STARTED 1/31/89

WHILE DRILLING

T.O.B. ELEVATION 626.5 DATE COMPLETED 2/3/89

SHEET 1 OF 7

FROM SAMPLE OBSERVATION 3/89

Top of PVC Riser: 755.98

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Brown and grey silty CLAY, tr. sand and gravel, oxidized spots, tr. silt partings	Fill (recompacted till)	G
1SS							
2SS							
3SS							
4SS							
5SS							
6SS							
7SS					742.5		
8SS					Brown silty CLAY, tr. sand and gravel, oxidized, mottled, jointed, tr. roots	Wadsworth Till (weathered)	
9SS							
10SS					738.0		
11SS					Grey silty CLAY, tr. sand and gravel, tr. oxidized spots		
12SS							
13SS					734.0		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 6440
IND. CPG 337

JOB NO. 89-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY I B-343

LLER Patrick Engineering, Inc.

RIG CME 75 METHOD Hollow Stem Auger

G.S. ELEVATION 754.0 DATE STARTED 1/31/89

T.O.B. ELEVATION 626.5 DATE COMPLETED 2/3/89

FROM SAMPLE OBSERVATION 3/89

BORING NO. G-133

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 2 OF 7

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
13SS					734.0 Brown silty CLAY, tr. sand and gravel w/pale grey and dark grey areas	Wadsworth Till (weathered)	
14SS							
15SS							
16SS							
17SS					several coarse sand seams below 25.0' 727.5		
SS					Brown clayey fine-coarse SAND and small-large GRAVEL grading into sandy gravelly CLAY	Lacustrofluvial (coarse-fine)	
19SS					724.5		
20SS					Grey silty CLAY, tr. sand and gravel	Wadsworth Till (unweathered)	
21SS							
22SS							
23SS							
24SS							
25SS							
26SS							

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
A.I.P.G. CPGS 6440

JOB NO. 89-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY I B-344

DRILLER Patrick Engineering, Inc.

RIG CME 75 METHOD Hollow Stem Auger

G.S. ELEVATION 754.0 DATE STARTED 1/31/89

T.O.B. ELEVATION 626.5 DATE COMPLETED 2/ 3/89

FROM SAMPLE OBSERVATION 3/89

BORING NO. G-133

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 3 OF 7

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
27SS					Grey silty CLAY, tr. sand and gravel	Wadsworth Till	
28SS					brownish-grey @ 43.0'		
29SS							
30SS							
31SS							
32SS					705.2		
					Grey SILT w/fine sand seams	Lacustrofluvial (medium-coarse)	
33SS					704.4 Grey fine-coarse SAND w/small-large gravel		
34SS					702.0		
35SS					Grey silty fine SAND	(medium)	
36SS							
37SS							
38SS							
39SS							
40SS							

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2928 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
A.I.P.G. CPG3 8440
IND CPG 237

JOB NO. 89-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY I B-345

DRILLER Patrick Engineering, Inc.

RIG CME 75 METHOD Hollow Stem Auger

G.S. ELEVATION 754.0 DATE STARTED 1/31/89

T.O.B. ELEVATION 626.5 DATE COMPLETED 2/ 3/89

FROM SAMPLE OBSERVATION 3/89

BORING NO. G-133

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 4 OF 7

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40SS					Grey silty fine SAND	Lacustrofluvial (medium)	
					693.0		
41SS							
42SS					690.0		
					Grey SILT		
43SS					689.3		
					Grey silty CLAY, tr. sand and gravel	Wadsworth Till.	
44SS							
					brownish-grey @ 67.0'		
45SS							
46SS							
47SS							
48SS							
49SS							
					brownish-grey below 74.5'		
50SS							
51SS							
52SS							
					silt parting @ 78.5'		
					625.0		
53SS					Brownish-grey CLAY, laminated w/ silt seams and partings	Lacustrofluvial (fine)	

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 #440
IMD CPG 237

JOB NO. 89-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY I B-346

DRILLER Patrick Engineering, Inc.

RIG CME 25 METHOD Hollow Stem Auger

G.S. ELEVATION 754.0 DATE STARTED 1/31/89

T.O.B. ELEVATION 626.5 DATE COMPLETED 2/3/89

FROM SAMPLE OBSERVATION 3/89

BORING NO. G-133

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 5 OF 7

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
30	53SS					Brownish-grey CLAY, laminated w/ silt	Lacustrofluvial (fine)	
					673.0	seams and partings		
31	54SS					Brownish-grey fine-coarse SAND and small-large GRAVEL	(coarse)	
32								
					671.0			
33	55SS					Grey, br. grey & pinkish CLAY, lam.	(fine)	
					670.5	w/sand and silt seams and partings		
34	56SS					Grey silty CLAY, some sand and small gravel	Wadsworth Till (transitional)	
35								
	57SS							
36					667.5			
37	58SS					Brownish-grey silty CLAY, tr. sand and gravel	Wadsworth Till	
89	59SS							
90	60SS							
91								
92	61SS							
93	62SS							
94								
95								
96	?							
97								
98	63SS							
	64SS							
100								

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2928 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
A.I.P.G. CPG5 #440
IND CPG 237

JOB NO. 89-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY I B-347 — BORING NO. G-133

DRILLER Patrick Engineering, Inc. — WATER LEVELS AT COMPLETION

RIG CME 75 — METHOD Hollow Stem Auger — HOURS

G.S. ELEVATION 754.0 — DATE STARTED 1/31/89 — WHILE DRILLING

T.O.B. ELEVATION 626.5 — DATE COMPLETED 2/3/89 — SHEET 6 OF 7

FROM SAMPLE OBSERVATION 3/89

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
64SS					Brownish-grey silty CLAY, tr. sand and gravel	Wadsworth Till	
65SS							
66SS							
67SS							
68SS							
					647.3		
?					Interlayered grey fine-coarse SAND and CLAY	Lacustrofluvial (fine-coarse)	
S					645.9		
					Brownish-grey silty CLAY, tr. sand and gravel	Wadsworth Till	
70SS							
71SS							
72SS					641.3		
				641.0	Brownish-grey fi-co.SAND &sm-lg.GRV.	Shallow Drift Aquifer	
73SS					Grey sandy CLAY, tr. sand and gravel	Interglacial Sediments (fine)	
					638.8		
74SS					Brownish-grey fine sandy SILT	(medium)	
					638.0		
75SS					Grey CLAY and SILT w/fine sand seams	(fine)	
					637.0		
76SS					Grey silty, sandy CLAY w/gravel	(fine) Diatomite	
				E			
77SS							

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050

JOB NO. 89-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI ZION WASTE MANAGEMENT FACILITY I B-348

ER Patrick Engineering, Inc.

G CME 75 METHOD Hollow Stem Auger

S.S. ELEVATION 754.0 DATE STARTED 1/31/89

T.O.B. ELEVATION 626.5 DATE COMPLETED 2/3/89

FROM SAMPLE OBSERVATION 3/89

BORING NO. G-133

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 2 OF 2

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
77SS					Grey silty, sandy, gravelly CLAY	Shallow Drift Aquifer Interglacial Sediments (fine) Illinoian	
?					631.0		
79SS					Brown silty CLAY, tr. sand and gravel 629.4	(fine)	
80SS					Brown clayey SILT 627.8	~~(fine-medium)~~ SDA	
81SS					Brown very silty CLAY, tr. sand and gravel 626.5	~~(fine)~~ Lower Till	
					T.O.B. 127.5'		

130
135
140

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
120 N. SHOREWOOD DRIVE
HENRY, ILLINOIS 61537

JOB NO. 89-105

LOGGED BY R.L. Jennings

B-349

DATE STARTED 9/26/84
FINISHED 10/1/84
SHEET 1 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G134
SURFACE ELEV. 741.
G.W. ELEV. 664.07

PROJECT CECOS Waukegan Ill. Well Installations, #4C002333
LOCATION N 10296.30 E 9406.24

DEPTH-FT	LOG Well G134	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
								Auger boring, no samples taken.	Boring advanced wi 3-3/8 in. ID hollo stem augers, MOBIL B-61 drilling rig.
								711.6	
0								30.0'	
		SB	1	12	16			Wet brownish-gray SILTY-CLAY, some SAND and GRAVEL, hard, plastic.	Water encountered 23 ft.
				15					
		SB	2	7	15				
				20					
								703	
								36.5-40.0'	
		SB	3	25	32			Saturated gray (F) SANDY-SILT/ CLAYEY-SILT, one (1) 0.5 inch thick SAND seam at approx. 41 ft., deposit is very dense, non to slightly plastic.	
				34					
								705.5	
								41.5-45.0'	
		SB	4	11	18			Wet brownish gray SILTY-CLAY, little SAND and (F) GRAVEL, hard, medium plastic.	
				28					
		SB	5	17	22			- little (F-C) GRAVEL	
				32					
		SB	6	15	23			- plastic	
				29					

8"
8"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

B-350

STARTED 9/26/84
ED 10/1/84
2 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G134
SURFACE ELEV. 741.6
G.W. ELEV. 664.07

PROJECT CECOS Waukegan Ill.
Well Installations. #4C002333

LOCATION N 10296.30
E 9406.24

LOG Well G134	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6 6/12 12/18 18/24		DESCRIPTION	NOTES
	SB	7	13 24	23	Saturated brownish gray SILTY-(F) SAND, uniformly graded, non-stratified, dense in-situ, loose in sampler. 681-3 60.3' 1676 61.5-65.0'	6 in. diameter flush threaded steel casing installed to 65 ft. below grade and grouted Boring advanced from 6 in. dia. casing with 3-7/8 in. dia. tri-cone bit, wash boring.
	SB	8	16 43	71	Wet brownish-gray SILTY-CLAY, some SAND, little GRAVEL, hard, medium plastic, massive	
	SB	9	15 32	33	- trace SAND and GRAVEL	
	SB	10	26 64	47	- little SAND and GRAVEL	
	SB	11	16 43	27		

3 7/8
8"
8"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

B-351

STARTED 9/26/84
FINISHED 10/1/84
PAGE 3 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G134
SURFACE ELEV. 741.6
G.W. ELEV. 664.07

PROJECT CECOS Waukegan Ill.
Well Installations. #4C002333

LOCATION N 10296.30
E 9406.24

LOG Well G134	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	BLOWS ON SAMPLER 6/12	BLOWS ON SAMPLER 12/18	BLOWS ON SAMPLER 18/24	DESCRIPTION	NOTES
	SB	12	18	35	41		I 640 96.5-105.0' Wet brownish-gray CLAYEY-SILT, little SAND and GRAVEL, hard, slightly plastic.	No recovery on SB#13, COBBLE at barrel end prevented sample penetration.
	SB	13	44	76	125			
	SB	14	18	43	38		x 633 106.5-110.0' Saturated gray SILTY-(F-M) SAND, very dense in-situ.	
	SB	15	34	47	42		631.1 110.5' Saturated gray (F) SANDY-SILT, very dense, uniformly graded. 629 111.5-115.0' Wet grayish-brown SILTY-CLAY, hard, plastic, non-stratified	SB#15; stratified sand and silt. Deposit appears to be glaciolacustrine or glacial fluvial flood-plain sediments, coarse materials are absent.
	SB	16	18	31	56		120.0'	Boring completed at 120 ft.

3 7/8"
8"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

B-354

GAMMA RAY LOG BY

JOHNSON-KECK GR-73 / GR-81 GAMMA RAY LOGGING SYSTEM

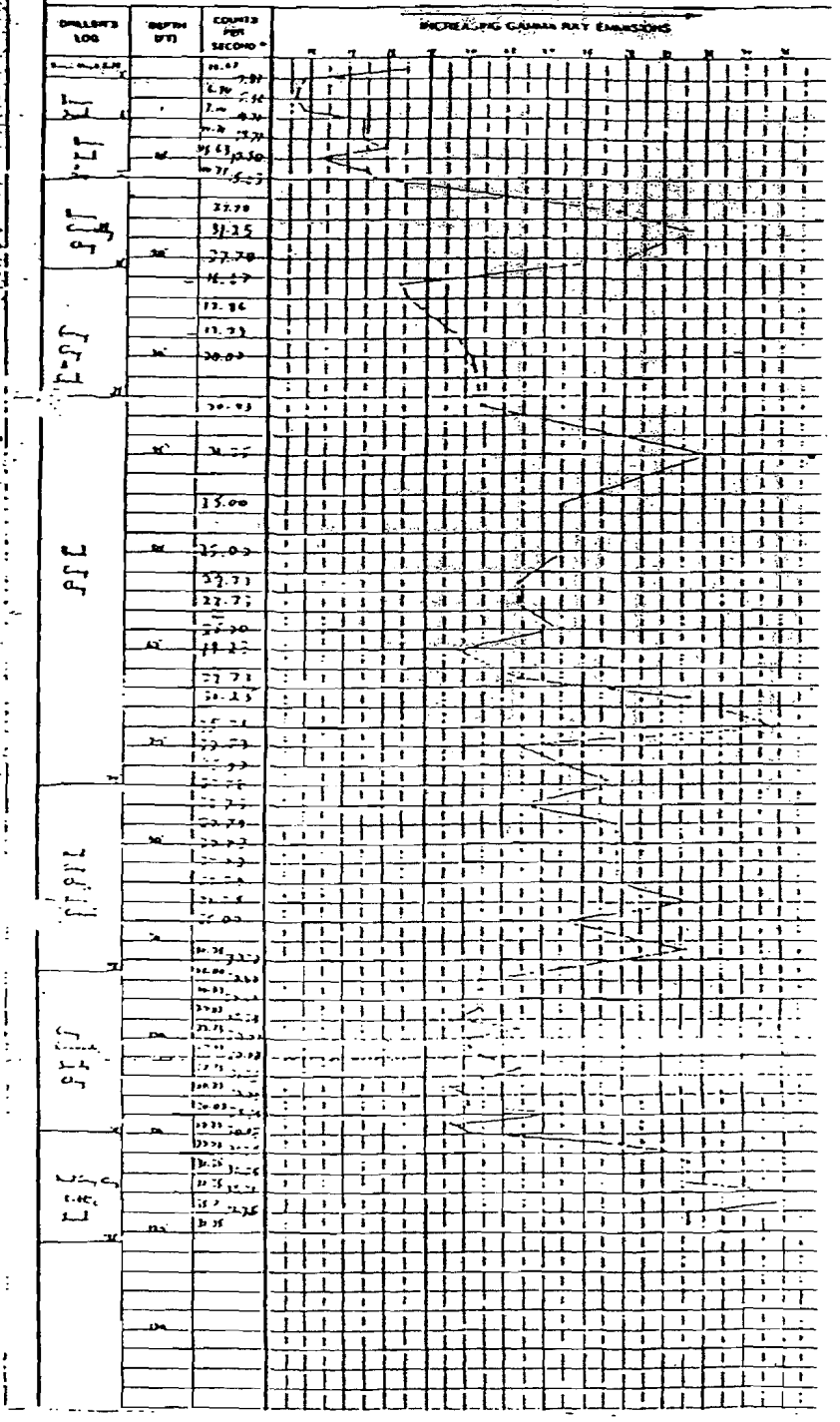
WELL G 31 OWNER [illegible]

MEASURING POINT Zero feet above/below ground level DATE October 23, 1995

DRILLER M Cody BOREHOLE DEPTH 121 feet, DIAMETER 8 inches

CASING DEPTH 102 feet, DIAMETER 2 inches OPERATOR [illegible]

COUNTS SETTING (GR-73) 250 RANGE SETTING (GR-81) _____ TIME CONSTANT (GR-81) _____



B-355

ARTED 10/11/84
NIS 10/11/84
1 OF 1

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G135
SURFACE ELEV. 758
G.W. ELEV.

PROJECT CECOS Waukegan Ill.
Well Installations, #4C002333

LOCATION N 11067
E 8655

LOG	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6 6/12 12/18 18/24	DESCRIPTION	NOTES
				Brown SILTY-CLAY.	Boring advanced with 3-7/8 in. dia. tri-cone bit, MOBILE B-61 drilling rig.
				5'	
				Waste FILL, assorted sanitary and industrial fill materials.	Lost drilling water at 13.0 ft.
				13.0'	Boring terminated at 13.0 ft.
					Borehole backfilled with bentonite.
					Boring location measured while drilling, referenced to Well G136.
					Surface elevation inferred from Browning-Ferris Industries topographic map dated 4/20/84.

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

B-356

ATE
STARTED 10/8/84
NISHED 10/11/84
E 1 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G136
SURFACE ELEV. 746.5
G.W. ELEV. 660.56

PROJECT CECOS Waukegan Ill.
Well Installations, #4C002333

LOCATION N 10767.34
E 8630.57

DEPTH-FT	LOG Well G136	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	BLOWS ON SAMPLER 6/12	BLOWS ON SAMPLER 12/18	BLOWS ON SAMPLER 18/24	DESCRIPTION	NOTES
								Wash boring, no samples collected.	Boring advanced with 3-7/8 in. dia. tri-cone bit, MOBILE B-61 drilling rig.
0								30.0'	
		SB	1	7	11	14		Wet brownish-gray SILTY-CLAY, some SAND, little GRAVEL, very stiff, medium plastic, massive.	
5		SB	2	10	13	16			
		SB	3	7	10	13		- little SAND	
5		SB	4	8	12	14			
0		SB	5	8	10	12			
5		SB	6	9	12	11		- trace SAND and GRAVEL	

6"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

RTED 10/8/84
ISHED 10/11/84
2 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G136
SURFACE ELEV. 746.5
G.W. ELEV. 660.56

PROJECT CECOS Waukegan Ill.
Well Installations, #4C002333

LOCATION N 10767.34
E 8630.57

LOG Well G136	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6 6/12 12/18 18/24		DESCRIPTION	NOTES
	SB	7	10	15		6 in. dia. flush threaded steel casing installed to 60 ft. below grade and grouted
			22			
						Boring advanced from 6 in. dia. casing with 3-7/8 in. dia. tri-cone bit, wash boring.
	SB	8	30	48		
			67			
	SB	9	17	26	- little SAND and GRAVEL	
			51			
	SB	10	21	45	- some SAND	
			51			

3 7/8" 7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

B-358

ATE
RTED 10/8/84
SHED 10/11/84
T 3 OF 3

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. G136
SURFACE ELEV. 746.5
G.W. ELEV. 660.56

PROJECT CECOS Waukegan Ill.
Well Installations, #4C002333

LOCATION N 10767.34
E 8630.57

DEPTH-FT	LOG Well G136	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6 6/12 12/18 18/24		DESCRIPTION	NOTES
							See sheet 2 for description
100		SB	11	32	53		
				67			
						101.5-105.0'	
105		SB	12	32	42	Saturated brownish-gray laminated CLAYEY-SILT and SANDY-SILT, non to slightly plastic, hard. 106.0'	
				57			
110	3 7/8" 7"	SB	13	20	31	Saturated gray SILTY-(F) SAND, uniformly graded, very dense. 111.5'	
				70			
115							Boring completed at 111.5 ft.

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

Started: [illegible]
Finished: 9/26/84
Sheet 1 of 3

SUBSURFACE LOG

Surface Elev. 744
G. W. Elev.

Project: CECOS Waukegan, IL
Well Installations, #4C002333

Location N 10446
E 9406

B-359

Depth-Ft.	Log WELL #137	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 18/24	Description
0		SB	1	23 / 27 / 46	Dry brown SILTY-CLAY, very hard
					3.5'-10.0'
5					Black, yellow, and brown mottled organic SILTY-CLAY, firm
10		SB	2	2 / 3 / 5	
					11.5'-20.0'
15					Moist brownish gray SILTY-CLAY, little (F-M) GRAVEL, subangular. Deposit is hard, plastic
20		SB	3	11 / 16 / 23	
25					
30		SB	4	10 / 13 / 14	-wet, some SAND and GRAVEL
35					
40					

T14
T12
T12

SP Log: 0 — 25 MV — 40 — 100Ω
Notes
R Log: 10 — 25
Gamma Log: 0 — 3 — 6 — 9 — 12 — 15 — 18 — 21 — 24 — 27 — 30 — 33 — 36 — 39 CPS

Casting Interference?

Depth (ft.)

Classification: Visual
Method of Investigation: See Notes

Date:
Started: 9/21/84
Finished: 9/24/84
Sheet 2 of 3

Roora Research, Inc.
SUBSURFACE LOG

Hole No. 91
Surface Elev. 11
G. W. Elev.

Project: CECOS Waukegan, Il.
Well Installations #4C002333

Location N 10446
E 9406

B-360

Depth-Ft.	Log WELL G137	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 10/24	Description
40		SB	5	9 / 14 / 20	-little GRAVEL
45					
50		SB	6	11 / 13 / 34	
55					
60		SB	7	11 / 19 / 21	
65					
70		SB	8	12 / 20 / 33	71.2'
					Saturated brownish gray CLAYEY-(F) SAND, some SILT, hard
75					71.5'-80.0'
					Wet brownish gray SILTY-CLAY, little (F) GRAVEL, hard, plastic
80					

672.8

Notes

SP Log 0 25 MV 40

R Log 100 10

Gamma Log 25 CPS

42 45 48 51 54 57 60 63 66 69 72 75 78

Depth (ft.)

Classification: Visual

Method of Investigation: See Notes

Finished: 7/24/84
Sheet 3 of 3

SUBSURFACE LOG

G. W. Elev. ____

Project: CECOS Waukegan, Il.
Well Installations #4C002333

Location N 10646
E 9406

B-361

Depth-Ft.	Log WELL G137	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 18/24	Description
80		SB	9	13 22	18
85					
90		SB	10	27 33	26
95		SB	11	15 27	21
100		SB	12	21 29	32
105		SB	13	20 16	11
110		SB	14	14 24	20
115		SB	15	27 57	38
120		SB	16	42 32	53

DIA 6390

101.5'-105.0'
Saturated brownish gray (F) SANDY CLAY some (F-M) GRAVEL, hard

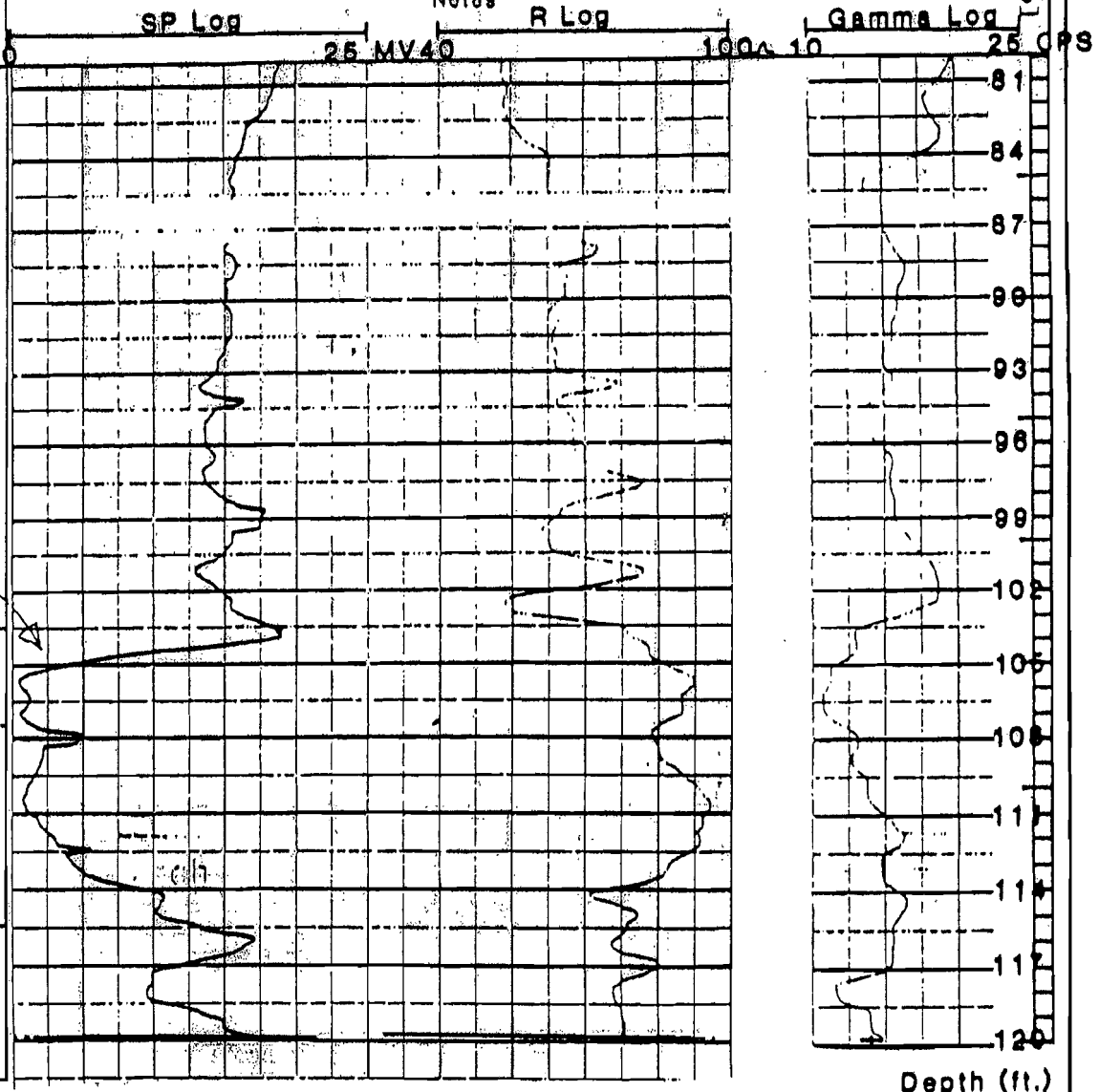
106.5'-110.0'
Wet brownish gray SILTY CLAY little SAND and GRAVEL, hard, plastic

6285
115.5'

Saturated brownish gray CLAYEY-SILT, slightly plastic, hard

121.5'

Notes



Classification: Visual

Method of Investigation: See Notes

B-363

PEERLESS-MIDWEST, INC. *Water Supply Contractors*
51255 BITTERSWEET ROAD / GRANGER, INDIANA 46530 / 219 272-9050

TEST DRILLING REPORT

Well No. G138 City Winthrop Harbor County Lake

Owner Browning-Ferris Industries - Winthrop Harbor Landfill Township Benton

Section NE¼NW¼NW¼ of 7h

Location State Illinois

2360' North of Ninth Street (Winthrop Harbor Road) and

1070' East of Highway 131 (Green Bay Road)

GRADE ELEVATION ABOVE MEAN SEA LEVEL — 760' ±

FORMATION	Top of Formation	Bottom of Formation	Thickness	Static Water Level	50% SIZE
Brown Clay	0'	22'	22'		
Gray Silty Clay, Some Gravel	22'	58'	36'		
Hard Gray Sandy Clay	58'	70'	12'		
Soft Sticky Gray Clay	70'	91'	21'		
Hard Gravelly Clay	91'	110'	19'		
Gray Silty Gravelly Clay	110'	125'	15'		
Gray Clayey Silt	125'	134'	9'		
Soft Gray Silty Clay	134'	155'	21'		

8 " Dia. hole drilled by cable tool Date completed 5/22/85

2 " casing set to 112 . 2 " screen set from 112 . to 117

_____ ft. of _____ screen recommended from _____ to _____

Recommended screen slot size: Tubular well _____ Gravel Pack well _____

Water analysis: Iron _____ PPM, hardness _____ GPG, PH _____

B-366

PEERLESS-MIDWEST, INC. *Water Supply Contractors*
51255 BITTERSWEET ROAD / GRANGER, INDIANA 46530 / 219 272-9050

SPLIT SPOON

TEST DRILLING REPORT

Well No. G139 City Winthrop Harbor County Lake

Owner Browning-Ferris Industries - Winthrop Harbor Landfill Township Benton

Section NE¼NW¼NW¼ of 7

Location State Illinois

2075' North of Ninth Street (Winthrop Harbor Rd.) &
1080' East of Highway 131 (Green Bay Rd.)

GRADE ELEVATION ABOVE MEAN SEA LEVEL — 755'±

	FORMATION	# BLOWS	Top of Formation	Bottom of Formation	Thickness	Static Water Level	50% SIZE
	Soft Gray Clay, Trace Gravel, Pliable, Sticky, Moist	11-25-45	100'	101½'	1½'		
	Soft Gray Clay, Trace Gravel Pliable, Sticky, Moist	16-25-55	105'	106½'	1½'		
	Soft Gray Silt, Wet, Sticky	17-25-38	110'	111½'	1½'		
	Gray Fine to Very Fine Sand, Wet	21-23-38	115	116½'	1½'		
Top 6"	Gray Fine to Med. Sand, Wet	51-32-32	120	120½'	½'		
Bottom 1'	Gray Silty Clay, Little Gravel, Dry		120½'	121½'	1 '		

8 " Dia. hole drilled by cable tool Date completed June 18, 1985

2 " casing set to 114 . 2 " screen set from 114 to 119

ft. of screen recommended from to

Recommended screen slot size: Tubular well Gravel Pack well

Water analysis: Iron PPM. hardness GPG, PH

Job No. 5304 Driller Mike Garrage

B-369

PEERLESS-MIDWEST, INC. *Water Supply Contractors*
51255 BITTERSWEET ROAD / GRANGER, INDIANA 46530 / 219 272-9050

SPLIT-SPOON

TEST DRILLING REPORT

Well No. G140 City Winthrop Harbor County Lake

Owner Browning-Ferris Industries - Winthrop Harbor Landfill Township Benton

Section $SE\frac{1}{4}NW\frac{1}{4}NW\frac{1}{4}$ of 7

Location State Illinois

1690' North of Ninth Street (Winthrop Harbor Road) &

1010' East of Highway 131 (Green Bay Road)

GRADE ELEVATION ABOVE MEAN SEA LEVEL — 764'±

FORMATION	# BLOWS	Top of Formation	Bottom of Formation	Thickness	Static Water Level	50% SIZE
Dry Clayey Gravelly Gray Silt, Little Sand. Bailer sample showed some silt, but clay mixture was in with it falling in from above.	25-78- REFUSED AT 3"	133'	134.25'	1.25'		
No sample recovered	REFUSED AT 3"	141'	—	—		
Dry Clayey Gravelly Gray Silt, Little Sand "Dense Compacted Glacial Till"	120-400-REFUSED	147'	148'	1'		

8 " Dia. hole drilled by cable tool Date completed May 22, 1985

2 " casing set to 113 · 2 " screen set from 113 · to 118

____ ft. of ____ screen recommended from ____ · to ____

Recommended screen slot size: Tubular well ____ Gravel Pack well ____

Water analysis: Iron ____ PPM. hardness ____ GPG. PH ____

Mike Garrage

B-372

PEERLESS-MIDWEST, INC. *Water Supply Contractors*
51255 BITTERSWEET ROAD / GRANGER, INDIANA 46530 / 219 272-9050

SPLIT-SPOON

TEST DRILLING REPORT

Well No. G141 City Winthrop Harbor County Lake

Owner Browning-Ferris Industries - Winthrop Harbor Landfill Township Benton

Section $NW\frac{1}{4}SW\frac{1}{4}NW\frac{1}{4}$ of 7

Location State Illinois

1305' North of Ninth Street (Winthrop Harbor Rd.) &

540' East of Highway 131 (Green Bay Rd.)

GRADE ELEVATION ABOVE MEAN SEA LEVEL — 752'±

FORMATION	# BLOWS	Top of Formation	Bottom of Formation	Thickness	Static Water Level	50% SIZE
Gray Fine Sandy Silt to Silty Very Fine Sand, Moist	12-19-15	90'	91½'	1½'		
Hard Gray Clay, Slightly Pliable, Somewhat Moist, Little Gravel	8-21-41	95'	96½'	1½'		
Gray Clay, Pliable, Somewhat Moist, Little Gravel	12-28-37	100'	101½'	1½'		

8 " Dia. hole drilled by cable tool Date completed June 4, 1985

2" " casing set to 88' . 2 " screen set from 88 to 93 .

_____ ft. of _____ screen recommended from _____ to _____ .

Recommended screen slot size Tubular well _____ Gravel Pack well _____

Water analysis: Iron _____ PPM. hardness _____ GPG. PH _____

Job No. 5304 Driller Mike Garrage

B-375

PEERLESS-MIDWEST, INC. *Water Supply Contractors*
51255 BITTERSWEET ROAD / GRANGER, INDIANA 46530 / 219 272-9050

SPLIT-SPOON

TEST DRILLING REPORT

Well No. G142 City Winthrop Harbor County Lake

Owner Browning-Ferris Industries -Winthrop Harbor Landfill Township Newport

Section NE¼SE¼NE¼ of 12

Location State Illinois

1255' North of Ninth Street (Winthrop Harbor Rd.) &

100' East of Highway 131 (Green Bay Rd.)

GRADE ELEVATION ABOVE MEAN SEA LEVEL — 740'±

FORMATION	# BLOWS	Top of Formation	Bottom of Formation	Thickness	Static Water Level	50% SIZE
Washed Gravel & Sand Top 4" Silty Sand 1"-2" Soft Silty Clay, Pliable 1" & Clay Silt	12-14-10	80'	81½'	1½'		

8" Dia. hole drilled by cable tool Date completed June 5, 1985

2" " casing set to 71' . 2 " screen set from 71 ' to 76 '

ft. of screen recommended from ' to

Recommended screen slot size Tubular well Gravel Pack well

Water analysis: Iron PPM. hardness GPG. PH

Job No. 5304

B-377

LOG OF BORING

PROJECT: Monitoring We Installation - BFI Winthrop Harbor Fac ty

BORING NO.: G-143

DRILLER: Patrick Engineering START: 12/11/87 COMPLETE: 12/17/87

SHEET: 1 OF 6

RIG: CME-75 Truck LOCATION: N 11304.38 E 7883.34

GROUND EL.: 745.77 W.L. & TIME:

ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	0.0						
		Dark brown silty clay, trace coarse to fine sand, trace coarse to fine gravel, medium plasticity, moist OL	S-1 0.0-1.8				Advanced borehole using 4-1/4" I.D. HSA. Location excavated to 3.0', S-1, S-2 samples from cut face.
	1.8	Brown silty clay, trace coarse to fine sand, trace coarse to fine gravel, medium plasticity, moist CL	S-2 1.8-3.0				
			SS-3 3.0-5.0 18"R	8 16 15 15		3.5*	
741	4.8	Brown sandy silt and medium to fine sand, medium dense, saturated ML	SS-4 5.0-7.0 14"R	12 7 17 7			
			SS-5A,B 7.0-9.0 24"R	4 6 5 8		1.8*	
737.1	8.7	Brown silty clay to clayey silt, trace coarse to fine sand, trace coarse to fine gravel, stiff, low plasticity, wet CL-ML	SS-6 9.0-11.0 24"R	6 10 10 15		1.3*	
		Little coarse to fine sand	SS-7 11.0-13.0 24"R	6 10 11 12		2.3*	
731.9		Some Coarse to fine sand	SS-8A,B 13.0-15.0 24"R	6 9 11 17		1.7* 3.7*	
	13.9	Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL	SS-9 15.0-17.0 24"R	6 8 11 15		2.2*	
			SS-10 17.0-19.0 24"R	4 6 12 12		2.3*	
	20.0		SS-11 19.0-21.0	4 5			

PATRICK ENGINEERING INC.

LOGGED BY: CRS JOB NO.: D151 (b140/D151-2)

LOG OF BORING

PROJECT: Monitoring W Installation - BFI Winthrop Harbor Fa lty BORING NO.: G-143

DRILLER: Patrick Engineering START: 12/11/87 COMPLETE: 12/17/87 SHEET: 2 OF 6

RIG: CME-75 Truck LOCATION: N 11304.38 E 7883.34

GROUND EL.: 745.77 W.L. & TIME:

LOG	ELEV.	DEPTH (ft)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		20.0 725.8	Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL	SS-11 19.0-21.0 24"R	8 13		2.1*	
				SS-12 21.0-23.0 24"R	5 7 7 14		2.5*	Quit drilling on 12/11/87 Resumed on 12/14/87.
				SS-13 23.0-25.0 24"R	5 10 14 14		3.3*	
				SS-14 25.0-27.0 24"R	4 8 12 13		3.8*	
				SS-15 27.0-29.0 24"R	5 7 9 14		3.9*	
				SS-16 29.0-31.0 4"R	5 6 8 13		3.1*	SS-16 driven on coarse gravel at 29.2'.
				SS-17 31.0-33.0 24"R	6 9 13 16		2.7*	
			Very stiff to hard	SS-18 33.0-35.0 24"R	9 11 14 18		4.1*	
				SS-19 35.0-37.0 24"R	5 11 12 15		2.6*	
		706.7		SS-20 37.0-39.0 24"R	6 8 11 17		2.8*	
		39.1 40.0		SS-31 39.0-41.0	5 7			

LOG OF BORING

PROJECT: Monitoring W Installation - BFI Winthrop Harbor Fa ity

BORING NO.: G-143

DRILLER: Patrick Engineering START: 12/11/87 COMPLETE: 12/17/87

SHEET: 3 OF 6

RIG: CME-75 Truck LOCATION: N 11304.38 E 7883.34

GROUND EL.: 745.77 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		40.0	Pinkish-gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL	SS-21 39.0-41.0 24"R	9 11		2.1*	
				SS-22 41.0-43.0 24"R	6 8 13 15		2.7*	
			Little coarse to fine gravel, very stiff to hard	SS-23 43.0-45.0 24"R	8 13 16 20		4.5+*	
				SS-24 45.0-47.0 24"R	6 8 12 16		2.6*	
			Trace coarse to fine sand	SS-25 47.0-49.0 24"R	5 7 12 14		2.5*	
	695.6			SS-26A,B 49.0-51.0 24"R	5 6 8 11		2.3*	
		50.2 50.8	Gray clayey silt, some coase to fine sand, little coarse to fine gravel, medium dense, moist ML	SS-27 51.0-53.0 24"R	4 6 8 12		1.8*	
	695		Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, stiff to very stiff, medium plasticity, moist CL	SS-28 53.0-55.0 24"R	11 13 15 12		2.1*	
				SS-29 55.0-57.0 24"R	7 9 10 13		2.4*	
				SS-30 57.0-59.0 24"R	8 11 13 12		2.6*	
	685.8	60.0		SS-31 59.0-61.0	9 9			

PATRICK ENGINEERING INC. LOGGED BY: CRS JOB NO.

B-380

LOG OF BORING

PROJECT: Monitoring W. Installation - BFI Winthrop Harbor Fa ity | BORING NO.: G-143

DRILLER: Patrick Engineering | START: 12/11/87 | COMPLETE: 12/17/87 | SHEET: 4 OF 6

RIG: CME-75 Truck | LOCATION: N 11304.38 E 7883.34

GROUND EL.: 745.77 | W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		60.0	Brownish-gray silty clay to clayey silt, trace coarse to fine sand, trace coarse to fine gravel, stiff to very stiff, medium plasticity, moist CL-ML	SS-31 59.0-61.0 24"R	10 15		2.0*	
				SS-32 61.0-63.0 24"R	7 9 11 14		1.7*	Quit drilling on 12/14/87. Resumed 12/16/87.
				SS-33 63.0-65.0 24"R	12 11 12 14		1.2*	
				SS-34 65.0-67.0 24"R	8 16 19 24		1.3*	
			Little coarse to fine sand	SS-35 67.0-69.0 24"R	9 12 15 18		1.2*	
		676.2	Some coarse to fine sand, little coarse to fine gravel	SS-36A,B 69.0-71.0 24"R	5 10 15 16		1.1* 1.4*	
		69.6	Brownish-gray silty clay to clayey silt, trace coarse to fine sand, trace coarse to fine gravel, stiff, medium plasticity, moist CL-ML	SS-37 71.0-73.0 24"R	11 15 17 21		1.9*	
		672.5						
		73.3		SS-38 73.0-75.0 24"R	8 10 15 18		1.3*	
		73.6 672.2	Brownish-gray silty clay to clayey silt, little coarse to fine sand, trace coarse to fine gravel, stiff, medium plasticity, moist CL-ML					
			Brownish-gray silty clay to clayey silt, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL-ML	SS-39 75.0-77.0 24"R	11 16 26 29		2.9*	
				SS-40 77.0-79.0 24"R	11 15 23 25		3.4*	
		665.9						
		80.0	Little coarse to fine gravel (10%)	SS-42 79.0-81.0	12 18			

PATRICK ENGINEERING INC. | LOGGED BY: CRS | JOB NO.: D151 (b140/D151-2)

B-381

LOG OF BORING

PROJECT: Monitoring W Installation - BFI Winthrop Harbor Fa ity | BORING NO.: G-143

DRILLER: Patrick Engineering | START: 12/11/87 | COMPLETE: 12/17/87 | SHEET: 5 OF 6

RIG: CME-75 Truck | LOCATION: N 11304.38 E 7883.34

GROUND EL.: 745.77 | W.L. & TIME:

G	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		80.0	Gray silty clay, little coarse to fine sand, little coarse to fine gravel, very stiff, medium plasticity, moist CL	SS-42 79.0-81.0 24"R	25 34		3.2*	
				SS-43 81.0-83.0 24"R	16 25 29 34		3.7*	
			Trace coarse to fine sand, trace coarse to fine gravel	SS-44A,B 83.0-85.0 24"R	19 21 23 34		3.7*	
	661.9	84.4						
		84.6	Gray silt, dense, moist ML					
	661.2		Gray silty, clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL	SS-45 85.0-87.0 24"R	13 17 23 27		2.6*	
				SS-46 87.0-89.0 24"R	14 21 26 37		3.2*	
	656.0			SS-47A,B 89.0-91.0 24"R	46 27 29 39		3.7*	
		89.8	Gray silty sand, dense, saturated SM					2.5" sand
		90.1	Gray silt, dense, wet ML					Quit drilling 12/16 Resumed on 12/17.
	655.1			SS-48A,B 91.0-93.0 24"R	12 21 24 25			
	653.5	92.5						
	653.1	92.7	Gray silty sand, fine to medium gravel, dense, saturated SM	SS-49A,B 93.0-95.0 24"R	9 30 33 39			
	652.3	93.5	Gray silt, dense, wet ML					
			Gray silty sand, fine to medium grained, saturated SM					
			Gray silt, dense, wet ML					
	650.4	95.4		SS-50A,B 95.0-97.0 24"R	11 10 12 14		4.5+*	
	650.1	95.7	Gray silty sand, coarse to fine gravel, medium dense, saturated SM					
			Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, hard, low plasticity, moist CL					
	648.9	96.9		SS-51A,B 97.0-99.0 24"R	15 23 43 58		4.5+*	
	648.5	97.3	Gray silty sand, coarse to fine gravel, dense, saturated SM					
			Gray silty clay to clayey silt, trace coarse to fine sand, trace coarse to fine gravel, hard, low plasticity, moist CL-ML					
	645.8	100.0	Little coarse to fine sand					

TRICK ENGINEERING INC. LOGGED BY: CRS JOB NO.: D151 (b140/D151-2)

B-382

LOG OF BORING

PROJECT: Monitoring W Installation - BFI Winthrop Harbor Fa ity — BORING NO.: G-143

DRILLER: Patrick Engineering — START: 12/11/87 — COMPLETE: 12/17/87 — SHEET: 6 OF 6

RIG: CME-75 Truck — LOCATION: N 11304.38 E 7883.34

GROUND EL.: 745.77 — W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		100.0						
			Gray silty clay to clayey silt, little coarse to fine sand, trace coarse to fine gravel, low plasticity, moist CL	SS-52 99.0-101.0 24"R	10 32 44 49		4.5+*	
				SS-53 101.0-103.0 24"R	31 46 56 64		4.5+*	
				SS-54 103.0-105.0 24"R	36 61 72 113		4.5+*	
	640	105.0	End of Boring at 105.0'.					

PATRICK ENGINEERING INC. — LOGGED BY: CRS — JOB NO.: D151 (b140/D151-2)

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois B-386

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL

BORING G145 DATE STARTED 8-26-94 DATE COMPLETED 8-26-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE 758.9

END OF BORING 647.9

WATER TABLE

▼ WHILE DRILLING 21.0'

▽ AT END OF BORING 104.0'

▼ 24 HOURS Well Installed

DISTANCE BELOW SURFACE IN FEET

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	1	SS	13						FILL - Dark brown silty CLAY, trace fine to coarse sand and gravel, damp (CL)
	2	SS	6				4.0	754.9	
	3	SS	13						Brown-gray silty CLAY, some fine to coarse sand and small gravel, moist (CL)
	4	SS	12				6.5	752.4	
	5	SS	14						Brown silty CLAY, trace coarse sand and iron oxide staining, moist (CL)
	6	SS	18						
	7	SS	15				14.0	744.9	
	8	SS	13				14.5	744.4	Brown clayey SAND, fine to coarse grained, trace small gravel very moist (SC)
	9	SS	16						
	10	SS	20						▼
	11	SS	19						Gray silty CLAY, trace coarse sand and small gravel, occasional thin silt seams, moist to wet (CL)
	12	SS	14						
	13	SS	15						
	14	SS	16						
	15	SS	16				29.5	729.4	
	16	SS	12				30.5	728.4	Gray clayey SILT with very fine sand, wet (ML)
	17	SS	11						
	18	SS	16						Gray silty CLAY, trace coarse sand and small gravel, moist (CL)
	19	SS	22						

DRILL RIG NO. 91

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois B-387

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL

BORING G145 DATE STARTED 8-26-94 DATE COMPLETED 8-26-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE 758.9

END OF BORING 647.9

WATER TABLE

▼ WHILE DRILLING 21.0'

▽ AT END OF BORING 104.0'

▼ 24 HOURS Well Installed

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	20	SS	16				41.0	717.9	Gray silty CLAY, trace coarse sand and small gravel, moist (CL)
	21	SS	45						
	22	SS	34						Gray silty CLAY, trace coarse sand and small gravel, moist (CL)
	23	SS	29						
	24	SS	35				48.0	710.9	
	25	SS	23						Gray, trace reddish-brown silty CLAY, trace coarse sand and small gravel, occasional thin (<1.0") silt seams, moist to very moist (CL)
	26	SS	24				51.0	707.9	Gray silty CLAY, trace coarse sand, moist (CL)
	27	SS	16				54.0	704.9	
	28	SS	17						Gray, trace reddish-brown silty CLAY, trace coarse sand and small gravel, moist (CL)
	29	SS	20				57.0	701.9	
	30	SS	27						
	31	SS	28						
	32	SS	25						
	33	SS	29						
	34	SS	22						Gray silty CLAY, trace coarse sand and small gravel, occasional cobble and thin clayey silt seams with fine to coarse sand, moist (CL)
	35	SS	21						
	36	SS	34						
	37	SS	22						
	38	SS	37						
	39	SS	50				79.0	679.9	

DISTANCE BELOW SURFACE IN FEET

40 45 50 55 60 65 70 75 80

DRILL RIG NO. 91

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois B-388

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL

BORING G145 DATE STARTED 8-26-94 DATE COMPLETED 8-26-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE 758.9

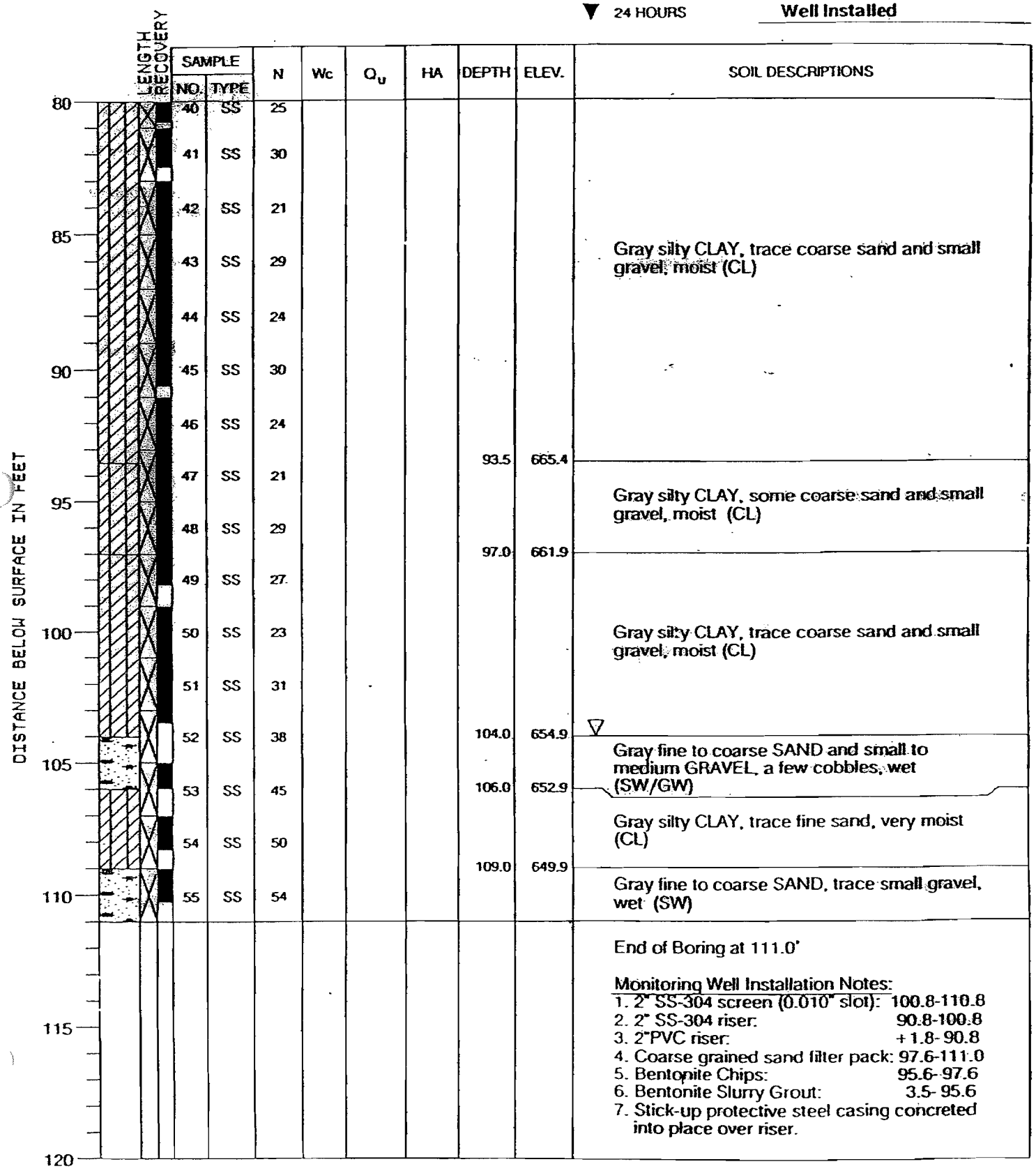
END OF BORING 647.9

WATER TABLE

▽ WHILE DRILLING 21.0'

▽ AT END OF BORING 104.0'

▼ 24 HOURS Well Installed



LENGTH OF RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	40	SS	25						Gray silty CLAY, trace coarse sand and small gravel, moist (CL)
	41	SS	30						
	42	SS	21						
	43	SS	29						
	44	SS	24						
	45	SS	30						
	46	SS	24						
							93.5	665.4	
	47	SS	21						Gray silty CLAY, some coarse sand and small gravel, moist (CL)
	48	SS	29						
							97.0	661.9	
	49	SS	27						Gray silty CLAY, trace coarse sand and small gravel, moist (CL)
	50	SS	23						
	51	SS	31						
	52	SS	38				104.0	654.9	▽
									Gray fine to coarse SAND and small to medium GRAVEL, a few cobbles, wet (SW/GW)
	53	SS	45				106.0	652.9	
	54	SS	50						Gray silty CLAY, trace fine sand, very moist (CL)
							109.0	649.9	
	55	SS	54						Gray fine to coarse SAND, trace small gravel, wet (SW)
									End of Boring at 111.0'

Monitoring Well Installation Notes:

1. 2" SS-304 screen (0.010" slot): 100.8-110.8
2. 2" SS-304 riser: 90.8-100.8
3. 2"PVC riser: +1.8-90.8
4. Coarse grained sand filter pack: 97.6-111.0
5. Bentonite Chips: 95.6-97.6
6. Bentonite Slurry Grout: 3.5-95.6
7. Stick-up protective steel casing concreted into place over riser.

DRILL RIG NO. 91

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois B-391

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL

BORING G147 DATE STARTED 9-1-94 DATE COMPLETED 9-2-94 JOB L - 35,874

ELEVATIONS

GROUND SURFACE 738.9

END OF BORING 635.9

WATER TABLE

▼ WHILE DRILLING 47.5'

▽ AT END OF BORING 94.0'

▼ 24 HOURS Well Installed

DISTANCE BELOW SURFACE IN FEET

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	1	SS	17						FILL - Brown-gray silty CLAY, trace fine to coarse sand and small gravel, damp (CL)
	2	SS	15						
	3	SS	14				6.0	732.9	
							7.0	731.9	Brown-gray silty CLAY, trace fine coarse sand and small gravel, damp (CL)
	4	SS	13						Brown-gray silty CLAY, trace fine to coarse sand, small gravel and iron oxide staining, moist (CL)
	5	SS	13						
							11.5	727.4	
	6	SS	20						Olive brown silty CLAY, trace fine to coarse sand and small gravel, moist (CL)
	7	SS	17						
							14.5	724.4	
	8	SS	Push						Gray silty CLAY, trace coarse sand and small gravel, moist (CL)
							19.5	719.4	
									Gray clayey SILT, trace fine sand, some small gravel, moist to very moist (ML)
							21.5	717.4	
	9	SS	Push						
	10	SS	Push						Gray silty CLAY, trace coarse sand and small gravel, occasional coarse gravel and thin clayey silt seams with fine sand, moist (CL)
	11	SS	Push						
	12	SS	Push						

DRILL RIG NO. 91

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois B-392

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL

BORING G147 DATE STARTED 9-1-94 DATE COMPLETED 9-2-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE 738.9

END OF BORING 635.9

WATER TABLE

▼ WHILE DRILLING 47.5'

▽ AT END OF BORING 94.0'

▼ 24 HOURS Well Installed

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	13	SS	Push						Gray silty CLAY, trace coarse sand and small gravel, occasional coarse gravel and thin clayey silt seams with fine sand, moist (CL)
	14	SS	Push				47.5	691.4	▼
									Gray silty fine to coarse SAND, trace coarse gravel, wet (SM)
							49.5	689.4	
	15	SS	Push						Gray silty CLAY, trace coarse sand and small to medium gravel, moist (CL)
							55.0	683.9	
	16	SS	Push						Gray silty CLAY, trace coarse sand and small gravel, moist (CL)
							60.0	678.9	
	17	SS	Push						Gray silty CLAY, trace coarse sand and small gravel, occasional, thin (1-3") clayey silt and clayey sand seams, moist to very moist (CL)
	18	SS	Push				67.0	671.9	Gray, trace reddish-brown silty CLAY, trace coarse sand and small gravel, moist (CL)
							69.0	669.9	
	19	SS	Push						Gray silty CLAY, trace coarse sand and small gravel, moist (CL)
	20	SS	Push						

DISTANCE BELOW SURFACE IN FEET

40 45 50 55 60 65 70 75 80

DRILL RIG NO. 91

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois B-393

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL

BORING G147 DATE STARTED 9-1-94 DATE COMPLETED 9-2-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE 738.9

END OF BORING 635.9

WATER TABLE

▼ WHILE DRILLING 47.5'

▽ AT END OF BORING 94.0'

▼ 24 HOURS Well Installed

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
							81.0	657.9	Gray silty CLAY, trace coarse sand and small gravel, moist (CL)
	21	SS	Push						
	22	SS	Push						Gray, trace reddish-brown silty CLAY, trace coarse sand and small gravel, moist (CL)
	23	SS	Push						
							94.0	644.9	▽
	24	SS	42				95.0	643.9	Gray SILT with very fine to fine sand, wet (ML)
							95.5	643.4	Gray silty CLAY, trace coarse sand and small gravel, moist (CL)
	25	SS	Push						Gray clayey SILT, some very fine to fine sand and thin layers of silty clay, wet (ML)
	26	SS	45						
									End of Boring at 103.0'

DISTANCE BELOW SURFACE IN FEET

80 85 90 95 100 105 110 115 120

Monitoring Well Installation Notes:

1. 2" SS-304 screen (0.010" slot): 92.8-102.8
2. 2" SS-304 riser: 82.8-92.8
3. 2"PVC riser: +2.3-82.8
4. Coarse grained sand filter pack: 87.3-103
5. Bentonite Chips: 84.7-87.3
6. Bentonite Slurry Grout: 3.0-84.7
7. Stick-up protective steel casing concreted into place over riser.

DRILL RIG NO. 91

B-396

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL

BORING G148 DATE STARTED 11-20-94 DATE COMPLETED 11-30-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE 733.7

END OF BORING 639.7

WATER TABLE

▼ WHILE DRILLING 62.0'

▽ AT END OF BORING 88.5'

▼ 24 HOURS Well Installed

DISTANCE BELOW SURFACE IN FEET

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	1	SS	47						FILL - Brown and gray silty CLAY, some fine to coarse sand and small gravel, damp (CL)
	2	SS	20						
							4.5	729.2	
	3	SS	22						FILL - Black silty CLAY, trace fine sand, some organic matter, damp (CL)
							6.0	727.7	
	4	SS	12						Light brown silty CLAY, trace fine to coarse sand, some iron oxide staining, moist (CL)
	5	SS	10						
							10.5	723.2	
	6	SS	12						Light Brown and gray silty CLAY, with fine to coarse sand, some small gravel and iron oxide staining, very moist (CL)
	7	SS	Push				13.0	720.7	
	8	SS	Push						Brown to reddish brown silty CLAY, trace fine sand, occasional small to large gravel, moist (CL)
							17.5	716.2	
									Gray silty CLAY, trace fine to coarse sand, occasional medium to large gravel, moist (CL)
	9	SS	Push				21.0	712.7	
	10	SS	Push						Gray silty CLAY, trace fine to coarse sand, occasional thin very fine sand and silt seams, trace coarse sand and small gravel, moist to very moist (CL-ML)
							34.0	699.7	
	11	SS	Push						Gray silty CLAY, trace medium to coarse sand, occasional thin silt seams and medium to large gravel, moist to very moist (CL)

DRILL RIG NO. 177

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois B-397

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL

BORING G148 DATE STARTED 11-20-94 DATE COMPLETED 11-30-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE 733.7

END OF BORING 639.7

WATER TABLE

▼ WHILE DRILLING 62.0'

▽ AT END OF BORING 88.5'

▼ 24 HOURS Well Installed

LENGTH & RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
40	12	SS	Push						Gray with reddish brown silty CLAY, trace medium to coarse sand, occasional large gravel, moist (CL)
45	13	SS	Push				45.0	688.7	Gray silty CLAY, trace fine to medium sand, some small gravel and thin silt seams with medium to coarse sand, moist to very moist (CL)
50	14	SS	Push				49.0	684.7	Gray silty CLAY, trace coarse sand and small to large gravel, moist, cobble at 56 feet (CL)
60	15	SS	Push						
	16	SS	Push				62.0	671.7	▼
							63.5	670.2	Gray fine to coarse SAND, trace silty clay and medium gravel, grading to gray clayey silt with very fine sand, wet (SP/ML)
65	17	SS	Push						Gray silty CLAY, trace medium to coarse sand, occasional thin silt seams and large gravel, moist to very moist (CL)
70	18	SS	Push				73.0	660.7	
75	19	SS	Push						Dark gray silty CLAY, trace fine to coarse sand and small gravel, moist (CL)
							77.5	656.2	
80							79.0	654.7	Gray silty CLAY, trace coarse sand and small gravel, occasional large gravel to small cobbles, moist to very moist (CL)

DRILL RIG NO. 177

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois B-398

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL

BORING G148 DATE STARTED 11-20-94 DATE COMPLETED 11-30-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE 733.7

END OF BORING 639.7

WATER TABLE

▼ WHILE DRILLING 62.0'

▽ AT END OF BORING 88.5'

▼ 24 HOURS Well Installed

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
20	SS		Push						Gray silty CLAY, trace coarse sand and small gravel, occasional thin seams of fine to coarse sand and silt, very moist to wet (CL)
21	SS		Push						
							88.5	645.2	▽
									Gray fine to coarse SAND and small to medium GRAVEL, poorly sorted, wet (SW/GW)
							91.0	642.7	
22	SS		Push						Gray silty CLAY, trace fine to coarse sand and small gravel, very moist (CL)
							93.0	640.7	Gray clayey SILT with very fine SAND, very moist (ML-SP)

DISTANCE BELOW SURFACE, FEET

80 85 90 95 100 105 110 115 120

End of Boring at 94.0'

Monitoring Well Installation Notes:

1. 2" SS-304 screen (0.010" slot): 83.8-93.8
2. 2" SS-304 riser: 73.8-83.8
3. 2"PVC riser: +2.3-73.8
4. Coarse grained sand filter pack: 81.8-94.0
5. Bentonite Chips: 78.9-81.8
6. Bentonite Slurry Grout: 3.0-78.9
7. Stick-up protective steel casing concreted into place over riser.

DRILL RIG NO. 177

PROJECT Zion Municipal Landfill, Monitoring Well Installation, Zion, IL

CLIENT Browning-Ferris Industries, 701 Green Bay Rd., Zion, IL

BORING G 146 DATE STARTED 9-6-95 DATE COMPLETED 9-7-95 JOB 38,190

ELEVATIONS

GROUND SURFACE 739.1

END OF BORING 634.1

N 10461.85, E 8626.34

WATER TABLE

▼ WHILE DRILLING 3.5'

▽ AT END OF BORING 57.0'

▼ 24 HOURS M. Well Installed

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_p	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	1	SS	10						FILL - Brown to gray silty CLAY, trace fine to coarse sand (CL)
	2	SS	8				3.0	736.1	
	3	SS	13						FILL - Brown and gray silty CLAY, trace coarse sand, occasional small gravel (CL)
	4	SS	15				7.5	731.6	
	5	SS	12						Brown to light gray silty CLAY, trace fine to coarse sand, some iron oxide staining, moist (CL)
	6	ST	Push				12.0	727.1	
							14.0	725.1	Gray silty CLAY, trace fine to coarse sand, small gravel, moist (CL)
							15.0	724.1	Brown and dark gray silty CLAY with fine to coarse sand and small to medium gravel, moist (CL)
	7	ST	Push						
	8	ST	Push						Gray silty CLAY, trace fine to coarse sand and small to medium gravel, moist (CL)
	9	ST	Push						
	10	SS	11						
	11	ST	Push				35.0	704.1	

DISTANCE BELOW SURFACE IN FEET

0 5 10 15 20 25 30 35 40

DRILL RIG NO. 177

Division lines between deposits represent approximate boundaries between soil types.

PROJECT **Zion Municipal Landfill, Monitoring Well Installation, Zion, IL**

CLIENT **Browning-Ferris Industries, 701 Green Bay Rd., Zion, IL**

BORING **G 146** DATE STARTED **9-6-95** DATE COMPLETED **9-7-95** JOB **38,190**

ELEVATIONS

GROUND SURFACE **739.1**

END OF BORING **634.1**

N 10461.85, E 8626.34

WATER TABLE

▼ WHILE DRILLING **3.5'**

▽ AT END OF BORING **57.0'**

▼ 24 HOURS **M. Well Installed**

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_p	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	12	ST	Push						Gray silty CLAY, trace fine to coarse sand, occasional small to medium gravel and thin silty sand seams, moist to wet (CL)
	13								
	14	SS							
							54.5	684.6	
							55.5	683.6	Gray SILT, trace very fine sand, moist to very moist (ML)
	15	SS							▽ Gray SILT, trace very fine sand and clay, occasional thin (1") fine to coarse sand seams, wet (ML)
							60.0	679.1	
	16	SS							Gray silty CLAY, trace very fine sand and occasional small gravel and thin sand seams, moist to very moist (CL)
	17	SS							
	18	SS							

DISTANCE BELOW SURFACE IN FEET

40 45 50 55 60 65 70 75 80

DRILL RIG NO. 177

Division lines between deposits represent approximate boundaries between soil types. In-situ, the transition may be gradual.

PROJECT Zion Municipal Landfill, Monitoring Well Installation, Zion, IL

CLIENT Browning-Ferris Industries, 701 Green Bay Rd., Zion, IL

TSC

BORING G 146 DATE STARTED 9-6-95 DATE COMPLETED 9-7-95 JOB 38,190

ELEVATIONS

GROUND SURFACE 739.1

END OF BORING 634.1

N 10461.85, E 8626.34

WATER TABLE

▼ WHILE DRILLING 3.5'

▽ AT END OF BORING 57.0'

▼ 24 HOURS M. Well Installed

DISTANCE BELOW SURFACE IN FEET

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_p	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
							80.0	659.1	
	19	SS							Bluish-gray silty CLAY, trace coarse sand and small gravel, moist to very moist (CL)
	20	SS							
							90.0	649.1	
	21	SS							Gray silty CLAY, some reddish-brown clay, occasional thin silt and sand seams, moist to very moist (CL)
							95.0	644.1	
	22	SS							Gray silty CLAY with fine to coarse sand and seams of coarse sand and small gravel with silt, very moist (CL)
							102.0	637.1	
	23	SS							Fine to coarse SAND, trace gravel, moist (SP)
							104.0	635.1	Gray silty CLAY, trace small gravel, moist (CL)

End of Boring at 105.0'

Monitoring Well Installation Notes

1. 2" SS-304 Screen (0.010" slot): 94.9-104.9'
2. 2" SS-304 riser: 84.9-94.9'
3. 2" PVC riser: +2.5-94.9'
4. Coarse Silica Sand: 92.5-104.9'
5. Bentonite Chips: 90.5-92.5'
6. Bentonite Slurry Grout: 3.0-90.5'
7. 6" protector casing concreted into place over riser.

DRILL RIG NO. 177

Division lines between deposits represent approximate boundaries between soil types. In-situ, the transition may be gradual.

Field Boring Log

DEPTH HOLE 130.0 | JOB NO. 93-2279 | PROJECT BEI / Zion / Illinois | BORING NO. CZ1600
DEPTH SOIL DRILL 130.0 | GA INSP. MNH | DRILLING METHOD MUD ROTARY | SHEET 1 OF 6
DEPTH ROCK CORE — | WEATHER P. cloudy | DRILLING COMPANY Aquadrill | SURFACE ELEV. ~7.63
NO. DIST. SA. — | UD. SA. — | TEMP. 65° | DRILL RIG GUS PECH BRAT 22R | DRILLER D. ARLD | DATUM Mean Sea Level
DPTH WL. — | HRS. PROD. — | WT. SAMPLER HAMMER 140 lb. | DROP 30" | STARTED 1500 hrs / 9-22-97 date
— | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED — / 9-24-97

SAMPLE TYPES

A.S.	AUGER SAMPLE	D.O.	DRIVE OPEN
C.S.	CHUNK SAMPLE	D.S.	DENNISON SAMPLE
P.S.	PITCHER SAMPLE	R.C.	ROCK CORE
S.S.	SLOTTED TUBE	T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON	W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% | "SOME" - 12 - 30% | "LITTLE" - 6 - 12% | "AND" 30-50%

RELATIVE DENSITY	BLOWS		CONSISTENCY		PRESSUREMETER
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	DRIVING POWER PER 6" OR PRESS.	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
2	(0.0-14.0) firm to stiff, olive gray and mod yellowish brn, SILTY CLAY, tr to little c-f sand and c-f gravel, WR, moist (cl) (FILL)						2	
4							4	
6		12	1	SS	4/6/6/6	1.0'/2.0'	6	NO.1, firm to stiff, olive gray and mod. yellowish brn, SILTY CLAY, tr to little c-f sand and c-f gravel, WR, moist, (cl) (FILL)
8							8	
10		13	2	SS	6/7/6/6	1.5'/2.0'	10	NO.2, SAA (SAME AS ABOVE)
12							12	
14	(14.0-25.0) stiff, mod yellowish brn, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (cl) (WEATHERED LODGEMENT TILL)						14	
16		33	3	SS	15/17/16/16	1.5'/2.0'	16	NO.3, Stiff, mod. yellowish brn, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (cl) (WEATHERED LODGEMENT TILL)
18							18	
20		32	4	SS	16/16/16/16	2.0'/2.0'	20	NO. 4, SAA
22							22	

Field Boring Log

DEPTH HOLE	JOB NO. 973-2279	PROJECT BFI / Zion / Illinois		BORING NO. G1160	
DEPTH SOIL DRILL	GA INSP.	DRILLING METHOD		SHEET 2 OF 6	
DEPTH ROCK CORE	WEATHER	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~763	
NO. DIST. SA. — UD. SA. —	TEMP.	DRILL RIG	DRILLER	DATUM Mean Sea Level	
EPTH WL.	HRS. PROD. —	WT. SAMPLER HAMMER	DROP	STARTED 1500 / 9-22-97 Time / Date	
	HRS. DELAYED —	WT. CASING HAMMER	DROP	COMPLETED 9-24-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CARBNO	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FIELD FIELD STRAIN
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DS	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDS	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS PER 6" ON SAMPLER (STANDARD PENETRATION TEST)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24							24	
26	(25.0-55.0) stiff, olive gray, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)	10	5	SS	5/5/5/5	2.0' / 2.0'	26	NO. 5, STIFF, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
28							28	
30						2.0'	30	NO. 6, SAA
		14	6	SS	7/7/7/7	2.0'		
32							32	
34							34	
36	-@ 37.0, some cobbles	28	7	SS	14/14/14/14	2.0' / 2.0'	36	NO. 7, SAA " NOTE: SAMPLER ENCOUNTERED A SMALL COBBLE.
38							38	
40	-from approx 40.0 to 43.0, thin (<2") sand and gravel seams present	15	8	SS	7/8/7/7	2.0' / 2.0'	40	NO. 8, SAA, some f-m and c-f sand and f gravel
42							42	
44							44	
						2.0' / 2.0'		NO. 9,
46		16	9	SS	8/9/8/8		46	(SEE NEXT PAGE FOR DESCRIPTION)

Field Boring Log

DEPTH HOLE — JOB NO. 99-2279 PROJECT BFI / Zion / Illinois BORING NO. G160

DEPTH SOIL DRILL — QA INSP. — DRILLING METHOD — SHEET 3 OF 6

DEPTH ROCK CORE — WEATHER — DRILLING COMPANY Aquadrill SURFACE ELEV. ~763

NO. DIST. SA. — UD. SA. — TEMP. — DRILL RIG — DRILLER — DATUM Mean Sea Level

WL. — HRS. PROD. — WT. SAMPLER HAMMER — DROP — STARTED 1500 (time) 19-22-97 (date)

WL. — HRS. DELAYED — WT. CASING HAMMER — DROP — COMPLETED — 19-24-97

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLTY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" 12-30%
"LITTLE" - 5-12% "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMMER BLOWS PER 6" (PER 12" IF PUSHED)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
		16	9	SS	11/5/11/11	2.0' / 2.0'		NO. 9, SAA, tr to little c-f sand and f gravel
48							48	
50		23	10	SS	11/12/11/11	2.0' / 2.0'	50	NO. 10, SAA
52							52	
54							54	
56	(55.0-57.0) compact, olive gray and multi-colored, C-F SAND, tr f gravel, tr silt, NR, wet (SW)	29	11		14/14/15/15	1.5' / 2.0'	56	NO. 11, Compact, olive gray and multicolored, C-F SAND, tr f gravel, tr silt, NR, wet (SW)
58	(57.0-70.0) stiff to v stiff, olive gray, SILTY CLAY, tr to little c-f sand and f gravel, NR, damp, (CL) (LODGEMENT TILL)						58	
60		20	12		10/10/10/10	2.0' / 2.0'	60	NO. 12, stiff to V. Stiff, olive gray, SILTY CLAY, tr to little c-f sand and f gravel, NR, damp, (CL) (LODGEMENT TILL)
62							62	
64							64	
66		20	13		10/10/10/10	2.0' / 2.0'	66	NO. 13, SAA
68							68	

Field Boring Log

DEPTH HOLE	JOB NO. 973-2279	PROJECT BFI / Zion / Illinois		BORING NO. G216U
DEPTH SOIL DRILL	QA INSP.	DRILLING METHOD		SHEET 4 OF 6
DEPTH ROCK CORE	WEATHER	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~763
NO. DIST. SA. — UD. SA. —	TEMP.	DRILL RIG	DRILLER	DATUM Mean Sea Level
H WL.	HRS. PROD.	WT. SAMPLER HAMMER	DROP	STARTED 1500 (Time) 12-22-97 (Date)
WL.	HRS. DELAYED	WT. CASING HAMMER	DROP	COMPLETED 12-31-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NONPLASTIC	SI	SILT
CL	CLAY	OR	ORANGE	SLY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GR	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LT	LITTLE	RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 90%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PENETRATION
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT		SAMPLES NO.	TYPE	BLOWS (CASING WORK)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70								70	NO. 14, STIFF, olive grey, CLAYEY SILT AND SILT, tr to and f-m sand, SR, moist, (ML), alternating layers of silt, clayey silt, and thin fine sand lenses. (LODGEMENT TILL)
72	(70.0-80.0) Stiff, olive grey, CLAYEY SILT AND SILT, tr to and f-m sand, SR, moist, (ML), alternating layers of silt, clayey silt and fine sand lenses (LODGEMENT TILL)	26		14	SS	7/7/7/7	2.0' / 2.0'	72	
74								74	
76	- below 75.0, seams of SILTY CLAY TILL present	17		15		7/8/7/8	2.0' / 2.0'	76	NO. 15, SAA, with seams of SILTY CLAY TILL
78								78	
80	(80.0-110.0) Stiff to V. Stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)	27		16		8/8/8/8	2.0' / 2.0'	80	NO. 16, Stiff to V. Stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
82								82	
84								84	
86		33		17		8/9/8/9	2.0' / 2.0'	86	NO. 17, SAA
88								88	
90								90	NO. 18, SAA
92		29		18		9/9/9/9	2.0' / 2.0'		

Field Boring Log

DEPTH HOLE ____ JOB NO. 93-2279 PROJECT BFI / Zim / Illmo BORING NO. G1160
DEPTH SOIL DRILL ____ QA INSP. ____ DRILLING METHOD ____ SHEET 5 OF 6
DEPTH ROCK CORE ____ WEATHER ____ DRILLING COMPANY Aquatell SURFACE ELEV. ~763
NO. DIST. SA. ____ UD. SA. ____ TEMP. ____ DRILL RIG ____ DRILLER ____ DATUM Mean Sea Level
HRS. PROD. ____ WT. SAMPLER HAMMER ____ DROP ____ STARTED 1500 / 9-22-97 (time / date)
HRS. DELAYED ____ WT. CASING HAMMER ____ DROP ____ COMPLETED 19-24-97

SAMPLE TYPES: AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DS DENISON SAMPLE; PS PITCHER SAMPLE; RC ROCK CORE; ST SLOTTED TUBE; TO THIN-WALLED, OPEN; TP THIN-WALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS: BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SLT SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION: "TRACE" - 0-5%; "SOME" - 12-30%; "LITTLE" - 5-12%; "AND" - 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	PHI/CLA FINE SOILS
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENTS
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS (CLEAN OUT WATER) (HAMMER FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(see previous page)							
94							94	
								NO. 19, SAA
96		29	19	SS	9/9/10/10	2.0' / 2.0'	96	
98							98	
100							100	
						2.0'		NO 20, SAA
		27	20	SS	10/10/10/11	2.0'		
102							102	
104							104	
106		29	21	SS	10/10/11/12	1.5' / 2.0'	106	NO. 21, SAA
								Note: recovery low due to gravel lodged in sampler shoe
108							108	
110	(110-111.5) stiff, olive grey, SILT AND CLAYEY SILT, SR, moist, (ml) (QUIET WATER SEDIMENT)	40	22	SS	11/11/11/11	1.8' / 2.0'	110	NO. 22, (110-111.5), stiff, olive grey, SILT AND CLAYEY SILT, SR, moist, (ml)
112	(111.5-112) dense, olive grey, F-M SAND, tr silt, NR, wet, (SW)						112	(111.5-112), dense, olive grey, F-M SAND, tr silt, NR, wet, (SW)
	(112.0-122.0) V. stiff, olive grey SILTY CLAY, tr to little c-f sand, tr f gravel, NR to SR, damp to moist, (CL) (LODGEMENT TILL)	26	23	SS	8/11/12/12	2.0' / 2.0'		NO. 23, V. stiff, olive grey, SILTY CLAY, little c-f sand, tr f gravel, NR, damp to moist, (CL)
114							114	NO. 24, (see next page)

Golder Associates

Field Boring Log

DEPTH HOLE 130.0	JOB NO 923-2279	PROJECT BEC / Zion / Illinois		BORING NO. G11E07	
DEPTH SOIL DRILL 130.0	QA INSP.	DRILLING METHOD MUD ROTARY		SHEET 6 OF 6	
DEPTH ROCK CORE —	WEATHER	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~763 ft	
NP T.SA. — UD.SA. —	TEMP.	DRILL RIG	DRILLER	DATUM Mean Sea Level	
WL.	HRS. PROD. —	WT. SAMPLER HAMMER	DROP	STARTED 1500 / 9-22-97	
ME WL.	HRS. DELAYED —	WT. CASING HAMMER	DROP	COMPLETED / 9-24-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENNISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THINWALLED, OPEN
T.P.	THINWALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OR	ORANGE	SLY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" - 12-30%
"LITTLE" - 5-12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		PHREA PRESSURE	
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES	
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY	
COMPACT	CP	10-30	FIRM	FM	MOLDS	
DENSE	DN	30-50	STIFF	ST	SHEARS WITH DIFFICULTY	
VERY DENSE	VDN	50	VERY STIFF	VST	SHEARS WITH GREAT DIFFICULTY	
			HARD	H	RESISTS SHEARING	

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT.	SAMPLES NO.	TYPE	PHREA POWER DRIVE POWER	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
116	(see previous page)	23	24	SS	11/11/12/11	2.0'/2.0'	116	NO. 24, v. stiff, olive grey, SILTY CLAY, tr c-f sand, WR, damp, (CL)
		22	25	SS	11/11/11/11	2.0'/2.0'		NO. 25, SAA
118	- below 118.0, tr to and silt, tr to some f sand, (thin seams of silt and sand present)	28	26	SS	14/14/14/14	2.0'/2.0'	118	NO. 26, v. stiff, olive grey, SILTY CLAY, tr to and silt, tr to some f sand, SR, damp to moist, (CL), contains seams of silt and fine sand
120		31	27	SS	15/15/16/16	2.0'/2.0'	120	NO. 27, SAA
122	(122.0-126.0) V. dense, olive grey and multi-colored, F SAND, little silt, NR, wet, (SP) (GLACIOFLUVIAL SEDIMENT)		28	SS		0.1'/2.0'	122	NO. 28, V. dense, olive grey and multi-colored, F SAND, little silt, NR, wet, (SP)
		>50			25+...			Note: poor recovery
124	- below 124.0, F-M sand	>50	29	SS	25+...	1.2'/2.0'	124	NO. 29, SAA, F-M SAND
126	(126.0-128.0) V. stiff to hard, olive grey, layered, SILT AND SILTY CLAY AND CLAY, WR to SR, damp to moist, (CL-ML) (QUIET WATER SEDIMENT)	>50	30	SS	25+...	1.5'/2.0'	126	NO. 30, V. stiff to hard, olive grey, layered, SILT AND SILTY CLAY AND CLAY, WR to SR, damp to moist, (CL-ML)
128	(128.0-131.0) hard, olive grey and multi-colored, SILTY CLAY AND CLAYEY SILT, some to and c-f sand and c-f gravel, SR damp to moist, (CL-ML-SC-GC) (POSSIBLE DEFORMATION)	>50	31	SS	25+...	1.0'/1.0'	128	NO. 31, hard, olive grey and multi-colored, SILTY CLAY, some to and c-f sand and c-f gravel, SR, damp to moist, (CL-SC-GC)
		>50	32	SS	25+...	1.0'/1.0'	129	NO. 32, SAA
130	END OF BORING @ 130.0 FEET BGS	>50	33	SS	25+...	1.0'/1.0'	130	NO. 33, SAA, but mainly CLAYEY SILT, (ML-SC-GC)
							131	NOTE: FROM 128. to 131 THE SAMPLER COULD ONLY BE ADVANCED ONE FOOT AT A TIME DUE TO VERY HARD MATERIALS PRESENT
132								
134								

Golder Associates

Field Boring Log

DEPTH HOLE 128.0 JOB NO. 973-2279 PROJECT BEE / Zion / Illinois BORING NO. G161
DEPTH SOIL DRILL 98.0 QA INSP. M. HADDOCK DRILLING METHOD 10" Wash / Mud Rotary SHEET 1 OF 6
DEPTH ROCK CORE — WEATHER SUNNY DRILLING COMPANY Aquadrill SURFACE ELEV. ~758'
NO. DIST. SA. — UD. SA. — TEMP. 75° DRILL RIG Gus Pech Brant 22A DRILLER Amon Arld DATUM Mean Sea Level
WL. — HRS. PROD. — WT. SAMPLER HAMMER 140 lbs. DROP 30 inches STARTED 1000 (Time) 9-8-97 (Date)
WL. — HRS. DELAYED — WT. CASING HAMMER — DROP — COMPLETED /

SAMPLE TYPES
AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DB DENISON SAMPLE; PS PISTON SAMPLE; RC ROCK CORE; ST SLOTTED TUBE; TO THIN-WALLED, OPEN; TP THIN-WALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS
BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NONPLASTIC; OR ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RK ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SLY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION
"TRACE" - 0-5%; "SOME" - 13-30%; "LITTLE" - 5-12%; "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS (6" - 6" - 6")	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
1	(0.0-14.0) stiff, olive grey and dk yellowish brn, SILTY CLAY, tr to some c-f sand and c-f crushed gravel, SR, moist, (CL) (FILL)							
2								
3								
4								
5							5.0'	No. 1, NO RECOVERY DUE TO ROCK OBSTRUCTION IN SAMPLER WHEN SAMPLER WAS DRIVEN.
6		—	1	S.S.	1 / 7 / 16	1.0 / — / 2.0		Note: FILL MATERIAL AND BASEROCK IS VISIBLE AT BORING LOCATION.
7							7.0'	
8								
9								
10							10.0'	
11		>50	2	S.S.	25+ / 50/3"	0.5 / — / 2.0		No. 2, stiff, olive grey, SILTY CLAY, tr to some c-f sand and c-f crushed gravel (construction base rock), SR, moist, (CL) (FILL)
12							12.0'	NOTE: Gravel impeded sampler
13								
14	(14.0-21.5) firm to stiff, mod yellowish brn and olive grey, mottled, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp to moist, (CL) (WEATHERED LODGEMENT TILL)							- Chert cobble slowed drilling. Driller had to change to a tri-cone roller bit to advance.
15							15.0'	
16		21	3	S.S.	10/11/14/11	1.8' / — / 2.0'		No. 3, firm to stiff, mod yellowish brn and olive grey, mottled, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp to moist, (CL) (WEATHERED LODGEMENT TILL)
17							17.0'	
18								
19								
20							20.0'	
		27	4	S.S.	8/11/9/11			SAA (SAME AS ABOVE) to 21.5' @ 21.5', stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
22	(21.5-22.0) stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)							
23							22.0'	

Field Boring Log

DEPTH HOLE ____ JOB NO. 973-2279 PROJECT BFI / Zion / Illinois BORING NO. 6161
DEPTH SOIL DRILL ____ GA INSP. MNH DRILLING METHOD 10" wash / Mud Rotary SHEET 2 OF 6
DEPTH ROCK CORE ____ WEATHER ____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~758'
NO. DIST. SA. ____ UD. SA. ____ TEMP. ____ DRILL RIG ____ DRILLER Dennis Arkl DATUM Mean Sea Level
WL. ____ HRS. PROD. ____ WT. SAMPLER HAMMER 140 lbs. DROP 30 inches STARTED ____ Time / Date
WL. ____ HRS. DELAYED ____ WT. CASING HAMMER ____ DROP ____ COMPLETED ____ /

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
F.S.	FITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE HYDRAULIC	TR	TRACE
PM	PRESSURE MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS PER 6 IN FORCE	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
29	(21.5-30.0) stiff, olive gray, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp to moist, (CL) (LODGEMENT TILL)							
25		27	5	S.S.	4/3/4/4	2.0' / 2.0'	25.0'	NO 5, SAA (SAME AS ABOVE)
26								
27							27.0'	
28								
29								
30							30.0'	
		22	6	S.S.	10/14/11/6	2.0' / 2.0'		NO. 6, SAA
32							31.0'	
33								
34								
35							35.0'	
36		16	7	S.S.	7/8/8/8	2.0' / 2.0'		NO. 7, SAA
37							37.0'	
38								
39								
40	- 40.0 to 42.0, thin silt fissures present						40.0'	NO. 8, SAA, but fissured with silt seams, firm, moist
41		11	8	S.S.	5/6/6/6	2.0' / 2.0'		
42							42.0'	
43								
45							45.0'	NO. 9, Start in Sheet, olive gray, SILTY CLAY, tr to little c-f sand and f gravel, WR, moist, (CL)
46		14	9	S.S.				(LODGEMENT TILL)

Field Boring Log

DEPTH HOLE ____ JOB NO. 973-2279 PROJECT BFI / Zion / Illinois BORING NO. G161
DEPTH SOIL DRILL ____ GA INSP. MNH DRILLING METHOD 6" wash / mud Rotary SHEET 3 OF 6
DEPTH ROCK CORE ____ WEATHER ____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~758'
NO. DIST. SA. ____ UD. SA. ____ TEMP. ____ DRILL RIG Gus Pech DRILLER Dennis Auld DATUM Mean Sea Level
WL. ____ HRS. PROD. ____ WT. SAMPLER HAMMER 140 lbs. DROP 30 inches STARTED ____ (TIME) ____ (DATE)
WL. ____ HRS. DELAYED ____ WT. CASING HAMMER ____ DROP ____ COMPLETED ____

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
O.O.	DRIVE OPEN
D.B.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THINWALLED, OPEN
T.P.	THINWALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	BOWL
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WOH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
U	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" 12 - 30%
"LITTLE" - 5 - 12% "AND" 30 - 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT		SAMPLES NO.	TYPE	DIAMM. BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47	(21.5-50.0) stiff, olive grey, SILTY CLAY, tr black c-f sand and f gravel, damp to moist, WR, (CL) (LODGEMENT TILL)			9	S.S.			47.0'	(SEE PREVIOUS PAGE)
48									
49									
50	(50.0-60.0) stiff, olive grey, SILT, tr to some c-f sand and f gravel, WR, moist to wet, (ML) (thin seams of c-f sand / glaciofluvial sediment present)	22		10	S.S.	11/11/11/11	1.2' / 2.0'	50.0'	NO. 10, stiff olive grey, SILT, tr to some c-f sand and f gravel, WR, moist to wet, (ML), thin seams of glaciofluvial sediment present.
51									
52								52.0'	
53									
55							2.0' / 2.0'	55.0'	NO. 11, SAA
56		17		11	S.S.	9/8/9/9			
57								57.0'	
58									
59									
60	(60.0-82.0) stiff to v. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)							60.0'	
61		24		12	S.S.	12/12/12/12	2.0' / 2.0'		NO. 12, stiff to v. stiff, olive grey, SILTY CLAY, tr c-f sand, and f gravel, WR, damp, (CL) (LODGEMENT TILL)
62									
63								62.0'	
64									
65									NO. 13 SAA
66		24		13	S.S.	12/12/12/12	2.0' / 2.0'	65.0'	
								67.0'	
68									
69									

Golder Associates

Field Boring Log

DEPTH HOLE	JOB NO. 933-2279	PROJECT BEI / Zion / Illinois		BORING NO. 6161	
DEPTH SOIL DRILL	GA INSP. MNH	DRILLING METHOD 10" wash / mud Rotary		SHEET 4 OF 6	
DEPTH ROCK CORE —	WEATHER	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~758'	
NO. DIST. SA. — UD. SA. —	TEMP.	DRILL RIG	DRILLER Dennis Arkl	DATUM Mean Sea Level	
WL.	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs.	DROP 30 inches	STARTED / TIME / DATE	
WL.	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED /	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" 12 30%
"LITTLE" - 5-12% "AND" 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	(60.0-85.0) Stiff to V stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp (CL) (LODGEMENT TILL)						70.0'	NO. 14, SAA
71		24	14	S.S.	12/12/12/12	1.0' / 2.0'		
72							72.0'	
73								
74								
75							75.0'	NO. 15, SAA
76		25	15	S.S.		2.0' / 2.0'		
77							77.0'	
78								
79								
80							80.0'	NO. 16, SAA
81		15	16	S.S.	7/8/7/7	2.0' / 2.0'		
82							82.0'	
83								
84								
85	(85.0-87.0) Stiff, olive grey, SILTY CLAY, tr to some c-f sand, tr f gravel, WR, moist (ML) (GLACIAL FLUVIAL)						85.0'	NO. 17, Stiff, olive grey, Clayey Silt, tr to some c-f sand, tr f gravel, WR, moist (ML)
86		23	17	S.S.	11/12/11/11	2.0' / 2.0'		
87							87.0'	
88	(87.0-110.0) V. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp. (CL) (LODGEMENT TILL)							
89								
90							90.0'	NO. 18, V. Stiff, olive grey, Silty Clay, tr to some c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
91		29	18	S.S.	15/16/16/16			
92							92.0'	

Golder Associates

Field Boring Log

DEPTH HOLE ____ JOB NO. 923-2279 PROJECT BEI / Zion / Illinois BORING NO. GWC1

DEPTH SOIL DRILL ____ QA INSP. MNH DRILLING METHOD 10" mud / mud Rotary SHEET 5 OF 6

DEPTH ROCK CORE ____ WEATHER ____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~758'

NO. DIST. SA. ____ UD. SA. ____ TEMP. ____ DRILL RIG ____ DRILLER Dennis Arkell DATUM Mean Sea Level

WL. ____ HRS. PROD. ____ WT. SAMPLER HAMMER 140 lbs. DROP 30 inches STARTED ____ / TIME DATE

WL. ____ HRS. DELAYED ____ WT. CASING HAMMER ____ DROP ____ COMPLETED ____ /

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENNISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WOH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" - 12-30%
"LITTLE" - 5-12% "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE	
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES	
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY	
COMPACT	CP	10-30	FIRM	FM	MOLDS	
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS	
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS	
			HARD	H	RESISTS THUMBNAIL	

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS (CORE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
93	(87.0-110.0) v. stiff, olive grey SILTY CLAY, tr cf sand and f gravel, WR, damp, (CL) (LACUSTRINE TILL)							
94								
95							95.0'	
96			19	S.S.				
97							97.0'	
98								
99								
100							100.0'	NO. 20, SAA
101		26	20	S.S.	13/13/13/13	2.0' / 2.0'		
102							102.0'	
103								
104								
105							105.0'	NO. 21, SAA
106		28	21	SS	14/14/14/14	2.0' / 2.0'		
107							107.0'	
108	- below TDP.O. thin silt seams present, moist							NO. 22, SAA w/ thin silt seams
109		32	22	SS	16/16/16/16	2.0' / 2.0'	108.0'	
110								
111	(110.0-120.0) v. stiff to hard, olive grey alternating layers of SILT, CLAYEY SILT AND SILTY CLAY, tr f sand, WR-SR, damp to wet, (CL & ML)	31	23	S.S.	16/15/12/16	2.0' / 2.0'	110.0'	NO. 23, v. stiff, olive grey, SILT AND CLAYEY SILT, tr to some f sand, WR, moist, (ML)
112	(QUIET WATER SEDIMENT)							
		>50	24	S.S.	25+	1.2' / 2.0'	112.0'	NO. 24, (112.0-113.5) v. stiff to hard, olive grey, SILTY CLAY, SR, damp, (CL)
								(113.5-114) v. stiff, olive grey, SILT, tr f sand, WR, moist to wet, (ML)
114							114.0'	
115			25	S.S.				

Golder Associates

Field Boring Log

DEPTH HOLE	JOB NO. 93-2279	PROJECT BFI / Zion / Illinois		BORING NO. 61b1	
DEPTH SOIL DRILL	QA INSP. MAH	DRILLING METHOD 10" wash / mud Rotary		SHEET 6 OF 6	
DEPTH ROCK CORE —	WEATHER	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~758'	
NO. DIST. SA. — UD. SA. —	TEMP.	DRILL RIG	DRILLER Dennis Auld	DATUM Mean Sea Level	
TH WL.	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs.	DROP 30 inches	STARTED / TIME / DATE	
E WL.	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED /	

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.-S.	SLOTTED TUBE	F	FINE
T.O.	THINWALLED, OPEN	FRAG	FRAGMENTS
T.P.	THINWALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SIY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	PRINTS INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	PRINTS INDENT
			HARD	H	RESISTS PRINTING

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS (SER'S) (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
116	(See description on previous page)	41	25	SS	20/20/21/21	1.0'/2.0'		NO. 25, V. stiff, olive grey, SILTY CLAY, SR, damp (CL) (QUIET WATER CLAY)
117		50	26	SS	25/25/25/25	1.5'/2.0'	116.0'	NO. 26, V. stiff, olive grey, SILT, tr f sand, WR, moist to wet, (ML)
118							118.0'	NO. 27, SAA.
119		50	27	SS	25/25/25/25	1.5'/2.0'		
120	(120.0-121.0) V. dense to v. stiff, olive grey, SILTY FINE SAND AND SILT, WR to SR, moist to wet, (SM-ML), (sediment slowly grades back and forth from very fine sand to silt	50	28	SS	25/25/25/25	1.2'/2.0'	120.0'	NO. 28, V. dense, olive grey, FINE SAND, some silt to and silt, WR, moist to wet, (SM)
122							122.0'	NO. 29, V. stiff to v. dense, olive grey, SILTY FINE SAND AND SILT, SR, moist to wet, (SM-ML)
123		>50	29	SS	25+....	1.2'/2.0'		
124							124.0'	NO. 30, V. stiff to v. dense, olive grey, SILTY FINE SAND AND SILT, SR, moist to wet, (SM-ML), silt gradually grades to silty fine sand and then grades back to silt
125		>50	30	SS	25+...	1.0'/2.0'		
126	(126.0-127.0) V. dense, multicolored, C-F GRAVEL AND COARSE SAND, little silt, NR, wet (GW-SW)	>50	31A	SS	25+...	0.2'/1.0'	126.0'	NO. 31A, poor recovery due to gravel lodged in sampler drive shoe. V. dense, olive grey and multi-colored C-FINE GRAVEL AND COARSE SAND, little silt, NR, wet (GW-SW)
127	(127.0-129.0) V. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)	45	31B	SS	22/22/23/21	2.0'/2.0'	127.0'	NO. 31B, V. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
128	END OF BORING @ 128.0 FEET BGS.						129.0'	
129								
130								
131								
132								

Golder Associates

Field Boring Log

DEPTH HOLE 114.0	JOB NO. 923-2279	PROJECT BFI / Zion / Illinois	BORING NO. G163
DEPTH SOIL DRILL 114.0	QA INSP. MNH	DRILLING METHOD Mud Rotary	SHEET 1 OF 5
DEPTH ROCK CORE —	WEATHER Sunny	DRILLING COMPANY Aquaterra	SURFACE ELEV. ~758
NO. DIST. SA. — UD. SA. —	TEMP. 75°	DRILL RIG CME 55 PECH BRAT 22R DRILLER D. Auld	DATUM Mean Sea Level
WL. —	HRS. PROD. —	WT. SAMPLER HAMMER 140 lb DROP 30"	STARTED 0800 (Time) 9-13-97 (Date)
WL. —	HRS. DELAYED —	WT. CASING HAMMER — DROP —	COMPLETED 9-15-97

SAMPLE TYPES

AS.	AUGER SAMPLE	BL	BLACK
CS.	CHUNK SAMPLE	BR	BROWN
DO.	DRIVE OPEN	C	COARSE
DS.	DENISON SAMPLE	CA	CASING
PS.	PITCHER SAMPLE	CL	CLAY
RC.	ROCK CORE	CLY	CLAYEY
ST.	SLOTTED TUBE	F	FINE
TO.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
TP.	THIN-WALLED, PISTON	GL	GRAVEL
WS.	WASH SAMPLE	LYD	LAYERED
		U	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE HYDRAULIC	TR	TRACE
PM	PRESSURE MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0 4	VERY SOFT VS	EXTRUDES
LOOSE LS	4 10	SOFT S	MOLDS EASILY
COMPACT CP	10 30	FIRM FM	MOLDS
DENSE DN	30 50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES BLOWS PER 6" (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
2	(0.0-17.0) soft to firm, olive grey, SILTY CLAY, little to some c-f sand and f gravel, WR, moist, (CL) (FILL)						0	
4							4	
6		17	1	SS	7/8/9/11	1.0' / 2.0'	6	NO. 1, soft to firm, olive grey, SILTY CLAY, little to some c-f sand and f gravel, WR, moist, (CL) (FILL)
8							8	
10		11	2	SS	5/5/6/6	1.5' / 2.0'	10	NO. 2, SAA, dk yellowish brn and olive grey, mottled (SAA = SAME AS ABOVE)
12							12	
14							14	
16		16	3	SS	7/8/8/9	1.5' / 2.0'	16	NO. 3 SAA, tr organics
18	(17.0-25.0) stiff, mod. yellowish brn, tr olive grey, mottled, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (WEATHERED LODGEMENT TILL)						18	
20		26	4	SS	11/12/14/15	2.0' / 2.0'	20	NO. 4, stiff, mod. yellowish brn, tr olive grey, mottled, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (WEATHERED LODGEMENT TILL)
22							22	

Field Boring Log

DEPTH HOLE _____ JOB NO. 973-2279 PROJECT BFI / Zion / Illinois BORING NO. G1163
DEPTH SOIL DRILL _____ GA INSP. _____ DRILLING METHOD _____ SHEET 2 OF 5
DEPTH ROCK CORE — WEATHER _____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~758
NO. DIST. SA. — UD. SA. — TEMP. _____ DRILL RIG _____ DRILLER _____ DATUM Mean Sea Level
F WL. _____ HRS. PROD. — WT. SAMPLER HAMMER _____ DROP _____ STARTED 9-13-97 (TIME / DATE)
L. _____ HRS. DELAYED — WT. CASING HAMMER _____ DROP _____ COMPLETED 9-15-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SOM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WOH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	PRESSES THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	DRIVING BLOWS (FREE FALL FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24							24	
26	(25.0-29.0) Firm to stiff, olive grey, SILTY CLAY, tr to and c-f sand, tr f gravel, WR, moist to wet, (CL-SC), small (<2") clayey sand seams interbedded (LODGEMENT TILL)	40	5	SS	12/20/20/20	1.2' / — / 2.0'	26	NO. 5. Firm to stiff olive grey, SILTY CLAY, tr to and c-f sand, tr f gravel, WR, moist to wet, (CL - SC), small clayey sand seams (LODGEMENT TILL)
28							28	
30	(29.0-69.0) stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)	16	6	SS	7/8/8/9	2.0' / — / 2.0'	30	NO. 6. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
32							32	
34							34	
36		12	7	SS	6/6/6/6	2.0' / — / 2.0'	36	NO. 7 SAA
38							38	
40		14	8	SS	7/7/7/7	2.0' / — / 2.0'	40	NO. 8, SAA
42							42	
49							49	
46	(45.0-49.0) Numerous clayey c-f sand and f gravel seams		9	SS			46	NO. 9, SAA w/ CLAYEY C-F SAND AND F GRAVEL SEAMS

Golder Associates

Field Boring Log

DEPTH HOLE ____ JOB NO. 973-2279 PROJECT BFI / Zion / Illinois BORING NO. G2163

DEPTH SOIL DRILL ____ QA INSP. ____ DRILLING METHOD ____ SHEET 3 OF 5

DEPTH ROCK CORE — WEATHER ____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~758

NO DIST. SA. — UD. SA. — TEMP. ____ DRILL RIG ____ DRILLER ____ DATUM Mean Sea Level

WL. ____ HRS. PROD. — WT. SAMPLER HAMMER ____ DROP ____ STARTED TIME ____ DATE 9-13-97

ME WL. ____ HRS. DELAYED — WT. CASING HAMMER ____ DROP ____ COMPLETED DATE 9-15-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" - 12-30%
"LITTLE" - 5-12% "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PINCH SCALE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	BLOWS (PEN. IN FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
			9	SS				(SEE PREVIOUS PAGE)
48							48	
50			10	SS			50	ND. 10, stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (cl) (LODGEMENT TILL)
52							52	
54							54	
56		14	11	SS	7/7/7/7	2.0'/2.0'	56	ND. 11, SAA
58	- below 58.0, course sand/gravel seams with tr. cobbles						58	- cobbles / course gravel ?
60		20	12	SS	9/10/10/10	0/2.0	60	- NO SAMPLE RECOVERED DUE TO GRAVEL JAMMED IN SAMPLER DRIVE SHOE
62							62	- cuttings indicate gravel seams
64	(64.0-98.0) stiff to v. stiff olive grey to pale reddish brn, SILTY CLAY to c-f sand and f gravel, WR, damp, (cl) (LODGEMENT TILL)						64	- cobbles encountered during drilling
66		19	13	SS	9/9/10/9		66	ND. 13, stiff to v stiff, olive grey to pale reddish brn, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (cl) (LODGEMENT TILL)
68							68	

Golder Associates

Field Boring Log

DEPTH HOLE	JOB NO. 973-2279	PROJECT BFI / Zion / Illinois		BORING NO. G163	
DEPTH SOIL DRILL	QA INSP.	DRILLING METHOD		SHEET 4 OF 5	
DEPTH ROCK CORE —	WEATHER	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~738	
NO. DIST. SA. — UD. SA. —	TEMP.	DRILL RIG	DRILLER	DATUM Mean Sea Level	
WL.	HRS. PROD. —	WT. SAMPLER HAMMER	DROP	STARTED 1300 (Time) 9-13-97 (Date)	
E WL.	HRS. DELAYED —	WT. CASING HAMMER	DROP	COMPLETED 9-15-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THINWALLED, OPEN
T.P.	THINWALLED, PISTON
W.S.	WASH SAMPLE

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
LI	LITTLE

ABBREVIATIONS

M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OB	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK

SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SLTY	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 10% "SOME" - 12 - 30%
"LITTLE" - 0 - 12% "AND" - 30 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0 4	VERY SOFT VS	EXTRUDES
LOOSE LS	4 10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30 50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES DRIVING BLOWS (DRIVE FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	(SEE DESCRIPTION ON PREVIOUS TABLE)						70	NO. 14, SAA (SAME AS ABOVE) (SEE PREVIOUS PAGE)
		21	14	SS	9/10/11/11	2.0 / 2.0		
72							72	
74							74	
		22	15	SS	11/11/11/11	2.0 / 2.0		NO. 15, SAA
76							76	
78							78	
80		19	16	SS	7/9/10/9	2.0 / 2.0	80	NO. 16, SAA
82							82	
84							84	
86		26	17	SS	13/13/13/14	2.0' / 2.0'	86	NO. 17, SAA
88							88	
90		30	18	SS	15/15/15/15	2.0' / 2.0'	90	NO. 18, SAA
92							92	

Golder Associates

Field Boring Log

DEPTH HOLE 114.0	JOB NO. 93-2279	PROJECT BFI / Zion / Illinois		BORING NO. G163	
DEPTH SOIL DRILL 114.0	GA INSP. MNH	DRILLING METHOD		SHEET 5 OF 5	
DEPTH ROCK CORE —	WEATHER	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~758	
T. ST.SA. — UD. SA. —	TEMP.	DRILL RIG	DRILLER	DATUM Mean Sea Level	
A WL.	HRS. PROD. —	WT. SAMPLER HAMMER	DROP	STARTED 9-13-97 (TIME / DATE)	
IME WL.	HRS. DELAYED —	WT. CASING HAMMER	DROP	COMPLETED 9-15-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.S.	SLOTTED TUBE	F	FINE
T.O.	THINWALLED, OPEN	FRAG	FRAGMENTS
T.P.	THINWALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OB	ORANGE	SIY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB MOLDS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS PER 6 IN. (PENETRATION RESISTANCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
92							92	
94						1.5'	94	No. 18, SAA
96		34	19	SS	17/17/17/17	1.8' / 2.0'	96	No. 19, SAA
98	(98.0-101.5) V. stiff, olive grey, SILT AND CLAYEY SILT tr c-f sand, WR, damp to moist, (ML) (SILTY DIAMICTON)	48	20	SS	25/24/24/24	1.2' / 2.0'	98	No. 20, V. stiff, olive grey, SILT AND CLAYEY SILT, tr c-f sand, WR, damp to moist, (ML) (SILTY DIAMICTON)
100		49	21	SS	25/24/25/26	1.5' / 2.0'	100	No 21, SAA to 101.5 @ 101.5, V dense, olive grey, SILTY FINE SAND, WR, moist to wet, (SM)
102	(101.5-112.0) V. dense, olive grey with multi-colored grains, C-F SAND AND F GRAVEL, tr to little silt, WR, wet, (SP-SW-GW) containing thin seams of silty clay diamicton	>50	22	SS	25+.....	1.0' / 2.0'	102	No 22, V dense, multi-colored, C-F SAND AND F GRAVEL, tr to little silt, WR, wet (SW-GW)
104	(GLACIOFLUVIAL SEDIMENTS W/THIN DIAMICTON SEAMS)	>50	23	SS	25+.....	1.0' / 2.0'	104	No 23 SAA, with 2" seams of: V. stiff to hard, olive grey and multi-colored SILTY CLAY/CF SAND/F GRAVEL/SILT, WR, damp (CL-ML-SM-GM) (DIAMICTON SEAMS)
106		>50	24	SS	25+.....	1.5' / 2.0'	106	No. 24. SAA
108	- (108.0-111.5) SAND EXHIBITS BETTER SORTING, (SP-SW)	>50	25	SS	25+.....		108	No. 25 V. dense, olive grey and multi-colored, C-F SAND, tr silt, NA, wet, (SP-SW)
110		>50	26	SS	25+.....		110	No. 26 SAA to 111.5 @ 111.5, 4" V. stiff, olive grey, SILT seam
112	(112-114) hard, olive grey and multi-colored, SILTY CLAY AND CLAYEY SILT, little to and c-f sand and f gravel, WR, damp to moist, (CL-ML) (DIAMICTON)	>50	27	SS	25+.....	0.2' / 2.0'	112	No. 27, hard, olive grey and multi-colored, SILTY CLAY AND CLAYEY SILT, little to and c-f sand and f gravel, WR, damp to moist, (CL-ML) (DIAMICTON)
114	END OF BORING @ 114.0 FT BGS						114	

Field Boring Log

DEPTH HOLE 113 ft | JOB NO. 990403 | PROJECT Onyx Zion LandFill Well Installation | BORING NO. G-165
DEPTH SOIL DRILL 111 ft | BY INSP. AMH | DRILLING METHOD Wash rotary w/split spoon Sampling | SHEET 1 OF 5
DEPTH ROCK CORE — | WEATHER Sunny | DRILLING COMPANY Fox DRILLING | SURFACE ELEV. 753.5 ft
NO. DIST. SA. — UD. SA. — | TEMP. ≈ 40° F | DRILL RIG Dietrich D-120 | DRILLER Willy Goodwin | DATUM MSL
DEPTH WL. 89.5' bgs | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30 inches | STARTED 9:05 am 11-8-0 (TIME, DATE)
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 12:46 pm 11-8-0

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.D	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THINWALLED, OPEN
T.P.	THINWALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPOR

"TRACE" - 0 - 5% "SOME" 12 - 30%
"LITTLE" - 5 - 12% "AND" 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSU
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS
DENSE	DH	30 50	STIFF	ST	THUMB INDENT
VERY DENSE	VDH	50	VERY STIFF	VST	THUMBNAIL IN
			HARD	H	RESISTS THUM

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
1								Drill from 0' to 18' using 4¼" HSA and 2" diameter 2 ft long split spoon sampling on 5-ft centers. After split spoon sampling to 20 ft, set 12¼" ID steel surface casing to depth of 9 feet. Ream hole to 10" diameter with tricon bit with wash rotary methods to depth of 111 feet.
2								
3	Firm, mottled dk yell. brn (10YR 4/2) and mod. yell. brn (10YR 5/4), CLAY, tr. gravel, SR, moist (CH)	6	1	SS	2 2 4 5	14"/24"		Sample #1 collected @ 1127
4								
5								
6								
7								
8	Dense, mottled greenish gray (5GY 6/1) and mod. yell brn (10YR 5/4), SILT, some clay, tr. sand, SR, dry (ML)	30	1	SS	8 14 16 22	18"/24"		Sample #1 collected @ 9:20 am
9								
10								
11								
12								
13	Compact, mottled greenish gray (5GY 6/1) and mod. yell brn. (10 YR 5/4), SILT, some clay, tr. sand, SR, dry (ML)	28	2	SS	7 12 16 21	22"/24"		Sample #2 collected @ 9:28 am
14 1/2'								
15	Hard, mod. yell brn (10YR 5/4), CLAY, little silt, tr. gravel, WR, moist (CL)							
16								
17								
18	Very stiff, mottled mod. yell. brn (10YR 5/4) and dark yell. brn. (10YR 4/4), CLAY, tr. gravel, WR, moist (CH)	23	3	SS	6 11 12 14	18"/24"		Advance 4¼" HSA to 18 feet; continue with 5½ inch wash rotary tricon bit; ream HSA is ground to facilitate water return Sample #3 Collected @ 9:45 am
19								
20								
21								
22								
23								

Field Boring Log

DEPTH HOLE 113 ft | JOB NO. 990403 | PROJECT Onyx Zion Landfill Well Installation | BORING NO. G-165
DEPTH SOIL DRILL 111 ft | BX INSP. AMH | DRILLING METHOD Wash rotary w/split spoon sampling | SHEET 2 OF 5
DEPTH ROCK CORE — | WEATHER Sunny | DRILLING COMPANY Fox DRILLING | SURFACE ELEV. 7535ft
NO. DIST. SA. — | UD. SA. — | TEMP. 265°F | DRILL RIG Dietrich D-120 | DRILLER Willy Goodwin | DATUM MSL
DEPTH WL. 89.5' bgs | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30-inches | STARTED 9:05 am (TIME) 11-8-0 (DAT)
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 12:45 pm 11-8-0

SAMPLE TYPES
A.S. AUGER SAMPLE; C.S. CHUNK SAMPLE; D.O. DRIVE OPEN; D.S. DENISON SAMPLE; P.S. PITCHER SAMPLE; R.C. ROCK CORE; S.T. SLOTTED TUBE; T.O. THIN-WALLED, OPEN; T.P. THIN-WALLED, PISTON; W.S. WASH SAMPLE

ABBREVIATIONS
BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OO ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIT SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPOR
"TRACE" - 0 - 5%; "SOME" - 12 - 30%; "LITTLE" - 5 - 12%; "AND" 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSU
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENT
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL IN
			HARD	H	RESISTS THUM

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24	Very stiff, dk. yell. brn. (10YR 4/2), CLAY, tr. gravel, WR, moist (CH)	16	4	SS	5, 7, 9, 10	21"/24"		Sample #4 collected @ 10:08 am
25								
26								
27								
28								
29	stiff, dk. yell. brn. (10YR 4/2), CLAY, tr. gravel, WR, moist (CH)	11	5	SS	5, 5, 6, 8	6"/24"		Sample #5 collected @ 10:20 am
30								
31								
32								
33								
34	Very stiff, dk. yell. brn. (10YR 4/2) homogeneous, CLAY, tr. gravel, WR, moist (CH)	16	6	SS	5, 7, 9, 12	20"/24"		Sample #6 collected @ 10:35 am
35								
36								
37								
38								
39	Very stiff, dk. yell. brn. (10YR 4/2) homogeneous, CLAY, tr. gravel, WR, moist (CH)	17	7	SS	4, 7, 10, 12	21"/24"		Sample #7 collected @ 10:55 am
40								
41								
42								
43								
44	Very stiff, dk. yell. brn. (10YR 4/2) homogeneous, CLAY, little gravel, WR, moist (CH)	28	8	SS	9, 12, 16, 20	12"/24"		Sample #8 collected @ 11:09 am
45								
46								

Field Boring Log

DEPTH HOLE 113 ft	JOB NO. 990403	PROJECT Onyx Zion Landfill Well Installation		BORING NO. G-165	
DEPTH SOIL DRILL 111 Ft	GA INSP. AMH	DRILLING METHOD Wash rotary w/ split spoon sampling		SHEET 3	OF 5
DEPTH ROCK CORE —	WEATHER Sunny	DRILLING COMPANY FOX DRILLING		SURFACE ELEV. 7535.1	
NO. DIST. S.A. — UD. S.A. —	TEMP. ~65°F	DRILL RIG Dietrich D-120	DRILLER Willy Boodwin	DATUM MSL	
DEPTH WL. 89.5' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 - inches	STARTED 9:05 am 11-8-01 (Time, Date)	
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 12:45 pm 11-8-01	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPO

"TRACE" - 0 - 5% "SOME" 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESS
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASI
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDE
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL
			HARD	H	RESISTS THU

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47								
48	Very stiff, dk. yell. brn. (10YR 4/2), homogeneous, CLAY, tr. gravel, WR, moist (CH)	43	9	SS	10 17 26 28	23"/24"		Sample #9 Collected @ 11:39 am
49 / 49.5'	Very dense, olive gray (5Y 4/1), well sorted, f-m SAND, tr. silt, WR, moist (SW) some clay starting @ 50.4 ft	42	10	SS	21 22 20 15	22"/24"	50	Sample #10 collected @ 11:34 am
51 / 52.8'	Dense, olive gray (5Y 4/1), SILT, WR, moist (ML)							
52 / 53.6'	Dense, olive gray (5Y 4/1) f-c SAND & GRAVEL, little clay, WR, wet (GP-GP)	18	11	SS	14 10 8 10	12"/24"		sample #11 collected @ 11:43 am
53 / 54	Very stiff, dk. yell. brn. (10YR 4/2) CLAY, some silt, tr. gravel, WR, moist (CL)							
55								
56								
57								
58	Very stiff, dk. yell. brn. (10YR 4/2) to olive gray (5Y 4/1), homogeneous, CLAY, tr. silt & gravel, WR, moist (CH)	22	12	SS	7 9 13 16	19"/24"		Sample #12 collected @ 12:05 pm
59								
60								
61								
62								
63	Dense, olive gray (5Y 4/1), SILT & F SAND, WR, moist (SM)	52	13	SS	18 23 29 31	16"/24"		Sample #13 collected @ 12:27 pm
64 / 64.8'	Very dense/hard, olive gray (5Y 4/1), CLAY & SILT, WR, moist (CL-ML)							
65								
66								
67								
68	Hard, dk. yell. brn. (10 YR 4/2) to olive gray (5Y 4/1), homogeneous, CLAY, some silt, tr. gravel, WR, moist (CL)	39	14	SS	13 17	18"/24"		Sample #14 Collected @ 1:25 pm
69								

Field Boring Log

DEPTH HOLE 113 ft	JOB NO. 990403	PROJECT Onyx Zion Landfill Well Installation		BORING NO. G-165	
DEPTH SOIL DRILL 111 ft	ON INSP. AMH	DRILLING METHOD Wash rotary w/ split spoon sampling		SHEET 4 OF 5	
DEPTH ROCK CORE —	WEATHER Sunny	DRILLING COMPANY Fox DRILLING		SURFACE ELEV. 753.6 ft	
NO. DIST. SA. — UD. SA. —	TEMP. ~65°F	DRILL RIG Dietrich D-120	DRILLER Willy Goodwin	DATUM MSL	
DEPTH WL. 89.5' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 - inches	STARTED 9:05 am 11/7/90 (TIME / DATE)	
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 12:45 pm 11/8/90	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
U	UTTLE	RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORT

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"UTTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY		FIELD PRESSURE	
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL MARK
			HARD	H	RESISTS THUMB

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	Hard, dk. yell. brn. (10YR 4/2) to olive gray (5Y 4/1), homogeneous, CLAY, some silt, tr. gravel, WR, moist (CL)	39	14	SS	22 25	18"/24"		Sample #14 collected @ 1:26 pm
71								
72								
73	Hard, dk. yell. brn. (10YR 4/2), homogeneous, CLAY, tr. silt + gravel, WR, moist (CL)	47	15	SS	15 21 26 31	23"/24"		Sample #15 collected @ 1:42 pm
74	becoming Some Sand @ 74.9 ft							
75								
76								
77								
78	Very stiff/compact, olive gray (5Y 4/1) CLAY + F SAND, tr. gravel, WR, moist (SC)	28	16	SS	7 11 17 25	24"/24"		Sample #16 collected @ 1:58 pm
78.9' 79	Very stiff, dk. yell. brn (10YR 4/2) to olive gray, homogeneous CLAY, tr. gravel, WR, moist (CH)							
79.8' 80	Dense, olive gray (5Y 4/1), SILT, WR, moist (ML)							
81								
82								
83	Hard, olive gray (5Y 4/1), homogeneous, CLAY, tr. gravel, WR, moist (CH)	40	17	SS	12 16 24 27	19"/24"		Sample #17 collected @ 2:15 pm
84								
85								
86								
87								
88	Hard, dk. yell. brn. (10YR 4/2), homogeneous, CLAY, tr. gravel, WR, moist (CH)	40	18	SS	10 16 24 31	23"/24"		Sample #18 collected @ 2:36 pm
89								
90								
91								
92								

Field Boring Log

DEPTH HOLE 113 Ft	JOB NO. 990403	PROJECT Onyx Zion Landfill Well Installation		BORING NO. G-165	
DEPTH SOIL DRILL 111Ft	GA INSP. AMH	DRILLING METHOD Wash Rotary w/ split spoon sampling		SHEET 5 OF 5	
DEPTH ROCK CORE —	WEATHER Sunny	DRILLING COMPANY Fox DRILLING		SURFACE ELEV. 7535 Ft	
NO. DIST. SA. — UD. SA. —	TEMP. ≈65°F	DRILL RIG Dietrich D-120	DRILLER Willy Goodwin	DATUM MSL	
DEPTH WL. 89.5' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 - inches	STARTED 9:05 am TIME 11-8-00 DAY	
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 12:45 pm 11-12	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.D.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPOR

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY		FINGER PRESSU
VERY LOOSE VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE LS	4 10	SOFT	S	MOLDS EASILY
COMPACT CP	10-30	FIRM	FM	MOLDS
DENSE DN	30 50	STIFF	ST	THUMB INDENT
VERY DENSE VDN	50	VERY STIFF	VST	THUMBNAIL IN
		HARD	H	RESISTS THUM

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								begin continuous split spoon sampling @ 93 ft
93	Very stiff, dk. yell. brn. (10YR 4/2) to olive gray (5YR 4/1), homogeneous CLAY, tr. gravel, WR, moist (CH)	25	19	SS	9 11 14 16	22"/24"		collect sample #19 @ 3:06 pm
94								
95	Very dense, olive gray (5YR 4/1), SILT, little gravel, tr. clay, WR, moist (ML)	54	20	SS	22 25 29 30	16"/24"		collect sample #20 @ 3:26 pm
96								
97								
98	Very dense, dk. yell brn (10YR 4/2) to olive gray (5YR 4/1), f SAND, little gravel + clay, NR, wet (SC)	114	21	SS	24 48 66 73	6"/24"		collect sample #21 @ 3:44 pm
99								
100	Very dense, olive gray (5Y 4/1), f-m SAND, NR, wet (SW)	135	22	SS	48 59 76 71	18"/24"		collect sample #22 @ 7:25 am (11-10-00)
101								
102	Very dense, olive gray (5Y 4/1), f-m SAND, NR, wet (SW)	113	23	SS	49 52 61 63	6"/24"		collect sample #23 @ 7:50 am
103								
104	Very dense, light olive gray (5Y 6/1), SILT, wr, moist (ML)	135	24	SS	47 62 73 47	6"/24"		collect sample #24 @ 8:13 am
105								
106	Very dense, olive gray (5Y 4/1) f-m SAND, tr. gravel, NR, wet (SP)	89	25	SS	37 41 48 43	18"/24"		collect sample #25 @ 9:10 am
106.2'	Very dense, olive gray (5Y 4/1), m-C SAND, little gravel, NR, wet (SP)							
107								
108	Very dense, olive gray (5Y 4/1), f-m SAND, tr. gravel, NR, wet (SW)	85	26	SS	43 37 48 56	15"/24"		collect sample #26 @ 9:23 am
109								
110	Very dense, olive gray (5Y 4/1), f-C SAND, some gravel, NR, wet (SP)	134	27	SS	71 76 58 34	11"/24"		collect sample #27 @ 9:58 am
110.4'								
111	Very dense, light olive gray (5Y 6/1), laminated, SILT, NR, wet (ML)							
112	Hard, dk. yell. brn (10YR 4/2) to olive gray (5Y 4/1), CLAY, tr. gravel, WR, moist (CL)	93	28	SS	27 37 56 64	11"/24"		collect sample #28 @ 10:05 am
113								Note: Approximately 2.0 - feet of fill was placed at the ground surface at this location after the well was completed. Therefore, the tdb depth of this borhole, relative to the completed ground surface conditions, is 115 - feet.
114			EOB @ 113 Ft					
115								

Field Boring Log

DEPTH HOLE 108 ft | JOB NO. 990403 | PROJECT Onyx Zion Landfill Well Installation | BORING NO. G-166
DEPTH SOIL DRILL 106ft | GA INSP. AMH | DRILLING METHOD Wash rotary w/ split spoon sampling | SHEET 1 OF 5
DEPTH ROCK CORE — | WEATHER clear | DRILLING COMPANY FOR DRILLING | SURFACE ELEV. 748.10 ft
NO. DIST. SA. — | UD. SA. — | TEMP. ≈65°F | DRILL RIG Diedrich D-120 | DRILLER Willy Gookin | DATUM MSL
DEPTH WL. 84.8' bgs | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30 inches | STARTED 10:40 am / 10-20-
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 4:25 pm / 10-2:

SAMPLE TYPES: A.S. AUGER SAMPLE; C.S. CHUNK SAMPLE; D.O. DRIVE OPEN; D.S. DENISON SAMPLE; P.S. PITCHER SAMPLE; R.C. ROCK CORE; S.T. SLOTTED TUBE; T.O. THIN-WALLED, OPEN; T.P. THIN-WALLED, PISTON; W.S. WASH SAMPLE

ABBREVIATIONS: BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORT: "TRACE" 0-5%; "SOME" 12-30%; "LITTLE" 5-12%; "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSUR
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL IND
			HARD	H	RESISTS THUMB

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Drill from 0' to 13' using 4¼" HSA and 2" diameter, 2-ft long split spoon sampling on 5-ft centers. After split spoon sampling to 108 ft, set 12¼" ID steel surface casing to depth of 9 feet. Ream hole to 10" diameter using tricone bit with wash rotary methods to depth of 105.5 ft.
	Stiff, lt. yell. brn (10YR 4/2) and dusky yell. brn (10YR 2/2), mottled, silty CLAY, tr sand, tr organic material, WR, moist (CL) (FILL)	10	1	SS	2 4 6 7	10" / 24"		sample 1 collected @ 1045
	Very stiff, mod. yell. brn (10YR 5/4) and pale yell. brn (10YR 6/2), mottled, silty CLAY, tr. sand and gravel, WR-SR, moist (CL)	18	2	SS	5 7 11 13	13" / 24"		sample 2 collected @ 1052
	Very stiff, mod. yell. brn (10YR 5/4) and pale yell. brn (10YR 6/2) mottled, silty CLAY, tr sand and gravel, WR-SR, moist (CL)	26	3	SS	5 10 16 18	22" / 24"		sample 3 collected @ 1117 Begin advancing boring using 3½" wash rotary methods from 13' to 106' (tri-cone bit), split spoon on 5-ft centers; 4¼" HSA left in ground to facilitate water return
	Very stiff, olive gray (5Y 4/1), homogeneous, CLAY, tr. gravel, WR, moist (CH)	28	4	SS	8 11 17 21	23" / 24"		sample 4 collected @ 1130

Field Boring Log

DEPTH HOLE 108 ft | JOB NO. 990403 | PROJECT Onyx Zion Landfill Well Installation | BORING NO. B-166
DEPTH SOIL DRILL 106 ft | GA INSP. AMH | DRILLING METHOD Wash rotary w/split spoon sampling | SHEET 2 OF 5
DEPTH ROCK CORE — | WEATHER clear | DRILLING COMPANY Fox DRILLING | SURFACE ELEV. 718.10 ft.
NO. DIST. SA. — UD. SA. — | TEMP. ~65°F | DRILL RIG Diedrich D-120 | DRILLER Willy Goodin | DATUM MSL
DEPTH WL. 94.8' bgs | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30-inches | STARTED 10:40 am (TIME) 10-20-01 (DATE)
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 4:25 pm 10-26-

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORT

"TRACE" - 0 - 5% "SOME" - 13 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDI
			HARD	H	RESISTS THUMB

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24	Very stiff, olive gray (5Y 4/1); homogeneous, CLAY, tr. gravel, WR, moist (CH)	18	5	SS	5 9 9 14	21"/24"		Sample 5 collected @ 1200
25								
26								
27								
28	Very stiff, olive gray (5Y 4/1), homogeneous, CLAY, tr. gravel, WR, moist (CH)	19	6	SS	7 8 11 13	24"/24"		Sample 6 collected @ 1213
29								
30								
31								
32								
33	Very stiff, olive gray (5Y 4/1), homogeneous, CLAY, tr. gravel, WR, moist (CH)	17	7	SS	5 8 9 10	23"/24"		Sample 7 collected @ 1225
34								
35								
36								
37								
38	Stiff, olive gray (5Y 4/1), homogeneous, CLAY, tr. gravel, WR, moist (CH)	14	8	SS	4 6 8 12	23"/24"		Sample 8 collected @ 1240
39								
40								
41								
42								
43	Very stiff, olive gray (5Y 4/1) homogeneous, CLAY, tr. gravel, WR, moist (CH)	27	9	SS	9 11 16 12	23"/24"		Sample 9 collected @ 1255.
44								
45	some gravel @ 44.8'							
46								

Field Boring Log

DEPTH HOLE 108 Ft	JOB NO. 990403	PROJECT Onyx Zion Landfill Well Installation		BORING NO. G-146	
DEPTH SOIL DRILL 106 Ft	GA INSP. AMH	DRILLING METHOD Wash rotary w/ split spoon sampling		SHEET 3 OF 5	
DEPTH ROCK CORE —	WEATHER Clear	DRILLING COMPANY FOX DRILLING		SURFACE ELEV. 748.10 ft	
NO. DIST. SA. — UD. SA. —	TEMP. 365°F	DRILL RIG Dietrich D-120	DRILLER Willy Goodwin	DATUM MSL	
DEPTH WL. 84-8' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30-inches	STARTED 10:40 am (TIME) 10-20-00 (DATE)	
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 4:25 pm 10-24	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPOR

"TRACE" - 0 - 5% "SOME" - 13 - 30%
"LITTLE" - 8 - 12% "AND" - 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSUR
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENT
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL IND
		HARD H	RESISTS THUMB

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47								
48 / 48.2'	Contact; br. gray (5YR 4/1) CLAY and F-M sand, tr. gravel, WR, wet (SC)				8			
48.7' / 49	Very stiff, brownish gray (5YR 4/1), homogeneous, CLAY, tr. silt and gravel, WR, moist (CH)	24	10	SS	11 13 16	24" / 24"		Sample 10 collected @ 1:03
50								
51								
52								
53								
54	Hard, br. gray (5YR 4/1) to olive gray (5YR 4/1), homogeneous, CLAY, tr. silt + gravel, WR, moist (CH)	31	11	SS	11 15 16 22	19" / 24"		Sample 11 collected @ 1:15
55								
56								
57								
58								
59	Very stiff, br. gray (5YR 4/1) to olive gray (5YR 4/1), homogeneous, CLAY, tr. silt + gravel, WR, moist (CH)	25	12	SS	8 11 14 14	21" / 24"		Sample 12 collected @ 1:26
60								
61'								
62								
63								
64	Very stiff, br. gray (5YR 4/1) to olive gray (5YR 4/1), homogeneous, CLAY, tr. gravel, WR, moist (CH)	24	13	SS	7 11 13 16	21" / 24"		Sample 13 collected @ 1:41
65								
66								
67								
68								
69 / 68.8'	Very stiff, br. gray (5YR 4/1) to olive gray (5YR 4/1), homogeneous, CLAY, tr. gravel, WR, moist (CH)	30	14	SS	8 13	24" / 24"		Sample 14 collected @ 0750 (10-24-00)

Field Boring Log

DEPTH HOLE 108 ft	JOB NO. 9910403	PROJECT Onyx Zion Landfill Well Installation	BORING NO. G-166
DEPTH SOIL DRILL 106ft	GA INSP. AMH	DRILLING METHOD Wash rotary w/ split spoon sampling	SHEET 4 OF 5
DEPTH ROCK CORE —	WEATHER Foggy	DRILLING COMPANY Fox DRILLING	SURFACE ELEV. 778.10 ft
NO. DIST. SA. — UD. SA. —	TEMP. 360°F	DRILL RIG Dietrich D-120 DRILLER Willy Gaskin	DATUM MSL
DEPTH WL. 84-8' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs DROP 30 inches	STARTED 10:40 AM 10-20-00 TIME DATE
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER — DROP —	COMPLETED 4:35 PM 10-25-

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LT	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORT

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	D	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDE
			HARD	H	RESISTS THUMB

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	Dense, olive gray (5Y 4/1), f-m SAND some clay, poorly sorted, wR, wet (SC) tr. gravel,	30	14	SS	17 22	24"/24"		Sample #14 collected @ 0750 (10-24-00)
71	Compact, olive gray (5Y 4/1), med. SAND some clay, tr. gravel, poorly sorted, wR, wet (SC)	20	15	SS	12 8 10 15	21"/24"		Sample #15 collected @ 0805
72 723'								
73	Very stiff, br. gray (5Y 4/1) to olive gray (5Y 4/1), homogeneous, CLAY, tr. gravel, wR, moist (CH)	24	16	SS	9 10 14 16	24"/24"		Sample #16 collected @ 0817 silt parting @ 73.4 ft
74								
75								
76								
77								
78								
79	Very stiff, olive gray (5Y 4/1), homogeneous, CLAY, tr. gravel, wR, moist (CH)	28	17	SS	8 12 16 19	17"/24"		Sample #17 collected @ 0840
80								
81								
82								
83								
84	Hard, br. gray (5Y 4/1) to olive gray (5Y 4/1), homogeneous, CLAY, tr. gravel, wR, moist (CH)	36	18	SS	8 14 22 35	24"/24"		Sample #18 collected @ 0859 silt parting @ 83.8 ft
85								
86								
87								
88								
89	Hard, dk. yell. brn (10YR 4/2) to olive gray (5Y 4/1), homogeneous, CLAY, tr. gravel, wR, moist (CH)	65	19	SS	19 27 38 43	22"/24"		begin continuous split spoon sampling @ 88 ft Sample #19 collected @ 0946
90								
91	Hard, dk. yell. brn (10 YR 4/2) to olive gray (5Y 4/1), homogeneous, CLAY, tr. gravel, wR, moist (CH)	61	20	SS	14 35 26 39	21"/24"		silt parting @ 90.4 ft Sample #20 collected @ 1002
92								

Field Boring Log

DEPTH HOLE 108 ft | JOB NO. 990403 | PROJECT Onyx Zion Landfill Well Installation | BORING NO. G-166
DEPTH SOIL DRILL 106 ft | QA INSP. AMH | DRILLING METHOD Wash rotary w/split spoon sampling | SHEET 5 OF 5
DEPTH ROCK CORE — | WEATHER Foggy | DRILLING COMPANY Fox Drilling | SURFACE ELEV. 7418.10
NO. DIST. SA. — | UD. SA. — | TEMP. ~60° F | DRILL RIG Dietrich D-120 | DRILLER Willy Gadwin | DATUM MSL
DEPTH WL. 84.8' bgs | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30 inches | STARTED 10:40 am (Time) 10/20 (D.)
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 4:25 pm 10/2

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPO

"TRACE" - 0 - 5% | "SOME" - 12 - 30%
"LITTLE" - 5 - 12% | "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESS
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASI
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDE
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL I
			HARD	H	RESISTS THU

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
93	Hard, dk. yell. brn. (10YR 4/2) to olive gray (5YR 4/1), CLAY, tr. gravel, homogeneous, WR, moist (CH)	36	21	SS	10 14 22 38	18"/24"		Sample #21 collected @ 1025
94								
95	Very dense, olive gray (5YR 4/1), interbedded f-m SAND, SILT, and GRAVEL, little clay, WR, wet (SM-GM)	112	22	SS	47 54 68 89	16"/24"		Sample #22 collected @ 1050
96								
97	Compact, olive gray (5YR 4/1), interbdd f SAND and SILT, little clay and gravel, WR, moist (SM)	28	23	SS	24 16 12 17	21"/24"		Sample #23 collected @ 1110
97.5								
98	Hard, dk. yell. brn (10YR 4/2) to olive gray (5YR 4/1), CLAY, little silt, tr. gravel, WR, moist (CH)							
99	Hard, olive gray (5YR 4/1), CLAY, tr. silt and gravel, WR, moist (CH)	92	24	SS	18 37 55 >100	16"/24"		Sample #24 collected @ 1133
100								
101	Very dense, olive gray (5YR 4/1) fine to medium SAND and GRAVEL, little silt, WR, wet, (SP-GP)	106	25	SS	75 52 54 58	14"/24"		Sample #25 collected @ 12:01
102								
103	Very dense, olive gray (5YR 4/1), SILT, some sand, tr. gravel, WR, moist (ML)	88	26	SS	33 36 52 38	13"/24"		Sample #26 collected @ 1228
104								
105	Very dense, olive gray (5YR 4/1), SILT, moist (ML) tr. sand and gravel, WR	117	27	SS	43 54 63 77	16"/24"		Sample #27 collected @ 1256
106								
107	Very dense, light olive gray (5Y 6/1) to olive gray (5YR 4/1), SILT, tr. gravel, WR, moist (ML)	97	28	SS	75 54 43 46	14"/24"		Sample #28 collected @ 1:18
107.6' 108	Hard, olive gray (5Y 4/1), homogeneous CLAY, tr. gravel, WR, moist (CH)			EOB @ 108 ft				

Field Boring Log

DEPTH HOLE 102 ft	JOB NO. 990408	PROJECT Onyx Zion Landfill Well Installation		BORING NO. G-167	
DEPTH SOIL DRILL 100 ft	SAMPLE INSP. AMH	DRILLING METHOD Wash Rotary w/ split spoon sampling		SHEET 1 OF 5	
DEPTH ROCK CORE NA	WEATHER cloudy	DRILLING COMPANY FOX DRILLING		SURFACE ELEV. 7947.0 ft	
NO. DIST. SA. — UD. SA. —	TEMP. ~50°F	DRILL RIG Diedrich D-120	DRILLER Willy Goodwin	DATUM MSL	
DEPTH WL. 81.2' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 inches	STARTED 1:15 pm TIME 10 Nov DATE	
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 3:45 pm 10 Nov	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPOR

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSUR
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENT
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL IND
			HARD	H	RESISTS THUMB

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Drill from 0' to 20' using 4¼" HSA and 2" Diameter, 2-pan split spoon sampling on 5-ft centers. After split spooning to 102 ft, set 12¼" ID steel surface casing to a depth of 9 feet. Ream hole to 10" diameter using tricone bit and wash rotary methods to depth of 99 feet.
3	Very stiff, dk yellowish brn (10YR 4/2) silty CLAY, tr. gravel, WR, dry to moist (CL-CH)	7			4			
4		8	1	SS	8	14"/24"		
5		12			12			
		12			12			
6								
7								
8								
9	Stiff, dk yellowish brn (10YR 4/2), laminated, weathered, silty CLAY, tr gravel WR, moist (CL-CH)	13	2		7 6 7 9	9"/24"		
10								
11								
12								
13								
14	Compact, dk yellowish orange (10YR 6/6) and mod. yellowish brn (10YR 5/4) weathered, SILT, tr. sand and gravel, WR, moist (ML)	17	3		7 8 9 12	11"/24"		
15								
16								
17								
18								
19	Very stiff, olive gray (5Y 3/2), homogeneous, CLAY, tr. gravel, WR, moist (CH)	21	4		4 8 13 14	24"/24"		
20								
21								Begin advancing boring using 3½" wash rotary methods from 20' to 100' (tri-cone bit), split spoon on 5-ft centers; 4¼" HSA left in ground to facilitate water return
22								
23								

Field Boring Log

DEPTH HOLE 102 ft	JOB NO. 990403	PROJECT Onyx Zion Landfill Well Installation		BORING NO. G-167	
DEPTH SOIL DRILL 100 ft	~~OR~~ INSP. AMH	DRILLING METHOD Wash rotary w/split spoon sampling		SHEET 2 OF 5	
DEPTH ROCK CORE —	WEATHER cloudy	DRILLING COMPANY FOX DRILLING		SURFACE ELEV. 747.0 ft	
NO. DIST. SA. — UD. SA. —	TEMP. ~50° F	DRILL RIG Diedrich D-120	DRILLER Willy Goodwin	DATUM MSL	
DEPTH WL. 81-2' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 inches	STARTED 1:45 pm (TIME) 10-16-00 (DATE)	
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 3:45 pm 10-18-00	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LS	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTI

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50+	VERY STIFF VST	THUMBNAIL INDEN
		HARD H	RESISTS THUMBNA

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT		SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24	Very stiff, olive gray (5Y 4/1), homogeneous, CLAY, tr. gravel, WR, moist (CH)	21		5	SS	5 9 12 14	24"/24"		
25									
26									
27									
28	Very stiff, dk yell. brn (10YR 4/2), homogeneous, CLAY, tr. gravel, WR, moist (CH)	26		6	SS	7 11 15 19	24"/24"		some silty and sandy partings
29									
30									
31									
32									
33	Compact, olive gray (5Y 4/1), CLAY and GRAVEL, some silt + F sd, WR, moist (GC)								
33.5									
34	Very stiff, dk yell brn (10 YR 4/2) homogeneous, CLAY, tr. gravel, WR, moist (CH)	30		7	SS	11 13 17 22	24"/24"		
35									
36									
37									
38	Very stiff, dk yell. brn (10YR 4/2), homogeneous, CLAY, tr. gravel, WR, moist (CH).	22		8	SS	6 9 13 15	20"/24"		
39									
40									
41									
42									
43									
44		41		9	SS	12 17 24 23	No Recovery		
45									
46									

Field Boring Log

DEPTH HOLE 102 ft	JOB NO. 990403	PROJECT Onyx Zion Landfill Well Installation		BORING NO. G-167	
DEPTH SOIL DRILL 100 ft	GA INSP. AMH	DRILLING METHOD Wash Rotary w/ split spoon sampling		SHEET 3	OF 5
DEPTH ROCK CORE —	WEATHER cloudy	DRILLING COMPANY Fox DRILLING		SURFACE ELEV. 747.0 ft	
NO. DIST. SA. — UD. SA. —	TEMP. ≈50°F	DRILL RIG Diedrich D-120	DRILLER Willy Goodin	DATUM MSL	
DEPTH WL. 81.2' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 inches	STARTED 1:45 pm (TIME) / 10-16-00 (DATE)	
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 3:44 pm / 10-18-	

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LT	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SIY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTI

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 6 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47							47	
48	Very stiff, dk. yell. brn. (10YR 4/2), silty CLAY, tr. gravel, WR, moist (CL)	22	10	SS	7 8 14 18	18"/24"	48	
49							49	
50							50	
51							51	
52							52	
53							53	
54	Very stiff, dk. yell. brn (10YR 4/2), CLAY, tr. gravel, WR, moist, (CL-CH)	25	11	SS	8 11 14 16	24"/24"	54	
55							55	
56							56	
57							57	
58							58	
59	Hard, dk. yell. brn (10YR 4/2), CLAY, tr. sand + gravel, WR, moist, (CH)	39	12	SS	9 16 23 31	24"/24"	59	
60							60	
61							61	
62							62	
63							63	
64	Very stiff, dk. yell. brn (10YR 4/2) CLAY, tr. sand + gravel, WR, moist (CH)	25	13	SS	8 11 14 21	24"/24"	64	
65							65	
66							66	
67							67	
68							68	
69	Stiff, dk. yell. brn (10YR 4/2), CLAY, some silt, tr. sand + gravel, WR, moist (CL)	15	14	SS	7 7	24"/24"	69	

Field Boring Log

DEPTH HOLE 102 ft	JOB NO. 990403	PROJECT Onyx Zion Landfill Well Installation			BORING NO. G-167
DEPTH SOIL DRILL 100 ft	GA INSP. AMH	DRILLING METHOD Wash Rotary w/ split spoon sampling			SHEET 4 OF 5
DEPTH ROCK CORE —	WEATHER cloudy	DRILLING COMPANY Fox DRILLING			SURFACE ELEV. 2170 ft
NO. DIST. SA. — UD. SA. —	TEMP. ~50° F	DRILL RIG Diedrich D-120	DRILLER Willy Gradin		DATUM MSL
DEPTH WL. 81.2' 6/1	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 - inches		STARTED 1:45 pm / 10-6 (Time / DAT)
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —		COMPLETED 3:45 pm / 10-6

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	OPG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPOR

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSU
VERY LOOSE VLS	0 4	VERY SOFT VS	EXTRUDES
LOOSE LS	4 10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENT
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL IN
		HARD H	RESISTS THUM

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	Stiff, dk. yell. brn. (10YR 4/2), CLAY, some silt, tr. sand + gravel, WR, moist (CL)	15	14	SS	8 9	24"/24"		
71								
72								
73	Very stiff, dk. yell. brn. (10YR 4/2), CLAY, tr. sand + gravel, WR, moist (CL)	29	15	SS	10 13 16 19	24"/24"		
74								
75								
76								
77								
78	Very stiff, dk. yell. brn. (10YR 4/2), CLAY, tr. sand + gravel, WR, moist (CL)	30	16	SS	9 13 17 21	24"/24"		Begin continuous split spoon sampling at 78 ft.
79								
80	Hard, dk. yellowish brn. (10YR 4/2), CLAY, tr. sand + gravel, WR, moist (CL)	41	17	SS	16 17 24 31	17"/24"		
81								
82								
83		44	18	SS	11 20 24 34	24"/24"		
84								
85		42	19	SS	12 18 24 33	24"/24"		
86								
87		52	20	SS	14 21 31 44	24"/24"		
88	becoming very stiff @ 88 ft							
89		30	21	SS	11 13 17 24	22"/24"		some silt partings @ 89 ft
90	becoming hard @ 90 ft							
91		47	22	SS	16 20 27 33	23"/24"		
92								

Field Boring Log

DEPTH HOLE 102 ft | JOB NO. 990403 | PROJECT Onyx Zion Landfill Well Installation | BORING NO. G-167
DEPTH SOIL DRILL 100 ft | ~~BA~~ INSP. AMH | DRILLING METHOD Wash Rotary w/ split spoon sampling | SHEET 5 OF 5
DEPTH ROCK CORE — | WEATHER Sunny | DRILLING COMPANY Fox DRILLING | SURFACE ELEV. 747.0 ±
NO. DIST. SA. — | UD. SA. — | TEMP. ~55° F | DRILL RIG Diedrich D120 | DRILLER Willy Aodain | DATUM MSL
DEPTH WL. 81.2' bgs | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30 inches | STARTED 6:45 am / 10-16 (TIME / DATE)
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 3:45 pm / 10-16

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LT	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPOR

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSU
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENT
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL IN
			HARD	H	RESISTS THUM

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT		SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
93	Hard, dk yellowish brn (10YR 4/2), CLAY, tr. sand + gravel, WR, moist (CL)	40		23	SS	11 17 33 75	20"/24"		
94 (93.8)	Very dense, dk yell. brn (10YR 4/2) to mod. yell. brn (10YR 5/4), interbedded f SAND, SILT, and GRAVEL, little clay, WR, moist-wet, (SM-GC)	96		24	SS	45 54 42 43	20"/24"		
96									
97	Very dense, olive gray (5Y 3/2), SILT, some f sand, tr. clay, WR, moist (ML)	111		25	SS	37 64 47 44	14"/24"		
98 (98.2)	Hard, olive gray (5Y 3/2), CLAY, some silt, tr. gravel, WR, moist (CL)	34		26	SS	22 17 17 21	22"/24"		
99									
100									
101		63		27	SS	21 37 26 33	10"/24"		
101.5									
102	Very dense, olive gray (5Y 3/2), clayey SILT, tr. gravel, WR, moist (CL-ML)					EOB @ 102 ft			Split spoon to 102 feet at 11:15 am, 10-17-00

Environmental Information Logistics, LLC

Soil Boring Log

PROJECT:	Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	G168
DEPTH HOLE:	107.0	DRILLING METHOD:	6" and 8" Wash/Mud Rotary	SHEET 1 OF	5
DEPTH SOIL DRILL:	107.0 LOGGED BY: RP	DRILLING COMPANY:	RDnP Drilling, Inc.	SURFACE ELEV.:	746.5
NO. DIST. SA.	31 UD. SA. 0	DRILL RIG: Diedrich 120	DRILLER: Jerry Copak	DATUM:	MSL
WT. SAMPLER HAMMER:	140 lb DROP: 30"	DATE STARTED:	12/10/07	DATE COMPLETED:	1/7/08
		NORTHING:	12,506.7	EASTING:	11,844.6

Elevation	Depth	Description	BLOWS / FT	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC / ATT	Depth	Sample Description and Boring Notes
746.5	0.0	(0.0'-10.5') very stiff, olive gray (5Y4/1), SILTY CLAY, little f sand, little f gravel, WR-SR, moist, (CL), ENGINEERED FILL							
	1.0								
	2.0								
	3.0		15	4 6 9 7	1	SS	1.3 / 2.0	3.0	(3.0'-5.0') very stiff (3.5 tsf), olive gray (5Y4/1), SILTY CLAY, little f sand, little f gravel, WR, moist, (CL)
	4.0								
	5.0								
	6.0								
	7.0								
	8.0		19	5 8 11 14	2	SS	1.3 / 2.0	8.0	(8.0'-10.0') very stiff (4.0 tsf), olive gray (5Y4/1), SILTY CLAY, little f sand, little f gravel, SR, moist, (CL)
	9.0								
	10.0								
736.0	11.0	(10.5'-17.0') very stiff, dark yellowish brown (10YR4/2), SILTY CLAY, little f sand, little f gravel, WR, moist, (CL), WEATHERED WADSWORTH FORMATION							
	12.0								
	13.0		8	3 3 5 12	3	SS	1.3 / 2.0	13.0	(13.0'-15.0') very stiff (3.75 tsf), dark yellowish brown (10YR4/2), SILTY CLAY, little f sand, little f gravel, lens of wet and soft clay from 13.3'-13.5', WR, moist, (CL)
	14.0								
	15.0								
	16.0								
729.5	17.0	(17.0'-52.0') stiff to very stiff, olive gray (5Y4/1) to dark yellowish brown (10YR4/2), SILTY CLAY, trace to little f sand, trace to little f gravel, WR-SR, moist, (CL), WADSWORTH FORMATION							
	18.0		27	5 12 15 17	4	SS	2.0 / 2.0	18.0	(18.0'-20.0') very stiff (3.25 tsf), olive gray (5Y4/1), SILTY CLAY, little f sand, little f gravel, seam of orange f sand from 18.3'-18.4', SR, moist, (CL)
	19.0								
	20.0								
	21.0								
	22.0								
723.5	23.0								

Environmental Information Logistics, LLC
Soil Boring Log

PROJECT:	Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	G168
DEPTH HOLE:	107.0	DRILLING METHOD:	6" and 8" Wash/Mud Rotary	SHEET 2 OF	5
DEPTH SOIL DRILL:	107.0 LOGGED BY: RP	DRILLING COMPANY:	RDnP Drilling, Inc.	SURFACE ELEV.:	746.5
NO. DIST. SA.	31 UD. SA. 0	DRILL RIG:	Diedrich 120 DRILLER: Jerry Copak	DATUM:	MSL
WT. SAMPLER HAMMER:	140 lb DROP: 30"	DATE STARTED:	12/10/07	DATE COMPLETED:	1/7/08
		NORTHING:	12,506.7	EASTING:	11,844.6

Elevation	Depth	Description	BLOWS / FT	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC / ATT	Depth	Sample Description and Boring Notes
723.5	23.0	(17.0'-52.0') stiff to very stiff, olive gray (5Y4/1) to dark yellowish brown (10YR4/2), SILTY CLAY, trace to little f sand, trace to little f gravel, WR-SR, moist, (CL), WADSWORTH FORMATION	9	3 4 5 9	5	SS	2.0 / 2.0	23.0	(23.0'-25.0') very stiff (2.5 tsf), dark yellowish brown (10YR4/2), SILTY CLAY, little f sand, little f gravel, WR, moist, (CL)
	24.0								
	25.0								
	26.0								
	27.0								
	28.0		15	5 6 9 11	6	SS	2.0 / 2.0	28.0	(28.0'-30.0') very stiff (3.0 tsf), dark yellowish brown (10YR4/2), SILTY CLAY, little f sand, little f gravel, WR, moist, (CL)
	29.0								
	30.0								
	31.0								
	32.0								
	33.0		8	4 4 4 5	7	SS	1.2 / 2.0	33.0	(33.0'-35.0') stiff (1.5 tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, WR, moist, (CL)
	34.0								
	35.0								
	36.0								
	37.0								
	38.0		20	9 9 11 16	8	SS	1.7 / 2.0	38.0	(38.0'-40.0') stiff (1.75 tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, WR, moist, (CL)
	39.0								
	40.0								
	41.0								
	42.0								
	43.0		18	5 7 11 13	9	SS	1.8 / 2.0	43.0	(43.0'-45.0') very stiff (3.0 tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, WR, moist, (CL)
	44.0								
	45.0								
700.5	46.0								

Environmental Information Logistics, LLC
Soil Boring Log

PROJECT: Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	G168
DEPTH HOLE: 107.0	DRILLING METHOD: 6" and 8" Wash/Mud Rotary		SHEET 3 OF	5
DEPTH SOIL DRILL: 107.0 LOGGED BY: RP	DRILLING COMPANY: RDnP Drilling, Inc.		SURFACE ELEV.:	746.5
NO. DIST. SA. 31 UD. SA. 0	DRILL RIG: Diedrich 120 DRILLER: Jerry Copak		DATUM:	MSL
WT. SAMPLER HAMMER: 140 lb DROP: 30"	DATE STARTED: 12/10/07		DATE COMPLETED:	1/7/08
	NORTHING: 12,506.7		EASTING:	11,844.6

Elevation	Depth	Description	BLOWS / FT	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC / ATT	Depth	Sample Description and Boring Notes
700.5	46.0	(17.0'-52.0') stiff to very stiff, olive gray (5Y4/1) to dark yellowish brown (10YR4/2), SILTY CLAY, trace to little f sand, trace to little f gravel, WR-SR, moist, (CL), WADSWORTH FORMATION							
	47.0								
	48.0		33	10 14 19 22	10	SS	1.3 2.0	48.0	(48.0'-50.0') very stiff (3.0 tsf), olive gray (5Y4/1), SILTY CLAY, little f sand, trace f gravel, WR, moist, (CL)
	49.0								
	50.0								
	51.0								
694.5	52.0	(52.0'-62.0') hard, olive gray (5Y4/1), CLAYEY SILT, trace f sand, SR, moist, (CL-ML), WADSWORTH FORMATION							
	53.0		177	57 87 90 50□	11	SS	1.5 2.0	53.0	(53.0'-55.0') hard (4.5□ tsf), olive gray (5Y4/1), CLAYEY SILT, trace f sand, SR, moist, (CL-ML)
	54.0								
	55.0								
	56.0								
	57.0								
	58.0		181	37 83 98 50□	12	SS	1.3 2.0	58.0	(58.0'-60.0') hard (4.5□ tsf), olive gray (5Y4/1), CLAYEY SILT, trace f sand, SR, moist, (CL-ML)
	59.0								
	60.0								
	61.0								
684.5	62.0	(62.0'-91.4') stiff to very stiff, olive gray (5Y4/1) to brownish gray (5YR4/1), SILTY CLAY, trace f sand, trace to little f gravel, NR-SR, moist, (CL), WADSWORTH FORMATION							
	63.0		38	21 18 20 24	13	SS	2.0 2.0	63.0	(63.0'-65.0') very stiff (3.0 tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, WR, moist, (CL)
	64.0								
	65.0								
	66.0								
	67.0								
	68.0		22	7 11	14	SS	2.0 2.0	68.0	(68.0'-70.0') stiff (1.5 tsf), brownish gray (5YR4/1), SILTY CLAY, trace f sand, WR, moist, (CL)
677.5	69.0								

Environmental Information Logistics, LLC
Soil Boring Log

PROJECT:	Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	G168
DEPTH HOLE:	107.0	DRILLING METHOD:	6" and 8" Wash/Mud Rotary	SHEET 4 OF	5
DEPTH SOIL DRILL:	107.0 LOGGED BY: RP	DRILLING COMPANY:	RDnP Drilling, Inc.	SURFACE ELEV.:	746.5
NO. DIST. SA.	31 UD. SA. 0	DRILL RIG:	Diedrich 120 DRILLER: Jerry Copak	DATUM:	MSL
WT. SAMPLER HAMMER:	140 lb DROP: 30"	DATE STARTED:	12/10/07	DATE COMPLETED:	1/7/08
		NORTHING:	12,506.7	EASTING:	11,844.6

Elevation	Depth	Description	BLOWS / FT	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC / ATT	Depth	Sample Description and Boring Notes
677.5	69.0	(62.0'-91.4') stiff to very stiff, olive gray (5Y4/1) to brownish gray (5YR4/1), SILTY CLAY, trace f sand, trace to little f gravel, NR-SR, moist, (CL), WADSWORTH FORMATION	22	11 21	14	SS	2.0 2.0		(68.0'-70.0') stiff (1.5 tsf), brownish gray (5YR4/1), SILTY CLAY, trace f sand, WR, moist, (CL)
	70.0								
	71.0								
	72.0								
	73.0		28	15 10 18 23	15	SS	1.7 2.0	73.0	(73.0'-73.5') very stiff (2.0 tsf), brownish gray (5YR4/1), SILTY CLAY, trace f sand, NR, moist, (CL), clayey silt with little f gravel from 73.5' to 73.9'
	74.0								
	75.0		31	12 15 16 22	16	SS	2.0 2.0	75.0	(75.0'-77.0') very stiff (3.5 tsf), brownish gray (5YR4/1), SILTY CLAY, trace f sand, SR, moist, (CL)
	76.0								
	77.0		33	14 15 18 21	17	SS	2.0 2.0	77.0	(77.0'-79.0') very stiff (3.5 tsf), brownish gray (5YR4/1), SILTY CLAY, little f gravel, trace f sand, WR, moist, (CL)
	78.0								
	79.0		47	17 22 25 27	18	SS	2.0 2.0	79.0	(79.0'-81.0') SAA
	80.0								
	81.0		37	10 13 24 25	19	SS	2.0 2.0	81.0	(81.0'-83.0') SAA
	82.0								
	83.0		46	12 19 27 33	20	SS	2.0 2.0	83.0	(83.0'-85.0') SAA
	84.0								
	85.0		58	20 27 31 34	21	SS	2.0 2.0	85.0	(85.0'-87.0') SAA
	86.0								
	87.0		57	20 20 37 35	22	SS	2.0 2.0	87.0	(87.0'-89.0') SAA
	88.0								
	89.0		35	11 15 20 19	23	SS	2.0 2.0	89.0	(89.0'-91.0') very stiff (3.5 tsf), brownish gray (5YR4/1), SILTY CLAY, trace f gravel, trace f sand, WR, moist, (CL)
	90.0								
	91.0	(91.4'-93.0') very stiff, brownish gray (5YR4/1), CLAYEY SILT, some f sand, little f gravel, WR, moist, (CL-ML), WADSWORTH FORMATION	152	79 75	24	SS	1.8 2.0	91.0	(91.0'-91.4') SAA (91.4'-93.0') very stiff (3.5 tsf), brownish gray (5YR4/1), CLAYEY SILT, some f sand, little f gravel, WR, moist, (CL-ML)
655.1 654.5	92.0								

Environmental Information Logistics, LLC
Soil Boring Log

PROJECT:	Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	G168
DEPTH HOLE:	107.0	DRILLING METHOD:	6" and 8" Wash/Mud Rotary	SHEET 5 OF	5
DEPTH SOIL DRILL:	107.0 LOGGED BY: RP	DRILLING COMPANY:	RDnP Drilling, Inc.	SURFACE ELEV.:	746.5
NO. DIST. SA.	31 UD. SA. 0	DRILL RIG:	Diedrich 120 DRILLER: Jerry Copak	DATUM:	MSL
WT. SAMPLER HAMMER:	140 lb DROP: 30"	DATE STARTED:	12/10/07	DATE COMPLETED:	1/7/08
		NORTHING:	12,506.7	EASTING:	11,844.6

Elevation	Depth	Description	BLOWS / FT	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC / ATT	Depth	Sample Description and Boring Notes
654.5	92.0	(91.4'-93.0') See previous page.	152	77 50□	24	SS	1.8 2.0		Note: Driller reports stone in sampler tip.
653.5	93.0	(93.0'-95.0') very dense, olive gray (5Y4/1), SILT, some f sand, little clay, trace f gravel, WR, moist, (ML), SHALLOW DRIFT AQUIFER	126	40 69 57 52	25	SS	1.3 2.0	93.0	(93.0'-95.0') very dense, olive gray (5Y4/1), SILT, some f sand, little clay, trace f gravel, WR, moist, (ML)
651.5	95.0	(95.0'-99.0') very dense, olive gray (5Y4/1), F-M SAND, trace to some f gravel, WR, wet, (SP), SHALLOW DRIFT AQUIFER	78	40 28 50 56	26	SS	1.2 2.0	95.0	(95.0'-97.0') very dense, olive gray (5Y4/1), F-M SAND, some f gravel, WR, wet, (SP)
	97.0		197	47 61 136 50□	27	SS	1.1 2.0	97.0	(97.0'-99.0') very dense, olive gray (5Y4/1), F-M SAND, trace f gravel, WR, wet, (SP)
647.5	99.0	(99.0'-101.0') very dense, brownish gray (5YR4/1), SILT, trace f sand, NR, moist, (ML), SHALLOW DRIFT AQUIFER	157	74 76 81 50□	28	SS	1.1 2.0	99.0	(99.0'-101.0') very dense, brownish gray (5YR4/1), SILT, trace f sand, NR, moist, (ML)
645.5	101.0	(101.0'-103.2') very dense, olive gray (5Y4/1), F-C SAND, little f gravel, WR, wet, (SW), SHALLOW DRIFT AQUIFER	136	63 88 48 50□	29	SS	1.3 2.0	101.0	(101.0'-103.0') very dense, olive gray (5Y4/1), F-C SAND, little f gravel, WR, wet, (SW)
643.3	103.0	(103.2'-107.0') very stiff, brownish gray (5YR4/1), CLAYEY SILT to SILTY CLAY, trace to little f sand, trace f gravel, WR, moist, (CL-ML), LOWER TILL	206	75 101 105 50□	30	SS	0.8 2.0	103.0	(103.0'-103.2') SAA (103.2'-103.8') very stiff (3.5 tsf), brownish gray (5YR4/1), CLAYEY SILT, trace f sand, WR, moist, (CL-ML)
	105.0		151	40 65 86 50□	31	SS	1.1 2.0	105.0	(105.0'-107.0') very stiff (3.0 tsf), brownish gray (5YR4/1), SILTY CLAY, little f sand, trace f gravel, WR, moist, (CL)
639.5	107.0	End of Boring at 107.0'							
	108.0								
	109.0								
	110.0								
	111.0								
	112.0								
	113.0								
	114.0								
	115.0								

Environmental Information Logistics, LLC

Soil Boring Log

PROJECT:	Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	G169
DEPTH HOLE:	107.0	DRILLING METHOD:	6" and 8" Wash/Mud Rotary	SHEET 1 OF	5
DEPTH SOIL DRILL:	107.0	LOGGED BY: RP	DRILLING COMPANY:	RDnP Drilling, Inc.	SURFACE ELEV.: 744.5
NO. DIST. SA.	31	UD. SA. 0	DRILL RIG:	Diedrich 120	DRILLER: Jerry Copak
WT. SAMPLER HAMMER:	140 lb	DROP: 30"	DATE STARTED:	12/7/07	DATE COMPLETED: 12/18/07
			NORTHING:	12,505.6	EASTING: 12,141.5

Elevation	Depth	Description	BLOWS / FT	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC / ATT	Depth	Sample Description and Boring Notes
744.5	0.0	(0.0'-10.5') very stiff, moderate yellowish brown (10YR5/4), SILTY CLAY, trace to little f sand, trace f gravel, seams of f-m sand and f gravel, WR, moist, (CL), ENGINEERED FILL							
	1.0								
	2.0								
	3.0		25	7 12 13 14	1	SS	1.5 2.0	3.0	(3.0'-5.0') very stiff (2.5 tsf), moderate yellowish brown (10YR5/4), SILTY CLAY, trace f sand, trace f gravel, WR, moist, (CL)
	4.0								
	5.0								
	6.0								
	7.0								
	8.0		21	6 9 12 13	2	SS	1.8 2.0	8.0	(8.0'-10.0') very stiff (2.5 tsf), moderate yellowish brown (10YR5/4), SILTY CLAY, little f sand, seams of f-m sand and f gravel at 9.2'-9.3' and 9.7'-9.8', WR, moist, (CL)
	9.0								
	10.0								
734.0	11.0	(10.5'-17.0') hard, dark yellowish brown (10YR4/2), SILTY CLAY, little f sand, little f gravel, WR, moist, (CL), WEATHERED WADSWORTH FORMATION							
	12.0								
	13.0		25	7 12 13 16	3	SS	1.8 2.0	13.0	(13.0'-15.0') hard (4.5 tsf), dark yellowish brown (10YR4/2), SILTY CLAY, little f sand, little f gravel, WR, moist, (CL)
	14.0								
	15.0								
	16.0								
727.5	17.0	(17.0'-89.0') stiff to hard, olive gray (5Y4/1), SILTY CLAY, trace to little f-c sand, trace to little f gravel, mottled, NR-WR, moist, (CL), WADSWORTH FORMATION							
	18.0		27	4 9 18 23	4	SS	1.9 2.0	18.0	(18.0'-20.0') very stiff (3.0 tsf), olive gray (5Y4/1), SILTY CLAY, little f sand, little f gravel, WR, moist, (CL)
	19.0								
	20.0								
	21.0								
	22.0								
721.5	23.0								

Environmental Information Logistics, LLC
Soil Boring Log

PROJECT:	Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	G169
DEPTH HOLE:	107	DRILLING METHOD:	6" and 8" Wash/Mud Rotary	SHEET 2 OF	5
DEPTH SOIL DRILL:	107 LOGGED BY: RP	DRILLING COMPANY:	RDnP Drilling, Inc.	SURFACE ELEV.:	744.5
NO. DIST. SA.	31 UD. SA. 0	DRILL RIG:	Diedrich 120 DRILLER: Jerry Copak	DATUM:	MSL
WT. SAMPLER HAMMER:	140 lb DROP: 30"	DATE STARTED:	12/7/07	DATE COMPLETED:	12/18/07
		NORTHING:	12,505.6	EASTING:	12,141.5

Elevation	Depth	Description	BLOWS / FT	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC / ATT	Depth	Sample Description and Boring Notes
721.5	23.0	(17.0'-89.0') stiff to hard, olive gray (5Y4/1), SILTY CLAY, trace to little f-c sand, trace to little f gravel, mottled, NR-WR, moist, (CL), WADSWORTH FORMATION	18	4 6 12 15	5	SS	2.0 2.0	23.0	(23.0'-25.0') very stiff (3.0 tsf), olive gray (5Y4/1), SILTY CLAY, little f gravel, trace f sand, WR, moist, (CL)
	24.0								
	25.0								
	26.0								
	27.0								
	28.0		27	5 11 16 19	6	SS	1.8 2.0	28.0	(28.0'-30.0') very stiff (3.0 tsf), olive gray (5Y4/1), SILTY CLAY, little f gravel, trace f sand, WR, moist, (CL)
	29.0								
	30.0								
	31.0								
	32.0								
	33.0		22	7 8 14 16	7	SS	2.0 2.0	33.0	(33.0'-35.0') stiff (1.8 tsf), olive gray (5Y4/1), SILTY CLAY, trace to little f-c sand, trace f gravel, NR, moist, (CL)
	34.0								
	35.0								
	36.0								
	37.0								
	38.0		30	12 14 16 16	8	SS	2.0 2.0	38.0	(38.0'-40.0') SAA
	39.0								
	40.0								
	41.0								
	42.0								
	43.0		26	8 10 16 18	9	SS	2.0 2.0	43.0	(43.0'-45.0') very stiff (2.2 tsf), olive gray (5Y4/1), SILTY CLAY, little f-c sand, little f gravel, NR, moist, (CL)
	44.0								
	45.0								
698.5	46.0								

Environmental Information Logistics, LLC

Soil Boring Log

PROJECT:	Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	G169
DEPTH HOLE:	107	DRILLING METHOD:	6" and 8" Wash/Mud Rotary	SHEET 3 OF	5
DEPTH SOIL DRILL:	107	LOGGED BY: RP	DRILLING COMPANY: RDnP Drilling, Inc.	SURFACE ELEV.:	744.5
NO. DIST. SA.	31	UD. SA. 0	DRILL RIG: Diedrich 120	DRILLER: Jerry Copak	DATUM: MSL
WT. SAMPLER HAMMER:	140 lb	DROP: 30"	DATE STARTED: 12/7/07		DATE COMPLETED: 12/18/07
			NORTHING: 12,505.6		EASTING: 12,141.5

Elevation	Depth	Description	BLOWS / FT	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC / ATT	Depth	Sample Description and Boring Notes
698.5	46.0	(17.0'-89.0') stiff to hard, olive gray (5Y4/1), SILTY CLAY, trace to little f-c sand, trace to little f gravel, mottled, NR-WR, moist, (CL), WADSWORTH FORMATION							
	47.0								
	48.0		65	11 23 42 40	10	SS	2.0 2.0	48.0	(48.0'-50.0') hard (4.5□tsf), olive gray (5Y4/1), SILTY CLAY, little f-c sand, little f gravel, NR, moist, (CL)
	49.0								
	50.0								
	51.0								
	52.0								
	53.0		21	6 11 10 16	11	SS	1.6 2.0	53.0	(53.0'-55.0') stiff (1.6 tsf), olive gray (5Y4/1) with slight variation, SILTY CLAY, little f-c sand, little f gravel, NR, moist, (CL)
	54.0								
	55.0								
	56.0								
	57.0								
	58.0		56	24 25 31 53	12	SS	1.4 2.0	58.0	(58.0'-60.0') hard (4.5□tsf), olive gray (5Y4/1) with slight variation, SILTY CLAY, little f-c sand, trace f gravel, NR, moist, (CL)
	59.0								
	60.0								
	61.0								
	62.0								
	63.0		42	11 18 24 27	13	SS	1.4 2.0	63.0	(63.0'-65.0') very stiff (2.75 tsf), olive gray (5Y4/1) with slight variation, SILTY CLAY, little f-c sand, trace f gravel, NR, moist, (CL)
	64.0								
	65.0								
	66.0								
	67.0								
	68.0		34	10 15	14	SS	2.0 2.0	68.0	(68.0'-70.0') stiff (1.4 tsf), olive gray (5Y4/1), SILTY CLAY, little f-c sand, little f gravel, NR, moist, (CL)
675.5	69.0								

Environmental Information Logistics, LLC
Soil Boring Log

PROJECT: Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	G169
DEPTH HOLE: 107	DRILLING METHOD: 6" and 8" Wash/Mud Rotary		SHEET 4 OF	5
DEPTH SOIL DRILL: 107 LOGGED BY: RP	DRILLING COMPANY: RDnP Drilling, Inc.		SURFACE ELEV.:	744.5
NO. DIST. SA. 31 UD. SA. 0	DRILL RIG: Diedrich 120	DRILLER: Jerry Copak	DATUM:	MSL
WT. SAMPLER HAMMER: 140 lb DROP: 30"	DATE STARTED: 12/7/07		DATE COMPLETED:	12/18/07
	NORTHING: 12,505.6		EASTING:	12,141.5

Elevation	Depth	Description	BLOWS / FT	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC / ATT	Depth	Sample Description and Boring Notes
675.5	69.0	(17.0'-89.0') stiff to hard, olive gray (5Y4/1), SILTY CLAY, trace to little f-c sand, trace to little f gravel, mottled, NR-WR, moist, (CL), WADSWORTH FORMATION	34	19 22	14	SS	2.0 2.0		(68.0'-70.0') stiff (1.4 tsf), olive gray (5Y4/1), SILTY CLAY, little f-c sand, little f gravel, NR, moist, (CL)
	70.0								
	71.0								
	72.0								
	73.0		58	10 23 35 43	15	SS	2.0 2.0	73.0	(73.0'-75.0') very stiff (3.0 tsf), olive gray (5Y4/1), SILTY CLAY, little f-c sand, little f gravel, NR, moist, (CL)
	74.0								
	75.0		45	10 17 28 30	16	SS	2.0 2.0	75.0	(75.0'-77.0') very stiff (3.2 tsf), olive gray (5Y4/1), SILTY CLAY, little f-c sand, little f gravel, NR, moist, (CL)
	76.0								
	77.0		62	17 24 38 43	17	SS	2.0 2.0	77.0	(77.0'-79.0') very stiff (3.0 tsf), olive gray (5Y4/1), SILTY CLAY, little f-c sand, trace f gravel, NR, moist, (CL)
	78.0								
	79.0		73	14 32 41 62	18	SS	0.8 2.0	79.0	(79.0'-81.0') hard (4.5□ tsf), olive gray (5Y4/1), SILTY CLAY, little f-c sand, trace f gravel, NR, moist, (CL)
	80.0								
	81.0		108	36 50 58 50□	19	SS	1.8 2.0	81.0	(81.0'-83.0') SAA
	82.0								
	83.0		77	14 29 48 55	20	SS	2.0 2.0	83.0	(83.0'-85.0') SAA
	84.0								
	85.0		74	14 30 44 68	21	SS	2.0 2.0	85.0	(85.0'-87.0') hard (4.5□ tsf), olive gray (5Y4/1), SILTY CLAY, little f-c sand, little f gravel, NR, moist, (CL)
	86.0								
	87.0		80	24 40 40 65	22	SS	2.0 2.0	87.0	(87.0'-89.0') SAA
	88.0								
655.5	89.0	(89.0'-95.0') hard, olive gray (5Y4/1), SILTY CLAY, little to some f sand, trace to little f gravel, silt partings, NR, moist, (CL), WADSWORTH FORMATION	105	17 27 78 50	23	SS	2.0 2.0	89.0	(89.0'-91.0') very stiff (3.5 tsf), olive gray (5Y4/1), SILTY CLAY, some f sand, trace f gravel, NR, moist, (CL)
	90.0								
	91.0		63	51 22	24	SS	1.7 2.0	91.0	(91.0'-93.0') SAA, silt partings
652.5	92.0								

Environmental Information Logistics, LLC

Soil Boring Log

PROJECT:	Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	G169
DEPTH HOLE:	107	DRILLING METHOD:	6" and 8" Wash/Mud Rotary	SHEET 5 OF	5
DEPTH SOIL DRILL:	107 LOGGED BY: RP	DRILLING COMPANY:	RDnP Drilling, Inc.	SURFACE ELEV.:	744.5
NO. DIST. SA.	31 UD. SA. 0	DRILL RIG: Diedrich 120	DRILLER: Jerry Copak	DATUM:	MSL
WT. SAMPLER HAMMER:	140 lb DROP: 30"	DATE STARTED:	12/7/07	DATE COMPLETED:	12/18/07
		NORTHING:	12,505.6	EASTING:	12,141.5

Elevation	Depth	Description	TFSWOB	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC/ATT	hrD	Sample Description and Boring Notes
652.5	92.0	(89.0'-95.0') hard, olive gray (5Y4/1), SILTY CLAY, little to some f sand, trace to little f gravel, silt partings, NR, moist, (CL), WADSWORTH FORMATION	63	41 47	24	SS	1.7 2.0		(91.0'-93.0') SAA, silt partings
	93.0		41	24 19 22 28	25	SS	1.6 2.0	93.0	(93.0'-95.0') hard (4.5 tsf), olive gray (5Y4/1), SILTY CLAY, little f sand, little f gravel, NR, moist, (CL)
649.5	94.0 95.0	(95.0'-101.0') dense to very dense, brownish gray (5YR4/1), F-M SAND, trace f gravel, WR, wet, (SP), SHALLOW DRIFT AQUIFER	50	21 28 22 33	26	SS	1.3 2.0	95.0	(95.0'-97.0') dense, brownish gray (5YR4/1), F-M SAND, trace f gravel, WR, wet, (SP)
	96.0 97.0		112	57 45 67 72	27	SS	1.3 2.0	97.0	(97.0'-99.0') very dense, brownish gray (5YR4/1), F-M SAND, trace f gravel, WR, wet, (SP)
	98.0 99.0		169	57 88 81 51	28	SS	1.7 2.0	99.0	(99.0'-101.0') SAA
643.5	100.0 101.0	(101.0'-105.0') very dense, brownish gray (5YR4/1), F-C SAND, some f gravel, WR, wet, (SW), SHALLOW DRIFT AQUIFER	159	73 77 82 52	29	SS	1.0 2.0	101.0	(101.0'-103.0') very dense, brownish gray (5YR4/1), F-C SAND, some f gravel, WR, wet (SW)
	102.0 103.0		93	50 38 55 37	30	SS	1.4 2.0	103.0	(103.0'-105.0') SAA
639.5	104.0 105.0	(105.0'-107.0') hard, olive gray (5Y4/1), SILTY CLAY, little f sand, trace f gravel, NR, moist, (CL), LOWER TILL	126	69 61 65 67	31	SS	1.4 2.0	105.0	(105.0'-107.0') very stiff (3.5 tsf), olive gray (5Y4/1), SILTY CLAY, little f sand, trace f gravel, NR, moist, (CL)
637.5	106.0 107.0	End of Boring at 107.0'							
	108.0 109.0 110.0 111.0 112.0 113.0 114.0 115.0								

Field Boring Log

DEPTH HOLE 99 ft | JOB NO. 990403 | PROJECT Onyx Zion Landfill Well Installation | BORING NO. G-176
DEPTH SOIL DRILL 97ft | GA INSP. AMH | DRILLING METHOD Wash rotary w/split spoon sampling | SHEET 1 OF 5
DEPTH ROCK CORE — | WEATHER Sunny | DRILLING COMPANY Fox DRILLING | SURFACE ELEV. 735.50
NO. DIST. SA. — UD. SA. — | TEMP. ≈70°F | DRILL RIG Dietrich D-120 | DRILLER Willy Goodwin | DATUM MSL
DEPTH WL. 72.0' bgs | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30 inches | STARTED 2:00 pm 11/4
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 6:45 am 11/5

SAMPLE TYPES: AS. AUGER SAMPLE; CS. CHUNK SAMPLE; DO. DRIVE OPEN; DS. DENISON SAMPLE; PS. PITCHER SAMPLE; RC. ROCK CORE; SS. SLOTTED TUBE; TO. THIN-WALLED, OPEN; TP. THIN-WALLED, PISTON; WS. WASH SAMPLE

ABBREVIATIONS: BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SLTY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPO: "TRACE" - 0 - 5%; "SOME" - 12 - 30%; "LITTLE" - 5 - 12%; "AND" - 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY		FINGERPRINTS
VERY LOOSE VLS	0 4	VERY SOFT	VS	ESTIMATES
LOOSE LS	4 10	SOFT	S	MOLDS EAS
COMPACT CP	10-30	FIRM	FM	MOLDS
DENSE DN	30 50	STIFF	ST	THUMB IND
VERY DENSE VDN	50	VERY STIFF	VST	THUMBNAIL
		HARD	H	RESISTS TH

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Drill from 0' to 18' using 4¼" HSA and 2" diameter 2 ft long split spoon sampling on 5-ft centers. Ac split spoon sampling to 99 feet, set 12¼" ID steel surface casing to depth of 9 feet. Ream hole to 10 diameter using tricon bit with wash rotary methods t depth of 97 feet.
1								
2								
3	No Sample - In recently placed fill							
4								
5								
6								
7								
8	Loose, mod. yell. brn (10YR 5/4) and dk. yell. brn (10 YR 4/2), med SAND & GRAVEL, some clay, WR, moist (GC-SC)	14	1	SS	5 6 8 10	17"/24"		Collect Sample #1 @ 2:05 pm
9 9.0'	Very stiff, dk. yell. brn (10YR 4/2) CLAY, tr. silt and gravel, WR, moist (CH)							
10								
11								
12								
13	Very stiff, dk. yell. brn (10YR 4/2) homogeneous, CLAY, tr. gravel, WR, moist (CH)	24	2	SS	3 10 14 17	16"/24"		Collect Sample #2 @ 2:15 pm
14								
15								
16								
17								
18								Auger to 18 ft; switch over to wash rotary with 3½ inch tricon HSA left in ground to facilitate water return
19	Very stiff, dk. yell. brn. (10YR 4/2) homogeneous, CLAY, tr. gravel, WR, moist. (CH)	25	3	SS	5 11 14 16	20"/24"		Collect Sample #3 @ 2:35 pm
20								
21								
22								
23								

Field Boring Log

DEPTH HOLE 98 ft	JOB NO. 992403	PROJECT Onyx Zion Landfill Well Installation			BORING NO. G-176
DEPTH SOIL DRILL 97ft	GA INSP. AMM	DRILLING METHOD Wash rotary w/ split spoon sampling			SHEET 2 OF 5
DEPTH ROCK CORE —	WEATHER Sunny	DRILLING COMPANY FOX DRILLING			SURFACE ELEV. 7350
NO. DIST. SA. — UD. SA. —	TEMP. ± 70°F	DRILL RIG Dietrich D-120	DRILLER Willy Goodwin		DATUM MSL
DEPTH WL. 72.0' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 inches		STARTED 2:00 pm / 11-1 (last)
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —		COMPLETED 6:45 pm 11-

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPC

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRES
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EAS
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB MO
VERY DENSE VDN	50	VERY STIFF VST	THUMBNA
		HARD H	RESISTS TH

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24	Very stiff, dk. yell. brn (10YR 4/2) to olive gray (5Y 4/1), CLAY, little silt, tr. gravel, WR, moist (CL-CH)	18	4	SS	5 8 10 14	22"/24"		Sample #4 collected @ 2:03 pm
25								
26								
27								
28								
29	Very stiff, dk. yell. brn (10YR 4/2) to olive gray (5Y 4/1), CLAY, little silt, tr. gravel, WR, moist (CL-CH)	24	5	SS	7 10 14 15	24"/24"		Sample #5 collected @ 3:06 pm silt parting @ 29.7 ft.
30								
31								
32								
33								
34	Compact, mod. yell. brn. (10YR 5/4) to dk. yell. brn. (10YR 4/2), f-m sand and GRAVEL, some clay, tr. silt, WR, moist (SC-GC)	26	6	SS	5 11 15 17	6"/24"		Sample #6 collected @ 3:21 pm
35								
36	Compact, pale yell. brn (10YR 6/2) to dk. yell. brn (10YR 4/2), laminated SILT, tr. sand & gravel, WR, moist (ML)	23	7	SS	12 11 12 13	19"/24"		gravel in top 0.1 ft of spoon Sample #7 collected @ 3:36 pm
37								
38								
39	Hard, dk. yell brn (10YR 4/2) to olive gray (5Y 4/1), homogenous, CLAY, little silt, tr. gravel, WR, moist (CL)	34	8	SS	10 16 23 31	24"/24"		Sample #8 collected @ 3:58 pm
40								
41								
42								
43	Very stiff, olive gray (5Y 4/1), homogenous, CLAY, little silt, tr. gravel, WR, moist (CL)	25	9	SS	6 11 14 15	18"/24"		Sample #9 collected @ 10:02 am (11-2-00)
45								
46								

Field Boring Log

DEPTH HOLE 99 ft	JOB NO. 990403	PROJECT Onyx Zion Landfill Well Installation			BORING NO. G-176
DEPTH SOIL DRILL 97 ft	GA INSP. AM	DRILLING METHOD Wash rotary w/split spoon sampling			SHEET 3 OF 5
DEPTH ROCK CORE —	WEATHER Cloudy, rainy	DRILLING COMPANY FOX DRILLING			SURFACE ELEV. 736.50
NO. DIST. SA. — UD. SA. —	TEMP. ~60°F	DRILL RIG Dietrich D-120	DRILLER Willy Grabein		DATUM MSL
DEPTH WL. 72.0' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 inches		STARTED 2:00 pm / 11-4 (TIME / D)
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —		COMPLETED 6:45 am / 11-5 (TIME / D)

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPO

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRES
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EASILY PUS
LOOSE	LS	4 10	SOFT	S	MOLDS EAS
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DNS	30-50	STIFF	ST	THUMB IND
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL
			HARD	H	RESISTS TH

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47								
48	Hard, olive gray (5Y 4/1), homogenous, CLAY, little silt, tr. gravel, WR, moist (CL)	32	10	SS	8 14 18 23	21" / 24"		Sample #10 collected @ 10:19 am
49								
50								
51								
52								
53	Very stiff, olive gray (5Y 4/1), homogenous, CLAY, little silt, tr. gravel, WR, moist (CL)	38	11	SS	9 16 22 27	17" / 24"		Sample #11 collected @ 10:30 am
54	Dense, olive gray (5Y 4/1), laminated, SILT, tr. clay and gravel, WR, moist (ML)							
55								
56								
57								
58	Dense, olive gray (5Y 4/1), laminated, SILT, tr. gravel, WR, moist (ML)	39	12	SS	11 18 21 29	16" / 24"		Sample #12 collected @ 10:55 am
59								
60								
61								
62								
63	Hard, olive gray (5Y 4/1), homogenous, CLAY, tr. silt & gravel, WR, moist (CH)	39	13	SS	13 17 22 28	24" / 24"		Sample #13 collected @ 11:15 am
64								
65								
66								
67								
68								
69	Very stiff, olive gray (5Y 4/1), homogenous, CLAY, tr. silt - gravel, WR, moist (CH)	21	14	SS	7 9	21" / 24"		Sample #14 collected @ 12:00 noon

Field Boring Log

DEPTH HOLE 99ft | JOB NO. 990403 | PROJECT Onyx Zion Landfill Well Installation | BORING NO. G-176
DEPTH SOIL DRILL 97ft | GA INSP. AMH | DRILLING METHOD Wash rotary w/split spoon sampling | SHEET 4 OF 5
DEPTH ROCK CORE — | WEATHER cloudy, rainy | DRILLING COMPANY Fox DRILLING | SURFACE ELEV. 795.5
NO. DIST. SA. — | UD. SA. — | TEMP. ~60°F | DRILL RIG Dietrich D-120 | DRILLER Willy Goodwin | DATUM MSL
DEPTH WL. 72.0' bgs | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30 inches | STARTED 2:00 pm / 11/4
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 6:45 am 11/

SAMPLE TYPES: A.S. AUGER SAMPLE; C.S. CHUNK SAMPLE; D.O. DRIVE OPEN; D.S. DENISON SAMPLE; P.S. PITCHER SAMPLE; R.C. ROCK CORE; S.T. SLOTTED TUBE; T.O. THIN-WALLED, OPEN; T.P. THIN-WALLED, PISTON; W.S. WASH SAMPLE

ABBREVIATIONS: BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROP: "TRACE" - 0 - 5%; "SOME" - 12 - 30%; "LITTLE" - 5 - 12%; "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY	
VERY LOOSE	VLS	0-4	VERY SOFT	VS
LOOSE	LS	4-10	SOFT	S
COMPACT	CP	10-30	FIRM	FM
DENSE	DN	30-50	STIFF	ST
VERY DENSE	VDN	50	VERY STIFF	VST
			HARD	H

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	Very stiff, olive gray (5Y 4/1), homogeneous, CLAY, tr. silt + gravel, WR, moist (CH)	21	14	SS	12 14	21"/24"		Sample #14 collected @ 12:00 noon
71								
72								
73								Begin continuous split spoon sampling @ 73 feet
74	Very stiff, olive gray (5Y 4/1), homogeneous, CLAY, tr. silt + gravel, WR, moist (CH)	30	15	SS	8 14 16 19	22"/24"		Sample #15 collected @ 1:10 pm
75								
76	Hard, olive gray (5Y 4/1), homogeneous, CLAY, some silt, little gravel, WR, moist (CL)	72	16	SS	14 26 46 53	20"/24"		Sample #16 collected @ 1:25 pm numerous silty partings between 76 and 77 feet
77								
78	Hard, olive gray (5Y 4/1), homogeneous, CLAY, little silt tr. sand + gravel, WR, moist (CL)	45	17	SS	10 19 26 33	7"/24"		Sample #17 collected @ 1:43 pm
79								
80	Hard, olive gray (5Y 4/1), homogeneous, CLAY, tr. gravel, WR, moist (CH)	52	18	SS	15 24 28 37	24"/24"		Sample #18 collated @ 2:00 pm
81								
82 (82.2')	Very dense, dk. yell. brn (10YR 4/2) to olive gray (5Y 4/1), f-m SAND, little silt, WR, moist (SM)	70	19	SS	25 29 41 63	16"/24"		Sample #19 collected @ 2:17 pm
83	Hard, olive gray (5Y 4/1), CLAY, some sand + gravel, WR, moist (CL)							
84 (84.4')	Very dense, olive gray (5Y 4/1), SILT, little sand + gravel, tr. clay, WR, moist (ML)	126	20	SS	37 58 68 83	15"/24"		Sample #20 collected @ 2:37 pm
85	Very dense, olive gray (5Y 4/1), f-c SAND, little gravel, tr. silt, NR, wet (SP)							
86	Very dense, olive gray (5Y 4/1), f-c SAND + GRAVEL, tr. silt, NR, wet (SP-GP)	120	21	SS	47 59 61 86	17"/24"		Sample #21 collected @ 3:04 pm
87								
88 (87.8')	Very dense, olive gray (5Y 4/1), C SAND and GRAVEL, NR, wet (SW-GW)	122	22	SS	35 63 59 57	23"/24"		Sample #22 collected @ 3:24 pm
89	Very dense, olive gray (5Y 4/1), f SAND, NR, wet (SW)							
90	Very dense, olive gray (5Y 4/1), f SAND, NR, wet (SW)	83	23	SS	33 37 46 53	19"/24"		Some C SAND in top 0.2 ft of spoon Sample #23 collected @ 4:00 pm
91								
92	very dense, olive gray (5Y 4/1), f SAND, NR, wet (SW)	88	24	SS	33 37	6"/24"		Sample #24 collected @ 4:20 pm

Field Boring Log

DEPTH HOLE 99 ft	JOB NO. 993403	PROJECT Onyx Zion Landfill Well Installation		BORING NO. G-176	
DEPTH SOIL DRILL 97 ft	QA INSP. AMM	DRILLING METHOD Wash rotary w/ split spoon sampling		SHEET 5	OF 5
DEPTH ROCK CORE —	WEATHER Sunny	DRILLING COMPANY Fox Drilling		SURFACE ELEV. 735.50	
NO. DIST. SA. — UD. SA. —	TEMP. ≈60°F	DRILL RIG Dietrich D-120	DRILLER Willy Goodwin	DATUM MSL	
DEPTH WL. 72.0' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 - inches	STARTED 2:00 pm / 11-1 (TIME / DATE)	
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 6:45 pm 11-3	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPO

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY		FINGER PRE
VERY LOOSE VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE LS	4 10	SOFT	S	MOLDS EA
COMPACT CP	10 30	FIRM	FM	MOLDS
DENSE DN	30 50	STIFF	ST	THUMB MC
VERY DENSE VDN	50	VERY STIFF	VST	THUMBNA
		HARD	H	RESISTS TH

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	Very dense, olive gray (5Y 4/1), f SAND, NR, WET (SW)	88	24	SS	51 63	6"/24"		Sample #24 collected @ 4:20 pm
93 93.2	GRAVEL from 93 to 93.2 ft							
	Very dense, olive gray (5Y 4/1), SILT, NR, wet (ML)	130	25	SS	37 61 69 77	6"/24"		Sample #25 collected @ 4:41 pm
94								
95								
	Very dense, olive gray (5Y 4/1), SILT, NR, wet (ML)	94	26	SS	33 41 53 56	5"/24"		Sample #26 collected @ 5:02 pm
96								
97								
	Hard, olive gray (5Y 4/1), CLAY tr. silt & gravel, WR, moist (CH)	77	27	SS	22 31. 46 56	24"/24"		Sample #27 collected @ 6:39 am (11-3-00)
98								
99			EOB @ 99 ft					

Note: Approximately 1.0' of soil at the ground surface at this location was removed after the well was completed. Therefore, the total depth of this borehole, relative to the completed ground surface conditions, is 98 - feet.

Golder Associates

Field Boring Log

DEPTH HOLE 90	JOB NO. 973-2279	PROJECT BFI / Zion / Illinois		BORING NO. G-177	
DEPTH SOIL DRILL 90	GA INSP. MNH	DRILLING METHOD MUD ROTARY		SHEET 1 OF 4	
DEPTH ROCK CORE —	WEATHER Clear 70°	DRILLING COMPANY Layne-NW		SURFACE ELEV. ~734	
NO. DIST. SA. — UD. SA. —	TEMP.	DRILL RIG GUS PECH BRAT	DRILLER D. ANLD	DATUM Mean Sea Level	
WL.	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30"	STARTED Time 19-10-97 Date	
WL.	HRS. DELAYED —	WT. CASING HAMMER	DROP	COMPLETED 19-11-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	PENETROMETER
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	DIAMIC BLOWS (DRIVE WT. (POUNDS))	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(0.0-5.0) Firm to stiff, lt olive grey and pale yellowish brn, SILTY CLAY, tr to some c-f sand and c-f gravel, (FILL)						0	~ FILL down to 5 feet
2							2	
4							4	
6	(5.0-15.0) Firm to stiff, dk yellowish brn and mod. yellowish brn, mottled, SILTY CLAY, tr to little c-f sand and f gravel, SR, damp, (CL) (WEATHERED LODGEMENT TILL)	7	1	SS	3/3/4/4	1.5' / 2.0'	6	No. 1 Firm to stiff, dk yellowish brn and mod. yellowish brn, mottled, SILTY CLAY, tr to little c-f sand and f gravel, SR, damp, (CL) (WEATHERED LODGEMENT TILL)
						2"	8	
10		37	2	SS	13/13/14/15	2.0' / 2.0'	10	No. 2 SAA (SAME AS ABOVE)
12							12	
14							14	
16	(15.0-20.0) Stiff to v. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)	24	3	SS	11/12/12/13	2.0' / 2.0'	16	No. 3 Stiff, to v. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
18							18	
20	(20.0-30.5) Stiff, olive grey, CLAYEY SILT, WR, moist, (ML)	21	4	SS	9/10/11/12	2.0' / 2.0'	20	No. 4 Stiff, olive grey, CLAYEY SILT, WR, moist (ML)
22							22	

Golder Associates

Field Boring Log

DEPTH HOLE 90	JOB NO. 93-2279	PROJECT BFI / Zion / Illinois		BORING NO. G177	
DEPTH SOIL DRILL 90	QA INSP. MNH	DRILLING METHOD MUD ROTARY		SHEET 2 OF 4	
DEPTH ROCK CORE —	WEATHER Clear 70°	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~734	
NO. DIST. SA. — UD. SA. —	TEMP. 70°	DRILL RIG CME 75 BOOM	DRILLER D. ANDS	DATUM Mean Sea Level	
WL. —	HRS. PROD. —	WT. SAMPLER HAMMER 140 #	DROP 30"	STARTED Time 19-10-97 Date	
ME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 9-11-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THINWALLED, OPEN	FRAG	FRAGMENTS
T.P.	THINWALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WOH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE LS	4-10	SOFT	S	MOLDS EASILY
COMPACT CP	10-30	FIRM	FM	MOLDS
DENSE DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS
		HARD	H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMMER BLOWS/CASING (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24							24	
26		21	5	SS	10/10/11/12	2.0 / 2.0	26	NO. 5 SAA
28							28	
30							30	NO. 6 (30.5-blow) v. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
32	(30.5-36.5) v. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)	23	6	SS	11/11/12/12	2.0' / 2.0'	32	
34							34	
36	(36.5-39.0) compact, multicolored, C-F SAND AND F GRAVEL, little silt, NR, wet (SW-GW) (GLACIOFLUVIAL)	16	7	SS	8/8/8/8	2.0 / 2.0'	36	NO. 7 SAA until 36.5' @ 36.5, compact, multicolored, C-F SAND AND F GRAVEL, little silt, NR, wet (SW-GW) (GLACIOFLUVIAL) - driller indicates presence of sand lenses
38							38	
40	(39.0-50.0) v. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL)	21	8	SS	9/10/11/11	1.8' / 2.0'	40	NO. 8 v. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
42							42	
44							44	
46		28	9	SS	11/11/11/15	1.5' / 2.0'	46	NO. 9 SAA

Golder Associates

Field Boring Log

DEPTH HOLE 90 | JOB NO. 97J-2279 | PROJECT BFI / Zion / Illinois | BORING NO. G177
DEPTH SOIL DRILL 90 | QA INSP. | DRILLING METHOD | SHEET 3 OF 4
DEPTH ROCK CORE — | WEATHER | DRILLING COMPANY Aquadrill | SURFACE ELEV. ~734
NO. DIST. SA. — UD. SA. — | TEMP. | DRILL RIG | DRILLER | DATUM Mean Sea Level
WL. | HRS. PROD. — | WT. SAMPLER HAMMER | DROP | STARTED 19-10-97 (TIME / DATE)
ME WL. | HRS. DELAYED — | WT. CASING HAMMER | DROP | COMPLETED 9-11-97

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 15 - 30%
"LITTLE" - 5 - 12% "AND" - 30 80%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0 4	VERY SOFT VS	EXTRUDES
LOOSE LS	4 10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30 50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENTS
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS PER 6" (STANDARD PENETRATION TEST)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
			9	SS				(SEE PREVIOUS PAGE)
48							48	
50	(50.0-53.0) V. stiff, olive grey, SILT AND SANDY SILT, WR, moist, (ML), layered (GLACIOLACUSTRINE/ GLACIOFLUVIAL)	30	10	SS			50	NO 10 @ 51.0, V.stiff, olive grey, SILT AND SANDY SILT, WR, moist, (ML) (GLACIOLACUSTRINE/FLUVIAL)
52							52	
54	(53.0-82.5) firm to stiff, olive grey to pale reddish-brn. SILTY CLAY, tr c-f sand and f gravel, WR to SR, damp to moist, (CL) (LODGEMENT TILL)						54	
56		26	11	SS	13/13/13/12	2.0' — 2.0'	56	NO. 11. V. Stiff, olive grey, SILTY CLAY, tr c-f Sand and f gravel, WR, damp to moist, (CL), (LODGEMENT TILL)
58							58	
60	- marbled appearance ~60-62? FEET BGS	19	12	SS	9/10/9/9	2.0' — 2.0'	60	NO. 12 firm to stiff, olive grey trace pale reddish brn marbling, SILTY CLAY, tr c-f sand and f gravel, SR, damp, (CL) (LODGEMENT TILL)
62							62	
64							64	
66		25	13	SS	11/12/13/12	2.0' — 2.0'	66	SAA, but no marbling
68							68	

Field Boring Log

DEPTH HOLE — JOB NO. 97J-2279 PROJECT BEI / Zion / Illinois BORING NO. G117
DEPTH SOIL DRILL — QA INSP. — DRILLING METHOD — SHEET 4 OF 4
DEPTH ROCK CORE — WEATHER — DRILLING COMPANY Aquadrill SURFACE ELEV. ~734
NO. DIST. SA. — UD. SA. — TEMP. — DRILL RIG — DRILLER — DATUM Mean Sea Level
— ft. — HRS. PROD. — WT. SAMPLER HAMMER — DROP — STARTED time 9-10-97 date
— ft. WL. — HRS. DELAYED — WT. CASING HAMMER — DROP — COMPLETED 9-11-97

SAMPLE TYPES

A.S. AUGER SAMPLE; C.S. CHUNK SAMPLE; D.O. DRIVE OPEN; D.S. DENISON SAMPLE; P.S. PITCHER SAMPLE; R.C. ROCK CORE; S.T. SLOTTED TUBE; T.O. THIN-WALLED, OPEN; T.P. THIN-WALLED, PISTON; W.S. WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RK ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SHY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5%; "SOME" - 12 - 20%; "LITTLE" - 8 - 12%; "AND" - 30 - 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	PENCIL PRESSURE
VERY LOOSE VLS	0 - 4	VERY SOFT VS	EASILY INDENTED
LOOSE LS	4 - 10	SOFT S	MOLDS EASILY
COMPACT CP	10 - 30	FIRM FM	MOLDS
DENSE DN	30 - 50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	DRIVING BLOWS PER 6" (FOOT)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70							70	NO. 14 SAA
		24	14	SS	12/12/12/12	2.0'/2.0'		
72							72	
74							74	NO. 15 SAA
76		25	15	SS	12/13/12/12	1.9'/2.0'	76	
								NO. 16 SAA
78		26	16	SS	14/13/13/13	2.0'/2.0'	78	
80		30	17	SS	15/15/15/15	1.8'/2.0'	80	NO. 17 SAA
82		49	18	SS	22/24/25/25	1.5'/2.0'	82	NO. 18, SAA to 82.5' below 82.5, v. dense, olive grey and multi-colored, C-F SAND, little silt, tr f gravel, WR wet, (SW)
84	(82.5-88.0) v. dense, olive grey and multi-colored, C-F SAND, little silt, tr f gravel, WR, wet, (SW), some sorting (GLACIOFLUVIAL)	60	19	SS	23/23/25/30	1.5'/2.0'	84	NO. 19. SAA - coarse gravel/cobbles @ 84-86
86		>50	20	SS	25/27/27/28	1.3'/2.0'	86	NO. 20 SAA
88	(88.0-91.0) v. stiff to hard, dk olive grey and multi-colored, SILTY CLAY AND C-F SAND AND F GRAVEL, SR, damp, poorly sorted (CL-SC-GC) (DIAMICTON)	>50	21	SS	26/28/29/30	1.0'/2.0'	88	NO. 21 SAA below 88', v. stiff to hard, dk olive grey and multi-colored, SILTY CLAY AND C-F SAND AND F GRAVEL, SR, damp, (CL-GC-SC) poorly sorted (DIAMICTON)
90	END OF BORING @ 90 FEET BGS	>50	22	SS		1.0'/2.0'	90	NO. 22 SAA
92							92	

Field Boring Log

DEPTH HOLE 96.0 | JOB NO. 93-2279 | PROJECT BFI / Zion / Illinois | BORING NO. 6118
DEPTH SOIL DRLL 96.0 | QA INSP. L. Miller | DRILLING METHOD 10" Wash / Mud Rotary | SHEET 1 OF 5
DEPTH ROCK CORE — | WEATHER cool & sunny | DRILLING COMPANY Aquadrill | SURFACE ELEV. ~734'
NO. ST. SA. — | UD. SA. — | TEMP. 60°-75° F | DRILL RIG Failing Model 1500 B-Bore | DRILLER Dennis Auld | DATUM Mean Sea Level
D WL. — | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs. | DROP 30 inches | STARTED 13:50 / 9-9-97 (time / date)
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 0800 / 9-10-97

SAMPLE TYPES

AS	AUGER SAMPLE
CS	CHUNK SAMPLE
DS	DRIVE OPEN
DB	DENISON SAMPLE
PS	PITCHER SAMPLE
RC	ROCK CORE
ST	SLOTTED TUBE
TO	THIN-WALLED, OPEN
TP	THIN-WALLED, PISTON
WS	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OB	ORANGE	SLT	SILTY
CLY	CLAYEY	OHB	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WOH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" 12-30%
"LITTLE" - 5-12% "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PINCH
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES DRIVING BLOWS (CUMULATIVE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
1	(0.0-14.0) Stiff to v. stiff, dk yellowish brn to mod. yellowish brn, homogeneous, SILTY CLAY, tr to some C-F Sand, mottled, NR to SR, moist to wet, (CL) (WEATHERED LODGEMENT TILL)							
5		40	1	S.S.	10 10 10 10	0.8' / 2.0'	5.0'	No. 1 V. Stiff, dark yellowish brown (10YR 4/2) to mod yellowish brn (10YR 5/4), homogeneous, SILTY CLAY, little F-C Sand, mottled, SR, moist, (CL), WEATHERED LODGEMENT TILL
8							7.0'	
10		40	2	S.S.	10 10 10 10	1.6' / 2.0'	10.0'	No. 2 Stiff to V. Stiff dark yellowish brown (10YR 4/2) to light brown (5YR 5/6) homogeneous, SILTY CLAY, some F-C Sand and F Gravel, mottled, NR, moist-wet, (CL), WEATHERED LODGEMENT TILL
12							12.0'	
14	(14.0-32.0) V. stiff, med dk grey to olive grey, homogeneous, SILTY CLAY, tr to little C-F Sand, NR, moist, (CL) (LODGEMENT TILL)							
15		34	3	S.S.	17 17 17 17	1.3' / 2.0'	15.0'	No. 3 V. Stiff, medium dark grey (N4), homogeneous, SILTY CLAY, trace F-C Sand, NR, moist, (CL), LODGEMENT TILL
18							17.0'	
20		18	4	S.S.	9 9 9 9	1.9' / 2.0'	20.0'	No. 4 V. Stiff, olive grey (5Y 4/1) homogeneous, SILTY CLAY, little F-C Sand, NR, moist, (CL), LODGEMENT TILL
22							22.0'	
23								

Field Boring Log

DEPTH HOLE 96.0 | JOB NO. 93-2279 | PROJECT BEE / Zion / Illinois | BORING NO. 6178
DEPTH SOR. DRILL 96.0 | QA INSP. J. Miller | DRILLING METHOD 11" Tooth / mud Rotary | SHEET 2 OF 5
DEPTH ROCK CORE — | WEATHER Cool, Sunny | DRILLING COMPANY Aquadrill | SURFACE ELEV. ~ 739'
I.D. SA. — UD. SA. — | TEMP. 60° - 75° F | DRILL RIG Foremost-Mobile B-8000 | DRILLER Dennis Reid | DATUM Mean Sea Level
D. — | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs. | DROP 30 inches | STARTED 13:50 / 9-4-97 (Time / Date)
GE WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 19-10-97

SAMPLE TYPES

AS	AUGER SAMPLE	BL	BLACK
CS	CHUNK SAMPLE	BR	BROWN
DO	DRIVE OPEN	C	COARSE
DS	DENISON SAMPLE	CA	CASING
PS	PITCHER SAMPLE	CL	CLAY
RC	ROCK CORE	CLY	CLAYEY
ST	SLOTTED TUBE	F	FINE
TO	THINWALLED, OPEN	FRAG	FRAGMENTS
TP	THINWALLED, PISTON	GR	GRAVEL
WS	WASH SAMPLE	LYD	LAYERED
		LT	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
ORG	ORANGE	SLTY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WOH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" 12 - 30%
"LITTLE" - 5 - 12% "AND" 30 - 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	POCKET PEN. TSF
VERY LOOSE VLS	0 - 4	VERY SOFT VS	0 - 0.25
LOOSE LS	4 - 10	SOFT S	0.25 - 0.5
COMPACT CP	10 - 30	FIRM F	0.5 - 1.0
DENSE DN	30 - 50	STIFF ST	1.0 - 2.0
VERY DENSE VDN	50	VERY STIFF VST	2.0 - 4.0
		HARD H	4.0 +

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMMER BLOWS PER 6" (PENETRATION FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24								
25	(6 4 / 6 0)						25.0'	
26		49	5	S.S.	10 / 10 / 19 / 19	1.9' / — / 2.0'		No. 5 SAA
27	6 0						27.0'	
28								
29								
30	- below 30.0, SAA with shale fragments and carbonic ions, SR				15 / 15	2.0'	30.0'	No. 6
1		60	6	S.S.	15 / 15	2.0'		V. stiff, olive gray (5Y 4/1), homogenous, SILTY CLAY, little F-C Sand and F Gravel, shell fragments and carbonate specks, SR, moist, (CL) (COMPACTED TILL)
32							32.0'	
33								
34								
35							35.0'	
36		30	7	S.S.	15 / 15 / 15 / 15	2.0' / — / 2.0'		No. 7 SAA
37							37.0'	
38								dolomite content, sand any & gravel between 37.0' & 42.0'
39	(37.0-42.0) brown, & olive gray, stratified, F SAND AND F GRAVEL							
40	limit to some silt and clay, SR, wet (SW-GW-SM) (GLACIOFLUVIAL)						40.0'	Rear doorway Sample No. 8
41		34	8	S.S.	17 / 13 / 17 / 17	0.9' / 2.0'		No. 8 - Dense light olive gray (5Y 6/1) stratified F SAND and F GRAVEL, little - some SILT and clay, SR, wet, (SW-GW-SM), GLACIOFLUVIAL
42							42.0'	
43	(42.0-83.0) STIFF to V. STIFF, olive gray or pale reddish brown mottling, homogeneous, SILTY CLAY to some C-F sand and F gravel, WR, moist (CL) (LODGEMENT TILL)	39	84	S.S.	15 / 15 / 15 / 15	2.0' / — / 2.0'		No. 84
44								V. Stiff, olive gray (5Y 4/1), homogenous, SILTY CLAY some F-C Sand and F Gravel, WR, moist, (CL), (LODGEMENT TILL)
45								9-4-97 13:15 The downhole hammer quit shortly after reaching the bottom. Hoist goes to get it fixed. Drill ahead at 46.0'
46		50	9	S.S.	25 / 25	2.0' / 2.0'	45.0'	9-5-97 12:00 Hammer fixed, but we don't the interval. Notify my so the 6" ink or its height is 0.

Field Boring Log

DEPTH HOLE 96.0 JOB NO. 973-1279 PROJECT BFI / Zion / Illinois BORING NO. G178
DEPTH SOIL DRILL 96.0 QA INSP. J. Miller DRILLING METHOD 4" wash / mud Rotary SHEET 3 OF 5
DEPTH ROCK CORE — WEATHER Cool, Sunny DRILLING COMPANY Aquadrill SURFACE ELEV. +739'
NO. SA. — UD. SA. — TEMP. 49°-75° F DRILL RIG Failing-Mobile B-9000 DRILLER Dennis Hill DATUM Mean Sea Level
DEP. WL. — HRS. PROD. — WT. SAMPLER HAMMER 140 lbs. DROP 30 inches STARTED 15:50 / 7-9-97
ME WL. — HRS. DELAYED — WT. CASING HAMMER — DROP — COMPLETED 5-10-97

SAMPLE TYPES: AS Auger Sample; CS Chunk Sample; DO Drive Open; DS Denison Sample; PS Piston Sample; RC Rock Core; ST Slotted Tube; TO Thinwalled, Open; TP Thinwalled, Piston; WS Wash Sample

ABBREVIATIONS: BL Black; BR Brown; C Coarse; CA Casing; CL Clay; CLY Clayey; F Fine; FRAG Fragments; GR Gravel; LYD Layered; LI Little; M Medium; MIC Micaceous; MOT Mottled; NP Non-Plastic; OR Orange; ORG Organic; PH Pressure-Hydraulic; PM Pressure-Manual; R Red; RES Residual; RK Rock; SA Sample; SAT Saturated; SD Sand; SI Silt; SLTY Silty; SM Some; TR Trace; WL Water Level; WOH Weight Of Hammer; Y Yellow

SOIL DESCRIPTION - RANGE OF PROPORTION: "TRACE" 0-5%; "SOME" 12-30%; "LITTLE" 5-12%; "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	PHOTO-FINE SOILS
VERY LOOSE VLS	0-4	VERY SOFT VS	ESTIMATED
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	TRIAXIAL MEASURE
VERY DENSE VDN	50	VERY STIFF VST	TRIAXIAL MEASURE
		HARD H	MEASURE TRIAXIAL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	PLASTIC BLOWS ORGANIC PENCIL	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47		50	9	S.S.	25 25	2.0' 2.0'		9-8-97 18:30 Aquadrill grouted in with cement by Ann Arbor Co. - they spot the rig on the hole 9-8-97 18:35 Out for the day 9-9-97 06:30 Begin boring and set 6" to bottom of backfill. Ground dirty and muddy
48							93.0'	
49								No. 9 V. Stiff, olive gray (5Y 4/1), homogeneous, SILTY CLAY, little F-C Sand and F Gravel, WR, moist, (CL), LODGEMENT TILL
50							50.0'	
51		38	10	S.S.	19 19 19 19	2.0' 2.0'		No. 10 - SAA
52							52.0'	
54								
55							55.0'	No. 11 V. Stiff, olive gray (5Y 4/1) to pale reddish brn, homogeneous below 56.0, SILTY CLAY, little to some C-F sand and F gravel, WR, & moist, (CL). LODGEMENT TILL
56		49	11	S.S.	24/25/25/25	2.0' 2.0'		
57							57.0'	Note: 55-56.0 contained some C-F Sand and F gravel and had a mottled olive gray/reddish brn SILTY CLAY matrix
58								
59								
60							60.0'	No. 12 Stiff to V. stiff, olive gray (5Y 4/1) SILTY CLAY, homogeneous, SILTY CLAY, tr to little C-F Sand and F gravel, WR, moist (CL) LODGEMENT TILL
61		25	12	S.S.	11/12/13/13	2.0' 2.0'		
62							62.0'	
63								
64								
65							65.0'	No. 13 SAA
66		50	13	S.S.		2.0' 2.0'		
68							68.0'	
69								

Golder Associates

Field Boring Log

DEPTH HOLE 96.0' JOB NO. 923-1279 PROJECT BFI / Zion / Illinois BORING NO. 4178
DEPTH BOR DRLD 96.0 GA INSP. J. Miller DRILLING METHOD 10" wash / mud Rotary SHEET 4 OF 5
DEPTH ROCK CORE — WEATHER 60°-75°F DRILLING COMPANY Layne-drill SURFACE ELEV. +739'
W.L. S.A. — U.D. S.A. — TEMP. — DRLL RIG Failing-Mobile B-6000 DRILLER Dennis Field DATUM Mean Sea Level
EPT. W.L. — HRS. PROD. — WT. SAMPLER HAMMER 140 lbs. DROP 30 inches STARTED 13:50 / 9-9-92
TIME W.L. — HRS. DELAYED — WT. CASING HAMMER — DROP — COMPLETED 19-10-92

SAMPLE TYPES

A.S. AUGER SAMPLE; C.S. CHUNK SAMPLE; D.O. DRIVE OPEN; D.S. DRIVEN SAMPLE; P.S. PUSHED SAMPLE; R.C. ROCK CORE; S.S. SLOTTED TUBE; T.O. THIN-WALLED, OPEN; T.P. THIN-WALLED, PISTON; W.S. WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; U LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SLTY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" - 12-30% "LITTLE" - 5-12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		PENETROMETER
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	C	10-30	FIRM	FM	MOLDS
DENSE	Dn	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDn	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS PER 6" (STD. PENETR.)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70								
							70.0'	NO. 14 SAA - tr c-f sand and f gravel
71		29	14	S.S.	7/11/11/18	2.0' / 2.0'		
72							72.0'	
73								
74								
75							75.0'	
		37	15	S.S.	18/15/15/19	2.0' / 2.0'		NO. 15 SAA
77							77.0'	
		38	16	S.S.	17/21/20/20	2.0' / 2.0'		NO. 16 SAA
78								
79							79.0'	
		36	17	S.S.	15/16/15/16	2.0' / 2.0'		NO. 17 SAA
80								
81							81.0'	
		37	18	S.S.	15/18/19/19	2.0' / 2.0'		NO. 18 SAA
82								
83	(83.0-89.5) V. stiff, olive grey, CLAYEY SILT, tr to and c-f sand and f gravel, WR, moist (ML-SM) (DRIFT)							
		34	19	S.S.	17/17/17/17	1.5' / 2.0'	83.0'	NO. 19 V. stiff, olive grey, CLAYEY SILT, Same tr and c-f sand and f gravel, WR, MOIST (ML-SM) DRIFT
84								
85							85.0'	
		32	20	S.S.	10/11/11/14	1.8' / 2.0'		NO. 20 SAA
86								
87	below 87.0, (ML)							
		40	21	S.S.	10/16/19/21	2.0' / 2.0'	87.0'	NO. 21 V. stiff olive grey, SILT, tr c-f sand and f gravel, WR, moist (ML) DRIFT
88								
89								(89.5 to 90.5)
	(89.5-92.0) dense, olive grey, F-M SAND AND SILTY F SAND, WR WET, (SP-SM) (BEACH OR LITTORAL)	34	22	S.S.	17/17/17/19	2.0' / 2.0'	89.0'	NO. 22, V. stiff, olive grey, SILTY CLAY, tr c-f sand, WR, moist, (CL)
90								sand @ 90.5, dense olive grey, F-M SAND, WR wet, (SP)
91								
		>50	23	S.S.	37/41/52/36	0-1' / 2.0'	91.0'	NO. 23 V. dense, olive grey, SILTY FINE SAND, WR, wet, (SM)
92								

Field Boring Log

DEPTH HOLE 96.0 | JOB NO. 93-2279 | PROJECT BFI / Zion / Illinois | BORING NO. 6178
DEPTH BOR. DRILL 96.0 | GA INSP. J. Miller | DRILLING METHOD 10" hsa / Mud rotary | SHEET 5 OF 5
DEPTH ROCK CORE — | WEATHER Cool, Sunny | DRILLING COMPANY Aquadrill | SURFACE ELEV. ~739'
U.S.A. — UD.SA. — | TEMP. 60°-85° F | DRILL RIG Failmost-Mobile B-8000 | DRILLER Charles Auld | DATUM Mean Sea Level
DE..H WL. — | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30 inches | STARTED 13:50 (time) / 9-9-97 (date)
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 0900 (time) / 9-10-97 (date)

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.S.	SLOTTED TUBE	F	FINE
T.R.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		U	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NONPLASTIC	SI	SILT
OG	ORANGE	SHY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE HYDRAULIC	TR	TRACE
PM	PRESSURE MANUAL	WL	WATER LEVEL
R	RED	WOH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" 0-5% "SOME" 12-30%
"LITTLE" 5-12% "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	BLOWS
VERY LOOSE VLS	0-4	VERY SOFT VS	2 PUSHES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DNS	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDNS	50	VERY STIFF VST	THUMBNAIL INDENTS
		HARD H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	BLOWS/6" (PENETRATION FORCE)	REC./ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
93	(93.0-97.0) V. stiff, olive gray, SILT, tr to some f sand, tr f gravel, WR, moist, (ML) (GLACIOLACUSTRINE)		23	SS				
94		>50	24	SS	28/50/5"/50	1.0' / 1.5'	93.0'	NO. 24, V. stiff, olive gray, SILT, some f sand, tr f gravel, WR, moist, (ML)
95		>50	25	SS	27/50/5"/50	0.5' / 1.0'	95.0' 96.0'	NO. 25, V. stiff, olive gray, SILT, tr f sand, WR, moist, (ML)
96	END OF BORING @ 96.0 FEET BGS	45	26	SS	29/22/23/24	1.0' / 1.0'	97.0'	NO 26, SAA
97								
98								
99								
101								
102								
103								
104								
105								
106								
107								
108								
109								
110								
111								
112								
113								
114								
115								

Golder Associates

Field Boring Log

DEPTH HOLE 99.5'	JOB NO. 923-2279	PROJECT BFI / Zion / Illinois		BORING NO. 6179	
DEPTH SOIL DRILL 99.5'	QA INSP. J. miller	DRILLING METHOD 10" Wash / mud Rotary		SHEET 1 OF 5	
DEPTH ROCK CORE —	WEATHER cool, overcast sun	DRILLING COMPANY Aquadrill		SURFACE ELEV. 733'	
U. DIST SA. — UD. SA. —	TEMP. 60°- 80° F	DRILL RIG Failing-Mobile B-800	DRILLER Dennis Auld	DATUM Mean Sea Level	
—	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 inches	STARTED 14:30 (time) / 8-27-97 (date)	
WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 08:30 / 9-3-97	

SAMPLE TYPES

1. AUGER SAMPLE
2. CHUNK SAMPLE
3. DRIVE OPEN
4. DENISON SAMPLE
5. PITCHER SAMPLE
6. ROCK CORE
7. SLOTTED TUBE
8. THIN-WALLED, OPEN
9. THIN-WALLED, PISTON
10. WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WHI	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 - 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMMER BLOWS (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
1	(0.0'- 3.0') ROADBASE FILL							8-27-97 14:00 Began drilling - 1' fill
2								fill to -3'
3								
4	(3.0'- 19.0') Stiff, moderate yellowish brown (10YR 5/4) to dark yellowish brown (10YR 4/2) to medium gray (N5), homogenous, SILTY CLAY, mottled, trace-some F-C Sand and F Gravel, NR-WR, moist-wet, (CL), WEATHERED LODGEMENT TILL							
5							5.0'	
6		13	1	S.S.	6, 6, 7, 9	1.1' / 2.0'		No. 1 Stiff moderate yellowish brown (10YR 5/4) to dark yellowish brown (10YR 4/2), homogenous, SILTY CLAY, trace F-C Sand and F Gravel, NR, moist, (CL), WEATHERED LODGEMENT TILL
7							7.0'	
8								
9								
10							10.0'	
11		8	2	S.S.	3, 4, 4, 7	1.8' / 2.0'		No. 2 Stiff, medium gray (N5) to medium yellowish brown (10YR 5/4), homogenous, SILTY CLAY, some F-C Sand and F Gravel, WR, moist-wet, (CL), WEATHERED LODGEMENT TILL
12							12.0'	
13								
14								
15	(19.0'- 34.0') Hard, olive gray (5Y 4/1) to brownish gray (5YR 4/1), homogenous, SILTY CLAY, little F-C Sand, trace-little F Gravel, SR, moist, (CL), LODGEMENT TILL						15.0'	
16		36	3	S.S.	18, 18, 18, 18	2.0' / 2.0'		No. 3 Hard, olive gray (5Y 4/1) homogenous, SILTY CLAY, little F-C Sand and F Gravel, SR, moist, (CL), LODGEMENT TILL - same as
17								
18							18.0'	
19								
20								
		24	4	S.S.	12, 12, 12, 12	1.3' / 2.0'	20.0'	No. 4 - SAM
22								
23							23.0'	

Field Boring Log

DEPTH HOLE 77.5' | JOB NO. 93-2279 | PROJECT BFI / Zion / Illinois | BORING NO. 6129
DEPTH SOIL DRILL 77.5' | GA INSP. J. Miller | DRILLING METHOD 10" Wash / Mud Rotary | SHEET 2 OF 5
DEPTH ROCK CORE — | WEATHER cool, mostly sun | DRILLING COMPANY Aquadrill | SURFACE ELEV. 733'
NO. DIST. SA. — UD. SA. — | TEMP. 60°-80° F | DRILL RIG Failmont-Mobile B-8000 | DRILLER Jimmy Auld | DATUM Mean Sea Level
[illegible] | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs. | DROP 30 inches | STARTED 14:00 (TIME) / 8-27-97 (DATE)
[illegible] | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 08:30 / 9-3-97

SAMPLE TYPES
AS AUGER SAMPLE; C.S. CHUNK SAMPLE; D.O. DRIVE OPEN; D.S. DENNISON SAMPLE; P.S. PITCHER SAMPLE; R.C. ROCK CORE; S.T. SLOTTED TUBE; T.O. THIN-WALLED, OPEN; T.P. THIN-WALLED, PISTON; W.S. WASH SAMPLE

ABBREVIATIONS
BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RK ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SLY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION
"TRACE" - 0 - 5%; "SOME" - 12 - 30%; "LITTLE" - 5 - 12%; "AND" - 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENTS
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS PER 6" (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24	(19.0'-34.0') Hard, olive gray (5Y 4/1) to brownish gray (5YR 4/1), homogenous, SILTY CLAY, little F-C Sand, trace-little F Gravel, SR, moist, (CL), LODGEMENT TILL	34	5	S.S.	17, 17, 17, 17	2.0' / 2.0'	25.0'	No. 5 Hard, brownish gray (5YR 4/1), homogenous, SILTY CLAY, little F-C Sand, shell fragments, trace silty mottles, SR, moist, (CL), LODGEMENT TILL
27							27.0'	
29								
30		48	6	S.S.	12, 12, 12		30.0'	No. 6 Moved to other spoils for use with Water Intake Mill Sealed Sediments are [illegible]
32							32.0'	
33		36	6A		19, 19, 19, 19	2.0' / 2.0'	32.5'	No. 6: Hard, olive gray (5Y 4/1), homogenous, SILTY CLAY, little F-C Sand and F Gravel, SR, moist, (CL), LODGEMENT TILL bed rod scars
34	(34.0'-35.5') Drab, brownish gray (5YR 4/1) stratified, F-C Sand, little Silt and Clay and F Gravel, WR, wet, (SW), GLACIOFLUVIAL							No 6A: 32.5'-34.0' - SAA 34.0'-34.5' Loose, brownish gray (5YR 4/1) stratified, F-C SAND, little-silt and [illegible] WR, wet (SW), GLACIOFLUVIAL
35	(35.5'-35.9') Hard, olive gray (5Y 4/1) homogenous, SILTY CLAY, little F-C Sand, SR, moist, (CL), LODGEMENT TILL						35.5'	
36	(35.9'-39.0') Dense, brownish gray (5YR 4/1), stratified, F-M SAND, trace-little Silt and Clay, WR, wet, (SP), GLACIOFLUVIAL	36	7	S.S.	15, 19, 19, 19	1.1' / 2.0'	35.0'	No. 7 35.0'-35.1'-SAA 35.1'-35.9' - Hard, olive gray (5Y 4/1), homogenous SILTY CLAY, little F-C Sand, SR, moist, (CL), LODGEMENT TILL
37							37.2'	35.9'-36.1' Loose, brownish gray (5YR 4/1) stratified F-M SAND, trace-little Silt and clay, WR, wet, (SP), GLACIOFLUVIAL
38		40	7A	S.S.	20, 20, 20, 22	NR		No. 7A - No Recovery
39	(39.0'-53.0') Hard, olive gray (5Y 4/1), homogenous, SILTY CLAY, little F-C Sand, trace-little F Gravel, WR-SR, moist, (CL), LODGEMENT TILL	32	8	S.S.	14, 16, 16, 16	6.7' / 2.0'	39.0'	No. 8 Hard, olive gray (5Y 4/1), homogenous, SILTY CLAY, little F-C Sand and F Gravel, SR, moist (CL), LODGEMENT TILL
41							40.0'	
42								
43								
45								No. 7 - SAA
46		38	9	S.S.	19, 19	1.0' / 2.0'	45.0'	

Field Boring Log

DEPTH HOLE 99.5'	JOB NO. 933-2279	PROJECT BFI / Zion / Illinois		BORING NO. 6179	
DEPTH SOIL DRILL 99.5'	QA INSP. J. Miller	DRILLING METHOD 10" Wash / mud Rotary		SHEET 3 OF 5	
DEPTH ROCK CORE —	WEATHER cool, mostly sun	DRILLING COMPANY Aquadrill		SURFACE ELEV. 733'	
NO. DIST. SA. — UD. SA. —	TEMP. 60° - 80° F	DRILL RIG Failing - Mobile B-6000	DRILLER Dennis Ard	DATUM Mean Sea Level	
[illegible] L. —	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs.	DROP 30 inches	STARTED 14:00 / 8-27-97 (time / date)	
[illegible] NL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 08:30 / 9-3-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CAVING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 6 - 12% "AND" - 30 - 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FIELD PRESSURE
VERY LOOSE VLS	0 4	VERY SOFT VS	EXTRUDES
LOOSE LS	4 10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENTS
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES BLOWS (RESIN FORCE)	SAMPLES REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47	(39.0' - 53.0') Hard, olive gray (5Y 4/1), homogeneous, SILTY CLAY, little F-C Sand, trace-little F Gravel, WR-SR, moist, (CL), LODGEMENT TILL	38	9	S.S.	19 19	1.0' 2.0'	47.0'	8-27-97 06:45 first drilling at 45'- Simply to 47'
50		36	10	S.S.	18 18 18 18	2.0' 2.0'	50.0'	No. 10 Hard, olive gray (5Y 4/1), homogeneous, SILTY CLAY, little F-C Sand, WR, moist, (CL), LODGEMENT TILL
53	(53.0'- 58.0') V. Stiff, olive gray (5Y 4/1) to pale reddish brown (10R 5/4), mottled, SILTY CLAY, mottled gray and reddish brown silt lenses, SR, moist, (CL), DEFORMATION TILL	30	11	S.S.	10 10 10 10	1.0' 2.0'	52.0' 55.0'	drills rocks and sand with to 52'-55' inches! No. 11 V. stiff, olive gray (5Y 4/1) to pale reddish brown (10R 5/4), mottled, SILTY CLAY, mottled olive gray (5Y 4/1) and pale reddish brown (10R 5/4) silt lenses, SR, moist, (CL), DEFORMATION TILL ? - LODGEMENT TILL
60	(58.0'- 88.0') V. Stiff to Hard, brownish gray (5YR 4/1) to olive gray (5Y 4/1), homogeneous, SILTY CLAY, little-some F-C Sand and F GRAVEL, gravelly lense with pyritic mineralization between 72.4' and 73.0', WR, moist, (CL), LODGEMENT TILL	36	12	S.S.	18 18 18 18	1.7' 2.0'	57.0' 60.0'	L olive gray (5Y 4/4) No. 12 V. stiff, brownish gray (5YR 4/1), homogeneous, SILTY CLAY, little-some F-C Sand and F Gravel, SWR, moist (CL), LODGEMENT TILL
65		40	13	S.S.	20 20 20 20	2.0' 2.0'	63.0' 65.0'	No. 13 - SAA
68							69.0'	

Field Boring Log

DEPTH HOLE 99.5' | JOB NO. 973-2279 | PROJECT BFI / Zion / Illinois | BORING NO. 6179
DEPTH SOIL DRILL 99.5' | GA INSP. J. Miller | DRILLING METHOD 10" wash / mud Rotary | SHEET 4 OF 5
DEPTH ROCK CORE — | WEATHER cool, mostly sun | DRILLING COMPANY Aquadrill | SURFACE ELEV. 733'
I.D. DIST. S.A. — | U.D. S.A. — | TEMP. 60°-80° F | DRILL RIG Failing - Mobile B-8000 | DRILLER Dennis Auld | DATUM Mean Sea Level
HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs. | DROP 30 inches | STARTED 14:00 (TIME) / 8-27-97 (DATE)
HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 08:30 / 9-3-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% | "SOME" - 12 - 30% | "LITTLE" - 5 - 12% | "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	PLASTIC BLOWS (TEST IN FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	(58.0'- 80.0') V. Stiff to Hard, brownish gray (5YR 4/1) to olive gray (5Y 4/1), homogeneous, SILTY CLAY, little - some F-C Sand and F Gravel, gravelly base with pyritic mineralization between 72.9' and 73.0', WR, moist, (CL), LODGEMENT TILL	40	19	S.S.	20 20 20 20	2.0' — 2.0'	70.0'	70.0'- 72.0' Hard, brownish gray (5YR 4/1), homogeneous, SILTY CLAY, little F-C Sand, WR, moist (CL), LODGEMENT TILL
71								
72		56	15	S.S.	28 28 28 28	1.6' — 2.0'	72.0'	72.0'- 72.4' - SAA 72.4'- 73.0'- Hard, olive gray (5Y 4/1), homogeneous, SILTY CLAY, F-C SAND and F GRAVEL, pyritic mineralization, WR, wet (CL-SC), LODGEMENT TILL
73								
74								73.0'- 73.9'- [illegible] (5Y 4/1), homogeneous, SILTY CLAY, little - F-C Sand and F Gravel, WR, moist (CL), LODGEMENT TILL
75		80	16	S.S.	40 40 40	1.1' — 1.5'	74.0'	
76								73.9'- 78.0'- SAA
		52	17	S.S.	26 26 26 26	2.0' — 2.0'	76.0'	
78								
79		50	18	S.S.	25 25 25 25	2.0' — 2.0'	78.0'	78.0'- 80.0'- SAA
80	(80.0'- 90.0') Hard, olive gray (5Y 4/1), homogeneous, CLAYEY SILT, little - and F-C Sand and F Gravel, SR, moist, (ML-CL-SC), DISMICTON	114	19	S.S.	51 51	0.8' 1.0'	80.0'	80.0'- Hard, olive gray (5Y 4/1), homogeneous, CLAYEY SILT, some - and F-C Sand and F Gravel, SR, moist, (ML-CL-SC), DISMICTON
81								
82		32	20	S.S.	16 16 16 16	0.4' — 2.0'	82.0'	No. 20 - SAA
83								
84		38	21	S.S.	17 17 17 17	1.3' — 2.0'	84.0'	No. 21 - SAA
85								
86		74	22	S.S.	38 38 38	NR	86.0'	No. 22 no recovery - just gravelly slough in spoon rig chatter through 86.0'- 88.0' interval
87								
88		76	23	S.S.	38 38 38	1.5' — 1.5'	88.0'	No. 23 Hard olive gray (5Y 4/1), homogeneous, CLAYEY SILT, little - some F-C Sand and F Gravel, SR, moist, (ML-CL), DISMICTON
89								
90	(90.0'- 99.0') Dense, olive gray (5Y 4/1), stratified, SILT, trace - little clay, SR wet, (ML), GLACIOLACUSTRINE / FLUVIAL	78	24	S.S.	39 39 39	0.9' — 1.5'	90.0'	90.0'- 90.5' Hard, olive gray (5Y 4/1), stratified, SILTY CLAY, SR moist, (CL), GLACIOLACUSTRINE 90.5'- 90.9' Dense, olive gray (5Y 4/1), stratified, SILT, SR, wet, (ML), GLACIOLACUSTRINE / FLUVIAL
91								
92							92.0'	

Field Boring Log

DEPTH HOLE 99.5' | JOB NO. 973-2279 | PROJECT BFI / Zion / Illinois | BORING NO. 6179
DEPTH SOIL DRILL 99.5' | QA INSP. J. Miller | DRILLING METHOD 10" wash / mud Rotary | SHEET 5 OF 5
DEPTH ROCK CORE — | WEATHER Cool, mostly sun | DRILLING COMPANY Aquadrill | SURFACE ELEV. 773'
U. DIST SA. — UD. SA. — | TEMP. 60°- 80° F | DRILL RIG Failing - Mobile B-800 | DRILLER Charlie Auld | DATUM Mean Sea Level
— | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs. | DROP 30 inches | STARTED 14:00 / 8-27-97 (TIME / DATE)
WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 08:30 / 9-3-97

SAMPLE TYPES

A.	AUGER SAMPLE
B.	CHUNK SAMPLE
D.	DRIVE OPEN
E.	DENISON SAMPLE
F.	PITCHER SAMPLE
G.	ROCK CORE
H.	SLOTTED TUBE
I.	THIN-WALLED, OPEN
O.	THIN-WALLED, PISTON
P.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM
BR	BROWN	MIC	MICACEOUS
C	COARSE	MOT	MOTTLED
CA	CASING	NP	NON-PLASTIC
CL	CLAY	OG	ORANGE
CLY	CLAYEY	ORG	ORGANIC
F	FINE	PH	PRESSURE-HYDRAULIC
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL
GR	GRAVEL	R	RED
LYD	LAYERED	RES	RESIDUAL
LI	LITTLE	RK	ROCK
SA	SAMPLE		
SAT	SATURATED		
SD	SAND		
SI	SILT		
SLY	SILTY		
SM	SOME		
TR	TRACE		
WL	WATER LEVEL		
WH	WEIGHT OF HAMMER		
Y	YELLOW		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% | "SOME" - 12 - 30% | "LITTLE" - 5 - 12% | "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS (PENETRATION FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
93	(90.0'- 94.0') Dense, olive gray (5Y 4/1), stratified, SILT, trace-little Clay, SR, wet, (ML), GLACIOLACUSTRINE / FLUVIAL	76	25	S.S.	38 32 38	0.7'/1.5'		92.0'-92.7' Dense, olive gray (5Y 4/1), stratified, SILT, SR, wet, (ML), GLACIOFLUVIAL trace-LAR clay
94								
95	(94.0'- 98.0') Dense, light olive gray (5Y 6/1) to grayish black (NL), stratified, F-C SAND and F GRAVEL, trace Silt and Clay, NR, wet, (SP, GW-SW), GLACIOFLUVIAL	> 100	26	S.S.	100	0.5'/0.5'	94.0' 94.5'	No. 26 Dense, light olive gray (5Y 6/1), stratified, F-m SAND, trace Silt and Clay, NR, wet, (SP), GLACIOFLUVIAL
96		> 115	27	S.S.	115	0.5'/0.5'	95.5'	No. 27 Dense, light olive gray (5Y 6/1) to grayish black (NL), Stratified, C SAND and F GRAVEL, NR, wet, (GW-SW), GLACIOFLUVIAL
97		>115	28	S.S.	115	0.3'/0.5'	96.8' 97.5'	No. 28 - Same wt
98	(98.0'- 99.5') Hard, olive gray (5Y 4/1), homogenous, SILTY CLAY, little F-C Sand and F Gravel, sl moist, (CL), LODGEMENT TILL	76	29	S.S.	38 38 38	1.1'/1.5'	98.0	8-28-97 14:30 at 96'- have been having water in the hole - not losing circulation - just not returning all water - drillers get more water and use for oil - drillers decide not to proceed with the hole until they have their water levels available. They pull up the hole and pull back the tools to the surface
99	End of Borehole at 99.5'						99.5'	9-3-97 07:19 been drilling down again - have water back- 9-3-97 08:00 AT 98.0'- Sample 98.0'-99.5'-

No. 29 Hard, olive gray (5Y 4/1), homogenous, SILTY CLAY, little F-C Sand and F Gravel, SL moist, (CL), LODGEMENT TILL

Golder Associates

Field Boring Log

DEPTH HOLE 101.0	JOB NO. 923-2279	PROJECT BFI / Zion / Illinois		BORING NO. G180	
DEPTH SOIL DRILL 101.0	QA INSP. MNH	DRILLING METHOD MUD ROTARY		SHEET 1 OF 5	
DEPTH ROCK CORE —	WEATHER SUNNY	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~734	
NO PRT. SA. — UD. SA. —	TEMP. 70°	DRILL RIG GUS PECH BRAT 22R	DRILLER D. AULD	DATUM Mean Sea Level	
WL. —	HRS. PROD. —	WT. SAMPLER HAMMER 140 #	DROP 30 Inches	STARTED 1400 / 9-25-97 (TIME / DATE)	
HE WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 17-26-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE	BK	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OR	ORANGE	SLY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 13 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0 4	VERY SOFT VS	EXTRUDES
LOOSE LS	4 10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30 50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMMER BLOWS PER 6" (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(0.0-8.0) firm to stiff, mod. yellowish brn, SILTY CLAY, tr to little c-f sand and f gravel, SR, moist, (CL) (WEATHERED LODGEMENT TILL)							
		12	1	SS	6/6/6/6	2.0' / 2.0'	6	NO. 1, firm to stiff, mod yellowish brn, SILTY CLAY, tr to little c-f sand and f gravel, SR, moist, (CL) (WEATHERED LODGEMENT TILL)
	(8.0-30.0) stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp to moist, (CL) (LODGEMENT TILL)							
		14	2	SS	7/7/7/7	2.0' / 2.0'	10	NO. 2, stiff, olive grey, SILTY CLAY tr to little c-f sand and f gravel, WR, moist, (CL) (LODGEMENT TILL)
							14	
		14	3	SS	7/7/7/7	2.0' / 2.0'	16	NO. 3, SAA (SAME AS ABOVE)
							18	
		16	4	SS	8/8/8/8	2.0' / 2.0'	20	NO. 4, SAA, tr c-f sand and f gravel damp,
							22	

Golder Associates

Field Boring Log

DEPTH HOLE ____ JOB NO. 973-2279 PROJECT BFI / Zion / Illinois BORING NO. G150

DEPTH SOIL DRILL ____ GA INSP. ____ DRILLING METHOD ____ SHEET 2 OF 5

DEPTH ROCK CORE ____ WEATHER ____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~734

NO. DIST. SA. ____ UD. SA. ____ TEMP. ____ DRILL RIG ____ DRILLER ____ DATUM Mean Sea Level

℄ ____ HRS. PROD. ____ WT. SAMPLER HAMMER ____ DROP ____ STARTED 1400 (TIME) / 9-25-97 (DATE)

℄ WL ____ HRS. DELAYED ____ WT. CASING HAMMER ____ DROP ____ COMPLETED ____ / 9-26-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PISTON SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" 12-30%
"LITTLE" - 5-12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EASY INTO
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24	(see previous page)						24	
26		16	5	SS	9/9/9/9	1.5' / 2.0'	26	NO. 5, SAA
28							28	
30	(30.0-33.0) Stiff, dive grey, to grn, blue, green, SILT, tr to little f sand, SR, moist, (ML)	22	6	SS	10/11/12/11	1.0' / 1.0'	30	NO. 6, stiff, olive grey, tr gray blue green, SILT, tr to little f sand, SR, moist (ML)
32							32	
34	(33.0-38.0) Stiff, olive grey, SILTY CLAY, tr of c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)						34	
36		15	7	SS	7/8/7/8	2.0' / 2.0'	36	NO. 7, Stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
38	(38.0-42.0) Firm to stiff, dive grey, SILT, tr to and f-m sand, WR to SR, moist to wet, (ML and SM), thin (<2") seams of sand						38	-driller indicates [illegible]
40		18	8	SS	9/9/9/9	1.5' / 2.0'	40	NO. 8, from to stiff olive [illegible], tr to little f-m sand, WR to SR, moist to wet, (ML and SM), thin (<2") seams of sand
42	(42.0-82.0) Stiff to v. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)						42	
44							44	
46		19	9	SS	9/9/10/10	2.0' / 2.0'	46	NO 9, Stiff olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)

Golder Associates

Field Boring Log

DEPTH HOLE ____ JOB NO. 973-2279 PROJECT BFI / Zion / Illinois BORING NO. G180

DEPTH SOIL DRILL ____ QA INSP. ____ DRILLING METHOD ____ SHEET 3 OF 5

DEPTH ROCK CORE ____ WEATHER ____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~734

NO. SPT. SA. ____ UD. SA. ____ TEMP. ____ DRILL RIG ____ DRILLER ____ DATUM Mean Sea Level

WL. ____ HRS. PROD. ____ WT. SAMPLER HAMMER ____ DROP ____ STARTED 1400 (TIME) 9-25-97 (DATE)

WL. ____ HRS. DELAYED ____ WT. CASING HAMMER ____ DROP ____ COMPLETED ____ 9-26-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

BL	BLACK
BR	BROWN
C	COARSE
CA	CAVING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
LI	LITTLE

ABBREVIATIONS

M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OR	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK

SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SIY	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 0 - 12% "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		PHOSPHORESCENCE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	DYNAMIC BLOWS PER 1 FT (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(see description on previous page)		9					NO. 9, (see previous page)
48							48	
50	(50-52) — thin vertical silt fissure in sample	15	10	SS	7/7/8/8	2.0' / 2.0'	50	NO. 10, SAA, thin vertical silt fissure in sample
52							52	
54							54	
56		16	11	SS	7/8/8/8	2.0' / 2.0'	56	NO. 11, SAA without silt fissure
58							58	
60		14	12	SS	7/7/7/7	2.0' / 2.0'	60	NO. 12, SAA
62							62	
64							64	
66		30	13	SS	15/15/15/15	2.0' / 2.0'	66	NO. 13, SAA
68							68	

Golder Associates

Field Boring Log

DEPTH HOLE ____ JOB NO. 97J-2279 PROJECT BFI / Zion / Illinois BORING NO. C-18D

DEPTH SOIL DRILL ____ QA INSP. ____ DRILLING METHOD ____ SHEET 4 OF 5

DEPTH ROCK CORE ____ WEATHER ____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~734

N T.SA. ___ UD.SA. ___ TEMP. ____ DRILL RIG ____ DRILLER ____ DATUM Mean Sea Level

WL. ____ HRS. PROD. ____ WT. SAMPLER HAMMER ____ DROP ____ STARTED 1400 / 9-25-97 (time / date)

WL. ____ HRS. DELAYED ____ WT. CASING HAMMER ____ DROP ____ COMPLETED 1-26-97

SAMPLE TYPES

A.S. AUGER SAMPLE; C.S. CHUNK SAMPLE; D.O. DRIVE OPEN; D.S. DENISON SAMPLE; P.S. PITCHER SAMPLE; R.C. ROCK CORE; S.T. SLOTTED TUBE; T.O. THINWALLED, OPEN; T.P. THINWALLED, PISTON; W.S. WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OD ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RK ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SLT SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5%; "SOME" - 12 - 30%; "LITTLE" - 5 - 12%; "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FIELD PRESSURE	
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES	
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY	
COMPACT	CP	10-30	FIRM	FM	MOLDS	
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS	
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT	
			HARD	H	RESISTS THUMBNAIL	

ELEV. DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMMER BLOWS PER 0.3m (FOOT)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70			13				70	NO. 14, SAA
		33	14	SS	15/16/17/11	2.0' / 2.0'		
72							72	
74							74	
	- below 75.0, tr to some c-f sand and f gravel, damp to v. moist, (thin seams of sand and gravel)	30	15	SS	15/15/15/16	2.0' / 2.0'	76	NO. 15, v. stiff, olive grey, SILTY CLAY, tr to some C-f sand and f gravel, WR, damp to v. moist, (CL), thin seam of clayey sand and gravel.
78		33	16	SS	15/16/17/17	2.0' / 2.0'	78	NO. 16, SAA
80		34	17	SS	17/17/17/17	2.0' / 2.0'	80	NO. 17, v. stiff olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
82	(82.0-83.0) dense, olive grey and multi-colored, F-M SAND AND SANDY SILT, some silt, wet, moist to wet, (SM-ML)	40	18	SS	20/17/21/20	2.0' / 2.0'	82	NO. 18, SAA to 82.0 below 82.0, dense, olive grey and multi-colored, F-M SAND AND SANDY SILT, some silt, WR, moist to wet, (SM-ML)
84	(83.0-90.0) stiff to hard, olive grey to pale reddish brn, CLAYEY SILT, little to some c-f sand, tr f gravel, SR, damp to moist, (ML) (DIAMICTON)	45	19	SS	22/22/23/23	1.8' / 2.0'	84	NO. 19, V. STIFF to hard, olive grey to pale reddish brn, CLAYEY SILT, little to some C-f sand, tr f gravel, SR, damp to moist (ML) (DIAMICTON)
86		33	20	SS	16/17/16/16	2.0' / 2.0'	86	NO. 20, SAA, but stiff to v. stiff (POSSIBLE DIAMICTON)
88	- below 87.0, tr c-f sand, WR	30	21	SS	15/15/15/15	2.0' / 2.0'	88	NO. 21, STIFF to v. stiff, olive grey, CLAYEY SILT, tr c-f sand and f gravel, WR, damp, (ML) (POSSIBLE DIAMICTON)
90	(90.0-93.0) dense, olive grey and multi-colored, F SAND AND SILT, WR to WR, wet, (SP-ML) (alternating layers of sand and silt) (GLACIAL DRIFT SEDIMENTS)	20	22	SS	10/9/12/16	2.0' / 2.0'	90	NO. 22 SAA to 90, below 90, dense, olive grey, F SAND, tr silt, WR, wet, (SP)
			23	SS				NO. 23 (see next page)

Golder Associates

Field Boring Log

DEPTH HOLE	JOB NO. 973-2279	PROJECT BFI / Zion / Illinois		BORING NO. G180	
DEPTH SOIL DRILL	QA INSP.	DRILLING METHOD		SHEET 5 OF 5	
DEPTH ROCK CORE	WEATHER	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~734	
NO. UNT. SA. UD. SA.	TEMP.	DRILL RIG	DRILLER	DATUM Mean Sea Level	
WL	HRS. PROD.	WT. SAMPLER HAMMER	DROP	STARTED 1400 (time) / 9-25-97 (date)	
WE WL	HRS. DELAYED	WT. CASING HAMMER	DROP	COMPLETED 9-26-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
F.S.	FITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES BLOWS PER 6" (DRIVING FORCE)	SAMPLES REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(see previous page)	32	23	SS	16/16/16/16	1.5'/2.0'		NO. 23, dense, olive grey and multi-colored, F SAND AND SILT, tr to little m sand, WR, wet, (SP-ML), alternating layers of fine sand and silt.
94	(93.0 - 99.0) V. dense, olive grey and multi-colored, F-M SAND tr f gravel, NR, wet, (SW) (GLACIAL DRIFT SEDIMENTS)	50+	24	SS	25+...	1.5'/2.0'	94	NO. 24, V. dense, olive grey and multi-colored F-M SAND, tr f gravel, NR, wet, (SW)
96		50+	25	SS	25+...	1.2'/2.0'	96	NO. 25, SAA
	- below 97.0, C-F sand							
98		50+	26	SS	25+....	1.0'/2.0'	98	NO. 26, V. dense, olive grey and multi-colored C-F SAND, some f gravel, NR, wet, (SW)
100		35	27	SS	17/17/18/18	1.5'/2.0'	100	NO. 27, V. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LOWER TILL)
102	END OF BORING @ 101 FEET BGS						102	
104							109	

Golder Associates

Field Boring Log

DEPTH HOLE 95.0	JOB NO. 93-2279	PROJECT BFI / Zion / Illinois		BORING NO. G2181	
DEPTH SOIL DRILL 95.0	GA INSP. MNH	DRILLING METHOD MUD ROTARY		SHEET 1 OF 5	
DEPTH ROCK CORE —	WEATHER SUNNY	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~ 755	
NO. UNDIST. SA. — UD. SA. —	TEMP. 75°	DRILL RIG GUS PECH BRAT 22R	DRILLER D. AULD	DATUM Mean Sea Level	
WL. —	HRS. PROD. —	WT. SAMPLER HAMMER 140#	DROP 30 inches	STARTED 0830 (TIME) 9-27-93 (DATE)	
ME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED —	A-29-93

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	PLASTIC BLOWS (FALLS UNDER OWN WEIGHT)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
2	(0.0-10.0) stiff, mod. yellowish brn, SILTY CLAY, tr to little c-f sand and c-f gravel, SR, damp to moist, (CL) (WEATHERED LODGEMENT TILL)						2	
4							4	
6		20	1	SS	10/10/10/11	1.5' — 2.0'	6	NO.1, stiff, mod yellowish brn, SILTY CLAY, tr to little c-f sand and c-f gravel, SR damp to moist, (CL) (WEATHERED LODGEMENT TILL)
8							8	
10	(10.0-35.0), firm to stiff, olive grey, SILTY CLAY, tr c-f sand, and f gravel, WR, damp, (CL) (LODGEMENT TILL)	8	2	SS	4/4/4/6	2.0' — 2.0'	10	NO.2, firm to stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR damp, (CL) (LODGEMENT TILL)
12							12	
14							14	NO.3, SAA (SAME AS ABOVE)
16		14	3	SS	7/7/7/7	2.0' — 2.0'	16	
18							18	
20							20	NO.4, SAA
22		13	4	SS	8/7/8/8	2.0' — 2.0'	22	

Golder Associates

Field Boring Log

DEPTH HOLE	JOB NO. 973-2279	PROJECT BFI / Zion / Illinois		BORING NO. G181	
DEPTH SOIL DRILL	GA INSP.	DRILLING METHOD		SHEET 2 OF 5	
DEPTH ROCK CORE	WEATHER	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~735	
NO. DIST. SA. — UD. SA. —	TEMP.	DRILL RIG	DRILLER	DATUM Mean Sea Level	
WL.	HRS. PROD. —	WT. SAMPLER HAMMER	DROP	STARTED 0830 / 9-27-97 (TIME / DATE)	
WL.	HRS. DELAYED —	WT. CASING HAMMER	DROP	COMPLETED 9-27-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	STI	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WOH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" 12-30%
"LITTLE" - 5-12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMMA BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24	(See previous page)						24	
								NO. 5, SAA
26		16	5	SS	8/8/8/8	2.0' — 2.0'	26	
28							28	
30							30	NO. 6, SAA
		13	6	SS	6/7/6/6	2.0' — 2.0'		below 31.0, SAA with trace (<2 mm) silt seams
32							32	
34							34	
36	(35.0-36.0) firm to stiff, olive gray, SILT, NR to WR, moist, (ML)	18	7	SS	9/9/9/9	2.0' — 2.0'	36	NO. 7, SAA to 36.0 below 36.0, firm to stiff olive gray, SILT, NR to WR, moist, (ML)
38	(36.0-38.0) stiff to v. stiff, olive gray, SILTY CLAY, tr c-f sand and f gravel, NR, damp, (CL) (LODGEMENT TILL)						38	
40		17	8	SS	8/8/9/9	2.0' — 2.0'	40	NO. 8, stiff to v. stiff, olive gray, SILTY CLAY tr c-f sand and f gravel, NR, damp, (CL) (LODGEMENT TILL)
42							42	
44							44	NO. 9, SAA but v. stiff
		33	9	SS	11/16/17/17	2.0' — 2.0'		

Golder Associates

Field Boring Log

DEPTH HOLE ____ JOB NO. 973-2279 PROJECT BFI / Zion / Illinois BORING NO. GTB1

DEPTH SOIL DRILL ____ GA INSP. ____ DRILLING METHOD ____ SHEET 3 OF 5

DEPTH ROCK CORE ____ WEATHER ____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~735

NO. DIST. SA. ____ UD. SA. ____ TEMP. ____ DRILL RIG ____ DRILLER ____ DATUM Mean Sea Level

WL ____ HRS. PROD. ____ WT. SAMPLER HAMMER ____ DROP ____ STARTED 0830 TIME 9-27-97 DATE

WL ____ HRS. DELAYED ____ WT. CASING HAMMER ____ DROP ____ COMPLETED ____ 9-29-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" 12 - 30%
"LITTLE" - 5 - 12% "AND" 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EASILY INTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMMER BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(See previous page)		9	SS				
48							48	
50	(50.0-52.0) firm to stiff, olive grey, SILT, WR, moist to wet, (ML)	14	10	SS	7/7/7/7	2.0' / 2.0'	50	NO. 10, firm to stiff, olive grey, SILT, WR, moist to wet, (ML)
52	(52.0-83.0) v. stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp, (CL) (Lodgement till)						52	
54							54	
56		21	11	SS	10/10/11/11	2.0' / 2.0'	56	NO. 11, v. stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp, (CL) (Lodgement till)
58							58	
60	-below 60, tr pale reddish-brn	18	12	SS	9/9/9/9	2.0' / 2.0'	60	NO. 12, SAA, tr pale reddish brn
62							62	
64							64	
66		30	13	SS	15/15/15/15	2.0' / 2.0'	66	NO. 13, SAA
68							68	

Golder Associates

Field Boring Log

DEPTH HOLE ____ JOB NO. 973-2279 PROJECT BFI / Zion / Illinois BORING NO. G181

DEPTH SOIL DRILL ____ GA INSP. ____ DRILLING METHOD ____ SHEET 4 OF 5

DEPTH ROCK CORE ____ WEATHER ____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~735

SA. ____ UD. SA. ____ TEMP. ____ DRILL RIG ____ DRILLER ____ DATUM Mean Sea Level

TH WL. ____ HRS. PROD. ____ WT. SAMPLER HAMMER ____ DROP ____ STARTED 0830 TIME 9-27-97 DATE

TIME WL. ____ HRS. DELAYED ____ WT. CASING HAMMER ____ DROP ____ COMPLETED ____ 9-29-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GR	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" 12-30%
"LITTLE" - 5-12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMMER BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70							70	NO. 14, SAA
		23	14	SS	10/11/12/12	2.0' / 2.0'		
72	(73.0) - Cuttings indicate coarse sand seam						72	- driller indicates course sand may be present based on cuttings
74							74	
		27	15	SS	13/13/11/14	2.0' / 2.0'	76	NO. 15, SAA
	- below 77.0, tr to and c-f sand and f gravel - approx. 5 inch sand seam @ 77.5	37	16	SS	16/18/19/19	2.0' / 2.0'	78	NO. 16, V. Stiff, olive grey, SILTY CLAY, tr to and c-f sand and f gravel, WR, damp to wet, (CL), contains a 5" sand-gravel seam @ 77.5.
80		41	17	SS	20/20/21/21	2.0' / 2.0'	80	NO. 17, V. Stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
82		32	18	SS	10/11/16/16	2.0' / 2.0'	82	NO. 18, SAA
84	(83.0 - 85.0) V. Stiff, olive grey, SILT AND CLAYEY SILT, tr c-f sand, WR to SR, moist, (ML) (POSSIBLE DIAMICTON)	26	19	SS	13/13/13/13	2.0' / 2.0'	84	NO. 19, V. Stiff, olive grey, SILT AND CLAYEY SILT, tr c-f sand, WR to SR, MOIST, (ML) (POSSIBLE DIAMICTON)
86	(85.0 - 87.0) V. Stiff, olive grey, SILTY CLAY AND CLAYEY SILT, tr to little c-f sand and f gravel, WR, damp to moist (CL-ML) (POSSIBLE DIAMICTON)	28	20	SS	14/14/14/14	2.0' / 2.0'	86	NO. 20, V. Stiff, olive grey, SILTY CLAY AND CLAYEY SILT, tr to little c-f sand and f gravel, WR, damp to moist, (CL-ML) (LODGEMENT TILL or POSSIBLE DIAMICTON)
88	(87.0 - 92.0) V. dense, olive grey and multi-colored, C-F SAND, little f gravel, NR, wet, (SW) (GLACIOFLUVIAL DRIFT SEDIMENT)	>50	21	SS	25"...	1.5' / 2.0'	88	NO. 21, V. dense, olive grey and multi-colored, c-f SAND, little f gravel, NR, wet (SW)
90	- below 89.0, F-M SAND (SP)	>50	22	SS	25"...	0.5' / 2.0'	90	NO. 22, V. dense, olive grey and multi-colored, F-M SAND, NR, wet, (SP)
92							92	

Golder Associates

Field Boring Log

DEPTH HOLE _____ JOB NO. 973-2279 PROJECT : BFI / Zion / Illinois BORING NO. G181

DEPTH SOIL DRILL _____ GA INSP. _____ DRILLING METHOD _____ SHEET 5 OF 5

DEPTH ROCK CORE — WEATHER _____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~735

NO SA. — UD. SA. — TEMP. _____ DRILL RIG _____ DRILLER _____ DATUM Mean Sea Level

AL. _____ HRS. PROD. — WT. SAMPLER HAMMER _____ DROP _____ STARTED 0830 (TIME) / 9-27-97 (DATE)

ME WL. _____ HRS. DELAYED — WT. CASING HAMMER _____ DROP _____ COMPLETED _____ / 9-29-97

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.S.	SLOTTED TUBE	F	FINE
T.O.	THINWALLED, OPEN	FRAG	FRAGMENTS
T.P.	THINWALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OR	ORANGE	SLTY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE HYDRAULIC	TR	TRACE
PM	PRESSURE MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		PHYSICAL PROPERTIES
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	CRUMBLE INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	CRUMBLE INDENTS
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES BLOWS ON 6" (140 lb FORCE)	SAMPLES REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(92.0-97.0) V. dense to v. stiff, olive grey, SILT, tr to little f sand, WR, moist to wet, (ML) (GLACIAL DRIFT SEDIMENT)	>50	23	SS	25+...	1.8' / 2.0'		NO. 23, SAA to 92.0, below 92.0, f. dense to v. stiff, olive grey, SILT, tr to little f sand, WR, moist, (ML)
94		>50	24	SS	25+...	1.2' / 2.0'	94	NO. 24, v. dense, olive grey, SILT, WR, wet, (ML)
	END OF BORING @ 95.0 FEET BGS	>50	25	SS	25+...	1.0' / 1.0'		NO. 25, SAA
96							96	
98							98	
100							100	

Field Boring Log

DEPTH HOLE 93.0 JOB NO. 97U-2279 PROJECT BFI / Zion / Illinois BORING NO. G182
DEPTH SOIL DRILL 93.0 QA INSP. MNH DRILLING METHOD MUD ROTARY SHEET 1 OF 5
DEPTH ROCK CORE — WEATHER SUNNY DRILLING COMPANY Aquadrill SURFACE ELEV. ~737
NO. PIST. SA. — UD. SA. — TEMP. 60° DRILL RIG GUS PECH BRAT 22R DRILLER D. ARLD DATUM Mean Sea Level
WL. — HRS. PROD. — WT. SAMPLER HAMMER 140 # DROP 30 inches STARTED TIME 19-29-97 DATE
WL. — HRS. DELAYED — WT. CASING HAMMER — DROP — COMPLETED 10-1-97

SAMPLE TYPES

A.S.	AUGER SAMPLE		
C.S.	CHUNK SAMPLE		
D.O.	DRIVE OPEN		
D.S.	DENISON SAMPLE		
P.S.	PITCHER SAMPLE		
R.C.	ROCK CORE		
S.T.	SLOTTED TUBE		
T.O.	THINWALLED, OPEN		
T.P.	THINWALLED, PISTON		
W.S.	WASH SAMPLE		

ABBREVIATIONS

BK	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
U	UNDISTURBED	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0 4	VERY SOFT VS	EXTRUDES
LOOSE LS	4 10	SOFT S	MOLDS EASILY
COMPACT CP	10 30	FIRM FM	MOLDS
DENSE DN	30 50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMMER BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
2	(0.0-36.0) firm to stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)						2	
4							4	
6		6	1	SS	3/3/3/3	1.8' / 2.0	6	NO.1, firm to stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
8							8	
10		9	2	SS	4/4/5/5	2.0' / 2.0'	10	NO.2, SAA (SAME AS ABOVE)
12							12	
14							14	
16		10	3	SS	5/5/5/5	2.0' / 2.0'	16	NO.3, SAA
18							18	
20		15	4	SS	7/7/3/7	2.0' / 2.0'	20	NO.4, SAA
22								

Golder Associates

Field Boring Log

DEPTH HOLE ____ JOB NO. 923-2279 PROJECT BFI / Zion / Illinois BORING NO. 92182

DEPTH SOIL DRILL ____ GA INSP. ____ DRILLING METHOD ____ SHEET 2 OF 5

DEPTH ROCK CORE — WEATHER ____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~737

W.L. ST. SA. — UD. SA. — TEMP. ____ DRILL RIG ____ DRILLER ____ DATUM Mean Sea Level

W.L. ____ HRS. PROD. — WT. SAMPLER HAMMER ____ DROP ____ STARTED 10-29-92

TIME W.L. ____ HRS. DELAYED — WT. CASING HAMMER ____ DROP ____ COMPLETED 10-1-92

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RK	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENTS
		HARD H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMMER BLOWS PER 6" (FOOT)	REC./ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24	(see previous page)						24	
26		18	5	SS	9/9/9/9	2.0'/2.0'	26	NO. 5, SAA
28							28	
30		17	6	SS	8/8/9/9	0/2.0'	30	NO. 6, NO RECOVERY - due to gravel lodged in end of sampler
32		15	7	SS	7/8/7/7	2.0'/2.0'	32	NO. 7, stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
34		16	8	SS	8/8/8/8	2.0'/2.0'	34	NO. 8, SAA
36	(34.0-45.0) v. stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)	25	9	SS	12/12/13/13	2.0'/2.0'	36	NO. 9, SAA, V. stiff
38		19	10	SS	9/9/10/9	2.0'/2.0'	38	NO. 10, SAA
40		25	11	SS	12/12/13/13	2.0'/2.0'	40	NO. 11, SAA, V. stiff
42		27	12	SS	14/14/14/14	2.0'/2.0'	42	NO. 12, SAA
44		31	13	SS	15/16/15/16	2.0'/2.0'	44	NO. 13, SAA to 45.0 below 45.0 v. stiff, olive grey, CLAYEY SILT AND SILT, moist, SR, (ML)
46	(see following page)						46	

Golder Associates

Field Boring Log

DEPTH HOLE	JOB NO. 973-2279	PROJECT BFI / Zion / Illinois		BORING NO. G182	
DEPTH SOIL DRILL	GA INSP.	DRILLING METHOD		SHEET 4 OF 5	
DEPTH ROCK CORE —	WEATHER	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~737	
NP S.A. — UD. S.A. —	TEMP.	DRILL RIG	DRILLER	DATUM Mean Sea Level	
WL.	HRS. PROD. —	WT. SAMPLER HAMMER	DROP	STARTED 17-25-97 (time / date)	
ME WL.	HRS. DELAYED —	WT. CASING HAMMER	DROP	COMPLETED 10-1-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLY	SILTY
ORG	ORGANIC	SOM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WOH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" ~0 - 5% "SOME" ~ 12 - 30%
"LITTLE" ~ 5 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE	
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES	
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY	
COMPACT	CP	10-30	FIRM	FM	MOLDS	
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS	
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS	
			HARD	H	RESISTS THUMBNAIL	

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS PER 6" (OR FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	(82.0-91.0) stiff to v. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, NR, damp to moist, (CL), (LODGEMENT TILL)	29	23	SS	14/14/15/16	2.0' / 2.0'	70	NO. 23, v. stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, NR, damp, (CL) (LODGEMENT TILL)
72							72	
74							74	
76		>50	24	SS	25+...	2.0' / 2.0'	76	NO. 24, SAA
78		46	25	SS	23/23/25/25	2.0 / 2.0'	78	NO. 25, SAA
80		34	26	SS	17/17/17/17	2.0' / 2.0'	80	NO. 26, SAA
82	(91.0-99.0) dense, multi-colored, C-F SAND AND F GRAVEL, tr silt, NR, wet, (SW-GW) (GLACIOFLUVIAL SEDIMENT)	36	27	SS	18/16/15/8	1.5' / 2.0'	82	NO. 27, dense, multi-colored, C-F SAND AND F GRAVEL, tr silt, NR, wet, (SW-GW)
84	(84.0-88.0) V. stiff, olive grey, SILT AND CLAYEY SILT AND SILTY CLAY, little to some c-f sand and c-f gravel, NR, damp to moist, (ML-CL) (DIAMICTON)	41	28	SS	20/20/21/22	1.5' / 2.0'	84	NO. 28, SAA to 84.0 below 84.0, V. stiff, olive grey, SILT AND CLAYEY SILT, little to some C-F sand and c-f gravel, NR, damp to moist, (ML), (DIAMICTON)
86		42	29	SS	21/21/21/21	1.8' / 2.0'	86	NO. 29, SAA, CLAYEY SILT AND SILTY CLAY, NO 3
88	(88.0-93.0) V. dense, olive grey and multi-colored, C-F SAND AND C. gravel, little silt, NR, moist to wet (SW) (GLACIOFLUVIAL)	>50	30	SS	25+...	2.0' / 2.0'	88	below 88.0, V. dense olive grey and multi-colored C-F SAND, little f gravel, little silt, NR, moist to wet (SW)
90	(93.0-93.0) V. dense, olive grey, SILT, tr v. fine sand, NR, moist, (ML) (GLACIAL DRIFT SEDIMENT)	>50	31	SS	25+...	0.0' / 2.0'	90	NO. 31, NO RECOVERY due to gravel wedged in bottom of sampler, < 2 inches of silt in sampler
92		>50	32	SS	25+...	1.0 / 2.0'	92	NO. 32 V. dense, olive grey, SILT, tr very fine sand, NR, moist, (ML)

Golder Associates

Field Boring Log

DEPTH HOLE 93.0 | JOB NO. 973-2279 | PROJECT BFI / Zion / Illinois | BORING NO. GIB2

DEPTH SOIL DRILL 93.0 | QA INSP. | DRILLING METHOD | SHEET 5 OF 5

DEPTH ROCK CORE — | WEATHER | DRILLING COMPANY Aquadrill | SURFACE ELEV. ~737

[illegible] ST. SA. — UD. SA. — | TEMP. | DRILL RIG | DRILLER | DATUM Mean Sea Level

[illegible] WL. | HRS. PROD. — | WT. SAMPLER HAMMER | DROP | STARTED 9-29-97 (time / date)

TIME WL. | HRS. DELAYED — | WT. CASING HAMMER | DROP | COMPLETED 10-1-97

SAMPLE TYPES

A.S. AUGER SAMPLE
C.S. CHUNK SAMPLE
D.O. DRIVE OPEN
D.S. DENNISON SAMPLE
F.S. FISCHER SAMPLE
R.C. ROCK CORE
S.T. SLOTTED TUBE
T.O. THIN-WALLED, OPEN
T.P. THIN-WALLED, PISTON
W.S. WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OR	ORANGE	SLY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GR	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 13 - 30%
"LITTLE" - 5 - 13% "AND" - 30 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE LS	4 10	SOFT	S	MOLDS EASILY
COMPACT CP	10 30	FIRM	FM	MOLDS
DENSE DN	30 50	STIFF	ST	BRAKES INDENTS
VERY DENSE VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS
		HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMMER BLOWS OR FALL OR FORCE	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(see previous page)		S2	SS				See description on previous page
94	END OF BORING @ 93.0 FEET BGS						94	
96							96	
98							98	

Field Boring Log

DEPTH HOLE 93.0 JOB NO. 93-2279 PROJECT BFI / Zion / Illinois BORING NO. G182
DEPTH SOIL DRILL 93.0 QA INSP. MNH DRILLING METHOD MUD ROTARY SHEET 1 OF 5
DEPTH ROCK CORE — WEATHER SUNNY DRILLING COMPANY Aquadrill SURFACE ELEV. ~737
U.DIST.SA. — UD.SA. — TEMP. 60° DRILL RIG GUS PECH BRAT 22R DRILLER D. ARLD DATUM Mean Sea Level
DEPTH WL. — HRS. PROD. — WT. SAMPLER HAMMER 140 # DROP 30 inches STARTED 9-29-97 (time/date)
TIME WL. — HRS. DELAYED — WT. CASING HAMMER — DROP — COMPLETED 10-1-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" 0-5% "SOME" 12-30%
"LITTLE" 5-12% "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
2	(0.0-36.0) firm to stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)						2	
4							4	
6		6	1	SS	3/3/3/3	1.8' / 2.0	6	NO.1, firm to stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
8							8	
10		9	2	SS	4/4/5/5	2.0' / 2.0'	10	NO.2, SAA (SAME AS ABOVE)
12							12	
14							14	
16		10	3	SS	5/5/5/5	2.0' / 2.0'	16	NO.3, SAA
18							18	
20		15	4	SS	7/7/9/7	2.0' / 2.0'	20	NO.4, SAA
22								

Field Boring Log

DEPTH HOLE ____ JOB NO. 973-2279 PROJECT BFI / Zion / Illinois BORING NO. G182

DEPTH SOIL DRILL ____ GA INSP. ____ DRILLING METHOD ____ SHEET 2 OF 5

DEPTH ROCK CORE ____ WEATHER ____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~737

NO. DIST. SA. ____ UD. SA. ____ TEMP. ____ DRILL RIG ____ DRILLER ____ DATUM Mean Sea Level

PTH WL. ____ HRS. PROD. ____ WT. SAMPLER HAMMER ____ DROP ____ STARTED 11-29-97 (Time / Date)

IME WL. ____ HRS. DELAYED ____ WT. CASING HAMMER ____ DROP ____ COMPLETED 12-1-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
LI	LITTLE
M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK
SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SLY	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" - 12-30%
"LITTLE" - 5-12% "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	ENTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT		SAMPLES NO.	TYPE	HAMMER BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24	(see previous page)							24	
26		18		5	SS	9/9/9/9	2.0' / 2.0'	26	NO. 5, SAA
28								28	
30		17		6	SS	9/8/9/9	0 / 2.0'	30	NO. 6, NO RECOVERY - due to gravel lodged in end of sampler
32		15		7	SS	7/8/7/7	2.0' / 2.0'	32	NO. 7, ~~stiff~~, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
34		16		8	SS	8/8/8/8	2.0' / 2.0'	34	NO. 8, SAA
36	(36.0-45.0) v. stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)	25		9	SS	12/12/13/13	2.0' / 2.0'	36	NO. 9, SAA, V. stiff
38		19		10	SS	9/9/10/9	2.0' / 2.0'	38	NO. 10, SAA
40		25		11	SS	12/12/13/13	2.0' / 2.0'	40	NO. 11, SAA, V. stiff
42		27		12	SS	14/14/14/14	2.0' / 2.0'	42	NO. 12, SAA
44		31		13	SS	15/16/15/16	2.0' / 2.0'	44	NO. 13, SAA to 45.0 below 45.0 V. stiff, olive grey, CLAYEY SILT AND SILT, moist, SR (ML)
46	(see following page)							46	

Field Boring Log

DEPTH HOLE ____ JOB NO. 93J-2279 PROJECT BFI / Zion / Illinois BORING NO. G625

DEPTH SOIL DRILL ____ QA INSP. ____ DRILLING METHOD ____ SHEET 3 OF 5

DEPTH ROCK CORE ____ WEATHER ____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~737

DIST. BA. ____ UD. BA. ____ TEMP. ____ DRILL RIG ____ DRILLER ____ DATUM Mean Sea Level

TH WL. ____ HRS. PROD. ____ WT. SAMPLER HAMMER ____ DROP ____ STARTED Time 19-29-97 Date

TIME WL. ____ HRS. DELAYED ____ WT. CASING HAMMER ____ DROP ____ COMPLETED 10-1-97

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SIY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" 12-30%
"LITTLE" - 5-12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EASILY
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB POINTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(45.0-48.0) firm to v. stiff, olive grey, SILT AND CLAYEY SILT, tr c-f sand, SR, moist to v. moist, (ML) (INTRATILL SEDIMENT)	25	14	SS	12/12/13/13	2.0' / 2.0'		NO. 14, firm to stiff, olive grey, SILT AND CLAYEY SILT, tr c-f sand, SR, moist to v. moist, (ML)
48	(48.0-50.0) stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)	21	15	SS	10/10/11/11	2.0' / 2.0'	48	NO. 15, stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL)
50	(50.0-52.0) firm to stiff, olive grey, SILT AND CLAYEY SILT, tr c-f sand, WR to SR, moist to v. moist, (ML) (INTRATILL SEDIMENT)	24	16	SS	12/12/12/12	2.0' / 2.0'	50	NO. 16, firm to stiff, olive grey, SILT AND CLAYEY SILT, tr c-f sand, WR to SR, moist to v. moist, (ML)
52	(52.0-81.0) stiff to v. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp to moist, (CL) (LODGEMENT TILL) @ 53.0', ½ inch sand seam present @ 55.0', ½ inch sand seam present	26	17	SS	13/13/13/13	2.0' / 2.0'	52	NO. 17, stiff to v. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp to moist, (CL), contained a thin (< ½") seam of medium sand.
54		28	18	SS	14/14/14/14	2.0' / 2.0'	54	NO. 18, SAA
56		28	19	SS	14/14/14/14	2.0' / 2.0'	56	NO. 19, SAA but no sand seams
58		26	20	SS	13/13/13/13	2.0' / 2.0'	58	NO. 20, SAA
60		28	21	SS	14/14/14/14	2.0' / 2.0'	60	NO. 21, SAA
62							62	
64	@ 64.0, possible cobbles						64	- driller indicates cobbles may be present
66	- (65.0-70.0) tr to some c-f sand and f gravel	27	22	SS	13/13/14/15	2.0' / 2.0'	66	NO. 22 SAA, tr to some c-f sand and f gravel
68							68	

Field Boring Log

DEPTH HOLE	JOB NO. 977-2279	PROJECT BFI / Zion / Illinois		BORING NO. G182	
DEPTH SOIL DRILL	GA INSP.	DRILLING METHOD		SHEET 4 OF 5	
DEPTH ROCK CORE	WEATHER	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~737	
T.S.A. U.D.S.A.	TEMP.	DRILL RIG	DRILLER	DATUM Mean Sea Level	
WL.	HRS. PROD.	WT. SAMPLER HAMMER	DROP	STARTED Time 11-25-97 Date	
TIME WL.	HRS. DELAYED	WT. CASING HAMMER	DROP	COMPLETED 12-1-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM
BR	BROWN	MIC	MICACEOUS
C	COARSE	MOT	MOTTLED
CA	CASING	NP	NON-PLASTIC
CL	CLAY	OG	ORANGE
CLY	CLAYEY	ORG	ORGANIC
F	FINE	PH	PRESSURE-HYDRAULIC
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL
GL	GRAVEL	R	RED
LYD	LAYERED	RES	RESIDUAL
LI	LITTLE	RX	ROCK
SA	SAMPLE		
SAT	SATURATED		
SD	SAND		
SI	SILT		
SLT	SALTY		
SM	SOME		
TR	TRACE		
WL	WATER LEVEL		
WH	WEIGHT OF HAMMER		
Y	YELLOW		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 to 5% "SOME" 12 to 30%
"LITTLE" - 5 to 12% "AND" 30 to 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE	
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES	
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY	
COMPACT	CP	10-30	FIRM	FM	MOLDS	
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS	
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT	
			HARD	H	RESISTS THUMBNAIL	

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMMER BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	(82.0-81.0) stiff to v. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, NR, damp to moist, (CL), (LODGEMENT TILL)	29	23	SS	14/14/15/16	2.0' / 2.0'	70	NO. 23, v. stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, NR, damp, (CL) (LODGEMENT TILL)
72							72	
74							74	
76		>50	24	SS	25+...	2.0' / 2.0'	76	NO. 24, SAA
78		46	25	SS	23/23/23/23	2.0 / 2.0'	78	NO. 25, SAA
80		34	26	SS	17/17/17/17	2.0' / 2.0'	80	NO. 26, SAA
82	(81.0-84.0) dense, multi-colored, C-F SAND AND F GRAVEL, tr silt, NR, wet, (SW-GW) (GLACIOFLUVIAL SEDIMENT)	36	27	SS	18/18/18/18	1.5' / 2.0'	82	NO. 27, dense, multi-colored, C-F SAND AND F GRAVEL, tr silt, NR, wet, (SW-GW)
84	(84.0-87.0) v. stiff, olive grey, SILT AND CLAYEY SILT AND SILTY CLAY, little to some c-f sand and c-f gravel, WR, damp to moist, (ML-CL) (DIAMICTON)	41	28	SS	20/20/21/22	1.5' / 2.0'	84	NO. 28, SAA to 84.0 below 84.0, v. stiff, olive grey, SILT AND CLAYEY SILT, little to some c-f sand and c-f gravel, WR, damp to moist, (ML), (DIAMICTON)
86		42	29	SS	21/21/21/21	1.8' / 2.0'	86	NO. 29, SAA, CLAYEY SILT AND SILTY CLAY,
88	(87.0-89.0) v. dense, olive grey and multi-colored, C-F SAND and F gravel, little silt, NR, moist to wet (SW) (GLACIOFLUVIAL)	>50	30	SS	25+...	2.0' / 2.0'	88	NO 3 below 88.0, v. dense, olive grey and multi-colored C-F SAND, little f gravel, little silt, NR, moist to wet (SW)
90	(89.0-93.0) v. dense, olive grey, SILT, tr v. fine sand, WR, moist, (ML) (GLACIAL DRIFT SEDIMENT)	>50	31	SS	25+...	0.0' / 2.0'	90	NO. 31, NO RECOVERY due to gravel wedged in bottom of sampler, ~2 inches of silt in sampler
92		>50	32	SS	25+...	1.0 / 2.0'	92	NO. 32 v. dense, olive grey, SILT, tr very fine sand, WR, moist, (ML)

Field Boring Log

DEPTH HOLE 93.0 | JOB NO. 993-2279 | PROJECT BEE / Zion / Illinois | BORING NO. GI82

DEPTH SOIL DRILL 93.0 | QA INSP. | DRILLING METHOD | SHEET 5 OF 5

DEPTH ROCK CORE — | WEATHER | DRILLING COMPANY Aquadrill | SURFACE ELEV. ~737

NO. DIST. SA. — | UD. SA. — | TEMP. | DRILL RIG | DRILLER | DATUM Mean Sea Level

DEPTH WL. | HRS. PROD. — | WT. SAMPLER HAMMER | DROP | STARTED Time 19-29-97 Date

TIME WL. | HRS. DELAYED — | WT. CASING HAMMER | DROP | COMPLETED 10-1-97

SAMPLE TYPES

AS	AUGER SAMPLE
CS	CHUNK SAMPLE
DO	DRIVE OPEN
DS	DENISON SAMPLE
PS	PITCHER SAMPLE
RC	ROCK CORE
ST	SLOTTED TUBE
TO	THIN-WALLED, OPEN
TP	THIN-WALLED, PISTON
WS	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" - 12-30%
"LITTLE" - 5-12% "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMMER BLOWS PER 6 IN (FORCE)	SAMPLES REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(see previous page)		S2	SS				See description on previous page
94	END OF BORING @ 93.0 FEET BGS						94	
96							96	
98							98	

Field Boring Log

DEPTH HOLE 139.5'	JOB NO. 973-2279	PROJECT BFI / Zion / Illinois			BORING NO. 6184
DEPTH SOIL DRILL 139.5'	GA INSP. J. Miller	DRILLING METHOD 10" Wash / Mud Rotary			SHEET 1 OF 6
DEPTH ROCK CORE —	WEATHER Cool, Sunny	DRILLING COMPANY Aquadrill			SURFACE ELEV. ~ 754'
NO. DIST. SA. — UD. SA. —	TEMP. 60° - 75° F	DRILL RIG Failing - Model B-8000	DRILLER Dennis Auld		DATUM Mean Sea Level
DEPTH WL. —	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 inches		STARTED 07:00 / 8-25-97 (time / date)
—	HRS. DELAYED —	WT. CASING HAMMER —	DROP —		COMPLETED 12:05 / 8-26-97

SAMPLE TYPES

AS.	AUGER SAMPLE
CS.	CHUNK SAMPLE
DO.	DRIVE OPEN
DS.	DENISON SAMPLE
PS.	PITCHER SAMPLE
RC.	ROCK CORE
ST.	SLOTTED TUBE
TO.	THIN-WALLED, OPEN
TP.	THIN-WALLED, PISTON
WS	WASH SAMPLE

ABBREVIATIONS

BL	BLACK
BR	BROWN
C	COARSE
CA	CAVING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
LI	LITTLE
M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK
SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SLY	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES DIAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	Blind Drill to 60.0'							8-25-97 07:00 began drilling - drill blind to 60' within sampled interval of adjacent 6845.
1								
2								
3								
4								
5								
6								
7								
7								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
23								

Field Boring Log

DEPTH HOLE 139.5' | JOB NO. 993-2279 | PROJECT BFI / Zion / Illinois | BORING NO. A184
DEPTH SOIL DRILL 139.5' | QA INSP. L. Miller | DRILLING METHOD 10" Wash / Mud Rotary | SHEET 2 OF 6
DEPTH ROCK CORE — | WEATHER cool, sunny | DRILLING COMPANY Aquadrill | SURFACE ELEV. ~754'
NO. DIST. SA. — | UD. SA. — | TEMP. 60°-75° F | DRILL RIG Failing/Mobile B-800 | DRILLER Donald Auffl | DATUM Mean Sea Level
DEPTH WL. — | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30 inches | STARTED 07:30 (time) / 8-25-97 (date)
— | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 12:05 (time) / 8-26-97 (date)

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S	WASH SAMPLE

ABBREVIATIONS

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GR	GRAVEL
LYD	LAYERED
LI	LITTLE
M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK
SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SLTY	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WOH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% | "SOME" - 12 - 30%
"LITTLE" - 5 - 12% | "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES (HAMM. BLOWS PER 6 IN (FORCE))	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	Blind Drill to 60.0'							
29								
25								
26								
27								
28								
29								
30								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
45								
46								

Field Boring Log

DEPTH HOLE 134.5' JOB NO. 973-2279 PROJECT BFI / Zion / Illinois BORING NO. 4184
DEPTH SOIL DRILL 134.5' GA INSP. J. Miller DRILLING METHOD 10" wash / mud Rotary SHEET 3 OF 6
DEPTH ROCK CORE — WEATHER cool, sunny DRILLING COMPANY Aquadrill SURFACE ELEV. ~754'
NO. DIST. SA. — UD. SA. — TEMP. 60° - 75° F DRILL RIG Failing-Mobile B-3000 DRILLER Dennis Auld DATUM Mean Sea Level
DEPTH WL. — HRS. PROD. — WT. SAMPLER HAMMER 140 lbs DROP 30 inches STARTED 07:00 / 8-25-97 (Time / Date)
EL. — HRS. DELAYED — WT. CASING HAMMER — DROP — COMPLETED 12:05 / 8-26-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
LI	LITTLE
M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK
SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SLT	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EASY INCHES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	DIAMA BLOWS PER IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47								
48								
49								
50								
51								
52								
53								
55								
56								
57								
58								
59								
60								
61								
62								
63								
64								
65	(65.0' - 68.0') Hard, olive gray (5Y 4/1), homogeneous, CLAYEY SILT, SR, moist, (ML-CL), GLACIOFLUVIAL/LACUSTRINE	76	1	S.S.	38 38 38	0.6 1.5'	65.0'	No-1 Hard, olive gray (5Y 4/1), homogeneous CLAYEY SILT, SR, moist, (ML-CL), GLACIOFLUVIAL/LACUSTRINE
66								
67							67.0'	
68								
69								

Field Boring Log

DEPTH HOLE 134.5' JOB NO. 973-2279 PROJECT BFI / Zion / Illinois BORING NO. 6184
DEPTH SOIL DRILL 134.5' GA INSP. J. Miller DRILLING METHOD 10" Mud Rotary SHEET 4 OF 6
DEPTH ROCK CORE — WEATHER Cool, sunny DRILLING COMPANY Aquadrill SURFACE ELEV. ~754'
NO. DIST. SA. — UD. SA. — TEMP. 60° - 75° F DRILL RIG Failing - Mobile B-8000 DRILLER Dennis Nold DATUM Mean Sea Level
DEPTH WL. — HRS. PROD. — WT. SAMPLER HAMMER 140 lbs DROP 30 inches STARTED 17:00 (Time) / 8-25-97 (Date)
— HRS. DELAYED — WT. CASING HAMMER — DROP — COMPLETED 12:05 / 8-28-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
LI	LITTLE
M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK
SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SLT	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 13 - 30%
"LITTLE" - 5 - 12% "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMMER BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	(68.0'- 89.0') Hard, brownish gray (5YR 4/1) to olive gray (5Y 4/1), homogeneous, SILTY CLAY, trace F-C Sand, shale/limestone chips, trace red silty smears, WR-SR, moist, (CL), LODGEMENT TILL							
71		56	2	S.S.	28 28 28 28	2.0' 2.0'	70.0'	No. 2 Hard, brownish gray (5YR 4/1) to olive gray (5Y 4/1), homogeneous, SILTY CLAY, trace F-C Sand, shale fragments, SR, moist, (CL), LODGEMENT TILL
72							72.0'	
73								
74								
75							75.0'	
76		50	3	S.S.	25 25 25 25	2.0' 2.0'		No. 3 Hard, olive gray (5Y 4/1), homogeneous, SILTY CLAY, trace F-C Sand, WR, moist, (CL), LODGEMENT TILL
77							77.0'	
78								
79								
80							80.0'	
81		60	4	S.S.	30 30 30 30	1.9' 2.0'		No. 4 Hard, olive gray (5Y 4/1), homogeneous, SILTY CLAY, trace F-C Sand (shale & limestone), brown red smears, WR, moist, (CL), LODGEMENT TILL
82							82.0'	
83								
84								
85							85.0'	
86		40	5	S.S.	20 20 20 20	2.0' 2.0'		No. 5 - SAR
87							87.0'	
88								
89	(89.0'- 91.3') V. stiff, grayish red (10YR 4/2) to pale red (10YR 6/2), mottled, SILTY CLAY, some sand F-C Sand and F Gravel, silt and F Sand infilled fissures, SR, moist, (CL-SC), DEGLACIAL TILL							
90		24	6	S.S.	13 13 13 13	2.0' 2.0'	90.0'	No. 6 90.0'- 91.3' - V. stiff, grayish red (10YR 4/2), to pale red (10YR 6/2), mottled, SILTY CLAY some sand F-C Sand and F Gravel, silt and F Sand infilled fissures, SR, moist, (CL-SC), DEGLACIAL TILL
91							91.3'	91.3'-93.0' V. stiff, olive gray (5Y 4/1), homogeneous, SILTY CLAY, little - some F-C Sand and F Gravel, WR, moist, (CL) TILL
92								

Field Boring Log

DEPTH HOLE 139.5' | JOB NO. 933-2279 | PROJECT BFI / Zion / Illinois | BORING NO. 4184
DEPTH SOIL DRILL 139.5' | QA INSP. J. Miller | DRILLING METHOD 10" Rock / Mud Rotary | SHEET 5 OF 6
DEPTH ROCK CORE — | WEATHER Cool, Sunny | DRILLING COMPANY Aquadrill | SURFACE ELEV. ~754'
NO. DIST. SA. — UD. SA. — | TEMP. 60° - 75°F | DRILL RIG Failing - Mobile B-8000 | DRILLER Dennis Auld | DATUM Mean Sea Level
DEPTH WL. — | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30 inches | STARTED 17:00 / 8-25-97 (time / date)
— | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 12:05 / 8-28-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LT	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% | "SOME" - 12 - 30% | "LITTLE" - 8 - 12% | "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		PROBE PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DR	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
93 / 94	(91.3' - 98.0') V. Stiff to Hard, homogeneous, SILTY CLAY, trace - some F-C Sand and F Gravel, SR, moist, (CL), LODGEMENT TILL							
95 / 96		54	7	S.S.	29 28 28 28	1.0' / 2.0'	95.0'	No. 7 Hard, olive gray (5Y 4/1), homogeneous, SILTY CLAY, trace - little F-C Sand and F Gravel, SR, moist, (CL), LODGEMENT TILL
97 / 98							97.0'	
99 / 101	(98.0' - 103.0') V. Stiff, olive gray (5Y 4/1), homogeneous, SILTY CLAY, some - and F-C Sand and F Gravel, SR, moist, (CL-SC), DEFORMATION TILL	46	8	S.S.	33 23 23 23	1.2' / 2.0'	100.0'	No. 8 V. Stiff, olive gray (5Y 4/1), homogeneous, SILTY CLAY, some - and F-C Sand and F Gravel, SR, moist, (CL-SC), TILL - Deformation?
102 / 103							102.0'	
104 / 105	(103.0' - 111.2') Dense to V. Dense, olive gray (5Y 4/1), laminated SILT, some Clay, SR, wet, (ML), GLACIOFLUVIAL / LACUSTRINE	76	9	S.S.	36 38 36	NR	105.0'	No. 9 No Recovery
106 / 107							107.0'	
108 / 109								
110 / 111		30	10	S.S.	15 15 15 15	1.2' / 2.0'	110.0'	No. 10 olive gray (5Y 4/1), laminated, SILT, some Clay, SR, wet, (ML), GLACIOFLUVIAL / LACUSTRINE
112 / 113	(111.2' - 126.9') Hard, olive gray (5Y 4/1), homogeneous, SILTY CLAY, trace F-C Sand and F Gravel, SR, moist, (CL), LODGEMENT TILL	58	11	S.S.	29 29 29 29	0.8' / 2.0'	112.0'	Hard, olive gray (5Y 4/1), homogeneous, SILTY CLAY, trace F-C Sand SR, moist, (CL), TILL
114 / 115		50	12	S.S.	25/2.5	1.9' / 2.0'	119.0'	

Field Boring Log

DEPTH HOLE 139.5' | JOB NO. 97J-2279 | PROJECT BFI / Zion / Illinois | BORING NO. 6184
DEPTH SOIL DRILL 139.5' | GA INSP. J. Miller | DRILLING METHOD 10" wash/mud Rotary | SHEET 6 OF 6
DEPTH ROCK CORE — | WEATHER cool, sunny | DRILLING COMPANY Aquadrill | SURFACE ELEV. ~754'
NO. DIST. SA. — | UD. SA. — | TEMP. 60°-76° F | DRILL RIG Failing-Mobile B-300 | DRILLER Dennis Auld | DATUM Mean Sea Level
WL. — | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30 inches | STARTED 07:00 / 8-26-97
WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 12:05 / 8-28-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.B.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.B.	DENNISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS PER 6" (PEN. FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
116	(111.2'-126.9') Hard, olive gray (5Y 4/1), homogenous, SILTY CLAY, trace F-C Sand and F Gravel, SR, moist, (CL), LODGEMENT TILL	50	12	S.S.	25 / 25	1.9' / 2.0'		No. 12 SAA
117		76	13	S.S.	38 / 38 / 38	1.5' / 1.5'	116.0'	Hard olive gray (5Y 4/1), homogeneous SILTY CLAY, trace F-C Sand, trace F Gravel, SR, moist, (CL) TILL
118								
119		76	14	S.S.	38 / 38 / 38	1.3' / 1.5'	118.0'	No. 14 SAA -
120								
121		76	15	S.S.	30 / 38 / 38	1.5' / 1.5'	120.0'	No. 15 SAA
122								
		56	16	S.S.	28 / 28 / 28 / 28	1.0' / 2.0'	122.0'	No. 16 SAA
124								
125		50	17	S.S.	25 / 25 / 25 / 25	1.7' / 2.0'	124.0'	No. 17 - SAA
126								
127	(126.9'-128.0') Hard, olive gray (5Y 4/1), mottled, CLAYEY SILT, sandy, trace pebbles, WR, moist, (ML), DEFORMATION TILL	54	18	S.S.	27 / 27 / 27 / 27	1.4' / 2.0'	126.0'	No. 18 126.0'-126.9' - SAA 126.9'-127.9' Hard, olive gray (5Y 4/1), homogenous, CLAYEY SILT, 0.1' rock - sandy clay inclusion at 128.0'-126.9', mottled with sandy lenses, WR, wet, (ML), DEFORMATION TILL
128	(128.0'-130.5') V. Dense, olive gray (5Y 4/1), stratified, SILT and F SAND, trace Clay, SR, wet, (ML), GLACIOFLUVIAL/ LACUSTRINE	>115	19	S.S.	115/6"	0.5'/0.5'	128.0'	No. 19 V. dense, olive gray (5Y 4/1), stratified SILT and F. SAND, WR, wet, (SM-SP), GLACIOFLUVIAL
129		>100	20	S.S.	100/6"	0.5'/0.5'	129.0'	
130		>100	21	S.S.	100/6"	0.5'/0.5'	130.0'	No. 20 V. dense, olive gray (5Y 4/1), stratified SILT, trace clay and F Sand, SR wet, (ML), GLACIOFLUVIAL
131	(130.5'-131.5') Hard, olive gray (5Y 4/1), mottled, SILTY CLAY and F-C SAND and F GRAVEL, SR, moist, (SC-CL) REWORKED TILL w/ DEFORMATION TILL	115	22	S.S.	57 / 57		130.5'	
132	(131.5'-139.5') Hard, olive gray (5Y 4/1), homogenous, CLAYEY SILT, trace F Sand, SR, moist-wet, (ML), GLACIOFLUVIAL/ LACUSTRINE	104	23	S.S.	52 / 52	1.0'/1.0'	131.5'	8-25-97 17:32 quit drilling for the day cl 129' - sampled to 129.5' - drilling pull rods back to ~40' shutdown remove all buildup and put in a rubble + bentonite mixture of 6%.
133		70	24		35 / 35 / 35	1.5' / 1.5'	133.0'	8-25-97 19:30 get 6% bit but house dr bit hammer-quit dr 8-26-97 06:30 finishes pull the rest of the rod and bit hammer in by hand 8-26-97 09:30 bit hammer head - bit in to 130'. 8-28-97 10:05 At 130'. retrieve samples
134								
135	End of Borehole at 139.5'						134.5'	No. 21 Hard, olive gray (5Y 4/1), stratified, SILT trace-little Clay, SR wet, (ML), GLACIOFLUVIAL/LACUSTRINE No. 22 Hard, olive gray (5Y 4/1), mottled, SILTY CLAY and F-C SAND and F GRAVEL, SR, moist, (SC-CL), REWORKED TILL - Deformation Till No. 23 Hard, olive gray (5Y 4/1), homogenous, CLAYEY SILT trace F Sand, SR, moist-wet (ML), GLACIOFLUVIAL/LAC. No. 24 Hard, olive gray (5Y 4/1), CLAYEY SILT, SR, moist, (ML-CL), TILL

Field Boring Log

DEPTH HOLE 102' | JOB NO. 010804 | PROJECT Onyx - Zion Site 2 | BORING NO. 6191
DEPTH SOIL DRILL 102' | INSP. Rick Polad | DRILLING METHOD Wash Rotary with Split Spoon Sampling | SHEET 1 OF 5
DEPTH ROCK CORE — | WEATHER Cloudy, rainy | DRILLING COMPANY K+S Engineers | SURFACE ELEV. 7337.7'
NO. DIST. SA. — UD. SA. — | TEMP. 60°-68°F | DRILL RIG Diedrich 120 | DRILLER Pete Delacruz | DATUM msl
DEPTH WL. 78.05' bgs | HRS. PROC. — | WT. SAMPLER HAMMER 140 LB | DROP 30" | STARTED 1112 / 9-17-01 (TIME / DATE)
TIME WL. 10-16-01 10:30 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 1440 / 9-18-01

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
U	LITTLE	RX	ROCK		

HP = Hand Penetrometer

SOIL DESCRIPTION - RANGE OF PROPORTIO

"TRACE" - 0 - 5% | "SOME" - 13 - 30% | "LITTLE" - 5 - 12% | "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
0	(0.0'- 8.5') Stiff, dark yellowish brown (10YR 4/2), homogenous, CLAY, moist, WR (CH), WADSWORTH TILL AND ARTIFICIAL SOILS						0	9-17-01 Start drilling at 1112
1							1	6" HSA to 10'
2							2	Begin mud rotary at 10' with 4" bit
3							3	- Drill to 102'
4							4	Ream hole to 10"
5							5	9-18-01 Complete drilling at 1440
6							6	
7							7	
8	(8.5'-23.0') Stiff to very Stiff, Dark yellowish brown (10 YR 4/2), homogenous, CLAY, trace gravel, moist, WR (CH) WADSWORTH TILL	26	1	SS	6, 11, 15, 19	1.5/2.0	8	8.5'-10.5', Very Stiff, Dark yellowish brown (10YR 4 homogenous, CLAY, trace gravel, moist, WR, (C HP = 4.0
9							9	
10							10	
11							11	
12							12	
13		11	2	SS	3, 5, 6, 8	2.0/2.0	13	13.5'-15.5', Stiff, Dark yellowish brown (10YR 4/2) homogenous, CLAY, little gravel, moist, WR (CH) HP = 1.5
14							14	
15							15	
16							16	
17							17	
18		11	3	SS	2, 5, 6, 9	2.0/2.0	18	18.0'-22.0', Stiff, Dark yellowish brown (10YR 4/2) homogenous, CLAY, trace gravel, moist, WR, (CH) HP = 1.5
19							19	
20							20	
21							21	
22							22	
23							23	

Field Boring Log

DEPTH HOLE 102' | JOB NO. 010804 | PROJECT Onyx - Zion's Site 2 | BORING NO. G191
DEPTH SOIL DRILL 102' | INSP. Rick Pofahl | DRILLING METHOD Wash Rotary with Split Spoon Sampling | SHEET 2 OF 5
DEPTH ROCK CORE — | WEATHER cloudy/rainy | DRILLING COMPANY KES Engineers | SURFACE ELEV. 737.7'
NO. DIST. SA. — UD. SA. — | TEMP. 60°-68°F | DRILL RIG Diedrich 120 | DRILLER Pete Delacruz | DATUM MSL
DEPTH WL. 78.05' bgs | HRS. PROD. — | WT. SAMPLER HAMMER 140 LB | DROP 30" | STARTED 1112 (TIME) 9-17-01 (DATE)
TIME WL. 10-16-01 10:30 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 1440 9-18-0

SAMPLE TYPES

A.S	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

HP = Hand Penetrometer

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% | "SOME" - 12-30% | "LITTLE" - 6-12% | "AND" - 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
23	(23.0'-29.5') Very Stiff, Dark yellowish brown (10YR 4/2), silty CLAY, trace gravel, moist, WR-SR, (CL) WADSWORTH TILL	20	4	SS	6, 8, 12, 14	2.0/2.0	23	23.0'-25.0', Very Stiff, Dark yellowish brown (10YR 4/2) homogeneous, silty CLAY, trace gravel, SR, moist, (CL) HP=2.5
24							24	
25							25	
26							26	
27							27	
28							28	28.0'-30.0', Stratified
29		24	5	SS	6, 10, 14	2.0/2.0	29	28.0'-29.5', Very Stiff, Dark yellowish brown (10 YR 4/2) silty CLAY, trace gravel, moist, SR (CL), HP=3.5
30	(29.5'-30.3') SAND + GRAVEL, moist, WR, (SW/GW) INTRATILL SEDIMENTS		6	SS	16		30	29.5'-30.0', SAND + GRAVEL, moist, WR (SW/GW)
31	(30.3'-44.0') Very Stiff, Dark yellowish brown, (10YR 4/2), silty CLAY, trace gravel, moist, WR-SR (CL) WADSWORTH TILL	18	7	SS	3, 8, 10, 12	2.0/2.0	31	30.0'-32.0' Stratified 30.0'-30.3', SAND + GRAVEL, moist, WR (SW/GW) 30.3'-32.0' Very Stiff, Dark yellowish brown (10YR 4/2 silty CLAY, trace gravel, moist, SR (CL), HP=2.0-0
32							32	
33							33	
34							34	
35							35	
36							36	
37							37	
38							38	
39		18	8	SS	5, 8, 10, 11	2.0/2.0	39	38.0'-40.0', Very Stiff, Dark yellowish brown (10YR 4/2 homogenous, silty CLAY, trace gravel, moist, WR, (CL), HP=2.5
40							40	
41							41	
42							42	
43							43	
44	(44.0'-48.5') Very Stiff, Dark yellowish brown (10YR 4/2), homogenous, CLAY, trace sand + gravel, moist, (CH), HP=4.5	20	9	SS	5, 9, 11, 13	2.0/2.0	44	43.0'-45.0', Very Stiff, Dark yellowish brown (10YR 4/2 homogenous, silty CLAY to CLAY, trace gravel, moist, WR-SR (CL-CH), HP=2.5-4.5
45							45	
46	WADSWORTH TILL						46	

Field Boring Log

DEPTH HOLE 102' | JOB NO. 010804 | PROJECT Onyx - Zion Site 2 | BORING NO. 6191
DEPTH SOIL DRILL 102' | INSP. Kirk Pelgd | DRILLING METHOD Wash rotary with split spoon sampling | SHEET 3 OF 5
DEPTH ROCK CORE — | WEATHER cloudy/rainy | DRILLING COMPANY K+S Engineers | SURFACE ELEV. 737.7'
NO. DIST. SA. — UD. SA. — | TEMP. 60°-68° F | DRILL RIG Diedrich 120 | DRILLER Pete Delacruz | DATUM MSL
DEPTH WL. 78.05' 4/5 | HRS. PROD. — | WT. SAMPLER HAMMER 140 LB | DROP 30" | STARTED 1112 / 9-17-01 (TIME / DATE)
TIME WL. 10-16-01 16:30 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 1440 / 9-18-01

SAMPLE TYPES

A.S	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
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W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
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C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

HP = Hand Penetrometer

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% | "SOME" - 12 - 30% | "LITTLE" - 6 - 12% | "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
46							46	
47							47	
48	(48.5'-48.7') Very stiff, dark yellowish brown (10YR 4/2), sandy CLAY, trace gravel, moist, SR, (SC) WADSWORTH TILL	29	10	SS	6 12 17 22	2.0/2.0	48	48.0'-50.0' Stratified 48.0'-48.5', Very Stiff, Dark yellowish brown (10YR 4/2) CLAY, trace sand + gravel, moist, SR, (CH) HP = 4.5 48.5'-48.7', Very stiff, Dark yellowish brown (10YR 4/2) sandy CLAY, trace gravel, moist, SR, (SC), HP = 4.0
49							49	
50	(48.7'-53.5') Very Stiff to Hard, dark yellowish brown (10YR 4/2) CLAY, trace gravel, moist, SR, (CH) WADSWORTH TILL						50	48.7'-50', Very stiff, Dark yellowish brown (10YR 4/2) CLAY, trace gravel, moist, SR, (CH), HP = 4.5
51							51	
52							52	
53	(53.5'-54.0') Hard, dark yellowish brown (10YR 4/2) sandy CLAY, trace gravel, moist, SR, (SC) WADSWORTH TILL	33	11	SS	7 17 16 12	2.0/2.0	53	53.0'-55.0' Stratified 53.0'-53.5', Hard, Dark yellowish brown (10YR 4/2) CLAY, trace gravel, moist, SR (CH), HP = 4.0 53.5'-54.0', Hard, Dark yellowish brown (10YR 4/2) sandy CLAY, trace gravel, moist, SR (SC), HP = 4.0
54							54	
55	(54.0'-55.3') clayey SAND, f-m, trace gravel, wet, WR, (SW) INTRATILL SORTED SEDIMENTS				7 10 11 14	2.0/2.0	55	54.0'-55.0', clayey SAND, f-m, trace gravel, wet, WR (SW) 55.0'-57.0' Stratified 55.0'-55.3', clayey SAND, f-m, trace gravel, wet, WR (SW) 55.3'-57.0', Very Stiff, Dark yellowish brown (10YR 4/2) silty CLAY, trace gravel, moist, WR, (CL), HP = 2.5
56	(55.3'-63.0') Very Stiff, Dark yellowish brown, (10YR 4/2), silty CLAY, trace gravel, moist, WR, (CL) WADSWORTH TILL	21	12	SS			56	
57							57	
58							58	
59							59	
60							60	
61							61	
62							62	
63							63	
64	(63.0'-84.0') Hard, Dark yellowish brown (10YR 4/2) homogenous, CLAY, trace gravel, moist, WR, (CH). WADSWORTH TILL						64	63.0'-65.0', Hard, Dark yellowish brown (10YR 4/2) homogenous, CLAY, trace gravel, moist, WR, (CH), HP = 4.5+
65							65	
66							66	
67							67	
68							68	
69		32	14	SS	9 14 18 21	2.0/2.0	69	See Next Page

Field Boring Log

DEPTH HOLE 102' | JOB NO. 010804 | PROJECT Onyx - Zion Site 2 | BORING NO. G191
DEPTH SOIL DRILL 102' | INSP. Rick Reed | DRILLING METHOD Wash Rotary with Split Spoon Sampling | SHEET 4 OF 5
DEPTH ROCK CORE — | WEATHER Cloudy/rainy/part Sunny | DRILLING COMPANY K+S Engineers | SURFACE ELEV. 737.7'
NO. D.ST. SA. — UD. SA. — | TEMP. 60°-70°F | DRILL RIG Diedrich 120 | DRILLER Pete Delacruz | DATUM MSL
DEPTH WL. 78.05' Lgs | HRS. PROD. — | WT. SAMPLER HAMMER 140 LB | DROP 30" | STARTED TIME 1112 DATE 9-17-01
TIME WL. 10-16-01 10:30 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED TIME 1440 DATE 9-18-01

SAMPLE TYPES
A.S. AUGER SAMPLE; C.S. CHUNK SAMPLE; D.O. DRIVE OPEN; D.S. DENISON SAMPLE; P.S. PITCHER SAMPLE; R.C. ROCK CORE; S.T. SLOTTED TUBE; T.O. THIN-WALLED, OPEN; T.P. THIN-WALLED, PISTON; W.S. WASH SAMPLE

ABBREVIATIONS
BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYG LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTIO
"TRACE" - 0 - 5%; "LITTLE" - 5 - 12%; "SOME" - 12 - 30%; "AND" 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

HP = Hand Penetrometer

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
69	(63.0'- 84.0') Hard, dark yellowish brown (10YR 4/2) homogeneous, CLAY, trace gravel, moist, WR, (CH), WADSWORTH TILL	32	14	SS	9 14 16 21	2.0/2.0	69	68.0'-70.0' Hard, Dark yellowish brown (10YR 4/2) homogenous, CLAY, trace gravel, moist, WR, (CH), HP = 4.5
70							70	
71							71	End Drilling Day 1 (9-17-01)
72							72	Start Drilling Day 2 (9-18-01)
73							73	73.0'-75.0', Hard, Dark yellowish brown (10YR 4/2 homogenous, CLAY, trace sand + gravel, moist, SR, (CH), HP = 4.5+
74		76	15	SS	10 28 48 44	2.0/2.0	74	
75							75	
76							76	
77							77	
78							78	78.0'-80.0', Hard, Dark yellowish brown, (10YR 4/2 homogenous, CLAY, trace gravel, moist, WR (CH) HP = 3.5
79		41	16	SS	11 18 23 27	2.0/2.0	79	
80							80	
81		43	17	SS	8 19 24 31	2.0/2.0	81	80.0'-82.0', Hard, Dark yellowish brown (10YR 4/2 homogenous, CLAY, trace gravel, moist, SR (CH), HP = 4.0
82							82	
83		34	18	SS	9 16 18 30	2.0/2.0	83	82.0'-84.0', Hard, Dark yellowish brown (10YR 4/2 homogenous, CLAY, trace gravel, moist, SR (CH), HP = 4.0
84							84	
85	(84.0'-86.0') Hard, Dark yellowish brown (10YR 4/2), homogenous, silty CLAY, trace gravel, moist, WR, (CL) WADSWORTH TILL	50	19	SS	26 25 25 22	1.6/2.0	85	84.0'-86.0', Hard, Dark yellowish brown (10 YR 4/2) homogenous, silty CLAY, trace gravel, moist WR, (CL), HP = 3.5
86	(86.0'-87.2') Hard, Dark yellowish brown (10YR 4/2) sandy CLAY, trace gravel, wet, SR, (CH) WADSWORTH TILL	46	20	SS	23 26 20 25	1.7/2.0	86	86.0'-87.2', Hard, Dark yellowish brown (10 YR 4/2 sandy CLAY, trace gravel, wet, SR, (SC) HP = 3.5
87	(87.2'-88.0') SAND + GRAVEL, wet, WR (GW/GS) SHALLOW DRIFT AQUIFER SEDIMENTS		21				87	87.2'-88.0' SAND + GRAVEL, wet, WR, (GW/GS)
88							88	
89	(88.0'-90.5') Hard, Dark yellowish brown, (10 YR 4/2) homogenous, sandy CLAY, some gravel, wet, SR, (SC) SHALLOW DRIFT AQUIFER SEDIMENTS	72	22	SS	18 31 41 50	1.6/2.0	89	88.0'-90.0', Hard, Dark yellowish brown (10YR 4/2 homogenous, sandy CLAY, some gravel, wet, SR, (SC), HP = 4.5
90							90	90.0'-92.0' Stratified
91	(90.5'-97.5') Dense to very dense, F-C SAND, wet, SR, poor to well graded (SP-SW) SHALLOW DRIFT AQUIFER SEDIMENTS	72	23	SS	22 50 =	1.5/2.0	91	90.0'-90.5', Hard, Dark yellowish brown (10YR 4/2 sandy CLAY, some gravel, wet, SR, (SC), HP = 4.5 90.5'-92.0' F SAND, wet, SR poorly graded very dense
92								

Field Boring Log

DEPTH HOLE 102' | JOB NO. 010804 | PROJECT Onyx - Zion Site 2 | BORING NO. G191
DEPTH SOIL DRILL 102' | INSP. Rick Poland | DRILLING METHOD Wash Rotary with Split Spoon Sampling | SHEET 5 OF 5
DEPTH ROCK CORE — | WEATHER Part Sunny | DRILLING COMPANY K+S Engineers | SURFACE ELEV. 737.71
NO. DIST. SA. — UD. SA. — | TEMP. 60°-70°F | DRILL RIG Diedrich 120 | DRILLER Pete Delacruz | DATUM MSL
DEPTH WL. 78.05' 6/1 | HRS. PROD. — | WT. SAMPLER HAMMER 140LB | DROP 30" | STARTED 1112 / 9-17-01 (TIME / DATE)
TIME WL. 10-16-01 10:30 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 1442 / 9-18-01

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

HP = Hand Penetrometer

SOIL DESCRIPTION - RANGE OF PROPORTIONS

"TRACE" - 0 - 5% | "SOME" - 13 - 30% | "LITTLE" - 6 - 12% | "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
92					25		92	92.0'-94.0', Dense, Dark yellowish brown (10YR 4/2
93		46	24	SS	21 25 27	1.7/ 2.0	93	homogenous, f-m SAND, trace gravel, wet, WR, (SW) well graded
94							94	
95		66	25	SS	15 26 40 48	2.0/ 2.0	95	94.0'-96.0', Very Dense, Dark yellowish brown (10YR 4 homogenous, f-c, SAND, trace gravel, wet, WR, (SW) well graded
96							96	96.0'-98.0' Stratified
97	(97.5'-98.0') Very Dense, Dark yellowish brown (10YR 4/2), clayey SAND + GRAVEL, wet, WR, (S+G) SHALLOW DRIFT AQUIFER SEDIMENTS	63	26	SS	30 34 29	2.0/ 2.0	97	96.0'-97.5', Very Dense, Dark yellowish brown (10YR 4/2 f SAND, trace gravel, wet, WR, (SP) poor graded, 97.5'-98.0', Very Dense, Dark yellowish brown (10YR 4/2 clayey SAND + GRAVEL, wet, WR, (S+G)
98			27	SS	50		98	
99	(98.0'-100.3') Very dense, Dark yellowish brown (10YR 4/2) SAND + GRAVEL, wet, WR, (S+G) SHALLOW DRIFT AQUIFER SEDIMENTS	88	28		32 38 50 —	.8/ 2.0	99	98.0'-98.8', Very Dense, Dark yellowish brown (10YR SAND + GRAVEL, wet, WR (S+G) rock obstruction in shoe
100							100	100.0'-102.0' Stratified
101	(100.3'-102.0') Hard, Dark yellowish brown, (10YR 4/2), CLAY, trace gravel, moist, WR, (CH) LOWER TILL	80	29		50 41 39 50	2.0 2.0	101	100.0'-100.3', Very Dence, Dark yellowish brown (10YR 4/ SAND + GRAVEL, wet, WR, (S+G) 100.3'-102.0', Hard, Dark yellowish brown (10YR 4/2 CLAY, trace gravel, moist, WR, (CH), HP = 4.5
102	END OF BORING	1020'					102	

Golder Associates

Field Boring Log

DEPTH HOLE 107.0'	JOB NO. 933-2279	PROJECT BFI / Zion / Illinois			BORING NO. GC 2S
DEPTH SOIL DRILL 107.0'	GA INSP. J. Miller	DRILLING METHOD 10.6" Wash / mud Rotary			SHEET 1 OF 5
DEPTH ROCK CORE —	WEATHER Cool, Cloudy	DRILLING COMPANY Aquadrill			SURFACE ELEV. ~ 801'
NO. DIST. SA. — UD. SA. —	TEMP. ~ 70° F	DRILL RIG Failing - Mobile B-80	DRILLER Dennis Auld		DATUM Mean Sea Level
DEPTH WL. —	HRS. PROD. —	WT. SAMPLER HAMMER 140 lb	DROP 30 inches		STARTED 11:00 (time) / 8-19-97 (date)
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —		COMPLETED 9:00 / 8-21-97

SAMPLE TYPES

A.S. AUGER SAMPLE	BL BLACK	M MEDIUM	SA SAMPLE
C.S. CHUNK SAMPLE	BR BROWN	MIC MICACEOUS	SAT SATURATED
D.O. DRIVE OPEN	C COARSE	MOT MOTTLED	SD SAND
D.S. DENISON SAMPLE	CA CASING	NP NON-PLASTIC	SI SILT
P.S. PITCHER SAMPLE	CL CLAY	OG ORANGE	SIT SILTY
R.C. ROCK CORE	CLY CLAYEY	ORG ORGANIC	SM SOME
S.T. SLOTTED TUBE	F FINE	PH PRESSURE-HYDRAULIC	TR TRACE
T.O. THIN-WALLED, OPEN	FRAG FRAGMENTS	PM PRESSURE-MANUAL	WL WATER LEVEL
T.P. THIN-WALLED, PISTON	GL GRAVEL	R RED	WH WEIGHT OF HAMMER
W.S. WASH SAMPLE	LYD LAYERED	RES RESIDUAL	Y YELLOW
	LI LITTLE	RX ROCK	

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(0.0'- 29.0') Stiff, brownish gray (5YR 4/1) to olive gray (5Y 4/1), homogenous, SILTY CLAY, trace - little F-C Sand, NR - SR, moist, (CL), FILL							8-19-97 11:00 AM - start drilling - drill to 8.0' many 6/.
5		12	1	S.S.	3 4 5 9	0.6' / 2.0'	5.0'	No.1 Stiff, brownish gray (5YR 4/1), homogenous, SILTY CLAY, trace - little F-C Sand, SR, moist (CL), FILL
7							7.0'	
10		15	2	S.S.	7 7 8 9	0.7' / 2.0'	10.0'	No.2 Stiff, olive gray (5Y 4/1), homogenous SILTY CLAY, trace F-C Sand, NR, moist, (CL), FILL
12		—					12.0'	
14								8-19-97 12:00 @ 12.0' - set surface casing to 10.0', Inform Lit
15								8-19-97 12:90 Drillers goal for lunch and to get supplies
15		14	3	S.S.	6 7 7 9	1 / 8.3' / 2.0'	15.0'	8-19-97 13:15 return Drilling No.3 SPT
17							17.0'	
20		12	4	S.S.	24	0.3' / 2.0'	20.0'	No. 4 Stiff, olive gray (5Y 4/1), homogenous SILTY CLAY, trace F-C Sand, WR, moist, (CL), FILL
22							22.0'	
23								

Golder Associates

Field Boring Log

DEPTH HOLE 107.0'	JOB NO 923-2279	PROJECT BFI / Zion / Illinois	BORING NO. GC25
DEPTH SOIL DRILL 107.0'	QA INSP. J. Miller	DRILLING METHOD 10" Wash / Mud Rotary	SHEET 2 OF 5
DEPTH ROCK CORE —	WEATHER o/c, cloudy	DRILLING COMPANY Aquadrill	SURFACE ELEV. ~ 801'
NO. DIST. SA. — UD. SA. —	TEMP. ~ 70° F	DRILL RIG Failing, Mobile B5000 DRILLER Dennis Auld	DATUM Mean Sea Level
DEPTH WL. —	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs. DROP 30 inches	STARTED 11:00 / 8-19-97 (Time / Date)
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER — DROP —	COMPLETED 09:00 / 8-21-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLTY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WOH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 6 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMMER BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
29	(0.0' - 29.0') Stiff, brownish gray (5YR 4/1) to olive gray (5Y 4/1), homogeneous, SILTY CLAY, trace - little F-C Sand, NR - SR, moist, (CL), FILL						0.0'	
25		12	5	S.S.	25	0.9' / 2.0'	25.0'	No. 5 Stiff, olive gray (5Y 4/1), homogenous SILTY CLAY, trace F Sand, NR, moist, (CL), FILL
26								
27							27.0'	
28								8-19-97 16:55 sampler got stuck on rocks -
29								8-19-97 17:10 drillers retrieve sampler - only down 18" -
30	(29.0' - 50.0') V. Stiff, moderate yellowish brown (10YR 5/4), homogeneous, SILTY CLAY, trace F-C Sand, WR, moist, (CL), FILL						30.0'	No. 6 - V. Stiff, moderate yellowish brown (10YR 5/4), homogenous, SILTY CLAY, trace F-C Sand, WR, moist, (CL), FILL
31		18	6	S.S.	6 6 6	0.6' / 1.5'		
32							32.0'	
33								
34								
35							35.0'	
36		19	7	S.S.	38	0.3' / 2.0'		No. 7 - SAA
37								
38							38.0'	
39								
40								
41		18	8	S.S.	36	0.1' / 2.0'	40.0'	No. 8 SAA
42								8-19-97 18:09 Drillers to stop @ 41' - worked to 42.1'
43							42.0'	8-20-97 07:20 resume drilling
44								
45								No. 9 - sampler got stuck again - 07:44 - worked 07:44
46		16	9	S.S.	5 8 8	NR	46.0'	No. 9 - No Recovery

Golder Associates

Field Boring Log

DEPTH HOLE 107.0'	JOB NO. 923-2279	PROJECT BFI / Zion / Illinois			BORING NO. GL25
DEPTH SOIL DRILL 107.0'	GA INSP. J. Miller	DRILLING METHOD 10.0" wash / mud Rotary			SHEET 3 OF 5
DEPTH ROCK CORE —	WEATHER cool, cloudy	DRILLING COMPANY Aquadrill			SURFACE ELEV. ~ 801'
NO. DIST. SA. — UD. SA. —	TEMP. ~ 70° F	DRILL RIG Failing-mobile B3000	DRILLER Dennis Hall		DATUM Mean Sea Level
DEPTH WL. —	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs.	DROP 30 inches		STARTED 11:00 / 8-17-97 (Time / Date)
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —		COMPLETED 09:00 / 8-21-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN. FORCE	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47	(29.0'- 52.0') V. Stiff, moderate yellowish brown (10YR 5/4), homogeneous, SILTY CLAY, trace F-C Sand, WR, moist, (CL), FILL	16	9	S.S.	9	NR	47.0'	
48								
49								
50	(52.0'- 63.0') V. Stiff, olive gray (5Y 4/1) to brownish gray (5YR 4/1) to medium dark gray (N4), homogeneous, SILTY CLAY, little - some F-C Sand and F Gravel, SR, moist, (CL), FILL	32	10	S.S.	11 16 16 16		50.0'	No. 10 V. Stiff, olive gray (5Y 4/1) to brownish gray (5YR 4/1) to medium dark gray (N4), homogeneous, SILTY CLAY, little m-c Sand and F Gravel, saturated, SR, moist (CL), FILL
51								
52							52.0'	
53								
54								
55							55.0'	
56		50	11	S.S.	25 25 25 25	1.3' / 2.0'		No. 11 V. Stiff, greyish olive green (5GY 3/2) to olive gray (5Y 4/1), homogeneous, SILTY CLAY, little to some F Sand, trace F-C Gravel, SR, moist, (CL), FILL
57							57.0'	
58								Rock - Styrofoam, visible, w/ voids
59								
60							60.0'	No. 12 No Recovery
61		58	12	S.S.	29 29 29 29	NR		
62							62.0'	
63	(63.0'- 73.0') V. Stiff, moderate yellowish brown (10YR 5/4) to light olive gray (5Y 6/1) to pale yellowish brown (10YR 6/2), homogeneous, SILTY CLAY and CLAYEY SILT, trace F-C Sand, SR, moist, (CL), FILL							
64								
65							65.0'	No. 13 V. Stiff mottled yellowish brown (10YR 5/4) to light olive gray (5Y 6/1), homogeneous, SILTY CLAY, trace F-C Sand, SR, moist, (CL), FILL
66			13	S.S.	26 24 26 26			
67							67.0'	
68								
69								

Golder Associates

Field Boring Log

DEPTH HOLE 107.0'	JOB NO. 923-2279	PROJECT BFI / Zion / Illinois			BORING NO. GC25
DEPTH SOIL DRILL 107.0'	QA INSP. J. Miller	DRILLING METHOD 10.0" Wash / mud Rotary			SHEET 4 OF 5
DEPTH ROCK CORE —	WEATHER cool, cloudy	DRILLING COMPANY Layne drill			SURFACE ELEV. ~801'
NO. DIST. SA. — UD. SA. —	TEMP. ~70°F	DRILL RIG Failing - Mobil B-Boss	DRILLER Dennis Auld		DATUM Mean Sea Level
DEPTH WL. —	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs.	DROP 30 inches		STARTED 11:00 / 8-19-93 (TIME / DATE)
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —		COMPLETED 7:00 / 8-21-93

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		U	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 8 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMMER BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	(63.0'-73.0') V. Stiff, moderate yellowish brown (10YR 5/4) to light olive gray (5Y 6/1) to pale yellowish brown (10YR 6/2), homogeneous, SILTY CLAY to CLAYEY SILT, trace F-C Sand, SR, moist, (CL), FILL	66	14	S.S.	10 38 48 61	1.0' / 2.0'	70.0'	No. 14 V. Stiff, medium yellowish brown (10YR 5/4) & pale yellowish brown (10YR 6/2), homogeneous, CLAYEY SILT, trace F-C Sand, SR, moist, (CL), FILL
71								
72							72.0'	
73								
74	(73.0'-78.0') V. Dense, medium gray (N5) to moderate yellowish brown (10YR 5/4), stratified, F-C Sand, trace to some Silt and Clay, SR, wet, (SM-SW), BLACK FLUVIAL							
75		59	15	S.S.	27 21 27 27	0.6' / 2.0'	75.0'	No. 15 V. Dense, medium gray (N5) to moderate yellowish brown (10YR 5/4), stratified, F-C SAND, trace to some Silt and Clay, wet, (SM-SW), BLACK FLUVIAL SR.
76								
77							77.0'	
78								
79	(78.0'-80.0') Hard, olive gray (5Y 4/1), homogeneous, SILTY CLAY, trace - little F-C Sand and F Gravel, silt-filled shears, clayey silt horizon at 80.0-80.5', SR, moist, (CL), UNWEATHERED LODGEMENT TILL							
80		56	16	S.S.	28 29 28 26	1.4' / 2.0'	80.0'	No. 16 80.0'-80.6' Hard, medium light gray (N6), homogeneous, CLAYEY SILT, some F-C Sand, SR, moist, (ML-SM), TILL 80.6'-81.9' Hard, olive gray (5Y 4/1), homogeneous, SILTY CLAY, little F-C Sand, SR, moist, (CL), LODGEMENT TILL
81								
82							82.0'	
83								
84								
85								
86		72	17	S.S.	18 16 11 19	0.3' / 2.0'	85.0'	80.6'-85.5' Hard, olive gray (5Y 4/1) homogeneous, SILTY CLAY, little F-C Sand, SR, moist, (CL), LODGEMENT TILL UNWEATHERED
87								No. 17
88		54	18	S.S.	6 27 27 35	1.8' / 2.0'	87.0'	85.0'-88.6 Hard olive gray (5Y 4/1), homogeneous, SILTY CLAY, trace F-C Sand, silt-filled shears, SR moist, (CL), UNWEATHERED LODGEMENT TILL
89								No. 19 - SAA Hard, olive gray (5Y 4/1), homogeneous, SILTY CLAY, trace F-C Sand and F Gravel, SR moist, (CL), UNWEATHERED LODGEMENT TILL
90		20	19	S.S.	7 10 11 20	1.0' / 2.0'	89.0'	
91								
92		30	20	S.S.	15 15	1.6' / 2.0'	91.0'	

Golder Associates

Field Boring Log

DEPTH HOLE 107.0'	JOB NO. 923-2279	PROJECT BFI / Zion / Illinois		BORING NO. GC25	
DEPTH SOIL DRILL 107.0'	QA INSP.	DRILLING METHOD 10.0" Wash / mud Rotary		SHEET 5	OF 5
DEPTH ROCK CORE —	WEATHER cool, cloudy	DRILLING COMPANY Aquadrill		SURFACE ELEV. ≈ 801'	
NO. DIST. SA. — UD. SA. —	TEMP. ~ 70° F	DRILL RIG Failing/- Mobile B-3000	DRILLER Dennis Auld	DATUM Mean Sea Level	
DEPTH WL. [illegible]	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs.	DROP 30 inches	STARTED 11:00 / 8-19-97 (Time / Date)	
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 9:10 / 8-21-97	

SAMPLE TYPES

A.S. AUGER SAMPLE; C.S. CHUNK SAMPLE; D.O. DRIVE OPEN; D.S. DENISON SAMPLE; P.S. PITCHER SAMPLE; R.C. ROCK CORE; S.T. SLOTTED TUBE; T.O. THIN-WALLED, OPEN; T.P. THIN-WALLED, PISTON; W.S. WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; U LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SLTY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5%; "LITTLE" - 5 - 12%; "SOME" - 12 - 30%; "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM BLOWS PEN IN FORCE	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
93	(78.0'-97.3') Hard, olive gray (5Y 4/1), homogenous, SILTY CLAY, trace - little F-C Sand and F Gravel, silt-filled shears, clayey silt horizon at 80.0'-80.6', SR, moist, (CL), UNWEATHERED LODGEMENT TILL	30	20	S.S.	15 15	1.6' 2.0'		No. 21 - SAA with silt-filled shears
94		38	21	S.S.	19 19 19 19	1.7' 2.0'	93.0'	
95		64	22	S.S.	33 33 33	0.9' 1.5'	95.0'	No. 22 - SAA
96								
97	703.7							
98	(97.3'-103.0') V. Dense, Light olive gray (5Y 6/1), stratified, FSAND and SILT, little Clay, NR, wet, (SM-ML), GLACIOFLUVIAL	44	23	S.S.	22 22 22 22	1.3' 2.0'	97.0'	97.0'-97.3' Hard, olive gray (5Y 4/1), homogenous, SILTY CLAY, trace F-C Sand and F Gravel, WR, moist, (CL), UNWEATHERED LODGEMENT TILL
99								7-30-97 11:30 geol Kelly to the dry @ 93' and Sandy @ 99'- electrical shop locked and excluded cuttings work.
100		56	24	S.S.	29 29 29 29	1.5' 2.0'	99.0'	8-21-97 08:50 resume drilling
101								
102		42	25	S.S.	31 31 31 31	0.9' 2.0'	101.0	(No. 24) V. Dense, light olive gray (5Y 6/1), stratified, FSAND and SILT, little Silt and Clay, NR, wet, (SM), GLACIOFLUVIAL
103	694							(No. 25) V. Dense, light olive gray (5Y 6/1), stratified, FSAND and SILT, little Clay, NR, wet, (SM-ML), GLACIOFLUVIAL
104	(103.0'-107.0') Hard, olive gray (5Y 4/1), homogenous, SILTY CLAY, little F-C Sand and F Gravel, WR, moist, (CL), UNWEATHERED LODGEMENT TILL	78	26	S.S.	38 38 38 38	1.2' 2.0'	103.0'	No. 26 Hard, olive gray (5Y 4/1) homogenous, SILTY CLAY, little F-C Sand and F (Gravel), WR, moist, (CL), UNWEATHERED LODGEMENT TILL
105								
106		49	27	S.S.	22 22 22 22	2.0' 2.0'	105.0'	No. 27 SAA
107	End of Borehole at 107.0'						107.0	8-21-97 09:00 Frank Kelly to 105' I surely to 107'

Field Boring Log

DEPTH HOLE 40.0	JOB NO. 97J-2279	PROJECT BFI / Zion / Illinois		BORING NO. GET5	
DEPTH SOIL DRILL 40.0	GA INSP. MNH	DRILLING METHOD MUD ROTARY		SHEET 1 OF 2	
DEPTH ROCK CORE —	WEATHER SUNNY	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~734	
WT. DIST. SA. — UD. SA. —	TEMP. 75°	DRILL RIG GUS PECH BRAT 22R	DRILLER D. ANLD	DATUM Mean Sea Level	
WL. —	HRS. PROD. —	WT. SAMPLER HAMMER 140 W.	DROP 30"	STARTED 0830 / 9-12-97 (Time / Date)	
WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED @ / 9-12-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENNISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THINWALLED, OPEN
T.P.	THINWALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" - 12-30%
"LITTLE" - 5-12% "AND" - 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS (HAMMER FALLS FREELY UNLESS NOTED)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
18	BUND DRILL TO 20 FEET BGS						18	
20	(20.0-36.5) firm to stiff, olive grey, fissured, SILTY CLAY AND CLAYEY SILT AND SILT, tr c-f sand and f gravel in silty clay portions, WR, damp to moist, (CL-ML)	17	1	SS	8/8/9/5	1.5' / 2.0'	20	NO.1, firm to stiff, olive grey, SILT AND CLAYEY SILT, WR, moist, (ML)
22	(FISSURED LODGEMENT TILL)	16	2	SS	8/9/8/8	1.8' / 2.0'	22	NO.2, SAA, but contains seams of stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (INTERBEDDED TILL AND SILT)
24		17	3	SS		1.8' / 2.0'	24	NO.3, firm to stiff, olive grey, fissured, SILT AND SILTY CLAY, WR, damp to moist, (CL & ML) (FISSURED LODGEMENT TILL tr c-f sand in silty clay w/ SILT FISSURES)
26	(26.0-36.5) homogeneous SILTY CLAY	15	4	SS	5/5/5/5/5	2.0' / 2.0'	26	NO.4, stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
28		15	5	SS	7/8/7/8	2.0' / 2.0'	28	NO.5, SAA
30		16	6	SS	8/8/8/8	2.0' / 2.0'	30	NO.6 SAA to 31.0. below 31.0, firm to stiff, olive grey, SILT AND CLAYEY SILT, tr c-f sand, moist, (ML)
32	(32.0-33.5) compact, multi-colored, C-F SAND AND F GRAVEL, little silt, NR, wet (SW-GW) (GLACIOFLUVIAL SEAM)	26	7	SS	12/13/13/14	2.0' / 2.0'	32	NO.7 SAA to 33.0 33.0-33.5, compact, multi-colored, sorted, C-F SAND AND F GRAVEL, little silt, NR, wet, (SW-GW) (GLACIOFLUVIAL SEAM) below 33.5, SAME AS NO.6
34		25	8	SS	12/13/13/11	2.0' / 2.0'	34	NO.8, firm to v. stiff, olive grey, SILTY CLAY, tr to some c-f sand and f gravel, WR, damp to wet, fine silt and fine sand lenses, (CL) (LODGEMENT TILL AND INTRATILL SORTED SEDIMENTS)
36	(36.5-39.5) compact, olive grey and multi-colored, C-F SAND, some f gravel, tr silt, NR, wet (SW), glaciofluvial (INTRATILL SORTED SEDIMENT)	16	9	SS	8/8/8/8	1.5' / 2.0'	36	NO.9 compact, olive grey and multi-colored, C-F SAND some f gravel, tr silt, NR, wet (SW) (INTRATILL GLACIOFLUVIAL SORTED SEDIMENT)
38	(39.5-41.0) stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)	20	10	SS	5/9/11/11	1.8' / 2.0'	38	NO.10, stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
40	END OF BORING @ 40.0 FEET BGS	21	11	SS	9/10/11/12	2.0' / 2.0'	40	NO.11, SAA

Field Boring Log

DEPTH HOLE 40.0	JOB NO. 97J-2279	PROJECT BFI / Zion / Illinois		BORING NO. GE75	
DEPTH SOIL DRILL 40.0	QA INSP. MNH	DRILLING METHOD Mud Rotary		SHEET 2 OF 2	
DEPTH ROCK CORE —	WEATHER	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~734	
NO. DIST. SA. — UD. SA. —	TEMP.	DRILL RIG GUS PECH BRAT	DRILLER D. Auld	DATUM Mean Sea Level	
WL.	HRS. PROD. —	WT. SAMPLER HAMMER	DROP	STARTED 0730 / 9-12-97	
WL.	HRS. DELAYED —	WT. CASING HAMMER	DROP	COMPLETED 9-12-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
O.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WOH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FIELD PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENTS
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMMER BLOWS PER IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	END OF BORING @ 40 FEET BGS						42	(see previous page for description)
							44	
							46	

Field Boring Log

DEPTH HOLE 49.0 | JOB NO. 97J-2279 | PROJECT BFI / Zion / Illinois | BORING NO. G2625
DEPTH SOIL DRILL 49.0 | GA INSP. MNH | DRILLING METHOD MUD ROTARY | SHEET 1 OF 3
DEPTH ROCK CORE — | WEATHER SUNNY | DRILLING COMPANY Aquadrill | SURFACE ELEV. ~737
NO. DIST. SA. — | UD. SA. — | TEMP. 70° | DRILL RIG GUS PECH BRAT 22R | DRILLER D. ADLD | DATUM Mean Sea Level
TP — | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30 Inches | STARTED 1420 (Time) 10-1-97 (Date)
— | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 10-2-97

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% | "SOME" - 12 - 30%
"LITTLE" - 5 - 12% | "AND" - 30 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	POCKET PENETROMETER
VERY LOOSE VLS	0 4	VERY SOFT VS	EXTRUDES
LOOSE LS	4 10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30 50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES DRIVE (DRIVE FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	BLIND DRILL TO 30 FEET BGS							(SEE G182 LOGS FOR UPPER 30 FEET DETAILS)

Field Boring Log

DEPTH HOLE	JOB NO. 973-2279	PROJECT BFI / Zion / Illinois		BORING NO. G625	
DEPTH SOIL DRILL	GA INSP.	DRILLING METHOD		SHEET 2 OF 3	
DEPTH ROCK CORE	WEATHER	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~737	
NO. DIST. SA. UD. SA.	TEMP.	DRILL RIG	DRILLER	DATUM Mean Sea Level	
WL.	HRS. PROD.	WT. SAMPLER HAMMER	DROP	STARTED 1430 / 10-1-97 (Time / Date)	
WL.	HRS. DELAYED	WT. CASING HAMMER	DROP	COMPLETED 1110-2-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS PER 6" OR PUSH FORCE	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24							24	
26							26	
28	@ 29.0 feet, igneous-intrusive cobble/boulder present (erratic)						28	- NOTE: driller encountered cobble @ 29 feet BGS. (Igneous-intrusive cobble)
30	(30.0-34.0) stiff, olive grey, CLAYEY SILT, tr f sand, SR, moist, (ML)	>50	1	SS	25+...	0.8' / 2.0'	30	NO. 1, stiff, olive grey, CLAYEY SILT, tr f sand, SR, MOIST, (ML)
								- note: cobble fragments impeded sampler
32		25	2	SS	10/13/12/15	0.3' / 2.0'	32	NO. 2, SAA (SAME AS ABOVE), but sample was disturbed considerably.
								- sampler impeded by cobble fragments. Recovery poor.
34	(34.0-42.0) stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)	17	3	SS	8/8/9/9	2.0' / 2.0'	34	NO. 3, stiff, olive grey, SILTY CLAY, tr to little c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)
36		14	4	SS	7/7/7/8	2.0' / 2.0'	36	NO. 4, SAA (SAME AS ABOVE)
38		15	5	SS	7/7/8/9	2.0' / 2.0'	38	NO. 5, SAA
40		30	6	SS	14/15/15/16	2.0' / 2.0'	40	NO. 6, SAA, but stiff to v. stiff
42	(42.0-48.0) v. dense, olive grey, SILT, tr f sand, WR, moist to wet, (ML) (INTRATILL SEDIMENT)	>50	7	SS	25+...	1.5' / 2.0'	42	NO. 7, v. dense, olive grey, SILT, tr f sand, WR, moist to wet, (ML) wet @ 43.0
44							44	NO. 8, SAA but damp to moist
		42	8	SS	20/24/21/21	1.5' / 2.0'		NO. 9, >50, moist, wet @ 47.0
46								

Field Boring Log

DEPTH HOLE 49.0	JOB NO. 973-2279	PROJECT BFI / Zion / Illinois		BORING NO. 12625	
DEPTH SOIL DRILL 49.0	QA INSP.	DRILLING METHOD		SHEET 3 OF 3	
DEPTH ROCK CORE —	WEATHER	DRILLING COMPANY Aquaterra		SURFACE ELEV. ~737	
NO. DIST. BA. — UD. BA. —	TEMP.	DRILL RIG	DRILLER	DATUM Mean Sea Level	
DEPTH WL.	HRS. PROD. —	WT. SAMPLER HAMMER	DROP	STARTED 1430 (Time) 10-1-97 (Date)	
WL.	HRS. DELAYED —	WT. CASING HAMMER	DROP	COMPLETED 10-2-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	BA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 6 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		POCKET PENETROMETER
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES BLOWS PER 6" (FORCE)	SAMPLES REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(see previous page)	>50	9	SS	25T...	1.5' / 2.0'		NO.9, SAA, but wet @ 47.0
48	(48.0-50.0) V. stiff, olive grey, SILTY CLAY AND CLAYEY SILT, tr c-f sand and f gravel, wet, damp, (CL-ML) (possible TILL)	38	10	SS	18/19/11/19	2.0' / 2.0'	48	NO.10, V. stiff, olive grey, SILTY CLAY AND CLAYEY SILT, tr c-f sand and f gravel, wet, damp, (CL-ML) (LODGEMENT TILL?)
	END OF BORING @ 49.0 FEET BGS							
50							50	
52							52	
54							54	
56							56	
58							58	

Golder Associates

Field Boring Log

DEPTH HOLE ____ JOB NO. 93-1279 PROJECT BFI / Zion / Illinois BORING NO. 62G25

DEPTH SOIL DRILL ____ QA INSP. ____ DRILLING METHOD ____ SHEET 3 OF 5

DEPTH ROCK CORE ____ WEATHER ____ DRILLING COMPANY Aquadrill SURFACE ELEV. ~737

W.T. S.A. ____ U.D. S.A. ____ TEMP. ____ DRILL RIG ____ DRILLER ____ DATUM Mean Sea Level

W.L. ____ HRS. PROD. ____ WT. SAMPLER HAMMER ____ DROP ____ STARTED 10-29-97 (TIME / DATE)

TIME W.L. ____ HRS. DELAYED ____ WT. CASING HAMMER ____ DROP ____ COMPLETED 11-1-97

SAMPLE TYPES

A.S. AUGER SAMPLE; C.S. CHUNK SAMPLE; D.O. DRIVE OPEN; D.S. DENNISON SAMPLE; P.S. PISTON SAMPLE; R.C. ROCK CORE; S.T. SLOTTED TUBE; T.O. THIN-WALLED, OPEN; T.P. THIN-WALLED, PISTON; W.S. WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GR GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SLTY SILTY; TR TRACE; WL WATER LEVEL; WOH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5%; "SOME" 12 - 30%; "LITTLE" - 5 - 12%; "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY		FINGER PRESSURE	
VERY LOOSE	VLS	0-4	VERY SOFT	VS	ED PRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	PRUNG INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	BLOWS (SEATED / DRIVE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(48.0-48.0) firm to v. stiff, olive grey, SILT AND CLAYEY SILT, tr c-f sand, SR, moist to v. moist, (ML) (INTRATILL SEDIMENT)	25	14	SS	12/12/13/13	2.0' / 2.0'		NO. 14, firm to stiff, olive grey, SILT AND CLAYEY SILT, tr c-f sand, SA, moist to v. moist, (ML)
48	(48.0-50.0) stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL) (LODGEMENT TILL)	21	15	SS	10/10/11/11	2.0' / 2.0'	48	NO. 15, stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp, (CL)
50	(50.0-52.0) firm to stiff, olive grey, SILT AND CLAYEY SILT, tr c-f sand, WR to SR, moist to v. moist, (ML) (INTRATILL SEDIMENT)	24	16	SS	12/12/12/12	2.0' / 2.0'	50	NO. 16, firm to stiff, olive grey, SILT AND CLAYEY SILT, tr c-f sand, WR to SR, moist to v. moist, (ML)
52	(52.0-81.0) stiff to v. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp to moist, (CL) (LODGEMENT TILL)	26	17	SS	13/13/13/13	2.0' / 2.0'	52	NO. 17, stiff to v. stiff, olive grey, SILTY CLAY, tr c-f sand and f gravel, WR, damp to moist, (CL), contained a thin (< ½") seam of medium sand.
54	@ 53.0', ½ inch sand seam present	28	18	SS	14/14/14/14	2.0' / 2.0'	54	NO. 18, SAA
56	@ 55.0', ½ inch sand seam present	29	19	SS	14/14/14/14	2.0' / 2.0'	56	NO. 19, SAA but no sand seams
58		26	20	SS	13/13/13/13	2.0' / 2.0'	58	NO. 20, SAA
60		28	21	SS	14/14/14/14	2.0' / 2.0'	60	NO. 21, SAA
62							62	
64	@ 64.0, possible cobbles						64	-driller indicates cobbles may be present-
66	(65.0-70.0) tr to some c-f sand and f gravel	27	22	SS	13/13/14/15	2.0' / 2.0'	66	NO. 22, SAA, tr to some c-f sand and f gravel
68							68	

Field Boring Log

DEPTH HOLE 60.0'	JOB NO. 973-2279	PROJECT BFI / Zion / Illinois		BORING NO. 6645	
DEPTH SOIL DRILL 60.0'	GA INSP. J. Miller	DRILLING METHOD 4" Wash/mud Rotary		SHEET 1 OF 3	
DEPTH ROCK CORE —	WEATHER cool, sunny	DRILLING COMPANY Aquadrill		SURFACE ELEV. +754'	
O. DIST. SA. — UD. SA. —	TEMP. 65°-75° F	DRILL RIG Failmont - Mobile B-8000	DRILLER Dennis Auld	DATUM Mean Sea Level	
	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs.	DROP 30 inches	STARTED 11:40 / 8-22-97 (Time / Date)	
	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 09:00 / 8-23-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY		FINGER PRESSURE	
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES BLOWS PER 6" (FORCE)	SAMPLES REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								8-22-97 11:40 Began drilling 6645
1	(0.0'-19.0') V. Stiff, brownish gray (5YR 4/1) to olive gray (5 Y 4/1), homogeneous, SILTY CLAY, trace - little F-C Sand and F Gravel, rootlets and organic material, mottled, NP, moist, (CL), FILL							
2								
3								
4								
5							5.0'	
6		15	1	S.S.	5 5 10 13	1.5' 2.0'		No. 1 V. Stiff, brownish gray (5YR 4/1) to olive gray (5Y 4/1) homogeneous, SILTY CLAY, trace - little F-C Sand and F Gravel, rootlets and organic material, mottled, NP, moist, (CL), FILL
7							7.0'	
8								
9								
10							9.0'	
11		17	2	S.S.	6 7 10 12	1.5' 2.0'		No. 2 SAA
12							12.0'	
13								
14								
15	(19.0'-18.0') V. Dense, moderate yellowish brown (10YR 5/4), homogeneous, SILT and F SAND, some Clay, trace F Gravel, mottled, bimodal, SR, wet, (SM-ML), WEATHERED NON-LODGEMENT TILL						15.0'	No. 3 V. Dens, moderate yellowish brown (10YR 5/4), homogeneous SILT and F SAND, some clay, trace F Gravel, mottled, bimodal, SR, wet, (SM-ML), WEATHERED TILL (not laminated)
16		53	3	S.S.	7 17 36 54	1.3' 2.0'		
17							17.0'	
18								
19	(18.0'-38.0') V. Stiff, olive gray (5Y 4/1), homogeneous, SILTY CLAY, little F-C Sand, trace F Gravel, SR, moist, (CL), UNWEATHERED LODGEMENT TILL							
20		36	4	S.S.	7 12 23 28	2.0' 2.0'	20.0'	No. 4 V. Stiff olive gray (5Y 4/1), homogeneous, SILTY CLAY, little F-C Sand, trace F Gravel, SR, moist, (CL), UNWEATHERED LODGEMENT TILL
21								
22								
23							23.0'	

Field Boring Log

DEPTH HOLE 60.0'	JOB NO. 993-2279	PROJECT BFI / Zion / Illinois		BORING NO. 4645	
DEPTH SOIL DRILL 60.0'	GA INSP. J. Miller	DRILLING METHOD 10" auger / Mud Rotary		SHEET 2 OF 3	
DEPTH ROCK CORE —	WEATHER cool, sunny	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~ 754	
NO. DIST. SA. — UD. SA. —	TEMP. 65°-75°F	DRILL RIG Failing - Mobile B-300	DRILLER Randy Auld	DATUM Mean Sea Level	
WL. —	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs.	DROP 30 inches	STARTED 10:40 (Time) / 8-22-97 (Date)	
WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 08:00 / 8-23-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CAISSON
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLT	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" - 12-30%
"LITTLE" - 5-12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FISSURE PRESENCE	
VERY LOOSE	VLS	0-4	VERY SOFT	VS	FISSURED	
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY	
COMPACT	CP	10-30	FIRM	FM	MOLDS	
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS	
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT	
			HARD	H	RESISTS THUMBNAIL	

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES BLOWS PER 6" (ONCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24	(18.0'-38.0') V. Stiff, olive gray (5Y 4/1), homogenous, SILTY CLAY, little F-C Sand, trace F Gravel, SR, moist, (CL), UNWEATHERED LODGEMENT TILL							
25					19	2.0'	25.0'	No. 5 SHT with 0.1' thick layer of 26' with precipitated (5R 4/1) sandy layer - 0.01' thick
26		38	5	S.S.	17 19 19	2.0'		
27							27.0'	
28								
29								
30					18		30.0'	No. 6 No Recovery
		36	6	S.S.	18 18 18	NR		
32							32.0'	
33								
34								
35								
36					30		35.0'	No. 7 - No Recovery
		40	7	S.S.	20 20 20	NR		
37							37.0'	
38	(38.0'-60.0') Dense, olive gray (5Y 4/1) to light Olive gray (5Y 6/1), stratified, F SAND and SILT, trace to and Clay, SR, wet, (SP, SM, ML, CL), GLACIOFLUVIAL							
40					10	1.0'	40.0'	No. 8 Stiff, olive gray (5Y 4/1), homogeneous, CLAYEY SILT, trace F-C Sand, SR, moist, (ML-CL)
41		90	8	S.S.	15 15	1.5'		
42							42.0'	42.0'-42.6' Dense, light olive gray (5Y 6/1) stratified SILT and CLAYEY SILT, SR, wet, (ML), GLACIOFLUVIAL
43			9	S.S.	33 33 33	0.6' / 1.5'		
		>100			100	0.5/0.5	44.0'	44.0'-44.5' Dense, light olive gray (5Y 6/1) stratified SILT, little fine Clay, SR wet, (ML), GLACIOFLUVIAL
45			10	S.S.			44.5'	
46								

Field Boring Log

DEPTH HOLE 60.0'	JOB NO. 933-2279	PROJECT BFI / Zion / Illinois		BORING NO. 6645	
DEPTH SOIL DRILL 60.0'	QA INSP. J. Miller	DRILLING METHOD 10" auger / mud Rotary		SHEET 3 OF 3	
DEPTH ROCK CORE —	WEATHER cool, sunny	DRILLING COMPANY Aquadrill		SURFACE ELEV. ~754'	
NO. DIST. SA. — UD. SA. —	TEMP. 65°-75° F	DRILL RIG Failing - Mobile B-Hand	DRILLER Gene Auld	DATUM Mean Sea Level	
WL. —	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs.	DROP 30 inches	STARTED 10:40 / 8-22-97 (Time / Date)	
WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 03:00 / 8-23-97	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THINWALLED, OPEN
T.P.	THINWALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM
BR	BROWN	MC	MICACEOUS
C	COARSE	MOT	MOTTLED
CA	CASING	NP	NON-PLASTIC
CL	CLAY	OG	ORANGE
CLY	CLAYEY	ORG	ORGANIC
F	FINE	PH	PRESSURE-HYDRAULIC
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL
GL	GRAVEL	R	RED
LYD	LAYERED	RES	RESIDUAL
LI	LITTLE	RX	ROCK
SA	SAMPLE		
SAT	SATURATED		
SD	SAND		
SI	SILT		
SLY	SILTY		
SM	SOME		
TR	TRACE		
WL	WATER LEVEL		
WH	WEIGHT OF HAMMER		
Y	YELLOW		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 13 - 30%
"LITTLE" - 5 - 12% "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	PENCIL IS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES BLOWS (PEN.)	SAMPLES REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47	(38.0'-60.0') Dense, olive gray (5Y 4/1) to light olive gray (5Y 6/1), stratified, F SAND and SILT, trace to and clay, SR, wet, (SP, SM, ML, CL), GLACIOFLUVIAL	100	11	S.S.	50 / 50	0.2' / 1.0'		41.0'-41.4' V. Dense, light olive gray (5Y 6/1), stratified, F SAND and SILT, SR, wet, (SM), GLACIOFLUVIAL
48		100	12	S.S.	50, 50	0.3' / 1.0'	48.0'	48.0'-48.3' V. Dense, light olive gray (5Y 6/1), stratified, F SAND, little silt and clay, SR, wet, (SP), GLACIOFLUVIAL
49								
50		100	13	S.S.	50, 50	0.3' / 1.0'	50.0'	50.0'-50.3' V. Dense, light olive gray (5Y 6/1), stratified, F SAND and SILT, some clay, SR, wet, (SM-ML), GLACIOFLUVIAL
51								8-22-97 17:35 Start drilling @ 50' sampled to 52'
52								8-23-97 08:30 resume drilling & sampling
		115	14	S.S.	58, 58	0.5' / 1.0'	52.0'	No. 14 V. Dense, light olive gray (5Y 6/1), stratified, F SAND, trace silt and clay, WR, wet, (SP), GLACIOFLUVIAL
53								
54		115	15	S.S.	57, 68	0.6' / 1.0'	54.0'	No. 15 Very dense, light olive gray (5Y 6/1), stratified, F SAND, some silt and clay, WR, wet, (SM-ML), GLACIOFLUVIAL - end
55								
56								
57		70	16	S.S.	35 / 35 / 35	1.3' / 1.5'	56.0'	No. 16 56.0'-56.6' SAA 56.6'-57.3' Hard, olive gray (5Y 4/1), homogenous, CLAYEY SILT, f SR, moist, (CL), TILL? true F.C. Seal
58		110	17	S.S.	55 / 55	0.9' / 1.0'	58.0'	58.0'-59.0' V. Dense, light olive gray (5Y 6/1), stratified, F SAND and SILT, little clay, SR, moist, (ML-SM), GLACIOFLUVIAL
59								
60	End of Soil Borlok at 60.0'						60.0'	8-23-97 08:00 finish drilling to 58.0' and sampling to 60.0'
61								
62								
63								

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-9

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 744.8 DATE STARTED 8/31/89

T.O.B. ELEVATION 637.8 DATE COMPLETED 9/ 7/89

Well finished 9/11/89

BORING NO. GW1D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 1 OF 6

Top of Pipe 746.18

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
					Black clayey TOPSOIL w/organics; roots	Wadsworth Till I (weathered)
					743.3	
1SS	5 7 8 7	6"		2.8	Brown and grey mottled silty CLAY, tr. sand and gravel, greyed along joints, oxidized spots, very stiff to hard	
2SS	4 4 6 9	17"		3.0		
3SS	6 6 8 13	19"		3.0	hairline silt parting 6.9'	
4SS	4 8 14 19	24"		4.0	greyish-brown below 9.0'	
5SS	8 11 17 24	24"		4.0	stiff below 11.0'	
6SS	8 9 11 15	21"		1.5		
					731.3	
7SS	4 6 7 10	24"		1.5	Grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till I (unweathered)
					sand pockets 14.7' and 16.5'	
8SS	3 5 7 10	24"		2.2		
9SS	6 6 8 12	24"		1.5		
10SS	2 3	18"		1.3		

LOG: Cement Plug; PVC Pipe; Volclay Grout

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 8440
MO. CPG 337

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/BFI Monitor Wells F-10

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 744.8 DATE STARTED 8/31/89

T.O.B. ELEVATION 637.8 DATE COMPLETED 9/ 7/89

Well finished 9/11/89

BORING NO. GK1D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 2 OF 6

SAMPLE NO./TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
10SS	7 10	18"		1.3	Grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till I	
11SS	4 5 7 10	23"		1.6			
12SS	5 6 8 10	24"		1.9	hairline silt partings 24.5' and 26.1'		
13SS	5 6 9 11	24"		1.5	medium sand pocket 26.2'		
14SS	8 8 11 13	24"		1.6	brown silty CLAY, tr. sand and gravel, 27.0' and 29.0' (possibly cave, but could be inclusions)		
15SS	6 8 10 12	24"		1.7	hairline silt parting 29.0'		
					713.8		
16SS	4 6 9 13	24"		1.8	Slightly brownish-grey silty CLAY, tr. sand and gravel, stiff to very stiff	Wadsworth Till I	
17SS	7 8 12 15	24"		2.2			
18SS	6 8 11 14	22"	disturbed by rock				
19SS	7 10 14 14	24"		2.0			
0SS	6 8	24"		2.2			

Volclay Grout

PVC 2" ID

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2026 N. SHOREWOOD DRIVE
ARLINGTON, ILLINOIS 60004
312/394-0017
ASPG CPGS 0440
IND CPG 237

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-11

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 744.8 DATE STARTED 8/31/89

T.O.B. ELEVATION 637.8 DATE COMPLETED 9/ 7/89

Well finished 9/11/89

BORING NO. GK1D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 3 OF 6

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40	20SS	10 14	24"		2.2	Slightly brownish-grey silty CLAY, tr. sand and gravel, stiff-very stiff	Wadsworth Till I	
41								
42	21SS	4 6 10 10	24"		1.9	irregular pinkish-grey fine sand in clay matrix, oxidized brown clay inclusion and shale fragments 41.9-42.2'		
43								
44	22SS	6 10 13 17	24"		2.9			
45								
46	23SS	9 11 17 23	24"		3.0	silt parting 46.5'		
47					2.1	697.3		
48	24SS	9 10 20 22	24"			Grey laminated SILT and fine SAND, dense, tr. clay laminae to 47.8'	Intratill Sorted Sediments	
49						696.1 695.8 Olive greenish-grey fairly silty CLAY, tr. sand and gravel 695.3 Interbedded fine-coarse SAND, fine SAND, and SILT		
50	25SS	11 10 13 22	24"		2.8	Brownish-grey silty CLAY, tr. sand 694.0 and grv., sl.lam, v.stiff w/sand seam		
51						693.6 Olive-grn-gr. SILT, tr. fi. sand		
52	26SS	8 10 20 20	24"		2.9	Brownish-grey silty CLAY, tr. sand and gravel, very stiff 692.2 691.8 Grey fine sandy SILT		
53								
54	27SS	19 15 17 26	24"		3.9	Slightly brownish-grey silty CLAY, tr. sand and gravel, very stiff-hard fine-coarse sand seams 53.5', 53.7', and 56.5'	Wadsworth Till II	
55								
56	28SS	6 13 21 30	24"		3.5	fine sand parting 55.4' clayey silt seam 55.4-55.7'		
57								
58	29SS	10 14 27 39	24"		4.0	slight feathery structure 58.5-61.0'		
	30SS	10 24	24"		4.0			
60								

Volclay Grout

PVC 2"ø

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2024 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 6440
IMD CPG 337

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-12
DRILLER Patrick Engineering, Inc.
RIG CME-75 METHOD Hollow Stem Auger
G.S. ELEVATION 744.8 DATE STARTED 8/31/89
T.O.B. ELEVATION 637.8 DATE COMPLETED 9/ 7/89
Well finished 9/11/89

BORING NO. GK1D
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 4 OF 6

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
30SS	28 45	24"		4.0	Slightly brownish-grey silty CLAY, tr. sand and gravel, very stiff-hard	Wadsworth Till II
31SS	12 15 21 27	24"		4.0	feathery structure 65.0-67.0', and 69.0-71.0'	
32SS	10 14 25 26	24"		3.5		
33SS	9 21 33 38	24"		4.0 2.7		
34ST		24"		4.0	9% sand, 48% silt, 43% clay (CL) K = 1.7 X 10^{-8} cm/sec.	
35SS	11 12 19 21	24"		3.1		
36SS	6 17 17 20	24"		2.5	laminated 72.8-73.0'	
					671.8	
37SS	7 9 12 14	24"		3.5	Brownish grey silty CLAY, tr. sand and gravel, very stiff-hard checkered structure (non-fractured) 73.0-77.0'	
38SS	10 14 15 20	24"		3.2	feathery structure 77.0-80.0'	
39SS	6 11 18 19	24"		4.0		
3S	8 10	24"		3.5		

LOG: 679 PVC Pipe; Stainless Steel Pipe; Volclay Grout

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MOMENCE, ILLINOIS 60950
815/944-0017
A.I.P.G. CPG3 6440
IHO CPC 237

JOB NO. 88-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells P-13
DRILLER Patrick Engineering, Inc.
RIG CME-75 METHOD Hollow Stem Auger
G.S. ELEVATION 744.8 DATE STARTED 8/31/89
T.O.B. ELEVATION 632.8 DATE COMPLETED 9/ 7/89
Well finished 9/11/89

BORING NO. GK1D
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 5 OF 6

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
80	40SS	13 15	24"		3.5	Brownish-grey silty CLAY, tr- sand and gravel, very stiff	Wadsworth Till II
81							
82	41SS	7 10 15 19	24"		3.0	foliated 82.0-83.0'	
83						slightly feathery below 83.0'	
84	42SS	11 12 21 24	24"		2.9		
85							
86	43SS	11 14 21 23	24"		3.2		
87							
88	44SS	18 30 32 42	24"		3.5	siltier, smoother textured 88.5'-89.0'	
89							
90	45SS	13 16 31 34	24"		2.8		
91							
92	46SS	13 17 23 39	24" partially dist. by rock		3.0		
93							
94	47SS	15 34 50 92	20"		4.2	hard 93.0-95.0' greyer below 93.0' hairline silt parting 94.0'	
95							
96	48SS	15 16 19 23	24"		2.7	foliated w/tr. horizontal fractures below 96.0'	
97							
98	49SS	10 18 55 77	24"		2.8	646.3	
						Brownish-grey fine and fine-medium SAND, tr. co. sand, very dense w/	Shallow Drift Aquifer Sediments
	50SS	25 19	20"			644.2 1/2" silt seams, feathery, bztl. fractures, small angle joint at 99.6'	
100							

LOG: Stainless Steel Pipe; Volclay Grout; 646; 644

ROBERTA L. JENNINGS
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3928 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 #440
IND. CPG 337

JOB NO. 88-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-14

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 744.8 DATE STARTED 8/31/89

T.O.B. ELEVATION 637.8 DATE COMPLETED 9/ 7/89

Well finished 9/11/89

BORING NO. GK1D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 6 OF 6

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					644.7		644
50SS	25 40	20"			Brownish-grey fine-coarse SAND, some sm-med gravel, very dense, thin silt seam, tr. organics 100.0'	Shallow Drift Aquifer Sediments	
					643.8		
51SS	39 53 64 44	20"			Grey fine sandy SILT grading to silty fine SAND, very dense		
					641.8		
52SS	30 11 16 24	15"			641.4 Brownish-grey fine-coarse SAND, some sm-lg gravel, dense, rock 103.4' Grey fairly silty, fine sandy CLAY, tr. sand and gravel, stiff, sand and silt seams 105.0-105.5'		639.
					639.3		
53SS	18 12 12 19	21"			Grey clayey SILT, tr. med. gravel, laminated below 1" sand seam 105.9'		
					637.8		637.
					T.O.B. 107.0'		
					Monitor well installed in hole at completion		

Stainless Steel Screen

Silica Sand

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815/344-0017
A.I.P.G. CPG3 8440
WHO. CPC 337

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-15
DRILLER Patrick Engineering, Inc.
RIG CME-75 METHOD Hollow Stem Auger
G.S. ELEVATION 744.1 DATE STARTED 9/12/89
T.O.B. ELEVATION 689.6 DATE COMPLETED 9/12/89
Well finished 9/12/89

BORING NO. GK1S
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 1 OF 3
Top of Pipe 745.64

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					See GK1D for complete log of adjacent boring	See GK1D for definitions	
1SS	9 9 11	15"		4.5+	Brown and grey mottled silty CLAY, tr. sand gravel, jointed, hard		
2SS	8 13 18	17"		4.5+	Brown and grey silty CLAY, tr. sand and gravel, oxidized spots, hard, hairline silt seam 9.9', grey below		
3SS	4 5 8	18"		1.3	Grey silty CLAY, tr. sand and gravel, stiff		
4SS	4 5 7	18"		1.6	Grey silty CLAY, tr. sand and gravel, stiff		

Cement Plug
Volclay Grout
PVC Pipe

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A.I.P.G. CPG3 0440
IND CPG 337

JOB NO. 88-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-16

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 744.1 DATE STARTED 9/12/89

T.O.B. ELEVATION 689.6 DATE COMPLETED 9/12/89

Well finished 9/12/89

BORING NO. GK1S

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 2 OF 3

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
5SS	5 6 7	18"		1.7	Grey silty CLAY, tr. sand and gravel, stiff hairline silt parting 24.1'		
6ST		23"		1.6	Grey silty CLAY, tr. sand and gravel, stiff 18% sand, 38% silt, 44% clay (CL) $K = 1.3 \times 10^{-8}$ cm/sec.		
7SS	6 9 11	18"		1.7	Grey silty CLAY, tr. sand and gravel, stiff fi-med sand ptgs. 34.7' and 35.0'		
8SS	6 8 12	18"		2.3	Grey silty CLAY, tr. sand and gravel, very stiff		

PVC Pipe

Volclay Grout

716.

Stainless Steel Pipe

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815/344-0017
A.I.P.G. CPG-3440
IMD. CPG-237

JOB NO. 88-105

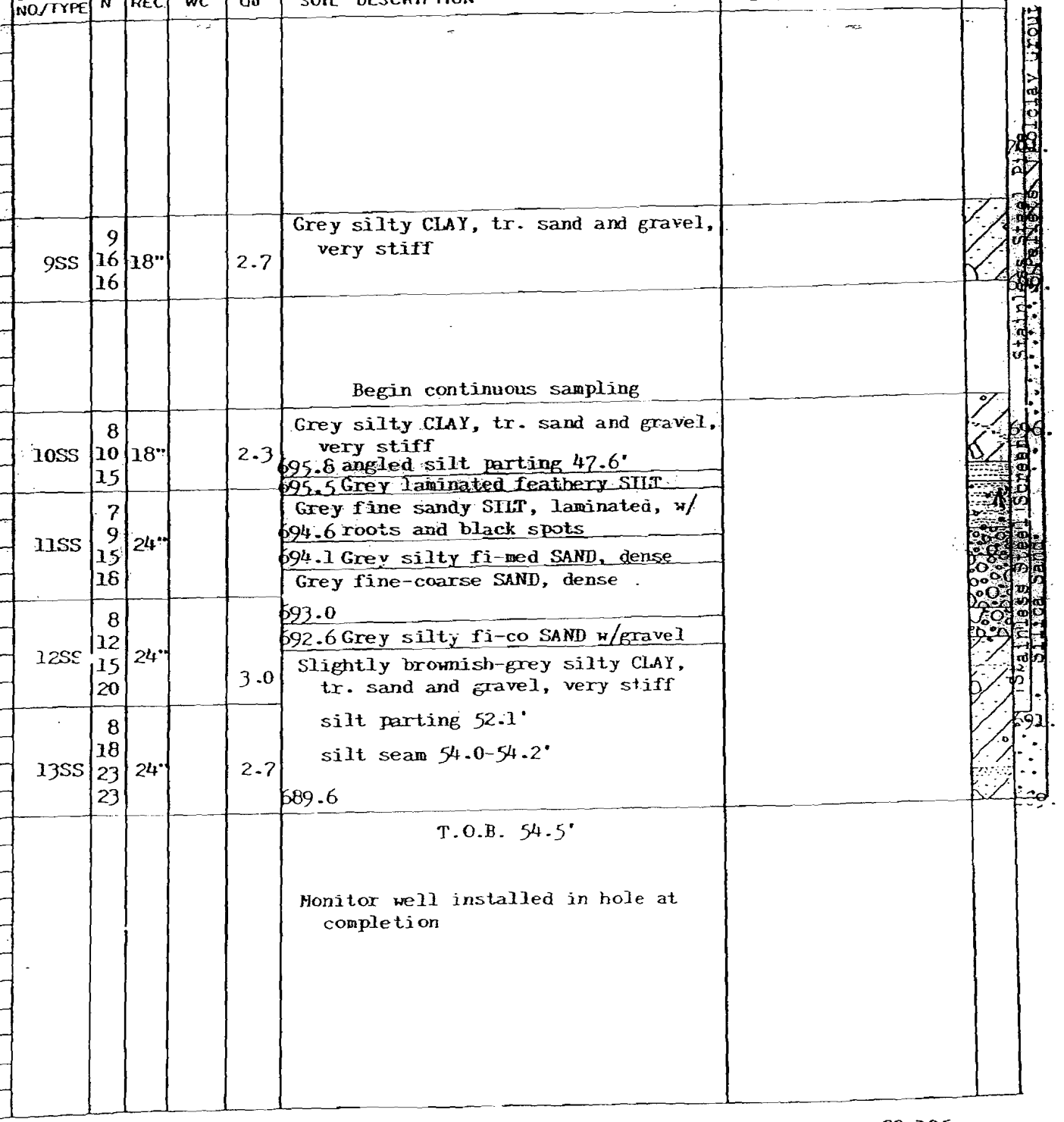
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-17
DRILLER Patrick Engineering, Inc.
RIG CME-75 METHOD Hollow Stem Auger
G.S. ELEVATION 744.1 DATE STARTED 9/12/89
T.O.B. ELEVATION 689.6 DATE COMPLETED 9/12/89
Well finished 9/12/89

BORING NO. GK1S
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 3 OF 3

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
9SS	9 16 16	18"		2.7	Grey silty CLAY, tr. sand and gravel, very stiff		
					Begin continuous sampling		
10SS	8 10 15	18"		2.3	Grey silty CLAY, tr. sand and gravel, very stiff 695.8 angled silt parting 47.6' 695.5 Grey laminated feathery SILT		
11SS	7 9 15 18	24"			Grey fine sandy SILT, laminated, w/ 694.6 roots and black spots 694.1 Grey silty fi-med SAND, dense Grey fine-coarse SAND, dense		
12SS	8 12 15 20	24"		3.0	693.0 692.6 Grey silty fi-co SAND w/gravel Slightly brownish-grey silty CLAY, tr. sand and gravel, very stiff silt parting 52.1'		
13SS	8 18 23 23	24"		2.7	silt seam 54.0-54.2' 689.6		
					T.O.B. 54.5' Monitor well installed in hole at completion		



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(815) 344-0013
A.I.P.G. CPG# 0440
IND. CPG# 237

JOB NO. 88-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-10

PROJECT BFI-Zion IEPA Monitor Wells

DRILLER Testing Service Corporation

RIG Mobile B-61 METHOD Rotary

G.S. ELEVATION 747.6 DATE STARTED 4/10/90

T.O.B. ELEVATION 642.6 DATE COMPLETED 4/11/90

BORING NO. GK3D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 1 OF 6

Top of Pipe 749.92

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
1SS	7 10 20 21	14"		2.0	Dark grey and light grey silty CLAY with silt seams, tr. roots, very stiff brown and grey below 3.0'	Slopewash	
2SS	9 12 16 20	13"		2.9	743.3		
3SS	6 14 22 26	19"		3.5	Brown silty CLAY, tr. sand and small-large gravel, greyed along joints, very stiff-hard	Wadsworth Till I (weathered)	
4SS	2 13 19 25	13"		4.4			
5SS	7 14 21 27	22"		4.5			
6SS	8 12 13 20	20"		3.0	1" brown siltier clay seam at 11.0' brownish grey below 11.0' hairline silt parting at 11.3' 1" br.,hard,very si. CLAY at 12.5'		
7SS	7 8 9 11	23"		2.0	735.1 Grey silty CLAY, tr. sand and small-large gravel, stiff	Wadsworth Till I (unweathered)	
8SS	6 7	12"		1.7			
9CS		5'		1.6 1.6 1.7 1.6 1.6	3 hairline fine sandy silt seams at 15.5'		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST

JOB NO. 88-105a

LOGGED BY R. Jennings

GEOLOGIC LOG OF BORING
G-17

PROJECT BFI-Zion IEPA Monitor Wells
BORING NO. GK3D
DRILLER Testing Service Corporation
WATER LEVELS
AT COMPLETION
HOURS
RIG Mobile B-61 METHOD Rotary
G.S. ELEVATION 747.6 DATE STARTED 4/10/90
WHILE DRILLING
T.O.B. ELEVATION 642.6 DATE COMPLETED 4/11/90
SHEET 2 OF 6

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				2.3	Grey silty CLAY, tr. sand and small-large gravel, stiff	Wadsworth Till I	
				1.6	1/2" silt seam at 22.0'		
10CS		4.0'		2.4	silty and slightly fine sandy at 21.0'-22.5'		
					slightly brownish-grey below 25.0'		
				1.0			
				1.4	two sand pockets at 26.6'		
11CS		4.0'		1.3			
				1.5			
				1.9	hairline fine sand parting at 30.6' (does not extend through sample)		
				1.9			
12CS		5.0'		1.7			
				2.0			
				1.9			
				1.4			
				1.5			
13CS		4.5'		2.6	hairline silt parting at 38.2'		
					709.3		
				3.0	Hard, silty sandy CLAY 708.9	Diamicton	
					SILT 708.6	Intratill sort.sed.	
				1.4	Brownish grey silty CLAY, tr. sand and small-large gravel, stiff	Wadsworth Till II	

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JOB NO. 88-105a
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-18

PROJECT BFI-Zion IEPA Monitor Wells

DRILLER Testing Service Corporation

RIG Mobile B-61 METHOD Rotary

G. S. ELEVATION 747.6 DATE STARTED 4/10/90

T.O.B. ELEVATION 642.6 DATE COMPLETED 4/11/90

BORING NO. GK3D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 3 OF 6

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				1.6	Brownish grey silty CLAY, tr. sand and small-large gravel, stiff	Wadsworth Till II	
				1.8			
14CS		5.0'		2.5			
				1.7			
				1.6			
				1.7			
				1.4	701.1		
					Grey si.fi.sa.CLAY, tr. grvl. 700.7	Diamicton	
15CS		5.0'		2.4	Brownish grey silty CLAY, tr. sand and small-large gravel, very stiff	Wadsworth Till II	
				2.6			
				1.6			
				2.9	2" silt seam at 50.5'		
				2.7			
16CS		5.0'		4.4			
				2.5			
				3.8	3" silt seam at 54.5'		
				4.5	laminated 53.0'-54.0'		
					feathery 55.0'-57.8'		
				4.2	1" silt seam at 56.1'		
17CS		5.0'		4.5	hard below 55.0'		
					laminated at 57.8'		
				4.5			
				2.4			

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JOB NO. 88-105a

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING G-19

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK3D

DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION ____ HOURS ____ WHILE DRILLING ____

RIG Mobile B-61 — METHOD Rotary

G.S. ELEVATION 742.6 — DATE STARTED 4/10/90

T.O.B. ELEVATION 642.6 — DATE COMPLETED 4/11/90

SHEET 4 OF 6

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
				3.5	Brownish grey silty CLAY, tr. sand and small-large gravel, very stiff	Wadsworth Till II
				3.6	laminated to 60.2'	
18CS		5.0'		4.0	1" coarse sand seam at 60.2' over shale fragments	
				4.0	greyish brown 60.2-61.1'	
				4.1		
				3.5		
				3.1		
19CS		5.0'		3.2	"checkered" 67.0'-68.0'	
				3.3		
				3.1		
				3.4	"checkered" 70.0'-74.0'	
				2.1		
20CS		5.0'		2.9		
				4.0		
				3.4	feathery 74.0'-75.0'	
				3.4	foliated 75.0'-75.5'	
				3.7	feathery below 75.5'	
					horizontal fracture at 78.5'	
21CS		5.0'		3.0	hard below 78.0'	
				4.1		
				4.5		

LOG: 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 80; PVC Pipe; Volclay Grout; Stainless Steel Pipe; 672.

ROBERTA L. JENNINGS
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2920 N. SHORE DRIVE
MCHENRY, ILLINOIS 60050
815/344-8017

JOB NO. 88-105a

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

G-20

PROJECT BFI-Zion IEPA Monitor Wells

DRILLER Testing Service Corporation

RIG Mobile B-61 METHOD Rotary

G.S. ELEVATION 747.6 DATE STARTED 4/10/90

T.O.B. ELEVATION 642.6 DATE COMPLETED 4/11/90

BORING NO. GK3D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 5 OF 6

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				4.4	Brownish grey silty CLAY, tr. sand and small-large gravel, hard	Wadsworth Till II	
				4.7	feathery and laminated		
22CS		4.0'		4.0	664.3		
				1.5	Grey silty, sandy, gravelly CLAY, stiff	Diamicton	
					661.8		
				4.4	Brownish grey silty CLAY, tr. sand and small-large gravel, hard	Wadsworth Till II	
				4.2			
23CS		3.5'		4.5+	659.5		
					Green fine SAND 659.3	Diamicton	
					Greenish grey silty CLAY/clayey SILT, tr. gravel, stiff		
				1.8	656.1		
					Interlayered grey fine, fine-medium, and fine-coarse SAND 655.7	Shallow drift aquifer sediments	
24CS		5.0'			Grey fine-coarse SAND and small-large GRAVEL		
					653.1		
					Grey fine-medium SAND with coarse sand and small gravel 652.1		
					Grey fine-coarse SAND and small-large GRAVEL		
25CS		3.5			648.7		
					Grey fine SAND 648.0		
					Grey SILT, tr. interlayered fine SAND		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST

JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING
G-21

PROJECT BFI-Zion IEPA Monitor Wells
DRILLER Testing ServiceCorporation
RIG Mobile B-61 METHOD Rotary
G.S. ELEVATION 747.6 DATE STARTED 4/10/90
T.O.B. ELEVATION 642.6 DATE COMPLETED 4/11/90

BORING NO. GK3D
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 6 OF 6

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION		GEOLOGIC UNIT	LOG
					Grey fine sandy SILT	647.1	Shallow drift aquifer sediments	
					Gr.fi.-co.SAND, some sm.grvl.	646.7		
					Grey silty fine SAND			
						645.0		
26CS		5.0'			Grey fine sandy SILT	644.5		
					Grey fine-coarse SAND with small-medium gravel			
						642.6		
					T.O.B. 105.0'			
					Monitor well installed in hole at completion			

100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 120

Sand 642

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST

JOB NO. 88-105a
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING
G-22

PROJECT BFI-Zion IEPA Monitor Wells
DRILLER Testing Service Corporation
RIG Mobile B-61 METHOD Rotary
G. S. ELEVATION 748.0 DATE STARTED 4/12/90
T.O.B. ELEVATION 702.0 DATE COMPLETED 4/12/90

BORING NO. GK3S
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING 42.0'
SHEET 1 OF 3
Top of Pipe 748.96

SAMPLE NO/TYPE	N	REC.	WC.	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
1SS	3 5 4 5	12"		3.0	Brown silty CLAY with roots, very stiff	Slopewash
					745.8	
2SS	4 6 8 12	18"		3.3	Brown silty CLAY, tr. sand and small-large gravel, tr. oxidation, greyed along joints, very stiff-hard	Wadsworth Till I (weathered)
3SS	8 15 17 20	24"		4.5+		
4SS	14 12 19 30	24"		4.2		
5SS	8 17 20 60	24"		3.9		
6SS	10 13 18 22	24"		3.6	1/8" dry silt seam at 10.7'	
7SS	8 15 22 26	24"		4.5+	large oxidized stains 12.0'-14.0'	
					734.0	
8SS	13 16 19 16	24"	disturbed by rock	2.5	Grey silty CLAY, tr. sand and small-large gravel, very stiff-stiff	Wadsworth Till I (unweathered)
9SS	5 8 11 12	24"		1.8		
10SS	5 8 10 12	24"		1.6		

LOG: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120

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815/344-0017
A.I.P.G. CPG3 8440
IMD CPG 237

JOB NO. 88-105a
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-23

PROJECT BFI-Zion IEPA Monitor Wells

DRILLER Testing Service Corporation

RIG Mobile B-61 METHOD Rotary

G. S. ELEVATION 748.0 DATE STARTED 4/12/90

T.O.B. ELEVATION 702.0 DATE COMPLETED 4/12/90

BORING NO. GK3S

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING 42.0'

SHEET 2 OF 3

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
20		8				Grey silty CLAY, tr. sand and small-large gravel, stiff	Wadsworth Till I
21	11SS	11 13 17	24"		1.7		
22							
23	12SS	5 9 11 12	24"		1.5		
24							
25	13SS	5 6 8 10	24"		1.6		
26						hairline silt partings at 25.7', 25.8', and 25.9'	
27	14SS	4 5 11 16	24"		1.9	3" silt pocket at 25.6'	
29	15SS	5 6 10 12	24"		1.4		
30							
31	16SS	3 5 10 11	24"		1.7		
32						fine-coarse sand pocket at 32.3'	
33	17SS	6 10 13 15	24"		1.5		
34							
35	18SS	4 10 14 13	24"	disturbed by rock	2.0		
36						6" brown silty clay, tr. organics 36.0'-36.5' (cave or inclusion)	
37	19SS	10 10 14 19	24"		2.4	2 fine sand partings at 36.8'	
38							
	20SS	4 7 12 14	21"		1.9		
40							

728

713.

708.

Stainless Steel Pipe

Volclay grout

Sand Pellet Seal

ROBERTA L. JENNINGS
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2926 N. SHORTWOOD DRIVE
MCHENRY, ILLINOIS 60050
(815) 344-0017
A.I.P.G. CPG3 #440
IWD CPG 237

JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-24

PROJECT BEI-Zion IEPA Monitor Wells

DRILLER Testing Service Corporation

RIG Mobile B-61 METHOD Rotary

G.S. ELEVATION 748.0 DATE STARTED 4/12/90

T.O.B. ELEVATION 702.0 DATE COMPLETED 4/12/90

BORING NO. GK3S

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING 42.0'

SHEET 3 OF 3

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
21SS	14 17 29 22	0"	rock @ 40'		Grey silty CLAY, tr.sand and sm-lg. gravel, stiff No Retovery ±707	Wadsworth Till I	
					Fine-medium SAND, some coarse, tr. small gravel (with water in sampler)	Intratill sorted sediments	
22SS	20 22 31 30	2"		2.0	±704		
23SS	11 14 18 20	14"	disturbed by rock		Brownish grey silty CLAY, tr. sand and small-large gravel, stiff 702.0	Wadsworth Till II	
					T.O.B. 46.0'		
					Monitor well installed in hole at completion		

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CPG CPGS #440
IND CPG 237

JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-25

PROJECT BFI-Zion IEPA Monitor Wells

DRILLER Testing Service Corporation

RIG Mobile B-61 METHOD Rotary

G.S. ELEVATION 745.3 DATE STARTED 4/6/90

T.O.B. ELEVATION 635.3 DATE COMPLETED 4/9/90

BORING NO. CK4D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING 6.5'

SHEET 1 OF 6

Top of Pipe 746.20

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Brown and grey silty CLAY, v.soft 745.0	FILL	
					Dark brown clayey TOPSOIL 744.2	Slopewash or surficial sorted sediments	
1SS	13 15 17 17	13"		1.3	Brown and grey mottled silty CLAY, tr. roots, greyed along joints, stiff-hard		
2SS	11 12 15 23	17"		1.7			
3SS	8 11 12 13	19"		4.5 2.0	sand seams, tr. pebbles below 5.8' 739.3		
4SS	7 12 10 7	24"			Brown and grey clayey SAND to sandy CLAY, tr. small-large gravel with occasional sand seams		
5SS	8 13 18 19	24"			735.8		
					Grey fine SAND w/gravel 735.1		
6SS	18 13 25 23	19"		3.6	Slightly brownish grey silty CLAY, tr. sand and small-large gravel, very stiff-stiff grey below 12.0'	Wadsworth Till I (unweathered)	
7SS	10 19 21 34	24"		3.0 2.0			
8SS	11 17	10"		2.5			
9CS		6.0"		2.3 2.3 1.5 2.3 1.3			

Volclay Grout

ant. pipe

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815/744-0007

JOB NO. 88-105a

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

G-26

PROJECT BFI-Zion IEPA Monitor Wells

DRILLER Testing Service Corporation

RIG Mobile B-61 METHOD Rotary

G. S. ELEVATION 745.3 DATE STARTED 4/6/90

T.O.B. ELEVATION 635.3 DATE COMPLETED 4/9/90

BORING NO. GK4D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING 6.5'

SHEET 2 OF 6

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				2.0	Grey silty CLAY, tr. sand and small-large gravel, stiff	Wadsworth Till I	
				1.8			
10CS		5.0'		1.5			
				1.5			
				1.8			
				1.1			
				1.6			
11CS		5.0'		1.7			
				1.7			
				1.7			
				1.4			
				1.6	hairline silt parting at 31.5' (does not extend through sample)		
12CS		5.0'		1.7			
				1.8			
				1.7			
				1.6			
				1.7			
					708.1		
13CS		5.0'		1.6	Grey silty CLAY, tr. sand and small-large gravel, very stiff-hard sand pocket at 37.2', 1/8" silt seam at 38.0', med-co sand pocket at 38.1', 1" silt seam at 39.2', hairline silt ptg.at39.4',1/8"silt seam at 39.7'	Wadsworth Till (transitional)	
				3.6			
				4.0	705.6		
					Sl.br.gr.si.CLAY,tr.sa.&grv.,hard	Wadsworth Till II	

VOLCLAY GROUT

PVC 2"ø

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JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-27

PROJECT BEI-Zion IEPA Monitor Wells

DRILLER Testing ServiceCorporation

RIG Mobile B-61 METHOD Rotary

G.S. ELEVATION 745.3 DATE STARTED 4/6/90

T.O.B. ELEVATION 635.3 DATE COMPLETED 4/9/90

BORING NO. GK4D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING 6.5'

SHEET 3 OF 6

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				2.7	Brownish grey silty CLAY, little fine sand, tr. small-large gravel, stiff	Wadsworth Till II	
				1.3			
14CS		4.5'		1.3			
				0.9			
				1.3			
				1.3			
				1.4			
15CS		5.0'		1.4			
				1.5			
				1.2			
				1.0	clayier below 50.0'		
				1.7			
16CS		4.5'		1.9			
				2.0	very stiff-hard below 53.0'		
				2.4			
				2.1			
				4.0	slightly pinkish at 57.0'		
17CS		5.0'		4.4	shale fragment at 57.8' 687.5		
				4.5	Grey CLAY w/occasional silt seams - irregular, occasional pebble, hard	Intratill sorted sediments	
				4.5			

VOLCLAY GROUT

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MCHENRY, ILLINOIS 60050

JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-28

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK4D

DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION ____ HOURS ____

RIG Mobile B-61 — METHOD Rotary — WHILE DRILLING 6.5'

G.S. ELEVATION 745.3 — DATE STARTED 4/6/90 — SHEET 4 OF 6

T.O.B. ELEVATION 635.3 — DATE COMPLETED 4/9/90

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				4.5+	Grey CLAY w/occasional silt seams - irregular, occasional pebble, hard	Intratill sorted sediments	
18CS		2.0'			682.3		
					Brownish grey silty CLAY, tr. sand and small-large gravel, very stiff	Wadsworth Till II	
					laminated 65.0'-70.3'		
				3.1			
				3.1	3" clayey silt seam at 66.5'		
19CS		4.0'		4.0	3" grey sandy silty CLAY, some gravel at 67.5'		
				4.5+			
					hard 68.0'-70.0'		
				3.3			
				3.2			
20CS		4.0'		2.2			
				3.3	3" silty sandy CLAY seam at 73.0'		
					laminated 75.8'-77.8'		
				3.2			
				3.3	feathery 77.8'-78.0'		
21CS		5.0'		2.3	laminated 78.0'-79.0'		
					foliated 79.0'-79.5'		
				3.0	laminated 79.5'-79.8'		
				3.0	foliated 79.8'-80.0'		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST

JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-29

PROJECT BFI-Zion IEPA Monitor Wells

BORING NO. CK4D

DRILLER Testing Service Corporation

WATER LEVELS AT COMPLETION ____ HOURS ____

RIG Mobile B-61 METHOD Rotary

G.S. ELEVATION 745.3 DATE STARTED 4/6/90

T.O.B. ELEVATION 635.3 DATE COMPLETED 4/9/90

WHILE DRILLING 6.5'

SHEET 5 OF 6

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
				3.9	Brownish grey silty CLAY, tr. sand and small-large gravel, very stiff-hard laminated to 81.5'	Wadsworth Till II
				2.9	hairline sand seam at 83.8'	
22CS		4.8'		4.4	irregular fine sand bleb at 84.0'	
					1" fine sand seam w/gravel at 84.6'	
				4.0	2.5" silty fine-coarse sand seam at 85.0' (unsorted diamicton)	
				2.4		
					658.8	
				0.7	Grey fine sandy si.CLAY w/grvl. 658.3	Diamicton
23CS		4.0'		1.0	Brownish grey fairly silty CLAY, tr. sand and small-large gravel 657.3	Wadsworth Till II/ Diamicton
				4.5	Brownish grey silty CLAY, tr. sand and small-large gravel	Wadsworth Till II
					1" seam fine sandy silty CLAY w/grvl. at 88.5' (unsorted diamicton) 655.3	
				4.5	Grey silty, fine sandy CLAY, some gravel, very stiff-hard	Wadsworth Till/ Diamicton
				4.5		
24CS		4.2'		3.3		
				3.3		
				4.5		
				4.5		
					649.3	
				0.7	Grey clayey fine sandy SILT, some gravel, medium stiff 648.3	Diamicton
25CS		4.0'		2.7	Grey silty, fine sandy CLAY, some gravel, very stiff	
				2.3		
			rock @ 99'		646.3	
					Rock	Rock

LOG: Wadsworth Till II; Diamicton; Wadsworth Till II/ Diamicton; Wadsworth Till II; Wadsworth Till/ Diamicton; Diamicton; Rock; Stratified Sand and Gravel

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JOB NO. 88-105a

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

G-30

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK4D

DRILLER Testing Service Corporation — WATER LEVELS

RIG Mobile B-61 METHOD Rotary — AT COMPLETION ____ HOURS ____

G.S. ELEVATION 745.3 DATE STARTED 4/6/90 — WHILE DRILLING 6.5'

T.O.B. ELEVATION 635.3 DATE COMPLETED 4/9/90 — SHEET 6 OF 6

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					ROCK 645.0	ROCK	
				2.0	Interlayered grey CLAY & fi.SAND 644.6	Shallow drift aquifer sediments	
					Brown fine-medium SAND 644.4		
					Brown fine-coarse SAND and small-large GRAVEL 643.8		
					ROCK 642.8		
26CS					Brown fine-coarse SAND and small-large GRAVEL 641.8		
				4.5	Grey silty, slightly fine sandy CLAY, tr. sand and small-large gravel, hard	Wadsworth Till III	
				4.5	1" silt seam at 104.2'		640.
				4.5	feathery		
				4.5	angled silt seams at 108.5' and 109.0'		
27CS				4.5	some gravel 109.0'-109.5'		
				4.5			
				4.5	635.3		
							635.
					T.O.B. 110.0'		
					Monitor well installed in hole at completion		

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JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-31

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK 5D

DRILLER Testing Service Corporation — WATER LEVELS

RIG Mobile B-61 — METHOD Rotary — AT COMPLETION ____ HOURS ____

G. S. ELEVATION 745.7 — DATE STARTED 4/3/90 — WHILE DRILLING ____

T.O.B. ELEVATION 645.7 — DATE COMPLETED 4/4/90 — SHEET 1 OF 5

Top of Pipe 747.44

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
1SS	9, 8, 6, 14	19"		3.1	Brown and grey silty CLAY, tr. sand and gravel, occasional silt seams, tr. oxidation, very stiff-hard	FILL	
2SS	5, 8, 9, 9	18"		4.2	741.7		
3SS	6, 6, 9, 10	20"		1.2	Dark grey very silty CLAY-TOPSOIL Brown very silty CLAY, oxidized, stiff	Slopewash or surficial sorted sediments	
4SS	5, 7, 8, 8	21"		3.0	738.9 Grey and brown silty CLAY, tr. gravel, tr. oxidation, roots, tr. silt seams, very stiff		
5SS	5, 10, 17, 22	24"		4.5+	737.5 Brown mottled silty CLAY, tr. sand small-large gravel, oxidized spots, hard-very stiff	Wadsworth Till I (weathered)	
6SS	12, 16, 20, 20	24"		3.0	733.9		
7SS	9, 18, 18, 22	24"		3.7	Grey silty CLAY, tr. sand and small-large gravel, very stiff	Wadsworth Till I (unweathered)	
8SS	28, 33	12"		3.2	slightly brownish-grey below 15.0'		
				3.1			
				3.0			
9CS		5.0		2.7			
				2.5			
				2.5			

Cement Bentonite Grout

Volcanic Gravel

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JOB NO. 88-105a

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

G-32

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK5D

DRILLER Testing Service Corporation — WATER LEVELS

RIG Mobile B-61 — METHOD Rotary — AT COMPLETION

HOURS

G.S. ELEVATION 745.7 — DATE STARTED 4/3/90 — WHILE DRILLING

T.O.B. ELEVATION 645.7 — DATE COMPLETED 4/4/90 — SHEET 2 OF 5

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				1.8	Slightly brownish grey silty CLAY, tr. sand and small-large gravel, stiff	Wadsworth Till I	
				1.6			
10CS		5.0'		1.2			
				0.9			
				1.2			
				1.2			
				1.6	hairline silt parting at 26.5' (does not extend through sample)		
11CS		5.0'		1.4			
				1.4			
				1.4			
				1.3			
				1.7	3" seam brownish grey SILT w/blue fi.sandy clay bands at 32.1', two 1/4" silt seams at 32.2' 713.0		
12CS		3.6'		1.3	Brownish grey fine sandy CLAY, tr. gravel, stiff 712.0	Diamicton	
					Brownish grey clayey fine sandy SILT, some small-large gravel 710.4		
				3.6	Greyish brown silty CLAY, tr. sand and small-large gravel, very stiff 708.9	Wadsworth Till	
				2.2			
13CS		3.0'		1.2	Greyish-brown clayey SILT, stiff, horizontal lamination grey below 37.2'	Intratill sorted sediments	

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JOB NO. 88-105a

LOGGED BY R.L. Jennings

12

GEOLOGIC LOG OF BORING
G-33

PROJECT BFI-Zion IEPA Monitor Wells
DRILLER Testing Service Corporation
RIG Mobile B-61 METHOD Rotary
G.S. ELEVATION 745.7 DATE STARTED 4/3/90
T.O.B. ELEVATION 645.7 DATE COMPLETED 4/4/90

BORING NO. GK5D
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 3 OF 5

SAMPLE NO/TYPE	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
			0.7	Grey clayey SILT, laminated 705.5	Intratill sort.sed.	
			0.8	Slightly brownish grey silty CLAY, tr. sand and small-large gravel, medium stiff	Wadsworth Till II	
14CS	3.5		0.9			
				1/2" grey clayey silt seam at 43.5'		
			0.6	699.7		
			0.6	Pinkish grey silty CLAY, tr. sand and small-large gravel, stiff-very stiff	Wadsworth Till II	
15CS	5.0		1.0			
			2.3			
			2.9			
			2.8			
			2.3	693.7		
16CS	5.0		3.5	Brownish grey silty CLAY, tr. sand and small-large gravel, very stiff	Wadsworth Till II	
			3.3			
			2.8	sl. feathery below 54.8'		
			3.0			
			3.0	laminated between 56.8' and 57.3'		
17CS	5.0		3.0	687.6		
			2.4	Brownish grey silty fine sandy CLAY, tr. to some small-large gravel, very stiff-stiff	Diamicton	
			1.4			

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JOB NO. 88-105a
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING G-34

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK5D

DRILLER Testing Service Corporation — WATER LEVELS

RIG Mobile B-61 — METHOD Rotary — AT COMPLETION ____ HOURS ____

G.S. ELEVATION 745.7 — DATE STARTED 4/3/90 — WHILE DRILLING ____

T.O.B. ELEVATION 645.7 — DATE COMPLETED 4/4/90 — SHEET 4 OF 5

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				1.1	Br.gr.si.fi.sa.CLAY,some sm-lg.gr. 685.4	Diamicton	
		rock at 61.0'			Brownish grey silty CLAY, tr. sand and small-medium gravel, very stiff-occasionally hard	Wadsworth Till II	
18CS		1.5'					
		(pushed rock)					
				4.0			
				3.5			
19CS		5.0'		3.6	sand pockets at 67.3' tr. small-large gravel below 67.3'		
				3.3	hairline silt parting at 67.9'		
				3.4	clayier below 68.0'		
				3.7			
				4.5	feathery 71.0'-72.0'		
20CS		2.0'			foliated at 71.7'		
		pushed rock below 75.5'					
21CS		0.5'					

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A.I.P.G. (PG) #000
IWD (PG) ???

JOB NO. 88-105a

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

G-35

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK5D

DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION

RIG Mobile B-61 — METHOD Rotary — HOURS

G.S. ELEVATION 745.7 — DATE STARTED 4/3/90 — WHILE DRILLING

T.O.B. ELEVATION 645.7 — DATE COMPLETED 4/4/90 — SHEET 5 OF 5

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
				3.5	Brownish grey silty CLAY, tr. sand and small-large gravel, very stiff	Wadsworth Till II	
				3.3			
22CS		4.8'		3.3			
				3.6			
				3.1			
				3.6			
				3.0	foliated below 86.0'		
					658.7		
23CS		5.0'		1.5	Greenish brownish grey silty fine sandy CLAY with small-medium gravel, stiff	Diamicton	
				1.4	grey below 88.0'		
					656.2		
				1.0	Grey clayey SILT, tr. clay bands	Shallow drift aquifer sediments	
					655.4		
					Fi-fi.med.w/co.SAND,tr.sm-lg.gr.655.1		
					Grey and brownish grey fine sandy SILT and SILT, interlayered 654.2		
					Fi-co.SAND, some sm-med. gravel 654.2		
24CS		4.8'	rock @ 91'		Interlayered fine SAND, fine-medium SAND, and fine-coarse SAND, tr. small-medium gravel		
					651.7		
					Brownish grey SILT, tr. clay		
					medium gravel seam at 95.0'		
					649.7		
					Grey clayey SILT w/si.cl.incl. 649.2		
				2.6	Brownish grey silty CLAY, little small-medium gravel, some fine sand, very stiff-hard	Wadsworth Till III	
25CS		4.2'		3.1			
				4.5			
					645.7		

Volclay Grout

Sand

Slotted PVC

T.O.B. 100.0'

Monitor well installed in hole at completion

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JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-36

PROJECT BFI-Zion IEPA Monitor Wells — BORING NO. GK5S

DRILLER Testing Service Corporation — WATER LEVELS

RIG Mobile B-61 — METHOD Rotary — AT COMPLETION ____ HOURS ____

G.S. ELEVATION 745.4 — DATE STARTED 4/5/90 — WHILE DRILLING ____

T.O.B. ELEVATION 703.4 — DATE COMPLETED 4/5/90 — SHEET 1 OF 3

Top of Pipe 747.63

SAMPLE NO/TYPE	N	REC.	WC.	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					See GK5D for complete log of adjacent boring		
1SS	6 7 8	16"		2.3	Mottled brown and grey silty CLAY, very stiff 741.0 Black TOPSOIL	FILL Slopewash	
2SS	10 20 27	17"		3.5	Dark brown silty CLAY, trace sand and small-large gravel, greyed along joints, very stiff	Wadsworth Till I (weathered)	
3SS	10 15 20	18"		2.3	Grey silty CLAY, trace sand and small-large gravel, very stiff	Wadsworth Till I (unweathered)	
4SS	8 13 16	18"		2.7	Grey silty CLAY, trace sand and small-large gravel, very stiff	Wadsworth Till I	

Bentonite Plug

Riser Pipe

Sand Pack

Screen

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2024 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 #440
IMD CPG 237

JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

G-37

PROJECT BFI-Zion IEPA Monitor Wells

DRILLER Testing Service Corporation

RIG Mobile B-61 METHOD Rotary

G.S. ELEVATION 745.4 DATE STARTED 4/5/90

T.O.B. ELEVATION 703.4 DATE COMPLETED 4/5/90

BORING NO. GK5S

WATER LEVELS

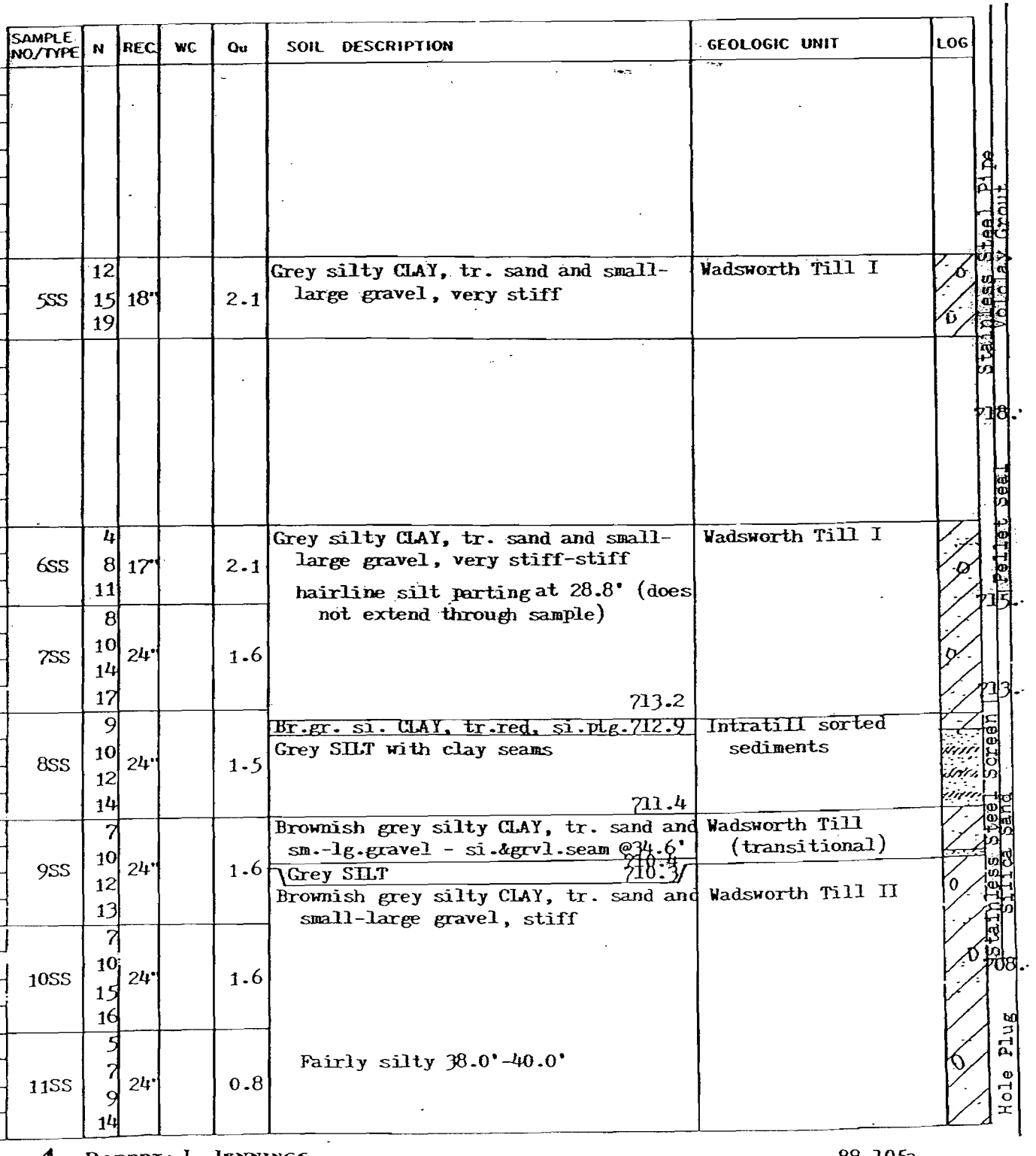
AT COMPLETION

HOURS

WHILE DRILLING

SHEET 2 OF 3

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20								
21								
22								
23								
24	5SS	12 15 19	18"		2.1	Grey silty CLAY, tr. sand and small-large gravel, very stiff	Wadsworth Till I	
25								
26								
27								
28								
29	6SS	4 8 11	17"		2.1	Grey silty CLAY, tr. sand and small-large gravel, very stiff-stiff hairline silt parting at 28.8' (does not extend through sample)	Wadsworth Till I	
30								
31	7SS	8 10 14 17	24"		1.6			
32						713.2		
33	8SS	9 10 12 14	24"		1.5	Br.gr. si. CLAY, tr.red, si.plg. 712.9 Grey SILT with clay seams 711.4	Intratill sorted sediments	
34						Brownish grey silty CLAY, tr. sand and sm.-lg.gravel - si.&grvl.seam @34.6'	Wadsworth Till (transitional)	
35	9SS	7 10 12 13	24"		1.6	710.4 Grey SILT 710.3		
36						Brownish grey silty CLAY, tr. sand and small-large gravel, stiff	Wadsworth Till II	
37	10SS	7 10 15 16	24"		1.6			
38								
	11SS	5 7 9 14	24"		0.8	Fairly silty 38.0'-40.0'		
40								



ROBERTA L. JENNINGS
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2620 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017

JOB NO. 88-105a

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

G-38

PROJECT BFI-Zion IEPA Monitor Wells

DRILLER Testing Service Corporation

RIG Mobile B-61 METHOD Rotary

G.S. ELEVATION 745.4 DATE STARTED 4/5/90

T.O.B. ELEVATION 703.4 DATE COMPLETED 4/5/90

BORING NO. GK5S

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 3 OF 3

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
12SS	9 11 10 11	24"		0.7	Brownish grey silty CLAY, tr. sand and small-large gravel, medium stiff 703.4	Wadsworth Till II	Hole Plug
					T.O.B. 42.0'		703.
					Monitor well installed in hole at completion		

ROBERTA L. JENNINGS
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2020 N. SHOREWOOD DRIVE
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815/344-0017
A.I.P.G. CPG3 #440
IMD CPG 237

JOB NO. 88-105a

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-18 — BORING NO. GK6D

DRILLER Patrick Engineering, Inc. — WATER LEVELS

RIG CME-75 — METHOD Hollow Stem Auger — AT COMPLETION ____ HOURS ____

G.S. ELEVATION 751.8 — DATE STARTED 9/18/89 — WHILE DRILLING ____

T.O.B. ELEVATION 638.8 — DATE COMPLETED 9/20/89 — SHEET 1 OF 6

Well finished 9/21/89 — Top of Pipe 754.05

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
-					Brown silty CLAY TOPSOIL, tr. roots, organics	Wadsworth Till I (weathered)	
					750.3		
1SS	4 6 9 11	18"		3.5	Brown mottled silty CLAY w/silt seams greyed along silt partings and joints, oxidized stains, very stiff, crumbly		
2SS	8 11 13 20	24"		crumbly			
3SS	7 12 15 16	24"		crumbly			
					744.8		
4SS	8 12 15 19	24"		4.5+	Brown SILT		
					744.2		
					744.0 Brown SAND and GRAVEL.		
					Brown silty CLAY, tr. sand and gravel, oxidized along joints, hard		
					742.8		
5SS	6 9 14 15	24"		3.1	Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till 1 (unweathered)	
6SS	6 7 13 16	24"		3.6			
7SS	5 7 11 11	24"		2.6 1.7	stiff 14.0-15.0'		
8SS	5 6 10 10	24"		2.5			
9SS	4 5 8 12	24"		2.1	fine sand pocket 18.7'		
10SS	4 7	24"		3.1			

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P.E. CPG 8440
PHD CPG 337

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/BFI Monitor Wells F-19

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 751.8 DATE STARTED 9/18/89

T.O.B. ELEVATION 638.8 DATE COMPLETED 9/20/89

Well finished 9/21/89

BORING NO. GK6D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 2 OF 6

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20	10SS	11 15	24"		3.1	Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till I	
21		7				silt pocket 20.6'		
22	11SS	8 13 15	24"		2.6	hairline silt parting 21.4'		
23		7						
24	12SS	9 15 17	24"		2.3	fine sand partings 24.8-25.0'		
						?26.8		
25		7				Grey sandy gravelly CLAY, very stiff	Wadsworth Till (diamicton)	
26	13SS	12 14 16	22"		2.1			
						?24.7		
27		5				Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till I	
28	14SS	9 12 14	21"		2.3	fairly silty w/silt pockets 27.7'-27.9'		
29		7						
30	15SS	10 16 20	21"		2.2			
31		6						
32	16SS	12 19 19	20"		2.7			
33		8						
34	17SS	12 13 19	24"		2.2			
35						28% sand, 40% silt, 32% clay (CL)		
36	18ST		20"		3.3	$K = 1.7 \times 10^{-8}$ cm/sec.		
37						contains wavy silt pockets @ 36.8' and 37.3'		
38		7						
	19SS	11 14 16	24"		2.8			
						?12.8		
						Interbedded olive brown CLAY and SILT	Wadsworth Till (diamicton)	
		5				?12.2		
40	20SS	7	24"		2.1	Sl.br-grey silty CLAY, tr.sa.&gry. very stiff	Wadsworth Till I	

RODERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-20

BORING NO. GK6D

DRILLER Patrick Engineering, Inc.

WATER LEVELS

RIG CME-75 METHOD Hollow Stem Auger

AT COMPLETION

HOURS

G.S. ELEVATION 751.8 DATE STARTED 9/18/89

WHILE DRILLING

T.O.B. ELEVATION 638.8 DATE COMPLETED 9/20/89

SHEET 3 OF 6

Well finished 9/21/89

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20SS	10 11	24"		2.1	Sl.brownish-grey silty CLAY, tr. sand and gravel, very stiff - 1" ox. CLAY 710.8 inclusion @ 41.0'	Wadsworth Till I	
21SS	6 10 17 18	12"		2.4	Grey silty CLAY, tr. sand and gravel, very stiff-stiff	Wadsworth Till I	
22SS	6 9 11 11	24"		1.6			
23SS	8 10 12 13	24"		1.2 1.7			
24SS	7 8 12 18	24"		2.0	1/8" coarse sand seam 47.7' 2 hairline fine sand partings 49.0' 702.8		
25SS	21 21 33 40	24"			Grey SILT, dense fine sandy 49.0'49.2 interbedded CLAY 50.0-51.7' 700.1	Intratill Sorted Sediments	
26SS	19 24 29 23	24"			Grey fine sandy SILT 699.5 Grey CLAY w/interbedded silt seams		
27SS	14 26 38 38	24"			698.2 Interbedded grey SILT and fine sandy SILT, very dense		
28SS	7 15 24 33	24"			695.5 Interbedded grey CLAY and SILT, hard		
29SS	30 32 32 62	24"					
30SS	16 40	24"			691.8		

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JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-21
DRILLER Patrick Engineering, Inc.
RIG CME-75 METHOD Hollow Stem Auger
G.S. ELEVATION 751.8 DATE STARTED 9/18/89
T.O.B. ELEVATION 638.8 DATE COMPLETED 9/20/89
Well finished 9/21/89

BORING NO. GK6D
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 4 OF 6

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
60	30SS	62 60	24"			691.8 Interbedded silty fine SAND and fine sandy SILT, very dense	Intratill Sorted Sediments	
61						layers are wavy and off-horizontal		
62	31SS	29 38 34 62	24"			688.8		
63						Slightly brownish-grey CLAY and SILT, hard		
64	32SS	19 28 42 62	24"		4.5+			
65								
66	33SS	10 15 22 28	24"		4.1	685.8 Slightly brownish-grey silty, slightly fine sandy CLAY, tr. sand and gravel, hard-very stiff	Wadsworth Till II (diamicton)	
67								
68	34SS	8 16 19 23	24"		3.8			
69								
70	35SS	7 8 17 17	24"		2.2	681.4 Interbedded SILT, CLAY and fine SAND		
71								
72	36SS	5 7 9 11	24"		2.0	680.0 Slightly brownish-grey silty CLAY and fine sandy CLAY, tr. sa & grv. very stiff, w/pink color band 678.8		
73					3.0	Brownish-grey silty CLAY, tr. sand and gravel, very stiff-hard	Wadsworth Till II	
74	37SS	10 15 23 32	24"		4.3	feathery texture		
75								
76	38SS	6 13 15 22	24"		2.3			
77					4.5	checkered texture (non-fractured) 77.0-78.0'		
78	39SS	11 22 37 39	24"		3.9			
						foliated 79.0-88.0'		
80	40SS	7 13	24"		3.2			

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SHOREWOOD, ILLINOIS 60431
815/744-0017

JOB NO. 88-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells P-22
DRILLER Patrick Engineering, Inc.
RIG CME-75 METHOD Hollow Stem Auger
G.S. ELEVATION 751.8 DATE STARTED 9/18/89
T.O.B. ELEVATION 638.8 DATE COMPLETED 9/20/89
Well finished 9/21/89

BORING NO. GK6D
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 5 OF 6

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40SS	18 24	24"		3.2	Brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till II	
41SS	6 12 18 22	24"		2.5	feathery texture foliated 79.0-88.0'		
42SS	12 15 21 23	24"		2.9			
43SS	8 25 35 29	12"	rock	2.4			
44SS	15 22 31 37	24"		3.3			
45SS	19 32 40 49	14"	rock	3.0			
46SS	11 20 31 33	24"		4.1	more homogeneous texture 91.0-93.5' w/tr. horizontal fractures, hard		
47SS	25 25 35 40	24"		2.6	hairline silt partings @ 93.5' 657.5 657.3 Grey SILT		
48SS	18 33 43 36	24"		3.3	Brownish-grey silty, fine sandy CLAY, tr. sand and gravel, pink and olive green color banding, very stiff foliated to 95.5'	Wadsworth Till II (diamicton)	
49SS	19 18 20 20	24"		2.9			
50SS	10 12	24"		3.0			

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(312) 799-0017

JOB NO. 88-105
LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-23

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G. S. ELEVATION 751.8 DATE STARTED 9/18/89

T.O.B. ELEVATION 638.8 DATE COMPLETED 9/20/89

Well finished 9/21/89

BORING NO. GK6D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 6 OF 6

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
100	50SS	17 22	24"		3.0	Brownish-grey silty, fine sandy CLAY, tr. sand and gravel, very stiff, pink and olive green color banding		
101						650.1		
		7			3.0	649.8 Transitional clayey SILT	Shallow Drift Aquifer	
102	51SS	20 23 16	24"			Brownish-grey fine sandy SILT, very dense	Sediments	
103		7						
104	52SS	23 30 20	24"					
105		0						
106	53SS	0 27 45	24"					
107						644.8		
		19				Grey SILT, massive, tr. clay, very dense-dense		
108	54SS	26 40 40	24"					
109		18						
110	55SS	14 19 21	24"					
111						640.8		
		16				Grey silty CLAY, tr. sand and gravel, hard - feathery to foliated texture	Wadsworth Till III?	
112	56SS	20 34 36	24"			1/4" sand and 1/2" silt seams @ 111.0' and 111.1'		
113						638.8 T.O.B. 113.0'		638
114						Monitor well installed in hole at completion		
115								
116								
117								
118								
120								

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
3920 N. SHOREWOOD DRIVE
SHOREWOOD, ILLINOIS 60431
815/725-0067

JOB NO. 88-105

LOGGED BY R.L. Jennings

SOIL BORING LOG

BORING GK6DR (G183)

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 10429.39 N. 10673.74 E.
DRILLING METHOD: 6.25" Hollow Stem Augers
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 8/21/93

PROJECT NO.: 06114.10
G.S. ELEV.: 751.84 ft. msl
TOC ELEV.: 754.42 ft. msl
TOTAL DEPTH: 114'
LOGGED BY: RCC
DATE END: 8/27/93

WELL NOTES	WELL DETAIL	ELEVATION/ DEPTH	STRATA	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE	PID (ppm)
6" steel protector pipe set in concrete washout with pad to depth of 4'. Bentonite slurry from 4 to 101'. 2" ID Type 316 stainless steel casing to depth of 107.6'.		0 / 750		Borehole advanced to depth of 6 feet prior to sampling. 0 - 6 feet described from cuttings. Brown with gray mottling silty clay, trace sand, trace gravel, plastic, cohesive, slightly moist.	Boring continuously sampled below 6 feet with 2-foot split spoon sampler.				
		5 / 745		Reddish brown clayey silt, trace sand, abundant Fe staining, slightly cohesive, damp-slightly moist, very stiff.	Split Spoon SS-1: 6 - 8' Blows/6": 6,11,18,28	SS-1	21"	27	
				As above, wet around coarse sand in matrix, hard.	SS-2: 8 - 10' Blows/6": 9,18,25,27 Jar-1 collected at 9'.	SS-2	24"	43	
		10 / 740			SS-3: 10 - 12' Blows/6": 5,11,16,22	SS-3	23"	28	
				At 11', brown with gray mottling very silty clay till, trace sand, very stiff, damp, cohesive, slightly plastic (upper till).	SS-4: 12 - 14' Blows/6": 11,11,15,22 Jar-2 collected at 13'.	SS-4	24"	26	
		15 / 735		As above, predominantly gray with brown mottling, silt content decreases, trace gravel below 13.2'. As above, gray silty clay till, stiff becoming very stiff below 16', (unweathered upper till).	SS-5: 14 - 16' Blows/6": 6,7,10,11	SS-5	20"	17	
					SS-6: 16 - 18' Blows/6": 6,7,10,11	SS-6	21"	17	
					SS-7: 18 - 20' Blows/6": 4,6,9,11	SS-7	18"	15	
		20 / 730		Till as above, 3" very sandy zone with wet coarse sand parting at 21'.	SS-8: 20 - 22' Blows/6": 6,7,13,18 Jar-3 collected at 21'.	SS-8	17"	20	
					SS-9: 22 - 24' Blows/6": 10,11,12,17	SS-9	24"	23	
		25 / 725		As above, stiff, several very silty and sandy zones between 24 and 25'.	SS-10: 24 - 26' Blows/6": 4,6,8,14	SS-10	22"	14	
				Same as above, 3" wavy moist clayey silt at 26.3'.	SS-11: 26 - 28' Blows/6": 4,6,8,9	SS-11	22"	14	
					SS-12: 28 - 30' Blows/6": 5,6,9,10	SS-12	20"	15	
		30 / 720			SS-13: 30 - 32' Blows/6": 4,5,8,13	SS-13	10"	13	
					SS-14: 32 - 34' Blows/6": 4,7,8,11	SS-14	4"	15	
		35		Till as above, trace sand, trace gravel, very plastic, very stiff.	SS-15: 34 - 36' Blows/6": 7,7,10,10 Jar-4 collected at 35'.	SS-15	24"	17	

Replacement monitor well GK6D installed in boring upon completion.
Development completed 8/27/93.

WW ENGINEERING AND SCIENCE

SOIL BORING LOG

BORING GK6DR (G183)

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 10429.39 N. 10673.74 E.
DRILLING METHOD: 6.25" Hollow Stem Augers
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 8/21/93

PROJECT NO.: 06114.10
G.S. ELEV.: 751.84 ft. msl
TOC ELEV.: 754.42 ft. msl
TOTAL DEPTH: 114'

LOGGED BY: RCC
DATE END: 8/27/93

WELL NOTES	WELL DETAIL	ELEVATION/ DEPTH	STRATA	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE	PID (ppm)
		715			SS-16: 36 - 38' Blows/6": 6,8,15,19	SS-16	24"	21	
					SS-17: 38 - 40' Blows/6": 8,11,16,18	SS-17	22"	27	
		40			SS-18: 40 - 42' Blows/6": 6,9,12,19	SS-18	23"	21	
		710		Gray silty clay till as above, stiff between 42 and 44', very stiff below 44'.	SS-19: 42 - 44' Blows/6": 4,5,8,13	SS-19	14"	13	
					SS-20: 44 - 46' Blows/6": 5,8,11,15	SS-20	24"	19	
		45			SS-21: 46 - 48' Blows/6": 7,9,15,19	SS-21	24"	24	
		705			SS-22: 48 - 50' Blows/6": 4,5,8,11 Jar-5 collected at 49'.	SS-22	24"	13	
		50		Gray till as above.	SS-23: 50 - 52' Blows/6": 6,8,12,17	SS-23	24"	20	
		700			SS-24: 52 - 54' Blows/6": 9,15,23,27 Jar-6 collected at 53'.	SS-24	24"	38	
				Gray very fine sandy silt, (sand content varies), very moist-wet, dense. As above, thin seams (<1/2") of clay throughout sample, 3" very sandy zone at 54.25', moist.	SS-25: 54 - 56' Blows/6": 5,10,20,28	SS-25	19"	30	
		55		As above, very fine sand and silt below 57.6', dense, very moist.	SS-26: 56 - 58' Blows/6": 5,14,15,38	SS-26	21"	29	
		695		At 58', predominantly gray silt, occasional thin clay seams and sandy zones.	SS-27: 58 - 60' Blows/6": 8,14,28,44	SS-27	20"	42	
				At 60', gray very fine sand and silt, dense, wet.	SS-28: 60 - 62' Blows/6": 7,16,27,35 Jar-7 collected at 61'.	SS-28	18"	43	
		60		As above, saturated.	SS-29: 62 - 64' Blows/6": 10,22,22,40	SS-29	24"	44	
		690		At 64', gray silt, little fine sand (mostly as partings), very moist-wet.	SS-30: 64 - 66' Blows/6": 8,15,26,40	SS-30	24"	45	
				At 65.7', gray silty clay till, abundant silt partings, trace sand, trace gravel, damp, cohesive, very stiff, (lower till).	SS-31: 66 - 68' Blows/6": 10,10,24,28	SS-31	13"	34	
		65		As above, no silt partings.	SS-32: 68 - 70' Blows/6": 2,7,14,25 Jar-8 collected at 68'.	SS-32	20"	21	
		685			SS-33: 70 - 72' Blows/6": 5,12,19,26	SS-33	21"	31	
		70							

Replacement monitor well GK6D installed in boring upon completion.
Development completed 8/27/93.

WW ENGINEERING AND SCIENCE

SOIL BORING LOG

BORING GK6DR (G183)

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 10429.39 N, 10673.74 E.
DRILLING METHOD: 6.25" Hollow Stem Augers
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 8/21/93

PROJECT NO.: 06114.10
G.S. ELEV.: 751.84 ft. msl
TOC ELEV.: 754.42 ft. msl
TOTAL DEPTH: 114'

LOGGED BY: RCC
DATE END: 8/27/93

WELL NOTES	WELL DETAIL	ELEVATION/ DEPTH	STRATA	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE	PID
		680			SS-34: 72 - 74' Blows/6": 8,8,16,21	SS-34	24"	25	
		75		As above, hard, more sand and silt in matrix.	SS-35: 74 - 76' Blows/6": 11,19,41,60	SS-35	24"	60	
		675		Till as above, little sand, trace gravel, slightly moist and plastic, cohesive, hard.	SS-36: 76 - 78' Blows/6": 12,17,16,30 Jar-9 collected at 76'.	SS-36	24"	33	
					SS-37: 78 - 80' Blows/6": 7,7,5,6	SS-37	10"	12	
		80		As above, trace sand, plastic.	SS-38: 80 - 82' Blows/6": 15,16,29,43	SS-38	24"	45	
		670			SS-39: 82 - 84' Blows/6": 10,12,10,19	SS-39	0"	22	
					SS-40: 84 - 86' Blows/6": 12,22,29,40	SS-40	24"	51	
		85							
		665		As above, 1/2" wet coarse sand seam at 86.8', trace-little sand in matrix.	SS-41: 86 - 88' Blows/6": 17,30,31,53	SS-41	19"	61	
					SS-42: 88 - 90' Blows/6": 7,9,13,28	SS-42	0"	22	
		90		As above, brownish tint.	SS-43: 90 - 92' Blows/6": 21,37,71,96 Driving large gravel or cobble.	SS-43	24"	108	
		660			SS-44: 92 - 94' Blows/6": 4,9,14,20	SS-44	0"	23	
				Till as above.	SS-45: 94 - 96' Blows/6": 9,18,23,56 Jar-10 collected at 94'.	SS-45	21"	41	
		95			No sample, wireline drilled to clear large rock.				
		655		Till as above, very stiff, faint olive green tint between 98.6 and 98.7'.	SS-46: 98 - 100' Blows/6": 7,12,16,39	SS-46	14"	28	
		100			SS-47: 100 - 102' Blows/6": 11,15,17,20	SS-47	0"	32	
Bentonite pellets from 101 to 104.5'.		650			SS-48: 102 - 104' Blows/6": 25,43,33/0"	SS-48	12"	NA	
				At 102.7', gray very fine sandy silt, very dense, very moist-wet.					
				As above, saturated.	SS-49: 104 - 106' Blows/6": 17,19,41,63 Jar-11 collected at 104'.	SS-49	13"	60	
Silica sand pack from 104.5 to 114'.		105							
		645			SS-50: 106 - 108' Blows/6": 29,22,42,74	SS-50	16"	64	

Replacement monitor well GK6D installed in boring upon completion.
Development completed 8/27/93.

WW ENGINEERING AND SCIENCE

SOIL BORING LOG

BORING GK6DR (G183)

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 10429.39 N. 10673.74 E.
DRILLING METHOD: 6.25" Hollow Stem Augers
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 8/21/93

PROJECT NO.: 06114.10
G.S. ELEV.: 751.84 ft. msl
TOC ELEV.: 754.42 ft. msl
TOTAL DEPTH: 114'

LOGGED BY: RCC
DATE END: 8/27/93

WELL NOTES	WELL DETAIL	ELEVATION/ DEPTH	STRATA	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE	PID (ppm)
2" ID Type 316 stainless steel screen (10-slot) set from 107.5 to 112.5'. (644.34 to 639.34 ft. msl). Approximately 6" of soil cuttings overlain by 12" silica sand at base of screen.		110 640 115 635 120 630 125 625 130 620 135 615 140 610		As above, slightly less sand.	SS-51: 108 - 110' Blows/6": 35,40,50,81	SS-51	12"	90	
				Predominantly gray silt, trace sand, very dense, saturated.	SS-52: 110 - 112' Blows/6": 8,18,34,27	SS-52	16"	52	
				At 112.5', olive gray sandy silty clay till, moist, stiff, wet 1/4" coarse sand seam at 112.8'. Total sampled and drilled depth = 114 feet.	SS-53: 112 - 114' Blows/6": 10,11,19,40	SS-53	13"	30	

Replacement monitor well GK6D installed in boring upon completion.
Development completed 8/27/93.

WW ENGINEERING AND SCIENCE

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-24

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 752.0 DATE STARTED 9/21/89

T.O.B. ELEVATION 689.0 DATE COMPLETED 9/22/89

Well finished 9/22/89

BORING NO. GK6S

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 1 OF 4

Top of Pipe 753.99

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					See GK6D for complete log of adjacent boring	See GK6D for definitions	
1SS	0 17 19	18"		1.5	Light brown and grey interbedded SILT and CLAY, oxidized, stiff		
2SS	7 10 12	18"		3.7	Grey silty CLAY, tr. sand and gravel, tr. silt partings, very stiff		
3SS	4 6 9	18"		2.4	Grey silty CLAY, tr. sand and gravel, very stiff		
4SS	7 8 12	18"		3.2	Grey silty CLAY, tr. sand and gravel, very stiff		

Cement Plug

Volclay Grout

Bolt Plug

ROBERTA L. JENNINGS
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2020 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 8440
IHD. CPG 237

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-25

DRILLER Patrick Engineering, Inc.

RIG C.M. B-75 METHOD Hollow Stem Auger

G.S. ELEVATION 752.0 DATE STARTED 9/21/89

T.O.B. ELEVATION 689.0 DATE COMPLETED 9/22/89

Well finished 9/22/89

BORING NO. GK6S

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 2 OF 4

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
5SS	8 9 13	18"		2.9	Grey silty CLAY, tr. sand and gravel, very stiff 1" sandy clay 24.5'		
6SS	4 7 12	17"		2.0	Grey silty CLAY, tr. sand and gravel, very stiff		
7SS	20 15 19	18"		4.3	Grey silty CLAY, tr. sand and gravel, hard rock @ 34.6' hairline silt parting 34.9'		
8SS	7 10 12	18"		3.0	Grey silty CLAY, tr. sand and gravel very stiff		

PVC Pipe

726.

Stainless Steel Pipe

Volclay Grout

ROBERTA L. JENNINGS
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MOMENCE, ILLINOIS 60950
815/344-0017
I.P.G. CPGS 0440
IND. CPG 337

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion . USEPA/RFI Monitor Wells F-26
BORING NO. GK6S
DRILLER Patrick Engineering, Inc.
RIG CME-75 METHOD Hollow Stem Auger
G.S. ELEVATION 752.0 DATE STARTED 9/21/89
T.O.B. ELEVATION 689.0 DATE COMPLETED 9/22/89
Well finished 9/22/89
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 3 OF 4

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
9SS	7 8 11	18"		1.3	Grey silty CLAY, tr. sand and gravel, stiff		
					Begin continuous sampling		
10SS	10 19 31 48	24"		3.3	Grey silty CLAY, tr. sand and gravel, laminated, pink color band, very stiff 701.7 Interbedded grey CLAY, SILT, and fi. 701.0 SAND		
11SS	9 22 30 34	24"		4.5+	Grey CLAY w/wavy silt partings and seams, hard 700.0 Grey fine sandy SILT w/clay and silt seams 698.5		
12SS	12 21 22 29	24"		4.5	Grey CLAY w/interbedded silt, hard (seams are wavy and off-horizontal) coarse sand pocket 54.2'		
13SS	11 23 29 58	24"		4.5+	numerous brick red shale pieces at base, bedding contact @ 45° 695.2		
14SS	32 25 29 50	24"			Grey fine sandy SILT, very dense 694.4 Grey CLAY w/interbedded silt, hard 693.7 Grey silty fine SAND, very dense 693.1		
15SS	28 22	24"		4.5+	Grey interbedded CLAY and SILT, hard		

Volclay Grout
704.
Stainless Steel Screen
Silica Sand
696
S

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2928 N. SHOREWOOD DRIVE
SHOREWOOD, ILLINOIS 60030
815/744-0017
A.I.P.G. CPG# 8440
IMD. CPG 333

JOB NO. 88-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-27

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 752.0 DATE STARTED 9/21/89

T.O.B. ELEVATION 689.0 DATE COMPLETED 9/22/89

9/22/89

BORING NO. GK6S

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 4 OF 4

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
15SS	28 42	24"		4.5+	Grey interbedded CLAY and SILT, laminated, hard		
16SS	16 23 33 41	24"			689.0		
					T.O.B. 63.0'		
					Monitor well installed in hole at completion		

60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 80

Sand. Slt. Screen

689.

ROBERTA L. JENNINGS
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815/344-0017
A I P G. CPG3 9440
IND CPG 237

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-28

BORING NO. GK7D (G185)

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING

G. S. ELEVATION 746.3* DATE STARTED 9/25/89

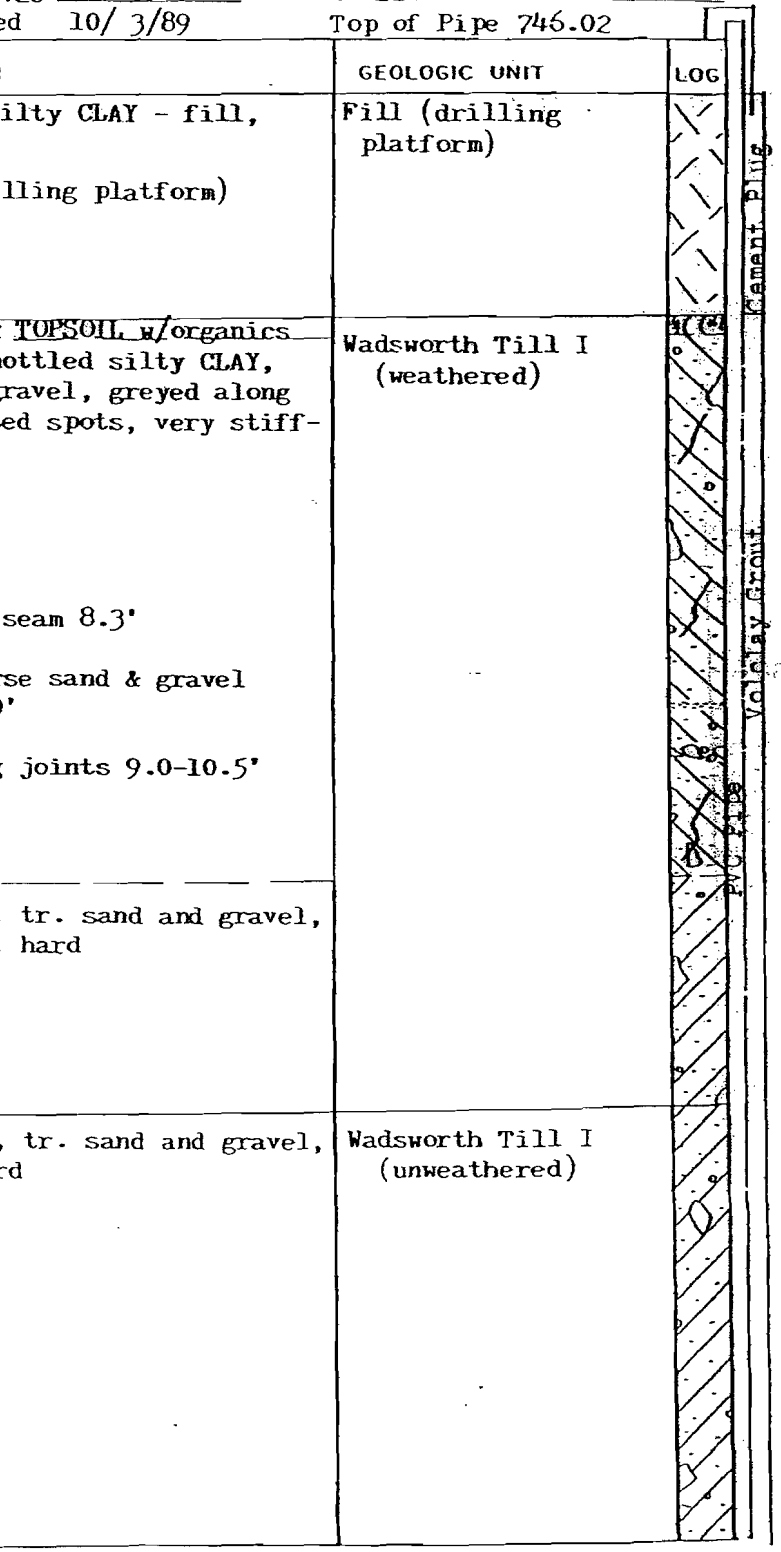
T.O.B. ELEVATION 621.3 DATE COMPLETED 9/29/89

Well finished 10/ 3/89

SHEET 1 OF 7

Top of Pipe 746.02

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Brown and grey silty CLAY - fill, very stiff	Fill (drilling platform)	
1SS	3 4 3 3	12"		2.0	(temporary drilling platform)		
					743.3		
					743.0 Black clayey TOPSOIL w/organics		
2SS	3 4 5 6	24"		2.0	Brown and grey mottled silty CLAY, tr. sand and gravel, greyed along joints, oxidized spots, very stiff-hard	Wadsworth Till I (weathered)	
3SS	3 4 6 7	22"		3.0			
4SS	3 8 11 15	24"		4.5+	1" brown silt seam 8.3' 3" clayey coarse sand & gravel seam 8.8-9.0'		
5SS	8 10 14 19	18"		4.5+	oxidized along joints 9.0-10.5'		
					735.5		
6SS	6 10 14 18	24"		4.2	Grey silty CLAY, tr. sand and gravel, tr. oxidation, hard		
					732.3		
7SS	6 8 14 19	24"		4.2	Grey silty CLAY, tr. sand and gravel, very stiff-hard	Wadsworth Till I (unweathered)	
8SS	5 8 16 21	24"		3.5			
9SS	6 11 16 17	24"		4.0			
10SS	5 7	24"		2.5			



ROBERTA L. JENNINGS
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A.I.P.G. CPG# 8440
WHO. CPG# 257

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/BFI Monitor Wells F-29

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 746.3* DATE STARTED 9/25/89

T.O.B. ELEVATION 621.3 DATE COMPLETED 9/29/89

Well finished 10/ 3/89

BORING NO. GK7D (G185)

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 2 OF 7

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20	10SS	12 17	24"		2.5	Grey silty CLAY, tr. sand and gravel, stiff-very stiff	Wadsworth Till I	
21								
22	11SS	6 7 11 15	24"		2.3			
23								
24	12SS	7 9 13 17	24"		2.4			
25						14% sand, 44% silt, 42% clay (CL)		
26	13 ST		20"		1.6	$K = 1.9 \times 10^{-8}$ cm/sec. slightly brownish-grey below 26.0'		
27								
28	14SS	5 9 12 14	24"		2.2			
29								
30	15SS	8 11 16 19	24"		2.7			
31								
32	16SS	5 8 12 14	24"		2.5	hairline silt partings 31.8' and 32.7'		
						713.8		
33						Brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till I	
34	17SS	8 11 19 22	24"		3.2	pink stain @ 34.6' and brown spots (inclusions)		
35								
36	18SS	7 10 13 21	24"		2.7			
37								
38	19SS	8 12 27 62	24"		2.9			
						707.8		
	20SS	26 60	21"			Grey SILT, slightly laminated, tr. fine sand, hard	Intratill Sorted Sediments	
40								

PVC Pipe Volclay Grout

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A.I.P.G. CPG3 6440
IHD CPG 237

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-30

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 746.3* DATE STARTED 9/25/89

T.O.B. ELEVATION 621.3 DATE COMPLETED 9/29/89

Well finished 10/ 3/89

BORING NO. GK7D (G185)

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 3 OF 7

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20SS	09 20	21" 3"			Grey SILT, slightly laminated, tr. fine sand, occasional clay seams 40.0-40.5', clayey silt seams 41.0'-41.5'	Intratill Sorted Sediments	
21SS	32 67 90 25	24"			703.2		
22SS	32 52 63 80	24"			Grey silty fine SAND, very dense 702.0 Grey fine SAND, tr. silt, very dense 701.3 Grey silty fine SAND, very dense		
23SS	36 50 66 124	24"			700.7 Grey CLAY, laminated, w/pink color banding, interbedded silt seams, hard - bedding wavy		
SS	21 72 19 107	24"			698.6 Grey silty fine SAND w/occasional silt and clay seams, very dense, hard		
25SS	35 70 28 130	24"					
26SS	24 55 90 10	24"			693.3		
27SS	33 39 60 55	24"			Grey fine SAND, tr. silt, very dense		
28SS		overdrilled no sample recovered					
29SS	28 48 82 97	24"			688.8 Grey silty fine SAND interbedded with silt seams, very dense, clay seams near base		
S	24 40	24"		4.5+	682.3 Brownish-grey silty CLAY, tr. sand and gravel, hard, silt parting 59.3' feathery texture	Wadsworth Till II	

Volclay Grout

Bent Chips

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A.I.P.G. CPG3 #340
IMD CPG 237

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-31

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 746.3* DATE STARTED 9/25/89

T.O.B. ELEVATION 621.3 DATE COMPLETED 9/29/89

Well finished 10/ 3/89

BORING NO. GK7D (G185)

WATER LEVELS

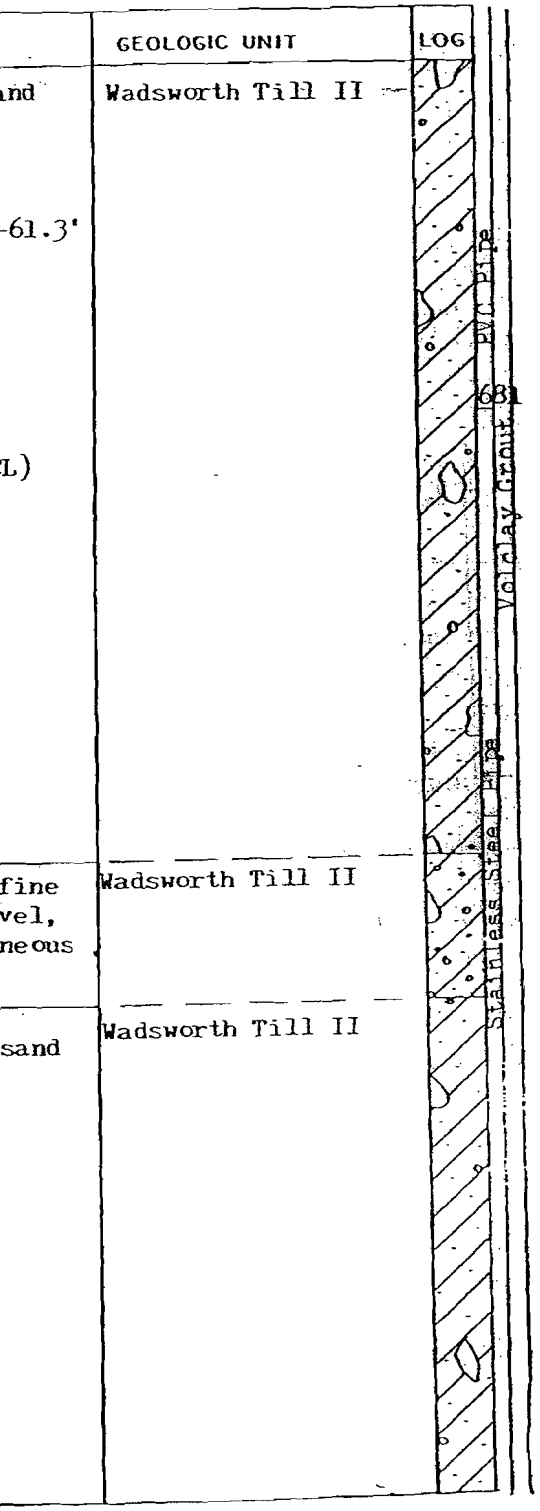
AT COMPLETION

HOURS

WHILE DRILLING

SHEET 4 OF 7

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
60	30SS	65 80	24"		4.5+	Brownish-grey silty CLAY, tr. sand and gravel, very stiff-hard	Wadsworth Till II	
61		12				feathery texture		
62	31SS	25 38 51	24"		3.2	foliated with pink bands 60.0-61.3'		
63		9						
64	32SS	18 28 30	24"		4.5+			
65						5% sand, 48% silt, 47% clay (CL)		
66	33ST		22"		4.2	$K = 1.8 \times 10^{-8}$ cm/sec.		
67		8						
68	34SS	12 20 26	24"		3.3			
69		9						
70	35SS	12 20 23	24"		2.6	foliated 70.0-70.5'		
						675.3		
71		7				Brownish-grey silty, slightly fine sandy CLAY, tr. sand and gravel, w/pink color banding, homogeneous texture, very stiff	Wadsworth Till II	
72	36SS	11 15 21	24"		3.2			
						673.3		
73		13				Brownish-grey silty CLAY, tr. sand and gravel, hard-very stiff	Wadsworth Till II	
74	37SS	24 37 50	24"		4.5+	feathery texture		
75		17				foliated 78.8-80.0'		
76	38SS	21 29 35	24"		4.0			
77		12						
78	39SS	15 20 28	24"		2.7			
	40SS	14 17	24"		3.8			
80								



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815/344-0017
A.I.P.G. CPG-1 0440
IWD CPG 237

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

PROJECT BFI-Zion USEPA/RFI Monitor Wells F-32

BORING NO. GK7D (6185)

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 746.3* DATE STARTED 9/25/89

T.O.B. ELEVATION 621.3 DATE COMPLETED 9/29/89

Well finished 10/3/89

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 5 OF 7

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40SS	25 33	24"		3.8	Brownish-grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till II	
41SS	11 16 22 24	24"		2.5	feathery texture foliated 81.0-82.8'		
					663.5		
42SS	12 39 52 69	12"		2.0 3.7	Brownish-grey silty, fine sandy CLAY, tr. sand and gravel w/pink color banding, very stiff homogeneous texture to 85.0', then feathery	Wadsworth Till II	
43SS	9 30 45 42	12"		2.3	2" hard brownish-grey silty clay seam @ 85.0' - foliated		
44SS	16 30 63 33	18"		2.5	fine sand content gradually reduces downward		
45SS	18 26 29 33	24"		4.0	silt parting 90.0'		
46SS	15 19 31 37	24"		3.6	1/4" coarse sand and small gravel seam 91.4' foliated 90.0-91.0'		
					653.3		
47SS	15 19 23 31	24"		3.6	Brownish-grey silty CLAY, tr. sand and gravel, very stiff foliated texture feathery 96.5-96.9'	Wadsworth Till II	
48SS	24 30 37 43	24"		2.1	1" silty fine sandy olive green silty clay seam @ 97.0'		
					649.1		
49SS	14 18 24 32	24"		3.7	Olive greenish-grey fine sandy, clayey SILT, some gravel, very stiff	Wadsworth Till II (diamicton)	
	10 18	12"		2.2			

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815/344-0017
A.I.P.G. CPG3 #440
IND. CPG 337

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING F-33

PROJECT BFI-Zion USEPA/RFI Monitor Wells — BORING NO. GK7D (G185)

DRILLER Patrick Engineering, Inc. — WATER LEVELS AT COMPLETION

RIG CME-75 — METHOD Hollow Stem Auger — HOURS

G.S. ELEVATION 746.3* — DATE STARTED 9/25/89 — WHILE DRILLING

T.O.B. ELEVATION 621.3 — DATE COMPLETED 9/29/89 — SHEET 6 OF 7

Well finished 10/ 3/89

	SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
100	50SS	20 29	12"		2.2	Olive greenish-grey fine sandy, clayey SILT, some gravel, very stiff	Wadsworth Till II (diamicton)	
						645.0		
101		20				Olive grey very silty, fine sandy CLAY	Wadsworth Till II (diamicton)	
102	51SS	19 23 43	19"		3.4	some gravel, very stiff		
						643.3		
103		14				Grey fairly silty CLAY, some gravel, very stiff-hard	Wadsworth Till II	
104	52SS	18 22 25	24"		3.7	coarse sand and small gravel parting @ 105.3'		
105		32				1" fine sandy silt seam @ 105.4'		
106	53SS	18 27 43	24"		4.5			
						639.5		
107		19				639.3 Olive greenish-grey and grey SILT, tr. clay	Wadsworth Till II (diamicton)	
108	54SS	39 29 29	24"		0.7	Greenish-brown very silty CLAY, tr. small gravel, medium stiff		
109		50						
110	55SS	50 65 65	NR			?		
						635.3		
111		10				Brownish-grey silty, slightly fine sandy CLAY, tr. sand and gravel, very stiff-hard	Wadsworth Till II (diamicton)	
112	56SS	25 44 53	24"		3.6	feathery texture		
113		31						
114	57SS	42 60 95	24"		4.5+			
115		18						
116	58SS	49 51 59	24"		4.2	some pink and grey coloring 116.0-119.0'		
117		35						
118	59SS	50 61 78	24"		4.5+	foliated 118.0-119.0'		
	60SS	11 32	24"			626.5		
120								

Stainless Steel Pipe Valve

628

626

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
I.P.G. CPG1 #440
WHD. CPG 233

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

F-34

PROJECT BFI-Zion USEPA/RFI Monitor Wells

BORING NO. GK7D (6185)

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

WATER LEVELS AT COMPLETION ____ HOURS ____ WHILE DRILLING ____

G.S. ELEVATION 746.3* DATE STARTED 9/25/89

T.O.B. ELEVATION 621.3 DATE COMPLETED 9/29/89

Well finished 10/ 3/89

SHEET 7 OF 7

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
60SS	80 95	24"			Interbedded CLAY and SILT and fine SAND, hard, very dense, numerous red & blue shale frgmts 120.3-120.5'	Shallow Drift Aquifer Sediments	
					625.2		
61SS	36 44 38 57	24"			Grey and brownish grey CLAY w/interbedded silt seams, hard feathery texture in clay		
62SS	27 39 54 52	24"		4.5+			
					621.3		
					T.O.B. 125.0'		
					Monitor well installed in hole at completion		
					* Ground surface elevation reflects temporary platform.		

626

621.

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
3928 N. SHOREWOOD DRIVE
MONENAT, ILLINOIS 60030
815/344-0017
A.I.P.G. CPG 5440
IND. CPG 237

JOB NO. ____

LOGGED BY ____

GEOLOGIC LOG OF BORING F-35

PROJECT BFI-Zion USEPA/BFI Monitor Wells

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 746.5* DATE STARTED 10/3/89

T.O.B. ELEVATION 687.5 DATE COMPLETED 10/4/89

Well finished 10/5/89

BORING NO. GK7S (GG55)

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 1 OF 3

Top of Pipe 745.99

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					See GK7D for complete log of adjacent boring	See GK1D for definitions	
1SS	3 4 8	6"		2.0	Brown and grey mottled silty CLAY, tr. sand and gravel, very stiff		
2SS	5 10 17	14"		4.3	Brown silty CLAY, tr. sand and gravel, oxidized spots, hard		
3SS	11 19 15	12"		4.3	Grey silty CLAY, tr. sand and gravel, hard, w/ 5" seam brown clayey coarse sand and gravel midway		
4SS	6 11 17	18"		2.6	Slightly brownish-grey silty CLAY, tr. sand and gravel, very stiff silt pocket 19.3'		

Cement Plug

PVC Pipe

Volclay Grout

726.

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG5 6440
IND. CPG 237

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING
F-36

PROJECT BFI-Zion USEPA/RFI Monitor Wells

BORING NO. GK7S (GGSS)

DRILLER Patrick Engineering, Inc.

RIG C-3-75 METHOD Hollow Stem Auger

WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING

G.S. ELEVATION 746.5* DATE STARTED 10/3/89

T.O.B. ELEVATION 687.5 DATE COMPLETED 10/4/89

Well finished 10/5/89

SHEET 2 OF 3

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
5SS	8 9 15	18"		2.5	Slightly brownish-grey silty CLAY, tr. sand and gravel, very stiff silt parting 24.2'		
6SS	8 8 11	18"		2.8	Grey and brownish grey silty CLAY, tr. sand and gravel, very stiff		
7SS	5 8 11	18"		1.5	Pale greyish brown silty CLAY, tr. sand and gravel, stiff		
8SS	8 8 15 22	18"		2.1	Brownish-grey silty CLAY, tr. sand and gravel, very stiff 708.3 Brownish-grey silty fine SAND, very dense		
SS	76 100/5"	NR			?		

726
Stainless Steel Pipe
Volclay Grout
Bentonite Pellets
708.
706.

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
7928 N. SHOREWOOD DRIVE
MORTON GROVE, ILLINOIS 60053
(312) 965-0017
A.I.P.G. CPG# 5440
IHD. CPG# 237

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING F-37

PROJECT BFI-Zion USEPA/RFI Monitor Wells — BORING NO. GK7S (GG5S)

DRILLER Patrick Engineering, Inc. — WATER LEVELS AT COMPLETION ____ HOURS ____ WHILE DRILLING ____

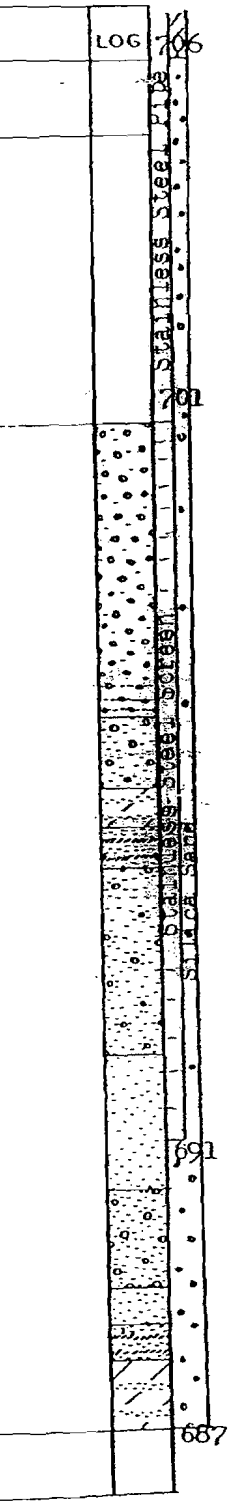
RIG CME-75 — METHOD Hollow Stem Auger

G.S. ELEVATION 746.5* — DATE STARTED 10/3/89

T.O.B. ELEVATION 687.5 — DATE COMPLETED 10/4/89 — Well finished 10/5/89

SHEET 3 OF 3

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
9SS		NR			?		
					Begin continuous sampling		
10SS	42 43 30 97	24"			Grey silty fine SAND, very dense		
11SS	19 39 56 85	18"			contains fine sandy silt layers 48.5-49.0'		
					697.5		
12SS	31 27 59 71	24"			Grey fine sandy SILT, hard 696.5 696.0 Grey CLAY w/silt seams, hard 695.3 Grey SILT w/clay seams, hard		
13SS	19 49 43 102	24"			Grey fine sandy SILT, hard		
14SS	22 45 84 110	24"			692.8 Grey SILT, hard		
15SS	25 44 75 122	24"			690.8 Grey fine sandy SILT, very dense 689.5		
16SS	32 37 40 99	24"			689.0 Grey SILT, hard 688.5 Grey SILT w/clay seams, hard Grey CLAY w/silt seams, hard 687.5 some pink banding 58.5-59.0'		
					T.O.B. 59.0' Monitor well installed in hole at completion		



ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPG3 0440
IHD. CPG 237

* Ground surface elevation reflects temporary platform.

JOB NO. 88-105

LOGGED BY R.L.Jennings

G172

GEOLOGIC LOG OF BORING F-38

PROJECT BFI-Zion USEPA/RFI Monitor Wells

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 742.4 DATE STARTED 10/12/89

T.O.B. ELEVATION 643.4 DATE COMPLETED 10/18/89

Well finished 10/19/89

BORING NO. GK9D

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 1 OF 5

Top of Pipe 744.51

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
	--				Dark grey clayey TOPSOIL w/organics 741.4	Surficial Sorted Sediments	
1SS	6 7 8 9	2"		1.6	Brown and grey CLAY, highly laminated, tr. silt seams, greyed along fracture traces, oxidized along laminae, stiff-hard-very stiff		
2SS	4 6 11 13	15"		4.0			
3SS	5 8 9 12	24"		3.2			
4SS	2 3 8 9	20"		2.5	734.8 Grey SILT w/clay and fine brown sand laminae 734.2 Brown fine-coarse SAND and small GRAVEL w/clay laminae, dry, med. dense 732.9		
5SS	3 3 8 9	15"			Grey fine-coarse SAND with small-med. gravel and silt laminae, moist, medium dense 731.4		
6SS	3 3 4 5	24"			Grey SILT w/interbedded fine-co.SAND 730.4 Grey and black SILT grading to fine SAND 729.4		
7SS	2 2 4 5	24"		1.3	Black and grey fairly silty CLAY w/ some interbedded silt and fine sand, stiff fine-medium sand seam 14.6-14.8' thin fine-coarse sand seam 14.9'		
8SS	2 5 6 7	14"			725.4		
9SS	4 5 6 7	24"			Dark grey fine-coarse SAND and small-medium GRAVEL, wet, medium dense interbedded silt below 19.8'		
10SS	5 8	24"			722.4		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
SHOREWAY, ILLINOIS 60020
815/344-0017

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING
F-39

PROJECT BFI-Zion USEPA/RFI Monitor Wells
DRILLER Patrick Engineering, Inc.
RIG CME-75 METHOD Hollow Stem Auger
G.S. ELEVATION 742.4 DATE STARTED 10/12/89
T.O.B. ELEVATION 643.4 DATE COMPLETED 10/18/89
Well finished 10/19/89

BORING NO. GK9D
WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING
SHEET 2 OF 5

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					722.4 SOIL DESCRIPTION		
10SS	12 15	24"			Dark grey fine-coarse SAND and small-medium GRAVEL w/interbedded silt and clay seams, medium dense	Surficial Sorted Sediments	
					721.0		
11SS	5 8 13 16	15"		4.3	Grey silty CLAY, tr. sand and gravel, hard-very stiff sand partings 21.7-21.8' and 23.0'	Wadsworth Till I	
12SS	6 8 12 18	14"		3.3	slightly brownish-grey 23.9-27.5'		
13SS	6 10 17 31	24"		2.6			
14SS	7 11 13 20	20"		3.8			
15SS	6 8 13 21	24"		2.4			
16SS	5 9 11 15	24"		2.0			
17SS	4 7 8 9	24"		2.2			
18SS	5 10 13 16	24"		2.2			
19SS	7 10 13 17	24"		2.2			
20SS	13 9	24"		2.5			

LOG: Steel Casing; Volclay Grout; PVC Riser; 738

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2036 N. SHOREWOOD DRIVE
MORMAT, ILLINOIS 60030
815/344-0013
AIPG CPG3 0440
NHO CPG 237

JOB NO. 88-105
LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING F-40

PROJECT BFI-Zion USEPA/RFI Monitor Wells

BORING NO. GK9D

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 742.4 DATE STARTED 10/12/89

T.O.B. ELEVATION 643.4 DATE COMPLETED 10/18/89

Well finished 10/19/89

WATER LEVELS AT COMPLETION ____ HOURS ____ WHILE DRILLING ____

SHEET 3 OF 5

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20SS	11 15	24"		2.5	Grey silty CLAY, tr. sand and gravel, very stiff	Wadsworth Till I	
21SS	25 27 35 54	NR	pushed rock				
22SS	4 6 12 19	24"		2.5			
23SS	7 10 17 19	24"		2.5			
24SS	8 12 13 14	20"		2.5	694.9 Grey interbedded CLAY, SILT, fine and fine coarse SAND seams, very stiff 693.4	Intratill Sorted Sediments	
25SS	11 21 26 14	24"		3.0	Slightly brownish-grey silty CLAY, tr. sand and gravel, very stiff 692.4		
				2.2	692.1 Grey fine-coarse SAND Olive brown, silty CLAY, tr. sand and gravel, very stiff		
26SS	8 17 13 16	24"		2.0	dark brown 51.7-52.0' shale fragments 52.0'-52.3' 689.4		
27SS	9 14 21 34	24"		2.2	Slightly brownish-grey silty CLAY, tr. sand and gravel, very stiff-stiff	Wadsworth Till II	
28SS	15 23 32 49	24"		2.2			
29ST		24"		3.1	11% sand, 47% silt, 42% clay (CL) 1.6×10^{-8} cm/sec.		
30SS	11 16	24"		1.8			

Volclay Grout

PVC Pipe

ROBERTA L. JENNINGS
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2036 N. SHOREWOOD DRIVE
MOUNT PROSPECT, ILLINOIS 60056
(312) 394-0017
I.P.G. CPG 5440
IHD CPG 237

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

F-41

PROJECT BFI-Zion USEPA/RFI Monitor Wells

BORING NO. GK9D

DRILLER Patrick Engineering, Inc.

WATER LEVELS

RIG CME-75 METHOD Hollow Stem Auger

AT COMPLETION

HOURS

G.S. ELEVATION 742.4 DATE STARTED 10/12/89

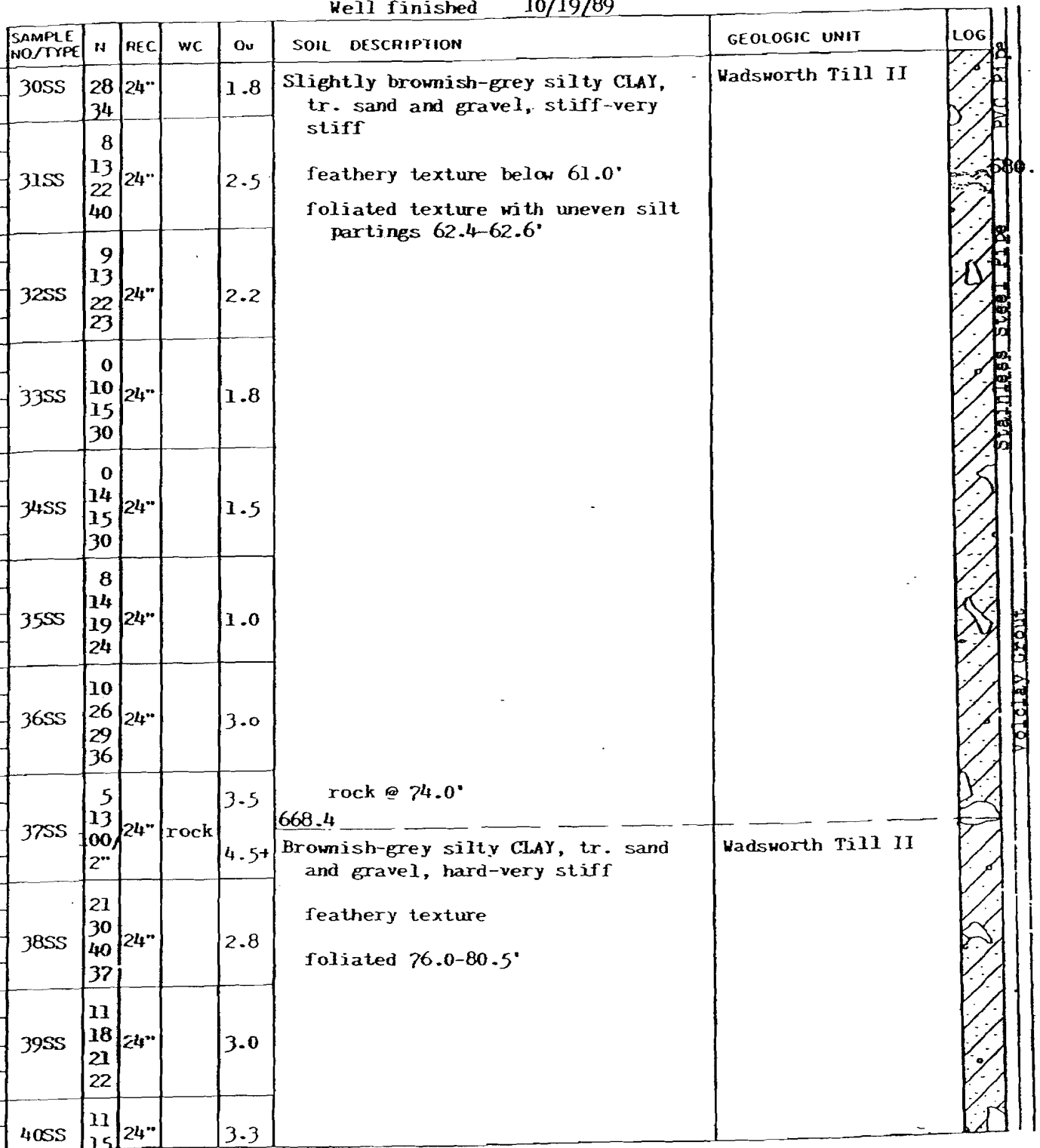
WHILE DRILLING

T.O.B. ELEVATION 643.4 DATE COMPLETED 10/18/89

SHEET 4 OF 5

Well finished 10/19/89

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
60	30SS	28 34	24"		1.8	Slightly brownish-grey silty CLAY, tr. sand and gravel, stiff-very stiff	Wadsworth Till II	
61								
62	31SS	8 13 22 40	24"		2.5	feathery texture below 61.0' foliated texture with uneven silt partings 62.4-62.6'		
63								
64	32SS	9 13 22 23	24"		2.2			
65								
66	33SS	0 10 15 30	24"		1.8			
67								
68	34SS	0 14 15 30	24"		1.5			
69								
70	35SS	8 14 19 24	24"		1.0			
71								
72	36SS	10 26 29 36	24"		3.0			
73						rock @ 74.0'		
74	37SS	5 13 100/ 2"	24"	rock	3.5 4.5+	668.4 Brownish-grey silty CLAY, tr. sand and gravel, hard-very stiff	Wadsworth Till II	
75								
76	38SS	21 30 40 37	24"		2.8	feathery texture foliated 76.0-80.5'		
77								
78	39SS	11 18 21 22	24"		3.0			
	40SS	11 15	24"		3.3			
80								



ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2920 N. SHOREWOOD DRIVE
MORENAY, ILLINOIS 60030
815/344-0057
A.I.P.G. (CPG) 6440
IWD (CPG) 337

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING F-42

PROJECT BFI-Zion USEPA/RFI Monitor Wells — BORING NO. GK9D

DRILLER Patrick Engineering, Inc. — WATER LEVELS

RIG CME-75 — METHOD Hollow Stem Auger — AT COMPLETION ____ HOURS ____

G.S. ELEVATION 742.4 — DATE STARTED 10/12/89 — WHILE DRILLING ____

T.O.B. ELEVATION 643.4 — DATE COMPLETED 10/18/89 — SHEET 5 OF 5

Well finished 10/19/89

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT
40SS	22 34	24"		3.3	Brownish-grey silty CLAY, tr. sand and gravel, very stiff-hard	Wadsworth Till II
41SS	10 15 28 35	24"		2.8		
42SS	20 31 44 56	24"		4.1		
43SS	5 19 36 50	24"		3.3	5 horizontal fractures ± 1/2" apart 85.7-86.4'	
44SS	6 15 28 31	24"		4.2		
45SS	19 24 13 47	24"		2.5	652.0 Thin seam fi-co.SAND, 4" pinkishbr.CLAY, Diamicton 651.4 tr. sa & grv, 3" fine SAND	
46SS	66 64 37 39	6"	rock		Rock @ 91.0', Grey fine-coarse SAND and small-large GRAVEL, very dense coarsens downward	Shallow Drift Aquifer Sediments
47SS	27 23 33 36	12"				
48SS	7 9 43 34	20"	rotary wash		rock @ 95.0' (Rotary wash used to penetrate) 645.7	
49SS	11 23 55 118	24"			645.4 Grey clayey SILT, tr. gravel 644.7 Brown fine-coarse SAND, very dense 643.6 Brown coarse SAND and small-medium GRAVEL, very dense 643.4 Brown fine SAND	

T.O.B. 99.0'

Monitor well installed in hole at completion

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. BROADWOOD DRIVE
HOFFMAN ESTATES, ILLINOIS 60194
(312) 882-0017

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

F-43

PROJECT BFI-Zion USEPA/RFI Monitor Wells

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 741.6 DATE STARTED 3/12/90

T.O.B. ELEVATION 690.6 DATE COMPLETED 3/12/90

Well finished 3/12/90

BORING NO. GK9S(R)

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 1 OF 3

Top of Pipe 743.79

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					See GK9D for complete log of adjacent boring	See GK9D for definitions	
1SS	5 7 8	17"		2.5	Brown and grey mottled silty CLAY, tr oxidation, joint traces, very stiff		
					Brown and grey silty CLAY, stiff 732.7		
2SS	4 4 5	16"			Grey silty fine SAND 731.9		
					Dark grey very silty CLAY, stiff		
3SS	6 9 11	18"			Grey fine-medium SAND w/interbedded fine SAND and SILT, medium dense, tr. coarse sand		
4SS	4 4 7	18"			Grey fine-coarse SAND with small-large gravel, medium dense		

Cement. Plug 738.

PVC Pipe

Volclay Grout

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0011
A.I.P.G. CPGS #446
IND CPG 337

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

F-44

PROJECT BFI-Zion USEPA/RFI Monitor Wells

BORING NO. GK9S(R)

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING

G.S. ELEVATION 741.6 DATE STARTED 3/12/90

T.O.B. ELEVATION 690.6 DATE COMPLETED 3/12/90

Well finished 3/12/90

SHEET 2 OF 3

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
5SS	3 7 12	18"		2.6	Grey silty CLAY, tr. sand and gravel, very stiff, tr. oxidized spots		
6SS	5 10 15	18"		2.2	Grey silty CLAY, tr. sand and gravel, very stiff		
7SS	5 9 12	16"		1.9	Grey silty CLAY, tr. sand and gravel, stiff		
8SS	9 11 18	18"		2.3	Grey silty CLAY, tr. sand and gravel, very stiff		

PVC Pipe

Volclay Grout

Stainless steel pipe

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2026 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPGS 6440
IND. CPG 251

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING

F-45

PROJECT BFI-Zion USEPA/RFI Monitor Wells

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G. S. ELEVATION 741.6 DATE STARTED 3/12/90

T.O.B. ELEVATION 690.6 DATE COMPLETED 3/12/90

Well finished 3/12/90

BORING NO. GK9S(R)

WATER LEVELS

AT COMPLETION

HOURS

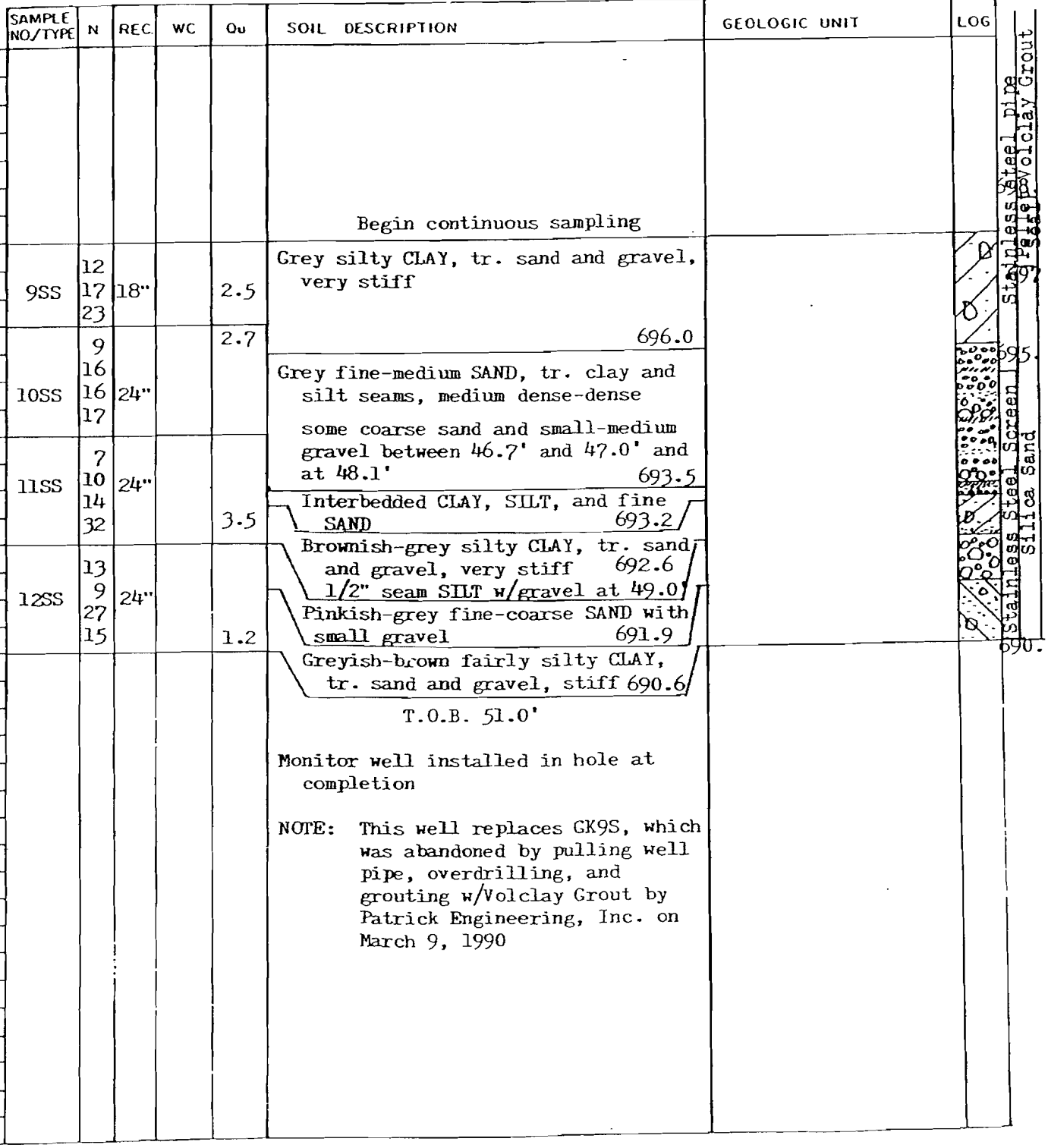
WHILE DRILLING

SHEET 3 OF 3

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Begin continuous sampling		
9SS	12 17 23	18"		2.5	Grey silty CLAY, tr. sand and gravel, very stiff 696.0		
10SS	9 16 16 17	24"		2.7	Grey fine-medium SAND, tr. clay and silt seams, medium dense-dense some coarse sand and small-medium gravel between 46.7' and 47.0' and at 48.1' 693.5		
11SS	7 10 14 32	24"		3.5	Interbedded CLAY, SILT, and fine SAND 693.2		
12SS	13 9 27 15	24"		1.2	Brownish-grey silty CLAY, tr. sand and gravel, very stiff 692.6 1/2" seam SILT w/gravel at 49.0' Pinkish-grey fine-coarse SAND with small gravel 691.9		
					Greyish-brown fairly silty CLAY, tr. sand and gravel, stiff 690.6 T.O.B. 51.0'		

Monitor well installed in hole at completion

NOTE: This well replaces GK9S, which was abandoned by pulling well pipe, overdrilling, and grouting w/Volclay Grout by Patrick Engineering, Inc. on March 9, 1990



ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
MCHENRY, ILLINOIS 60050
815/344-0017
A.I.P.G. CPGS 8440
IMD CPG 237

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING F-46

PROJECT BFI-Zion USEPA/BFI Monitor Wells

BORING NO. GK11 (D)

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING

G.S. ELEVATION 735.1 DATE STARTED 10/ 6/89

T.O.B. ELEVATION 638.1 DATE COMPLETED 10/10/89
Well finished 10/11/89

SHEET 1 OF 5

Top of Pipe 737.33

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Dark brown clayey TOPSOIL w/organics	Wadsworth Till I (weathered)	
					733.9		
1SS	6 8 12 13	20"		1.7	Brown and grey mottled silty CLAY, tr. sand and gravel, oxidized spots, greyed along joint traces, stiff-very stiff-hard		
2SS	5 10 15 16	24"		3.6			
3SS	6 10 15 21	24"		4.0			
4SS	7 13 15 19	24"		3.9			
5SS	5 7 11 15	24"		3.3			
6SS	7 9 10 15	24"		4.3			
					2" silt seam @ 13.0'		
7SS	8 12 15 16	24"		1.6	720.6		
	4		rock		Grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till I (unweathered)	
8SS	6 7 9	12"		1.8	1/8" fine sand seam @ 15.0'		
9SS	4 4 7 10	24"		1.5			
10SS	4 5	24"		1.6			

Cement Plug

Bentonite Grout

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
SHOREWOOD, WISCONSIN 53211
414/332-0017

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

F-47

PROJECT BFI-Zion USEPA/RFI Monitor Wells — BORING NO. GK11 (D)

DRILLER Patrick Engineering, Inc. — WATER LEVELS

RIG CME-75 — METHOD Hollow Stem Auger — AT COMPLETION ____ HOURS ____

G.S. ELEVATION 735.1 — DATE STARTED 10/6/89 — WHILE DRILLING ____

T.O.B. ELEVATION 638.1 — DATE COMPLETED 10/10/89 — SHEET 2 OF 5

Well finished 10/11/89

	SAMPLE NO/TYPE	N	REC	WC	Ov	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20	10SS	7 10	24"		1.6	Grey silty CLAY, tr. sand and gravel, stiff-very stiff	Wadsworth Till I	
21		4						
22	11SS	5 7 10	24"		1.4	fine sand pocket 22.5'		
23		5						
24	12SS	6 9 11	24"		2.0			
25		5						
26	13SS	7 9 12	24"		2.5			
27		7						
28	14SS	10 14 18	18"		3.0			
29		5				1/2" silt seam 29.0'		
30	15SS	8 10 14	21"		1.6			
31		6						
32	16SS	7 11 12	24"		1.5	sand pocket 32.9'		
33		4						
34	17SS	6 9 14	24"		1.6			
35		7						
36	18SS	8 8 11	24"		1.4			
37		5						
38	19SS	9 12 21	24"		1.2	hairline silt partings below 38.1'		
						696.3		
	20SS	16 11	24"		4.3	Brownish-grey silty CLAY, tr. sand and gravel, hard	Wadsworth Till	
40								

Volclay Grout

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JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

F-48

PROJECT BFI-Zion USEPA/RFI Monitor Wells — BORING NO. GK11(D)

DRILLER Patrick Engineering, Inc. — WATER LEVELS

RIG CME-75 — METHOD Hollow Stem Auger — AT COMPLETION ____ HOURS ____ WHILE DRILLING ____

G.S. ELEVATION 735.1 — DATE STARTED 10/6/89

T.O.B. ELEVATION 638.1 — DATE COMPLETED 10/10/89 — Well finished 10/11/89

SHEET 3 OF 5

SAMPLE NO/TYPE	N	REC.	WC	Ov	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
20SS	12 40	24"		4.3	Brownish-grey silty CLAY, tr. sand and gravel, hard-stiff-very stiff	Wadsworth Till	
21SS	18 13 15 16	24"		1.5	grey below 42.5'		
22ST		24"		1.6	23% sand, 49% silt, 28% clay (CL) K = 1.7 X 10^{-8} cm/sec.		
23SS	5 6 12 12	24"		1.5			
24SS	4 8 12 18	24"		2.3			
25SS	6 9 16 22	24"		3.5	pebble concentration in clay matrix at base		
					683.4		
26SS	7 14 18 18	24"		3.5	Brownish-grey silty CLAY, tr. sand and gravel, stiff	Wadsworth Till II	
27SS	6 9 12 28	20"		1.9	feathery texture		
28SS	3 4 8 13	24"		1.6			
29SS	7 9 13 15	24"		1.6			
					676.0		
30SS	8 10	24"		1.8	Thin interbedded br-grey silty CLAY, tr. sa & grv, and olive-grey silty fine sandy CLAY w/pink banding		

Valley Creek

676.

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815/472-0012

JOB NO. 88-105

LOGGED BY R.L. Jennings

GEOLOGIC LOG OF BORING

F-49

PROJECT BFI-Zion USEPA/BFI Monitor Wells

DRILLER Patrick Engineering, Inc.

RIG CME-75 METHOD Hollow Stem Auger

G.S. ELEVATION 735.1 DATE STARTED 10/ 6/89

T.O.B. ELEVATION 638.1 DATE COMPLETED 10/10/89

Well finished 10/11/89

BORING NO. GK11 (D)

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 4 OF 5

	SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
60	30SS	11 14	24"		1.8	Thin interbedded br.-grey silty CLAY, tr. sa & grv. and olive grey silty, fi.sa CLAY, somegrv. w/pink banding	Wadsworth Till (diamicton)	
61						673.8 2 black fine sand ptgs below	Wadsworth Till II	
62	31SS	7 10 13 20	24"		1.6	60.7'-lg. black shale fgmt @ base		
63						Brownish-grey silty CLAY, tr. sand and gravel, very stiff		
64	32SS	5 9 13 15	24"		2.6			
65								
66	33SS	5 12 19 25	24"		3.3			
67						hard 67.0-69.0'		
68	34SS	9 14 24 36	24"		4.3	feathery texture below 68.8'		
69								
70	35SS	8 9 14 18	24"		2.2	foliated 70.8-77.0'		
71								
72	36SS	7 10 13 17	24"		2.7			
73								
74	37SS	4 6 12 19	24"		2.3			
75								
76	38SS	10 11 13 16	24"		2.3			
77						feathery texture below 77.0'		
78	39SS	7 40 87 24	24"	rock	3.7			
	40SS	8 11	24"		3.0			
80								

Volclay Grout

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST

JOB NO. 88-105

LOGGED BY R.L.Jennings

GEOLOGIC LOG OF BORING
F-50

PROJECT BFI-Zion USEPA/RFI Monitor Wells — BORING NO. GK11(D)

DRILLER Patrick Engineering, Inc. — WATER LEVELS

RIG CME-75 METHOD Hollow Stem Auger — AT COMPLETION ____ HOURS ____

G.S. ELEVATION 735.1 DATE STARTED 10/ 6/89 — WHILE DRILLING ____

T.O.B. ELEVATION 638.1 DATE COMPLETED 10/10/89 — SHEET 5 OF 5

Well finished 10/11/89

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40SS	15 21	24"		3.0	Br-grey silty CLAY, tr. sa & grv., very stiff, feathery texture	Wadsworth Till II	
					694.3		
					Br-grey fi-co SAND, some sm grv.	Shallow Drift Aquifer Sediments	
					684.0		
					Grey SILT, hard		
					683.6		
41SS	38 58 63 47	17"			Grey fine sandy clayey SILT, tr. sand and gravel, very dense		
					2" laminated silt seam 82.8'		
42SS	25 30 32 36	24"					
					649.9		
43SS	4 9 33 36	24"			Grey layered SILT, tr. clay layers, very dense		
					tr. pebbles and pink band @ 87.0'		
44SS	14 27 29 34	20"			interbedded clay below 89.3'		
					645.2		
45SS	19 21 43 70	22"			Grey CLAY w/interbedded silt, hard, foliated		
					644.3		
46SS	27 41 36 49	24"			Grey fine-medium SAND, some coarse sand, w/interbedded silt and fine sand (2-4" layers), very dense		
					642.1		
47SS	15 16 30 33	19"			Grey silty fi-med SAND, dense		
					641.6		
					Grey fine-coarse SAND and small GRAVEL		
					640.8		
48SS	17 16 22 32	20"			Interbedded grey CLAY and SILT, hard		
					tr. gravel below 95.4'		
					638.3		
					Grey silty CLAY, tr.sa & grv.		
					638.1		
					T.O.B. 97.0'		
					Monitor well installed in hole at completion		
					Note: No shallow well emplaced at this location		

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JOB NO. 88-105

LOGGED BY R.L.Jennings

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill

BORING NO.: GP-1

DRILLER: Patrick Engineering START: 3/1/89 COMPLETE: 3/1/89

SHEET: 1 OF 2

RIG: CME-75 LOCATION: N 11293.39, E 7968.31

GROUND EL.: 746.9 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	746.9	0.0	Gray and brown silty clay, little to some coarse to fine sand, little to some coarse to fine gravel, stiff to very stiff, low plasticity, moist, fill CL					Advanced borehole using 4-1/4" I.D. HSA.
				SS-1 1.0-2.5 6"R			Frozen	
	743.9	3.0	Gray silty clay, some coarse to fine sand, some coarse to fine gravel, stiff to very stiff, low plasticity, moist CL	SS-2 2.5-4.0 14"R			1.7*	
				SS-3 4.0-5.5 18"R			2.7*	
				SS-4 5.5-7.0 18"R			2.0*	
				SS-5 7.0-8.5 18"R			2.5*	
				SS-6 8.5-10.0 18"R			1.8*	
				SS-7 10.0-11.5 18"R			1.6*	
				SS-8 11.5-13.0 18"R			1.9*	
				SS-9 13.0-14.5 18"R			1.9*	
				SS-10 14.5-16.0 18"R			2.2*	
				SS-11 16.0-17.5 18"R			1.6*	
				SS-12 17.5-19.0 18"R			2.5*	
				SS-13 19.0-20.5 18"R			1.9*	

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill

BORING NO.: GP-1

DRILLER: Patrick Engineering START: 3/1/89 COMPLETE: 3/1/89

SHEET: 2 OF 2

RIG: CME-75 LOCATION: N 11293.39, E 7968.31

GROUND EL.: 746.9 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	726.9	20.0						
				SS-14 20.5-22.0 18"R			1.8*	
	726.9	22.0	End of Boring at 22.0'					

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill — BORING NO.: GP-2

DRILLER: Patrick Engineering — START: 2/28/89 — COMPLETE: 2/28/89 — SHEET: 1 OF 2

RIG: CME-75 — LOCATION: N 11362.05, E 8657.34

GROUND EL.: 758.9 — W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	758.9	0.0	Brown gray black and red mixed silty clay, trace to and coarse to fine sand, trace to some coarse to fine gravel, very stiff to hard, low plasticity, dry to moist, fill CL					Advanced borehole using 4-1/4" I.D. HSA.
				SS-1 1.0-2.5 8"R	3 5 7		Frozen	
				SS-2 2.5-4.0 14"R	4 13 12		4.5+*	
				SS-3 4.0-5.5 18"R	8 12 14		4.0*	
				SS-4 5.5-7.0 18"R	8 13 22		4.5+*	
				SS-5 7.0-8.5 18"R	11 16 27		4.5+*	
				SS-6 8.5-10.0 18"R	12 18 20		4.5+* 4.5+*	
				SS-7 10.0-11.5 18"R	6 16 23		4.5+*	
				SS-8 11.5-13.0 18"R	8 9 13		4.5+*	
				SS-9 13.0-14.5 18"R	7 9 12		3.3+*	
				SS-10 14.5-16.0 18"R	4 8 11		2.6*	
	742.9	16.0	A) Gray silty clay, little to some coarse to fine sand, little coarse to fine gravel, stiff to very stiff, low plasticity, moist CL B) Interbedded with gray clayey silt, trace medium to fine sand, well graded, medium dense, saturated ML	SS-11A,B 16.0-17.5 18"R	3 5 8		2.2*	
				SS-12 17.5-19.0 18"R	4 6 9		1.8*	
				SS-13 19.0-20.5 18"R	4 6 8		1.5*	

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill

BORING NO.: GP-2

DRILLER: Patrick Engineering START: 2/28/89 COMPLETE: 2/28/89

SHEET: 2 OF 2

RIG: CME-75 LOCATION: N 11362.05, E 8657.34

GROUND EL.: 758.9 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	738.9	20.0						
				SS-14	4			
				20.5-22.0	6		1.7*	
				18"R	11			
	736.9	22.0	End of Boring at 22.0'					

LOG OF BORING

PROJECT: BFI Gas Probes, Winthrop Harbor Landfill
DRILLER Patrick Engineering START: 11/09/88 COMPLETE: 11/10/88
RIG: CME-55/TRUCK LOCATION: N 12362.20, E 8666.82
GROUND EL.: 762.1 W.L. & TIME:

BORING NO.: GP-3
SHEET: 1 OF 2

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	762.1	0.0	Brown and gray mixed silty clay, little to some coarse to fine sand, trace to little coarse to fine gravel, stiff to hard, low plasticity, moist, fill CL					Advanced borehole using 4-1/4" I.D. HSA.
				SS-1 1.0-2.5 18"R	19 14 11		Frozen	
				SS-2 2.5-4.0 12"R	7 6 7		1.3*	
				SS-3 4.0-5.5 14"R	5 11 17		4.5+*	
				SS-4 5.5-7.0 18"R	10 17 25		4.5+*	
				SS-5 7.0-8.5 18"R	11 19 27		4.5+*	
				SS-6 8.5-10.0 18"E	9 17 24		4.5+*	
				SS-7 10.0-11.5 18"R	7 15 23		4.5+*	
				SS-8 11.5-13.0 18"R	10 14 24		4.5+*	
				SS-9 13.0-14.5 18"R	11 18 27		4.5+*	
	747.6	14.5	Brown silty clay, little coarse to fine sand, little coarse to fine gravel, hard, low plasticity, moist CL	SS-10 14.5-16.0 18"R	12 24 29		4.5+*	
				SS-11 16.0-17.5 18"R	11 22 29		4.5+*	
				SS-12 17.5-19.0 18"R	10 18 20		4.5+*	
	742.6	19.5	Gray silty clay, little coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL	SS-13A,B 19.0-20.5 18"R	6 8 12		3.7*	

LOG OF BORING

PROJECT: BFI Gas Probes, Winthrop Harbor Landfill
DRILLER Patrick Engineering START: 2/28/89 COMPLETE: 2/28/88
RIG: CME-55/TRUCK LOCATION: N 12362.20, E 8666.82
GROUND EL.: 762.1 W.L. & TIME:

BORING NO.: GP-3
SHEET: 2 OF 2

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	742.1	0.0						
				SS-14	5			
				20.5-22.0	8			
				18"R	12		3.5*	
	740.1	22.0	End of Boring at 22.0'					

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill

BORING NO.: GP-4

DRILLER: Patrick Engineering START: 2/27/89 COMPLETE: 2/27/89

SHEET: 1 OF 2

RIG: CME-75 LOCATION: N 12601.51, E 9457.30

GROUND EL.: 750.6 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	750.6	0.0						Advanced borehole using 4-1/4" I.D. HSA.
			Brown gray black and red mixed silty clay, trace to some coarse to fine sand, trace to little coarse to fine gravel, medium stiff to stiff, low plasticity, moist, fill CL	SS-1 1.0-2.5 10"R	9 7 5		Frozen	
				SS-2 2.5-4.0 6"R	3 4 5		1.1*	
				SS-3 4.0-5.5 6"R	2 3 4		1.0*	
				SS-4 5.5-7.0 6"R	1 2 2		0.7*	
	743.1	7.5	Brown and gray mottled silty clay, some coarse to fine sand, little coarse to fine gravel, hard, low plasticity, moist CL	SS-5 8.0-10.0 18"R	7 10 15 22		4.1*	
				SS-6 10.0-11.5 18"R	5 11 17		3.0*	
				SS-7 11.5-13.0 18"R	10 11 16		3.7*	
				SS-8 13.0-14.5 18"R	7 11 13		3.7*	
				SS-9 14.5-16.0 18"R	7 10 12		3.3*	
			Gradational Contact					
	734.6	16.0	Gray silty and clayey coarse to fine sand, little to some coarse to fine gravel, well graded, medium dense to dense, wet SW	SS-10 16.0-17.5 18"R	6 8 10			
			Gradational Contact	SS-11 17.5-19.0 18"R	4 6 34			
			Gray silty clay and coarse to fine sand, little coarse to fine gravel, well graded, low plasticity, very stiff, wet SW/CL	SS-12 19.0-20.5 18"R	8 14 17		2.9*	
	731.1	19.5						

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill

BORING NO.: GP-4

DRILLER: Patrick Engineering START: 2/27/89 COMPLETE: 2/27/89

SHEET: 2 OF 2

RIG: CME-75 LOCATION: N 12601.51, E 9457.30

GROUND EL.: 750.6 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	730.6	20.0						
	729.6	21.0	Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff, low plasticity, moist CL	SS-13 20.5-22.0 18"R	8 12 14		2.7*	
	728.6	22.0	End of Boring at 22.0'.					

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill

BORING NO.: GP-5

DRILLER: Patrick Engineering START: 2/27/89 COMPLETE: 2/27/89

SHEET: 1 OF 2

RIG: CME-75 LOCATION: N 12593.08, E 10668.55

GROUND EL.: 745.1 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	745.1	0.0						Advanced borehole using 4-1/4" I.D. HSA.
			Brown and buff mixed silty clay, little to some coarse to fine sand, trace to little coarse to fine gravel, hard, low plasticity, dry to moist, fill CL	SS-1 1.0-2.5 10"R	10 13 16		Frozen	
				SS-2 2.5-4.0 12"R	21 23 39		4.5+*	
				SS-3 4.0-5.5 16"R	20 28 24		4.5+*	
				SS-4 5.5-7.0 16"R	18 28 32		4.5+*	
				SS-5 7.0-8.5 18"R	18 30 34		4.5+*	
				SS-6 8.5-10.0 18"R	12 18 12		4.5+*	
				SS-7 10.0-11.5 18"R	16 17 28		4.5+*	
				SS-8 11.5-13.0 18"R	8 10 16		4.5+*	
				SS-9 13.0-14.5 18"R	6 7 9		2.3* to 4.5+*	
	730.4	14.7	Gray silty clay, little coarse to fine sand, little coarse to fine gravel, stiff, medium plastictiy, moist CL	SS-10 14.5-16.0 18"R	5 6 8		1.6*	
				SS-11 16.0-17.5 18"R	5 7 7		1.8*	
	727.1	18.0	Gray silty and clayey coarse to fine sand, some coarse to fine gravel, well graded, dense to very dense, moist SW	SS-12A,B 17.5-19.0 18"R	4 23 32		1.7*	
				SS-13 19.0-20.5 18"R	20 24 24			

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill

BORING NO.: GP-5

DRILLER: Patrick Engineering START: 2/27/89 COMPLETE: 2/27/89

SHEET: 2 OF 2

RIG: CME-75 LOCATION: N 12593.08, E 10668.55

GROUND EL.: 745.1 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	725.1	20.0						
				SS-14 20.5-22.0 18"R	13 23 20			
	723.1	22.0	End of Boring at 22.0'					

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 2/24/89 COMPLETE: 2/24/89
RIG: CME-75/TRUCK LOCATION: N 10320.83, E 10672.08
GROUND EL.: 748.8 W.L. & TIME:

BORING NO.: GP-6
SHEET: 1 OF 2

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	748.8	0.0	Brown and brown gray mottled silty clay, trace coarse to fine sand, roots, very stiff to hard, low plasticity, moist CL	AU-1 0-1				Advanced borehole using 4-1/4" I.D. HSA
				SS-2 1.0-2.5 18"R	5 6 7		2.8*	
				SS-3 2.5-4.0 18"R	9 12 16		4.5+*	
				SS-4 4.0-5.5 18"R	8 14 16		4.5+*	
				SS-5 5.5-7.0 18"R	7 12 16		4.5+*	
				SS-6 7.0-8.5 18"R	7 11 16		4.5+*	
	740.3	8.5	Brown silty clay, some coarse to fine sand, little coarse to fine gravel, hard, low plasticity, moist CL	SS-7 8.5-10.0 18"R	8 11 11		4.3* 3.5*	
				SS-8 10.0-11.5 18"R	4 7 11		2.8*	
				SS-9 11.5-13.0 18"R	6 12 17		4.1*	
	735.3	13.5	Gray silty clay, some coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL	SS-10 13.0-14.5 18"R	8 9 13		2.7*	
				SS-11 14.5-16.0 18"R	6 7 14		2.6*	
				SS-12 16.0-17.5 18"R	5 7 11		2.4*	
				SS-13 17.5-19.0 18"R	7 8 11		2.8*	
				SS-14 19.0-20.5 18"R	5 9 12		2.9*	

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill
BORING NO.: GP-6
DRILLER: Patrick Engineering START: 2/22/89 COMPLETE: 2/22/89
SHEET: 2 OF 2
RIG: CME-75/TRUCK LOCATION: N 10320.83, E 10672.08
GROUND EL.: 748.8 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	728.8	20.0						
				SS-15	7			
				20.5-22.0	8			
				18"R	13		2.3*	
	706.8	22.0	End of Boring at 22.0'					

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill

BORING NO.: GP-7

DRILLER: Patrick Engineering START: 2/28/89 COMPLETE: 2/28/89

SHEET: 1 OF 2

RIG: CME-75 LOCATION: N 10425.86, E 10067.60

GROUND EL.: 743.8 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	743.8	0.0						Advanced borehole using 4-1/4" I.D. HSA.
			Brown with gray mottling silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff to hard, low plasticity, moist CL	SS-1 1.0-2.5 10"R	5 5 6		Frozen	
				SS-2 2.5-4.0 10"R	4 6 10		1.9+*	
				SS-3 4.0-5.5 18"R	9 12 12		4.5+*	
				SS-4 5.5-7.0 18"R	6 11 17		4.5+*	
				SS-5 7.0-8.5 0"R	26 18 24			Pushed cobble
	736.0	7.8	Gray silty clay, little coarse to fine sand, little coarse to fine gravel, hard, low plasticity, moist CL	SS-6 8.5-10.0 18"R	8 10 17		4.5+*	
				SS-7 10.0-11.5 18"R	3 11 14		4.5+*	
				SS-8 11.5-13.0 18"R	11 11 17		4.0+*	
				SS-9 13.0-14.5 18"R	8 11 18		3.8*	
				SS-10 14.5-16.0 18"R	5 8 12		3.5*	
				SS-11 16.0-17.5 18"R	5 8 14		3.2*	
				SS-12 17.5-19.0 18"R	6 9 15		2.4*	
				SS-13 19.0-20.5 18"R	8 11 15		4.2*	

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill

BORING NO.: GP-7

DRILLER: Patrick Engineering START: 2/28/89 COMPLETE: 2/28/89

SHEET: 2 OF 2

RIG: CME-75 LOCATION: N 10425, E 10067.60

GROUND EL.: 743.8 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	723.5	20.0						
				SS-14	9			
				20.5-22.0	12			
				18"R	16		3.7*	
	721.8	22.0	End of Boring at 22.0'					

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 2/23/89 COMPLETE: 2/23/89
RIG: CME-75/TRUCK LOCATION: N 10320.83, E 9881.14
GROUND EL.: 743.5 W.L. & TIME:

BORING NO.: GP-8
SHEET: 1 OF 2

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	743.5	0.0						Advanced borehole using 4-1/4" I.D. HSA
			Brown, black and red mixed silty clay, little to some coarse to fine sand, trace to little coarse to fine gravel, stiff to hard, low plasticity, dry to moist, fill. CL	SS-1 1.0-2.5 18"R	7 11 15		Frozen	
				SS-2 2.5-4.0 8"R	2 4 5		2.3*	
				SS-3 4.0-5.5 12"R	3 5 5		1.4*	
				SS-4 5.5-7.0 18"R	4 7 10		3.0*	
	736.0	7.5		SS-5A,B 7.0-8.5 18"R	4 8 16		2.8*	
			Brown silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff, low plasticity, moist CL	SS-6 8.5-10.0 18"R	10 15 21		4.5+* 4.5+*	
	743.0	9.5						
			Gray silty clay, little to some coarse to fine sand, little coarse to fine gravel, hard, low plasticity, moist CL	SS-7 10.0-11.5 18"R	8 13 17		4.5+*	
				SS-8 11.5-13.0 18"R	10 15 17		4.5+*	
				SS-9 13.0-14.5 18"R	9 11 15		3.2*	
				SS-10 14.5-16.0 18"R	6 10 14		3.3*	
				SS-11 16.0-17.5 18"R	9 11 13		3.4*	
				SS-12 17.5-19.0 18"R	8 9 12		2.3*	
				SS-13 19.0-20.5 18"R	5 7 11		3.1*	

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill
BORING NO.: GP-8
DRILLER: Patrick Engineering START: 2/23/89 COMPLETE: 2/23/89
SHEET: 2 OF 2
RIG: CME-75/TRUCK LOCATION: N 10137.97, E 9881.14
GROUND EL.: 743.5 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	723.5	20.0						
				SS-14 20.5-22.0 18"R			4.0*	
	721.5	22.0	End of Boring at 22.0'					

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 2/23/89 COMPLETE: 2/23/89
RIG: CME-75/TRUCK LOCATION: N 10031.32, E 9259.76
GROUND EL.: 742.0 W.L. & TIME:

BORING NO.: GP-9
SHEET: 1 OF 2

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	742.0	0.0	Brown, gray and red silty clay, little to and coarse to fine sand, trace to some coarse to fine gravel, stiff to very stiff, low plasticity, moist to dry, fill CL					Advanced borehole using 4-1/4" I.D. HSA.
				SS-1 1.0-2.5 3"R	9 5 5		Frozen	
				SS-2 2.5-4.0 12"R	4 5 5		1.1*	
				SS-3 4.0-5.5 18"R	7 7 8			
	736.0	6.0	Gray clayey silt interbedded with red medium to fine silty sand, medium dense, moist ML/SP	SS-4 5.5-7.0 18"R	7 7 9			
				SS-5 7.0-8.5 18"R	5 6 12			
	733.0	9.0	Gray organic silty clay, trace coarse to fine sand, trace coarse to fine gravel, roots, stiff, high plasticity, moist CF	SS-6 8.5-10.0 18"R	4 6 7		1.3*	
				SS-7 10.0-11.5 18"R	2 4 8		1.6*	
	730.5	11.5	Gray silty clay, some coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL	SS-8 11.5-13.0 18"R	7 7 8		3.4*	
				SS-9 13.0-14.5 18"R	5 5 7		3.2*	
				SS-10 14.5-16.0 18"R	4 6 11		3.4*	
				SS-11 16.0-17.5 18"R	8 11 15		4.0*	
				SS-12 17.5-19.0 18"R	6 10 11		4.1*	
				SS-13 19.0-20.5 18"R	4 6 7		1.7*	

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill
BORING NO.: GP-9
DRILLER: Patrick Engineering START: 2/23/89 COMPLETE: 2/23/89
SHEET: 2 OF 2
RIG: CME-75/TRUCK LOCATION: N 10031.32, E 9259.76
GROUND EL.: 742.0 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	722.0	20.0						
				SS-14 20.5-22.0 18"R	3 4 5		1.3*	
	720.0	22.0	End of Boring at 22.0'					

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 2/23/89 COMPLETE: 2/23/89
RIG: CME-75/TRUCK LOCATION: N 10047.44, E 8690.55
GROUND EL.: 735.1 W.L. & TIME:

BORING NO.: GP-10
SHEET: 1 OF 2

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	735.1	0.0	Brown, gray and black silty clay, little to some coarse to fine sand, trace to little coarse to fine gravel, stiff to hard, low plasticity, dry to moist, fill CL					Advanced borehole using 4-1/4" I.D. HSA
				SS-1 1.0-2.5 8"R	6 8 8		Frozen	
				SS-2 2.5-4.0 8"R	3 4 4		0.7*	
				SS-3 4.0-5.5 14"R	9 11 9		2.4*	
				SS-4 5.5-7.0 14"R	4 5 7		1.8*	
	727.8	7.3	Brown silty clay, little to some coarse to fine sand, little to some coarse to fine gravel, very stiff, low plasticity, moist CL	SS-5 7.0-8.5 18"R	7 8 10		2.7*	
				SS-6 8.5-10.0 18"R	4 9 11		3.4*	
				SS-7 10.0-11.5 14"R	6 11 14		3.3*	
	723.8	11.3	Brown clayey silt, trace coarse to fine sand, trace coarse to fine gravel, well graded, medium dense, low plasticity, wet ML	SS-8 11.5-13.0 18"R	9 11 15			
	721.9	13.2	Gray clayey silt, trace coarse to fine sand, trace coarse to fine gravel, well graded, medium dense, low plasticity, wet ML	SS-9 13.0-14.5 18"R	7 10 11			
				SS-10 14.5-16.0 18"R	10 30 15			
	719.1	16.0	Gradational contact Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, low plasticity, moist SW/GW	SS-11 16.0-17.5 18"R	10 12 22		3.3*	
	717.8	17.3	Gray silty and clayey coarse to fine sand and coarse to fine gravel, well graded, dense, saturated SW/GW	SS-12 17.5-19.0 18"R	15 20 24			
				SS-13A,B 19.0-20.5 18"R	9 11 12			

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 2/23/89 COMPLETE: 2/23/89
RIG: CME-75/TRUCK LOCATION: N 10047.44, E 8690.55
GROUND EL.: 735.1 W.L. & TIME:

BORING NO.: GP-10
SHEET: 2 OF 2

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	725.1	20.0						
				SS-14 20.5-22.0 6"R	11 13 13			
	713.1	22.0	End of Boring at 22.0'					

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 2/22/89 COMPLETE: 2/22/89
RIG: CME-75/TRUCK LOCATION: N 10041.70, E 8258.31
GROUND EL.: 730.5 W.L. & TIME:

BORING NO.: GP-11
SHEET: 1 OF 2

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	730.5	0.0						Advanced borehole using 4-1/4" I.D. HSA
			Brown, black and gray silty clay, little to some coarse to fine sand, trace to little coarse to fine gravel, stiff, low plasticity, moist, fill CL	SS-1 1.0-2.5 3"R	4 5 6		Frozen	
				SS-2 2.5-4.0 8"R	3 5 5		1.9*	
				SS-3 4.0-5.5 6"R	3 5 7		1.8*	
	724.9	5.6		SS-4 5.5-7.0 18"R	6 11 18		4.5+*	
			Brown silty clay, little coarse to fine sand, little coarse to fine gravel, hard, low plasticity, moist CL	SS-5 7.0-8.5 18"R	10 14 22		4.2*	
	722.5	8.0	Mottled brown and gray					
	721.5	9.0	Gray silty clay, little coarse to fine sand, little coarse to fine gravel, hard, low plasticity, moist CL	SS-6 8.5-10.0 18"R	13 14 19		3.7*	
				SS-7 10.0-11.5 18"R	8 12 20		4.5+*	
				SS-8 11.5-13.0 18"R	6 9 12		2.5*	
				SS-9 13.0-14.5 18"R	6 8 10		2.9*	
				SS-10 14.5-16.0 18"R	5 7 9		1.4*	
				SS-11 16.0-17.5 18"R	8 12 14		2.4*	
				SS-12 17.5-19.0 18"R	7 9 12		1.9*	
				SS-13 19.0-20.5 18"R	8 9 10		2.7*	

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill
BORING NO.: GP-11
DRILLER: Patrick Engineering START: 2/22/89 COMPLETE: 2/22/89
SHEET: 2 OF 2
RIG: CME-75/TRUCK LOCATION: N 10041.70, E 8258.31
GROUND EL.: 730.5 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	710.5	20.0						
				SS-14 20.5-22.0 18"R	6 9 12		1.8*	
	708.5	22.0	End of Boring at 22.0'					

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 2/22/89 COMPLETE: 2/22/89
RIG: CME-75/TRUCK LOCATION: N 10109.45, E 7837.15
GROUND EL.: 730.3 W.L. & TIME:

BORING NO.: GP-12
SHEET: 1 OF 2

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	730.3	0.0	Brown, black and gray mixed silty clay, little to some coarse to fine sand, trace to little coarse to fine gravel, stiff to hard, very low plasticity, dry to moist, fill. CL					Advanced borehole using 4-1/4" I.D. HSA
				SS-1 1.0-2.5 6"R	4 6 7		Frozen	
				SS-2 2.5-4.0 12"R	10 10 12		3.2*	
	726.3	4.0	Brown with red iron stain silty clay, some coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL	SS-3 4.0-5.5 18"R	8 10 14		3.0*	
				SS-4 5.5-7.0 18"R	6 10 15		3.3*	
				SS-5A,B 7.0-8.5 18"R	6 11 13		3.2* 3.6*	
	722.3	8.0	Gray silty clay, little to some coarse to fine sand, trace coarse to fine gravel, very stiff, low plasticity, moist CL					
	721.8	8.5	Gray coarse to fine silty sand, little coarse to fine gravel, well graded, medium dense, moist SW	SS-6 8.5-10.0 18"R	9 9 15			
				SS-7 10.0-11.5 12"R	8 14 16			
	718.9	11.4	Gradational Contact Gray silty and clayey coarse to fine sand and coarse to fine gravel, well graded, dense, saturated SW/GW	SS-8 11.5-13.0 10"R	8 19 18			
				SS-9 13.0-14.5 10"R	9 12 15			
				SS-10 14.5-16.0 18"R	14 11 14			
				SS-11 16.0-17.5 18"R	12 16 15			
				SS-12 17.5-19.0 18"R	9 13 13			
				SS-13 19.0-20.5 18"R	9 12 7			

PATRICK ENGINEERING INC

LOGGED BY: CGS JOB NO.: D178 (ref:b149/d178-G-8)

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill
BORING NO.: GP-12
DRILLER: Patrick Engineering START: 2/22/89 COMPLETE: 2/22/89
SHEET: 2 OF 2

RIG: CME-75/TRUCK LOCATION: N 10109.45, E 7837.15
GROUND EL.: 730.3 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	710.3	20.0	Gray silty clay, some coarse to fine sand, little coarse to fine gravel, stiff, low plasticity, moist CL	SS-14 20.5-22.0 18"R	5 6 10		1.9*	
	708.3	22.0	End of Boring at 22.0'					

PATRICK ENGINEERING INC. LOGGED BY: COS JOB NO. P178 (=6-b148/d178)

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill

BORING NO.: GP-13

DRILLER: Patrick Engineering START: 3/2/89 COMPLETE: 3/2/89

SHEET: 1 OF 2

RIG: CME-75 LOCATION: N 10904.79, E 7771.38

GROUND EL.: 732.3 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	732.3	0.0						Advanced borehole using 4-1/4" I.D. HSA.
			Brown, gray and black mixed silty clay, little to some coarse to fine sand, trace to little coarse to fine gravel, stiff to hard, low plasticity, moist, fill CL	SS-1 1.0-2.5 10"R	4 3 4		Frozen	
				SS-2 2.5-4.0 12"R	6 7 10		2.6*	
				SS-3 4.0-5.5 14"R	4 5 9		1.9*	
				SS-4 5.5-7.0 18"R	5 9 15		4.5+*	
				SS-5 7.0-8.5 18"R	8 16 22		4.5+*	
				SS-6 8.5-10.0 18"R	10 14 22		4.5+*	
				SS-7 10.0-11.5 18"R	10 16 22		4.5+*	
				SS-8 11.5-13.0 18"R	8 13 16		4.5+*	
				SS-9 13.0-14.5 18"R	6 9 11		3.4*	
	717.5	14.8	Gray silty clay, little coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL	SS-10 14.5-16.0 18"R	5 7 10		2.3*	
				SS-11 16.0-17.5 18"R	5 6 8		2.9*	
				SS-12 17.5-19.0 18"R	4 6 8		2.6*	
				SS-13 19.0-20.5 18"R	3 4 7		2.2*	

LOG OF BORING

PROJECT: BFI - Gas Probes, Winthrop Harbor Landfill

BORING NO.: GP-13

DRILLER: Patrick Engineering START: 3/2/89 COMPLETE: 3/2/89

SHEET: 2 OF 2

RIG: CME-75 LOCATION: N 10904.79, E 7771.38

GROUND EL.: 732.3 W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	710.3	20.0						
				SS-14	5			
				20.5-22.0	11			
				18"R	12		3.2*	
	710.3	22.0	End of Boring at 22.0'					

DATE STARTED 10/1/84
FINISHED 10/1/84
SHEET 1 OF 1

REECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. GT01
SURFACE ELEV. 739.6
G.W. ELEV. 730.92

PROJECT CECOS Waukegan Ill.
Well Installations, #4C002333

LOCATION N 10032.86
E 9040.25

DEPTH - FT	LOG Well GT01	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	BLOWS ON SAMPLER 6/12	BLOWS ON SAMPLER 12/18	BLOWS ON SAMPLER 18/24	DESCRIPTION	NOTES
								Auger boring, no samples collected. 15.0'	Boring advanced with 3-3/4 in. ID HSA, ATV mounted drilling rig.
15		SB	1	8	7	11	13	Moist brownish gray SILTY-CLAY, little (F) GRAVEL, stiff to very stiff. 16.0'	
		SB	2	3	3	6	8	Saturated brownish gray CLAYEY-SILT, very stiff. 17.0'	
20		SB	3	2	4	8	6	Wet brownish gray SILTY-CLAY, little (F) GRAVEL, subangular to sub-rounded. Deposit is stiff. 19.0'	
	8"	SB	4	4	6	11	13	Saturated gray SILTY-(F) SAND/ (F) SANDY-SILT, uniformly graded, medium dense.	
25								- at 19.9 ft.; one (1) inch (F-M) GRAVEL seam. 20.0'	
30								Wet brownish gray SILTY-CLAY, four (4) inch CLAYEY-SILT seam at 21.0 ft. Deposit is very stiff. 23.0'	Boring completed at 23.0 ft.

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

STARTED 10/1/84
D 10/1/84
T 1 OF 1

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. GT02
SURFACE ELEV. 742.3
G.W. ELEV. 729.89

PROJECT CECOS Waukegan III.
Well Installations, #4C002333

LOCATION N 10032.70
E 9185.53

LOG Well GT02	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
							Auger boring, no samples collected. 15.0'	Boring advanced with 3-3/4 in. ID HSA, ATV mounted drilling rig.
	SB	1	4	4	7	7	Wet brown and gray mottled SILTY-CLAY, some SAND, little (F) GRAVEL, surbrounded, stiff to very stiff.	
	SB	2	4	7	10	12		
	SB	3	4	7	10	11	at 17.0 ft.; becoming gray.	
	SB	4	5	7	8	9		
	SB	5	4	4	7	8		
	SB	6	5	7	11	12	26.4'	
	SB	7	3	3	7	8	Saturated gray SILTY-SAND, some (F-M) GRAVEL, well graded, medium dense. 29.0'	
	SB	8	3	4	6	6	Saturated gray (F-C) SAND, medium dense. 30.1'	
8"							Wet brownish gray SILTY-CLAY, very stiff. 31.0'	Boring completed at 31.0 ft.

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

DATE STARTED 9/26/84
FINISHED 9/27/84
SHEET 1 OF 2

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. GT03
SURFACE ELEV. 760
G.W. ELEV.

PROJECT CECOS Waukegan Ill.
Well Installations. #4C002333

LOCATION N 12620
E 8885

DEPTH-FT	LOG	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
								Auger boring, no samples collected.	Boring advanced with 3-3/4 in. ID HSA, ATV mounted drilling rig.
15								15.0'	
		SB	1	9	8	10		Moist brownish gray SILTY-CLAY, trace SAND, little (F) GRAVEL, very stiff, plastic.	
		SB	2		6	8	8		
20		SB	3	5	6	11			Boring location measured while drilling, referenced to well G123.
		SB	4		5	9	13		
		SB	5	4	8	12			Surface elevation inferred from Browning Ferris Industries topographic map dated 4/20/84.
		SB	6		5	9	11		
30		SB	7	6	6	10			
35		SB	8	5	6	10		- little (F-M) GRAVEL.	
40		SB	9	10	15	20		- wet	

CLASSIFICATION Visual

METHOD OF INVESTIGATION See Notes

ARTED 9/26/84
NI) 9/27/84
r 2 OF 2

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. GT03
SURFACE ELEV. 760
G.W. ELEV.

PROJECT CECOS Waukegan Ill.
Well Installations, #4C002333

LOCATION N 12620
E 8885

LOG	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6 6/12 12/18 18/24	DESCRIPTION	NOTES
	SB	10	5 8 12		See Sheet 1 for description.
	SB	11	7 14 14	51.5'	Boring completed at 51.5 ft. Borehole grouted at completion.

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

Date
Started: 9/24/84
Finished: 9/25/84
Sheet 1 of 2

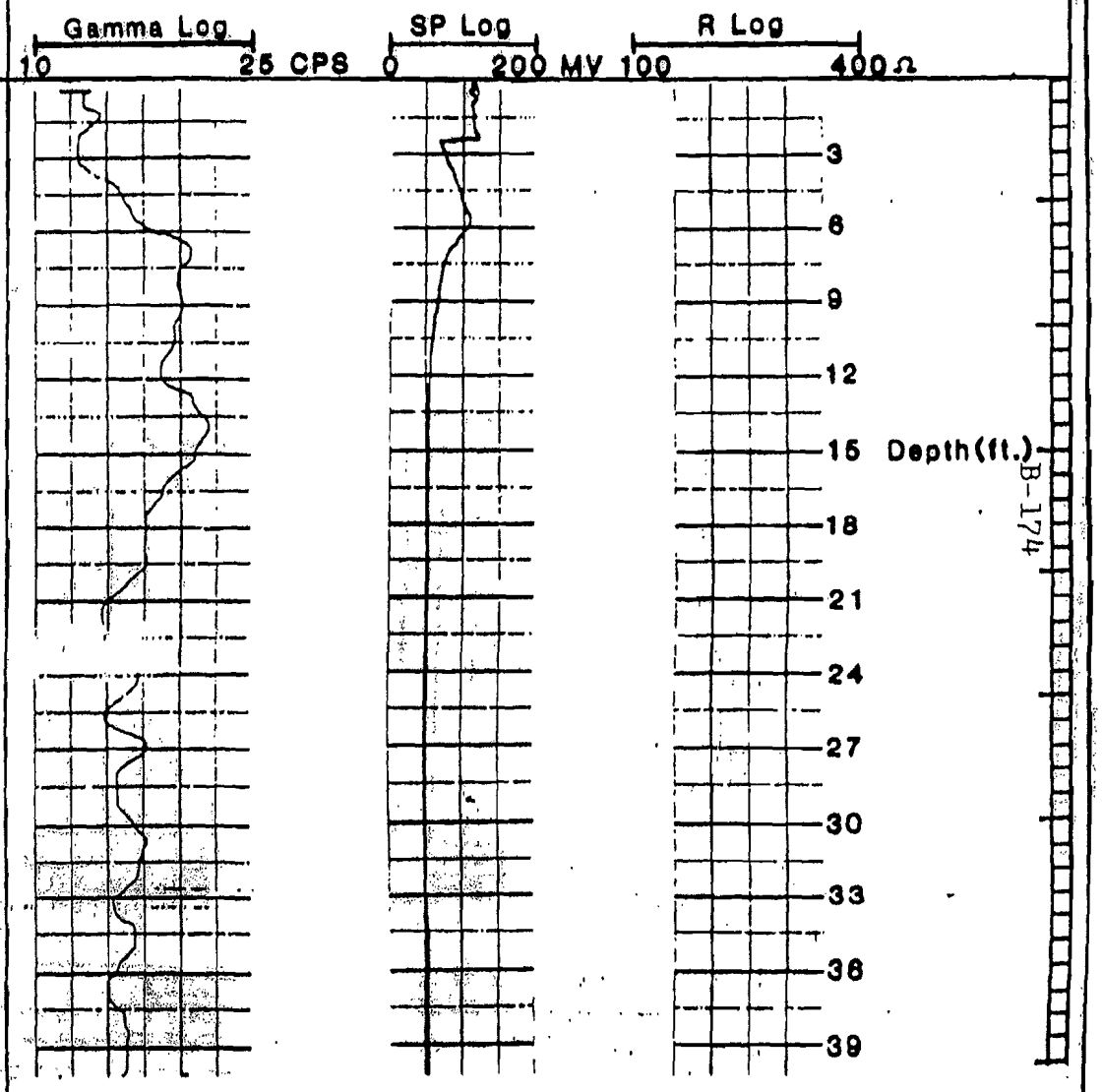
Recra Research, Inc.
SUBSURFACE LOG

Hole No: GW4
Surface Elev. 762
G. W. Elev.

Project: CECOS Waukegan, IL
Well Installations #4C002333

Location N 12458
E 8669

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 18/24	Description
0					
5		SB	1	10 16 23	Moist brown and yellow mottled silty-clay, hard plastic
10		SB	2	9 14 21	Brown and red varigated, trace (F) gravel
15		SB	3	9 14 16	Brown and gray mottled, little (F-M) gravel, subangular
20		SB	4	5 7 9	Brownish gray, very stiff
25		SB	5	5 7 8	Some sand
30		SB	6	6 7 9	Little sand
35		SB	7	4 8 11	
40					



B-174

Classification: Visual
Method of Investigation: See notes

Date
Started: 9/24/84
Finished: 9/25/84
Sheet 2 of 2

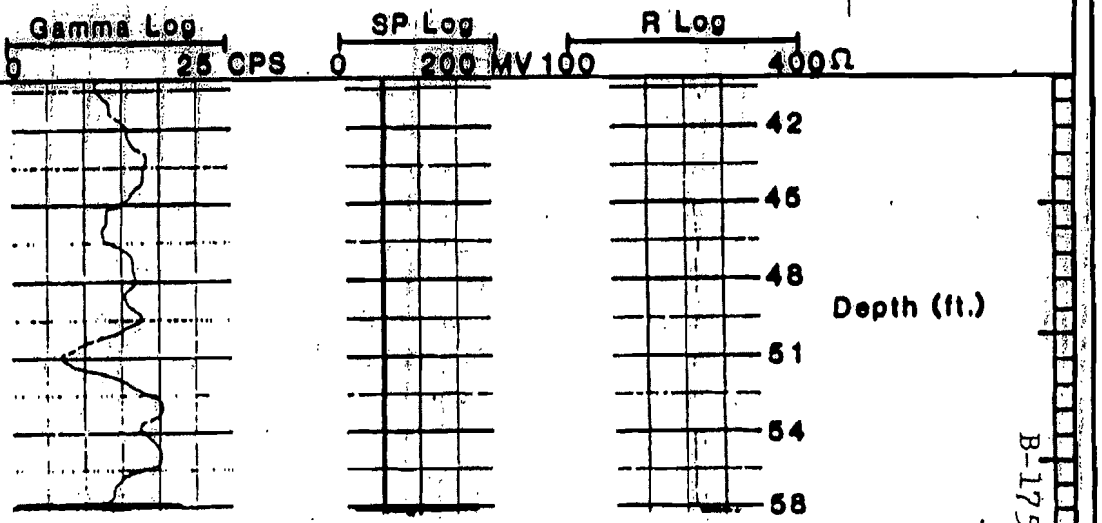
Recra Research, Inc.
SUBSURFACE LOG

Surface Elev. 762
G. W. Elev.

Project: CECOS Waukegan, IL
Well Installations #4C002333

Location N: 12658
E: 8669

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0-6 / 6-12 / 12-18 / 18-24	Description
40		SB	8	5 / 9 / 11	
45		SB	9	7 / 10 / 11	
50		SB	10	7 / 9 / 11	
55		SB	11	8 / 10 / 14	
60		SB	12	10 / 11 / 20	61.5'
65					
70					



B-175

Classification: Visual
Method of Investigation: See notes

B-176

DATE
STARTED 9/27/84
FINISHED 9/28/84
SHEET 1 OF 2

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. GT05
SURFACE ELEV. 756.9
G.W. ELEV. 731.78

PROJECT CECOS Waukegan Ill. Well Installations, #4C002333
LOCATION N 12617.25 E 9184.33

DEPTH-FT	LOG Well GT05	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	BLOWS ON SAMPLER 6/12	BLOWS ON SAMPLER 12/18	BLOWS ON SAMPLER 18/24	DESCRIPTION	NOTES
10								Auger boring, no samples collected.	Boring advanced with 3-3/4 in. ID HSA, ATV mounted drilling rig.
20								20.0'	
		SB	1	8	10	14		Moist brown and gray mottled SILTY-CLAY, little (F) GRAVEL, sub-rounded. One (1) inch SILT seam at approx. 21 ft. Deposit is very stiff, plastic.	
25		SB	2	5	7	9		-at 26.0 ft.; grades to brownish gray.	
30		SB	3	2	6	10			
35		SB	4	5	8	8		- (F) SAND seam.	
		SB	5		7	11	13	38.6' Saturated brownish gray CLAYEY-SILT, very stiff, slightly plastic.	
40		SB	6	7	8	10		40.6'	
		SB	7		7	10	10	Wet brownish gray SILTY-CLAY, some (F-M) GRAVEL, little SAND, very stiff.	

8"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

RTED 9/27/84
S 9/28/84
2 OF 2

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. GT05
SURFACE ELEV. 756.9
G.W. ELEV. 731.78

PROJECT CECOS Waukegan Ill
Well Installations. #4C002333

LOCATION N 12617.25
E 9184.33

LOG Well GT05	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
	SB	8	11	14	14		45.4' Saturated brownish-gray CLAYEY-SAND, some (F-M) GRAVEL, dense, well graded. 46.5-47.5'	
	SB	9			8	8	10	
8"	SB	10	10	13	13		Saturated brown and gray (M-C) SAND, little to some (F) GRAVEL, medium dense, uniformly graded. 49.0-50.0' Wet brownish gray SILTY-CLAY, little SAND and GRAVEL, very stiff, plastic. 51.5'	Boring completed at 51.5 ft.

CLASSIFICATION Visual

METHOD OF INVESTIGATION See Notes

ATE STARTED 10/11/84
SHED 10/12/84
EL 1 OF 2

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. GT06
SURFACE ELEV. 771.8
G.W. ELEV. 746.52

PROJECT CECOS Waukegan Ill. Well Installations, #4C002333
LOCATION N 11642.19 E 9373.84

DEPTH-FT	LOG Well GT06	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	BLOWS ON SAMPLER 6/12	BLOWS ON SAMPLER 12/18	BLOWS ON SAMPLER 18/24	DESCRIPTION	NOTES
								Wash boring, no samples collected.	Boring advanced with 3-7/8 in. dia. tri-cone bit, truck mounted rotary drilling rig.
10								10.0'	
		SB	1	25	30	43		Wet brown and gray mottled SILTY-CLAY, hard, plastic.	
15									
		SB	2	10	15	19		- brownish gray, little (F) GRAVEL	
25									
30		SB	3	10	16	18		- trace (F) SAND	
35									

3 7/8"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

AR. 10/11/84
NISHED 10/12/84
2 OF 2

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. GT06
SURFACE ELEV. 771.8
G.W. ELEV. 746.52

PROJECT CECOS Waukegan Ill.
Well Installations, #4C002333

LOCATION N 11642.19
E 9373.84

LOG Well GT06	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
	SB	4	18	21	20			
				15				
	SB	5	24	28				
	SB	6	11	13	21			
				13				
	SB	7	21	40			- little to some (F) SAND	
	SB	8	8	11	19			
				10			51.5-52.5' Saturated gray (M-C) SAND, stratified with CLAY-SILT, dense.	
	SB	9	15	16				
	SB	10	15	18	17		- little (F) GRAVEL at 55.0 ft.	
				19			56.5-57.5' Saturated gray CLAY-SILT, uniformly graded, dense.	
	SB	11	19	21				
	SB	12	21	24	23		- occasional (F) SAND partings. 61.0'	
				19			Wet brownish gray SILTY-CLAY, little to some GRAVEL, hard. 64.0'	
	SB	13	25	27				Boring completed at 64.0 ft.

3 7/8"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

SOIL BORING LOG

BORING GT06R (RT06)

DRAFT

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11634.03 N. 9374.22 E.
DRILLING METHOD: 6.25" Hollow Stem Augers
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 8/19/93

PROJECT NO.: 06114.10
G.S. ELEV.: 805.32 ft. msl
TOC ELEV.: 807.72 ft. msl
TOTAL DEPTH: 94'
LOGGED BY: RCC
DATE END: 8/25/93

WELL NOTES	WELL DETAIL	ELEVATION/ DEPTH	STRATA	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE	PID (ppm)
8" steel protective pipe set in concrete anchor with pad to depth of 4'. Bentonite slurry from 4 to 88.3'. 2" ID Type 316 stainless steel casing to depth of 88.3'.		805 0		Borehole advanced to depth of 6 feet through berm material prior to sampling.	Boring continuously sampled below 6 feet with 2-foot split spoon sampler.				
		800 5		Grayish brown silty clay berm material, trace sand, trace gravel, very plastic and cohesive, stiff, slightly moist.	Split Spoon SS-1: 6 - 8' Blows/6": 15,10,16,25	SS-1	19"	25	
				As above, brownish gray in color, little Fe staining.	SS-2: 8 - 10' Blows/6": 16,16 Sampler bouncing on cobble.	SS-2	11"	NA	
		795 10		As above, abundant limestone fragments in sampler.	SS-3: 10 - 12' Blows/6": 5,5,5,7	SS-3	8"	10	
				Berm material as above, some olive brown mottling between 12 and 12.5'. All gray below 12.5'.	SS-4: 12 - 14' Blows/6": 3,8,8,13	SS-4	18"	14	
					SS-5: 14 - 16' Blows/6": 14,6,8,11	SS-5	8"	14	
		790 15		As above, still abundant fragements of a limestone cobble, grayish brown below 17'.	SS-6: 16 - 18' Blows/6": 11,6,8,13	SS-6	15"	14	
					SS-7: 18 - 20' Blows/6": 5,4,6,11	SS-7	18"	10	
		785 20			SS-8: 20 - 22' Blows/6": 14,9,10,13	SS-8	10"	19	
					SS-9: 22 - 24' Blows/6": 13,7,11,13	SS-9	8"	18	
				Berm material as above, gray in color.	SS-10: 24 - 26' Blows/6": 7,5,8,13	SS-10	17"	13	
		780 25			SS-11: 26 - 28' Blows/6": 5,5,7,11	SS-11	2"	12	
				As above, somewhat softer and more moist.	SS-12: 28 - 30' Blows/6": 3,5,4,5	SS-12	11"	9	
		775 30			SS-13: 30 - 32' Blows/6": 3,4,4,8	SS-13	21"	8	
				Silty clay berm material as above, stiff, slightly moist.	SS-14: 32 - 34' Blows/6": 6,7,6,12	SS-14	18"	13	
		770 35			SS-15: 34 - 36' Blows/6": 8,4,7,11	SS-15	15"	11	

Relacement monitor well GT06 installed in boring upon completion.
Development completed 8/25/93.

WW ENGINEERING AND SCIENCE

SOIL BORING LOG

DRAFT

BORING GT06R
(RT06)

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11634.03 N. 9374.22 E.
DRILLING METHOD: 6.25" Hollow Stem Augers
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 8/19/93

PROJECT NO.: 06114.10
G.S. ELEV.: 805.32 ft. msl
TOC ELEV.: 807.72 ft. msl
TOTAL DEPTH: 94'

LOGGED BY: RCC
DATE END: 8/25/93

WELL NOTES	WELL DETAIL	ELEVATION/ DEPTH	STRATA	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE	PID (ppm)
					SS-16: 38 - 38' Blows/6": 8,6,9,14	SS-16	9"	15	
				As above, trace brown mottling and Fe staining below 38', stiffer.	SS-17: 38 - 40' Blows/6": 9,11,15,25	SS-17	13"	26	
		765 - 40		As above, mottling and Fe staining increase, not as stiff.	SS-18: 40 - 42' Blows/6": 5,7,11,14	SS-18	20"	18	
				Berm material as above, brown with gray mottling.	SS-19: 42 - 44' Blows/6": 4,4,6,8	SS-19	14"	10	
		760 - 45			SS-20: 44 - 46' Blows/6": 5,4,6,7 Jar-1 collected at 45'.	SS-20	18"	9	
					SS-21: 48 - 48' Blows/6": 9,13,22,23	SS-21	21"	35	
				At 47', reddish brown silty clay, trace to little sand, trace gravel, very stiff, slightly plastic and cohesive, slightly moist (weathered upper till).	SS-22: 48 - 50' Blows/6": 8,11,11,14	SS-22	14"	22	
		755 - 50		Brown till as above, not as stiff.	SS-23: 50 - 52' Blows/6": 4,4,4,11 Jar-2 collected at 50'.	SS-23	19"	8	
				As above, gray silt filled root partings, abundant root fragments.	SS-24: 52 - 54' Blows/6": 11,9,10,14	SS-24	24"	19	
				As above, darker brown in color, very silty, stiffer.	SS-25: 54 - 56' Blows/6": 6,7,13,18	SS-25	18"	20	
		750 - 55		Gray mottling below 57.5'.	SS-26: 56 - 58' Blows/6": 8,11,13,16	SS-26	21"	24	
				As above, Fe staining.	SS-27: 58 - 60' Blows/6": 7,10,13,17	SS-27	20"	23	
		745 - 60			SS-28: 60 - 62' Blows/6": 5,8,13,18	SS-28	4"	21	
				As above, transition from brown to gray in color between 62.5 and 63.5'.	SS-29: 62 - 64' Blows/6": 7,8,9,12	SS-29	24"	16	
				At 63.5', gray silty clay, trace sand, trace gravel, plastic, damp-slightly moist, stiff-very stiff (unweathered upper till).	SS-30: 64 - 66' Blows/6": 7,12,11,22	SS-30	12"	23	
		740 - 65		A 1/8" silty fine sand layer at 64.7' with some brown mottling above and below the layer (app. 1").	SS-31: 66 - 68' Blows/6": 10,14,11,14 Jar-3 collected at 67'.	SS-31	21"	25	
				At 66', olive/gray/brown clayey silt till, several coarse sand partings. 1" seam of wet olive silt at 67.2'.	SS-32: 68 - 70' Blows/6": 5,8,7,13.	SS-32	18"	15	
				At 68.6', gray silty clay till as before.					
		735 - 70			SS-33: 70 - 72' Blows/6": 12,5,10,17	SS-33	24"	15	

Relacement monitor well GT06 installed in boring upon completion.
Development completed 8/25/93.

SOIL BORING LOG

BORING GT06R
(RTOG)

DRAFT

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11634.03 N. 9374.22 E.
DRILLING METHOD: 6.25" Hollow Stem Augers
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 8/19/93

PROJECT NO.: 06114.10
G.S. ELEV.: 805.32 ft. msl
TOC ELEV.: 807.72 ft. msl
TOTAL DEPTH: 94'

LOGGED BY: RCC
DATE END: 8/25/93

WELL NOTES	WELL DETAIL	ELEVATION/ DEPTH	STRATA	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE	PID (ppm)
				Till as above, trace sand, trace gravel, stiff-very stiff, some very silty pockets between 74 and 76'.	SS-34: 72 - 74' Blows/6": 4,6,7,17	SS-34	22"	13	
		730 75			SS-35: 74 - 76' Blows/6": 6,8,10,18 Jar-4 collected at 74'.	SS-35	24"	18	
					SS-36: 76 - 78' Blows/6": 3,6,7,13	SS-36	16"	13	
				Gray silty clay till as above.	SS-37: 78 - 80' Blows/6": 8,11,8,26	SS-37	10"	19	
Bentonite pellets from 80.3' to 83.3'.		725 80			SS-38: 80 - 82' Blows/6": 5,9,13,21	SS-38	24"	22	
					SS-39: 82 - 84' Blows/6": 5,7,10,27	SS-39	24"	17	
Silica sand pack from 83.3 to 83'.				Till as above.	SS-40: 84 - 86' Blows/6": 7,7,11,28	SS-40	24"	18	
		720 85			SS-41: 88 - 88' Blows/6": 3,5,10,12 Jar-5 collected at 87'.	SS-41	18"	16	
2" ID Type 316 stainless steel screen (10-slot) from 88.3 to 93.3' (718.08 to 714.08 ft. msl).				At 87', 2" seam of wet coarse sand and fine gravel. At 87.2', 10" seam of wet gray slightly clayey silt, cohesive.	SS-42: 88 - 90' Blows/6": 6,11,11,24 Jar-6 collected at 89'.	SS-42	22"	22	
Silica sand below base of screen.		715 90		At 89', gray silt, trace sand, trace gravel, dense, saturated. As above, 3" seam of clayey silt till at 90.25'.	SS-43: 90 - 92' Blows/6": 3,8,12,16	SS-43	24"	18	
				At 91.8', gray silty clay till, trace sand, trace gravel, plastic, slightly moist, very stiff.	SS-44: 92 - 94' Blows/6": 6,10,12,27	SS-44	3"	32	
		710 95		Total sampled depth = 94 feet. Total drilled depth = 93 feet.					
		705 100							
		700 105							

Relacement monitor well GT06 installed in boring upon completion.
Development completed 8/25/93.

WW ENGINEERING AND SCIENCE

ARTED 10/22/84
HS 10/23/84
1 OF 2

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. GT07
SURFACE ELEV. 764.3
G.W. ELEV. 743.24

PROJECT CECOS Waukegan Ill.
Well Installations, #4C002333

LOCATION N 11377.04
E 9362.25

LOG Well GT07	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
							Wash boring, no samples collected. 30.0'	Boring advanced with 3-7/8 in. dia. tri-cone bit, MOBILE B-61 drilling rig.
	SB	1	7	10	10		Wet brownish gray SANDY-CLAY, some (F-M) GRAVEL, grades downward to CLAYEY-SILT. Deposit is very stiff. 31.5-35.0'	
	SB	2	7	10	14		Wet brownish gray SILTY-CLAY, very stiff, plastic.	
	SB	3	5	10	13		- little (M) GRAVEL	
	SB	4		15	12	29		
	SB	5	6	10	13		- GRAVEL is absent	
	SB	6		7	11	15		

3 7/8"
7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

DATE STARTED 10/22/84
FINISHED 10/23/84
2 OF 2

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. GT07
SURFACE ELEV. 764.3
G.W. ELEV. 743.24

PROJECT CECOS Waukegan Ill. Well Installations. #4C002333
LOCATION N 11377.04 E 9362.25

DEPTH-FT	LOG Well GT07	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
		SB	7	5	8	12			
							9		
		SB	8	17	18			- occasional 1-2" seams of CLAYEY-SILT/SANDY-CLAY	
55		SB	9	11	16	20		- massive structure, little (F) GRAVEL	
		SB	10		8	12	15		
60		SB	11	7	11	14		61.5'	Boring completed at 61.5 ft.

7"

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

SOIL BORING LOG

DRAFT

BORING GT07R (RT07)

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11376.96 N. 9369.63 E.
DRILLING METHOD: 6.25" Hollow Stem Augers
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START:

PROJECT NO.: 06114.10
G.S. ELEV.: 806.90 ft. msl
TOC ELEV.: 812.01 ft. msl
TOTAL DEPTH: 76'

LOGGED BY: JDA,RCC
DATE END: 8/20/93

WELL NOTES	WELL DETAIL	ELEVATION/ DEPTH	STRATA	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE	PID (ppm)
8" steel protector pipe set in concrete anchor with pad to depth of 4'. Bentonite slurry from 4 to 83'. 2" ID Type 316 stainless steel casing to depth of 83.6'.		0 / 805 / 5 / 800 / 10 / 795 / 15 / 790 / 20 / 785 / 25 / 780 / 30 / 775 / 35		Borehole advanced to depth of 8 feet through berm material prior to sampling.	Boring continuously sampled below 8 feet with 2-foot split spoon sampler.				
				Grayish brown silty clay berm material with sand, trace gravel, damp, very plastic, cohesive, firm.	Split Spoon SS-1: 8 - 8' Blows/6": 3,4,6,7	SS-1	0"	8	
					SS-2: 8 -10' Blows/6": 1,3,4,7	SS-2	12"	7	
					SS-3: 10 - 12' Blows/6": 5,5,5,7	SS-3	12"	10	
				Berm material as above, slightly moist, increase in silt content, decrease in sand and gravel content.	SS-4: 12 - 14' Blows/6": 3,4,6,8	SS-4	12"	10	
					SS-5: 14 - 16' Blows/6": 4,3,4,8	SS-5	14"	7	
				Berm material as above, stiff.	SS-6: 16 - 18' Blows/6": 3,5,7,11	SS-6	18"	12	
					SS-7: 18 - 20' Blows/6": 5,5,8,8	SS-7	14"	13	
				As above, increase in sand and silt content, very stiff between 22 and 24'.	SS-8: 20 - 22' Blows/6": 4,5,8,11	SS-8	12"	13	
					SS-9: 22 - 24' Blows/6": 8,9,11,9	SS-9	12"	20	
				As above, firm becoming stiff below 26'.	SS-10: 24 - 26' Blows/6": 3,3,3,5	SS-10	12"	6	
					SS-11: 26 - 28' Blows/6": 3,4,6,6	SS-11	13"	10	
					SS-12: 28 - 30' Blows/6": 4,5,7,14	SS-12	22"	12	
				As above, at 30.5' becomes mottled rust/brown in color, with sand, trace gravel, grey silt partings, stiff-very stiff.	SS-13: 30 - 32' Blows/6": 5,8,9,12	SS-13	22"	16	
					SS-14: 32 - 34' Blows/6": 6,8,11,12	SS-14	19"	17	
					SS-15: 34 - 36' Blows/6": 2,5,9,12	SS-15	14"	14	

Replacement monitor well GT07 installed in boring upon completion.
Development completed 8/20/93.

SOIL BORING LOG

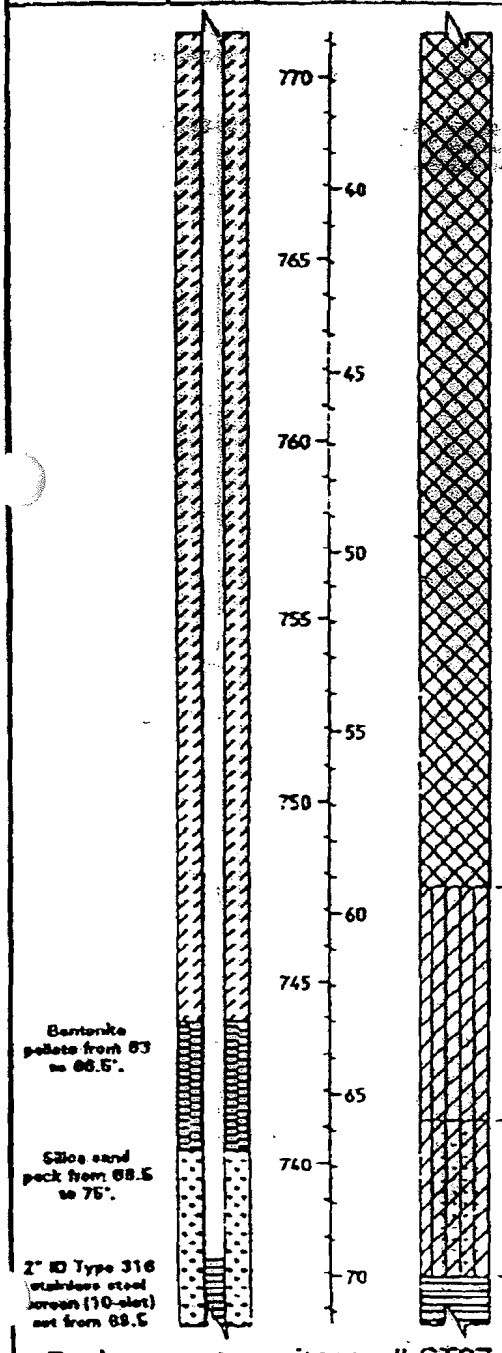
DRAFT

BORING GT07R
(RT07)

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11376.96 N. 9369.63 E.
DRILLING METHOD: 6.25" Hollow Stem Augers
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START:

PROJECT NO.: 06114.10
G.S. ELEV.: 806.90 ft. msl
TOC ELEV.: 812.01 ft. msl
TOTAL DEPTH: 76'

LOGGED BY: JDA,RCC
DATE END: 8/20/93



DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV.	"N" VALUE	PID (ppm)
Berm material as above, mottled rust/brown/black in color, damp, very stiff.	SS-16: 36 - 38' Blows/6": 7,9,15,21	SS-16	18"	24	
As above, 2.5" seam of paper waste at 38", dry.	SS-17: 38 - 40' Blows/6": 6,6,9,13	SS-17	22"	15	
	SS-18: 40 - 42' Blows/6": 4,7,11,15	SS-18	19"	18	
Berm material as above, very stiff-hard.	SS-19: 42 - 44' Blows/6": 8,12,21,22	SS-19	22"	33	
As above, mottled gray/brown in color. Wood fragments, paper and cloth encountered at 47'.	SS-20: 44 - 46' Blows/6": 10,11,14,25	SS-20	22"	25	
	SS-21: 46 - 48' Blows/6": 4,11,11,17	SS-21	18"	22	
As above, mottled brown/black/gray in color, some organic material and plastic.	SS-22: 48 - 50' Blows/6": 10,10,17,20	SS-22	23"	27	
Berm material as above, stiff.	SS-23: 50 - 52' Blows/6": 5,6,6,8	SS-23	7"	11	
	SS-24: 52 - 54' Blows/6": 4,3,4,9	SS-24	22"	7	
As above, small seam (<3/4") paper waste at 55'. Reddish brown in color below 55.5'.	SS-25: 54 - 56' Blows/6": 3,4,8,11	SS-25	21"	10	
Berm material as above, color varies from brown to gray.	SS-26: 56 - 58' Blows/6": 7,7,9,14	SS-26	20"	16	
	SS-27: 58 - 60' Blows/6": 5,7,11,13	SS-27	22"	18	
At 58.25', brown with trace gray mottling silty clay, trace sand, trace gravel, damp, cohesive, plastic, very stiff. (weathered upper till).	SS-28: 60 - 62' Blows/6": 5,7,8,10	SS-28	15"	15	
As above, abundant Fe and Mn staining, slightly plastic.	SS-29: 62 - 64' Blows/6": 8,9,18,23	SS-29	23"	28	
As above, begins transition to gray at 65'.	SS-30: 64 - 66' Blows/6": 8,7,18,23 Jar-1 collected at 64'.	SS-30	24"	25	
At 66.7', gray silty clay till, trace sand, trace gravel, slightly moist, plastic, stiff-very stiff (unweathered upper till).	SS-31: 66 - 68' Blows/6": 4,7,10,13	SS-31	24"	17	
	SS-32: 68 - 70' Blows/6": 4,8,10,12	SS-32	24"	18	
At 70', Alternating seams of gray clayey silt, silty clay and very sandy silt.	SS-33: 70 - 72' Blows/6": 10,13,20,32 Jar-2 collected at 70'	SS-33	24"	33	

Replacement monitor well GT07 installed in boring upon completion.
Development completed 8/20/93.

WW ENGINEERING AND SCIENCE

SOIL BORING LOG

DRAFT

BORING GT07R
(RT07)

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11376.96 N. 9369.63 E.
DRILLING METHOD: 6.25" Hollow Stem Augers
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START:

PROJECT NO.: 06114.10
G.S. ELEV.: 806.90 ft. msl
TOC ELEV.: 812.01 ft. msl
TOTAL DEPTH: 76'

LOGGED BY: JDA,RCC
DATE END: 8/20/93

WELL NOTES	WELL DETAIL	ELEVATION/ DEPTH	STRATA	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE	PID (ppm)
to 74.5'. (737.41 to 732.41 ft. msl.		735		some thin (<1/8") fine sand partings, very moist-wet, very stiff-hard.	SS-34: 72 - 74' Blows/6": 10,10,14,14	SS-34	24"	24	
6" silica sand below base of screen.		75		As above, predominantly sandy clay-ey silt, 1/8-1/4" wet medium sand seams at 72.7 and 73.5', trace-little gravel in matrix.	SS-35: 74 - 76' Blows/6": 6,11,11,13 Jar-3 collected at 74'.	SS-35	24"	22	
		730		At 74', gray silty clay till, trace sand, trace gravel, very plastic, stiff and cohesive, slightly moist. Total sampled depth = 78 feet. Total drilled depth = 76 feet.					
		80							
		725							
		85							
		720							
		90							
		715							
		95							
		710							
		100							
		705							
		105							
		700							

Replacement monitor well GT07 installed in boring upon completion.
Development completed 8/20/93.

WW ENGINEERING AND SCIENCE

DATE STARTED 9/24/84
FINISHED 9/24/84
SHEET 1 OF 2

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. GT08
SURFACE ELEV. 742
G.W. ELEV. ———

PROJECT CECOS Waukegan Ill
Well Installations. #4C002333

LOCATION N 11135
E 9400

DEPTH-FT	LOG	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6 6/12 12/18 18/24	DESCRIPTION	NOTES
					Wash boring, no samples collected.	Boring advanced with 3-7/8 in. dia. tri-cone bit, MOBILE B-61 drilling rig.
					712	
30					30.0'	
		SB	1	7 7 13	Wet brownish gray SILTY-CLAY, little SAND and GRAVEL, plastic, stiff, massive.	
35		SB	2	10 10 16	- becoming very stiff to hard	Boring location measured while drilling, referenced to well G131
40		SB	3	11 11 23		Surface elevation inferred from Browning-Ferris Industries topographic map dated 4/20/84.
45		SB	4	12 15 21		
50		SB	5	7 15 21		
55		SB	6	7 14 17		

CLASSIFICATION Visual
METHOD OF INVESTIGATION See Notes

E
ETARTED 9/24/84
FINISHED 9/24/84
E 2 OF 2

RECRA RESEARCH, INC.

SUBSURFACE LOG

HOLE NO. GT08
SURFACE ELEV. 742
G.W. ELEV.

PROJECT CECOS Waukegan, Ill.
Well Installations, #4C002333

LOCATION N 11135
E 9400

LOG	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
	SB	7	10	15	20		← See sheet 1 for description	
	SB	8	10	13	17			
	SB	9	14	22	36		71.5'	Boring completed at 71.5 ft. Borehole grouted at completion.

CLASSIFICATION Visual

METHOD OF INVESTIGATION

Date
Started: 9/20/84
Finished: 9/21/84
Sheet 1 of 2

Recra Research, Inc.
SUBSURFACE LOG

Hole No. MW1
Surface Elev. 757.0
G. W. Elev. 739.47

Project: CECOS Waukegan, IL
Well Installations #4C002333

Location N 12257.64
E 8669.17

Depth-Ft	Log WELL GT09	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 18/24	Description
		SB	1	4 6 11	Moist brown, gray, and black mottled SILT and CLAY, organic, some roots 0.25
5		SB	2	15 18 25	Moist yellowish brown and gray mottled SILTY-CLAY, little (F) GRAVEL, trace SAND, very stiff to hard, plastic
10		SB	3	11 19 34	-brown
15		SB	4	18 24 40	-gray, massive
20		SB	5	8 9 14	
25		SB	6	9 11 17	-some SAND
30		SB	7	6 13 12	
35		SB	8	13 20 21	-some (F-M) GRAVEL
					36.5'-40.0'
40					

3"
7"

Gamma Log
0 20 CPS

Notes

3
6
9
12
15
18
21
24
27
30
33
36
39

Depth (ft.)

B-190

Classification: Visual
Method of Investigation: See notes

Date
Start 9/20/84
Finished: 9/21/84
Sheet 2 of 2

Recra Research, Inc.
SUBSURFACE LOG

Hole No. [illegible]
Surface Elev. 757
G. W. Elev. 739.47

Project: CECOS Waukegan, IL
Well Installations #4C002333

Location N 12257.64
E 8669.17

Depth-Ft.	Log WELL CT09	Sample Type	Sample No.	Blows on Sampler 0-6 / 6-12 / 12-18 / 18-24	Description
		SB	9	15 / 16	36 Saturated gray (F) SANDY-SILT, uniformly graded, very dense, non to slightly plastic 41.5'-45.0'
45					Wet brownish gray SILTY-CLAY, trace SAND and (F) GRAVEL, hard,
		SB	10	10 / 20	17 plastic 46.5'-50.0' Saturated gray CLAYEY-SILT, very stiff, non-plastic
50					50.5'
	3 7/8"	SB	11	5 / 17	9 Wet brownish gray SILTY-CLAY, trace SAND and (F) GRAVEL, very stiff, plastic 51.5'
	7"				
55					

Gamma Log
0 — 20 CPS

Notes

42 Depth (ft.)

B-191

Classification: Visual

Methr Investigation: See notes

LOG OF BORING B-192

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor — BORING NO.: GT-10

DRILLER: Patrick Engineering — START: 6/22/88 — COMPLETE: 6/28/88 — SHEET: 1 OF 2

RIG: CME-45/ATV — LOCATION: Approx. 75.0' east of GT-01

GROUND EL.: 741.9 — W.L. & TIME: 14.3' during, 11.0' immediately after drilling.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	741.9	0.0	Brown silty clay, little coarse to fine sand, trace coarse to fine gravel, stiff to very stiff, low plasticity, moist CL					Advanced borehole using 4-1/4" I.D. HSA.
				SS-1 4.0-5.5 15"R	3 4 4		1.4*	
	732.9	9.0	Brown and gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very soft, low to medium plasticity, moist CL	SS-2 9.0-10.5 8"R	2 3 3		<0.2*	SS-2 driven on a piece of coarse gravel.
	727.9	14.0	Brownish-gray silty coarse to fine sand, trace coarse to fine gravel, medium dense, poorly graded, wet SM	SS-3A,B 14.0-15.5 16"R	8 9 10		2.1*	Water level during drilling at approximately 14.3'.
	727.2	14.7	Gray silty clay, little coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL					
				SS-4 16.5-18.0 16"R	6 7 8		3.0	
	723.9	18.0	Gray silty coarse to fine sand, trace medium to fine gravel, medium dense, poorly graded, wet to saturated SM	SS-5A,B 18.0-19.5 15"R	6 7 9		2.8*	
	723.1	18.8	Gray silty clay, little coarse to fine sand, very stiff, low to medium plasticity, moist CL					
	722.4	19.5	End of Boring at 19.5'.					

PATRICK ENGINEERING INC.

LOGGED BY: MZW JOB NO.: D158 (ref:b148/D158)

LOG OF BORING B-193

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor BORING NO.: GT-10

DRILLER: Patrick Engineering START: 6/22/88 COMPLETE: 6/28/88 SHEET: 2 OF 2

RIG: CME-45/ATV LOCATION: Approx. 6.0' east of GT-10A

GROUND EL.: 7+1.90 W.L. & TIME: 14.3' during, 11.0' immediately after drilling.

IG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		0.0	DESCRIPTION OF WELL CONSTRUCTION Bottom of boring was verified to be at a depth of 19.5'. 17.5' of 2-inch I.D. Schedule 10 type 304 stainless steel riser pipe connected to 5.0' of 2-inch I.D. Schedule 10 type 304, 0.01-inch wire wound stainless steel screen was placed inside the HSA. The annular space between the well screen and the borehole wall was backfilled with clean, washed silica sand. The top of the silica sand was verified to be at a depth of 12.5'. A 4.0' thick bentonite pellet seal was placed above the sand filter. During placement, the top of the pellet seal was frequently sounded to insure that the pellets did not bridge or stick above the desired depth. The pellet seal was wetted with approximately 5.0 gallons of potable water and allowed to hydrate for 5 days. Top of bentonite seal after hydration was verified to be 8.5' deep. A 3.0' thick layer of Volclay grout was placed above the bentonite seal and allowed to set for 15.0 hours (overnight). The upper 5.0' was grouted with a cement-bentonite mix and a 6" diameter steel well protector was installed. A 4.0 foot diameter by 6" thick concrete slab was constructed around the well protector. The surface of this slab gently slopes away from the well in all directions.					

LOG OF BORING B-194

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor — BORING NO.: GT-10A

DRILLER: Patrick Engineering — START: 6/21/88 — COMPLETE: 6/21/88 — SHEET: 1 OF 2

RIG: CME-45/ATV — LOCATION: Approximately 6' west of GT-10

GROUND EL.: 7+1.70 — W.L. & TIME: 14.5' during drilling.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		0.0						
			Brown silty clay, little coarse to fine sand, little coarse to fine gravel, very stiff to hard, low plasticity, moist, fill CL					Advanced borehole using 4-4/2" I.D. HSA.
				SS-1 1.0-2.5 10"R	10 9 9		3.5*	
				SS-2 2.5-4.0 7"R	4 4 5		2.1*	SS-2 driven on a piece of coarse gravel at 3.0'.
		3.5	Brown silty clay to clayey silt and coarse to fine sand, trace coarse to fine gravel, stiff, low plasticity, moist CL-ML	SS-3 4.0-5.5 18"R	2 2 3		1.0*	
		5.5	Brown silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist to wet CL	SS-4 5.5-7.0 15"R	1 1 1		0.2*	
				SS-5 7.0-8.5 13"R	1 1 1		<0.2*	
				SS-6 8.5-10.0 8"R	1 1 1		0.4*	
				SS-7 10.0-11.5 9"R	1 1 2		0.8*	
		11.1	Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, stiff to very stiff, low plasticity, moist CL	SS-8 11.5-13.0 12"R	2 2 3		1.7*	Water level during drilling at approximately 14.5'.
				SS-9A,B 13.0-14.5 15"R	4 8 10		2.2*	
		13.7	Brown silty coarse to fine sand, trace coarse to fine gravel, medium dense, poorly graded, moist SM					
		14.4						
		14.8	Gray silty coarse to fine sand, trace coarse to fine gravel, medium dense, poorly graded, wet SM	SS-10A,B 14.5-16.0 14"R	6 5 8		2.1*	
			Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff, low plasticity, moist CL	SS-11 16.0-17.5 16"R	6 7 14		2.3*	
			2" thick silty coarse to fine sand seam at 17.7' 3" thick silty medium to fine sand at 18.8' (Sample 12B)	SS-12A,B 17.5-19.0 18"R	6 7 8		2.5*	
			2" thick layer of silty coarse to fine sand at 19.3'	SS-13 19.0-20.5 16"R	7 7 10		3.1*	
		20.0						

LOG OF BORING B-195

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor BORING NO.: GT-10A

DRILLER: Patrick Engineering START: 6/21/88 COMPLETE: 6/21/88 SHEET: 2 OF 2

RIG: CME-45/ATV LOCATION: Approximately 6' west of GT-10

GROUND EL.: 741.70 W.L. & TIME:

ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	20.0	Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff, low plasticity, moist CL SS-14: Layers of silt and silty coarse to fine sand of various thicknesses (<2") present within sample	SS-14 20.5-22.0 18"R	5 7 8		2.7*	
			SS-15A,B 22.0-23.5 18"R	4 7 19		2.4*	
	23.0 23.5	Gray silty coarse to fine sand, trace coarse to fine gravel, medium dense to dense, poorly graded, moist SM	SS-16 23.5-25.0 18"R	4 7 12		3.5*	
	25.0	Brownish-gray to gray silty clay to clayey silt, little coarse to fine sand, trace coarse to fine gravel, very stiff, low plasticity, moist CL-ML End of Boring at 25.0'.					Boring was grouted with cement-bentonite grout mix using the tremmie method.

LOG OF BORING B-196

PROJECT: Piezor · and Monitoring Well Installation, Winthrop Harbor — BORING NO.: GT-11

DRILLER: Patric :gineering — START: 6/28/88 — COMPLETE: 6/28/88 — SHEET: 1 OF 2

RIG: CME-45/ATV — LOCATION: Approximately 10' west of GT-01

GROUND EL.: 73' — W.L. & TIME: 16.5' during drilling, 10.0' immediately after drilling.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	739.8	0.0	Brown silt · ıy, little coarse to fine sand, little coa · :o fine gravel, very stiff to hard, low · :icity, moist, fill CL	SS-1 1.0-2.5 9"R	6 8 8		4.5+*	Advanced borehole using 4-1/4" I.D. HSA.
	737.7	2.1	Brown silt · ıy, some coarse to fine sand, little coa · :o fine gravel, stiff to very stiff, low · :ticity, moist, fill CL	SS-2 2.5-4.0 11"R	6 6 6		2.5*	
				SS-3 4.0-5.5 12"R	3 3 5		2.0*	
				SS-4 5.5-7.0 12"R	2 3 2		1.4*	
				SS-5 7.0-8.5 3"R	1 1 1			SS-5 driven on a piece of coarse gravel at 7.3'.
	732.1	7.7	Brown silt · arse to fine sand, little coarse to fine gr · , loose to medium dense, well graded, mc · to wet SM					
	730.9	8.9	Brown silt · ay, little coarse to fine sand, trace coar · o fine gravel, very stiff, low plasticity · ist CL	SS-6A,B 8.5-10.0 16"R	4 5 6		3.5*	
				SS-7 10.0-11.5 18"R	6 7 13		4.5+*	SS-7 driven through 2" Ø sand pocket at 10.4'.
				SS-8 11.5-13.0 16"R	6 7 8		2.3*	
				SS-9 13.0-14.5 18"R	4 5 7		2.3*	
			1/2" thic · ty coarse to fine sand seam 14.9'					
			1/2" thic · ty fine sand seam at 16.0'	SS-10 14.5-16.0 18"R	5 6 7		2.0*	Water level during drilling at 16.5'.
	723.8	16.0	Gray silt · fine sand, medium dense, non-plastic, · to wet ML					
	723.2	16.6	Gray silty · lium to fine sand, medium dense, poorly gra · , wet SM	SS-11ABC 16.0-17.5 15"R	6 8 9			
	722.4	17.4	Gray clayey · ilt, little medium to fine sand, medium den · low plasticity, moist to wet ML	SS-12A,B 17.5-19.0 18"R	5 7 9		3.0*	
	721.3	18.5	Gray silty · ay, trace coarse to fine sand,					
	720.8	19.0	trace coar · :o fine gravel, very stiff, low plasticity · oist CL	SS-13A,B 19.0-20.5 18"R	4 7 10			
			Gray silty · arse to fine sand, little coarse to fine gr · l, medium dense, well graded, saturate · SM					
		20.0						

LOG OF BORING B-197

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor — BORING NO.: GT-1

DRILLER: Patrick Engineering — START: 6/20/88 — COMPLETE: 6/28/88 — SHEET: 2 OF 2

RIG: CME-45/ATV — LOCATION: Approximately 10' west of GT-01

GROUND EL.: 739.8 — W.L. & TIME: 16.5' during drilling, 10.0' immediately after drilling.

OG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	720.0	19.8						
	719.8	20.0	Gray silty coarse to fine sand, little coarse to fine gravel, medium dense, well graded, saturated SM	SS-14 20.5-22.0 13"R	5 11 19		4.5+*	
	717.8	22.0	Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff, low plasticity, moist CL					
			End of Boring at 22.0'.					

Description of Well Construction

The bottom of the boring was verified to be at a depth of 22.0'. 20.0' of 2-inch I.D. Schedule 10 #304 stainless steel riser pipe connected to 5.0' of 2-inch I.D. Schedule 10 #304, 0.01-inch slotted wire wound stainless steel screen was placed inside the HSA. The annular space between the well screen and the borehole was back-filled with clean, washed silica sand. The top of the sand filter was verified to be at a depth of 14.0'. A 3.5' thick bentonite pellet seal was placed above the sand filter. During placement, the top of the pellet seal was frequently sounded to insured that the pellets did not bridge above the desired depth. The pellet seal was wetted with 5 gallons of potable water and allowed to hydrate for 15 hrs. The top of the bentonite after hydration was verified to be at 10.5'. A 5.0' thick layer of Volclay grout was placed above the bentonite seal and allowed to set for approximately 24 hours. The upper 5.5' of the borehole was grouted with a cement-bentonite mix and a 6" steel well protector was installed.
A 6" thick concrete slab was then constructed around the well protector with the surface of the slab gently slopeing away from the well in all directions.

LOG OF BORING B-198

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor — BORING NO.: GT-12

DRILLER: Patrick Engineering — START: 6/23/88 — COMPLETE: 6/28/88 — SHEET: 1 OF 2

RIG: CME-45/ATV — LOCATION: Approximately 75' west of GT-11

GROUND EL.: 738.7 — W.L. & TIME: 14.5' during, 10.0' after drilling.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	738.7	0.0						
			Brown silty clay, little coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist, fill CL					Advanced borehole using 3-1/4" I.D. HSA.
				SS-1 1.0-2.5 13"R	4 10 9		4.5+*	
	735.7	3.0		SS-2A,B 2.5-4.0 12"R	5 4 5		3.0* 1.6*	
	735.0	3.7	Dark brown silty clay with fibers, little coarse to fine sand, trace coarse to fine gravel, stiff, low plasticity, moist, topsoil CL					
			Brown silty clay, some coarse to fine sand, trace coarse to fine gravel, stiff, low plasticity, moist CL	SS-3 4.0-5.5 14"R	3 4 5		1.5*	
	733.4	5.3						
			Brown clayey silt, some coarse to fine sand, medium dense, low plasticity, moist to wet ML	SS-4 5.5-7.0 15"R	4 6 10			
	731.8	6.9						
			Brown silty coarse to fine gravel, some coarse to fine sand, medium dense to dense, well graded, moist GM	SS-5 7.0-8.5 10"R	8 20 10			SS-5 driven on a piece of coarse gravel at 7.8'.
	730.5	8.2						
			Brown silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff, low plasticity, moist CL	SS-6 8.5-10.0 18"R	5 6 7		2.1*	Driller noted cobble at 8.5'.
				SS-7A,B 10.0-11.5 18"R	6 6 8		3.0* 2.1*	
	728.2	10.5						
			Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff to stiff, low plasticity, moist CL 3" ø sand pocket at 12.8'	SS-8 11.5-13.0 18"R	5 8 13		2.3*	
				SS-9 13.0-14.5 16"R	5 6 9		2.1*	
	724.3	14.4						
			Gray clayey silt, little coarse to fine sand, medium dense, low plasticity, wet ML	SS-10A,B 14.5-16.0 15"R	5 13 7			Water level during drilling at approximately 14.5'.
	723.5	15.2						
			Gray silty coarse to fine sand, trace coarse to fine gravel, medium dense, poorly graded, wet SM					
	722.8	15.9						
			Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, stiff to very stiff, low plasticity, moist CL	SS-11A,B 16.0-17.5 18"R	5 7 8		1.6*	2" of silty coarse sand, saturated at 16.1'. (See SS-11A)
				SS-11 17.5-19.0 18"R	5 6 10		2.1*	
	719.7	19.0						
			End of Boring at 19.0'.					

LOG OF BORING B-199

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor BORING NO.: GT-12

DRILLER: Patrick Engineering START: 6/23/88 COMPLETE: 6/28/88 SHEET: 2 OF 2

RIG: CME-45/ATV LOCATION: Approximately 75' west of GT-11

GROUND EL.: 738.7 W.L. & TIME: 14.5' during, 10.0' after drilling.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		0.0	DESCRIPTION OF WELL CONSTRUCTION The bottom of the boring was verified to be at a depth of 19.0'. 17.5' of 2-inch I.D. Schedule 10 #304 stainless steel riser pipe connected to 5.0' of 2-inch I.D. #304, 0.01-inch slotted wire wound stainless steel screen was placed inside the HSA. The annular space between the well screen and the borehole was backfilled with clean, washed silica sand. The top of the sand filter was verified to be at a depth of 11.5'. A 3.0' thick bentonite pellet seal was placed above the sand filter. During placement, the top of the pellet seal was frequently sounded to ensure the pellets did not bridge or stick above the desired depth. The pellet seal was wetted with 5 gallons of potable water and allowed to hydrate for 4 days. The top of the bentonite seal was verified to be at 8.5' after hydration. A 3.5' thick layer of Volclay grout was placed above the bentonite seal and allowed to set for 24 hours. The upper 5.0' was grouted with a cement-bentonite mix and a 6" diameter steel well protector was installed. A 6" thick concrete slab was constructed around the well protector with the surface of this slab gently sloping away from the well in all directions.					

LOG OF BORING B-200

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor — BORING NO.: GT-12A

DRILLER: Patrick Engineering — START: 6/23/88 — COMPLETE: 6/23/88 — SHEET: 1 OF 2

RIG: CME-45/ATV — LOCATION: Approximately 100' west of GT-01

GROUND EL.: 737.95 — W.L. & TIME: 15.0' during, 25.0' 10 hours after drilling.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		0.0	Brown silty clay, little coarse to fine sand, little coarse to fine gravel, very stiff to hard, low plasticity, moist, fill CL					Advanced borehole using 4-1/4" I.D. HSA.
				SS-1 1.0-2.5 13"R	4 4 10		2.8*	
				SS-2 2.5-4.0 12"R	7 9 12		4.1*	
		3.7	Black silty clay, little coarse to fine sand, very stiff, medium plasticity, moist, topsoil CL	SS-3A,B 4.0-5.5 15"R	5 5 6		2.1* 2.5*	
		4.5	Brown to brownish-gray silty clay, little coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL	SS-4 5.5-7.0 18"R	4 6 4		2.2*	
				SS-5 7.0-8.5 18"R	4 4 5		2.1*	
				SS-6 8.5-10.0 18"R	4 6 8		2.7*	
			2" thick layer of brownish-gray silt at 9.8'					
		10.0	Brown silty clay, little coarse to fine sand, little coarse to fine gravel, very stiff to hard, low plasticity, moist CL	SS-7 10.0-11.5 18"R	5 7 10		3.6*	
				SS-8A,B 11.5-13.0 18"R	8 8 12		4.5+* 3.2*	
		12.4	Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff, low to medium plasticity, moist CL	SS-9A,B 13.0-14.5 18"R	6 7 10		2.5*	
		13.5	Gray clayey silt, trace coarse to fine sand, trace coarse to fine gravel, very stiff, low plasticity, moist ML					
		14.5	Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff, low to medium plasticity, moist CL	SS-10 14.5-16.0 14"R	4 5 7		2.1*	Water level during drilling at approximately 15.0'.
				SS-11 16.0-17.5 18"R	4 5 7		2.2*	
			1/4" sand seam present at 18.0'	SS-12 17.5-19.0 18"R	4 7 9		2.5*	
				SS-13 19.0-20.5 18"R	5 9 12		2.4*	
		20.0						

LOG OF BORING B-201

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor BORING NO.: GT-12A

DRILLER: Patrick Engineering START: 6/23/88 COMPLETE: 6/23/88 SHEET: 2 OF 2

RIG: CME-45/ATV LOCATION: Approximately 100' west of GT-01

GROUND EL.: 737.95 W.L. & TIME: 15.0' during, 25.0' 10 hours after drilling.

OG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		20.0						
			Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, low to medium plasticity, moist CL	SS-14 20.5-22.0 18"R	7 8 9		2.0*	
				SS-15 22.0-23.5 18"R	5 8 10		2.5*	
			2" layer of silty coarse to fine sand present at 24.3'	SS-16 23.5-25.0 18"R	4 5 9		2.0*	
				SS-17 25.0-26.5 16"R	3 5 8		2.1*	
		26.5	End of Boring at 26.5'.					Boring grouted with cement-bentonite grout mix using the tremie method.

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL B-202

BORING GT13 DATE STARTED 8-24-94 DATE COMPLETED 8-24-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE No data

END OF BORING

WATER TABLE

▼ WHILE DRILLING Dry

▽ AT END OF BORING Dry

▼ 24 HOURS Backfilled

DISTANCE BELOW SURFACE IN FEET

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	1	SS	7				2.0		FILL - Brown-gray silty CLAY, trace coarse sand and small gravel, moist (CL)
	2	SS	63				4.5		FILL - Brown-gray silty CLAY, trace fine to coarse sand, dolomitic cobble at 4.5', moist, (CL)
	3	SS	35						Gray-brown silty CLAY, trace coarse sand and small gravel, moist (CL)
	4	SS	27				8.0		
	5	SS	26						Brown-gray silty CLAY, trace fine to coarse sand and small gravel, some iron oxide staining, moist (CL)
	6	SS	21						
	7	SS	21				13.5		
	8	SS	13						Brown silty CLAY, trace fine to coarse sand and small gravel, some iron oxide staining, moist (CL)
	9	SS	13				17.5		
	10	SS	16						Gray silty CLAY, trace small gravel and coarse sand, moist (CL)
	11	SS	14				21.0		
	12	SS	15						
	13	SS	12						Gray silty CLAY, trace small gravel and coarse sand, moist (CL)
	14	SS	13						
	15	SS	12						
	16	SS	15						
	17	SS	12						
	18	SS	15						
	19	SS	20						

DRILL RIG NO. 91

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL B-203

BORING GT13 DATE STARTED 8-24-94 DATE COMPLETED 8-24-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE No data

END OF BORING

WATER TABLE

▼ WHILE DRILLING Dry

▽ AT END OF BORING Dry

▼ 24 HOURS Backfilled

DISTANCE BELOW SURFACE IN FEET

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	20	SS	13						
	21	SS	16						
	22	SS	13						
	23	SS	10						
	24	SS	12						Gray silty CLAY, trace small gravel and coarse sand, moist (CL)
	25	SS	15						
	26	SS	13						
	27	SS	15						
	28	SS	21						
	29	SS	16				57.0		
	30	SS	15						
	31	SS	18						
	32	SS	21						
	33	SS	16						Gray silty CLAY, trace fine to coarse sand and small gravel, moist (CL)
	34	SS	12						
	35	SS	17						
	36	SS	21						
	37	SS	21						
	38	SS	19						
	39	SS	26				77.0		Gray silty CLAY, trace fine to coarse sand, thin silt seam at 77.5', moist to very moist (CL)
									End of Boring at 79.0'

DRILL RIG NO. 91

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL B-204

BORING GT14 DATE STARTED 8-25-94 DATE COMPLETED 8-26-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE 758.5

END OF BORING 681.5

WATER TABLE

▼ WHILE DRILLING 25.0'

▽ AT END OF BORING 73.0'

▼ 24 HOURS Well Installed

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	1	SS	16						FILL - Brown-gray silty CLAY, trace fine to coarse sand, damp (CL)
	2	SS	26						
	3	SS	20						
	4	SS	32				7.0	751.5	Brown and gray silty CLAY, trace fine to coarse sand, occasional cobble, some iron oxide staining, moist (CL)
	5	SS	22				9.0	749.5	Brown silty CLAY, trace coarse sand, small gravel and thin silt seams, some iron oxide staining, moist (CL)
	6	SS	23				11.5	747.0	Olive brown silty CLAY, trace coarse sand, small gravel and iron oxide staining, moist (CL)
	7	SS	12						
	8	SS	11				15.5	743.0	Gray silty CLAY, trace coarse sand and small gravel, occasional thin silt seam with fine to very fine sand, moist (CL-ML)
	9	SS	14				18.0	740.5	
	10	SS	9						Gray silty CLAY, trace coarse sand and small to medium gravel, moist (CL)
	11	SS	14						
	12	SS	12						▼
	13	SS	15				25.0	733.5	Gray clayey SILT with fine to very fine sand, trace small gravel, wet (ML)
	14	SS	13				28.0	730.5	Gray silty CLAY, trace coarse sand and small gravel, moist (CL)
	15	SS	16				31.0	727.5	Gray silty CLAY, trace coarse sand and small gravel, occasional thin silt seams, trace fine to very fine sand, moist to very moist (CL)
	16	SS	13				34.5	724.0	
	17	SS	13						Gray silty CLAY, trace fine to coarse sand and small gravel, moist (CL)
	18	SS	13						
	19	SS	15						

DISTANCE BELOW SURFACE IN F

DRILL RIG NO. 91

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL B-205

BORING GT14 DATE STARTED 8-25-94 DATE COMPLETED 8-26-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE 758.5

END OF BORING 681.5

WATER TABLE

▼ WHILE DRILLING 25.0'

▽ AT END OF BORING 73.0'

▼ 24 HOURS Well Installed

DISTANCE BELOW SURFACE IN FEET	LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
40		20	SS	14						Gray silty CLAY, trace fine to coarse sand and small gravel, moist (CL)
		21	SS	17				43.0	715.5	
		22	SS	25						Gray silty CLAY, trace coarse sand and small gravel, moist, thin 2" clayey silt seam with very fine to fine sand, wet at 46.5' (CL-ML)
45		23	SS	18						
		24	SS	19				49.0	709.5	
50		25	SS	15						Gray silty CLAY, trace fine to coarse sand, moist (CL)
		26	SS	26				53.0	705.5	
		27	SS	30						Gray silty CLAY, trace fine to coarse sand and small gravel, some reddish brown very thin silt seams, moist (CL)
55		28	SS	38						
		29	SS	14				59.0	699.5	
60		30	SS	18						Dark gray silty CLAY, trace fine to coarse sand and small gravel, moist (CL)
		31	SS	16						
		32	SS	19						
65		33	SS	16						
		34	SS	15				67.0	691.5	Dark gray silty CLAY, trace fine to coarse sand, and small to medium gravel, moist to very moist (CL)
70		35	SS	16				70.5	688.0	
		36	SS	10						Dark gray silty CLAY, trace fine to coarse sand, small gravel and thin (<1") reddish brown, clayey silt seams with fine to coarse sand, moist to very moist (CL)
		37	SS	13				73.0	685.5	Gray silty fine SAND, trace coarse sand and small gravel, wet (SM)
75		38	SS	21				75.0	683.5	Gray silty CLAY, trace fine to coarse sand and small gravel, moist to very moist (CL)
80										End of Boring at 77.0'
										See Page 3

DRILL RIG NO. 91

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL B-206

BORING GT14 DATE STARTED 8-25-94 DATE COMPLETED 8-26-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE 758.5

END OF BORING 681.5

WATER TABLE

▼ WHILE DRILLING 25.0'

▽ AT END OF BORING 73.0'

▼ 24 HOURS Well Installed

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS

DISTANCE BELOW SURFACE IN FEET

80
85
90
95
100
105
110
115
120

Continued for Boring GT14 from Page 2

Monitoring Well Installation Notes:

1. 2" SS-304 screen (0.010" slot): 66.8-76.8
2. 2" SS-304 riser: 56.8-66.8
3. 2"PVC riser: +2.3-56.8
4. Coarse grained sand filter pack: 63.0-77.0
5. Bentonite Chips: 60.5-63.0
6. Bentonite Slurry Grout: 3.0-60.5
7. Stick-up protective steel casing concreted into place over riser.

DRILL RIG NO. 91

PROJECT Zion Municipal Landfill, Monitoring Well Installation, Zion, IL

CLIENT Browning-Ferris Industries, 701 Green Bay Rd., Zion, IL

BORING GT 15 DATE STARTED 9-8-95 DATE COMPLETED 9-11-95 JOB 38,190

ELEVATIONS

GROUND SURFACE 739.1

END OF BORING 679.1

N 10471.61, E 8627.33

WATER TABLE

▼ WHILE DRILLING 6.0'

▽ AT END OF BORING 50.0'

▼ 24 HOURS M. Well Installed

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_p	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
									▼ Blind Drill

DISTANCE BELOW SURFACE, FEET

0
5
10
15
20
25
30
35
40

DRILL RIG NO. 177

Division lines between deposits represent approximate boundaries between soil types. In-situ, the transition may be gradual.

PROJECT Zion Municipal Landfill, Monitoring Well Installation, Zion, IL

CLIENT Browning-Ferris Industries, 701 Green Bay Rd., Zion, IL

BORING GT 15 DATE STARTED 9-8-95 DATE COMPLETED 9-11-95 JOB 38,190

ELEVATIONS

GROUND SURFACE 739.1

END OF BORING 679.1

N 10471.61, E 8627.33

WATER TABLE

▼ WHILE DRILLING 6.0'

▽ AT END OF BORING 50.0'

▼ 24 HOURS M. Well Installed

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_p	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
									Blind Drill
							50.0	689.1	▽
	1	SS	15						Gray silty CLAY, trace very fine sand, moist to very moist (CL)
							52.0	687.1	
	2	SS	14						Gray SILT, trace very fine sand and clay, occasional thin (1-2") fine to coarse sand seams, wet (ML)
	3	SS	18						
	4	SS	13						
	5	SS	14				59.0	680.1	
									Gray silty CLAY, trace very fine sand and small gravel, moist to very moist (CL)
									End of Boring at 60.0'

DISTANCE BELOW SURFACE IN FEET

40 45 50 55 60 65 70 75 80

Monitoring Well Installation Notes

1. 2" SS-304 Screen (0.010" slot): 50.3-60.3'
2. 2" SS-304 riser: 30.3-50.3'
3. 2" PVC riser: +2.16-30.3'
4. Coarse Silica Sand: 47.5-60.3'
5. Bentonite Chips: 45.0-47.5'
6. Bentonite Slurry Grout: 2.5-45.0'
7. 6" protector casing concreted into place over riser.

DRILL RIG NO. 177

Division lines between deposits represent approximate boundaries between soil types. In-situ, the transition may be gradual.

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL B-209

BORING GT16 DATE STARTED 8-31-94 DATE COMPLETED 8-31-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE 739.4

END OF BORING 684.4

WATER TABLE

▼ WHILE DRILLING 47.0'

▽ AT END OF BORING 47.0'

▼ 24 HOURS Well Installed

DISTANCE BELOW SURFACE IN FEET

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	1	SS	31						FILL - Brown silty CLAY with coarse gravel, damp (CL)
							3.0	736.4	
	2	SS	20						Brown silty CLAY, trace fine to coarse sand, some small to medium gravel, damp (CL)
							5.0	734.4	
	3	SS	19						Brown-gray silty CLAY, trace fine to coarse sand and small gravel, some iron oxide staining, moist (CL)
	4	SS	22						
	5	SS	21						
							11.5	727.9	
	6	SS	19						Gray silty CLAY, trace coarse sand and small gravel, some iron oxide staining, moist (CL)
							13.0	726.4	
	7	SS	11						Gray silty CLAY, trace coarse sand and small gravel, moist, cobble at 19.0' (CL)
	8	SS	14						
	9	SS	10						
	10	SS	12						
	11	SS	20						
							23.0	716.4	
	12	SS	13						Gray silty CLAY, trace fine to coarse sand and small gravel, occasional thin (<1") silt seams, moist (CL)
							25.0	714.4	
	13	SS	18						Gray silty CLAY, trace coarse sand and small gravel, moist (CL)
	14	SS	24				28.0	711.4	
									Gray trace reddish brown silty CLAY, trace coarse sand and small gravel, moist (CL)
	15	SS	13				30.0	709.4	
	16	SS	14						Gray silty CLAY, trace coarse sand and small gravel, moist to very moist, thin 2" fine to coarse sand, trace gravel seam at 34.0' (CL)
	17	SS	15						
	18	SS	10						
	19	SS	12						

DRILL RIG NO. 91

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL B-210

BORING GT16 DATE STARTED 8-31-94 DATE COMPLETED 8-31-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE 739.4

END OF BORING 684.4

WATER TABLE

▼ WHILE DRILLING 47.0'

▽ AT END OF BORING 47.0'

▼ 24 HOURS Well Installed

DISTANCE BELOW SURFACE, FEET	LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
40		20	SS	Push						
		21	SS	Push						Gray silty CLAY, trace coarse sand and small gravel, moist to very moist, thin 2" fine to coarse sand, trace gravel seam at 34.0' (CL)
45							0.5'	47.0	692.4	▼
		22	SS	Push				47.5	691.9	Gray silty fine to coarse SAND, trace small to medium gravel, wet (SM)
50										Gray silty CLAY, trace coarse sand and small gravel, moist to very moist (CL)
		23	SS	Push				53.0	686.4	Gray silty CLAY, trace coarse sand and small gravel, moist (CL)
55										End of Boring at 55.0'
										Monitoring Well Installation Notes:
										1. 2" SS-304 screen (0.010" slot): 44.8-54.8
										2. 2" SS-304 riser: 34.8-44.8
										3. 2"PVC riser: +2.9-34.8
										4. Coarse grained sand filter pack: 41.0-55.0
										5. Bentonite Chips: 38.7-41.0
										6. Bentonite Slurry Grout: 3.0-38.7
										7. Stick-up protective steel casing concreted into place over riser.
60										
65										
70										
75										
80										

DRILL RIG NO. 91

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL B-213

BORING GT17 DATE STARTED 11-30-94 DATE COMPLETED 12-1-94 JOB L - 35,874

ELEVATIONS

GROUND SURFACE 733.9

END OF BORING 669.9

WATER TABLE

▼ WHILE DRILLING 45.0'

▽ AT END OF BORING 45.0'

▼ 24 HOURS Well Installed

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	1	SS	28						FILL - Brown silty CLAY, trace coarse sand, small gravel, damp (CL)
	2	SS	26				3.0	730.9	FILL - Brown and black silty CLAY, trace coarse sand and small gravel, damp (CL)
	3	SS	16				5.0	728.9	FILL - Black trace gray silty CLAY, some organic matter, damp (CL)
	4	SS	18				7.5	726.4	Olive brown silty CLAY, trace fine to coarse sand and small gravel, moist (CL)
	5	SS	14				8.5	725.4	Brown and gray silty CLAY, trace fine sand, moist (CL)
	6	SS	13				10.5	723.4	Brown trace gray silty CLAY, trace fine to coarse sand and small gravel, some iron oxide staining, moist to very moist (CL)
	7	SS	Push						
	8	SS	Push				18.0	715.9	Gray silty CLAY, trace fine to coarse sand and small to large gravel, occasional thin silt seams, moist to very moist (CL)
	9	SS	Push				19.5	714.4	Gray silty CLAY, trace coarse sand and small to medium gravel, moist (CL)
	10	SS	Push						
	11	SS	Push				33.0	700.9	Gray silty CLAY, trace coarse sand and small to medium gravel, occasional thin silt seams with very fine sand, moist to very moist (CL)
	12	SS	Push						

DISTANCE BELOW SURFACE IN FEET

DRILL RIG NO. 117

PROJECT Zion Landfill, Monitoring Well Installation, Zion, Illinois

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, IL B-214

BORING GT17 DATE STARTED 11-30-94 DATE COMPLETED 12-1-94 JOB L-35,874

ELEVATIONS

GROUND SURFACE 733.9

END OF BORING 669.9

WATER TABLE

▼ WHILE DRILLING 45.0'

▽ AT END OF BORING 45.0'

▼ 24 HOURS Well Installed

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_u	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	13	SS	Push						Gray silty CLAY, trace coarse sand and small to medium gravel, occasional thin silt seams with very fine sand, moist to very moist (CL
							45.0	688.9	▼
							46.0	687.9	Gray very sandy (fine) SILT, some clay, wet (ML)
	14	SS	Push						
	15	SS	Push						Gray silty CLAY, trace coarse sand and small to medium gravel, moist to very moist (CL)
	16	SS	Push						
	17	SS	Push				62.0	671.9	
							62.5	671.4	Gray fine to coarse silty SAND, trace small gravel, wet (SW/GW)
									Gray silty CLAY, trace coarse sand and small medium gravel, very moist (CL)

End of Boring at 64.0'

Monitoring Well Installation Notes:

1. 2" SS-304 screen (0.010" slot): 53.8-63.8
2. 2" SS-304 riser: 43.8-53.8
3. 2"PVC riser: +2.4-43.8
4. Coarse grained sand filter pack: 51.5-64
5. Bentonite Chips: 48.3-51.5
6. Bentonite Slurry Grout: 2.7-48.3
7. Stick-up protective steel casing concreted into place over riser.

DISTANCE BELOW SURFACE IN FEET

40 45 50 55 60 65 70 75 80

DRILL RIG NO. 117

Field Boring Log

DEPTH HOLE 55.0' | JOB NO. 990402 | PROJECT Well Replacements - Zion Foothills | BORING NO. GTZ4

DEPTH SOIL DRILL 55.0' | GA INSP. Mike Hirt | DRILLING METHOD 0.0' - 55.0': 4.25-inch hollow stem auger | SHEET 1 OF 3

DEPTH ROCK CORE — | WEATHER Normal | DRILLING COMPANY RD-n-P Drilling, Inc. | SURFACE ELEV. 741.6'

NO. DIST. SA. 6 | UD. SA. — | TEMP. 80's | DRILL RIG Diedrich D120 | DRILLER Paul Eger | DATUM MSL

DEPTH WL. 14.9' BGS | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs. | DROP 30 inches | STARTED TIME 10:30 / DATE 7-19-05

TIME WL. 10/19/05 10:00 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED TIME 14:10 / DATE 7-19-05

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN WALLED, OPEN
T.P.	THIN WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(0.0' - 8.0') Fill consisting of concrete rubble, bricks, and silty clay							7-19-05 10:30 Start hollow stem auger drilling
8	(8.0' - 20.0') Very stiff, moderate yellowish brown (10YR 5/4), homogeneous, SILTY CLAY, trace c sand and f gravel, pyrite present, SR, dry, (CL), WEATHERED WADSWORTH TILL	24	1	S.S.	12, 9, 15, 17	1.4' / 2.0'		#1 9.0' - 11.0' Very stiff, moderate yellowish brown (10YR 5/4), homogeneous, SILTY CLAY, trace c sand and f gravel, pyrite present, SR, dry, (CL), WEATHERED WADSWORTH TILL
20	(20.0' - 45.0') Very stiff, olive gray (5Y 3/2), homogeneous, SILTY CLAY, trace c sand and f gravel, SR, moist, (CL), WADSWORTH TILL							At 20.0' Based on Examination of Auger Cuttings: Very stiff, olive gray (5Y 3/2), homogeneous, SILTY CLAY, trace c sand and f gravel, SR, moist, (CL), WADSWORTH TILL

Field Boring Log

DEPTH HOLE 55.0' | JOB NO. 990402 | PROJECT Well Replacements - Zion Landfills | BORING NO. GT24
DEPTH SOIL DRILL 55.0' | GA INSP. Mike Hirt | DRILLING METHOD 0.0'-55.0': 4.25-inch hollow stem auger | SHEET 2 OF 3
DEPTH ROCK CORE — | WEATHER Normal | DRILLING COMPANY RD-M-P Drilling, Inc. | SURFACE ELEV. 741.6'
NO. DIST. SA. 6 | UD. SA. — | TEMP. 80's | DRILL RIG Diedrich D120 | DRILLER Paul Eger | DATUM MSL
DEPTH WL. 14.9' BGS | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs. | DROP 30-inches | STARTED 10:30 (TIME) / 7-19-05 (DATE)
TIME WL. 10/4/05 10:00 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 19:10 / 7-19-05

SAMPLE TYPES

AS	AUGER SAMPLE
CS	CHUNK SAMPLE
DO	DRIVE OPEN
DS	DENISON SAMPLE
PS	PITCHER SAMPLE
RC	ROCK CORE
ST	SLOTTED TUBE
TO	THIN-WALLED, OPEN
TP	THIN-WALLED, PISTON
WS	WASH SAMPLE

ABBREVIATIONS

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
LI	LITTLE
M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK
SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SIY	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 5% | "SOME" - 12 - 30%
"LITTLE" - 5 12% | "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB MOLNTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24	(20.0' - 45.0') Very stiff, olive gray (5Y 3/2), homogeneous, SILTY CLAY, trace c sand and f gravel, SR, moist, (CL), WADSWORTH TILL							
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46	See Page 3	18	2	SS	3, 8, 10, 11	1.5' / 2.0'		

Field Boring Log

DEPTH HOLE 55.0' | JOB NO. 990402 | PROJECT Well Replacements | BORING NO. GT24
DEPTH SOIL DRILL 55.0' | QA INSP. Mike Hirt | DRILLING METHOD 0.0'-55.0': 4.25-inch hollow stem auger | SHEET 3 OF 3
DEPTH ROCK CORE — | WEATHER Normal | DRILLING COMPANY RD-n-P Drilling, Inc. | SURFACE ELEV. 741.6'
NO. DIST. SA. 6 UD. SA. — | TEMP. 80's | DRILL RIG Diedrich D120 | DRILLER Paul Eger | DATUM MSL
DEPTH WL. 14.9' 3&S | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs. | DROP 30 inches | STARTED 10:30 (TIME) / 7-19-05 (DATE)
TIME WL. 10/19/05 10:00 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 14:10 / 7-19-05

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O	THIN WALLED, OPEN
T.P.	THIN WALLED, PISTON
W.S	WASH SAMPLE

ABBREVIATIONS

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
LI	LITTLE
M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE MANUAL
R	RED
RES	RESIDUAL
RX	ROCK
SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SLT	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

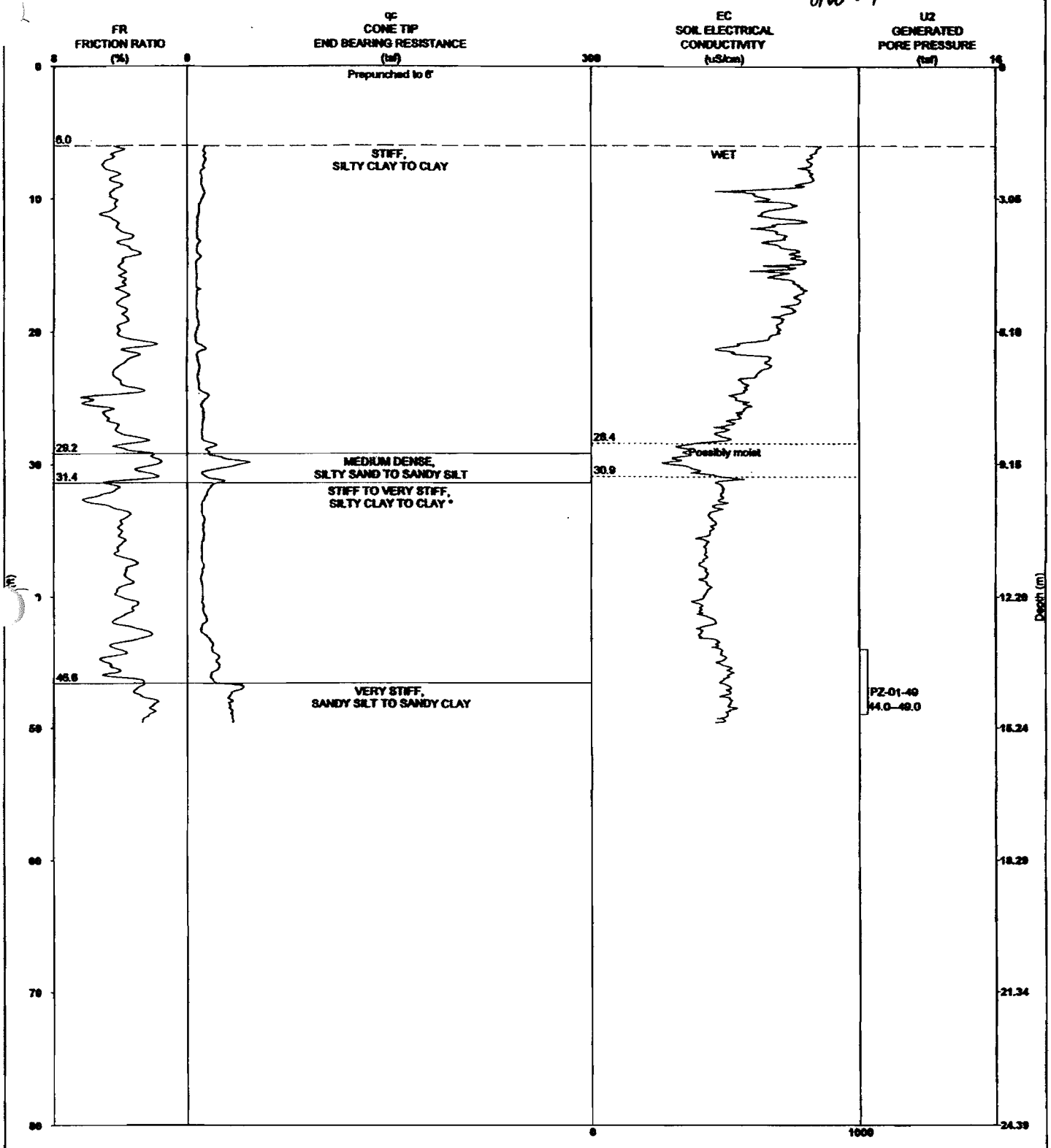
"TRACE" - 0 5% | "SOME" - 12 - 30%
"LITTLE" - 5 - 12% | "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS'
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47	(45.0'-53.0') Very Stiff, olive gray (5Y 3/2), stratified, CLAYEY SILT, CLAY, SILTY CLAY, and F-C SAND, WR, wet, (CL, ML, SC), INTRATILL GRANULAR SEDIMENTS	18	2	S.S.	3, 8, 10, 11	1.5' / 2.0'		#2 45.0'-47.0' Very stiff, olive gray (5Y 3/2), stratified, CLAYEY SILT and F-C SAND, WR, wet, (SC), INTRATILL GRANULAR SEDIMENTS
48		25	3	S.S.	7, 9, 11, 20	1.9' / 2.0'		#3 47.0'-49.0' Very stiff, olive gray (5Y 3/2), stratified, SILTY CLAY and CLAYEY SILT, little f sand and f gravel, WR, wet, (CL, ML), INTRATILL GRANULAR SEDIMENTS
49								
50		20	4	S.S.	5, 7, 13, 19	1.6' / 2.0'		#4 49.0'-51.0' Very stiff, olive gray (5Y 3/2), stratified, SILTY CLAY, little c sand and f gravel, SR, moist, (CL), INTRATILL GRANULAR SEDIMENTS
51								
52		23	5	S.S.	5, 7, 16, 16	2.0' / 2.0'		#5 51.0'-53.0' Very stiff, olive gray (5Y 3/2), stratified, CLAY, trace c sand and f gravel, WR, moist, (CL), INTRATILL GRANULAR SEDIMENTS
53								
54	(53.0'-55.0') Hard, olive gray (5Y 3/2), homogeneous, SILTY CLAY, trace f-c sand and f gravel, SR, moist, (CL), WADSWORTH TILL	60	6	S.S.	31, 40, 20, 20	1.0' / 2.0'		#6 53.0'-55.0' Hard, olive gray (5Y 3/2), homogeneous, SILTY CLAY, trace f-c sand and f gravel, SR, moist, (CL), WADSWORTH TILL
55								

CPTU-EC LOG WITH LITHOLOGIC EVALUATION

GW01



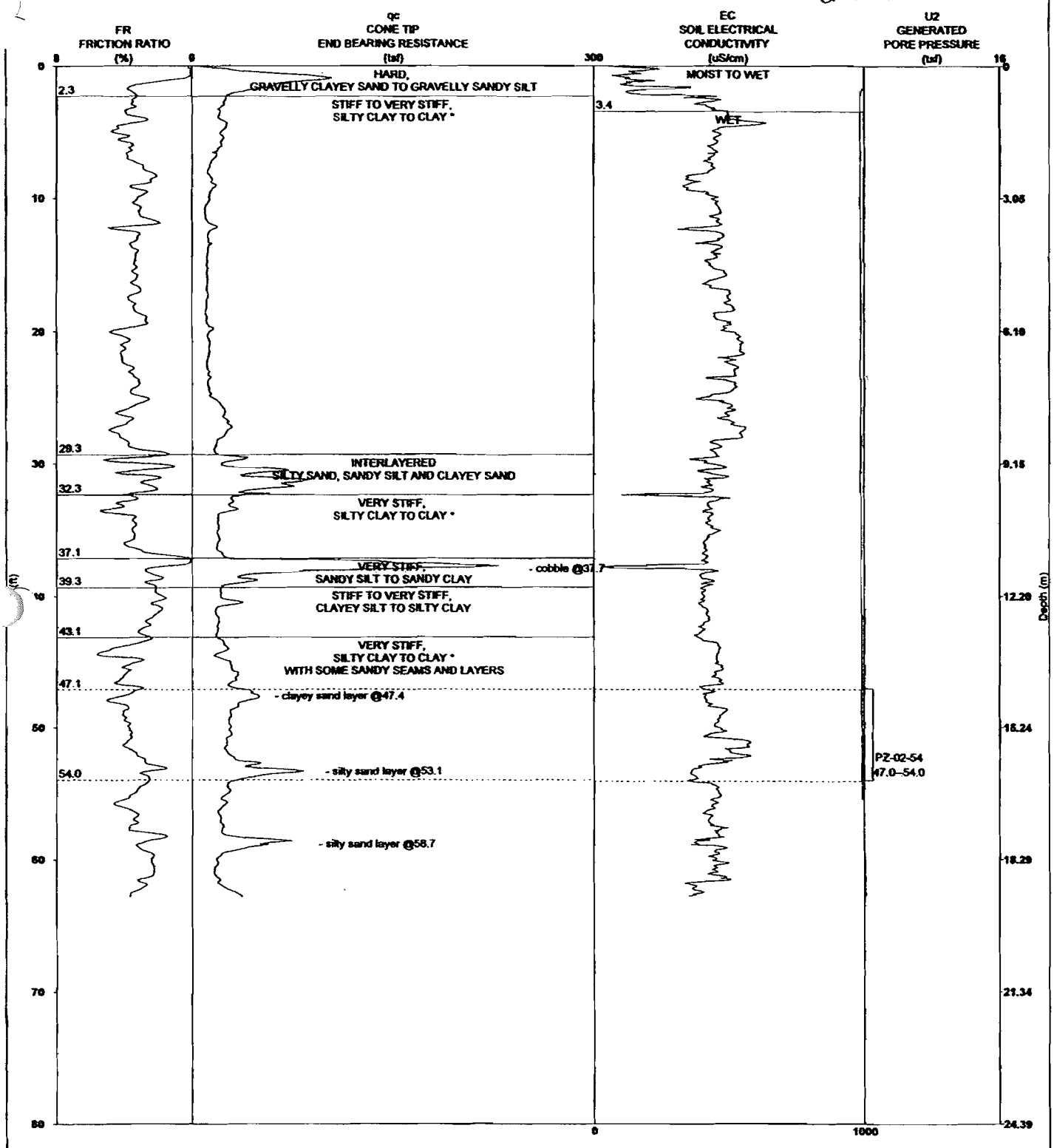
PROJECT NAME:GG28 Exploration Zion Landfill
PROJECT NUMBER:04-110-039

STRATIGRAPHICS

R1DATE: 3-01-2004 TIME:12:19:28.09
SOUNDING NUMBER:CP-GW-01

CPTU-EC LOG WITH LITHOLOGIC EVALUATION

GW02



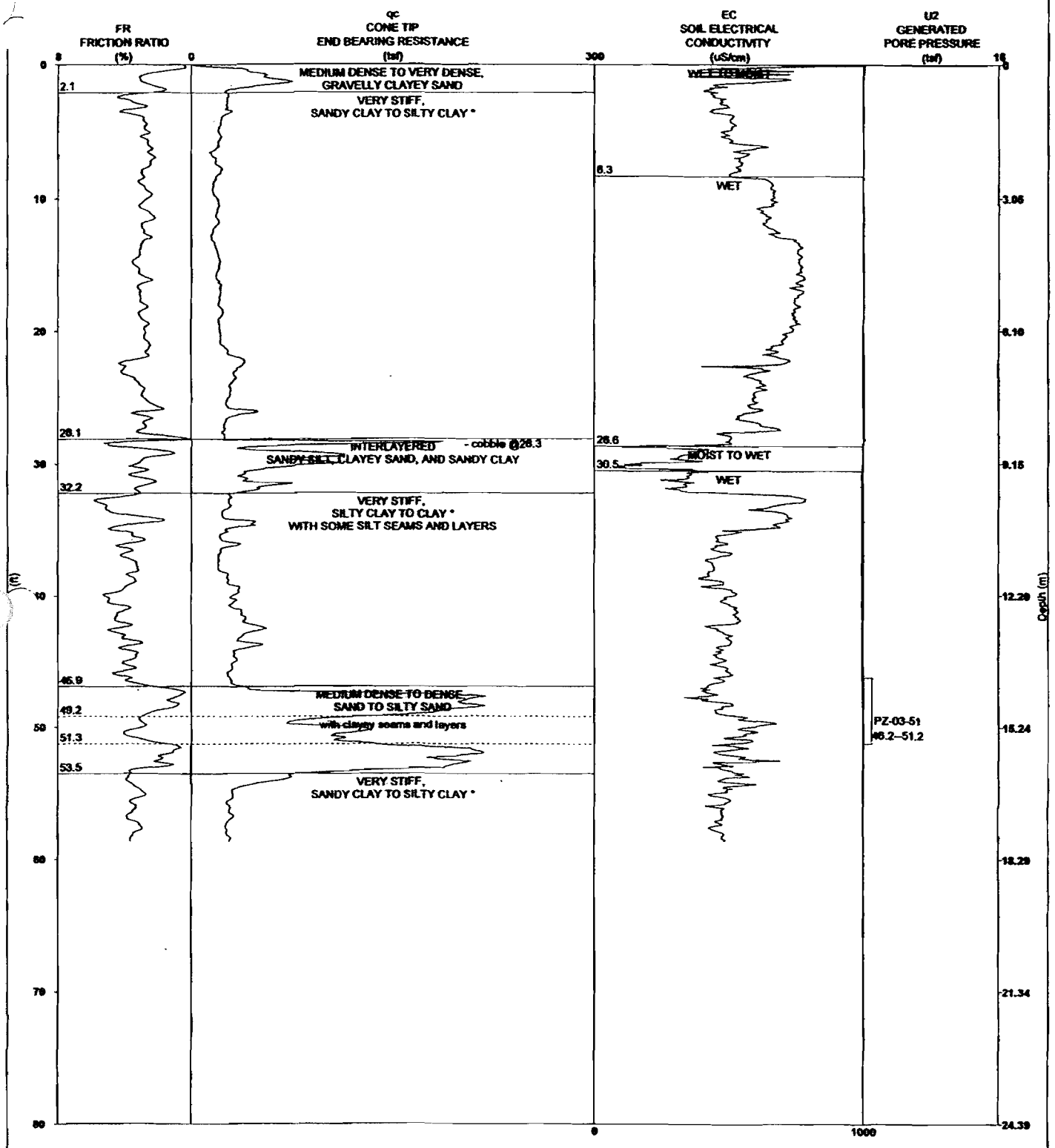
PROJECT NAME:GG23 Exploration Zion Landfill
PROJECT NUMBER:04-110-030

STRATIGRAPHICS

R1DATE: 3-03-2004 TIME:08:45:19.70
SOUNDING NUMBER:CP-GW-02

CPTU-EC LOG WITH LITHOLOGIC EVALUATION

GW03



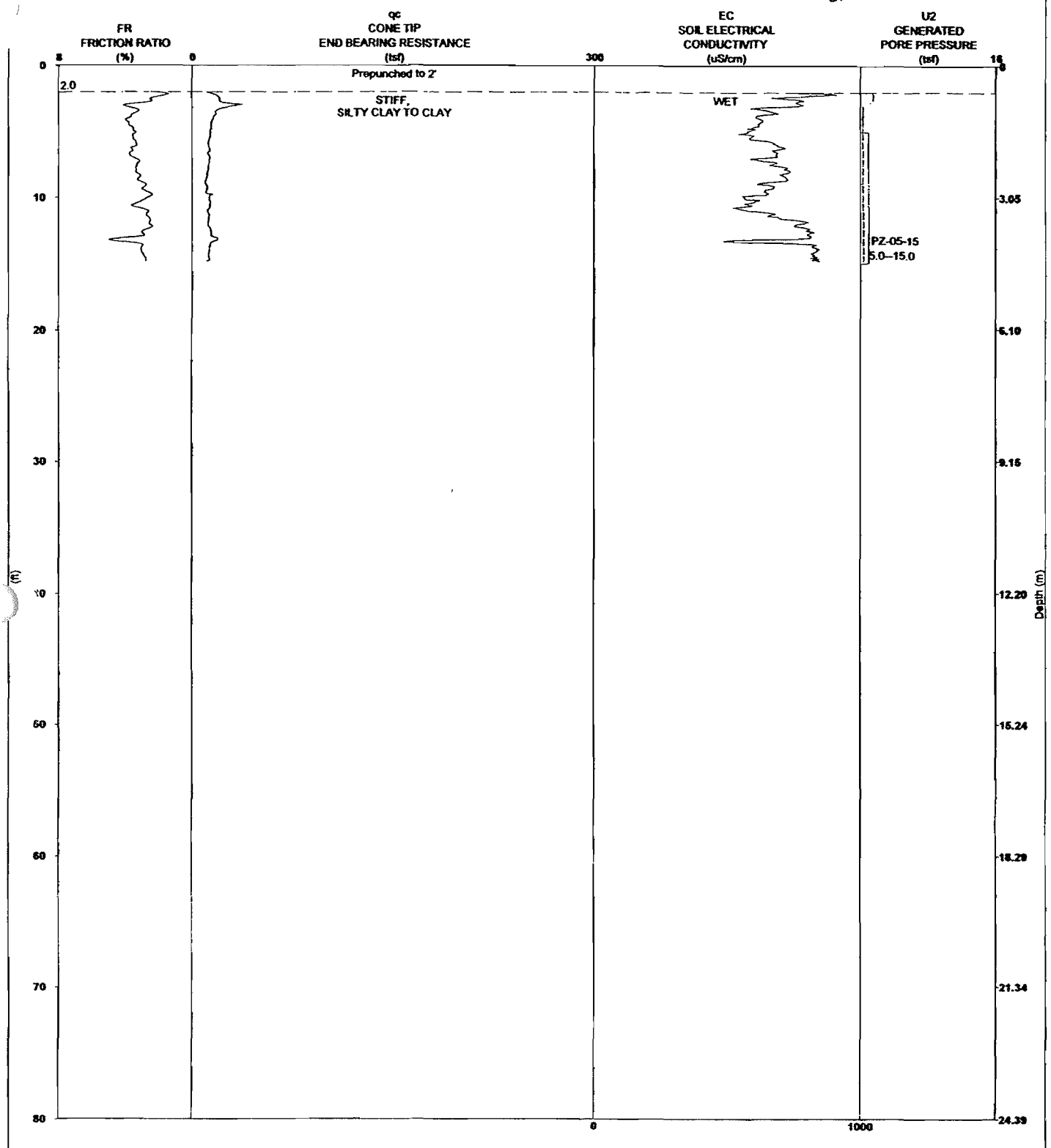
PROJECT NAME:GG2S Exploration Zion Landfill
PROJECT NUMBER:04-110-030

STRATIGRAPHICS

R1DATE: 3-02-2004 TIME:15:59:08.13
SOUNDING NUMBER:CP-GW-03

CPTU-EC LOG WITH LITHOLOGIC EVALUATION

GW05



PROJECT NAME:GG2S Exploration Zion Landfill
PROJECT NUMBER:04-110-030

STRATIGRAPHICS

R1DATE: 3-02-2004 TIME:14:46:52.53
SOUNDING NUMBER:CP-GW-05

Date:
Started: 83
Finished: 12-15-83
Sheet 1 of 5

Recra Research Inc.
SUBSURFACE LOG OW-1

Surface Elev. 734.5
G. W. Elev. 661.2 2/20/84

Project: Waukegan Hazardous Waste Management Facility
Location: 9th Street near (rear) gate after intersection of Green Bay and Ninth

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 18/24	Description
0		SS			
5			1	8 / 15 / 16	Light brown clayey fine sandy silt, moist, occasional coarse sand
					734.5
10			2	3 / 5 / 7	Brown grey silty clay, moist occasional angular-subangular gravel
					724
15			3	11 / 8 / 10	Grey silty clay, moist
20			4	6 / 19 / 16	Alternating 1-2" sand layers
25			5	13 / 17 / 21	Minor sand lense at 27'
30			6	8 / 13 / 16	
					Sandy layer from 31-34.5'
35					
40					

Notes

Gamma Log: sp log (0, + , − 5 mv) — Gamma (0 — 60 CPS)

Electric Log Normal (0 — 500 Ω m)

Temporary steel Casing to 40'

sp

Gamma

Water

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

Sheet 2 of 5 | OW-1 | G. W. Elev. 661.2 2/20/84

Project: Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location 9th Street for the first gate after the intersection of Green Bay

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 18/24	Description
40		SS	7	11 14 25	Grey silty clay (con't)
45					
50			8	11 25 29	
55					
60			9	23 44 60	
65					
70			10	24 34 47	
75					
80					

Notes

Gamma Log: 0 sp Tug + 5 mv 50 CPS

Electric Log Normal: 0 500Ω m; .25m; .5m

Gamma

sp

Clay

Classification: Visual

Method of Investigation: ASTM D 1452-80

B-147

Date:
Started: -83
Finished: 12-15-83
Sheet ___ of 5

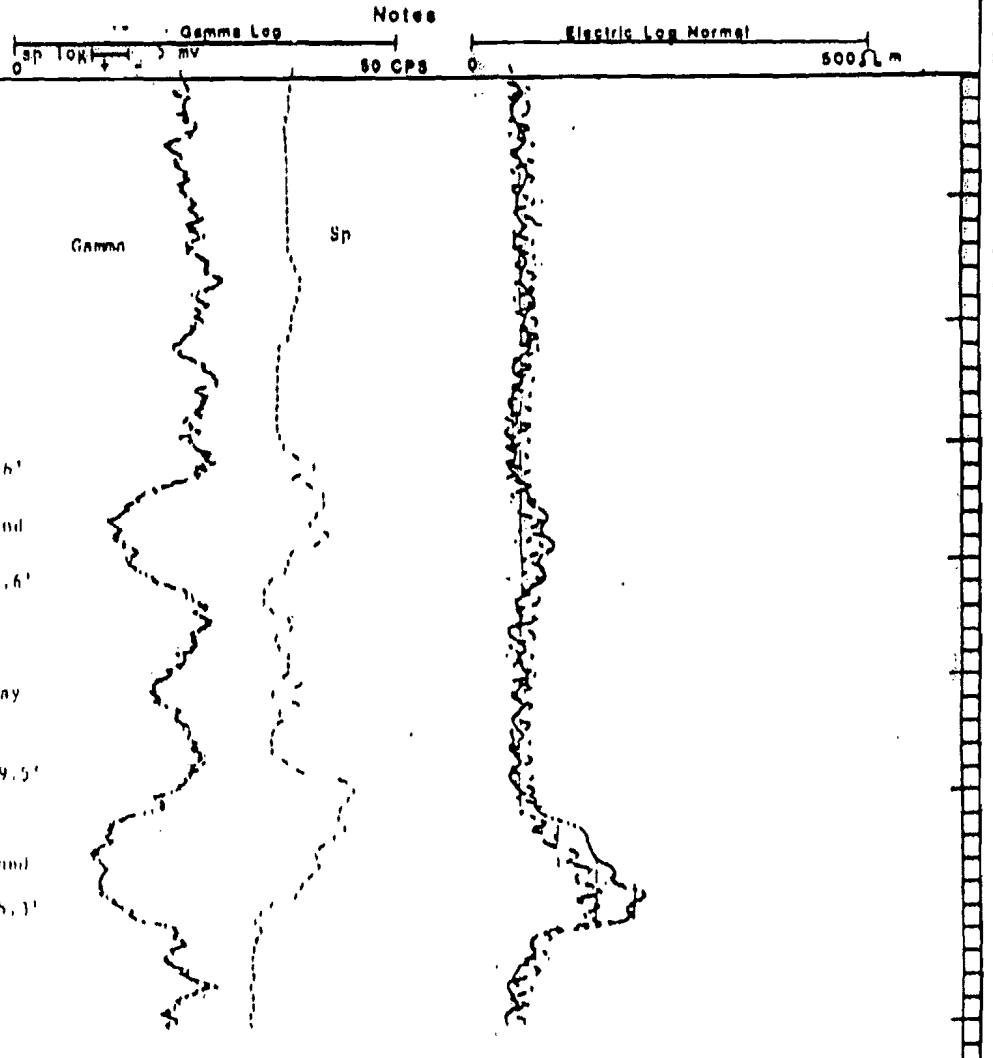
Recra Reseal[illegible] Inc.
SUBSURFACE L[illegible] OW-1

Surface Elev. 714.5
G. W. Elev. 661.2 2/20/84

Project: Waukegan Hazardous Waste Management Facility Location 9th Street Near gate post
Winthrop Harbor, Illinois Intersection of Green Bay

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6	6/12	12/18	18/24	Description
80		SS	11	19	37			Grey silty clay (con't)
				67				
85								
90			12	32	71			
				76				
95								638°
								Grey clay with 1% coarse sand and pebbles, moist, grading to dark brown grey clayey silt, very dry, well compacted
100			13	56	70			622.9
				125/5"				
05								Grey silty clay
110			14	64	76			Coarse to medium sand, little to no fine sand or silt, drillers note coarse sand 104-116'
				109				
115								Grey clayey silt/silty clay, moist, occasional very fine sand
120								

Notes



Classification: Visual
Method of Investigation: ASTM D 1452-80

B-148

Finished: 12-15-83

Sheet 4 of 5

SUBSURFACE LOG OW-1

G. W. ELEV. 661.2 2/20/84

Project: Waukegan Hazardous Waste Management Facility, Winthrop Harbor, Illinois

Location 9th Street water gate pump intersection of Green Bay

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 / 6 / 12 / 18	Description
120			15	42 / 65 / 91	Grey clayey silt/silty clay, moist, occasional very fine sand
125					
130			16	46 / 77 / 76	
135					
140			17	28 / 59 / 89	
145					
150			18	22 / 32 / 52	Drillers note sandy layer 148-150'
155					
160					

Notes

Gamma Log: 0 api log; + 5 mv -; 50 CPS

Electric Log Normal: 0; 800 Ω m

Gamma

up

Clay

Classification: Visual

Method of Investigation: ASTM D 1452-80

Date:
Started: ___
Finished: ___
Sheet 3 of 3

Recra Research, Inc.

SUBSURFACE LOG OW-1

Surface Elev. 734.5
G. W. Elev. 661.2 2/20/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location 9th Street near gate point intersection of Green Bay

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 16/24	Description
160		SS	19	21 55	
					562.1
					- Boulder
170			20	110 175/1"	Grey clay with coarse sand grading to grey coarse sand with some gravel size fragments.
					Boulder at 175-176'
					Drillers note out of sand at 177.5'. 557.0
180			21		10:10 a.m., 12/15/83
					4" boring completed at 180' 554.5

Notes

Gamma Log: 5 mv per tick; 50 CPS
Electric Log Normal: 0 to 800Ω m

Gamma

168.4'

Sand

Boulder

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

B-150

Finished: 12-16-83

Sheet 1 of

SUBSURFACE LOG OW-2

G. W. ELEV. 660.9 2/20/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location 20' W of TB-[illegible]ear entrance
to wire inside fence corner

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 / 6 / 12 / 18 / 24	Description
0					Refer to TB-1 for subsurface information.
5					No samples were taken from ground surface to 120' depth. Descriptions, where Presented are interpolated from TB1 and WW 1 above 120' to cross correlate with strata breaks seen on geophysical log. TB1 is 20' from OW 2.
10					
15					
20					
25					
30					
35					
40					Gravel zone medium - coarse sand and pebbles.

Notes

Gamma Log: 0 SP log — 5 mv — 80 CPS

Electric Log Normal: 0 — 500Ω m

Temporary steel casing to 26 feet

SP

Gamma

Res.

693.4

39.2'

Classification: Visual

Method of Investigation: ASTM D 1452-80

Date:
Started: —
Finished: 12-16-83
Sheet 2 of 4

Recra Research Inc.
SUBSURFACE LOG OW-2

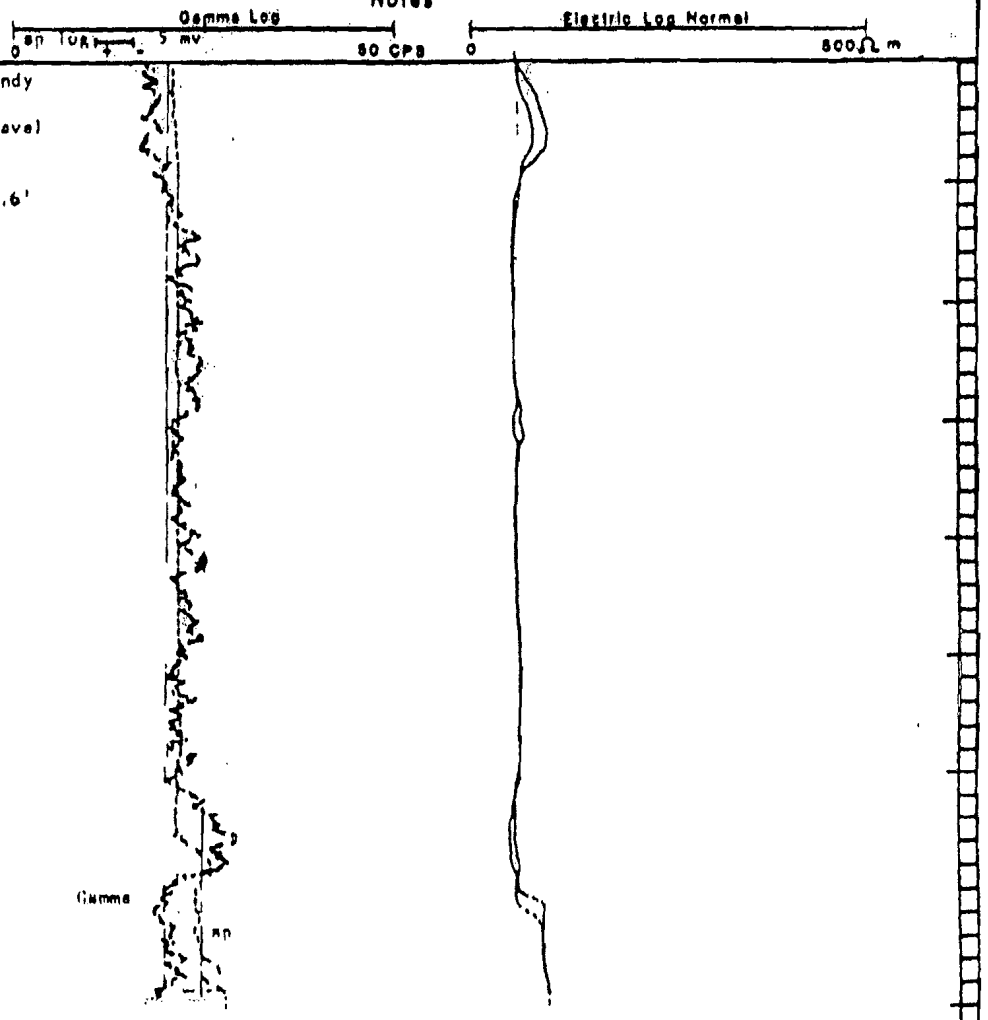
Surface Elev. 732.8
G. W. Elev. 660.9 2/20/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location 20' W of TB-1 near entrance to site inside fence corner

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0–6 / 6–12 / 12–18 / 18–24	Description
40					Refer to TB-1 for subsurface information.
					Grey brown silty gravel, clay very fine to medium gravel
45					45.6'
					689.2
50					Interpreted to be Grey/Brown silty clay from boring log of TB-1
55					
60					
65					
70					
75					
80					

Notes



Classification: VISUAL

Method of Investigation: ASTM D 1452-80

B-152

Finished: 12-16-83

Sheet 2 of

SUBSURFACE LOG MW-2

G. W. Elev. 660.9 2/10/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location 20' W of TBI near NNCA
to site fence corner

Log	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 18/24	Description	Elevation	Notes
				Grey clayey silt, slightly plastic, dense, very stiff, hard, slightly moist (TBI)	647.8	Gamma Log: gr low — 5 mv — 50 CPS; Electric Log Normal: 0 — 500Ω m
				Light brown very fine silty sand, moist, poorly sorted (TBI)	603.3	85' Sand/Gravel; 89.5' Clay
				Interpreted to be grey clayey sandy silt	638.0	94.8' Sand
				Light brown very fine silty sand, moist, poorly sorted (TBI)	633.9	98.9' Clay
				Interpreted to be clayey silt from TBI	627.3	105.5' Sand; .5m; .25m
				Light brown very fine sand, soft, homogeneous, poorly sorted (WW)	621.4	108.4' Clay
				Silty clay - homogeneous, soft plastic, no gravel or sand (WW)	618.3	114.5' Sand/Gravel
				Grey silty clay, occasional gravel		

Classification: Visual

Method of Investigation: ASTM D 1452-80

B-153

Date:
Started: [illegible]
Finished: 12-16-83
Sheet 4 of 4

Recra Research, SUBSURFACE LOG OW-2

Hole No.:
Surface Elev. 732.8
G. W. Elev. 660.9 2/20/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location 20' W of TB-1 near entrance to gate inside of fence corner

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 / 6 / 12	Description	Notes
120		SS	1		Grey silty clay, homogeneous, occasional gravel, plastic (612.8 / 610.8)	Gamma Log: SP log, + 5 mv, 50 CPS; Electric Log Normal: 0, 500 Ω m
125					Drillers note cobble at 125'	120.3' Silty Clay; 122.8' Silt Sand Gravel
					(603.8)	129.2'
130			2	150/5.5"	Gravelly clayey fine sand, abundant medium gravel subrounded-rounded	Sand Gravel
135						
140			3	125/2"	No recovery, cobble encountered	
					(592.9)	143.9'
145						
150			4	100/3"	Sandy silt/silty very fine sand, soft, uniform, homogeneous, poorly sorted	Sand; SP
					(577.5)	
155						155.3'
					Clay	Clay
160				160/6"	High % silt, soft, grey brown. Boring terminated at 160.5', 12-14-83	
					(572.3)	

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

Finished: 1-4-84

Sheet 1 of

SUBSURFACE LOG OW-3

G. W. Elev. 656.51 2/20/84

Project: Waukegan Hazardous Waste Management Facility, Winthrop Harbor, Illinois

Location Middle of Berm South Cu-Disposal Limits, South of road

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0-6 / 6-12 / 12-18	Description
0		SS			Drilled through 7-10' of berm
5					
0					750.7
					Grey brown, tan mottled silty clay, occasional fine gravel-coarse sand, moist
5			1	17 / 20	
				29	
0					Clay
					-5.7
5			2	10 / 24	Grey very slightly clayey silt, homogeneous, poorly sorted, moist
				24	
0					
5			3	14 / 4	Abundant fine gravel
				25	
10					

Notes

Gamma Log: 0 (tap to set) – 2 mv; 0 – 60 CPS

Electric Log Normal: 0 – 600Ω m

Temporary Steel Casing to 25.5'

Gamma

SP

.25m

Classification: VISUAL

Method of Investigation: ASTM D-1452-80

B-155

Date:
Started: —
Finished: 1-4-84
Sheet 2 of 5

Recra Research Inc
SUBSURFACE LOG OW-3

Hole No.:
Surface Elev. 760.7
G. W. M.P.V. 656.53 2/20/84

Project: Waukegan Hazardous Waste Management Facility, Winthrop Harbor, Illinois

Location Middle of Berm within co-disposal Limits, South of road

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 to 6 / 6 to 12 / 12 to 18	Description
40		SS			red very slightly clayey silt.
45			4	6 / 6 / 10	
50					710.7
55			5	10 / 14 / 16	Increase in silt content
60					
65			6	15 / 17 / 26	Increase in coarse sand - fine gravel fraction
70					
75			7	13 / 17 / 23	
80					

Notes

Gamma Log: 0 HP log — 5 mv — 60 CPS; Gamma

Electric Log Normal: 0 — 800 Ω m; Sp

Clay

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

B-156

Finished:

Sheet 1 of 5

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location Middle of Berm (in co-disposal limits south of road)

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 18/24	Description
80		SS			
85			8	25 42	32
90					- Drillers note 91-92.5' cobble
95			9	59	91
100					
105			10	21 40	43 Abundant fine gravel, occasional very course gravel
110					
115			11	62 106	54 Grey brown very fine sandy silt/ silty very fine sand, saturated, homogeneous, poorly sorted

Notes

Gamma Log: 0 up log, 5 mv, 50 CPS

Electric Log Normal: 0, 500 Ω m

Gamma

up

Clay

112.9'

Sand

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

B-157

Date:
Started: —
Finished: 1-4-84
Sheet 4 of 5

Recra Research, [illegible]
SUBSURFACE LOG OW-3

Surface Elev. 760.7
G. W. ELEV. 656.53 2/20/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location Middle of Berm within co-disposal south of road

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6	6/12	12/18	18/24	Description
120		SS						Grey brown silty very fine sand
125			12	37	27			Grey brown sandy clay, very fine gravelly clay, plasticity high, saturated lenses of medium sand, frequent fine-medium gravel
				36				
130								
135			13	35	41			Grading to silty clay
				53				
140								
145			14	25	25			
				49				
150								
155			15	65	101			Grey sandy silt/clayey sandy silt, occasional coarse gravel, moist, frequent fine gravel
								Clayey sand

Notes

Gamma Log: 0 API log — 5 mv — 80 CPS
Electric Log Normal: 0 — 500 Ω m

121.1' Sandy Clay
128.2' Sand
134.2' Silty Clay
Gamma
149.8' Sandy Silt
158' Clayey Sand

Classification: VISUAL
Method of Investigation: ASTM D 1452-80

Finished: 1-4-

Sheet 5 of 5

SUBSURFACE LOG OW-3

G. W. El.: 656.53 2/20/84

Project: Waukegan Hazardous Waste Management Facility
Vinthrop Harbor, Illinois

Location: Middle of Berm within co-disposal limits, south of road

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0-6 / 6-12 / 12-18 / 18-24	Description
160		SS			600.2
165			16	100 2"	Brown-light brown, silty sand, poorly sorted, uniform texture, homogeneous, fine gravel, moist. Drillers note cobble
170					Grading to medium grained sand moderately well sorted
175			17	100 1"	585.5
					completed to 175'2" completed 12/11/81

Notes

Gamma Log: 0 Air Log, 5 mv, 50 CPS

Electric Log Normal: 0, 500Ω m

160.5'

Sand

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

ate: -
Started: 1-
Finished: 12-29-85
heet 1 of 3

Recra Research,
SUBSURFACE LOG OW-4

Surface Elev. 738.45
G. W. El. Lv. 656.4 2/20/86

Project: Waukegan Hazardous Waste Containment Facility
Winthrop Harbor, Illinois

Location Northeast corner of proposed Secure
Cell - across road, at fence corner

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0-6 / 6-12 / 12-18 / 18-24	Description
0					Silty clay with occasional pebbles to 80'
5					No samples taken above 80 '
10					
15					
20					
25					

Gamma Log — sp log — 5 mv — 50 CPS

Notes

Electric Log Normal — 0 — 500 Ω m

Gamma

Casing

Temporary steel casing to 13 feet

Gamma

sp

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

Sheet 2 of 3

SUBSURFACE LOG OW-4

G. W. Elev. 636.4 2/20/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location NW corner of proposed Secure Cell
Across road at fence corner

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 18/24	Description
40					silty clay with occasional pebbles
45					
50					
55					
60					
65					
70					
75					

Notes

Gamma Log: 0 cps Top → 5 mv → 50 CPS

Electric Log Normal: 0 → 500Ω m

Clay

Classification: Visual

Method of Investigation: ASTM D 1452-80

Date:
Started: 1
Finished: 12-27-83
Sheet 1 of 3

Recra Research Inc.
SUBSURFACE LOG OW-4

Surface Elev. 758.45
G. W. Elev. 656.4 7/10/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location NE corner of Proposed Secure cell across road at fence corner

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 / 6 / 12		Description
80		SS	1	15 / 31	75	Grey silty clay, approximately 12 coarse sand and angular pebbles, moist, 1.0 foot recovery
85						
90			2	25 / 29	29	
95						
100			3	39 / 51	31	Decreasing silt content 656.3
						102.2' Driller notes sand 104-119'
110			4	58 / 82	80	Coarse grey sand, minor clay, little to no silt 641.9
						113.6' Grey silty clay
115						

Notes

Gamma Log: NP Tick, 0 mv, 50 CPS

Electric Log Normal: 0, 600 Ω m

678.5

Sand

Silty Clay

Classification: Visual

Method of Investigation: ASTM D 1452-80

B-162

Finished: 12/29/83

Sheet 4 of 5

SUBSURFACE LOG OW-4

G. W. Elev: 636.4 2/20/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

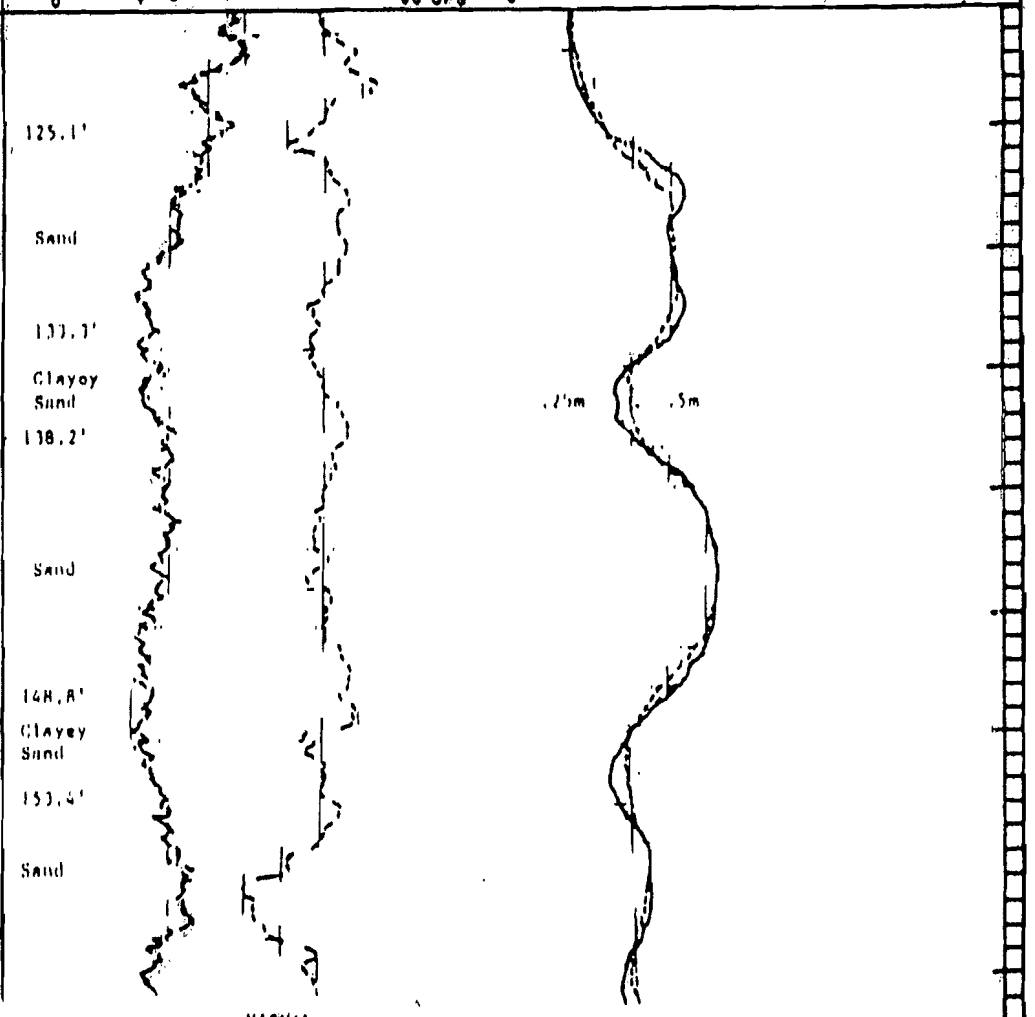
Location NW corner of proposed Secure cell across road at fence corner

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 to 6	6 to 12	12 to 18	Description
120		SS	5	4	7	7	Grey silty clay, occasional coarse sand
				21			633.8
125							125.1'
							Driller notes dense fine sand
130			6	125			Clayey silty dense fine sand, approximately 1-2% coarse sand with occasional pebbles and gravel, .5' recovery
							627.2
135							Clayey Sand 133.1'
							620.3
							138.2' Dense grey silty clayey fine sand
140			7	200/3"			.25' recovery
145							
							148.8' Clayey Sand
150			8	200/2"			Increase in fines
							605.0
							153.4' Dense grey silty clayey fine sand
155							

Notes

Gamma Log: 0 to 50 CPS (up for + 5 mV)

Electric Log Normal: 0 to 500 Ω m



Classification: VISUAL

Method of Investigation: ASTM D 1452-80

Start 12-20-83
Finished 12-21-83
Sheet 5 of 5

SUBSURFACE [illegible]3 OW-4

Surface Elev. 718.45
G. W. ELEV. 656.6 2/20/84

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location NE Corner of Proposed secure cell across road from corner

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0-6 / 6-12 / 12-18 / 18-24	Description
160		SS	9	200/ 2"	Grading to light brown medium grained sand with very little clay
					Inc. Clay Content
					Sand
170			10	200/ 3"	Increasing silt content
					Sand
			11	200/ 2"	- 178.5 small boulder encountered. Grey coarse sandy silty clay
180					Drillers note at 180' hardpan clay. Completed to 180' 12-21-83

Notes

Gamma Log: 0 api log — 5 mv — 50 CPS
Electric Log Normal: 0 — 500 Ω m

Sand
164.2'
Clayey Sand
166.8'
Sand
169.6'
Clayey Sand
174.6'
Sand
Silty Clay

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

B-164

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-1 DATE STARTED 10-28-86 DATE COMPLETED 10-28-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 747.3

END OF BORING 705.3

LOCATION: 12010.2N
10880.6E

WATER TABLE

AT END OF BORING

24 HOURS PIEZOMETER INSTALLED

WHILE DRILLING

SHEET 1 OF 2

DISTANCE BELOW SURFACE IN FEET	LENGTH & RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
0								18"	745.8	Black clayey TOPSOIL
5		1 A B	SS	48	16.7	4.5+*				Hard to very tough brown silty CLAY, trace to little sand, trace gravel, moist (CL)
		2 A B C	SS	43	15.4	4.5+*				
10		3 A B C	SS	45	15.7	3.5*				
		A			15.7	--		11.0	736.3	
		4B	SS	35	16.0	--				Hard brown silty CLAY, trace to little sand, trace gravel, moist (CL); seams of clayey silt above 12.0'
		C			18.3	4.0*				
		A			17.0	4.5+*				Closed gray joint traces observed between 11 to 13 feet
15		5B C	SS	28	15.0	2.75±		14.5	732.8	
		A B						15.5	731.8	Very tough brown and silty CLAY, trace to little sand and gravel, moist (CL)
		6C D	SS	24	15.8	3.25±				
20										Very tough gray silty CLAY, trace to little sand, trace gravel, moist (CL)
25										
30		A 7B C D	SS	25	18.0	2.0*	113.5			Sample 7: pH = 7.1
		A 8B C	SS	23	17.7	2.25±				
35		A 9B C D	SS	47	16.3	2.25*	117.1			Sample 9: pH = 7.1
		A						37.0	710.3	
		10B	SS	10	15.0	3.75*				Firm gray clayey SILT, moist; occasional thin sand seams (ML)
		C			17.1	--				
		A			18.2	--		38.5	708.8	
		11B	SS	40	23.1	2.25*				Very tough gray silty CLAY, trace sand and gravel, moist (CL)
40		C D								

TESTING SERVICE CORPORATION

DRILL RIG NO. 103

BORING LOG CONTINUED

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-1 Cont. DATE STARTED 10-28-86 DATE COMPLETED 10-28-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 747.3

END OF BORING 705.3

LOCATION: 12010.2N
10880.6E

WATER TABLE

AT END OF BORING

24 HOURS PIEZOMETER INSTALLED

WHILE DRILLING

SHEET 2 OF 2

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
	A			21.5	1.5*				Thin gray layers of silty to very silty CLAY, clayey SILT, fine to coarse SAND and silty fine to coarse SAND; moist to very moist (CL, CL-ML, ML, SW, SM)
128	B	SS	40	16.9	--				
	C			--	--				
				End of Boring at 42.0 Feet					

* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

PIEZOMETER INSTALLATION NOTES 2" PVC CONST.

1). Bore hole made using 3¼" I.D. hollowstem auger
2). Bottom of screen at 42'
3). Top of screen at 37'
4). Gravel pack from 42' to 35'
5). Bentonite pellets from 35' to 32'
6). Volclay Grout from 32' to surface
7). Steel protector pipe concreted into place over riser pipe

Sealed and abandoned
April 13, 1990 by
Testing Service Corporation
Pipe removed and hole
grouted with Volclay Grout.
RLJ

TESTING SERVICE CORPORATION

DRILL RIG NO. 103

140

EXPLORATION TECHNOLOGY INC.

LOG OF TEST BORING

Project B.F.I. Landfill

Location Zion, Illinois

Boring No. P1W

Surface Elevation 730

Job No. 810929

Sheet 1 of 3

1402 EMIL STREET • P.O. BOX 9404 MADISON, WIS. 53715 • TEL • (608) 258-9550

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
Recovery			Moisture								
No.	Type	I T	I Y	N	Depth	.5' TOPSOIL	q_u	W	LL	PL	D
						Brown Medium to Fine Silty Sandy CLAY, Trace Gravel					
1	SS	16"	D	28	5	Brown Silty CLAY, Trace Medium to Fine Sand					
2	SS	12"	D	64	10						
3	SS	18"	M/W	36	15	Brown CLAY, Trace Medium to Fine Sand, Trace Gravel					
						Gray-Brown Medium to Fine Sandy CLAY					
4	SS	18"	D	21	20	Gray-Brown Silty CLAY, Trace Medium to Fine Sand, Trace Gravel					
5	SS	17"	D	45	25						
6	SS	18"	D	44	30	Gray-Brown Medium to Fine Silty Sandy CLAY with Some Gravel					
7	SS	17"	D	31	35						
8	SS	15"	D	40	40						
9	SS	18"	D	41	45						

140

EXPLORATION TECHNOLOGY INC.

LOG OF TEST BORING

Project B.F.I. Landfill

Location Zion, Illinois

Boring No. P1W

Surface Elevation

Job No. 810929

Sheet 2 of 3

1402 EMIL STREET · P.O. BOX 9504 MADISON, WIS. 53715 · TEL · (608) 258-9550

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
Recovery			Moisture								
No.	Type	I t	I t	N	Depth		qp	W	LL	PL	D
10	SS	17"	D	26	50	Gray-Brown Medium to Fine Silty Sandy CLAY with Some Gravel					
11	SS	16"	D	32	55						
12	SS	17"	M/W	31	60						
13	SS	16"	W	30	65						
14	SS	NR	W	45	70						
15	SS	16"	W	31	75	Brown Coarse to Fine Sand Seam					
						Brown Coarse to Fine Sand Seam					
16	SS	17"	W	39	80						
17	SS	16"	W	48	85						
					90	Gray-Brown Medium to Fine Sand Seam					

140

EXPLORATION TECHNOLOGY INC.

LOG OF TEST BORING

Project: B.F.I. Landfill

Location: Zion, Illinois

Boring No. P1W

Surface Elevation

Job No. 810929

Sheet 3 of 3

1402 EMIL STREET · P.O. BOX 9404, MADISON, WIS. 53715 · TEL. (608) 258-9550

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
Recovery			Moisture								
No.	Type	In		%	Depth		qu	W	LL	PL	D
						Gray-Brown Medium to Fine Silty Sandy CLAY with Some Gravel					
18	SS	17"	W	58	95	End Boring at 93.5'					
						Well at 92.0'					
					100						
					105						
					110						
					115						
					120						
					125						
					130						

WATER LEVEL OBSERVATIONS

While Drilling

Upon Completion of Drilling

Time After Drilling

Depth to Water

Depth to Cave In

GENERAL NOTES

Start 11/6/85 Complete 11/6/85

Crew Chief KP Rig D50

Drilling Method Rotary Wash

140

EXPLORATION TECHNOLOGY INC.

GEOPHYSICAL LOG

Boring No.: P-1W

PROJECT: Browning-Ferris Industries

Job No.: 810929

LOCATION: Winthrop Harbor, Illinois

Sheet 1 of 2

1402 EMIL STREET • P.O. BOX 9404 • MADISON, WIS. 53715 • TEL. (608) 258-9550

Date of Log: 11/7/85
Personnel: MGC
Instrument: MS 1000 C
Probe No: SN 1372

Casing: None Diam. -
Depth of Well or Boring: 90'
Backfill Type: Bentonite Drilling Mud
Logging Rate: 0.1ft./sec. Uphole

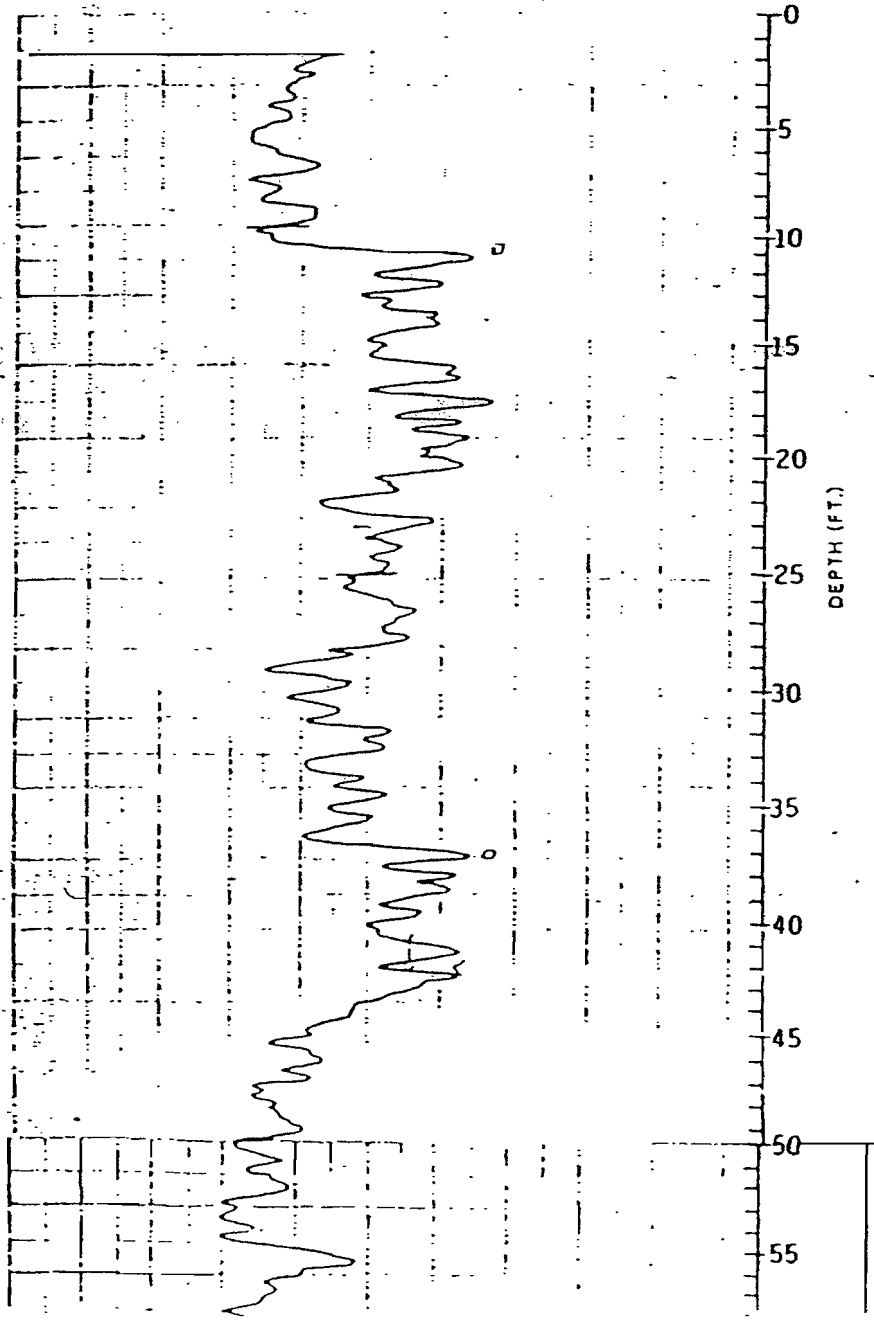
Borehole Diam. 6"
Depth to Water: 0.

NATURAL GAMMA LOG
Scale: 5CPS/DIV Disp.: 0

S.P. LOG
Scale: _____ Bias.: _____

RESISTIVITY LOG
Scale: _____ Disp.: _____

Datum: Ground Elev.: ~730ft.MSL
Ground Surface Elevation: ~730ft.MSL



DESCRIPTIONS

(From Field Boring Log)

0-0.5' TOPSOIL

0.5-3.5' Brown Silty Sandy CLAY with Trace of Gravel

3.5-10.5' Brown Silty CLAY with Trace Fine to Medium Sand

10.5-16.0' Brown CLAY with Trace Fine to Medium Sand and Trace Gravel

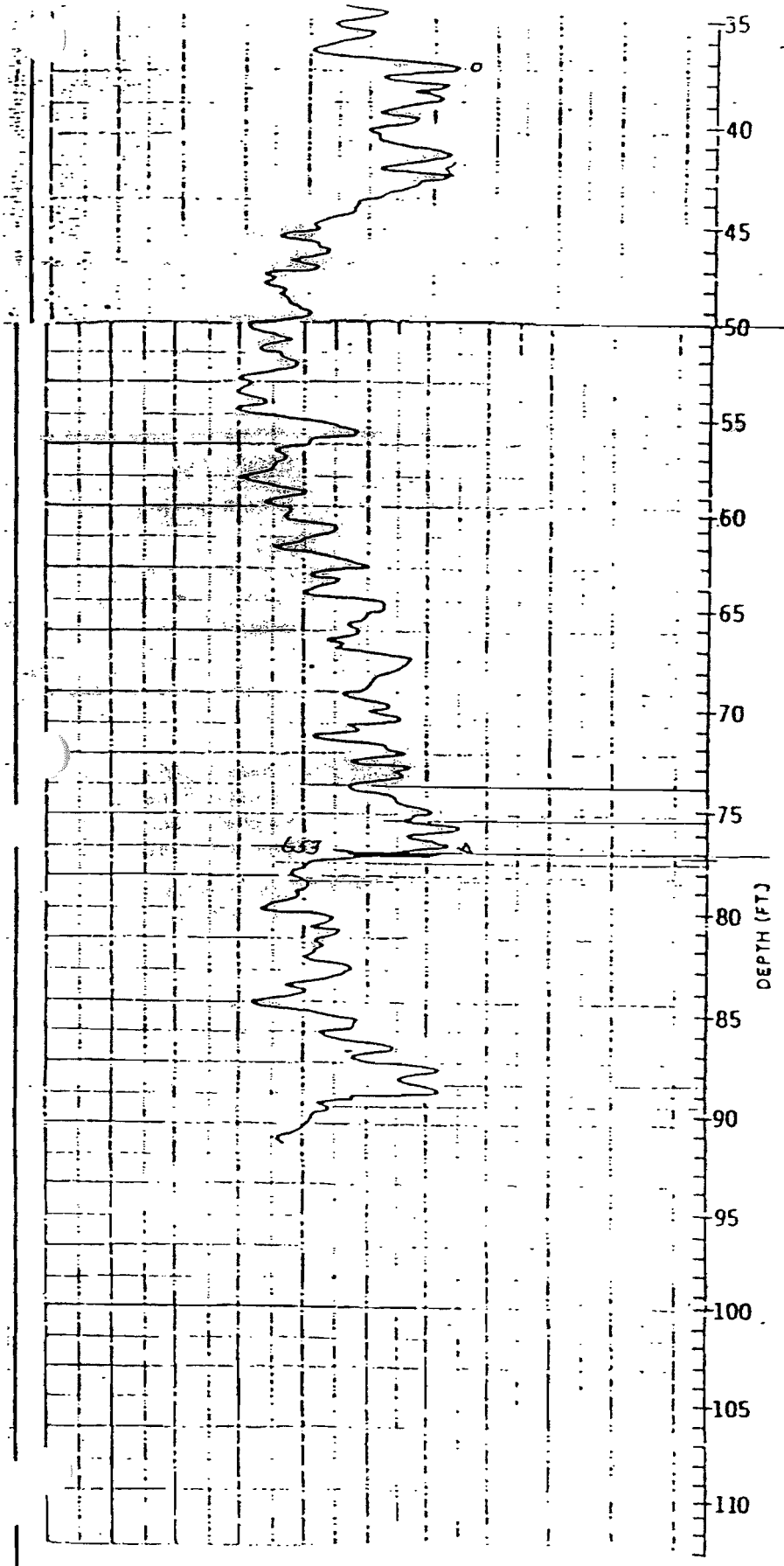
16.0-18.5' Gray-Brown Silty Sandy CLAY

18.5-25.5' Gray-Brown Silty CLAY, Trace Fine to Medium Sand and Trace Gravel

25.5-93.5' Gray-Brown Silty Sandy CLAY with Some Gravel, Sand seams as noted below.

140

P-1 (cont.)



74.0-75.5' Brown Fine to Coarse SAND Seam

77.5-78.5' Brown Fine to Coarse SAND Seam

88.5-89.5' Gray-Brown Fine to Medium SAND Seam

93.5' Gray-Brown Fine to Medium SAND Noted in Tip of Split Spoon Sampler.

Installed well at 92.0'
Screened Interval from 87.0 to 92.0'

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-2 DATE STARTED 10-29-86 DATE COMPLETED 10-29-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 744.5

END OF BORING 705.5

LOCATION: 11245.8N
10884.7E

WATER TABLE

AT END OF BORING

24 HOURS PIEZOMETER INSTALLED

WHILE DRILLING -35.0 Feet

SHEET 1 OF 2

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							1.5	743.0	Black clayey TOPSOIL
A 1B C	SS		49	16.2 -- --	4.5+* -- --				Hard brown silty CLAY, little sand, moist (CL)
A 2B C	SS		46	13.6 -- --	4.5+* -- --				
A 3B C	SS		50	14.2 -- 14.5	4.5+* -- 4.5+*		10.0	734.5	
A 4B C	SS		40	14.9 -- --	4.5+* -- --				
A 5B C	SS		31	15.6 -- --	3.5* -- --				Hard to tough gray silty CLAY, trace to little sand, trace gravel, moist; occasional thin silt seams from 29' to 31'; occasional thin sand seams from 31' to 35' (CL)
A 6B C	SS		28	17.8 -- --	2.25* -- --	113.9			Sample 6: pH = 7.2
A 7B C	SS		33	17.7 -- --	1.75* -- --	114.1			Sample 7: pH = 7.2
A 8B C	SS		23	17.6 -- --	1.75* -- --				
A 9B C/D	SS		18	16.0 17.5 --	2.0* 1.75* --				
A 10B C/D	SS		30	16.8 --	2.0* --				
A 11B C	SS		68				35.0 35.5	709.5 709.0	Very dense gray silty fine SAND, wet (SM)
A 12B C	SS		35	9.7 --- ---	-- -- --		37.0	707.5	Very dense gray silty fine to coarse SAND and GRAVEL, wet; occasional silty clay seams (SM/CH)
									Dense gray clayey SAND and GRAVEL, trace silt, very moist (SC/GC)
			End of Boring at	-39.0	Feet				

DRILL RIG NO. 103

TESTING SERVICE

* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-2 DATE STARTED 10-29-86 DATE COMPLETED 10-29-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 744.5

END OF BORING 705.5

LOCATION: 11245.8N
10884.7E

WATER TABLE

AT END OF BORING

24 HOURS PIEZOMETER INSTALLED

WHILE DRILLING -35.0 Feet

SHEET 2 OF 2

LENGTH	RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
								0		

PIEZOMETER INSTALLATION NOTES: 2" PVC CONST.

1). Bore hole made using 3¼" I.D. hollowstem auger
2). Bottom of screen at 39'
3). Top of screen at 34'
4). Gravel pack from 39' to 31'
5). Bentonite pellets from 31' to 28'
6). Volclay Grout from 28' to surface
7). Steel protector pipe concreted into place over riser pipe

5
10
15
20
25
30
35
40

Sealed and abandoned
April 13, 1990 by
Testing Service Corporation.
Pipe removed and hole
grouted with Volclay Grout.
RLJ

TESTING SERVICE CORPORATION

DRILL RIG NO.

B-412

9:=5 752

141

EXPLORATION TECHNOLOGY INC.

LOG OF TEST BORING

Project B.F.I. Landfill

Location Zion, Illinois

Boring No. P2W

Surface Elevation

Job No. 810929

Sheet 1 of 3

1402 EMIL STREET · P.O. BOX 9401 MADISON, WIS. 53715 · TEL: (608) 258-9550

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
Recovery			Moisture								
No.	Type			N	Depth		qu	W	LL	PL	D
						FILL: 1" Brown Lean Clay, 4" Coarse Sand					
1	SS	18"	M	22	5	Very Stiff, Brown Lean CLAY, Little Sand, Trace of Sand, Occasional Gravel 1/2" Silty Wet Sand Seam	(3.5)				
2	SS	18"	W	20	10	Very Stiff, Gray Sandy Lean CLAY, Trace of Gravel Little Sand	(4.5)				
3	SS	18"	M	16	15	Very Stiff, Gray Lean CLAY, Trace of Sand, Occasional Gravel	(4.0)				
4	SS	18"	M	16	20		(2.8)				
5	SS	18"	W	5	25	Very Soft, Little Sand, More Silty	(0.5)				
6	SS	18"	M	13	30	Stiff	(1.5)				
7	SS	18"	M	31	35						
8	SS	18"	M	32	40		(4.0)				
9	SS	18"	M	12	45	Trace of Reddish Brown Color Marble in 1/2" Wet Silty Sand Seam	(2.6)				

141

EXPLORATION TECHNOLOGY INC.

GEOPHYSICAL LOG

PROJECT: Browning-Ferris Industries
LOCATION: Winthrop Harbor, Illinois

Boring No.: P-2W
Job No.: 810929
Sheet 1 of 2

1402 EMIL STREET · P.O. BOX 9404 · MADISON, WIS. 53715 · TEL. (608) 258-9550

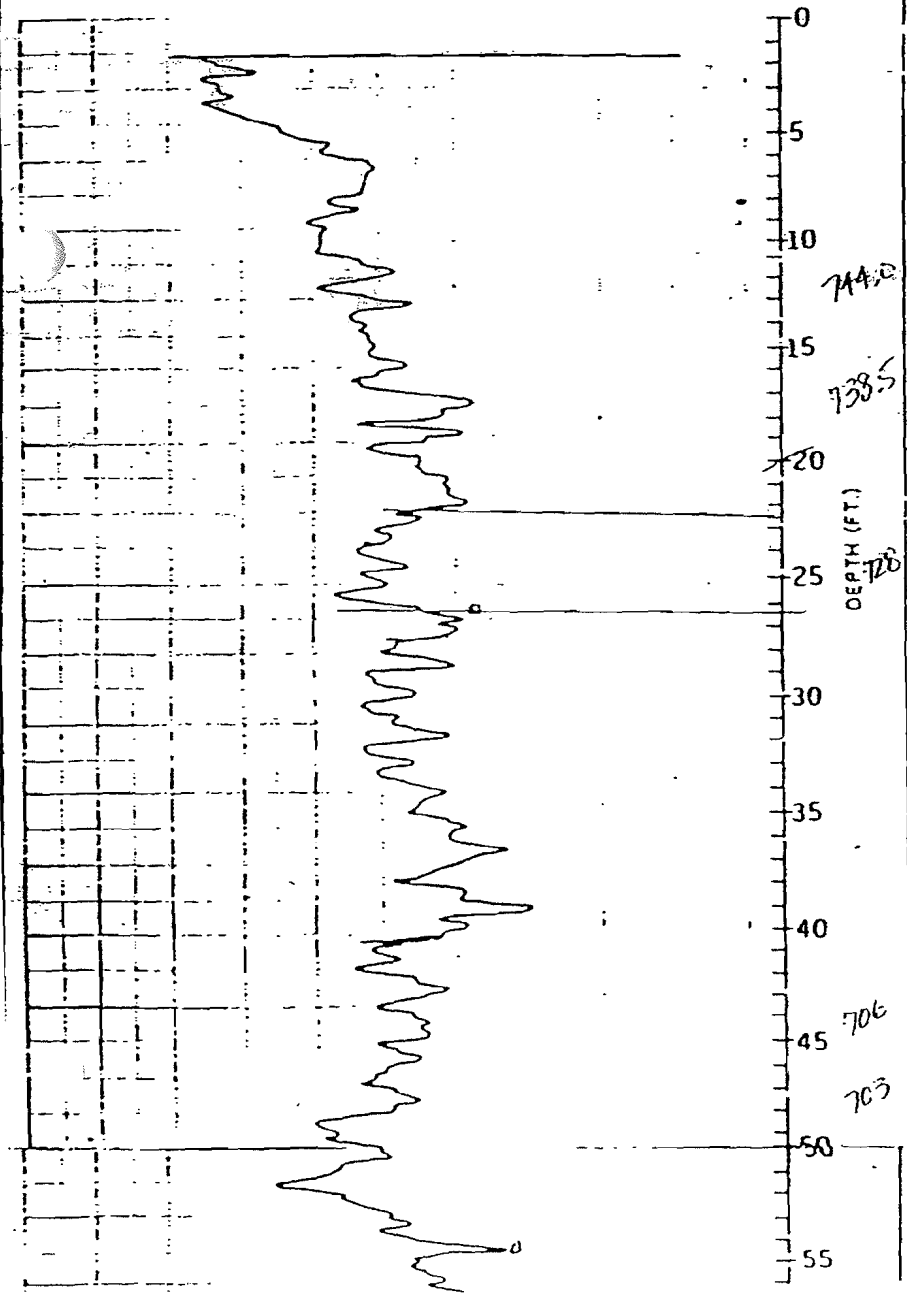
Date of Log: 11/7/85
Personnel: MGC²
Instrument: MS 1000 C
Probe No: SN 1372

Casing: None Diam. -
Depth of Well or Boring: 110'
Backfill Type: Bentonite Drilling Mud
Logging Rate: 0.1 ft./sec. Up Hole

Borehole Diam. 6"
Depth to Water: 0

NATURAL GAMMA LOG	S.P. LOG	RESISTIVITY LOG 750.0
Scale: 5CPS/DIV Disp.: 0	Scale: _____ Bias.: _____	Scale: _____ Disp.: _____

Datum: Ground Elev.: ~750ft.MSL
Ground Surface Elevation: ~750ft.MSL



DESCRIPTIONS

(From Field Boring Log)

0-1.5' Fill Material. Brown Lean CLAY with Coarse Sand

1.5-6.0' Very Stiff, Brown Lean CLAY with Trace of Sand and Occasional Gravel

744.0 6.0-11.5' Very Stiff, Gray Sandy Lean CLAY with Trace of Gravel

738.5 11.5-92.0' Very Stiff Gray Lean CLAY with Trace of Sand and Occasinal Gravel. Sand seams as noted below

728 722.5 22.0-27.5' Very Soft Drilling, Little Sand, More Silty

705 706 44.0-45.0' Reddish Brown Wet Silty SAND

703 47.0 1" to 2" Silty SAND Seams

EXPLORATION TECHNOLOGY INC.

LOG OF TEST BORING

Project B.F.I. Landfill

Location Zion, Illinois

Boring No. P2W

Surface Elevation

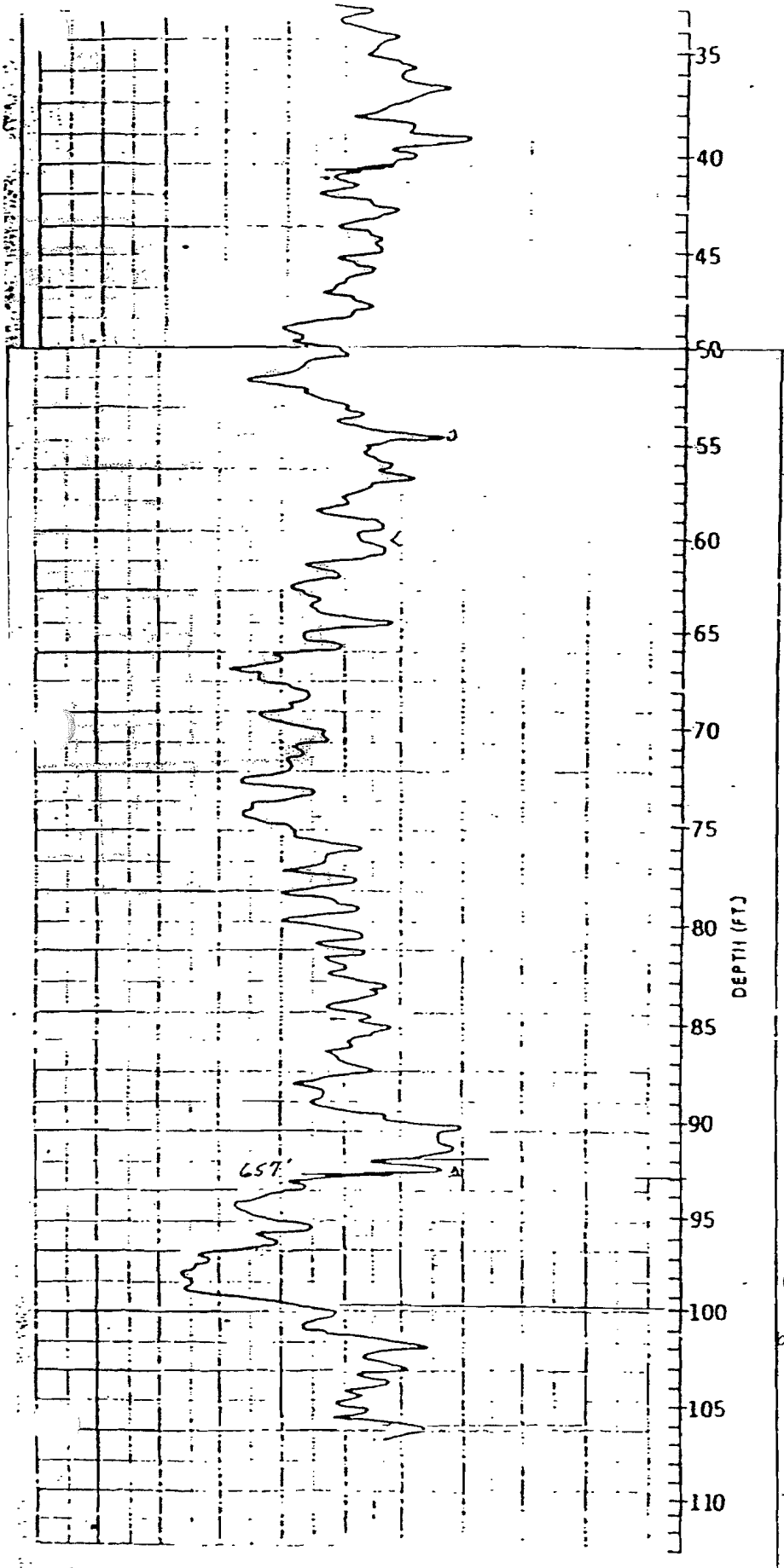
Job No. 810929

Sheet 2 of 3

1402 EMIL STREET · P.O. BOX 9504 MADISON, WIS. 53713 · TEL· (608) 256-9550

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
Recovery			Moisture								
No.	Type			N	Depth		qu	W	LL	PL	D
10	SS	9"	W	18	50	Very Stiff, Gray Lean CLAY, Trace of Sand, Occasional Gravel					
11	SS	18"	M	26	55		(3.5)				
						Lacking Sand Seams					
12	SS	18"	M	20	60		(2.2)				
						Little Gravel					
13	SS	18"	M	54	65	Firmer	(3.0)				
						Softer					
14	SS	18"	W	20	70		(1.0)				
						Small Cobble					
15	SS	10"	W	98	75						
16	SS	18"	M	49	80		(2.5)				
17	SS	18"	M	38	85		(3.5)				
18	SS	16"	M	31	90		(3.6)				

141
P-2 (cont.)



44.0-45.0' Reddish Brown Wet Silty SAND

47.0 1" to 2" Silty SAND Seams

658 654

92.0-96.0' Dense Gray SILT with Occasional Seams of Sand, Some Clean, Some Silty and Occasional Seams of Lean Clay

654 650

96.0-100.0' Hard SAND & GRAVEL

650 649

100-106.0' Hard Gray Lean CLAY with Trace of Occasional Gravel

640

106.0-110.0' Occasional Seams of Clean Medium SAND

Installed well at 109.0'
Screened Interval from 104.0 to 109.0'

141

EXPLORATION TECHNOLOGY INC.

LOG OF TEST BORING

Project: B.F.I. Landfill

Location: Zion, Illinois

Boring No. P2W

Surface Elevation

Job No. 810929

Sheet 3 of 3

1402 EMIL STREET - P.O. BOX 9404 - MADISON, WIS. 53715 - TEL. (608) 258-9550

SAMPLE No.	Type	Recovery	Moisture	%	Depth	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES q-	W	LL	PL	D
						Very Stiff, Gray Lean CLAY, Trace of Sand, Occasional Gravel					
19	SS	18"	W	36	95	Dense, Gray SILT with Occasional Seams of Sand, Some Clean, Some Silt, Occasional Seams of Lean Clay					
20	WS				100	Hard ROCK SAND & GRAVEL					
21	SS	16"	M	82	105	Hard Gray Lean CLAY, Trace Occasional Gravel	(4.5)				
22	SS	10"	W	70	110	Occasional Seams of Clean Medium SAND					
						End Boring at 110'					
					115		( ) Pocket Penetrometer Reading, TSF				
					120						
					125						
					130						

WATER LEVEL OBSERVATIONS

While Drilling

Upon Completion of Drilling

Time After Drilling

Depth to Water

GENERAL NOTES

Start 11/6/85 Complete 11/6/85

Crew Chief LS Rig 9100

Drilling Method

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, HC HENRY, ILLINOIS

BORING P-3 DATE STARTED 10-24-86 DATE COMPLETED 10-24-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 737.2

END OF BORING 672.2

LOCATION: 10593.4N 11421.1E

WATER TABLE

AT END OF BORING

24 HOURS PIEZONETER INSTALLED

WHILE DRILLING

SHEET 1 OF 2

DISTANCE BELOW SURFACE IN FEET

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Q_u	γDRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
							1.0	736.2	Dark brown clayey TOPSOIL
									Very tough to hard brown silty CLAY, little sand, trace gravel, moist; partings noted in S-2A (CL)
	A			16.8	3.25*				
	1B	SS	47	14.6	4.5+*				
	C			--	--				
	A			13.9	4.5+*				
	2B	SS	53	--	--				
	C			--	--				
	A			13.4	4.5+*				
	3B	SS	40	--	--		10.0	727.2	
	C			15.7	3.0*				
	A			16.0	2.5*				
	4B	SS	31	--	--				
	C			--	--				
	A			15.0	2.5*				
	5B	SS	22	--	--				Very tough to tough gray silty CLAY, trace sand, trace gravel, moist; zone of very silty clay from 35' to 37'; occasional thin brown silt seams (CL)
	C			--	--				
	A			19.2	1.75*				
	6B	SS	26	--	--				
	C			--	--				
	A			16.9	2.25*				
	7B	SS	24	--	--				
	C			--	--				
	A			17.5	2.5*	114.5			
	8B	SS	27	--	--				Sample 8: pH = 7.2
	A			18.4	2.25*				
	9B	SS	23	--	--				
	C			--	--				
	A			15.6	2.0*				
	10B	SS	24	--	--				
	C			--	--				
	A			15.4	2.25*				
	11B	SS	26	--	--				
	C			--	--				
	A			15.7	2.5*				
	12B	SS	27	--	--				
	C			--	--				
	A			15.3	1.5*				
	13B	SS	28	--	--				

TESTING SERVICE CORPORATION

DRILL RIG NO. 103

BORING LOG CONTINUED

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-3 Cont. DATE STARTED 10-24-86 DATE COMPLETED 10-24-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 737.2

END OF BORING 672.2

LOCATION: 10493.4N
11421.1E

WATER TABLE

AT END OF BORING

24 HOURS PIEZOMETER INSTALLED

WHILE DRILLING

SHEET 2 OF 2

LENGTH & RECOVERY	SAMPLE NO	SAMPLE TYPE	N	WC	Q_u	%DRY	DEPTH	ELEV	SOIL DESCRIPTIONS
	13C	SS	28	15.3	1.5*				
	A			14.8	1.25*	120.5			Very tough to tough gray silty CLAY, trace sand, trace gravel, moist; zone of very silty clay from 35' to 37'; occasional thin brown silt seams (CL)
	14B	SS	23	--	--				
	C			--	--				
	A			14.4	1.5*				
	15B	SS	27	--	--				
	C			--	--				
	A			14.8	1.75*				SAMPLE 14: pH = 7.2
	16B	SS	30	--	--				
	C			--	--				
	A			12.8	2.0*		47.0	690.2	
	17B	SS	27	--	--				
	C			--	--				
	A			12.9	2.25*				
	18B	SS	23	--	--				Very tough to hard gray silty CLAY, trace sand and gravel, moist, occasional sand seams from 47' to 49' and below 59.5'
	C			--	--				
	A			15.2	4.5+*				
	19B	SS	45	--	--				
	C			--	--				
	A			16.8	3.5*				
	20B	SS	37	--	--				
	C			--	--				
	A			15.8	3.5*				
	21B	SS	51	--	--				
	C			--	--				
	A			16.9	3.5*				
	22B	SS	42	--	--				
	C			--	--				
	A			15.8	3.5*				
	23B	SS	61	15.6	3.25*		60.0	677.2	
	C			14.3	--				
	A			15.0	--				Very dense to dense gray clayey SILT, little sand, moist (ML)
	24B	SS	49	--	--				
	C			--	--				
	A			13.5	3.5*		63.0	674.2	
	25B	SS	72	--	--				Very tough gray silty CLAY, trace sand, moist (CL)
	C			--	--				

End of Boring at -65.0 Feet

* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

PIEZOMETER INSTALLATION NOTES: 2" PVC CONST.

1). Bore hole made using 3¼" I.D. Hollowstem auger
2). Bottom of screen at 65'
3). Top of screen at 60'
4). Gravel pack from 65' to 58.5'
5). Bentonite pellets from 58.5' to 53.5'
6). Volclay Grout from 53.5' to surface
7). Steel protector pipe concreted into place over riser pipe

TESTING SERVICE CORPORATION

DRILL RIG NO. 103

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC., SCHAUMBURG, ILLINOIS

BORING P-3 DATE STARTED 4-3-87 DATE COMPLETED 4-6-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 727.1

END OF BORING 634.6

WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING -85.5 FEET

SHEET 1 OF 3

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0		FILL: Dark gray and brown silty CLAY, little sand, trace gravel, trace organic, very moist (CL)
1	SS		19	31.0			5.0	722.1	
							7.0	720.1	Black clayey TOPSOIL, moist (OL)
2	SS		21	20.9	4.0*				Hard brown and gray silty CLAY, little sand, trace gravel, moist (CL)
							12.0	715.1	
3	SS		42	16.8	4.0*				Very tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
4	SS		25	19.8	3.25*				Hairline clayey sand seam from 77.4' to 77.5'; hairline silt seam at 82.0'
5	SS		50	16.8	4.5*				
6	SS		22	19.9	2.0*				
7	SS		23	22.6	3.0*				
8	SS		19	14.8	2.25*				

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC., SCHAUMBURG, ILLINOIS

BORING P-3 DATE STARTED 4-3-87 DATE COMPLETED 4-6-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 727.1

END OF BORING 634.6

WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING -85.5 FEET

SHEET 2 OF 3

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	TYPE	LENGTH RECOVERY	N	WC	q_u	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
9	SS		19	14.3	2.25*				Very tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
10	SS		16	21.2	2.75*				Hairline clayey sand seam from 77.4' to 77.5'; hairline silt seam at 82.0'
11	SS		24	16.8	2.75*				
12	SS		32	15.6	3.5*				
13	SS		32	15.2	2.25*				
14	SS		65	15.1	2.5*				
15	SS		65	13.9	2.5*				
16	SS		125	16.9	4.5+*				
17	SS		65	22.5	3.5*				

DRILL RIG NO. 91

TESTING SERVICE CORPORATION

BORING LOG CONTINUED

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC, SCHAUMBURG, ILLINOIS

BORING P-3 DATE STARTED 4-3-87 DATE COMPLETED 4-6-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 727.1

END OF BORING 634.6

WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING -85.5 FEET

SHEET 3 OF 3

SAMPLE NO.	TYPE	LENGTH	RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
18	SS			80	15.2	4.5+*				Very tough to hard gray silty CLAY, little sand, trace gravel, moist (CL)
								83.0	644.1	Hairline silt seam at 82.0'
19A	SS			56	--	--		84.0	643.1	Very dense gray clayey SILT, little sand, moist (ML)
19B	SS				21.8	4.5+*		85.5	641.6	Hard gray silty CLAY, little sand, moist (CL)
20	SS			118						Very dense gray SAND and GRAVEL, trace clay, trace silt, moist (SW/GW)
21	SS			135						
22	SS			74				92.0	635.1	Very dense gray clayey SAND and GRAVEL, trace silt, trace clay, very moist (SC)

End of Boring at -92.5 Feet

* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

DISTANCE BELOW SURFACE IN F

80 85 90 95 100 105 110 5 120

PIEZOMETER INSTALLATION NOTES

1).	2" Schedule 40 PVC screen (.010" slot):	82.5 - 92.5'
2).	2" Schedule 40 PVC riser:	+2.0 - 82.5'
3).	Coarse silica sand:	78.5 - 92.5'
4).	Bentonite pellets:	73.5 - 78.5'
5).	Volclay grout:	2.5 - 73.5'
6).	Steel protector casing, with locking cap, concreted into place over piezometer	

TESTING SERVICE CORPORATION

PROJECT BEI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 7926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-4 DATE STARTED 10-31-86 DATE COMPLETED 10-31-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 735.5

END OF BORING 680.5

LOCATION: 11425.9N
11547.9E

WATER TABLE

AT END OF BORING

24 HOURS PIEZOMETER INSTALLED

WHILE DRILLING

SHEET 1 OF 2

DISTANCE BELOW SURFACE IN FEET

LENGTH & RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
							1.0	734.5	Black clayey TOPSOIL
									Hard to very tough brown silty CLAY, trace sand, trace gravel, moist (CL)
	A 1 B	SS	62	15.9	4.5+*				
	A 2 B	SS	60	16.8	4.5+*				
	A 3B C	SS	46	16.3	4.5+*				
				15.6	2.5*		10.5	725.0	
	A 4B C	SS	21	16.8	2.0*				Very tough gray silty CLAY, trace sand, trace gravel, moist, occasional very thin gray silt seams (CL)
	A 5B C	SS	26	16.7	2.5*				
	A 6B C	SS	27	16.3	2.5+				SAMPLE 6: pH = 7.1
									% Dry = 117.0
	A 7B C	SS	24	13.3	--		27.0	708.5	Firm gray clayey SILT, little sand, trace gravel, moist; sandy silt seam encountered at 30' (ML)
	A 8B C	SS	27	16.4	--				
				16.5	1.75*		30.5	705.0	
	A 9B C	SS	29	14.2	2.25*				Tough to hard gray silty CLAY, trace sand, moist; silt seam in Sample 8B (CL)
	A 10B C	SS	33	15.4	2.0*				
	A 11B C	SS	26	15.0	1.5*				SAMPLE 10: pH = 7.2
									% Dry = 119.0
	A 12B C	SS	34	15.1	2.75*				
	A 13B	SS	27	14.1	4.0*				

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-4 Cont. DATE STARTED 10-31-86 DATE COMPLETED 10-31-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 735.5

END OF BORING 680.5

LOCATION: 11425.9N
11547.9E

WATER TABLE

AT END OF BORING

24 HOURS PIEZOMETER INSTALLED

WHILE DRILLING

SHEET 2 OF 2

LENGTH & RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
	13C	SS	27	--	--				
	A			15.4	3.0*				
	14B	SS	34	--	--				Tough to hard gray silty CLAY, trace sand, moist (CL)
	C			--	--				
	A			16.3	2.0*				
	15B	SS	33	--	--				
	C/D								
	A			16.4	2.5*				
	16B	SS	35	--	--				
	C/D								
	A			18.8	2.5*				
	17B	SS	36	--	--				
	C			--	--				
	A			19.7	2.25*		49.0	686.5	
	18B	SS	35	14.0	1.5*				Tough to very tough gray silty CLAY, trace sand, moist with sand and silt seams (CL)
	C			18.8	2.75*				
	A			18.5	2.75*				
	19B	SS	28	18.7	2.25*				
	C			--	--		52.0	683.5	
	A			15.4	3.5*				Very tough gray very silty CLAY, trace sand (CL/CL-ML)
	20B	SS	50	--	--				
	C			--	--				

End of Boring at -55.0 FEet

* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

PIEZOMETER INSTALLATION NOTES: 2" PVC CONST.

1). Bore hole made using 3¼" I.D. Hollowstem auger
2). Bottom portion of bore hole sealed with bentonite pellets from 55' to 32'
3). Bottom of screen at 32'
4). Top of screen at 27'
5). Gravel pack from 32' to 25'
6). Bentonite pellets from 25' to 21'
7). Volclay Grout from 21' to surface

TESTING SERVICE CORPORATION

DRILL RIG NO. 103

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC., SCHAUMBRUG, ILLINOIS

BORING P-4 DATE STARTED 4-1-87 DATE COMPLETED 4-3-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 731.3

END OF BORING 641.3

WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING -81.7 FEET

SHEET 1 OF 3

DISTANCE BELOW SURFACE IN F

SAMPLE NO	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS		28	15.0	4.0*				Hard brown, trace gray silty CLAY, little sand, trace gravel, occasional joints (closed) from 6.0 to 12.0', moist (CL)
2	SS		44	18.1	4.5*				
							12.0	719.3	
3	SS		17	13.9	2.5*				Very tough to hard gray silty CLAY, little sand, trace gravel, occasional cobble, moist; thin (1/2") sand seams at 39.6' and 39.9' (CL)
4	SS		16	12.7	2.25*				
5	SS		16	16.5	2.25*				
6	SS		17	16.6	2.25*				
7	SS		18	18.0	4.25*				
8	SS		23	16.6	2.0*				

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC., SCHAUMBURG, ILLINOIS

BORING P-4 DATE STARTED 4-1-87 DATE COMPLETED 4-3-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 731.3

END OF BORING 641.3

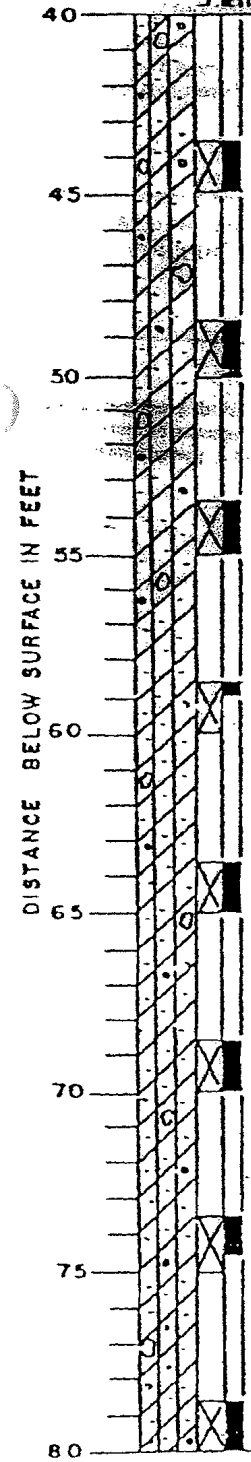
WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING -81.7 FEET

SHEET 2 OF 3



SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_U	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
9	SS		21	14.3	2.25*				Very tough to hard gray silty CLAY, little sand, trace gravel, occasional cobble, moist (CL)
10	SS		29	14.7	4.5*				
11	SS		31	22.7	3.0*				
12	SS		DIS-TURBED	20.9					
13	SS		42	15.4	3.0*				
14	SS		40	14.0	3.0*				
15	SS		42	13.0	4.0*				
16	SS		53	19.5	3.5*				

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC., SCHAUMBURG, ILLINOIS

BORING P-4 DATE STARTED 4-1-87 DATE COMPLETED 4-3-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 731.3

END OF BORING 641.3

WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING -81.7 FEET

SAMPLE NO.	TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
17	SS	8"	68	26.9 15.7	3.0* --		81.7	649.6	Very tough to hard gray silty CLAY, little sand, trace gravel, occasional cobble, wet (CL)
18	SS		145	8.3					Very dense gray clayey fine to coarse SAND, occasional lenses of clayey silt, wet (SC)
19	SS		170/11"				86.0	645.3	
20	SS		155						Very dense gray SAND and GRAVEL, trace silt, trace clay, wet (SW)

End of Boring at 90.0 Feet

* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

PIEZOMETER INSTALLATION NOTES

1).	2" Schedule 40 PVC screen (.010"):	78.5 - 88.5'
2).	2" Schedule 40 PVC riser:	+2.0 - 78.5'
3).	Coarse silica sand:	75.0 - 90.0'
4).	Bentonite pellets:	70.0 - 75.0'
5).	Volclay grout:	2.5 - 75.0'
6).	Steel protector casing, with locking cap, concreted into place over piezometer	

DISTANCE BELOW SURFACE IN FEET

80 85 90 95 100 105 110 115 120

DRILL RIG NO. 91

TESTING SERVICE CORPORATION

B-425

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC., SCHAUMBURG, ILLINOIS

BORING P-5 DATE STARTED 4-7-87 DATE COMPLETED 4-8-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 729.8

END OF BORING 624.8

WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING -94.5 FEET

SHEET 1 OF 3

DISTANCE BELOW SURFACE IN FT

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							1.5	728.3	Black clayey TOPSOIL, very moist (OL)
1	SS		20	16.5	3.25*				Very tough to hard brown to gray silty CLAY, little sand, trace gravel, moist (CL)
2	SS		21	12.8	4.5*				
							11.0	718.8	
3	SS		22	13.8	3.0*				Tough to hard gray silty CLAY, little to some sand, trace gravel; hairline 1/2" silt seams at 24.2 to 34.6' (CL)
4	SS		17	16.1	2.0*				
5	SS		19	16.2	2.25*				
6	SS		22	18.2	1.75*				
7	SS		21	16.3	2.25*				
8	SS		18	18.2	1.75*				

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC., SCHAUMBURG, ILLINOIS

BORING B-5 DATE STARTED 4-7-87 DATE COMPLETED 4-8-87 JOB 23.942

ELEVATIONS

GROUND SURFACE 729.8

END OF BORING 624.8

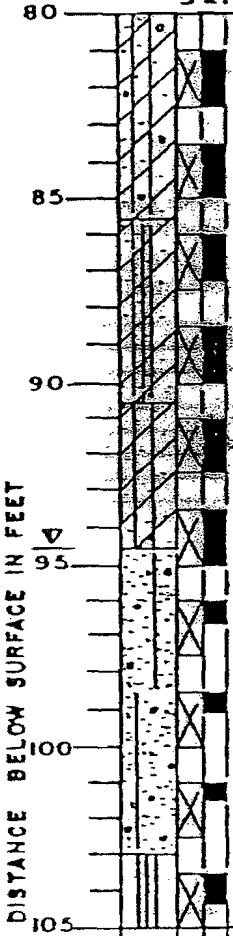
WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING -94.5 FEET

SHEET 3 OF 3



SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
17	SS		47	17.3	4.5+*				Tough to hard gray silty CLAY, little to some sand, trace gravel (CL)
18	SS		43	19.1	4.0*				
							85.5	644.3	
19	SS		62	25.2					Very dense interbedded gray silty CLAY and clayey SILT, little sand, moist to very moist (ML/CL)
20	SS		59	19.7					
							90.5	639.3	
21	SS		76	12.1	4.5*				Very tough to hard gray very silty CLAY, hairline silt seams, trace to little sand, moist (CL)
22	SS		135/ 11"	17.9	2.5*		94.5	635.3	
23	SS		66/ 6"						Very dense gray fine to coarse SAND and small to large GRAVEL, trace silt, wet (SW/GW)
24	SS		50/ 4"						
25	SS		200/ 6"						
							103.0	626.8	
26	SS		71						Very dense gray SILT, very moist to wet (ML)

End of Boring at 105.0 Feet

* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

PIEZOMETER INSTALLATION NOTES

1).	2" Schedule 40 PVC screen (.010" slot):	97.0 - 102.0'
2).	2" Schedule 40 PVC riser:	+2.7 - 97.0'
3).	Coarse silica sand:	92.5 - 102.0'
4).	Bentonite pellets:	87.5 - 92.5'
5).	Volclay grout:	2.5 - 87.5'
6).	Steel protector pipe, with locking cap, concreted into place over piezometer	

TESTING SERVICE CORPORATION

RIG NO 91

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-5 DATE STARTED 10-23-86 DATE COMPLETED 10-23-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 740.5

END OF BORING 678.5

LOCATION: 12301.5N 12345.0E

WATER TABLE

AT END OF BORING

24 HOURS PIEZOMETER INSTALLED

WHILE DRILLING -9.0 Feet

SHEET 1 OF 2

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							1.5	739.0	Black clayey TOPSOIL
									Very tough brown and gray silty CLAY, trace sand, moist (CL)
1A	SS		20	21.6	3.5*				
1B				--	--				Closed gray joint traces observed between 7 to 9 feet
A				18.2	--		7.0	733.5	
2B	SS		28	--	--				Brown layers of firm clayey SILT, moist; silty fine to coarse SAND, wet, and very tough CLAY, moist (ML, SM, CL)
C				18.3	3.75*				
A				16.2	3.75*		9.0	731.5	
3B	SS		40	--	--				
C				--	--				
A				14.0	3.5*				Very tough to hard gray silty CLAY, trace sand, trace gravel, moist; zone of very silty clay from 11' to 11.5' (CL)
4B	SS		26	13.9	4.25*				
C/D				--	--				
A				18.4	2.0*				
5B	SS		35	--	--				
C/D				--	--				
							15.0	725.5	
				NO SAMPLES TAKEN BETWEEN 15' TO 35'					
A				15.5	3.25*	118.9	35.0	705.5	
6B	SS		48	--	--				Very tough to tough gray silty CLAY, trace to little sand, trace gravel, moist (CL)
C/D				--	--				
A				16.4	3.0*				
7B	SS		54	--	--				SAMPLE 6: pH = 7.2
C				--	--				
A				15.2	3.5*	119.6			SAMPLE 8: pH = 7.2
8B	SS		31	--	--				

TESTING SERVICE CORPORATION

DRILL RIG NO. 103

BORING LOG CONTINUED

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-5 Cont. DATE STARTED 10-23-86 DATE COMPLETED 10-23-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 740.5

END OF BORING 678.5

LOCATION: 12301.5N 12345.0E

WATER TABLE

AT END OF BORING

24 HOURS PIEZOMETER INSTALLED

WHILE DRILLING -9.0 Feet

SHEET 2 OF 2

SAMPLE NO.	TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
8C	SS		31						
D									
A				17.4	3.0*				
9B	SS		39	--	--				Very tough to tough gray silty CLAY, trace to little sand, trace gravel, moist (CL)
C				--	--				
A				19.0	1.25*				
10B	SS		37	--	--				
C				14.8	3.25*				
A				14.6	2.25*				
11B	SS		30	--	--				SAMPLE B: pH = 7.2
C				--	--				
A				16.3	3.0*				
12B	SS		25	--	--				
C				--	--				
A				14.8	1.0*		49.0	691.5	
13B	SS		26	14.2	2.0*				Tough to very tough gray silty CLAY, trace sand and gravel, moist, occasional sand seams (CL)
C				--	--				
14A	SS		100/3"	14.4	4.5+*		51.0	689.5	
B				--	--				
A				13.2	4.5+*				Hard gray very silty to silty CLAY, trace sand and gravel, moist, occasional sand and silt seams (CL)
15B	SS		72	--	--				
C				--	--				
A				14.5	4.5+*				
16B	SS		103	--	--		56.0	684.5	
C				--	--				
A				17.7	1.5*				
17B	SS		65	--	--				Gray layers of fine SAND and silty CLAY, trace sand and gravel, moist (SP, CL)
C				13.7	2.5*				
A				17.8	3.0*				
18B	SS		70	16.8	2.25*				
C				--	--				

End of Boring at 62.0 Feet

* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

PIEZOMETER INSTALLATION NOTES: 2" PVC CONST.

1). Bore hole made using 3¼" I.D. hollowstem auger
2). Bottom of screen at 62'
3). Top of screen at 57'
4). Gravel pack from 62' to 53.8'
5). Bentonite pellets from 53.8' to 48.8'
6). Volclay Grout from 48.8' to surface
7). Steel protector pipe concreted into place over riser pipe

TESTING SERVICE CORPORATION

DRILL RIG NO. 103

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MT. HENRY, ILLINOIS

BORING P-6 DATE STARTED 10-22-86 DATE COMPLETED 10-22-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 740.0

END OF BORING 681.0

LOCATION: 11750.9N
12393.8E

WATER TABLE

AT END OF BORING

24 HOURS

WHILE DRILLING -43.0 Feet

SHEET 1 OF 2

SAMPLE NO.	TYPE	LENGTH RECOVERY	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
							2.0	738.0	Black clayey TOPSOIL
1A	SS		22	23.2	4.5+*				Hard to tough brown and gray to brown silty CLAY, little sand, trace gravel, moist (CL)
1B				21.5	4.5+*				
2A	SS		40	23.4	1.5*				Closed gray joint traces observed between 5 to 7 feet
A				21.5	1.5*				
3B	SS		26	--	--		9.5	730.5	
C				--	--				Tough gray silty CLAY, little sand, trace gravel, moist (CL)
A				21.9	1.5*				
4B	SS		18	--	--		12.0	728.0	
C				--	--				Stiff gray silty CLAY, trace sand, very moist (CL)
A				23.4	1.0*				
5B	SS		13	--	--		14.0	726.0	
C				--	--				Stiff to tough gray silty CLAY, trace sand, moist (CL)
A				17.5	2.25*		35.0	705.0	
6B	SS		38	17.3	4.0*				Very tough to hard gray silty CLAY, trace sand and gravel, moist (CL)
C				--	--				
7	ST 3"			15.8	3.0*	118.2			SAMPLE 7: pH = 7.3
8A	SS		25	12.7	4.5+*				
B				--	--				

DISTANCE BELOW SURFACE IN FEET

0 5 10 15 20 25 30 35 40

TESTING SERVICE CORPORATION

DRILL RIG NO. 103

BORING LOG CONTINUED

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-6 Cont. DATE STARTED 10-22-86 DATE COMPLETED 10-22-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 740.0

END OF BORING 681.0

LOCATION: 11750.9N 12393.8E

WATER TABLE

AT END OF BORING

24 HOURS

WHILE DRILLING 43.0 Feet

SHEET 2 OF 2

SAMPLE NO.	TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
9	ST 3"			12.9	3.25*	124.3			SAMPLE 9: pH = 7.3
A				15.7	4.0*				
10B	SS		42	--	--				Very tough to tough gray silty CLAY, trace sand and gravel, moist (CL)
C				--	--				
A				14.2	1.75*				
11B	SS		30	--	--				
C/D				--	--				
A				13.6	1.75*				
12B	SS		30	--	--				
C				--	--				
A				17.9	0.25*				
13B	SS		58	--	--				
C				--	--				
14	SS		58	17.9	--				
15	SS		42	20.1	1.5*		53.0	687.0	Dense gray clayey SILT, some fine sand, damp (CL-ML)
A				12.3	--		55.0	685.0	Disturbed appearing - unsorted
16B	SS		27	--	--				Firm gray clayey SILT, very silty CLAY and sandy SILT, moist (ML, CL-ML)
C				--	--				
A				15.4	--				
17B	SS		38	15.2	--				
C/D				--	--				

End of Boring at -59.0 Feet

* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

PIEZOMETER INSTALLATION NOTES: 2" PVC CONST.

1). Bore hole made using 3¼" I.D. hollowstem auger
2). Bottom of screen at 59'
3). Top of screen at 54'
4). Gravel pack from 59' to 51.8'
5). Bentonite pellets from 51.8' to 47.8'
6). Volclay Grout from 47.8' to surface
7). Steel protector pipe concreted into place over riser pipe

TESTING SERVICE CORPORATION

DRILL RIG NO. 103

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC.

BORING P-6 DATE STARTED 4-13-87 DATE COMPLETED 4-16-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 733.8

END OF BORING 626.3

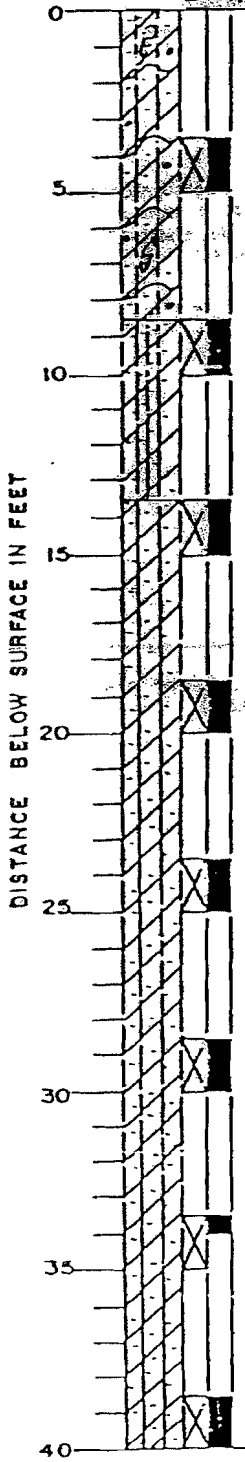
WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING -101.5 FEET

SHEET 1 OF 3



LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
	1	SS	9	24.5	DISTURBED				Brown silty CLAY, trace sand, trace topsoil, trace roots and organics, very moist (CL)
							8.5	725.3	
	2	SS	19	19.3					Soft brown and gray clayey SILT, little fine sand, moist (ML)
							13.5	720.3	
	3	SS	12	15.2	2.0*				Tough to very tough gray silty to very silty CLAY, trace to little sand, moist (CL); thin (1/2") sand seam at 55.0'
	4	SS	20	15.8	2.0*				
	5	SS	19	14.9	2.25*				
	6	SS	23	14.1	2.25*				
	7	SS	44	19.6	2.25*				
	8	SS	30	18.0	2.25*				

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC.

BORING P-6 DATE STARTED 4-13-87 DATE COMPLETED 4-16-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 733.8

END OF BORING 626.3

WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS -101.5 FEET

WHILE DRILLING

SHEET 2 OF 3

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
9	SS		18	18.4	1.75*				Tough to very tough gray silty to very silty CLAY, trace to little sand, moist (CL); thin (1/2") sand seam at 55.0'
10	SS		25	14.2	2.0*				
11	SS		29	6.0	2.25*				
							57.0	676.8	
12	SS		39						Dense gray SILT, trace clay, trace sand, moist (ML)
							62.0	671.8	
13	SS		59	13.9	4.5*				Very tough to hard brownish gray to gray silty to very silty CLAY, little sand, trace gravel, moist (CL)
14	SS		40	14.7	3.5*				
15	SS		54	14.2	3.5*				
16	SS		61	16.9	3.0*				

DISTANCE BELOW SURFACE IN FEET: 40, 45, 50, 55, 60, 65, 70, 75, 80

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC., SCHAUMBURG, ILLINOIS

BORING P-6 DATE STARTED 4-13-87 DATE COMPLETED 4-16-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 733.8

END OF BORING 626.3

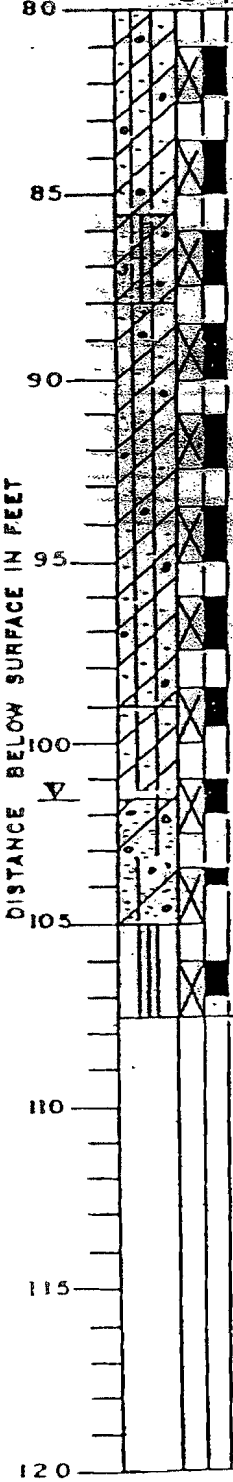
WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING -101.5 FEET

SHEET 3 OF 3



SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
17	SS		76	17.4	3.5*				Very tough to hard brownish gray to gray silty to very silty CLAY, little sand, trace gravel, moist (CL)
18	SS		75	19.9	3.0*				
							85.5	648.3	
19	SS		45						Dense gray clayey SILT, little sand, trace gravel, moist (ML)
							88.0	645.8	
20	SS		74	9.8	4.5+*				Hard very silty CLAY, little sand, trace gravel, moist (CL)
21	SS		57	10.1	4.5+*				
22	SS		106/ 11"	11.1	4.5+*				
23	SS		88	11.5	4.5+*				
24	SS		88/ 8"	18.3	4.5*		99.0	634.8	
									Very tough to hard gray silty CLAY, silt layers, trace sand, moist (CL)
25A/B	SS		100/ 5"	22.8 --	3.0* --		101.5	632.3	
									Very dense gray GRAVEL and SAND, trace silt, trace clay, wet (GW)
26	SS		155/ 6"						
							105.0	628.8	
27	SS		71/ 6"						Very dense gray SILT, moist to wet (ML)

End of Boring at -107.5 Feet

* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

PIEZOMETER INSTALLATION NOTES

1). 2" Schedule 40 PVC screen (.010" slot): 100.0 - 105.0'
2). 2" Schedule 40 PVC risers: +5.1 - 100.0'
3). Coarse silica sand: 98.0 - 107.5'
4). Bentonite pellets: 93.0 - 98.0'
5). Volclay grout: 2.5 - 93.0'
6). Steel protector casing with locking cap, concreted into place over piezometer. Extended to allow berm to be raised.

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-7 DATE STARTED 11-3-86 DATE COMPLETED 11-4-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 744.9

END OF BORING 653.9

LOCATION: 12596.0N 10622.5E

WATER TABLE

AT END OF BORING

24 HOURS

WHILE DRILLING -17.0 Feet

SHEET 1 OF 3

SAMPLE NO.	TYPE	LENGTH RECOVERY	N	WC	Q_u	δ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							1'3"	743.6	Black clayey TOPSOIL (OL)
A				16.4	4.5+*				Hard brown silty CLAY, little sand, trace gravel, moist (CL)
1B	SS		36	--	--				
C				--	--				
A				19.2	4.25*				Closed gray joint traces observed between 5 to 11 feet
2B	SS		57	--	--				
C/D				--	--				
A				21.8	3.0*		9.0	735.9	
3B	SS		30	--	--				Very tough brown silty CLAY, trace sand, trace gravel, moist (CL)
C/D				--	--				
A				20.0	2.75*				
4B	SS		44	--	--				
C/D				--	--				
A				20.2	2.75*		13.0	731.9	
5B	SS		21	--	--				Very tough to tough brown to gray silty CLAY, trace sand and gravel, moist (CL)
D				18.0	1.75*				
							17.0	727.9	
A				15.5	--				Very dense gray sandy SILT, some clayey SILT, wet (ML)
6B	SS		60	--	--				
C/D				--	--				
A				--	--				
7B	SS		30	--	--		24.0	720.9	
C				15.6	3.0*				Very tough gray silty CLAY, trace sand and gravel, moist (CL)
D				--	--				
A				--	--				
8B	SS		31	17.6	3.0*				
C/D				--	--				
9A	SS		39	16.8	2.5*				
BCD				--	--				
A				17.1	1.0*		37.0	707.9	
10B	SS		22	--	--				Tough to very tough gray silty CLAY, trace sand and gravel, moist (CL)
C/D				--	--				
A				13.2	2.5*				
11B	SS		27	--	--				
C/D				--	--				

DISTANCE BELOW SURFACE IN FEET

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-7 Cont. DATE STARTED 11-3-86 DATE COMPLETED 11-4-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 744.9

END OF BORING 653.9

LOCATION: 12596.0N 10622.5E

WATER TABLE

AT END OF BORING

24 HOURS

WHILE DRILLING -17.0 Feet

SHEET 2 OF 3

LENGTH RECOVERY	SAMPLE NO	TYPE	N	WC	Q_U	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
	A 12B C/D	SS	22	15.7 -- --	1.0* -- --				
	A 13B C/D	SS	23	15.9 -- --	1.25* -- --				Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
	A 14B C	SS	21	20.4 -- --	2.75* -- --				
	A 15B C	SS	39	20.3 -- --	2.0* -- --		55.0	689.9	
	A 16B C	SS	44	17.9 -- --	2.0* -- --				
	A 17B C	SS	31	22.4 -- --	3.5* -- --				
	A 18B C/D	SS	41	24.3 --	3.0* --				
	A 19B C	SS	44	24.0	3.0*				Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
	A 20B C	SS	36	24.3 -- --	3.25* -- --				
	A 21B C	SS	58	16.7 -- 15.2	3.5* -- 4.0*				
	A 22B C	SS	27	16.8 -- --	1.5* -- --				

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-7 Cont. DATE STARTED 11-3-86 DATE COMPLETED 11-4-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 744.9

END OF BORING 653.9

LOCATION: 12596.0N
10622.5E

WATER TABLE

AT END OF BORING

24 HOURS

WHILE DRILLING -17.0 Feet

SHEET 3 OF 3

SAMPLE NO.	TYPE	LENGTH & RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
									Very tough gray silty CLAY, little sand, trace gravel, moist (CL)
							83.5	661.4	
A 23B C	SS		97						Very dense gray fine to coarse SAND, trace gravel, wet (SW)
A 24B C	SS		64						
A 25B C	SS		88						
									End of Boring at -91.0 Feet

* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

DISTANCE BELOW SURFACE IN FEET

80 85 90 95 100 105 110 115 120

MONITORING WELL INSTALLATION NOTES: 4" PVC CONST.

1). Bore hole made by the rotary method
2). Bottom of screen at 91'
3). Top of screen at 86'
4). Gravel pack from 91' to 83.5'
5). Bentonite pellets from 83.5' to 78.5'
6). Volclay Grout from 78.5' to surface
7). Steel protector pipe concreted into place over riser pipe.

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC.

BORING P-7 DATE STARTED 4-16-87 DATE COMPLETED 4-21-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 741.9

END OF BORING 591.9

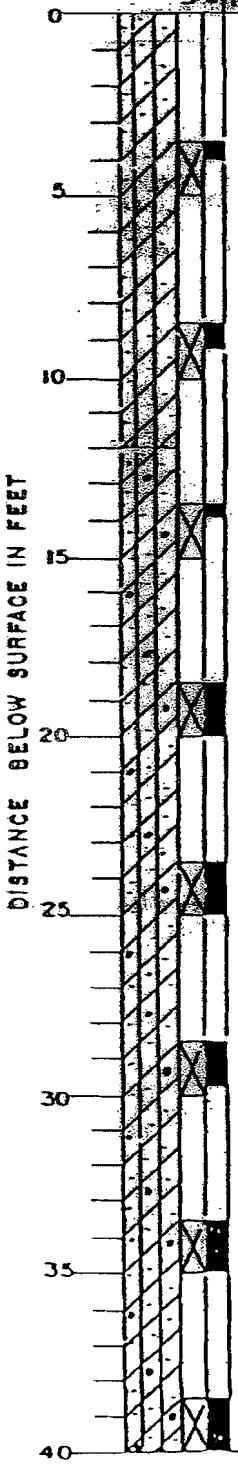
WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING DRY

SHEET 1 OF 5



SAMPLE NO.	SAMPLE TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS	5	19.6	0.6*				Soft brown silty CLAY, little sand, very moist (CL)
2	SS	5	27.1	0.4*				
						12.0	729.9	
3	SS	15	15.4	0.75*				Stiff to very tough gray silty to very silty CLAY, little sand, trace gravel, moist to very moist; hairline silt seam at 15.0' (CL)
4	SS	22	18.1	2.25*				
5	SS	19	13.1	1.8*				
6	SS	22	13.0	1.0*				
7	SS	21	15.5	1.0*				
8	SS	19	15.0	1.4*				

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC., SCHAUMBURG, ILLINOIS

BORING P-7 DATE STARTED 4-16-87 DATE COMPLETED 4-21-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 741.9

END OF BORING 591.9

WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING DRY

SHEET 2 OF 5

DISTANCE BELOW SURFACE, IN FEET

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	W.C	q_u	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40									
45	9	SS	25	16.2	2.25*				Stiff to very tough gray silty to very silty CLAY, little sand, trace gravel, moist to very moist; hairline silt seam at 15.0' (CL)
50	10	SS	25	15.1	2.5*				
55	11	SS	33	17.3	2.5*				
60	12	SS	34	18.2	2.75*				
							62.0	679.9	
65	13	SS	42						Dense gray clayey SILT, little sand, moist (ML)
							67.0	674.9	
70	14	SS	78	9.7	4.5+*				Very tough to hard gray silty to very silty CLAY, little sand, moist; hairline silt seam at 84.0' (CL)
75	15	SS	34	15.3	3.25*				
80	16	SS	45	14.7	3.5*				

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC., SCHAUMBURG, ILLINOIS

BORING P-7 DATE STARTED 4-16-87 DATE COMPLETED 4-21-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 741.9

END OF BORING 591.9

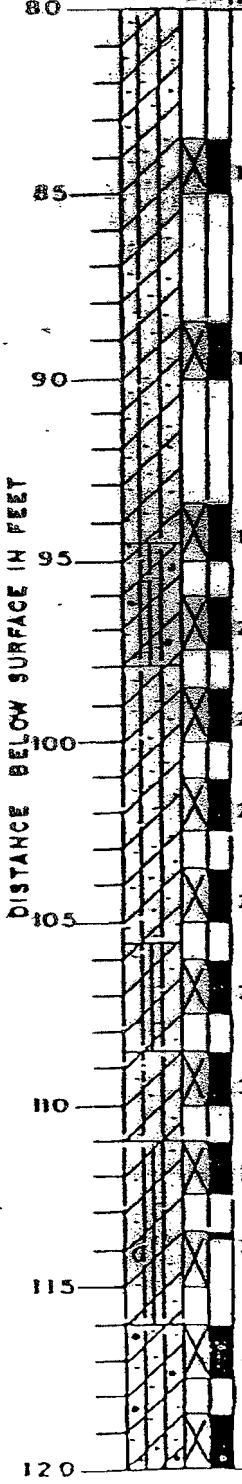
WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING DRY

SHEET 3 OF 5



SAMPLE NO.	TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
17	SS		61	14.1	3.0*				Very tough to hard gray silty to very silty CLAY, little sand, moist; hairline silt seam at 84.0' (CL)
18	Ss		61	13.0	3.75*				
19A	SS		86	18.8	3.5*		94.5	647.4	
19B				13.5	--				Dense gray clayey SILT, trace sand, trace gravel, moist (ML)
20	SS		33	12.3			98.0	643.9	
21	SS		89	10.5	4.5+*				Hard gray very silty CLAY, trace to little sand, damp to moist; sand seam at 102.0 to 102.5' (CL)
22	SS		53	10.2	4.5+*				
23	SS		112	11.2	4.5+*				
24	SS		70	10.8			105.5	636.4	Dense gray clayey SILT, trace sand, moist (ML)
25	SS		66	18.1	3.5*		108.5	633.4	Very tough gray very silty CLAY, trace sand, moist (CL)
26	SS		107	19.6			111.0	630.9	Dense gray clayey SILT, trace sand, damp; boulder at 113.0-114.5' (ML)
27	SS		100/4"						
28	SS		71	18.2	4.5+*		116.0	625.9	Tough to hard gray silty to very silty CLAY, trace to little sand, trace gravel, moist (CL)
29	SS		58	18.3	3.75*				

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC., SCHAUMBURG, ILLINOIS

BORING P-7 DATE STARTED 4-16-87 DATE COMPLETED 4-21-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 741.9

END OF BORING 591.9

WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING DRY

SHEET 4 OF 5

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
30	SS		95/11"	24.0	1.0*				Tough to hard gray silty to very silty CLAY, trace to little sand, trace gravel, moist (CL)
31	SS		88	17.0	4.5+*				
32	SS		117	16.4	4.5+*				
33	SS		108/11"	16.6	4.5+*				
34	SS		101	14.3	4.5+*				
35	SS		87/5"	16.6	4.5+*				
36	SS		98	17.2	2.75*				
37	SS		89	15.8	3.0*				
38	SS		50/6"	21.3	4.5+*				
39	SS		56/6"	18.0	4.5+*				
40	SS		56/6"	16.8	4.5+*				
41	SS		104/10"	16.0	4.5+*				

End of Boring at 150.0 Feet

* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

TESTING

PROJECT BFI WINTHROP HARBOR: SANITARY LANDFILL

CLIENT BROWNING-FERRIS INDUSTRIES OF ILLINOIS, INC., SCHAUMBURG, ILLINOIS

BORING P-7 DATE STARTED 4-16-87 DATE COMPLETED 4-21-87 JOB 23,942

ELEVATIONS

GROUND SURFACE 741.9

END OF BORING 591.9

WATER TABLE

AT END OF BORING PIEZOMETER INSTALLED

24 HOURS

WHILE DRILLING DRY

SHEET 5 OF 5

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	D_d	%DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
									PIEZOMETER INSTALLATION NOTES
									1). End of boring (3 1/2"): 150.0'
									2). End of boring (6"): 119.0'
									3). Bole Plug: 111.5 - 150.0'
									4). 2" Schedule 40 PVC screen (0.10") slot: 105.5 - 110.5'
									5). 2" Schedule 40 PVC riser: +2.0 - 105.5'
									6). Coarse silica sand: 96.0 - 111.5'
									7). Bentonite pellets: 91.0 - 96.0'
									8). Volclay grout: 2.5 - 91.0'
									9). Steel protector casing with locking cap, concreted into place over piezometer

DISTANCE BELOW SURFACE IN FEET

160 165 170 175 180 185 190 195 200

TESTING SERVICE CORPORATION

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-8 DATE STARTED 10-27-86 DATE COMPLETED _____ JOB 23,390

ELEVATIONS

GROUND SURFACE 743.7

END OF BORING 646.7

LOCATION: 12596.1N
13059.7E

WATER TABLE

AT END OF BORING _____

24 HOURS _____

WHILE DRILLING - 3.0 Feet

SHEET 1 OF 3

LENGTH & RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0'10"	742.9	Black clayey TOPSOIL (OL)
									Stiff brown and gray silty CLAY, trace sand and gravel, moist (CL)
							3.0	740.7	
									Firm brown fine to medium SAND, trace gravel and clay, wet (SP)
	1A	SS	38	16.5	4.5+*		5.0	738.7	
	1B			--	--				Hard brown silty CLAY, trace sand and gravel, moist (CL)
	A			17.2	2.75*		7.0	736.7	
	2B	SS	34	14.3	4.5+*		8.0	735.7	Very tough brown-gray silty CLAY, trace sand and gravel, moist (CL)
	C			--	--				
	3A	SS	47	14.9	4.5+*				
	B			--	--				
	A			16.0	4.0*				
	4B	SS	37	--	--				
	C			--	--				
	A			17.4	3.5*				
	5B	SS	34	--	--				
	C/D			--	--				
									Hard to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
	6	SS	71	18.0	2.25*				
	A			18.5	2.75*				
	7B	SS	16	--	--				
	C			--	--				
	A			18.7	3.0*				
	8B	SS	23	--	--				
	C			--	--				
	9	SS	35	BOULDER					
	A			17.4	3.5*		38.0	705.7	
	10B	SS	39	--	--				Very tough gray silty CLAY, trace sand and gravel, moist (CL)
	C			--	--				

TESTING SERVICE CORPORATION

DRILL RIG NO. 103

BORING LOG CONTINUED

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-8 Cont. DATE STARTED 10-27-86 DATE COMPLETED _____ JOB 23,390

ELEVATIONS

GROUND SURFACE 743.7

END OF BORING 646.7

LOCATION: 12596.1N
13059.7E

WATER TABLE

AT END OF BORING _____

24 HOURS _____

WHILE DRILLING - 3.0 Feet

SHEET 2 OF 3

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γDRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
									Very tough gray silty CLAY, trace sand and gravel, moist (CL)
A				15.7	3.0*				
11B	SS		36	16.8	3.5*				
C				--	--		45.0	698.7	
				18.4	--				Dense to firm gray SILT and clayey SILT (clay layer @ 47.5-48.0'), moist (ML & CL)
12B	SS		48	18.9	--				
C				--	--				
A				20.3	--				
13B	SS		24	20.1	3.0*				
C				--	--		49.0	694.7	
A				22.6	4.25*				
14B	SS		31	--	--				
C				22.3	2.75*				
A				16.7	2.0*				Hard to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
15B	SS		23	--	--				
C				--	--				
A				13.1	3.25*				
16B	SS		38	--	--				
C				--	--				
							57.0	686.7	
A									
17B	SS		51						Very dense to dense gray fine SAND, trace silt, wet (SP)
C									
A									
18B	SS		49						
C									
							65.5	678.2	
A				13.1	2.0*				Very tough to hard gray silty CLAY, trace sand, moist (CL)
19B	SS		36	--	--				
C/D				--	--				
A				13.9	4.5+*				
20B	SS		66	--	--				
C/D				--	--				
A				20.7	3.5*				
21B	SS		47	--	--				
C/D				--	--				

DISTANCE BELOW SURFACE IN FEET: 40, 45, 50, 55, 60, 65, 70, 75, 80

TESTING SERVICE CORPORATION

DRILL RIG NO. 103

BORING LOG CONTINUED

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 NL SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-8 Cont. DATE STARTED 10-27-86 DATE COMPLETED _____ JOB 23,390

ELEVATIONS

GROUND SURFACE 743.7

END OF BORING 646.7

LOCATION: 12596.1N
13059.7E

WATER TABLE

AT END OF BORING _____

24 HOURS _____

WHILE DRILLING - 3.0 Feet

SHEET 3 OF 3

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
									Hard to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
A				14.3	4.5+*				
22B	SS		59	--	--				
C				15.3	3.25*				
A				15.9	2.25*				
23B	SS		82	--	--				
C/D				--	--				
A				15.8	4.5+*				
24B	SS		75	--	--				
C				--	--				
A				23.3	4.5+*				
25B	SS		74	--	--				
C/D				22.3	4.25*				
							91.0	652.7	
A									Very dense gray silty fine to coarse SAND, trace gravel, moist (SM)
26B	SS		95						
C									
A									
27B	SS		90						
C									
							95.0	648.7	
A				11.8					Very dense gray clayey SILT, little sand, trace gravel, moist (ML)
28B	SS		65	--					
C/D				11.5					

End of Boring at -97.0 Feet

* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

MONITORING WELL INSTALLATION NOTES: 4" PVC CONST.

1). Bore hole made by the rotary method
2). Bottom of screen at 97'
3). Top of screen at 92'
4). Gravel pack from 97' to 90'
5). Bentonite pellets from 90' to 85'
6). Volclay Grout from 85' to surface
7). Steel protector pipe concreted into place over riser pipe

TESTING SERVICE CORPORATION

DRILL RIG NO. 103

LOG OF BORING B-438

PROJECT: Monitoring W. Installation - BFI Winthrop Harbor Fa ity — BORING NO.: P-8

DRILLER: Patrick Engineering — START: 12/1/87 — COMPLETE: 12/3/87 — SHEET: 1 OF 7

RIG: CME-75 Truck — LOCATION: 4' West of Stake

GROUND EL.: ~~1773.~~ 1773. — W.L. & TIME: 45' while drilling, 117 after 24 hours.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		0.0	Crushed Limestone Pad					
								Advanced borehole using 4-1/4" I.D. HSA.
								Advance boring to 15' without sampling.
		15.0	Brown silty clay to clayey silt, little coarse to fine sand, trace coarse to fine gravel, hard, medium plasticity, moist CL-ML	SS-1 15.0-16.5 18"R	8 13 21		4.1*	
		18.2						

PATRICK ENGINEERING INC.

LOGGED BY: CRS — JOB NO.: D151 (D140/D151)

LOG OF BORING

B-439

PROJECT: Monitoring W Installation - BFI Winthrop Harbor Fa ity — BORING NO.: P-8

DRILLER: Patrick Engineering — START: 12/1/87 — COMPLETE: 12/3/87 — SHEET: 2 OF 7

RIG: CME-75 Truck — LOCATION: 4' West of Stake

GROUND EL.: — W.L. & TIME: 45' while drilling, 117 after 24 hours.

ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	20.0	Light brown silt, trace clay, dense, moist ML	SS-2 20.0-21.5 18"R	11 17 27			
	23.2	Brown clayey silt, trace coarse to fine sand, dense, moist ML	SS-3 25.0-26.5 18"R	11 15 24		3.5*	
	28.2	Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL	SS-4 30.0-31.5 18"R	9 16 19		3.1*	
	36.2		SS-5 35.0-36.5 18"R	9 12 11		3.2*	
	36.3	Gray coarse to fine sand, well graded, trace coarse to fine gravel, saturated SP					
		Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL					
	40.0						

LOG OF BORING B-440

PROJECT: Monitoring We Installation - BFI Winthrop Harbor Fac ty | BORING NO.: P-8

DRILLER: Patrick Engineering | START: 12/1/87 | COMPLETE: 12/3/87 | SHEET: 3 OF 7

RIG: CME-75 Truck | LOCATION: 4' West of Stake

GROUND EL.: | W.L. & TIME: 45' while drilling, 117 after 24 hours.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		40.0	Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL	SS-6 40.0-41.5 18"R	12 20 20		2.7*	
		43.2	Grayish-brown clayey silt, little coarse to fine sand, trace coarse to fine gravel, medium dense, wet ML	SS-7 45.0-46.5 18"R	10 11 12			Water at 45'.
		48.2	Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL	SS-8 50.0-51.5 9"R	15 22 22			SS-8 driven on coarse gravel at 50'. Unable to get a reliable q_u value on disturbed sample.
				SS-9 55.0-56.5 18"R	16 19 21		2.7*	
		60.0						

LOG OF BORING B-441

PROJECT: Monitoring W Installation - BFI Winthrop Harbor Fa 'ty | BORING NO.: P-8

DRILLER: Patrick Engineering | START: 12/1/87 | COMPLETE: 12/3/87 | SHEET: 4 OF 7

RIG: CME-75 Truck | LOCATION: 4' West of Stake

GROUND EL.: | W.L. & TIME: 45' while drilling, 117 after 24 hours.

ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	60.0	Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL	SS-10 60.0-61.5 18"R	13 20 23		2.7*	
			SS-11 65.0-66.5 18"R	14 20 22		3.3*	
			SS-12 70.0-71.5 18"R	15 19 22		3.2*	
			SS-13 75.0-76.5 18"R	19 27 32		4.1*	
	78.2 80.0	Gray clayey silt, trace coarse to fine sand, dense, wet ML					

LOG OF BORING B-442

PROJECT: Monitoring We Installation - BFI Winthrop Harbor Fac ty | BORING NO.: P-8

DRILLER: Patrick Engineering | START: 12/1/87 | COMPLETE: 12/3/87 | SHEET: 5 OF 7

RIG: CME-75 Truck | LOCATION: 4' West of Stake

GROUND EL.: | W.L. & TIME: 45' while drilling, 117 after 24 hours.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		80.0	Gray clayey silt, trace coarse to fine sand, dense, wet ML	SS-14 80.0-81.5 18"R	14 19 20			
		83.2	Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL	SS-15 85.0-86.5 18"R	16 18 23		3.3*	
				SS-16 90.0-91.5 18"R	28 39 50		4.5+*	Quit drilling 12/1/87. Resumed 12/2/87. Water at 75'.
		96.0	Gray clayey silt, trace coarse to fine sand, very dense, wet ML	SS-17A,B 95.0-96.5 18"R	22 24 31		4.0*	
		100.0						

LOG OF BORING B-443

PROJECT: Monitoring W Installation - BFI Winthrop Harbor Fac ty

BORING NO.: P-8

DRILLER: Patrick Engineering START: 12/1/87 COMPLETE: 12/3/87

SHEET: 6 OF 7

RIG: CME-75 Truck LOCATION: 4' West of Stake

GROUND EL.: W.L. & TIME: 45' while drilling, 117 after 24 hours.

ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	100.0	Gray clayey silt to silty clay, little coarse to fine sand, very dense, moist ML-CL	SS-18 100.0-101.5 18"R	13 19 34		3.7*	
	103.2	Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL	SS-19 105.0-106.5 18"R	16 27 41		3.5*	
			SS-20 110.0-111.5 18"R	14 32 41		2.7*	
			SS-21 115.0-117.0 5"R	67 95 107 112		2.1*	SS-21 driven on coarse gravel at 115.4'.
			SS-22A,B 117.0-119.0 24"R	28 44 97 118		3.5*	
	118.5	Greenish-gray silt, extremely dense, moist ML					
	120.0		SS-23A,B 119.0-121.0 20"R	33 68			

LOG OF BORING B-444

PROJECT: Monitoring We Installation - BFI Winthrop Harbor Fac ty — BORING NO.: P-6

DRILLER: Patrick Engineering — START: 12/1/87 — COMPLETE: 12/3/87 — SHEET: 7 OF 7

RIG: CME-75 Truck Truck — LOCATION: 4' West of Stake

GROUND EL.: — W.L. & TIME: 45' while drilling, 117 after 24 hours.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		120.0						
		120.2	Brownish-gray sandy silt, some fine sand, extremely dense, wet ML	SS-23A,B 119.0-121.0 20"R	179 213			
				SS-24 121.0-123.0 24"R	35 54 79 89			Quit drilling 12/2. Resumed 12/3.
				SS-25 123.0-125.0 22"R	63 57 107 116			
				SS-26A,B 125.0-127.0 23"R	41 67 170 196			
		125.4	Gray silty sand, medium to fine grained, trace coarse to fine gravel, extremely dense, wet SM					
		126.5	Gray silty sand, well graded, trace coarse to fine gravel, extremely dense, wet SM Sample saturated below 128.0'	SS-27 127.0-129.0 24"R	4 11 48 59			
		129.0	Gray silty sand, medium to fine grained, trace coarse to fine gravel, extremely dense, saturated SM	SS-28 129.0-131.0 24"R	22 66 116 112			Sand becoming finer with depth
				SS-29 131.0-133.0 24"R	39 64 73 79			
				SS-30 133.0-135.0 24"R	24 53 84 91			
				SS-31 135.0-136.5 18"R	17 75 98			
								Advance boring from 136.5' to 140.0' without sampling.
		140.0	End of Boring at 140.0'.					

PATRICK ENGINEERING INC. — LOGGED BY: CRS — JOB NO.: D151 (b140/D151)

PROJECT BF1: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-9 DATE STARTED 10-30-86 DATE COMPLETED 10-31-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 739.6

END OF BORING 648.6

LOCATION: 11392.4N 11939.7E

WATER TABLE

AT END OF BORING

24 HOURS

WHILE DRILLING - 9.0 Feet

SHEET 1 OF 3

DISTANCE BELOW SURFACE IN FEET

SAMPLE NO.	TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							1'6"	738.1	Black clayey TOPSOIL (OL)
							4.0	735.6	Stiff to tough brown silty CLAY, trace small gravel, moist (CL)
A				21.3	2.25*				
1B	SS		16	--	--				Very tough to tough brown silty CLAY, trace sand, moist (CL)
C				--	--				
A				22.6	1.25*				Closed gray joint traces observed between 5 to 7 feet
2B	SS		19	--	--		8.0	731.6	
C/D				--	--				Firm brown and gray sandy SILT, trace clay, very moist (ML)
							9.0	730.6	
3 A/B	SS		35						
A									Firm gray silty fine to coarse SAND, trace gravel, moist (SM)
4B	SS		23						
C									
A									
5B	SS		21						
C									
A				--	--				
6B	SS		21	--	--				
C				17.4	3.5*		16.5	723.1	
A				14.4	2.0*				
7B	SS		20	--	--				Tough to very tough gray silty CLAY, little sand, trace gravel, moist (CL)
C				--	--				
A				15.6	1.75*				
8B	SS		18	--	--				
C				--	--				
A				13.4	2.25*				
9B	SS		24	14.9	4.0*		24.0	715.6	
C				--	--				Very tough gray silty CLAY, little to trace sand, trace gravel, moist (CL)
A				8.2	--				
10B	SS		20	16.7	2.5*				
C				--	--				
A				17.0	2.0*				
11B	SS		22	--	--				
C/D				--	--		34.5	705.1	
									Dense gray silty fine SAND, trace gravel, moist (SM)
12 A/B	SS		49				36.0	703.6	
A				16.5	1.5*				Tough gray very silty CLAY, little sand, trace gravel, moist (CL)
13B	SS		20	--	--				
C/D				--	--				
A				16.3	--				
14B	SS		26	--	--				
C				--	--				

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2925 N. SCHOREWOOD DRIVE, HC HENRY, ILLINOIS

BORING P-9 Cont. DATE STARTED 10-30-86 DATE COMPLETED 10-31-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 739.6

END OF BORING 648.6

LOCATION: 11392.4N 11939.7E

WATER TABLE

AT END OF BORING

24 HOURS

WHILE DRILLING - 9.0 Feet

SHEET 2 OF 3

LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	ϕDRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
	A 15B C	SS	23	14.3 -- --	1.5* -- --				Tough gray very silty CLAY, trace sand and gravel, moist (CL)
	A 16B C/D	SS	36	14.2 -- --	1.5* --				
	A 17B C/D	SS	24	16.2 -- 17.4	2.25* -- --		45.0	694.6	
	A 18C C	SS	24	15.7 15.8 14.6	1.75* -- --				
	19	SS	53	(BOULDER)					
	A 20B	SS	45	19.5 --					
	A 21B C/D	SS	59	15.2 -- --	-- -- --				sl fine sandy @53'
	A 22B C	SS	47	17.8 15.8 --	-- 2.25* --				Tough to very tough to hard gray silty CLAY, little sand, trace gravel, some layers of clayey SILT, moist (CL & ML)
	A 23B C/D	SS	50	13.6 -- --	2.5* -- --				
	A 24B C	SS	46	23.7 -- --	3.25* -- --				
	A 25B C	SS	64	22.2 -- --	3.0* -- --				
	A 26B C	SS	138	15.0 -- --	4.5+* -- --				

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

BORING LOG CONTINUED

PROJECT BFI: ZION WASTE MANAGEMENT FACILITY - EAST EXPANSION

CLIENT ROBERTA L. JENNINGS, 2926 N. SHOREWOOD DRIVE, MC HENRY, ILLINOIS

BORING P-9 Cont. DATE STARTED 10-30-86 DATE COMPLETED 10-31-86 JOB 23,390

ELEVATIONS

GROUND SURFACE 739.6

END OF BORING 648.6

LOCATION: 11392.4N
11939.7E

WATER TABLE

AT END OF BORING

24 HOURS

WHILE DRILLING - 9.0 Feet

SHEET 3 OF 3

SAMPLE NO.	TYPE	LENGTH RECOVERY	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
27A 27B 27C	SS		168	24.9 -- --	3.75* -- --		83.5	656.1	Very tough gray silty CLAY, little sand, trace gravel, moist (CL) clayey
28A 28B	SS		100/5"				85.0	654.6	Very dense gray silty fine SAND, trace gravel, very moist (SM)
29A 29B 29C	SS		135	10.6 -- --					Very dense gray silty fine SAND, trace gravel, wet (SM & SP)
30A 30B 30C	SS		146						

End of Boring at -91.0 Feet

* Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

MONITORING WELL INSTALLATION NOTES: 4" PVC CONST.

1). Bore hole made by the rotary method
2). Bottom of screen at 91'
3). Top of screen at 86'
4). Gravel pack from 91' to 83'
5). Bentonite pellets from 83' to 78'
6). Volclay Grout from 78' to surface
7). Steel protector pipe concreted into place over riser pipe

DISTANCE BELOW SURFACE IN FEET

80 85 90 95 100 105 110 115 120

TESTING SERVICE CORPORATION

DRILL RIG NO. 91

LOG OF BORING B-447

PROJECT: Monitoring We Installation - BFI Winthrop Harbor Fa ty | BORING NO.: P-9

DRILLER: Patrick Engineering | START: 11/17/87 | COMPLETE: 11/20/87 | SHEET: 1 OF 8

RIG: CME-75-Truck | LOCATION: N 11930.51 E 9370.40

GROUND EL.: 778.45 | W.L. & TIME:

ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	0.0	Augered to 15.0'. No sampling required.					Advanced borehole using 4-1/4" I.D. HSA.
	17.0	Dark brownish-gray clayey silt, trace coarse to fine sand, trace fine gravel, very stiff, medium plasticity, moist ML	SS-1 17.0-18.5 13"R	8 13 17		3.5*	
	20.0						

PROJECT: Monitoring We Installation - BFI Winthrop Harbor Fac ty | BORING NO.: P-9

DRILLER: Patrick Engineering | START: 11/17/87 | COMPLETE: 11/20/87 | SHEET: 2 OF 8

RIG: CME-75-Truck | LOCATION: N 11930.51 E 9370.40

GROUND EL.: 778.45 | W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		20.0						
		20.5	Dark brownish-gray clayey silt, trace coarse to fine sand, trace fine gravel, very stiff, medium plasticity, moist ML					
			Dark brownish-gray silt with coarse to fine sand, trace medium to fine gravel, very stiff, medium plasticity, moist ML	SS-2 22.0-23.5 14"R	8 15 13		2.0*	
		26.7	Gray silty clay, trace coarse to fine sand, trace medium to fine gravel, very stiff, medium plasticity, moist CL	SS-3 27.0-28.5 18"R	13 20 23		3.0*	
				SS-4 32.0-33.5 18"R	6 [illegible] 12		2.5*	
				SS-5 37.0-38.5 18"R	11 17 18		2.3*	
		40.0						

PATRICK ENGINEERING INC. | LOGGED BY: CJM | JOB NO.: D151 (b138/d151)

LOG OF BORING

B-449

PROJECT: Monitoring We Installation - BFI Winthrop Harbor Fac ty

BORING NO.: P-9

DRILLER: Patrick Engineering START: 11/17/87 COMPLETE: 11/20/87

SHEET: 3 OF 8

RIG: CME-75-Truck LOCATION: N 11930.51 E 9370.40

GROUND EL.: 778.45 W.L. & TIME:

ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	40.0	Gray silty clay, trace coarse to fine sand, trace medium to fine gravel, very stiff, medium plasticity, moist CL					
			SS-6 42.0-43.5 18"R	8 14 17		2.5*	
			SS-7 47.0-48.5 18"R	7 10 15		3.7*	
		1.5" silt seam at 53.3	SS-8 52.0-53.5 18"R	8 11 12		3.0*	
			SS-9 57.0-58.5 18"R	12 18 26		3.7*	Quit drilling 11/17 Resumed on 11/18. Water level at 56.5'
	60.0						

PATRICK ENGINEERING INC.

LOGGED BY: CJM

LOG OF BORING B-450

PROJECT: Monitoring W Installation - BFI Winthrop Harbor Fa. ity | BORING NO.: P-9

DRILLER: Patrick Engineering | START: 11/17/87 | COMPLETE: 11/20/87 | SHEET: 4 OF 8

RIG: CME-75-Truck | LOCATION: N 11930.51 E 9370.40

GROUND EL.: 778.45 | W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		60.0						
			Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL					
				SS-10 62.0-63.5 18"R	10 11 13		2.6*	
				SS-11 67.0-68.5 18"R	11 11 14		3.2*	
		70.0						
			Gray clayey silt to silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff, low plasticity, moist ML-CL					
				SS-12 72.0-73.5 18"R	10 17 16		3.2*	
		75.0						
			Gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL					
				SS-13 77.0-78.5 18"R	18 36 29			SS-13 driven on coarse gravel @ 77', Sample disturbed. Unable to get reliable q_u.
		80.0						

PATRICK ENGINEERING INC. LOGGED BY: CRS JOB NO.: D151 (b138/d151)

LOG OF BORING B-451

PROJECT: Monitoring We Installation - BFI Winthrop Harbor Fa. ty BORING NO.: P-9

DRILLER: Patrick Engineering START: 11/17/87 COMPLETE: 11/20/87 SHEET: 5 OF 8

RIG: CME-75-Truck LOCATION: N 11930.51 E 9370.40

GROUND EL.: 778.45 W.L. & TIME:

ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	80.0						
	80.2	Brownish-gray clayey silt to silty clay, little coarse to fine sand, trace coarse to fine gravel, medium stiff, medium plasticity, moist ML-CL					
			SS-14 82.0-83.5 18"R	8 8 11		0.8*	
	85.2	Brownish-gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL					
			SS-15 87.0-88.5 18"R	17 33 37		3.7*	
		Very stiff to hard	SS-16 92.0-93.5 18"R	11 13 19		4.2*	
			SS-17 97.0-98.5 18"R	11 13 19		4.2*	
	100.0						

LOG OF BORING B-452

PROJECT: Monitoring W. Installation - BFI Winthrop Harbor Fa ity | BORING NO.: P-9

DRILLER: Patrick Engineering | START: 11/17/87 | COMPLETE: 11/20/87 | SHEET: 6 OF 8

RIG: CME-75-Truck | LOCATION: N 11930.51 E 9370.40

GROUND EL.: 778.45 | W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		100.0	Brownish-gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL					
				SS-18 102.0-103.5 18"R	15 21 21		3.4*	
				SS-19 107.0-108.5 18"R	19 20 24		3.7*	
			Very stiff to hard	SS-20 112.0-113.5 18"R	13 17 17		4.1*	
				SS-21 117.0-118.5 18"R	17 21 24		4.1*	
		120.0						Quit drilling 11/18

PATRICK ENGINEERING INC. LOGGED BY: CRS JOB NO.: D151 (b138/d151)

LOG OF BORING B-453

PROJECT: Monitoring W. Installation - BFI Winthrop Harbor Fa .ty BORING NO.: P-9

DRILLER: Patrick Engineering START: 11/17/87 COMPLETE: 11/20/87 SHEET: 7 OF 8

RIG: CME-75-Truck LOCATION: N 11930.51 E 9370.40

GROUND EL.: 778.45 W.L. & TIME:

ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	120.0						
		Brownish-gray silty clay, trace coarse to fine sand, trace coarse to fine gravel, very stiff, medium plasticity, moist CL	SS-22A,B 120.0-121.5 18"R	9 22 121		3.6*	Resumed on 11/19/87. SS-22 taken with 3" Split-spoon.
	121.0	Greenish-gray silt, extremely dense, moist ML	SS-23A,B 121.5-123.5 23"R	10 39 84 95			
	122.9	Gray fine silty sand, poorly sorted, very dense,					
	123.4	wet SM					
		Brownish-gray sandy silt, extremely dense, wet ML	SS-24 123.5-125.5 20"R	21 53 143 176			
			SS-25 125.5-127.5 24"R	34 54 56 70			
	127.4	Gray silty fine to medium sand, trace coarse to fine gravel, extremely dense, wet SM	SS-26A,B 127.5-129.5 15"R	63 95 106 108			
	128.3	Gray silty sand, trace coarse to fine gravel, well graded, extremely dense, wet SM					
		Some coarse to fine gravel, saturated	SS-27 129.5-131.5 21"R	35 49 46 53			
		Little coarse to fine gravel	SS-28 131.5-133.5 24"R	39 63 57 59			
		Trace coarse to fine gravel	SS-29A,B 133.5-135.5 24"R	65 99 54 48			Quit drilling 11/19. Resumed on 11/20/87. Water level at 42'.
	135.6	Gray silty fine sand, trace medium to coarse sand, trace coarse to fine gravel, poorly graded, extremely dense, saturated SM	SS-30A,B 135.5-137.5 24"R	67 45 52 79			
	136.8	Gray silty sand, little coarse to fine gravel, well graded, extremely dense, saturated SM					
		Little to some coarse to fine gravel	SS-31 137.5-139.5 24"R	26 31 53 54			
	140.0						

LOG OF BORING B-454

PROJECT: Monitoring We Installation - BFI Winthrop Harbor Facility — BORING NO.: P-9

DRILLER: Patrick Engineering — START: 11/17/87 — COMPLETE: 11/20/87 — SHEET: 8 OF 8

RIG: CME-75-Truck — LOCATION: N 11930.51 E 9370.40

GROUND EL.: 778.45 — W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		140.0	Gray silty sand, little coarse to fine gravel, well graded, extremely dense, saturated SM	SS-31 139.5-141.5 24"R	21 40 59 65			
		141.6	Gray silty sand, fine grained, poorly graded, very dense, saturated SM	SS-32A,B,C 141.5-143.5 24"R	37 59 76 187			
		142.0						
		143.0	Gray sandy silt, extremely dense, saturated ML					
			Gray silty sand, fine grained, poorly graded, extremely dense, saturated SM	SS-33A,B 143.5-145.5 24"R	37 48 51 48			
		144.6	Gray silt to clayey silt, very dense, saturated ML					Drilled to 149' without sampling.
		149.0	End of boring @ 149'.					

PATRICK ENGINEERING INC.

LOGGED BY: CES — JOB NO.: D151 (6138/4151)

LOG OF BORING B-457

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor — BORING NO.: P-11

DRILLER: Patrick Engineering — START: 6/15/88 — COMPLETE: 6/16/88 — SHEET: 1 OF 2

RIG: CME-45/ATV — LOCATION: Approximately 200' west of CT-01

GROUND EL.: 737.95 — W.L. & TIME:

ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	0.0	Brown silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff, low plasticity, moist to dry, fill CL					Advanced borehole using 3-1/4" I.D. HSA.
			SS-1 1.0-2.5 5"R	5 4 4		3.1*	SS-1 driven on a piece of coarse gravel at 1.5'.
			SS-2 2.5-4.0 3"R	3 2 4		2.3*	SS-2 driven on a piece of coarse gravel.
			SS-3A,B 4.0-5.5 18"R	4 6 6		2.5* 3.1*	
	4.5	Dark brown to black silty clay with fibers, trace coarse to fine sand, trace coarse to fine gravel, very stiff, low to medium plasticity, moist CL					
	5.5	Brown and gray silt clay, little coarse to fine sand, trace coarse to fine gravel, very stiff, low to medium plasticity, moist CL	SS-4 5.5-7.0 15"R	4 5 6		2.2*	
	7.0	Brown silty clay, little coarse to fine sand, trace coarse to fine gravel, hard, low plasticity, moist CL	SS-5 7.0-8.5 18"R	6 10 12		4.5+*	
			SS-6 8.5-10.0 18"R	8 7 13		4.0*	
			SS-7 10.0-11.5 18"R	8 10 13		4.1*	
	12.2	Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff, low plasticity, moist CL 1/4" silty sand seam present at 13.0' 2" clayey silt seam present at 14.1'	SS-8A,B 11.5-13.0 13"R	11 19 19		3.0* 2.3*	SS-8 driven on a piece of weathered cobble at 12.3'.
			SS-9A,B 13.0-14.5 14"R	5 6 11		2.7*	Stopped drilling at 14.5' on 6/15/88. Resumed drilling on 6/16/88. Water level at 13.5'
			SS-10 14.5-16.0 18"R	7 10 12		3.0*	
			SS-11 16.0-17.5 18"R	6 8 10		2.7*	
			SS-12 17.5-19.0 18"R	4 6 8		2.2*	
			SS-13 19.0-20.5 17"R	17 7 8		2.0*	SS-13 driven on a piece of coarse gravel from 19.0 to 19.5'.
	20.0						

LOG OF BORING B-458

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor — BORING NO.: P-11

DRILLER: Patrick Engineering — START: 6/15/88 — COMPLETE: 6/16/88 — SHEET: 2 OF 2

RIG: CME-45/ATV — LOCATION: Approximately 200' west of GT-01

GROUND EL.: 726.99 — W.L. & TIME:

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		20.0						
			Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff to stiff, low plasticity, moist CL	SS-14 20.5-22.0 18"R	5 6 9		2.0*	
				SS-15 22.0-23.5 18"R	5 8 9		2.3*	
				SS-16 23.5-25.0 18"R	5 8 11		1.8*	
				SS-17 25.0-26.5 18"R	6 8 10		2.2*	
				SS-18 26.5-28.0 18"R	5 6 8		2.2*	
				SS-19 28.0-29.5 18"R	6 7 10		2.5*	
				SS-20 29.5-31.0 18"R	 18		2.6*	SS-20 rod slipped spoon penetrated 12". SS-20 driven on a piece of coarse gravel at 30.5'.
				SS-21 31.0-32.5 18"R	4 8 10		2.2*	
				SS-22 32.5-34.0 18"R	8 8 13		3.0*	
				SS-23 34.0-35.5 18"R	7 8 13		3.0*	
		35.5	End of Boring at 35.5'.					The borehole was grouted with a cement-bentonite grout mix using the tremie method.

LOG OF BORING B-459

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor — BORING NO.: P-13

DRILLER: Patrick Engineering — START: 6/24/88 — COMPLETE: 6/27/88 — SHEET: 1 OF 2

RIG: CME-45/ATV — LOCATION: Approximately 450' west and 150' north of CT-01

GROUND EL.: 741.84 — W.L. & TIME: No water during or after drilling.

ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	0.0	Brown silty clay, little coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist, fill CL					Advanced borehole using 4-1/4" I.D. HSA.
		Pieces of rubbish (metal, wood, plastic, glass) present within samples	SS-1 1.0-2.5 6"R	6 15 9			SS-1 driven on a piece of coarse gravel at 1.5'.
			SS-2 2.5-4.0 9"R	6 10 19			SS-2 driven on a piece of coarse gravel at 3.5'.
	3.6	Brown silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff to hard, low plasticity, moist CL	SS-3 4.0-5.5 16"R	5 8 11		3.5*	
			SS-4 5.5-7.0 18"R	5 8 10		3.0*	
			SS-5 7.0-8.5 18"R	6 7 10		3.5*	Stopped drilling on 6/24/88 at 8.5'. Resumed drilling on 6/27/88.
			SS-6 8.5-10.0 14"R	8 12 17			SS-6 driven on a piece of coarse gravel at 8.5'.
			SS-7 10.0-11.5 18"R	8 8 17		4.5+*	
	11.5	Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, stiff to very stiff, low to medium plasticity, moist CL	SS-8 11.5-13.0 18"R	4 7 9		2.2*	
			SS-9 13.0-14.5 18"R	5 6 10		2.2*	
			SS-10 14.5-16.0 18"R	4 6 9		2.1*	
			SS-11 16.0-17.5 18"R	3 7 9		2.5*	
			SS-12 17.5-19.0 18"R	4 6 7		1.9*	
			SS-13 19.0-20.5 18"R	4 6 8		1.7*	
	20.0						

LOG OF BORING B-460

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor BORING NO.: P-13

DRILLER: Patrick Engineering START: 6/24/88 COMPLETE: 6/27/88 SHEET: 2 OF 2

RIG: CME-45/ATV LOCATION: Approximately 450' west and 150' north of GI-01

GROUND EL.: 741.84 W.L. & TIME: No water during or after drilling.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		20.0	Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, stiff to very stiff, low to medium plasticity, moist CL					
				SS-14 20.5-22.0 18"R	3 6 7		1.9*	
				SS-15 22.0-23.5 18"R	4 4 7		1.3*	
				SS-16 23.5-25.0 18"R	4 5 6		1.7*	
				SS-17 25.0-26.5 18"R	4 5 9		1.6*	
				SS-18 26.5-28.0 18"R	4 5 8		2.0*	
				SS-19 28.0-29.5 18"R	5 6 9		2.0*	
				SS-20 29.5-31.0 18"R	5 6 8		2.1*	
				SS-21 31.0-32.5 18"R	4 6 8		2.0*	
				SS-22 32.5-34.0 18"R	4 6 9		1.6*	
				SS-23 34.0-35.5 18"R	4 6 12		1.5*	
		35.5	End of Boring at 35.5'.					Boring was grouted immediately after drilling with a cement-bentonite mix using the tremie method.

LOG OF BORING B-461

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor — BORING NO.: P-14

DRILLER: Patrick Engineering — START: 6/27/88 — COMPLETE: 6/27/88 — SHEET: 1 OF 2

RIG: CME-45/ATV — LOCATION: Approximately 450' west and 350' north of GT-01

GROUND EL.: 735.48 — W.L. & TIME: 14.5' during, 14.0' after drilling, 11.0' after 24 hours.

ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	0.0						
		Brown silty clay, little coarse to fine sand, little coarse to fine gravel, very stiff to hard, low plasticity, moist, fill CL					Advanced borehole using 4-1/4" I.D. HSA.
			SS-1 1.0-2.5 18"R	9 15 17		4.5+*	
			SS-2 2.5-4.0 18"R	8 9 10		3.6*	
	4.0						
		Brown silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff to hard, low plasticity, moist CL	SS-3 4.0-5.5 18"R	7 13 17		4.5+*	
			SS-4 5.5-7.0 16"R	10 11 12		3.5*	
			SS-5 7.0-8.5 18"R	4 6 8		2.2*	
	8.5						
		Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff to hard, low to medium plasticity, moist CL	SS-6 8.5-10.0 18"R	5 6 10		2.1*	
		1" thick layer of silty coarse to fine sand present at 10.6'	SS-7 10.0-11.5 18"R	7 7 8		2.3*	
			SS-8 11.5-13.0 18"R	4 7 10		2.0*	
			SS-9 13.0-14.5 18"R	4 7 8		2.1*	Water level during drilling at approximately 14.5'.
			SS-10 14.5-16.0 18"R	4 5 7		2.0*	
			SS-11 16.0-17.5 18"R	5 5 7		1.7*	
			SS-12 17.5-19.0 18"R	4 5 8		1.5*	
			SS-13 19.0-20.5 18"R	4 6 9		2.0*	
	20.0						

LOG OF BORING B-462

PROJECT: Piezometer and Monitoring Well Installation, Winthrop Harbor BORING NO.: P-14

DRILLER: Patrick Engineering START: 6/27/88 COMPLETE: 6/27/88 SHEET: 2 OF 2

RIG: CME-45/ATV LOCATION: Approximately 450' west and 350' north of GT-01

GROUND EL.: 735.48 W.L. & TIME: 14.5' during, 14.0' after drilling, 11.0' after 24 hours.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
		20.0	Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, very stiff to stiff, low to medium plasticity, moist CL	SS-14 20.5-22.0 18"R	5 7 10		2.1*	
				SS-15 22.0-23.5 8"R	5 7 9		2.0*	SS-15 driven on a piece of coarse gravel at 22.5'.
				SS-16 23.5-25.0 18"R	4 8 10		2.0*	
				SS-17A,B 25.0-26.5 18"R	8 13 16		1.1*	
		25.5	Gray silty medium to fine sand, medium dense, poorly graded, wet to saturated SM					
		26.5	Gray silt, some fine sand, dense, non-plastic, saturated ML	SS-18 26.5-28.0 18"R	12 16 20			
		28.0	Gray silty clay and coarse to fine sand, some medium to fine gravel, very stiff, low plasticity, moist CL	SS-19 28.0-29.5 15"R	9 7 9		2.0*	
		29.4	Gray silty coarse to fine sand, little coarse to fine gravel, medium dense, well graded, moist to wet SM	SS-20A,B 29.5-31.0 16"R	5 7 10		1.3*	
			Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, stiff to very stiff, low to medium plasticity, moist CL	SS-21 31.0-32.5 15"R	5 7 9		1.5*	
		32.5	End of Boring at 32.5'.					Boring was grouted on 6/28/88 with a cement-bentonite mix using the tremie method.

Date:
Started: _____
Finished: _____
Sheet ____ of ____

Hecra Research Inc. [illegible]
SUBSURFACE LO[illegible]

Surface Elev. 717.8

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location 20' E of OW2 South of Entrance to Nice Textile Fence

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 / 6 / 12 / 18	Description
0		SS			
10			1	14 / 24 / 29	Grey brown mottled silty clay, very stiff, high plasticity, occasional angular gravel.
20			2	5 / 6 / 9	
30			3	8 / 12 / 14	Grading to uniform tan clay

-107 ft

Notes

SP vs Gamma Log: 0 mV 40 CPS

Electric Log Normal: 0 600Ω m

Gamma

SP

Casing

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

Finished: 12-4-83

Sheet 2 of

SUBSURFACE LOG [illegible]

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location 20 ' E of OW 2

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 to 6	Blows on Sampler 6 to 12	Description
40		SS	4	21 37	29	Grey-brown silty, gravelly clay, saturated, soft very plastic, very fine to medium gravel, 58% recovery
45						
50			5	21 23	22	
55			6	14 22	20	
60			7	17 21	21	
65			8	15 28	25	
70			9	22 36	26	
75			10	20 36	27	

Notes

Gamma Log: 0 ap. log ← 5 mV → 60 CPS

Electric Log Normal: 0 → 600 Ω m

Clay

Classification: VISUAL.

Method of Investigation: ASTM D 1452-80

Date:
Started: 12-4-81
Finished: 12-4-81
Sheet 1 of 6

Recra Research, Inc. 17-83-1 B-1

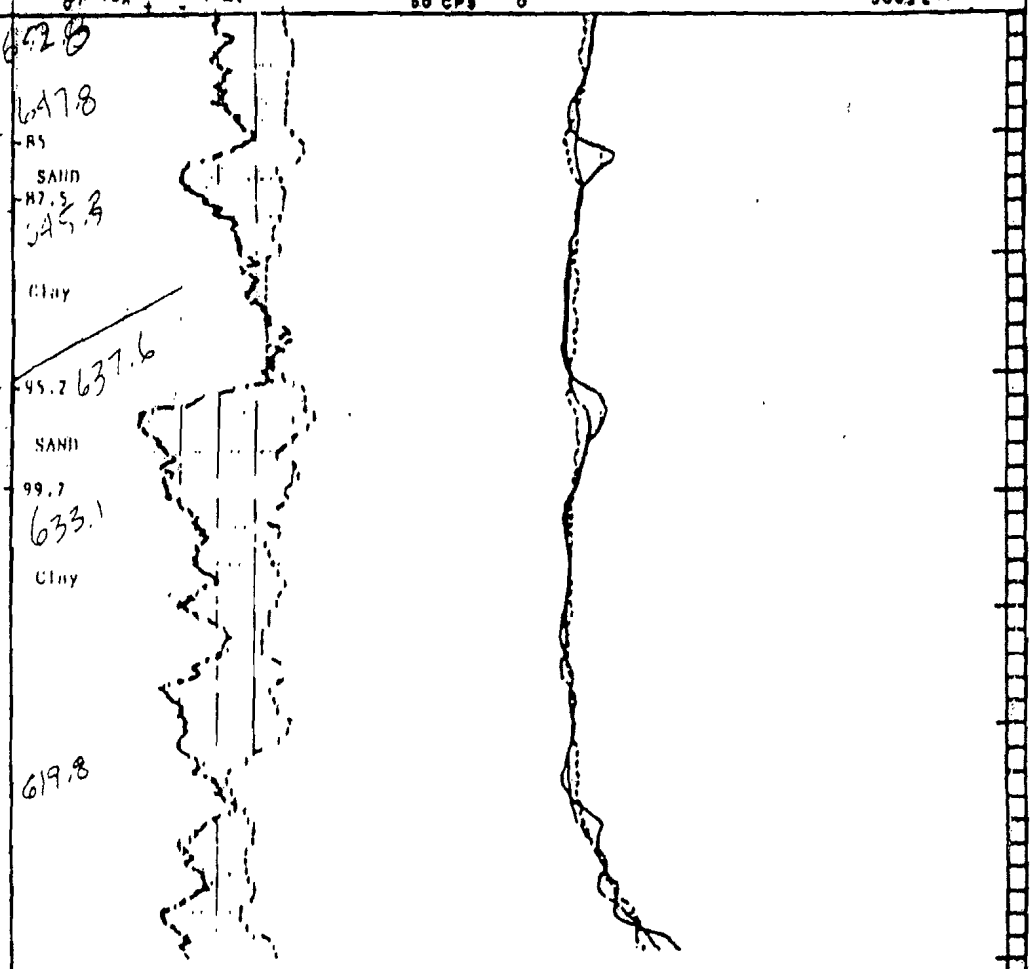
SUBSURFACE LOG

Surface Elev. 712.8

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location 20' E of HW2

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 18/24	Description
80		SS	11	12 / 44 / 51	Grey clayey silt, slightly plastic, dense, very stiff, hard slightly moist, slightly mottled
85			12	25 / 75 / 41	Light brown, very fine silty sand, bottom 6" moist, poorly sorted top 12" grey clay.
90			13	38 / 36 / 40	Uniform tan grey clay clayey sandy silt, plastic soft firm, stiff
95			14	40 / 34 / 46	Increasing sand content, light brown very fine silty sand, moist, poorly sorted.
100			15	81 / 107	Silt seam
105			16	33 / 36 / 32	Grey silty clay
110			17	22 / 43 / 31	Silt seam
115			18	15 / 40 / 30	Grey silty clay, uniform texture, moist, soft



Classification: VISUAL

Method of Investigation: ASTM D 1452-80

Sheet 6 of 6

Project: Nuclear Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location 20' E of

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6	6/12	12/18	18/24	Description	Notes
120		SS	19	27	25	Abundant gravel (upper 12" of sample) subrounded grey, white, black gravelly till, poorly sorted gravelly till, poorly sorted.	-120-140 gravelly clay sandy gravel
				31			
125			20	60	101	Grading from coarse sand to fine silty sand	-124.5 Inc. fines
130			21	156/	115	Sandy till - grey silty, sandy gravelly clay, silty at top grading to clayey silty fine to coarse sand, occasional fine gravel, no plasticity, crumbles easily, damp	130.8' Sand and Gravel
135			22	150/	3"	Grading to clayey very fine sand increasing content fine to medium gravel - abundant	
140			23	175/	3"		
145			24	100/	4"		-143.1 sand
150			25	140/	4"	Light tan, brown, salt and pepper medium to coarse grained sand with minor clay, soft, moist - saturated homogeneous poorly sorted	
155			26	156/	3"		
						Increasing clay content	-160.9

SP and Gamma Log: 20 mv Top, 0 mv, 80 CPS

Electric Log Normal: 0, 1.0, 5 m, 800 Ω m

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

Started: 12-
Finished: 12-4-83
of 6

Recra Research, I
SUBSURFACE LOG -83-TB-1

Surface Elev. 772.8

Project: Waukegan Hazardous Waste Management Facility
Harbor, Illinois

Location 20' E of MW-2

Log	Sample Type	Sample No.	Blows on Sampler 0 to 6	6 to 12	Description
	SS	27	150/	4"	Gray tan clayey fine sand fine sandy clay
		28	155/	4	Increasing silt content - no plasticity
		29	166/	6	Grey brown clayey silt, silty clay with salt and pepper medium to coarse grained sand, occasional medium gravel, clay very plastic, homogeneous
		30	36	62	Med. - coarse grained sand with clay, salt and pepper, white
			125/	5"	occasional medium gravel.
		31	150/	4"	Predominantly silt/silty sand tan grey clayey silty sand/ clayey sandy silt.
			150/	3"	Silty Clay
			150/	2"	Gray-red mottled silty and clay clayey silt, extremely dense hard dry
			96	150	Red sandy silty clay, very thinly laminated sand lenses

Notes

Gamma Log: top log, 5 mv, 80 CPS
Electric Log Normal: 0, 500Ω m

772.8
Clay
Silty of sandy clay
551.5
175.5
Sand
549.5
183.3
Clay
546.9
186.4
Sand/Gravel
532.2
194.6
Clay

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

Finished: 12-4-83

Sheet 6 of 6

SUBSURFACE LOG B-83-101

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location 20' E of OW

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 to 6 / 6 to 12 / 12 to 18 / 18 to 24	Description
200			S5	160	Grading to coarse gravelly sand.
			S6	42/7 .5"	Weathered/Silurian dolomite grey very soft sandy silt/silty sand, minor clay, friable, moist.
205					Refusal at 202'. Drilled to 205 with wide bit.
					Boring completed to 205' 1:40 p.m. 12/4/83.

Notes

Gamma Log: all link = 5 mv; 0 to 50 CPS

Electric Log Normal: 0 to 800 Ω m

206.6 Bedrock

532.8

530.8

527.8

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

B-133

Date:
Started:
Finished:
Sheet 1 of 6

Hedra Research, [illegible]

SUBSURFACE LOG -83-TB-2

Surface Elev. 754.4

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location East of Keyway - 14' E of bottom of berm on boundary of site 1 and 2

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0-6 / 6-12 / 12-18 / 18-24	Description
10		SS	1	6 / 14 / 15	Grey silty fine-coarse sandy clay, brown nodules, trace fine gravel subrounded-rounded,
20			2	4 / 6 / 8	Increasing silt content
30			3	5 / 10 / 14	Increasing sand content

Notes

Gamma Log: gn Log — 10 mv — 50 CPS

Electric Log Normal: 0 — 800 Ω m

Casing

Gamma

Casing

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

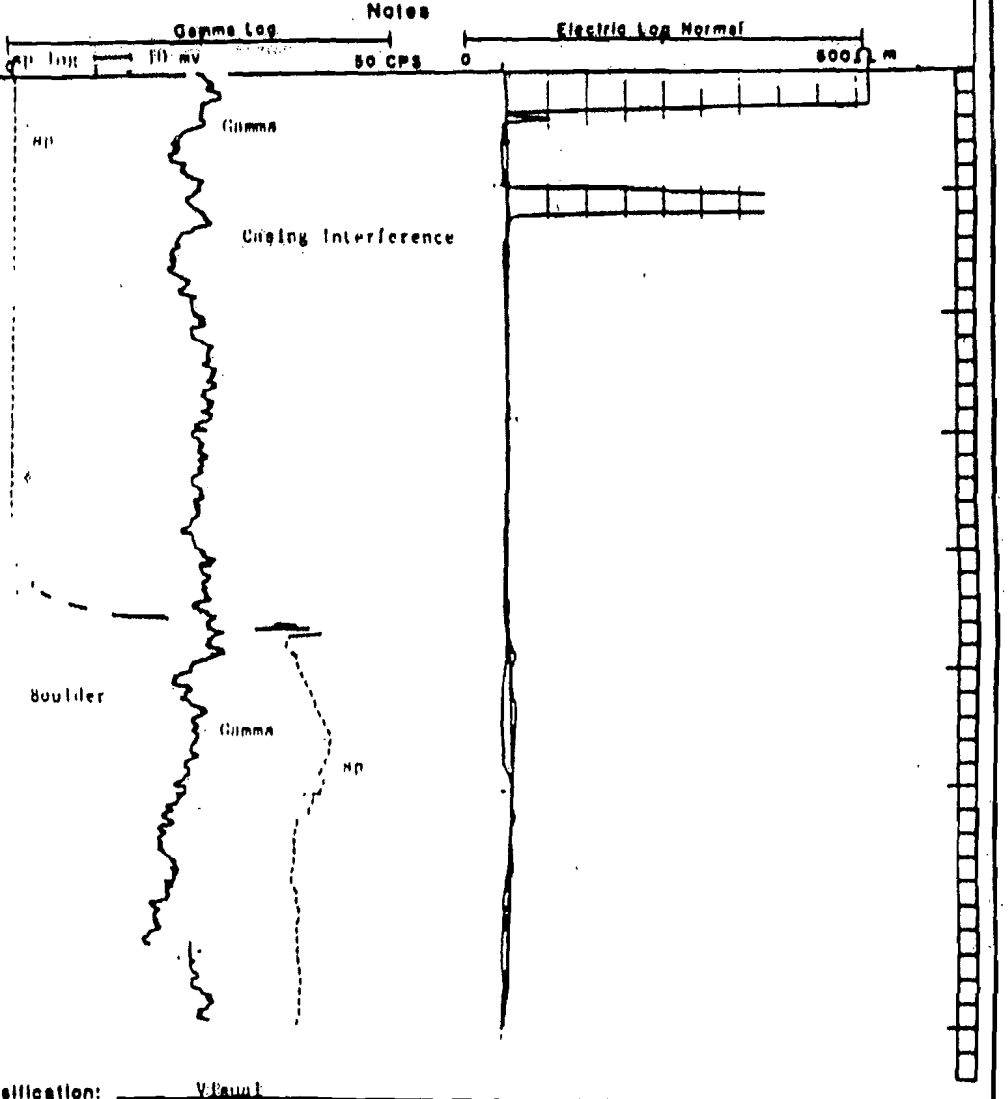
Sheet: [illegible]
of 2 of [illegible]

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location: East of Keyway - [illegible]' of bottom of berm on boundary between Cells 1 and 2

Log	Sample Type	Sample No.	Blows on Sampler 0/6	6/12	12/18	18/24	Description
	SS	4	8	14			
			18				
							710.9
							Grey clayey sand fine to coarse, grained, saturated
							705.0
							49'7" to 49'9" boulder encountered
		5	11	16			Grey slightly sandy, silty clay, tight, stiff, trace fine to coarse sand
			7				
		6	16	33			
			36				
		7	21	39			
			41				
		8	68	31			Drillers note - drilled boulder 66'-67'
			42				
		9	12	21			
			34				
							Drillers note - drilling changes from soft to hard
		10	27	39			
			59				

Notes



Classification: Visual

Method of Investigation: ASTM D 1452-80

B-135

Date:
Started: -83
Finished: 12-4-83
Sheet 3 of 6

Recra Research, Inc.
SUBSURFACE Log B-83-TB-2

Surface Elev. 744.9

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location N of Keyway
14' E of Bottom Berm

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6	6/12	12/18	18/24	Description
80		SS	11	18	24			Boulder encountered at 81.5-82'
				27				
85			12	21	27			Grey silty clay, trace of fine gravel, moderately plastic 90% recovery
				33				
90			13	23	44			
				57				
95			14	33	34			
				42				
100			15	90/4"	84			Drilling from 101-105 Boulder
								no recovery
105			16	100+				Mottled blue green, black, silty fine-medium gravel, 7" thick clay layer 60% recovery
110			17	50	89			Grey slightly clayey fine sandy silt, trace coarse sand to fine gravel, non-plastic, tight
				135/4"				
115			18	48	37			Grey fine sandy silty clay, stiff, slightly plastic, trace of fine gravel
				50				

Notes

Gamma Log: 50 cps
Electric Log Normal: 0 — 500Ω m
SP Log: 10 mv

Boulder
SP
Gamma
Clay
106'
Sand
Fines
Pulse
119'

Classification: Visual
Method of Investigation: ASTM 1452-80

Finished:

of

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location 9 of Keyway
14' E of Bottom of Open

Log	Sample Type	Sample No.	Blows on Sampler 0 / 6 / 12	6 / 12 / 18	Description
	SS	19	14	120	Grey fine sandy silty clay
		20	25 / 91	39	
		21	36 / 86	68	Alternating thinly laminated layers of silt and lighter grey clay and darker grey clay
		22	20 / 45	34	
		23	56 / 60	50	Boulder ripped up during drilling
		24	46 / 93	65	6079
					Small boulder
		25	92	35/4	Increasing sand content
					6019
		26	17/7	2	Mottled brown, grey, green slightly clayey fine to medium sand, occasional fine to medium subrounded to rounded gravel.

Notes

Gamma Log: 0 to 50 CPS; HP Tank; 10 mV

Electric Log Normal: 0 to 800 Ω m

Boring level check

Clay

Resistivity change

147'

Sand

.25m 1.0m .5m

Classification: V (mun)

Method of Investigation: ASTM D 1452-80

Date:
Started: —
Finished: 4-83
Sheet 5 of 6

Recra Research R-83-TB-2

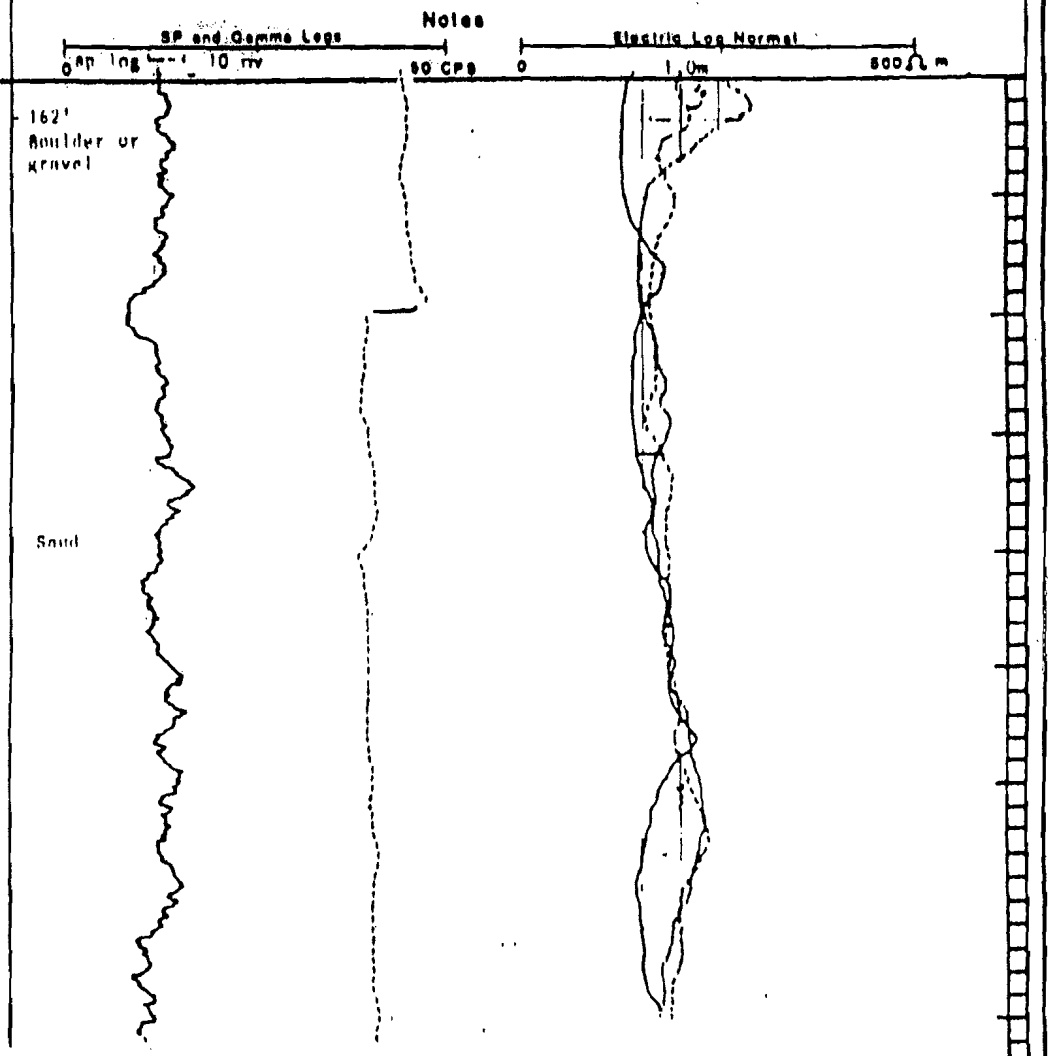
SUBSURFACE L

Surface Elev. 754.9

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location E of Keyway
14' E of Bottom of Berm

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 to 6 / 6 to 12 / 12 to 18 / 18 to 24	Description
60		SS	27	200/ 2	
65			28	190/ 15	Mottled brown tan white fine to medium sand, trace of fine gravel
70			29	200/ 15	Grey brown fine to medium sand dense
75			30	201/ 8	
80			31	200/ 15	
85			32	169/ 15	
190			33	200/ 15	
195					



Classification: Visual

Method of Investigation: ASTM D 1452-80

Finished: 12/4/83

Sht 6 of

SUBSURFACE LOG K-83-TB-2

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location E of Keyway
14' N of Bottom of Berm

Log	Sample Type	Sample No.	Blows on Sampler 0 to 6 / 6 to 12 / 12 to 18 / 18 to 24	Description
	SS	34	2007 15	Grey brown fine to medium sand, dense
				Clayey seam @ 215'
		35	1907 1	Drilled to 218'3" - completed 4"15 p.m. 12/4/83. Rock encountered at 218'3", drilled into rock 219'3" with 400# psi on rods. Dropped rods for free fall of 1' rebounded 1/2'.

Notes

Gamma Log: 0 to 50 CPS

Electric Log Normal: 0 to 500 Ω m; 10 mv; .25m; .5m; 1.0m

207.6

Inc. Fines

536.6

535.6

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

SOIL BORING LOG

BORING R124

DRAFT

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 12426.88 N. 9375.19 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 8/3/93

PROJECT NO.: 06114.10
G.S. ELEV.: 781.50 ft. msl
TOC ELEV.: 783.34 ft. msl
TOTAL DEPTH: 150'

LOGGED BY: JDA
DATE END: 8/25/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE
780 / 0			Borehole advanced to depth of 76 feet with 13" bit and mud rotary methods for placement of 8-inch outer casing. Borehole advanced from 76 to 150 feet with 6" bit and cable tool methods for placement of monitor well. Boring straight drilled without sampling to 6 feet for placement of drill stabilizer.	Boring continuously sampled below 6 feet with 2-foot split spoon sampler.			
775 / 5			Gray silty clay berm material, trace to little sand, stiff-very stiff, plastic, cohesive, damp.	Split Spoon SS-1: 6 - 8' Blows/6": 7,10,14,14	SS-1	6"	24
				SS-2: 8 - 10' Blows/6": 4,6,7,10	SS-2	10"	13
770 / 10				SS-3: 10 - 12' Blows/6": 5,5,9,10	SS-3	6"	14
			Berm material as above.	SS-4: 12 - 14' Blows/6": 9,10,11,16	SS-4	6"	21
765 / 15				SS-5: 14 - 16' Blows/6": 5,6,10,14	SS-5	12"	16
			As above, slight increase in sand content.	SS-6: 16 - 18' Blows/6": 18,9,11,14	SS-6	7"	20
				SS-7: 18 - 20' Blows/6": 16,7,11,15	SS-7	12"	18
760 / 20			At 20', mottled brown/orange/gray berm material, otherwise as above.	SS-8: 20 - 22' Blows/6": 7,9,10,17	SS-8	14"	19
				SS-9: 22 - 24' Blows/6": 5,8,13,17	SS-9	12"	21
755 / 25			As above, mottled rust/brown/gray, very stiff, organic rich seam at 24'.	SS-10: 24 - 26' Blows/6": 9,10,18,20	SS-10	19"	28
				SS-11: 26 - 28' Blows/6": 11,11,14,18	SS-11	8"	25
751.5			As above, mottled brown in color, stiff.	SS-12: 28 - 30' Blows/6": 6,8,4,8	SS-12	6"	12
750 / 30			At 30', rusty brown silty clay, with sand, trace gravel, gray silt partings, very stiff-hard, cohesive, plastic, damp, (weathered upper till). As above, brown in color, slightly plastic, very hard.	SS-13: 30 - 32' Blows/6": 6,15,22,32	SS-13	18"	37
				SS-14: 32 - 34' Blows/6": 20,46,62,64 Jar-1 collected at 32'.	SS-14	18"	97
745 / 35				SS-15: 34 - 36' Blows/6": 16,32,38,38	SS-15	18"	70
				SS-16: 36 - 38' Blows/6": 21,[illegible]d,23,43	SS-16	22"	43

8" ID steel outer casing installed to depth of 76'. 2" ID stainless steel casing and 10-foot 0.010-slot screen installed at depth of 148 feet.

SOIL BORING LOG

BORING R124

DRAFT

ROJECT: MONITOR WELL REPLACEMENT
LIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
RID COORDINATES: 12426.88 N. 9375.19 E.
RILLING METHOD: Mud Rotary and Cable Tool Methods
ONTRACTOR: Aquadrill Well Drilling
INAL WATER LEVEL: T.O.C.:
ATES - DATE START: 8/3/93

PROJECT NO.: 06114.10
G.S. ELEV.: 781.50 ft. msl
TOC ELEV.: 783.34 ft. msl
TOTAL DEPTH: 150'

LOGGED BY: JDA
DATE END: 8/25/93

EVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
			Till as above, slightly higher clay content, more plastic.	SS-17: 38 - 40' Blows/6": 17,28,44,33	SS-17	18"	72
60				SS-18: 40 - 42' Blows/6": 16,27,30,38	SS-18	18"	57
740		731.5	At 42.2', gray silty clay till, trace sand, very plastic, very stiff-hard, damp, (unweathered upper till).	SS-19: 42 - 44' Blows/6": 10,20,22,20	SS-19	24"	42
45			As above, trace gravel, very stiff.	SS-20: 44 - 46' Blows/6": 7,11,11,20	SS-20	23"	22
735				SS-21: 46 - 48' Blows/6": 16,8,10,14	SS-21	18"	18
			As above, dry 1/8" silt seam at 48.6'.	SS-22: 48 - 50' Blows/6": 7,8,16,22	SS-22	22"	24
50				SS-23: 50 - 52' Blows/6": 8,8,12,24	SS-23	18"	20
730			As above, slight increase in sand content.	SS-24: 52 - 54' Blows/6": 7,8,13,24 Jar-2 collected at 52'.	SS-24	24"	21
55				SS-25: 54 - 56' Blows/6": 13,14,24,59	SS-25	24"	38
725				SS-26: 56 - 58' Blows/6": 10,18,20,40	SS-26	24"	38
			Till as above.	SS-27: 58 - 60' Blows/6": 8,10,14,26	SS-27	24"	24
60				SS-28: 60 - 62' Blows/6": 8,12,22,60	SS-28	24"	34
720			As above, trace sand, sparse gravel, very plastic, increase in silt content, hard.	SS-29: 62 - 64' Blows/6": 17,36,42,54	SS-29	14"	78
			As above, sand and gravel content increase.	SS-30: 64 - 66' Blows/6": 10,16,26,50	SS-30	24"	41
65			Moist-wet silt seams within till between 66 and 68'.	SS-31: 66 - 68' Blows/6": 10,16,27,33	SS-31	12"	43
715		718.2	At 68.26', 3" seam of gray very fine silty sand.	SS-32: 68 - 70' Blows/6": 12,17,19,40	SS-32	10"	36
70			At 68.5', gray very silty clay/clayey silt, with sand, trace gravel, damp.	SS-33: 70 - 72' Blows/6": 10,18,20,36	SS-33	22"	38
				Sample interval 72 - 74' overdrilled.			

8" ID steel outer casing installed to depth of 76'. 2" ID stainless steel casing and 10-foot 0.010-slot screen installed at depth of 148 feet.

SOIL BORING LOG

BORING R124

DRAFT

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 12426.88 N. 9375.19 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 8/3/93

PROJECT NO.: 06114.10
G.S. ELEV.: 781.50 ft. msl
TOC ELEV.: 783.34 ft. msl
TOTAL DEPTH: 150'

LOGGED BY: JDA
DATE END: 8/25/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE
75			TB as above, hard.	SS-34: 74 - 76' Blows/6": 12,26,100/6"	SS-34	24"	126
705			8-inch outer steel casing installed to depth of 76' (706.50 ft. msl).	SS-35: 76 - 78' 6,17,24,36	SS-35	24"	41
			As above, slightly moist, some cobbles, hard-very hard.	SS-36: 78 - 80' Blows/6": 10,18,100/6"	SS-36	22"	118
80				SS-37: 80 - 82' Blows/6": 10,31,36,43	SS-37	24"	67
700			Gray silty clay/clayey silt till as above.	SS-38: 82 - 84' Blows/6": 18,36,47,100/6"	SS-38	24"	83
85		695.5		SS-39: 84 - 86' Blows/6": 10,25,37,50	SS-39	22"	62
695			At 86.9', gray sandy silty clay, slightly moist-moist, cohesive, hard-very hard, flower till.	SS-40: 88 - 88' Blows/6": 22,30,100/6"	SS-40	12"	NA
				SS-41: 88 - 90' Blows/6": 18,32,40,48	SS-41	24"	72
90		691.0		SS-42: 90 - 92' Blows/6": 18,29,40,100/6"	SS-42	24"	69
690			At 90.5', 1" seam of moist light brown silt, at 90.6' becomes brown clayey silt, trace sand, sparse gravel. Gray in color below 93'.	SS-43: 92 - 94' Blows/6": 16,24,100/6"	SS-43	12"	NA
				SS-44: 94 - 96' Blows/6": 10,18,36,50	SS-44	24"	52
95		685.0		SS-45: 96 - 98' Blows/6": 18,100/6"	SS-45	12"	NA
685			At 96.5', gray silty clay, sparse sand, plastic, very stiff-hard.	SS-46: 98 - 100' Blows/6": 100/5"	SS-46	5"	NA
			As above, increase in sand and gravel content.	SS-47: 100 - 102' Blows/6": 21,50,100/6"	SS-47	18"	150
100		679.5		SS-48: 102 - 104' Blows/6": 15,28,37,50	SS-48	18"	65
680			At 102', gray fine sandy silt with clay, cohesive, firm, slightly plastic to plastic.	SS-49: 104 - 106' Blows/6": 16,30,100/6"	SS-49	10"	NA
			At 102.5', Gray clay with silt, sparse sand, very plastic, cohesive, very stiff-hard.	SS-50: 106 - 108' Blows/6": 10,20,34,49	SS-50	24"	54
105		675.8		SS-51: 108 - 110' Blows/6": 30,100/6"	SS-51	12"	NA
675			At 105.7', brown very fine sandy silt, wet.	SS-52: 110 - 112' Blows/6": 18,100/6"	SS-52	6"	NA
			At 106', brown sandy clay, trace gravel, very stiff, plastic, cohesive, moist.				
110							

8" ID steel outer casing installed to depth of 76'. 2" ID stainless steel casing and 10-foot 0.010-slot screen installed at depth of 148 feet.

SOIL BORING LOG

BORING R124

DRAFT

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 12426.88 N. 9375.19 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 8/3/93

PROJECT NO.: 06114.10
G.S. ELEV.: 781.50 ft. msl
TOC ELEV.: 783.34 ft. msl
TOTAL DEPTH: 150'

LOGGED BY: JDA
DATE END: 8/25/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE
70			Till as above, gray in color.	SS-63: 112 - 114' Blows/6": 19,100/8"	SS-63	12"	NA
115				SS-64: 114 - 116' Blows/6": 23,100/8"	SS-64	6"	NA
665				SS-65: 116 - 118' Blows/6": 24,100/6"	SS-65	0"	NA
			Till as above.	SS-66: 118 - 120' Blows/6": 27,100/8"	SS-66	12"	NA
120				SS-67: 120 - 122' Blows/6": 20,42,100/8"	SS-67	18"	142
660				SS-68: 122 - 124' Blows/6": 28,40,100/6"	SS-68	17"	NA
			Till as above.	SS-69: 126 - 126' Blows/6": 38,100/4"	SS-69	0"	NA
125				SS-60: 126 - 128' Blows/6": 23,40,100/6"	SS-60	18"	140
655			Gray silty clay till as above, sparse sand and gravel, hard-very hard.	SS-61: 128 - 130' Blows/6": 18,36,100/6"	SS-61	18"	136
130				SS-62: 130 - 132' Blows/6": 20,48,100/6"	SS-62	18"	148
650				SS-63: 132 - 134' Blows/6": 23,100/8"	SS-63	12"	NA
		649.5					
135			At 134', laminated gray silt and clay. At 134.5', alternating seams of dense and wet very fine sandy silt with clay and laminated silt/clay. At 136', gray laminated silt and clay, hard, very cohesive, plastic, damp.	SS-64: 134 - 136' Blows/6": 38,38,100/6"	SS-64	17"	138
645				SS-65: 136 - 138' Blows/6": 20,32,100/6"	SS-65	18"	132
				SS-66: 138 - 140' Blows/6": 26,32,60,100	SS-66	24"	92
		641.6					
140			At 139.5', very fine sandy silt with clay grading to very fine silty sand, saturated.	SS-67: 140 - 142' Blows/6": 10,18,43,100	SS-67	24"	82
640			At 140.8', laminated gray silt and clay.				
		639.7	At 141.5', saturated silty fine sand, slightly clayey and cohesive below 142'.	SS-68: 142 - 144' Blows/6": 25,100/6"	SS-68	12"	NA
145				SS-69: 144 - 146' Blows/6": 36,97,100/6"	SS-69	18"	197
		635.5					
635			At 146', saturated fine-coarse sand, slightly cohesive-loose.	SS-70: 148 - 148' Blows/0": 100/24"	SS-70	24"	NA

8" ID steel outer casing installed to depth of 76'. 2" ID stainless steel casing and 10-foot 0.010-slot screen installed at depth of 148 feet.

SOIL BORING LOG

BORING R124

DRAFT

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 12426.88 N. 9375.19 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 8/3/93

PROJECT NO.: 06114.10
G.S. ELEV.: 781.50 ft. msl
TOC ELEV.: 783.34 ft. msl
TOTAL DEPTH: 150'

LOGGED BY: JDA
DATE END: 8/25/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
150 / 630		6330	At 148.5', grey silty clay till. Total sampled depth = 150 feet. Total drilled depth = 148 feet.	SS-71: 148 - 150' Blows/6": 26,70,100/6" 2" ID 316 Stainless Steel screen set from 644.78 to 634.78 ft. msl. Slot size: 0.010".	SS-71	16"	170
155 / 625							
160 / 620							
165 / 615							
170 / 610							
175 / 605							
180 / 600							
185							

8" ID steel outer casing installed to depth of 76'. 2" ID stainless steel casing and 10-foot 0.010-slot screen installed at depth of 148 feet.

SOIL BORING LOG

DRAFT

BORING R126

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11851.36 N. 9375.92 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/23/93

PROJECT NO.: 06114.10
G.S. ELEV.: 803.00 ft. msl
TOC ELEV.: 807.01 ft. msl
TOTAL DEPTH: 156'

LOGGED BY: RCC
DATE END: 8/20/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
0			Borehole advanced to depth of 94 feet with 13" bit and mud rotary methods for placement of 8-inch outer casing. Borehole advanced from 94 to 156 feet with 6" bit and cable tool methods for placement of monitor well. Boring straight drilled without sampling to 8 feet for placement of drill stabilizer. Berm material composed of recompacted clay.	Borings continuously sampled below 8 feet with 2-foot split spoon sampler.			
800			Recompacted grayish brown silty clay berm material, trace sand, trace gravel, damp-moist.	Split Spoon SS-1: 6 - 8' Blows/6": 7,19,14,18	SS-1	9"	33
5				SS-2: 8 - 10' Blows/6": 3,7,10,10	SS-2	10"	17
795				SS-3: 10 - 12' Blows/6": 8,8,12,13	SS-3	0"	20
10			Berm material as above, predominantly gray in color, little brown mottling.	SS-4: 12 - 14' Blows/6": 6,8,8,12	SS-4	18"	16
790				SS-5: 14 - 16' Blows/6": 10,10,12,10	SS-5	0"	22
15				SS-6: 16 - 18' Blows/6": 6,8,12,10	SS-6	0"	20
785			As above	SS-7: 18 - 20' Blows/6": 5,5,8,9	SS-7	8"	13
20				SS-8: 20 - 22' Blows/6": 6,3,2,4	SS-8	5"	5
780			As above, slight brownish tint, some Fe staining, trace-little sand.	SS-9: 22 - 24' Blows/6": 5,8,10,10	SS-9	18"	18
25			Predominantly grayish brown in color, abundant Fe staining.	SS-10: 24 - 26' Blows/6": 7,9,11,11	SS-10	17"	20
775				SS-11: 26 - 28' Blows/6": 2,4,7,8	SS-11	13"	11
30			Few scraps of paper coming up with return flow of drilling mud.	SS-12: 28 - 30' Blows/6": 3,3,6,8	SS-12	21"	9
770			As above, brownish gray becoming gray below 31', trace-little sand, trace gravel.	SS-13: 30 - 32' Blows/6": 3,4,8,11	SS-13	18"	12
35				SS-14: 32 - 34' Blows/6": 8,9,12,18	SS-14	21"	21
			As above, brown mottling and Fe staining.	SS-15: 34 - 36' Blows/6": 4,12,15,15	SS-15	19"	27
				SS-16: 36 - 38' Blows/6": 3,5,7 11	SS-16	24"	18

8" ID steel outer casing installed to depth of 94'. 2" ID stainless steel casing and 10-foot 0.010-slot screen installed at depth of 156 feet.

SOIL BORING LOG

BORING R126

DRAFT

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11851.36 N. 9375.92 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/23/93

PROJECT NO.: 06114.10
G.S. ELEV.: 803.00 ft. msl
TOC ELEV.: 807.01 ft. msl
TOTAL DEPTH: 156'

LOGGED BY: RCC
DATE END: 8/20/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
765				SS-17: 38 - 40' Blows/6": 5,5,7,7	SS-17	3"	12
40				SS-18: 40 - 42' Blows/6": 4,8,8,10	SS-18	0"	16
760				SS-19: 42 - 44' Blows/6": 11,26,19,34	SS-19	0"	44
45			Gray and brown recompacted clay berm material.	SS-20: 44 - 46' Blows/6": 10,26,20,22	SS-20	7"	46
				SS-21: 46 - 48' Blows/6": 15,32,51,57 Jar-1 collected at 48'.	SS-21	2"	83
755			As above.	SS-22: 48 - 50' Blows/6": 13,25,28,30	SS-22	0"	53
50			At 50', brown silty clay, trace sand, trace gravel, damp-slightly moist, plastic, very stiff, (natural weathered upper till).	SS-23: 50 - 52' Blows/6": 7,31,23,30 Jar-2 collected at 51'.	SS-23	17"	54
750				SS-24: 52 - 54' Blows/6": 5,16,19,38	SS-24	0"	35
55			Weathered till as above.	SS-25: 54 - 56' Blows/6": 8,18,29,24	SS-25	7"	47
				SS-26: 56 - 58' Blows/6": 10,20,23,23	SS-26	0"	43
745			At 58', gray silty clay, trace sand, trace gravel, damp-slightly moist, plastic, very stiff (unweathered upper till).	SS-27: 58 - 60' Blows/6": 6,12,22,30 Jar-3 collected at 58.5'.	SS-27	13"	34
60				SS-28: 60 - 62' Blows/6": 10,13,19,21	SS-28	0"	32
740			Till as above, very stiff.	SS-29: 62 - 64' Blows/6": 10,20,20,30	SS-29	7"	40
65				SS-30: 64 - 66' Blows/6": 14,27,23,27	SS-30	12"	50
				SS-31: 66 - 68' Blows/6": 18,24,36,43	SS-31	13"	60
735			As above, large gravel in sampler causing high blow counts.	SS-32: 68 - 70' Blows/6": 24,46,89,40	SS-32	12"	134
70				SS-33: 70 - 72' Blows/6": 10,37,28,46	SS-33	13"	63
730				SS-34: 72 - 74' Blows/6": 7,14,23,32	SS-34	6"	37

8" ID steel outer casing installed to depth of 94'. 2" ID stainless steel casing and 10-foot 0.010-slot screen installed at depth of 156 feet.

SOIL BORING LOG

BORING R126

DRAFT

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11851.36 N. 9375.92 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/23/93

PROJECT NO.: 06114.10
G.S. ELEV.: 803.00 ft. msl
TOC ELEV.: 807.01 ft. msl
TOTAL DEPTH: 156'

LOGGED BY: RCC
DATE END: 8/20/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
75				SS-36: 74 - 76' Blows/6": 12,17,18,30	SS-36	0"	35
			Gray silty clay till as above, trace-little sand, trace gravel, slightly moist, plastic, stiff to very stiff.	SS-38: 78 - 78' Blows/6": 8,25,30,26 Jar-4 collected at 77'.	SS-38	22"	55
725				SS-37: 78 - 80' Blows/6": 10,15,25,40	SS-37	6"	40
80				SS-38: 80 - 82' Blows/6": 13,18,34,59	SS-38	0"	49
				SS-39: 82 - 84' Blows/6": 8,18,39,33	SS-39	0"	57
720				SS-40: 84 - 86' Blows/6": 9,17,34,41	SS-40	0"	51
85			Gray till as above.	SS-41: 86 - 88' Blows/6": 17,34,46,40	SS-41	6"	80
715				SS-42: 88 - 90' Blows/6": 8,17,30,34	SS-42	8"	47
90				SS-43: 90 - 92' Blows/6": 8,26,28,42 Jar-5 collected at 91'.	SS-43	24"	54
			8-inch outer casing installed to depth of 94' (709.00 ft. msl).	SS-44: 92 - 94' Blows/6": 9,22,36,44	SS-44	0"	58
710			Gray silty clay till as above, very stiff.	SS-45: 94 - 96' Blows/6": 9,22,30,38	SS-45	14"	52
95				SS-46: 96 - 98' Blows/6": 10,21,20,30	SS-46	14"	41
705				SS-47: 98 - 100' Blows/6": 16,28,36,48	SS-47	7"	82
100			Till as above, thin (<1/4") very moist-wet silt seam at 100.3'.	SS-48: 100 - 102' Blows/6": 12,23,29,38	SS-48	20"	52
			At 102', brownish gray silty clay, similar than above, increase in sand and gravel content, very stiff-hard, damp to slightly moist, (lower till). As above, slightly plastic.	SS-49: 102 - 104' Blows/6": 13,30,45,100 Jar-6 collected at 103'.	SS-49	22"	75
700				SS-50: 104 - 106' Blows/6": 17,32,40,50	SS-50	18"	72
105				SS-51: 106 - 108' Blows/6": 10,27,32,47	SS-51	21"	59
695			Gray silty clay as above, trace sand, sparse gravel.	SS-52: 108 - 110' Blows/6": 14,30,100/6"	SS-52	18"	NA
110			At 110', grey clayey silt, trace-little sand, trace gravel, moist, slightly	SS-53: 110 - 112' Blows/6": 18,25,28,30	SS-53	24"	53

8" ID steel outer casing installed to depth of 94'. 2" ID stainless steel casing and 10-foot 0.010-slot screen installed at depth of 156 feet.

SOIL BORING LOG

BORING R126

DRAFT

ROJECT: MONITOR WELL REPLACEMENT
LIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
RID COORDINATES: 11851.36 N. 9375.92 E.
RILLING METHOD: Mud Rotary and Cable Tool Methods
ONTRACTOR: Aquadrill Well Drilling
INAL WATER LEVEL: T.O.C.:
ATES - DATE START: 7/23/93

PROJECT NO.: 06114.10
G.S. ELEV.: 803.00 ft. msl
TOC ELEV.: 807.01 ft. msl
TOTAL DEPTH: 156'

LOGGED BY: RCC
DATE END: 8/20/93

EVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
690 / 115			plastic, very stiff-hard.	Jar-7 collected at 111'.			
			As above, sand and gravel content increases, moist-very moist, very stiff to hard.	SS-54: 112 - 114' Blows/6": 22,18,100/6"	SS-54	6"	118
				SS-55: 114 - 116' Blows/6": 22,100/5"	SS-55	0"	NA
685 / 120			At 116', brownish gray silty clay, little sand, trace gravel, slightly moist, very stiff to hard, slightly plastic.	SS-56: 116 - 118' Blows/6": 28,32,100/4"	SS-56	4"	NA
				SS-57: 118 - 120' Blows/6": 37,100/6" Jar-8 collected at 118'.	SS-57	12"	NA
				SS-58: 120 - 122' Blows/6": 39,100/6"	SS-58	12"	NA
680 / 125				SS-59: 122 - 124' Blows/6": 21,100/5"	SS-59	3"	NA
			Brownish gray till as above, increase in gravel content.	SS-60: 124 - 126' Blows/6": 17,29,40,47	SS-60	22"	69
675 / 130			As above, much softer and more plastic below 128.5'.	SS-61: 126 - 128' Blows/6": 20,28,32,37 Jar-9 collected at 127'.	SS-61	24"	60
				SS-62: 128 - 130' Blows/6": 12,13,20,28	SS-62	23"	33
			Till as above, stiff below 130.5'.	SS-63: 130 - 132' Blows/6": 12,21,22,31	SS-63	21"	33
670 / 135			As above, very stiff-hard, slightly plastic.	SS-64: 132 - 134' Blows/6": 38,100/6"	SS-64	8"	NA
				SS-65: 134 - 136' Blows/6": 26,43,100/6"	SS-65	6"	143
				SS-66: 136 - 138' Blows/6": 34,56,100/5"	SS-66	2"	156
665 / 140				SS-67: 138 - 140' Blows/6": 46,100/5"	SS-67	3"	NA
			Till as above, little sand, little gravel, very stiff to hard, slightly plastic, slightly moist.	SS-68: 140 - 142' Blows/6": 20,32,44,100/4" Jar-10 collected at 141'.	SS-68	21"	76
660 / 145				SS-69: 142 - 144' Blows/6": 36,20,41,100	SS-69	10"	61
				SS-70: 144 - 146' Blows/6": 18,30,36,49	SS-70	22"	66
655				SS-71: 146 - 148' Blows/6": 18,33,100/6"	SS-71	18"	133

8" ID steel outer casing installed to depth of 94'. 2" ID stainless steel casing and 10-foot 0.010-slot screen installed at depth of 156 feet.

SOIL BORING LOG

DRAFT

BORING R126

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11851.36 N. 9375.92 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/23/93

PROJECT NO.: 06114.10
G.S. ELEV.: 803.00 ft. msl
TOC ELEV.: 807.01 ft. msl
TOTAL DEPTH: 156'

LOGGED BY: RCC
DATE END: 8/20/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
150 / 650			At 148.5', gray with brownish tint clayey silt, Hard, damp, wet.	SS-72: 148 - 160' Blows/6": 30,100/6"	SS-72	12"	NA
				SS-73: 150 - 152' Blows/6": 35,100/6"	SS-73	1"	NA
			At 152', gray very silty fine sand/sandy silt, damp, wet.	SS-74: 152 - 154' Blows/6": 50,100/5" Jar-11 collected at 152'.	SS-74	3"	NA
155 / 645			At 154', alternating seams (1 - 2") of wet silt, fine sand and very moist sandy clay.	SS-75: 154 - 156' Blows/6": 20,37,100/5" Jar-12 collected at 154'.	SS-75	14"	NA
160 / 640			Total sampled depth = 156 feet. Total drilled depth = 156 feet.	2" ID 316 Stainless Steel screen set from 658.38 to 648.38 ft. msl. Slot size: 0.010".			
165 / 635							
170 / 630							
175 / 625							
180 / 620							
185							

8" ID steel outer casing installed to depth of 94'. 2" ID stainless steel casing and 10-foot 0.010-slot screen installed at depth of 156 feet.

SOIL BORING LOG

BORING R128

DRAFT

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 12119.26 N. 9372.78 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/27/93

PROJECT NO.: 06114.10
G.S. ELEV.: 796.30 ft. msl
TOC ELEV.: 797.11 ft. msl
TOTAL DEPTH: 150'

LOGGED BY: RCC,JDA
DATE END: 8/23/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE
0			Borehole advanced to depth of 86 feet with 13" bit and mud rotary methods for placement of 8-inch outer casing. Borehole advanced from 86 to 149 feet with 6" bit and cable tool methods for placement of monitor well. Boring straight drilled without sampling to 6 feet for placement of drill stabilizer.	Boring continuously sampled below 6 feet with 2-foot split spoon sampler.			
795							
5							
790			Reconpacted grey silty clay loam material, trace sand, trace gravel, plastic, slightly moist, stiff to very stiff.	Split Spoon SS-1: 6 - 8' Blows/6": 5,5,14,16	SS-1	10"	23
				SS-2: 8 - 10' Blows/6": 3,7,12,12	SS-2	3"	19
10				SS-3: 10 - 12' Blows/6": 3,14,7,16	SS-3	14"	21
785			As above, slightly more plastic.	SS-4: 12 - 14' Blows/6": 8,7,12,18	SS-4	8"	19
				SS-5: 14 - 16' Blows/6": 13,10,12/10	SS-5	4"	22
15				SS-6: 16 - 18' Blows/6": 5,6,10,16	SS-6	7"	16
780			As above, abundant brown mottling below 19.5', stiff.	SS-7: 18 - 20' Blows/6": 14,12,15,16	SS-7	12"	27
20			Brownish grey in color, otherwise as above.	SS-8: 20 - 22' Blows/6": 11,11,12,8	SS-8	14"	23
775			As above, stiff.	SS-9: 22 - 24' Blows/6": 5,6,8,8	SS-9	3"	13
				SS-10: 24 - 26' Blows/6": 4,5,6,5	SS-10	10"	11
25							
770			Grey silty clay loam material, firm, very plastic, slightly moist. Grayish brown below 28'.	SS-11: 26 - 28' Blows/6": 5,6,9,11	SS-11	14"	14
				SS-12: 28 - 30' Blows/6": 5,7,9,7	SS-12	16"	16
30				SS-13: 30 - 32' Blows/6": 6,7,9,9	SS-13	7"	16
765			Loam material as above.	SS-14: 32 - 34' Blows/6": 7,10,11,9	SS-14	10"	21
				SS-15: 34 - 36' Blows/6": 5,8,10,11	SS-15	14"	18
35							
760			As above, brownish grey in color, firm/stiff.	SS-16: 36 - 38' Blows/6": 5,7,8,10	SS-16	14"	15

8" ID steel outer casing installed to depth of 86'. 2" ID stainless steel casing and 5-foot 0.010-slot screen installed at depth of 149 feet.

SOIL BORING LOG

BORING R128

DRAFT

)J T: MONITOR WELL REPLACEMENT
ENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
ID COORDINATES: 12119.26 N. 9372.78 E.
LLING METHOD: Mud Rotary and Cable Tool Methods
NTRACTOR: Aquadrill Well Drilling
AL WATER LEVEL: T.O.C.:
TES - DATE START: 7/27/93

PROJECT NO.: 06114.10
G.S. ELEV.: 796.30 ft. msl
TOC ELEV.: 797.11 ft. msl
TOTAL DEPTH: 150'

LOGGED BY: RCC,JDA
DATE END: 8/23/93

ATION / PTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
				SS-17: 38 - 40' Blows/6": 9,11,10,20	SS-17	7"	21
40				SS-18: 40 - 42' Blows/6": 2,4,8,9 Jar-1 collected at 41'.	SS-18	18"	13
			As above, wood fragments between 42 and 42.5', "decayed" odor associated with wood fragements. wash zone.	SS-19: 42 - 44' Blows/6": 4,4,4,8 Jar-2 collected at 42'.	SS-19	12"	8
45			As above, weak odor.	SS-20: 44 - 46' Blows/6": 4,9,12,11	SS-20	6"	21
			At 46', grayish brown silty clay, trace to little sand, trace gravel, slightly moist, plastic, stiff (natural weathered upper till). Brown in color below 48', very stiff to hard.	SS-21: 46 - 48' Blows/6": 5,9,14,20	SS-21	22"	23
				SS-22: 48 - 50' Blows/6": 5,29,53,83	SS-22	21"	82
50				SS-23: 50 - 52' Blows/6": 12,27,51,61	SS-23	21"	78
			As above, some gray mottling below 52.5'.	SS-24: 52 - 54' Blows/6": 8,24,29,48 Jar-3 collected at 53'.	SS-24	23"	53
55			Gray with brown mottling. Fe staining, otherwise as above.	SS-25: 54 - 56' Blows/6": 8,19,30,74	SS-25	13"	49
				SS-26: 56 - 58' Blows/6": 8,22,36,41	SS-26	20"	58
			At 58', gray silty clay till,trace to little sand, trace gravel, slightly moist, plastic, stiff-very stiff, (unweathered upper till). Till as above, very plastic, slightly moist-moist.	SS-27: 58 - 60' Blows/6": 6,13,43,47 Jar-4 collected at 59'.	SS-27	24"	82
60				SS-28: 60 - 62' Blows/6": 9,13,20,29	SS-28	24"	33
				SS-29: 62 - 64' Blows/6": 7,14,22,37	SS-29	24"	36
65				SS-30: 64 - 66' Blows/6": 6,9,22,29	SS-30	24"	31
				SS-31: 66 - 68' Blows/6": 6,12,19,25	SS-31	24"	31
				SS-32: 68 - 70' Blows/6": 7,9,15,28	SS-32	24"	24
70			Till as above.	SS-33: 70 - 72' Blows/6": 8,15,21,36 Jar-5 collected at 71'.	SS-33	24"	36
				SS-34: 72 - 74' Blows/6": 6,15,21,31	SS-34	24"	36

ID steel outer casing installed to depth of 86'. 2" ID stainless steel
ing and 5-foot 0.010-slot screen installed at depth of 149 feet.

SOIL BORING LOG

BORING B128

DRAFT

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 12119.26 N. 9372.78 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/27/93

PROJECT NO.: 06114.10
G.S. ELEV.: 796.30 ft. msl
TOC ELEV.: 797.11 ft. msl
TOTAL DEPTH: 150'

LOGGED BY: RCC,JDA
DATE END: 8/23/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE
75			Till as above, not as stiff.	SS-36: 74 - 76' Blows/6": 5,8,10,20	SS-36	24"	18
720				SS-38: 78 - 78' Blows/6": 17,38,28,25	SS-38	24"	66
				SS-37: 78 - 90' Blows/6": 9,19,29,41	SS-37	24"	48
80				SS-38: 80 - 82' Blows/6": 9,17,21,19	SS-38	24"	38
715			Grey silty clay till as above.	SS-39: 82 - 84' Blows/6": 9,10,16,21	SS-39	24"	26
				SS-40: 84 - 86' Blows/6": 6,15,27,34 Jar-6 collected at 84'.	SS-40	24"	42
85							
710			8-inch outer casing installed to depth of 86 feet (710.30 ft. msl).	SS-41: 86 - 88' Blows/6": 16,15,13,21	SS-41	18"	28
			Till as above.	SS-42: 88 - 90' Blows/6": 9,13,13,20	SS-42	18"	26
90				SS-43: 90 - 92' Blows/6": 13,18,23,30	SS-43	24"	41
705			At 92', gray with slight brownish tint silty clay, little sand, trace-little gravel, slightly moist, slightly plastic, very stiff (lower till).	SS-44: 92 - 94' Blows/6": 13,23,28,34	SS-44	24"	49
				SS-45: 94 - 96' Blows/6": 16,22,30,40	SS-45	24"	52
95							
700				SS-46: 96 - 98' Blows/6": 17,25,32,48	SS-46	18"	57
			Till as above, very stiff-hard.	SS-47: 98 - 100' Blows/6": 12,25,38,50 Jar-7 collected at 99'.	SS-47	24"	63
100				SS-48: 100 - 102' Blows/6": 16,26,100/6"	SS-48	18"	126
695			As above, increase in silt content with depth, very stiff-hard.	SS-49: 102 - 104' Blows/6": 100/6"	SS-49	6"	NA
				SS-50: 104 - 106' Blows/6": 12,22,20,30 Jar-8 collected at 105'.	SS-50	24"	52
105			At 104.5', brownish gray slightly clayey silt, very dense, wet.				
690			As above, clay content increases with depth.	SS-51: 106 - 108' Blows/6": 10,22,22,24	SS-51	24"	44
			As above, trace sand, trace gravel, moist-very moist, very stiff-hard.	SS-52: 108 - 110' Blows/6": 12,20,24,36 Jar-9 collected at 109'.	SS-52	24"	44
110			At 110', brownish gray silty clay till, little sand, trace-little gravel,	SS-53: 110 - 112' Blows/6": 40,100/6"	SS-53	10"	NA

8" ID steel outer casing installed to depth of 86'. 2" ID stainless steel casing and 5-foot 0.010-slot screen installed at depth of 149 feet.

B-223

SOIL BORING LOG

DRAFT

BORING R128

OJECT: MONITOR WELL REPLACEMENT
IENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
ID COORDINATES: 12119.26 N. 9372.78 E.
ILLING METHOD: Mud Rotary and Cable Tool Methods
)NTRACTOR: Aquadrill Well Drilling
VAL WATER LEVEL: T.O.C.:
ATES - DATE START: 7/27/93

PROJECT NO.: 06114.10
G.S. ELEV.: 796.30 ft. msl
TOC ELEV.: 797.11 ft. msl
TOTAL DEPTH: 150'

LOGGED BY: RCC,JDA
DATE END: 8/23/93

VATION / EPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
5			slightly moist and plastic, very stiff to hard.	SS-64: 112 - 114' Blows/6": 20,32,100/6":	SS-64	16"	132
115			As above, silt content varies.	SS-65: 114 - 116' Blows/6": 16,48,100/6"	SS-65	18"	148
0				SS-66: 116 - 118' Blows/6": 21,32,42,100	SS-66	24"	74
			As above, several sandy zones in matrix.	SS-67: 118 - 120' Blows/6": 10,27,39,48 Jar-10 collected at 119'.	SS-67	24"	66
120				SS-68: 120 - 122' Blows/6": 12,26,36,41	SS-68	20"	62
5				SS-69: 122 - 124' Blows/6": 12,27,100/5"	SS-69	18"	NA
			Till as above.	SS-60: 124 - 126' Blows/6": 10,25,29,50	SS-60	24"	54
70				SS-61: 126 - 128' Blows/6": 14,29,100/4"	SS-61	16"	NA
				SS-62: 128 - 130' Blows/6": 26,30,100/6"	SS-62	8"	130
130			Till as above. Silt content increases below 132'.	SS-63: 130 - 132' Blows/6": 19,42,100/6"	SS-63	18"	142
65				SS-64: 132 - 134' Blows/6": 24,100/5"	SS-64	7"	NA
			Brownish grey till as above, very silty, very stiff-hard.	SS-65: 134 - 136' Blows/6": 28,100/6" Jar-11 collected at 135'.	SS-65	12"	NA
135			As above, predominantly grey in color, increase in sand content.	SS-66: 136 - 138' Blows/6": 20,48,100/6"	SS-66	18"	148
60			Till as above, silt content increases.	SS-67: 138 - 140' Blows/6": 19,36,100/5"	SS-67	3"	NA
140			At 140', alternating seams of grey clay and silt.	SS-68: 140 - 142' Blows/6": 19,100/6" Jar-12 collected at 140'.	SS-68	12"	NA
655			At 142', 4" fine to medium sand with silt, very dense, wet.	SS-69: 142 - 144' Blows/6": 26,32,42,100 Jar-13 collected at 142'.	SS-69	18"	74
			At 142.3', brown silty clay/clayey silt till, very stiff-hard, slightly plastic.	SS-70: 144 - 146' Blows/6": 26,100/2"	SS-70	3"	NA
145			At 143.5', grey very fine silty sand, wet.				
650			At 146', grayish brown silty clay till, sparse sand, very stiff-hard.	SS-71: 146 - 148' Blows/6": 27,100/6"	SS-71	12"	NA
			At 146.8', grey very fine sand and silt, very dense, saturated.				

8" ID steel outer casing installed to depth of 86'. 2" ID stainless steel casing and 5-foot 0.010-slot screen installed at depth of 149 feet.

B-274

SOIL BORING LOG

DRAFT

BORING R128

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 12119.26 N. 9372.78 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/27/93

PROJECT NO.: 06114.10
G.S. ELEV.: 796.30 ft. msl
TOC ELEV.: 797.11 ft. msl
TOTAL DEPTH: 150'

LOGGED BY: RCC,JDA
DATE END: 8/23/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
150 / 645			At 149', brownish gray silty clay till. Total sampled depth = 150 feet. Total drilled depth = 150 feet.	SS-72: 148 - 150' Blows/6": 39,48,100/8" 2" ID 316 Stainless Steel screen set from 652.70 to 647.70 ft. msl. Slot size: 0.010".	SS-72	17"	148
155 / 640							
160 / 635							
165 / 630							
170 / 625							
175 / 620							
180 / 615							
185							

8" ID steel outer casing installed to depth of 86'. 2" ID stainless steel casing and 5-foot 0.010-slot screen installed at depth of 149 feet.

JUL-10-95 MON 9:45

B-284

SOIL BORING LOG

BORING R129 A129

DRAFT

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11618.46 N. 9373.81 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/20/93

PROJECT NO.: 06114.10
G.S. ELEV.: 805.36 ft. msl
TOC ELEV.: 809.76 ft. msl
TOTAL DEPTH: 162.5'

LOGGED BY: RCC
DATE END: 8/21/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
805 / 0			Borehole advanced to depth of 97 feet with 13" bit and mud rotary methods for placement of 8-inch outer casing. Borehole advanced from 97 to 181 feet with 6" bit and cable tool methods for placement of monitor well. Boring straight drilled without sampling to 6 feet for placement of drill stabilizer.	Boring continuously sampled below 6 feet with 2-foot split spoon sampler.			
800 / 5			Recompacted gray silty clay berm material, trace sand, trace gravel, plastic, slightly moist, stiff.	Split Spoon SS-1: 6 - 8' Blows/6": 6,7,13,10	SS-1	6"	20
				SS-2: 8 - 10' Blows/6": 3,7,6,6	SS-2	0"	13
795 / 10				SS-3: 10 - 12' Blows/6": 2,7,10,11	SS-3	8"	17
			Recompacted silty clay as above, some brown mottling below 12'.	SS-4: 12 - 14' Blows/6": 6,7,12,13	SS-4	7"	19
				SS-5: 14 - 16' Blows/6": 6,8,9,9	SS-5	11"	17
790 / 15				SS-6: 16 - 18' Blows/6": 3,4,6,6	SS-6	8"	10
				SS-7: 18 - 20' Blows/6": 3,4,5,8	SS-7	0"	9
785 / 20			Berm material as above, gray in color, no brown mottling below 20'.	SS-8: 20 - 22' Blows/6": 7,8,11,13	SS-8	8"	19
				SS-9: 22 - 24' Blows/6": 6,7,8,9	SS-9	12"	15
				SS-10: 24 - 26' Blows/6": 6,9,8,10	SS-10	13"	17
780 / 25			Berm material as above.	SS-11: 26 - 28' Blows/6": 4,6,8,10	SS-11	18"	14
				SS-12: 28 - 30' Blows/6": 4,6,8,11	SS-12	7"	14
775 / 30				SS-13: 30 - 32' Blows/6": 9,10,9,17	SS-13	10"	19
			bottom casing @ 708.4'	SS-14: 32 - 34' Blows/6": 5,5,8,11	SS-14	17"	13
				SS-15: 34 - 36' Blows/6": 5,8,10,11	SS-15	18"	18
770 / 35			At 36', gray with brown mottling, stiff to very stiff.	SS-16: 36 - 38' Blows/6": 6,10,18,18	SS-16	13"	28

8" ID steel outer casing installed to depth of 97'. 2" ID stainless steel casing and 5-foot 0.010-slot screen installed at depth of 160.5 feet.

SOIL BORING LOG

DRAFT

BORING R129

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11618.46 N. 9373.81 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/20/93

PROJECT NO.: 06114.10
G.S. ELEV.: 805.36 ft. msl
TOC ELEV.: 809.76 ft. msl
TOTAL DEPTH: 162.5'

LOGGED BY: RCC
DATE END: 8/21/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
				SS-17: 38 - 40' Blows/6": 6,7,18,16	SS-17	15"	25
765 - 40			Brown silty clay loam material, very stiff-hard.	SS-18: 40 - 42' Blows/6": 16,31,30,40 Jar-1 collected at 40'.	SS-18	22"	61
				SS-19: 42 - 44' Blows/6": 10,9,25,42	SS-19	23"	34
		761.4					
760 - 45			At 44', brown silty clay, trace-little sand, trace gravel, plastic, slightly moist, very stiff-hard. (weathered upper till).	SS-20: 44 - 46' Blows/6": 16,36,41,52	SS-20	3"	77
				SS-21: 48 - 48' Blows/6": 13,28,52,100/3"	SS-21	3"	78
				SS-22: 48 - 50' Blows/6": 30,40,46,52	SS-22	14"	86
- 50				Sample interval 50 - 52' overdrilled.			
			Weathered till as above.	SS-23: 52 - 54' Blows/6": 16,13,38,49	SS-23	4"	51
			Large gravel in tip of sampler blocking recovery.	SS-24: 54 - 56' Blows/6": 27,67,48,34	SS-24	0"	115
750 - 55			As above.	SS-25: 56 - 58' Blows/6": 20,21,41,45	SS-25	0"	62
			Till as above, brown with slight grayish tint, becomes brownish gray in color below 60'.	SS-26: 58 - 60' Blows/6": 10,55,100/2"	SS-26	8"	NA
745 - 60		743.4		SS-27: 60 - 62' Blows/6": 14,13,29,38	SS-27	3"	47
			At 62', grey silty clay, trace sand, trace gravel, plastic, slightly moist, very stiff (unweathered upper till).	SS-28: 62 - 64' Blows/6": 17,24,26,43 Jar-2 collected at 63'.	SS-28	24"	50
				SS-29: 64 - 66' Blows/6": 12,15,25,31	SS-29	24"	40
740 - 65				SS-30: 66 - 68' Blows/6": 12,20,45,47	SS-30	0"	65
				SS-31: 68 - 70' Blows/6": 12,16,23,29	SS-31	0"	39
735 - 70			Grey till as above.	SS-32: 70 - 72' Blows/6": 3,5,9,33	SS-32	3"	14
				SS-33: 72 - 74' Blows/6": 14,20,30,41	SS-33	8"	50

8" ID steel outer casing installed to depth of 97'. 2" ID stainless steel casing and 5-foot 0.010-slot screen installed at depth of 160.5 feet.

SOIL BORING LOG

DRAFT

BORING R129

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11618.46 N. 9373.81 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/20/93

PROJECT NO.: 06114.10
G.S. ELEV.: 805.36 ft. msl
TOC ELEV.: 809.76 ft. msl
TOTAL DEPTH: 162.5'

LOGGED BY: RCC
DATE END: 8/21/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE
730 / 75				SS-34: 74 - 76' Blows/6": 12,29,29,41	SS-34	24"	58
			Gray silty clay till as above.	SS-35: 76 - 78' Blows/6": 15,38,51,53	SS-35	7"	90
				SS-36: 78 - 80' Blows/6": 12,26,31,56 Jar-3 collected at 78'.	SS-36	3"	57
725 / 80			As above, poor recovery from 78 to 88'. Possibly due to large cobble blocking sampler.	SS-37: 80 - 82' Blows/6": 17,43,48,40	SS-37	0"	91
				SS-38: 82 - 84' Blows/6": 8,23,34,38	SS-38	1"	57
				SS-39: 84 - 86' Blows/6": 12,24,34,54	SS-39	0"	60
720 / 85				SS-40: 88 - 88' Blows/6": 11,39,31,100/4"	SS-40	0"	70
			Gray silty clay till as above, trace to little sand, trace gravel, slightly moist, plastic, stiff.	SS-41: 88 - 90' Blows/6": 11,18,29,42 Jar-4 collected at 89'.	SS-41	22"	47
715 / 90				SS-42: 90 - 92' Blows/6": 11,35,33,39	SS-42	21"	68
				SS-43: 92 - 94' Blows/6": 8,21,34,48	SS-43	24"	55
			Till as above	SS-44: 94 - 96' Blows/6": 10,24,28,46	SS-44	2"	52
710 / 95				SS-45: 96 - 97' Blows/6": 17,36	SS-45	7"	NA
			8-inch steel outer casing installed to depth of 97 feet (708.36 ft. msl).	SS-46: 97 - 99' Blows/6": 24,24,36,32	SS-46	15"	60
				SS-47: 99 - 101' Blows/6": 16,100/6"	SS-47	3"	NA
705 / 100							
			At 101', gray with light brown tint silty clay, little sand, trace-little gravel, slightly moist and plastic, very stiff-hard (lower till). Silt content greater than till above.	SS-48: 101 - 103' Blows/6": 20,32,100/6" Jar-5 collected at 102'.	SS-48	18"	132
				SS-49: 103 - 105' Blows/6": 16,100/6"	SS-49	4"	NA
700 / 105			Till as above, not as stiff.	SS-50: 105 - 107' Blows/6": 17,22,36,41	SS-50	23"	58
				SS-51: 107 - 109' Blows/6": 15,27,32,42	SS-51	13"	59
			Same as above.	SS-52: 109 - 111' Blows/6": 18,26,33,46	SS-52	24"	59
695 / 110							

8" ID steel outer casing installed to depth of 97'. 2" ID stainless steel casing and 5-foot 0.010-slot screen installed at depth of 160.5 feet.

SOIL BORING LOG

DRAFT

BORING R129

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11618.46 N. 9373.81 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/20/93

PROJECT NO.: 06114.10
G.S. ELEV.: 805.36 ft. msl
TOC ELEV.: 809.76 ft. msl
TOTAL DEPTH: 162.5'

LOGGED BY: RCC
DATE END: 8/21/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE
				SS-63: 111 - 113' Blows/6": 17,24,29,36	SS-63	24"	53
			Large gravel in sample.	SS-64: 113 - 115' Blows/6": 22,34,100/6"	SS-64	8"	134
690 / 115			Till as above, slightly softer and more plastic, slightly moist-moist.	SS-65: 115 - 117' Blows/6": 18,30,35,41 Jar-6 collected at 116'.	SS-65	24"	65
			Silt content increases, plasticity and moisture decreases.	SS-66: 117 - 119' Blows/6": 16,25,36,47	SS-66	14"	80
685 / 120				SS-67: 119 - 121' Blows/6": 20,46,100/6"	SS-67	18"	146
			Till as above, very stiff-hard.	SS-68: 121 - 123' Blows/6": 20,50,100/6"	SS-68	18"	150
				SS-69: 123 - 125' Blows/6": 31,100/6"	SS-69	10"	NA
680 / 125			Very stiff brownish gray till as above, app. 1" very moist sandy pocket at 127.25'.	SS-60: 125 - 127' Blows/6": 21,37,42,50	SS-60	22"	79
				SS-61: 127 - 129' Blows/6": 18,30,38,45 Jar-7 collected at 128.5'.	SS-61	24"	68
			At 128.5', app. 1/4" fine clayey sand seam atop gray silty clay till, trace sand, no gravel, slightly moist, plastic, very stiff-hard.	SS-62: 129 - 131' Blows/6": 22,32,43,50	SS-62	24"	87
675 / 130			At 131', brownish gray silty clay till, little sand, trace-little gravel, slightly moist and plastic, very stiff.	SS-63: 131 - 133' Blows/6": 13,26,100/6"	SS-63	18"	126
				SS-64: 133 - 135' Blows/6": 19,42,48,100	SS-64	4"	88
670 / 135			Till as above, very stiff-hard, damp-slightly moist.	SS-65: 136 - 137' Blows/6": 32,100/6"	SS-65	11"	NA
				SS-66: 137 - 139' Blows/6": 100/6"	SS-66	6"	NA
			Till as above, hard.	SS-67: 139 - 141' Blows/6": 100/6" Jar-8 collected at 139'.	SS-67	6"	NA
665 / 140				SS-68: 141 - 143' Blows/6": 31,100/6"	SS-69	12"	NA
				SS-69: 143 - 145' Blows/6": 28,100/6"	SS-69	10"	NA
660 / 145			As above, silt content higher between 145 and 145.5'.	SS-70: 145 - 147' Blows/6": 28,100/6"	SS-70	11"	NA
				SS-71: 147 - 149' Blows/6": 24,100/6"	SS-71	9"	NA

8" ID steel outer casing installed to depth of 97'. 2" ID stainless steel casing and 5-foot 0.010-slot screen installed at depth of 160.5 feet.

SOIL BORING LOG

DRAFT

BORING R129

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11618.46 N. 9373.81 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/20/93

PROJECT NO.: 06114.10
G.S. ELEV.: 805.36 ft. msl
TOC ELEV.: 809.76 ft. msl
TOTAL DEPTH: 162.5'

LOGGED BY: RCC
DATE END: 8/21/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
655 - 150				SS-72: 149 - 151' Blows/6": 45,100/6"	SS-72	10"	NA
		653.9		SS-73: 151 - 153' Blows/6": 48,100/8"	SS-73	12"	NA
			At 151.5', grey with slight brownish tint clayey silt, very dense and moist.	Jar-9 collected at 151.5'.			
			At 152', brownish grey very fine sandy silt, very moist becoming wet below 153'.	SS-74: 153 - 155' Blows/6": 37,48,100/4" Jar-10 collected at 153'.	SS-74	11"	NA
650 - 155		648.4	As above, less sand in matrix.	SS-76: 155 - 157' Blows/6": 28,100/6"	SS-76	12"	NA
			At 157', grey silty fine-coarse sand, little clay, wet.	SS-78: 157 - 159' Blows/6": 42,100/5" Jar-11 collected at 158'.	SS-78	2"	NA
645 - 160		644.4		SS-77: 159 - 161' Blows/6": 38,44,100/6"	SS-77	3"	144
			At 161', brownish grey silty clay till.	SS-78: 161 - 162.5' Blows/6": 25,32,100/5"	SS-78	13"	NA
			Total sampled depth = 162.5 feet. Total drilled depth = 180.5 feet.	2" ID 316 Stainless Steel screen set from 651.30 to 646.30 ft. msl. Slot size: 0.010".			
640 - 165							
635 - 170							
630 - 175							
625 - 180							
- 185							

8" ID steel outer casing installed to depth of 97'. 2" ID stainless steel casing and 5-foot 0.010-slot screen installed at depth of 160.5 feet.

SOIL BORING LOG

BORING R131

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11121.61 N. 9377.73 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/13/93

PROJECT NO.: 06114.10
G.S. ELEV.: 803.20 ft. msl
TOC ELEV.: 808.23 ft. msl
TOTAL DEPTH: 162'

LOGGED BY: CBQ
DATE END: 7/29/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE
0			Borehole advanced to depth of 84 feet with 13" bit and mud rotary methods for placement of 8-inch outer casing. Borehole advanced from 84 to 162 feet with 6" bit and cable tool methods for placement of monitor well. Boring originally drilled without sampling to 6 feet for placement of drill stabilizer.	Boring continuously sampled below 6 feet with 2-foot split spoon sampler.			
800			Recompacted gray silty clay berm material, trace sand, trace gravel, plastic, moist, stiff-very stiff.	Split Spoon SS-1: 6 - 8' Blows/6": 5,8,9,12	SS-1	18"	17
5				SS-2: 8 - 10' Blows/6": 5,13,19,14	SS-2	10"	32
795				SS-3: 10 - 12' Blows/6": 3,5,8,11	SS-3	18"	13
10			Berm material as above, stiff.	SS-4: 12 - 14' Blows/6": 2,6,8,8	SS-4	10"	14
790				SS-5: 14 - 16' Blows/6": 5,6,7,7	SS-5	10"	13
15				SS-6: 16 - 18' Blows/6": 4,2,3,2	SS-6	0"	5
785				SS-7: 18 - 20' Blows/6": 4,7,7,7	SS-7	8"	14
20			Silty clay berm material as above, stiff-very stiff.	SS-8: 20 - 22' Blows/6": 7,6,9,10	SS-8	14"	15
780				CC-9: 22 - 24' Blows/6": 10,15,15,15	SS-9	24"	30
25				SS-10: 24 - 26' Blows/6": 6,6,8,9	SS-10	18"	14
			Berm material as above, ronic brown mottling.	SS-11: 26 - 28' Blows/6": 4,6,6,6	SS-11	18"	12
775				SS-12: 28 - 30' Blows/6": 4,0,0,5	SS-12	18"	12
30				SS-13: 30 - 32' Blows/6": 5,5,8,13	SS-13	18"	17
				SS-14: 32 - 34' Blows/6": 7,8,9,13	SS-14	20"	17
770			Brown berm material as above, some gray mottling, trace sand, trace gravel, plastic, slightly moist-moist, very stiff-hard.	SS-15: 34 - 36' Blows/6": 6,6,8,20	SS-15	20"	16
35				SS-16: 36 - 38' Blows/6": 10,7,31,22	SS-16	24"	38

8" ID steel outer casing installed to depth of 93'. 2" ID stainless steel casing and 5-foot 0.010-slot screen installed at depth of 155 feet.

B-304

SOIL BORING LOG

BORING R131

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11121.61 N. 9377.73 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/13/93

PROJECT NO.: 06114.10
G.S. ELEV.: 803.20 ft. msl
TOC ELEV.: 808.23 ft. msl
TOTAL DEPTH: 162'

LOGGED BY: CBQ
DATE END: 7/29/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE
765				SS-17: 38 - 40' Blows/6": 12,18,22,31	SS-17	20"	40
40			As above, slightly plastic, very stiff.	SS-18: 40 - 42' Blows/6": 13,17,16,22	SS-18	20"	33
				SS-19: 42 - 44' Blows/6": 8,9,9,13	SS-19	24"	18
760				SS-20: 44 - 46' Blows/6": 8,9,14,37	SS-20	24"	23
45				SS-21: 46 - 48' Blows/6": 9,8,16,34	SS-21	12"	24
755			Silty clay berm material as above.	SS-22: 48 - 50' Blows/6": 13,21,33,68	SS-22	20"	54
50				SS-23: 50 - 52' Blows/6": 14,26,28,40	SS-23	18"	54
				SS-24: 52 - 54' Blows/6": 8,12,30,62	SS-24	24"	42
750			As above, some black mottling, few wood fragments.	SS-25: 54 - 56' Blows/6": 27,44,100/6"	SS-25	12"	144
55			717.2				
			At 56', brown silty clay with tan and gray mottling, trace sand, trace gravel, plastic, moist, very stiff-hard (weathered upper till).	SS-26: 58 - 58' Blows/6": 31,30,66,100	SS-26	18"	96
745				SS-27: 58 - 60' Blows/6": 20,48,61,82	SS-27	0"	109
60			As above, slight increase in gravel content.	SS-28: 60 - 62' Blows/6": 13,14,36,43	SS-28	20"	49
				SS-29: 62 - 64' Blows/6": 12,27,27,62	SS-29	0"	54
740				SS-30: 64 - 66' Blows/6": 8,20,20,64	SS-30	20"	40
65				SS-31: 66 - 68' Blows/6": 18,43,58,64	SS-31	12"	101
			736.2				
			At 67', gray silty clay, trace sand, trace gravel, plastic, moist, very stiff-hard (unweathered upper till).	SS-32: 68 - 70' Blows/6": 13,17,53,32	SS-32	24"	70
735				SS-33: 70 - 72' Blows/6": 44,56,45,56	SS-33	24"	101
70							
			As above, trace sand, trace gravel.	SS-34: 72 - 74' Blows/6": 11,27,52,99	SS-34	24"	79
730				SS-35: 74 - 76' Blows/6": 16,23,36,41	SS-35	24"	59

8" ID steel outer casing installed to depth of 93'. 2" ID stainless steel casing and 5-foot 0.010-slot screen installed at depth of 155 feet.

B-305

SOIL BORING LOG

BORING R131

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11121.61 N. 9377.73 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/13/93

PROJECT NO.: 06114.10
G.S. ELEV.: 803.20 ft. msl
TOC ELEV.: 808.23 ft. msl
TOTAL DEPTH: 162'

LOGGED BY: CBQ
DATE END: 7/29/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
75				SS-36: 78 - 78' Blows/6": 7,12,22,42	SS-36	24"	34
725			Gray till as above.	SS-37: 78 - 80' Blows/6": 8,12,20,30	SS-37	24"	32
80				SS-38: 80 - 82' Blows/6": 7,10,20,28	SS-38	24"	30
				SS-39: 82 - 84' Blows/6": 6,12,17,26	SS-39	24"	29
720			As above, plastic, moist.	SS-40: 84 - 86' Blows/6": 8,14,25,47	SS-40	24"	39
85				SS-41: 86 - 88' Blows/6": 7,8,18,34	SS-41	24"	26
			As above, slightly plastic.	SS-42: 88 - 90' Blows/6": 11,19,40,58	SS-42	20"	59
90				SS-43: 90 - 92' Blows/6": 20,33,44,44	SS-43	18"	77
710			8-inch outer casing installed to depth of 93 feet (710.20 ft. msl).	SS-44: 92 - 94' Blows/6": 5,10,19,29	SS-44	12"	29
95				SS-45: 94 - 96' Blows/6": 8,15,22,30	SS-45	12"	37
			Gray silty clay till as above.	SS-46: 96 - 98' Blows/6": 7,19,26,36	SS-46	18"	44
705				SS-47: 98 - 100' Blows/6": 18,21,26,60	SS-47	24"	47
100				SS-48: 100 - 102' Blows/6": 18,22,36,48	SS-48	24"	58
				SS-49: 102 - 104' Blows/6": 15,22,27,40	SS-49	24"	49
700			As above, more plastic.	SS-50: 104 - 106' Blows/6": 22,34,40,50	SS-50	24"	74
105				SS-51: 106 - 108' Blows/6": 13,20,25,30	SS-51	24"	45
695				SS-52: 108 - 110' Blows/6": 17,20,25,48	SS-52	24"	45
			693.2				
110			At 110', gray gravelly clay, some sand, very moist, very stiff, flower till. At 111', gray silty clay, trace-little sand, trace gravel, very stiff-hard.	SS-53: 110 - 112' Blows/6": 17,20,100/6"	SS-53	24"	120
				SS-54: 112 - 114'	SS-54	20"	74

8" ID steel outer casing installed to depth of 93'. 2" ID stainless steel casing and 5-foot 0.010-slot screen installed at depth of 155 feet.

SOIL BORING LOG

BORING R131

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11121.61 N. 9377.73 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/13/93

PROJECT NO.: 06114.10
G.S. ELEV.: 803.20 ft. msl
TOC ELEV.: 806.23 ft. msl
TOTAL DEPTH: 162'

LOGGED BY: CBQ
DATE END: 7/29/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE
690			slightly plastic-plastic, moist.	Blows/6": 22,34,40,50			
115			As above, thin (1/8") fine seam at 114.6'.	SS-65: 114 - 116' Blows/6": 17,20,32,40	SS-65	20"	82
				SS-66: 116 - 118' Blows/6": 17,34,37,100	SS-66	24"	71
685				SS-67: 119 - 120' Blows/6": 16,28,100/6"	SS-67	24"	128
120				SS-68: 120 - 122' Blows/6": 10,37,100/8"	SS-68	8"	137
			Till as above.	SS-69: 122 - 124' Blows/6": 18,30,37,100	SS-69	24"	67
680				SS-60: 124 - 126' Blows/6": 27,100/6"	SS-60	11"	NA
125				SS-61: 126 - 128' Blows/6": 17,100/6"	SS-61	20"	NA
675				SS-62: 128 - 130' Blows/6": 20,27,50,40	SS-62	12"	77
130			Till as above.	SS-63: 130 - 132' Blows/6": 48,100/6"	SS-63	12"	NA
				SS-64: 132 - 134' Blows/6": 27,100/6"	SS-64	12"	NA
670				SS-65: 134 - [illegible] Blows/6": 20,30,100/6"	SS-65	18"	130
135			As above, increase in sand and gravel content, very moist.	SS-66: 136 - 138' Blows/6": 16,100/6"	SS-66	12"	NA
665				SS-67: 138 - 140' Blows/6": 21,100/5"	SS-67	8"	NA
140			Grey silty clay as above, trace-little sand, trace gravel, moist.	SS-68: 140 - 142' Blows/6": 19,31,100/6"	SS-68	18"	131
				SS-69: 142 - 144' Blows/6": 25,36,100/6"	SS-69	18"	136
660				SS-70: 144 - 146' Blows/6": 21,100/6"	SS-70	12"	NA
145				SS-71: 146 - 148' Blows/6": 24,36,100/6"	SS-71	18"	136
655				SS-72: 148 - 150' Blows/6": 12,16,41,100	SS-72	24"	56

8" ID steel outer casing installed to depth of 93'. 2" ID stainless steel casing and 5-foot 0.010-slot screen installed at depth of 155 feet.

B-307

SOIL BORING LOG

BORING R131

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 11121.61 N. 9377.73 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 7/13/93

PROJECT NO.: 06111.10
G.S. ELEV.: 803.20 ft. msl
TOC ELEV.: 808.23 ft. msl
TOTAL DEPTH: 162'

LOGGED BY: CBQ
DATE END: 7/29/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE
150			653.2				
			At 150', gray very sandy clay with thin wet sand and gravel seams.	SS-73: 150 - 152' Blows/6": 31,100/5"	SS-73	12"	NA
			651.2				
650			At 152', gray silty clay till, trace to little sand, trace gravel, slightly moist, plastic, very stiff-hard.	SS-74: 152 - 154' Blows/6": 24,32,100/8"	SS-74	18"	132
155				SS-75: 154 - 156' Blows/6": 36,100/5"	SS-75	12"	NA
				SS-76: 156 - 158' Blows/6": 33,100/6"	SS-76	12"	NA
645				SS-77: 158 - 160' Blows/6": 34,50,100/2"	SS-77	16"	NA
160			Till as above.	SS-78: 160 - 162' Blows/6": 49,100/6"	SS-78	6"	NA
			Total sampled depth = 162 feet. Total drilled depth = 160 feet. 641.2	2" ID 316 stainless steel screen set from 654.82 to 649.82 ft. msl. Slot size: 0.010".			
640							
165							
635							
170							
630							
175							
625							
180							
620							
185							

[illegible]" steel outer casing installed to depth of 93'. 2" ID stainless steel casing and 5-foot 0.010-slot screen installed at depth of 155 feet.

B-325

SOIL BORING LOG

A132

BORING R132

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 10844.57 N. 9373.31 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 6/29/93

PROJECT NO.: 06114.10
G.S. ELEV.: 798.70 ft. msl
TOC ELEV.: 800.69 ft. msl
TOTAL DEPTH: 164'
LOGGED BY: CBQ
DATE END: 7/22/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE
0			Borehole advanced to depth of 89 feet with 15" bit and mud rotary methods for placement of 8-inch outer casing. Borehole advanced from 89 to 164 feet with 6" bit and cable tool methods for placement of monitor well.	Boring straight drilled to 6 feet through berm material for placement of drill stabilizer. Boring continuously sampled below 6 feet with 2-foot split spoon sampler.			
795			Gray silty clay berm material, trace sand, slightly moist, plastic.	Split Spoon SS-1: 6 - 8' Blows/6": 3,5,2,3	SS-1	10"	7
5				SS-2: 8 - 10' Blows/6": 7,6,8,8	SS-2	8"	14
790				SS-3: 10 - 12' Blows/6": 3,15,23,16	SS-3	2"	38
10			Clay berm material as above, stiff.	SS-4: 12 - 14' Blows/6": 4,6,8,8	SS-4	6"	14
785				SS-5: 14 - 16' Blows/6": 3,3,5,5	SS-5	8"	8
15				SS-6: 16 - 18' Blows/6": 4,8,12,11	SS-6	10"	20
780				SS-7: 18 - 20' Blows/6": 3,5,3,7	SS-7	10"	8
20			Silty clay berm material as above.	SS-8: 20 - 22' Blows/6": 5,5,9,9	SS-8	8"	14
				SS-9: 22 - 24' Blows/6": 3,3,6,6	SS-9	12"	9
775				SS-10: 24 - 26' Blows/6": 4,6,13,14	SS-10	12"	19
25				SS-11: 26 - 28' Blows/6": 6,6,5,9	SS-11	8"	11
			Berm material as above, brown in color.	SS-12: 28 - 30' Blows/6": 5,8,12,8	SS-12	14"	18
770				SS-13: 30 - 32' Blows/6": 4,4,9,12	SS-13	22"	13
30				SS-14: 32 - 34' Blow counts not recorded.	SS-14	0"	NA
765			As above, gray mottling below 34', very stiff.	SS-15: 34 - 36' Blows/6": 32,46,100/6"	SS-15	3"	146
35				SS-16: 36 - 38' Blows/6": 25,42,8,7	SS-16	4"	50

8" OD steel outer casing installed to depth of 89'. 2" ID stainless steel casing and 10-foot 0.010-slot screen installed to depth of 164 feet.

SOIL BORING LOG

BORING R132

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES; ZION, IL
GRID COORDINATES: 10844.57 N. 9373.31 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 6/29/93

PROJECT NO.: 06114.10
G.S. ELEV.: 798.70 ft. msl
TOC ELEV.: 800.69 ft. msl
TOTAL DEPTH: 164'

LOGGED BY: CBQ
DATE END: 7/22/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE
760 / 40				SS-17: 38 - 40' Blows/6": 16,36,13,7	SS-17	4"	49
				SS-18: 40 - 42' Blows/6": 6,8,12,16	SS-18	12"	20
			Silty clay berm material as above, slightly plastic, stiff-very stiff.	SS-19: 42 - 44' Blows/6": 2,6,9,11	SS-19	14"	15
755 / 45				SS-20: 44 - 46' Blows/6": 4,3,5,7	SS-20	0"	8
				SS-21: 46 - 48' Blows/6": 3,8,12,14	SS-21	4"	20
750 / 50			Berm material as above, gray in color below 49', trace sand, trace gravel, slightly plastic, moist, very stiff to hard.	SS-22: 48 - 50' Blows/6": 3,8,12,17	SS-22	18"	20
				SS-23: 50 - 52' Blows/6": 2,13,27,27	SS-23	20"	40
				SS-24: 52 - 54' Blows/6": 16,19,25,33	SS-24	12"	44
745 / 55			As above, some brown mottling below 54'.	SS-25: 54 - 56' Blows/6": 8,9,16,18	SS-25	14"	25
			As above, small seam of paper(11") at 57'.	SS-26: 56 - 58' Blows/6": 9,14,13,20	SS-26	8"	27
				SS-27: 58 - 60' Blows/6": 13,23,24,24	SS-27	12"	47
740 / 60			As above, brown with gray mottling, very stiff-hard, slightly moist.	SS-28: 60 - 62' Blows/6": 10,16,32,30	SS-28	14"	48
				SS-29: 62 - 64' Blows/6": 22,30,32,34	SS-29	1"	62
735 / 65			Gray silty clay berm material as above, trace sand, trace gravel, very stiff. Brown in color below 65'.	SS-30: 64 - 66' Blows/6": 8,10,10,22	SS-30	23"	20
				SS-31: 66 - 68' Blows/6": 7,8,25,30	SS-31	18"	31
730 / 70				SS-32: 68 - 70' Blows/6": 10,28,27,50	SS-32	18"	55
			At 70', brown silty clay, trace sand, trace gravel, gray and tan mottling, slightly plastic, moist, very stiff to hard (weathered upper till).	SS-33: 70 - 72' Blows/6": 25,25,27,38	SS-33	14"	56
725				SS-34: 72 - 74' Blows/6": 10,40,45,45	SS-34	13"	90
			At 73.5', brown silt with clay, trace coarse sand, soft, very moist.	SS-35: 74 - 76' Blows/6": 22,25,42,45	SS-35	8"	87

8" ID steel outer casing installed to depth of 89'. 2" ID stainless steel casing and 10-foot 0.010-slot screen installed to depth of 164 feet.

SOIL BORING LOG

BORING R132

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES, ZION, IL
ID COORDINATES: 10844.57 N. 9373.31 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 6/29/93

PROJECT NO.: 06114.10
G.S. ELEV.: 798.70 ft. msl
TOC ELEV.: 800.69 ft. msl
TOTAL DEPTH: 164'
LOGGED BY: CBQ
DATE END: 7/22/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
75			At 74', tan/brown silty fine to coarse sand, some clay, trace fine gravel, very moist. At 76', coarse sand, some silt, some clay, wet.	SS-36: 76 - 78' Blows/6": 100/6"	SS-36	6"	NA
720 80			At 78', gray silty clay, trace sand, trace gravel, (unweathered upper till), 2" thick silt seams at 78 and 79'.	SS-37: 78 - 80' Blows/6": 11,17,40,33	SS-37	24"	57
			As above, more plastic, decrease in silt content, very stiff-hard.	SS-38: 80 - 82' Blows/6": 7,11,22,23	SS-38	18"	33
			Gray clay with silt, otherwise as above.	SS-39: 82 - 84' Blows/6": 7,12,24,40	SS-39	24"	36
715 85				SS-40: 84 - 86' Blows/6": 20,34,48,99	SS-40	24"	82
				SS-41: 87 - 89' Blows/6": 10,11,23,27	SS-41	24"	34
710 90			As above, very plastic, moist. 8-inch outer casing installed to depth of 89 feet (709.70 ft. msl).	SS-42: 89 - 91' Blows/6": 25,18,24,30	SS-42	24"	40
				SS-43: 91 - 93' Blows/6": 26,30,26,38	SS-43	2"	56
705		703.7		SS-44: 93 - 95' Blows/6": 22,26,27,34	SS-44	15"	53
95			At 95', gray clayey silt, trace-little sand, trace-little gravel, slightly plastic, moist, couple 1/4" sand seams.	SS-45: 95 - 97' Blows/6": 24,22,28,26	SS-45	20"	50
700		698.7		SS-46: 98 - 100' Blows/6" 30,68,100/6"	SS-46	18"	168
100			At 100', gray silty clay, little-some sand, little-some gravel, slightly plastic, moist, very stiff-hard (lower till).	SS-47: 100 - 102' Blows/6": 74,78,38,42	SS-47	12"	114
				SS-48: 102 - 104' Blows/6": 38,44,100/6"	SS-48	18"	144
695 105			As above, decrease in sand and gravel content, trace-little.	SS-49: 104 - 106' Blows/6": 35,51,71,100	SS-49	24"	122
				SS-50: 106 - 108' Blows/6": 32,38,40,45	SS-50	24"	78
690			As above, more plastic.	SS-51: 108 - 110' Blows/6": 20,39,49,21	SS-51	24"	88
110			Till as above, trace gravel only.	SS-52: 110 - 112' Blows/6": 15,23,24,45	SS-52	24"	47
				SS-53: 112 - 114'	SS-53	24"	52

8" ID steel outer casing installed to depth of 89'. 2" ID stainless steel casing and 10-foot 0.010-slot screen installed to depth of 164 feet.

SOIL BORING LOG

BORING R132

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
GRID COORDINATES: 10844.57 N. 9373.31 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 6/29/93

PROJECT NO.: 06114.10
G.S. ELEV.: 798.70 ft. msl
TOC ELEV.: 800.69 ft. msl
TOTAL DEPTH: 164'
LOGGED BY: CBQ
DATE END: 7/22/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOV-ERY	"N" VALUE
				Blows/6": 17,23,29,39			
685 / 115				SS-54: 114 - 116' Blows/6": 22,28,36,54	SS-54	24"	64
			As above, more plastic.	SS-55: 116 - 118' Blows/6": 24,25,31,45	SS-55	12"	56
680 / 120				SS-56: 118 - 120' Blows/6": 18,28,30,47	SS-56	18"	58
			Gray silty clay till as above, very plastic, very moist becoming moist below 122', very stiff-hard.	SS-57: 120 - 122' Blows/6": 26,30,50,62	SS-57	24"	100
				SS-58: 122 - 124' Blows/6": 16,28,50,63	SS-58	24"	78
675 / 125				SS-59: 124 - 126' Blows/6": 20,34,57,69	SS-59	24"	91
				SS-60: 126 - 128' Blows/6": 17,28,30,45	SS-60	24"	58
670 / 130			Gray clay with silt, trace gravel, very plastic, moist.	SS-61: 128 - 130' Blows/6": 10,28,35,50	SS-61	24"	63
			At 130', Gray silty sand with clay, trace gravel, wet.	SS-62: 130 - 132' Blows/6": 26,35,52,80	SS-62	16"	87
			At 130.8', gray silty clay till as above, trace sand, trace gravel, very plastic, moist, very stiff-hard. Till as above, slightly plastic.	SS-63: 132 - 134' Blows/6": 18,40,100/6"	SS-63	24"	140
665 / 135				SS-64: 134 - 136' Blows/6": 17,100/6"	SS-64	12"	NA
				SS-65: 136 - 138' Blows/6": 48,100/6"	SS-65	11"	NA
660 / 140				SS-66: 138 - 140' Blows/6": 52,100/6"	SS-66	12"	NA
				SS-67: 140 - 142' Blows/6": 42,100/6"	SS-67	0"	NA
			Till as above, not as moist.	SS-68: 142 - 144' Blows/6": 18,40,100/6"	SS-68	18"	140
655 / 145				SS-69: 144 - 146' Blows/6": 47,100/4"	SS-69	10"	NA
				SS-70: 148 - 148' Blows/6": 17,48,100/6"	SS-70	18"	148
650			Gray silty clay till as above.	SS-71: 148 - 150' Blows/6": 100/8"	SS-71	0"	NA

8" ID steel outer casing installed to depth of 89'. 2" ID stainless steel casing and 10-foot 0.010-slot screen installed to depth of 164 feet.

SOIL BORING LOG

BORING B132

PROJECT: MONITOR WELL REPLACEMENT
CLIENT/OWNER: BROWNING-FERRIS INDUSTRIES: ZION, IL
D COORDINATES: 10844.57 N. 9373.31 E.
DRILLING METHOD: Mud Rotary and Cable Tool Methods
CONTRACTOR: Aquadrill Well Drilling
FINAL WATER LEVEL: T.O.C.:
DATES - DATE START: 6/29/93

PROJECT NO.: 06114.10
G.S. ELEV.: 798.70 ft. msl
TOC ELEV.: 800.69 ft. msl
TOTAL DEPTH: 164'

LOGGED BY: CBQ
DATE END: 7/22/93

ELEVATION / DEPTH	STRATA	USCS	DESCRIPTION	REMARKS	SAMPLE NUMBER	RECOVERY	"N" VALUE
150				SS-72: 160 - 162' Blows/6": 27,39,100/6"	SS-72	18"	139
645 / 155			At 152.5', gray sandy clay, trace silt, trace gravel, slightly plastic, moist.	SS-73: 162 - 164' Blows/6": 33,40,100/8"	SS-73	18"	140
			At 153.5', gray silty clay till as above.	SS-74: 154 - 156' Blows/6": 20,42,100/6"	SS-74	14"	142
				SS-75: 156 - 158' Blows/6": 68,100/6"	SS-75	12"	NA
640 / 160			At 158', gray clayey gravelly sand, wet.	SS-76: 158 - 160' Blows/6": 43,100/6"	SS-76	4"	NA
			At 160', gray fine to medium sand with silt, wet.	SS-77: 160 - 162' Blows/6": 100/6"	SS-77	6"	NA
				SS-78: 162 - 164' Blows/6": 32,100/6"	SS-78	12"	NA
635 / 165			At 163.5', gray silty clay, some sand, some gravel. Total sampled depth = 164 feet. Total drilled depth = 164 feet.	2" ID 316 stainless steel screen set from 647.28 to 637.28 ft. msl. Slot size: 0.010".			
630 / 170							
625 / 175							
620 / 180							
615 / 185							

646.7
645.2
640.7
638.7
635.2

-164
634.7 TOB

8" ID steel outer casing installed to depth of 89'. 2" ID stainless steel cr ng and 10-foot 0.010-slot screen installed to depth of 164 feet.

LOG OF BORING

B-335

PROJECT: BFI Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 1/31/89 COMPLETE: 2/3/89
RIG: CME-75/TRUCK LOCATION: N 10430.59; E 9424.18
GROUND EL.: 754.0 W.L. & TIME: 16' 2 weeks after drilling

BORING NO.: G-133
SHEET: 1 OF 7

R133

G	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	754.0	0.0	Brown and gray silty clay, some coarse to fine sand, little coarse to fine gravel, hard, low plasticity, moist, fill CL					Advanced borehole using 4-1/4" I.D. HSA.
				SS-1 1.0-2.5 16"R	16 16 20		4.5+*	
				SS-2 2.5-4.0 6"R	17 16 16		4.5+*	
				SS-3 4.0-5.5 6"R	14 15 34		4.5+*	
				SS-4 5.5-7.0 6"R	24 21 23		4.5+*	
				SS-5 7.0-8.5 3"R	6 7 13		4.5+*	
				SS-6 8.5-10.0 14"R	7 14 25		4.5+*	
				SS-7 10.0-11.5 12"R	13 15 14		4.5+*	
				SS-8 11.5-13.0 10"R	5 8 10		3.5+*	
				SS-9 13.0-14.5 18"R	4 8 9		3.5+*	
				SS-10 14.5-16.0 12"R	2 5 9		3.7*	
				SS-11 16.0-17.5 12"R	5 7 18		3.3* 4.5+*	
				SS-12 17.5-19.0 6"R	12 12 12		4.5+*	
				SS-13 19.0-20.5 12"R	5 7 9		1.8*	

ATRICK ENGINEERING INC LOGGED BY: CCS JOB NO.: D186 (...D186-G133)

LOG OF BORING

B-336

PROJECT: BFI Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 1/31/89 COMPLETE: 2/3/89
BORING NO.: G-133
SHEET: 2 OF 7

RIG: CME-75/TRUCK LOCATION: N 10430.59; E 9424.18
GROUND EL.: 754.0 W.L. & TIME: 16' 2 weeks after drilling

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	734.0	20.0	Brown and gray silty clay, some coarse to fine sand, little coarse to fine gravel, hard, low plasticity, moist, fill CL					
				SS-14 20.5-22.0 16"R	6 9 10		2.8*	
				SS-15 22.0-23.5 18"R	6 8 10		3.0*	
				SS-16 23.5-25.0 18"R	6 7 8		2.2*	
				SS-17 25.0-26.5 18"R	9 11 12		2.2*	
				SS-18 26.5-28.0 18"R	9 15 12		3.3*	
	725.7	28.3	Gray silty clay, some coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL	SS-19 28.0-29.5 18"R	8 10 12		2.2*	
				SS-20 29.5-31.0 18"R	8 10 21		3.5*	
				SS-21 31.0-32.5 18"R	18 22 26		3.2*	
				SS-22 32.5-34.0 18"R	10 12 20		4.2*	
				SS-23 34.0-35.5 18"R	6 8 10		2.8*	
				SS-24 35.5-37.0 18"R	6 11 15		2.3*	
				SS-25 37.0-38.5 18"R	9 17 14		2.4*	
				SS-26 38.5-40.0 18"R	8 12 15		2.5*	

LOG OF BORING

B-337

PROJECT: BFI Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 1/31/89 COMPLETE: 2/3/89
RIG: CME-75/TRUCK LOCATION: N 10430.59; E 9424.18
GROUND EL.: 754.0 W.L. & TIME: 16' 2 weeks after drilling.

BORING NO.: G-133
SHEET: 3 OF 7

ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
714.0	40.0	Gray silty clay, some coarse to fine sand, little coarse to fine gravel, very stiff, low plasticity, moist CL	SS-27 40.0-41.5 18"R	- 12 16		2.0*	
			SS-28 41.5-43.0 18"R	8 10 18		2.3*	
			SS-29 43.0-44.5 18"R	11 12 18		2.3*	
			SS-30 44.5-46.0 18"R	4 10 13		2.4*	
			SS-31 46.0-47.5 18"R	9 11 15		2.2*	
705.2	48.8	Gray clayey silt, little coarse to fine sand, very dense, moist ML	SS-32A,B 47.5-49.0 18"R	6 8 26		1.8*	
704.4	49.6	Gray silty coarse to fine sand, little to some coarse to fine gravel, well graded, very dense, moist SM	SS-33A,B 49.0-50.5 18"R	14 22 29			
			SS-34 50.5-52.0 18"R	20 22 28			
			SS-35 52.0-53.5 18"R	13 18 24			
			SS-36 53.5-55.0 18"R	15 16 19			
			SS-37 55.0-56.5 18"R	12 16 20			
			SS-38 56.5-58.0 18"R	17 20 24			
			SS-39 58.0-59.5 18"R	24 26 31			

LOG OF BORING

B-338

PROJECT: BFI Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 1/31/89 COMPLETE: 2/3/89
RIG: CME-75/TRUCK LOCATION: N 10430.59; E 9424.18
GROUND EL.: 754.0 W.L. & TIME: 16' 2 weeks after drilling.

BORING NO.: G-133
SHEET: 4 OF 7

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	694.0	60.0	Gray silty coarse to fine sand, little to some coarse to fine gravel, well graded, very dense, moist SM	SS-40 59.5-61.0 18"R	18 22 36			
				SS-41 61.0-62.5 18"R	19 20 20			
	691.5	62.5	Gray clayey silt, trace to some coarse to fine sand, dense, wet ML	SS-42 62.5-64.0 18"R	11 15 18			
				SS-43A,B 64.0-65.5 18"R	9 11 15		3.0*	
	689.0	65.0	Gray silty clay, some coarse to fine sand, trace coarse to fine gravel, very stiff to hard, low plasticity, moist CL	SS-44 65.5-67.0 18"R	12 20 25		3.3*	
				SS-45 67.0-68.5 18"R	13 19 21		4.5+*	
				SS-46 68.5-70.0 18"R	21 29 27		4.5+*	
				SS-47 70.0-71.5 18"R	10 10 22		4.3*	
				SS-48 71.5-73.0 18"R	17 15 18		3.2*	
				SS-49 73.0-74.5 18"R	16 28 29		3.4*	
				SS-50 74.5-76.0 18"R	9 14 19		4.1*	
				SS-51 76.0-77.5 18"R	12 18 22		3,2*	
				SS-52 77.5-79.0 18"R	12 18 22		3.0*	
				SS-53 79.0-80.5 4"R	42 32 20			Pushed small cobble

LOGGED BY: CCS JOB NO.: D186 (ref: D149/D186-G133)

LOG OF BORING

B-339

PROJECT: RPI Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 1/31/89 COMPLETE: 2/3/89
RIG: CME-75/TRUCK LOCATION: N 10430.59; E 9424.18
GROUND EL.: 754.0 W.L. & TIME: 16' 2 weeks after drilling.

BORING NO.: G-133
SHEET: 5 OF 7

G	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	674.0	80.0	Gray silty clay, some coarse to fine sand, trace coarse to fine gravel, very stiff to hard, low plasticity, moist					
	673.0	81.0	Gray clayey silt, little coarse to fine sand, well graded, very dense, moist ML	SS-54A,B 80.5-82.0 18"R	14 21 31		1.3*	
	672.0	82.0	Gray coarse to fine sand with silt, trace fine gravel, well graded, very dense, moist SM	SS-55A,B 82.0-83.5 18"R	40 31 22		1.3*	
	671.0	83.0	Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, stiff to hard, low plasticity, moist CL	SS-56 83.5-85.0 18"R	8 10 17		3.5*	
				SS-57 85.0-86.5 18"R	21 23 32		3.1*	Blow counts are high due to overfilling of spoon.
				SS-58 86.5-88.0 18"R	8 14 22		4.5+*	
				SS-59 88.0-89.5 18"R	25 27 32		4.5+*	
				SS-60 89.5-91.0 18"R	8 15 19		4.5+*	
				SS-61 91.0-92.5 18"R	14 20 19		3.0*	
				SS-62 92.5-94.0 18"R	12 14 65		2.8*	Pushed cobble
								Auger past cobble
				95.0-96.5 0"R				Pushed cobble
								Auger past cobble
				SS-63 97.5-99.0 18"R	16 20 24		3.0*	
				SS-64 99.0-100.5 18"R	16 21 27		2.5*	

LOG OF BORING

B-340

PROJECT: BFI Winthrop Harbor Landfill — BORING NO.: G-133

DRILLER: Patrick Engineering — START: 1/31/89 — COMPLETE: 2/3/89 — SHEET: 6 OF 7

RIG: CME-75/TRUCK — LOCATION: N 10430.59; E 9424.18

GROUND EL.: 754.0 — W.L. & TIME: 16' 2 weeks after drilling.

LOG	ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
	654.0	100.0	Gray silty clay, little coarse to fine sand, trace coarse to fine gravel, stiff to hard, low plasticity, moist CL	-				
				SS-65 100.5-102 18"R	15 20 23		3.0*	
				SS-66 102-103.5 18"R	19 27 35		4.2*	
				SS-67 103.5-105 18"R	16 18 24		3.6*	
				SS-68 105-106.5 8"R	25 30 47		1.5*	
	647.3	106.7						Auger past cobble
			Gray coarse to fine sand with silt, little clay, some coarse to fine gravel, well graded, dense, saturated SM	SS-69A,B 107-108.5 18"R	24 17 9		2.4*	
	645.9	108.1	Gray silty clay, some coarse to fine sand, trace coarse to fine gravel, very stiff, low plasticity, moist CL	SS-70 108.5-110 18"R	21 25 29		3.1*	
				SS-71 110-111.5 18"R	- 21 19		3.0*	
			Gray coarse to fine sand with silt, little coarse to fine gravel, well graded, very dense, saturated SM	SS-72A,B 111.5-113 18"R	23 23 55		2.5*	
	641.3	112.7						
	641.0	113.0	Gray clayey silt, some coarse to fine sand, trace coarse to fine gravel, medium dense, low plasticity, moist ML	SS-73A,B 113-114.5 18"R	23 12 15		4.5+*	
	640.0	114.0	Gray silty clay, some coarse to fine sand, little coarse to fine gravel, hard, low plasticity, moist CL	SS-74 114.5-116 18"R	27 33 41		4.5+*	
	638.8	115.2	Gray clayey silt, little to some coarse to fine sand, trace coarse to medium gravel, low plasticity, very dense, saturated ML	SS-75A,B 116-117.5 18"R	17 23 27		4.5+*	
	637.0	117.0	Gray silt clay, some coarse to fine sand, little coarse to fine gravel, hard, low plasticity, moist CL	SS-76 117.5-119 18"R	25 35 30		4.5+*	
				SS-77 119-120.5 10"R	15 30 36		4.5+*	

PATRICK ENGINEERING INC. LOGGED BY: CGS JOB NO.: D186 (ref:b149/D186-G133)

LOG OF BORING

B-341

PROJECT: BFI Winthrop Harbor Landfill
DRILLER: Patrick Engineering START: 1/31/89 COMPLETE: 2/3/89
RIG: CME-75/TRUCK LOCATION: N 10430.49; E 9424.18
GROUND EL.: 754.0 W.L. & TIME: 16' 2 weeks after drilling.

BORING NO.: G-133
SHEET: 7 OF 7

G ELEV.	DEPTH (ft.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (ft.) / RECOV. (in.)	SPT	WC %	q_u (tsf)	NOTES & TEST RESULTS
634.0	120.0	Gray silty clay, some coarse to fine sand, little coarse to fine gravel, hard, low plasticity, moist CL					
			SS-78 120.5-122 0"R	26 33 42			Pushed cobble
							Augered past cobble
			SS-79 123-124.5 18"R	30 35 44		4.5+*	
629.4	124.6	Gray clayey silt, low plasticity, extremely dense, wet ML	SS-80 124.5-126 18"R	24 35 45			
627.8	126.2	Gray silty clay, some coarse to fine sand, little coarse to fine gravel, stiff, low plasticity, moist CL	SS-81 126-127.5 10"R	30 60 80		1.7*	Pushed cobble
626.5	127.5	End of boring at 127.5					

Field Boring Log

DEPTH HOLE 111.5' | JOB NO. 990402 | PROJECT Well Replacements - Tion Landfills | BORING NO. R136
DEPTH SOIL DRILL 111.5' | QA INSP. B. McQueen | DRILLING METHOD 0.0'-95.5': 10" Rotary; 95.5'-111.0': 6" Rotary | SHEET 1 OF 5
DEPTH ROCK CORE — | WEATHER Normal | DRILLING COMPANY RO-n-P Drilling, Inc. | SURFACE ELEV. 745.7'
NO. DIST. SA. 7 UD. SA. — | TEMP. 80's | DRILL RIG Diedrich D120 | DRILLER Paul Eger | DATUM MSL
DEPTH WL. 88.4' BGS | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30-inches | STARTED 8:30 / 7-8-05 (TIME / DATE)
TIME WL. 10/14/05 10:06 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 11:20 / 7-20-05 (TIME / DATE)

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
LI	LITTLE
M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK
SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SLY	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% | "SOME" - 12 - 30%
"LITTLE" - 5 - 12% | "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	Drilled without Sampling to 97.0' BGS							7-8-05 8:30 start 10.0" mud/wash Rotary Drilling without Sampling to set 6.0" Permanent Steel Casing.
1							1	
2							2	
3							3	
4							4	
5							5	
6							6	
7							7	
8							8	
9							9	
10							10	
11							11	
12							12	
13							13	
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Field Boring Log

DEPTH HOLE 111.5' | JOB NO. 990402 | PROJECT well Replacements - Tim Landfills | BORING NO. R136
DEPTH SOIL DRILL 111.5' | GA INSP. B. McQueen | DRILLING METHOD 0.0'-95.5': 10" Rotary; 95.5'-111.0': 6" Rotary | SHEET 2 OF 5
DEPTH ROCK CORE — | WEATHER Normal | DRILLING COMPANY RO-N-P Drilling, Inc. | SURFACE ELEV. 745.7'
NO. DIST. SA. 7 | UD. SA. — | TEMP. 80's | DRILL RIG Dirdrich D120 | DRILLER Paul Eger | DATUM MSL
DEPTH WL. 80.4' BGS | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs. | DROP 30-inches | STARTED 8:30 (TIME) / 7-8-05 (DATE)
TIME WL. 10/4/05 10:06 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 11:20 / 7-20-05

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS 0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS 4 10	SOFT	S	MOLDS EASILY
COMPACT	CP 10 30	FIRM	FM	MOLDS
DENSE	DN 30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN 50	VERY STIFF	VST	THUMBNAIL INDENT
		HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT		SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	Drilled without Sampling								
24	to 97.0' BGS								
25									
26									
27									
28									
29									
30									
31									
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41									
42									7-8-05 14:30 Advanced 10.0" bit to 43.0' BGS.
43									Quit drilling for the day. Break for weekend.
44									7-11-05 7:50 Resume 10.0" wash/mud rotary drilling.
45									
46									

Field Boring Log

DEPTH HOLE 111.5' JOB NO. 990402 PROJECT Well Replacements - Zion Landfills BORING NO. R136
DEPTH SOIL DRILL 111.5' GA INSP. B. McBurney DRILLING METHOD 0.0'-95.5': 10" Rotary; 95.5'-111.0', 6" Rotary SHEET 3 OF 5
DEPTH ROCK CORE — WEATHER Normal DRILLING COMPANY RD-n-P Drilling, Inc. SURFACE ELEV. 745.7'
UD. DIST. SA. 7 UD. SA. — TEMP. 80's DRILL RIG Diedrich D120 DRILLER Paul Eger DATUM MSL
DEPTH WL. 88.4' BGS HRS. PROD. — WT. SAMPLER HAMMER 140 lbs DROP 30-inches STARTED 8:30 / 7-8-05 (TIME / DATE)
TIME WL. 10/19/05 10:06 HRS. DELAYED — WT. CASING HAMMER — DROP — COMPLETED 11:20 / 7-10-05

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" - 12-30%
"LITTLE" - 5-12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47	Drilled Without Sampling to 97.0' BGS							7-11-05 Continue 10.0" mud / Rotary Drilling
48								
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Field Boring Log

DEPTH HOLE 111.5' | JOB NO. 990402 | PROJECT Well Replacements - Zion Landfills | BORING NO. R136

DEPTH SOIL DRILL 111.5' | QA INSP. B. McGovern | DRILLING METHOD 0.0'-95.5': 10" Rotary; 95.5'-111.0': 6" Rotary | SHEET 4 OF 5

DEPTH ROCK CORE — | WEATHER Normal | DRILLING COMPANY RQ-n-D Drilling, Inc. | SURFACE ELEV. 745.7'

NO. DIST. SA. 7 UD. SA. — | TEMP. 80's | DRILL RIG Diedrich D120 | DRILLER Paul Eger | DATUM MSL

DEPTH WL. 88.4' BGS | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30-inches | STARTED 8:30 (Time) / 7-8-05 (Date)

TIME WL. 10/19/05 10:06 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 11:20 / 7-20-05

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN WALLED, OPEN
T.P.	THIN WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 5% "SOME" 12 - 30%
"LITTLE" - 5 - 12% "AND" 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	Drilled Without Sampling to 97.0' BGS							7-11-05 Continue 10.0" mud flush Rotary Drilling
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Field Boring Log

DEPTH HOLE 111.5' | JOB NO. 990402 | PROJECT Well Replacements - Zion Landfills | BORING NO. R136
DEPTH SOIL DRILL 111.5' | QA INSP. B. McBreen | DRILLING METHOD 0.0'-95.5': 10" Rotary; 95.5'-111.0': 6" Rotary | SHEET 5 OF 5
DEPTH ROCK CORE — | WEATHER Normal | DRILLING COMPANY RD-n-P Drilling, Inc. | SURFACE ELEV. 745.7'
O. DIST. SA. 7 UD. SA. — | TEMP. 80's | DRILL RIG Diedrich D120 | DRILLER Paul Eger | DATUM MSL
DEPTH WL. 88.4' BGS | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs. | DROP 30 inches | STARTED 8:30 (TIME) 7-8-05 (DATE)
TIME WL. 10/19/05 10:06 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 11:20 (TIME) 7-20-05 (DATE)

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S	DENISON SAMPLE
P.S	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O	THIN WALLED, OPEN
T.P.	THIN WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
LI	LITTLE
M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK
SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SIY	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 5% "SOME" 12 30%
"LITTLE" - 5 12% "AND" 30 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0 4	VERY SOFT VS	EXTRUDES
LOOSE LS	4 10	SOFT S	MOLDS EASILY
COMPACT CP	10 30	FIRM FM	MOLDS
DENSE DN	30 50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
93	Drilled Without Sampling to 97.0' BGS							7-11-05 17:00 Advance 10.0" bit to 95.5' BAS. Flush borehole with clean water. Retract 10.0" bit and rods to prepare to set casing.
94								
95								7-11-05 17:30 10.0" bit and rods retrieved. Quit for the day.
96								7-12-05 07:00 Begin lowering 21' sections of 6.0" diameter steel casing into the borehole and welding each joint.
97								
98	(97.0'-103.6') Hard, olive gray (5Y 3/2), homogeneous, SILTY CLAY, trace f-c sand, pyrite crystals, SR, moist, (CL), WADSWORTH TILL	66	1	S.S.	19,26,40,50	1.1'/2.0'		7-12-05 08:30 6.0" diameter casing set to 95.5' BAS. Begin grouting lower 20' of annular space with bentonite grout.
99								
100		55	2	S.S.	13,22,33,37	2.0'/2.0'		7-12-05 09:30 Begin mixing & placing cement-bentonite grout in annular space around 6.0" casing.
101								
102		40	3		11,15,25,31	2.0'/2.0'		7-12-05 11:20 Finish placing cement-bentonite grout to ground surface. Allow grout to cure.
103								7-20-05 08:30 Begin 6.0" mud/wash rotary drilling
104	(103.6'- 111.0') Very Dense, olive gray (5Y 3/2) to dark greenish gray (5GY 4/1), stratified, F-C SAND, SANDY SILT, and F GRAVEL, WR to NR, wet, (SW,SM,GP), SHALLOW DRIFT AQUIFER SEDIMENTS	93	4		20,44,49,50	1.6'/2.0'		#1 97.0'-99.0': Hard, olive gray (5Y 3/2), homogeneous, SILTY CLAY, trace f-c sand, pyrite crystals present, SR, moist, (CL), WADSWORTH TILL
105								
106		93	5		25,32,61,69	1.9'/2.0'		#2 - SAA
107								#3 - SAA
108		141	6		44,57,84,70	1.8'/2.0'		#4 103.0'-103.6' - SAA 103.6'-105.0' - Very dense, olive gray (5Y 3/2), stratified, F-C SAND, some silt, WR, wet, (SW), SHALLOW DRIFT AQUIFER SEDIMENTS
109								#5 105.0'-106.4'- SAA
110		128	7		29,39,89,105	1.5'/2.0'		106.4'-107.0'- Very Dense, olive gray (5Y 3/2), stratified, SANDY SILT, SR, wet, (SM), SHALLOW DRIFT AQUIFER SEDIMENTS
111								#6 107.0'-108.2'- SAA 108.2'-109.0' - Very Dense, olive gray (5Y 3/2), stratified, F-C SAND, WR, wet, (SW), SHALLOW DRIFT AQUIFER SEDIMENTS
	End of Borehole at 111.5'							#7 109.0'-110.5' - SAA 110.5'-111.0' Very Dense, dark greenish gray (5GY 4/1), stratified, F GRAVEL, NR, wet, (GP), SHALLOW DRIFT AQUIFER SEDIMENTS
								7-20-05 11:20 Finish drilling & sampling to 111.5'

Field Boring Log

DEPTH HOLE 98.0'	JOB NO. 990403	PROJECT Well 6193 Replacement			BORING NO. R193
DEPTH SOIL DRILL 98.0'	GA INSP. K. Schneider	DRILLING METHOD 10.0" Diameter Wash Rotary			SHEET 1 OF 5
DEPTH ROCK CORE —	WEATHER Sunny	DRILLING COMPANY RD-n-P Drilling, Inc.			SURFACE ELEV. 734.9'
NO. DIST. SA. 8 UD. SA. —	TEMP. 40-45° F	DRILL RIG Acker	DRILLER Eric Karlin		DATUM MSL
DEPTH WL. 77.01' BTOC	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 24 inches		STARTED TIME 08:45 DATE 4-13-09
TIME WL. 16:58 5/25/09	HRS. DELAYED —	WT. CASING HAMMER —	DROP —		COMPLETED TIME 17:15 DATE 4-13-09

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTIO

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL MOUNT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	Drilled Without Sampling to Screen Interval. For Description of Penetrated Materials Please See Geologic Log For Predecessor Well 6K11D (6193).							4-13-09 08:45 Commence drilling borehole for replacement monitoring well R193 using 10.0" diameter wash rotary methods.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

Field Boring Log

DEPTH HOLE 98.0'	JOB NO. 990403	PROJECT Well 6193 Replacement		BORING NO. R193	
DEPTH SOIL DRILL 98.0'	GA INSP. K. Schneider	DRILLING METHOD 10.0" Diameter Wash Rotary		SHEET 2 OF 5	
DEPTH ROCK CORE —	WEATHER Sunny	DRILLING COMPANY RD-n-R Drilling, Inc.		SURFACE ELEV. 734.9'	
NO. DIST. SA. B UD. SA. —	TEMP. 40°-45°	DRILL RIG Acker	DRILLER	DATUM MSL	
DEPTH WL. 77.01' BTOC	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs.	DROP 24-inches	STARTED 08:45 (TIME) / 4-13-04 (DATE)	
TIME WL. 16:58 5/25/04	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 17:15 / 4-13-04	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" – 0 - 5% "SOME" – 12 - 30%
"LITTLE" – 5 - 12% "AND" – 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24	Drilled Without Sampling to Screen Interval. For Description of Penetrated Materials, Please See Geologic Log For Predecessor Well GK11D (6193).							
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Field Boring Log

DEPTH HOLE 98.0' | JOB NO. 990403 | PROJECT Well 4193 Replacement | BORING NO. R193
DEPTH SOIL DRILL 98.0' | GA INSP. K. Schneider | DRILLING METHOD 10.0" Diameter Wash Rotary | SHEET 3 OF 5
DEPTH ROCK CORE — | WEATHER Sunny | DRILLING COMPANY RD-M-P Drilling, Inc. | SURFACE ELEV. 734.9'
NO. DIST. SA. 8 | UD. SA. — | TEMP. 40°-45°F | DRILL RIG Acker | DRILLER Eric Kaelin | DATUM MSL
DEPTH WL. 27.01' BTOC | HRS. PROD. — | WT. SAMPLER HAMMER 140-lbs. | DROP 24-inches | STARTED 08:45 (TIME) 4-13-04 (DATE)
TIME WL. 16:58 5/25/04 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 17:15 (TIME) 4-13-04 (DATE)

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
LI	LITTLE
M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK
SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SIY	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WN	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" 12-30%
"LITTLE" - 5-12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47	Drilled Without Sampling to Screen Interval. For Description of Penetrated Materials, Please See Geologic Log For Predecessor Well 6K 11 D (4193).							
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Field Boring Log

DEPTH HOLE 98.0' JOB NO. 990403 PROJECT Well 6193 Replacement BORING NO. R193
DEPTH SOIL DRILL 98.0' GA INSP. K. Schneider DRILLING METHOD 10.0" Diameter Wash Rotary SHEET 4 OF 5
DEPTH ROCK CORE — WEATHER Sunny DRILLING COMPANY RQ-n-R Drilling, Inc. SURFACE ELEV. 734.9'
NO. DIST. SA. 8 UD. SA. — TEMP. 40°-45°F DRILL RIG Acker DRILLER Eric Kaelin DATUM MSL
DEPTH WL. 77.01' BTOC HRS. PROD. — WT. SAMPLER HAMMER 140-165. DROP 24-inches STARTED 08:45 (TIME) 4-13-04 (DATE)
TIME WL. 16:58 5/25/04 HRS. DELAYED — WT. CASING HAMMER — DROP — COMPLETED 17:15 (TIME) 4-13-04 (DATE)

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
LI	LITTLE
M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK
SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SIY	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 5% "SOME" 12 - 30%
"LITTLE" - 5 - 12% "AND" 30 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0 4	VERY SOFT VS	EXTRUDES
LOOSE LS	4 10	SOFT S	MOLDS EASILY
COMPACT CP	10 30	FIRM FM	MOLDS
DENSE DN	30 50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	Drilled without Sampling to Screen Interval. For Description of Penetrated Materials, Please See Geologic Log For Predecessor Well 6KIID (6193).							
71								
72								
73								
74								
75								
76								
77								
78								
79								
80								
81								
82	(82.0'-98.0') Hard to Very Dense, gray (7.5YR 5/1), homogenous to stratified, CLAYEY SILT, SILTY CLAY, and F-C SAND, trace to little gravel, WR-SR, wet, (CL, ML, SW), SHALLOW DRIFT AQUIFER						82.0	#1 82.0-84.0' hard, gray (5YR 5/1), stratified, FSANDY CLAYEY SILT, tr f gravel, WR, wet (ML), SHALLOW DRIFT AQUIFER
83		35	1	S.S.	10, 11, 19, 29	0.8'/2.0'		
84							84.0	#2 84.0'-84.4' hard, gray (7.5YR 5/1), stratified, CLAYEY SILT, some f gravel, SR, wet, (ML)
85		40	2	S.S.	22, 25, 15, 23	1.5'/2.0'		84.4'-86.0' hard, gray (7.5YR 5/1), homogenous, SILTY CLAY, little f gravel, SR, wet, (CL), SHALLOW DRIFT AQUIFER
86							86.0	#3 86.0'-88.0' Hard, gray (7.5YR 5/1), homogenous, SILTY CLAY, little f gravel, SR, wet, (CL), SHALLOW DRIFT AQUIFER
87		60	3	S.S.	28, 30, 30, 33	1.1'/2.0'		
88							88.0	#4 88.0'-88.2' Hard, gray (7.5YR 5/1), stratified CLAYEY SILT, little f gravel, WR, wet, (ML)
89		38	4	S.S.	15, 9, 29, 37	1.1'/2.0'		88.2'-88.4' Hard, gray (7.5YR 5/1), homogenous, SILTY CLAY, little f gravel, SR, wet, (CL)
90							90.0	88.4'-90.0' Dense, gray (7.5YR 5/1), stratified, SILTY F SAND, SR, wet, (SP) SHALLOW DRIFT AQUIFER
91		61	5	S.S.	26, 35, 26, 17	1.0'/2.0'		#5 90.0'-92.0' Hard, gray (7.5YR 5/1), stratified, SILTY CLAY, f sand partings, tr f gravel, SR,
92							92.0	wet, (CL), SHALLOW DRIFT AQUIFER

Field Boring Log

DEPTH HOLE 98.0' JOB NO. 990403 PROJECT Well 6193 Replacement BORING NO. R193
DEPTH SOIL DRILL 98.0' GA INSP. K. Schneider DRILLING METHOD 10.0" Diameter Wash Rotary SHEET 5 OF 5
DEPTH ROCK CORE — WEATHER Sunny DRILLING COMPANY RO-n-R Drilling, Inc. SURFACE ELEV. 734.9'
NO. DIST. SA. 8 UD. SA. — TEMP. 40°-95° F DRILL RIG Acker DRILLER Eric Koelin DATUM MSL
DEPTH WL. 77.01' ISTOL HRS. PROD. — WT. SAMPLER HAMMER 140 lbs. DROP 24 inches STARTED 08:45 (TIME) 4-13-04 (DATE)
TIME WL. 16:58 5/25/04 HRS. DELAYED — WT. CASING HAMMER — DROP — COMPLETED 17:15 (TIME) 4-13-04 (DATE)

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
LI	LITTLE
M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK
SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SLY	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	(82.0'- 98.0') Hard to							#6 92.0'- 92.3' Hard, gray (7.5YR 5/1), stratified,
93	Very Dense, gray (7.5YR 5/1),	61	6	SS.	9, 19, 42, 50	1.1' / 2.0'		CLAYEY SILT, SR, wet, (ML)
	homogeneous to stratified,							92.3'- 94.0' Hard, gray (7.5YR 5/1), stratified,
94	CLAYEY SILT, SILTY CLAY,						94.0'	F-C SAND, tr gravel, SR, wet, (SW),
	and F-C SAND, trace to							SHALLOW DRIFT AQUIFER
95	little gravel, WR- SR,	61	7	SS.	29, 29, 32, 31	0.9' / 2.0'		#7 94.0'- 96.0' Very Dense, gray (7.5YR 5/1), stratified,
	wet, (CL, ML, SW),							SILT and F-C SAND, SR, wet, (ML-SW),
96	SHALLOW DRIFT AQUIFER							SHALLOW DRIFT AQUIFER
							96.0	#8 96.0'- 98.0' Hard, gray (7.5YR 5/1),
97		33	8	SS.	8, 12, 21, 96	0.9' / 2.0'		homogeneous, SILTY CLAY, trace F-C gravel, WR, wet,
								(CL), SHALLOW DRIFT AQUIFER
98								
	End of Borehole at 98.0'						98.0	4-13-04 17:15 Finished drilling to 98.0' by
								wash rotary.

Field Boring Log

DEPTH HOLE 65.0 Ft. JOB NO 99-9604 PROJECT RFI ZION BORING NO. RF25
DEPTH SOIL DRILL 65.0 Ft QA INSP. BAB DRILLING METHOD TRI CONE SHEET 1 OF 3
DEPTH ROCK CORE — WEATHER RAINY DRILLING COMPANY LAYNE - NW SURFACE ELEV. 757.40 FT
NO. DIST. SA. — UD. SA. — TEMP. 50's DRILL RIG BARBER DRILLER D. Wuitz DATUM MSL
DEPTH WL. — HRS. PROD. — WT. SAMPLER HAMMER — DROP — STARTED 1130, 5-12-99
TIME WL. — HRS. DELAYED — WT. CASING HAMMER — DROP — COMPLETED 1200, 5-14-99

SAMPLE TYPES: AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DS DENISON SAMPLE; PS PITCHER SAMPLE; RC ROCK CORE; ST SLOTTED TUBE; TO THIN WALL TO. OPEN; TP THIN WALL TO. PISTON; WS WASH SAMPLE

ABBREVIATIONS: BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYRD LAYERED; U LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OR ORANGE; ORG ORGANIC; PM PRESSUREMETER/DILATOMETER; PM PRESSUREMETER/MANUAL; R RED; REM REMOVAL; RT ROOT; SA SAMPLER; SAT SATURATED; SD SAND; SLT SILT; SLTY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WOH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION: "TRACE" - 0 - 10%; "SOME" 11 - 20%; "LITTLE" - 21 - 35% AND 35-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	PRESSUREMETER
VERY LOOSE VL	0-4	VERY SOFT VS	EXPANSIVE
LOOSE L	5-10	SOFT S	MODERATELY EXPANSIVE
COMPACT C	10-30	FIRM FM	MEDIUM
DENSE D	30-50	STIFF ST	PRESSURE INDICATES
VERY DENSE VD	50	VERY STIFF VST	PRESSURE INDICATES
		HARD H	PRESSURE INDICATES

ELEV. DEPTH	DESCRIPTION	BLOWS / FT		SAMPLES NO.	TYPE	BLOWS PER 6" (PEN.)	REC. / RET	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
2	(0.0-3.0) Soft, lt. yellowish brn to med brn, SILTY CLAY, moist, (CL) (TEMPORARY FILL)	N/A	X	N/A	CS	N/A	N/A		BEGIN BLIND DRILLING (0.0-3.0) Soft lt yellowish brn to med brn SILTY CLAY, moist, (CL)
	TOPSOIL								(SILTY FINE SAND)
4	(3.5-16.0) Firm, med brn to dk. brn, SILTY CLAY, moist (CL)	N/A	X	N/A	CS	N/A	N/A		(4.0-5.0) Firm, med brn to dk brn SILTY CLAY, moist (CL) trace soil and gravel sized
6									
8									
10									
12									
14									
16	(16.0-59.0) Firm to stiff, med grey, SILTY CLAY, moist to wet	N/A	X	N/A	CS	N/A	N/A		(16.0-17.5) Firm wet grey SILTY CLAY, moist (CL)
18									
20									
22									

Golder Associates

Field Boring Log

DEPTH HOLE 65.0 FT	JOB NO. 922-9609	PROJECT BC / ZION	BORING NO. RE25
DEPTH SOIL DRILL 65.0 FT	QA INSP. BAR	DRILLING METHOD TRI CONE	SHEET 2 OF 3
DEPTH ROCK CORE —	WEATHER CLOUDY	DRILLING COMPANY LAYNE - NW	SURFACE ELEV.
NO. DIST. SA. — UD. SA. —	TEMP. 50's	DRILL RIG SPERRY	DRILLER D. [illegible] DATUM
DEPTH WL. —	HRS. PROG.	WT. SAMPLER HAMMER —	DROP — STARTED 1130 / 5-12-99
TIME WL. —	HRS. DELAYED	WT. CASING HAMMER —	DROP — COMPLETED 2:00 / 5-14-99

SAMPLE TYPES: AS AUGER SAMPLE; CS CHUNK SAMPLE; DO CORE OPEN; DS DENISON SAMPLE; PS PISTON SAMPLE; RC ROCK CORE; ST SLOTTED TUBE; TO THIN WALLED OPEN; TP THIN WALLED PISTON; WS WASH SAMPLE

ABBREVIATIONS: BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LTD LAYERED; U UNIFORM; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG GRANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SANDY; SAT SATURATED; SD SAND; SLT SILTY; SOME SOME; TR TRACE; WL WATER LEVEL; WOH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

RELATIVE DENSITY	BLOWS	CONSISTENCY			
VERY LOOSE	VL	0-4	VERY SOFT	VS	ESTIMATED
LOOSE	L	4-10	SOFT	S	MOLDED TEST
COMPACT	C	10-30	FIRM	F	HAND
DENSE	D	30-50	STIFF	ST	PENETROMETER
VERY DENSE	VD	50	VERY STIFF	VST	PENETROMETER HOLE
			HARD	H	VISUAL EXAMINATION

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	TEST DATA	SAMPLE DESCRIPTION AND BORING NOTES
24	SEE PREVIOUS PAGE FOR DESCRIPTION							
26		N/A	-	CS	N/A	N/A		(25.0-26.0) SAA (SOR) (12.0-13.0) (C.) drop
28								
30								
32								
34								
36		N/A	-	CS	N/A	N/A		(35.0-36.0) SAA (25.0-26.0) clump
38								
40								
42								
44								

Golder Associates

Field Boring Log

DEPTH HOLE 65.0 FT | JOB NO. 993-9502 | PROJECT GALLEON | BORING NO. B-25
DEPTH SOIL DRILL 65.0 FT | QA INSP. B.A.G. | DRILLING METHOD 7" I.D. CSA | SHEET 3 OF 3
DEPTH ROCK CORE — | WEATHER CLOUDY | DRILLING COMPANY BECKER | SURFACE ELEV. —
ND DIST. SA. — | UD. SA. — | TEMP. 50's | DRILL RIG CME-75 | DRILLER D. LEWIS | DATUM —
DEPTH WL. — | HRS. PROD. — | WT. SAMPLER HAMMER — | DROP — | STARTED 1115 5-12-89
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 1515 5-12-89

SAMPLE TYPES: AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DS DENISON SAMPLE; FS FIXED PISTON SAMPLE; RC ROCK CORE; ST SHELBY TUBE; TO THIN WALLED, OPEN; TP THIN WALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS: BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GR GRAVEL; LTO LAYERED; L LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OR ORANGE; ORG ORGANIC; PP PRESSURE-PYROMETER; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SLTY SILTY; TR TRACE; WL WATER LEVEL; WOH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION
"TRACE" 0 - 10%; "SOME" 12 - 30%; "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FIELD PERMEABILITY
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTREMELY
LOOSE L	4-10	SOFT S	MODERATELY
COMPACT C	10-30	FIRM FM	MODERATE
DENSE D	30-50	STIFF ST	SLIGHT
VERY DENSE VDS	50+	VERY STIFF VST	VERY SLIGHT
		HARD H	IMPERVIOUS

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMMER BLOWS PER 6 INCHES	SAMPLES REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
48	SEE PREVIOUS PAGE FOR DESCRIPTION							
50								
52								
54								
56								BEGIN CONTINUOUS SAMPLING @ 58.0 FT BGS
58	- becomes wet	N/A	1	CA	N/A	N/A		#1 (58.0-59.5) [illegible]
60	(59.0-62.0) firm, mod grey, CLAYEY SILT tr. C-F sand, wet, (CL-ML)	N/A	2	CA	N/A	N/A		#2 (59.5-61.0) [illegible] CLAYEY SILT
		N/A	3	CA	N/A	N/A		#3 (61.0-62.5) SAA [illegible]
62		N/A	4	CA	N/A	N/A		
	(62.0-64.0) compact, mod grey, C-F SAND, tr to some f gravel, coarsening downward wet (SP-SW)	N/A	5	CA	N/A	N/A		#4 (62.5-64.0) [illegible]
64		N/A	6	CA	N/A	N/A		#5 (64.0-65.5) [illegible] SAND (SP)
	(64.0-65.5) stiff, mod grey, SILTY CLAY, wet. (CL)	N/A	7	CA	N/A	N/A		#6 (65.5-67.0) [illegible] SAND, some C-F gravel (SW)
66	END OF BORING @ 65.5 FT BGS							#7 (67.0-68.5) [illegible]

Field Boring Log

DEPTH HOLE 103 Ft	JOB NO. 010802	PROJECT Onyx Zion Site 2 Landfill			BORING NO. RC23
DEPTH SOIL DRILL 103Ft	INSP. J. Kinch	DRILLING METHOD 8" and 6" mud rotary			SHEET 1 OF 5
DEPTH ROCK CORE —	WEATHER Sunny & cloudy (80's) & Warm	DRILLING COMPANY K+S Engineers			SURFACE ELEV. 801.1
NO. DIST. SA. 3 UD. SA. —	TEMP. 60-80°F	DRILL RIG Diedrich D120	DRILLER Pete dela Cruz		DATUM MSL
DEPTH WL. 73.1' ±5	HRS. PROD. —	WT. SAMPLER HAMMER 140 lb	DROP 30 inches		STARTED 1450 (Time) / 8/23/01 (Date)
TIME WL. 7-6-01 16:45	HRS. DELAYED —	WT. CASING HAMMER —	DROP —		COMPLETED 1600 / 8/29/

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P	THIN-WALLED, PISTON
W.S	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTIO

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 6 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL MOUNT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
1	(0.0' - 29.0') Stiff, brownish gray (5YR 4/1) to olive gray (5Y 4/1), homogenous, SILTY CLAY, trace-little F-C sand, NR-SR, moist (CL), FILL						1	8/23/01 1450 Start drilling - drill without sampling to 81 ft. Materials described based on borehole log for GC23 and observation of cuttings discharged in mud return. Drilled to 84 ft with 7 7/8 inch bit.
2							2	
3							3	
4							4	
5							5	
6							6	
7							7	
8							8	
9							9	
10							10	
11							11	
12							12	
13							13	
14							14	
15							15	
16							16	
17							17	
18							18	
19							19	
20							20	
21							21	
23							23	
23							23	

Field Boring Log

DEPTH HOLE 103 Ft	JOB NO. 010802	PROJECT Onyx Zion Site 2 Lonoth II			BORING NO. RC25
DEPTH SOIL DRILL 103 Ft	INSP. T. Kinch	DRILLING METHOD 8" and 6" mud rotary			SHEET 2 OF 5
DEPTH ROCK CORE —	WEATHER Sunny/cloudy cool & warm	DRILLING COMPANY K+S Engineers			SURFACE ELEV. 801.1
NO. DIST. SA. 3 UD. SA. —	TEMP. 60°-80°F	DRILL RIG Diedrich D120	DRILLER Peter de la Cruz		DATUM MSL
DEPTH WL. 73.4' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lb	DROP 30 in.		STARTED 1450 (Time) / 8/22/01 (Date)
TIME WL. 9-6-01 16:45	HRS. DELAYED —	WT. CASING HAMMER —	DROP —		COMPLETED 1600 / 8/29/01

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
U	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTIO

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL MOVES
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24	(0.0'-29.0') Stiff, brownish gray (5YR 4/1) to olive gray (5Y 4/1), homogenous, SILTY CLAY, trace-little F-C sand, NR-SR, moist (CL), FILL							
25								
26								
27								
28								
29								
30	(29.0'-50.0') V. stiff, moderate yellowish brown (10 YR 5/4), homogenous, SILTY CLAY, trace F-C sand, NR, moist, (CL), FILL							
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								

Field Boring Log

DEPTH HOLE 103 Ft	JOB NO. 010802	PROJECT Onyx Zion Site 2 Land Fill		BORING NO. RCDS	
DEPTH SOIL DRILL 103 Ft	INSP. J. Kirch	DRILLING METHOD 8" and 6" mud rotary		SHEET 3 OF 5	
DEPTH ROCK CORE —	WEATHER sunny - cloudy cool & warm	DRILLING COMPANY K & S Engineers		SURFACE ELEV. 801.1	
NO. DIST. SA. 3 UD. SA. —	TEMP. 60-80°F	DRILL RIG Diedrich D120	DRILLER Pekarek/Cruz	DATUM MSL	
DEPTH WL. 73.4' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lb	DROP 30 inches	STARTED TIME 1450 DATE 8/23/01	
TIME WL. 9-6-01 16:45	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED TIME 1600 DATE 8/29/01	

SAMPLE TYPES

A.S.	AUGER SAMPLE	BL	BLACK
C.S.	CHUNK SAMPLE	BR	BROWN
D.O.	DRIVE OPEN	C	COARSE
D.S.	DENISON SAMPLE	CA	CASING
P.S.	PITCHER SAMPLE	CL	CLAY
R.C.	ROCK CORE	CLY	CLAYEY
S.T.	SLOTTED TUBE	F	FINE
T.O.	THIN-WALLED, OPEN	FRAG	FRAGMENTS
T.P.	THIN-WALLED, PISTON	GL	GRAVEL
W.S.	WASH SAMPLE	LYD	LAYERED
		LI	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE-MANUAL	WL	WATER LEVEL
R	RED	WH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTIO

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47	(29.0'-50.0') V. stiff, moderate yellowish brown (10 YR 5/4) homogenous, SILTY CLAY, trace F-C sand, WR, moist, (CL), FILL							
48								
49								
50								
51	(50.0'-63.0') V stiff, olive gray (5Y 4/1), to brownish gray (5YR 4/1) to medium dark gray (N4), homogenous, SILTY CLAY, little-some F-C sand and F gravel, SR, moist, (CL), FILL							
52								
53								
54								
55								
56								
57								
58								
59								
60								Some refuse noted in mud return at 60ft
61								
62								
63								
64	(63.0'-73.0') V. stiff, moderate yellowish brown (10 YR 5/4) to light olive gray (5Y 6/1) to pale yellowish brown (10 YR 6/2), homogenous, SILTY CLAY and CLAYEY SILT, trace F-C sand, SR, moist (CL), FILL							
65								
66								
67								
68								
69								

Field Boring Log

DEPTH HOLE 103 Ft | JOB NO. 010802 | PROJECT Onyx Zion Site 2 Landfill | BORING NO. RCZS
DEPTH SOIL DRILL 103 Ft | INSP. T. Kingh (sunny & cloudy) | DRILLING METHOD 8" and 6" mud rotary | SHEET 4 OF 5
DEPTH ROCK CORE — | WEATHER cool & Warm | DRILLING COMPANY KYS Engineers | SURFACE ELEV. 801.1
NO. DIST. SA. 3 UD. SA. — | TEMP. 60-80°F | DRILL RIG Diedrich D120 | DRILLER Patello Crue | DATUM MSL
DEPTH WL. 73.4 ' bgs | HRS. PROD. — | WT. SAMPLER HAMMER 140 16 | DROP 30.in | STARTED 1450 (TIME) 18/03/0 (DATE)
TIME WL. 9-6-01 16:45 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 1000 (TIME) 18/09 (DATE)

SAMPLE TYPES: A.S. AUGER SAMPLE; C.S. CHUNK SAMPLE; D.O. DRIVE OPEN; D.S. DENISON SAMPLE; P.S. PITCHER SAMPLE; R.C. ROCK CORE; S.T. SLOTTED TUBE; T.O. THIN-WALLED, OPEN; T.P. THIN-WALLED, PISTON; W.S. WASH SAMPLE

ABBREVIATIONS: BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; L LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SLT SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTI: "TRACE" 0-5%; "SOME" 12-30%; "LITTLE" 6-12%; "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE	
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EASILY	
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY	
COMPACT	CP	10-30	FIRM	FM	MOLDS	
DENSE	DN	30-50	STIFF	ST	THUMB MOLDS	
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL MOLDS	
			HARD	H	RESISTS THUMBNAIL	

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	(63.0'-73.0') V. stiff, moderate yellowish brown (10YR 5/4) to light olive gray (5Y 6/1) to pale yellowish brown (10YR 6/2), homogenous, SILTY CLAY to CLAYEY SILT, trace F-C sand, SR, moist, (CL), FILL							
71								
72								
73	(73.0'-78.0') v. dense, medium gray (N5) to moderate yellowish brown (10YR 5/4), stratified, F-C SAND, trace to some silt and clay, SR, wet, (SM-SW) GLACIAL-FLUVIAL							
74								
75								
76								
77								
78	(78.0'-103') hard, olive gray (5Y 4/1), homogenous, SILTY CLAY, trace-little F-C sand and F gravel, silt-filled shears, clayey silt horizon at 80.0'-80.6', SR, moist, (CL) UNWEATHERED LODGEMENT TILL							
79								
80								
81							81'	
82		17	1	S.1	4 7 10 12	2.0' 2.0'		No ① 81.0'-83.0' Firm, gray (5YR 5/1) SILTY CLAY, trace F-C sand and F gravel, moist, low plasticity, homogenous, (CL) TILL
83							83'	
84								8/28/01 12:10 set 6" steel casing to 82.8 ft
85								materials from 81.0 to 92.0' ft described based on borehole log for well GCZS and observation of cuttings discharged in mud return. Borehole drilled with 5 7/8" bit from 84 ft to depth.
86								
87								
88								
89								
90								
91								
92								

Field Boring Log

DEPTH HOLE 103 Ft | JOB NO. 010802 | PROJECT Onyx Zion Site 2 Landfill | BORING NO. RC2S
DEPTH SOIL DRILL 103 Ft | INSP. J. Kinch (Sunny & Cloudy) | DRILLING METHOD 8" and 6" mud rotary | SHEET 5 OF 5
DEPTH ROCK CORE — | WEATHER Cool & Warm | DRILLING COMPANY K+S Engineers | SURFACE ELEV. 801.1
NO. DIST. SA. 3 UD. SA. — | TEMP. 60-80° F | DRILL RIG Diedrich D120 | DRILLER Peñaloza Cruz | DATUM MSL
DEPTH WL. 73.4 ' 6/5 | HRS. PROD. — | WT. SAMPLER HAMMER 140 lb | DROP 30 in | STARTED 1450 (Time) 7/23/0 (Date)
TIME WL. 9-6-01 16:45 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 1600 (Time) 7/29/ (Date)

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTIC

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB MOLNTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL MOLNT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
93	(78.0' - 103') Hard, olive gray (5Y 4/1), homogenous, SILTY CLAY, trace - little F-C sand and F gravel, silt-filled shears, clayey silt horizon at 80.0'-80.6', SR, moist, (CL), UNWEATHERED LODGEMENT TILL							
94								
95								
96								
97							97	
98		32	2	SS	11 14 18 21	1.8'/2.0'		No. (2) 97.0'-99.0' SAFF, gray (5Y 4/1), 4/1) SILTY CLAY, little F-C sand and F gravel, moist, medium plasticity, homogenous, three 1"-2" lenses of silt and clayey silt (CL) TILL
99							99	
100							100	No (3) 100'-102' SAA with some fine gravel
102		33	3	SS	8 14 19 21	1.8'/2.0'		
103	End of borehole - 103'						102	8/29/01 1600 finish drilling to 103'

PROJECT Zion Landfill, Monitoring Well Installation

CLIENT BFI, 701 Green Bay Road, Zion, IL

BORING RG 8S DATE STARTED 10-20-98 DATE COMPLETED 10-20-98 JOB L-45,697

ELEVATIONS

GROUND SURFACE 746.1

END OF BORING 705.6

WATER TABLE

WHILE DRILLING

AT END OF BORING

24 HOURS

DISTANCE BELOW SURFACE, IN FEET	LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Qp	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
0										Blind drilling to 30.0'
30		1	SS	14				30.0	716.1	Stiff to very tough gray silty CLAY, trace sand and small gravel, moist (CL); 0.5" seam of brown silty CLAY at 34.5-34.6'; 2.0" seam of gray, fine to medium SAND, trace clay and silt at 34.6 - 34.8'; 5.0" seam of gray clayey SILT to SILT at 35.4-35.8'
35		2	SS	13						
		3	SS	10						
		4A	SS	11						
		4B	SS					37.8	708.3	
		5A	SS	6				39.0	707.1	Loose gray clayey to very clayey SILT, wet (ML)
40		5B	SS							Soft gray silty CLAY, trace sand and small gravel, moist (CL)
45										End of Boring at 40.5'
50										Monitoring Well Installation Notes
55										1. 4" SS-304 screen (0.010" slot): 30.0 - 40.2' 2. 4" SS-304 riser: + 2.4 - 30.0' 3. Coarse Silica Sand: 27.4 - 40.5' 4. Fine Silica Sand: 25.9 - 27.4' 5. Bentonite Grout: 4.0 - 22.4' 6. Bentonite Chips: 2.4 - 4.0' 7. Portland Cement Concrete 40.2 - 2.4' 8. Bentonite Chips: 22.4 - 25.9' 9. Protector casing concreted into place over riser
60										

DRILL RIG NO 127

Division lines between deposits represent approximate boundaries between soil types; in-situ, the transition may be gradual.

PROJECT BFI Zion Landfill B-484

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, Illinois

BORING RGK-1(D) DATE STARTED 1-12-93 DATE COMPLETED 1-18-93 JOB L-32,922

(6162) ELEVATIONS

GROUND SURFACE

END OF BORING

WATER TABLE

▼ WHILE DRILLING

▽ AT END OF BORING

▼ 24 HOURS

LENGTH & RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC.	Q_u	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
	1	SS	7						FILL - Gray silty CLAY, trace sand, small gravel, moist (CL)
	2	SS	0						
	3	SS	10				4.5 4.8		Brown clayey TOPSOIL, moist (OL)
	4	SS	17						Tough to very tough brown silty CLAY, mottled gray trace sand, small to medium gravel, moist (CL)
	5	SS	22						
	6	SS	12						
	7	SS	18						
	8	SS	12				14.5		
	9	SS	9						Tough gray silty CLAY, trace sand, small to medium gravel, moist (CL)
	10	SS	35						
	11	SS	7						
	12	SS	9						
	13	SS	7						
	14	SS	12						
	15	SS	10						
	16	SS	6						
	17	SS	12						
	18	SS	13						
	19	SS	16				36.0		Very tough gray silty CLAY, trace sand, small to medium gravel, moist (CL)
	20	SS	20						

DISTANCE BELOW SURFACE IN FEET

0 5 10 15 20 25 30 35 40

DRILL RIG NO. 53

B-485

PROJECT BFI Zion Landfill

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, Illinois

BORING RGK-1(D) DATE STARTED 1-12-93 DATE COMPLETED 1-18-93 JOB L-32,922

(6162) ELEVATIONS

GROUND SURFACE

END OF BORING

WATER TABLE

▼ WHILE DRILLING

▽ AT END OF BORING

▼ 24 HOURS

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
	21	SS	12						
	22	SS	18						
	23	SS	9						
	24	SS	19						Very tough gray silty CLAY, trace sand, small to medium gravel, moist (CL)
	25	SS	19						
	26	SS	8						
	27	SS	30				52.5		
	28	SS	32				54.5		Dense gray fine to coarse SAND and GRAVEL, wet (SW-GW)
	29	SS	36				55.5		Tough gray silty CLAY interbedded with silt, little sand, trace small gravel, moist (CL-ML)
	30	SS	20						
	31	SS	24						
	32	SS	28						
	33	SS	40						
	34	SS	29						Very tough gray silty CLAY, little sand, trace gravel, occasional thin sand seam (<1"), moist (CL)
	35	SS	27						
	36	SS	23						
	37	SS	25						
	38	SS	26						
	39	SS	25						
	40	SS	39						

DISTANCE BELOW SURFACE IN FEET

40 45 50 55 60 65 70 75 80

DRILL RIG NO. 53

B-486

PROJECT BFI Zion Landfill

CLIENT Browning-Ferris Industries, 701 Green Bay Road, Zion, Illinois

BORING RGK-1(D) DATE STARTED 1-12-93 DATE COMPLETED 1-18-93 JOB L-32,922

(6162) ELEVATIONS

GROUND SURFACE

END OF BORING

WATER TABLE

▼ WHILE DRILLING

▽ AT END OF BORING

▼ 24 HOURS

DISTANCE BELOW SURFACE IN FEET	LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Q_u	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
80		41	SS	33						Very tough gray silty CLAY, little sand, trace gravel, occasional thin sand seam (<1"), moist (CL)
		42	SS	35						
85		43	SS	18						
		44	SS	24						
		45	SS	24						
90		46	SS	22						
		47	SS	38						
95		48	SS	42						
		49	SS	36						
		50	SS	65						
100		51	SS	28						
								102.0		
		52	SS	51						Dense gray fine to coarse SAND, trace small to medium gravel, wet (SW)
105		53	SS	65						
		54	SS	46						
		55	SS	34				108.0		Dense gray clayey SILT, little sand, saturated (ML)
110										End of Boring at 109'
										Monitoring well installed at 109' A) 2"x5" 316 screen 104'-109' B) 2" SS 316 riser +3'-104' C) Silica sand 102'-109' D) Bentonite seal 99'-102' E) Bentonite grout 3'-99'
115										
120										

DRILL RIG NO. 53

Field Boring Log

DEPTH HOLE 80.5'	JOB NO. 990404	PROJECT WCA RT07 Replacement			BORING NO. AT07 (RT07)
DEPTH SOIL DRILL 80.5'	GA INSP. Drew Coppess	DRILLING METHOD 0.0'-68.5': 10.0" Rotary; 68.5'-80.5': 6.0" rotary			SHEET 1 OF 4
DEPTH ROCK CORE —	WEATHER Cloudy & Cold	DRILLING COMPANY RD-n-R Drilling, Inc.			SURFACE ELEV. 809.9'
NO. DIST. SA. 5 UD. SA. —	TEMP. 42°-65° F	DRILL RIG Acker Soilmax	DRILLER Eric Kaelin		DATUM MSL
DEPTH WL. 47.13' BTOC	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs.	DROP 30 inches		STARTED 12:55 / 4-19-04 (TIME / DATE)
TIME WL. 11:26 5/21/04	HRS. DELAYED —	WT. CASING HAMMER —	DROP —		COMPLETED 11:55 / 4-22-04

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	Drilled without Sampling to Screen Interval. For Description of Penetrated materials - Please see Geologic Log For Predecessor Well AT07R (RT07) (8/20/93).							4/19/04 12:55 start drilling AT07 with 10.0" wash rotary methods.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

Field Boring Log

DEPTH HOLE 80.5' | JOB NO. 990404 | PROJECT Well RT07 Replacement | BORING NO. AT07 (RT07)

DEPTH IN SOIL DRILL 80.5' | GA INSP. Drew Caccess | DRILLING METHOD 0.0'-68.5': 10.0" Rotary; 68.5'-80.5': 10.0" Rotary | SHEET 2 OF 4

DEPTH ROCK CORE — | WEATHER Cloudy & cold | DRILLING COMPANY RD-n-P Drilling, Inc. | SURFACE ELEV. 809.41

DIST. SA. S UD. SA. — | TEMP. 42°-65°F | DRILL RIG Acker Soilmax | DRILLER Eric Keelin | DATUM MSL

DEPTH WL. 47.13' BTOC | HRS. PROD. — | WT. SAMPLER HAMMER 140-lbs. | DROP 30-inches | STARTED 12:55 (TIME) / 4-19-04 (DATE)

TIME WL. 11:26 5/4/04 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 11:55 / 4-22-04

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0-5% "SOME" 13-30%
"LITTLE" - 5-12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT		SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	Drilled Without Sampling to Screen Interval. For Description of Penetrated Materials - Please See Geologic Log For Predecessor Well GT07R (RT07) (8/20/93).								
24									
25									
26									
27									
28									
29									
30									
31									
32									
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35									
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41									
42									
43									
44									
45									
46									

Field Boring Log

DEPTH HOLE 80.5' | JOB NO. 190404 | PROJECT Well RT07 Replacement | BORING NO. AT07 (RT07)
DEPTH SOIL DRILL 80.5' | GA INSP. Drew Copperss | DRILLING METHOD 0.0'-68.5': 10.0" Rotary; 68.5'-80.5': 6.0" Rotary | SHEET 3 OF 4
DEPTH ROCK CORE — | WEATHER Cloudy & cold | DRILLING COMPANY B.D-n-P Drilling, Inc. | SURFACE ELEV. 809.4'
NO. DIST. SA. 5 UD. SA. — | TEMP. 42°-65° F. | DRILL RIG Acker Soilmax | DRILLER Eric Karlin | DATUM MSL
DEPTH WL. 47.13' BTOC | HRS. PROD. — | WT. SAMPLER HAMMER 140 - lbs. | DROP 30 - inches | STARTED 12:55 (TIME) / 4-19-04 (DATE)
TIME WL. 11:26 5/21/04 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 11:55 (TIME) / 4-22-04 (DATE)

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.B.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47	Drilled Without Sampling to Screen Interval. For Description of Penetrated Materials - Please See Geologic Log for Predecessor Well GT07R (RT07) (8/20/93).							4-19-04 17:00 Stop drilling 10.0" wash rotary borehole at 58.0' for the day.
48								
49								4-20-04 09:10 Resume drilling 10.0" wash rotary borehole.
50								
51								4-20-04 09:30 Finish drilling 10.0" wash rotary borhole to 68.5'. Prepare to set 6.0" permanent steel casing.
52								
53								4-20-04 15:30 Finish setting 6.0" permanent steel casing to 68.8' BGS. Sealed annular space around permanent steel casing to about 46.5' BGS with pure bold bentonite grout.
54								
55								4-20-04 15:35 Finish work for the day to allow bentonite grout to set overnight.
56								
57								4-21-04 07:00 Resume work. Seal remaining annular space around 6.0" permanent steel casing to ground surface with cement-bentonite grout.
58								
59								4-21-04 12:00 Finish grouting permanent steel casing. Stop work and allow grout to set overnight.
60								
61								
62								
63								
64								
65								
66								
67								
68								
69								

Field Boring Log

DEPTH HOLE 80.5'	JOB NO. 990404	PROJECT Well RT07 Replacement	BORING NO. AT07 (RT07)
DEPTH SOIL DRILL 80.5'	QA INSP. Drew Ingress	DRILLING METHOD 0.0'-69.5': 10.0" Rotary; 69.5'-80.5's 6.0' rotary	SHEET 4 OF 4
DEPTH ROCK CORE —	WEATHER Cloudy / Cold	DRILLING COMPANY RD-n-P Drilling, Inc.	SURFACE ELEV. 809.4'
NO. DIST. SA. 5 UD. SA. —	TEMP. 42°-65°F	DRILL RIG Acker Soilmex	DRILLER Eric Kaelin
DEPTH WL. 47.13' BTOC	HRS. PROD. —	WT. SAMPLER HAMMER 140-lbs.	DROP 30-inches
TIME WL. 11:26 5/21/04	HRS. DELAYED —	WT. CASING HAMMER —	DROP —

DATUM MSL
STARTED 12:55 (TIME) 4-19-04 (DATE)
COMPLETED 11:55 4-22-04

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SLY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	Drilled Without Sampling to Screen Interval. For Description of Penetrated Materials Please See Geologic Log for Predecessor Well 6T07R (RT07) (8/20/93).							4-22-04 09:05 Began drilling through 6.0" permanent steel casing with 5 7/8" wash rotary.
71							71.5	#1 71.5'-73.5' Very stiff dark gray (5YR 4/1), stratified, CLAYEY SILT, WR, moist, (ML) UNDESIGNATED WATER BEARING SEDIMENTS
72	(71.5'-77.5') Compact to very stiff, gray (5YR 6/1) to dark gray (5YR 4/1), stratified, CLAYEY SILT and F-C SAND, WR, moist to wet, (ML-SW), UNDESIGNATED WATER BEARING SEDIMENTS	20	1	S.S.	4,10,10,16	1.5' / 2.0'		
73							73.5	#2 73.5'-75.5' Compact, gray (5YR 6/1), stratified, F-C SAND, trace gravel, WR, wet, (SW), UNDESIGNATED WATER BEARING SEDIMENTS
74		14	2	S.S.	4,10,4,15	1.0' / 2.0'		
75							75.5	#3 75.5'-76.7' - SAA
76		22	3	S.S.	7,19,12,15	0.8' / 2.0'		76.7'-77.5' Very stiff grey (5Y 6/1), stratified, SILTY CLAY, some F-C Sand, trace gravel, WR, wet, (CL), UNDESIGNATED WATER BEARING SEDIMENTS
77								
78	(77.5'-80.5') Very stiff, olive gray (5Y 5/2), homogeneous, SILTY CLAY, trace sand and gravel, SR, moist, (CL), WADSWORTH TILL	21	4	S.S.	7,5,16,23	2.0' / 2.0'	77.5	#4 77.5'-79.5' Very stiff, olive gray (5Y 5/2), homogeneous, SILTY CLAY, trace sand and gravel, SR, moist, (CL), WADSWORTH TILL
79								
80		17	5	S.S.	10,17	0.5' / 1.0'	79.5	#5 - SAA
81	End of Borhole at 80.5'						80.5	4/22/04 11:55 Finish drilling to 80.5' by 5 7/8" wash rotary methods.
82								
83								

Field Boring Log

DEPTH HOLE 57.0 | JOB NO. 990403 | PROJECT Zion Site 2 Landfill | BORING NO. R002
DEPTH SOIL DRILL 57.0 | INSP. KS/AMH | DRILLING METHOD 0.0'-14.0': 6.25" HSA; 14.0'-57.0': 6.0" mud/WashRotary | SHEET 1 OF 1
DEPTH ROCK CORE — | WEATHER cloudy | DRILLING COMPANY K.J.'s Engineers, Inc. | SURFACE ELEV. 691.0
NO. DIST. SA. — UD. SA. — | TEMP. ~ 40° F | DRILL RIG Dietrich D-50 | DRILLER Ruben Perez | DATUM MSL
DEPTH WL. 37.50' TOC | HRS. PROD. — | WT. SAMPLER HAMMER — | DROP — | STARTED 08:30 (TIME) / 10/29/02 (DATE)
TIME WL. 11:35 11/20/02 | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 16:40 / 10/29/02

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTIO

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL MOLDS
			HARD	H	RESISTS THUMBNAIL

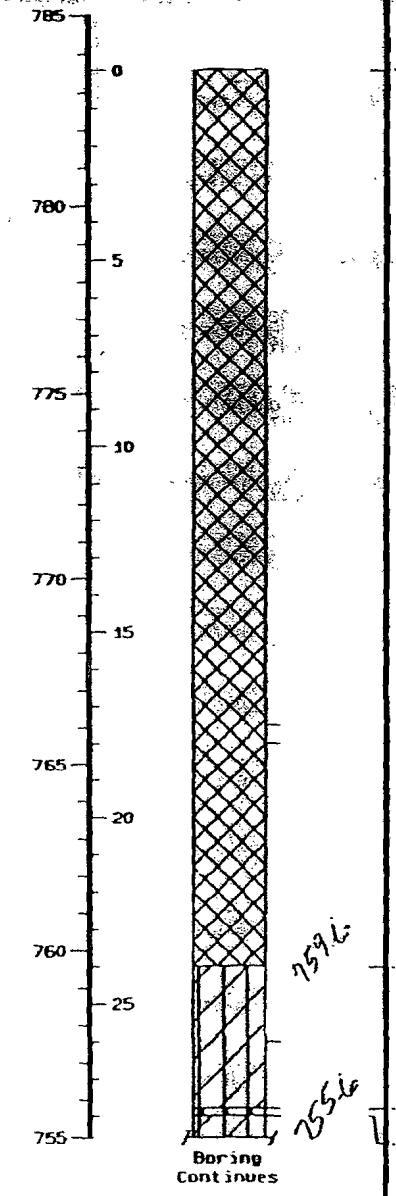
ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	Blind drill to 57.0-feet							Borhole R002 drilled within 10-feet of former well TOOL GI a replacement. No sampling was performed.
3							3	
6							6	Advance 6.25-inch I.D. HSA to 14.0-feet.
9							9	Pull water return casing at surface.
12							12	
15							15	Begin mud rotary drilling at 10:05 at depth of 14.0-feet. Good water return established.
18							18	
21							21	
24							24	
27							27	
30							30	
33							33	
36							36	
39							39	
42							42	
45							45	Target depth was 54.0-feet. Overdrilled to 57.0-feet to accomodate possible sand collapse into borehole. Hole flushing with water induced sand collapse. Ribbon bottom of borehole with mud rotary. Flush borehole with 750 gallons of clean water after setting 2.0-inch well casing at depth of 54.3-feet.
48							48	
51							51	
54							54	
57	End of Boring at 57.0'						57	

SOIL BORING LOG

BORING SB-1

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11739.39N 9375.68E
BORING NO.: SB-1
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 783.58'
TOTAL DEPTH: 86
DATE START: 10/22/91
DATE END: 10/23/91
LOGGED BY: JDA, SMG



ELEVATION / DEPTH	USCS	Description	Remarks	Sample Number
		STRAIGHT DRILL WITHOUT SAMPLING TO 14' DRILLER NOTES "SOFTER" DRILLING @ 11-12'		
		DK. BROWN SILTY CLAY W/TRACE SAND & GRAVEL DAMP, PLASTIC, FIRM	SPLIT SPOON SS-1 14-16 FT. BLOWS/6 INCHES: 6, 8, 9 4" RECOVERY	
			SS-2 16-18 FEET 4, 4, 5, 6 (BLOWS/6") 18" RECOVERY	
			SS-3 18-20 FEET 3, 4, 5, 7 (BLOWS/6") 20" RECOVERY	S-1 GS-1
			SS-4 20-22 FEET 7, 10, 14, 15 (BLOWS/6") 24" RECOVERY	
			SS-5 22-24 FEET 7, 12, 10, 10 (BLOWS/6") 18" RECOVERY	
		V.FINE Lt.BROWN SILT SEANS, DRY		
		Lt. BROWN SILTY CLAY W/TRACE SAND, DAMP FIRM, PLASTIC, VERT. PARTINGS W/ROOTS & CRYSTAL FORMATION	SS-6 24-26 FEET 3, 5, 7, 8 (BLOWS/6") 24" RECOVERY	
			SS-7 26-28 FEET 8, 10, 14, 22 (BLOWS/6") 18" RECOVERY	S-2
		2" WET TO SATURATED GRAY SILT/FINE SAND SEAM	SS-8 28-30 FEET 5, 5, 9, 12 (BLOWS/6") 24" RECOVERY	GS-2 S-3
		DK. BROWN SILTY CLAY W/TRACE SAND, DAMP STIFF, PLASTIC OXIDIZED VERT. PARTINGS		

BORING GROUTED TO SURFACE WITH A BENTONITE SLURRY

SOIL BORING LOG

BORING SB-1

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11739.39N 9375.68E
BORING NO.: SB-1
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 783.58'
TOTAL DEPTH: 86
DATE START: 10/22/91
DATE END: 10/23/91
LOGGED BY: JDA, SMG

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
755 / 30				SS-9 30-32 FEET 5,8,10,13 (BLOWS/6") 24" RECOVERY	
			SAME AS ABOVE, WET SAND SEAM @ 31.5 VERT. PARTINGS W/ MOISTURE CONTENT INCREASING W/DEPTH	SS-10 32-34 FEET 8,10,14,19 (BLOWS/6") 24" RECOVERY	S-4
750 / 35				SS-11 34-36 FEET 7,9,13,15 (BLOWS/6") 24" RECOVERY	
	746.6			SS-12 36-38 FEET 6,7,10,12 (BLOWS/6") 24" RECOVERY	
			GRAY SILTY CLAY W/SAND & TRACE GRAVEL DAMP, STIFF, V.PLASTIC	SS-13 38-40 FEET 5,8,9,9 (BLOWS/6") 24" RECOVERY	
745 / 40				SHELBY TUBE ST-1 PUSHED TUBE FROM 40-42 FT. 24" RECOVERY	GS-3
				SS-14 42-44 FEET 7,12,16,18 (BLOWS/6") 24" RECOVERY	
740 / 45			SAME AS ABOVE, CONTAINS HAIRLINE HORZ. SEANS OF Lt.GRAY SILT @ 44.5' & 45.2'	SS-15 44-46 FEET 5,8,10,10 (BLOWS/6") 24" RECOVERY	S-5
				SS-16 46-48 FEET 6,10,14,15 (BLOWS/6") 24" RECOVERY	
735 / 50				SS-17 48-50 FEET 5,6,9,11 (BLOWS/6") 24" RECOVERY	
				SS-18 50-52 FEET 8,10,13,17 (BLOWS/6") 24" RECOVERY	
				SS-19 52-54 FEET 7,14,15,15 (BLOWS/6") 24" RECOVERY	GS-4
730 / 55			SAME AS ABOVE, CONTAINS GREEN COLOR SMEARS INCREASED SAND CONTENT		
			SAME AS ABOVE, CONTAINS SAND PARTING @ 54.3' GRAY SILTY CLAY, STIFF, LITTLE SAND, MOIST, PLASTIC	SS-20 54-56 FEET 6,7,9,11 (BLOWS/6") 24" RECOVERY	
				SHELBY TUBE ST-2 PUSHED TUBE FROM 56-58' 22" RECOVERY	S-6
725	Boring Continues			SS-21 58-60 FEET 5,7,9,13 (BLOWS/6") 24" RECOVERY	

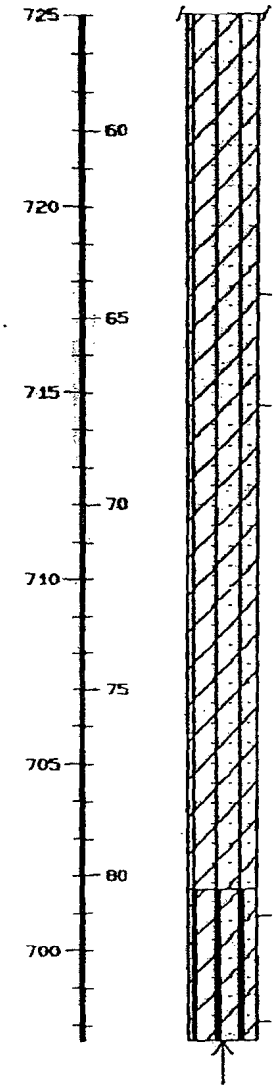
BORING GROUTED TO SURFACE WITH A BENTONITE SLURRY

SOIL BORING LOG

BORING SB-1.

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11739.39N 9375.68E
BORING NO.: SB-1.
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 783.58
TOTAL DEPTH: 86
DATE START: 10/22/91
DATE END: 10/23/91
LOGGED BY: JDA, SMG

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
725 / 60				SS-22 60-62 FEET 8 10 12 17 (BLOWS/6") 24" RECOVERY	
				SS-23 62-64 FEET 12 18 21 24 (BLOWS/6") 24" RECOVERY	
720 / 65				SS-24 64-66 FEET 6 8 9 12 (BLOWS/6") 24" RECOVERY	
				SS-25 66-68 FEET 7 12 16 22 (BLOWS/6") 24" RECOVERY	S-7
715 / 70				SS-26 68-70 FEET 6 9 11 14 (BLOWS/6") 24" RECOVERY	S-8
				SS-27 70-72 FEET 7 9 11 22 (BLOWS/6") 18" RECOVERY	
710 / 75				SS-28 72-74 FEET 14 19 28 28 (BLOWS/6") 12" RECOVERY	
				SS-29 74-76 FEET 6 9 12 21 (BLOWS/6") 18" RECOVERY	
705 / 80				SS-30 76-78 FEET 8 17 19 26 (BLOWS/6") 18" RECOVERY	
				SS-31 78-80 FEET 7 12 17 26 (BLOWS/6") 18" RECOVERY	
				SS-32 80-82 FEET 6 12 16 19 (BLOWS/6") 21" RECOVERY	
700	783.1		GRAY SILTY CLAY, LITTLE SAND, DENSE, MOIST, HARD, SL.PLASTIC	SS-33 82-84 FEET 16 28 31 35 (BLOWS/6") 20" RECOVERY	S-9
				SS-34 84-86 FEET 18 20 28 30 (BLOWS/6") 22" RECOVERY	S-10

SOIL BORING GROUTED TO SURFACE WITH BENTONITE SLURRY

SOIL BORING LOG

BORING SB-2

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11575.74N 9373.30E
BORING NO.: SB-2
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 787.08'
TOTAL DEPTH: 96
DATE START: 10/24/91
DATE END: 10/26/91
LOGGED BY: JDA

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
790 / 0			STRAIGHT DRILL TO 18' 0-12' GRAY SILTY CLAY 12-18 BROWN SILTY CLAY		
785 / 5					
10					
775 / 15					
770 / 20			NOTTLED RUST BROWN SILTY CLAY W/SAND & GRAVEL. DAMP TO DRY. PLASTIC-FRIABLE	SS-1 18-20' (4,5,7,8) 14" SS-2 20-22' (3,4,4,7) 18" SS-3 22-24' (7,7,10,12) 18"	
765 / 25			SAME AS ABOVE W/ORGANIC RICH SEAMS	SS-4 24-26' (3,4,5,6) 16" SS-5 26-28' (4,4,6,7) 18" SS-6 28-30' (2,3,4,4) 20"	S1,GS1
760	Boring Continues				

SOIL BORING GROUTED WITH A BENTONITE SLURRY

SOIL BORING LOG

BORING SB-2

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11575.74N 9373.30E
BORING NO.: SB-2
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 787.08'
TOTAL DEPTH: 96
DATE START: 10/24/91
DATE END: 10/26/91
LOGGED BY: JDA

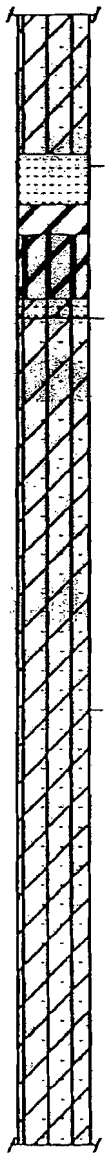
ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
760					
30				SS-7 30-32" (3, 4, 5, 6) 19" SS-8 32-34" (8, 10, 10, 12) 20" SS-9 34-36" (8, 10, 12, 14) 20"	S2, 6S2
755					
35	751.6		OXIDIZED BROWN SILTY CLAY W/SAND & GRAVEL FIRM, DAMP, SL PLASTIC, VERT & HORZ FRACTURES OXIDIZED, BLK PPT. & ROOTS	SS-10 36-38" (11, 14, 18, 25) SS-11 38-40" (5, 9, 11, 16) 21" SS-12 40-42" (4, 8, 10, 11) 20"	S-3
750					
40					
745				S-13 42-44" (7, 12, 16, 20) S-14 44-46" (6, 10, 12, 15) S-15 46-48" (8, 12, 13, 15)	S4, 6S3
	743.1		GRAY SILTY CLAY W/TRACE SAND & GRAVEL MOIST, V.PLASTIC, FEW HAIRLINE HORZ. SILT/CLAY SEAMS		
45					
740				SS-16 48-50" (5, 6, 9, 12) SS-17 50-52" (3, 7, 9, 9) SS-18 52-54" (7, 12, 13, 16)	S-5
50			@ 50.5" Lt.BROWN SILT SEAM W/SLIGHT GREENISH TINT, LAMINATED APPEARENCE		S-6
735	734.6		V.FINE-MED. BROWN SAND W/FINES, SATURATED		S7, V1
	733.1		GRAY SILTY CLAY, TRACE SAND, STIFF, MOIST, PLASTIC	SS-19 54-56" (3, 6, 9, 10) SS-20 56-58" (4, 6, 11, 11) SS-21 58-60" (6, 8, 10, 12)	
55					
730	Boring Continues				

SOIL BORING GROUTED WITH A BENTONITE SLURRY

SOIL BORING LOG

BORING SB-2

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
PROJECT NO.: 06053
GRID COORDINATES: 11575.74N 9373.30E
ELEV.: 787.08'
BORING NO.: SB-2
TOTAL DEPTH: 96
DRILLING METHOD: 3.25" H.S AUGERS
DATE START: 10/24/91
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
DATE END: 10/26/91
FINAL WATER LEVEL: N/A
LOGGED BY: JDA

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
730 / 60				ST-1 60-62" 8" RECOVERY SS-22 62-64 (3, 4, 6, 8) 24"	
			COARSE SAND W/TRACE GRAVEL, SOME FINES SATURATED	SS-23 64-66" (3, 8, 10, 11)	S-8
725			GRAY CLAY, V.PLASTIC, COHESIVE, SOFT MOIST		
			GRAY SILT W/CLAY & TRACE SAND & GRAVEL SOFT, VERY PLASTIC, COHESIVE		
65			SILTY SAND W/CLAY, MOIST		
			GRAY SILTY CLAY W/SAND & TRACE GRAVEL V.PLASTIC, COHESIVE, STIFF, SL MOIST-DAMP, SEVERAL SMALL SAND POCKETS		S-9
720				ST-2 66-68" NO RECOVERY ST-3 68-70" NO RECOVERY SS-24 70-72" (5, 7, 10, 15)	
70					
715				ST-4 72-74" NO RECOVERY SS-25 74-76" (5, 8, 11, 16) SS-26 76-78" (7, 8, 10, 11)	
75					
					S-10
710					
			SAME AS ABOVE, 1" THICK SAND SEAM @ 78.5'	SS-27 78-80" (7, 8, 10, 11) ST-5 80-82" 100% RECOVERY SS-28 82-84" (DROPPED) 20"	
80					
705					
				SS-29 84-86" (8, 10, 11, 12) SS-30 86-88" (8, 11, 15, 21) SS-31 88-90" (9, 13, 18, 20)	
85					
700	Boring Continues				

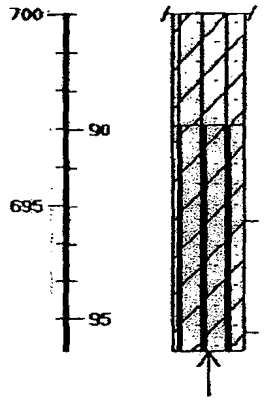
SOIL BORING GROUTED WITH A BENTONITE SLURRY

SOIL BORING LOG

BORING SB-2

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11575.74N 9373.30E
BORING NO.: SB-2
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 787.08'
TOTAL DEPTH: 96
DATE START: 10/24/91
DATE END: 10/26/91
LOGGED BY: JDA

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
700 90 695 95			BROWNISH GRAY V SILTY CLAY W/SOME SAND & GRAVEL, SL PLASTIC, DENSE, V STIFF	SS-32 90-92' (9,15,25,28) SS-33 92-94' (12,13,17,22) SS-34 94-96' (8,17,19,20)	S-12 S-11

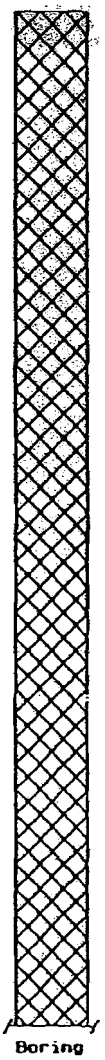
SOIL BORING GROUTED WITH A BENTONITE SLURRY

SOIL BORING LOG

BORING SB-3

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11517.68N 9374.32E
BORING NO.: SB-3
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 786.98'
TOTAL DEPTH: 98'
DATE START: 10/28/91
DATE END: 10/29/91
LOGGED BY: JDA

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
790 / 0			STRAIGHT DRILL TO 28' W/O SAMPLING OXIDIZED BROWN/GRAY MOTTLED SILTY CLAY W/ SAND & TR.GRAVEL & ORGANIC RICH LAYERS		
785 / 5					
780 / 10					
775 / 15					
770 / 20					
765 / 25					
760	Boring Continues				

SOIL BORING GROUTED TO SURFACE WITH A BENTONITE SLURRY

SOIL BORING LOG

BORING SB-3

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11517.68N 9374.32E
BORING NO.: SB-3
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 786.98'
TOTAL DEPTH: 98'
DATE START: 10/28/91
DATE END: 10/29/91
LOGGED BY: JDA

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
760				SS-1 28-30" (4, 5, 9, 12) 20"	
				SS-2 30-32" (6, 6, 7, 8) 18"	
30			NOTTLED GRAY/BROWN SILTY CLAY W/ORGANIC RICH LAYERS, V.PLASTIC, DAMP-MOIST, SMALL PIECE OF PLASTIC IN SAMPLE (BERM)	SS-3 32-34" (8, 14, 26, 31)	
755					
				SS-4 34-36" (6, 8, 12, 15) 22"	
				SS-5 36-38" (13, 22, 27, 33)	
35			BROWN SILTY CLAY W/SAND & GRAVEL, DAMP, PLASTIC, FIRM, VERT. GRAY SILT FILLED FRACTURES OXIDIZED	SS-6 38-40" (7, 9, 11, 12)	S-1
750					GS-1
40				SS-7 40-42" (5, 9, 10, 12)	
				SS-8 42-44" (5, 7, 9, 11)	
				SS-9 44-46" (5, 7, 9, 12)	S-2
745			GRAY SILTY CLAY W/SAND & TRACE GRAVEL, FIRM, DAMP, PLASTIC		
45					
				SS-10 46-48" (4, 7, 9, 11)	
740				SS-11 48-50" (4, 6, 7, 9)	
				SS-12 50-52" (6, 7, 9, 10)	GS-2
			SAME AS ABOVE, COARSE SAND POCKET @ 49', VERT. PARTING FILLED W/COARSE SAND @ 50' (WET)		S-3
50					
735				SS-13 52-54" (7, 12, 18, 20)	
				SS-14 54-56" (4, 6, 9, 12)	
				SS-15 56-58" (5, 9, 12, 15)	
55			SAME AS ABOVE, HORZ. COARSE SAND SEAM @55' WET, TILL CONTAINS HORZ. HAIRLINE SILT/CLAY PARTINGS		S-4
730	Boring Continues				

SOIL BORING GROUTED TO SURFACE WITH A BENTONITE SLURRY

SOIL BORING LOG

BORING SB-3

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11517.68N 9374.32E
BORING NO.: SB-3
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 786.98'
TOTAL DEPTH: 98'
DATE START: 10/28/91
DATE END: 10/29/91
LOGGED BY: JDA

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
730				ST-1 58-60' 100% RECOVERY	
				SS-16 60-62' (4, 5, 17, 6)	
60				SS-17 62-64' (3, 6, 7, 11)	
725			LAMINATED FINE SAND & SILT/CLAY- V.PLASTIC V.SOFT, MOIST W/ SLIGHT GRAY/GREEN TINT		S-5
					S-6
				SS-18 64-66' (6, 9, 11, 12)	
65			GRAY SILTY CLAY W/SAND & GRAVEL, DAMP, V.PLASTIC, FIRM @ 65.5-65.8' SAND RICH SEAM	SS-19 66-68' (5, 6, 7, 10)	
				SS-20 68-70' (0, 3, 5, 7) 18"	
720			LAMINATED SILT/CLAY, V.PLASTIC, V.SOFT, MOIST		
			GRAY V.FINE-MED. SAND W/FINES, LOOSE-SL.COHESIVE, SATURATED, INCREASED SILT CONTENT @68.4' & @69' SAND/SILT SATURATED		S-7 V-1
70			GRAY SILTY CLAY W/SAND & GRAVEL, DAMP, V.PLASTIC, SAND SEAMS @ 72.5-72.8' & 74.2-74.3' TILL FIRM JUST BELOW SAND LENS, BECOMES STIFF WITH DEPTH	SS-21 70-72' (4, 5, 11, 12)	
				SS-22 72-74' (6, 11, 15, 21)	
715				SS-23 74-76' (7, 9, 11, 12)	
					S-8
75					
				SS-24 76-78' (7, 9, 13, 17)	
710				SS-25 78-80' (6, 7, 9, 10)	
				SS-26 80-82' (6, 9, 13, 16)	
80					
705					S-9
				SS-27 82-84' (5, 12, 19, 21)	
				SS-28 84-86' (9, 11, 16, 18)	
85				SS-30 86-88' (9, 15, 21, 29)	
700	Boring Continues				

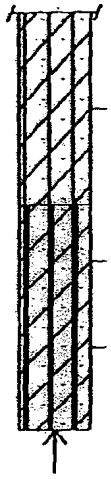
OIL BORING GROUTED TO SURFACE WITH A BENTONITE SLURRY

SOIL BORING LOG

BORING SB-3

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11517.68N 9374.32E
BORING NO.: SB-3
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 786.98'
TOTAL DEPTH: 98'
DATE START: 10/28/91
DATE END: 10/29/91
LOGGED BY: JDA

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
700				SS-30 88-90' (7, 11, 15, 22) SS-31 90-92' (9, 11, 17, 22) SS-32 92-94' (7, 12, 19, 32)	
90			SAME, HORZ. HAIRLINE FINE SAND & SILT SEAMS, WET. TILL SOFTER W/INCREASED SAND CONTENT		S-10
695			BROWNISH GRAY V.SILTY CLAY W/SOME SAND & GRAVEL, SL.PLASTIC, DENSE, V.STIFF		
				SS-33 94-96' (9, 16, 22, 27) SS-34 96-98' (8, 16, 22, 28)	S-11
95					S-12
690					

SOIL BORING GROUTED TO SURFACE WITH A BENTONITE SLURRY

SOIL BORING LOG

BORING SB-4

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11449.04N 9373.09E
BORING NO.: SB-4
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 786.94
TOTAL DEPTH: 99
DATE START: 10/28/91
DATE END: 10/30/91
LOGGED BY: SMG

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
790 / 0			STRAIGHT DRILL WITHOUT SAMPLING TO 30' BERM MATERIAL: BROWN SILTY CLAY- MOTTLED GRAY		
785 / 5					
780 / 10					
775 / 15					
770 / 20					
765 / 25				HP - HAND PENETROMETER - (TON/SQUARE FT.)	
760	Boring Continues				

SOIL BORING GROUTED TO SURFACE WITH BENTONITE SLURRY

SOIL BORING LOG

BORING SB-4

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11449.04N 9373.09E
BORING NO.: SB-4
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 786.94
TOTAL DEPTH: 99
DATE START: 10/28/91
DATE END: 10/30/91
LOGGED BY: SMG

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
760					
30			BROWN & GRAY V.SILTY CLAY, TRACE SAND & GRAVEL, MOIST FIRM-STIFF, FEW ORGANIC LAYERS "PLANT"	CONTINUOUS SAMPLER 30-35' C-1 5' RECOVERY HP = 1.5-3.0	
755					
35				C-2 35-40' NO RECOVERY SPLIT SPOON SS-1 40-42 FT. 14, 19, 19, 23 (BLOW/6") 24"	S-1
750			BROWN SILTY CLAY W/TRACE SAND & GRAVEL DAMP, V.STIFF, PLASTIC		
40					S2, GS1
745			GRAY SILTY CLAY W/TRACE SAND & GRAVEL MOIST, V.FIRM-STIFF, PLASTIC 1" SAND LAYER @ 42.8'	C-3 42-45' 3" RECOVERY HP = 1.5-2.5	S-3
45				C-4 45-50' FULL RECOVERY HP = 2.5	S-4
740					
50			SAME AS ABOVE, LITTLE SAND, TRACE SMALL COBBLES	C-5 50-55' FULL RECOVERY HP = 2.5-3.0	S-5
735					
55				C-6 55-60' FULL RECOVERY HP = 1.5-2.5	
730	Boring Continues		SAME AS ABOVE, CONTAINS HAIRLINE SILT PARTINGS FROM 56.5-60'		

SOIL BORING GROUTED TO SURFACE WITH BENTONITE SLURRY

SOIL BORING LOG

BORING SB-4

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11449.04N 9373.09E
BORING NO.: SB-4
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 786.94
TOTAL DEPTH: 99
DATE START: 10/28/91
DATE END: 10/30/91
LOGGED BY: SMG

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
730					
60	726.9		GRAY CLAYEY SILT W/V.FINE SAND, MOIST	SS-2 60-62' 2' RECOVERY 5,6,9,12 (BLOWS/6")	
725			GRAY SILTY CLAY W/TRACE SAND & GRAVEL MOIST, STIFF, PLASTIC	C-7 62-65' 3' RECOVERY HP = 1.25-1.50	
65				SHELBY TUBE ST-1 65-67' FULL RECOVERY	
720				C-8 67-70' 3' RECOVERY HP = 1.0	
			GRAY CLAYEY SILT W/TR.SAND, FIRM DAMP-MOIST (TILL) INCREASED SILT CONTENT OBSERVED		
70			GRAY SILTY CLAY W/TRACE SAND & GRAVEL STIFF, PLASTIC THIN SAND SEAMS @ 70.5-71.8'		S-6
715				C-9 70-75' FULL RECOVERY HP = 1.5	S-7
	712.9				
			2" SAND SEAM W/SOME FINES, WET @ 74'		S-8
75			GRAY V.SILTY CLAY W/SOME SAND & TR.GRAVEL MOIST, STIFF TO V.STIFF, PLASTIC 1/2" FINE SAND SEAM, WET @ 75.8'	C-10 75-80' FULL RECOVERY HP = 1.5-2.0	
710					
80				ST-2 80-82' 2' RECOVERY C-11 82-85' 3' RECOVERY HP = 2.5-3.0	S-9
705					
85				C-12 85-90' FULL RECOVERY HP = 2.5-3.0	
700	Boring Continues				

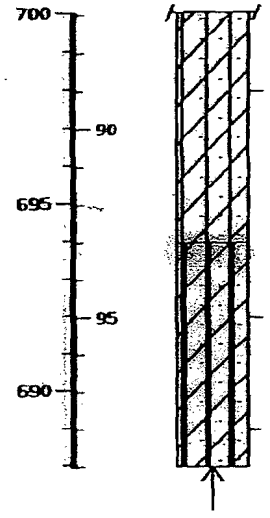
SOIL BORING GROUTED TO SURFACE WITH BENTONITE SLURRY

SOIL BORING LOG

BORING SB-4

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11449.04N 9373.09E
BORING NO.: SB-4
DRILLING METHOD: 3.25" H.S. AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 786.94
TOTAL DEPTH: 99
DATE START: 10/28/91
DATE END: 10/30/91
LOGGED BY: SMG

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
700					
90					S-10
				C-13 90-95' FULL RECOVERY HP = 1.5-3.0	
695			BROWNISH GRAY V.SILTY CLAY W/SOME SAND & GRAVEL, SL.PLASTIC, DENSE, HARD		
95				ST-3 95-97' 2" RECOVERY SS-3 97-99' 2" RECOVERY 20, 21, 23, 25 (BLOWS/6")	S-11
690					S-12

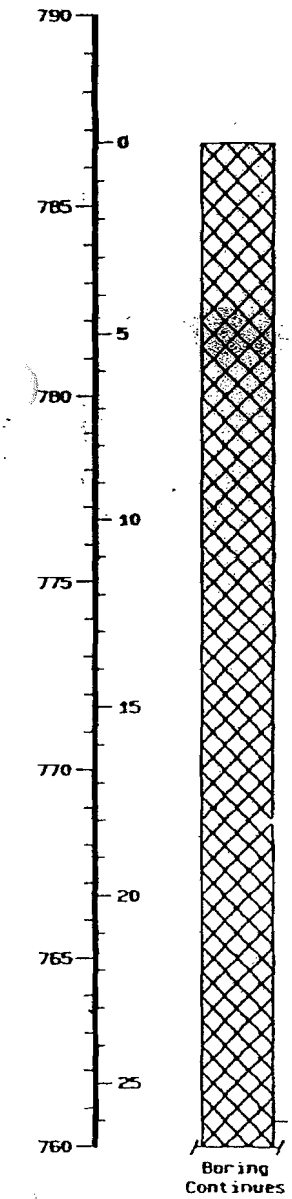
SOIL BORING GROUTED TO SURFACE WITH BENTONITE SLURRY

SOIL BORING LOG

BORING SB-5

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11274.11N 9375.69E
BORING NO.: SB-5
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 786.68'
TOTAL DEPTH: 95
DATE START: 10/23/91
DATE END: 10/35/91
LOGGED BY: SMG



ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
			STRAIGHT DRILL FROM 0-18' WITHOUT SAMPLES USE 5' CONTINUOUS SAMPLER BELOW 18 FEET CUTTINGS MOTTLED GRAY BROWN SILT CLAY	HP = HAND PENETROMETER = (TON/SQUARE FT.)	
			BROWN MOTTLED SILTY CLAY W/TR.SAND BERM MATERIAL	CONTINUOUS SAMPLER C-1 18-23' 18" RECOVERY	
				SS-1 23-25' (6, 7, 10, 12) 20" SS-2 25-27' (4, 6, 6, 8) SS-3 27-30' (6, 7, 10, 12)	S-1

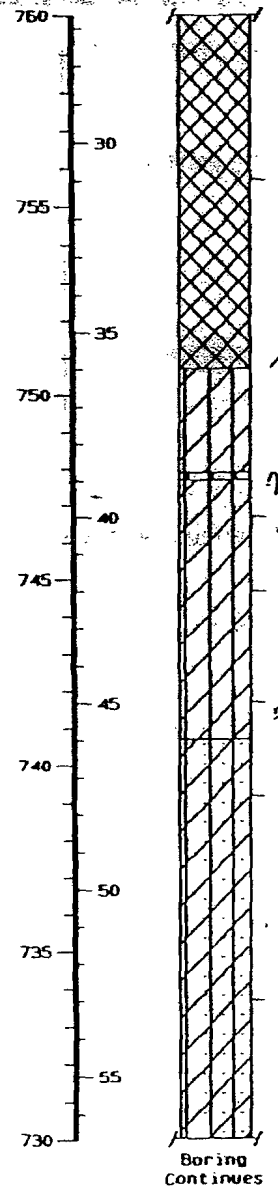
SOIL BORING GROUTED TO SURFACE WITH A BENTONITE SLURRY

SOIL BORING LOG

BORING SB-5

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11274.11N 9375.69E
BORING NO.: SB-5
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 786.68'
TOTAL DEPTH: 95
DATE START: 10/23/91
DATE END: 10/35/91
LOGGED BY: SMG



ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
				SS-4 29-31' (2,5,6,10) 20" SS-5 31-33' (3,4,4,5) 24" SS-6 33-35' (4,5,12,13) 24"	
					S2,6S1
				SS-7 35-37' (4,5,11,13) 24" SS-8 37-38' (3,6,10,10) 24"	
			BROWN SANDY V.SILTY CLAY, V.STIFF @36.3-36.5 GRAY SILT V.COMPACT @ 37 MOTTLED BROWN GRAY SILTY CLAY W/TR.SAND	C-2 39-40' FULL RECOVERY HP = 2.0-2.75	
			BROWN & GRAY SILT TRACE FINE SAND, DRY VERY STIFF		
			BROWN SILTY CLAY W/TRACE SAND & GRAVEL MOTTLING (GRAY), DAMP, STIFF, COHESIVE FEW HAIRLINE HORZ. SILT PARTINGS	C-3 40-45' FULL RECOVERY HP = 1.75-3.0 C-4 45-50' 4.5 RECOVERY HP = 1.75-2.0	S-3
			@ 42' 1" CLAYEY COARSE SAND SEAM, DRY		S-4
					GS-2
			GRAY CLAY/SILT W/TRACE SAND & SMALL GRAVEL MOIST, HARD, FEW HAIRLINE FINE SAND PARTINGS @ 47.5' 2" SILTY FINE SAND, WET		S-5
			@ 51' 2" MEDIUM SAND POCKET	C-5 50-55' FULL RECOVERY HP = 1.5-2.0 SHELBY TUBE ST-1 55-57'	S-6

SOIL BORING GROUTED TO SURFACE WITH A BENTONITE SLURRY

SOIL BORING LOG

BORING SB-5

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11274.11N 9375.69E
BORING NO.: SB-5
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 786.68'
TOTAL DEPTH: 95
DATE START: 10/23/91
DATE END: 10/35/91
LOGGED BY: SMG

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
730				C-6 57-60' 3' RECOVERY HP = 1.75-2.0	GS-3
60					S-7
				C-7 60-65' 5' RECOVERY HP = 1.5-2.0	
725					S-8
					S-9
65			@ 65.3 SMALL 1.5" POCKET OF SILTY MED.SAND WET	C-8 65-70' 3.5' RECOVERY HP = 2.0	
720			@ 67.5' 2" CLAYEY SILT SEAM W/TR.SAND		
70				ST-2 70-72' FULL RECOVERY HP = 2.5	
715	715.2		GRAY SILT W/SOME VERY FINE SAND, WET @ 73-73.5' INTERBEDDED SAND/SILT/CLAY	C-9 72-75' FULL RECOVERY HP = 3.0-4.0	
	713.2		GRAY SILTY CLAY W/TRACE SAND & GRAVEL MOIST, PLASTIC, FEW HAIRLINE HORZ. SILT SEAMS		S-10
75	711.7		BROWNISH GRAY SILTY CLAY W/TRACE SAND & GRAVEL, FEW SMALL COBBLES, MOIST, PLASTIC STIFF-HARD	C-10 75-80' 5' RECOVERY HP = 3.5- >4.5	
710					
80				C-11 80-85' 5' RECOVERY HP = 3.0	S-11
705					
85				ST-3 85-86.5' 18" RECOVERY HP = 4.5	S-12
700	Boring Continues			C-12 86.5-90' HP = 3.0-3.5	

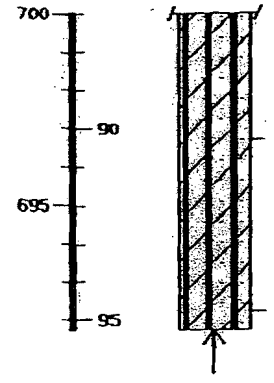
SOIL BORING GROUTED TO SURFACE WITH A BENTONITE SLURRY

SOIL BORING LOG

BORING SB-5

PROJECT: BFI - ZION WASTE MANAGEMENT FACILITY
GRID COORDINATES: 11274.11N 9375.69E
BORING NO.: SB-5
DRILLING METHOD: 3.25" H.S AUGERS
CONTRACTOR: TESTING SERVICE CORPORATION (TSC)
FINAL WATER LEVEL: N/A

PROJECT NO.: 06053
ELEV.: 786.68'
TOTAL DEPTH: 95
DATE START: 10/23/91
DATE END: 10/35/91.
LOGGED BY: SMG

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Sample Number
700 / 90 / 695 / 95			SAME AS ABOVE, SEVERAL HAIRLINE HORZ. SILT PARTINGS	C-13 90-95' FULL RECOVERY	S-13 S-14

SOIL BORING GROUTED TO SURFACE WITH A BENTONITE SLURRY

DATE STARTED 2/10/84
DATE FINISHED 2/10/84
SHEET 1 OF 1

RECRA RESEARCH, INC.
SUBSURFACE LOG

HOLE NO. SW1
SURFACE ELEV. 7± 1

PROJECT Waukegan Hazardous Waste Management Facility

LOCATION North @ 30' of MW2

DEPTH (ft)	LOG	SAMPLE	SAMPLE #	BLOWS ON SAMPLER 0/6 6/12 12/18 18/24	DESCRIPTION	NOTES
		3/26/84			Black organic topsoil, sandy silt.	
5					Mottled orange, tan/gray silty clay.	
10						
15					Gray silty clay	
20					End of Boring @ 18' Water table noted at 7'	

CLASSIFICATION Visual
METHOD OF INVESTIGATION ASTM D 1452-80

DATE STARTED 2/18/84
DATE FINISHED 2/18/84
SHEET 1 OF 1

RECRA RESEARCH, INC.
SUBSURFACE LOG

HOLE NO. SW4
SURFACE ELEV. 724.4
S.W.L.:

PROJECT Waukegan Hazardous Waste Management Facility, Winthrop Harbor, Illinois

LOCATION 50' east of M-1

DEPTH (ft)	LOG	SAMPLE TYPE	SAMPLE #	BLOWS ON SAMPLER 0/6 6/12 12/18 18/24	DESCRIPTION	NOTES
0					Topsoil dark gray/black, clayey fine sandy silt, organic, moist, grades to: Orange/brown sandy clay/clayey sand, moist, mottled orange/brown and light brown sand and light grey clay, moist, saturated, occasional rounded gravel.	
			3/26/84			
5						
10						
15					Grading from mottled red/brown silty clay to gray clay, moist, dense, slightly plastic. Minor thin sand lense.	
20					End of Boring 21'	

CLASSIFICATION Visual
METHOD OF INVESTIGATION ASTM D 1452-80

DATE STARTED 2/18/84
DATE FINISHED 2/18/84
SHEET 1 OF 1

RECRA RESEARCH, INC.
SUBSURFACE LOG

HOLE NO. SW5
SURFACE ELEV. 732.2

PROJECT

LOCATION West side of site south of entrance near OW2

DEPTH (ft)	LOG	SAMPLE TYPE	SAMPLE #	BLOWS ON SAMPLER 0-6 / 6-12 / 12-18 / 18-24	DESCRIPTION	NOTES
			3	26/84	Topsoil 0-3.5', dark sandy to black sandy clayey silt, moist, loose, organic	
5					Mottled brown and reddish/ brown silty sandy clay, moist, slightly plastic.	
10						
15					Grading to grey silty clay at 13', moist, dense plastic, occasional coarse sand lenses.	
20					End of Boring 21'	

CLASSIFICATION Visual
METHOD OF INVESTIGATION ASTM D 1452-80

Field Boring Log

DEPTH HOLE 90 Ft	JOB NO. 990403	PROJECT Onyx Zion Landfill Well Installation			BORING NO. T-001
DEPTH SOIL DRILL 88 Ft	BY INSP. AMH	DRILLING METHOD Wash Rotary w/ Split Spoon Sampling			SHEET 1 OF 4
DEPTH ROCK CORE —	WEATHER Cloudy, windy	DRILLING COMPANY Fox Drilling			SURFACE ELEV. 729.30 Ft
NO. DIST. SA. — UD. SA. —	TEMP. ~25° F	DRILL RIG Dietrich D-120	DRILLER Willy Bordelon		DATUM MSL
DEPTH WL. 65.8' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 - inches		STARTED 2:30 pm (Time) 11-20-00 (Date)
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —		COMPLETED 12:40 pm 11-22-00

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORT

"TRACE" - 0 - 5% "SOME" - 13 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DNS	30-50	STIFF	ST	[illegible]
VERY DENSE	VDN	50	VERY STIFF	VST	[illegible]
			HARD	H	[illegible]

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
1								Drill from 0' to 8' using 3¼" HSA and 2" diameter, 2' long split spoon sampling on 5-ft centers. After split spoon sampling to 10 ft, set 6" diameter surface casing to depth of 9 feet. Advance hole to 88 feet using 6" diameter tricone bit with wash rotary methods.
2								
3	Very stiff, mottled olive gray (5Y 4/1) and moderate brn (5YR 4/4), CLAY, little silt, tr. gravel, SR, moist (CL) (FILL)							
4		19	1	SS	3 7 12 15	20"/24"		Sample #1 collected @ 2:40 pm
5								
6								
7								
8	Very stiff, olive gray (5YR 4/1), CLAY, little silt, tr. gravel, WR, moist (CL)							Begin advancing boring using 6" tricone with rotary from 8' to split spoon on 5-foot centers
9		26	2	SS	8 12 14 17	21"/24"		Sample #2 collected @ 2:55 pm
10								
11								
12								
13	Very stiff, olive gray (5Y 4/1) to dk. yell. brn. (10 YR 4/2), homogeneous, CLAY, tr. gravel, WR, moist (CH)							
14		22	3	SS	5 9 13 15	13"/24"		Sample #3 collected @ 10:30 am (11-21-00)
15								
16								
17								
18								
19	Very stiff, dk. yell. brn. (10YR 4/4) homogeneous, CLAY, tr. gravel, WR, moist (CH)	23	4	SS	5 8 15 16	20"/24"		Sample #4 collected @ 2:45 pm
19.6' 20	Dense, light olive gray (5Y 6/1), SILT, WR, moist (ML)							
21								
22								
23								

Field Boring Log

DEPTH HOLE 92 ft | JOB NO. 990403 | PROJECT Onyx Zion Landfill Well Installation | BORING NO. T-001
DEPTH SOIL DRILL 98 ft | GT INSP. Amil | DRILLING METHOD Wash rotary w/ split spoon sampling | SHEET 2 OF 4
DEPTH ROCK CORE — | WEATHER Cloudy, windy | DRILLING COMPANY Fox Drilling | SURFACE ELEV. 721.30 ft
NO. DIST. SA. — UD. SA. — | TEMP. ≈ 25°F | DRILL RIG Dietrich D-120 | DRILLER Willy Gardner | DATUM MSL
DEPTH WL. 15.8' bgs | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30 inches | STARTED 2:30 pm (Time) 11-20-00 (Date)
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 12:30 pm 11-22-00

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH BAMPLE

ABBREVIATIONS

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
U	LITTLE
M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK
SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SIY	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORT

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY		FINGER PRESSURE	
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	BRAKES INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL MARK
			HARD	H	RESISTS THUMBN

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24	Very stiff, dk. yell. brn. (10 YR 4/4) homogeneous, CLAY, tr. gravel, WR, moist (CH)	18	5	SS	4 8 10 11	24" / 24"		Sample #5 collected @ 11:03 am
25								
26								
27								
28								
29	Very stiff, olive gray (5 YR 4/1) & dk. yell. brn. (10 YR 4/2), homogeneous, CLAY, tr. gravel, WR, moist (CH)	24	6	SS	9 11 13 17	19" / 24"		Sample #6 collected @ 11:35 am
30								
31								
32								
33								
34	Very stiff, olive gray (5 YR 4/1) CLAY, some gravel, WR, moist (CH)	23	7	SS	6 8 15 10	3" / 24"		Sample #7 collected @ 12:17 pm
35								
36								
37								
38								
39	Hard, olive gray (5 YR 4/1) & dk. yell. brn. (10 YR 4/2), homogeneous, CLAY, tr. gravel, WR, moist (CH)	33	8	SS	8 14 19 20	23" / 24"		Sample #8 collected @ 12:40 pm
40								
41								
42								
43								
44	Very stiff, dk. yell. brn. (10 YR 4/2), homogeneous, CLAY, tr. gravel, WR, moist (CH)	27	9	SS	9 11 16 18	19" / 24"		Sample #9 collected @ 1:10 pm
45								
46								

Field Boring Log

DEPTH HOLE 90 Ft	JOB NO. 990403	PROJECT 990403		BORING NO. T-001
DEPTH SOIL DRILL 88 FT	INSP. AMH	DRILLING METHOD Wash rotary w/ split spoon sampling		SHEET 3 OF 4
DEPTH ROCK CORE —	WEATHER Cloudy, windy	DRILLING COMPANY Fox Drilling		SURFACE ELEV. 724.20 ft
NO. DIST. SA. — UD. SA. —	TEMP. ~25°F	DRILL RIG Dietrich D-120	DRILLER Willy Goodwin	DATUM MSL
DEPTH WL. 65.8' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 inches	STARTED 2:30 pm 11-20-1 (hour) (day)
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 12:40 pm 11-2

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPOR

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSUR
VERY LOOSE VLS	0 4	VERY SOFT VS	EXTRUDES
LOOSE LS	4 10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB MODENT
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL IND
		HARD H	RESISTS THUMB

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47								
48	Very dense, olive gray (5YR 4/1), f-c SAND & GRAVEL, little silt, WR, moist (SC-GC)	54	10	SS	9 17 37 16	18"/24"		Sample #10 collected @ 1:40 pm
49								
50 (49.8')	Hard, olive gray (5YR 4/1), homogeneous, CLAY, tr. gravel, WR, moist (CH)							Note: hole not staying open upon removal of split spoons, resulting in increased sample time intervals
51								
52								
53	Very stiff, olive gray (5YR 4/1) to dk. yell. brn. (10YR 4/2), homogeneous, CLAY, tr. gravel and silt, WR, moist (CL)	20	11	SS	6 9 11 14	19"/24"		Sample #11 collected @ 2:15 pm
54								
55								
56								
57								
58	Very stiff, dk. yell. brn. (10YR 4/2), homogeneous, CLAY, tr. gravel and silt, WR, moist (CL)	23	12	SS	8 10 13 16	24"/24"		Sample #12 collected @ 2:37 pm
59								
60								
61								
62								
63								
64	Hard, dk. yell. brn. (10YR 4/2), homogeneous, CLAY, tr. gravel and silt, WR, moist (CL)	42	13	SS	9 17 25 32	22"/24"		Sample #13 collected @ 3:07 pm
65								
66								
67								
68	Hard, dk. yell. brn. (10YR 4/2), homogeneous, CLAY, tr. gravel, WR, moist (CH)	42	14	SS	10 19	23"/24"		Begin continuous split spoon sampling @ 68 feet Sample #14 collected @ 3:57 pm
69								

Field Boring Log

DEPTH HOLE 90 ft	JOB NO. 990403	PROJECT Onyx Zion Landfill Well Installation		BORING NO. I-001	
DEPTH SOIL DRILL 88 ft	OR INSP. AMH	DRILLING METHOD Wash rotary w/ split spoon sampling		SHEET 4	OF 4
DEPTH ROCK CORE —	WEATHER cloudy, windy	DRILLING COMPANY Fox Drilling		SURFACE ELEV. 7293.0 ft	
NO. DIST. SA. — UD. SA. —	TEMP. ≈25°F	DRILL RIG Dietrich D-120	DRILLER Willy Boudin	DATUM MSL	
DEPTH WL. 65.8' bgs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 - inches	STARTED 2:30 pm 11/20/00 (TIME / DATE)	
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 12:45 pm 11/22/00	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORT

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY		PENETROMETER
VERY LOOSE	VLS	0 <	VERY SOFT	VS
LOOSE	LS	4 - 10	SOFT	S
COMPACT	CP	10-30	FIRM	FM
DENSE	DN	30-50	STIFF	ST
VERY DENSE	VDN	50	VERY STIFF	VST
			HARD	H

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
70	Hard, dk. yell. brn. (10YR 4/2), homogneous, CLAY, tr. gravel, WR, moist (CH)	42	14	SS	23 27	23"/24"		Sample #14 collected @ 3:52 pm
71	Hard, dk. yell brn. (10YR 4/2), homogneous, CLAY, tr. gravel, WR, moist (CH)	61	15	SS	10 23 38 42	24"/24"		Sample #15 collected @ 4:16 pm
72	↓							
73		66	16	SS	18 27 39 47	24"/24"		Sample #16 collected @ 4:36 pm
74	Hard, dk. yell. brn. (10YR 4/2), homogeneous, CLAY, tr. gravel and silt, WR, moist (CH)				19			
75		56	17	SS	26 30	18"/24"		Sample #17 collected At. 9:20 am (11-22-00)
	2" thick f SAND + SILT @ 75.8'				31			
76	Very dense, olive gray (5YR 4/1), SILT and f SAND, some gravel and clay, WR, moist (ML-SC)				24			
77		62	18	SS	35 27 32	16"/24"		Sample #18 collected @ 9:44 am
78	Compact, olive gray (5YR 4/1), SILT and f SAND, some gravel and clay, WR, moist (ML-SC)				14			
79		18	19	SS	8 10 29	10"/24"		Sample #19 collected @ 10:13 am
80	2" thick med. SAND @ 79.8 ft							rock in end of split spoon
81	Very dense, olive gray (5YR 4/1), f-C SAND, some gravel, NR, wet (SW)	97	20	SS	42 46 51 54	16"/24"		Sample #20 collected @ 10:37 am
82	Very dense, olive gray (5YR 4/1), m-C SAND, some gravel, NR, wet (SP)				34			
83		110	21	SS	47 63 69	10"/24"		Sample #21 collected @ 11:05 am
83.8' 84								
85	Very dense, light olive gray (5Y 6/1), homogeneous, SILT, WR, moist (ML)	82	22	SS	26 38 44 36	14"/24"		Sample #22 collected @ 11:40 am
86								
87	Very dense, light olive gray (5Y 6/1), homogeneous, SILT, tr. gravel, WR, moist (ML)	163	23	SS	35 79 84 89	12"/24"		Sample #23 collected @ 12:09 pm
88								
89	Hard, olive gray (5YR 4/1), homogeneous, CLAY, tr. gravel and silt, WR, moist (CH)	86	24	SS	25 47 39 44	3"/24"		Sample #24 collected @ 12:35 pm
90								
			EOB @		90 ft			
91								
92								

Field Boring Log

DEPTH HOLE 85 Ft	JOB NO. 990403	PROJECT Onyx Zion Landfill Well Installation		BORING NO. T-002a
DEPTH SOIL DRILL 85 Ft	ENGR INSP. AAM	DRILLING METHOD Wash rotary w/ split spoon sampling		SHEET 1 OF —
DEPTH ROCK CORE —	WEATHER cloudy	DRILLING COMPANY Fox Drilling		SURFACE ELEV. 720
NO. DIST. SA. — UD. SA. —	TEMP. ~35°F	DRILL RIG Dietrich D-120	DRILLER Willy Goodwin	DATUM MSL
DEPTH WL. 56.7' 6gs	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 inches	STARTED 2:30 pm 11-2 (MST)
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 9:30 am 11

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.D.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROP

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PR
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDE
LOOSE	LS	4 10	SOFT	S	MOLDS E
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	THUMB IN
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNA
			HARD	H	RESISTS T

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
1								Drill Rig 0' to 8' using 3¼" HSA and 2" diameter, 2 long split spoon sampling on 5-ft centers. After split spoon sampling to 20', set 6" steel surface casing to depth of 7 Feet. Advance boring to termination using 6 diameter tricone bit with wash rotary methods
2								
3	Very stiff, dk. yell. brn. (10YR 4/2), homogenous, CLAY, tr. gravel, WR, moist (CH)				6			
4		20	1	SS	9	15"/24"		Sample #1 collected @ 2:35 pm
5	some silty partings				11			
					11			
6								
7								
8								
9	Very stiff, dk. yell. brn. (10YR 4/2), homogenous, CLAY, tr. sand and gravel, WR, moist (CH)	21	2	SS	6	23"/24"		Sample #2 collected @ 3:10 pm
	some sand partings				10			
10					11			
					13			
11								
12								
13	Very stiff, dk. yell. brn. (10YR 4/2), CLAY, tr. sand + gravel, WR, moist (CH)				5			
14		23	3	SS	9	14"/24"		Sample #3 collected @ 8:56 am (11-29-00)
	some sandy, light olive gray partings				14			
15					13			
16								
17								
18								
19	Stiff, dk. yell. brn. (10YR 4/2), homogenous, CLAY, tr. sand + gravel, WR, moist (CH)				3			
20		12	4	SS	5	18"/24"		Sample #4 collected @ 9:11 am
					7			note: Skipped 1 bit of Sampling to accomodate for rig elevation; Sample from this depth on 5-ft centers
21					8			
22								
23								

Field Boring Log

DEPTH HOLE 85 ft | JOB NO. 990403 | PROJECT Onyx Zion Landfill Well Installation | BORING NO. I-002
DEPTH SOIL DRLD 83 ft | QA INSP. AMM | DRILLING METHOD Wash rotary w/ split spoon sampling | SHEET 2 OF 4
DEPTH ROCK CORE — | WEATHER cloudy | DRILLING COMPANY Fer Drilling | SURFACE ELEV. 720.00 ft
NO. DIST. SA. — | UD. SA. — | TEMP. ~35° | DRILL RIG Dietrich D120 | DRILLER Willy Bordwin | DATUM MSL
DEPTH WL. 56.7' bgs | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30 inches | STARTED 2:30 pm (TIME) 1/28/00 (DATE)
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 9:20 am 1/29/00

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORT

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30 50	STIFF	ST	[illegible]
VERY DENSE	VDN	50	VERY STIFF	VST	[illegible]
			HARD	H	[illegible]

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
24								
25	Very stiff, mottled dk. yell. brn. (10 YR 4/2) and light brn. (5YR 5/6), CLAY, tr. gravel, WR, moist (CH) some sandy partings	17	5	SS	4 7 10 11	19" / 24"		Sample #5 collected @ 9:25 am note: CMW = GRAVEL stuff in top of spoon
26								
27								
28								
29	Very stiff, dk. yell. brn. (10YR 4/2), homogeneous, CLAY, tr. gravel, WR, moist (CH)	18	6	SS	6 8 10 11	20" / 24"		Sample #6 collected @ 9:48 am note: starting to have difficulty getting trioms, bit down hole after sampling, having trouble to go in and out of hole twice on occasion note: CMW = GRAVEL stuff in top of spoon
30								
31								
32								
33								
34	Hard, dk yell brn (10YR 4/2), homogeneous, CLAY, tr. gravel, WR, moist (CH)	48	7	SS	15 25 23 29	12" / 24"		Sample #7 collected @ 10:11 am
35								
36								
37								
38								
39	Stiff dk. yell. brn. (10 YR 4/2), CLAY some silt, little sand, tr. gravel, WR, moist (CL)	15	8	SS	6 7 8 11	16" / 24"		Sample #8 collected @ 10:37 am
40								
41								
42								
43								
44	Very stiff, olive gray (5Y 4/1), CLAY some silt, little sand, WR, moist (CL)	21	9	SS	6 8 13 17	15" / 24"		Sample #9 collected @ 11:02 am
45/45.2	Dense, olive gray (5Y 4/1), SILT, little clay and sand, tr. gravel, WR, moist (ML)							
46								

Field Boring Log

DEPTH HOLE 85 Ft | JOB NO. 990403 | PROJECT Onyx Zion Landfill Well Installation | BORING NO. T-002-
DEPTH SOIL DRILL 83 Ft | ~~BY~~ INSP. Arnf | DRILLING METHOD Wash oscly w/ split spoon sampling | SHEET 3 OF 4
DEPTH ROCK CORE — | WEATHER cloudy | DRILLING COMPANY Fox Drilling | SURFACE ELEV. 7720.00
NO. DIST. SA. — | UD. SA. — | TEMP. ~35°F | DRILL RIG Dietrich D-120 | DRILLER Willy Goodwin | DATUM MSL
DEPTH WL. 56.7' bgs | HRS. PROD. — | WT. SAMPLER HAMMER 140 lbs | DROP 30 - inches | STARTED 2:30pm 11-28-0 (TIME / DATE)
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 4:20 pm 11-30

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
LI	LITTLE
M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK
SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SLY	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPOR

"TRACE" - 0 - 5% | "SOME" - 12 - 30%
"LITTLE" - 5 - 12% | "AND" - 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSU
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EASY MOLDS
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB MODENT
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL IND
			HARD	H	RESISTS THUMB

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
47								
48								
49	Hard, dk. yell. brn. (10YR 4/2), homogeneous, CLAY, tr. gravel, WR, moist (CH) and parting @ 50.2 ft	38	10	SS	10 16 22 24	21"/24"		Sample #10 collected @ 11:26 am
50								
51								
52								
53								
54	Hard, dk. yell. brn. (10YR 4/2) homogeneous, CLAY, tr. gravel, WR, moist (CH)	38	11	SS	11 15 23 29	7"/24"		Sample #11 collected @ 11:51 am
55								
56								
57								
58								
59	Hard, dk. yell. brn. (10YR 4/2), homogeneous, CLAY, tr. gravel, silt, WR, moist (CH)	44	12	SS	17 19 25 31	19"/24"		Sample #12 collected @ 12:16 pm
60								
61								
62								
63								
64								
65	Hard, dk. yell. brn. (10YR 4/2) to olive gray (5Y 4/1) homogeneous, CLAY, tr. gravel, WR, moist (CH)	31	13	SS	9 15 16 19	22"/24"		Sample #13 collected @ 12:43 pm
66								
67								
68								
69								

Field Boring Log

DEPTH HOLE 85 ft	JOB NO. 980403	PROJECT Onyx Zion Landfill Well Installation		BORING NO. T-002	
DEPTH SOIL DRILL 83 ft	GA INSP. AMH	DRILLING METHOD Wash rotary w/split spoon sampling		SHEET 4	OF 4
DEPTH ROCK CORE —	WEATHER cloudy, rainy	DRILLING COMPANY Fox Drilling		SURFACE ELEV. 720.00	
NO. DIST. SA. — UD. SA. —	TEMP. 235°F	DRILL RIG Dietrich D-120	DRILLER Willy Goodwin	DATUM MSL	
DEPTH WL. 56.7' 655	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30 inches	STARTED 2:30pm 11-28-98 DAY	
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 9:20am 11-3	

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O.	DRIVE OPEN
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED, OPEN
T.P.	THIN-WALLED, PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIT	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LT	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPOR

"TRACE" - 0 - 5% "SOME" - 12 - 30%
"LITTLE" - 5 - 12% "AND" 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY		FINGER PRESSU
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DNS	30-50	STIFF	ST	
VERY DENSE	VDN	50	VERY STIFF	VST	
			HARD	H	RESISTS THUM

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT		SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	Very dense, dk. yell. brn. (10YR 4/2) to olive gray (5Y 4/1), SILT, some clay, little sand, WR, moist (MH)					9			begin continuous split spoon sampling @ 69 feet
70		79		14	SS	52	16"/24"		Sample #14 collected @ 1:11 pm
	Very dense/Hard, dk. yell. brn. (10YR 4/2), interbedded SILT, CLAY, and SAND, WR, moist (MH/CH/SC)					27			
71						43			
	Very dense, olive gray (5Y 4/1), f SAND, WR, moist (SP)					72			
72		130		15	SS	51	17"/24"		Sample #15 collected @ 3:08 pm
						79			
73						77			
	Very dense, olive gray (5Y 4/1), f-m SAND, WR, moist (SP) becoming coarser grained w/depth					39			
74		84		16	SS	36	18"/24"		Sample #16 collected @ 3:30 pm
						48			
75						34			
	Very dense, olive gray (5Y 4/1), f-c SAND + GRAVEL, WR, wet (SW-GP)					46			
76		162		17	SS	70	15"/24"		Sample #17 collected @ 3:58 pm
	Very dense, light olive gray (5Y 6/1) laminated, SILT, WR, wet (ML)					92			
77						72			
						24			
78	NO RECOVERY	64		18	SS	29	0"/24"		Sample #18 collected @ 7:41 am (11-30-00) NO RECOVERY
						35			
79						32			
	Very dense, olive gray (5Y 4/1), f-m SAND, WR, wet (SW)					36			
80		92		19	SS	43	19"/24"		Sample #19 collected @ 8:19 am
						49			
81	Very dense, olive gray (5Y 4/1), f-c SAND, WR, wet (SW)					55			
						66			
82	Very dense, light olive gray (5Y 6/1), laminated, SILT, WR, moist (ML)	231		20	SS	89	18"/18"		Sample #20 collected @ 8:40 am
	NO SAMPLE					142			
83						—			
	Hard, olive gray (5Y 4/1) to dk. yell. brn. (10YR 4/2), CLAY, some silt, tr. gravel, WR, moist (CL)					27			
84		75		21	SS	36	12"/24"		Sample #21 collected @ 9:18 am
						39			
85						43			
									TOB @ 85 ft
86									
87									

Environmental Information Logistics, LLC

Soil Boring Log

PROJECT: Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	T003
DEPTH HOLE: 48.0'	DRILLING METHOD: 4.25-inch I.D. HSA		SHEET 1 OF	3
DEPTH SOIL DRILL: 48.0' LOGGED BY: RP	DRILLING COMPANY: RDnP Drilling, Inc.		SURFACE ELEV.:	686.4
NO. DIST. SA. 19 UD. SA. 0	DRILL RIG: Diedrich 120	DRILLER: Jerry Copak	DATUM:	MSL
WT. SAMPLER HAMMER: 140 lb DROP: 30"	DATE STARTED: 2/4/08		DATE COMPLETED:	2/5/08
	NORTHING: 12,216.9		EASTING:	12,179.1

Elevation	Depth	Description	BLOWS / FT	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC / ATT	Depth	Sample Description and Boring Notes
686.4	0.0	(0.0'-32.6') very stiff to hard, olive gray (5Y4/1), SILTY CLAY, trace to little f sand, trace to little f gravel, WR-SR, moist, (CL), WADSWORTH FORMATION							
	1.0								
	2.0								
	3.0		17	3 7 10 10	1	SS	0.6 2.0	3.0	(3.0'-5.0') hard (4.5□ tsf), olive gray (5Y4/1), SILTY CLAY, little f sand, little f gravel, SR, moist, (CL)
	4.0								
	5.0								
	6.0								
	7.0								
	8.0		31	5 10 21 23	2	SS	1.0 2.0	8.0	(8.0'-10.0') very stiff (2.5 tsf), olive gray (5Y4/1), SILTY CLAY, little f sand, little f gravel, SR, moist, (CL)
	9.0								
	10.0								
	11.0								
	12.0								
	13.0		30	7 12 18 23	3	SS	1.4 2.0	13.0	(13.0'-15.0') very stiff (2.5 tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, trace f gravel, WR, moist, (CL)
	14.0								
	15.0		34	8 13 21 26	4	SS	2.0 2.0	15.0	(15.0'-17.0') very stiff (3.0 tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, WR, moist, (CL)
	16.0								
	17.0		30	6 9 21 27	5	SS	2.0 2.0	17.0	(17.0'-19.0') hard (4.5□ tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, WR, moist, (CL)
	18.0								
	19.0		31	5 12 19 25	6	SS	2.0 2.0	19.0	(19.0'-21.0') SAA
	20.0								
	21.0		42	9 18 24 32	7	SS	2.0 2.0	21.0	(21.0'-23.0') very stiff (3.0 tsf), olive gray (5Y4/1), SILTY CLAY, little f sand, little f gravel, WR, moist, (CL)
	22.0								
663.4	23.0								(23.0'-25.0') See next page.

Environmental Information Logistics, LLC

Soil Boring Log

PROJECT:	Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	T003
DEPTH HOLE:	48.0'	DRILLING METHOD:	4.25-inch I.D. HSA	SHEET 2 OF	3
DEPTH SOIL DRILL:	48.0' LOGGED BY: RP	DRILLING COMPANY:	RDnP Drilling, Inc.	SURFACE ELEV.:	686.4
NO. DIST. SA.	19 UD. SA. 0	DRILL RIG:	Diedrich 120 DRILLER: Jerry Copak	DATUM:	MSL
WT. SAMPLER HAMMER:	140 lb DROP: 30"	DATE STARTED:	2/4/08	DATE COMPLETED:	2/5/08
		NORTHING:	12,216.9	EASTING:	12,179.1

Elevation	Depth	Description	BLOWS / FT	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC / ATT	Depth	Sample Description and Boring Notes
663.4	23.0	(0.0'-32.6') very stiff to hard, olive gray (5Y4/1), SILTY CLAY, trace to little f sand, trace to little f gravel, WR-SR, moist, (CL), WADSWORTH FORMATION	40	10 19 21 27	8	SS	2.0 2.0	23.0	(23.0'-25.0') hard (4.5 tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, trace f gravel, WR, moist, (CL)
	24.0								
	25.0		48	10 18 30 37	9	SS	2.0 2.0	25.0	(25.0'-27.0') hard (4.5□tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, little f gravel, WR, moist, (CL)
	26.0								
	27.0		61	10 25 36 41	10	SS	2.0 2.0	27.0	(27.0'-29.0') SAA
	28.0								
	29.0		56	10 22 34 36	11	SS	2.0 2.0	29.0	(29.0'-31.0') hard (4.5□tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, WR, moist, (CL)
	30.0								
	31.0		40	4 8 32 33	12	SS	2.0 2.0	31.0	(31.0'-33.0') very stiff (3.5 tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, moist silt from 32.6'-33.0', WR, moist, (CL),
	32.0								
653.8									
	33.0	(32.6'-37.5') dense, olive gray (5Y4/1), SILT, some f-c sand, little f gravel, WR, moist, (ML), SHALLOW DRIFT AQUIFER	34	7 19 15 20	13	SS	1.4 2.0	33.0	(33.0'-35.0') dense, olive gray (5Y4/1), SILT, some f-c sand, little f gravel, sand content increases with depth, WR, moist, (ML)
	34.0								
	35.0		37	5 19 18 18	14	SS	0.0 2.0	35.0	(35.0'-37.0') recovered single piece of coarse gravel
	36.0								
	37.0							37.0	(37.0'-37.5') SILT (same as 33.0'-35.0')
648.9		(37.5'-42.8') compact to dense, olive gray (5Y4/1), F-C SAND, little f gravel, WR, wet, (SW), SHALLOW DRIFT AQUIFER	15	4 6 9 16	15	SS	2.0 2.0		(37.5'-39.0') compact, olive gray (5Y4/1), F-C SAND, little f gravel, WR, wet, (SW)
	38.0								
	39.0		12	4 5 7 13	16	SS	2.0 2.0	39.0	(39.0'-41.0') compact, olive gray (5Y4/1), F-C SAND, little f gravel, WR, wet, (SW)
	40.0								Note: sand heaving around augers - must flush
	41.0		55	24 25 30 37	17	SS	2.0 2.0	41.0	(41.0'-43.0') dense, olive gray (5Y4/1), F-C SAND, little f gravel, silt from 42.8'-43.0', WR, wet, (SW)
	42.0								
643.6									
	43.0	(42.8'-48.0') dense to very dense, olive gray (5Y4/1), SILT, little f sand, trace f gravel, WR, moist, (ML), SHALLOW DRIFT AQUIFER	46	20 25 21 33	18	SS	1.2 2.0	43.0	(43.0'-45.0') dense, olive gray (5Y4/1), SILT, little f sand, trace f gravel, WR, moist, (ML)
	44.0								
	45.0		73	14 32	19	SS	1.5 2.0	45.0	(45.0'-47.0') very dense, SAA
640.4	46.0								

Environmental Information Logistics, LLC

Soil Boring Log

PROJECT:	Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	T003
DEPTH HOLE:	48.0'	DRILLING METHOD:	4.25-inch I.D. HSA	SHEET 3 OF	3
DEPTH SOIL DRILL:	48.0' LOGGED BY: RP	DRILLING COMPANY:	RDnP Drilling, Inc.	SURFACE ELEV.:	686.4
NO. DIST. SA.	19 UD. SA. 0	DRILL RIG:	Diedrich 120 DRILLER: Jerry Copak	DATUM:	MSL
WT. SAMPLER HAMMER:	140 lb DROP: 30"	DATE STARTED:	2/4/08	DATE COMPLETED:	2/5/08
		NORTHING:	12,216.9	EASTING:	12,179.1

Elevation	Depth	Description	BLOWS / FT	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC / ATT	Depth	Sample Description and Boring Notes
640.4	46.0	(42.8'-48.0') dense to very dense, olive gray (5Y4/1), SILT, little f sand, trace f gravel, WR, moist, (ML), SHALLOW DRIFT AQUIFER	73	41 44	19	SS	1.5 2.0	46.0	(45.0'-47.0') very dense, olive gray (5Y4/1), SILT, little f sand, trace f gravel, WR, moist, (ML)
	47.0								
638.4	48.0	End of Boring at 48.0'							
	49.0								
	50.0								
	51.0								
	52.0								
	53.0								
	54.0								
	55.0								
	56.0								
	57.0								
	58.0								
	59.0								
	60.0								
	61.0								
	62.0								
	63.0								
	64.0								
	65.0								
	66.0								
	67.0								
	68.0								
	69.0								

Environmental Information Logistics, LLC

Soil Boring Log

PROJECT:	Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	T004
DEPTH HOLE:	51.0'	DRILLING METHOD:	4.25-inch I.D. HSA	SHEET 1 OF	3
DEPTH SOIL DRILL:	51.0' LOGGED BY: RP	DRILLING COMPANY:	RDnP Drilling, Inc.	SURFACE ELEV.:	689.2
NO. DIST. SA.	19 UD. SA. 0	DRILL RIG:	Diedrich 120 DRILLER: Jerry Copak	DATUM:	MSL
WT. SAMPLER HAMMER:	140 lb DROP: 30"	DATE STARTED:	12/4/07	DATE COMPLETED:	12/6/07
		NORTHING:	11,842.0	EASTING:	12,178.4

Elevation	Depth	Description	BLOWS / FT	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC / ATT	Depth	Sample Description and Boring Notes
689.2	0.0	(0.0'-25.0') stiff to hard, brownish gray (5YR4/1) to olive gray (5Y4/1), SILTY CLAY, trace f sand, NR-SR, moist, (CL), WADSWORTH FORMATION							
	1.0								
	2.0								
	3.0		8	4 3 5 8	1	SS	0.4 2.5	3.0	(3.0'-5.0') stiff (1.0 tsf), brownish gray (5YR4/1), SILTY CLAY, trace f sand, NR, moist, (CL)
	4.0								
	5.0								
	6.0								
	7.0								
	8.0		10	3 5 5 8	2	SS	1.8 2.0	8.0	(8.0'-10.0') stiff (1.0 tsf), brownish gray (5YR4/1), SILTY CLAY, trace f sand, NR, moist, (CL)
	9.0								
	10.0								
	11.0								
	12.0								
	13.0		24	9 11 13 14	3	SS	2.0 2.0	13.0	(13.0'-15.0') very stiff (2.0 tsf), brownish gray (5YR4/1), SILTY CLAY, trace f sand, NR, moist, (CL)
	14.0								
	15.0								
	16.0								
	17.0								
	18.0								
	19.0		45	19 21 24 24	4	SS	1.8 2.0	19.0	(19.0'-21.0') hard (4.5 tsf), brownish gray (5YR4/1), SILTY CLAY, trace f sand, WR, moist, (CL)
	20.0								
	21.0		18	13 7 11 14	5	SS	2.0 2.0	21.0	(21.0'-23.0') stiff (1.75 tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, SR, moist, (CL)
	22.0								
666.2	23.0								

Environmental Information Logistics, LLC

Soil Boring Log

PROJECT: Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	T004
DEPTH HOLE: 51.0'	DRILLING METHOD: 4.25-inch I.D. HSA		SHEET 2 OF	3
DEPTH SOIL DRILL: 51.0' LOGGED BY: RP	DRILLING COMPANY: RDnP Drilling, Inc.		SURFACE ELEV.:	689.2
NO. DIST. SA. 19 UD. SA. 0	DRILL RIG: Diedrich 120 DRILLER: Jerry Copak		DATUM:	MSL
WT. SAMPLER HAMMER: 140 lb DROP: 30"	DATE STARTED: 12/4/07		DATE COMPLETED:	12/6/07
	NORTHING: 11,842.0		EASTING:	12,178.4

Elevation	Depth	Description	Blow Count	SAMPLES No.	SAMPLES Type	SAMPLES REC/ATT	Depth	Sample Description and Boring Notes
666.2	23.0	(0.0'-25.0') stiff to hard, brownish gray (5YR4/1) to olive gray (5Y4/1), SILTY CLAY, trace f sand, NR-SR, moist, (CL), WADSWORTH FORMATION	5 11 15 16 (26)	6	SS	2.0 / 2.0	23.0	(23.0'-25.0') very stiff (3.5 tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, WR, moist, (CL)
	24.0							
664.2	25.0	(25.0'-35.0') very stiff to hard, olive gray (5Y4/1), SILTY CLAY, trace to some f sand, sand lenses, WR, moist, (CL), WADSWORTH FORMATION	10 19 16 27 (35)	7	SS	2.0 / 2.0	25.0	(25.0'-27.0') very stiff (3.5 tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, sand lenses at 26.0'-26.1' and 26.9'-27.0', WR, moist, (CL)
	26.0							
	27.0		5 17 16 26 (33)	8	SS	2.0 / 2.0	27.0	(27.0'-29.0') very stiff (3.5 tsf), olive gray (5Y4/1), SILTY CLAY, some f sand, sand lens from 27.0'-27.6', WR, wet, (CL)
	28.0							Note: Driller reports ▽7' of water in hole.
	29.0		9 17 27 13 (44)	9	SS	2.0 / 2.0	29.0	(29.0'-31.0') very stiff (3.5 tsf), olive gray (5Y4/1), SILTY CLAY, some f sand, WR, moist (CL)
	30.0							
	31.0		17 38 44 55 (82)	10	SS	2.0 / 2.0	31.0	(31.0'-33.0') hard (4.5 tsf), olive gray (5Y4/1), SILTY CLAY, trace f sand, WR, moist (CL)
	32.0							
	33.0		8 12 20 20 (32)	11	SS	2.0 / 2.0	33.0	(33.0'-35.0') SAA
	34.0							
654.2	35.0	(35.0'-40.0') compact to very dense, olive gray (5Y4/1), SILT and F SAND, little to some clay, trace to little f gravel, WR, moist, (ML), SHALLOW DRIFT AQUIFER	28 41 28 29 (69)	12	SS	1.5 / 2.0	35.0	(35.0'-37.0') very dense, olive gray (5Y4/1), SILT and F SAND, some clay, WR, moist, (ML)
	36.0							
	37.0		4 7 21 18 (28)	13	SS	1.5 / 2.0	37.0	(37.0'-39.0') compact, olive gray (5Y4/1), SILT and F SAND, little clay, little f gravel, WR, moist, (ML)
	38.0							
	39.0		14 15 11 13 (26)	14	SS	2.0 / 2.0	39.0	(39.0'-40.0') SAA
649.2	40.0	(40.0'-43.0') compact, olive gray (5Y4/1), F SAND, little to some silt, trace f gravel, NR, wet, (SP), SHALLOW DRIFT AQUIFER						(40.0'-41.0') compact, olive gray (5Y4/1), F SAND, little silt, trace f gravel, NR, wet, (SP)
	41.0		9 9 11 15 (20)	15	SS	1.6 / 2.0	41.0	(41.0'-43.0') compact, olive gray (5Y4/1), F SAND, some silt, trace f gravel, NR, wet, (SP)
	42.0							
646.2	43.0	(43.0'-46.0') compact to dense, olive gray (5Y4/1), F-M SAND, trace to little f gravel, trace silt, NR, wet, (SP), SHALLOW DRIFT AQUIFER	3 4 9 22 (13)	16	SS	1.1 / 2.0	43.0	(43.0'-45.0') compact, olive gray (5Y4/1), F-M SAND, little f gravel, trace silt, NR, wet, (SP)
	44.0							
	45.0		14 17 (45)	17	SS	2.0 / 2.0	45.0	(45.0'-46.0') dense, olive gray (5Y4/1), F-M SAND, trace silt, trace f gravel, NR, wet, (SP)
643.2	46.0							

Environmental Information Logistics, LLC

Soil Boring Log

PROJECT:	Zion Cell 6 Well Installation	CONSULTANT: EIL	JOB NO: 990403	BORING NO:	T004
DEPTH HOLE:	51.0'	DRILLING METHOD:	4.25-inch I.D. HSA	SHEET 3 OF	3
DEPTH SOIL DRILL:	51.0' LOGGED BY: RP	DRILLING COMPANY:	RDnP Drilling, Inc.	SURFACE ELEV.:	689.2
NO. DIST. SA.	19 UD. SA. 0	DRILL RIG:	Diedrich 120 DRILLER: Jerry Copak	DATUM:	MSL
WT. SAMPLER HAMMER:	140 lb DROP: 30"	DATE STARTED:	12/4/07	DATE COMPLETED:	12/6/07
		NORTHING:	11,842.0	EASTING:	12,178.4

Elevation	Depth	Description	BLOWS / FT	Blows per 6 inches	SAMPLES No.	SAMPLES Type	SAMPLES REC / ATT	Depth	Sample Description and Boring Notes
643.2	46.0	(46.0'-51.0') dense to very dense, olive gray (5Y4/1), SILT, little f sand, trace f gravel, NR-WR, wet, (ML), SHALLOW DRIFT AQUIFER	45	28 33	17	SS	2.0 2.0	46.0	(46.0'-47.0') dense, olive gray (5Y4/1), SILT, little f sand, trace f gravel, NR, wet, (ML)
	47.0		49	14 18 31 21	18	SS	1.4 2.0	47.0	(47.0'-49.0') dense, olive gray (5Y4/1), SILT, little f sand, WR, wet, (ML)
	49.0		78	31 37 41 43	19	SS	1.5 2.0	49.0	(49.0'-51.0') very dense, SAA
638.2	51.0	End of Boring at 51.0'							
	52.0								
	53.0								
	54.0								
	55.0								
	56.0								
	57.0								
	58.0								
	59.0								
	60.0								
	61.0								
	62.0								
	63.0								
	64.0								
	65.0								
	66.0								
	67.0								
	68.0								
	69.0								

GEOLOGIC LOG OF BORING

H-5

PROJECT BFI ZION SANITARY LANDFILL

BORING NO. TB-1

DRILLER Testing Service Corporation

WATER LEVELS

RIG Mobile B53 METHOD Rotary Wash

AT COMPLETION

HOURS

G. S. ELEVATION 737.9 DATE STARTED 11/25/92

WHILE DRILLING

T.O.B. ELEVATION 513.9 DATE COMPLETED 12/ 9/92

SHEET 1 OF 12

11377.0 N 11892.9 E

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Blind drilled, with intermittent samples for testing, to 80.0'. For continuous sampling 0.0-80.0', see adjacent boring P-9.		
1ST		1.0'		4.5+	Brownish grey fine-coarse SAND, tr. small-large gravel, tr. silty clay, oxidized stains, very dense	Intratill sorted sediments	

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 20

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST

JOB NO 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-6

PROJECT BFI ZION SANITARY LANDFILL

BORING NO. TB-1

DRILLER Testing Service Corporation

RIG Mobile B53 METHOD Rotary Wash

WATER LEVELS
AT COMPLETION
HOURS
WHILE DRILLING

G.S. ELEVATION 737.9 DATE STARTED 11/25/92

T.O.B. ELEVATION 513.9 DATE COMPLETED 12/ 9/92

SHEET 2 OF 12

SAMPLE NO/TYPE	N	REC.	WC	Ov*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
						Wadsworth Till I	
2ST		2.0'		4.0	Grey silty CLAY, tr. fine-coarse sand and small-large gravel, hard		
3ST		1.0'		4.0	Grey silty CLAY, tr. fine-coarse sand and small-large gravel, hard		
4ST		0.9'		1.0	Grey silty CLAY, tr. fine-coarse sand and small-large gravel, stiff		

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GEOLOGIC LOG OF BORING

H-7

PROJECT BFI ZION SANITARY LANDFILL

BORING NO. TB-1

DRILLER Testing Service Corporation

WATER LEVELS

RIG Mobile B53 METHOD Rotary Wash

AT COMPLETION

HOURS

G.S. ELEVATION 737.9 DATE STARTED 11/25/92

WHILE DRILLING

T.O.B. ELEVATION 513.9 DATE COMPLETED 12/ 9/92

SHEET 3 OF 12

	SAMPLE NO/TYPE	N	REC	WC	Qu *	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
40							Wadsworth Till	
41								
42								
43								
44								
45								
46								
47								
48								
49	5ST		2.0		4.0	Grey silty CLAY, tr. fine-coarse sand and small gravel, hard		
50								
51								
52								
53								
54								
55								
56								
57								
58								
	6ST		2.0		3.5	Grey silty CLAY, tr. fine-coarse sand and small-medium gravel, very stiff		
60								

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST

JOB NO 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

4-8

PROJECT BFI ZION SANITARY LANDFILL

DRILLER Testing Service Corporation

RIG Mobile B53 METHOD Rotary Wash

G.S. ELEVATION 737.9 DATE STARTED 11/25/92

T.O.B. ELEVATION 513.9 DATE COMPLETED 12/ 9/92

BORING NO. TB-1

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 4 OF 12

SAMPLE NO/TYPE	N	REC.	WC	QU*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					No samples 60.0-80.0'	Wadsworth Till	
					At 80.0' begin continuous sampling		

60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 80

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JOB NO 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-9

PROJECT BFI ZION SANITARY LANDFILL — BORING NO. TB-1

DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION ____ HOURS ____ WHILE DRILLING ____

RIG Mobile B53 — METHOD Rotary Wash

G. S. ELEVATION 737.9 — DATE STARTED 11/25/92

T.O.B. ELEVATION 513.9 — DATE COMPLETED 12/ 9/92

SHEET 5 OF 12

	SAMPLE NO/TYPE	N	REC	WC	Qu *	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
80								
81	1SS	21 29 32 35	2.0'		4.5+	Dark brownish grey CLAY, tr. silt, coarse sand, and small gravel, hard	Wadsworth Till	
82						655.9		
83	2SS	10 31 42 47	2.0'		1.0	Brownish grey fine-coarse SAND and small GRAVEL, tr. silt and clay seams, very dense	Shallow Drift Aquifer sediments	
84								
85	3SS	25 36 41 45	1.3'					
86						651.9		
87	4SS	36 63 100/6"	1.0'			Brownish grey fine SAND, tr. silt, seams of grey clayey silt and fine sandy silt, very dense		
89	5SS	36 51 58 62	1.0'					
90						647.9		
91	6SS	57 100/6"	0.9'			Grey SILT, tr. fine sand, some clay seams, very dense		
92						645.9		
93	7SS	57 68 102/6"	1.4'			Brownish grey silty fine SAND, tr. clay seams, very dense		
94						643.9		
95	8SS	30 33 39 41	1.5'			Grey SILT, very dense		
96						641.9		
97	9SS	24 33 36 40	1.4'			Brownish grey clayey SILT, with clay seams, laminated, very dense		
98								
99	10SS	25 37 39 41	1.4'					
100						637.9		

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LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING
H-10

PROJECT BFI ZION SANITARY LANDFILL — BORING NO. TB-1

DRILLER Testing Service Corporation — WATER LEVELS

RIG Mobile B53 — METHOD Rotary Wash — AT COMPLETION ____ HOURS ____

G. S. ELEVATION 737.9 — DATE STARTED 11/25/92 — WHILE DRILLING ____

T.O.B. ELEVATION 513.9 — DATE COMPLETED 12/ 9/92 — SHEET 6 OF 12

	SAMPLE NO/TYPE	N	REC.	WC	Qu*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
100						637.9		
	11SS	24 53 73 90	1.0'			Grey SILT, tr. fine sand partings, very dense	Shallow Drift Aquifer sediments	
101						635.9		
102								
103	12SS	16 25 37 42	2.0'		4.5+	Brownish grey CLAY, tr. silt, fine-coarse sand, and small gravel, laminated to foliated in areas, hard-very stiff	Lower Till	
104								
105	13SS	21 29 36 43	2.0'		3.0			
106								
107	14SS	11 22 30 38	2.0'		4.5+			
108								
109	15SS	9 15 19 24	1.9'		3.0	tr. large gravel 108.0-110.0'		
110								
111	16SS	15 20 27 34	2.0'		3.5	reddish coloring and numerous silt partings 110.0-112.0'		
112								
113	17SS	18 24 29 35	NR					
114								
115	18SS	18 8 12 12	NR					
116						621.9		
117	19SS	9 12 14 16	2.0'		0.5	Grey silty CLAY, tr. fine-coarse sand and small gravel, laminated, soft		
118								
119	20SS	10 14 15 17	2.0'		0.5			
120						617.9		

ROBERTA L. JENNINGS
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JOB NO 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING H-11

PROJECT BFI ZION SANITARY LANDFILL — BORING NO. TB-1

DRILLER Testing Service Corporation — WATER LEVELS

RIG Mobile B53 — METHOD Rotary Wash — AT COMPLETION ____ HOURS ____

G.S. ELEVATION 737.9 — DATE STARTED 11/25/92 — WHILE DRILLING ____

T.O.B. ELEVATION 513.9 — DATE COMPLETED 12/ 9/92 — SHEET 7 OF 12

	SAMPLE NO/TYPE	N	REC.	WC	Qu*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
120								
121	21SS	18 28 32 43	2.0'		2.5	Brownish grey silty CLAY, tr. fine-coarse sand and small gravel, several silt partings and inclusions, very stiff 615.9	Lower Till	
122								
123	22SS	28 60 62 68	2.0'		4.5+	Grey silty CLAY, tr. fine-coarse sand and small gravel, hard		
124								
125	23SS	15 26 33 40	2.0'		4.5+			
126						foliated with interfoliated silt partings and inclusions below 126.0'		
127	24SS	13 31 46 52	2.0'		4.5+			
129	25SS	19 34 50 67	2.0'		4.5+			
130								
131	26SS	51 100/3"	0.8'		4.5+			
132								
133	27SS	71 100/6"	0.9'		4.5+			
134								
135	28SS	29 37 40 46	1.8'		4.5+			
136						601.9		
137	29SS	29 71 100/2"	1.0'			Grey SILT with brownish grey fine-coarse sand seams, very dense	Sorted sediments	
138						599.4		
140	30SS	89 100/6"	0.9'			Brownish grey fine-medium SAND, very dense 597.9		

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JOB NO. 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-12

PROJECT BFI ZION SANITARY LANDFILL — BORING NO. TB-1

DRILLER Testing Service Corporation — WATER LEVELS

RIG Mobile B53 — METHOD Rotary Wash — AT COMPLETION ____ HOURS ____

G.S. ELEVATION 737.9 — DATE STARTED 11/25/92 — WHILE DRILLING ____

T.O.B. ELEVATION 513.9 — DATE COMPLETED 12/9/92 — SHEET 8 OF 12

SAMPLE NO/TYPE	N	REC	WC	Qu *	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					597.9		
31SS	28 44 56 68	1.6'		4.5+	Brownish grey silty CLAY, tr. to rare small gravel, tr. hairline silt partings, hard	Lower Till	
32SS	68 100/6"	0.9'			tr. medium-large gravel, tr. fine sand and silt partings 142.0-144.0'		
33SS	25 48 63 81	2.0'		4.5+	laminated below 144.0'		
34SS	18 30 44 32	2.0'		4.5+	interfoliated silt partings and inclusions below 146.0'		
35SS	15 20 54 43	2.0'		4.5+			
36SS	26 33 37 41	2.0'		4.5+			
37SS	40 20 22 26	2.0'		4.5+	interfoliated fine sand and silt below 152.0'		
38SS	100/4"	NR					
39SS	31/4"	0.3'			interlayered silt below 156.0'		
					579.9		
40SS	20/5"	0.6'			Grey SILT, tr. to some clay, laminated, very dense	Sorted sediments	

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JOB NO 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-13

PROJECT BFI ZION SANITARY LANDFILL

DRILLER Testing Service Corporation

RIG Mobile B53 METHOD Rotary Wash

G.S. ELEVATION 737.9 DATE STARTED 11/25/92

T.O.B. ELEVATION 513.9 DATE COMPLETED 12/ 9/92

BORING NO. TB-1

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 9 OF 12

	SAMPLE NO/TYPE	N	REC.	WC	Qu*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
160								
161	41SS	20 27 103/5"	1.5			Grey clayey SILT, laminated, very dense 575.9	Sorted sediments	
162								
163	42SS	20 26 37 45	2.0		4.5+	Brownish grey silty CLAY, tr. silt partings, laminated, hard-very stiff		
164								
165	43SS	19 30 47 78	2.0		3.5	thinly laminated below 164.0'		
166								
167	44SS	28 46 28 33	2.0		3.5	 569.9		
168								
169	45SS	10 56 82 100/2"	1.8		3.0	Brownish grey very silty CLAY/very clayey SILT, laminated, very stiff 567.9		
170								
171	46SS	13 18 21 26	2.0		3.0	Brownish grey silty CLAY, tr. hairline silt partings, deeply thinly laminated, very stiff-very soft		
172								
173	47SS	10 16 18 22	2.0		1.5			
174								
175	48SS	0 5 7 9	2.0		0.5			
176								
177	49SS	0 7 7 9	2.0		0.2			
178						 559.4		
	50SS	0 9 15 18	2.0		1.5	Grey silty CLAY, tr. sand and small-large gravel, w/fine-coarse sand seams, stiff	Lower Till	
80								

ROBERTA L. JENNINGS
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JOB NO 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-14

PROJECT BFI ZION SANITARY LANDFILL — BORING NO. TB-1

DRILLER Testing Service Corporation — WATER LEVELS

RIG Mobile B53 — METHOD Rotary Wash — AT COMPLETION ____ HOURS ____

G.S. ELEVATION 737.9 — DATE STARTED 11/25/92 — WHILE DRILLING ____

T.O.B. ELEVATION 513.9 — DATE COMPLETED 12/ 9/92 — SHEET 10 OF 12

	SAMPLE NO/TYPE	N	REC.	WC	Qu *	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
180								
181	51SS	0 19 17 47	1.9'		4.0	Greyish brown silty CLAY tr. sand and small-large gravel, w/fine-coarse sand seams, hard	Lower Till	
182						555.9		
183	52SS	20 57 103/2"	1.0'		4.0	Brownish grey silty CLAY, laminated, tr. hairline silt partings and seams, hard		
184						553.4		
185	53SS	103/5"	0.4'			Brownish grey fine sandy SILT, very dense	Sorted sediments	
186								
187	54SS	58 104/5"	0.9'					
188						549.9		
189	55SS	66 48 100/2"	1.5'			Grey SILT with clay seams and fine sand seams, very dense		
190								
191	56SS	21 61 92/6"	1.5'					
192						545.9		
193	57SS	101/5"	0.4'			Grey silty CLAY with small-medium gravel, some fine sand, very dense	Lower Till	
194								
195	58SS	65 100/1"	0.5'			Boulder 194.8-196.0'		
196						541.9		
197	59SS	0 19 38 47	2.0'		3.0	Brownish grey silty CLAY, laminated, with hairline silt partings and inclusions, some foliation, very stiff		
198								
200	60SS	0 14 20 25	2.0'		2.5			

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST

JOB NO 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-15

PROJECT BFI ZION SANITARY LANDFILL — BORING NO. TB-1

DRILLER Testing Service Corporation — WATER LEVELS

RIG Mobile B53 — METHOD Rotary Wash — AT COMPLETION ____ HOURS ____

G.S. ELEVATION 737.9 — DATE STARTED 11/25/92 — WHILE DRILLING ____

T.O.B. ELEVATION 513.9 — DATE COMPLETED 12/9/92 — SHEET 11 OF 12

	SAMPLE NO/TYPE	N	REC	WC	Qu*	SOIL DESCRIPTION-	GEOLOGIC UNIT	LOG
200								
201	61SS	10 6 10 9	2.0"		2.5	Grey silty CLAY, feathery to foliated, with hairline silt partings and inclusions, very stiff	Lower Till	
202						535.9		
203	62SS	45 101/6"	0.6"			Small-large GRAVEL and COBBLES, with some fine to coarse sand, tr. silt and clay, very dense	Basal Drift Aquifer sediments (bedrock rubble zone)	
204								
205	63SS	123/3"	NR			Boulder 204.0-206.0		
206								
207	64SS	150/3"	0.2"					
208						529.9		
209	65SS	142/3"	0.2"			Grey silty SAND and small GRAVEL in clay matrix		
210								
211	66SS	137/1.5"	0.2"					
212						525.9		
213	67SS	140/3"	0.3"			Grey fine sandy SILT, tr. clay, with small-medium gravel	Bedrock soil zone	
214						523.9		
215	68SS	150/3"	0.3"			Fractured DOLOMITE, tr. clay and silt	Silurian Dolomite Bedrock	
216								
217	69SS	100/0"	NR					
218								
219	70SS	128/1"	0.1"					
220								

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST

JOB NO 86-106a
JFO/RLJ

GEOLOGIC LOG OF BORING

H-16

PROJECT BFI ZION SANITARY LANDFILL — BORING NO. TB-1

DRILLER Testing Service Corporation — WATER LEVELS AT COMPLETION ____ HOURS ____ WHILE DRILLING ____

RIG Mobile B53 — METHOD Rotary Wash

G. S. ELEVATION 737.9 — DATE STARTED 11/25/92

T.O.B. ELEVATION 513.9 — DATE COMPLETED 12/ 9/92

SHEET 12 OF 12

SAMPLE NO/TYPE	N	REC.	WC	Qu*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
220					DOLOMITE	Silurian Dolomite Bedrock	
221 — No samples, drill to bedrock			blind verify				
222							
223							
224					513.9		
					T.O.B. 224.0		
225					Hole grouted on completion with Volclay Grout tremied into hole from the bottom upwards.		
226							
227							
228							
229							
230							
231							
232							
233							
234							
235							
236							
237							
238							
240							

ROBERTA L. JENNINGS
(CONSULTING HYDROGEOLOGIST)

JOB NO ____

LOGGED BY ____

GEO

PROJECT BFI ZION SANITARY LANDFILL

DRILLER Testing Service Corporation

RIG Mobile B53 METHOD Hollow Stem Auger

G.S. ELEVATION 739.2 DATE STARTED 11/23/92

T.O.B. ELEVATION 679.2 DATE COMPLETED 11/23/92

11923.6 N 12449.1 E

BORING NO. TB-2

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 1 OF 3

SAMPLE NO/TYPE	N	REC.	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Boring blind drilled for purpose of collecting intermittent samples at random depths for testing.	Surficial sorted sediments	
1ST		1.7'		2.5	Grey silty CLAY, very dense		
					723.2 Grey fine-coarse SAND on auger below 16.0'		
2ST		NR					

RODERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST

JOB NO. 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-18

PROJECT BFI ZION SANITARY LANDFILL

DRILLER Testing Service Corporation

RIG Mobile B53 METHOD Hollow Stem Auger

G.S. ELEVATION 739.2 DATE STARTED 11/23/92

T.O.B. ELEVATION 679.2 DATE COMPLETED 11/23/92

BORING NO. TB-2

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 2 OF 3

SAMPLE NO/TYPE	N	REC.	WC	Qu*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
						Surficial sorted sediments	
1SS	6 8 9 9	2.0'		2.5	Grey clayey SAND, tr. silt, medium dense 710.2		
					Grey CLAY, tr. silt and fine sand, laminated, very stiff	Wadsworth Till I	
3ST		1.2'		4.5+	Grey silty CLAY, tr. fine-coarse sand and small-large gravel, hard		
4ST		2.0'		1.5	Grey silty CLAY, tr. fine-coarse sand and small-medium gravel, stiff		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
MCHENRY ILLINOIS 60050

JOB NO. 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-19

PROJECT BFI ZION SANITARY LANDFILL

DRILLER Testing Service Corporation

RIG Mobile B53 METHOD Hollow Stem Auger

G.S. ELEVATION 739.2 DATE STARTED 11/23/92

T.O.B. ELEVATION 679.2 DATE COMPLETED 11/23/92

BORING NO. TB-2

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 3 OF 3

SAMPLE NO/TYPE	N	REC	WC	Qu*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
						Wadsworth Till I	
5ST		1.1'		4.5+	Grey silty CLAY, tr. fine-coarse sand and small gravel, hard		
6ST		2.0'		2.0	Grey silty CLAY, tr. fine-coarse sand and small gravel, very stiff		

679.2

T.O.B. 60.0'

Hole grouted on completion with Volclay Grout tremied into hole from the bottom upwards.

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
MORENCY, ILLINOIS 60030

JOB NO. 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-20

PROJECT BFI ZION SANITARY LANDFILL

DRILLER Testing Service Corporation

RIG Mobile B53 METHOD Hollow Stem Auger

G.S. ELEVATION 744.4 DATE STARTED 11/24/92

T.O.B. ELEVATION 684.4 DATE COMPLETED 11/24/92

10564.3 N 11222.8 E

BORING NO. TB-3

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 1 OF 3

SAMPLE NO/TYPE	N	REC	WC	Qu	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
					Boring blind drilled for purpose of collecting intermittent samples at random depths for testing.	Wadsworth Till I	
1ST		2.0'		1.0	Grey silty CLAY, tr. fine-coarse sand and small-large gravel, stiff		

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2020 N. SHOREWOOD DRIVE
SHOREWOOD, ILLINOIS 60350

JOB NO. 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

H-21

PROJECT BFI ZION SANITARY LANDFILL

DRILLER Testing Service Corporation

RIG Mobile B53 METHOD Hollow Stem Auger

G.S. ELEVATION 744.4 DATE STARTED 11/24/92

T.O.B. ELEVATION 684.4 DATE COMPLETED 11/24/92

BORING NO. TB-3

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 2 OF 3

SAMPLE NO/TYPE	N	REC.	WC	Qu*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
						Wadsworth Till I	
2ST		2.0'		1.0	Grey silty CLAY, tr. fine-coarse sand and small-large gravel, stiff		
3ST		2.0'		1.5	Grey silty CLAY, tr. fine-coarse sand and small-large gravel, stiff		
4ST		2.0'		3.5	Grey silty CLAY, tr. fine-coarse sand and small-large gravel, very stiff		

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2926 N. SHOREWOOD DRIVE
SHOREWOOD, ILLINOIS 60431

JOB NO. 86-106a

LOGGED BY JFO/RLJ

GEOLOGIC LOG OF BORING

A-22

PROJECT BFI ZION SANITARY LANDFILL

DRILLER Testing Service Corporation

RIG Mobile B53 METHOD Hollow Stem Auger

G.S. ELEVATION 744.4 DATE STARTED 11/24/92

T.O.B. ELEVATION 684.4 DATE COMPLETED 11/24/92

BORING NO. TB-3

WATER LEVELS

AT COMPLETION

HOURS

WHILE DRILLING

SHEET 3 OF 3

SAMPLE NO/TYPE	N	REC.	WC	Qu*	SOIL DESCRIPTION	GEOLOGIC UNIT	LOG
						Wadsworth Till I	
5ST		2.0'		3.5	Grey silty CLAY, tr. fine-coarse sand and small-large gravel, very stiff		
6ST		1.7'		3.5	Grey silty CLAY, tr. fine-coarse sand and small-large gravel, very stiff		
					684.4 T.O.B. 60.0'		

Hole grouted on completion with Volclay Grout tremied into hole from the bottom upwards.

ROBERTA L. JENNINGS
CONSULTING HYDROGEOLOGIST
2016 W. SHOREWOOD DRIVE
SHOREWOOD, ILLINOIS 60431

JOB NO. 86-106a

LOGGED BY JFO/RLJ

Date:
Started: 84
Finished: -8-84
Sheet 1 of 6

Recra Researc[illegible]

SUBSURFACE L[illegible] TB-3

Surface Elev. 744.21

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

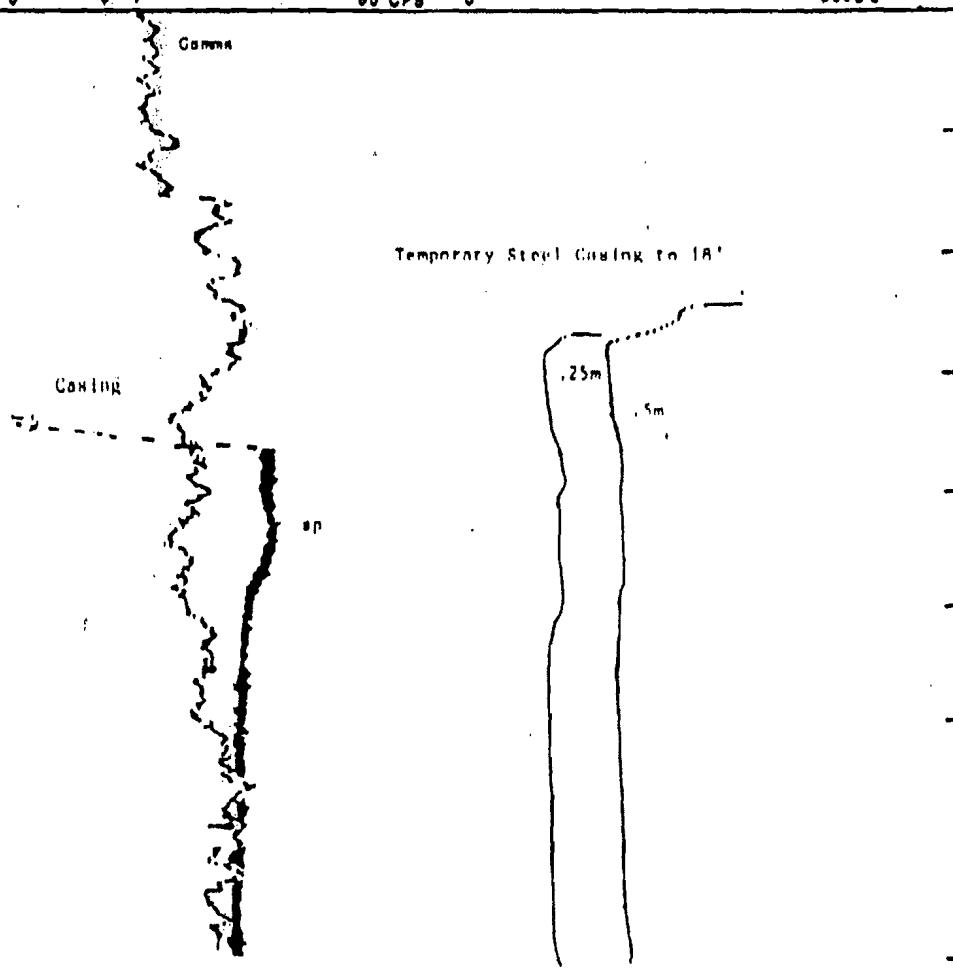
Location SE corner of Site 2,860' S of OW-1
on berm

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0/6 6/12 12/18 18/24	Description
10		SS	1	17 18 / 18	Mottled brown/black silty clay, organic, occasional coarse gravel, moist, plastic, recovery 66%
20			2	13 19 / 16	Mottled orange brown silty clay/ clayey silt, some fine gravel, high silt content, oxidized, slightly plastic, coarse gravel at 20'
30			3	8 10 / 10	Grey silty clay occasional rounded, well sorted coarse gravel, slightly stiff moist, plastic

716.2

Notes

Gamma Log: sp Top [+] 5 mv | 0 — 80 CPS
Electric Log Normal: 0 — 800Ω m



Classification: VISUAL

Method of Investigation: ASTM D 1452-80

B-140

Finished: 5/29/84

of 2 of

SUBSURFACE LOG TD-5

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location SE Corner of Site 860' E of OW1 on berm

Log	Sample Type	Sample No.	Blows on Sampler 0/6	6/12	12/18	18/24	Description
	SS	4	10	10			Grey silty clay occasional rounded, well sorted, coarse gravel, slightly stiff, moist, plastic
			17				
							~498.7
							Grey gravelly clay/clayey gravel, coarse rounded gravel - coarse sand, plastic ~495.2
		5	21	39			
			26				
		6	15	20			Grey silty clay occasional rounded, well sorted, coarse gravel, slightly stiff, moist plastic
			28				
		7	13	39			
			27				
			21	29			
			40				

Notes

Gamma Log: 0 cps 80 cps

sp log: + 5 mv -

Electric Log Normal: 0 800Ω m

Gamma sp .5m .25m

Silty Clay/Gravel

Clay

Classification: Visual

Method of Investigation: ASTM D1452-80

Date:
Started: 84
Finished: 7-xx/84
Sheet 1 of 6

Hecra Research Inc.

SUBSURFACE LOG TB-3

Surface Elev. 746.21

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location SE Corner of Site 2,860 ' S of
OW-1 on berm

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 to 6	Blows on Sampler 6 to 12	Description
80		SS	9	15	20	Increasing silt content
				20		
85						
90			10	24	25	
				22		Grey silty clay, occasional rounded well sorted coarse gravel, slightly stiff, moist plastic
95			11			
100			12	21	36	
				48		
105			13	18	25	
				40		
						108.7
110			14			Moderate to abundant fine gravel, occasional medium to coarse gravel.
				31	38	
				50		
115			15	25	27	Grey clayey silt, saturated
				31		
120						

Notes

Gamma Log 0 to 50 CPS

Electric Log Normal 0 to 800 Ω m

Gamma

sp

.5m

.25m

Clay

Dec. Finish

6375

6317

Classification: Visual

Method of Investigation: ASTM D 1452-80

B-142

SUBSURFACE LOG TB-3

Finished: 1/26/84

Sheet 4 of

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location SE Corner of S[illegible] 2 860' S of OW3 on Berm

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 to 6 / 6 to 12 / 12 to 18 / 18 to 24	Description
20		SS			Grey clayey silt saturated
25			16	28 / 44 / 37	Brown grey silty clay, some red, mottled, dense, stiff, dry, slightly moist
30					
35			17	35 / 72 / 48	
40			18	24 / 46 / 36	
45			19	51 / 37 / 39	Minor silt lenses common from 140-155'
155			20	24 / 40 / 31	Brown grey silty clay
60					

Notes

Gamma Log: 0 up 100 | 1 mv | 50 CPS

Electric Log Normal: 0 | 800 Ω m

Silt

122.1'

Gamma

up

.5m

.25m

Clay

Gamma

up

Classification: Visual

Method of Investigation: ASTM D 1452-80

B-143

Date:
Started:
Finished: 1/26/84
Sheet 5 of 6

Recra Research, Inc.
SUBSURFACE LOG TB-3

Surface Elev. 746.21

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location SE Corner of Site 2, 860' S of CW 3 on Berm

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler	Description
160		SS			
165			21	18 / 20 / 22	Brown sandy silty till, extremely dense, hard, dry stiff
170					
175			22	12 / 17 / 19	Grey silty clay, homogeneous, moist, soft plastic
180					
185			23	37 / 35 / 39	
190					
					192.7'
195			24	300/3"	Brown fine sand, some silt, unconsolidated, poorly sorted, soft, moist

Notes

Gamma Log: sp log (+ / −) 1 mV; 60 CPS
Electric Log Normal: 0 to 600 Ω m; .25m; .5m

Gamma
sp
Clayey Till
Sandy

Classification: Visual
Method of Investigation: ASTM D 1452-80

B-144

Started: 84

Finished: 1/26/

Sheet 6 of 6

SUBSURFACE LOG B-3

Project: Waukegan Hazardous Waste Management Facility
Winthrop Harbor, Illinois

Location SE Corner of Site 2, 860 ' S of CWS of berm

Depth-Ft.	Log	Sample Type	Sample No.	Blows on Sampler 0 to 6	Blows on Sampler 6 to 12	Description
200		SS				213.5
						Grey clayey silt/sandy clayey silt occasional coarse angular gravel, moist, slightly plastic
205			25	14	6"	
						196.3
210						Interpreted to by clay 191.4
215			26	60	96/1"	Silt/fine sandy silt moist, homogeneous, non-slightly clayey
						205.5
220						Light grey/brown fine sand, homogeneous soft slightly moist, poorly sorted.
						224' Bedrock 202.2
225						Completed to 225.5 190.7

Notes

Gamma Log: sp log | 5 mv | 80 CPS

Electric Log Normal: 0 | 800 Ω m

Gamma: Sand 202.7' | Clayey Silt 209.2' | Clay 211.8' | Silt 218.8' | Sand

sp

.5m

.25m

Classification: VISUAL

Method of Investigation: ASTM D 1452-80

B-145

G.4 – As-Built Diagrams and Well Construction Reports

APTIM

AS-BUILT DIAGRAMS FOR THE MOST RECENT INVESTIGATION AND FOR THE PREVIOUSLY EXISTING MONITORING WELLS OR PEIZOMETERS USED IN DEVELOPMENT OF POTENTIOMETRIC MAPS
(DRAWING NOS. G21 THROUGH G42)

APTIM

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-01-18IT

State Plane Coordinate: X 11523.09 Y 13134.36 (or) Latitude: 42° 29' 15.4315" Longitude: -087° 52' 14.1428" Borehole #: B-01-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mounted Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-42') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 1/16/2019 Date Finished: 1/17/2019

Report Form Completed By: Ralph Bonk, P.G. Date: 3/28/2019

ANNULAR SPACE DETAILS

Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

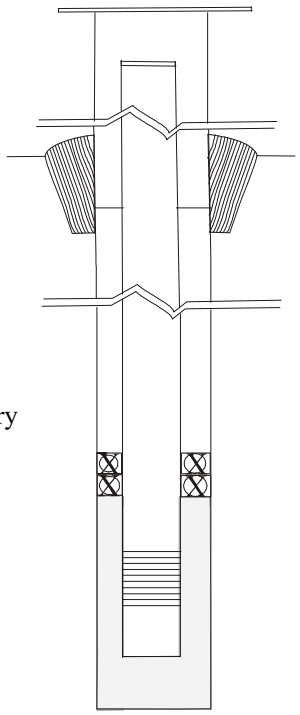
Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA



Elevations (MSL)*	Depths (BGS)	(.01ft.)
734.79	+2.80	Top of Protective Casing
734.48	+2.49	Top of Riser Pipe
731.99	0.00	Ground Surface
729.99	2.00	Top of Annular Sealant
703.70	28.29(2/20/19)	Static Water Level (After Completion)
704.04	27.95	Top of Seal
697.39	34.60	Top of Sand Pack
695.14	36.85	Top of Screen
690.47	41.52	Bottom of Screen
690.01	41.98	Bottom of Well
689.99	42.00	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	39.34
Bottom of Screen to End Cap (feet)	0.46
Screen Length (1st slot to last slot) (feet)	4.67
Total Length of Casing (feet)	44.47
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-01-18SD

State Plane Coordinate: X 11523.43 Y 13129.54 (or) Latitude: 42° 29' 15.3839" Longitude: -087° 52' 14.1387" Borehole #: B-01-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

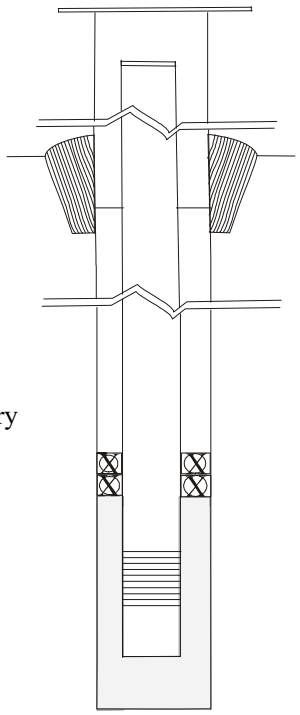
Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-92') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 1/15/2019 Date Finished: 1/16/2019

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS



Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA

	Elevations (MSL)*	Depths (BGS)	(.01ft.)
	734.84	+2.85	Top of Protective Casing
	734.59	+2.60	Top of Riser Pipe
	731.99	0.00	Ground Surface
	729.99	2.00	Top of Annular Sealant
	666.19	65.80(2/27/19)	Static Water Level (After Completion)
	660.29	71.70	Top of Seal
	652.99	79.00	Top of Sand Pack
	650.21	81.78	Top of Screen
	640.55	91.44	Bottom of Screen
	640.06	91.93	Bottom of Well
	639.99	92.00	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	84.38
Bottom of Screen to End Cap (feet)	0.49
Screen Length (1st slot to last slot) (feet)	9.66
Total Length of Casing (feet)	94.53
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-03-18SD

State Plane Coordinate: X 13038.69 Y 13129.62 (or) Latitude: 42° 29' 15.3025" Longitude: -087° 51' 53.9155" Borehole #: B-03-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

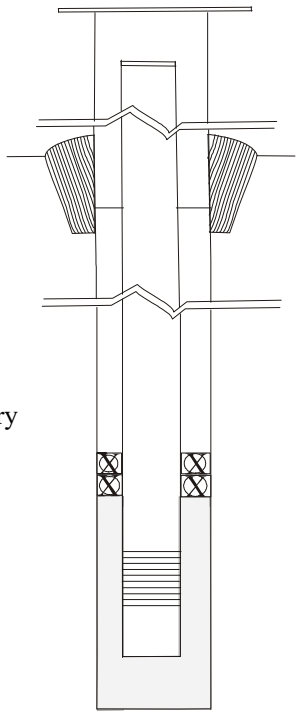
Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-104') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 12/20/2018 Date Finished: 12/26/2018

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS



Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA

	Elevations (MSL)*	Depths (BGS)	(.01ft.)
	748.23	+2.65	Top of Protective Casing
	748.01	+2.43	Top of Riser Pipe
	745.58	0.00	Ground Surface
	743.58	2.00	Top of Annular Sealant
	665.64	79.94(3/1/19)	Static Water Level (After Completion)
	661.33	84.25	Top of Seal
	655.58	90.00	Top of Sand Pack
	651.36	94.22	Top of Screen
	641.70	103.88	Bottom of Screen
	641.22	104.36	Bottom of Well
	641.22	104.36	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC, or Other X
Screen	SS304, SS316, PTFE, PVC, or Other X

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	96.65
Bottom of Screen to End Cap (feet)	0.48
Screen Length (1st slot to last slot) (feet)	9.66
Total Length of Casing (feet)	106.79
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-04-18LSD

State Plane Coordinate: X 11614.85 Y 13615.89 (or) Latitude: 42° 29' 20.1831" Longitude: -087° 52' 12.8831" Borehole #: B-04-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

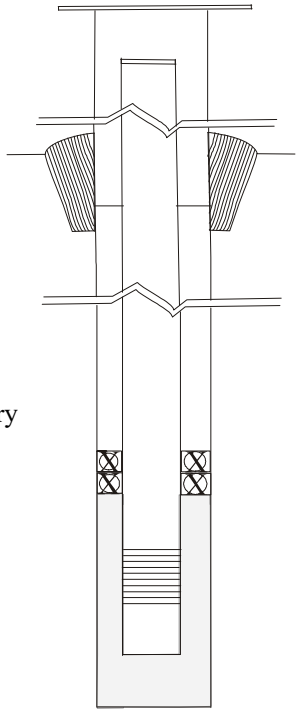
Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-112.07') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 12/12/2018 Date Finished: 12/13/2018

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS



Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA

	Elevations (MSL)*	Depths (BGS)	(.01ft.)
	733.86	+2.68	Top of Protective Casing
	733.71	+2.53	Top of Riser Pipe
	731.18	0.00	Ground Surface
	729.18	2.00	Top of Annular Sealant
	662.81	68.37(2/27/19)	Static Water Level (After Completion)
	631.38	99.80	Top of Seal
	626.59	104.59	Top of Sand Pack
	624.27	106.91	Top of Screen
	619.59	111.59	Bottom of Screen
	619.11	112.07	Bottom of Well
	619.11	112.07	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	109.44
Bottom of Screen to End Cap (feet)	0.48
Screen Length (1st slot to last slot) (feet)	4.68
Total Length of Casing (feet)	114.6
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-04-18USD

State Plane Coordinate: X 11614.82 Y 13621.32 (or) Latitude: 42° 29' 20.2367" Longitude: -087° 52' 12.8831" Borehole #: B-04-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

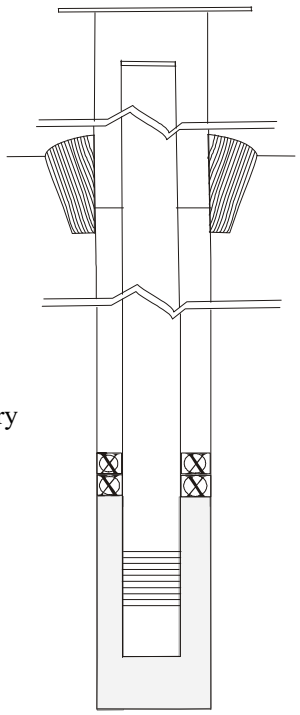
Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-94.12') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 12/13/2018 Date Finished: 12/14/2018

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS



Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA

	Elevations (MSL)*	Depths (BGS)	(.01ft.)
	733.93	+2.79	Top of Protective Casing
	733.79	+2.65	Top of Riser Pipe
	731.14	0.00	Ground Surface
	729.14	2.00	Top of Annular Sealant
	666.36	64.78(2/28/19)	Static Water Level (After Completion)
	655.64	75.50	Top of Seal
	649.62	81.52	Top of Sand Pack
	647.17	83.97	Top of Screen
	637.55	93.59	Bottom of Screen
	637.02	94.12	Bottom of Well
	637.02	94.12	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	86.62
Bottom of Screen to End Cap (feet)	0.53
Screen Length (1st slot to last slot) (feet)	9.62
Total Length of Casing (feet)	96.77
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-05-18SD

State Plane Coordinate: X 12391.54 Y 13628.73 (or) Latitude: 42° 29' 20.2679" Longitude: -087° 52' 2.5159" Borehole #: B-05-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

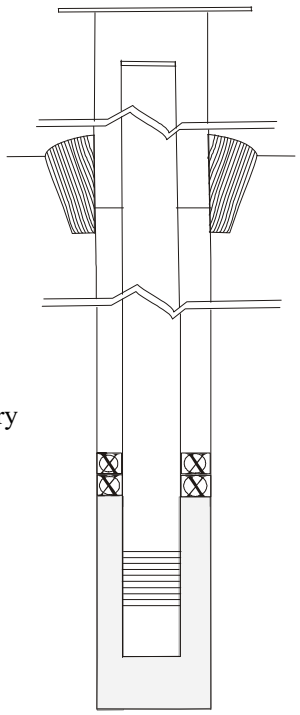
Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-120.03') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 11/21/2018 Date Finished: 11/29/2018

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNUAL SPACE DETAILS



Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA

	Elevations (MSL)*	Depths (BGS)	(.01ft.)
Top of Protective Casing	745.31	+2.77	
Top of Riser Pipe	745.10	+2.56	
Ground Surface	742.54	0.00	
Top of Annular Sealant	740.54	2.00	
Static Water Level (After Completion)	659.54	83.00(2/28/19)	
Top of Seal	636.54	106.00	
Top of Sand Pack	630.29	112.25	
Top of Screen	627.68	114.86	
Bottom of Screen	622.99	119.55	
Bottom of Well	622.51	120.03	
Bottom of Borehole	622.51	120.03	

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	117.42
Bottom of Screen to End Cap (feet)	0.48
Screen Length (1st slot to last slot) (feet)	4.69
Total Length of Casing (feet)	122.59
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-06-18LSD

State Plane Coordinate: X 13043.36 Y 13632.77 (or) Latitude: 42° 29' 20.2724" Longitude: -087° 51' 53.816" Borehole #: B-06-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-132.14') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 12/17/2018 Date Finished: 12/19/2018

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS

Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

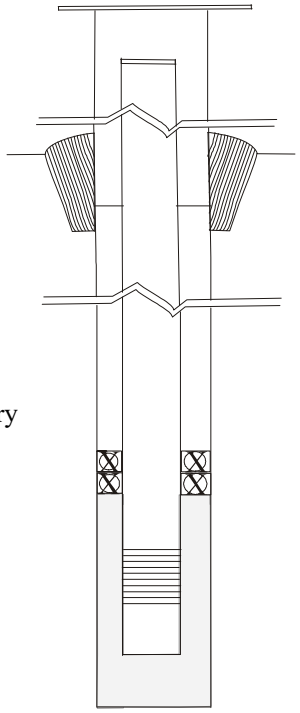
Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA



Elevations (MSL)*	Depths (BGS)	(.01ft.)
748.00	+2.99	Top of Protective Casing
747.47	+2.46	Top of Riser Pipe
745.01	0.00	Ground Surface
743.01	2.00	Top of Annular Sealant
659.30	85.71(3/1/19)	Static Water Level (After Completion)
630.76	114.25	Top of Seal
625.46	119.55	Top of Sand Pack
623.01	122.00	Top of Screen
613.39	131.62	Bottom of Screen
612.87	132.14	Bottom of Well
612.87	132.14	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	124.46
Bottom of Screen to End Cap (feet)	0.52
Screen Length (1st slot to last slot) (feet)	9.62
Total Length of Casing (feet)	134.60
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-06-18USD

State Plane Coordinate: X 13043.36 Y 13638.28 (or) Latitude: 42° 29' 20.3268" Longitude: -087° 51' 53.8156" Borehole #: B-06-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-110') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 12/19/2018 Date Finished: 12/19/2018

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS

Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

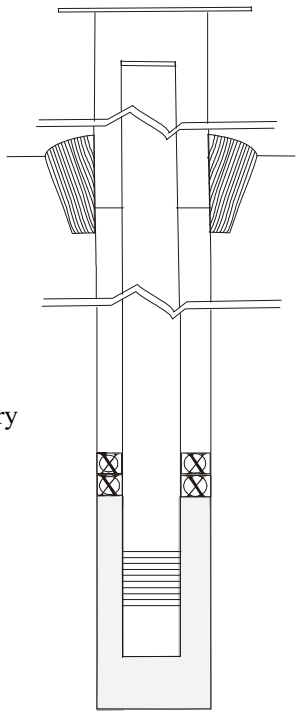
Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA



	Elevations (MSL)*	Depths (BGS)	(.01ft.)
	747.58	+2.88	Top of Protective Casing
	747.56	+2.86	Top of Riser Pipe
	744.70	0.00	Ground Surface
	742.70	2.00	Top of Annular Sealant
	665.26	79.44(3/1/19)	Static Water Level (After Completion)
	653.30	91.40	Top of Seal
	647.18	97.52	Top of Sand Pack
	645.11	99.59	Top of Screen
	635.49	109.21	Bottom of Screen
	634.96	109.74	Bottom of Well
	634.70	110.00	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	102.45
Bottom of Screen to End Cap (feet)	0.53
Screen Length (1st slot to last slot) (feet)	9.62
Total Length of Casing (feet)	112.60
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-07-18LSD

State Plane Coordinate: X 11601.29 Y 14162.75 (or) Latitude: 42° 29' 25.5857" Longitude: -087° 52' 13.0242" Borehole #: B-07-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-116.13') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 12/7/2018 Date Finished: 12/11/2018

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNUAL SPACE DETAILS

Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

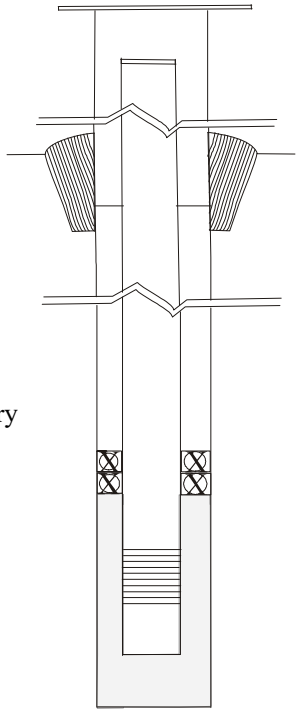
Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA



	Elevations (MSL)*	Depths (BGS)	(.01ft.)
Top of Protective Casing	735.22	+2.63	
Top of Riser Pipe	735.01	+2.42	
Ground Surface	732.59	0.00	
Top of Annular Sealant	730.59	2.00	
Static Water Level (After Completion)	663.68	68.91(3/5/19)	
Top of Seal	633.99	98.60	
Top of Sand Pack	629.19	103.40	
Top of Screen	626.60	105.99	
Bottom of Screen	617.07	115.52	
Bottom of Well	616.46	116.13	
Bottom of Borehole	616.46	116.13	

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	108.41
Bottom of Screen to End Cap (feet)	0.61
Screen Length (1st slot to last slot) (feet)	9.53
Total Length of Casing (feet)	118.55
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-07-18USD

State Plane Coordinate: X 11602.38 Y 14157.94 (or) Latitude: 42° 29' 25.5381" Longitude: -087° 52' 13.0099" Borehole #: B-07-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-88') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 12/11/2018 Date Finished: 12/11/2018

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS

Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

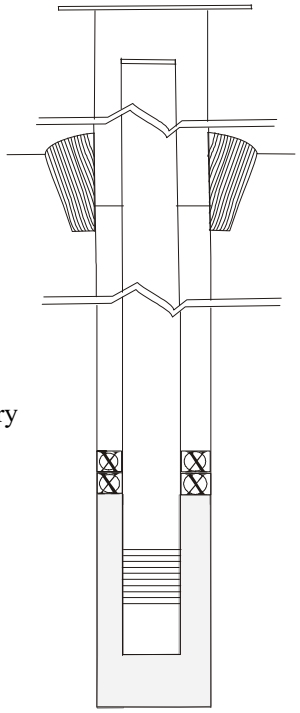
Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA



Elevations (MSL)*	Depths (BGS)	(.01ft.)
734.93	+2.68	Top of Protective Casing
734.81	+2.56	Top of Riser Pipe
732.25	0.00	Ground Surface
730.25	2.00	Top of Annular Sealant
665.73	66.52(3/5/19)	Static Water Level (After Completion)
662.65	69.60	Top of Seal
656.65	75.60	Top of Sand Pack
654.45	77.80	Top of Screen
644.91	87.34	Bottom of Screen
644.31	87.94	Bottom of Well
644.25	88.00	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	80.36
Bottom of Screen to End Cap (feet)	0.60
Screen Length (1st slot to last slot) (feet)	9.54
Total Length of Casing (feet)	90.50
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-08-18D

State Plane Coordinate: X 12383.73 Y 14134.91 (or) Latitude: 42° 29' 25.2683" Longitude: -087° 52' 2.583" Borehole #: B-08-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

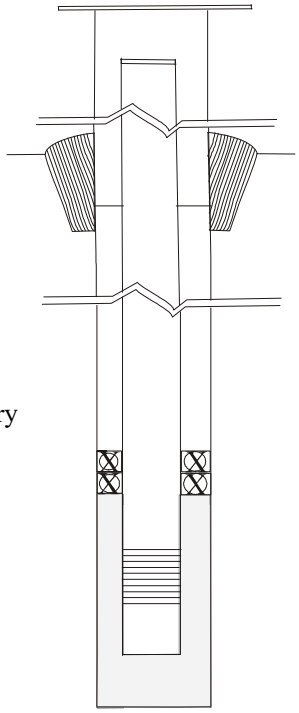
Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-206.08') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 11/12/2018 Date Finished: 11/19/2018

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS



Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA

	Elevations (MSL)*	Depths (BGS)	(.01ft.)
	745.69	+2.75	Top of Protective Casing
	745.40	+2.46	Top of Riser Pipe
	742.94	0.00	Ground Surface
	740.94	2.00	Top of Annular Sealant
	661.46	81.48(3/8/19)	Static Water Level (After Completion)
	553.94	189.00	Top of Seal
	549.34	193.60	Top of Sand Pack
	547.00	195.94	Top of Screen
	537.45	205.49	Bottom of Screen
	536.86	206.08	Bottom of Well
	536.86	206.08	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	198.40
Bottom of Screen to End Cap (feet)	0.59
Screen Length (1st slot to last slot) (feet)	9.55
Total Length of Casing (feet)	208.54
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-08-18IT

State Plane Coordinate: X 12384.45 Y 14142.76 (or) Latitude: 42° 29' 25.3458" Longitude: -087° 52' 2.5729" Borehole #: B-08-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

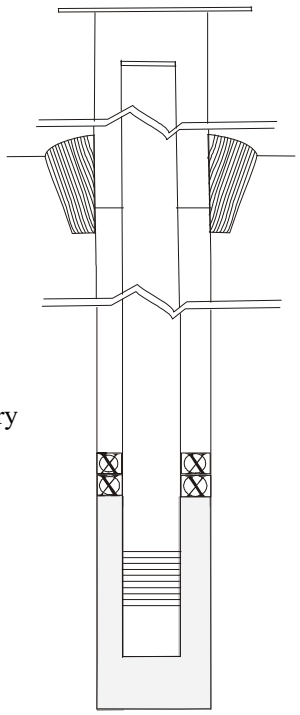
Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-58.29') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 11/20/2018 Date Finished: 11/21/2018

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS



Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA

	Elevations (MSL)*	Depths (BGS)	(.01ft.)
	745.39	+2.36	Top of Protective Casing
	745.30	+2.27	Top of Riser Pipe
	743.03	0.00	Ground Surface
	741.03	2.00	Top of Annular Sealant
	702.83	40.20(3/20/19)	Static Water Level (After Completion)
	698.03	45.00	Top of Seal
	692.43	50.60	Top of Sand Pack
	689.90	53.13	Top of Screen
	685.22	57.81	Bottom of Screen
	684.74	58.29	Bottom of Well
	684.74	58.29	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	55.40
Bottom of Screen to End Cap (feet)	0.48
Screen Length (1st slot to last slot) (feet)	4.68
Total Length of Casing (feet)	60.56
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-08-18SD

State Plane Coordinate: X 12384.45 Y 14139.31 (or) Latitude: 42° 29' 25.3117" Longitude: -087° 52' 2.5732" Borehole #: B-08-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

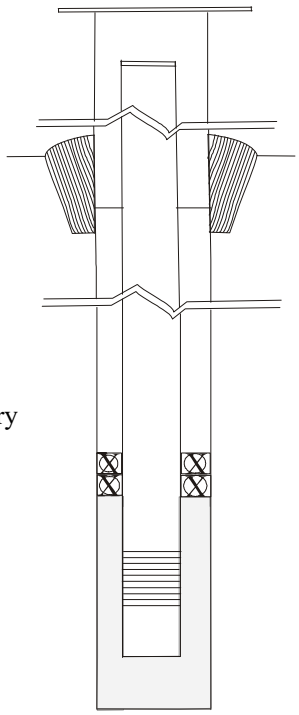
Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-121.92') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 11/19/2018 Date Finished: 11/20/2018

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS



Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA

	Elevations (MSL)*	Depths (BGS)	(.01ft.)
	745.56	+2.76	Top of Protective Casing
	745.34	+2.54	Top of Riser Pipe
	742.80	0.00	Ground Surface
	740.80	2.00	Top of Annular Sealant
	659.50	83.30(3/7/19)	Static Water Level (After Completion)
	632.80	110.00	Top of Seal
	628.30	114.50	Top of Sand Pack
	626.04	116.76	Top of Screen
	621.36	121.44	Bottom of Screen
	620.88	121.92	Bottom of Well
	620.88	121.92	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	119.30
Bottom of Screen to End Cap (feet)	0.48
Screen Length (1st slot to last slot) (feet)	4.68
Total Length of Casing (feet)	124.46
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-09-18SD

State Plane Coordinate: X 13178.87 Y 14125.68 (or) Latitude: 42° 29' 25.1339" Longitude: -087° 51' 51.9711" Borehole #: B-09-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-104.22') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 1/3/2019 Date Finished: 1/7/2019

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS

Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

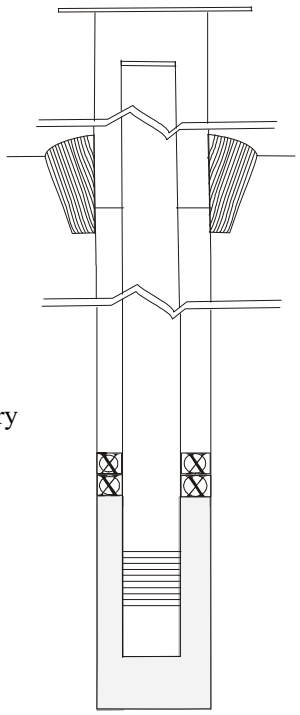
Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA



Elevations (MSL)*	Depths (BGS)	(.01ft.)
740.99	+2.72	Top of Protective Casing
740.80	+2.53	Top of Riser Pipe
738.27	0.00	Ground Surface
736.27	2.00	Top of Annular Sealant
665.06	73.21(3/7/19)	Static Water Level (After Completion)
648.37	89.90	Top of Seal
647.27	91.00	Top of Sand Pack
644.20	94.07	Top of Screen
634.55	103.72	Bottom of Screen
634.05	104.22	Bottom of Well
634.05	104.22	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	96.6
Bottom of Screen to End Cap (feet)	0.50
Screen Length (1st slot to last slot) (feet)	9.65
Total Length of Casing (feet)	106.75
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-10-18SD

State Plane Coordinate: X 11602.68 Y 14652.76 (or) Latitude: 42° 29' 30.4259" Longitude: -087° 52' 12.9699" Borehole #: B-10-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

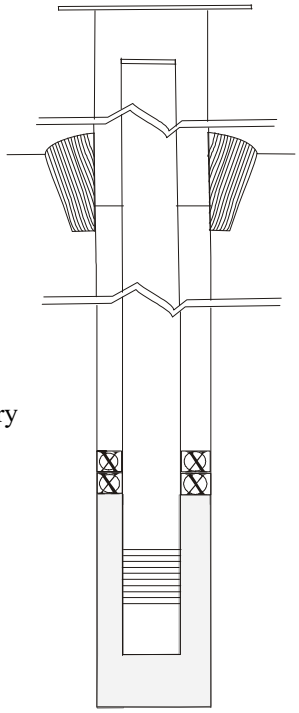
Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-99.63') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 1/9/2019 Date Finished: 1/11/2019

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS



Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA

	Elevations (MSL)*	Depths (BGS)	(.01ft.)
Top of Protective Casing	735.77	+3.13	
Top of Riser Pipe	735.53	+2.89	
Ground Surface	732.64	0.00	
Top of Annular Sealant	730.64	2.00	
Static Water Level (After Completion)	664.37	68.27(3/4/19)	
Top of Seal	652.04	80.60	
Top of Sand Pack	645.64	87.00	
Top of Screen	643.15	89.49	
Bottom of Screen	633.50	99.14	
Bottom of Well	633.01	99.63	
Bottom of Borehole	633.01	99.63	

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	92.38
Bottom of Screen to End Cap (feet)	0.49
Screen Length (1st slot to last slot) (feet)	9.65
Total Length of Casing (feet)	102.52
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-11-18SD

State Plane Coordinate: X 12392.18 Y 14545.78 (or) Latitude: 42° 29' 29.3264" Longitude: -087° 52' 2.4401" Borehole #: B-11-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

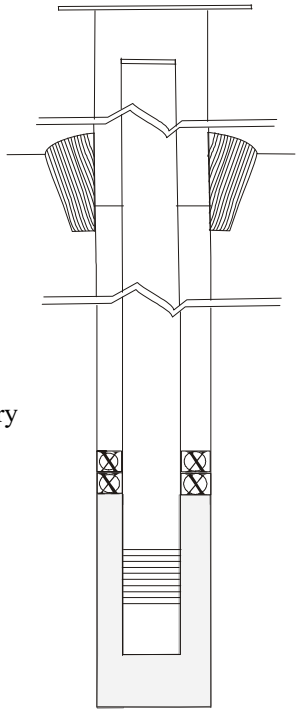
Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-119.71') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 11/29/2018 Date Finished: 12/6/2018

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS



Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA

	Elevations (MSL)*	Depths (BGS)	(.01ft.)
	736.47	+2.71	Top of Protective Casing
	736.29	+2.53	Top of Riser Pipe
	733.76	0.00	Ground Surface
	731.76	2.00	Top of Annular Sealant
	660.04	73.72(3/7/19)	Static Water Level (After Completion)
	632.86	100.90	Top of Seal
	626.26	107.50	Top of Sand Pack
	624.18	109.58	Top of Screen
	614.62	119.14	Bottom of Screen
	614.05	119.71	Bottom of Well
	614.05	119.71	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	112.11
Bottom of Screen to End Cap (feet)	0.57
Screen Length (1st slot to last slot) (feet)	9.56
Total Length of Casing (feet)	122.24
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-12-18IT

State Plane Coordinate: X 13210.12 Y 14641.44 (or) Latitude: 42° 29' 30.2268" Longitude: -087° 51' 51.5159" Borehole #: B-12-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-59.29') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 1/2/2019 Date Finished: 1/2/2019

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS

Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

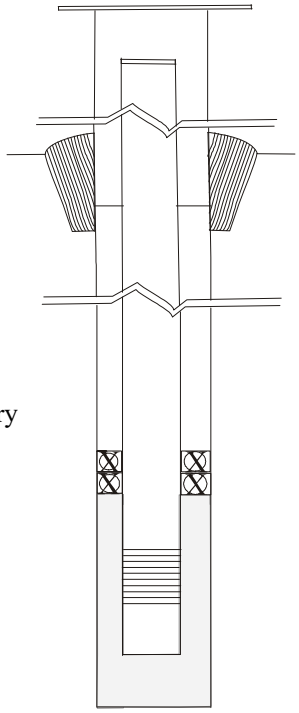
Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA



Elevations (MSL)*	Depths (BGS)	(.01ft.)
744.42	+2.90	Top of Protective Casing
744.11	+2.59	Top of Riser Pipe
741.52	0.00	Ground Surface
739.52	2.00	Top of Annular Sealant
701.00	40.52(2/20/19)	Static Water Level (After Completion)
700.52	41.00	Top of Seal
694.90	46.62	Top of Sand Pack
692.37	49.15	Top of Screen
682.80	58.72	Bottom of Screen
682.23	59.29	Bottom of Well
682.23	59.29	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	51.74
Bottom of Screen to End Cap (feet)	0.57
Screen Length (1st slot to last slot) (feet)	9.57
Total Length of Casing (feet)	61.88
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-12-18SD

State Plane Coordinate: X 13209.63 Y 14646.46 (or) Latitude: 42° 29' 30.2765" Longitude: -087° 51' 51.522" Borehole #: B-12-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-106.28') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 12/28/2018 Date Finished: 1/2/2019

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNUAL SPACE DETAILS

Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

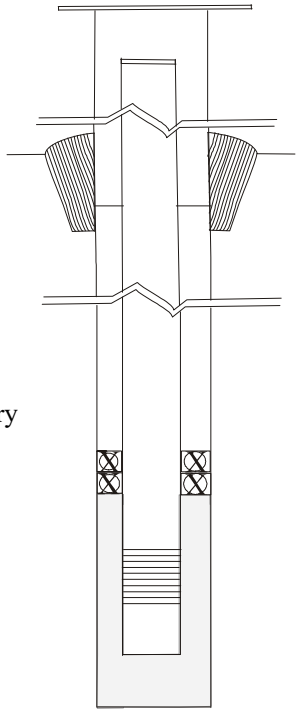
Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA



Elevations (MSL)*	Depths (BGS)	(.01ft.)
744.10	+2.78	Top of Protective Casing
743.76	+2.44	Top of Riser Pipe
741.32	0.00	Ground Surface
739.32	2.00	Top of Annular Sealant
664.45	76.87(3/6/19)	Static Water Level (After Completion)
654.52	86.80	Top of Seal
647.77	93.55	Top of Sand Pack
645.23	96.09	Top of Screen
635.62	105.70	Bottom of Screen
635.04	106.28	Bottom of Well
635.04	106.28	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	98.53
Bottom of Screen to End Cap (feet)	0.58
Screen Length (1st slot to last slot) (feet)	9.61
Total Length of Casing (feet)	108.72
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-13-18IT

State Plane Coordinate: X 11532.14 Y 15107.46 (or) Latitude: 42° 29' 34.9212" Longitude: -087° 52' 13.8783" Borehole #: B-13-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-49.94') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 1/15/2019 Date Finished: 1/15/2019

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS

Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

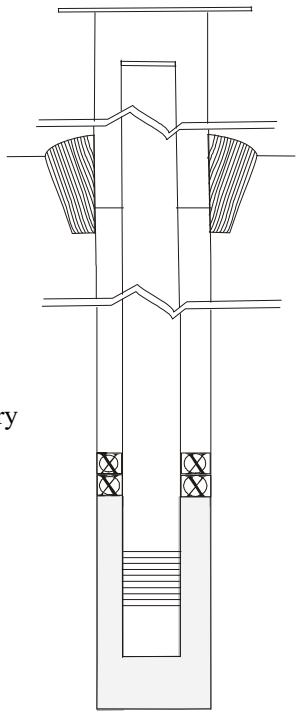
Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA



	Elevations (MSL)*	Depths (BGS)	(.01ft.)
	733.34	+2.95	Top of Protective Casing
	733.12	+2.73	Top of Riser Pipe
	730.39	0.00	Ground Surface
	728.39	2.00	Top of Annular Sealant
	697.74	32.65(2/20/19)	Static Water Level (After Completion)
	693.39	37.00	Top of Seal
	688.04	42.35	Top of Sand Pack
	685.59	44.80	Top of Screen
	680.91	49.48	Bottom of Screen
	680.45	49.94	Bottom of Well
	680.45	49.94	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	47.53
Bottom of Screen to End Cap (feet)	0.46
Screen Length (1st slot to last slot) (feet)	4.68
Total Length of Casing (feet)	52.67
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-13-18SD

State Plane Coordinate: X 11532.48 Y 15112.47 (or) Latitude: 42° 29' 34.9707" Longitude: -087° 52' 13.8734" Borehole #: B-13-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-96.02') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 1/11/2019 Date Finished: 1/14/2019

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS

Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

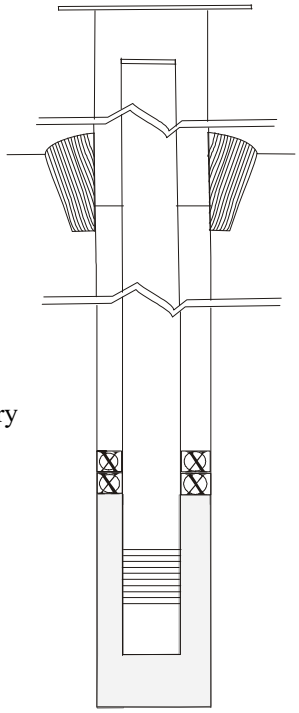
Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA



Elevations (MSL)*	Depths (BGS)	(.01ft.)
733.02	+2.71	Top of Protective Casing
732.82	+2.51	Top of Riser Pipe
730.31	0.00	Ground Surface
728.31	2.00	Top of Annular Sealant
662.76	67.55(2/25/19)	Static Water Level (After Completion)
653.81	76.50	Top of Seal
646.81	83.50	Top of Sand Pack
644.44	85.87	Top of Screen
634.77	95.54	Bottom of Screen
634.29	96.02	Bottom of Well
634.29	96.02	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	88.38
Bottom of Screen to End Cap (feet)	0.48
Screen Length (1st slot to last slot) (feet)	9.67
Total Length of Casing (feet)	98.53
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-14-18IT

State Plane Coordinate: X 12399.61 Y 15154.47 (or) Latitude: 42° 29' 35.3387" Longitude: -087° 52' 2.2963" Borehole #: B-14-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

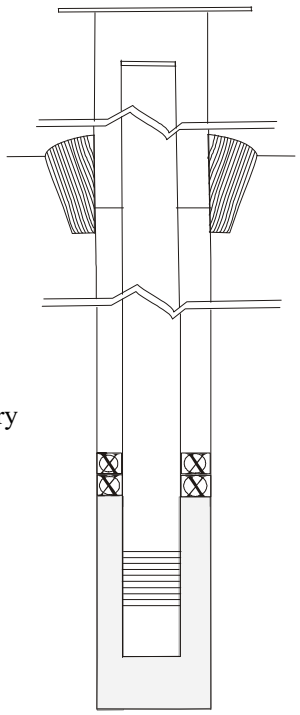
Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-84.27') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 12/5/2018 Date Finished: 12/5/2018

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS



Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA

	Elevations (MSL)*	Depths (BGS)	(.01ft.)
	741.81	+2.56	Top of Protective Casing
	741.58	+2.33	Top of Riser Pipe
	739.25	0.00	Ground Surface
	737.25	2.00	Top of Annular Sealant
	675.72	63.53(2/25/19)	Static Water Level (After Completion)
	668.25	71.00	Top of Seal
	662.75	76.50	Top of Sand Pack
	660.14	79.11	Top of Screen
	655.46	83.79	Bottom of Screen
	654.98	84.27	Bottom of Well
	654.98	84.27	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	81.44
Bottom of Screen to End Cap (feet)	0.48
Screen Length (1st slot to last slot) (feet)	4.68
Total Length of Casing (feet)	86.6
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-14-18SD

State Plane Coordinate: X 12405.35 Y 15154.58 (or) Latitude: 42° 29' 35.3394" Longitude: -087° 52' 2.2197" Borehole #: B-14-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

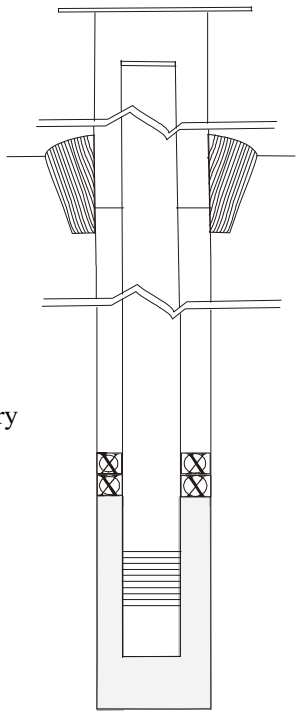
Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-122.04') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 12/3/2018 Date Finished: 12/5/2018

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS



Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA

	Elevations (MSL)*	Depths (BGS)	(.01ft.)
	741.91	+2.81	Top of Protective Casing
	741.62	+2.52	Top of Riser Pipe
	739.10	0.00	Ground Surface
	737.10	2.00	Top of Annular Sealant
	662.51	76.59(2/25/19)	Static Water Level (After Completion)
	630.10	109.00	Top of Seal
	624.80	114.30	Top of Sand Pack
	622.22	116.88	Top of Screen
	617.54	121.56	Bottom of Screen
	617.06	122.04	Bottom of Well
	617.06	122.04	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC, or Other X
Screen	SS304, SS316, PTFE, PVC, or Other X

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	119.4
Bottom of Screen to End Cap (feet)	0.48
Screen Length (1st slot to last slot) (feet)	4.68
Total Length of Casing (feet)	124.56
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency — Well Completion Report

Site Number: NA County: Lake

Site Name: Zion Landfill Site 2 North Expansion Well #: P-15-18SD

State Plane Coordinate: X 13213.52 Y 15144.13 (or) Latitude: 42° 29' 35.1922" Longitude: -087° 51' 51.4334" Borehole #: B-15-18

Surveyed by: Chris Salazar, P.L.S. IL Registration #: 035004017

Drilling Contractor: Strata Earth Services, LLC Driller: Bill McCarthy

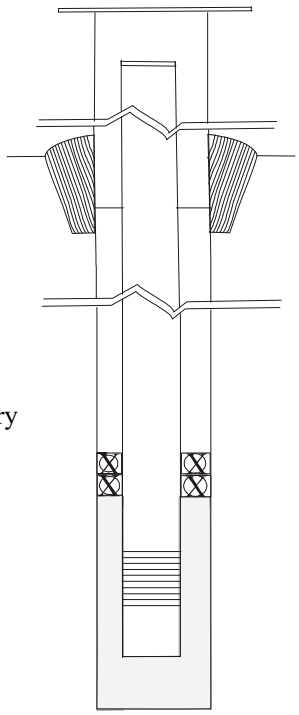
Consulting Firm: APTIM Geologist: Ralph Bonk, P.G.

Drilling Method: Mobile B-57 Track Mount Drill Rig:6"Solid Flight Augers(0-10');4 7/8" Dia.Tricone Roller Bit(10-100.16') Drilling Fluid (Type): Water

Logged By: Ralph Bonk, P.G. Date Started: 1/23/2019 Date Finished: 1/24/2019

Report Form Completed By: Ralph Bonk, P.G. Date: 3/29/2019

ANNULAR SPACE DETAILS



Type of Surface Seal: Concrete

Type of Annular Sealant: Cement-Bentonite Grout

Installation Method: Tremie

Setting Time: > 24 hrs.

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) X

Installation Method: Poured

Setting Time: > 1 Hour

Type of Sand Pack: #5 Silica Sand

Grain Size: 10/20 (Sieve Size)

Installation Method: Poured

Type of Backfill Material: NA (if applicable)

Installation Method: NA

	Elevations (MSL)*	Depths (BGS)	(.01ft.)
Top of Protective Casing	739.08	+2.38	
Top of Riser Pipe	739.04	+2.34	
Ground Surface	736.70	0.00	
Top of Annular Sealant	734.70	2.00	
Static Water Level (After Completion)	665.26	71.44(3/7/19)	
Top of Seal	656.70	80.00	
Top of Sand Pack	650.70	86.00	
Top of Screen	646.68	90.02	
Bottom of Screen	637.03	99.67	
Bottom of Well	636.54	100.16	
Bottom of Borehole	636.54	100.16	

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other X
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC X, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC X, or Other
Screen	SS304, SS316, PTFE, PVC X, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	5
ID of Riser Pipe (inches)	2.0
Protective Casing Length (feet)	5' Long/4" Dia.(Round)
Riser Pipe Length (feet)	92.36
Bottom of Screen to End Cap (feet)	0.49
Screen Length (1st slot to last slot) (feet)	9.65
Total Length of Casing (feet)	102.5
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Well Completion Report

Site No.: 122150 County: Lake Well No.: MW-03-07

Site Name: Veolia E.S. Zion Landfill Site 4 Expansion Grid Coordinate: Northing 12,039.70 Easting 13,077.93

Drilling Contractor: RDnP Drilling, Inc. Date Drilling Started: 04-17-07

Driller: Don Smith Geologist: Ralph Bonk Date Well Completed: 04-19-07

Drilling Method: 6.25" HSA (0-10'), Rotary – 3.875" Tricone Roller Bit (10-98') Drilling Fluids (type): Water

5.875" Tricone Rotary Bit – Drill Ream (10-98')

Annular Space Details

Type of Surface Seal: 3 x 50 lb. Bags Quikrete Concrete Mix

Type of Annular Sealant: Bentonite Grout (Pure Gold Grout – Cetco)

Amount of cement: # of bags -- Lbs. per bag --

Amount of bentonite: # of bags 5 Lbs. per bag 50

Type of bentonite seal: ¼" Coated Bentonite Pellets - Cetco

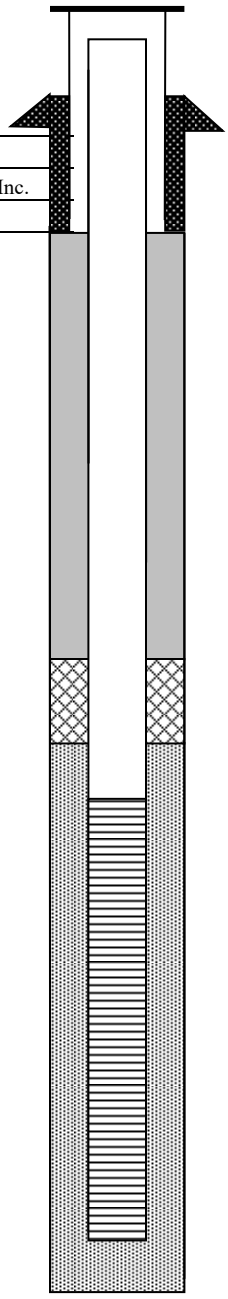
Amount of bentonite: # of bags 0.5 Lbs. per bag 5-Gallon Bucket

Type of Sand Pack: #5 Source of Sand: Global Drilling Supplies, Inc.

Amount of Sand: # of bags 4 Lbs. per bag 50

Elevations - .01 ft

743.08	MSL Top of Protective Casing
743.10	MSL Top of Riser Pipe
2.50	Ft. Casing Stickup
+0.3	Ft. Top of Concrete
740.60	MSL Ground Surface
-3.50	Ft. Top of Annular Sealant
66.50	Ft. Total Annular Sealant Interval
-70.00	Ft. Top of Bentonite Seal
12.00	Ft. Total Bentonite Seal Interval
-82.00	Ft. Top of Sand Pack
-87.70	Ft. Top of Screen
10.00	Ft. Total Screen Interval
-97.70	Ft. Bottom of Screen
-98.00	Ft. Bottom of Borehole



Well Construction Materials

	Stainless Steel Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint		Threaded	
Riser pipe above w.t.		SCH 40	
Riser pipe below w.t.		SCH 40	
Screen		SCH 40	
Coupling joint screen to riser		Threaded	
Protective casing		Stainless Steel	

Measurements to .01 ft (where applicable)

Riser pipe length	90.03
Protective casing length	4" Diameter - 5' Long
Screen length	9.64
Bottom of screen to end cap	0.08
Top of screen to first joint	0.28
Total length of casing	-
Screen slot size	0.01"
% of openings in screen	1/8" Spacing/ 3 Row Slots
Diameter of borehole	10" (0-10') – 6" (10-100')
ID of riser pipe (in)	2"

Completed by: Ralph Bonk Surveyed by:

Shaw® Shaw Environmental, Inc.

Well Completion Report

Site No.: 122150 County: Lake Well No.: MW-06-07-D

Site Name: Veolia E.S. Zion Landfill Site 4 Expansion Grid Coordinate: Northing 11,400.75 Easting 13,283.41

Drilling Contractor: RDnP Drilling, Inc. Date Drilling Started: 03-30-07

Driller: Don Smith Geologist: Ralph Bonk Date Well Completed: 04-16-07

Drilling Method: 6.25" HSA (0-20'), Rotary - 5.875" Tricone Roller Bit (20-100'), Rotary – 3.875" Tricone Roller Bit (100-220'), 5.875" Tricone Rotary Bit – Drill Ream (100-220') Drilling Fluids (type): Revert

Annular Space Details

Type of Surface Seal: 3 x 50 lb. Bags Quikrete Concrete Mix

Type of Annular Sealant: Bentonite Grout (Pure Gold Grout – Cetco)

Amount of cement: # of bags -- Lbs. per bag --

Amount of bentonite: # of bags 6 Lbs. per bag 50

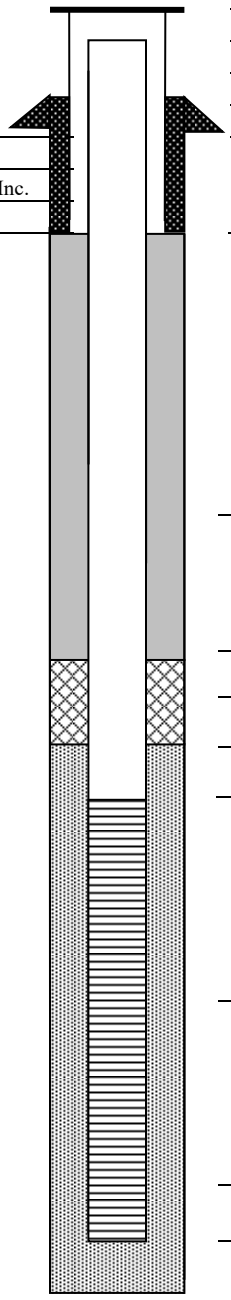
Type of bentonite seal: ¼" Coated Bentonite Pellets - Cetco

Amount of bentonite: # of bags 1 Lbs. per bag 5-Gallon Bucket

Type of Sand Pack: #5 Source of Sand: Global Drilling Supplies, Inc.

Amount of Sand: # of bags 3 Lbs. per bag 50

Elevations - .01 ft



746.50	MSL Top of Protective Casing
746.65	MSL Top of Riser Pipe
2.55	Ft. Casing Stickup
+0.3	Ft. Top of Concrete
744.10	MSL Ground Surface
-3.50	Ft. Top of Annular Sealant
190.50	Ft. Total Annular Sealant Interval
-194.00	Ft. Top of Bentonite Seal
16.00	Ft. Total Bentonite Seal Interval
-210.00	Ft. Top of Sand Pack
-214.58	Ft. Top of Screen
5.01	Ft. Total Screen Interval
-219.59	Ft. Bottom of Screen
-220.00	Ft. Bottom of Borehole

Well Construction Materials

	Stainless Steel Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint		Threaded	
Riser pipe above w.t.		SCH 40	
Riser pipe below w.t.		SCH 40	
Screen		SCH 40	
Coupling joint screen to riser		Threaded	
Protective casing		Stainless Steel	

Measurements to .01 ft (where applicable)

Riser pipe length	217.06
Protective casing length	4" Diameter - 5' Long
Screen length	4.8
Bottom of screen to end cap	0.17
Top of screen to first joint	0.04
Total length of casing	-
Screen slot size	0.01"
% of openings in screen	1/8" Spacing/ 3 Row Slots
Diameter of borehole	10" (0-20') – 6" (20-220')
ID of riser pipe (in)	2"

Completed by: Ralph Bonk Surveyed by:

Shaw® Shaw Environmental, Inc.

Well Completion Report

Site No.: 122150 County Lake Well No.: MW-08-07

Site Name: Veolia E.S. Zion Landfill Site 4 Expansion Grid Coordinate: Northing 10,868.75 Easting 12,490.36

Drilling Contractor: RDnP Drilling, Inc. Date Drilling Started: 04-20-07

Driller: Don Smith Geologist: Ralph Bonk Date Well Completed: 04-24-07

Drilling Method: 6.25" HSA (0-14'), Rotary – 3.875" Tricone Roller Bit (14-92') Drilling Fluids (type): Water

5.875" Tricone Rotary Bit – Drill Ream (14-92')

Annular Space Details

Elevations - .01 ft

Type of Surface Seal: 5 x 80 lb. Bags Quikrete Concrete Mix

Type of Annular Sealant: Bentonite Grout (Pure Gold Grout – Cetco)

Amount of cement: # of bags -- Lbs. per bag --

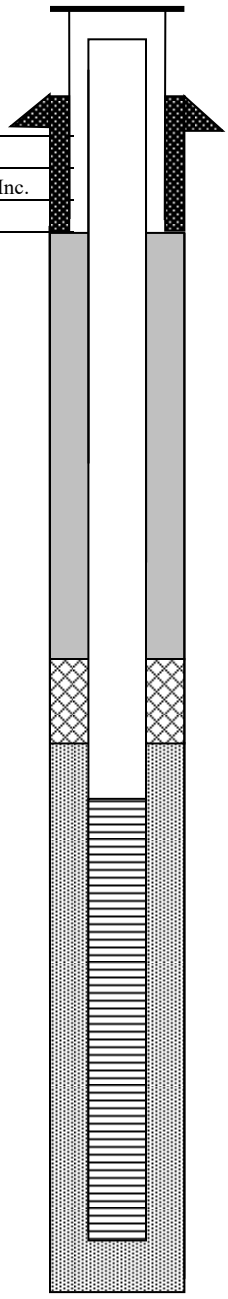
Amount of bentonite: # of bags 4 Lbs. per bag 50

Type of bentonite seal: ¼" Coated Bentonite Pellets - Cetco

Amount of bentonite: # of bags 0.5 Lbs. per bag 5-Gallon Bucket

Type of Sand Pack: #5 Source of Sand: Global Drilling Supplies, Inc.

Amount of Sand: # of bags 4 Lbs. per bag 50



739.83	MSL Top of Protective Casing
739.83	MSL Top of Riser Pipe
2.63	Ft. Casing Stickup
+ 0.3	Ft. Top of Concrete
737.20	MSL Ground Surface
-3.50	Ft. Top of Annular Sealant
66.50	Ft. Total Annular Sealant Interval
-70.00	Ft. Top of Bentonite Seal
8.00	Ft. Total Bentonite Seal Interval
-78.00	Ft. Top of Sand Pack
-81.70	Ft. Top of Screen
10.00	Ft. Total Screen Interval
-91.70	Ft. Bottom of Screen
-92.00	Ft. Bottom of Borehole

Well Construction Materials

	Stainless Steel Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint		Threaded	
Riser pipe above w.t.		SCH 40	
Riser pipe below w.t.		SCH 40	
Screen		SCH 40	
Coupling joint screen to riser		Threaded	
Protective casing		Stainless Steel	

Measurements to .01 ft (where applicable)

Riser pipe length	83.99
Protective casing length	4" Diameter - 5' Long
Screen length	9.64
Bottom of screen to end cap	0.08
Top of screen to first joint	0.28
Total length of casing	-
Screen slot size	0.01"
% of openings in screen	1/8" Spacing/ 3 Row Slots
Diameter of borehole	10" (0-14') – 6" (14-92')
ID of riser pipe (in)	2"

Completed by: Ralph Bonk Surveyed by:

Shaw® Shaw Environmental, Inc.

Well Completion Report

Site No.: 122150 County: Lake Well No.: MW-09-07

Site Name: Veolia E.S. Zion Landfill Site 4 Expansion Grid Coordinate: Northing 10,924.54 Easting 12,901.47

Drilling Contractor: RDnP Drilling, Inc. Date Drilling Started: 04-24-07

Driller: Don Smith Geologist: Ralph Bonk Date Well Completed: 04-30-07

Drilling Method: 6.25" HSA (0-10'), Rotary – 3.875" Tricone Roller Bit (10-100')
5.875" Tricone Rotary Bit – Drill Ream (10-100') Drilling Fluids (type): Water

Annular Space Details

Type of Surface Seal: 3 x 80 lb. Bags Quikrete Concrete Mix

Type of Annular Sealant: Bentonite Grout (Pure Gold Grout – Cetco)

Amount of cement: # of bags -- Lbs. per bag --

Amount of bentonite: # of bags 3 Lbs. per bag 50

Type of bentonite seal: ¼" Coated Bentonite Pellets - Cetco

Amount of bentonite: # of bags 0.5 Lbs. per bag 5-Gallon Bucket

Type of Sand Pack: #5 Source of Sand: Global Drilling Supplies, Inc.

Amount of Sand: # of bags 3 Lbs. per bag 50

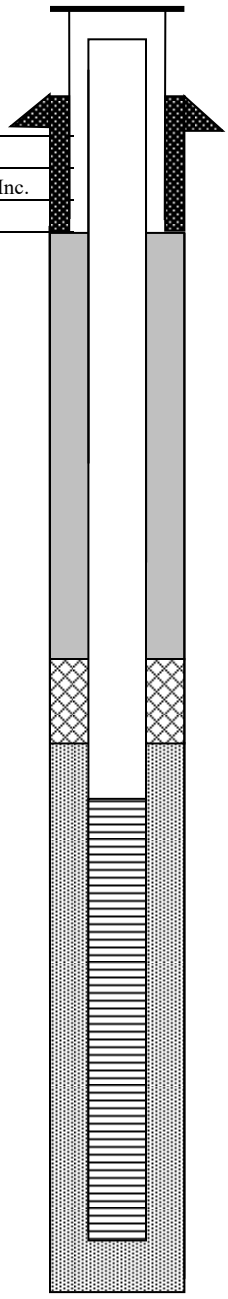
Well Construction Materials

	Stainless Steel Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint		Threaded	
Riser pipe above w.t.		SCH 40	
Riser pipe below w.t.		SCH 40	
Screen		SCH 40	
Coupling joint screen to riser		Threaded	
Protective casing		Stainless Steel	

Measurements to .01 ft (where applicable)

Riser pipe length	92.07
Protective casing length	4" Diameter - 5' Long
Screen length	9.64
Bottom of screen to end cap	0.28
Top of screen to first joint	0.08
Total length of casing	-
Screen slot size	0.01"
% of openings in screen	1/8" Spacing/ 3 Row Slots
Diameter of borehole	10" (0-10') – 6" (10-100')
ID of riser pipe (in)	2"

Elevations - .01 ft



742.01	MSL Top of Protective Casing
741.97	MSL Top of Riser Pipe
2.47	Ft. Casing Stickup
+0.3	Ft. Top of Concrete
739.50	MSL Ground Surface
-3.50	Ft. Top of Annular Sealant
78.50	Ft. Total Annular Sealant Interval
-82.00	Ft. Top of Bentonite Seal
5.00	Ft. Total Bentonite Seal Interval
-87.00	Ft. Top of Sand Pack
-89.77	Ft. Top of Screen
10.00	Ft. Total Screen Interval
-99.77	Ft. Bottom of Screen
-100.00	Ft. Bottom of Borehole

Completed by: Ralph Bonk Surveyed by:

Shaw® Shaw Environmental, Inc.

Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: GX178

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: G178

COORDINATE: X _____ Y _____ (or) LATITUDE: 42 · 28 · 52 · LONGITUDE: 87 · 53 · 43 ·

SURVEYED BY: C. Bergquist IL REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

CONSULTING FIRM: Golder Assoc. GEOLOGIST: M. Haddock

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: M. Haddock DATE STARTED: 9/4/97 DATE FINISHED: 9/10/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

TYPE OF BENTONITE SEAL – GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

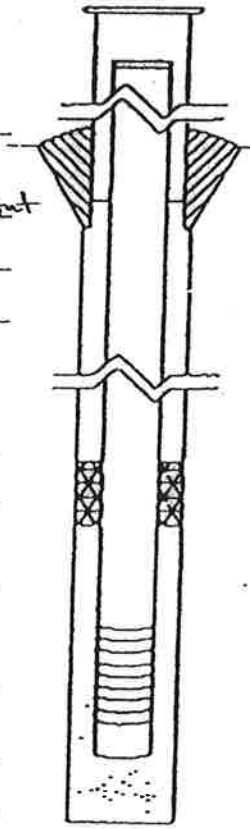
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: filter sand (IF APPLICABLE)

INSTALLATION METHOD: tremie



ELEVATIONS (MSL)* DEPTHS (BGS) (.01 ft)

ELEVATIONS (MSL)*	DEPTHS (BGS)	
737.65	3.15	TOP OF PROTECTIVE CASING
737.16	2.66	TOP OF RISER PIPE
734.50	0.00	GROUND SURFACE
730.50	4.00	TOP OF ANNULAR SEALANT
	76.59	
657.91	~~79.25~~	STATIC WATER LEVEL (AFTER COMPLETION)
730.50	4.00	TOP OF SEAL
648.50	86.00	TOP OF SANDPACK
645.40	89.10	TOP OF SCREEN
640.80	93.7	BOTTOM OF SCREEN
639.9	94.6	BOTTOM OF WELL
639.50	96.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
SCREEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

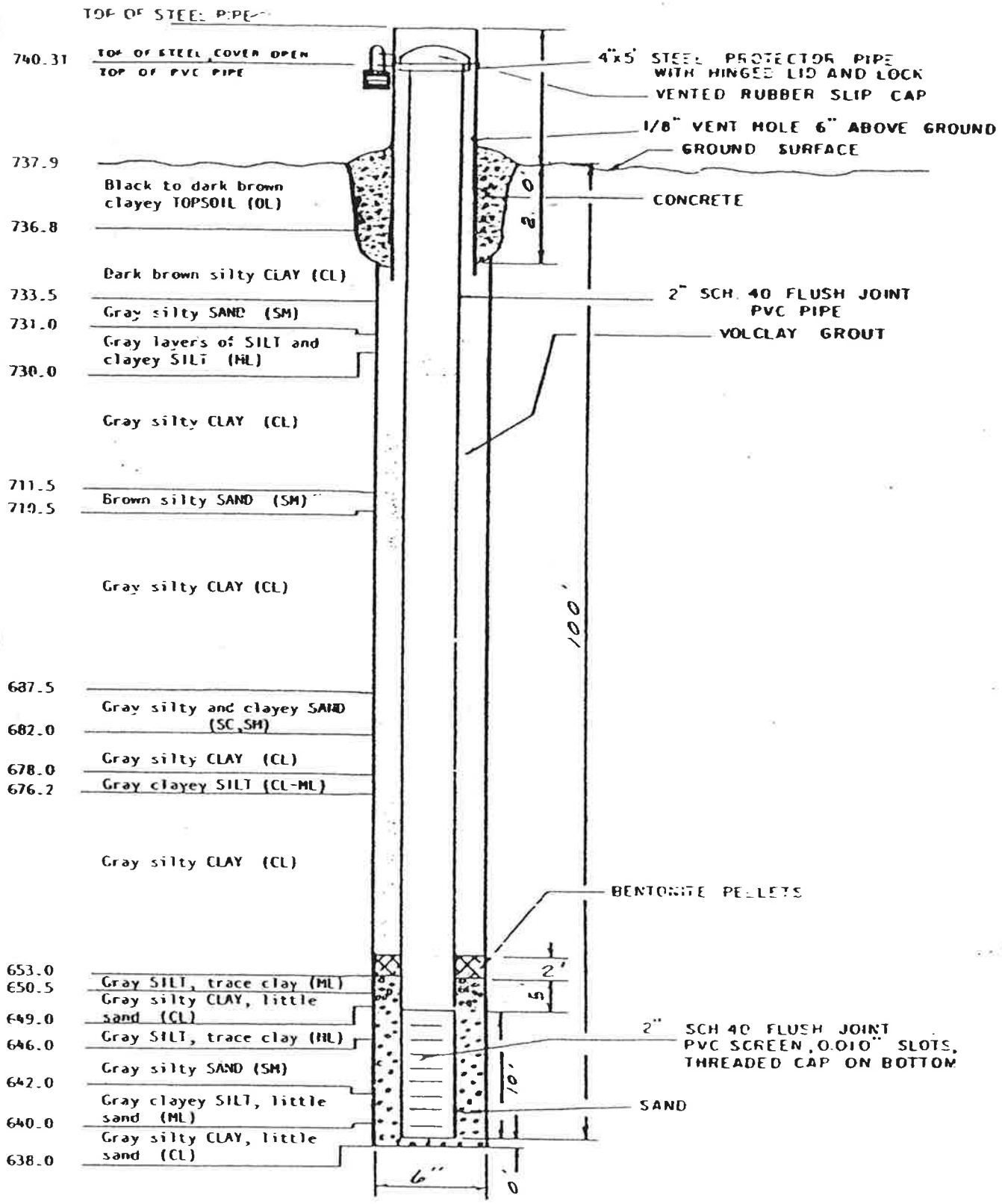
CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	91.76
BOTTOM OF SCREEN TO END CAP (ft)	0.9
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.6
TOTAL LENGTH OF CASING (ft)	97.26
SCREEN SLOT SIZE **	0.006

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

GROUNDWATER MONITORING WELL EP-6D

(NOT TO SCALE)

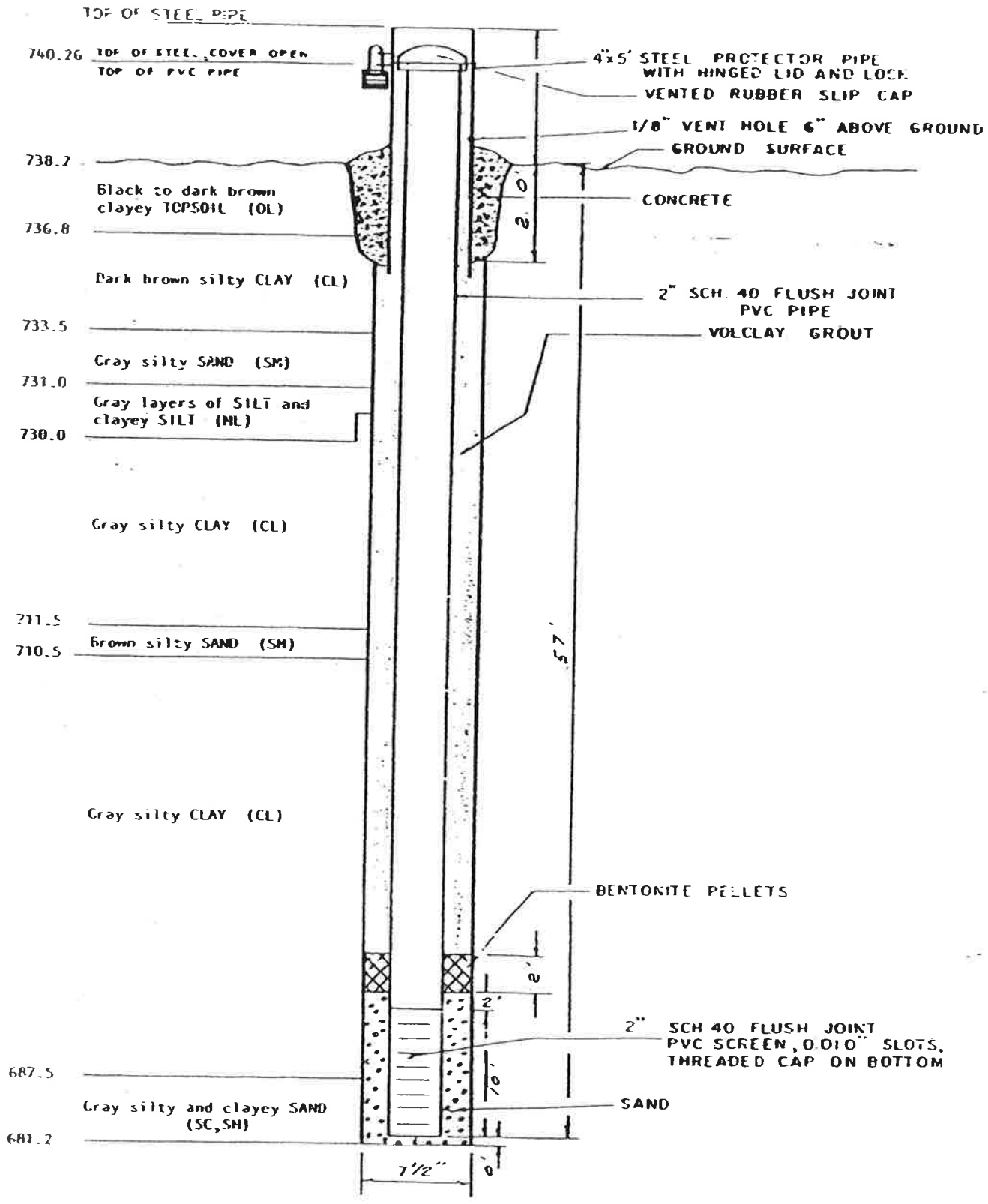


GROUNDWATER DATA	17-2-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	50
CONDUCTIVITY (UMHOS)	448
PH	8.7

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 19 1986 L-22,459

GROUNDWATER MONITORING WELL EP-6 I

(NOT TO SCALE)

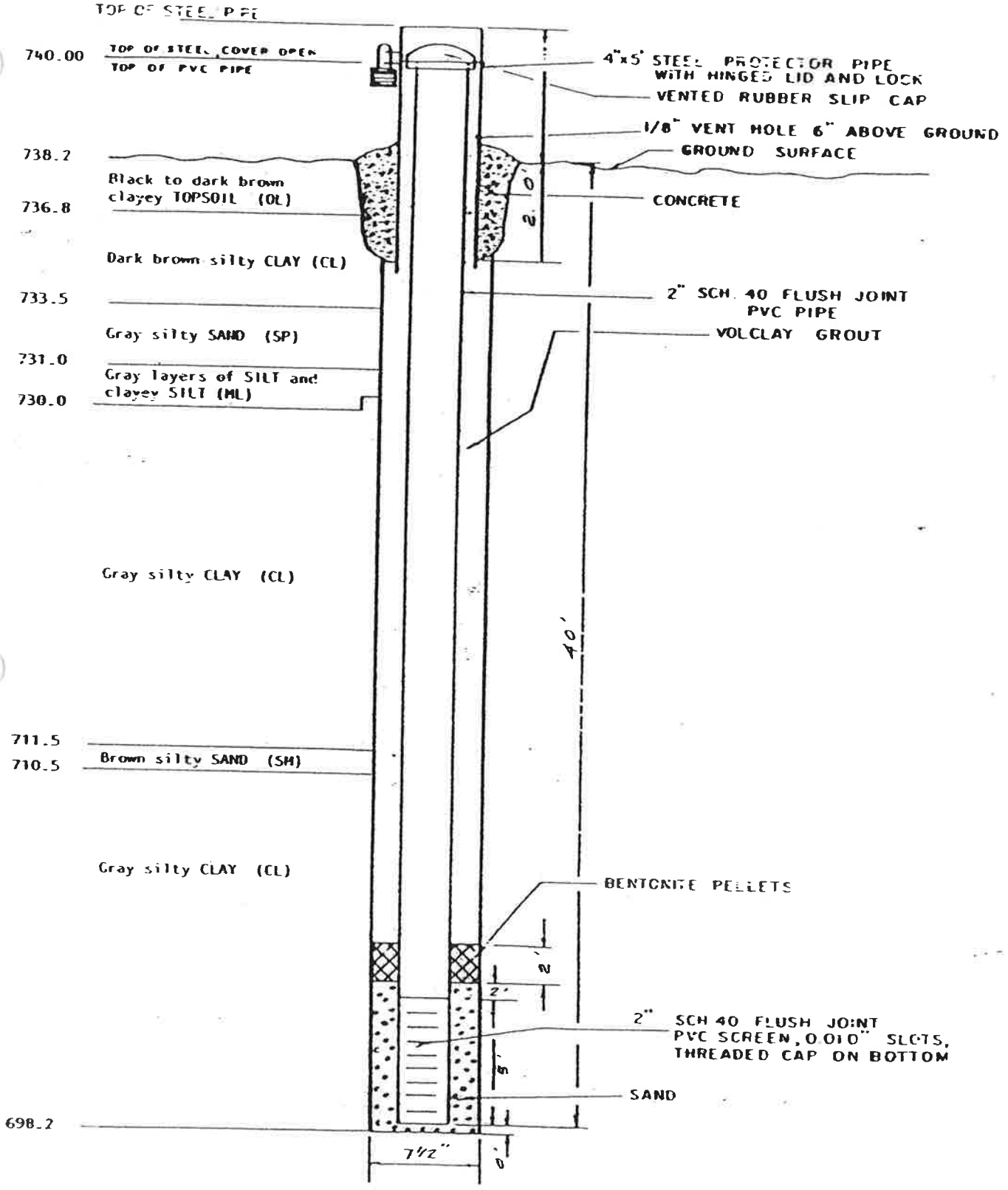


GROUNDWATER DATA	12-3-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	--
CONDUCTIVITY (UMHOS)	767
Ph	8.3

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 19 1986 L-22,459

GROUNDWATER MONITORING WELL EP- 6 S

(NOT TO SCALE)

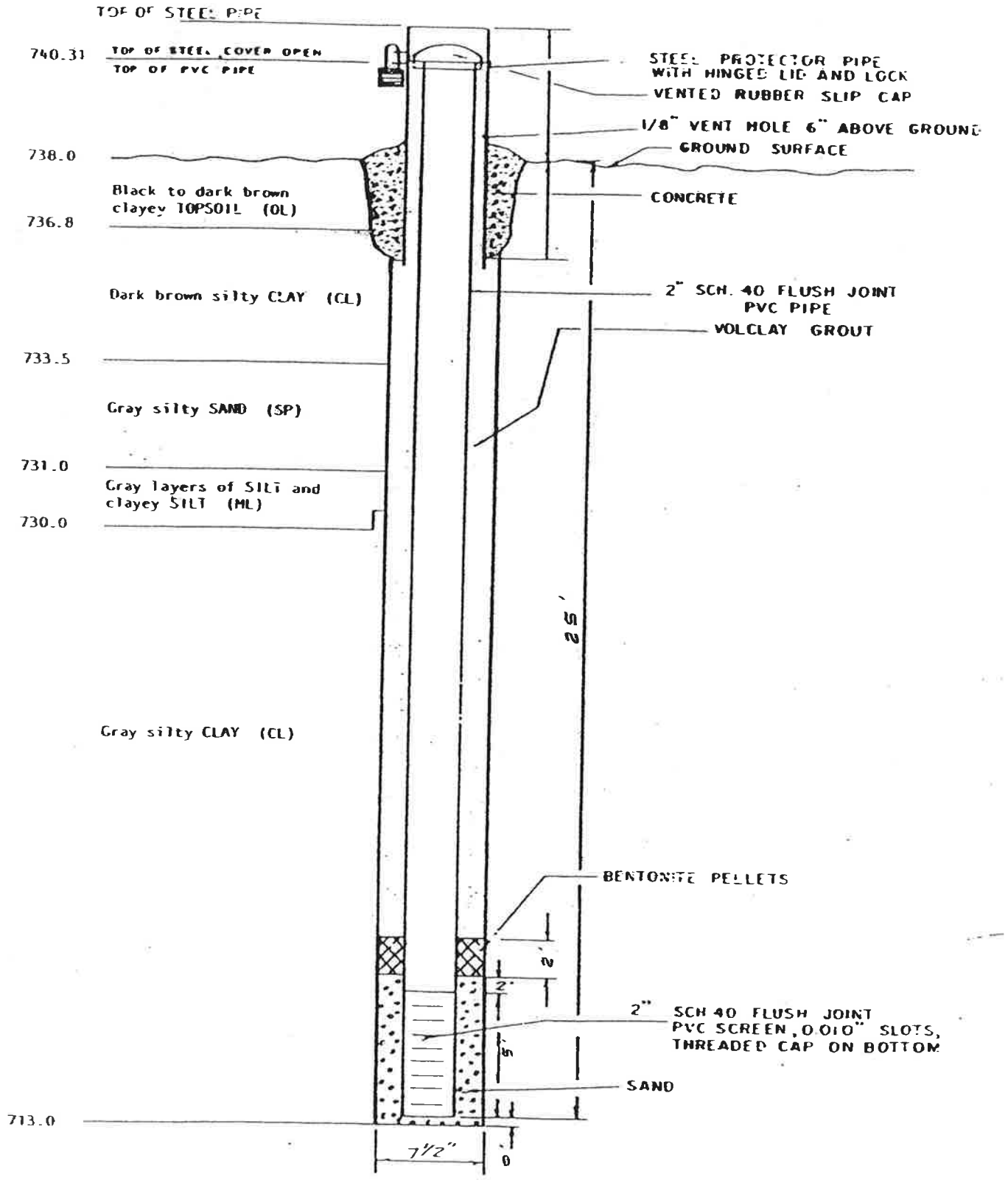


GROUNDWATER DATA	11-20-86
STATIC WATER LEVEL ELEV	--
TEMPERATURE (°F)	46
CONDUCTIVITY (UMHOS)	683
PH	8.4

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 19, 1986 L-22,459

GROUNDWATER MONITORING WELL EP-6 SS

(NOT TO SCALE)



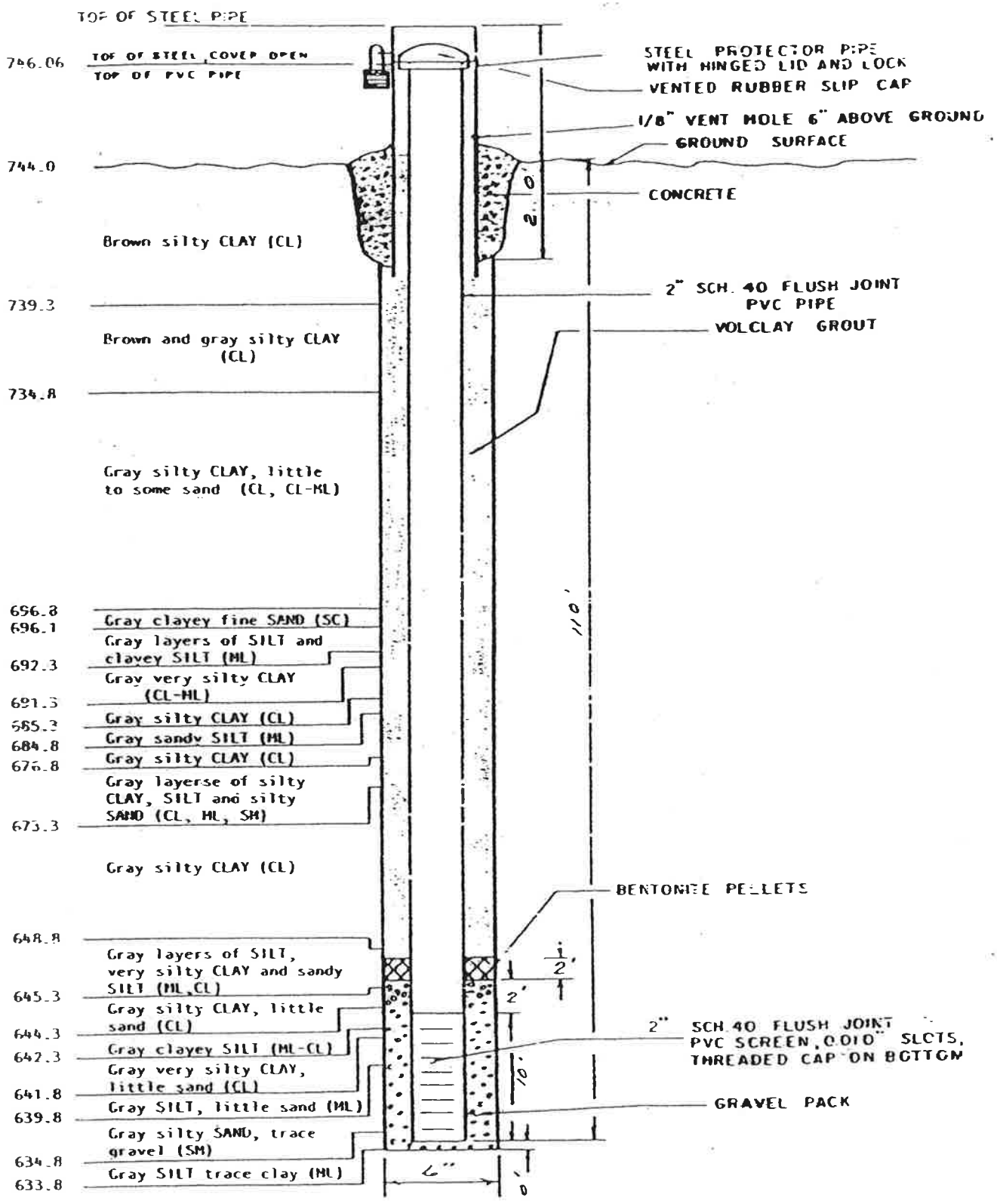
GROUNDWATER DATA	11-28-86
STATIC WATER LEVEL ELEV	--
TEMPERATURE (°F)	45
CONDUCTIVITY (UMHOS)	861
PH	7.5

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 19 1986 L-22,459

GROUNDWATER MONITORING WELL EP-10 D

D-47

(NOT TO SCALE)



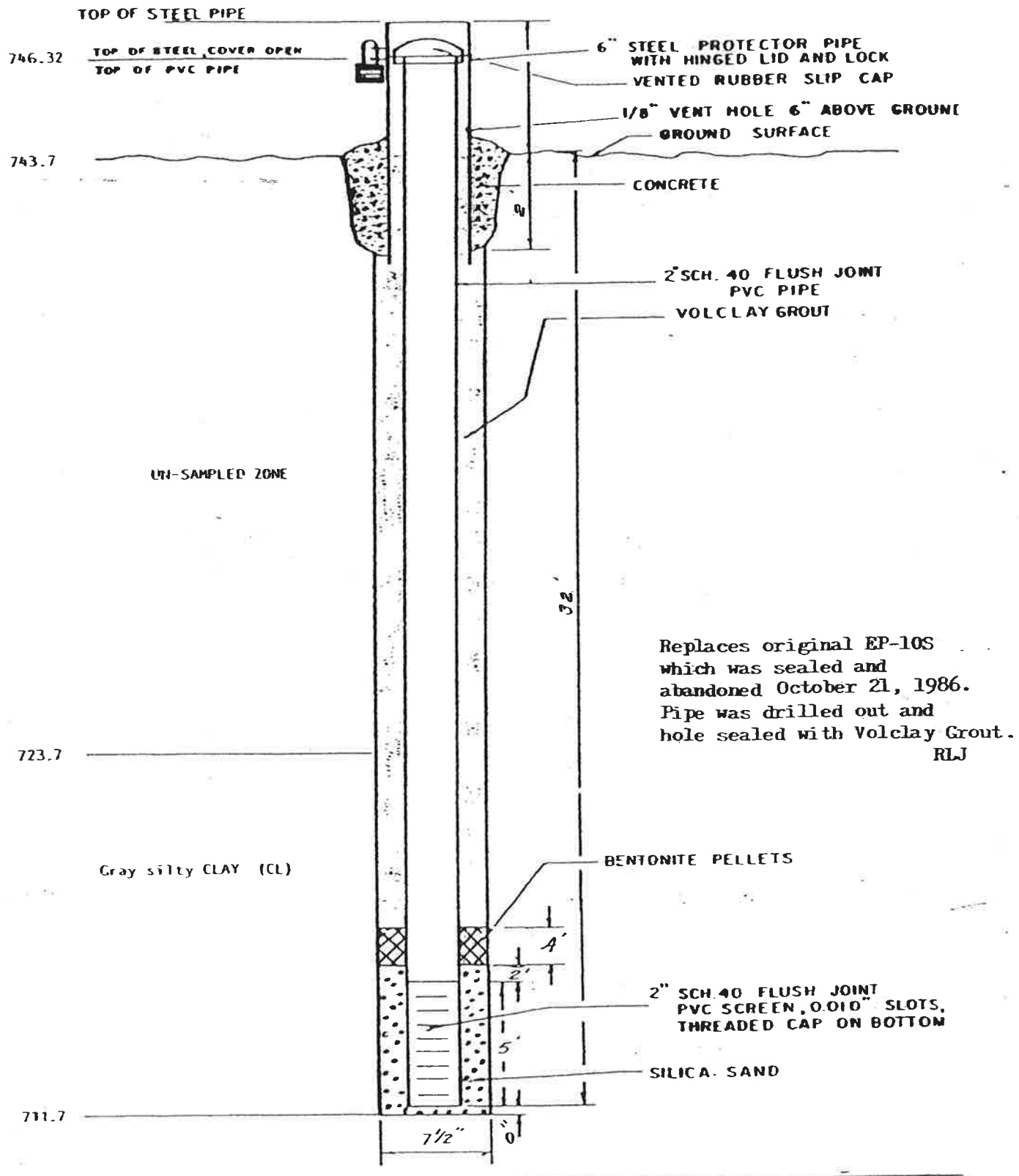
GROUNDWATER DATA	11-21-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	50
CONDUCTIVITY (UMHOS)	386
Ph	8.5

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 19 1986 L-22,459

D-45

GROUNDWATER MONITORING WELL EP-10 SR

(NOT TO SCALE)



Replaces original EP-10S which was sealed and abandoned October 21, 1986. Pipe was drilled out and hole sealed with Volclay Grout.
RLJ

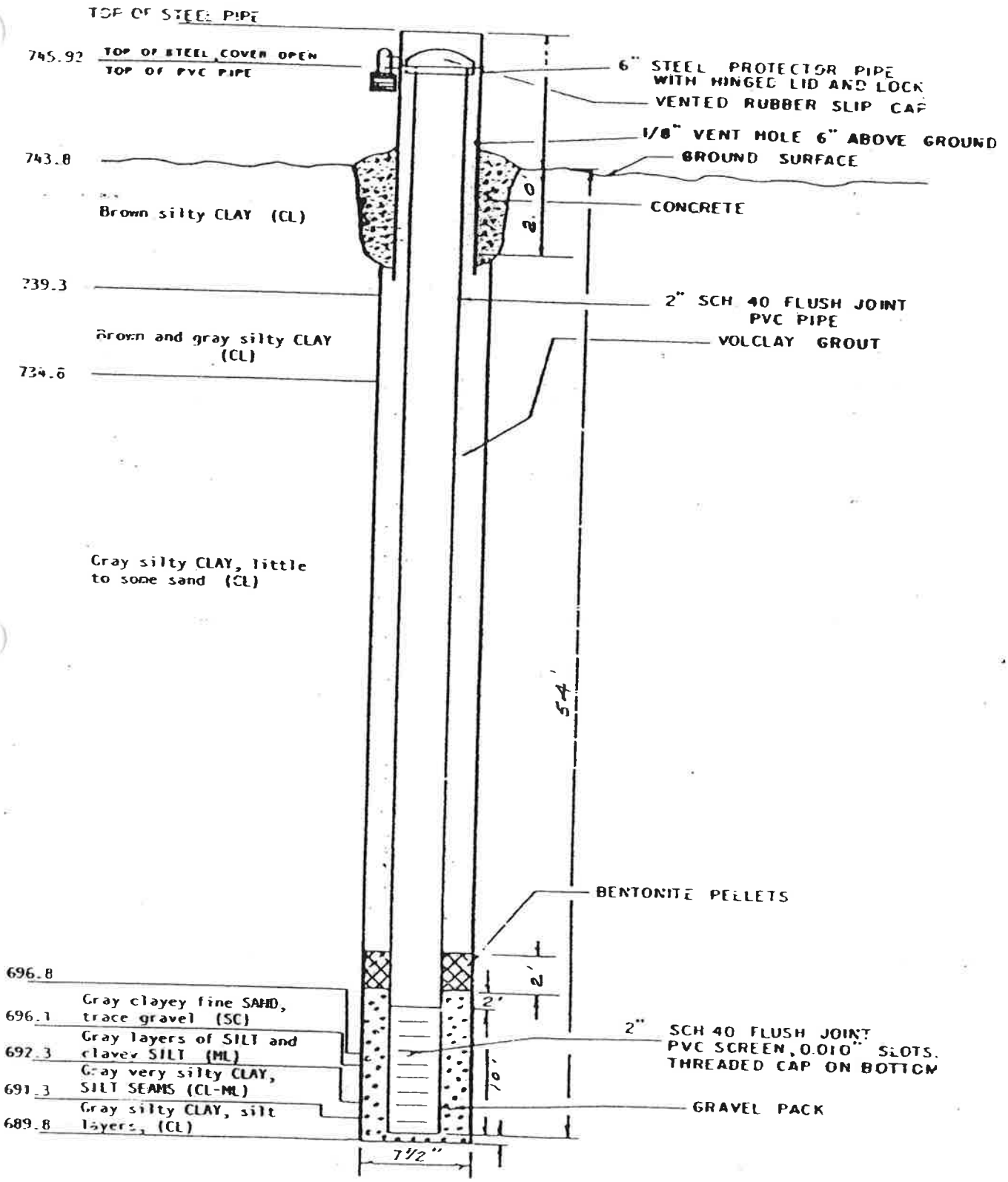
GROUNDWATER DATA	11-20-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	47
CONDUCTIVITY (UMHOS)	868
PH	8.2

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DECEMBER 16, 1986 L-23,390

GROUNDWATER MONITORING WELL EP-10 I

(NOT TO SCALE)

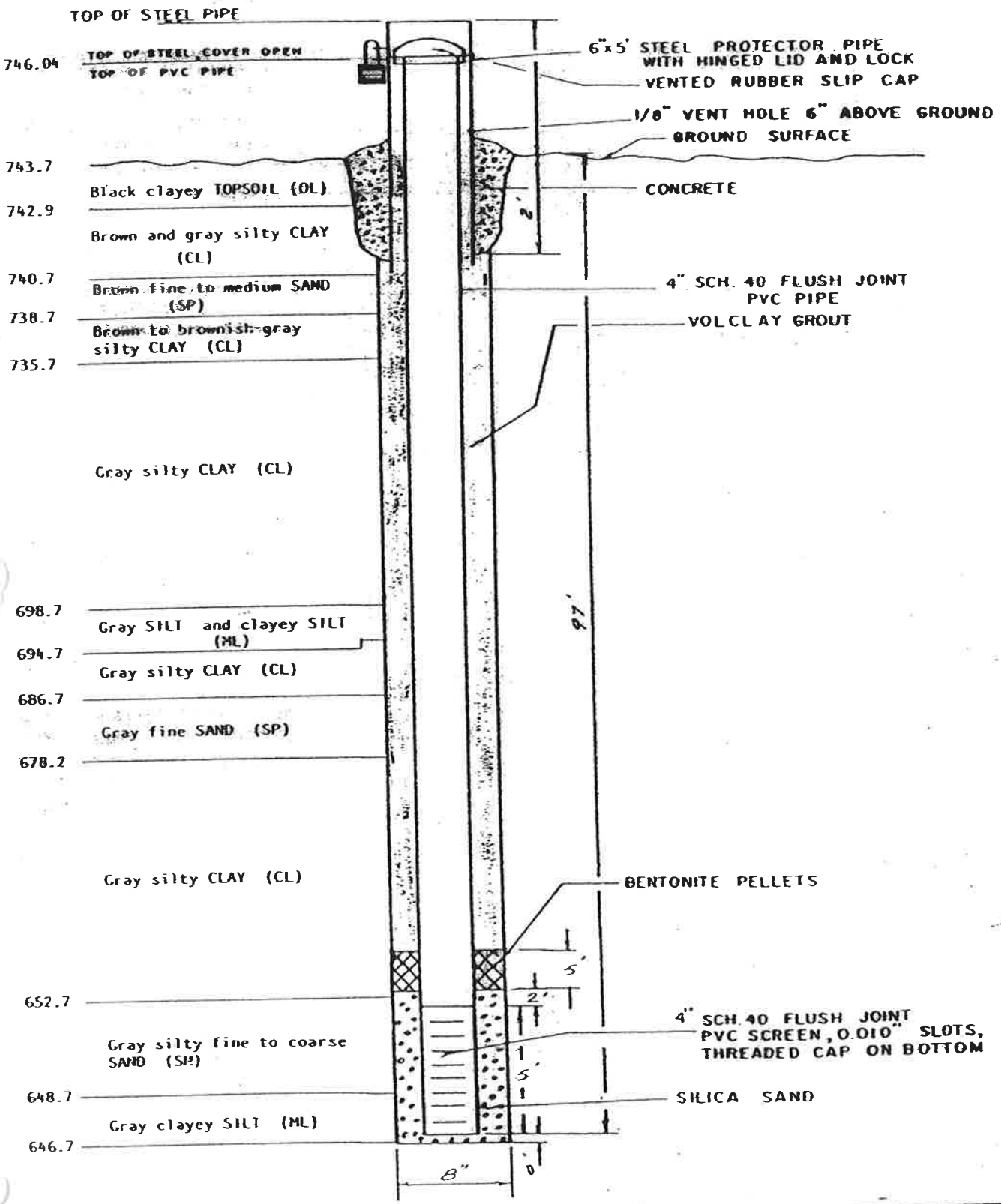


GROUNDWATER DATA	11-20-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (DF)	50
CONDUCTIVITY (UMHOS)	530
PH	8.5

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 19, 1986 L-22,459

GROUNDWATER MONITORING WELL P-8

(NOT TO SCALE)



GROUNDWATER DATA	12-17-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	50
CONDUCTIVITY (UMHOS)	471
PH	8.4

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 16, 1986 L-23390

WELL CONSTRUCTION REPORTS (MOST RECENT INVESTIGATION)

APTIM

Illinois Department of Public Health

WATER WELL CONSTRUCTION REPORT

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

Date 09/17/19

1. Type of Well a. **Driven** Well Casing diam. _____ in. Depth _____ ft.
   b. **Bored** Well Buried Slab [ ] Yes [ ] No
   Hole Diameter _____ in. to _____ ft.; _____ in. to _____ ft.; _____ in. to _____ ft.
   c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ ft.
   Hole Diameter 8 in. to 102.0 ft.; _____ in. to _____ ft.; _____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Bentonite Slurry	14	10.1 lbs/gal	3.0	86.0	83
Bentonite Pellets	1	10.8 lbs/gal	86.0	89.5	87

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven [ ] Yes [ ] No
Hole Diameter _____ in. to _____ ft.; _____ in. to _____ ft.; _____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finish within [x] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand	Global #7	89.5	102.0

2. Well Use [ ] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
   [X] Monitoring [ ] Other
3. Date Well Completed 9/16/2019 Well Disinfected [ ] Yes [X] No
   Driller's estimated well yield NA gpm
4. Date Permanent Pump Installed NA
5. Pump Capacity NA gpm Set at (depth) NA ft.
6. Pitless Adapter Model and Manufacturer NA
7. Well Cap Type and Manufacturer NA
8. Pressure Tank Working Cycle NA gals. Captive Air [ ] Yes [ ] No
9. Pump System Disinfected [ ] Yes [X] No
10. Name of Pump Company Not Applicable
11. Pump Installer Not Applicable License # Not Applicable
12. Not Applicable License # Not Applicable
    Licensed Pump Contractor Signature

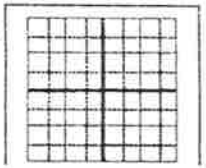
Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

DO NOT write on these lines

IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. **DISCLOSURE OF THIS INFORMATION IS MANDATORY.** This form has been approved by the Forms Management Center.

GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner ADS Zion Landfill, Inc. Well # G207
14. Driller Mark Baker License# Not Applicable
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. Not Applicable Date Issued Not Applicable
17. Date Drilling Started 8/19/2019
18. Well **SITE** address 701 Green Bay Road
19. Township Name Benton Land ID# NA
20. Subdivision Name Not Applicable Lot # NA
21. Location a. County Lake
    b. Township 45N Range 12E Section 7
    c. SE Quarter NE Quarter NE Quarter
    d. Coordinates 11,366N, 13,074E Site Elevation 744.3 ft. (msl)



For Survey Use

22. Casings, Liners* and Screen Information

Diam.	Material	Joint	Slot Size	From(ft.)	To(ft.)
2.0	PVC	Flush	---	+1.6	95.5
2.0	PVC	Flush	0.006	95.5	100.5

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from sand & silt at a depth of 94.0 ft. to 102.0 ft.
    a. Static water level 82.0 ft. below casing which is 19.2 in. above ground
    b. Pumping level is NA ft. pumping NA gpm after pumping for NA hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
silty clay	0.0	94.0
f-c sand and silt and clayey silt	94.0	102.0

(If **dry hole**, fill out log and indicate how hole was sealed.)

Joseph A Miller

Not Applicable
License Number

25. License Water Well Contractor Signature

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION

Illinois Department of Public Health

WATER WELL CONSTRUCTION REPORT

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

Date 09/17/19

1. Type of Well a. **Driven** Well Casing diam. _____ in. Depth _____ ft.
   b. **Bored** Well Buried Slab [ ] Yes [ ] No
   Hole Diameter _____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.
   c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ ft.
   Hole Diameter 8 in. to 108.0 ft.; ____ in. to _____ ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Bentonite Slurry	15	10.1 lbs/gal	3.0	93.0	90
Bentonite Pellets	1	10.8 lbs/gal	93.0	96.0	93

   d. **Drilled** Well **Steel** Casing- - - Mechanically Driven [ ] Yes [ ] No
   Hole Diameter _____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

   e. Well finish within [x] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand	Global #7	96.0	108.0

2. Well Use [ ] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
   [X] Monitoring [ ] Other
3. Date Well Completed 9/16/2019 Well Disinfected [ ] Yes [X] No
   Driller's estimated well yield NA gpm
4. Date Permanent Pump Installed NA
5. Pump Capacity NA gpm Set at (depth) NA ft.
6. Pitless Adapter Model and Manufacturer NA
7. Well Cap Type and Manufacturer NA
8. Pressure Tank Working Cycle NA gals. Captive Air [ ] Yes [ ] No
9. Pump System Disinfected [ ] Yes [X] No
10. Name of Pump Company Not Applicable
11. Pump Installer Not Applicable License # Not Applicable
12. Not Applicable License # Not Applicable
    Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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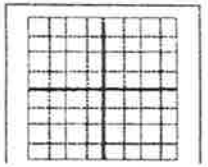
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner ADS Zion Landfill, Inc. Well # G208
14. Driller Jake Good License# Not Applicable
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. Not Applicable Date Issued Not Applicable
17. Date Drilling Started 8/22/2019
18. Well **SITE** address 701 Green Bay Road
19. Township Name Benton Land ID# NA
20. Subdivision Name Not Applicable Lot # NA
21. Location a. County Lake
    b. Township 45N Range 12E Section 7
    c. NE Quarter SE Quarter NE Quarter
    d. Coordinates 11,167N, 13,075E Site Elevation 745.2 ft. (msl)



For Survey Use

22. Casings, Liners* and Screen Information

Diam.	Material	Joint	Slot Size	From(ft.)	To(ft.)
2.0	PVC	Flush	---	+1.5	100.2
2.0	PVC	Flush	0.006	100.2	105.2

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from sand & silt at a depth of 96.8 ft. to 108.0 ft.
    a. Static water level 83.0 ft. below casing which is 18 in. above ground
    b. Pumping level is NA ft. pumping NA gpm after pumping for NA hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
silty clay	0.0	96.8
f-c sand and silt and clayey silt	96.8	108.0

(If **dry hole**, fill out log and indicate how hole was sealed.)

Joseph A. Miller

Not Applicable
License Number

25. License Water Well Contractor Signature

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION

Illinois Department of Public Health

WATER WELL CONSTRUCTION REPORT

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

Date 09/17/19

1. Type of Well a. **Driven** Well Casing diam. _____ in. Depth _____ ft.
   b. **Bored** Well Buried Slab [ ] Yes [ ] No
   Hole Diameter _____ in. to _____ ft.; _____ in. to _____ ft.; _____ in. to _____ ft.
   c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ ft.
   Hole Diameter 8 in. to 106.0 ft.; _____ in. to _____ ft.; _____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Bentonite Slurry	15	10.1 lbs/gal	3.0	91.8	89
Bentonite Pellets	1	10.8 lbs/gal	91.8	95.3	92

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven [ ] Yes [ ] No
Hole Diameter _____ in. to _____ ft.; _____ in. to _____ ft.; _____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finish within [x] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand	Global #7	95.3	106.0

2. Well Use [ ] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock [X] Monitoring [ ] Other
3. Date Well Completed 9/16/2019 Well Disinfected [ ] Yes [X] No
   Driller's estimated well yield NA gpm
4. Date Permanent Pump Installed NA
5. Pump Capacity NA gpm Set at (depth) NA ft.
6. Pitless Adapter Model and Manufacturer NA
7. Well Cap Type and Manufacturer NA
8. Pressure Tank Working Cycle NA gals. Captive Air [ ] Yes [ ] No
9. Pump System Disinfected [ ] Yes [X] No
10. Name of Pump Company Not Applicable
11. Pump Installer Not Applicable License # Not Applicable
12. Not Applicable License # Not Applicable
    Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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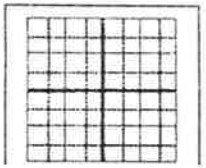
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner ADS Zion Landfill, Inc. Well # G209
14. Driller Mark Baker License# Not Applicable
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. Not Applicable Date Issued Not Applicable
17. Date Drilling Started 8/29/2019
18. Well **SITE** address 701 Green Bay Road
19. Township Name Benton Land ID# NA
20. Subdivision Name Not Applicable Lot # NA
21. Location a. County Lake
    b. Township 45N Range 12E Section 7
    c. NE Quarter SE Quarter NE Quarter
    d. Coordinates 10,996N, 12,976E Site Elevation 746.0 ft. (msl)



For Survey Use

22. Casings, Liners* and Screen Information

Diam.	Material	Joint	Slot Size	From(ft.)	To(ft.)
2.0	PVC	Flush	---	+2.1	99.7
2.0	PVC	Flush	0.006	99.7	104.6

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from sand & silt at a depth of 96.5 ft. to 106.0 ft.
    a. Static water level 84.5 ft. below casing which is 25.2 in. above ground
    b. Pumping level is NA ft. pumping NA gpm after pumping for NA hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
silty clay	0.0	96.5
f-c sand and silt and clayey silt	96.5	106.0

(If **dry hole**, fill out log and indicate how hole was sealed.)

Jamie A Miller

Not Applicable
License Number

25. License Water Well Contractor Signature

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
   b. **Bored** Well Buried Slab ☐ Yes ☐ No
   Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
   c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
   Hole Diameter 5.0 in. to 42.0 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2	94/50 lb. Bg.	2.0	27.95	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	27.95	34.6	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	34.6	42.0

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 01/17/2019 Well Disinfected ☐ Yes ☒ No
   Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
    Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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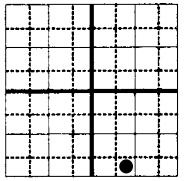
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-01-18IT
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 01/16/2019
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
    b. Township 46N Range 12E Section 6
    c. SE Quarter SW Quarter SE Quarter
    d. Coordinates Lat.42°29'15.4" Long.-87°52'14.1" Site Elevation 731.99 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.49	36.87
2	SCH 40 PVC	Threaded	0.01	36.87	41.98

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from ML/SM/CL at a depth of 34.60 ft. to 42.00 ft.
    a. Static water level _____ ft. below casing which is _____in. above ground
    b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Clayey Silt	0.0	1.6
Silty Clay	1.6	37
Clayey Sandy Silt	37	40.2
Silty Sand	40.2	41.0
Clayey Silt, Silty Clay	41.0	42.0

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 92.0 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/1	94/50 lb. Bg.	2.0	71.7	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	71.7	79.0	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	79.0	92.0

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 01/16/2019 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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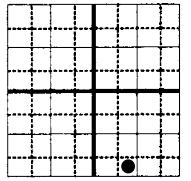
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-01-18SD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 01/15/2019
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. SE Quarter SW Quarter SE Quarter
d. Coordinates Lat.42°29'15.4" Long.-87°52'14.1" Site Elevation 731.99 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.60	81.78
2	SCH 40 PVC	Threaded	0.01	81.78	91.93

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from ML/CL/SM at a depth of 79.00 ft. to 92.00 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Clayey Silt	0.0	1.6
Silty Clay	1.6	37
Clayey Sandy Silt	37.0	40.2
Silty Sand	40.2	41.0
Clayey Silt, Silty Clay, Silty Sand	41.0	79.2
Clayey/Sandy Silt, Silty Clay, Silty Sand	79.2	92.0

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 104.4 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentontie	2/2	94/50 lb. Bg.	2.0	84.25	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	84.25	90.0	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	90.0	104.36

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 12/26/2018 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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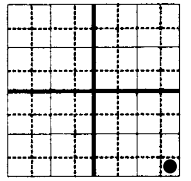
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-03-18SD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 12/20/2018
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. SE Quarter SE Quarter SE Quarter
d. Coordinates Lat.42°29'15.3" Long.-87°51'53.4" Site Elevation 745.58 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.43	94.22
2	SCH 40 PVC	Threaded	0.01	94.22	104.36

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from ML/CL/SM at a depth of 90.00 ft. to 104.36 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Clayey Silt	0.0	0.6
Silty Clay	0.6	4.5
Clayey Sand and Gravel	4.5	6.1
Silty Clay	6.1	79.0
Silty Clay, Clayey Silt, Silty Sand, Silt	79.0	104.36

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA NA
25. Licensed Water Well Contractor Signature License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 112.1 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/2	94/50 lb. Bg.	2.0	99.8	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	99.8	104.59	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	104.59	112.07

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 12/13/2018 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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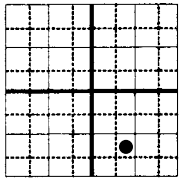
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-04-18LSD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 12/12/2018
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. NE Quarter SW Quarter SE Quarter
d. Coordinates Lat.42°29'20.2" Long.-87°52'12.9" Site Elevation 731.18 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.53	106.91
2	SCH 40 PVC	Threaded	0.01	106.91	112.07

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from CL/SM/SP/ML at a depth of 104.59 ft. to 112.07 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Clayey Silt	0.0	0.6
Silty Clay, Clayey Silt	0.6	38.2
Clayey Silt, Silty Sand,	38.2	40.5
Silty Clay	40.5	67.0
Silty Clay, Clayey Silt, Silty Sand	67.0	94.0
Silty Clay	94.0	106.0
Silty Sand, Silty Clay, Clayey Silt, Sand	106.0	112.07

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 94.12 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentontie	2/1.5	94/50 lb. Bg.	2.0	75.5	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	75.5	81.52	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#6:12/20;R.W.Sidley	81.52	94.12

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 12/14/2018 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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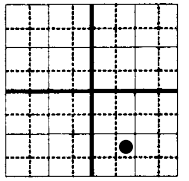
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-04-18USD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 12/13/2018
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. NE Quarter SW Quarter SE Quarter
d. Coordinates Lat.42°29'20.2" Long.-87°52'12.9" Site Elevation 731.14 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.65	83.97
2	SCH 40 PVC	Threaded	0.01	83.97	94.12

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from ML/SM/CL at a depth of 81.52 ft. to 94.12 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Clayey Silt	0.0	0.6
Silty Clay, Clayey Silt	0.6	38.2
Clayey Silt	38.2	40.5
Silty Clay	40.5	67.0
Silty Clay, Clayey Silt, Silty Sand	67.0	94.12

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA

25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 120.0 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/2	94/50 lb. Bg.	2.0	106	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	106	112.25	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5;10/20;R.W.Sidley	112.25	120.03

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 11/29/2018 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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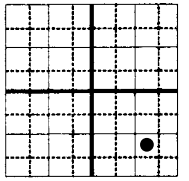
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-05-18SD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 11/21/2018
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. NW Quarter SE Quarter SE Quarter
d. Coordinates Lat.42°29'20.3" Long.-87°52'2.5" Site Elevation 742.54 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.56	114.86
2	SCH 40 PVC	Threaded	0.01	114.86	120.03

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from CL/SP at a depth of 112.25 ft. to 120.03 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Clayey Silt	0.0	1.0
Silty Clay	1.0	10.0
Sand	10.0	13.5
Silty Clay, Clayey Silt	13.5	48.5
Silty Sand, Silty Clay, Clayey Silt	48.5	49.3
Silty Clay, Clayey Silt	49.3	115.5
Sand	115.5	118
Silty Clay	118.0	120.03

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 132.1 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/2	94/50 lb. Bg.	2.0	114.25	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	114.25	119.55	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	119.55	132.14

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 12/19/2018 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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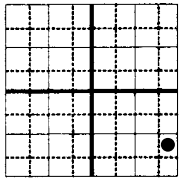
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-06-18LSD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 12/17/2018
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. NE Quarter SE Quarter SE Quarter
d. Coordinates Lat.42°29'20.3" Long.-87°51'53.8" Site Elevation 745.01 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.46	122.0
2	SCH 40 PVC	Threaded	0.01	122.0	132.14

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from SP/ML/SM at a depth of 114.25 ft. to 132.14 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Clayey Silt	0.0	0.5
Silty Clay, Silty Clayey Sand (4.5-5.5')	0.5	33.2
Silty Clay, Silt, Clayey Silt, Sandy Silt, Silty Sand(48-50')	33.2	58.25
Silty Clay	58.25	89.0
Silty Sand, Sandy Silt, Clayey Silt, Silty Clay, Silt	89.0	100.7
Sand, Sandy Silt, Silty Clay, Clayey Silt	100.7	132.14

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 110.0 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/2	94/50 lb. Bg.	2.0	91.4	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	91.4	97.52	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#6:10/20;R.W.Sidley	97.52	110.0

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 12/19/2018 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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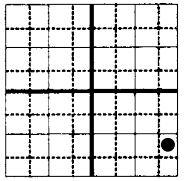
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-06-18USD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 12/19/2018
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. NE Quarter SE Quarter SE Quarter
d. Coordinates Lat.42°29'20.3" Long.-87°51'53.8" Site Elevation 744.70 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.86	99.59
2	SCH 40 PVC	Threaded	0.01	99.59	109.74

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from SP/ML/SM/CL at a depth of 97.52 ft. to 110.00 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Clayey Silt	0.0	0.5
Silty Clay, Silty Clayey Sand (4.5-5.5')	0.5	33.2
Silty Clay, Silt, Clayey Silt, Sandy Silt, Silty Sand(48-50')	33.2	58.25
Silty Clay	58.25	89.0
Silty Sand, Sandy Silt, Clayey Silt, Silty Clay, Silt	89.0	100.7
Sand, Sandy Silt, Silty Clay, Clayey Silt	100.7	110.0

(If **dry hole**, fill out log and indicate how hole was sealed.)
NA
25. Licensed Water Well Contractor Signature NA License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 116.1 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/2	94/50 lb. Bg.	2.0	98.6	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	98.6	103.4	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#7:20/40;R.W.Sidley	103.4	116.13

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 12/11/2018 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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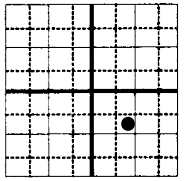
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-07-18LSD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 12/7/2018
18. Well **SITE** address 12247 128th Street, Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. SE Quarter NW Quarter SE Quarter
d. Coordinates Lat.42°29'25.6" Long.-87°52'13" Site Elevation 732.59 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.42	105.99
2	SCH 40 PVC	Threaded	0.01	105.99	116.13

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from ML/SM/CL at a depth of 105.99 ft. to 116.13 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Clayey Silt	0.0	0.8
Silty Clay	0.8	25.4
Silty Clay, Sandy Silt	25.4	28.6
Silty Clay, Clayey Silt	28.6	75.8
Silty Sand, Sandy/Clayey Silt, Silty Clay, Silt, Gravel	75.8	116.13

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 88.0 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/2	94/50 lb. Bg.	2.0	69.6	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	69.6	75.6	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	75.6	88.0

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 12/11/2018 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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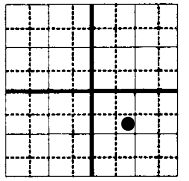
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-07-18USD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 12/11/2018
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. SE Quarter NW Quarter SE Quarter
d. Coordinates Lat.42°29'25.5" Long.-87°52'13.0" Site Elevation 732.25 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.56	77.80
2	SCH 40 PVC	Threaded	0.01	77.80	87.94

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from ML/SM/CL at a depth of 75.60 ft. to 88.00 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Clayey Silt	0.0	0.8
Silty Clay	0.8	25.4
Silty Clay, Sandy Silt	25.4	29.5
Silty Clay, Clayey Silt	29.5	75.8
Silty Sand, Sandy Silt, Clayey Silt, Silty Clay, Silt	75.8	88.0

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 206.1 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	4.6/2.4	94/50 lb. Bg.	2.0	189.0	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	189.0	193.6	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	193.6	206.08

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 11/19/2018 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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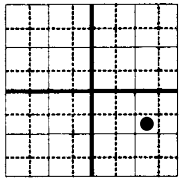
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-08-18D
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 11/19/2018
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. SW Quarter NE Quarter SE Quarter
d. Coordinates Lat.42°29'25.3" Long.-87°52'2.6" Site Elevation 742.94 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.46	195.94
2	SCH 40 PVC	Threaded	0.01	195.94	206.08

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from ML/CL/DOL at a depth of 193.60 ft. to 206.08 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Clayey Silt	0.0	1.0
Silty Clay, Clayey Silt	1.0	52.3
Sand, Silty Sand	52.3	53.4
Silty Clay	53.4	87.3
Clayey Silt	87.3	101
Silty Clay, Clayey Silt, Sand, Gravel	101.0	122.2
Silty Clay, Silt, Clayey Silt	122.2	202.4
Dolomite	202.4	206.08

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 58.29 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	1/1	94/50 lb. Bg.	2.0	45.0	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	45.0	50.6	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	50.6	58.29

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 11/21/2018 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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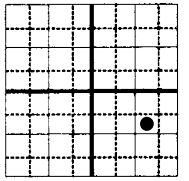
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-08-18IT
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 11/20/2018
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. SW Quarter NE Quarter SE Quarter
d. Coordinates Lat.42°29'25.3" Long.-87°52'2.6" Site Elevation 743.03 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.27	53.13
2	SCH 40 PVC	Threaded	0.01	53.13	58.29

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from CL/SP/SM at a depth of 50.60 ft. to 58.29 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Clayey Silt	0.0	1.0
Silty Clay, Clayey Silt	1.0	52.3
Sand, Silty Sand	52.3	53.4
Silty Clay	53.4	58.29

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 121.9 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	1.6/2.4	94/50 lb. Bg.	2.0	110	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	110	114.5	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	114.5	121.92

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 11/20/2018 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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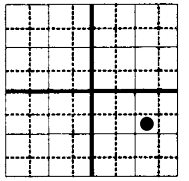
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-08-18SD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 11/19/2018
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. SW Quarter NE Quarter SE Quarter
d. Coordinates Lat.42°29'25.3" Long.-87°52'2.6" Site Elevation 742.80 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.54	116.76
2	SCH 40 PVC	Threaded	0.01	116.76	121.92

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from ML/SM/CL at a depth of 114.50 ft. to 121.92 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Clayey Silt	0.0	1.0
Silty Clay, Clayey Silt	1.0	52.3
Sand, Silty Sand,	52.3	53.4
Silty Clay	53.4	87.3
Clayey Silt	87.3	101.0
Silty Clay, Clayey Silt, Sand, Gravel	101.0	121.92

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 104.2 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/2	94/50 lb. Bg.	2.0	89.9	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	89.9	91.0	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	91.0	104.22

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 01/07/2019 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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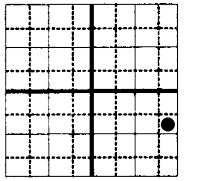
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-09-18SD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 01/03/2019
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. SE Quarter NE Quarter SE Quarter
d. Coordinates Lat.42°29'25.1" Long.-87°51'52" Site Elevation 738.27 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.53	94.07
2	SCH 40 PVC	Threaded	0.01	94.07	104.22

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from ML/CL at a depth of 91.00 ft. to 104.22 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Clayey Silt	0.0	1.58
Silty Clay, Clayey Silt	1.58	43.0
Silty Sand	43.0	43.5
Silty Clay, Clayey Silt	43.5	64.2
Silty Sand, Sand, Silty Clay	64.2	82.4
Silty Clay, Clayey Silt	82.4	104.22

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 99.63 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/1.5	94/50 lb. Bg.	2.0	80.6	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	80.6	87.0	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	87.0	99.63

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 01/11/2019 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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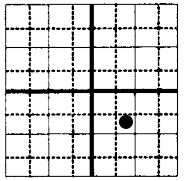
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-10-18SD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 01/09/2019
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. SE Quarter NW Quarter SE Quarter
d. Coordinates Lat.42°29'30.4" Long.-87°52'13" Site Elevation 732.64 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.89	89.49
2	SCH 40 PVC	Threaded	0.01	89.49	99.63

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from SM/ML/SP at a depth of 87.00 ft. to 99.63 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Silty Clay	0.0	30.5
Clayey Silt, Silty Sand, Sand	30.5	33.8
Silty Clay	33.8	56.5
Silty Clay, Clayey Silt	56.5	87.2
Sand, Silt	87.2	99.63

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 119.7 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/2	94/50 lb. Bg.	2.0	100.9	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	100.9	107.5	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	107.5	119.71

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 12/06/2018 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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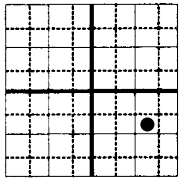
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-11-18SD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 11/29/2018
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. SW Quarter NE Quarter SE Quarter
d. Coordinates Lat.42°29'29.3" Long.-87°52'2.4" Site Elevation 733.76 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.53	109.58
2	SCH 40 PVC	Threaded	0.01	109.58	119.71

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from CL/ML/SM at a depth of 107.50 ft. to 119.71 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic/Silty Clay Fill	0.0	4.5
Silty Clay, Silt	4.5	22.0
Silty Sand	22.0	25.8
Silty Clay	25.8	40.5
Silty Sand, Clayey Silt	40.5	45.8
Silty Clay, Clayey Silt	45.8	103.9
Silty Sand, Gravel, Silty Clay, Sandy Silt	103.9	119.71

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 59.29 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	1/1	94/50 lb. Bg.	2.0	41.0	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	41.0	46.62	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	46.62	59.29

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 01/02/2019 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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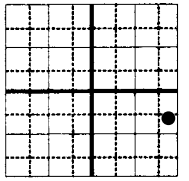
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-12-18IT
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 01/02/2019
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. SE Quarter NE Quarter SE Quarter
d. Coordinates Lat.42°29'30.2" Long.-87°51'51.5" Site Elevation 741.52 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.59	49.15
2	SCH 40 PVC	Threaded	0.01	49.15	59.29

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from CL/ML/SM/GM at a depth of 46.62 ft. to 59.29 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Silty Clay, Clayey Silt	0.0	47.0
Silty Clay, Clayey Silt, Silt, Silty Sand and Gravel	47.0	56.5
Silty Clay, Silty Sandy Clay	56.5	59.29

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 106.3 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/2	94/50 lb. Bg.	2.0	86.8	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	86.8	93.55	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	93.55	106.28

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 01/02/2019 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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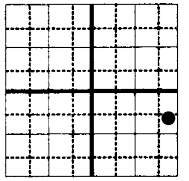
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-12-18SD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 12/28/2018
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. SE Quarter NE Quarter SE Quarter
d. Coordinates Lat.42°29'30.3" Long.-87°51'51.5" Site Elevation 741.32 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.44	96.09
2	SCH 40 PVC	Threaded	0.01	96.09	106.28

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from CL/ML/SP at a depth of 93.55 ft. to 106.28 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Silty Clay, Clayey Silt	0.0	47.0
Silty Clay, Clayey Silt, Silt, Silty Sand and Gravel	47.0	56.5
Silty Clay, Silty Sandy Clay, Clayey Silt	56.5	104.5
Sand	104.5	104.8
Clayey Silt	104.8	106.28

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 49.94 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	1/1	94/50 lb. Bg.	2.0	37.0	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	37.0	42.35	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	42.35	49.94

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 01/15/2019 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

DO NOT write on these lines

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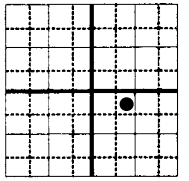
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-13-18IT
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 01/15/2019
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. NE Quarter NW Quarter SE Quarter
d. Coordinates Lat.42°29'34.9" Long.-87°52'13.9" Site Elevation 730.39 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.73	44.80
2	SCH 40 PVC	Threaded	0.01	44.80	49.94

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from ML/SP/CL at a depth of 42.35 ft. to 49.94 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Silty Clay	0.0	0.30
Silty Clay	0.30	32.0
Clayey Silt, Fat Clay, Sand(45-47.5')	32.0	49.79
Silty Clay	49.79	49.94

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 96.02 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/1.5	94/50 lb. Bg.	2.0	76.5	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	76.5	83.5	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	83.5	96.02

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 01/14/2019 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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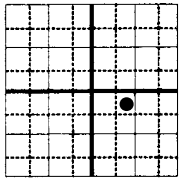
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-13-18SD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 01/11/2019
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. NE Quarter NW Quarter SE Quarter
d. Coordinates Lat.42°29'35" Long.-87°52'13.9" Site Elevation 730.31 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.51	85.87
2	SCH 40 PVC	Threaded	0.01	85.87	96.02

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from CL/ML/SP/GP at a depth of 83.50 ft. to 96.02 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through

	From (ft.)	To (ft.)
Organic Silty Clay	0.0	0.30
Silty Clay	0.30	32.0
Clayey Silt, Fat Clay, Sand(45-47.5')	32.0	49.79
Silty Clay	49.79	84.0
Silty Clay, Clayey Silt	84.0	86.5
Sand, Gravel	86.5	96.02

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 84.27 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/1.5	94/50 lb. Bg.	3.0	71.0	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	71.0	76.5	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	76.5	84.27

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 12/05/2018 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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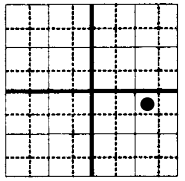
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-14-18IT
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 12/05/2018
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. NW Quarter NE Quarter SE Quarter
d. Coordinates Lat.42°29'35.3" Long.-87°52'2.3" Site Elevation 739.25 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.33	79.11
2	SCH 40 PVC	Threaded	0.01	79.11	84.27

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from CL/ML/SM at a depth of 76.50 ft. to 84.27 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Fill	0.0	1.75
Silty Clay	1.75	25.86
Silty Sand	25.86	26.1
Silty Clay	26.1	44.8
Silty Clay, Clayey Silt, Silty Sand(79-79.8'; 82.4-83.2')	44.8	84.27

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 122.0 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/2	94/50 lb. Bg.	2.0	109.0	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	109.0	114.3	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	114.3	122.04

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 12/05/2018 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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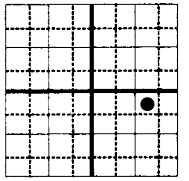
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-14-18SD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 12/03/2018
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. NW Quarter NE Quarter SE Quarter
d. Coordinates Lat.42°29'35.3" Long.-87°52'2.2" Site Elevation 739.10 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.52	116.88
2	SCH 40 PVC	Threaded	0.01	116.88	122.04

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from CL/ML/SP/GP at a depth of 114.30 ft. to 122.04 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Fill	0.0	1.75
Silty Clay	1.75	25.86
Silty Sand	25.86	26.1
Silty Clay	26.1	44.8
Silty Clay, Clayey Silt, Silty Sand	44.8	101.1
Silty Clay, Clayey Silt	101.1	122.04

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date March 28, 2019

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
b. **Bored** Well Buried Slab ☐ Yes ☐ No
Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
Hole Diameter 5.0 in. to 100.2 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Portland/Bentonite	2/2	94/50 lb. Bg.	2.0	80.0	
3/8" Bentonite Pellets	1	5 Gal. Bkt.	80.0	86.0	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven ☐ Yes ☐ No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within ☒ Unconsolidated Materials ☐ Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand Filter Pack	#5:10/20;R.W.Sidley	86.0	100.16

2. Well Use ☐ Domestic ☐ Irrigation ☐ Commercial ☐ Livestock ☒ Monitoring ☐ Other
3. Date Well Completed 01/24/2019 Well Disinfected ☐ Yes ☒ No
Driller's estimated well yield _____gpm
4. Date Permanent Pump Installed_____
5. Pump Capacity _____gpm Set at (depth) _____ft.
6. Pitless Adapter Model and Manufacturer _____
7. Well Cap Type and Manufacturer _____
8. Pressure Tank Working Cycle_____gals. Captive Air ☐ Yes ☐ No
9. Pump System Disinfected ☐ Yes ☐ No
10. Name of Pump Company _____
11. Pump Installer _____ License # _____
12. _____License # _____
Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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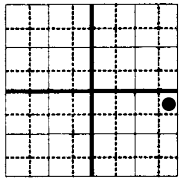
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner Advanced Disposal Services Well # P-15-18SD
14. Driller Bill McCarthy License # _____
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. NA Date Issued NA
17. Date Drilling Started 01/23/2019
18. Well **SITE** address 12247 West Russell Rd., Zion, IL 60099
19. Township Name Zion Land ID # NA
20. Subdivision Name NA Lot # NA
21. Location a. County Lake
b. Township 46N Range 12E Section 6
c. NE Quarter NE Quarter SE Quarter
d. Coordinates Lat.42°29'35.2" Long.-87°52'51.4" Site Elevation 736.70 ft. (msl)


For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2	SCH 40 PVC	Threaded	-	+2.34	90.02
2	SCH 40 PVC	Threaded	0.01	90.02	100.16

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from CL/ML/SM at a depth of 86.00 ft. to 100.16 ft.
a. Static water level _____ ft. below casing which is _____in. above ground
b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
Organic Silty Clay	0.0	2.5
Silty Clay, Silty Sand, Clayey Silt, Silt	2.5	23.1
Silty Clay, Clayey Sandy Silt	23.1	50.7
Silty Clay, Clayey Silt	50.7	61.7
Silty Clay	61.7	85.25
Silty Clay, Clayey Silt	85.25	100.16

(If **dry hole**, fill out log and indicate how hole was sealed.)

NA
25. Licensed Water Well Contractor Signature

NA
License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

ALL OTHER AS-BUILTS AND CONSTRUCTION REPORTS

APTIM

Illinois Department of Public Health

WATER WELL CONSTRUCTION REPORT

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

Date 09/17/19

1. Type of Well a. **Driven** Well Casing diam. _____ in. Depth _____ ft.
   b. **Bored** Well Buried Slab [ ] Yes [ ] No
   Hole Diameter _____ in. to _____ ft.; _____ in. to _____ ft.; _____ in. to _____ ft.
   c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ ft.
   Hole Diameter 8 in. to 102.0 ft.; _____ in. to _____ ft.; _____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Bentonite Slurry	14	10.1 lbs/gal	3.0	86.0	83
Bentonite Pellets	1	10.8 lbs/gal	86.0	89.5	87

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven [ ] Yes [ ] No
Hole Diameter _____ in. to _____ ft.; _____ in. to _____ ft.; _____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finish within [x] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand	Global #7	89.5	102.0

2. Well Use [ ] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
   [X] Monitoring [ ] Other
3. Date Well Completed 9/16/2019 Well Disinfected [ ] Yes [X] No
   Driller's estimated well yield NA gpm
4. Date Permanent Pump Installed NA
5. Pump Capacity NA gpm Set at (depth) NA ft.
6. Pitless Adapter Model and Manufacturer NA
7. Well Cap Type and Manufacturer NA
8. Pressure Tank Working Cycle NA gals. Captive Air [ ] Yes [ ] No
9. Pump System Disinfected [ ] Yes [X] No
10. Name of Pump Company Not Applicable
11. Pump Installer Not Applicable License # Not Applicable
12. Not Applicable License # Not Applicable
    Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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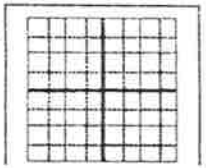
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner ADS Zion Landfill, Inc. Well # G207
14. Driller Mark Baker License# Not Applicable
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. Not Applicable Date Issued Not Applicable
17. Date Drilling Started 8/19/2019
18. Well **SITE** address 701 Green Bay Road
19. Township Name Benton Land ID# NA
20. Subdivision Name Not Applicable Lot # NA
21. Location a. County Lake
    b. Township 45N Range 12E Section 7
    c. SE Quarter NE Quarter NE Quarter
    d. Coordinates 11,366N, 13,074E Site Elevation 744.3 ft. (msl)



For Survey Use

22. Casings, Liners* and Screen Information

Diam.	Material	Joint	Slot Size	From(ft.)	To(ft.)
2.0	PVC	Flush	---	+1.6	95.5
2.0	PVC	Flush	0.006	95.5	100.5

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from sand & silt at a depth of 94.0 ft. to 102.0 ft.
    a. Static water level 82.0 ft. below casing which is 19.2 in. above ground
    b. Pumping level is NA ft. pumping NA gpm after pumping for NA hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
silty clay	0.0	94.0
f-c sand and silt and clayey silt	94.0	102.0

(If **dry hole**, fill out log and indicate how hole was sealed.)

Joseph A Miller

Not Applicable
License Number

25. License Water Well Contractor Signature

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION

Illinois Department of Public Health

WATER WELL CONSTRUCTION REPORT

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

Date 09/17/19

1. Type of Well a. **Driven** Well Casing diam. _____ in. Depth _____ ft.
   b. **Bored** Well Buried Slab [ ] Yes [ ] No
   Hole Diameter _____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.
   c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ ft.
   Hole Diameter 8 in. to 108.0 ft.; ____ in. to _____ ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Bentonite Slurry	15	10.1 lbs/gal	3.0	93.0	90
Bentonite Pellets	1	10.8 lbs/gal	93.0	96.0	93

   d. **Drilled** Well **Steel** Casing- - - Mechanically Driven [ ] Yes [ ] No
   Hole Diameter _____ in. to _____ ft.; ____ in. to _____ ft.; ____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

   e. Well finish within [x] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand	Global #7	96.0	108.0

2. Well Use [ ] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
   [X] Monitoring [ ] Other
3. Date Well Completed 9/16/2019 Well Disinfected [ ] Yes [X] No
   Driller's estimated well yield NA gpm
4. Date Permanent Pump Installed NA
5. Pump Capacity NA gpm Set at (depth) NA ft.
6. Pitless Adapter Model and Manufacturer NA
7. Well Cap Type and Manufacturer NA
8. Pressure Tank Working Cycle NA gals. Captive Air [ ] Yes [ ] No
9. Pump System Disinfected [ ] Yes [X] No
10. Name of Pump Company Not Applicable
11. Pump Installer Not Applicable License # Not Applicable
12. Not Applicable License # Not Applicable
    Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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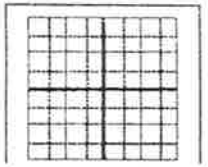
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner ADS Zion Landfill, Inc. Well # G208
14. Driller Jake Good License# Not Applicable
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. Not Applicable Date Issued Not Applicable
17. Date Drilling Started 8/22/2019
18. Well **SITE** address 701 Green Bay Road
19. Township Name Benton Land ID# NA
20. Subdivision Name Not Applicable Lot # NA
21. Location a. County Lake
    b. Township 45N Range 12E Section 7
    c. NE Quarter SE Quarter NE Quarter
    d. Coordinates 11,167N, 13,075E Site Elevation 745.2 ft. (msl)



For Survey Use

22. Casings, Liners* and Screen Information

Diam.	Material	Joint	Slot Size	From(ft.)	To(ft.)
2.0	PVC	Flush	---	+1.5	100.2
2.0	PVC	Flush	0.006	100.2	105.2

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from sand & silt at a depth of 96.8 ft. to 108.0 ft.
    a. Static water level 83.0 ft. below casing which is 18 in. above ground
    b. Pumping level is NA ft. pumping NA gpm after pumping for NA hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
silty clay	0.0	96.8
f-c sand and silt and clayey silt	96.8	108.0

(If **dry hole**, fill out log and indicate how hole was sealed.)

Joseph A. Miller

Not Applicable
License Number

25. License Water Well Contractor Signature

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION

Illinois Department of Public Health

WATER WELL CONSTRUCTION REPORT

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

Date 09/17/19

1. Type of Well a. **Driven** Well Casing diam. _____ in. Depth _____ ft.
   b. **Bored** Well Buried Slab [ ] Yes [ ] No
   Hole Diameter _____ in. to _____ ft.; _____ in. to _____ ft.; _____ in. to _____ ft.
   c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ ft.
   Hole Diameter 8 in. to 106.0 ft.; _____ in. to _____ ft.; _____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Bentonite Slurry	15	10.1 lbs/gal	3.0	91.8	89
Bentonite Pellets	1	10.8 lbs/gal	91.8	95.3	92

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven [ ] Yes [ ] No
Hole Diameter _____ in. to _____ ft.; _____ in. to _____ ft.; _____ in. to _____ ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finish within [x] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand	Global #7	95.3	106.0

2. Well Use [ ] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock [X] Monitoring [ ] Other
3. Date Well Completed 9/16/2019 Well Disinfected [ ] Yes [X] No
   Driller's estimated well yield NA gpm
4. Date Permanent Pump Installed NA
5. Pump Capacity NA gpm Set at (depth) NA ft.
6. Pitless Adapter Model and Manufacturer NA
7. Well Cap Type and Manufacturer NA
8. Pressure Tank Working Cycle NA gals. Captive Air [ ] Yes [ ] No
9. Pump System Disinfected [ ] Yes [X] No
10. Name of Pump Company Not Applicable
11. Pump Installer Not Applicable License # Not Applicable
12. Not Applicable License # Not Applicable
    Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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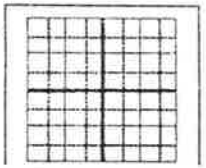
GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner ADS Zion Landfill, Inc. Well # G209
14. Driller Mark Baker License# Not Applicable
15. Name of Drilling Co. Strata Earth Services, LLC
16. Permit No. Not Applicable Date Issued Not Applicable
17. Date Drilling Started 8/29/2019
18. Well **SITE** address 701 Green Bay Road
19. Township Name Benton Land ID# NA
20. Subdivision Name Not Applicable Lot # NA
21. Location a. County Lake
    b. Township 45N Range 12E Section 7
    c. NE Quarter SE Quarter NE Quarter
    d. Coordinates 10,996N, 12,976E Site Elevation 746.0 ft. (msl)



For Survey Use

22. Casings, Liners* and Screen Information

Diam.	Material	Joint	Slot Size	From(ft.)	To(ft.)
2.0	PVC	Flush	---	+2.1	99.7
2.0	PVC	Flush	0.006	99.7	104.6

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from sand & silt at a depth of 96.5 ft. to 106.0 ft.
    a. Static water level 84.5 ft. below casing which is 25.2 in. above ground
    b. Pumping level is NA ft. pumping NA gpm after pumping for NA hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
silty clay	0.0	96.5
f-c sand and silt and clayey silt	96.5	106.0

(If **dry hole**, fill out log and indicate how hole was sealed.)

Jamie A Miller

Not Applicable
License Number

25. License Water Well Contractor Signature

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **G207**

SITE NAME: Advanced Disposal Services Zion Landfill BOREHOLE #: **G207**

NORTHING: 11,366 EASTING: 13,074 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Ryan Wijas ILL. REGISTRATION #: ---

DRILLING CONTR.: Strata Earth Services, LLC DRILLER: Mark Baker

CONSULTING FIRM: EIL, LLC GEOLOGIST: Joseph Miller

DRILLING METHOD: 3 7/8" and 7 7/8" Wash Rotary DRILLING FLUIDS (TYPE): Clean Water

LOGGED BY: Joseph Miller DATE STARTED: 08/22/19 DATE FINISHED: 09/16/19

REPORT FORM COMPLETED BY: Joseph Miller DATE: 09/17/19

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Bentonite Grout

INSTALLATION METHOD: Tremie pipe

SETTING TIME: >24 hours

TYPE BENTONITE SEAL- GRANULAR, **PELLET**, SLURRY
(CIRCLE ONE)

INSTALLATION METHOD: Tremie pipe

SETTING TIME: > 3 hrs

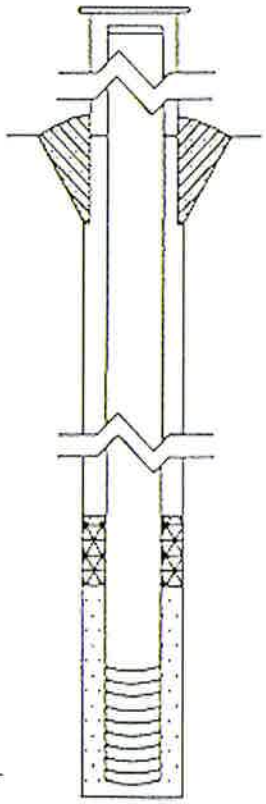
TYPE OF SAND PACK: Quartz Sand

GRAIN SIZE: #7

INSTALLATION METHOD: Tremie pipe

TYPE OF BACKFILL MATERIAL: N/A
(IF APPLICABLE)

INSTALLATION METHOD: N/A



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
746.14	1.8	TOP OF PROTECTIVE CASING
745.86	1.6	TOP OF RISER PIPE
744.3	0.0	GROUND SURFACE
741.3	3.0	TOP OF ANNULAR SEALANT
663.81	82.05	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
658.3	86.0	TOP OF SEAL
654.8	89.5	TOP OF SANDPACK
648.8	95.5	TOP OF SCREEN
644.4	99.9	BOTTOM OF SCREEN
643.8	100.5	BOTTOM OF WELL
642.3	102.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	8.0
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	97.07
BOTTOM OF SCREEN TO END CAP (ft)	0.60
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.38
TOTAL LENGTH OF CASING (ft)	102.05
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **G208**

SITE NAME: Advanced Disposal Services Zion Landfill BOREHOLE #: **G208**

NORTHING 11,167 EASTING 13,075 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Ryan Wijas ILL. REGISTRATION #: ---

DRILLING CONTR. Strata Earth Services, LLC DRILLER: Jake Good

CONSULTING FIRM: EIL, LLC GEOLOGIST: A. Michael Hirt

DRILLING METHOD: 3 7/8" and 7 7/8" Wash Rotary DRILLING FLUIDS (TYPE): Clean Water

LOGGED BY: A. Michael Hirt DATE STARTED: 08/28/19 DATE FINISHED: 09/16/19

REPORT FORM COMPLETED BY: Joseph Miller DATE: 09/17/19

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Bentonite Grout

INSTALLATION METHOD: Tremie pipe

SETTING TIME: >24 hours

TYPE BENTONITE SEAL- GRANULAR, **PELLET,** SLURRY
(CIRCLE ONE)

INSTALLATION METHOD: Tremie pipe

SETTING TIME: > 3 hrs

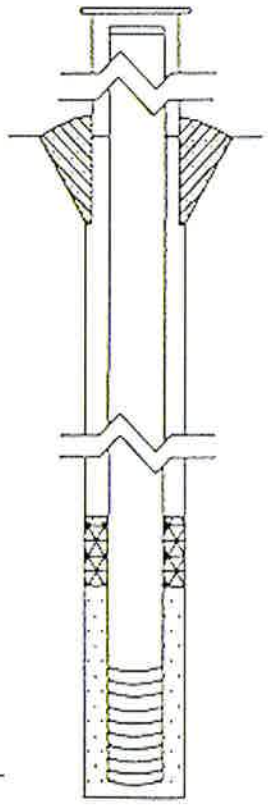
TYPE OF SAND PACK: Quartz Sand

GRAIN SIZE: #7

INSTALLATION METHOD: Tremie pipe

TYPE OF BACKFILL MATERIAL: N/A
(IF APPLICABLE)

INSTALLATION METHOD: N/A



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
746.92	1.7	TOP OF PROTECTIVE CASING
746.69	1.5	TOP OF RISER PIPE
745.2	0.0	GROUND SURFACE
742.2	3.0	TOP OF ANNULAR SEALANT
663.65	83.04	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
652.2	93.0	TOP OF SEAL
649.2	96.0	TOP OF SANDPACK
645.0	100.2	TOP OF SCREEN
640.6	104.6	BOTTOM OF SCREEN
640.0	105.2	BOTTOM OF WELL
637.2	108.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	8.0
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	101.67
BOTTOM OF SCREEN TO END CAP (ft)	0.60
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.38
TOTAL LENGTH OF CASING (ft)	106.65
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **G209**

SITE NAME: Advanced Disposal Services Zion Landfill BOREHOLE # **G209**

NORTHING 10,996 EASTING 12,976 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Ryan Wijas ILL. REGISTRATION #: ---

DRILLING CONTR. Strata Earth Services, LLC DRILLER: Mark Baker

CONSULTING FIRM: EIL, LLC GEOLOGIST: A. Michael Hirt

DRILLING METHOD: 3 7/8" and 7 7/8" Wash Rotary DRILLING FLUIDS (TYPE): Clean Water

LOGGED BY: A. Michael Hirt DATE STARTED: 09/04/19 DATE FINISHED: 09/16/19

REPORT FORM COMPLETED BY: Joseph Miller DATE: 09/17/19

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Bentonite Grout

INSTALLATION METHOD: Tremie pipe

SETTING TIME: >3 hours

TYPE BENTONITE SEAL- GRANULAR, **PELLET**, SLURRY
(CIRCLE ONE)

INSTALLATION METHOD: Tremie pipe

SETTING TIME: > 3 hrs

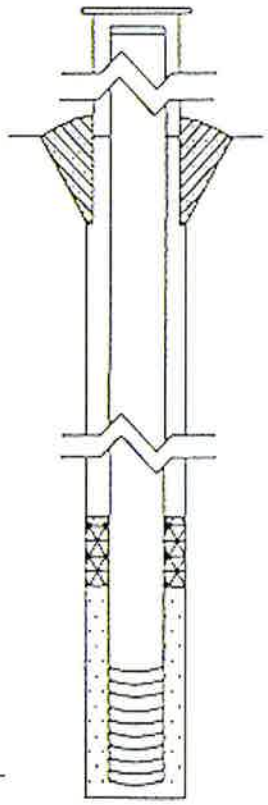
TYPE OF SAND PACK: Quartz Sand

GRAIN SIZE: #7

INSTALLATION METHOD: Tremie pipe

TYPE OF BACKFILL MATERIAL: N/A
(IF APPLICABLE)

INSTALLATION METHOD: N/A



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
748.36	2.4	TOP OF PROTECTIVE CASING
748.07	2.1	TOP OF RISER PIPE
746.0	0.0	GROUND SURFACE
743.0	3.0	TOP OF ANNULAR SEALANT
663.56	84.51	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
654.2	91.8	TOP OF SEAL
650.7	95.3	TOP OF SANDPACK
646.4	99.7	TOP OF SCREEN
642.0	104.0	BOTTOM OF SCREEN
641.4	104.6	BOTTOM OF WELL
640.0	106.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	8.0
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	101.72
BOTTOM OF SCREEN TO END CAP (ft)	0.60
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.38
TOTAL LENGTH OF CASING (ft)	106.70
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **GMP-35**

SITE NAME: Veolia ES Zion Landfill BOREHOLE #: **GMP-35**

NORTHING 11,963 EASTING 13,120 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Veolia ES ILL. REGISTRATION #: ---

DRILLING CONTR. Strata Earth Services, LLC DRILLER: Mark Baker

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Daniel Fager

DRILLING METHOD: 3.25-inch I.D. HSA DRILLING FLUIDS (TYPE): ---

LOGGED BY: Daniel Fager DATE STARTED: 05/02/12 DATE FINISHED: 06/18/12

REPORT FORM COMPLETED BY: Daniel Fager DATE: 07/05/12

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: ---

INSTALLATION METHOD: ---

SETTING TIME: ---

TYPE BENTONITE SEAL- **GRANULAR**, PELLET, SLURRY
(CIRCLE ONE)

INSTALLATION METHOD: Gravity

SETTING TIME: > 24 hrs

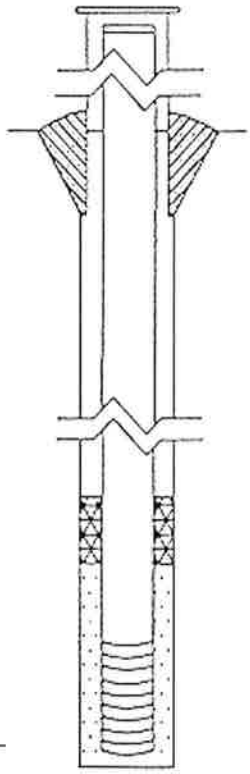
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: Global #5

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA
(IF APPLICABLE)

INSTALLATION METHOD: NA



	ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)
TOP OF PROTECTIVE CASING	744.20	2.7
TOP OF RISER PIPE	743.85	2.4
GROUND SURFACE	741.5	0.0
TOP OF ANNULAR SEALANT	---	---
STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)	731.39	10.11
TOP OF SEAL	740.0	1.5
TOP OF SANDPACK	739.5	2.0
TOP OF SCREEN	739.2	2.3
BOTTOM OF SCREEN	719.6	21.9
BOTTOM OF WELL	719.3	22.3
BOTTOM OF BOREHOLE	717.5	24.0

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS
(CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	7.0
ID OF RISER PIPE (in)	1.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	4.68
BOTTOM OF SCREEN TO END CAP (ft)	0.35
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	19.57
TOTAL LENGTH OF CASING (ft)	24.60
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **GMP-36**

SITE NAME: Veolia ES Zion Landfill BOREHOLE / **GMP-36**

NORTHING 11,968 EASTING 13,528 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Veolia ES ILL. REGISTRATION #: ---

DRILLING CONTR. Strata Earth Services, LLC DRILLER: Mark Baker

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Daniel Fager

DRILLING METHOD: 3.25-inch I.D. HSA DRILLING FLUIDS (TYPE): ---

LOGGED BY: Daniel Fager DATE STARTED: 04/26/12 DATE FINISHED: 06/18/12

REPORT FORM COMPLETED BY: Daniel Fager DATE: 07/05/12

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: ---

INSTALLATION METHOD: ---

SETTING TIME: ---

TYPE BENTONITE SEAL- **GRANULAR**, PELLET, SLURRY

(CIRCLE ONE)

INSTALLATION METHOD: Gravity

SETTING TIME: > 24 hrs

TYPE OF SAND PACK: Silica Sand

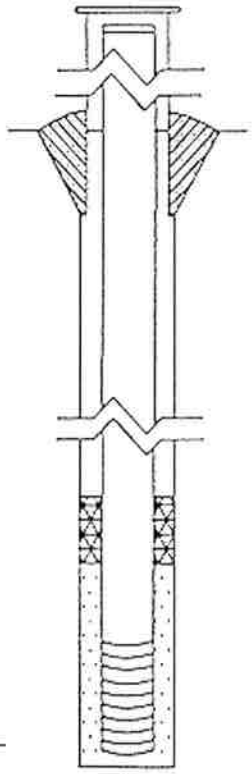
GRAIN SIZE: Global #5

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA

(IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
743.60	2.5	TOP OF PROTECTIVE CASING
743.47	2.4	TOP OF RISER PIPE
741.1	0.0	GROUND SURFACE
---	---	TOP OF ANNULAR SEALANT
729.90	11.20	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
739.6	1.5	TOP OF SEAL
738.1	3.0	TOP OF SANDPACK
736.7	4.4	TOP OF SCREEN
717.4	23.7	BOTTOM OF SCREEN
716.9	24.2	BOTTOM OF WELL
716.9	24.2	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	7.0
ID OF RISER PIPE (in)	1.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	6.74
BOTTOM OF SCREEN TO END CAP (ft)	0.45
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	19.35
TOTAL LENGTH OF CASING (ft)	26.54
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **GMP-37**

SITE NAME: Veolia ES Zion Landfill BOREHOLE #: **GMP-37**

NORTHING 11,572 EASTING 13,537 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Veolia ES ILL. REGISTRATION #: ---

DRILLING CONTR. Strata Earth Services, LLC DRILLER: Mark Baker

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Daniel Fager

DRILLING METHOD: 3.25-inch I.D. HSA DRILLING FLUIDS (TYPE): ---

LOGGED BY: Daniel Fager DATE STARTED: 04/26/12 DATE FINISHED: 06/18/12

REPORT FORM COMPLETED BY: Daniel Fager DATE: 07/05/12

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: ---

INSTALLATION METHOD: ---

SETTING TIME: ---

TYPE BENTONITE SEAL- **GRANULAR**, PELLET, SLURRY

(CIRCLE ONE)

INSTALLATION METHOD: Gravity

SETTING TIME: > 24 hrs

TYPE OF SAND PACK: Silica Sand

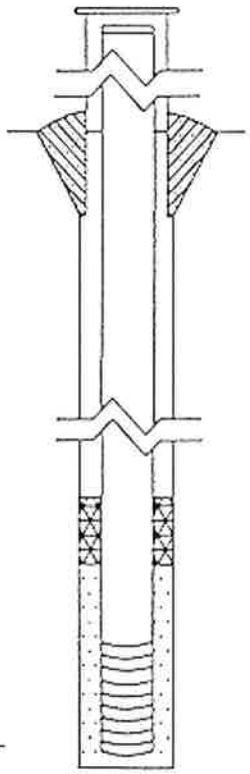
GRAIN SIZE: Global #5

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA

(IF APPLICABLE)

INSTALLATION METHOD: NA



	ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)
TOP OF PROTECTIVE CASING	738.10	2.8
TOP OF RISER PIPE	737.82	2.5
GROUND SURFACE	735.3	0.0
TOP OF ANNULAR SEALANT	---	---
STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)	726.95	8.35
TOP OF SEAL	733.3	2.0
TOP OF SANDPACK	732.3	3.0
TOP OF SCREEN	731.5	3.8
BOTTOM OF SCREEN	706.6	28.7
BOTTOM OF WELL	706.5	28.8
BOTTOM OF BOREHOLE	706.3	29.0

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	7.0
ID OF RISER PIPE (in)	1.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	6.33
BOTTOM OF SCREEN TO END CAP (ft)	0.10
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	24.90
TOTAL LENGTH OF CASING (ft)	31.33
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **GMP-38**

SITE NAME: Veolia ES Zion Landfill BOREHOLE #: **GMP-38**

NORTHING 11,024 EASTING 13,434 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Veolia ES ILL. REGISTRATION #: ---

DRILLING CONTR. Strata Earth Services, LLC DRILLER: Mark Baker

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Daniel Fager

DRILLING METHOD: 3.25-inch I.D. HSA DRILLING FLUIDS (TYPE): ---

LOGGED BY: Daniel Fager DATE STARTED: 05/03/12 DATE FINISHED: 06/18/12

REPORT FORM COMPLETED BY: Daniel Fager DATE: 07/05/12

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: ---

INSTALLATION METHOD: ---

SETTING TIME: ---

TYPE BENTONITE SEAL- **GRANULAR**, PELLET, SLURRY

(CIRCLE ONE)

INSTALLATION METHOD: Gravity

SETTING TIME: > 24 hrs

TYPE OF SAND PACK: Silica Sand

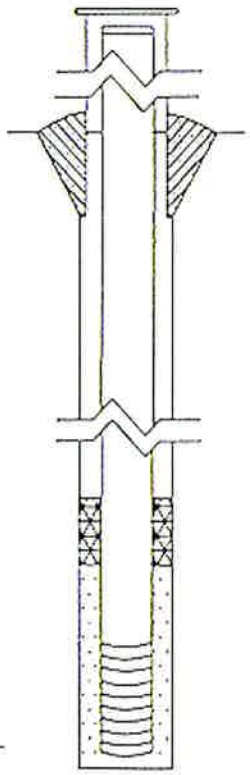
GRAIN SIZE: Global #5

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA

(IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
740.50	3.1	TOP OF PROTECTIVE CASING
739.96	2.6	TOP OF RISER PIPE
737.4	0.0	GROUND SURFACE
---	---	TOP OF ANNULAR SEALANT
726.43	10.97	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
735.4	2.0	TOP OF SEAL
734.4	3.0	TOP OF SANDPACK
733.5	4.0	TOP OF SCREEN
714.0	23.4	BOTTOM OF SCREEN
713.6	23.8	BOTTOM OF WELL
713.4	24.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	7.0
ID OF RISER PIPE (in)	1.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	6.51
BOTTOM OF SCREEN TO END CAP (ft)	0.40
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	19.41
TOTAL LENGTH OF CASING (ft)	26.32
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **GMP-39**

SITE NAME: Veolia ES Zion Landfill BOREHOLE #: **GMP-39**

NORTHING 10,728 EASTING 12,860 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Veolia ES ILL. REGISTRATION #: ---

DRILLING CONTR. Strata Earth Services, LLC DRILLER: Mark Baker

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Daniel Fager

DRILLING METHOD: 3.25-inch I.D. HSA DRILLING FLUIDS (TYPE): ---

LOGGED BY: Daniel Fager DATE STARTED: 05/04/12 DATE FINISHED: 06/18/12

REPORT FORM COMPLETED BY: Daniel Fager DATE: 07/05/12

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: ---

INSTALLATION METHOD: ---

SETTING TIME: ---

TYPE BENTONITE SEAL- **GRANULAR**, PELLET, SLURRY
(CIRCLE ONE)

INSTALLATION METHOD: Gravity

SETTING TIME: > 24 hrs

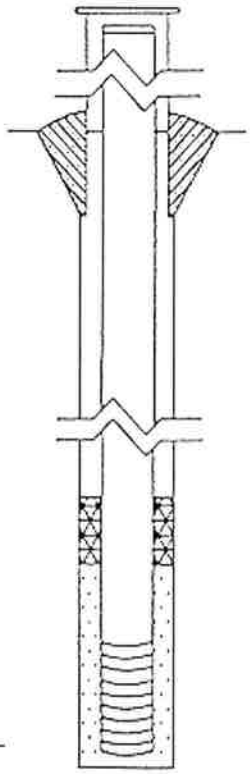
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: Global #5

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA
(IF APPLICABLE)

INSTALLATION METHOD: NA



	ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)
TOP OF PROTECTIVE CASING	742.00	2.8
TOP OF RISER PIPE	741.64	2.4
GROUND SURFACE	739.2	0.0
TOP OF ANNULAR SEALANT	---	---
STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)	728.33	10.87
TOP OF SEAL	737.2	2.0
TOP OF SANDPACK	736.2	3.0
TOP OF SCREEN	735.1	4.1
BOTTOM OF SCREEN	715.7	23.5
BOTTOM OF WELL	715.3	23.9
BOTTOM OF BOREHOLE	715.0	24.2

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	4.5
ID OF RISER PIPE (in)	1.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	6.57
BOTTOM OF SCREEN TO END CAP (ft)	0.45
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	19.35
TOTAL LENGTH OF CASING (ft)	26.37
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **GMP-40**

SITE NAME: Veolia ES Zion Landfill BOREHOLE #: **GMP-40**

NORTHING 10,744 EASTING 12,422 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Veolia ES ILL. REGISTRATION #: ---

DRILLING CONTR. Strata Earth Services, LLC DRILLER: Mark Baker

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Daniel Fager

DRILLING METHOD: 3.25-inch I.D. HSA DRILLING FLUIDS (TYPE): ---

LOGGED BY: Daniel Fager DATE STARTED: 05/03/12 DATE FINISHED: 06/18/12

REPORT FORM COMPLETED BY: Daniel Fager DATE: 07/05/12

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: ---

INSTALLATION METHOD: ---

SETTING TIME: ---

TYPE BENTONITE SEAL- **GRANULAR**, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Gravity

SETTING TIME: > 24 hrs

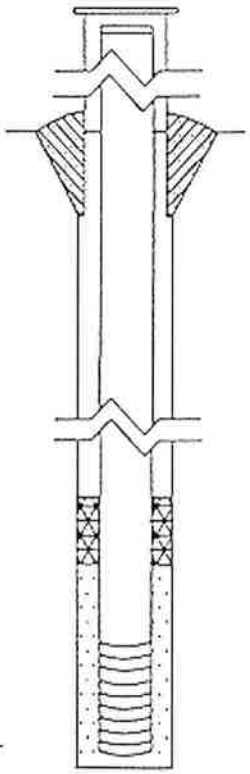
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: Global #5

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA (IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
740.50	2.6	TOP OF PROTECTIVE CASING
740.15	2.3	TOP OF RISER PIPE
737.9	0.0	GROUND SURFACE
---	---	TOP OF ANNULAR SEALANT
728.36	9.54	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
735.9	2.0	TOP OF SEAL
734.9	3.0	TOP OF SANDPACK
733.7	4.2	TOP OF SCREEN
714.3	23.7	BOTTOM OF SCREEN
713.8	24.1	BOTTOM OF WELL
713.5	24.4	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	7.0
ID OF RISER PIPE (in)	1.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	6.48
BOTTOM OF SCREEN TO END CAP (ft)	0.45
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	19.42
TOTAL LENGTH OF CASING (ft)	26.35
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Well Completion Report

Site No.: 122150 County: Lake Well No.: G170

Site Name: Veolia E.S. Zion Landfill Site 4 Expansion Grid Coordinate: Northing 12,494.15 Easting 12,422.13

Drilling Contractor: RDnP Drilling, Inc. Date Drilling Started: 05-07-07

Driller: Don Smith Geologist: Ralph Bonk Date Well Completed: 05-09-07

Drilling Method: 6.25" HSA (0-10'), Rotary – 3.875" Tricone Roller Bit (10-102') Drilling Fluids (type): Water

5.875" Tricone Rotary Bit – Drill Ream (10-102')

Annular Space Details

Type of Surface Seal: 4 x 50 lb. Bags Quikrete Concrete Mix

Type of Annular Sealant: Bentonite Grout (Pure Gold Grout – Cetco)

Amount of cement: # of bags -- Lbs. per bag --

Amount of bentonite: # of bags 4 Lbs. per bag 50

Type of bentonite seal: ¼" Coated Bentonite Pellets - Cetco

Amount of bentonite: # of bags 0.5 Lbs. per bag 5-Gallon Bucket

Type of Sand Pack: #5 Source of Sand: Global Drilling Supplies, Inc.

Amount of Sand: # of bags 3.5 Lbs. per bag 50

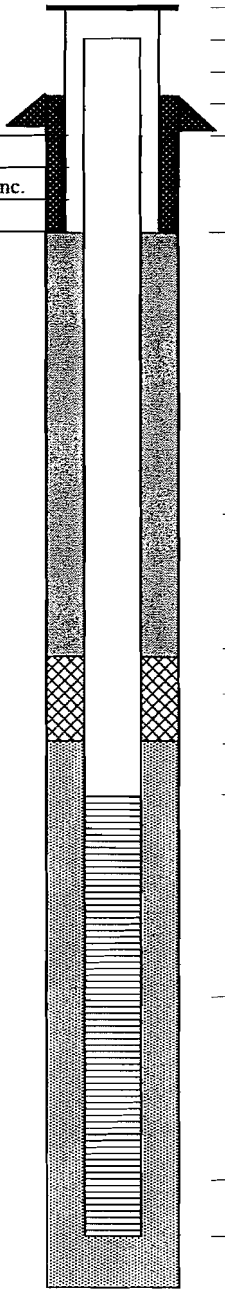
Well Construction Materials

	Stainless Steel Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint		Threaded	
Riser pipe above w.t.		SCH 40	
Riser pipe below w.t.		SCH 40	
Screen		SCH 40	
Coupling joint screen to riser		Threaded	
Protective casing		Stainless Steel	

Measurements to .01 ft (where applicable)

Riser pipe length	94.0
Protective casing length	4" Diameter - 5' Long
Screen length	9.64
Bottom of screen to end cap	0.28
Top of screen to first joint	0.08
Total length of casing	-
Screen slot size	0.01"
% of openings in screen	1/8" Spacing/ 3 Row Slots
Diameter of borehole	10" (0-10') – 6" (10-102')
ID of riser pipe (in)	2"

Elevations - .01 ft



745.48	MSL Top of Protective Casing
745.43	MSL Top of Riser Pipe
2.53	Ft. Casing Stickup
+ 0.3	Ft. Top of Concrete
742.90	MSL Ground Surface
-3.50	Ft. Top of Annular Sealant
77.50	Ft. Total Annular Sealant Interval
-81.00	Ft. Top of Bentonite Seal
8.00	Ft. Total Bentonite Seal Interval
-89.00	Ft. Top of Sand Pack
-91.77	Ft. Top of Screen
10.00	Ft. Total Screen Interval
-101.77	Ft. Bottom of Screen
-102.00	Ft. Bottom of Borehole

Completed by: Ralph Bonk Surveyed by:

Shaw® Shaw Environmental, Inc.

Well Completion Report

Site No.: 122150 County Lake Well No.: G175

Site Name: Veolia E.S. Zion Landfill Site 4 Expansion Grid Coordinate: Northing 11,485.09 Easting 12,154.43

Drilling Contractor: RDnP Drilling, Inc. Date Drilling Started: 05-01-07

Driller: Don Smith Geologist: Ralph Bonk Date Well Completed: 05-03-07

Drilling Method: 6.25" HSA (0-10'), Rotary - 3.875" Tricone Roller Bit (10-102') Drilling Fluids (type): Water

5.875" Tricone Rotary Bit - Drill Ream (10-100')

Annular Space Details

Type of Surface Seal: 4 x 80 lb. Bags Quikrete Concrete Mix

Type of Annular Sealant: Bentonite Grout (Pure Gold Grout - Cetco)

Amount of cement: # of bags -- Lbs. per bag --

Amount of bentonite: # of bags 3 Lbs. per bag 50

Type of bentonite seal: ¼" Coated Bentonite Pellets - Cetco

Amount of bentonite: # of bags 0.5 Lbs. per bag 5-Gallon Bucket

Type of Sand Pack: #5 Source of Sand: Global Drilling Supplies, Inc.

Amount of Sand: # of bags 3 Lbs. per bag 50

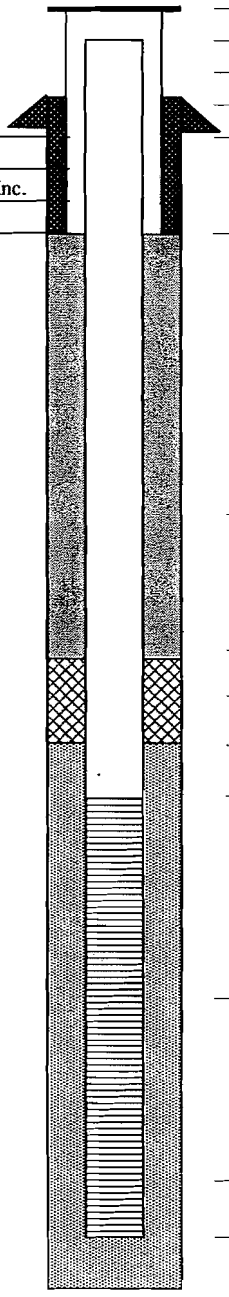
Well Construction Materials

	Stainless Steel Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint		Threaded	
Riser pipe above w.t.		SCH 40	
Riser pipe below w.t.		SCH 40	
Screen		SCH 40	
Coupling joint screen to riser		Threaded	
Protective casing		Stainless Steel	

Measurements to .01 ft (where applicable)

Riser pipe length	91.55
Protective casing length	4" Diameter - 5' Long
Screen length	9.64
Bottom of screen to end cap	0.08
Top of screen to first joint	0.28
Total length of casing	-
Screen slot size	0.01"
% of openings in screen	1/8" Spacing/ 3 Row Slots
Diameter of borehole	10" (0-10') - 6" (10-100')
ID of riser pipe (in)	2"

Elevations - .01 ft



739.96	MSL Top of Protective Casing
739.92	MSL Top of Riser Pipe
2.52	Ft. Casing Stickup
+ 0.3	Ft. Top of Concrete
737.40	MSL Ground Surface
-3.50	Ft. Top of Annular Sealant
78.50	Ft. Total Annular Sealant Interval
-82.00	Ft. Top of Bentonite Seal
5.00	Ft. Total Bentonite Seal Interval
-87.00	Ft. Top of Sand Pack
-89.20	Ft. Top of Screen
10.00	Ft. Total Screen Interval
-99.20	Ft. Bottom of Screen
-100.0	Ft. Bottom of Borehole

Completed by: Ralph Bonk Surveyed by:

Shaw® Shaw Environmental, Inc.

Well Completion Report

Site No.: 122150 County Lake Well No.: MW-03-07

Site Name: Veolia E.S. Zion Landfill Site 4 Expansion Grid Coordinate: Northing 12,039.70 Easting 13,077.93

Drilling Contractor: RDnP Drilling, Inc. Date Drilling Started: 04-17-07

Driller: Don Smith Geologist: Ralph Bonk Date Well Completed: 04-19-07

Drilling Method: 6.25" HSA (0-10'), Rotary – 3.875" Tricone Roller Bit (10-98') Drilling Fluids (type): Water

5.875" Tricone Rotary Bit – Drill Ream (10-98')

Annular Space Details

Type of Surface Seal: 3 x 50 lb. Bags Quikrete Concrete Mix

Type of Annular Sealant: Bentonite Grout (Pure Gold Grout – Cetco)

Amount of cement: # of bags -- Lbs. per bag --

Amount of bentonite: # of bags 5 Lbs. per bag 50

Type of bentonite seal: ¼" Coated Bentonite Pellets - Cetco

Amount of bentonite: # of bags 0.5 Lbs. per bag 5-Gallon Bucket

Type of Sand Pack: #5 Source of Sand: Global Drilling Supplies, Inc.

Amount of Sand: # of bags 4 Lbs. per bag 50

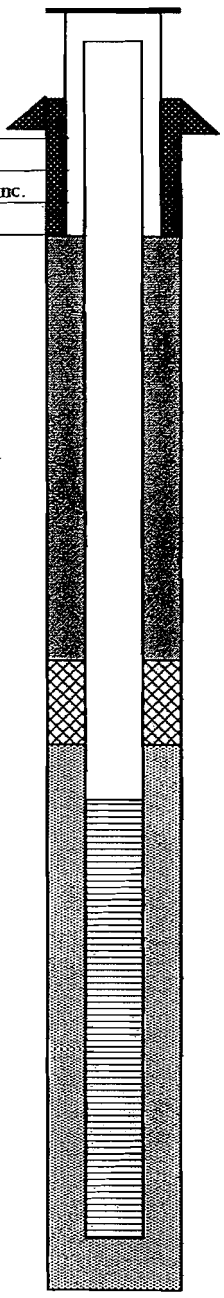
Well Construction Materials

	Stainless Steel Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint		Threaded	
Riser pipe above w.t.		SCH 40	
Riser pipe below w.t.		SCH 40	
Screen		SCH 40	
Coupling joint screen to riser		Threaded	
Protective casing		Stainless Steel	

Measurements to .01 ft (where applicable)

Riser pipe length	90.03
Protective casing length	4" Diameter - 5' Long
Screen length	9.64
Bottom of screen to end cap	0.08
Top of screen to first joint	0.28
Total length of casing	-
Screen slot size	0.01"
% of openings in screen	1/8" Spacing/ 3 Row Slots
Diameter of borehole	10" (0-10') – 6" (10-100')
ID of riser pipe (in)	2"

Elevations - .01 ft



743.08	MSL Top of Protective Casing
743.10	MSL Top of Riser Pipe
2.50	Ft. Casing Stickup
+0.3	Ft. Top of Concrete
740.60	MSL Ground Surface
-3.50	Ft. Top of Annular Sealant
66.50	Ft. Total Annular Sealant Interval
-70.00	Ft. Top of Bentonite Seal
12.00	Ft. Total Bentonite Seal Interval
-82.00	Ft. Top of Sand Pack
-87.70	Ft. Top of Screen
10.00	Ft. Total Screen Interval
-97.70	Ft. Bottom of Screen
-98.00	Ft. Bottom of Borehole

Completed by: Ralph Bonk Surveyed by:

Shaw® Shaw Environmental, Inc.

Well Completion Report

Site No.: 122150 County Lake Well No.: MW-06-07-D

Site Name: Veolia E.S. Zion Landfill Site 4 Expansion Grid Coordinate: Northing 11,400.75 Easting 13,283.41

Drilling Contractor: RDnP Drilling, Inc. Date Drilling Started: 03-30-07

Driller: Don Smith Geologist: Ralph Bonk Date Well Completed: 04-16-07

Drilling Method: 6.25" HSA (0-20'), Rotary - 5.875" Tricone Roller Bit (20-100'), Rotary – 3.875" Tricone Roller Bit (100-220'), 5.875" Tricone Rotary Bit – Drill Ream (100-220') Drilling Fluids (type): Revert

Annular Space Details

Type of Surface Seal: 3 x 50 lb. Bags Quikrete Concrete Mix

Type of Annular Sealant: Bentonite Grout (Pure Gold Grout – Cetco)

Amount of cement: # of bags -- Lbs. per bag. --

Amount of bentonite: # of bags 6 Lbs. per bag 50

Type of bentonite seal: ¼" Coated Bentonite Pellets - Cetco

Amount of bentonite: # of bags 1 Lbs. per bag 5-Gallon Bucket

Type of Sand Pack: #5 Source of Sand: Global Drilling Supplies, Inc.

Amount of Sand: # of bags 3 Lbs. per bag 50

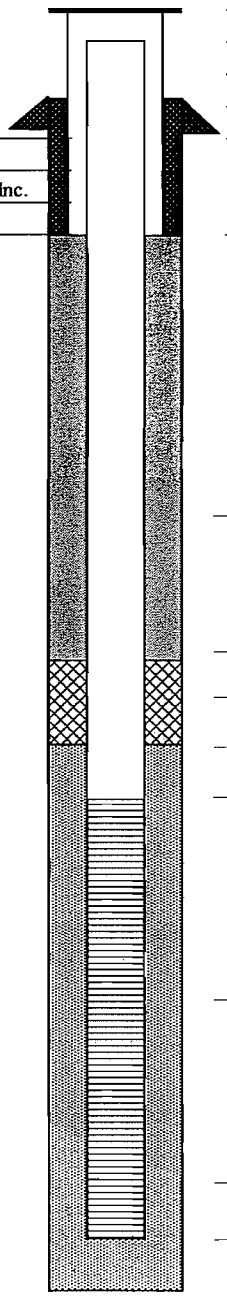
Well Construction Materials

	Stainless Steel Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint		Threaded	
Riser pipe above w.t.		SCH 40	
Riser pipe below w.t.		SCH 40	
Screen		SCH 40	
Coupling joint screen to riser		Threaded	
Protective casing		Stainless Steel	

Measurements to .01 ft (where applicable)

Riser pipe length	217.06
Protective casing length	4" Diameter - 5' Long
Screen length	4.8
Bottom of screen to end cap	0.17
Top of screen to first joint	0.04
Total length of casing	-
Screen slot size	0.01"
% of openings in screen	1/8" Spacing/ 3 Row Slots
Diameter of borehole	10" (0-20') – 6" (20-220')
ID of riser pipe (in)	2"

Elevations - .01 ft



746.50	MSL Top of Protective Casing
746.65	MSL Top of Riser Pipe
2.55	Ft. Casing Stickup
+0.3	Ft. Top of Concrete
744.10	MSL Ground Surface
-3.50	Ft. Top of Annular Sealant
190.50	Ft. Total Annular Sealant Interval
-194.00	Ft. Top of Bentonite Seal
16.00	Ft. Total Bentonite Seal Interval
-210.00	Ft. Top of Sand Pack
-214.58	Ft. Top of Screen
5.01	Ft. Total Screen Interval
-219.59	Ft. Bottom of Screen
-220.00	Ft. Bottom of Borehole

Completed by: Ralph Bonk Surveyed by:

Shaw® Shaw Environmental, Inc.

Well Completion Report

Site No.: 122150 County Lake Well No.: MW-08-07

Site Name: Veolia E.S. Zion Landfill Site 4 Expansion Grid Coordinate: Northing 10,868.75 Easting 12,490.36

Drilling Contractor: RDnP Drilling, Inc. Date Drilling Started: 04-20-07

Driller: Don Smith Geologist: Ralph Bonk Date Well Completed: 04-24-07

Drilling Method: 6.25" HSA (0-14'), Rotary – 3.875" Tricone Roller Bit (14-92') Drilling Fluids (type): Water

5.875" Tricone Rotary Bit – Drill Ream (14-92')

Annular Space Details

Type of Surface Seal: 5 x 80 lb. Bags Quikrete Concrete Mix

Type of Annular Sealant: Bentonite Grout (Pure Gold Grout – Cetco)

Amount of cement: # of bags – Lbs. per bag --

Amount of bentonite: # of bags 4 Lbs. per bag 50

Type of bentonite seal: ¼" Coated Bentonite Pellets - Cetco

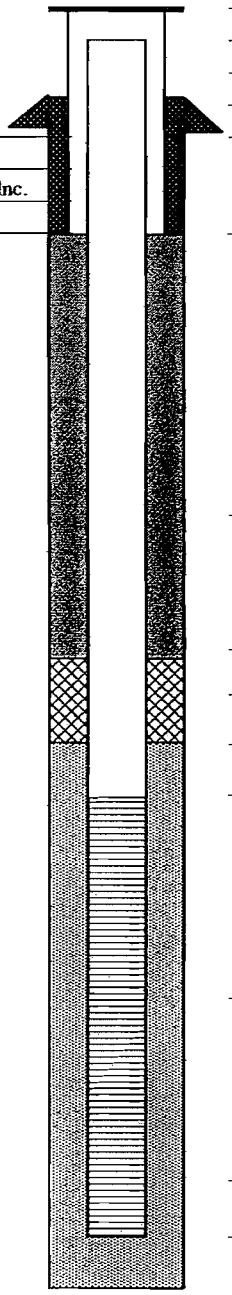
Amount of bentonite: # of bags 0.5 Lbs. per bag 5-Gallon Bucket

Type of Sand Pack: #5 Source of Sand: Global Drilling Supplies, Inc.

Amount of Sand: # of bags 4 Lbs. per bag 50

Elevations - .01 ft

739.83	MSL Top of Protective Casing
739.83	MSL Top of Riser Pipe
2.63	Ft. Casing Stickup
+ 0.3	Ft. Top of Concrete
737.20	MSL Ground Surface
-3.50	Ft. Top of Annular Sealant
66.50	Ft. Total Annular Sealant Interval
-70.00	Ft. Top of Bentonite Seal
8.00	Ft. Total Bentonite Seal Interval
-78.00	Ft. Top of Sand Pack
-81.70	Ft. Top of Screen
10.00	Ft. Total Screen Interval
-91.70	Ft. Bottom of Screen
-92.00	Ft. Bottom of Borehole



Well Construction Materials

	Stainless Steel Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint		Threaded	
Riser pipe above w.t.		SCH 40	
Riser pipe below w.t.		SCH 40	
Screen		SCH 40	
Coupling joint screen to riser		Threaded	
Protective casing		Stainless Steel	

Measurements to .01 ft (where applicable)

Riser pipe length	83.99
Protective casing length	4" Diameter - 5' Long
Screen length	9.64
Bottom of screen to end cap	0.08
Top of screen to first joint	0.28
Total length of casing	-
Screen slot size	0.01"
% of openings in screen	1/8" Spacing/ 3 Row Slots
Diameter of borehole	10" (0-14') – 6" (14-92')
ID of riser pipe (in)	2"

Completed by: Ralph Bonk Surveyed by: _____

Shaw® Shaw Environmental, Inc.

Well Completion Report

Site No.: 122150 County Lake Well No.: MW-09-07

Site Name: Veolia E.S. Zion Landfill Site 4 Expansion Grid Coordinate: Northing 10,924.54 Easting 12,901.47

Drilling Contractor: RDnP Drilling, Inc. Date Drilling Started: 04-24-07

Driller: Don Smith Geologist: Ralph Bonk Date Well Completed: 04-30-07

Drilling Method: 6.25" HSA (0-10'), Rotary – 3.875" Tricone Roller Bit (10-100') Drilling Fluids (type): Water

5.875" Tricone Rotary Bit – Drill Ream (10-100')

Annular Space Details

Type of Surface Seal: 3 x 80 lb. Bags Quikrete Concrete Mix

Type of Annular Sealant: Bentonite Grout (Pure Gold Grout – Cetco)

Amount of cement: # of bags -- Lbs. per bag --

Amount of bentonite: # of bags 3 Lbs. per bag 50

Type of bentonite seal: ¼" Coated Bentonite Pellets - Cetco

Amount of bentonite: # of bags 0.5 Lbs. per bag 5-Gallon Bucket

Type of Sand Pack: #5 Source of Sand: Global Drilling Supplies, Inc.

Amount of Sand: # of bags 3 Lbs. per bag 50

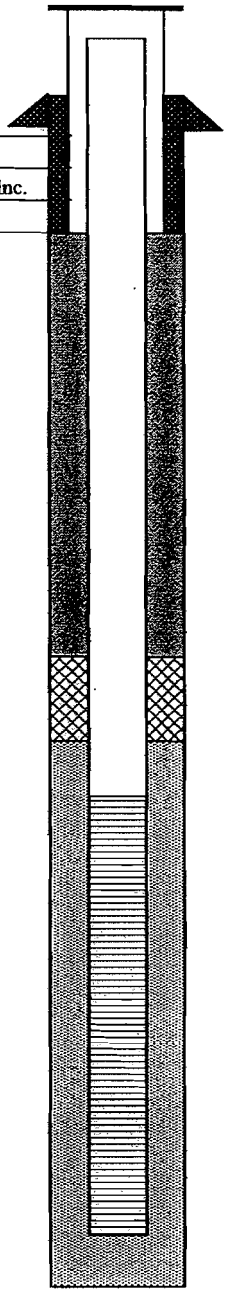
Well Construction Materials

	Stainless Steel Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint		Threaded	
Riser pipe above w.t.		SCH 40	
Riser pipe below w.t.		SCH 40	
Screen		SCH 40	
Coupling joint screen to riser		Threaded	
Protective casing		Stainless Steel	

Measurements to .01 ft (where applicable)

Riser pipe length	92.07
Protective casing length	4" Diameter - 5' Long
Screen length	9.64
Bottom of screen to end cap	0.28
Top of screen to first joint	0.08
Total length of casing	-
Screen slot size	0.01"
% of openings in screen	1/8" Spacing/ 3 Row Slots
Diameter of borehole	10" (0-10') – 6" (10-100')
ID of riser pipe (in)	2"

Elevations - .01 ft



742.01	MSL Top of Protective Casing
741.97	MSL Top of Riser Pipe
2.47	Ft. Casing Stickup
+0.3	Ft. Top of Concrete
739.50	MSL Ground Surface
-3.50	Ft. Top of Annular Sealant
78.50	Ft. Total Annular Sealant Interval
-82.00	Ft. Top of Bentonite Seal
5.00	Ft. Total Bentonite Seal Interval
-87.00	Ft. Top of Sand Pack
-89.77	Ft. Top of Screen
10.00	Ft. Total Screen Interval
-99.77	Ft. Bottom of Screen
-100.00	Ft. Bottom of Borehole

Completed by: Ralph Bonk Surveyed by:

Shaw® Shaw Environmental, Inc.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020001 COUNTY: Lake WELL #: AT07

SITE NAME: Zion Site 1 Phase A Landfill BOREHOLE #: AT07 (RT07)

NORTHING 11,367.6 EASTING 9,369.2 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. RD-n-P Drilling, Inc. DRILLER: Eric Kaelin

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Drew Coppess

DRILLING METHOD: 10" Wash Rotary DRILLING FLUIDS (TYPE): Clean Water

LOGGED BY: Drew Coppess DATE STARTED: 04/19/04 DATE FINISHED: 04/22/04

REPORT FORM COMPLETED BY: Joe Miller DATE: 06/16/04

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Not Applicable

INSTALLATION METHOD: Not Applicable

SETTING TIME: Not Applicable

TYPE BENTONITE SEAL- GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

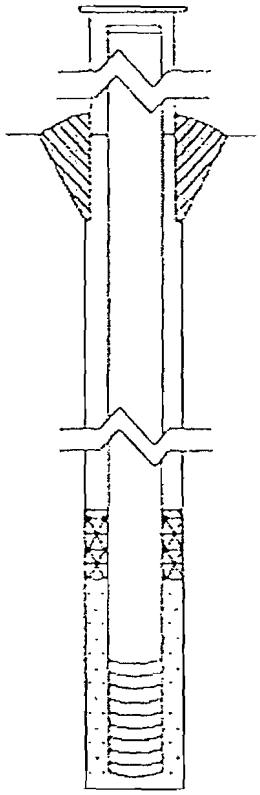
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: 40/60 Sand (IF APPLICABLE)

INSTALLATION METHOD: Gravity Fall



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
812.22	2.8	TOP OF ROYER CAP
811.34	1.9	TOP OF RISER PIPE
812.10	2.7	TOP OF STEEL 6" CASING
809.4	0.0	GROUND SURFACE
764.21	47.13	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
806.4	3.0	TOP OF SEAL
740.6	68.8	BOTTOM OF STEEL 6" CASING
739.9	69.5	TOP OF SANDPACK
736.2	73.2	TOP OF SCREEN
731.4	78.0	BOTTOM OF SCREEN
731.0	78.4	BOTTOM OF WELL
728.9	80.5	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**:	steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:	
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10.0
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	NA
RISER PIPE LENGTH (ft)	75.15
BOTTOM OF SCREEN TO END CAP (ft)	0.33
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.82
TOTAL LENGTH OF CASING (ft)	80.30
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Zion Landfill
Monitoring Well As Built Diagram
B129

evation above
ean Sea Level

p of PVC Casing : 811.76

ound Surface : 808.9

op of annular seal : 804.9

ottom of Protective
asing : 804.4

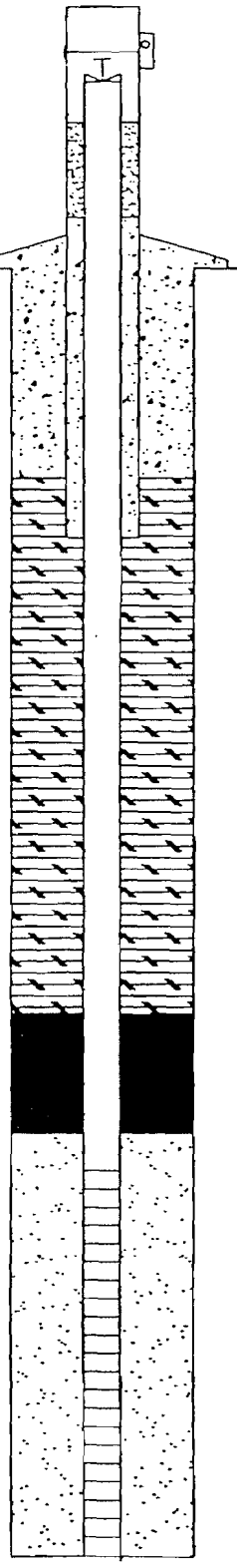
op of Primary Seal: 656.24

op of Sand Pack: 652.9

op of Screen : 649.65

n of Screen: 644.65

Total Depth : 644.65



Top of PVC Casing : 2.86'

Ground Surface: 0.0'

Top of annular seal : 4.0'

Bottom of Protective Casing : 4.5'

Top of Primary Seal: 152.66'

Top of Sand Pack: 156'

Top of Screen :
159.25'

Bottom of Screen:
164.25'

Total Depth : 164.25'

Top of PVC Casing : 811.76'

Northing: 11610.69

Easting: 9374.49

Ground Surface: 808.9'

Type of Surface Seal:
Concrete

Type of Annular Seal:
Wyo-Ben, Inc.
Grout-Well NSF

Riser Material : Type 316 Stainless from 159.25' to 99.25' and Schedule 40 PVC from 99.25' to 2.5'

Centralizer (s): yes/(no)

Riser Diameter: 2 inches

Type of Primary Seal:
Hydrated Pure Gold
Medium Chips

Type of Secondary Sand Pack:
None necessary, see primary seal

Type of Primary Sand Pack:
Redflint Sand & Gravel #30
Certified by UL Inc. Standard
ANSI/NSF 61-(2/92)

Screen Slot Size: U.S. Filter
Johnson Screens 10 Slot Type
304 Stainless with Integrated
Cap

Herst & Associates, Inc.

Illinois Environmental Protection Agency - Well Completion Report

SITE # 0978020002 COUNTY: Lake WELL # B129 BOREHOLE # B129

SITE NAME: Zion Landfill WELL POSITION - UPGRAD, DNGRAD, UNKN (CIRCLE ONE)

STATE PLANE COORDINATE: X 9374.49 Y 11610.69 (or) LATITUDE ____ LONGITUDE ____

SURVEYED BY: Carl Bergquist ILL REGISTRATION # 2342

DRILLING CONTRACTOR: Layne Northwest DRILLER: Doug Jones

GEOLOGIST: Elizabeth Reed FIRM: Herst & Associates, Inc.

DRILLING METHOD: Air Rotary DRILLING FLUID (TYPE): Water

DATE STARTED: 4/26/00 DATE FINISHED: 4/26/00

REPORT FORM COMPLETED BY: Elizabeth Reed DATE: 9/28/00

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Wyo-Ben Grout-Well NSF

TYPE OF ANNULAR SEALANT: Wyo-Ben Grout-Well NSF

INSTALLATION METHOD: Tremie

SETTING TIME: 24 hours

TYPE OF BENTONITE SEAL - GRANULAR (PELLET) SLURRY (CIRCLE ONE)

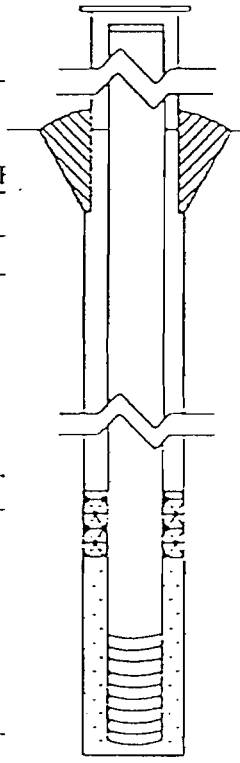
INSTALLATION METHOD: Gravity

SETTING TIME: 30 minutes

TYPE OF SAND PACK: Redflint Sand & Gravel

GRAIN SIZE: 30 (SIEVE SIZE)

INSTALLATION METHOD: Gravity



ELEVATIONS (MSL) *	DEPTHS (BGS)	(.01 ft)
N/A	N/A	TOP OF PROTECTIVE CASING
811.76	2.86	TOP OF RISER PIPE
808.9	0	GROUND SURFACE
804.9	4.0	TOP OF ANNULAR SEALANT
662.76	149	DEPTH TO WATER
656.24	152.66	TOP OF SEAL
652.9	156	TOP OF SANDPACK
649.65	159.25	TOP OF SCREEN
644.65	164.25	BOTTOM OF SCREEN
644.65	164.25	BOTTOM OF WELL
644.65	164.25	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

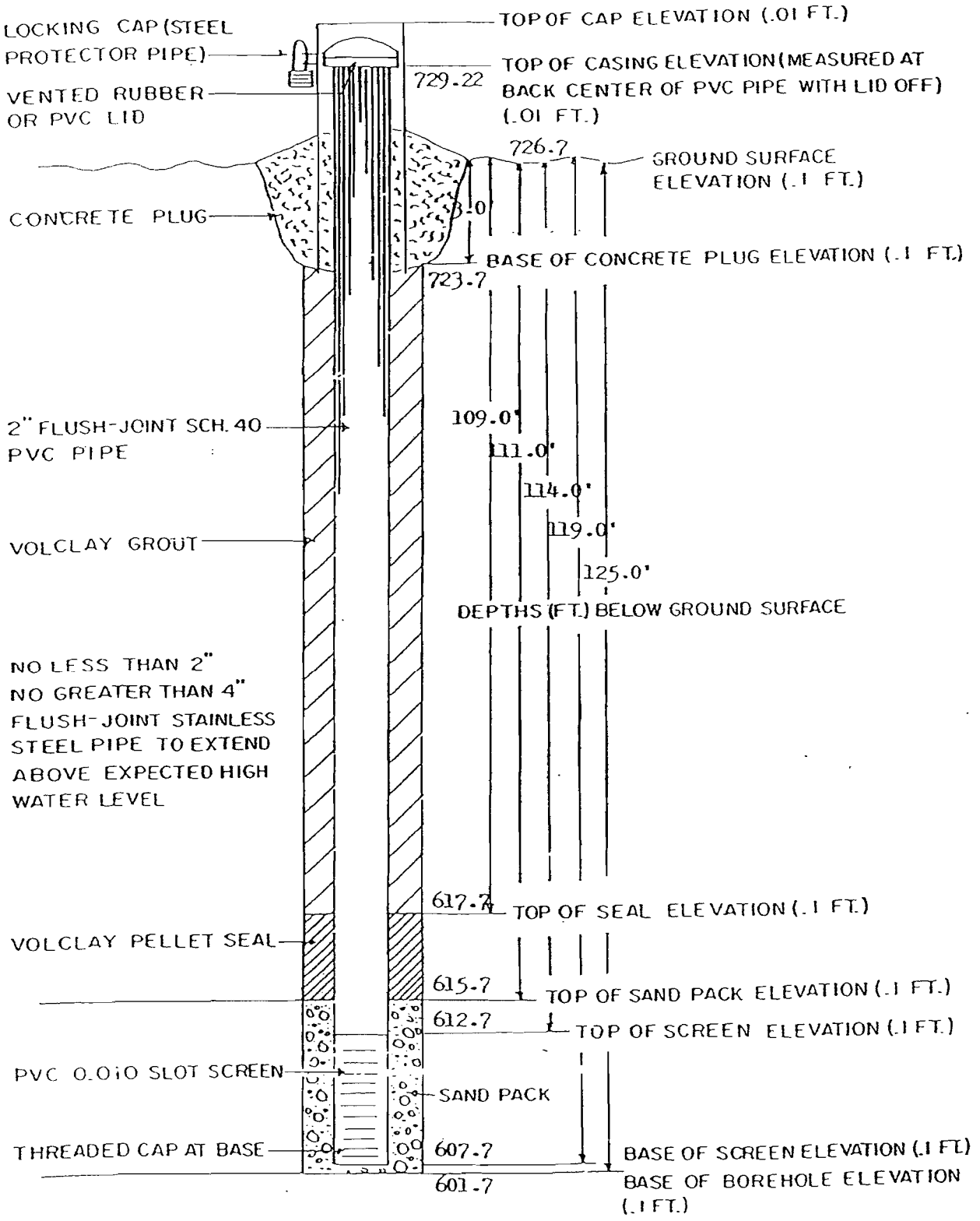
PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR (OTHER:)
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:
RISER PIPE BELOW W.T.	(SS304) SS316, PTFE, PVC OR OTHER:
SCREEN	(SS304) SS316, PTFE, PVC OR OTHER:

MEASUREMENTS

DIAMETER OF BOREHOLE (in)	6
ID OF RISER PIPE (in)	2
PROTECTIVE CASING LENGTH (ft)	7
RISER PIPE LENGTH (ft)	162.11
BOTTOM OF SCREEN TO END CAP (ft)	0.08
SCREEN LENGTH (1st slot to last slot)	5
TOTAL LENGTH OF CASING (ft)	167.11
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

WELL NO. BP-1 WELL COORDINATES 13,931.83N 8476.97E

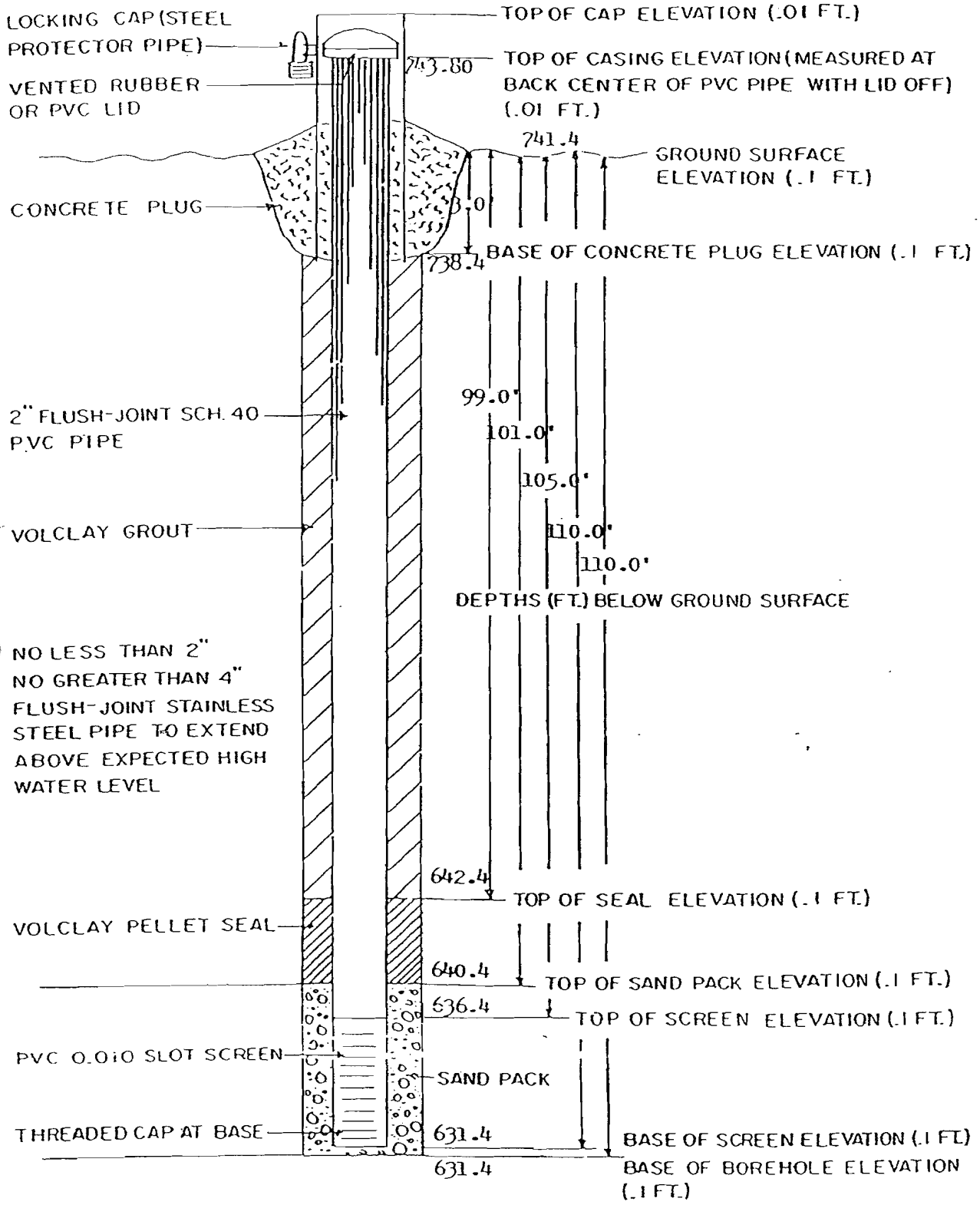


PIEZOMETER CONSTRUCTION DETAIL

NO SCALE

RLJ

WELL NO. BP-2 WELL COORDINATES 13,923.78N 9682.59E

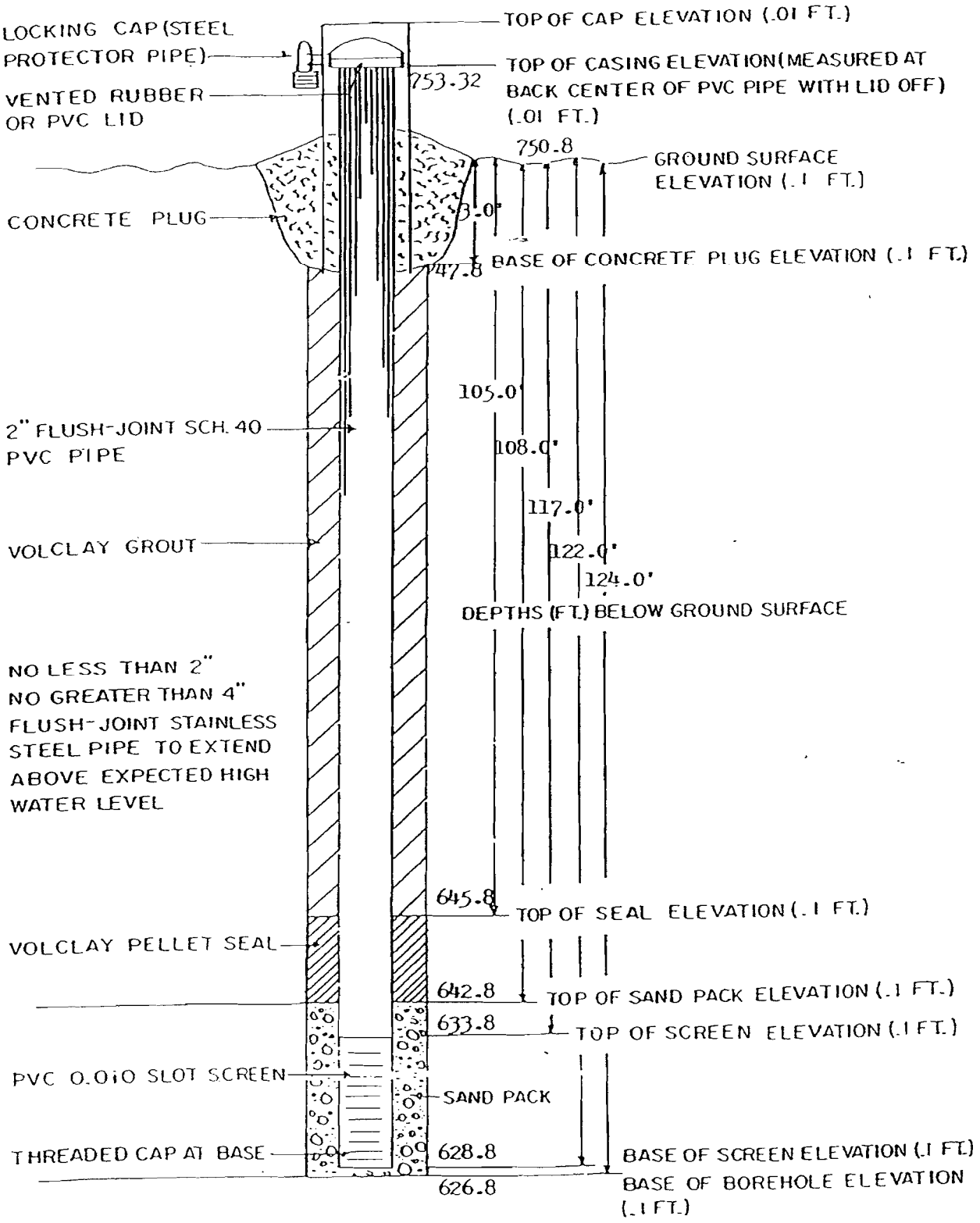


PIEZOMETER CONSTRUCTION DETAIL

NO SCALE

RLJ

WELL NO. BP-3 WELL COORDINATES 12,625.34N 9687.90E

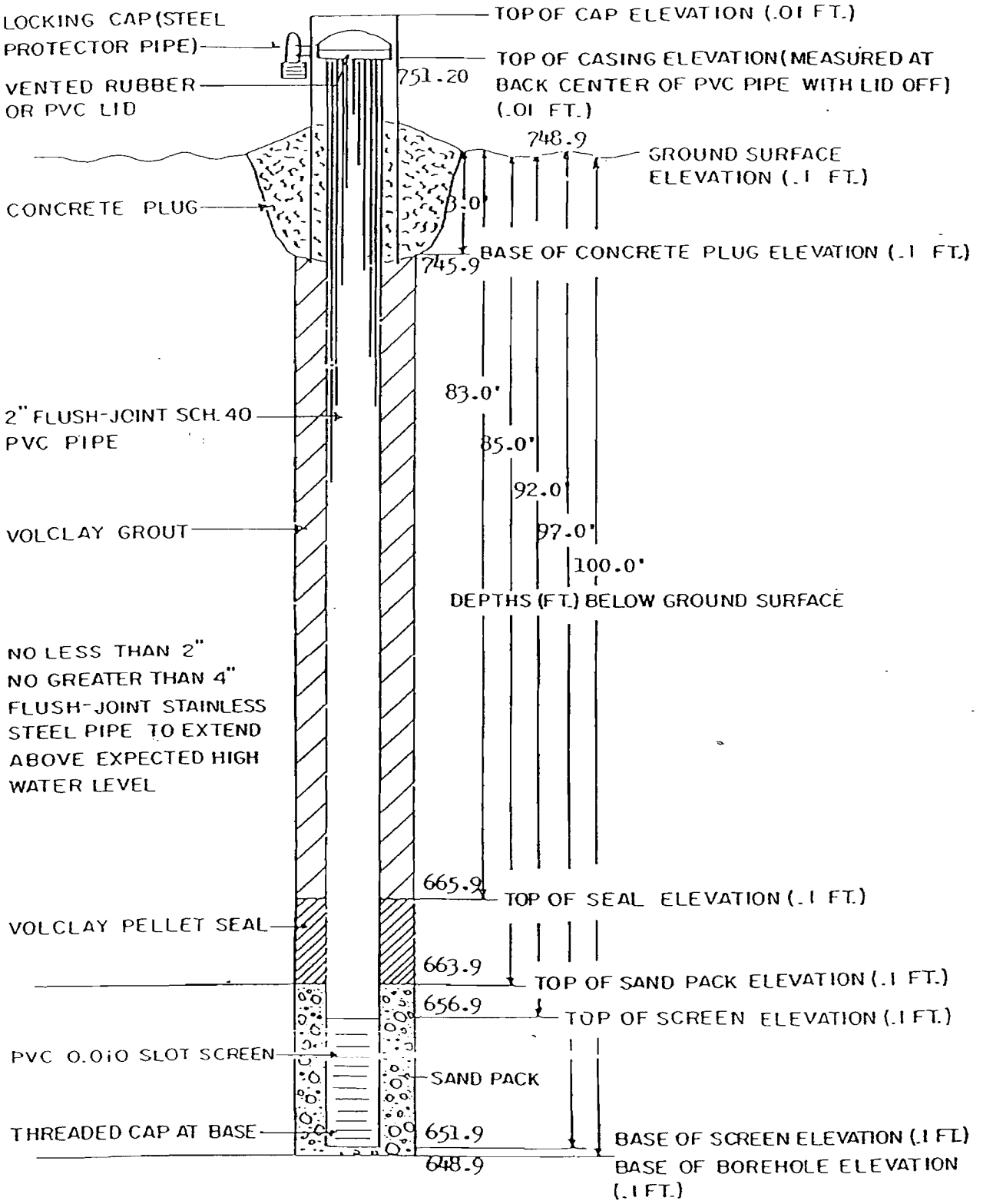


PIEZOMETER CONSTRUCTION DETAIL

NO SCALE

RLJ

WELL NO. BP-4 WELL COORDINATES 13,081.97N 8138.38E

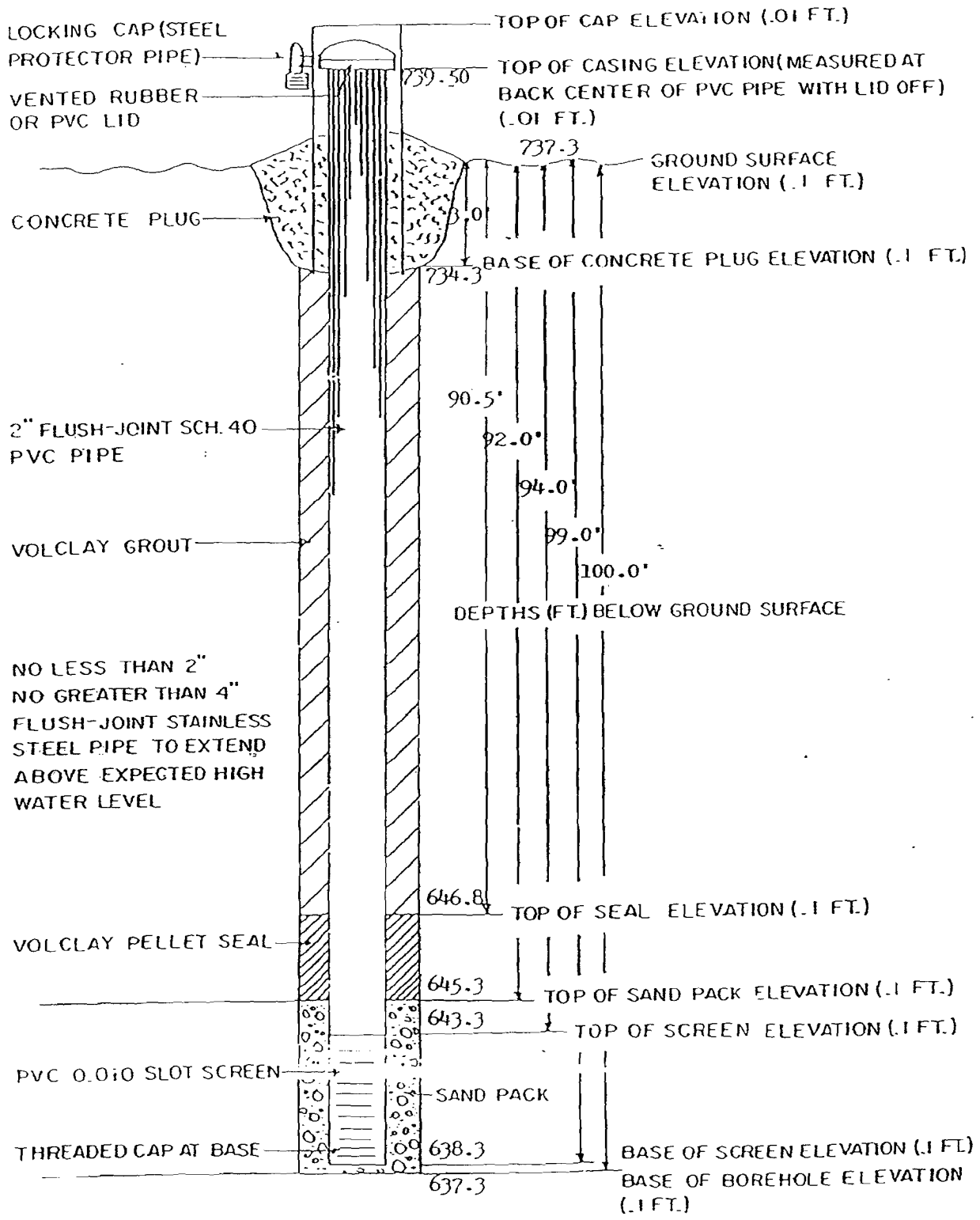


PIEZOMETER CONSTRUCTION DETAIL

NO SCALE

RLJ

WELL NO. BP-5 WELL COORDINATES 13,072.18N 7618.68E



PIEZOMETER CONSTRUCTION DETAIL

NO SCALE

RL J

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020001 & 0978020002 COUNTY: Lake WELL #: C129

SITE NAME: Zion Site 1 Phase A and Zion Site 2 Landfills BOREHOLE #: C129

NORTHING 11,606.4 EASTING 9,374.0 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. RD-n-P Drilling, Inc. DRILLER: Paul Eger

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Brian McQueen

DRILLING METHOD: 6" and 10" Wash/Mud Rotary DRILLING FLUIDS (TYPE): Clean Water/Bentonite

LOGGED BY: Brian McQueen DATE STARTED: 07/13/05 DATE FINISHED: 09/01/05

REPORT FORM COMPLETED BY: Joe Miller DATE: 10/20/05

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Cement/Bentonite

TYPE OF ANNULAR SEALANT: Not Applicable

INSTALLATION METHOD: Not Applicable

SETTING TIME: Not Applicable

TYPE BENTONITE SEAL- GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

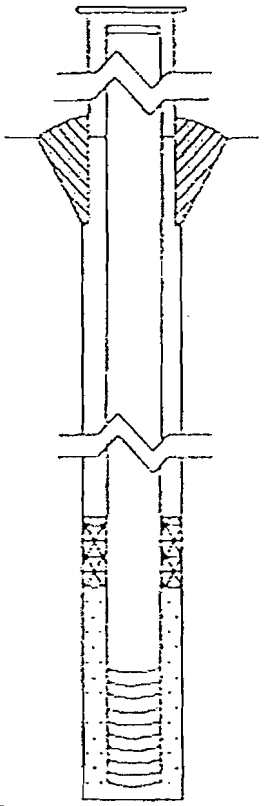
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA (IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (.01 ft) (BGS)	
813.27	3.2	TOP OF PROTECTIVE CASING
812.66	2.6	TOP OF RISER PIPE
810.1	0.0	GROUND SURFACE
NA	NA	TOP OF ANNULAR SEALANT
657.26	155.40	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
807.1	3.0	TOP OF SEAL
665.1	145.0	BOTTOM OF SECONDARY STEEL CASING
654.1	156.0	TOP OF SANDPACK
649.6	160.5	TOP OF SCREEN
644.9	165.2	BOTTOM OF SCREEN
644.4	165.7	BOTTOM OF WELL
644.1	166.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	6 & 10
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	163.09
BOTTOM OF SCREEN TO END CAP (ft)	0.46
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.70
TOTAL LENGTH OF CASING (ft)	168.25
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020001 COUNTY: Lake WELL #: **CPT01**

SITE NAME: Zion Site 1 Phase B Landfill BOREHOLE #: **CPT01**

NORTHING 10,890.4 EASTING 8,114.1 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. Stratigraphics, Inc. DRILLER: Andrew Strutynsky

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Kristen Schneider

DRILLING METHOD: Cone Penetrometer DRILLING FLUIDS (TYPE): None

LOGGED BY: Kristen Schneider DATE STARTED: 07/02/03 DATE FINISHED: 07/10/03

REPORT FORM COMPLETED BY: Joe Miller DATE: 09/02/03

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Bentonite Grout

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

TYPE BENTONITE SEAL- **GRANULAR**, PELLET, SLURRY

(CIRCLE ONE)

INSTALLATION METHOD: Pre-Packed

SETTING TIME: > 24 hrs

TYPE OF SAND PACK: Filter Fabric

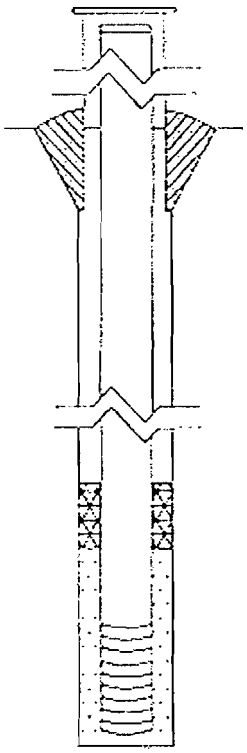
GRAIN SIZE: NA (SIEVE SIZE)

INSTALLATION METHOD: NA

TYPE OF BACKFILL MATERIAL: Slough

(IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (.01 ft) (BGS)	
741.40	1.1	TOP OF PROTECTIVE CASING
740.90	0.6	TOP OF RISER PIPE
740.3	0.0	GROUND SURFACE
739.3	1.0	TOP OF ANNULAR SEALANT
732.33	8.57	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
723.5	16.8	TOP OF SEAL
722.5	17.8	TOP OF SANDPACK
722.5	17.8	TOP OF SCREEN
717.8	22.5	BOTTOM OF SCREEN
717.7	22.6	BOTTOM OF WELL
* 713.3	27.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**:	Steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:	
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	1.75
ID OF RISER PIPE (in)	0.75
PROTECTIVE CASING LENGTH (ft)	2.0
RISER PIPE LENGTH (ft)	18.44
BOTTOM OF SCREEN TO END CAP (ft)	0.07
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.70
TOTAL LENGTH OF CASING (ft)	23.21
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020001 COUNTY: Lake WELL #: **CPT02**

SITE NAME: Zion Site 1 Phase B Landfill BOREHOLE: **CPT02**

NORTHING 10,871.3 EASTING 8,090.3 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. Stratigraphics, Inc. DRILLER: Andrew Strutynsky

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Kristen Schneider

DRILLING METHOD: Cone Penetrometer DRILLING FLUIDS (TYPE): None

LOGGED BY: Kristen Schneider DATE STARTED: 07/02/03 DATE FINISHED: 07/10/03

REPORT FORM COMPLETED BY: Joe Miller DATE: 09/02/03

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Bentonite Grout

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

TYPE BENTONITE SEAL- **GRANULAR**, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Pre-Packed

SETTING TIME: > 24 hrs

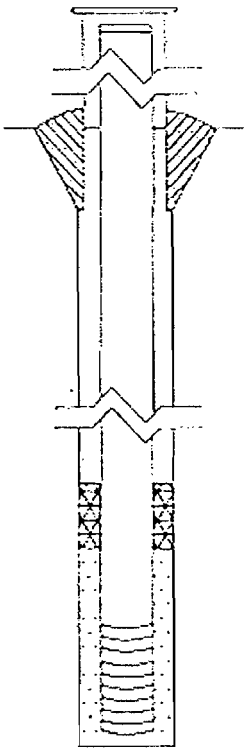
TYPE OF SAND PACK: Filter Fabric

GRAIN SIZE: NA (SIEVE SIZE)

INSTALLATION METHOD: NA

TYPE OF BACKFILL MATERIAL: Slough (IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (.01 ft) (BGS)	
740.45	1.1	TOP OF PROTECTIVE CASING
739.95	0.6	TOP OF RISER PIPE
739.4	0.0	GROUND SURFACE
738.4	1.0	TOP OF ANNULAR SEALANT
726.97	12.98	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
699.0	40.4	TOP OF SEAL
698.0	41.4	TOP OF SANDPACK
698.0	41.4	TOP OF SCREEN
693.3	46.1	BOTTOM OF SCREEN
693.2	46.2	BOTTOM OF WELL
* 684.0	55.4	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**:	Steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:	
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	1.75
ID OF RISER PIPE (in)	0.75
PROTECTIVE CASING LENGTH (ft)	2.0
RISER PIPE LENGTH (ft)	41.94
BOTTOM OF SCREEN TO END CAP (ft)	0.05
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.74
TOTAL LENGTH OF CASING (ft)	46.73
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020001 COUNTY: Lake WELL #: **CPT03**

SITE NAME: Zion Site 1 Phase B Landfill BOREHOLE #: **CPT03**

NORTHING 10,960.2 EASTING 8,135.6 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. Stratigraphics, Inc. DRILLER: Andrew Strutynsky

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Kristen Schneider

DRILLING METHOD: Cone Penetrometer DRILLING FLUIDS (TYPE): None

LOGGED BY: Kristen Schneider DATE STARTED: 07/03/03 DATE FINISHED: 07/10/03

REPORT FORM COMPLETED BY: Joe Miller DATE: 09/02/03

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Bentonite Grout

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

TYPE BENTONITE SEAL- **GRANULAR**, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Pre-Packed

SETTING TIME: > 24 hrs

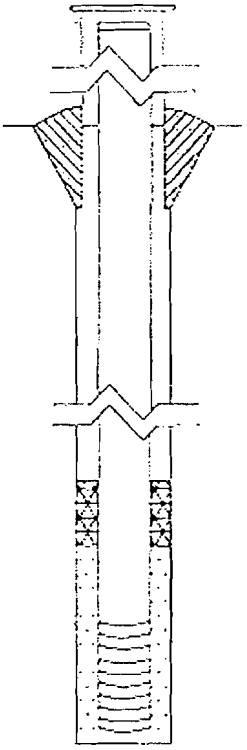
TYPE OF SAND PACK: Filter Fabric

GRAIN SIZE: NA (SIEVE SIZE)

INSTALLATION METHOD: NA

TYPE OF BACKFILL MATERIAL: Slough (IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (.01 ft) (BGS)	
742.20	1.1	TOP OF PROTECTIVE CASING
741.70	0.6	TOP OF RISER PIPE
741.1	0.0	GROUND SURFACE
740.1	1.0	TOP OF ANNULAR SEALANT
736.68	5.02	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
701.7	39.4	TOP OF SEAL
700.7	40.4	TOP OF SANDPACK
700.7	40.4	TOP OF SCREEN
696.0	45.1	BOTTOM OF SCREEN
696.0	45.2	BOTTOM OF WELL
* 684.5	56.6	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**:	Steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:	
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	1.75
ID OF RISER PIPE (in)	0.75
PROTECTIVE CASING LENGTH (ft)	2.0
RISER PIPE LENGTH (ft)	40.97
BOTTOM OF SCREEN TO END CAP (ft)	0.09
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.69
TOTAL LENGTH OF CASING (ft)	45.75
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020001 COUNTY: Lake WELL #: **CPT08**

SITE NAME: Zion Site 1 Phase B Landfill BOREHOLE #: **CPT08**

NORTHING 10,819.6 EASTING 8,113.7 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. Stratigraphics, Inc. DRILLER: Andrew Strutynsky

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Kristen Schneider

DRILLING METHOD: Cone Penetrometer DRILLING FLUIDS (TYPE): None

LOGGED BY: Kristen Schneider DATE STARTED: 07/03/03 DATE FINISHED: 07/10/03

REPORT FORM COMPLETED BY: Joe Miller DATE: 09/02/03

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Bentonite Grout

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

TYPE BENTONITE SEAL- **GRANULAR**, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Pre-Packed

SETTING TIME: > 24 hrs

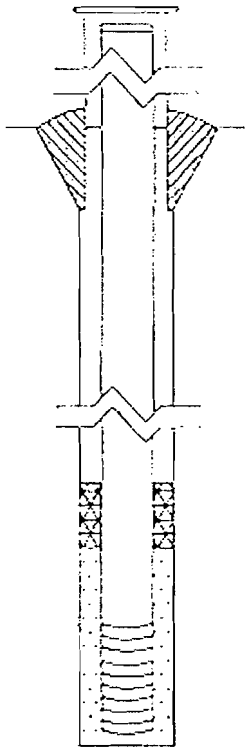
TYPE OF SAND PACK: Filter Fabric

GRAIN SIZE: NA (SIEVE SIZE)

INSTALLATION METHOD: NA

TYPE OF BACKFILL MATERIAL: Slough (IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (.01 ft) (BGS)	
739.10	1.1	TOP OF PROTECTIVE CASING
738.60	0.6	TOP OF RISER PIPE
738.0	0.0	GROUND SURFACE
737.0	1.0	TOP OF ANNULAR SEALANT
729.67	8.93	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
691.7	46.3	TOP OF SEAL
690.7	47.3	TOP OF SANDPACK
690.7	47.3	TOP OF SCREEN
686.0	52.0	BOTTOM OF SCREEN
685.9	52.1	BOTTOM OF WELL
* 684.0	54.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**:	Steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:	
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:	

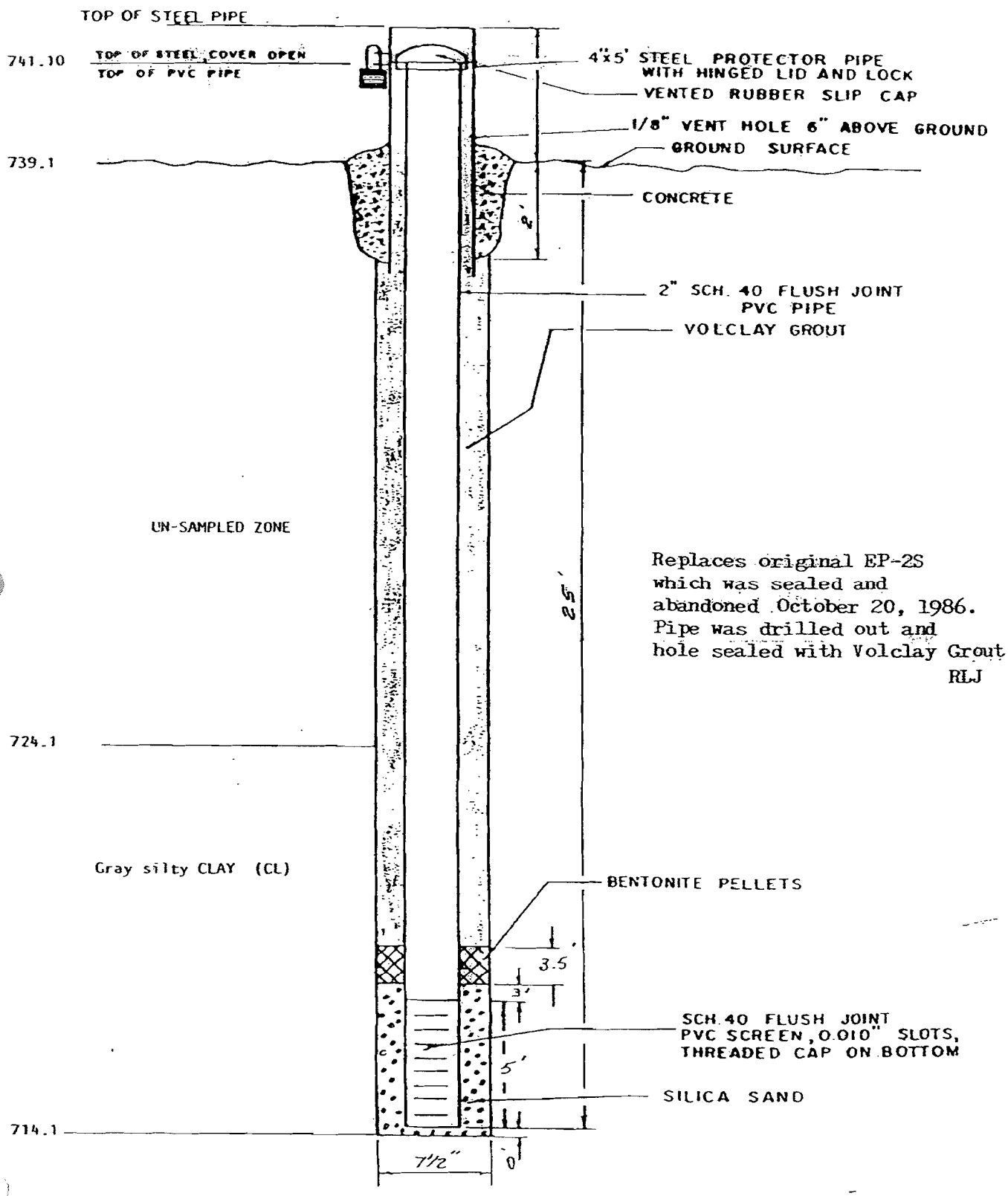
CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	1.75
ID OF RISER PIPE (in)	0.75
PROTECTIVE CASING LENGTH (ft)	2.0
RISER PIPE LENGTH (ft)	47.94
BOTTOM OF SCREEN TO END CAP (ft)	0.09
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.70
TOTAL LENGTH OF CASING (ft)	52.73
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

GROUNDWATER MONITORING WELL EP-2S R

(NOT TO SCALE)



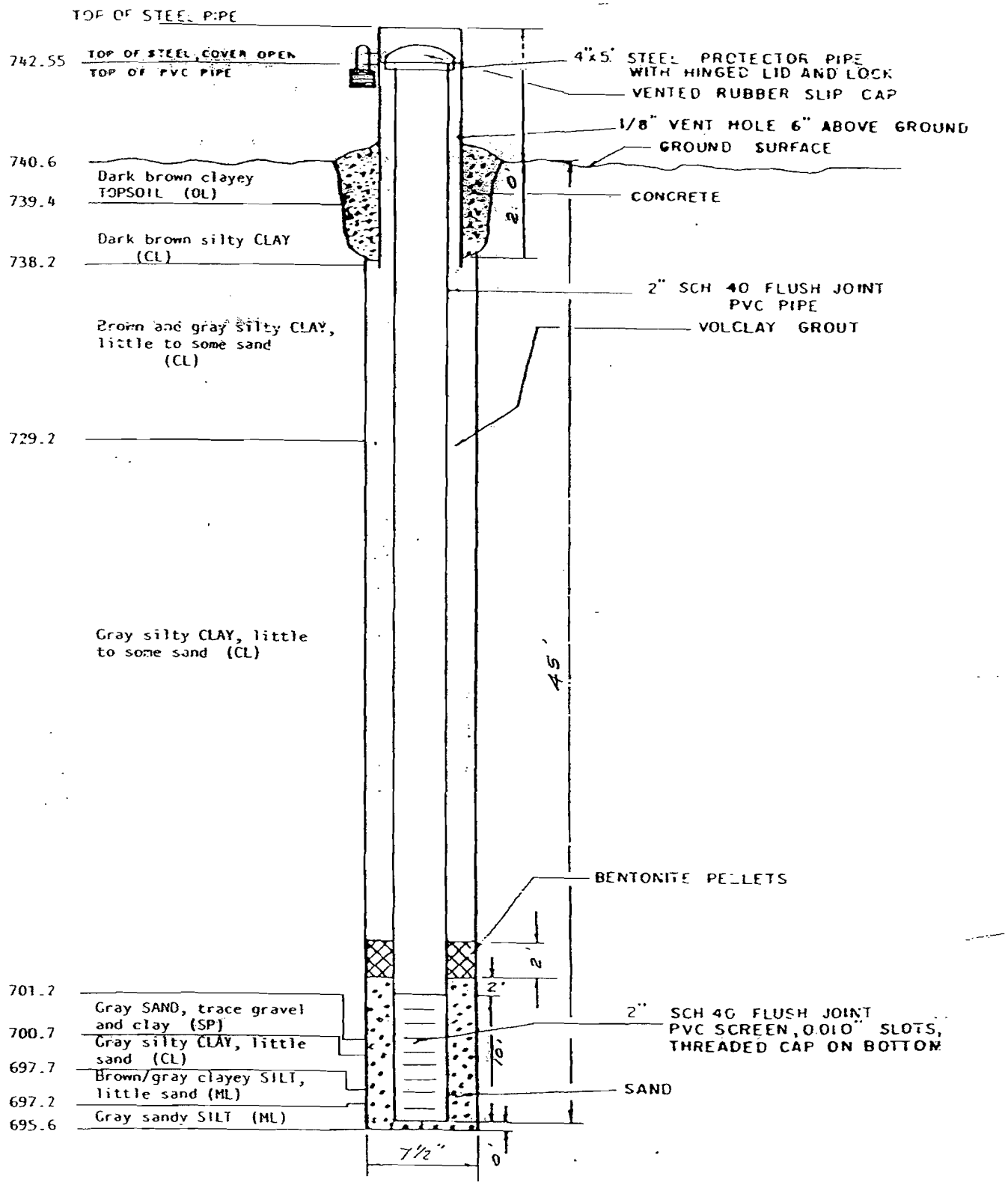
Replaces original EP-2S which was sealed and abandoned October 20, 1986. Pipe was drilled out and hole sealed with Volclay Grout.
RLJ

GROUNDWATER DATA	12-3-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	52
CONDUCTIVITY (UMHOS)	1013
PH	8.2

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 16, 1986 L-23390

GROUNDWATER MONITORING WELL EP-2I

(NOT TO SCALE)

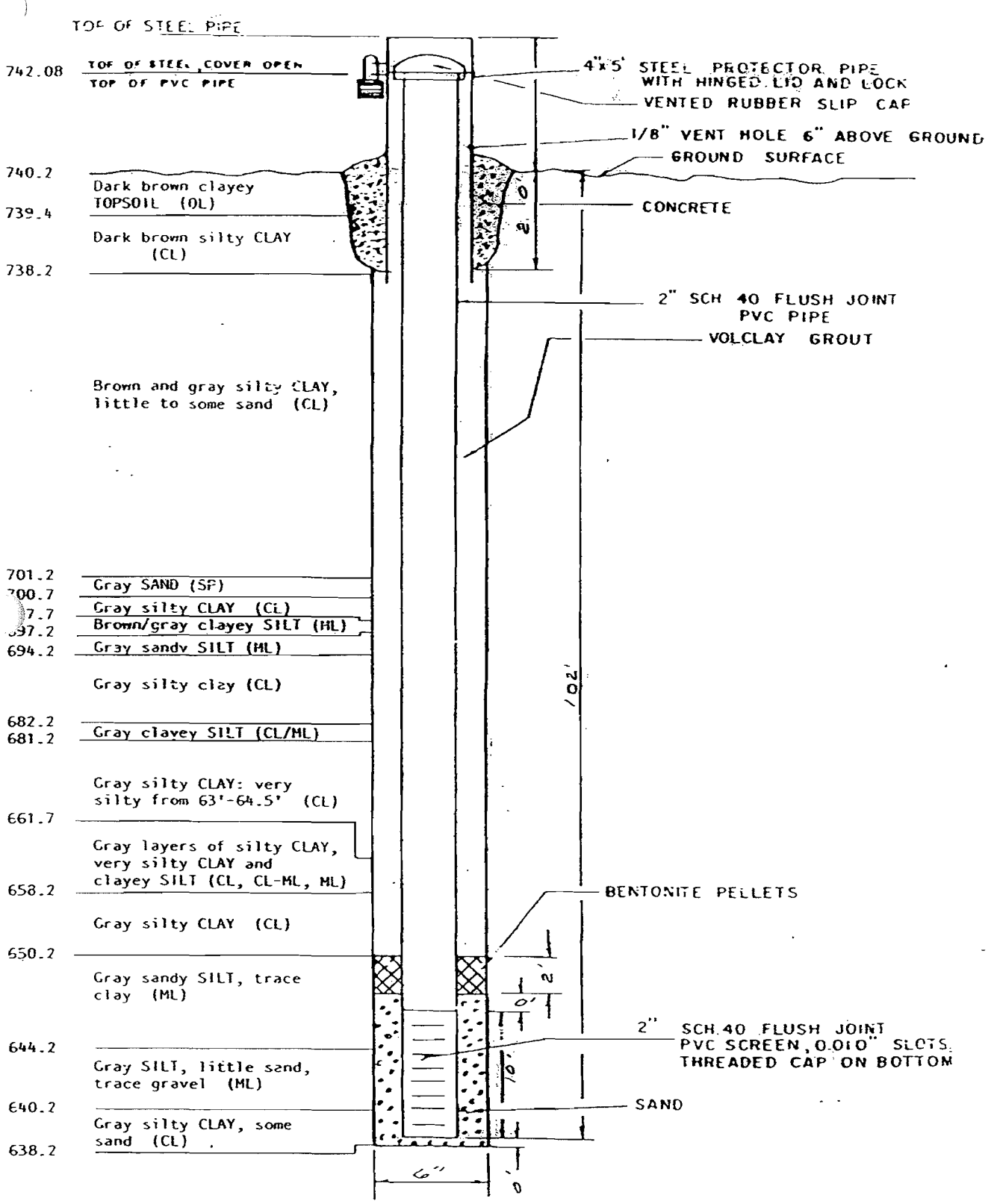


GROUNDWATER DATA	12-9-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (DF)	51
CONDUCTIVITY (UMHOS)	1011
PH	7.6

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 19 1986 L-22,459

GROUNDWATER MONITORING WELL EP-2D

(NOT TO SCALE)



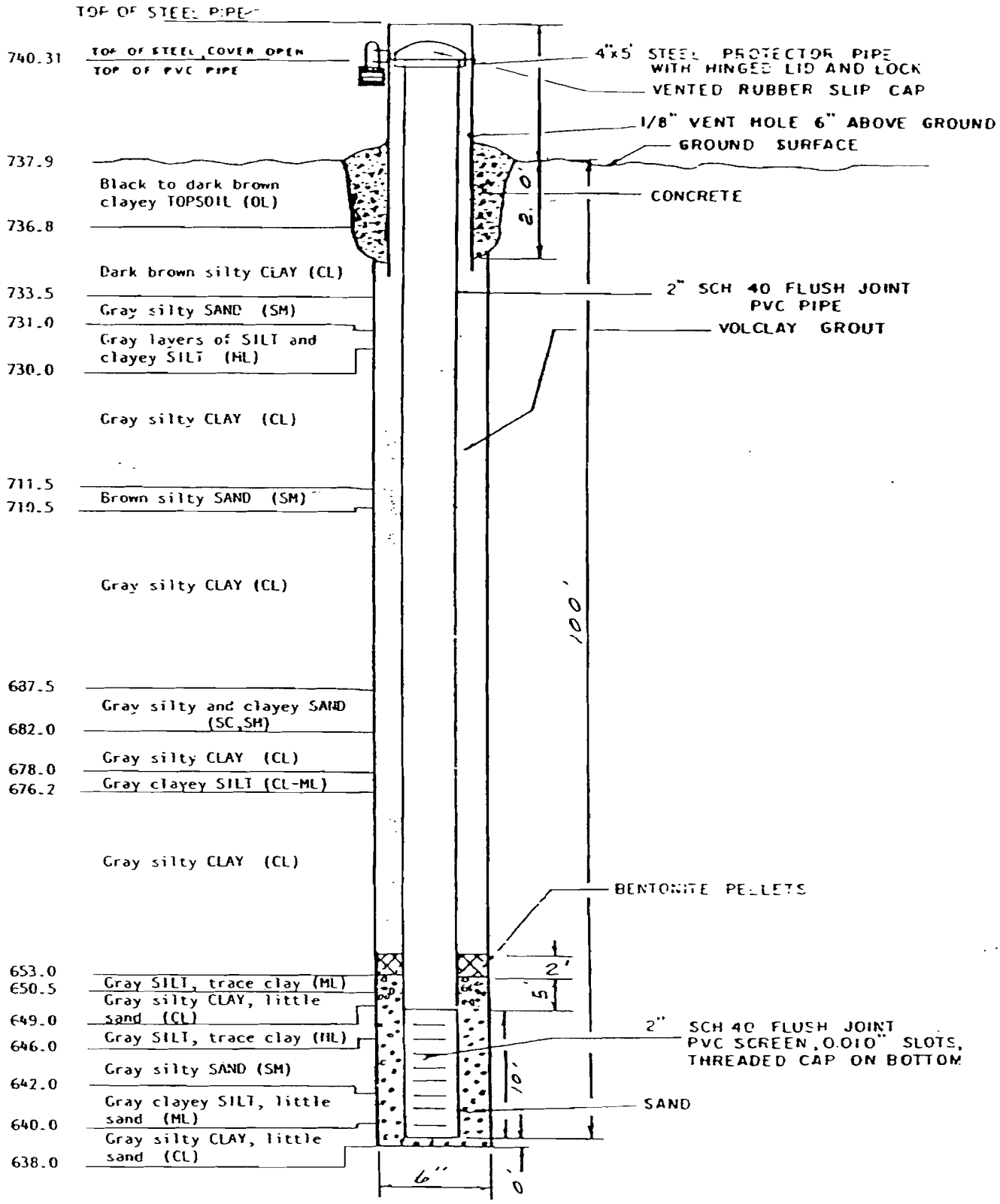
GROUNDWATER DATA	11-21-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	51
CONDUCTIVITY (UMHOS)	400
PH	8.5

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DECEMBER 19 1986 L-22,459

GROUNDWATER MONITORING WELL EP-6D

(NOT TO SCALE)

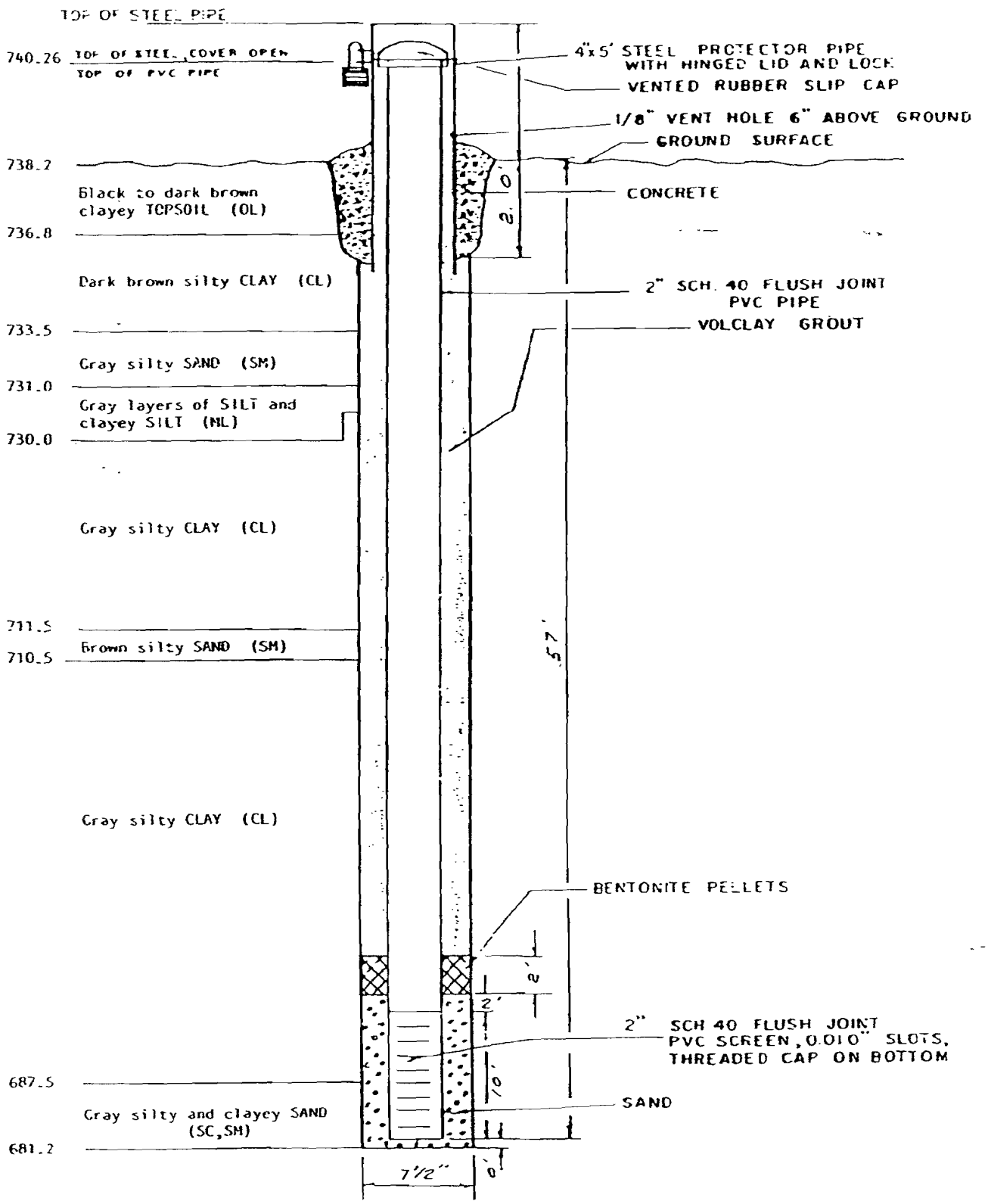


GROUNDWATER DATA	12-2-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	50
CONDUCTIVITY (UMHOS)	448
PH	8.7

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 19 1986 L-22,459

GROUNDWATER MONITORING WELL EP-6 I

(NOT TO SCALE)

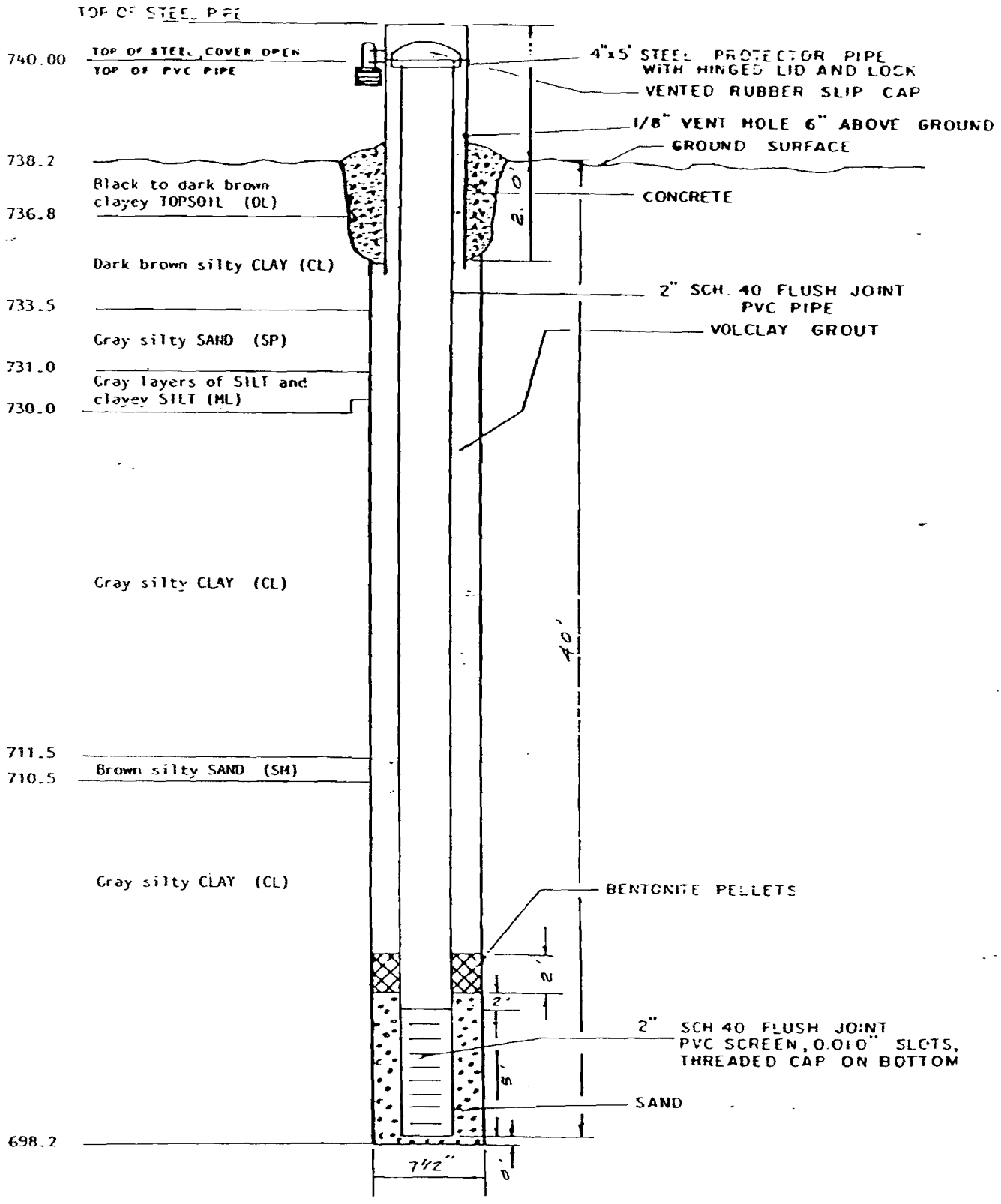


GROUNDWATER DATA	12-3-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	--
CONDUCTIVITY (UMHOS)	767
Ph	8.3

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 19 1986 L-22,459

GROUNDWATER MONITORING WELL EP- 6 S

(NOT TO SCALE)

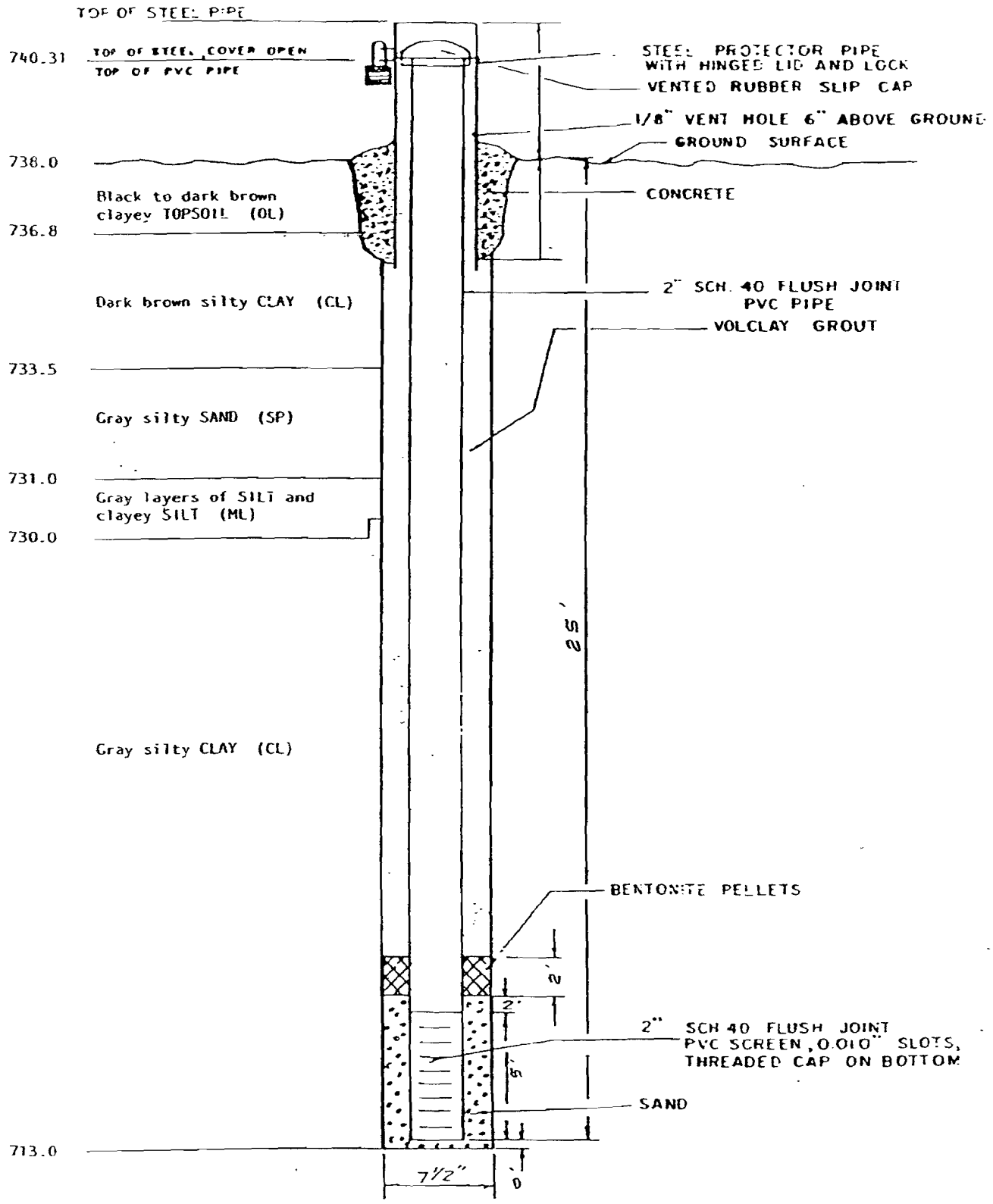


GROUNDWATER DATA	11-28-86
STATIC WATER LEVEL ELEV	--
TEMPERATURE (°F)	46
CONDUCTIVITY (UMHOS)	683
PH	8.4

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 19, 1986 L-22,459

GROUNDWATER MONITORING WELL EP-6 SS

(NOT TO SCALE)



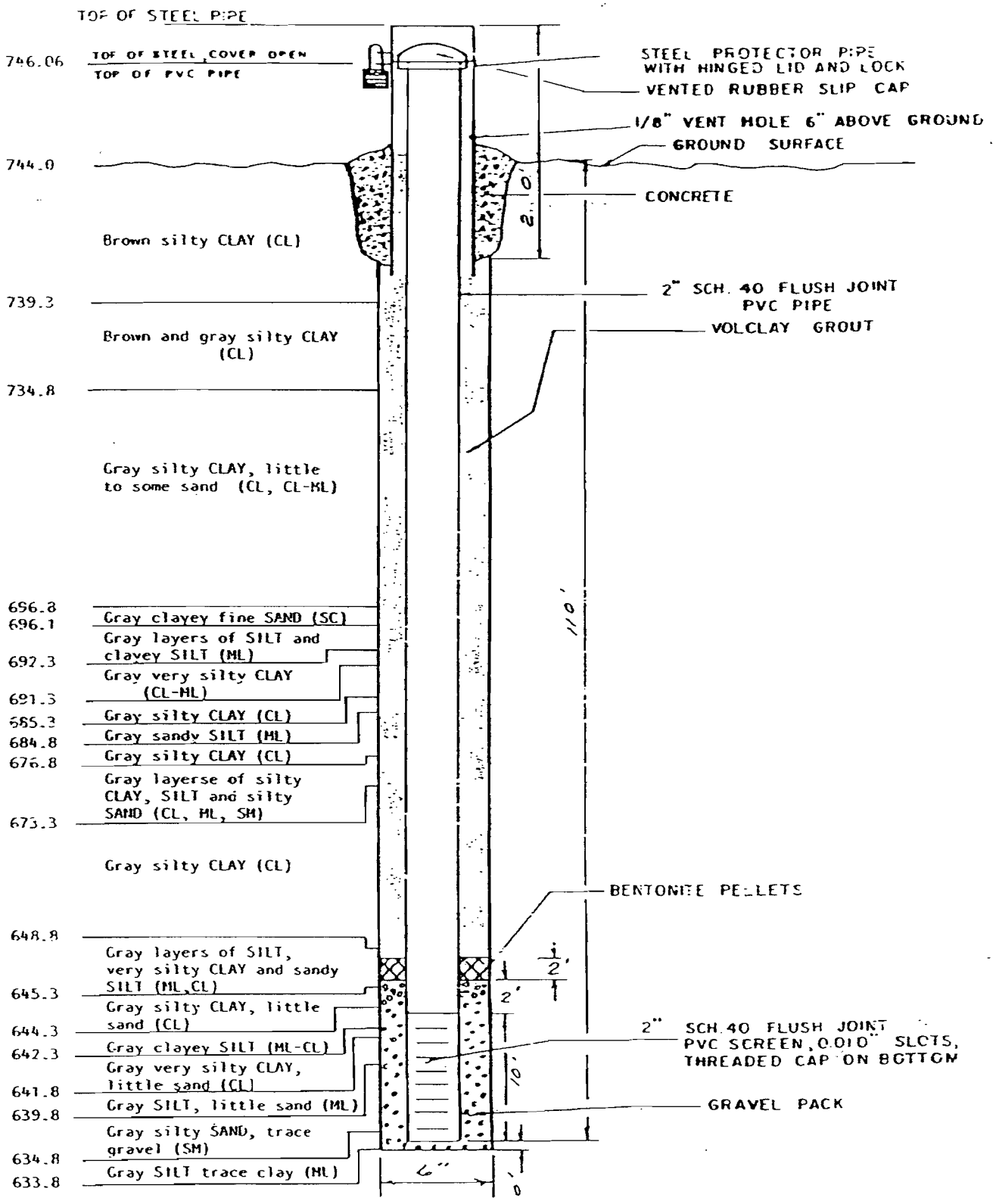
GROUNDWATER DATA	11-28-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	45
CONDUCTIVITY (UMHOS)	861
PH	7.5

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DECEMBER 19 1986 L-22,459

GROUNDWATER MONITORING WELL EP-10 D

(NOT TO SCALE)



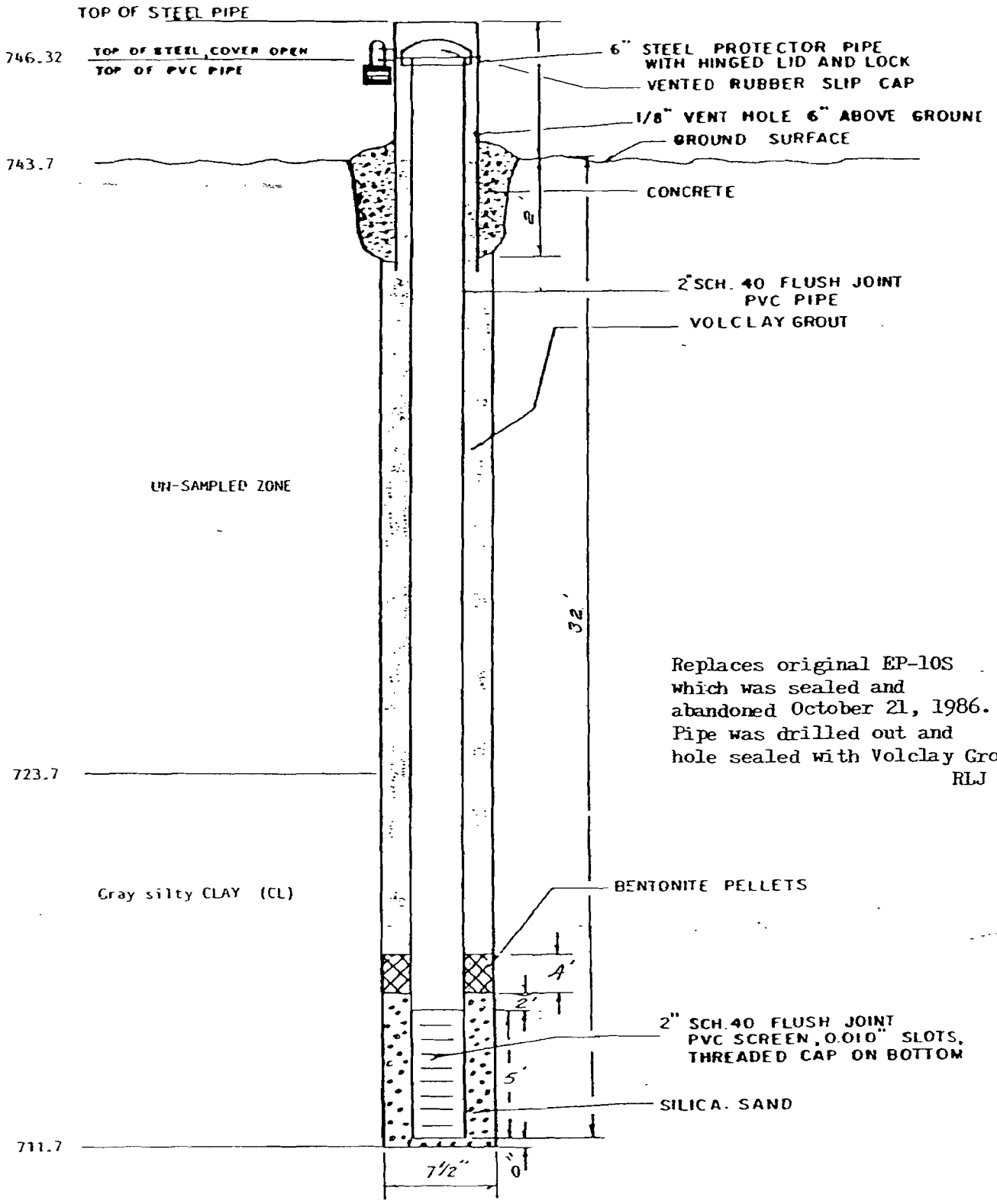
GROUNDWATER DATA	11-21-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	50
CONDUCTIVITY (UMHOS)	386
Ph	8.5

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 9 1986 L-22,459

D-45

GROUNDWATER MONITORING WELL EP-10 SR

(NOT TO SCALE)



Replaces original EP-10S which was sealed and abandoned October 21, 1986. Pipe was drilled out and hole sealed with Volclay Grout.
RLJ

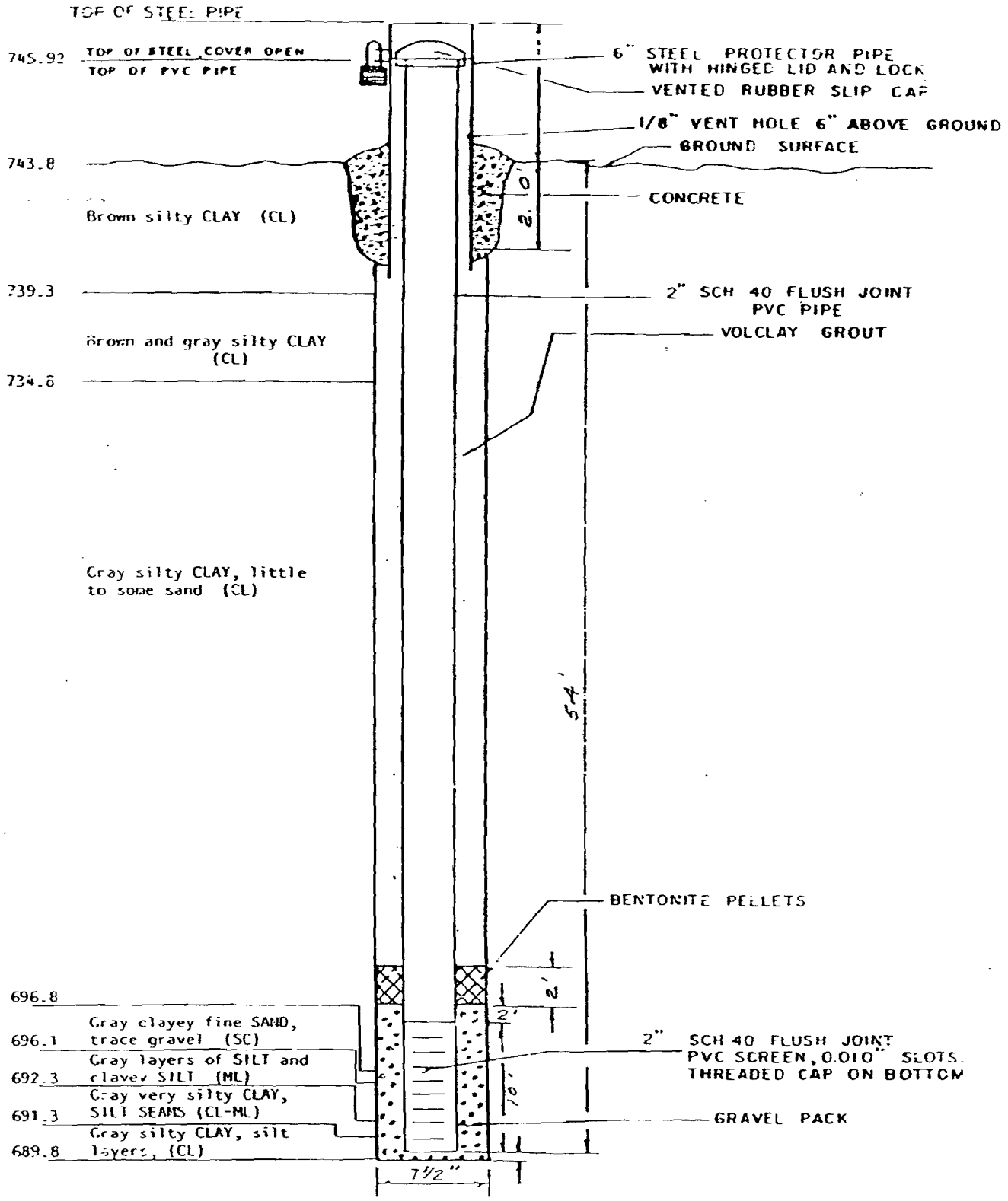
GROUNDWATER DATA 11-20-86	
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	47
CONDUCTIVITY (UMHOS)	868
PH	8.2

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DECEMBER 16, 1986 L-23,390

GROUNDWATER MONITORING WELL EP-10 I

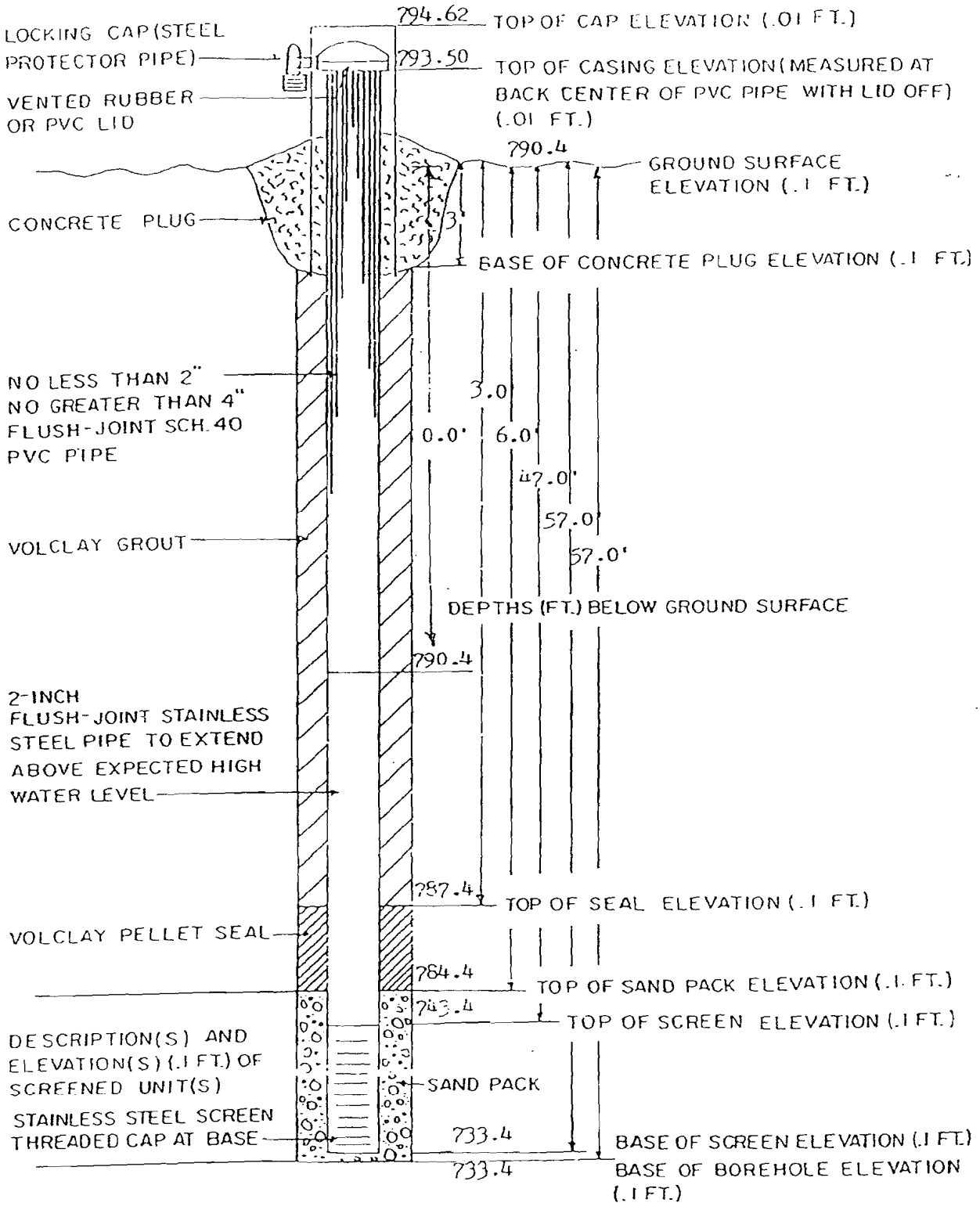
(NOT TO SCALE)



GROUNDWATER DATA	11-20-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	50
CONDUCTIVITY (UMHOS)	530
PH	8.5

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 19 1986 L-22,459

WELL NO. L101 WELL COORDINATES 12180.28N 10208.11E



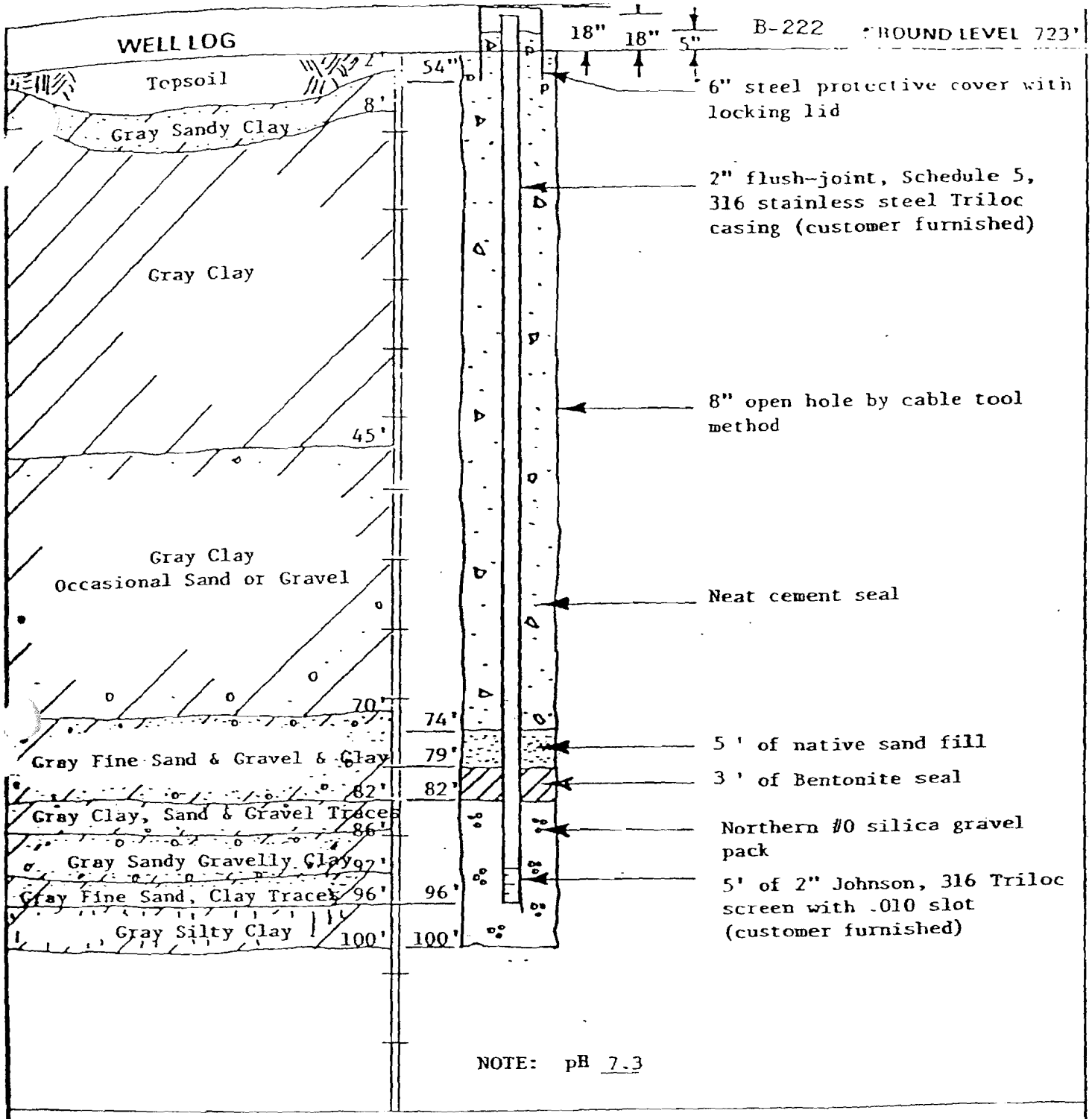
MONITORING WELL CONSTRUCTION DETAIL

NO SCALE

RLJ

WELL LOG

B-222 GROUND LEVEL 723'



NOTE: pH 7.3

City Winthrop Harbor State Illinois

Location 10539' North; 7807' East

County Lake Twp. Newport T46N-R11E Section SE¼SE¼NE¼ of 12

Test Capacity 5 GPM. Static Water Level 59 ft. Pumping Level ft.

Specific Capacity GPM/Ft. D.D.

Date Drilled September 27, 1985

Driller Mike Garrage

Job No. 5510

Well No G 121

BROWNING-FERRIS INDUSTRIES
WINTHROP HARBOR LANDFILL
WINTHROP HARBOR, ILLINOIS

PEERLESS-MIDWEST, INC.
Granger, Indiana

SURVEYS SECTION. BE SURE TO PROVIDE PRO... DETACH GEOLOGICAL/WATER ...LL LOCATION.

ILLIN... DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 8 in. Depth 124½ ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven_____. Drive Pipe Diam. _____ in. Depth _____ ft.
   c. Drilled X. Finished In Drift _____. In Rock _____.
   Tubular _____. Gravel Packed X.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Neat Cement	18"	97'
	above grade	

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast Iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes____ No X
4. Date well completed 10/9/85
5. Permanent Pump Installed? Yes___ Date _____ No____
   Manufacturer _____ Type _____ Location _____
   Capacity_____gpm. Depth of Setting _____ Ft.
6. Well Top Sealed? Yes____ No____ Type _____
7. Pitless Adapter Installed? Yes_____ No_____
   Manufacturer _____ Model Number _____
   How attached to casing? _____
8. Well Disinfected? Yes_____ No_____
9. Pump and Equipment Disinfected? Yes_____ No_____
10. Pressure Tank Size_____gal. Type _____
    Location _____
11. Water Sample Submitted? Yes_____ No_____

EMARKS:

THIS IS A REPLACEMENT MONITORING WELL.

County # 27386

DPH 4.055
/74 — KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

Browning-Ferris Industries

10. Property owner Winthrop Harbor Landfill Well No. G 123
    Address Winthrop Harbor, IL
    Driller Peerless-Midwest, Inc License No. 102-002995
11. Permit No. 118386 Date 6/14/85
12. Water from _____ (Formation)
    at depth 114 to 119 ft.
13. County Lake
    Sec. 7, 7L
    Twp. Benton
    Rge. 12E
    Elev. 760'
14. Screen: Diam. 2 in.
    Length: 5' ft. Slot .010

	X	L	

SHOW LOCATION IN SECTION PLAT
NE NW NW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
2	flush-joint, Schedule	18"	114'
	5, 316 SS Triloc	above	
		ground	

16. Size Hole below casing: 8 in.
17. Static level 98ft. below casing top which is 1½ ft. above ground level. Pumping level _____ ft. when pumping at _____ gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	10'	10'
Soft Gray Silty Clay	25'	35'
Soft Silty Clay, Some Gravel	18'	53'
Hard Gray Clay	15'	68'
Soft Gray Silty Clay, Occasional Hard Gravelly Zone	40'	108'
Gray Sandy Silty Clay	15'	123'
Hard Gray Sandy Clay	1½'	124½'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED _____ DATE 12/4/85
J. P. Osborne

B-230

GROUND LEVEL 760'

STARTED 10/3/84
FINISHED 10/5/84
PT. 1 OF 1

RECRA RESEARCH, INC. B-23

SUBSURFACE LOG

HOLE NO. G123
SURFACE ELEV. 759.9
G.W. ELEV. 658.71

PROJECT CECOS Waukegan IL
Well Installations, #4C002333

LOCATION N 12620.15
E 8895.19

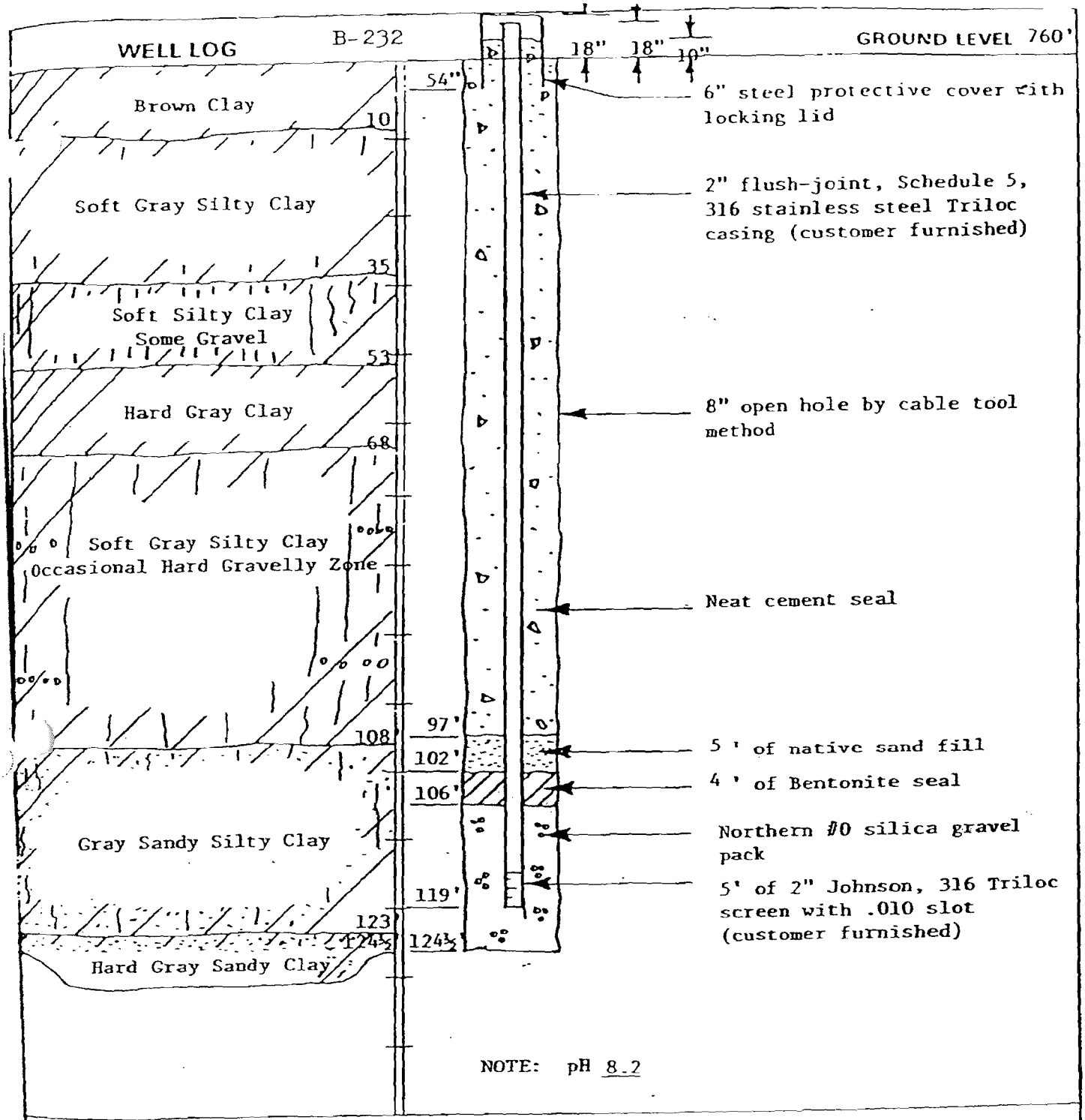
LOG WELL G123	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
							Wash boring, no samples collected for subsurface information refer to adjacent MW-3. Boring Log (Completed 1/30/84, abandoned 10/26/84)	Boring advanced from 0-60 ft. with 7 in. dia. tri-cone bit, truck mounted rotary drilling rig.
								6 in. dia. flush threaded steel casing installed to 60 ft. below grade and grouted.
								Boring advanced from 6 in. dia. casing with 3 7/8 in dia. tri-cone bit, wash boring.
							110.0'	
	SB	1	36	37	39		Saturated brownish gray SILTY-(F) SAND/CLAYEY-(F) SAND, uniformly graded, very dense, non- to slightly plastic	
	SB	2	47	46	43			
							120.0'	
								Boring completed at 120.0 ft.

3 7/8"
6"
7'

CLASSIFICATION Visual
METHOD OF INVESTIGATION See notes

WELL LOG B-232

GROUND LEVEL 760'



NOTE: pH 8.2

City Winthrop Harbor State Illinois

Location 12621' North; 8904' East

County Lake Twp. Benton T46N-R12E Section NE¼NW¼NW¼ of 7

Test Capacity 1/4 GPM. Static Water Level 98 ft. Pumping Level ft.

Specific Capacity GPM/Ft. D.D.

Date Drilled October 9, 1985

Driller John Blatz

Job No. 5510

Well No. G 123

BROWNING-FERRIS INDUSTRIES
WINTHROP HARBOR LANDFILL
WINTHROP HARBOR, ILLINOIS

PEERLESS-MIDWEST, INC.
Granger, Indiana

SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 8 in. Depth 123 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock ____.
   Tubular ____. Gravel Packed X.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Neat Cement	25" above grade	98'

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast Iron) ____
   Privy ____ Sewer (Cast Iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes ____ No X
4. Date well completed 10/22/85
5. Permanent Pump Installed? Yes ____ Date ____ No ____
   Manufacturer ____ Type ____ Location ____
   Capacity ____ gpm. Depth of Setting ____ Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No ____
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ____ No ____
9. Pump and Equipment Disinfected? Yes ____ No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

THIS IS A REPLACEMENT MONITORING WELL.

County #27386

IDPH 4063

GEOLOGICAL AND WATER SURVEYS WELL RECORD

Browning-Ferris Industries
Winthrop Harbor Landfill

10. Property owner ____ Well No. G 124
    Address Winthrop Harbor, IL
    Driller Peerless-Midwest, Inc. License No. 102-002995
11. Permit No. 118386 Date 6/14/85
12. Water from ____ (Formation) 13. County Lake
    at depth ____ to ____ ft.
14. Screen: Diam. 2" in.
    Length: 5 ft. Slot .010
    Sec. 7, 7A
    Twp. Benton
    Rge. 12E
    Elev. 763'

	X	X	

SHOW LOCATION IN SECTION PLAT
NE NW NW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
2"	flush-joint stainless steel 316, Triloc	36" above grade	118'

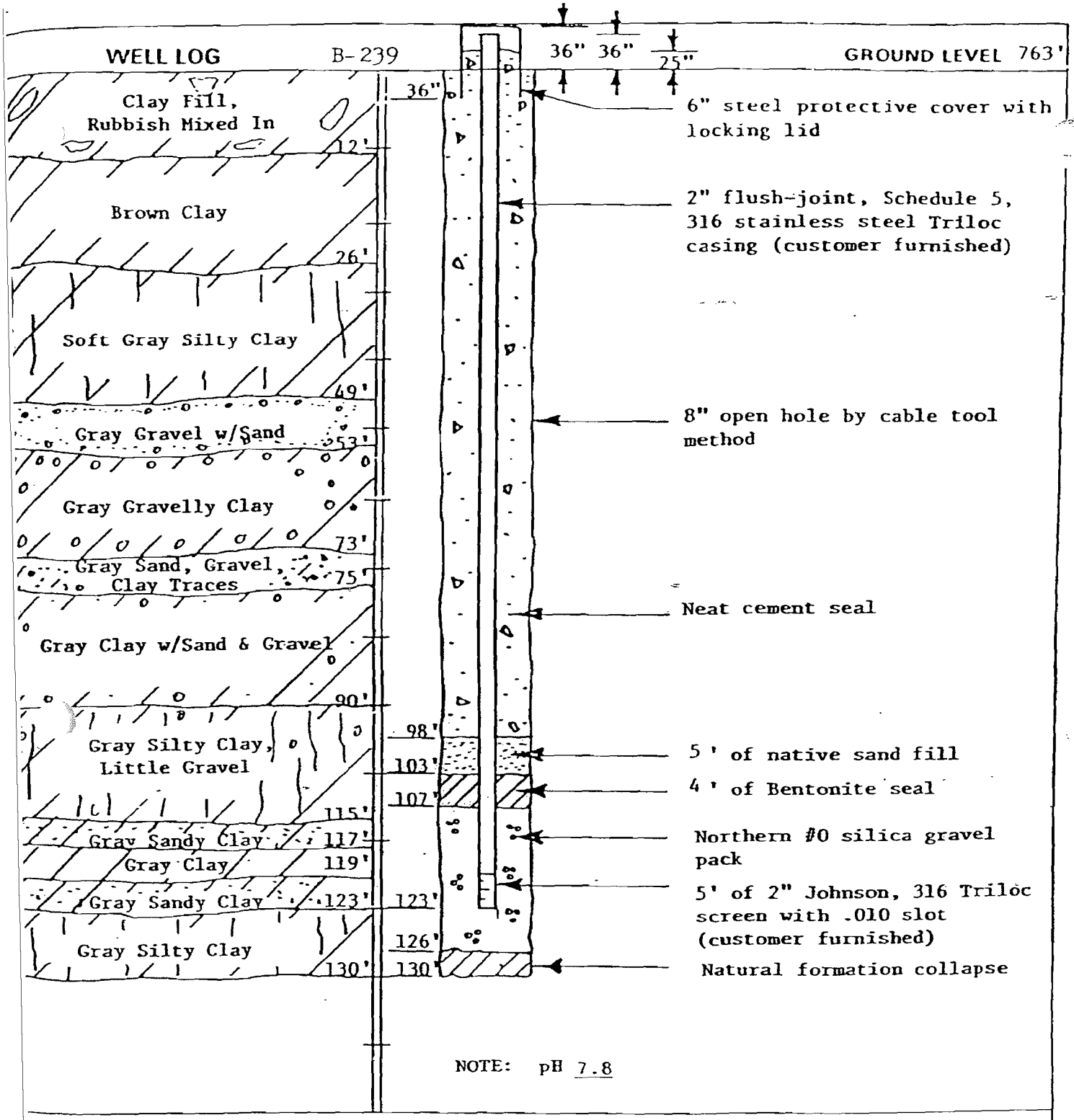
16. Size Hole below casing: 8 in.
17. Static level 91 ft. below casing top which is 36" ft. above ground level. Pumping level ____ ft. when pumping at ____ gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay Fill, Rubbish Mixed in	12'	12'
Brown Clay	14'	26'
Soft Gray Silty Clay	23'	49'
Gray Gravel with Sand	4'	53'
Gray Gravelly Clay	20'	73'
Gray Sand, Gravel, Clay Traces	2'	75'
Gray Clay w/Sand & Gravel	15'	90'
Gray Silty Clay, Little Gravel	25'	115'
Gray Sandy Clay	2'	117'
(CONTINUE ON SEPARATE SHEET IF NECESSARY)		
Gray Sandy Clay	6'	123'
Gray Silty Clay	4'	130'

SIGNED ____ DATE 10/24/85
J. P. Osborne

B-237

WELL LOG B-239



NOTE: pH 7.8

ity Winthrop Harbor State Illinois

ocation 12431' North; 9373' East

ounty Lake Twp. Benton T46N-R12E Section NE¼NW¼NW¼ of 7

es pacity 3/8 GPM. Static Water

vel 91 ft. Pumping Level ft.

ecific Capacity GPM/Ft. D.D.

ate Drilled October 22, 1985

iller John Blatz

ob No. 5510

Well No G 124

BROWNING-FERRIS INDUSTRIES
WINTHROP HARBOR LANDFILL
WINTHROP HARBOR, ILLINOIS

PEERLESS-MIDWEST, INC.
Granger, Indiana

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____, Bored ____, Hole Diam. 8 in. Depth 125 ft.
      Curb material ____, Buried Slab: Yes ____ No ____
   b. Driven ____, Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X, Finished in Drift ____, In Rock ____,
      Tubular ____, Gravel Packed X.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Neat Cement	19"	89'
	above grade	

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast Iron) ____
   Privy ____ Sewer (Cast Iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes ____ No X
4. Date well completed 10/15/85
5. Permanent Pump Installed? Yes ____ Date ____ No ____
   Manufacturer ____ Type ____ Location ____
   Capacity ____ gpm. Depth of Setting ____ Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No ____
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ____ No ____
9. Pump and Equipment Disinfected? Yes ____ No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

THIS IS A REPLACEMENT MONITORING WELL.

County #2736

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

Browning-Ferris Industries
Winthrop Harbor Landfill

10. Property owner ____ Well No. G 125
    Address Winthrop Harbor, IL
    Driller Peerless-Midwest, Inc. License No. 102-002995
11. Permit No. 118386 Date 6/14/85
12. Water from ____ Formation at depth 109 to 114 ft.
13. County Lake
    Sec. 7, 7L
    Twp. 46N Benton
    Rge. 12E
    Elev. 756'

X		X	

SHOW LOCATION IN SECTION PLAT
NE NW NW

14. Screen: Diam. 2 in.
    Length: 5 ft. Slot .010
15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
2"	flush-joint, Schedule 5, 316 stainless steel Triloc	19" above grade	109'

16. Size Hole below casing: 8 in.
17. Static level 93 ft. below casing top which is 19" ft. above ground level. Pumping level ____ ft. when pumping at ____ gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	10'	10'
Gray Silty Clay	28'	38'
Gray Silty Clay, Some Gravel	26'	64'
Hard Gravelly Clay	9'	73'
Gray Silty Clay	6'	79'
Hard Gravelly Clay	7'	86'
Gray Silty Clay w/Gravel	19'	105'
Gray Fine to Med. Sand w/Clay	12'	117'
Hard Gray Gravelly, Sandy Clay	8'	125'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED ____ DATE 12/4/85
J. P. Osborne

B-249

ILLINO DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 8 in. Depth 125 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____ in. Depth _____ ft.
   c. Drilled X. Finished in Drift _____. In Rock _____.
   Tubular _____. Gravel Packed X.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Neat Cement	26"	81'
	above grade	

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast Iron) _____
   Privy _____ Sewer (Cast Iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes____ No X
4. Date well completed 10/18/85
5. Permanent Pump Installed? Yes___ Date _____ No____
   Manufacturer _____ Type _____ Location _____
   Capacity_____ gpm. Depth of Setting _____ Ft.
6. Well Top Sealed? Yes____ No____ Type _____
7. Pitless Adapter Installed? Yes_____ No_____
   Manufacturer _____ Model Number _____
   How attached to casing? _____
8. Well Disinfected? Yes_____ No _____
9. Pump and Equipment Disinfected? Yes_____ No_____
10. Pressure Tank Size_____ gal. Type _____
    Location _____
11. Water Sample Submitted? Yes_____ No_____

REMARKS:

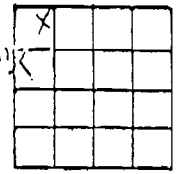
THIS IS A REPLACEMENT MONITORING WELL.

Permit # 118386

IDPH 1065

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Browning-Ferris Industries Winthrop Harbor Landfill Well No. G 127
    Address Winthrop Harbor, IL
    Driller Peerless-Midwest, Inc. License No. 102-002995
11. Permit No. 118386 Date 6/14/85
12. Water from _____ Formation 13. County Lake
    at depth 100 to 105 ft.
    14. Screen: Diam. 2 in.
    Length: 5 ft. Slot .010
    Sec. 7 74 SW Benton
    Twp. 42N
    Rge. 12E
    Elev. 757'



15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
2"	flush-joint, Schedule	26"	100'
	5, 316 stainless	above grade	
	steel, Triloc		

SHOW LOCATION IN SECTION PLAT
NE NW NW

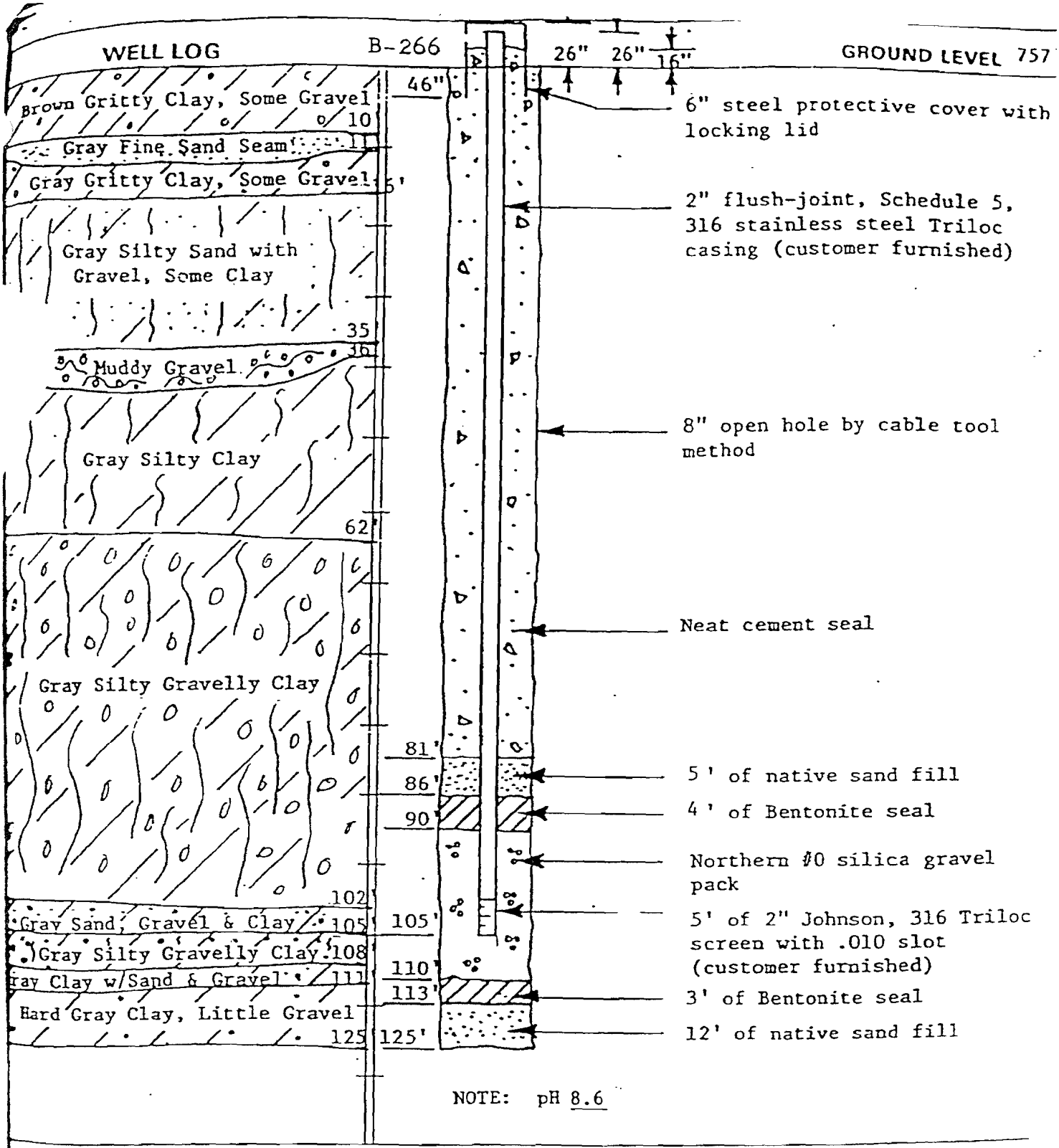
16. Size Hole below casing: 8 in.
17. Static level 97 ft. below casing top which is 26" ft. above ground level. Pumping level _____ ft. when pumping at _____ gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Gritty Clay, Some Gravel	10'	10'
Gray Fine Sand Seam	1'	11'
Gray Gritty Clay, Some Gravel	6'	16'
Gray Silty Sand w/Gravel, Some Clay	19'	35'
Muddy Gravel	1'	36'
Gray Silty Clay	26'	62'
Gray Silty Gravelly Clay	40'	102'
Gray Sand, Gravel & Clay	3'	105'
Gray Silty Gravelly Clay	3'	108'
(CONTINUE ON SEPARATE SHEET IF NECESSARY)		
Gray Clay w/Sand & Gravel	3'	111'
Hard Gray Clay, Little Gravel	14'	125'

SIGNED [signature] DATE 12/4/85
P. Osborne

B-253

WELL LOG B-266



NOTE: pH 8.6

City Winthrop Harbor State Illinois

Location 11211' North; 8517' East

County Lake Twp. Benton T46N-S12E Section NW¼SW¼NW¼ of 7

Test Capacity Minimal - Had to Bail! GPM. Static Water Level 97 ft. Pumping Level ft.

Specific Capacity GPM/Ft. D.D.

Date Drilled October 18, 1985

Driller Al Cockey

Job No. 5510

Well No G 127

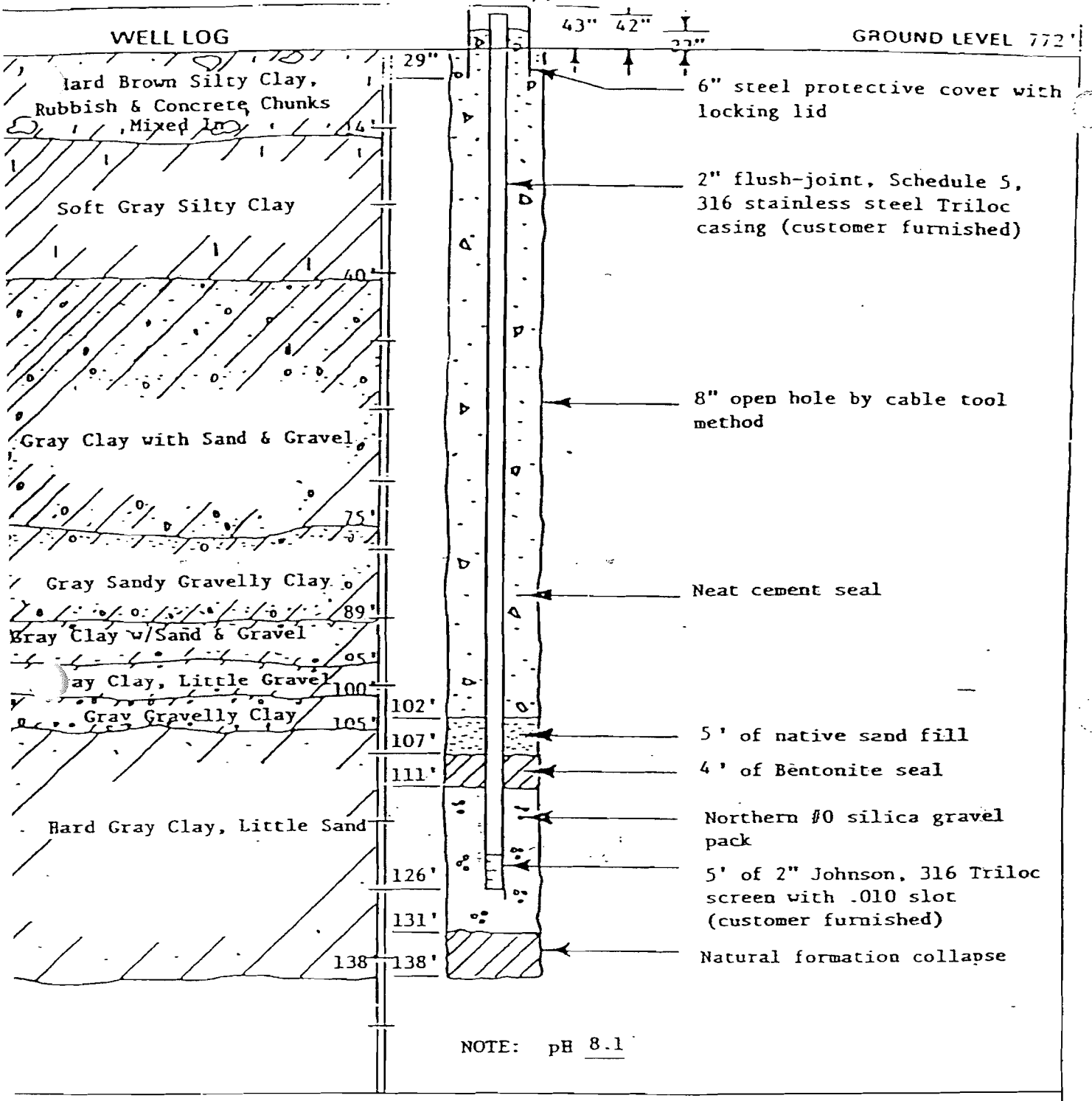
BROWNING-FERRIS INDUSTRIES
WINTHROP HARBOR LANDFILL
WINTHROP HARBOR, ILLINOIS

PEERLESS-MIDWEST, INC.

B-279

WELL LOG

GROUND LEVEL 772'



NOTE: pH 8.1

City Winthrop Harbor State Illinois

Location 11623' North; 9366' East

County Lake Twp. Benton T46N-R12E Section SE¼NW¼NW¼ of 7

Te apacity 1/4 GPM. Static Water Level 108 ft. Pumping Level ft.

Specific Capacity GPM/Ft. D.D.

Date Drilled October 1, 1985

Driller John Blatz

Job No. 5510

Well No G 129

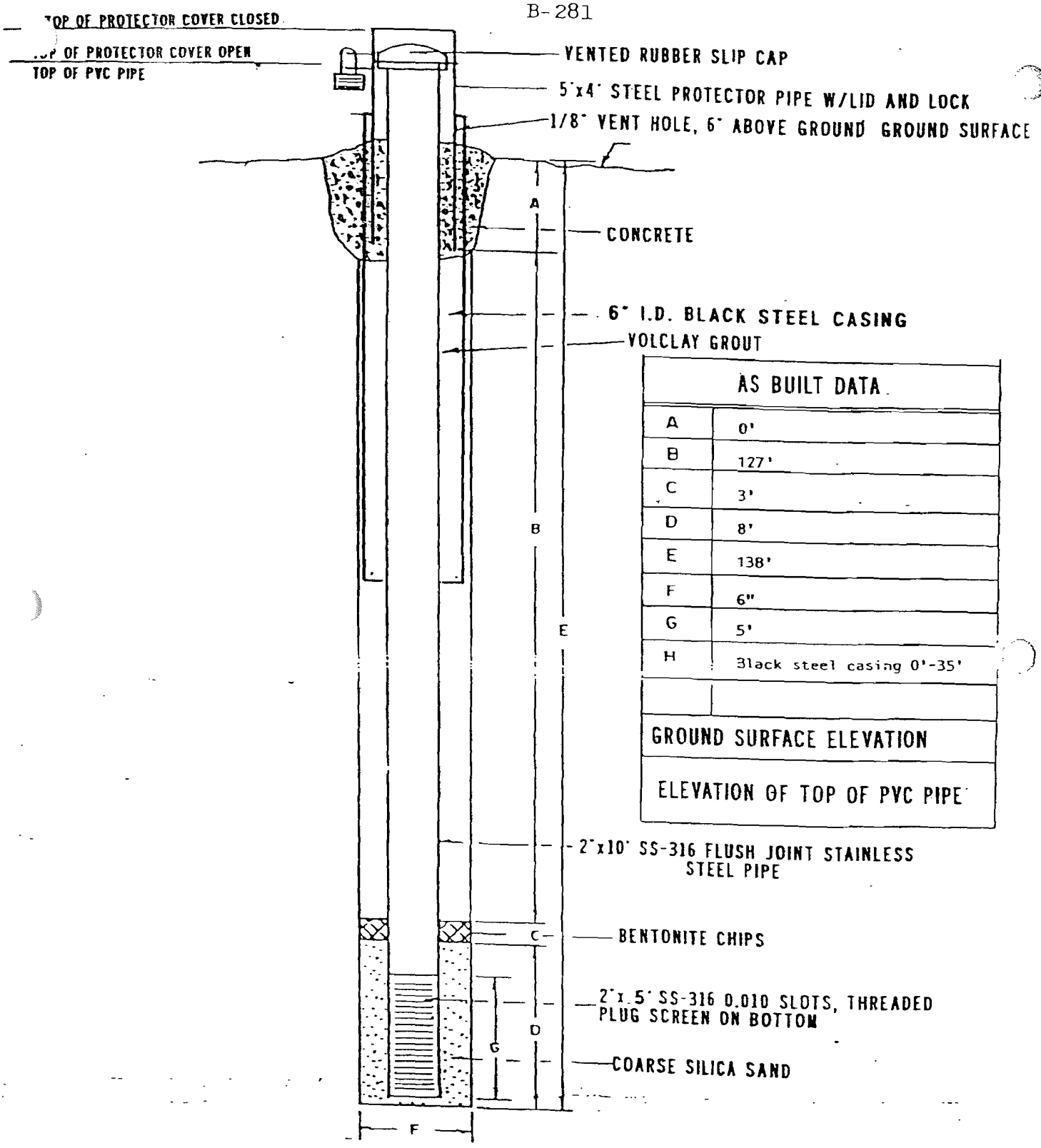
BROWNING-FERRIS INDUSTRIES
WINTHROP HARBOR LANDFILL
WINTHROP HARBOR, ILLINOIS

PEERLESS-MIDWEST, INC.
Granger, Indiana

GROUNDWATER MONITORING WELL G-129

NOT TO SCALE

B-281



AS BUILT DATA	
A	0'
B	127'
C	3'
D	8'
E	138'
F	6"
G	5'
H	Black steel casing 0'-35'
GROUND SURFACE ELEVATION	
ELEVATION OF TOP OF PVC PIPE	

Illinois Environmental Protection Agency B-282 Well Completion Report

Site #: _____ County LAKE Well # G-129 R-129

Name: WINTHROP HARBOR Grid Coordinate: Northing _____ Easting _____

Drilling Contractor: TESTING SERVICE CORPORATION Date Drilled Start: 11-91

Driller: Greg Donovan Geologist: Darin Delaney Date Completed: 11-91

Drilling Method: Wet Rotary Drilling Fluids (type): Bentonite/potable water

Annular Space Details

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite grout

Amount of cement: # of bags _____ lbs. per bag _____

Amount of bentonite: # of bags 9 lbs. per bag 50

Type of Bentonite Seal (Granular, Pellet): Enviroplug Chips

Amount of bentonite: # of Bags 1 lbs. per bag 80

Type of Sand Pack: Coarse Grained Silica

Source of Sand: Colorado Silica Co.

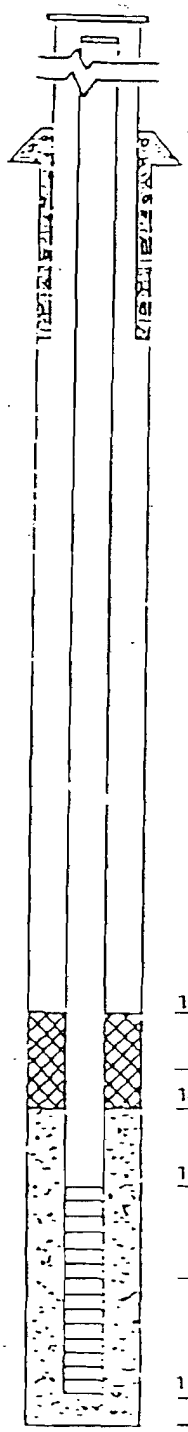
Amount of Sand: # of bags 4 lbs. per bag 50

Construction Materials

	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint	SS-316			
Riser pipe above w.t.	SS-316			
Riser pipe below w.t.	SS-316			
Screen	SS-316			
Coupling joint screen to riser	SS-316			
Protective casing				Black Steel

Measurements to .01 ft. (where applicable)

Riser pipe length	133.0 feet
Protective casing length	6.0 feet
Screen length	5.0 feet
Bottom of screen to end cap	0.5 feet
Top of screen to first joint	2.0 inches
Total length of casing	138.0 feet
Screen slot size	0.010 inch
# of openings in screen	
Diameter of borehole (in)	6.0 inches
ID of riser pipe (in)	2.0 inches



Elevations — .01 ft.

	810.29	MSL Top of Protective Casing
	809.37	MSL Top of Riser Pipe
2.0		ft. Casing Stickup
0	807.4	MSL Ground Surface
		ft. Top of annular sealant
128.0	679.4	ft. Top of Seal
3.0		ft. Total Seal Interval
131.0	676.4	ft. Top of Sand
133.0	674.4	ft. Top of Screen
5.0		ft. Total Screen Interval
138.0	669.4	ft. Bottom of Screen
		ft. Bottom of Borehole

Completed by: Darin Delaney Surveyed by: _____ Ill. registration # _____

Note Copy – Well Owner

SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 8 in. Depth 127 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock ____.
   Tubular ____. Gravel Packed X.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Neat Cemen	18'	90'
	above grade	

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast Iron) ____
   Privy ____ Sewer (Cast Iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes ____ No X
4. Date well completed 10/16/85
5. Permanent Pump Installed? Yes ____ Date ____ No ____
   Manufacturer ____ Type ____ Location ____
   Capacity ____ gpm. Depth of Setting ____ Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No ____
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ____ No ____
9. Pump and Equipment Disinfected? Yes ____ No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

THIS IS A REPLACEMENT MONITORING WELL
County # 5736

IDPH 4.065

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Browning-Ferris Industries Winthrop Harbor Landfill Well No. G 131
    Address Winthrop Harbor, Il.
    Driller Peerless-Midwest, Inc. License No. 102-002995
11. Permit No. 118386 Date 6/14/85
12. Water from ____ Formation at depth 109' to 114' ft.
13. County Lake
14. Screen: Diam. 2 in.
    Length: 5 ft. Slot .010
    Sec. 7 NW
    Twp. Benton
    Rge. 12E
    Elev. 755'

SHOW LOCATION IN SECTION PLAT
NE NW NW

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
2	flush-joint, Schedule	18"	109'
	5, 316 stainless	above grade	
	steel Triloc		

16. Size Hole below casing: 8 in.
17. Static level 90 ft. below casing top which is 18" ft. above ground level. Pumping level ____ ft. when pumping at ____ gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Hard Gray Clay, Little Sand	62'	62'
Soft Gray Clay, Some Gravel	46'	108'
Gray Sandy Clay w/Gravel	6'	114'
Hard Gray Clay, Little Sand	13'	127'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED T. L. Osborne DATE

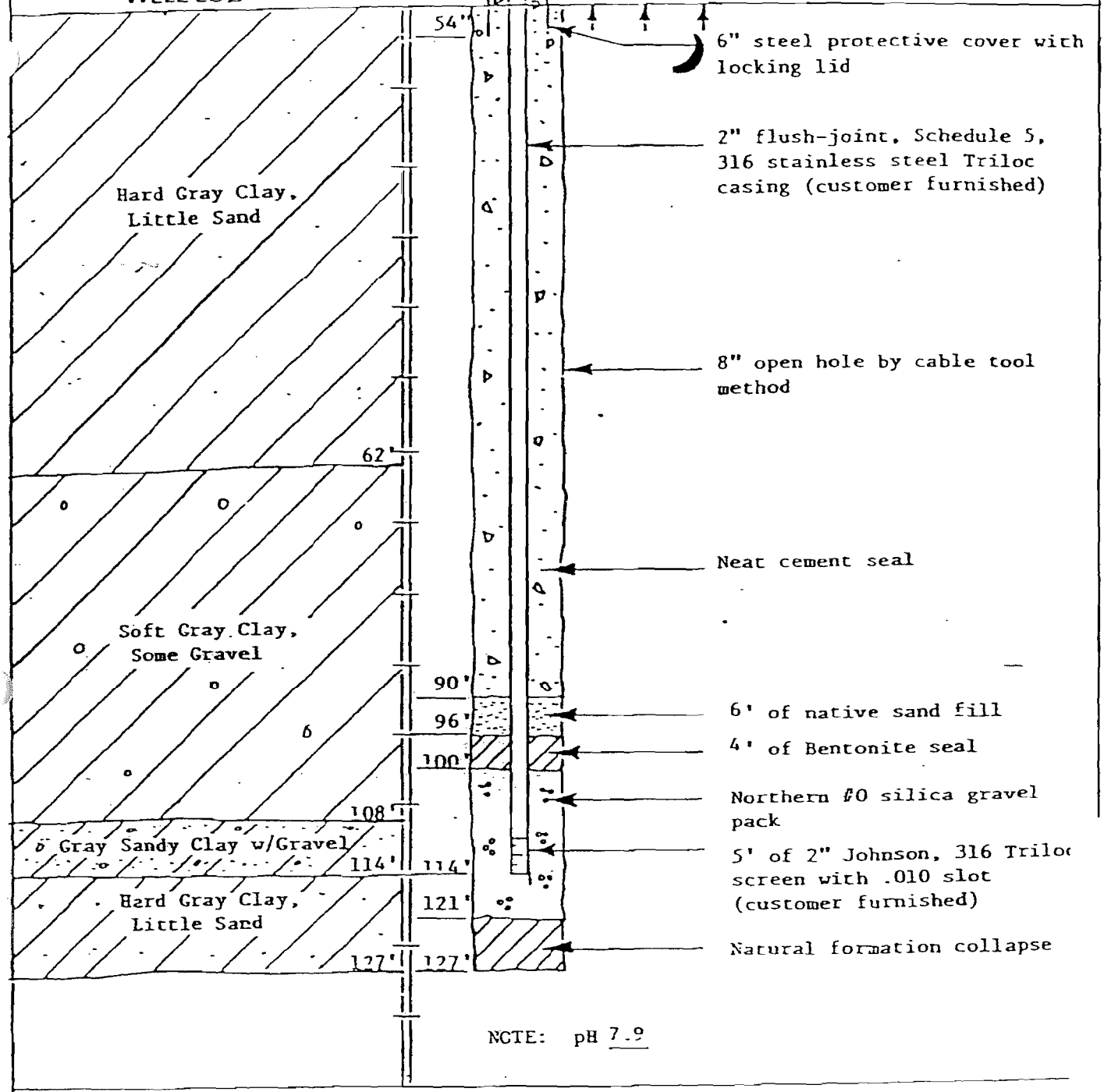
B-297

B-298

WELL LOG

18" 18"

GROUND LEVEL 755'



NOTE: pH 7.9

City Winthrop Harbor State Illinois

Location 11115' North; 9376' East

County Lake Twp. Benton T46N-R12E Section NE¼SW¼NW¼ of 7

Test Capacity 1/4 GPM. Static Water Level 90 ft. Pumping Level ft.

Specific Capacity GPM/Ft. D.D.

Date Drilled October 16, 1985

Driller Al Cockey

Job No. 5510

Well No G 131

BROWNING-FERRIS INDUSTRIES
WINTHROP HARBOR LANDFILL
WINTHROP HARBOR, ILLINOIS

PEERLESS-MIDWEST, INC.
Grange, Indiana

Blue Copy – Well Owner

JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____, Bored ____, Hole Diam. 8 in. Depth 120' ft.
   Curb material ____, Buried Slab: Yes ____ No ____
   b. Driven ____, Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X, Finished in Drift ____, In Rock ____,
   Tubular ____, Gravel Packed X.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Neat Cement	2½'	91'
	above ground	

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast Iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes ____ No X
4. Date well completed 10/30/85
5. Permanent Pump Installed? Yes ____ Date ____ No ____
   Manufacturer ____ Type ____ Location ____
   Capacity ____ gpm. Depth of Setting ____ Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No ____
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ____ No ____
9. Pump and Equipment Disinfected? Yes ____ No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

THIS IS A REPLACEMENT MONITORING WELL.

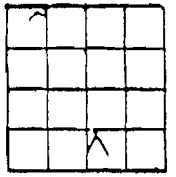
County # 57366

IDPH 4.065

GEOLOGICAL AND WATER SURVEYS WELL RECORD

Browning-Ferris Industries

10. Property owner Winthrop Harbor Landfill Well No. G 133
    Address Winthrop Harbor, IL
    Driller Peerless-Midwest, Inc. License No. 102-002995
11. Permit No. 118386 Date 6/14/85
12. Water from ____ (Formation) 13. County Lake
    at depth 101' to 106 ft. Sec. 7, 7K
    14. Screen: Diam. 2 in. Twp. Benton
    Length: 5 ft. Slot .010 Rge. 12E
    Elev. 743'



SHOW LOCATION IN SECTION PLAT
NE NW NW

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
2	flush joint, Schedule	2½'	101'
	5, 316 stainless	above grade	
	steel Triloc		

16. Size Hole below casing: 8 in.
17. Static level 81 ft. below casing top which is ____ ft. above ground level. Pumping level ____ ft. when pumping at ____ gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	5'	5'
Brown Sand	2'	7'
Brown Sand & Clay	4'	11'
Brown Sand	1'	12'
Brown Clay with Sand	12'	24'
Soft Gray Clay	44'	68'
Hard Silty Gray Clay	34'	102'
Gray Clay & Sand	2'	104'
Gray Gravelly, Sandy Clay	11'	115'
Hard Gray Clay, Little Sand	5'	120'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

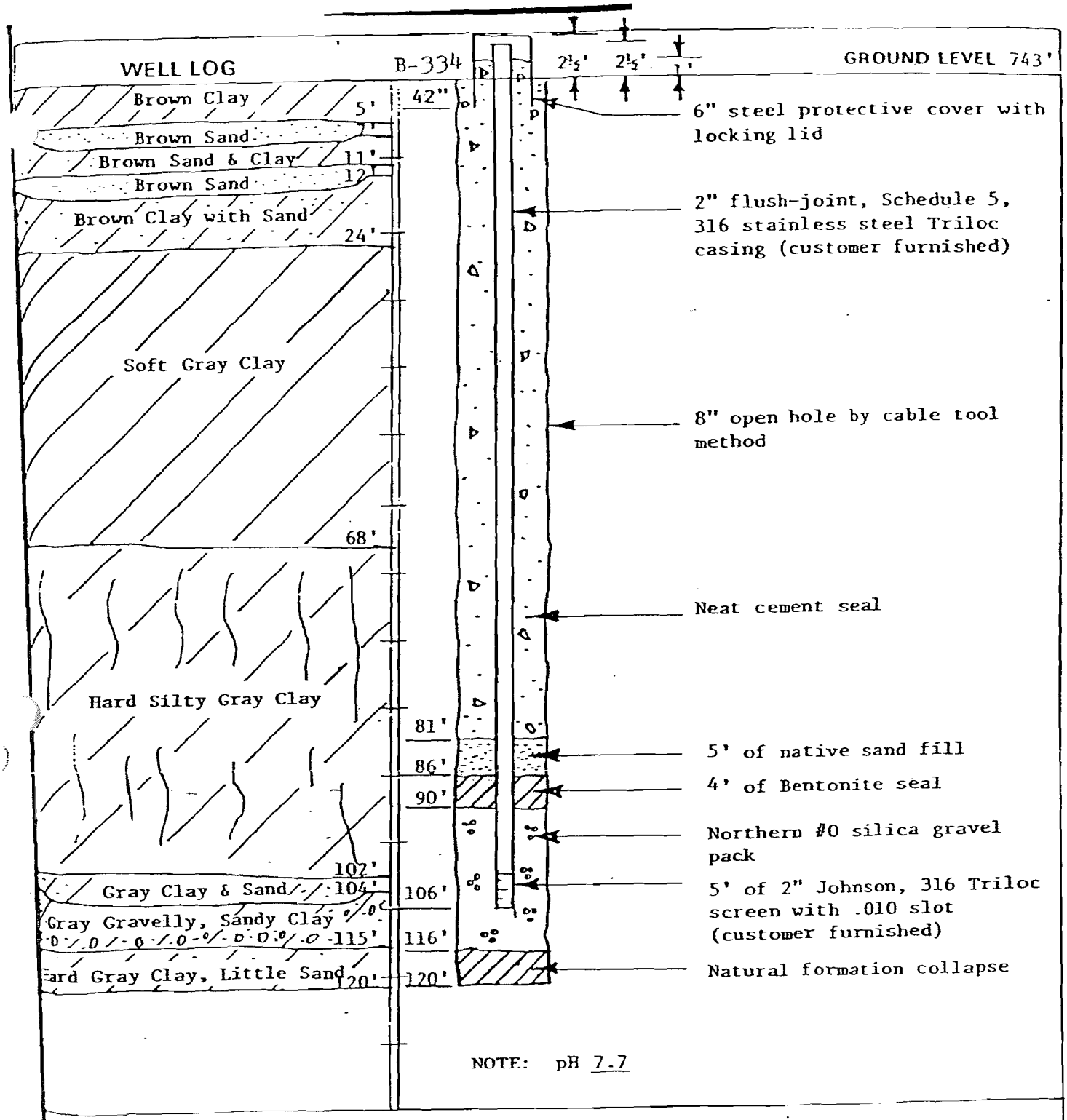
SIGNED ____ DATE 12/4/85
T. P. Osborne

B-333

101

WELL LOG B-334

GROUND LEVEL 743'



NOTE: pH 7.7

City Winthrop Harbor State Illinois

Location 10502' North; 9395' East

County Lake Twp. Benton T46N-R12E Section SE¼SW¼NW¼ of 7

Test Capacity 1 GPM. Static Water Level 81 ft. Pumping Level ft.

Specific Capacity GPM/Ft. D.D.

Date Drilled October 30, 1985

Driller John Blatz

Job No. 5510

Well No G 133

BROWNING-FERRIS INDUSTRIES
WINTHROP HARBOR LANDFILL
WINTHROP HARBOR, ILLINOIS

PEERLESS-MIDWEST, INC.
Granger, Indiana

White Copy –
III. Dept. of Pl. ...h
Yellow Copy – Well ... actor
Blue Copy – Well Own...

FILL IN ALL PERTINENT INFORMATION REQUE... AND MAIL ORIGINAL TO ... DEPARTMENT OF PUBLIC HEALTH, CONSUME... ALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 8 in. Depth 121 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____ in. Depth _____ ft.
   c. Drilled X. Finished in Drift _____. In Rock _____.
   Tubular _____. Gravel Packed X.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Neat Cement	21"	83'
	above grade	

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes____ No X
4. Date well completed 10/23/85
5. Permanent Pump Installed? Yes___ Date _____ No____
   Manufacturer _____ Type _____ Location _____
   Capacity_____ gpm. Depth of Setting _____ Ft.
6. Well Top Sealed? Yes____ No____ Type _____
7. Pitless Adapter Installed? Yes_____ No_____
   Manufacturer _____ Model Number _____
   How attached to casing? _____
8. Well Disinfected? Yes_____ No_____
9. Pump and Equipment Disinfected? Yes_____ No_____
10. Pressure Tank Size_____ gal. Type _____
    Location _____
11. Water Sample Submitted? Yes_____ No_____

REMARKS:

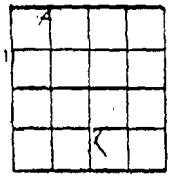
THIS IS A REPLACEMENT MONITORING WELL.

County # 27386

GEOLOGICAL AND WATER SURVEYS WELL RECORD

Browning-Ferris Industries

10. Property owner Winthrop Harbor Landfill Well No. G 134
    Address Winthrop Harbor, IL
    Driller Peerless-Midwest, Inc. License No. 102-002995
11. Permit No. 118386 Date 6/14/85
12. Water from _____ Formation 13. County Lake
    at depth 102' to 107 ft.
14. Screen: Diam. 2 in.
    Length: 5 ft. Slot .010
    Sec. 7 7N
    Twp. Benton
    Rge. 12E
    Elev. 743'



SHOW LOCATION IN SECTION PLAT
NE NW NW

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
2	Flush-joint, Schedule	21"	102
	5, 316 stainless		
	steel Triloc		

16. Size Hole below casing: 8 in.
17. Static level 79 ft. below casing top which is _____ ft. above ground level. Pumping level _____ ft. when pumping at _____ gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay & Silt	2'	2'
Brown Sand	4'	6'
Brown Sand & Clay	6'	12'
Brown Gravelly Clay	9'	21'
Gray Clay & Sand	13'	34'
Hard Gray Clay	30'	74'
Hard Gray Clay, Some Gravel	19'	93'
Gray Gravelly, Sandy Clay	17'	110'
Hard Gray Clay, Little Sand	11'	121'

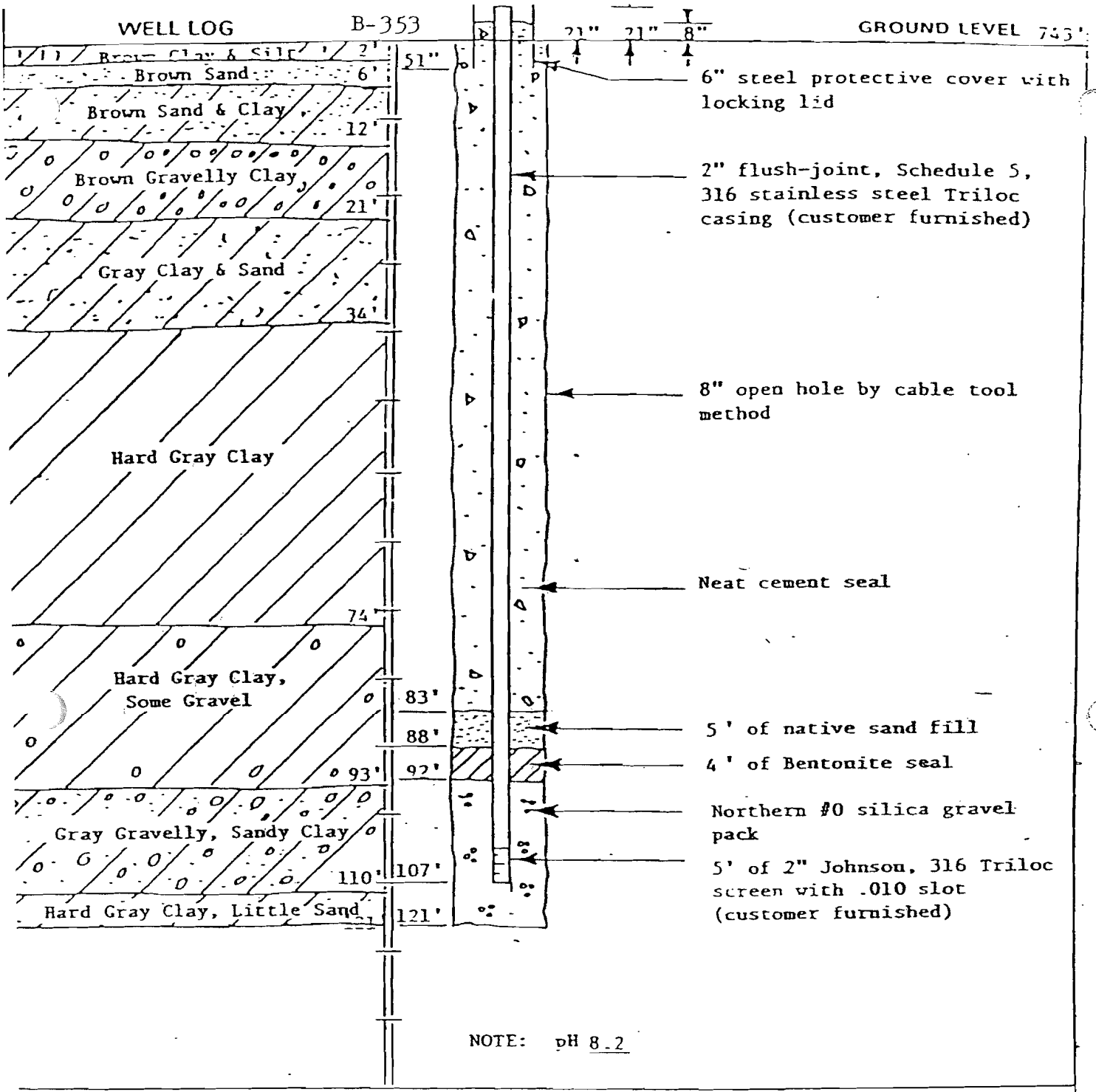
(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED _____ DATE 12/4/85
J. P. Osborne

B-352

$750 (100)

WELL LOG B-353



NOTE: pH 8.2

City Winthrop Harbor State Illinois

Location 10163' North; 9456' East

County Lake Twp. Benton T46N-R12E Section SE¼SW¼NW¼ of 7

Test Capacity 1/4 GPM. Static Water L 79 ft. Pumping Level ft.

Specific Capacity GPM/Ft. D.D.

Date Drilled October 23, 1985

Driller Al Cockey

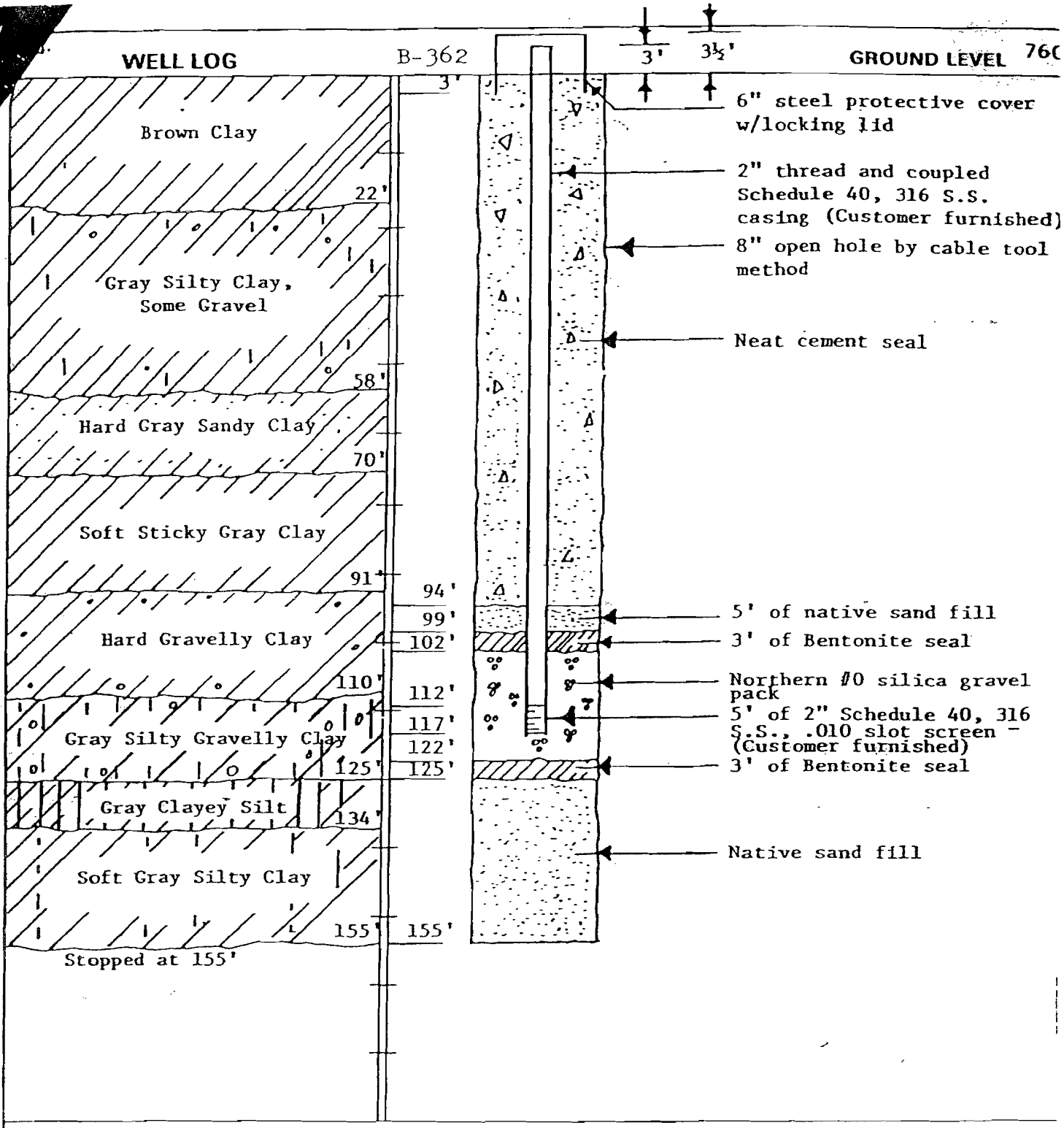
Job No. 5510

Well No G 134

BROWNING-FERRIS INDUSTRIES
WINTHROP HARBOR LANDFILL
WINTHROP HARBOR, ILLINOIS

PEERLESS-MIDWEST, INC.
Granger, Indiana

WELL LOG B-362 GROUND LEVEL 760



City Winthrop Harbor State Illinois

Location 2360' north of 9th Street (Winthrop Harbor Rd.) and 1070' east of Hwy. 131 (Green Bay Rd.)

County Lake Twp. Benton Section NE¼NW¼NW¼ of 7

76

Test Capacity 3 GPM. Static Water Level 98 ft. Pumping Level ft.

Specific Capacity GPM/Ft. D.D.

Date Drilled 5/22/85

Driller John Blatz

Job No. 5304

Well No G138

BROWNING-FERRIS INDUSTRIES
WINTHROP HARBOR LANDFILL
WINTHROP HARBOR, ILLINOIS

PEERLESS-MIDWEST, INC.
Granger, Indiana

Ill. Dept. of Pub
llow Copy – Well
ue Copy – Well Owner

DEPARTMENT OF PUBLIC HEALTH, CONSUMER [illegible]TH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT [illegible]CH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WE[illegible]LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 8 in. Depth 155 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock ____.
   Tubular ____. Gravel Packed X.
   d Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Neat Cement	0'	94'
Bentonite	99'	101'
Bentonite	122'	125'

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes ____ No ____
4. Date well completed 5/22/85
5. Permanent Pump Installed? Yes ____ Date ____ No ____
   Manufacturer ____ Type ____ Location ____
   Capacity ____ gpm. Depth of Setting ____ Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No ____
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ____ No ____
9. Pump and Equipment Disinfected? Yes ____ No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

This is a monitoring well.
Well log and Test Drilling Report Attached.

Cancelled 5/15/85

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

Browning-Ferris Industries

10. Property owner Winthrop Harbor Landfill Well No. G138
    Address Winthrop Harbor, IL
    Driller Peerless-Midwest, Inc. License No. 102-002995
11. Permit No. 118385 Date ____
12. Water from ____ (Formation) 13. County Lake
    at depth ____ to ____ ft. Sec. 7 7/1
    14. Screen: Diam. 2" in. 1/4 Twp. Benton
    Length: 5 ft. Slot .010 Rge. [illegible]
    Elev. 760'±

SHOW LOCATION IN SECTION PLAT
NE NW NW

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
2"	Schedule 40, 316 SS	3' above grade	112

16. Size Hole below casing: 8" in.
17. Static level 98 ft. below casing top which is ____ ft. above ground level. Pumping level ____ ft. when pumping at ____ gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	22'	22'
Gray Silty Clay, Some Gravel	36'	58'
Hard Gray Sandy Clay	12'	70'
Soft Sticky Gray Clay	21'	91'
Hard Gravelly Clay	19'	110'
Gray Silty Gravelly Clay	15'	125'
Gray Clayey Silt	9'	134'
Soft Gray Silty Clay	21'	155'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED [signature] DATE 7/18/85
Joseph P. Osborne

±750

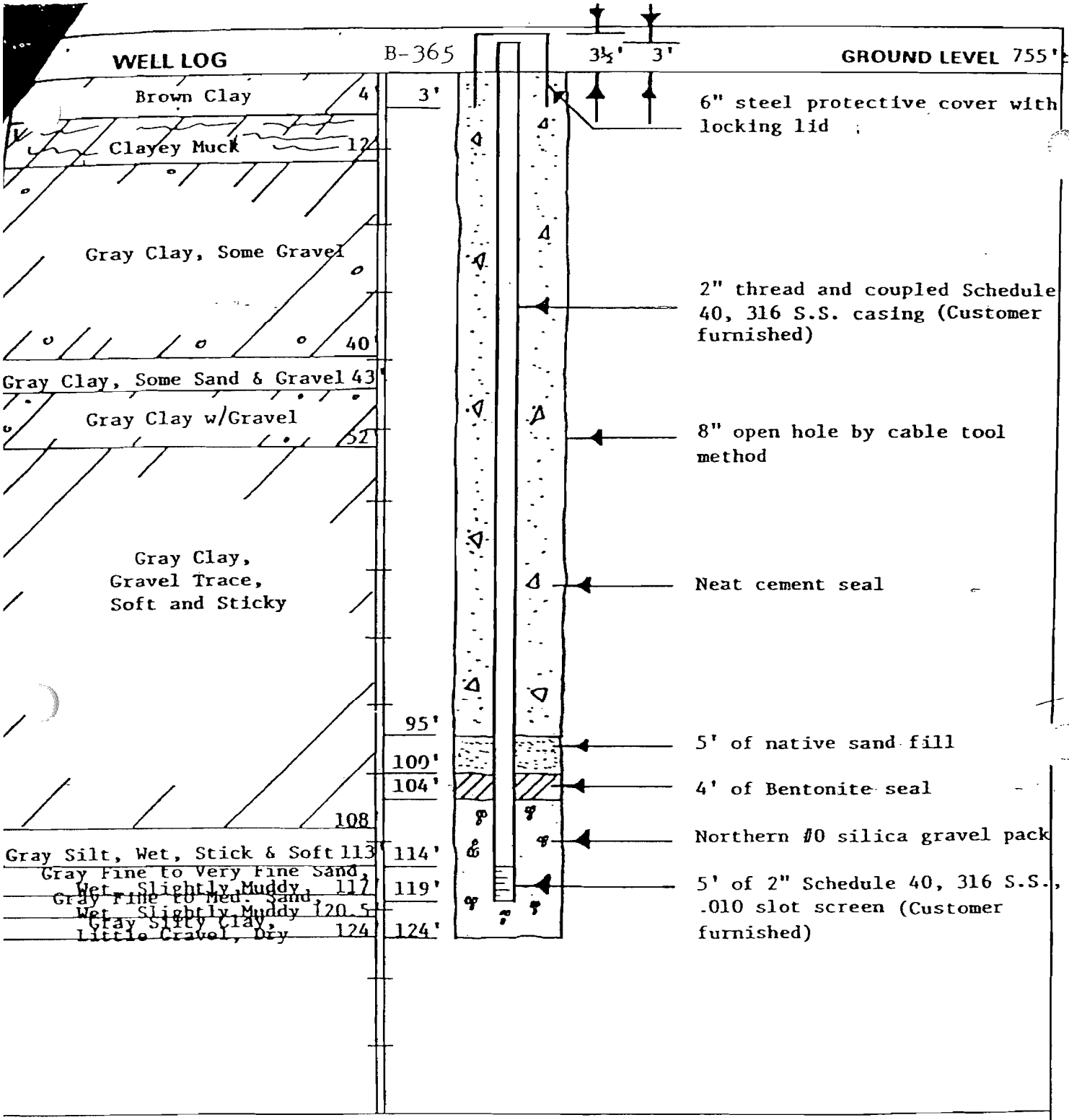
B-364

99

WELL LOG

B-365

GROUND LEVEL 755'±



City Winthrop Harbor State Illinois

Location 2075' North of Ninth Street (Winthrop Harbor Road) & 1080' East of Highway 131 (Green Bay Rd.) T46N-R12E

County Lake Twp. Benton Section $NE\frac{1}{4}NW\frac{1}{4}NW\frac{1}{4}$ of 7

Test Capacity _____ GPM. Static Water Level _____ ft. Pumping Level _____ ft.

Specific Capacity _____ GPM/Ft. D.D.

Date Drilled June 18, 1985

Driller Mike Garrage

Job No. 5304

Well No. G139

BROWNING-FERRIS INDUSTRIES
WINTHROP HARBOR LANDFILL
WINTHROP HARBOR, ILLINOIS

PEERLESS-MIDWEST, INC.
Cranger, Indiana

SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 8 in. Depth ____ ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock ____.
   Tubular ____. Gravel Packed X.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Neat Cement	0'	95'
Bentonite	100'	104'

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast Iron) ____
   Privy ____ Sewer (Cast Iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes ____ No ____
4. Date well completed 6/18/85
5. Permanent Pump Installed? Yes ____ Date ____ No ____
   Manufacturer ____ Type ____ Location ____
   Capacity ____ gpm. Depth of Setting ____ Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No ____
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ____ No ____
9. Pump and Equipment Disinfected? Yes ____ No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

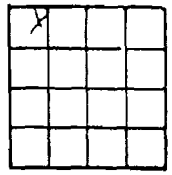
This is a monitoring well.
Well Log and Split-Spoon Test Drilling Report
Attached.

IDPH 4.065
1/74 — KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

Browning-Ferris Industries

10. Property owner Winthrop Harbor Landfill Well No. G139
    Address Winthrop Harbor, IL
    Driller Peerless-Midwest, Inc. License No. 102-002995
11. Permit No. 1183836 Date ____
12. Water from ____ (Formation)
    at depth ____ to ____ ft.
13. County Lake
    Sec. 7 7h
    Twp. Benton
    Rge. 12E
    Elev. 755'±
14. Screen: Diam. 2 in.
    Length: 5 ft. Slot .010



SHOW LOCATION IN SECTION PLAT
NE NW NW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
2"	Schedule 40, 316 SS	3'above	114'
		grade	

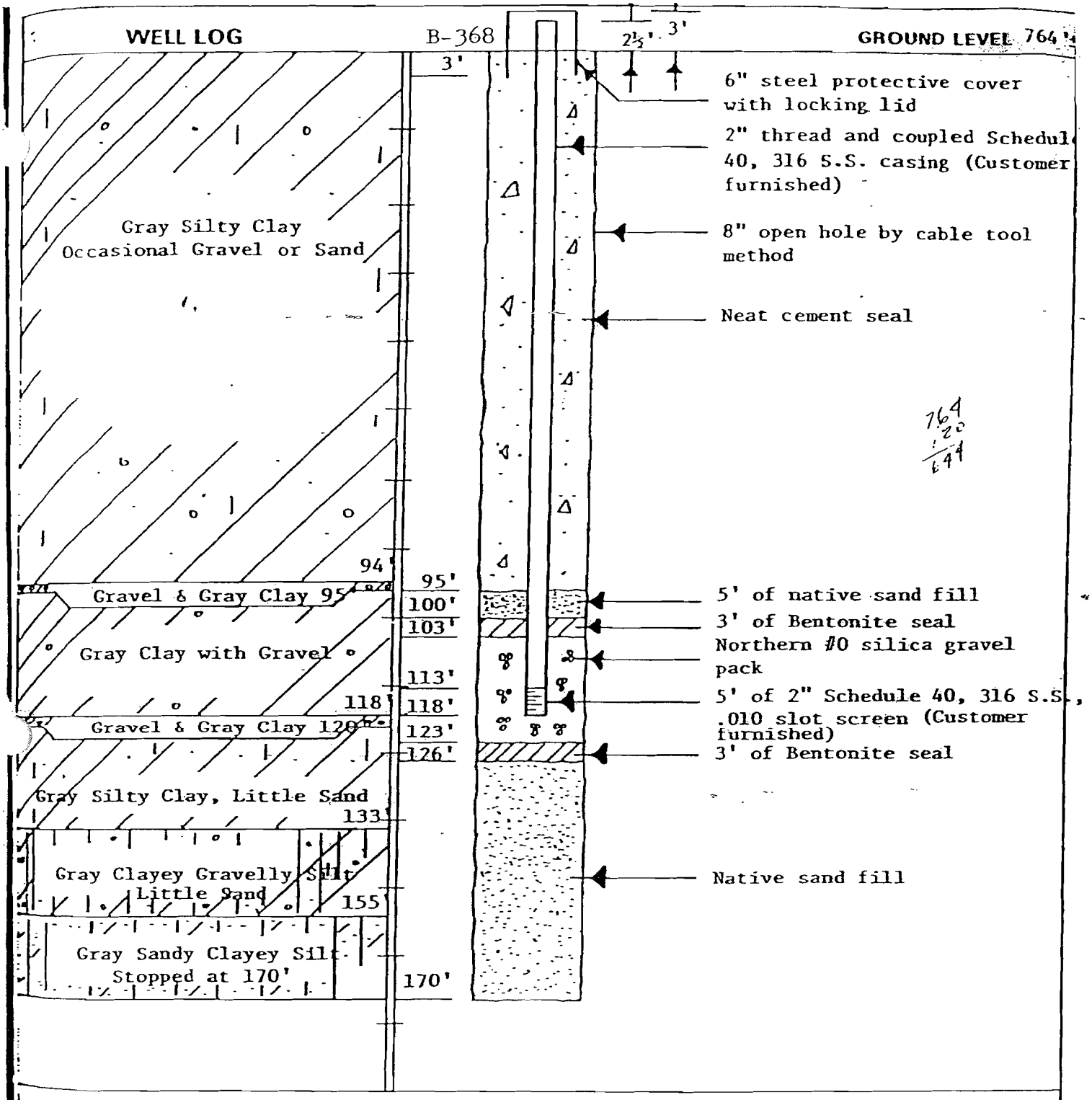
16. Size Hole below casing: 8" in.
17. Static level ____ ft. below casing top which is ____ ft. above ground level. Pumping level ____ ft. when pumping at ____ gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	4'	4'
Clayey Muck	8'	12'
Gray Clay, Some Gravel	28'	40'
Gray Clay, Some Sand & Gravel	3'	43'
Gray Clay with Gravel	9'	52'
Gray Clay, Gravel Trace, Soft & Sticky	56'	108'
Gray Silt, Wet, Sticky & Soft	5'	113'
Gray Fine to Very Fine Sand, Wet, Slightly Muddy	4'	117'
Gray, Fine to Med. Sand, Wet, Slightly Muddy	3½'	120½'
(CONTINUE ON SEPARATE SHEET IF NECESSARY) Gray Silty Clay, Little Gravel, Dry	3½'	124'

SIGNED Joseph P. Osborne DATE 7/18/85

B-367

WELL LOG B-368 GROUND LEVEL 764'



764
2c
1/64

City Winthrop Harbor State Illinois

Location 1690' north of 9th St. (Winthrop Harbor Rd.) & 1010' east of Highway 131 (Green Bay Rd.)

County Lake Twp. Benton T46N-R12E Section SE¼NW¼NW¼ of 7

Test Capacity 1½ GPM. Static Water Level 101 ft. Pumping Level ft.

Specific Capacity GPM/Ft. D.D.

Date Drilled May 22, 1985

Driller Mike Garrage

Job No. 5304

Well No. G140

BROWNING-FERRIS INDUSTRIES
WINTHROP HARBOR LANDFILL
WINTHROP HARBOR, ILLINOIS

PEERLESS-MIDWEST, INC.
Granger, Indiana

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____ in. Depth ____ ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock ____.
   Tubular ____. Gravel Packed X.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Neat Cement	0'	95'
Bentonite	100'	103'
Bentonite	123'	126'

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes ____ No ____
4. Date well completed 5/22/85
5. Permanent Pump Installed? Yes ____ Date ____ No ____
   Manufacturer ____ Type ____ Location ____
   Capacity ____ gpm. Depth of Setting ____ Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No ____
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ____ No ____
9. Pump and Equipment Disinfected? Yes ____ No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

This is a monitoring well.
Well Log and Split-Spoon Test Drilling Report Attached.

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Browning-Ferris Industries Winthrop Harbor Landfill Well No. G140
    Address Winthrop Harbor, IL
    Driller Peerless-Midwest, Inc. License No. 102-002995
11. Permit No. 1183856 Date ____
12. Water from ____ (Formation) 13. County Lake
    at depth ____ to ____ ft.
14. Screen: Diam. 2 in.
    Length: 5 ft. Slot .010
    Sec. 7, 7
    Twp. Benton
    Rge. 12E
    Elev. 764'±

SHOW LOCATION IN SECTION PLAT
SE NW N W

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
2	Schedule 40, 316 s.s.	2½' above grade	113

16. Size Hole below casing: 8 in.
17. Static level 101 ft. below casing top which is ____ ft. above ground level. Pumping level ____ ft. when pumping at ____ gpm for ____ hours.

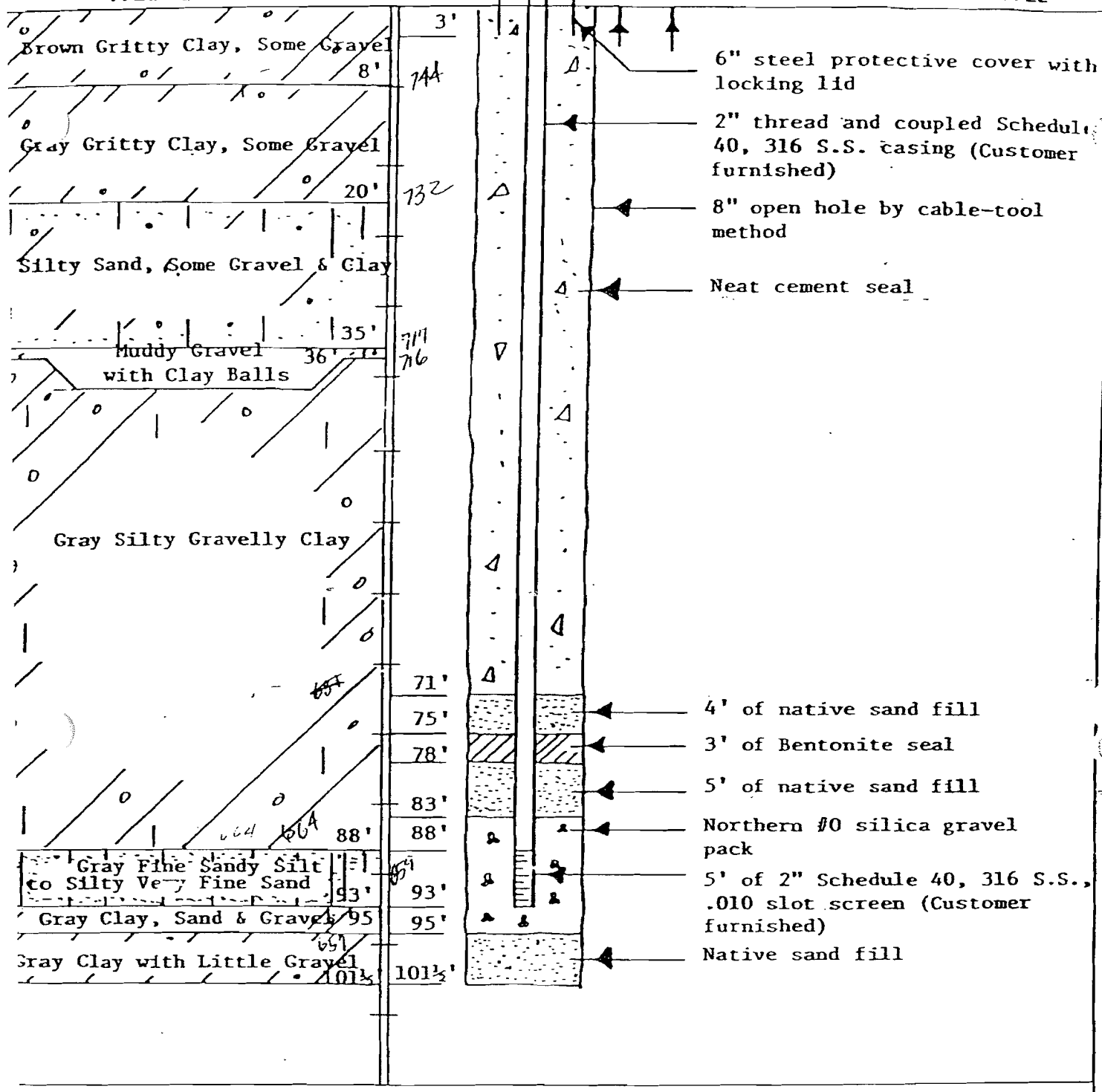
18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Gray Silty Clay, Occasional Gravel or Sand	94'	94'
Gravel & Gray Clay	1'	95'
Gray Clay with Gravel	23'	118'
Gravel & Gray Clay	2'	120'
Gray Silty Clay, Little Sand	13'	133'
Gray Clayey Gravelly Silt, Little Sand	22'	155'
Gray Sandy Clayey Silt, Stopped at 170'	15'	170'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED ____ DATE 7/18/85
Joseph P. Osborne

B-1/c

WELL LOG B-371 3' 2½' **GROUND LEVEL** 752 ±



ity Winthrop Harbor State Illinois

ocation 1305' North of 9th Street (Winthrop Harbor Rd.) & 540' East of Highway 131 (Green Bay Rd.)

ounty Lake Twp. Benton T46N-R12E Section NW¼SW¼NW¼ of 7

est Capacity _____ GPM. Static Water
evel 42 ft. Pumping Level _____ ft.
pe Capacity _____ GPM/Ft. D.D.
ate Drilled June 4, 1985
riller Mike Garrage
ob No. 5304

Well No G141
BROWNING-FERRIS INDUSTRIES
WINTHROP HARBOR LANDFILL
WINTHROP HARBOR, ILLINOIS

PEERLESS-MIDWEST, INC.
Granger, Indiana

Blue Copy – Well Owner

JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____ in. Depth ____ ft.
      Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock ____.
      Tubular ____. Gravel Packed X.
   d. Grout:

(KIND)	FROM (FT.)	TO (FT.)
Neat Cement	0'	71'
Bentonite	75'	78'

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes ____ No ____
4. Date well completed 6/4/85
5. Permanent Pump Installed? Yes ____ Date ____ No ____
   Manufacturer ____ Type ____ Location ____
   Capacity ____ gpm. Depth of Setting ____ Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No ____
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ____ No ____
9. Pump and Equipment Disinfected? Yes ____ No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

This is a monitoring well. Well Log and Split-Spoon Test Drilling Report attached.

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Browning-Ferris Industries Winthrop Harbor Landfill Well No. G141
    Address Winthrop Harbor, IL
    Driller Peerless-Midwest, Inc. License No. 102-002995
11. Permit No. 118385 Date ____
12. Water from ____ (Formation)
    at depth ____ to ____ ft.
    14. Screen: Diam. 2 in.
    Length: 5 ft. Slot ____
13. County Lake
    Sec. 7 ~~2~~
    Twp. Benton
    Rge. 12E
    Elev. 752'±

SHOW LOCATION IN SECTION PLAT
NW SW NW

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
2	Schedule 40, 316 S.S.	2½' above grade	71'

16. Size Hole below casing: 8 in.
17. Static level 42 ft. below casing top which is ____ ft. above ground level. Pumping level ____ ft. when pumping at ____ gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Gritty Clay, Some Gravel	8'	8'
Grny Gritty Clay, Some Gravel	12'	20'
Silty Sand, Some Gravel	15'	35'
Muddy Gravel with Clay Balls	1'	36'
Gray Silty Gravelly Clay	52'	88'
Gray Fine Sandy Silt to Silty Very Fine Sand	5'	93'
Gray Clay, Sand & Gravel	2'	95'
Gray Clay with Little Gravel	6½'	101½'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

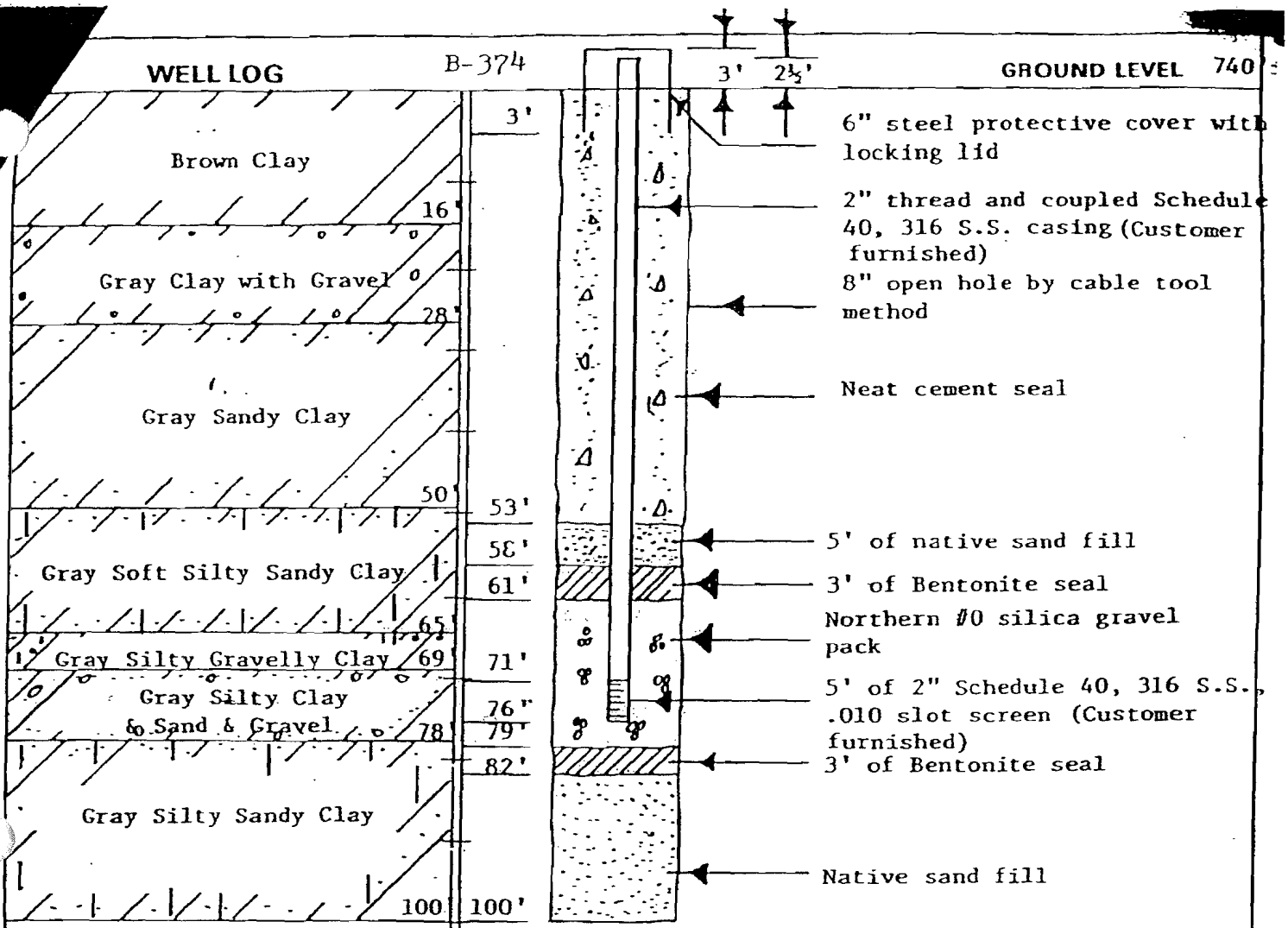
SIGNED [signature] DATE 7/18/85
Joseph P. Osborne

B-373

WELL LOG

B-374

GROUND LEVEL 740'



City Winthrop Harbor State Illinois

Location 1255' North of Ninth Street (Winthrop Harbor Rd.) & 100' East of Highway 131 (Green Bay Rd.) T46N-R11E

County Lake Twp. Newport Section NE¼SE¼NE¼ of 12

Test Capacity _____ GPM. Static Water Level 52 ft. Pumping Level _____ ft.

Specific Capacity _____ GPM/Ft. D.D.

Date Drilled June 5, 1985

Driller John Blatz

Job No. 5304

Well No G142

BROWNING-FERRIS INDUSTRIES
WINTHROP HARBOR LANDFILL
WINTHROP HARBOR, ILLINOIS

PEERLESS-MIDWEST, INC.
Granger, Indiana

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUE[illegible] AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HE[illegible]H PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT ATTACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ___ Bored ___. Hole Diam. ___ in. Depth ___ ft.
      Curb material ___. Buried Slab: Yes ___ No ___.
   b. Driven ___. Drive Pipe Diam ___ in. Depth ___ ft.
   c. Drilled X. Finished in Drift ___. In Rock ___.
      Tubular ___. Gravel Packed X.
   d Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Neat Cement	0'	53'
Bentonite	58'	61'
Bentonite	78'	82'

2. Distance to Nearest:
   Building ___ Ft. Seepage Tile Field ___
   Cess Pool ___ Sewer (non Cast iron) ___
   Privy ___ Sewer (Cast iron) ___
   Septic Tank ___ Barnyard ___
   Leaching Pit ___ Manure Pile ___
3. Well furnishes water for human consumption? Yes ___ No ___
4. Date well completed 6/5/85
5. Permanent Pump Installed? Yes ___ Date ___ No ___
   Manufacturer ___ Type ___ Location ___
   Capacity ___ gpm. Depth of Setting ___ Ft.
6. Well Top Sealed? Yes ___ No ___ Type ___
7. Pitless Adapter Installed? Yes ___ No ___
   Manufacturer ___ Model Number ___
   How attached to casing? ___
8. Well Disinfected? Yes ___ No ___
9. Pump and Equipment Disinfected? Yes ___ No ___
10. Pressure Tank Size ___ gal. Type ___
    Location ___
11. Water Sample Submitted? Yes ___ No ___

REMARKS:

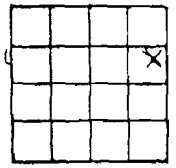
This is a monitoring well. Well Log and Split-Spoon Test Drilling Report Attached.

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

Browning-Ferris Industries
Winthrop Harbor Landfill

10. Property owner ___ Well No. G142
    Address Winthrop Harbor, IL
    Driller Peerless-Midwest, Inc. License No. 102-002995
11. Permit No. 1183886 Date ___
12. Water from ___ (Formation) at depth ___ to ___ ft.
13. County Lake
    Sec. 12/F
    Twp. Newport
    Rge. 11E
    Elev. 740'±
14. Screen: Diam. 2 in.
    Length: 5 ft. Slot ___



SHOW LOCATION IN SECTION PLAT
NE SE NE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
2	Schedule 40, 316 S.S.	2½' above grade	71'

16. Size Hole below casing: 8 in.
17. Static level 52 ft. below casing top which is ___ ft. above ground level. Pumping level ___ ft. when pumping at ___ gpm for ___ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	16'	16'
Gray Clay with Gravel	12'	28'
Gray Sandy Clay	22'	50'
Gray Soft Silty Sandy Clay	15'	65'
Gray Silty Gravelly Clay	4'	69'
Gray Silty Clay & Sand & Gravel	9'	78'
Gray Silty Sandy Clay	22'	100'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED ___ DATE 7/18/85
Joseph P. Osborne

B-376

FIGURE 2

COMPLETION REPORT: GROUND WA . MONITORING WELL B-383 | WELL NO.: G-143

Location of Site: BFI WINTHROP HARBOR FACILITY | Northing: 11304.38

Well Drilling Contractor: Patrick Engineering | Easting: 7883.34

Driller: Pat Bolger Geologist: Craig R. Smith | Collar Elevation:

Purpose of Well: Monitor Interglacial sand aquifer | Date Completed: 12/30/87

Comments: Well # changed from R-142 to G-143 | Total Depth: 105.0

WELL CONSTRUCTION DETAILS

LOCK:

CAP: PVC

TYPE OF SURFACE CASING: 6" O.D. Steel Well Protector

748.31 MSL - Surf. Casing Collar Elev.

748.23 MSL - Riser Pipe Collar Elev.

___.__ FT. - Riser Pipe Height Above Ground Elev.

___.__ MSL - Drainhole Elev.

___.__ - GROUND ELEV., MSL

GENERALIZED RESIDUAL SOILS

Note: Show Elev. where water 1st. encountered & Static Level.

Soil Zone:

From: . MSL Elev.

To: . MSL Elev.

Till/Alluvium/

Weathered Zone:

From: . MSL Elev.

To: . MSL Elev.

Soil/Rock Above Aquifer:

From: . MSL Elev.

To: . MSL Elev.

AQUIFER MONITORED:

From: . MSL Elev.

To: . MSL Elev.

Aqu. Perm. ___ cm/sec.

Soil/Rock Below Aquifer:

From: . MSL Elev.

To: . MSL Elev.

___.__ MSL - Water 1st. Encountered

▽ ___.__ MSL - Static (Stable) Water Level

___.__ FT. - Depth of Surface Seal Below Ground

Type of Surface Seal: Portland Cement

Quan. Used: 7 bags

___.__ FT.- Depth of Surface Casing Below Ground

_____ IN.- Inner Diam. of Surf. Casing

8 IN.- Diam. of Borehole

Type of Riser pipe: PVC flush joint, Schedule 40, 2.067" I.D. riser pipe 2.375" O.D. riser pipe to 48.5' below ground surface

Type of Riser Pipe: Stainless steel flush joint, Sched. 40

2.067 IN.- Inner Diam.-Riser Pipe

2.375 IN.- Outer Diam.- Riser Pipe

Type of Riser Joint/Coupling: flush joint, o-rings & teflon taped

658.27 MSL- Top of Screen Elev.

Type of Coupling/Joint-Screen to Riser Pipe: Flush joint, teflon taped

Type of Screen: 0.010" slot continuously wound #304 stainless steel

Opening Size: 0.010"

Opening Spacing: continuous slot

____ Openings in Screen

648.27 MSL- Bottom of Screen Elev.

0.2 FT.- Length of Tailpiece/ Blank Section/Cup.

648.07 MSL- Plug Elevation

Type of Plug: Screw on Stainless steel cap

97.5 FT.- Total Depth of Well Without cap

ANNULAR SPACE DETAILS

___.__ MSL Ground Surface Elevation

N/A MSL Top of Backfill Elevation

Type of Backfill: N/A

No. Bags Cement:

No. Bags Bentonite: 7

Type of Bentonite: Volclay Grout Mix

73.0 FT. Depth to Top of Seal

672.77 MSL Top of Seal Elev.

6.5 FT. Total Seal Interval

Type of Seal 3/8" Bentonite Pellets

79.5 FT. Depth to top of Sand Pack from Ground Sur:

662.27 MSL Elev. of Top of Sand

Type of Sand Pack: #40 washed Silica Sand

Source of Sand Wedron Silica Sand

Quantity of Sand Used: 14.50 lb. bags

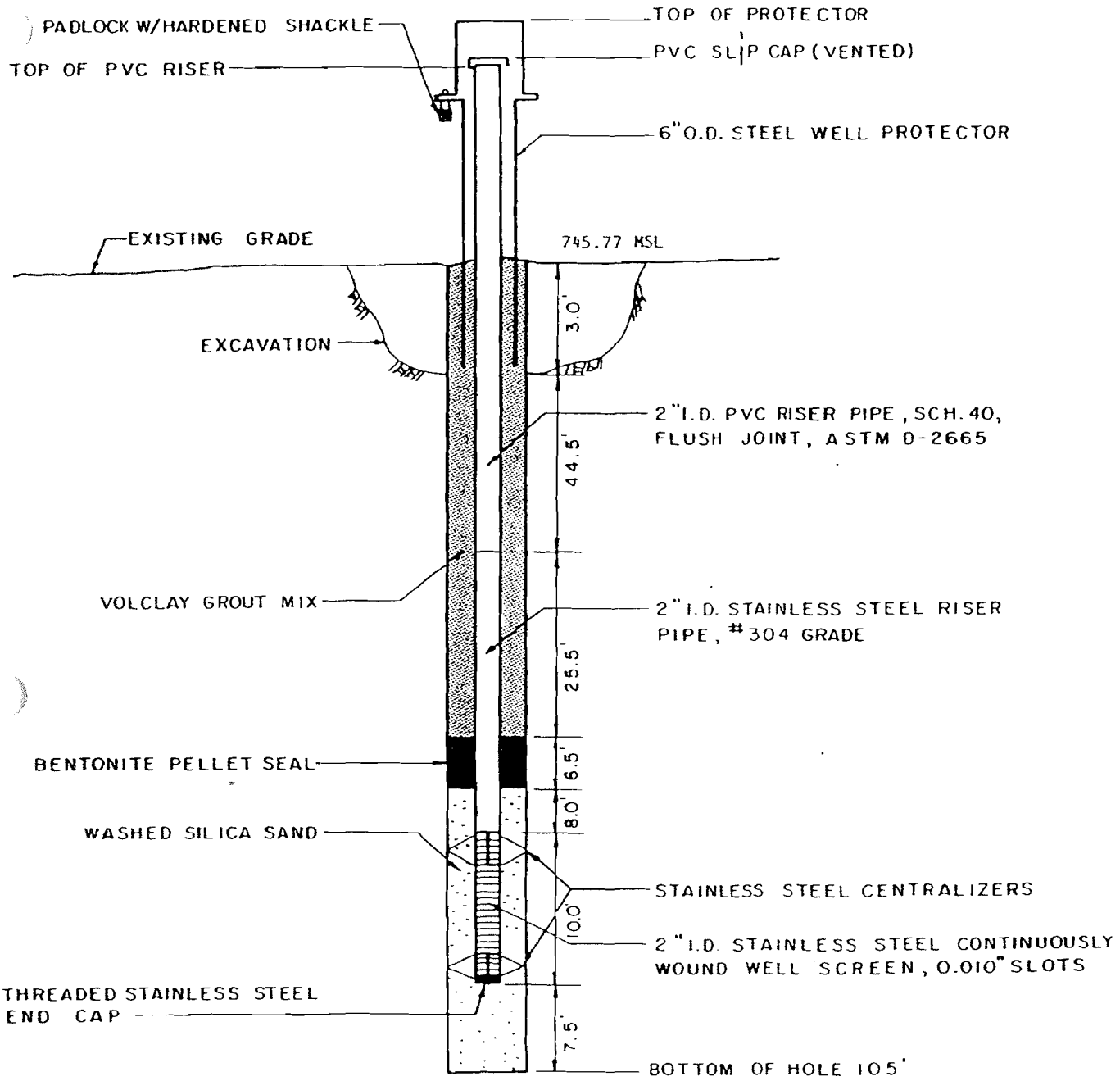
25.5 FT. Total Sand Pack Inter

___.__ MSL Bottom of Sand Pack Elevation

Type of Backfill Below Sand Pack

105.0 FT. Total Borehole Depth

___.__ MSL Elev. of Borehole Bot



NOT TO SCALE

NOTE:
ALL DEPTHS MEASURED FROM ORIGINAL GROUND SURFACE (BEFORE EXCAVATION TO PROVIDE DRILL RIG ACCESS).

BFI WINTHROP HARBOR FACILITY

DATE: JAN. 1988	JOB NUMBER: D151

WELL NO. G143
MONITORING WELL CONSTRUCTION RECORD

PATRICK ENGINEERING INC.
Engineers • Geolcgists • Hydrologists
Glen Ellyn, Illinois

Illinois Environmental Protection Agency

Well Completion Report

B-389

097802001 County Lake Well # G145

am BFI Zion Landfill Grid Coordinate: Northing 112+35.2 Easting 85+28.1

g Contractor: Testing Service Corporation Date Drilled Start: 8/26/94

: Dan Frazier Geologist: Frank Santella Date Completed: 8/26/94

g Method: 4.25 I.D. Hollowstem Augers Drilling Fluids (type): None

ular Space Details

of Surface Seal: Concrete

of Annular Sealant: Bentonite Grout

mount of cement: # of bags ____ lbs. per bag ____

mount of bentonite: # of bags 12 lbs. per bag 50

of Bentonite Seal (Granular, Pellet): Bentonite Chips

nt of bentonite: # of Bags 1 lbs. per bag 50

of Sand Pack: Coarse Grained (10-20 Grade) Silica Sand

e of Sand: Colorado Silica

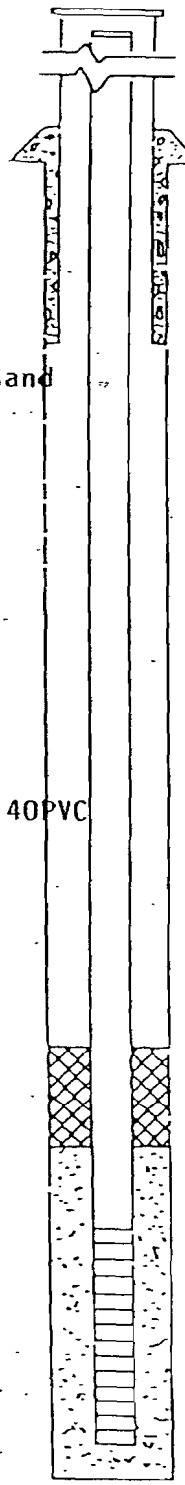
mount of Sand: # of bags 6 lbs. per bag 50

l Construction Materials

	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
r coupling joint	N/A Flush Threaded			
r pipe above w.t.	304 Stainless Steel		& Sched. 40PVC	
r pipe below w.t.	304 Stainless Steel			
en	304 Stainless Steel			
pling joint screen to riser	304 Flush Threaded			
tective casing	Steel			

asurements to .01 ft. (where applicable)

r pipe length	102.6 Feet
tective casing length	5 Feet
een length	10 Feet
tom of screen to end cap	2 Inches
p of screen to first joint	3 Inches
tal length of casing	112.8 Feet
r pt size	0.010 Inches
f openings in screen	----
meter of borehole (in)	7.75
) of riser pipe (in)	2



Elevations — .01 ft.

2.22	761.18	MSL Top of Protective Casing
1.80	760.77	MSL Top of Riser Pipe
1.80	1.8	ft. Casing Stickup
0	758.96	MSL Ground Surface
1.5	757.46	ft. Top of Surface seal
2.5	756.46	ft. Top of annular sealar
95.6	663.36	ft. Top of Seal
2.0	---	
---	---	ft. Total Seal Interval
97.6	661.36	ft. Top of Sand
100.8	658.16	ft. Top of Screen
10	---	ft. Total Screen Interval
110.8	648.16	ft. Bottom of Screen
111.0	647.96	ft. Bottom of Borehole

mpleted by: Frank Santella Surveyed by: Howard Surveying Co Ill. registration # 2342

Ill. of Public Health
Yellow Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 7.75 in. Depth____ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____

d. Grout:	(KIND)	FROM (Ft.)	TO (Ft.)
	Bentonite	95.6	2.5

2. Well furnishes water for human consumption? Yes___ No X
3. Date well drilled 08/26/94
4. Permanent pump installed? Yes ___ Date_____ No X
   Manufacturer_____ Type_____
   Location_____
   Capacity _____gpm. Depth of setting_____ _____ft.
5. Well top sealed? Yes X No___ Type_____
6. Pitless adapter installed? Yes___ No X
   Manufacturer_____ Model No._____
   How attached to casing?_____
7. Well disinfected? Yes___ No X
8. Pump and equipment disinfected Yes___ No X

IMPORTANT NOTICE

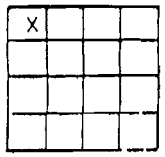
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Testing Service Corporation License No. Not Required
10. Well Site Address 701 Green Bay Road
11. Property Owner Brownig-Ferris Ind. Well No. G145
12. Permit No. N/A Date Issued---
13. Location: 112 +35.2 N
    85 +28.1 E
    County Lake
    Sec. 7
    Twp. 46N
    Rge. 12E



Show location in section plat

14. Water from Drift at depth 104 ft to 109 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
2	Sched. 40 pVC Riser	+1.8	90.8
2	304 Stainles Steel Riser	90.8	100.8
2	304 Stainless Steel Riser	100.8	110.8

B-390

16. Screen: Diam. 2 in, Length 120 in, Slot Size 0.010"
17. Size hole below casing____in. 18. Ground Elev._____ ft msl.
19. Static level___ft below casing top which is ___ft. above ground level. Pumping level ___ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Glacial Till - Brown Grey Silty Clay Little Sand and Gravel	0'	14.5
Glacial Till - Grey Silty Clay Little sand and gravel	14.5'	104
Glacial Till - Grey Silty Clay	104'	111'

Continue on separate sheet if necessary.

Signed_____ Date_____

Illinois Environmental Protection Agency

Well Completion Report

097802001 County Lake Well # G 146

Site Name: TESTING SERVICE CORPORATION Grid Coordinate: Northing 10461.85 Easting 8626.34

Drilling Contractor: TESTING SERVICE CORPORATION Date Drilled Start: 9-6-95

Driller: Greg Donovan Geologist: Frank Santella Date Completed: 9-11-95

Drilling Method: 4.25" Hollowstem Auger Drilling Fluids (type): None

Annular Space Details

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite Grout

Amount of cement: # of bags ____ lbs. per bag ____

Amount of bentonite: # of bags 6 lbs. per bag 50

Type of Bentonite Seal (Granular, Pellet): Bentonite Chips

Amount of bentonite: # of Bags 1 lbs. per bag 50

Type of Sand Pack: Coarse Grained (10-20) Grade Silica Sand

Source of Sand: Colorado Silica

Amount of Sand: # of bags 5 lbs. per bag 50

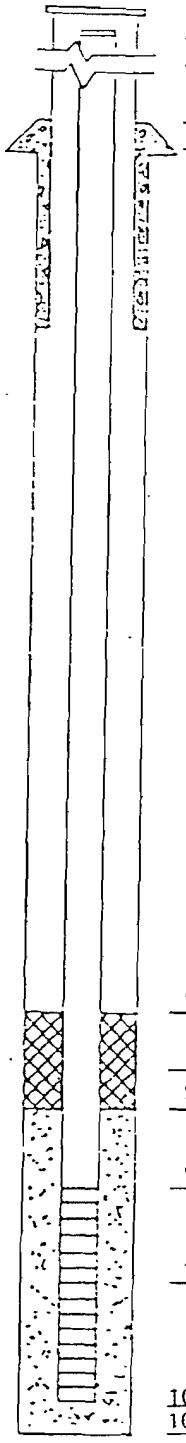
Well Construction Materials

	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint	N/A Flush Joint			
Riser pipe above w.t.	304 Stainless Steel & Schld. 40 PVC			
Riser pipe below w.t.	304 Stainless Steel			
Screen	304 Stainless Steel			
Coupling joint screen to riser	304 Flush Thread			
Protective casing	Steel			

Measurements

to .01 ft. (where applicable)

Riser pipe length	97.4
Protective casing length	5 feet
Screen length	10 feet
Bottom of screen to end cap	2 inches
Top of screen to first joint	3 inches
Total length of casing	107.6
Screen slot size	0.010 inches
% of openings in screen	---
Diameter of borehole (in)	7.75
ID of riser pipe (in)	2



Elevations — .01 ft.

2.65	741.75	MSL Top of Protective Casing
2.47	741.57	MSL Top of Riser Pipe
2.47	---	ft. Casing Stickup
0	739.10	MSL Ground Surface
1.5	737.60	ft. Top of annular sealant
3.0	736.10	ft. Top of annular seal
90.5	648.60	ft. Top of Seal
2.0	---	ft. Total Seal Interval
92.5	646.60	ft. Top of Sand
94.9	644.20	ft. Top of Screen
10.0	---	ft. Total Screen Interval
104.93	634.17	ft. Bottom of Screen
105.0	634.10	ft. Bottom of Borehole

David M. Ferriss Surveyed by: Howard Surveying Co. Ill. registration # 2342

Illinois Environmental Protection Agency — B-394 — Well Completion Report

e #: 097802001 — County: Lake — Well #: 6147

e i : BFI Zion Landfill — Grid Coordinate: Northing 10[illegible]49.8 — Easting 81.59.2

ing Contractor: Testing Service Corporation — Date Drilled Start: 9/1/94

iller: Dan Frazier — Geologist: Frank Santella — Date Completed: 9/1/94

rilling Method: 4.25 I.D. Hollowstem Augers — Drilling Fluids (type): None

nnular Space Details

ype of Surface Seal: Concrete

ype of Annular Sealant: Bentonite Grout

Amount of cement: # of bags ____ lbs. per bag ____

Amount of bentonite: # of bags 8 lbs. per bag 50

ype of Bentonite Seal (Granular, Pellet): Bentonite Chips

mount of bentonite: # of Bags 1 lbs. per bag 50

ype of Sand Pack: Coarse Grained (10-20 Grade) Silica Sand

ource of Sand: Colorado Silica

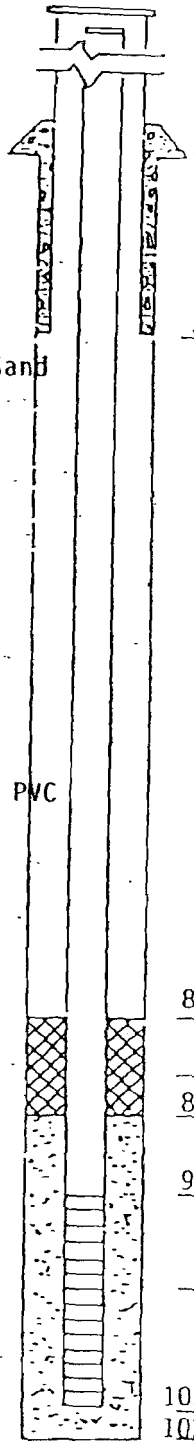
Amount of Sand: # of bags 8 lbs. per bag 50

W Construction Materials

	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint	N/A Flush Threaded			
Riser pipe above w.t.	304 Stainless Steel &		Sched. 40 PVC	
Riser pipe below w.t.	304 Stainless Steel			
Screen	304 Stainless Steel			
Coupling joint screen to riser	304 Flush Threaded			
Protective casing	Steel			

Measurements to .01 ft (where applicable)

Riser pipe length	95.14 Feet
Protective casing length	5 Feet
Screen length	10 Feet
Bottom of screen to end cap	2 Inches
Top of screen to first joint	3 Inches
Total length of casing	105.34 feet
Screen slot size	0.010 Inches
openings in screen	------
meter of borehole (in)	7.75
ID of riser pipe (in)	2



Elevations — .01 ft.

2.51	741.46	MSL Top of Protective Casing
2.34	741.29	MSL Top of Riser Pipe
2.34	2.34	ft. Casing Stickup
0	738.95	MSL Ground Surface
2.0	736.95	ft. Top of Surface seal
3.0	735.95	ft. Top of annular sealar
84.7	654.25	ft. Top of Seal
2.6	---	
---	---	ft. Total Seal Interval
87.3	651.65	ft. Top of Sand
92.8	646.15	ft. Top of Screen
10	---	ft. Total Screen Interval
102.8	636.15	ft. Bottom of Screen
103.0	635.95	ft. Bottom of Borehole

Completed by: Frank Santella — Surveyed by: Howard Surveying Co. Inc. — Ill. registration #: 2342

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 7.75 in. Depth____ft
      Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Bentonite	84.7	3

2. Well furnishes water for human consumption? Yes___ No X
3. Date well drilled 09/02/94
4. Permanent pump installed? Yes ___ Date_____ No X
   Manufacturer_____ Type_____
   Location_____
   Capacity _____gpm. Depth of setting_____ft.
5. Well top sealed? Yes X No___ Type_____
6. Pitless adapter installed? Yes___ No X
   Manufacturer_____ Model No._____
   How attached to casing?_____
7. Well disinfected? Yes___ No X
8. Pump and equipment disinfected Yes___ No X

IMPORTANT NOTICE

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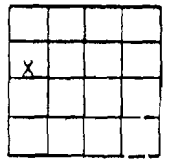
PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Testing Service Corp, License No. Not Req.
10. Well Site Address 701 Green Bay Rd.
11. Property Owner Browning-Ferris Ind. Well No. G147
12. Permit No. N/A Date Issued ---
13. Location: 108 + 49.8N
    81 + 51.2E
    County Lake
    Sec. 7
    Twp. 46N
    Rge. 12E



Show location in section plat

14. Water from Drift at depth 94 ft to 95 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
2	Sched. 40 PVC Riser	+2.3	82.8
2	304 Stainless Steel Riser	82.8	92.8
2	304 Stainless Steel Screen	92.8	102.8

16. Screen: Diam. 2 in, Length 120 in, Slot Size 0.010"
17. Size hole below casing____in. 18. Ground Elev._____ ft msl.
19. Static level___ft below casing top which is ___ft. above ground level. Pumping level ___ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Glacial Till-Brown Grey Silty Clay Little Sand and Gravel	0'	14.5
Glacial Till-Grey Silty Clay Sand and Gravel	14.5	94'
Glacial Till - Grey Silty Clay with interbedded silt and v. fine sand seams	94'	103'

Continue on separate sheet if necessary.

Signed_____ Date_____

B-395

...nmental Protection Agency

B-399

Well Completion Report

01 County Lake Well # G148

BFI Zion Landfill Grid Coordinate: Northing 104+15.4 Easting 81+34.8

...tor: Testing Service Corporation Date Drilled Start: 11/28/94

...eg Donavin Geologist: Frank Santella Date Completed: 11/28/94

...thod: 4.25 I.D. Hollowstem Augers Drilling Fluids (type): None

Space Details

...rface Seal: Concrete

...nular Sealant: Bentonite Grout

...t of cement: # of bags ____ lbs. per bag ____

...t of bentonite: # of bags 9 lbs. per bag 50

...tonite Seal (Granular, Pellet): Bentonite Chips

...entonite: # of Bags 1 lbs. per bag 50

...d Pack: ~~Coarse Grained (10-20 grade) Silica~~ Sand

...nd: Colorado Silica

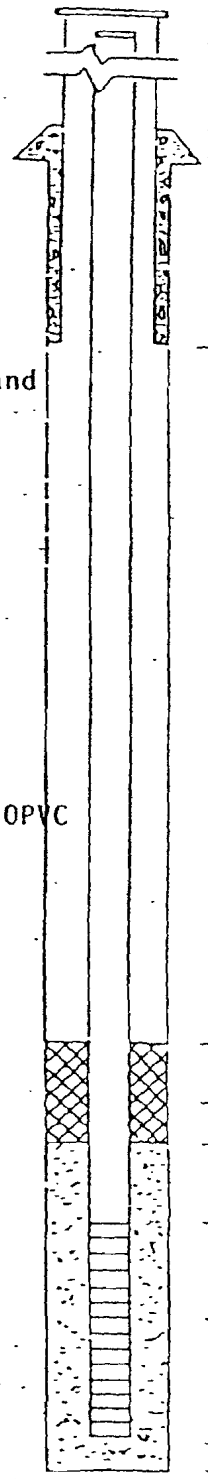
... of Sand: # of bags 6 lbs. per bag 50

...truction Materials

	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
...g joint	N/A Flush Threaded			
...ove w.l.	304 Stainless	Steel & Sched 40PVC		
...low w.l.	304 Stainless	Steel		
	304 Stainless	Steel		
...t screen to riser	304 Flush Threaded			
...sing	Steel			

...nts to .01 ft. (where applicable)

...gth	
...ng length	5 Feet
	10 Feet
...en to end cap	2 Inches
...o first joint	3 Inches
...casing	
	0.010 Inches
...n screen	---
...ch ...(in)	7.75
...in.	2



Elevations — .01 ft.

2.32 736.11 MSL Top of Protective Casing
2.34 736.13 MSL Top of Riser Pipe
2.34 2.34 ft. Casing Stickup

0 733.79 MSL Ground Surface
2.0 731.79 ft. Top of Surface seal

2.5 731.29 ft. Top of annular sealar

78.9 654.89 ft. Top of Seal
2.9 --- ft. Total Seal Interval
81.8 651.99 ft. Top of Sand

92.8 640.99 ft. Top of Screen

10 --- ft. Total Screen Interval

102.8 630.99 ft. Bottom of Screen
103.0 630.79 ft. Bottom of Borehole

Frank Santella Surveyed by: Howard Surfevors Co. Inc. registration # 2342

Ill. Department of Public Health
Yellow: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 7.75 in. Depth____ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Bentonite	78.9	2.5

2. Well furnishes water for human consumption? Yes___ No X
3. Date well drilled 11/30/94
4. Permanent pump installed? Yes ___ Date_____ No X
   Manufacturer_____ Type_____
   Location_____
   Capacity _____gpm. Depth of setting_____ft.
5. Well top sealed? Yes X No___ Type_____
6. Pitless adapter installed? Yes___ No X
   Manufacturer_____ Model No._____
   How attached to casing?_____
7. Well disinfected? Yes___ No X
8. Pump and equipment disinfected Yes___ No X

IMPORTANT NOTICE

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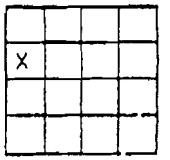
PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL4 126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Testing Service Corp. License No. Not. Req.
10. Well Site Address 701 Green Bay Rd.
11. Property Owner Browning-Ferris Ind. Well No. G148
12. Permit No. N/A Date Issued ---
13. Location: 104 + 15.4N
    81 + 34.8E
    County Lake
    Sec. 7
    Twp. 46N
    Rge. 12E



Show location in section plat

14. Water from Drift at depth 88.5 ft to 93. ft
15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
2	Sched. 40 PVC Riser	+2.3	73.8
2	304 Stainless Steel Riser	73.8	83.8
2	304 Stainless steel Screen	83.8	93.8

B-400

16. Screen: Diam. 2 in, Length 120 in, Slot Size 0.010"
17. Size hole below casing____in. 18. Ground Elev._____ ft msl.
19. Static level____ft below casing top which is ____ft. above ground level. Pumping level ____ft, pumping gpm for ____ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Glacial Till -Brown Grey Silty Clay Trace of Sand and Gravel	0'	17.5
Glacial Till - Grey Silty Clay Trace of sand/Gravel	17.5	93
Occasional interbedded sand and gravel seams		

Continue on separate sheet if necessary.

Signed_____ Date_____

Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: G160

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: G160

STATE PLANE COORDINATE: X _____ Y _____ (circle) LATITUDE: 42 · 29 · 8 · LONGITUDE: 87 · 54 · 13 ·

SURVEYED BY: C. Bergquist IL REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

CONSULTING FIRM: Golder Assoc. GEOLOGIST: M. Haddock

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: M. Haddock DATE STARTED: 9/22/97 DATE FINISHED: 9/24/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

TYPE OF BENTONITE SEAL – GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

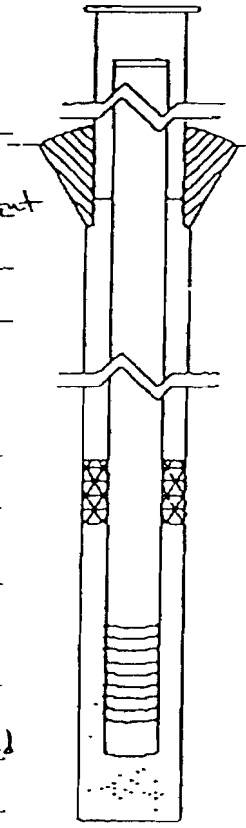
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: cave material / filter sand (IF APPLICABLE)

INSTALLATION METHOD: cave / tremie



ELEVATIONS (MSL)* DEPTHS (BGS) (.01 ft)

ELEVATIONS (MSL)*	DEPTHS (BGS)	
766.77	3.17	TOP OF PROTECTIVE CASING
766.26	2.66	TOP OF RISER PIPE
763.60	0.0	GROUND SURFACE
759.60	4.00	TOP OF ANNULAR SEALANT
660.58	103.02 ~~105.68~~	STATIC WATER LEVEL (AFTER COMPLETION)
759.60	4.00	TOP OF SEAL
644.60	119.00	TOP OF SANDPACK
641.60	122.00	TOP OF SCREEN
637.00	126.60	BOTTON OF SCREEN
636.60	127.00	BOTTON OF WELL
633.60	130.00	BOTTON OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
SCREEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	124.66
BOTTOM OF SCREEN TO END CAP (ft)	0.4
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.6
TOTAL LENGTH OF CASING (ft)	129.66
SCREEN SLOT SIZE **	0.006

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: G161

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: G161

ST/PL COORDINATE: X _____ Y _____ (or) LATITUDE: 42 . 29 . 8 . LONGITUDE: 87 . 54 . 9 .

SURVEYED BY: C. Bergquist IL REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

CONSULTING FIRM: Golder Assoc. GEOLOGIST: M. Haddock

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: M. Haddock DATE STARTED: 9/16/97 DATE FINISHED: 9/18/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High Solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

BENTONITE SEAL – GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

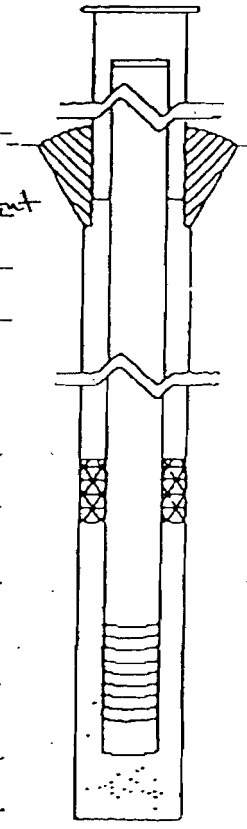
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: filter sand (IF APPLICABLE)

INSTALLATION METHOD: tremie



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
761.40	3.00	TOP OF PROTECTIVE CASING
760.91	2.51	TOP OF RISER PIPE
758.40	0.0	GROUND SURFACE
754.40	4.00	TOP OF ANNULAR SEALANT
659.51	98.89 ~~101.40~~	STATIC WATER LEVEL (AFTER COMPLETION)
754.40	4.00	TOP OF SEAL
644.40	114.00	TOP OF SANDPACK
640.60	117.80	TOP OF SCREEN
631.00	127.40	BOTTOM OF SCREEN
630.60	127.80	BOTTOM OF WELL
630.40	128.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
SCREEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	120.31
BOTTOM OF SCREEN TO END CAP (ft)	0.4
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	9.6
TOTAL LENGTH OF CASING (ft)	130.31
SCREEN SLOT SIZE **	0.006

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: G163

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: G163

S/P COORDINATE: X _____ Y _____ (or) LATITUDE: 42 . 29 . 8 . LONGITUDE: 87 . 54 . 1 .

SURVEYED BY: C. Bergquist IL REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

CONSULTING FIRM: Golder Assoc. GEOLOGIST: M. Haddock

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: M. Haddock DATE STARTED: 9/13/97 DATE FINISHED: 9/15/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

OF BENTONITE SEAL – GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

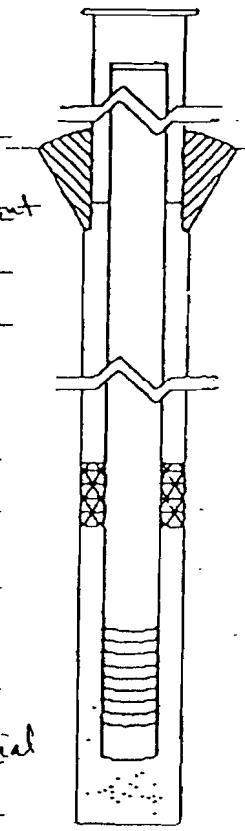
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: filter sand / cavid material (IF APPLICABLE)

INSTALLATION METHOD: tremie / cave



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
760.56	3.46	TOP OF PROTECTIVE CASING
760.12	3.02	TOP OF RISER PIPE
757.1	0.0	GROUND SURFACE
753.10	4.00	TOP OF ANNULAR SEALANT
659.25	97.85 ~~100.87~~	STATIC WATER LEVEL (AFTER COMPLETION)
753.10	4.00	TOP OF SEAL
658.10	99.00	TOP OF SANDPACK
655.10	102.00	TOP OF SCREEN
645.50	111.60	BOTTOM OF SCREEN
645.10	112.00	BOTTOM OF WELL
643.10	114.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
ER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
EEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

(0+0)

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	105.02
BOTTOM OF SCREEN TO END CAP (ft)	0.4
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	9.6
TOTAL LENGTH OF CASING (ft)	115.02
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency — Well Completion Report

SITE I.D.: 0978020002 COUNTY: Lake WELL I.D.: G177

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE I.D.: G177

COORDINATE: X _____ Y _____ (or) LATITUDE: 42° 28' 55" LONGITUDE: 87° 53' 43"

SURVEYED BY: C. Bergquist ILL. REGISTRATION I.D.: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

CONSULTING FIRM: Golder Assoc. GEOLOGIST: M. Haddock

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: M. Haddock DATE STARTED: 9/10/97 DATE FINISHED: 9/11/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

TYPE OF BENTONITE SEAL — GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

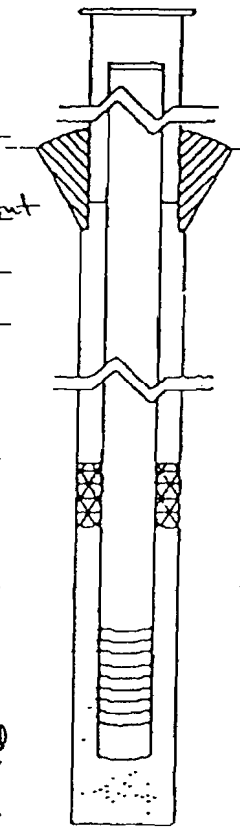
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 + 20/40 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: Sand / caved material (IF APPLICABLE)

INSTALLATION METHOD: tremie / cave



ELEVATIONS (MSL)* DEPTHS (BGS) (.01 ft)

ELEVATIONS (MSL)*	DEPTHS (BGS)	
738.47	3.07	TOP OF PROTECTIVE CASING
737.93	2.43	TOP OF RISER PIPE
735.40	0.0	GROUND SURFACE
731.40	4.00	TOP OF ANNULAR SEALANT
658.56	76.94 ~~79.37~~	STATIC WATER LEVEL (AFTER COMPLETION)
731.40	4.00	TOP OF SEAL
654.90	80.50	TOP OF SANDPACK
652.00	83.40	TOP OF SCREEN
647.40	88.00	BOTTOM OF SCREEN
647.00	88.40	BOTTOM OF WELL
645.40	90.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
ER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
REEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

.014)

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	85.83
BOTTOM OF SCREEN TO END CAP (ft)	0.4
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.6
TOTAL LENGTH OF CASING (ft)	90.83
SCREEN SLOT SIZE **	0.010

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: G179

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: G179

STATE PLANE COORDINATE: X _____ Y _____ (circle) LATITUDE: 42 • 28 • 49 • LONGITUDE: 87 • 53 • 43 •

SURVEYED BY: C. Bergquist IL REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

CONSULTING FIRM: Golder Assoc. GEOLOGIST: J. Miller

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: J. Miller DATE STARTED: 8/27/97 DATE FINISHED: 9/3/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

IF BENTONITE SEAL - GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

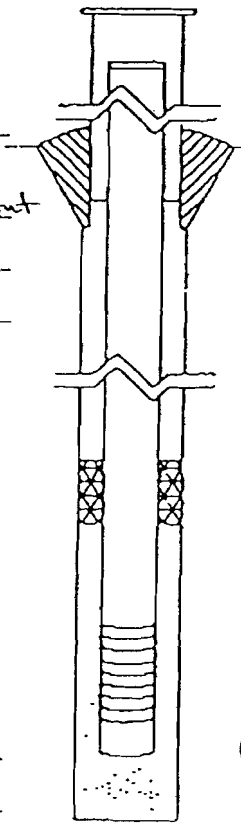
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: Sand (IF APPLICABLE)

INSTALLATION METHOD: tremie



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
736.07	2.57	TOP OF PROTECTIVE CASING
735.60	2.10	TOP OF RISER PIPE
733.50	0.00	GROUND SURFACE
729.50	4.00	TOP OF ANNULAR SEALANT
657.40	76.10 ~~78.20~~	STATIC WATER LEVEL (AFTER COMPLETION)
727.50	4.00	TOP OF SEAL
646.60	86.90	TOP OF SANDPACK
641.80	91.70	TOP OF SCREEN
637.20	96.30	BOTTOM OF SCREEN
636.80	96.70	BOTTOM OF WELL
635.50	98.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
SCREEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	93.8
BOTTOM OF SCREEN TO END CAP (ft)	0.4
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.6
TOTAL LENGTH OF CASING (ft)	98.8
SCREEN SLOT SIZE **	0.006

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: G180

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: G180

COORDINATE: X _____ Y _____ (or) LATITUDE: 42 · 28 · 48 · LONGITUDE: 87 · 53 · 46 ·

SURVEYED BY: C. Bergquist ILL REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

CONSULTING FIRM: Golder Assoc. GEOLOGIST: M. Haddock

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: M. Haddock DATE STARTED: 9/25/97 DATE FINISHED: 9/26/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

TYPE OF BENTONITE SEAL - GRANULAR, PELLET, (SLURRY) (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

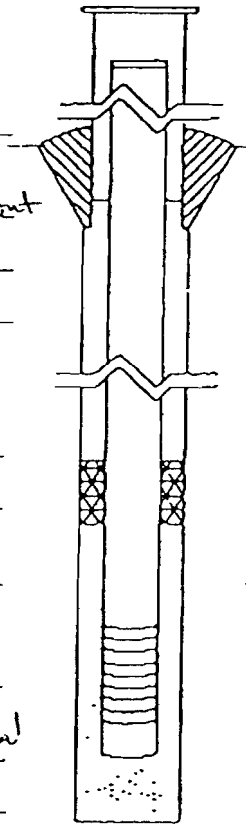
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: Sand/caved material (IF APPLICABLE)

INSTALLATION METHOD: tremie/cave



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
736.35	2.95	TOP OF PROTECTIVE CASING
735.84	2.44	TOP OF RISER PIPE
733.40	0.00	GROUND SURFACE
729.40	4.00	TOP OF ANNULAR SEALANT
657.43	~~78.91~~ 75.97	STATIC WATER LEVEL (AFTER COMPLETION)
729.40	4.00	TOP OF SEAL
647.40	86.00	TOP OF SANDPACK
644.00	89.40	TOP OF SCREEN
634.40	99.00	BOTTOM OF SCREEN
634.00	99.40	BOTTOM OF WELL
632.40	101.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
R PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
EEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	91.84
BOTTOM OF SCREEN TO END CAP (ft)	0.4
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	9.6
TOTAL LENGTH OF CASING (ft)	101.84
SCREEN SLOT SIZE **	0.006

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: G181

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: G181

COORDINATE: X _____ Y _____ (m) LATITUDE: 42 · 28 · 48 · LONGITUDE: 87 · 53 · 50 ·

SURVEYED BY: C. Bergquist ILL. REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

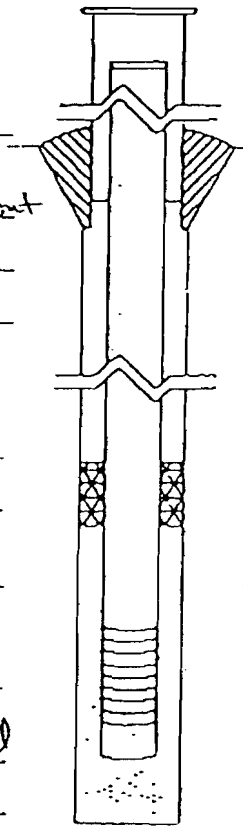
CONSULTING FIRM: Golder Assoc. GEOLOGIST: M. Haddock

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: M. Haddock DATE STARTED: 9/27/97 DATE FINISHED: 9/29/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS



TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

TYPE OF BENTONITE SEAL – GRANULAR, PELLET, (SLURRY) (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: Sand/cavel material (IF APPLICABLE)

INSTALLATION METHOD: tremie/cave

ELEVATIONS (MSL)* DEPTHS (BGS) (.01 ft)

(MSL)*	(BGS)	
737.93	2.93	TOP OF PROTECTIVE CASING
737.41	2.41	TOP OF RISER PIPE
735.00	0.00	GROUND SURFACE
731.00	4.00	TOP OF ANNULAR SEALANT
658.26	~~79.15~~ 76.74	STATIC WATER LEVEL (AFTER COMPLETION)
731.00	4.00	TOP OF SEAL
651.00	84.00	TOP OF SANDPACK
648.00	87.00	TOP OF SCREEN
643.40	91.60	BOTTOM OF SCREEN
643.00	92.00	BOTTOM OF WELL
640.00	95.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
SCREEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	89.41
BOTTOM OF SCREEN TO END CAP (ft)	0.4
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.6
TOTAL LENGTH OF CASING (ft)	94.41
SCREEN SLOT SIZE **	0.006

** – MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: G182

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: G182

STATE COORDINATE: X _____ Y _____ (or) LATITUDE: 42 · 28 · 48 · LONGITUDE: 87 · 53 · 54 ·

SURVEYED BY: C. Bergquist ILL REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

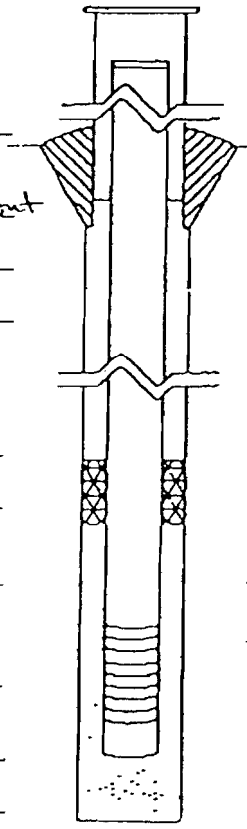
CONSULTING FIRM: Golder Assoc. GEOLOGIST: M. Haddock

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: M. Haddock DATE STARTED: 9/29/97 DATE FINISHED: 10/1/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS



TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

TYPE OF BENTONITE SEAL - GRANULAR, PELLET, (SLURRY) (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: Sand (IF APPLICABLE)

INSTALLATION METHOD: tremie

ELEVATIONS (MSL)* DEPTHS (BGS) (.01 ft)

ELEVATIONS (MSL)*	DEPTHS (BGS)	
741.12	2.92	TOP OF PROTECTIVE CASING
740.64	2.44	TOP OF RISER PIPE
738.20	0.00	GROUND SURFACE
734.20	4.00	TOP OF ANNULAR SEALANT
	79.71	
658.49	~~82.15~~	STATIC WATER LEVEL (AFTER COMPLETION)
734.20	4.00	TOP OF SEAL
653.20	85.00	TOP OF SANDPACK
651.20	87.00	TOP OF SCREEN
646.60	91.60	BOTTOM OF SCREEN
646.20	92.00	BOTTOM OF WELL
645.20	93.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
R PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
EEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	89.44
BOTTOM OF SCREEN TO END CAP (ft)	0.4
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.6
TOTAL LENGTH OF CASING (ft)	94.44
SCREEN SLOT SIZE **	0.006

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: G184

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: G184

STATE PLANE COORDINATE: X _____ Y _____ (m) LATITUDE: 42° 28' 48" LONGITUDE: 87° 51' 1"

SURVEYED BY: C. Bergquist IL REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

CONSULTING FIRM: Golder Assoc. GEOLOGIST: J. Miller

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: J. Miller DATE STARTED: 8/25/97 DATE FINISHED: 8/27/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

TYPE OF BENTONITE SEAL – GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

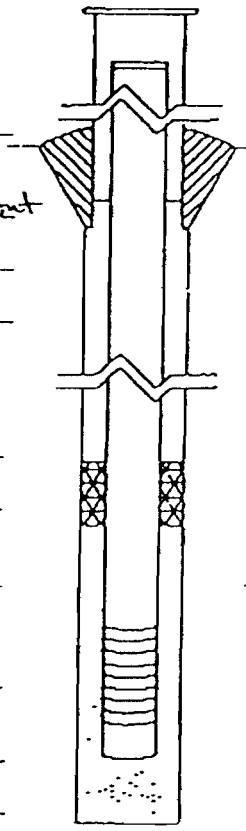
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: sand (IF APPLICABLE)

INSTALLATION METHOD: tremie



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
758.11	2.81	TOP OF PROTECTIVE CASING
757.60	2.30	TOP OF RISER PIPE
755.30	0.00	GROUND SURFACE
751.30	4.00	TOP OF ANNULAR SEALANT
657.04	98.26 / 100.56	STATIC WATER LEVEL (AFTER COMPLETION)
751.30	4.00	TOP OF SEAL
630.60	124.70	TOP OF SANDPACK
627.40	127.90	TOP OF SCREEN
622.80	132.50	BOTTOM OF SCREEN
622.40	132.90	BOTTOM OF WELL
622.30	133.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
SCREEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	130.2
BOTTOM OF SCREEN TO END CAP (ft)	0.4
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.6
TOTAL LENGTH OF CASING (ft)	135.2
SCREEN SLOT SIZE **	0.006

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

WELL COMPLETION REPORT

#: 097802002 COUNTY: Lake WELL #: G-165

SITE NAME: Onyx Zion Landfill BOREHOLE #: G-165

STATE PLANE COORDINATE: X 10929.60 Y 12503.50 (OR) LATITUDE: ___ ' ___ ' ___ " LONGITUDE: ___ ' ___ ' ___ "

SURVEYED BY: Carl Bergquist obo/Howard Surveying Co. IL REGISTRATION #: 2342

DRILLING CONTRACTOR: Fox Drilling DRILLER: Willy Goodwin

CONSULTING FIRM: EIL GEOLOGIST: A. Michael Hirt

DRILLING METHOD: 4¼" HSA w/SS Sampling to 116 FT; 3½" Tricone with casing to 111 FT; 10" Tricone w/out casing (0'-113') DRILLING FLUIDS (TYPE): water

LOGGED BY: A. Michael Hirt DATE STARTED: 11-16-00 DATE FINISHED: 11-16-00 (well casing) & 12-1-00 (protective casing)

REPORT FORM COMPLETED BY: A. Michael Hirt DATE: 12-1-00

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: Bentonite grout

INSTALLATION METHOD: tremie pipe

SETTING TIME: 15 days

TYPE OF BENTONITE SEAL – GRANULAR, PELLET, SLURRY (CHIPS) (CIRCLE ONE)

INSTALLATION METHOD: drop from surface

SETTING TIME: 45 minutes

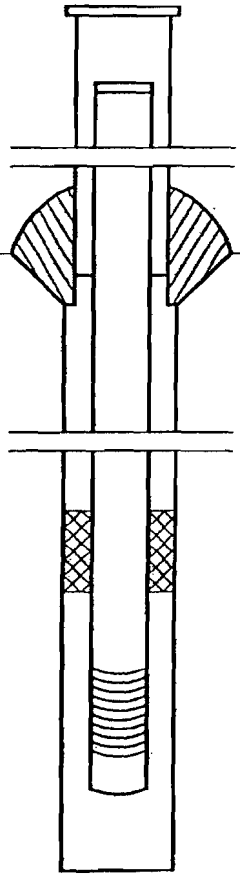
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: #6-7/8 (SIEVE SIZE)

INSTALLATION METHOD: tremie pipe/pour

TYPE OF BACKFILL MATERIAL: formation sand (IF APPLICABLE)

INSTALLATION METHOD: N/A



ELEVATIONS

ELEVATIONS (MSL)*	ELEVATIONS (BGS) (0.1 FT.)	
756.30	2.8	TOP OF PROTECTIVE CASING
755.95	2.4 (2.35)	TOP OF RISER PIPE
753.5	0.0	GROUND SURFACE
749.0	4.5	TOP OF ANNULAR SEALANT
663.97	91.88	STATIC WATER LEVEL (AFTER COMPLETION) (BTOC)
659.5	94.0	TOP OF SEAL
655.0	98.5	TOP OF SANDPACK
650.5	103.0	TOP OF SCREEN
641.1	112.4	BOTTOM OF SCREEN
640.8	112.7	BOTTOM OF WELL
640.5	113.0	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR (OTHER: anodized aluminum)
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:
SCREEN	SS304, SS316, PTFE, (PVC) OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (IN)	10.0
ID OF RISER PIPE (IN)	4.0
PROTECTIVE CASING LENGTH (FT)	5.0
RISER PIPE LENGTH (FT)	105.30'
BOTTOM OF SCREEN TO END CAP (FT)	0.30'
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (FT)	9.40'
TOTAL LENGTH OF CASING (FT)	115.00'
SCREEN SLOT SIZE **	0.006-inch

WELL COMPLETION REPORT

#: 09780200Z COUNTY: Lake WELL #: G-166

SITE NAME: Onyx Zion Landfill BOREHOLE #: G-166

STATE PLANE COORDINATE: X 11242.10 Y 12503.91 (OR) LATITUDE: ___ ° ___ ' ___ " LONGITUDE: ___ ° ___ ' ___ "

SURVEYED BY: Carl Beggwist OBE/Howard Surveying Co. IL REGISTRATION #: 2342

DRILLING CONTRACTOR: Fox Drilling DRILLER: Willy Goodwin

CONSULTING FIRM: EIL GEOLOGIST: A. Michael Hirt

DRILLING METHOD: 4½" HSA w/SS sampling to 13 ft; 3⅞" Tricone Wash Rotary to 105.5 ft DRILLING FLUIDS (TYPE): Water

LOGGED BY: A. Michael Hirt DATE STARTED: 10-26-00 DATE FINISHED: 10-26-00 (well casing and protective cover) 10-31-00

REPORT FORM COMPLETED BY: A. Michael Hirt DATE: 12-1-00

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Bentonite grout

INSTALLATION METHOD: tremie pipe

SETTING TIME: 5 days

TYPE OF BENTONITE SEAL – GRANULAR, PELLET, SLURRY (CIRCLE ONE) (CHIPS)

INSTALLATION METHOD: drop from surface

SETTING TIME: 40 minutes

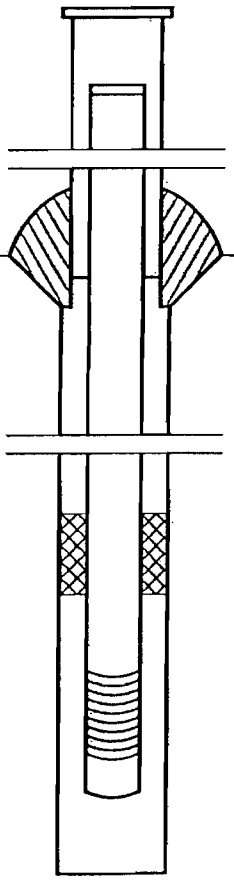
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: No. 7/9 (SIEVE SIZE)

INSTALLATION METHOD: tremie pipe / pour

TYPE OF BACKFILL MATERIAL: settled drill cuttings (IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	ELEVATIONS (BGS)	(0.1 FT.)
751.25	3.1	TOP OF PROTECTIVE CASING
750.70	2.6	TOP OF RISER PIPE
748.1	0.0	GROUND SURFACE
743.1	5.0	TOP OF ANNULAR SEALANT
663.30'	87.40	STATIC WATER LEVEL (AFTER COMPLETION) (BTOC)
662.1	86.0	TOP OF SEAL
657.1	91.0	TOP OF SANDPACK
652.9	95.2	TOP OF SCREEN
643.7	104.4	BOTTOM OF SCREEN
643.7	104.9	BOTTOM OF WELL
642.6	105.5	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR (OTHER: anodized aluminum)	
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:	
RISER PIPE BELOW W.T.	(SS304) SS316, PTFE, PVC OR OTHER:	
SCREEN	(SS304) SS316, PTFE, PVC OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (IN)	10.0
ID OF RISER PIPE (IN)	4.0
PROTECTIVE CASING LENGTH (FT)	5.0
RISER PIPE LENGTH (FT)	97.77
BOTTOM OF SCREEN TO END CAP (FT)	0.00 **
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (FT)	9.2
TOTAL LENGTH OF CASING (FT)	106.97
SCREEN SLOT SIZE **	0.006-inch

** welded coupling - no distance between screen and bottom of well

WELL COMPLETION REPORT

#: 097802002 COUNTY: Lake WELL #: G-167

SITE NAME: Onyx Zion Landfill BOREHOLE #: G-167

STATE PLANE COORDINATE: X 11541.67 Y 12511.14 (OR) LATITUDE: ___ ___ ___ " LONGITUDE: ___ ___ ___ "

SURVEYED BY: Carl Bergquist OBO/Hustad Surveying Co. IL REGISTRATION #: 2342

DRILLING CONTRACTOR: Fox Drilling DRILLER: Willy Goodwin

CONSULTING FIRM: EIL GEOLOGIST: A. Michael Hirt

DRILLING METHOD: 4¼" HSA w/SS sampling to 20 ft; 3½" tricone wash rotary to 102 ft; 15" tricone wash rotary (0-102ft) DRILLING FLUIDS (TYPE): water

LOGGED BY: A. Michael Hirt DATE STARTED: 10-19-00 DATE FINISHED: 10-19-00 (well casing + screen) 10-20-00 (protective casing)

REPORT FORM COMPLETED BY: A. Michael Hirt DATE: 12-1-00

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: Bentonite grout

INSTALLATION METHOD: tremie pipe

SETTING TIME: 11 days

TYPE OF BENTONITE SEAL – GRANULAR, PELLET, SLURRY (CIRCLE ONE) (CHIPS)

INSTALLATION METHOD: drop from surface

SETTING TIME: 40 minutes

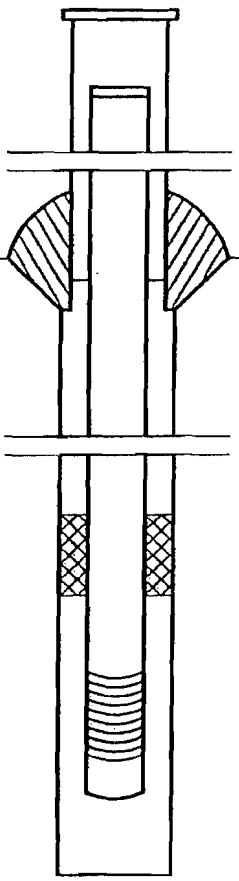
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: No. 7/8 (SIEVE SIZE)

INSTALLATION METHOD: tremie pipe/pour

TYPE OF BACKFILL MATERIAL: settled drill cuttings (IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS

ELEVATIONS (MSL)*	ELEVATIONS (BGS)	(0.1 FT.)
750.10	3.1	TOP OF PROTECTIVE CASING
749.60	2.6	TOP OF RISER PIPE
747.0	0.0	GROUND SURFACE
742.5	4.5	TOP OF ANNULAR SEALANT
665.81	83.79	STATIC WATER LEVEL (AFTER COMPLETION) (BTOC)
663.0	84.0	TOP OF SEAL
657.6	89.4	TOP OF SANDPACK
653.4	93.6	TOP OF SCREEN
648.8	98.2	BOTTOM OF SCREEN
648.8	98.2	BOTTOM OF WELL
648.0	99.0	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR (OTHER: anodized aluminum)
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:
RISER PIPE BELOW W.T.	(SS304,) SS316, PTFE, PVC OR OTHER:
SCREEN	(SS304,) SS316, PTFE, PVC OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (IN)	10.0
ID OF RISER PIPE (IN)	4.0
PROTECTIVE CASING LENGTH (FT)	5.0
RISER PIPE LENGTH (FT)	96.18'
BOTTOM OF SCREEN TO END CAP (FT)	0.00 **
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (FT)	4.60'
TOTAL LENGTH OF CASING (FT)	100.78'
SCREEN SLOT SIZE **	0.006-inch

** welded endcap - no distance between screen and bottom of well

12050\DL\G1DL1

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **G168**

SITE NAME: Veolia ES Zion Landfill BOREHOLE #: **G168**

NORTHING 12,506.7 EASTING 11,844.6 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Douglas L. Howard, P.L.S. ILL. REGISTRATION #: 2669

DRILLING CONTR. RD-n-P Drilling, Inc. DRILLER: Jerry Copak

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Joe Miller

DRILLING METHOD: 6" and 8" Wash/Mud Rotary DRILLING FLUIDS (TYPE): Clean Water/Bentonite

LOGGED BY: Ryan Patton DATE STARTED: 12/10/07 DATE FINISHED: 02/19/08

REPORT FORM COMPLETED BY: Ryan Patton DATE: 02/27/08

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Cement/Bentonite

TYPE OF ANNULAR SEALANT: Bentonite Grout

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

TYPE BENTONITE SEAL- GRANULAR, PELLET, SLURRY
(CIRCLE ONE)

INSTALLATION METHOD: Gravity

SETTING TIME: > 24 hrs

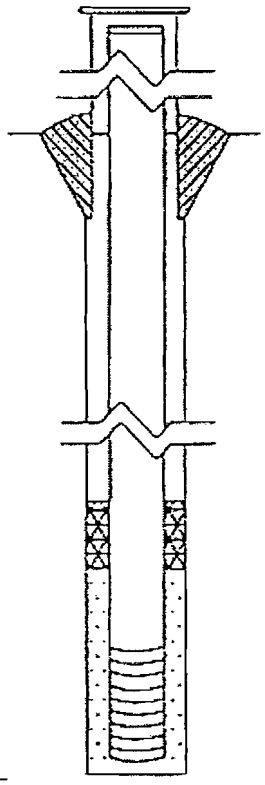
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 20/40 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA
(IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
749.50	3.0	TOP OF PROTECTIVE CASING
749.08	2.6	TOP OF RISER PIPE
746.5	0.0	GROUND SURFACE
744.0	2.5	TOP OF ANNULAR SEALANT
714.5	32.0	BOTTOM OF 6.0" SECONDARY STEEL CASING
661.39	87.69	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
662.5	84.0	TOP OF SEAL
657.5	89.0	TOP OF SANDPACK
653.3	93.2	TOP OF SCREEN
643.7	102.8	BOTTOM OF SCREEN
643.2	103.4	BOTTOM OF WELL
639.5	107.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	6 & 8
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	95.80
BOTTOM OF SCREEN TO END CAP (ft)	0.54
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	9.59
TOTAL LENGTH OF CASING (ft)	105.93
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **G169**

SITE NAME: Veolia ES Zion Landfill BOREHOLE #: **G169**

NORTHING 12,505.6 EASTING 12,141.5 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Douglas L. Howard, P.L.S. ILL. REGISTRATION #: 2669

DRILLING CONTR. RD-n-P Drilling, Inc. DRILLER: Jerry Copak

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Joe Miller

DRILLING METHOD: 6" and 8" Wash/Mud Rotary DRILLING FLUIDS (TYPE): Clean Water/Bentonite

LOGGED BY: Ryan Patton DATE STARTED: 12/07/07 DATE FINISHED: 02/19/08

REPORT FORM COMPLETED BY: Ryan Patton DATE: 02/27/08

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Cement/Bentonite

TYPE OF ANNULAR SEALANT: Bentonite Grout

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

TYPE BENTONITE SEAL- GRANULAR, **PELLET**, SLURRY
(CIRCLE ONE)

INSTALLATION METHOD: Gravity

SETTING TIME: > 24 hrs

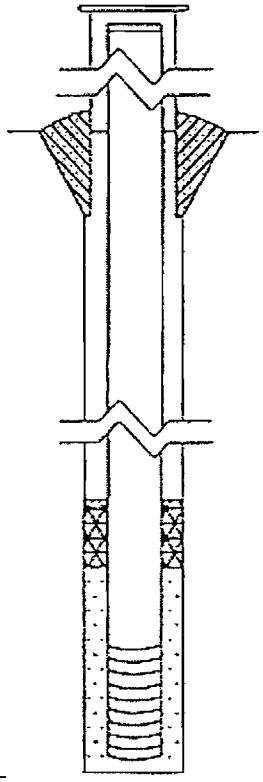
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 20/40 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA
(IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (.01 ft) (BGS)	
747.46	3.0	TOP OF PROTECTIVE CASING
747.14	2.6	TOP OF RISER PIPE
744.5	0.0	GROUND SURFACE
742.0	2.5	TOP OF ANNULAR SEALANT
713.5	31.0	BOTTOM OF 6.0" SECONDARY STEEL CASING
661.05	86.09	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
657.5	87.0	TOP OF SEAL
653.2	91.3	TOP OF SANDPACK
648.0	96.5	TOP OF SCREEN
638.5	106.0	BOTTOM OF SCREEN
637.9	106.6	BOTTOM OF WELL
637.5	107.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	6 & 8
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	99.11
BOTTOM OF SCREEN TO END CAP (ft)	0.54
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	9.55
TOTAL LENGTH OF CASING (ft)	109.20
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

WELL COMPLETION REPORT

I.E.P.A. #: 0978020002 COUNTY: Lake WELL #: G-176

SITE NAME: Onyx Zion Landfill BOREHOLE #: G-176

STATE PLANE COORDINATE: X 11859.06 Y 11464.78 (OR) LATITUDE: ——— LONGITUDE: ———

SURVEYED BY: Carl Bergquist obo/Howard Surveying Co. IL REGISTRATION #: 2342

DRILLING CONTRACTOR: Fox Drilling DRILLER: Willy Goodwin

CONSULTING FIRM: EJL GEOLOGIST: A. Michael Hirt

DRILLING METHOD: 7⅝" HSA w/ 6¼" tricone bit to 46 ft; 6¼" tricone with rotary (0-96 ft) DRILLING FLUIDS (TYPE): Water

LOGGED BY: A. Michael Hirt DATE STARTED: 11-7-00 DATE FINISHED: 11-7-00 (well casing/screen); 11-27-00 (protective cover)

REPORT FORM COMPLETED BY: A. Michael Hirt DATE: 12-1-00

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: bentonite chips

TYPE OF ANNULAR SEALANT: Bentonite grout

INSTALLATION METHOD: tremie pipe

SETTING TIME: 20 days

TYPE OF BENTONITE SEAL – GRANULAR, PELLET, SLURRY (CHIPS) (CIRCLE ONE)

INSTALLATION METHOD: drop from surface

SETTING TIME: ≈30 minutes

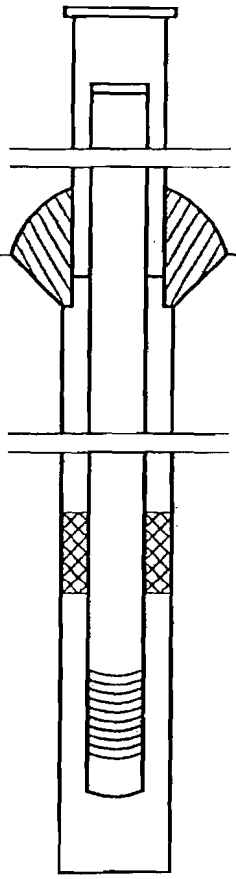
TYPE OF SAND PACK: Silica sand

GRAIN SIZE: No 7/8 (SIEVE SIZE)

INSTALLATION METHOD: tremie pipe/pour

TYPE OF BACKFILL MATERIAL: Silica sand (IF APPLICABLE)

INSTALLATION METHOD: tremie pipe/pour



ELEVATIONS

ELEVATIONS (MSL)*	ELEVATIONS (BGS)	(0.1 FT.)
738.77	3.3	TOP OF PROTECTIVE CASING
738.14	2.6	TOP OF RISER PIPE
735.50	0.0	GROUND SURFACE
735.0	0.5	TOP OF ANNULAR SEALANT
663.51	74.63	STATIC WATER LEVEL (AFTER COMPLETION) (BTOC)
661.5	74.0	TOP OF SEAL
656.5	79.0	TOP OF SANDPACK
652.8	82.7	TOP OF SCREEN
643.6	91.9	BOTTOM OF SCREEN
643.6	91.9	BOTTOM OF WELL
642.4	93.1	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR (OTHER: galvanized aluminum)
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:
RISER PIPE BELOW W.T.	(SS304), SS316, PTFE, PVC OR OTHER:
SCREEN	(SS304), SS316, PTFE, PVC OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (IN)	10.0
ID OF RISER PIPE (IN)	4.0
PROTECTIVE CASING LENGTH (FT)	5.0
RISER PIPE LENGTH (FT)	85.31
BOTTOM OF SCREEN TO END CAP (FT)	0.00 **
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (FT)	9.2
TOTAL LENGTH OF CASING (FT)	94.51
SCREEN SLOT SIZE **	0.006-inch

** welded endcap - no distance between screen and bottom of well

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Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: G178

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: G178

STATE PLANE COORDINATE: X _____ Y _____ (-) LATITUDE: 42 · 28 · 52 · LONGITUDE: 87 · 53 · 43 ·

SURVEYED BY: C. Bergquist IL REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

CONSULTING FIRM: Golder Assoc. GEOLOGIST: M. Haddock

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: M. Haddock DATE STARTED: 9/4/97 DATE FINISHED: 9/10/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

OF BENTONITE SEAL - GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

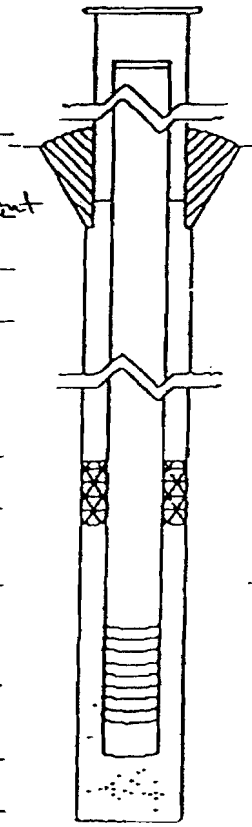
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: filter sand (IF APPLICABLE)

INSTALLATION METHOD: tremie



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
737.65	3.15	TOP OF PROTECTIVE CASING
737.16	2.66	TOP OF RISER PIPE
734.50	0.00	GROUND SURFACE
730.50	4.00	TOP OF ANNULAR SEALANT
657.91	76.59 ~~79.25~~	STATIC WATER LEVEL (AFTER COMPLETION)
730.50	4.00	TOP OF SEAL
648.50	86.00	TOP OF SANDPACK
645.40	89.10	TOP OF SCREEN
640.80	93.7	BOTTOM OF SCREEN
639.9	94.6	BOTTOM OF WELL
638.50	96.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
SCREEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	91.76
BOTTOM OF SCREEN TO END CAP (ft)	0.9
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.6
TOTAL LENGTH OF CASING (ft)	97.26
SCREEN SLOT SIZE **	0.006

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY — LOG OF BORE HOLE

I.D.: 0978102 0002 COUNTY: Lake WELL #: G182

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: G182

STATE PLANE COORDINATE: X _____ Y _____ (or) LATITUDE: 42 • 28 • 48 LONGITUDE: 87 • 53 • 54

SURVEYED BY: C. Bergquist ILL REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

CONSULTING FIRM: Golder Assoc. GEOLOGIST: M. Haddock

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: M. Haddock DATE STARTED: 9/29/97 DATE FINISHED: 10/1/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High Solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

TYPE OF BENTONITE SEAL – GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

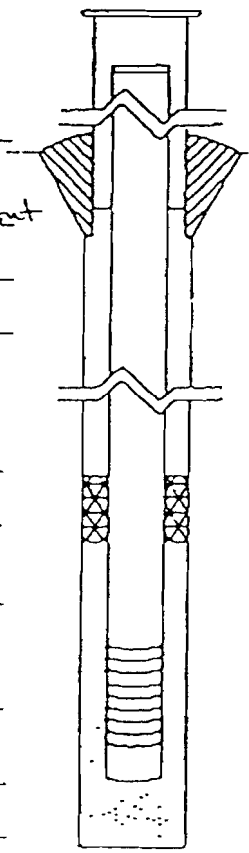
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: Sand (IF APPLICABLE)

INSTALLATION METHOD: tremie



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
741.12	2.92	TOP OF PROTECTIVE CASING
740.64	1.44	TOP OF RISER PIPE
738.20	0.00	GROUND SURFACE
734.20	4.00	TOP OF ANNULAR SEALANT
	79.71	
658.49	~~82.15~~	STATIC WATER LEVEL (AFTER COMPLETION)
734.20	4.00	TOP OF SEAL
653.20	85.00	TOP OF SANDPACK
651.20	87.00	TOP OF SCREEN
646.60	91.60	BOTTOM OF SCREEN
646.20	92.00	BOTTOM OF WELL
645.20	93.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
SCREEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	89.44
BOTTOM OF SCREEN TO END CAP (ft)	0.4
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.6
TOTAL LENGTH OF CASING (ft)	94.44
SCREEN SLOT SIZE **	0.006

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

(8/1014)

WELL COMPLETION REPORT

IEPA #: 0978020002 COUNTY: Lake WELL #: G191

SITE NAME: Onyx Zion Landfill BOREHOLE #: G191

STATE PLANE COORDINATE: Northing 12567.8 Easting 11666.3 (OR) LATITUDE: — ° — ' — " LONGITUDE: — ° — ' — "

SURVEYED BY: Howard Surveying IL REGISTRATION #: 2342

DRILLING CONTRACTOR: K+S Drilling, Inc. DRILLER: Pete Delacruz

CONSULTING FIRM: EIL GEOLOGIST: Rick Polad

DRILLING METHOD: 6" HSA to 10' - 4" mud rotary wash to 102' - 10" tricone rotary to 102' DRILLING FLUIDS (TYPE): Water

LOGGED BY: Rick Polad DATE STARTED: 9-17-01 DATE FINISHED: 9-24-01

REPORT FORM COMPLETED BY: Rick Polad DATE: 10-16-01

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Bentonite Grout

INSTALLATION METHOD: Tremie Pipe

SETTING TIME: > 24 Hours

TYPE OF BENTONITE SEAL – GRANULAR, PELLET, SLURRY (chips) (CIRCLE ONE)

INSTALLATION METHOD: Pour

SETTING TIME: > 24 Hours

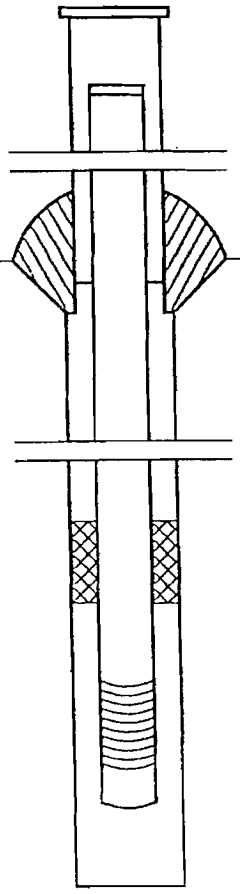
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: #5/7 (SIEVE SIZE)

INSTALLATION METHOD: Pour

TYPE OF BACKFILL MATERIAL: Silica Sand (IF APPLICABLE)

INSTALLATION METHOD: Pour



ELEVATIONS (MSL)*	ELEVATIONS (BGS) (0.1 FT.)	
740.77	2.7	TOP OF PROTECTIVE CASING
740.19	2.1	TOP OF RISER PIPE
738.1	0.0	GROUND SURFACE
735.1	3.0	TOP OF ANNULAR SEALANT
660.04	78.06	STATIC WATER LEVEL (AFTER COMPLETION)
655.3	82.8	TOP OF SEAL
651.4	86.7	TOP OF SANDPACK
647.1	91.0	TOP OF SCREEN
637.7	100.4	BOTTOM OF SCREEN
637.2	100.9	BOTTOM OF WELL
636.1	102.0	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR (OTHER:)
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:
SCREEN	SS304, SS316, PTFE, (PVC) OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (IN)	10
ID OF RISER PIPE (IN)	4
PROTECTIVE CASING LENGTH (FT)	5.0
RISER PIPE LENGTH (FT)	93.13
BOTTOM OF SCREEN TO END CAP (FT)	0.47
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (FT)	9.4
TOTAL LENGTH OF CASING (FT)	103.00
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

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Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: GC2S

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: GC2S

STATE COORDINATE: X _____ Y _____ (or) LATITUDE: 42° 28' 52" LONGITUDE: 87° 54' 14"

SURVEYED BY: C. Bergquist ILL REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

CONSULTING FIRM: Golder Assoc. GEOLOGIST: J. Miller

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: J. Miller DATE STARTED: 8/19/97 DATE FINISHED: 8/21/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

OF BENTONITE SEAL — GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

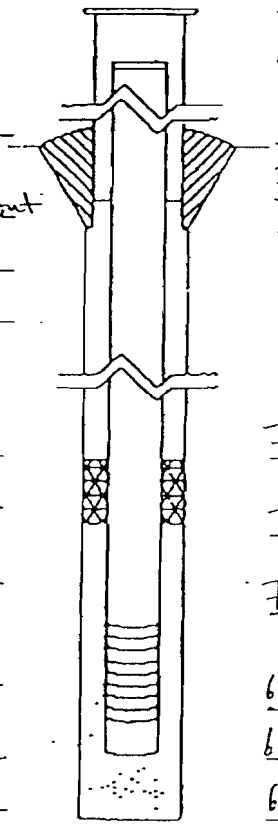
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: filler sand (IF APPLICABLE)

INSTALLATION METHOD: tremie



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
805.89	3.39	TOP OF PROTECTIVE CASING
805.39	2.89	TOP OF RISER PIPE
802.50	0.0	GROUND SURFACE
798.50	4.00	TOP OF ANNULAR SEALANT
722.36	80.14	
~~883.03~~	~~83.03~~	STATIC WATER LEVEL (AFTER COMPLETION)
798.50	4.00	TOP OF SEAL
707.50	95.00	TOP OF SANDPACK
704.50	98.00	TOP OF SCREEN
699.90	102.60	BOTTOM OF SCREEN
699.50	103.00	BOTTOM OF WELL
697.50	105.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
SCREEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

(10/94)

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	100.89
BOTTOM OF SCREEN TO END CAP (ft)	0.4
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.6
TOTAL LENGTH OF CASING (ft)	105.89
SCREEN SLOT SIZE **	0.006

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

GW Monitoring Well Construction Log

Well No. 6C2S

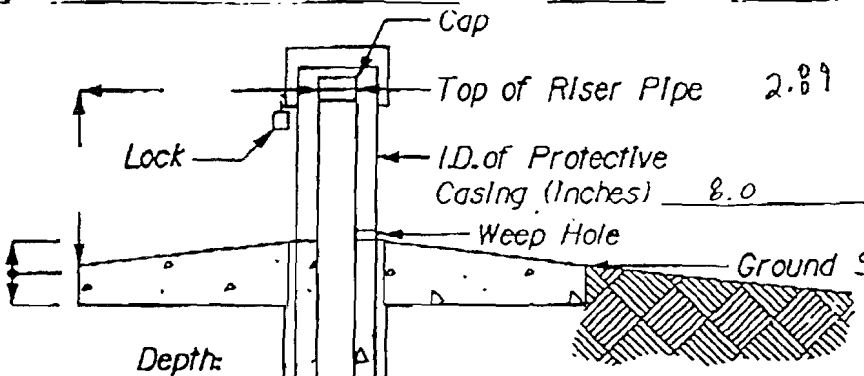
Site Name: Zion Landfill | Location: Zion, Illinois

Northing: 10833.8 | Easting: 9373.9 | Completion Date: 8-21-97

Consultant: Holder Associates Inc. | Driller: Aqua drill | Drilling Methods: 10" Wash/mud Rotary

Geologist: Joseph O. Miller | Static Water Level: 699.71 | Date: 10/20/97

Estimated Elevation (MSL): 805.39



	Depth:	
798.5	4.0'	Base of Concrete Seal
		I.D. of Riser Pipe (Inches) 4.0
		Type of Riser Pipe +2.8' - 87.7': PVC, 87.7' - 98.0': stainless steel
		Diameter of Borehole (Inches) 10
		Type of Annular Seal Bensal Bentonite Slurry
798.5	4.0'	Top of Seal
		Type of Seal Bensal Bentonite Slurry
707.5	95.0'	Top of Sand Pack
704.5	98.0'	Top of Screen
		Screen Mfg. by: Johnson - U.S. Filter
		Screen slot size (Inches): 0.006
		Size of Sand Pack 40/60
		Filter Pack Predeveloped? (yes/no)
699.9	102.6'	Bottom of Screen
	~ 102.6'	Centralizer Type: stainless steel
699.5	103.0'	Bottom of Casing
697.5	105.0'	Bottom of Filter Pack
		Type of Backfill filter Sand
697.5	105.0'	Total Depth of Borehole

*Note: All depths are measured from Ground Surface.

/lana4/std/geo/mwasb.dgn

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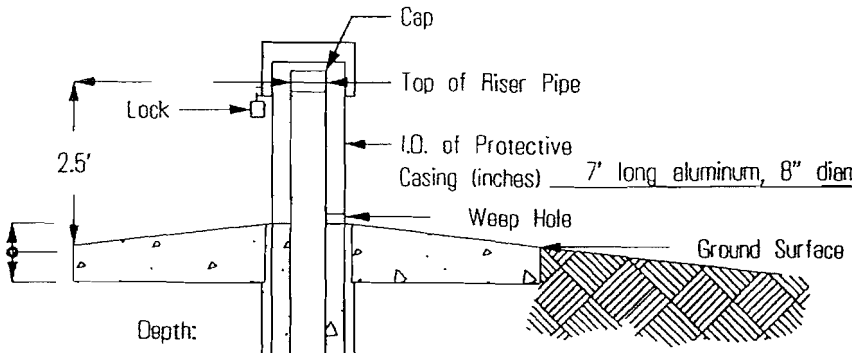
AUG 29 '95 03:55PM GROUNDWATER SERVICES

Groundwater Monitoring Well As-Built

Well No. GC3S

Site Name: BFI Zion Landfill	Location: Upgradient	
Northing: 10432.38	Easting: 9433.34	Completion Date: 5/14/97
Consultant: Golder Associates Inc.	Driller: Greg Donovan	Drilling Methods: Wash/Mud Rotary
Geologist: J. Miller	Static Water Level:	Date:



Elevation (MSL)	Depth	
749.8	4.0	Base of Concrete Seal I.D. of Riser Pipe (inches) 4" Type of Riser Pipe +2-38.3':4" PVC, 38.3-48.2':4" Stainless Steel Diameter of Borehole (inches) 10" Type of Annuler Seal Volclay Grout II
749.8	4.0	Top of Seal Type of Seal Volclay Grout II
709.8	44.0	Top of Sand Pack
705.2	48.6	Top of Screen Screen slot size (inches): 0.006 Size of Sand Pack 52-58.5':30/40, 44-52':40/60 Filter Pack Predeveloped? (yes) / no)
696.2	57.6	Bottom of Screen Centralizer Type: Stainless Steel
695.9	57.9	Bottom of Casing
695.3	58.5	

*Note: All depths are measured from Ground Surface.

Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: GG25

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: GG25

COORDINATE: X _____ Y _____ (N) LATITUDE: 42° 28' 48" LONGITUDE: 87° 53' 54"

SURVEYED BY: C. Bergquist ILL REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

CONSULTING FIRM: Golder Assoc. GEOLOGIST: M. Haddock

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: M. Haddock DATE STARTED: 10/1/97 DATE FINISHED: 10/2/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High Solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

TYPE OF BENTONITE SEAL - GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

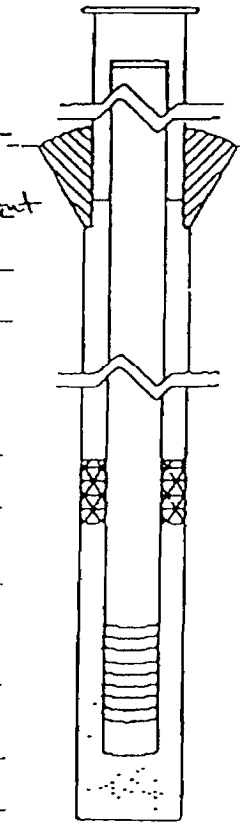
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: filler sand (IF APPLICABLE)

INSTALLATION METHOD: tremie



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
741.19	2.79	TOP OF PROTECTIVE CASING
740.66	2.26	TOP OF RISER PIPE
738.40	0.0	GROUND SURFACE
734.40	4.00	TOP OF ANNULAR SEALANT
696.79	41.61 ~~43.87~~	STATIC WATER LEVEL (AFTER COMPLETION)
~~734.40~~	4.00	TOP OF SEAL
698.40	40.00	TOP OF SANDPACK
695.40	43.00	TOP OF SCREEN
690.80	47.60	BOTTOM OF SCREEN
690.40	48.00	BOTTOM OF WELL
689.40	49.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
R PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
EEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

D+O)

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	45.26
BOTTOM OF SCREEN TO END CAP (ft)	0.4
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.6
TOTAL LENGTH OF CASING (ft)	50.26
SCREEN SLOT SIZE **	0.006

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: GG45

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: GG45

STATE PLANE COORDINATE: X _____ Y _____ (circle) LATITUDE: 42 · 28 · 48 · LONGITUDE: 87 · 54 · 1 ·

SURVEYED BY: C. Bergquist IL REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

CONSULTING FIRM: Golder Assoc. GEOLOGIST: J. Miller

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: J. Miller DATE STARTED: 8/22/97 DATE FINISHED: 8/23/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

TYPE OF BENTONITE SEAL – GRANULAR, PELLET, (SLURRY) (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

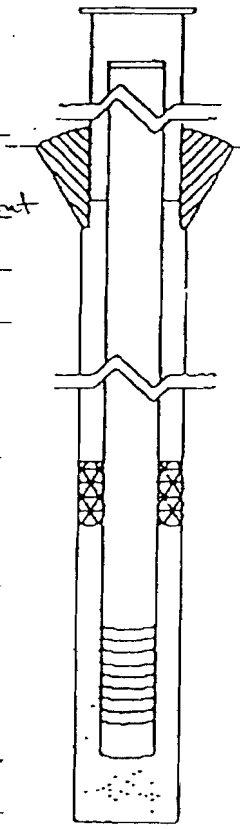
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: filter sand (IF APPLICABLE)

INSTALLATION METHOD: tremie



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
757.65	2.75	TOP OF PROTECTIVE CASING
757.16	2.26	TOP OF RISER PIPE
754.9	0.0	GROUND SURFACE
750.90	4.00	TOP OF ANNULAR SEALANT
718.73	36.17 ~~38.13~~	STATIC WATER LEVEL (AFTER COMPLETION)
750.90	4.00	TOP OF SEAL
710.30	44.60	TOP OF SANDPACK
707.10	47.80	TOP OF SCREEN
697.50	57.40	BOTTOM OF SCREEN
697.10	57.80	BOTTOM OF WELL
696.90	58.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
SCREEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	50.06
BOTTOM OF SCREEN TO END CAP (ft)	0.4
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	9.6
TOTAL LENGTH OF CASING (ft)	60.06
SCREEN SLOT SIZE **	0.006

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: GF 7S

SITE NAME: BFI Zion Sanitary Landfill BOREHOLE #: GF-7S

STATE COORDINATE: X _____ Y _____ (m) LATITUDE: 42 · 28 · 55 · LONGITUDE: 87 · 53 · 43 ·

SURVEYED BY: C. Bergquist ILL REGISTRATION #: 2342

DRILLING CONTRACTOR: Aquadrill DRILLER: D. Auld

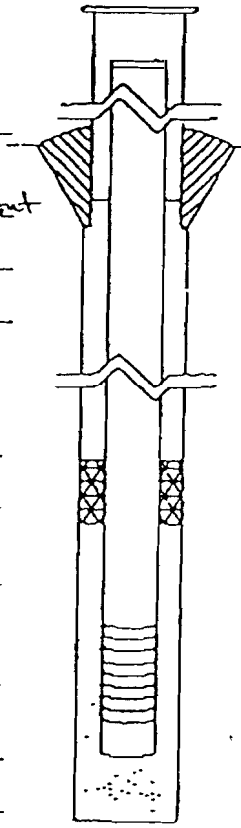
CONSULTING FIRM: Golder Assoc. GEOLOGIST: M. Haddock

DRILLING METHOD: Mud Rotary DRILLING FLUIDS (TYPE): Mud (bentonite)

LOGGED BY: M. Haddock DATE STARTED: 9/12/97 DATE FINISHED: 9/12/97

REPORT FORM COMPLETED BY: M. Sandfort DATE: 11/26/97

ANNULAR SPACE DETAILS



TYPE OF SURFACE SEAL: concrete

TYPE OF ANNULAR SEALANT: High Solid bentonite grout

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

% OF BENTONITE SEAL — GRANULAR, PELLET, (SLURRY) (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: >24 hrs

TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: tremie

TYPE OF BACKFILL MATERIAL: filter sand tremie

INSTALLATION METHOD: (IF APPLICABLE) tremie

ELEVATIONS (MSL)* / DEPTHS (BGS) (.01 ft)

ELEVATIONS (MSL)*	DEPTHS (BGS)	
738.63	3.23	TOP OF PROTECTIVE CASING
738.16	2.76	TOP OF RISER PIPE
735.40	0.0	GROUND SURFACE
731.40	4.00	TOP OF ANNULAR SEALANT
	23.14	
712.26	~~25.90~~	STATIC WATER LEVEL (AFTER COMPLETION)
731.40	4.00	TOP OF SEAL
704.40	31.00	TOP OF SANDPACK
701.30	34.10	TOP OF SCREEN
696.70	38.70	BOTTOM OF SCREEN
696.40	39.00	BOTTOM OF WELL
695.40	40.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Al
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER: PVC
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER: SS304
SCREEN	SS304, SS316, PTFE, PVC OR OTHER: SS304

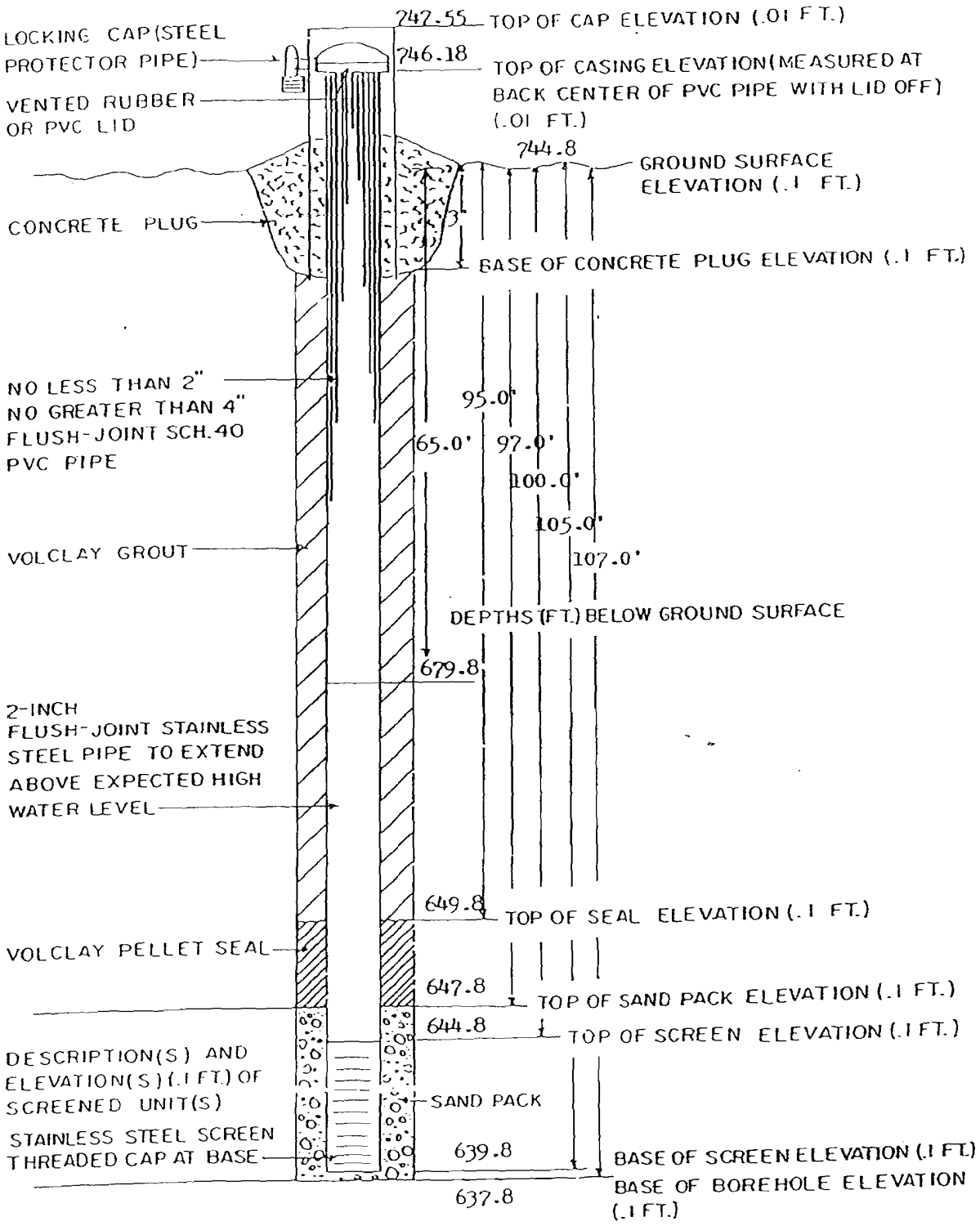
CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	5
RISER PIPE LENGTH (ft)	36.86
BOTTOM OF SCREEN TO END CAP (ft)	0.3
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.6
TOTAL LENGTH OF CASING (ft)	41.76
SCREEN SLOT SIZE **	0.006

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

WELL NO. GK1D

WELL COORDINATES 12582.34N 10045.74E

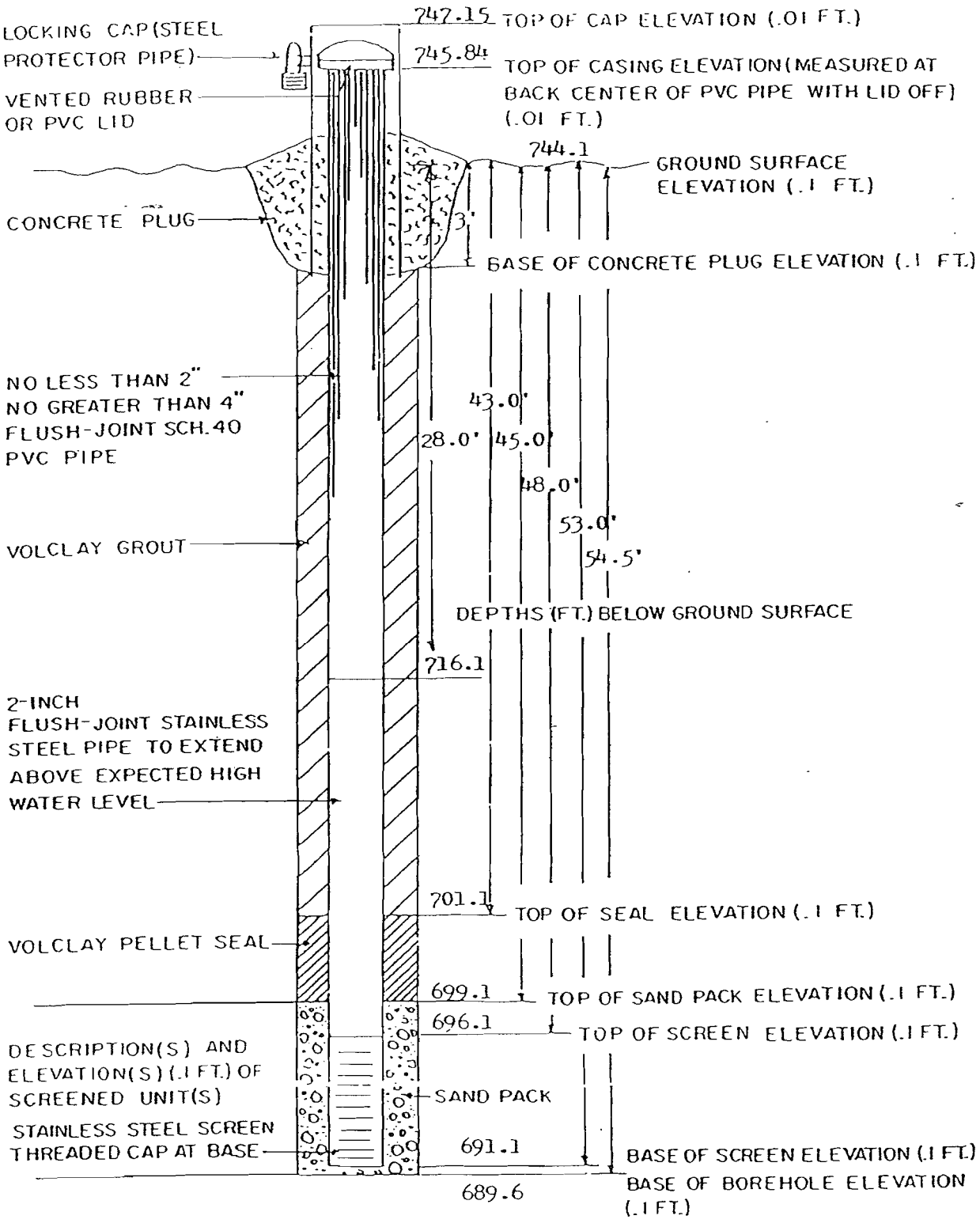


MONITORING WELL CONSTRUCTION DETAIL

NO SCALE

RLJ

WELL NO. GK1S WELL COORDINATES 12584.66N 10054.61E

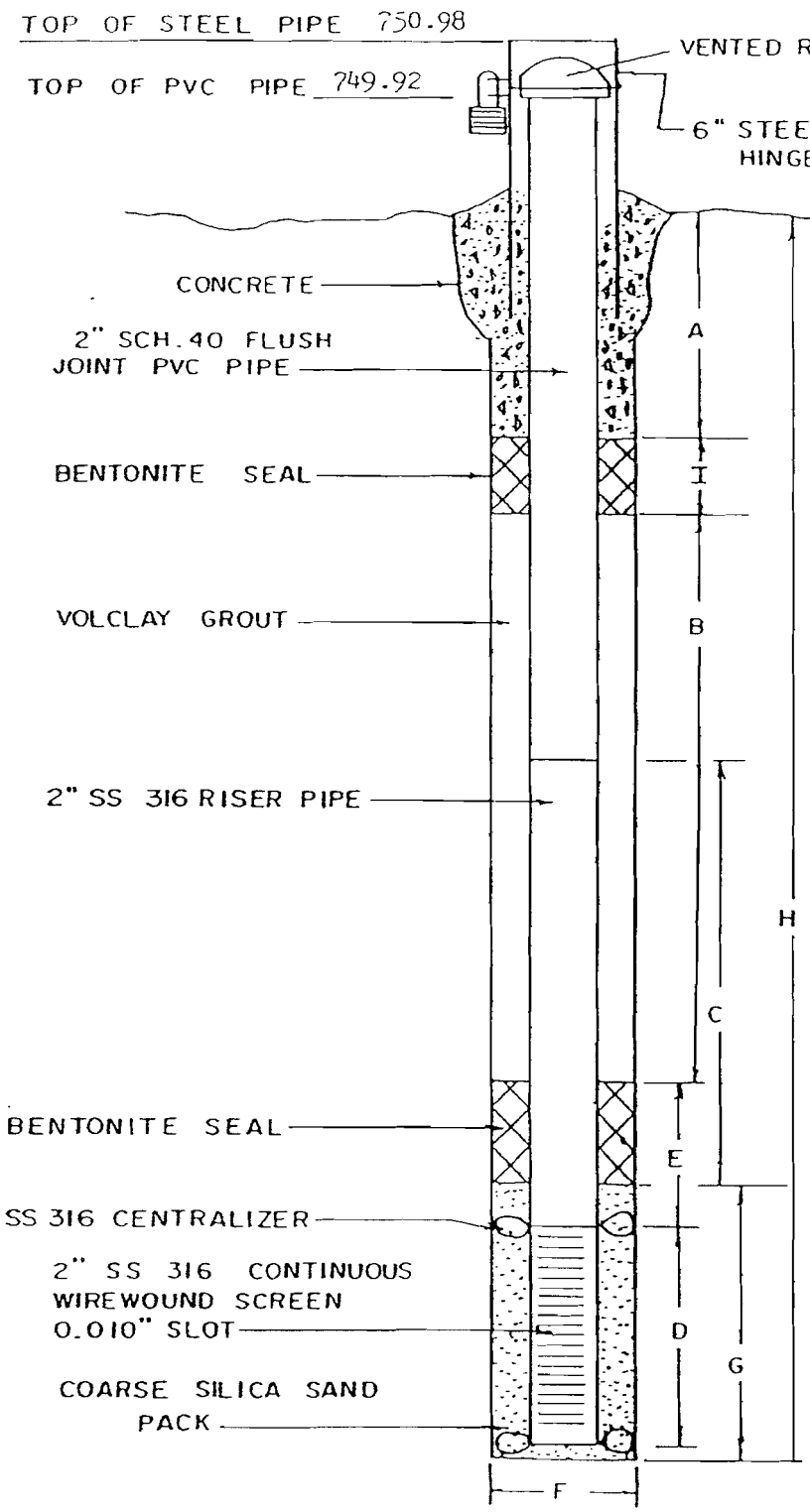


MONITORING WELL CONSTRUCTION DETAIL

NO SCALE

RLJ

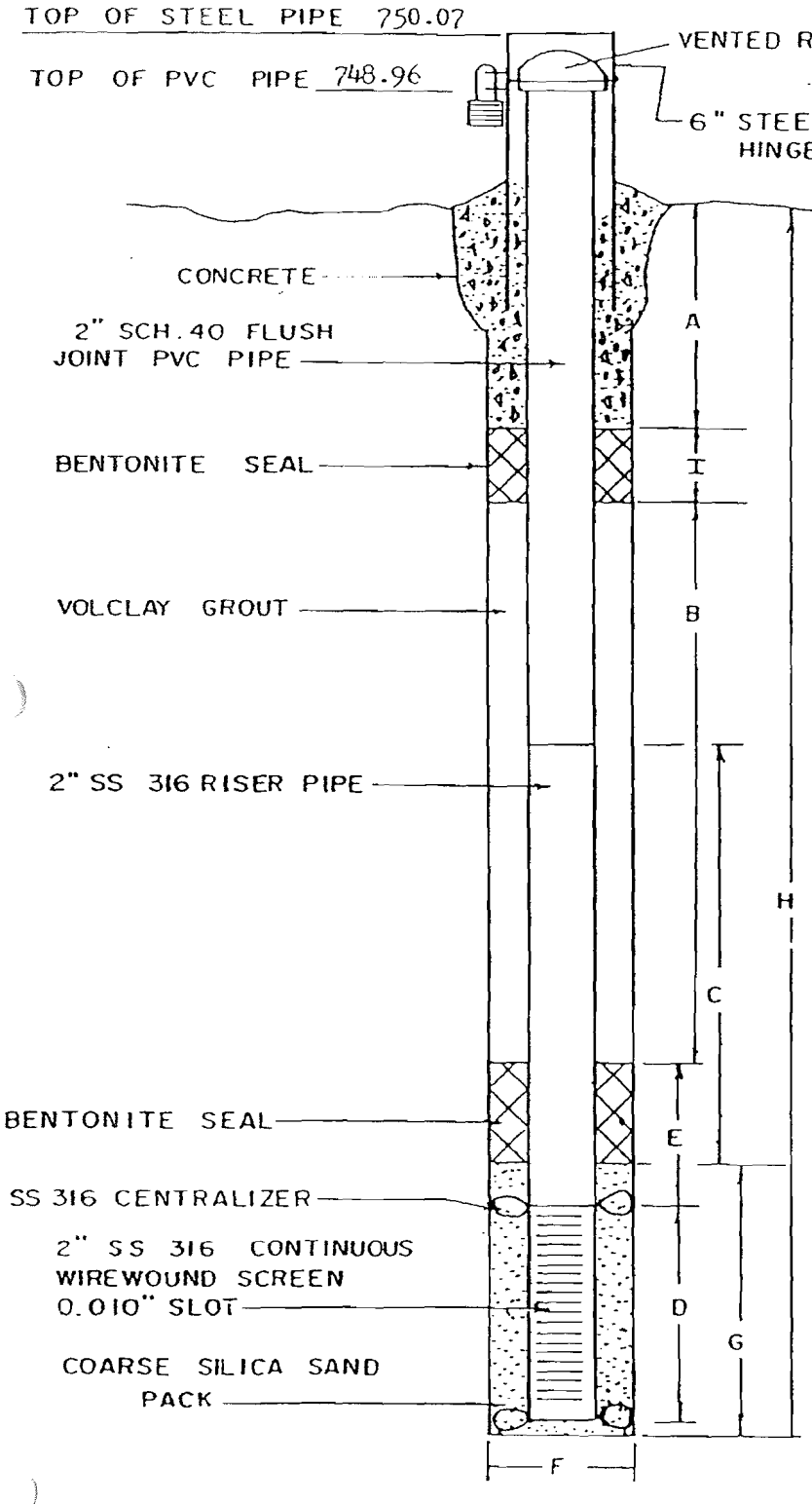
MONITORING WELL NUMBER GK-3 (D)



AS BUILT DATA	
A	3'
B	85'
C	20'
D	10'
E	3'
F	6"
G	13'
H	105'
I	1'
GROUND SURFACE ELEV: 747.6	
ELEVATION OF TOP OF PVC PIPE, ELEV:	

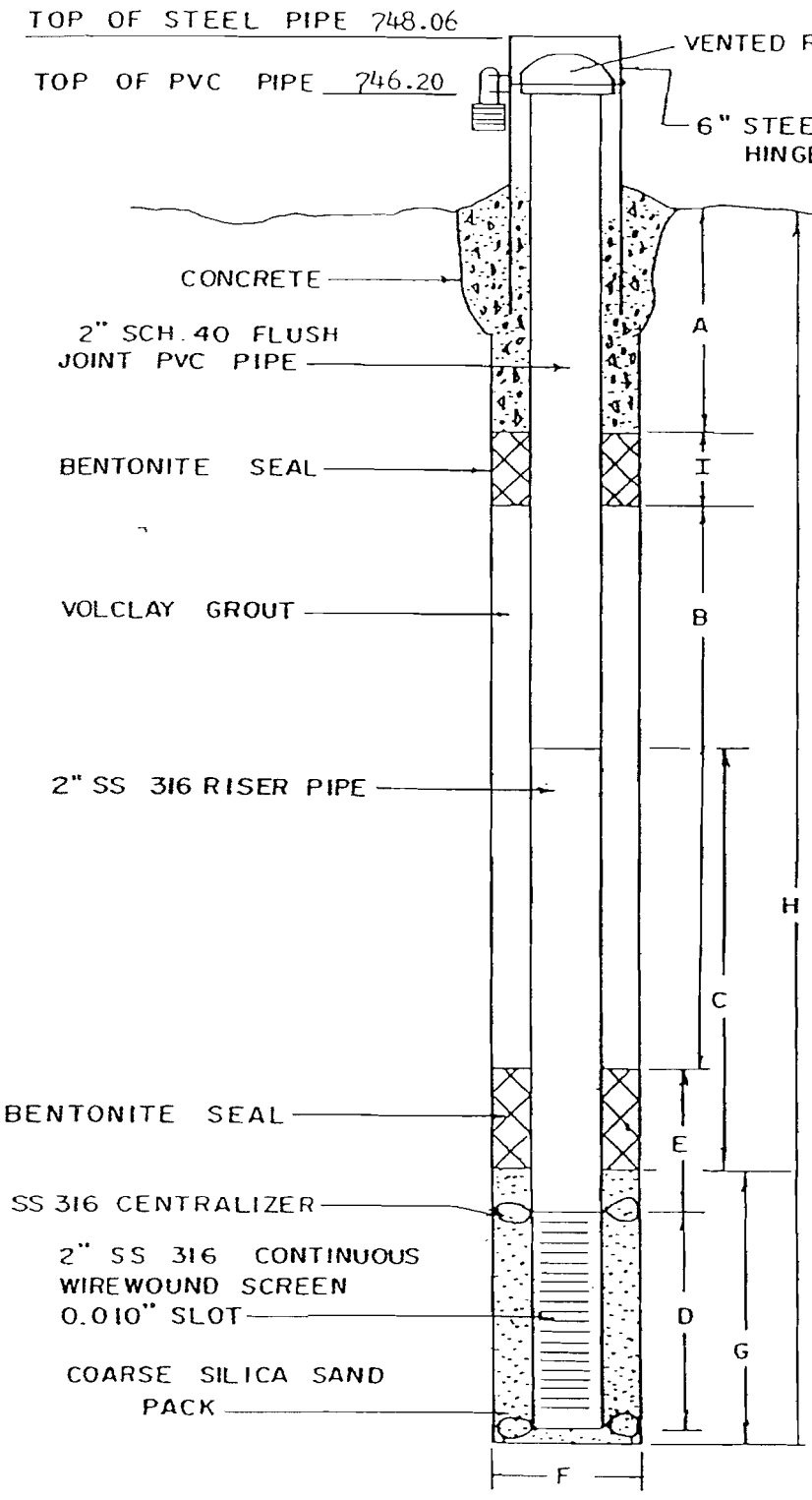
L-28,364

MONITORING WELL NUMBER GK-3 (S)



AS BUILT DATA	
A	3'
B	31'
C	20'
D	5'
E	3'
F	7"
G	7'
H	45'
I	1'
GROUND SURFACE ELEV: 748.0	
ELEVATION OF TOP OF PVC PIPE, ELEV:	

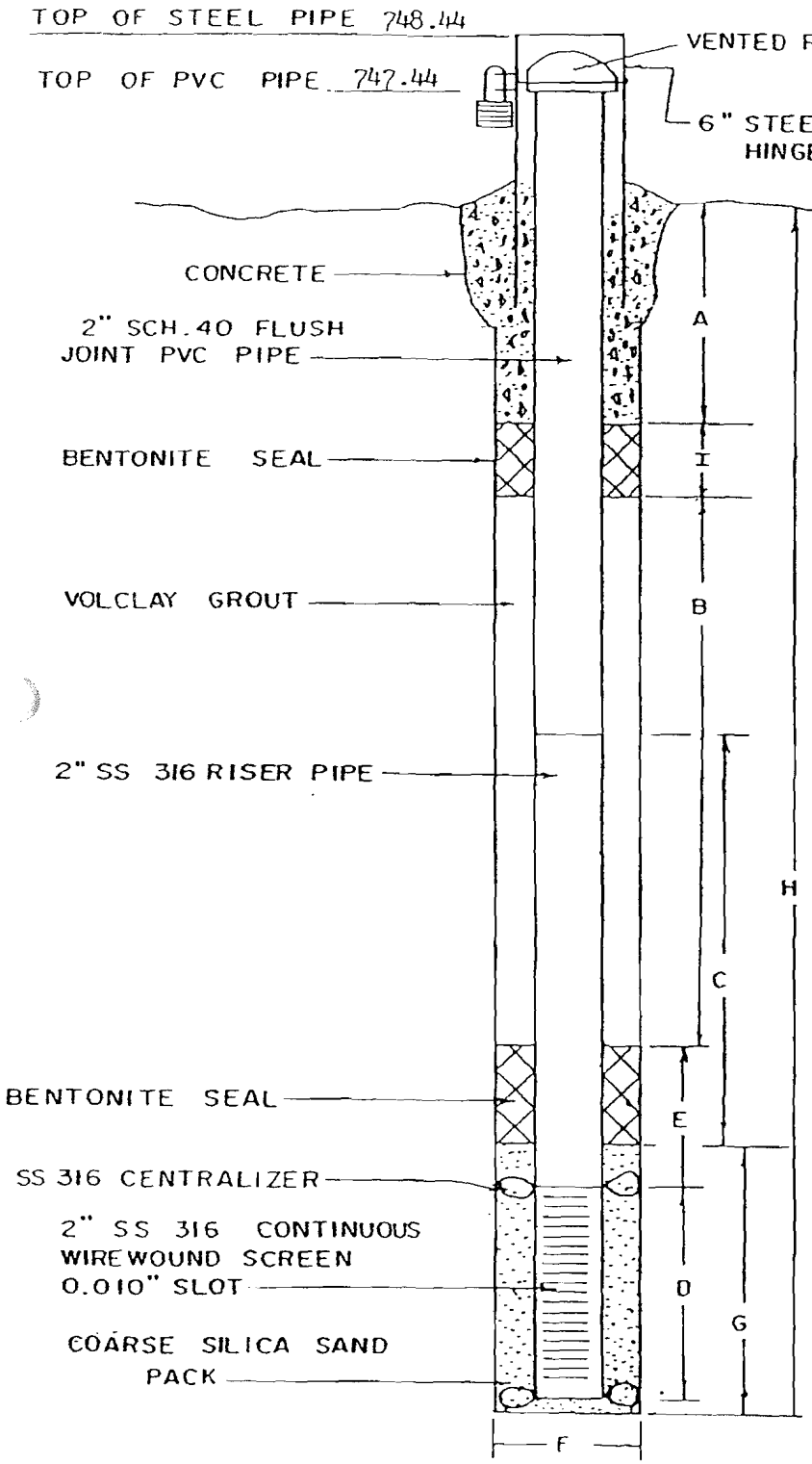
MONITORING WELL NUMBER GK-4(D)



AS BUILT DATA	
A	3'
B	85'
C	20'
D	10'
E	3'
F	6"
G	13'
H	105'
I	1'
GROUND SURFACE ELEV: 745.3	
ELEVATION OF TOP OF PVC PIPE, ELEV:	

L-28,364

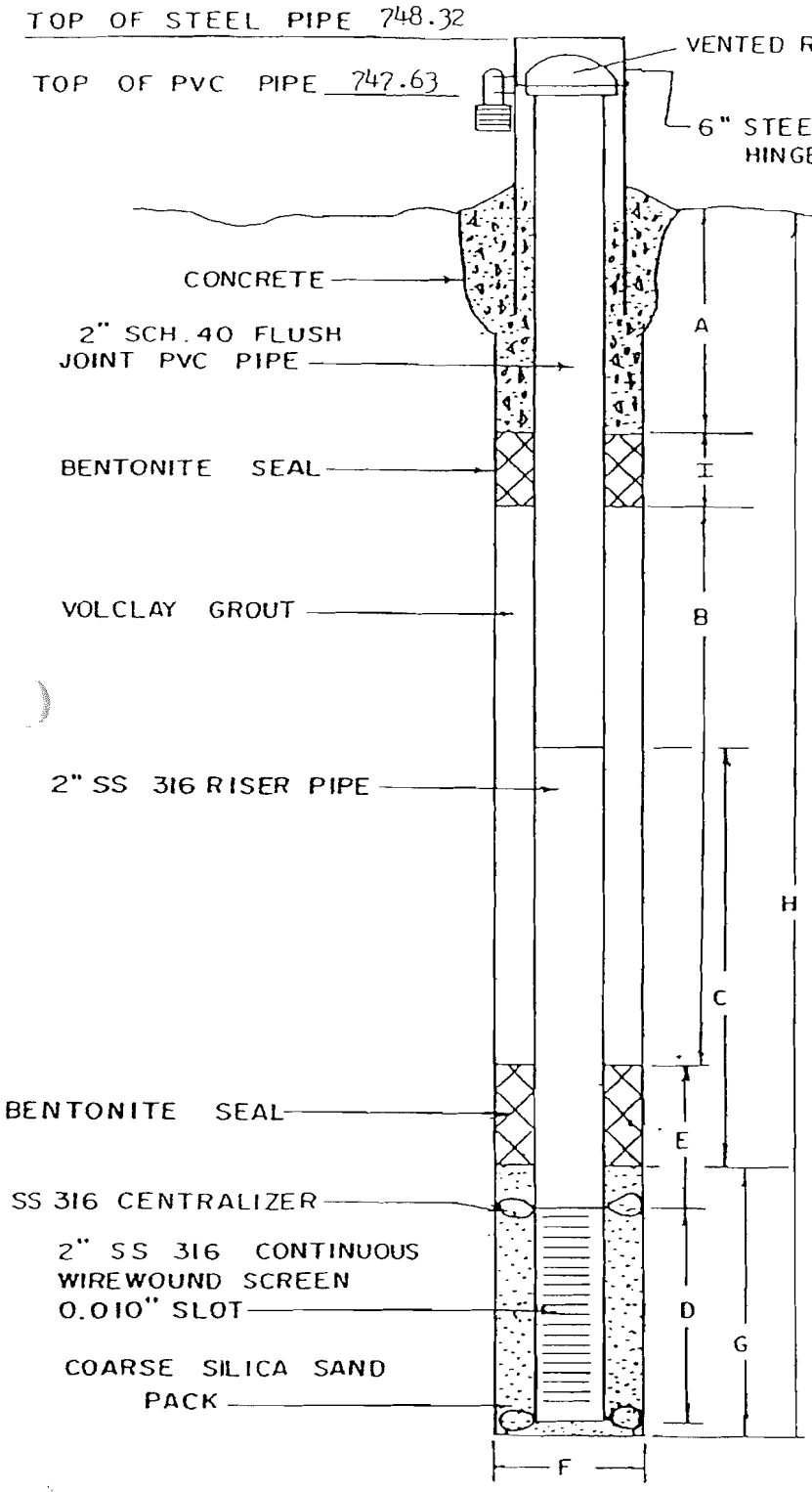
MONITORING WELL NUMBER GK-5 (D)



AS BUILT DATA	
A	3'
B	79'
C	20'
D	10'
E	3'
F	6"
G	12'
H	98'
I	1'
GROUND SURFACE ELEV: 745.7	
ELEVATION OF TOP OF PVC PIPE, ELEV:	

MON

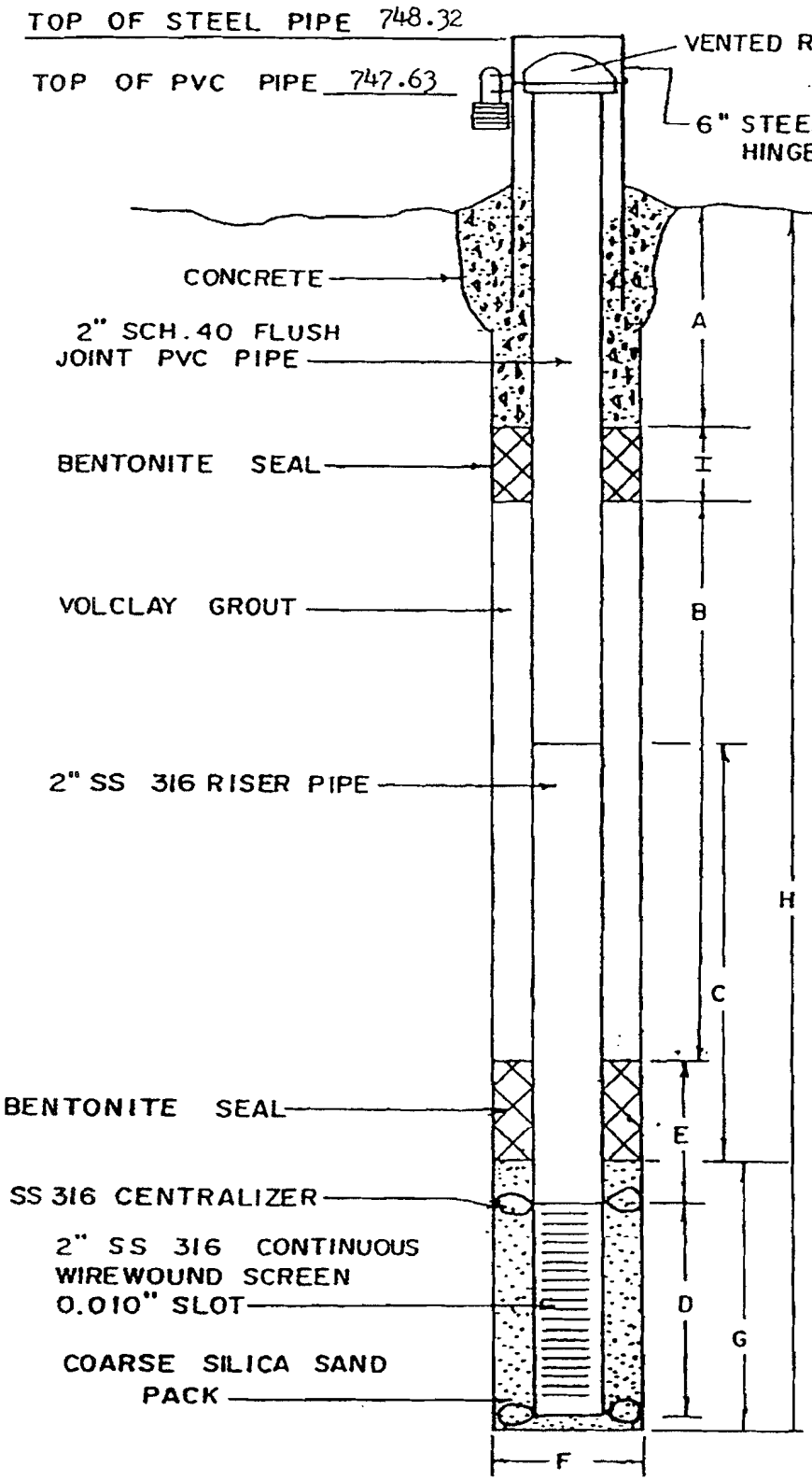
MBER GK-5 (S)



AS BUILT DATA	
A	3'
B	22.5'
C	20'
D	5'
E	3.5'
F	6"
G	7'
H	37'
I	1'
GROUND SURFACE ELEV: 745.4	
ELEVATION OF TOP OF PVC PIPE, ELEV:	

L-28,364

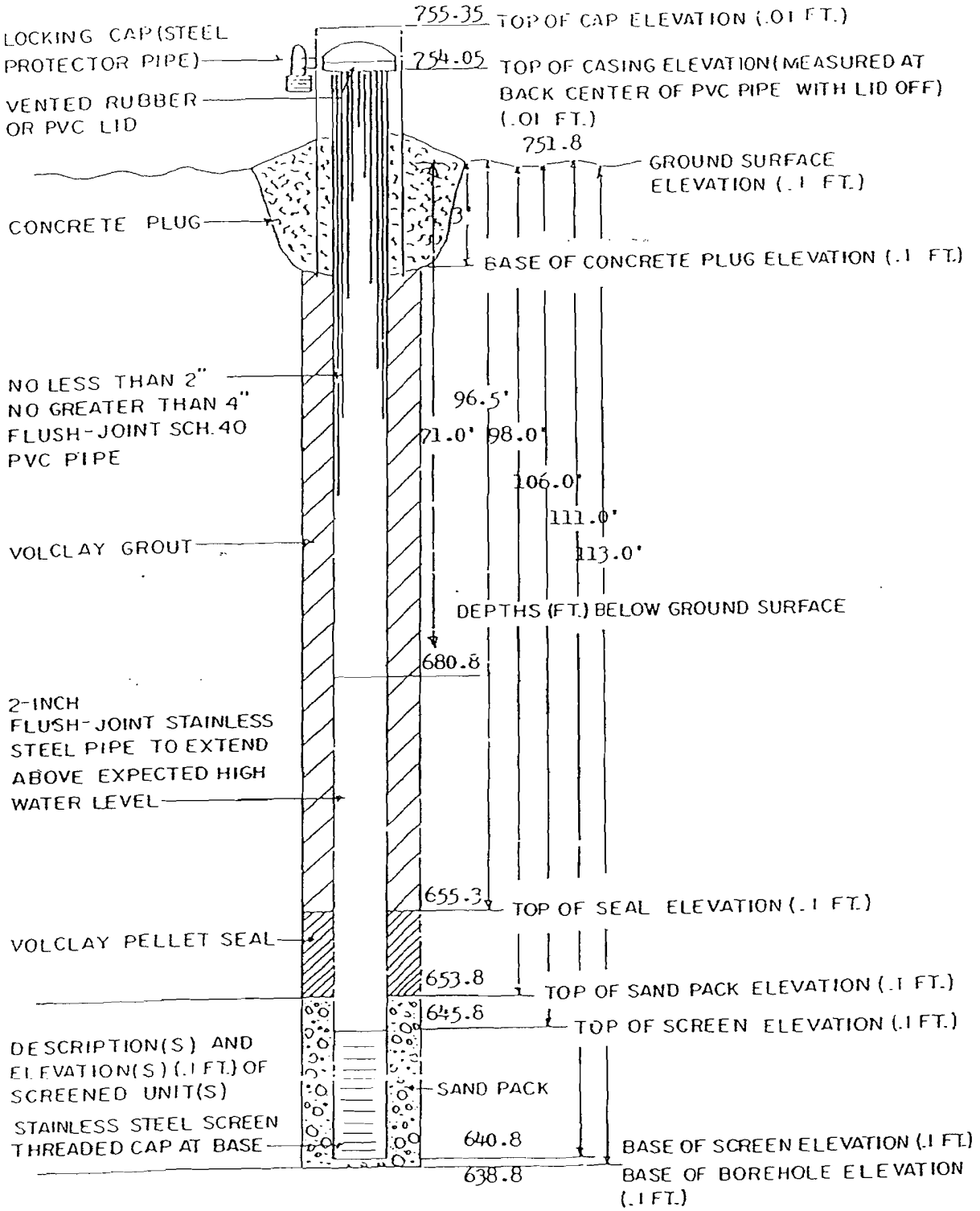
MONITORING WELL NUMBER GK-5 (S)



AS BUILT DATA	
A	3'
B	22.5'
C	20'
D	5'
E	3.5'
F	6"
G	7'
H	37'
I	1'
GROUND SURFACE ELEV: 745.4	
ELEVATION OF TOP OF PVC PIPE, ELEV:	

L-28,364

WELL NO GK6D WELL COORDINATES 10440.03N 10675.

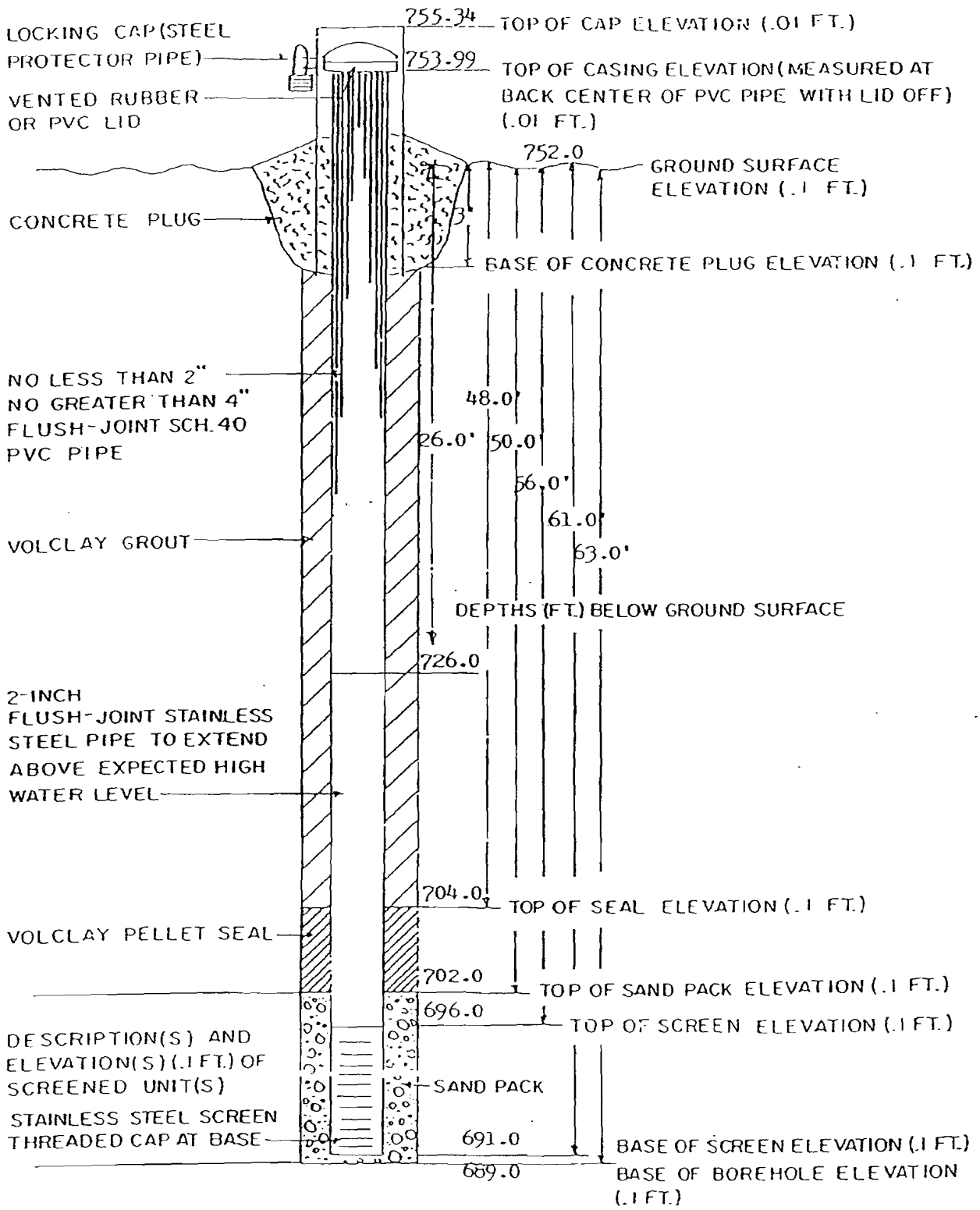


MONITORING WELL CONSTRUCTION DETAIL

NO SCALE

RLJ

WELL NO. GK6S WELL COORDINATES 10446.49N 10675.60E

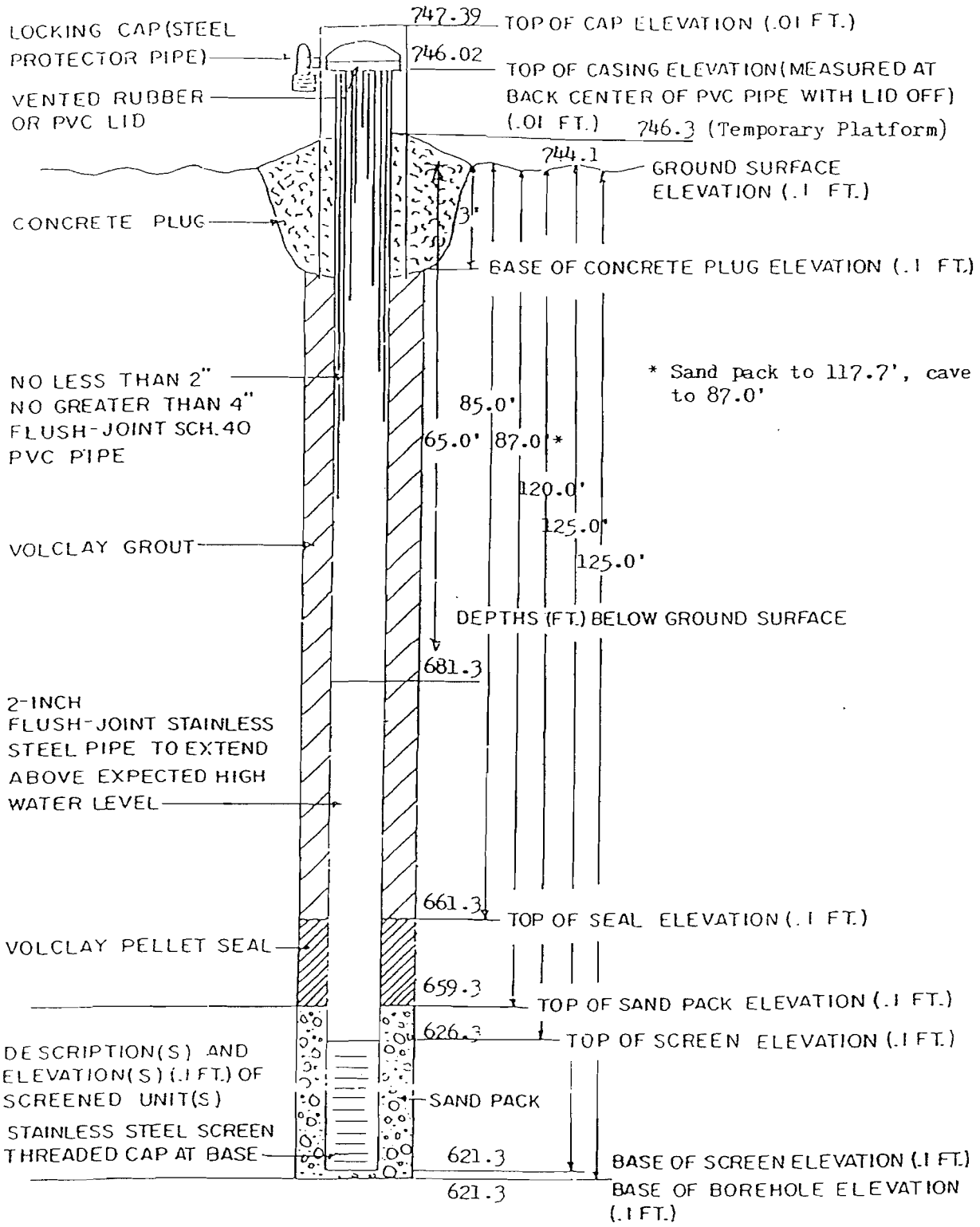


MONITORING WELL CONSTRUCTION DETAIL

NO SCALE

RLJ

WELL NO. GK7D (G185) WELL ... ATES 10425.48N 10035.88E

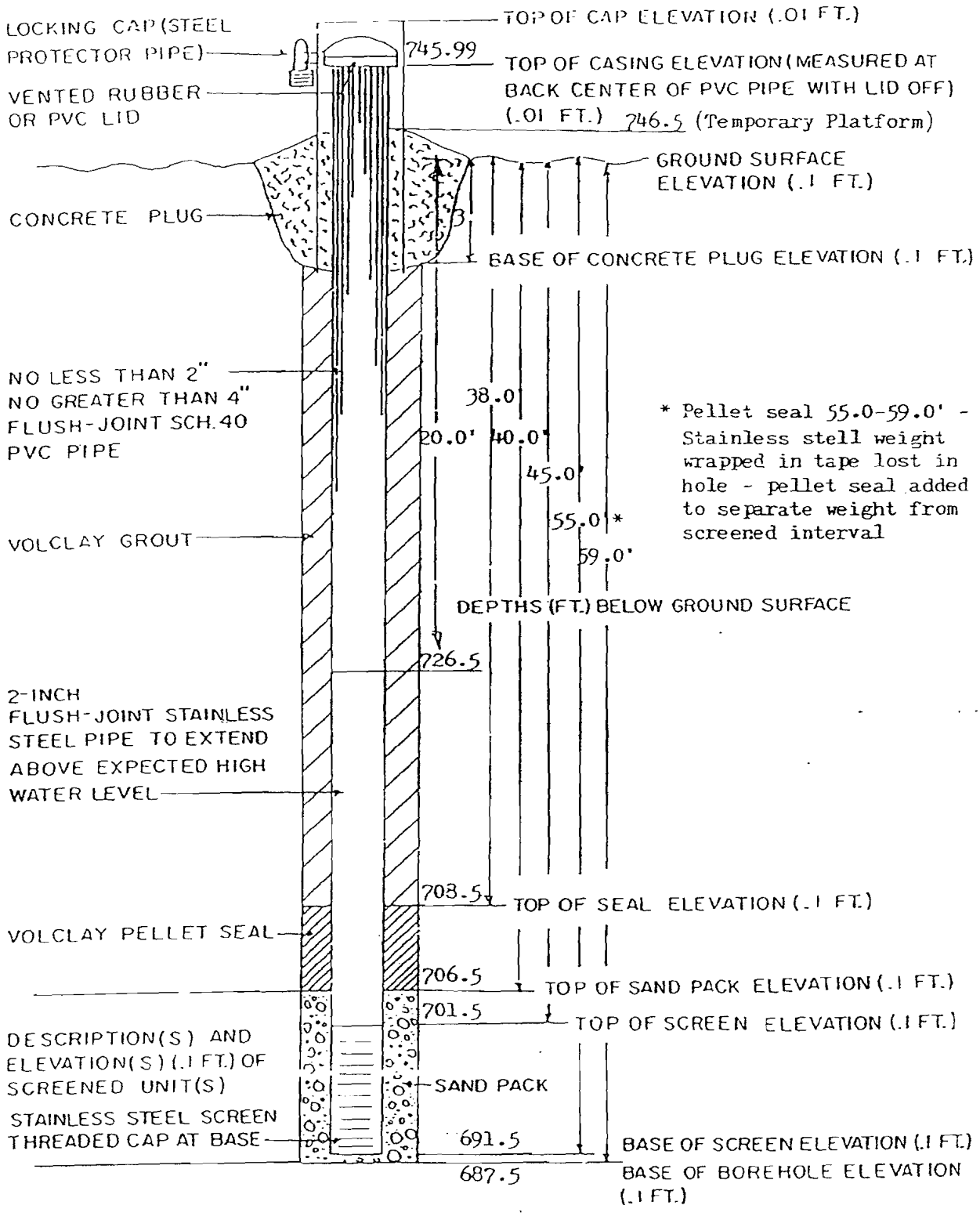


MONITORING WELL CONSTRUCTION DETAIL

NO SCALE

RLJ

WELL NO GK7S (GG55) WELL COORDINATES 10424.86N 10052.84E

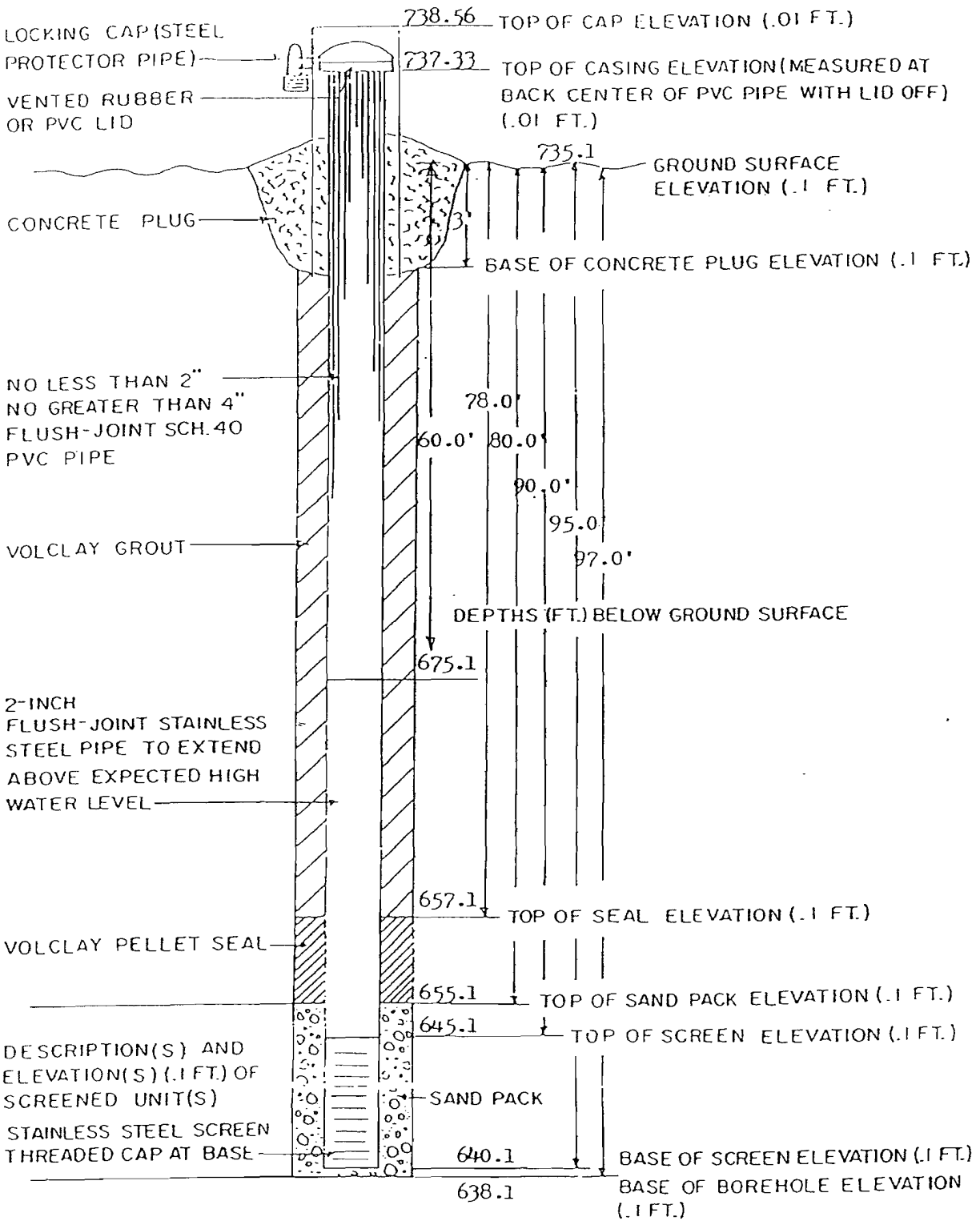


MONITORING WELL CONSTRUCTION DETAIL

NO SCALE

RLJ

WELL NO. GK11 (D) WELL COORDINATES 10442.20N 11502.07E

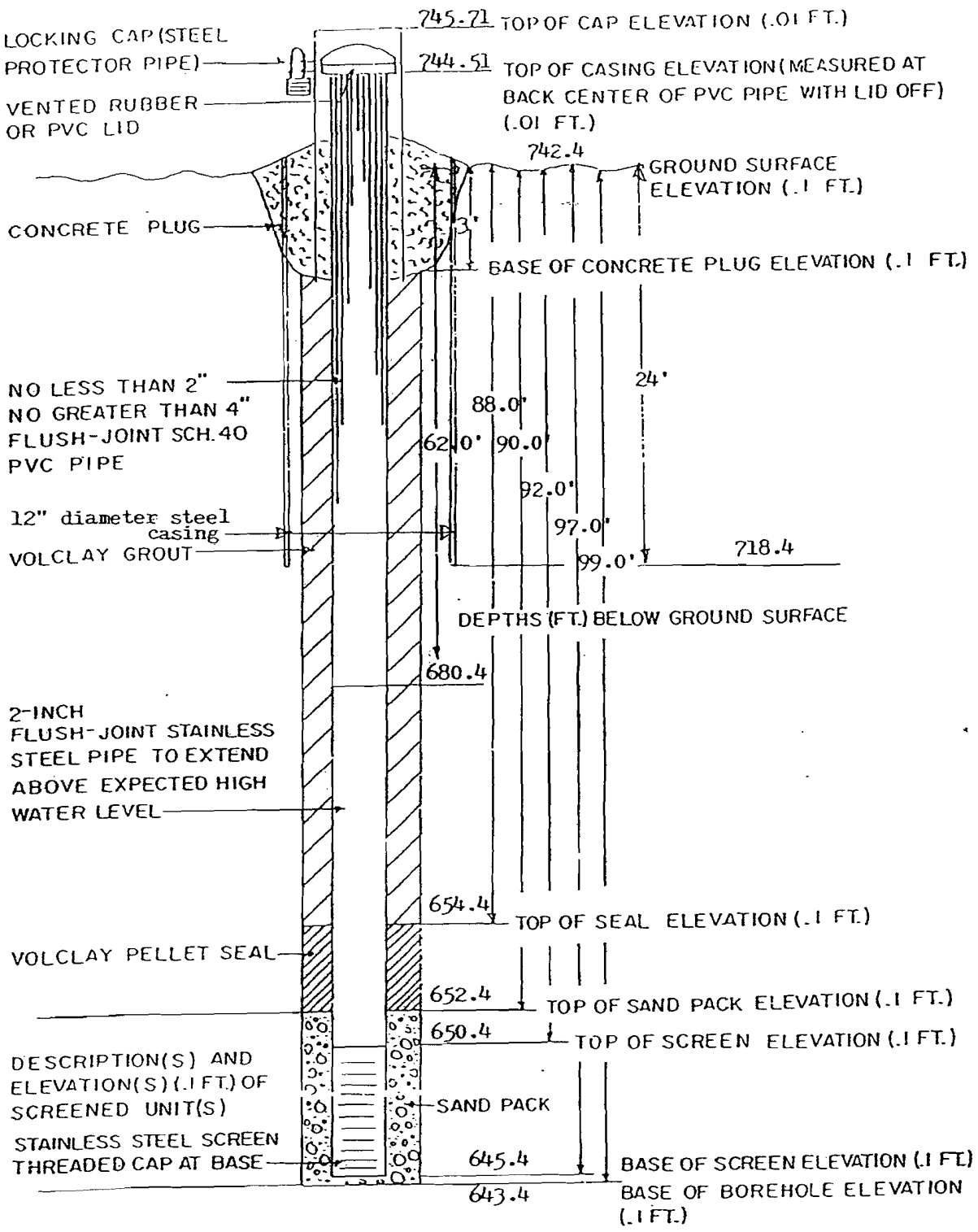


MONITORING WELL CONSTRUCTION DETAIL

NO SCALE

RLJ

WELL NO. GK9D WELL COORDINATES 12004.32N 12669.41E

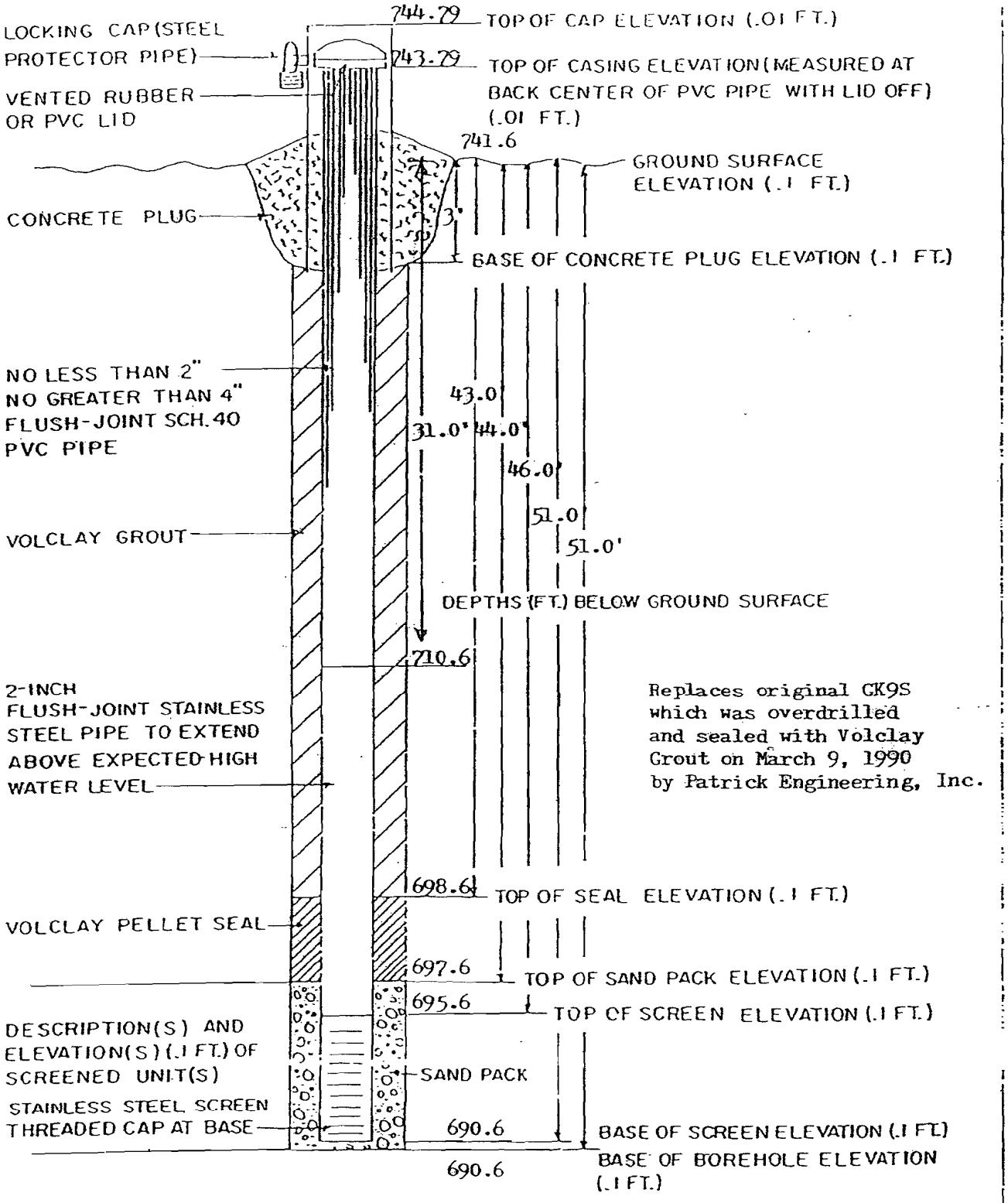


MONITORING WELL CONSTRUCTION DETAIL

NO SCALE

RLJ

WELL NO. GK9S (R) WELL COORDINATES 11,991.19N 12,668.24E



MONITORING WELL CONSTRUCTION DETAIL

NO SCALE

RLJ

PROJECT Zion Waste Mgmt. Facility, Site 1, Phase B, Gas Monitoring Probe

CLIENT Browning-Ferris Industries, 701 Green Bay Rd., Zion, IL

BORING GMP-14 DATE STARTED 3-18-96 DATE COMPLETED 3-18-96 JOB 39,215

ELEVATIONS

GROUND SURFACE 733.5

END OF BORING 679.5

WATER TABLE

▼ WHILE DRILLING Dry

▽ AT END OF BORING Dry

▼ 24 HOURS Gas Probe Installed

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	Wc	Q_p	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0		
1	SS		17				1.0	732.5	Black clayey TOPSOIL (OL)
2	SS		15				4.0	729.5	Fill - Brown and gray silty CLAY, little sand and gravel, trace organic, damp (CL)
3	SS		15						Brown and gray silty CLAY, little sand, trace gravel, moist (CL)
4	SS		16				8.0	725.5	
5	SS		12						Brown silty CLAY, little sand, trace gravel, moist (CL)
6	SS		12						1" sand seam at 11.5'
7	SS		20				13.0	720.5	
8	SS		14						Gray silty CLAY, little sand, trace gravel moist (CL)
9	SS		50/4"						Cobble/boulder at 17.5'
10	SS		18						
11	SS		19						
12	SS		11				22.0	711.5	
13	SS		11						Gray silty CLAY, trace sand, trace gravel, moist (CL)
14	SS		16						1" wet silt seam at 24.5'
15	SS		14						
16	SS		12						
17	SS		9						
18	SS		9						
19	SS		15						
20	SS		12						

DISTANCE BELOW SURFACE IN FEET

0 5 10 15 20 25 30 35 40

DRILL RIG NO. 53

Division lines between deposits represent approximate boundaries between soil types. In-situ, the transition may be gradual.

PROJECT **Zion Waste Mgmt. Facility, Site 1, Phase B, Gas Monitoring Probe**

CLIENT **Browning-Ferris Industries, 701 Green Bay Rd., Zion, IL**

BORING **GMP-14** DATE STARTED **3-18-96** DATE COMPLETED **3-18-96** JOB **39,215**

ELEVATIONS

GROUND SURFACE **733.5**

END OF BORING **679.5**

WATER TABLE

▼ WHILE DRILLING **Dry**

▽ AT END OF BORING **Dry**

▼ 24 HOURS **Gas Probe Installed**

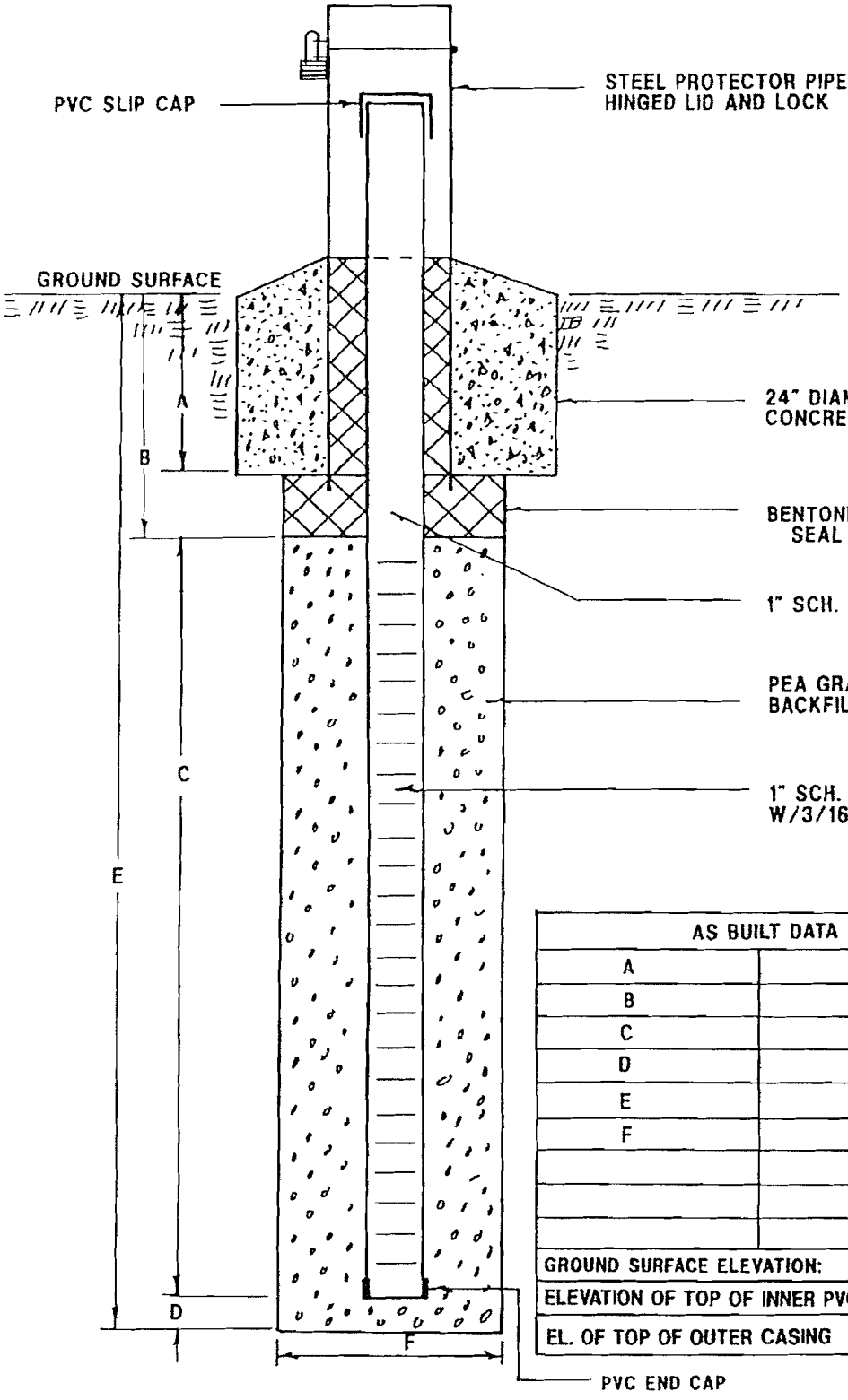
DISTANCE BELOW SURFACE IN FEET	LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_p	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
40		21	SS	13						Gray silty CLAY, trace sand, trace gravel, moist (CL)
		22	SS	13						
45		23	SS	14						
		24	SS	13						
		25	SS	12						
50		26	SS	14						
		27	SS	15						
55										End of Boring at 54.0'
										Gas Probe Installation Notes
60										1. 1" Diam. SCH 40 PVC Screen ·4.0-54.0'
										3. 1" Diam. SCH 40 PVC Riser +1.8-4.0'
65										3. Pea Gravel: 4.0-54.0'
										4. Bentonite Chips 0.0-4.0'
70										5. 8" Diam. steel protector concreted into place over riser.
75										
80										

Division lines between deposits represent approximate boundaries between soil types. In-situ, the transition may be gradual.

DRILL RIG NO **53**

METHANE GAS PROBE SKETCH

NOT TO SCALE



AS BUILT DATA GMP-14	
A	24"
B	4'
C	50'
D	.6'
E	54'
F	7.5"
GROUND SURFACE ELEVATION:	733.96'
ELEVATION OF TOP OF INNER PVC WELL	735.25
EL. OF TOP OF OUTER CASING	736.01

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DRAWN BY:	DJM
CHECKED BY:	DH
JOB. NO.:	L-39,215
DATE:	APRIL 1996

PAGE NO.

PROJECT Zion Waste Mgmt. Facility, Site 1, Phase B, Gas Monitoring Probe

CLIENT Browning-Ferris Industries, 701 Green Bay Rd., Zion, IL

BORING GMP-15 DATE STARTED 3-20-96 DATE COMPLETED 3-20-96 JOB 39,215

ELEVATIONS

GROUND SURFACE 744.5

END OF BORING 684.5

WATER TABLE

▼ WHILE DRILLING Dry

▽ AT END OF BORING Dry

▼ 24 HOURS Gas Probe Installed

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	Wc	Q_p	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0.5	744.0	Black clayey TOPSOIL (OL)
1	SS		10						Fill - Black, brown, and gray silty CLAY, some sand, trace gravel, damp (CL)
2	SS		15						
							4.5	740.0	
3	SS		14						Brown silty CLAY, little sand, trace gravel, damp (CL)
4	SS		13						
5	SS		13				9.0	735.5	
							10.0	734.5	Brown and gray silty CLAY, little sand, trace gravel, moist (CL)
6	SS		12						Gray silty CLAY, little sand, trace gravel, moist (CL)
7	SS		13						
							14.0	730.5	
8	SS		14						
9	SS		10						
10	SS		11						
11	SS		10						
12	SS		10						
13	SS		12						Gray silty CLAY, trace sand, trace gravel, moist (CL)
14	SS		11						
15	SS		11						1/4" sand seam at 29.0'
16	SS		12						
17	SS		11						
18	SS		14						
19	SS		11						
20	SS		10						

DISTANCE BELOW SURFACE IN FEET

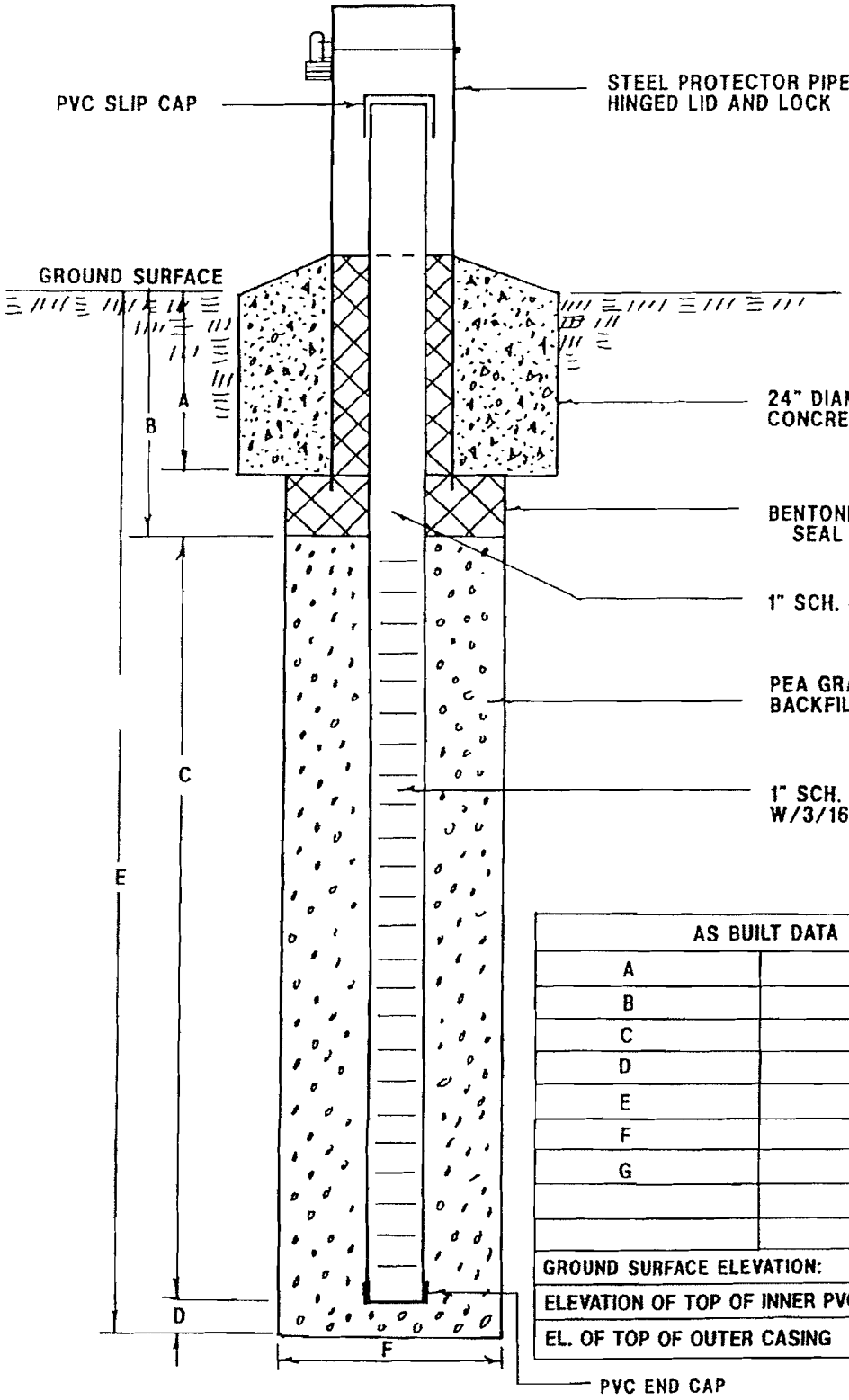
0 5 10 15 20 25 30 35 40

Division lines between deposits represent approximate boundaries between soil types. In-situ, the transition may be gradual.

DRILL RIG NO. 53

METHANE GAS PROBE SKETCH

NOT TO SCALE



AS BUILT DATA GMP-15	
A	24"
B	4'
C	56'
D	0.5'
E	60'
F	7.5"
G	
GROUND SURFACE ELEVATION:	746.55
ELEVATION OF TOP OF INNER PVC WELL	748.13
EL. OF TOP OF OUTER CASING	748.80

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DRAWN BY:	DJM
CHECKED BY:	DH
JOB. NO.:	L-39,215
DATE:	APRIL 1996

PAGE NO.

PROJECT **Zion Waste Mgmt. Facility, Site 1, Phase B, Gas Monitoring Probe**

CLIENT **Browning-Ferris Industries, 701 Green Bay Rd., Zion, IL**

BORING **GMP-15** DATE STARTED **3-20-96** DATE COMPLETED **3-20-96** JOB **39,215**

ELEVATIONS

GROUND SURFACE **744.5**

END OF BORING **684.5**

WATER TABLE

▼ WHILE DRILLING **Dry**

▽ AT END OF BORING **Dry**

▼ 24 HOURS **Gas Probe Installed**

DISTANCE BELOW SURFACE IN FEET

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_p	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	21	SS	15						Gray silty CLAY, trace sand, trace gravel, moist (CL)
	22	SS	9				43.5	701.0	
	23	SS	13						Gray very silty CLAY, trace sand, trace gravel, moist (CL)
	24	SS	9						
	25	SS	14				48.5	696.0	
	26	SS	14						Gray silty CLAY, trace sand, trace gravel, moist (CL)
	27	SS	13						
	28	SS	13						
	29	SS	14						
	30	SS	13						

End of Boring at 60.0'

Gas Probe Installation Notes

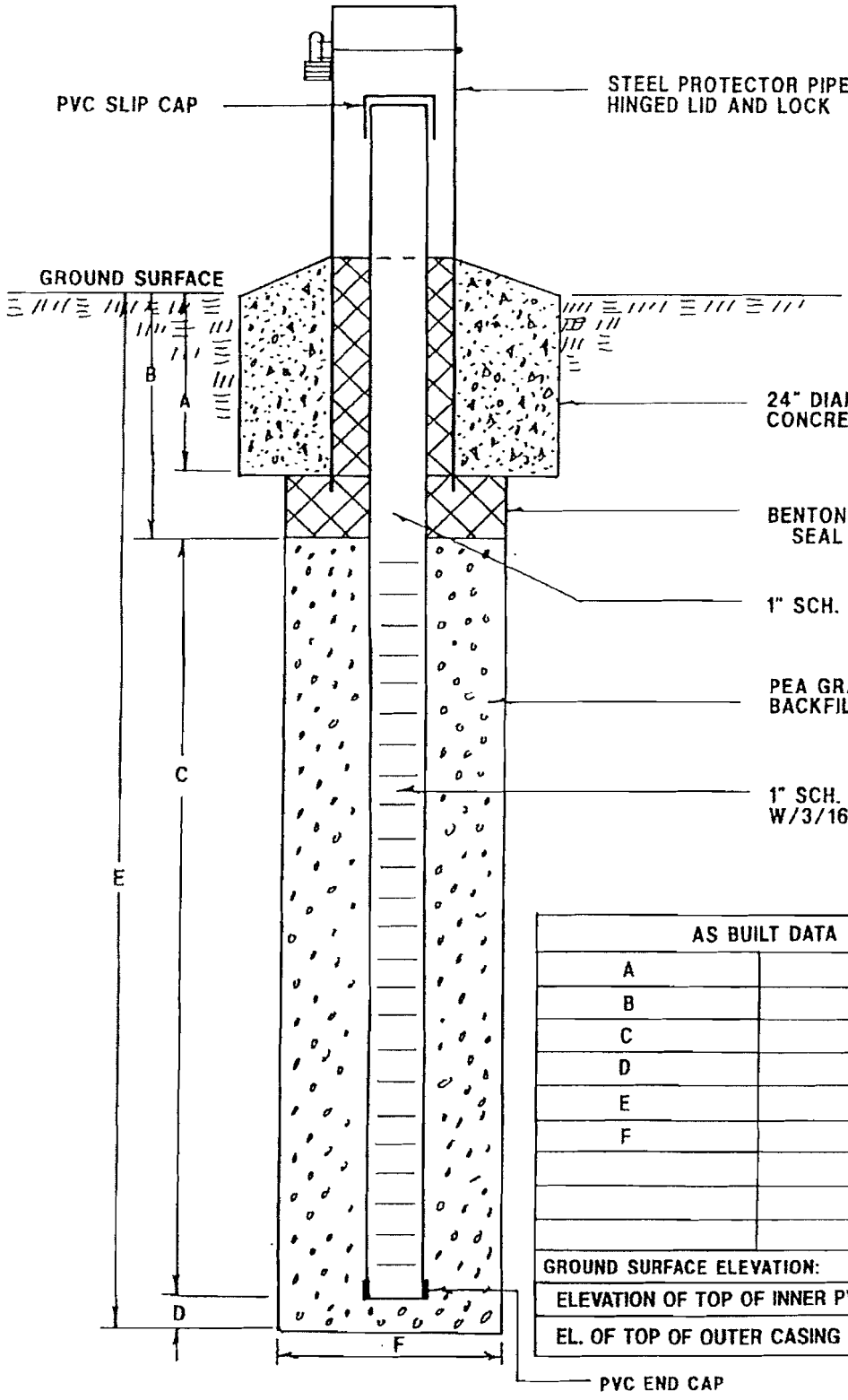
1. 1" Diam. SCH 40 PVC Screen 5.0-60.0'
3. 1" Diam. SCH 40 PVC Riser +2.5-5.0'
3. Pea Gravel: 4.0-60.0'
4. Bentonite Chips 0.0-4.0'
5. 8" Diam. steel protector concreted into place over riser.

DRILL RIG NO. **53**

Division lines between deposits represent approximate boundaries between soil types. In-situ, the transition may be gradual.

METHANE GAS PROBE SKETCH

NOT TO SCALE



AS BUILT DATA GMP-16	
A	24"
B	4'
C	70'
D	0.5'
E	74'
F	7.5"
GROUND SURFACE ELEVATION:	759.0
ELEVATION OF TOP OF INNER PVC WELL	760.92
EL. OF TOP OF OUTER CASING	761.46

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DRAWN BY:	DJM
CHECKED BY:	DH
JOB. NO.:	L-39,215
DATE:	APRIL 1996

PAGE NO.

PROJECT **Zion Waste Mgmt. Facility, Site 1, Phase B, Gas Monitoring Probe**

CLIENT **Browning-Ferris Industries, 701 Green Bay Rd., Zion, IL**

BORING **GMP-16** DATE STARTED **3-19-96** DATE COMPLETED **3-19-96** JOB **39,215**

ELEVATIONS

GROUND SURFACE **757.2**

END OF BORING **683.2**

WATER TABLE

▼ WHILE DRILLING **Dry**

▽ AT END OF BORING **Dry**

▼ 24 HOURS **Gas Probe Installed**

DISTANCE BELOW SURFACE IN FEET

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_p	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
	1	SS	8				0.5	756.7	Black clayey TOPSOIL (OL)
	2	SS	10						Brown and gray silty CLAY, little sand, trace gravel, trace organic, moist (CL)
	3	SS	15				5.0	752.2	
	4	SS	20						Brown silty CLAY, little sand, trace gravel, moist (CL)
	5	SS	16						
	6	SS	13				10.5	746.7	
	7	SS	10				13.0	744.2	Gray silty CLAY, little sand, trace gravel, moist (CL)
	8	SS	8						Gray very silty CLAY, little sand, trace gravel, moist (CL)
	9	SS	13						
	10	SS	10						
	11	SS	16				20.5	736.7	
	12	SS	14						Gray silty CLAY, trace sand, trace gravel, moist (CL)
	13	SS	16						
	14	SS	14						
	15	SS	12						
	16	SS	10						
	17	SS	14						
	18	SS	15						
	19	SS	14						
	20	SS	13						

Division lines between deposits represent approximate boundaries between soil types. In-situ, the transition may be gradual.

DRILL RIG NO. **53**

PROJECT **Zion Waste Mgmt. Facility, Site 1, Phase B, Gas Monitoring Probe**

CLIENT **Browning-Ferris Industries, 701 Green Bay Rd., Zion, IL**

BORING **GMP-16** DATE STARTED **3-19-96** DATE COMPLETED **3-19-96** JOB **39,215**

ELEVATIONS

GROUND SURFACE **757.2**

END OF BORING **683.2**

WATER TABLE

▼ WHILE DRILLING **Dry**

▽ AT END OF BORING **Dry**

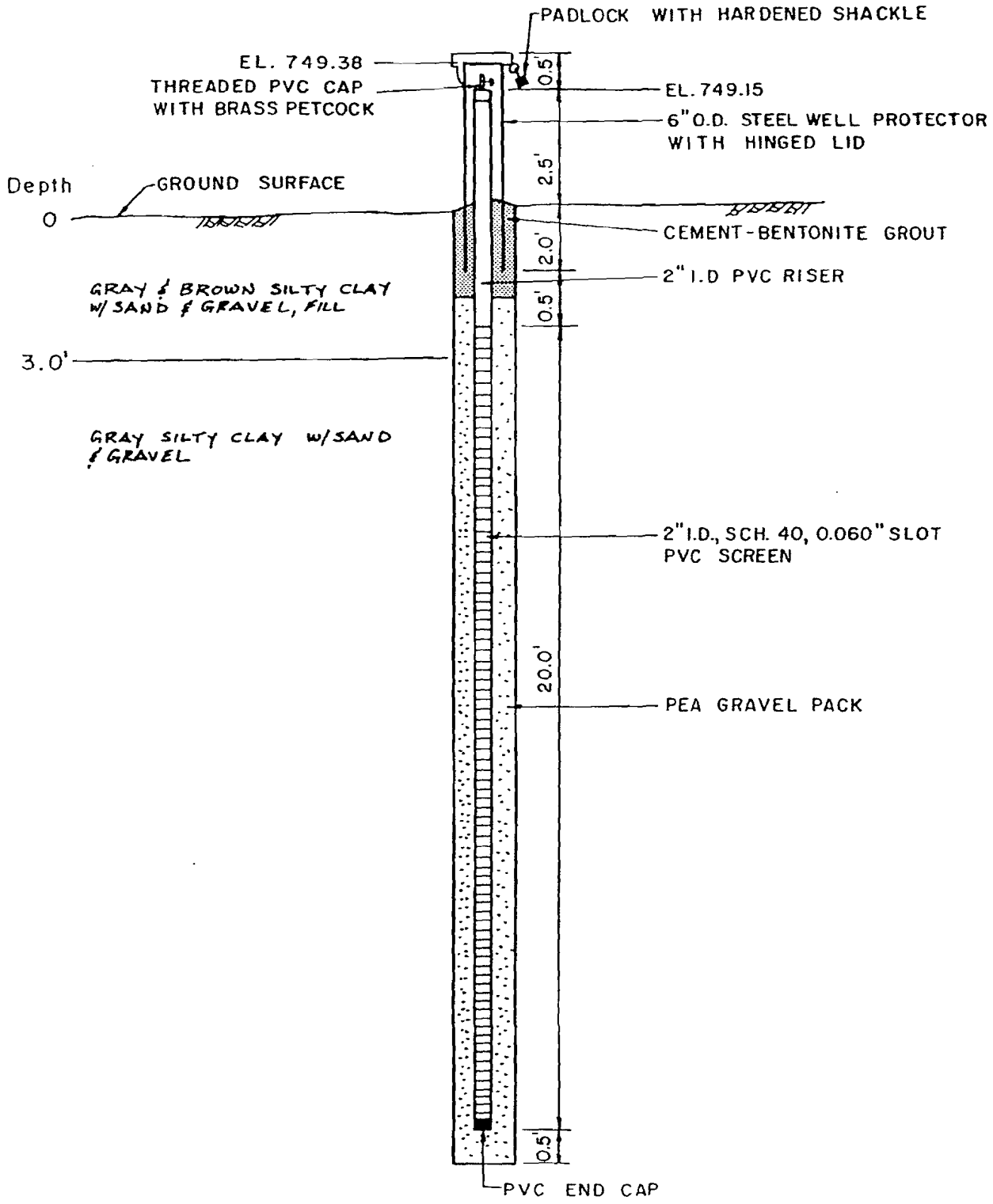
▼ 24 HOURS **Gas Probe Installed**

DISTANCE BELOW SURFACE, FEET

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	Wc	Q_p	HA	DEPTH	ELEV.	SOIL DESCRIPTIONS
40									
	21	SS	14						
	22	SS	14						Gray silty CLAY, trace sand, trace gravel, moist (CL)
45	23	SS	13						
	24	SS	16						
	25	SS	14						
50	26	SS	15						. sand seam at 49.5'
	27	SS	14						
55	28	SS	14						
	29	SS	19						
	30	SS	15						
60	31	SS	18						
	32	SS	17						
65	33	SS	16						**Gas Probe Installation Notes**
	34	SS	15						1. 1" Diam. SCH 40 PVC Screen 4.0-74.0'
	35	SS	15						3. 1" Diam. SCH 40 PVC Riser +2.5-4.0'
70	36	SS	15						3. Pea Gravel: 4.0-74.0'
	37	SS	19						4. Bentonite Chips 0.0-4.0'
									5. 8" Diam. steel protector concreted into place over riser.
75									End of Boring at 74.0'
80									

DRILL RIG NO. **53**

Division lines between deposits represent approximate boundaries between soil types. In-situ, the transition may be gradual.



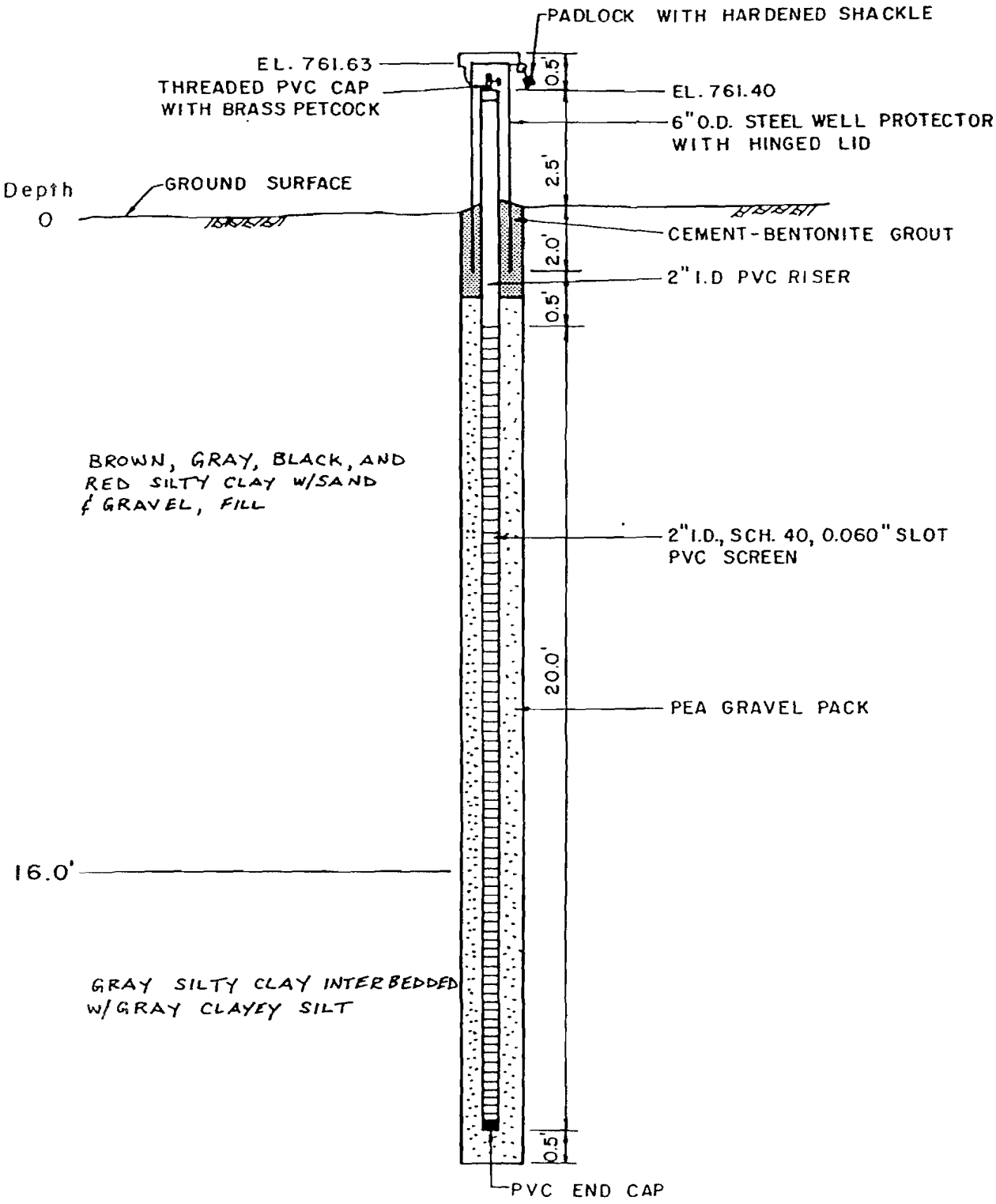
NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: MARCH 1, 1989 | JOB NUMBER D178

METHANE PROBE NO.
GP-1

PATRICK ENGINEERING INC.
Engineers • Architects • Hydrologists
Geologists • Surveyors
Glen Ellyn, Illinois



NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 28, 1989 | JOB NUMBER D178

METHANE PROBE NO.
GP-2

PATRICK ENGINEERING INC.
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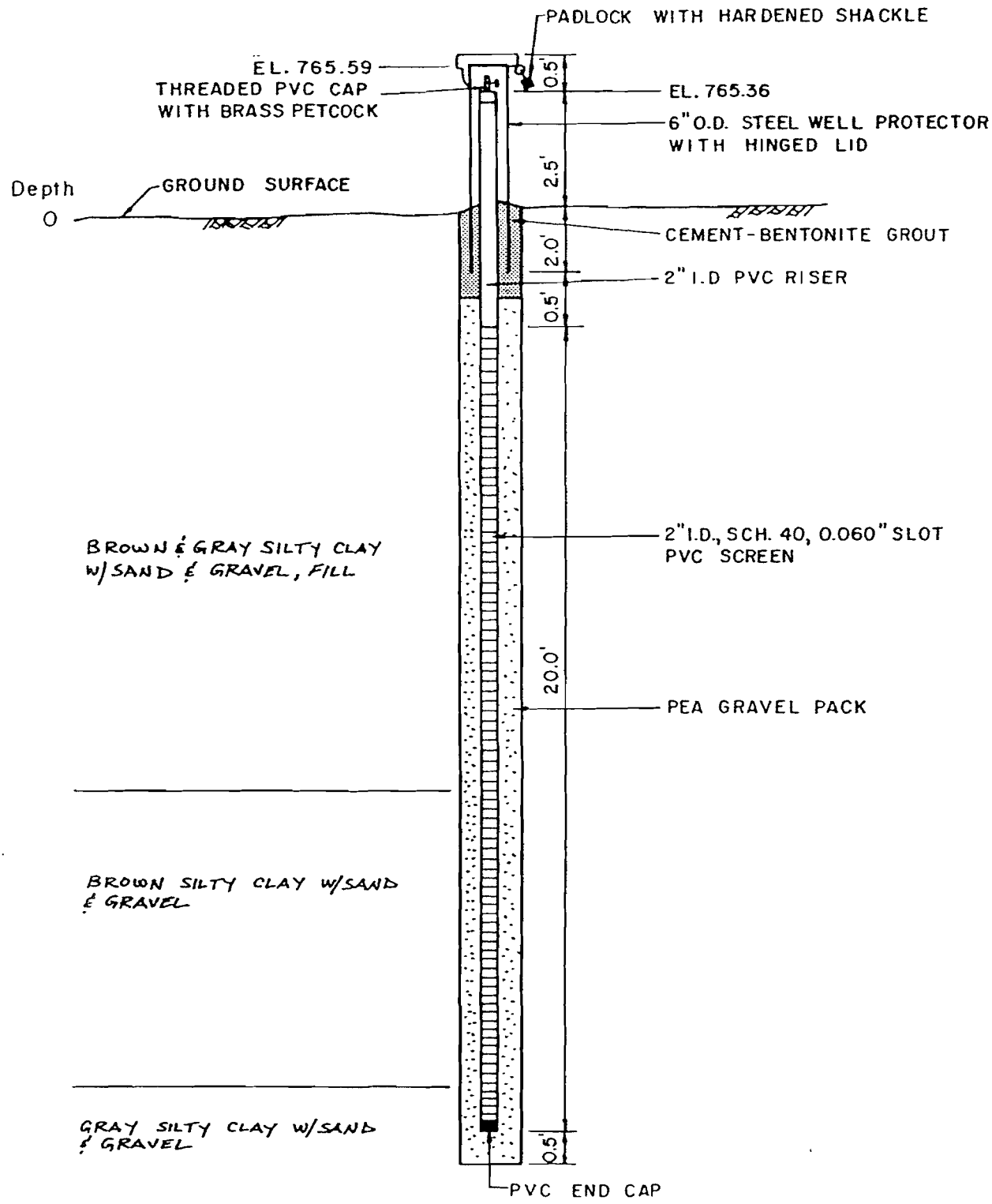
Geologists • Surveyors
Glen Ellyn, Illinois



NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 28, 1989	JOB NUMBER D178

METHANE PROBE NO.
GP-3

PATRICK ENGINEERING INC.
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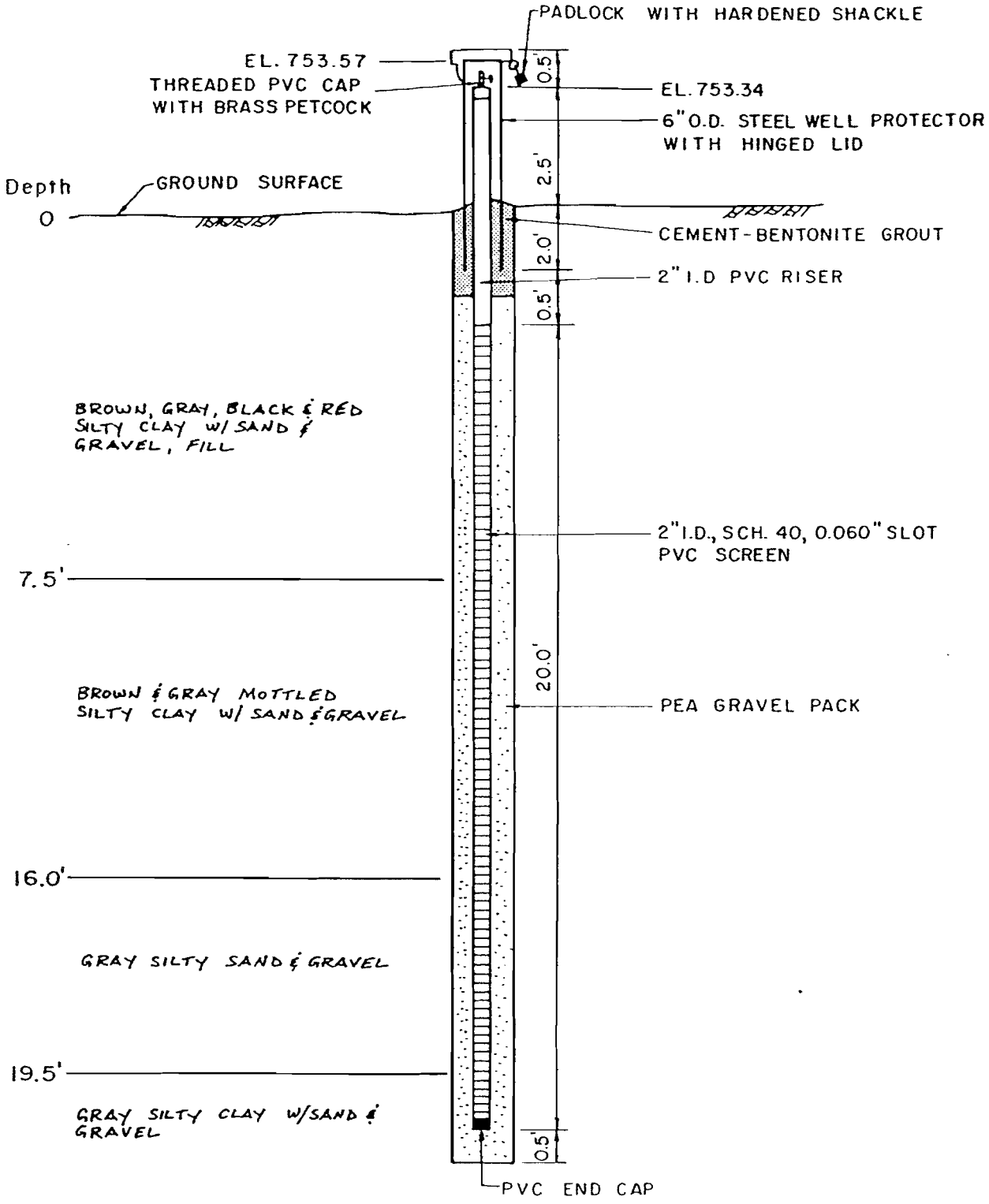
Geologists • Surveyors
Glen Ellyn, Illinois



NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 27, 1989 | JOB NUMBER D178

METHANE PROBE NO.
GP-4

PATRICK ENGINEERING INC.
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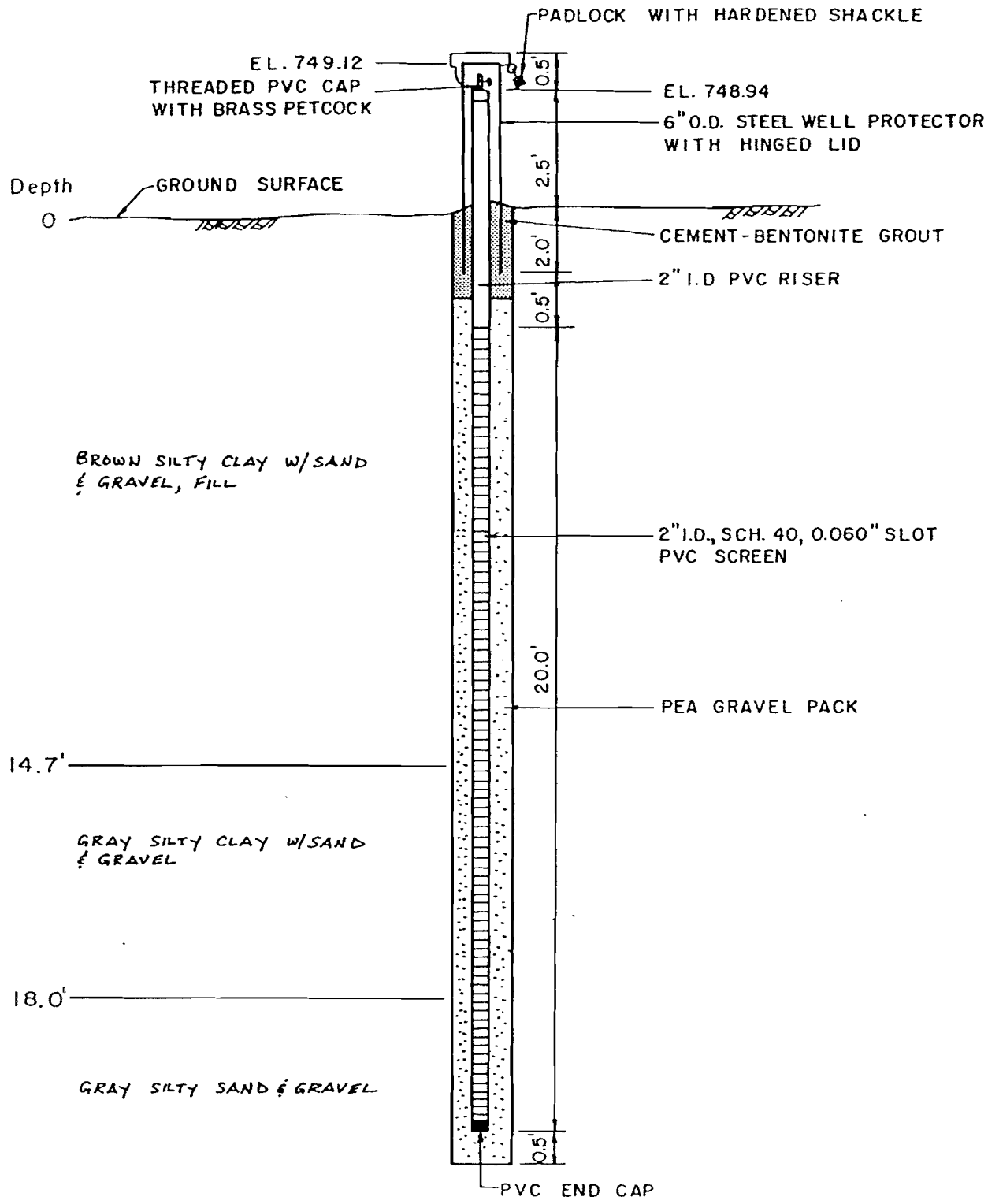
Geologists • Surveyors
Glen Ellyn, Illinois



NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 27, 1989 | JOB NUMBER D178

METHANE PROBE NO.
GP-5

PATRICK ENGINEERING INC.
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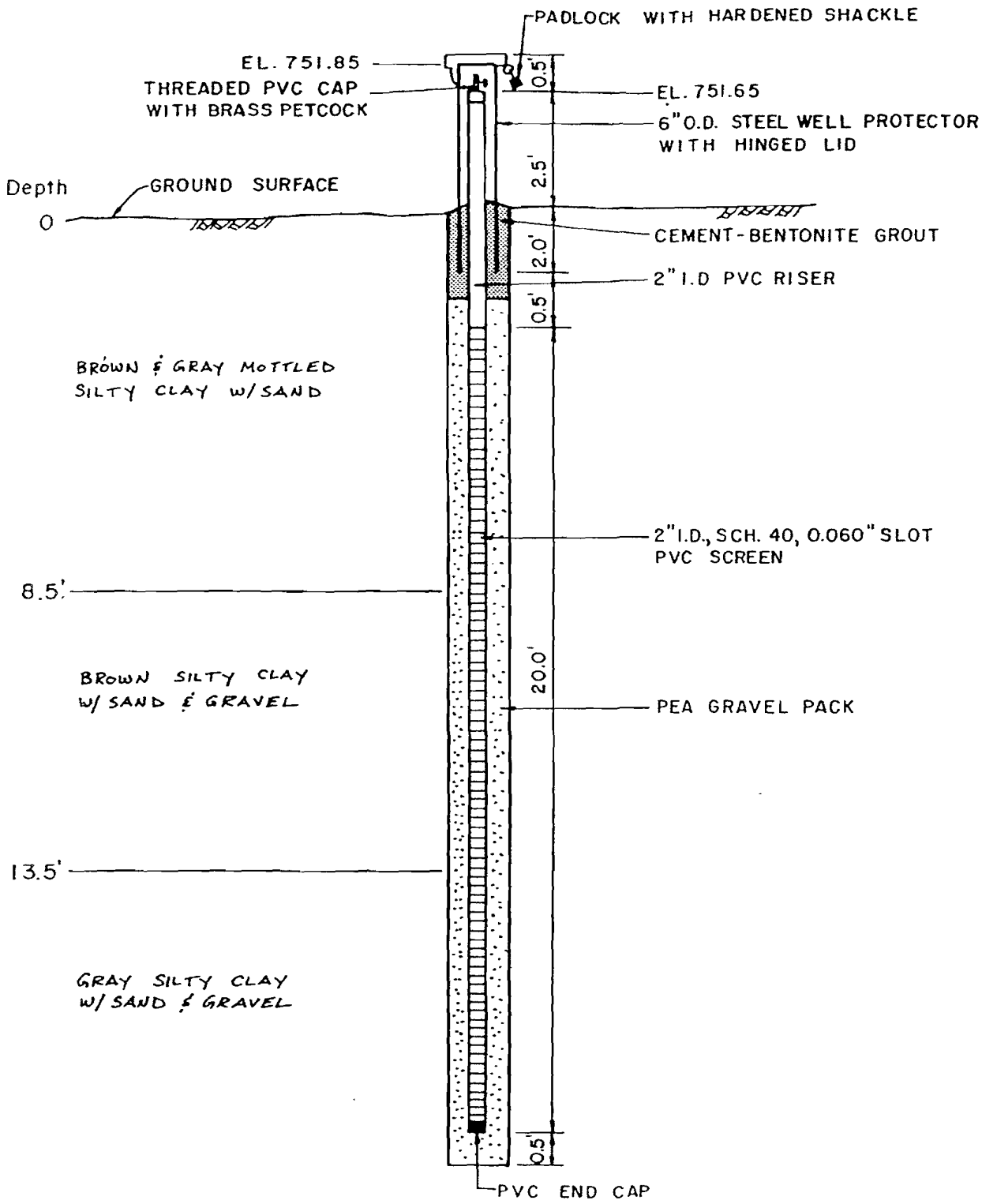
Geologists • Surveyors
Glen Ellyn, Illinois



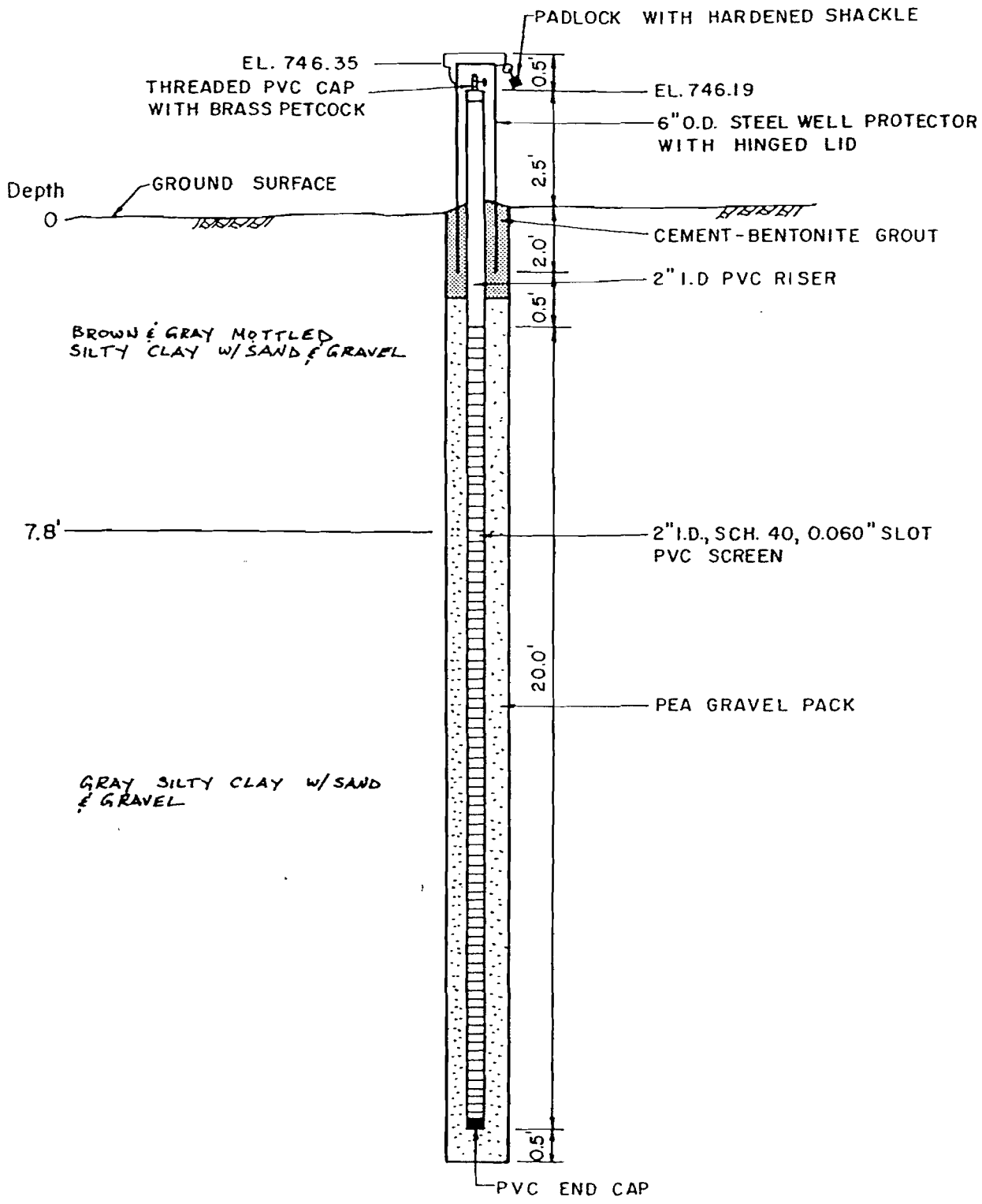
NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 24, 1989	JOB NUMBER D178

METHANE PROBE NO.
GP-6

PATRICK ENGINEERING INC.
Engineers • Architects • Hydrologists
Geologists • Surveyors
Glen Ellyn, Illinois



NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 28, 1989	JOB NUMBER D178

METHANE PROBE NO.
GP-7

PATRICK ENGINEERING INC.
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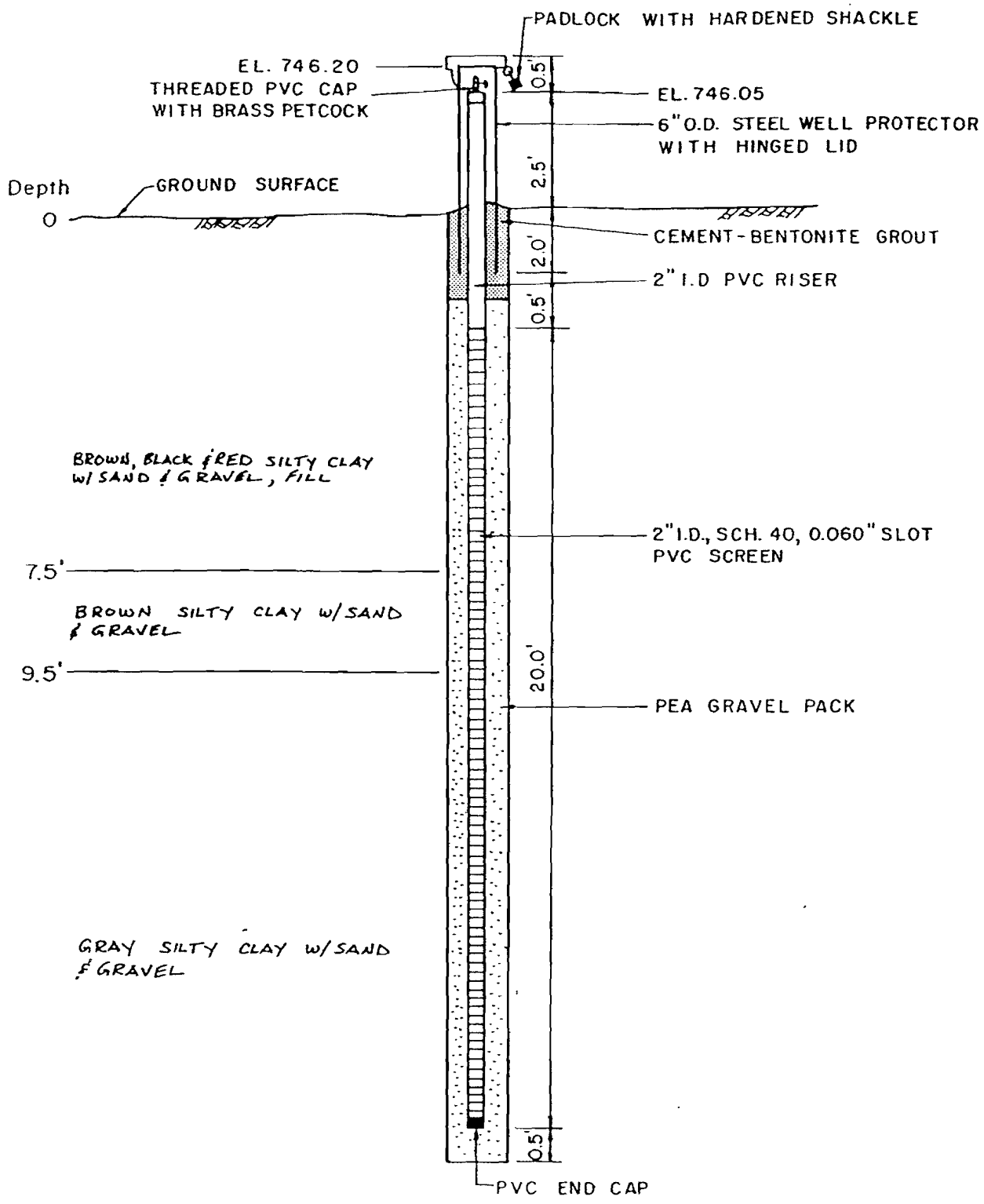
Geologists • Surveyors
Glen Ellyn, Illinois



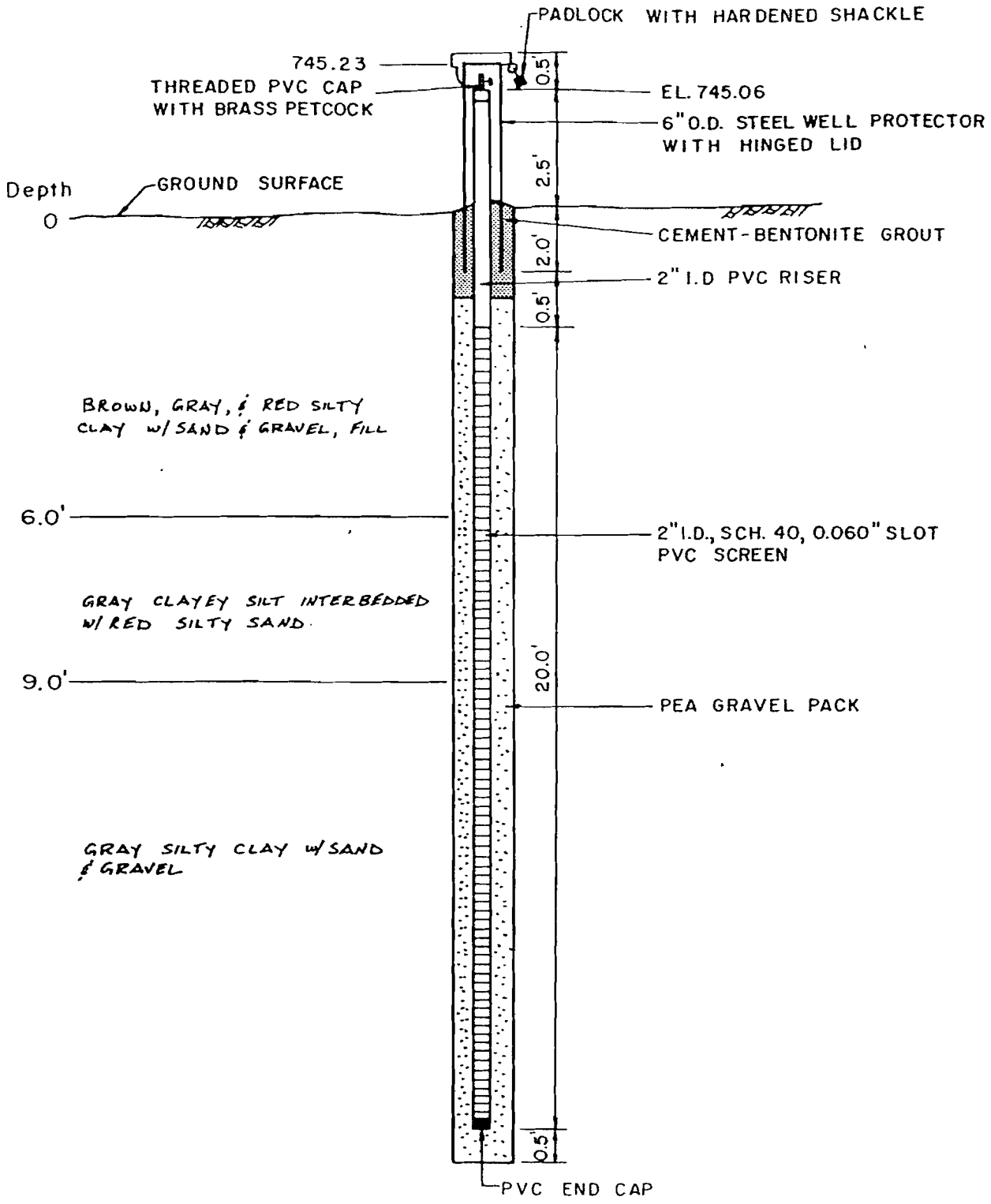
NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 23, 1989	JOB NUMBER D178

METHANE PROBE NO.
GP-8

PATRICK ENGINEERING INC.
Engineers • Architects • Hydrologists
Geologists • Surveyors
Glen Ellyn, Illinois



NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 23, 1989 | JOB NUMBER D178

METHANE PROBE NO.

GP-9

PATRICK ENGINEERING INC.

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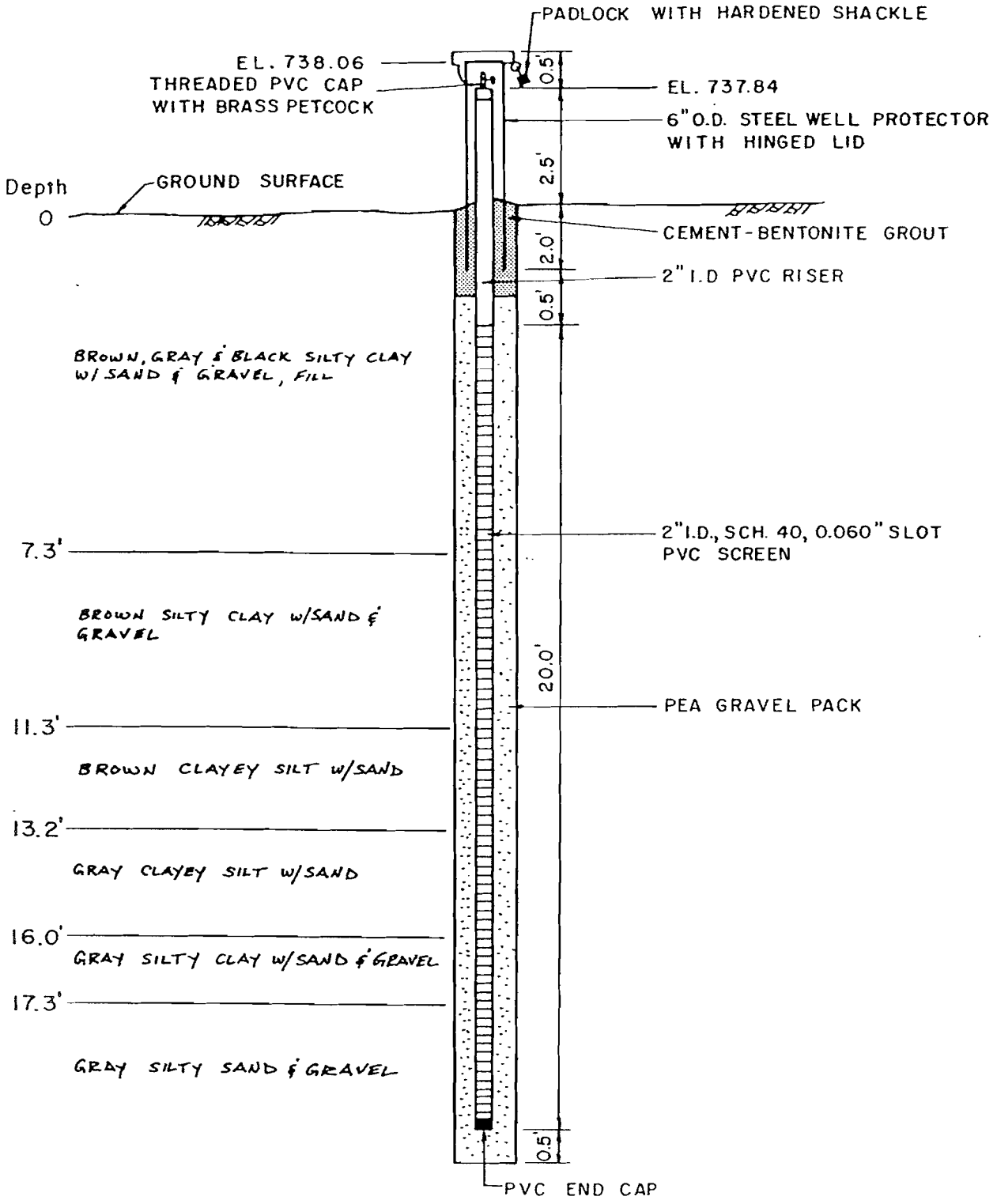
Geologists • Surveyors

Glen Ellyn, Illinois



NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 23, 1989 | JOB NUMBER D178

METHANE PROBE NO.
GP-10

PATRICK ENGINEERING INC.
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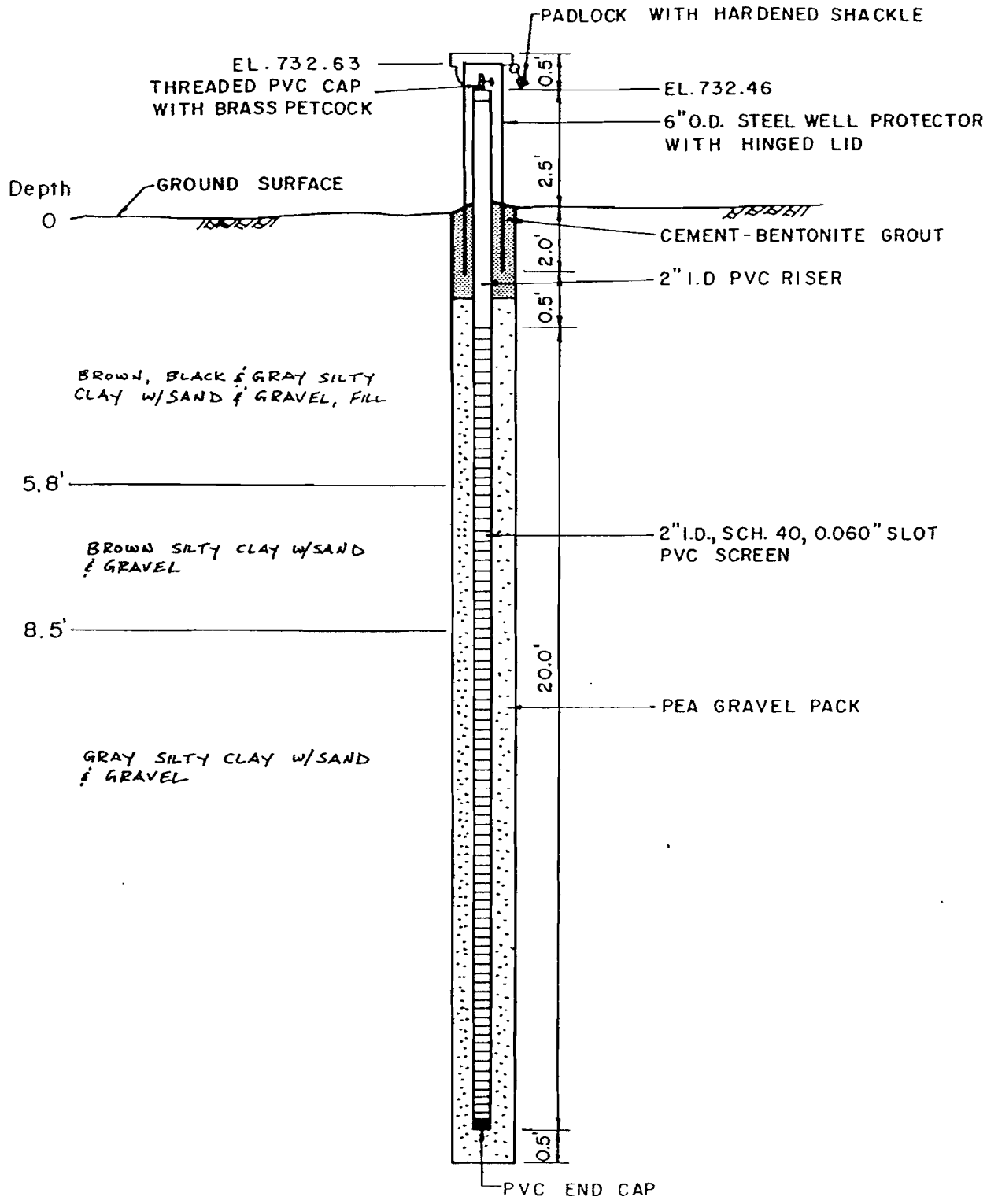

NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 22, 1989 | JOB NUMBER D178

METHANE PROBE NO.
GP-11

PATRICK ENGINEERING INC.
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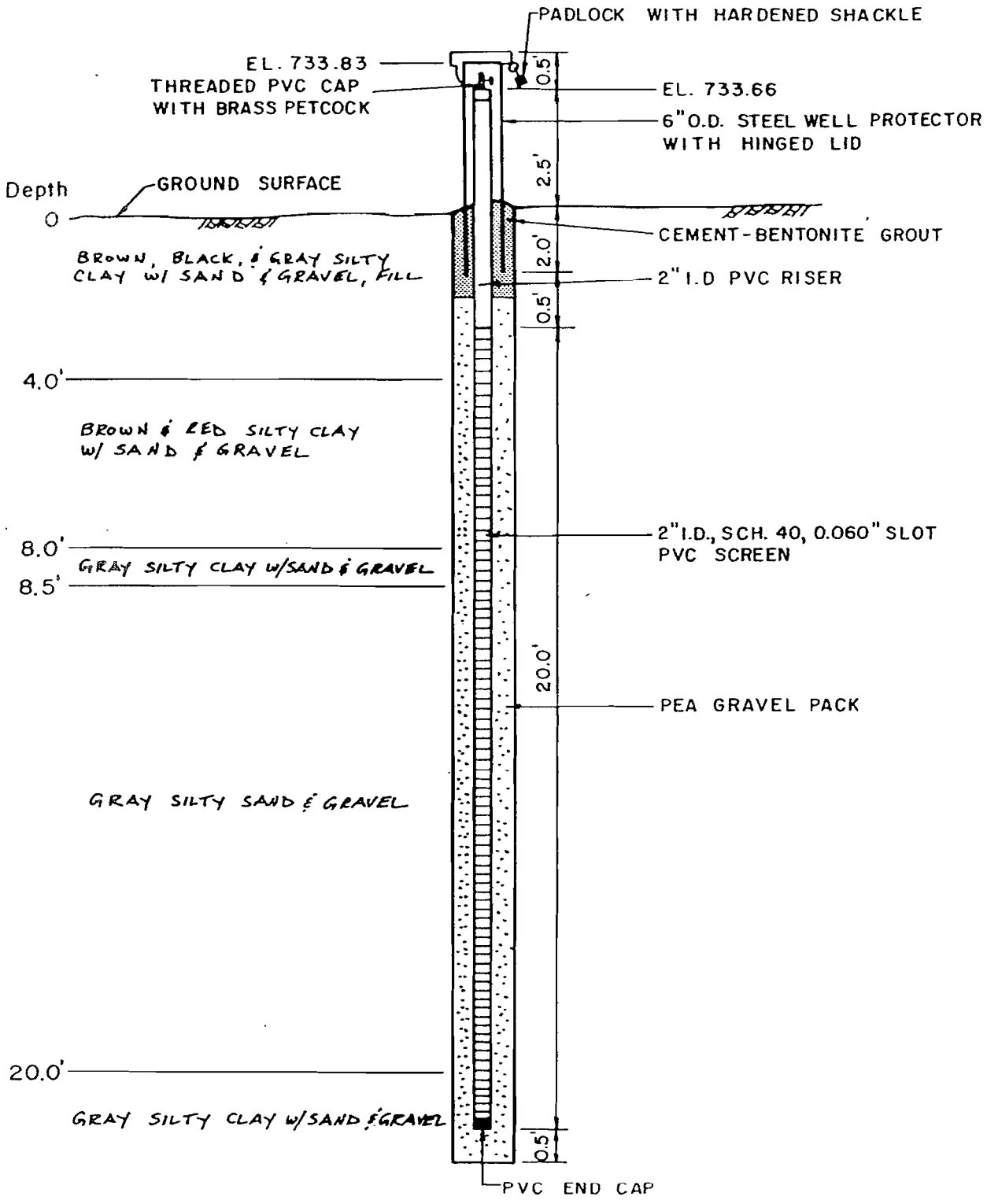
Geologists • Surveyors
Glen Ellyn, Illinois



NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 22, 1989 | JOB NUMBER D178

METHANE PROBE NO.
GP-12

PATRICK ENGINEERING INC.
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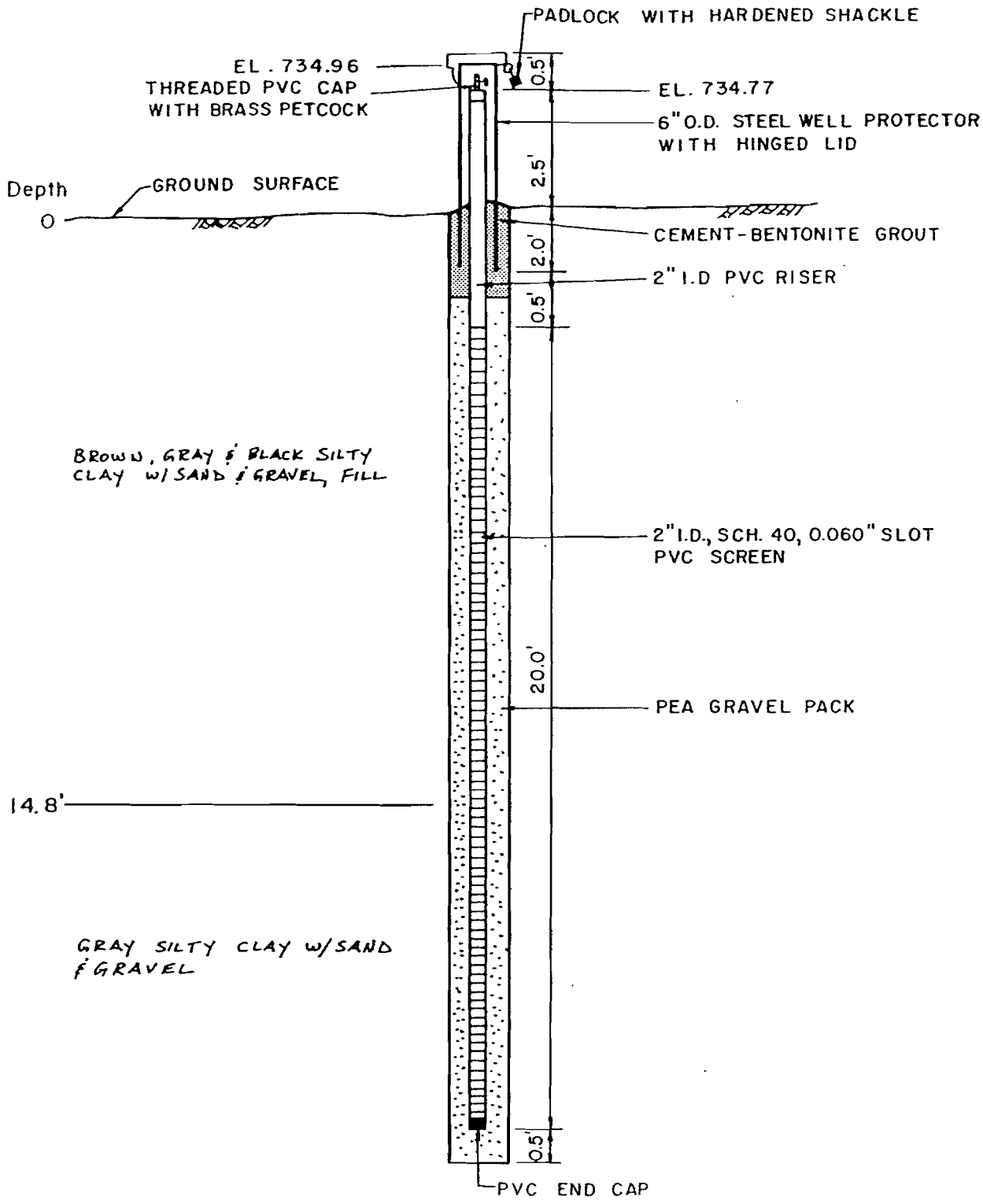
Geologists • Surveyors
Glen Ellyn, Illinois



NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: MARCH 2, 1989 | JOB NUMBER D178

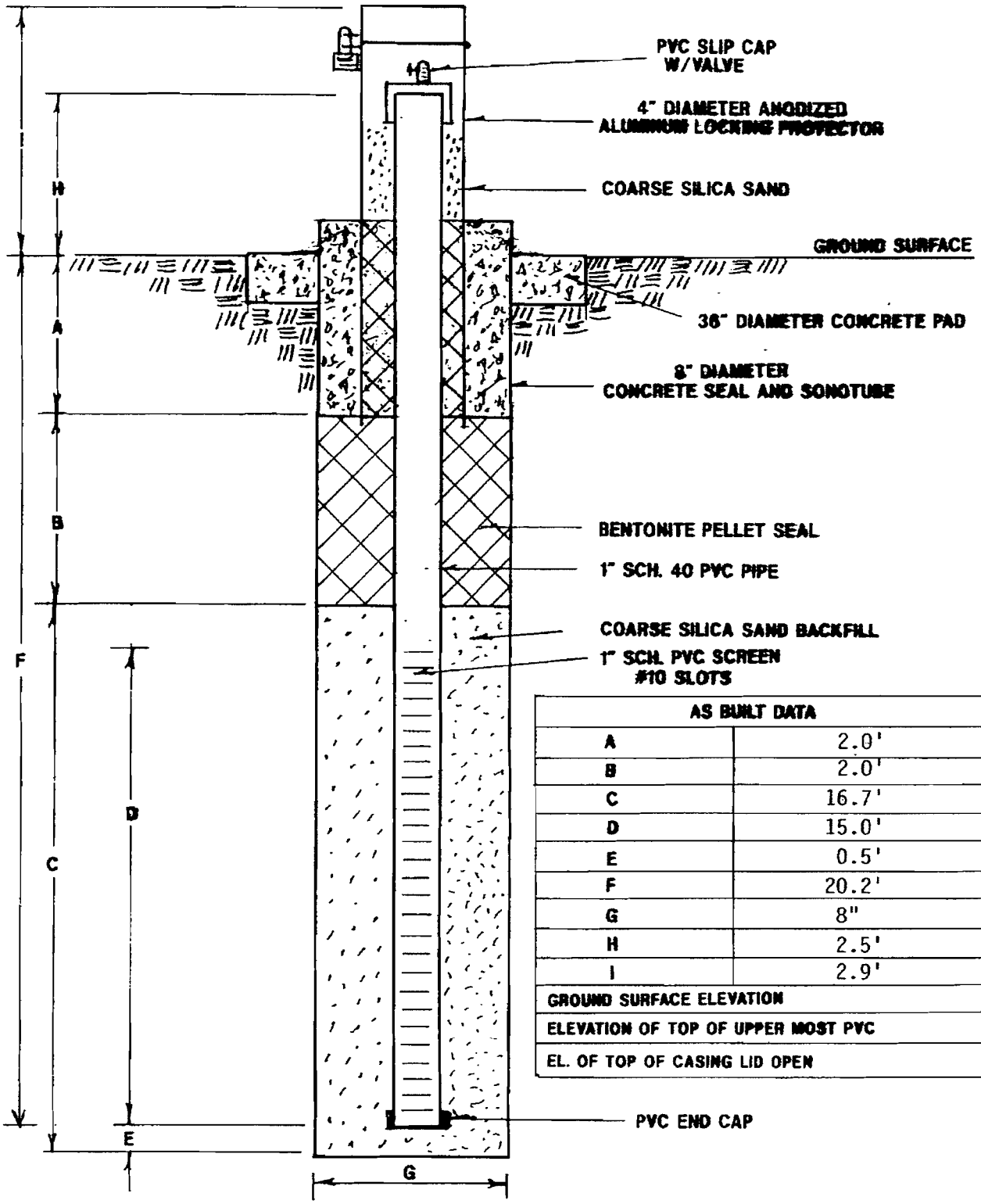
METHANE PROBE NO. GP-13

PATRICK ENGINEERING INC.
Engineers • Architects • Hydrologists
Geologists • Surveyors
Glen Ellyn, Illinois

METHANE GAS PROBE SKETCH

GP-25

NOT TO SCALE



AS BUILT DATA	
A	2.0'
B	2.0'
C	16.7'
D	15.0'
E	0.5'
F	20.2'
G	8"
H	2.5'
I	2.9'
GROUND SURFACE ELEVATION	
ELEVATION OF TOP OF UPPER MOST PVC	
EL. OF TOP OF CASING LID OPEN	

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

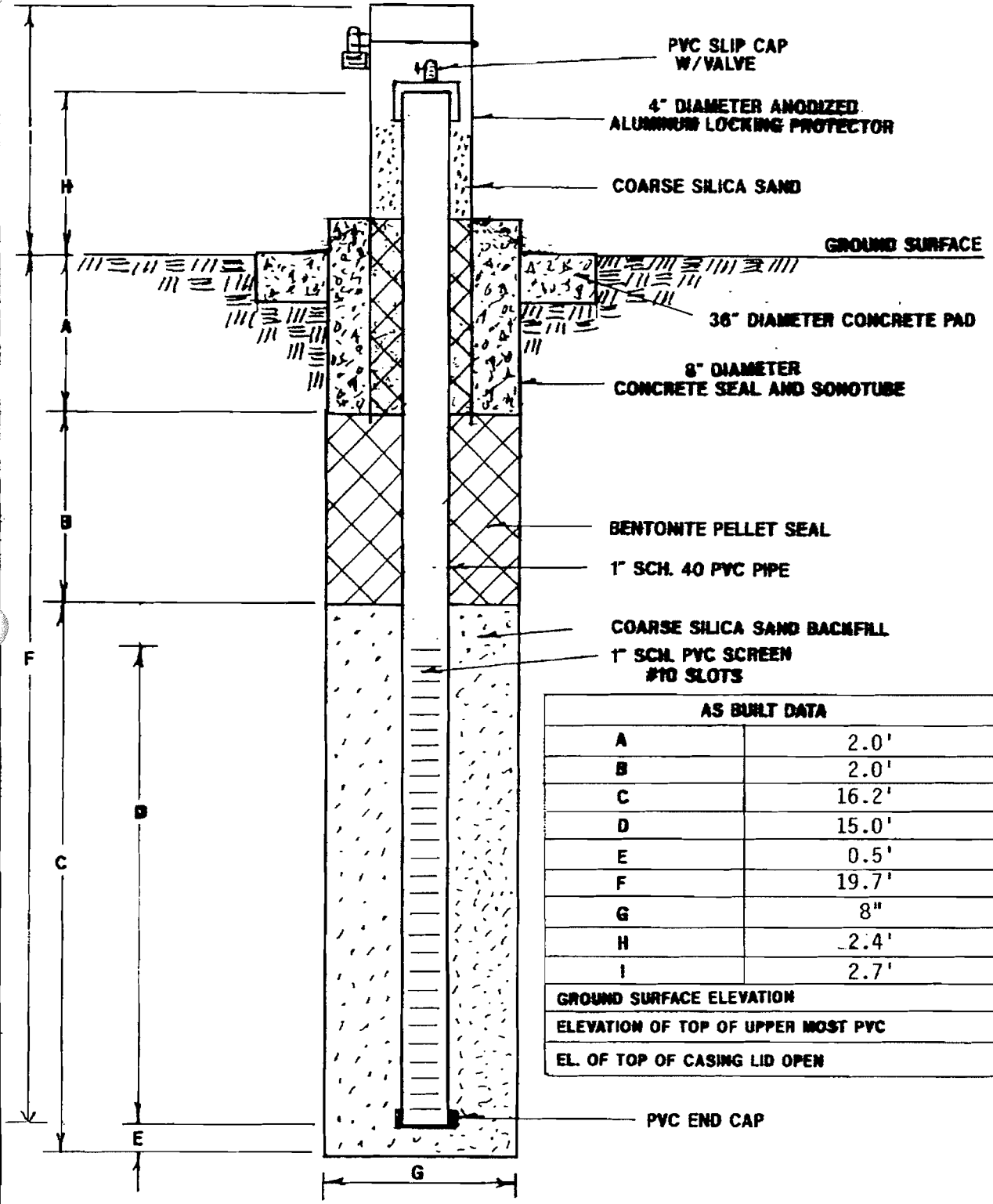
DRAWN BY:	DJM
CHECKED BY:	DH
JOB. NO.:	L-51,402
DATE:	NOVEMBER 2000

PAGE NO.

METHANE GAS PROBE SKETCH

GP-26

NOT TO SCALE



AS BUILT DATA	
A	2.0'
B	2.0'
C	16.2'
D	15.0'
E	0.5'
F	19.7'
G	8"
H	2.4'
I	2.7'
GROUND SURFACE ELEVATION	
ELEVATION OF TOP OF UPPER MOST PVC	
EL. OF TOP OF CASING LID OPEN	

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

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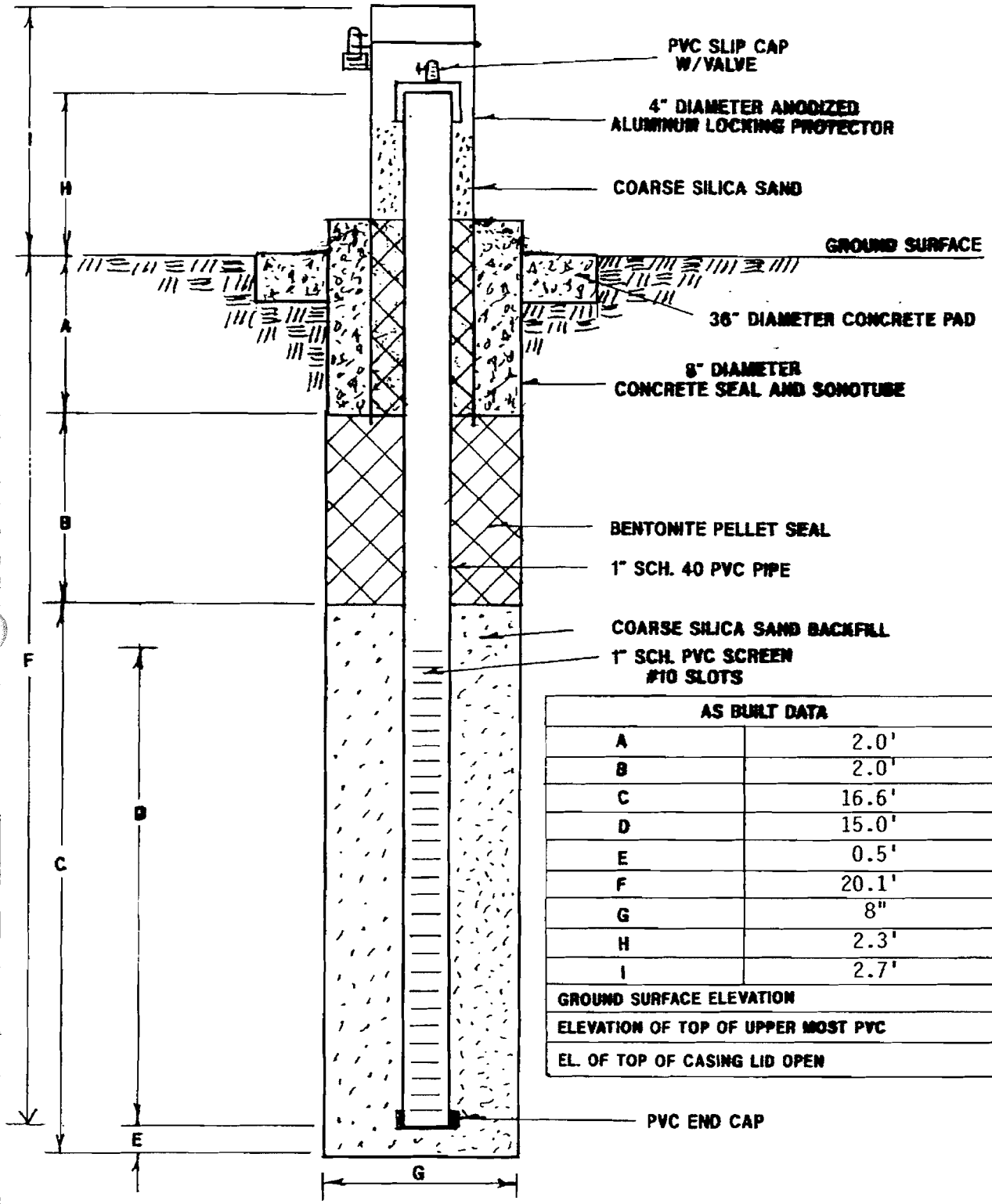
METHANE GAS PROBE SKETCH

GP-27

NOT TO SCALE



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C	16.6'
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F	20.1'
G	8"
H	2.3'
I	2.7'
GROUND SURFACE ELEVATION	
ELEVATION OF TOP OF UPPER MOST PVC	
EL. OF TOP OF CASING LID OPEN	

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

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METHANE GAS PROBE SKETCH

GP-28

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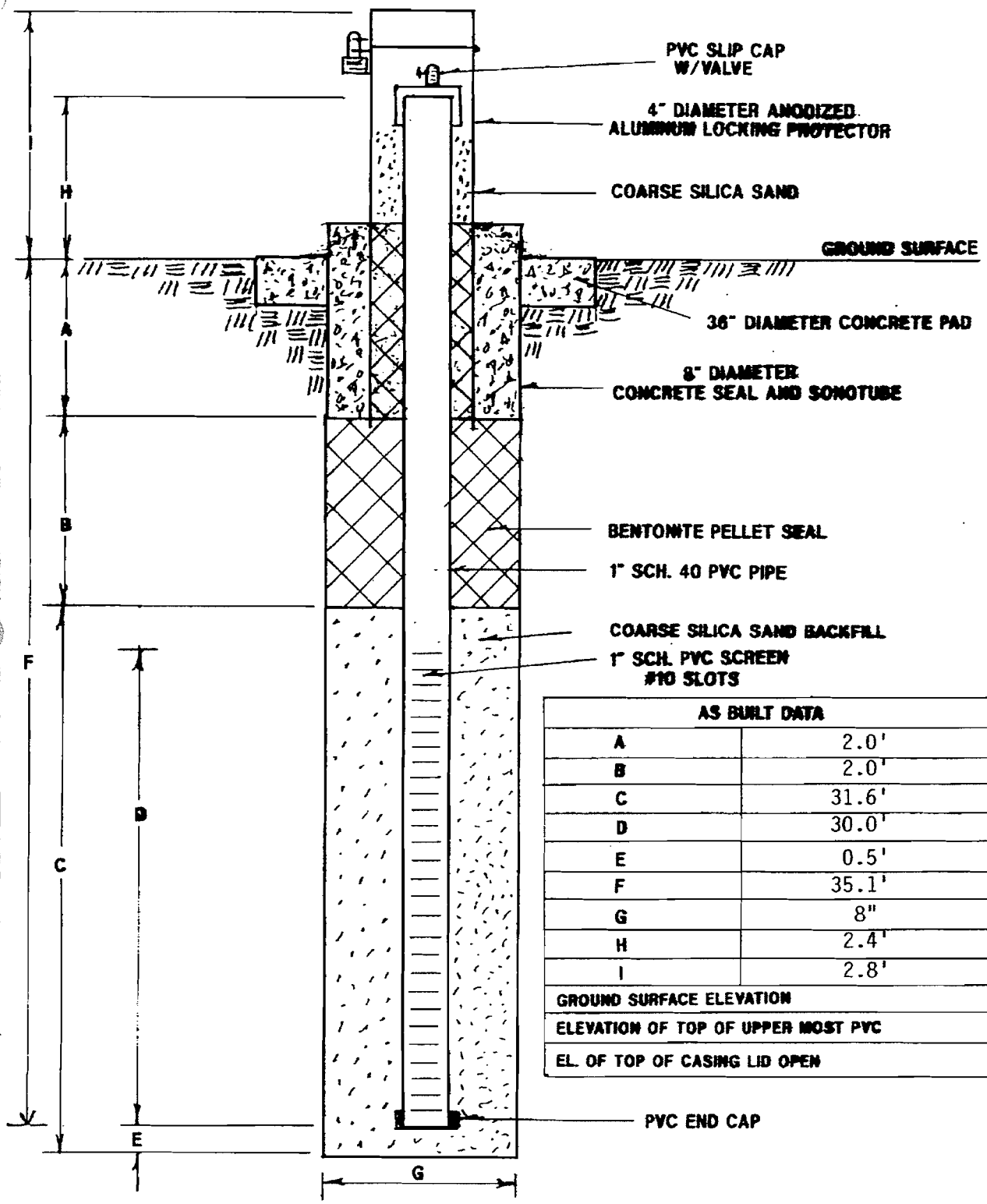

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B	2.0'
C	31.6'
D	30.0'
E	0.5'
F	35.1'
G	8"
H	2.4'
I	2.8'
GROUND SURFACE ELEVATION	
ELEVATION OF TOP OF UPPER MOST PVC	
EL. OF TOP OF CASING LID OPEN	

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

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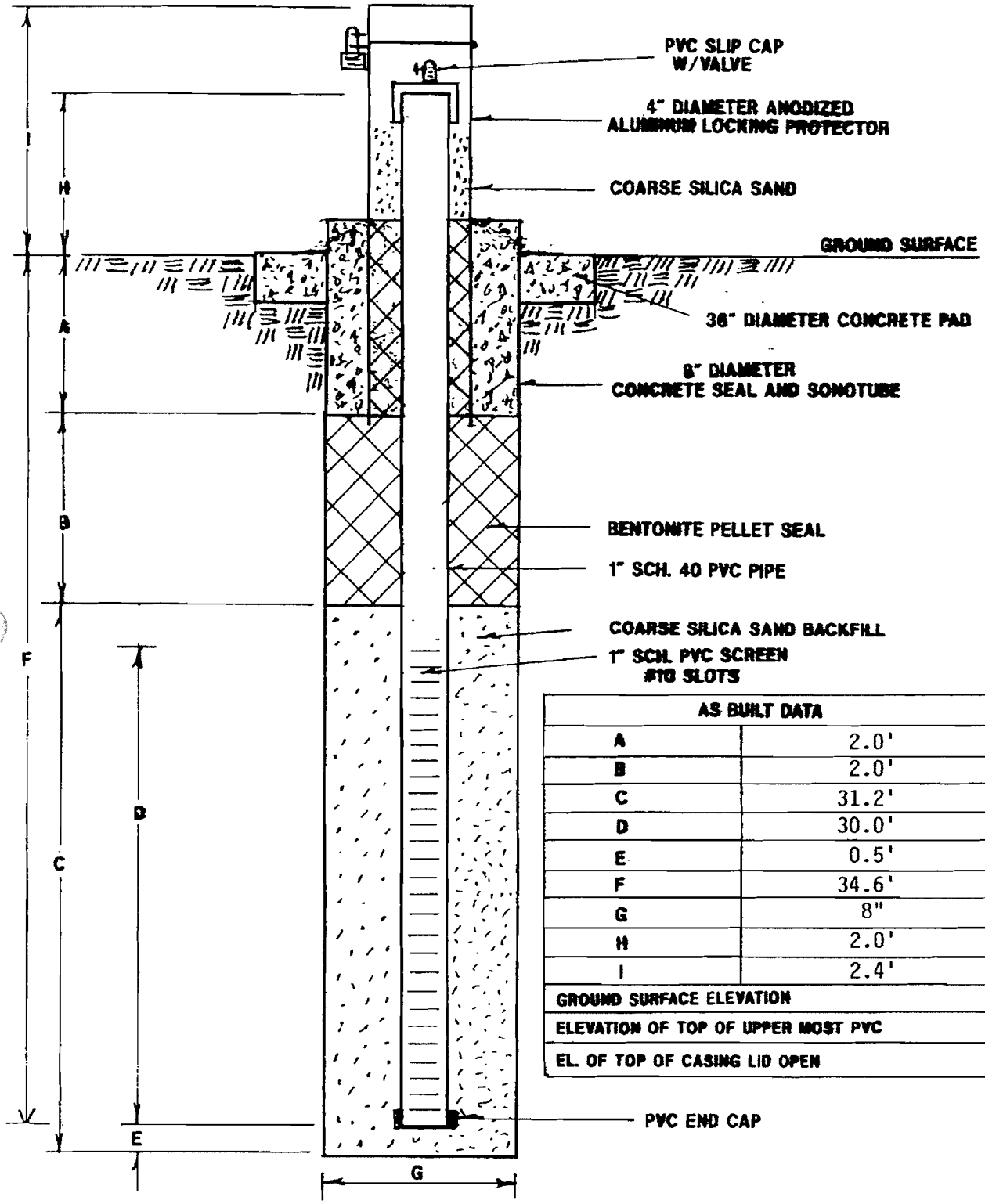
DATE:	NOVEMBER 2000

PAGE NO.

METHANE GAS PROBE SKETCH

GP-29

NOT TO SCALE



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B	2.0'
C	31.2'
D	30.0'
E	0.5'
F	34.6'
G	8"
H	2.0'
I	2.4'
GROUND SURFACE ELEVATION	
ELEVATION OF TOP OF UPPER MOST PVC	
EL. OF TOP OF CASING LID OPEN	

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

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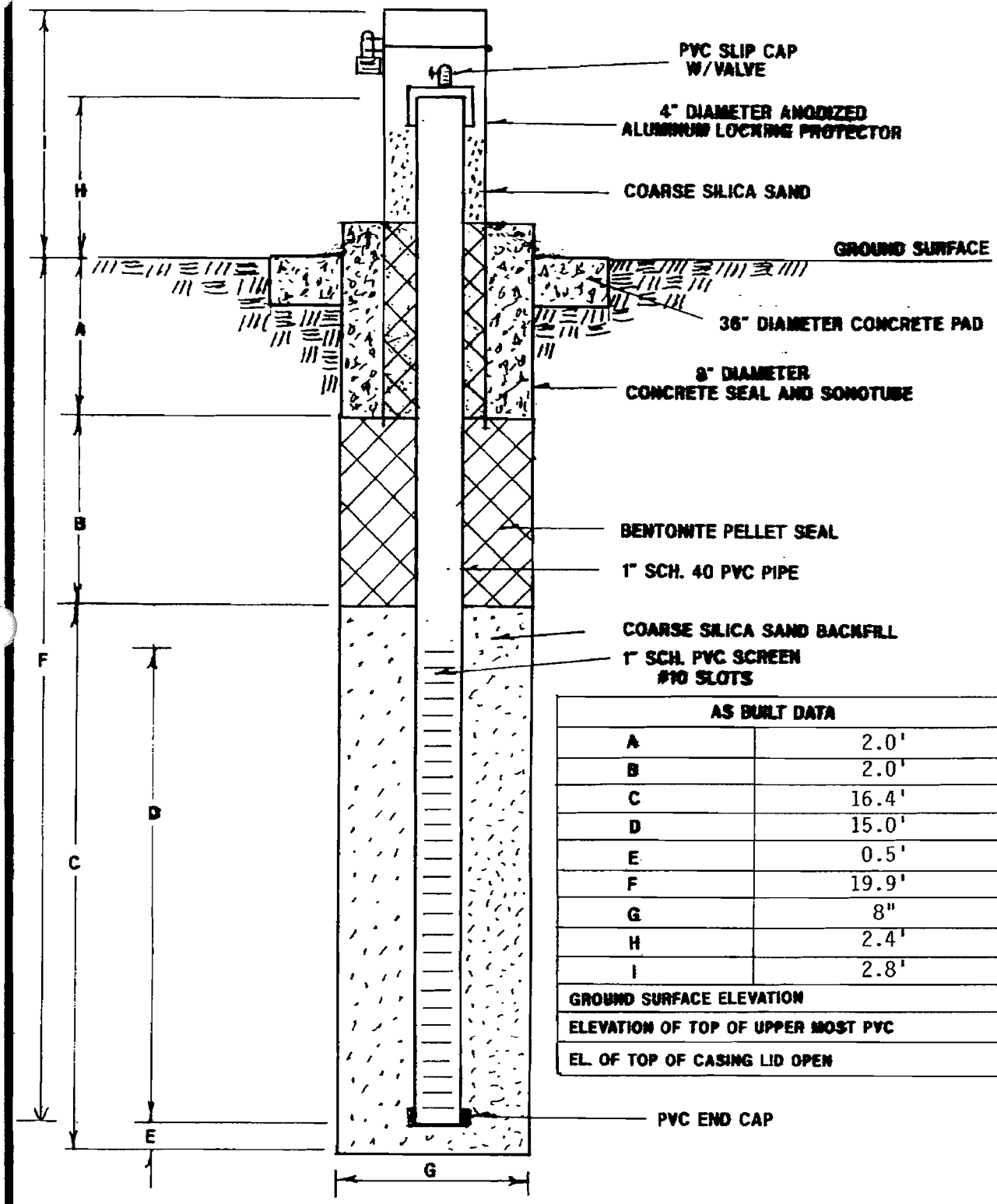
JOB. NO.:	L-51,402
DATE:	NOVEMBER 2000

PAGE NO.

METHANE GAS PROBE SKETCH

GP-30

NOT TO SCALE



AS BUILT DATA	
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B	2.0'
C	16.4'
D	15.0'
E	0.5'
F	19.9'
G	8"
H	2.4'
I	2.8'
GROUND SURFACE ELEVATION	
ELEVATION OF TOP OF UPPER MOST PVC	
EL. OF TOP OF CASING LID OPEN	

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DRAWN BY:	DJM
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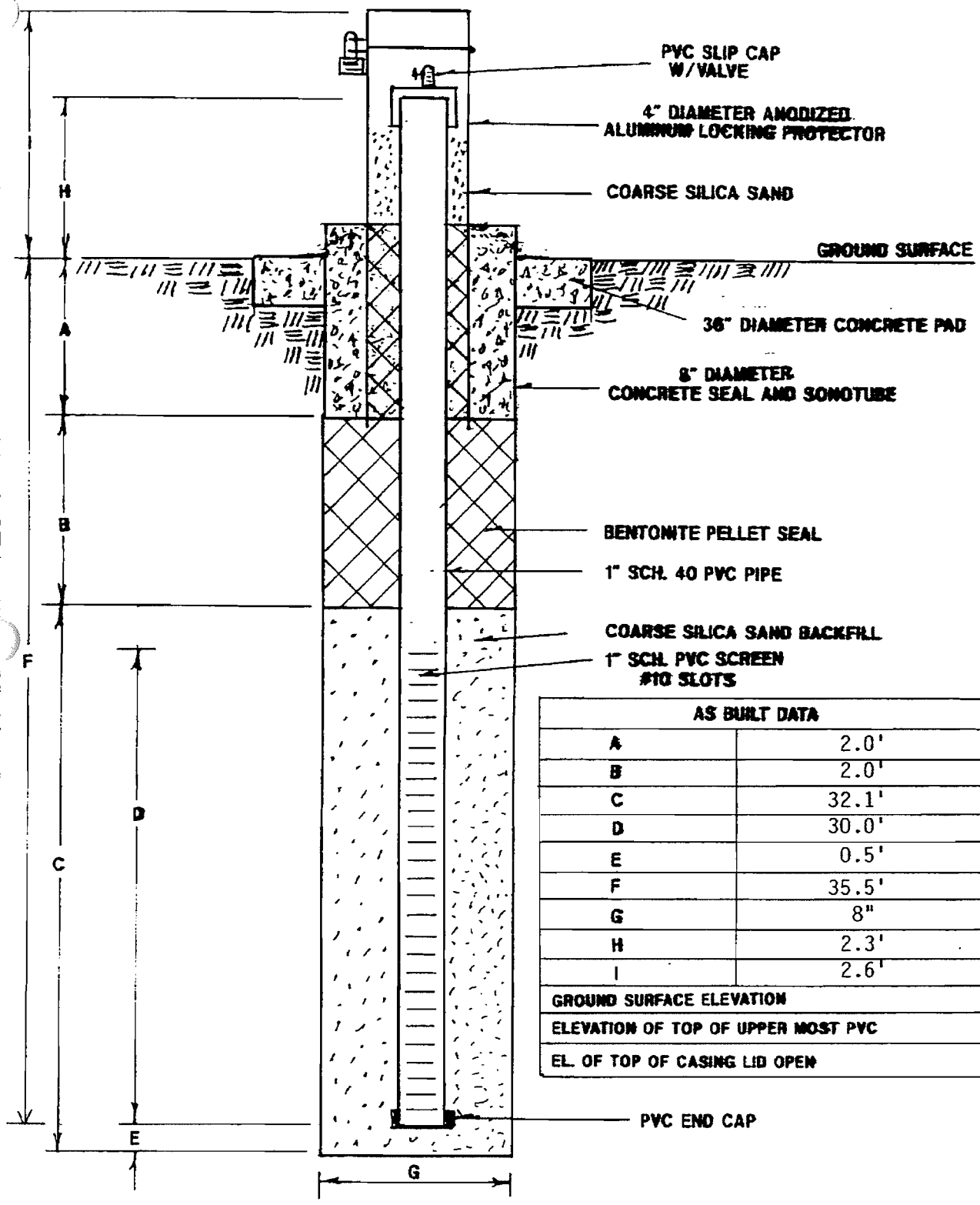
JOB. NO.:	L-51,402
DATE:	NOVEMBER 2000

PAGE NO.

METHANE GAS PROBE SKETCH

GP-31

NOT TO SCALE



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G	8"
H	2.3'
I	2.6'
GROUND SURFACE ELEVATION	
ELEVATION OF TOP OF UPPER MOST PVC	
EL. OF TOP OF CASING LID OPEN	

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DRAWN BY:	DJM
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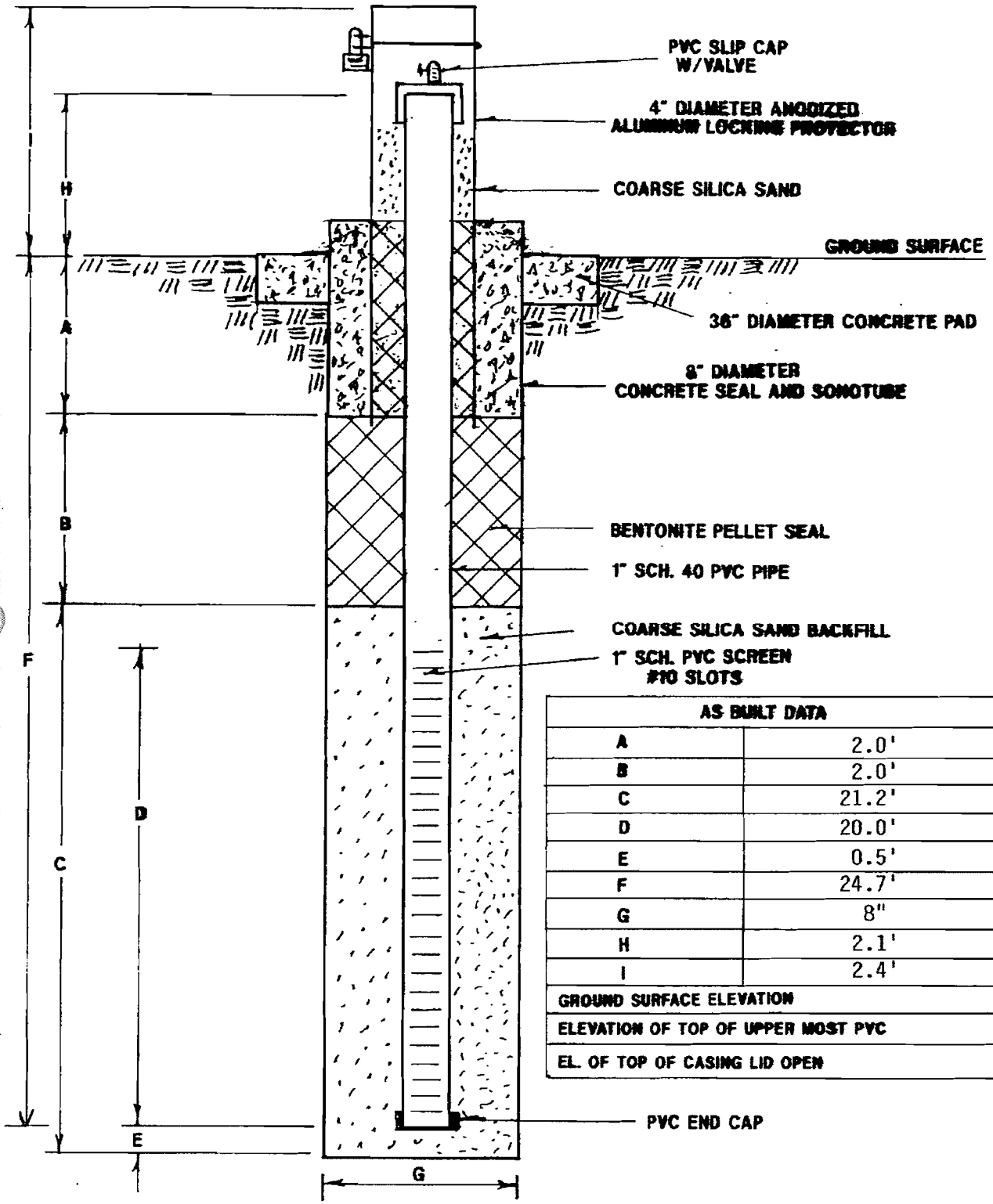
JOB. NO.:	L-51,402
DATE:	NOVEMBER 2000

PAGE NO.

METHANE GAS PROBE SKETCH

GP-32

NOT TO SCALE



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D	20.0'
E	0.5'
F	24.7'
G	8"
H	2.1'
I	2.4'
GROUND SURFACE ELEVATION	
ELEVATION OF TOP OF UPPER MOST PVC	
EL. OF TOP OF CASING LID OPEN	

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

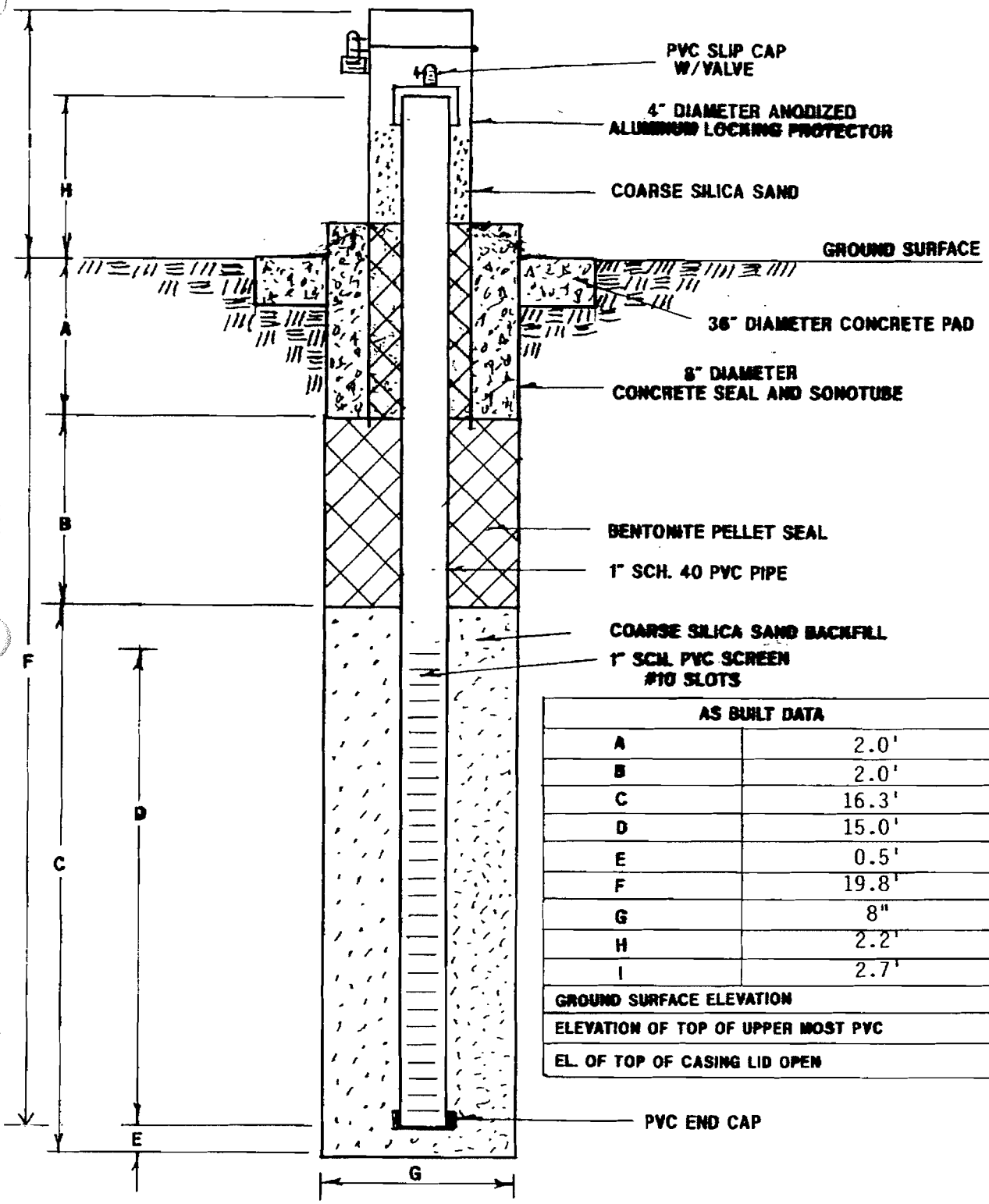
DRAWN BY:	DJM
CHECKED BY:	DH
JOB. NO.:	L-51,402
DATE:	NOVEMBER 2000

PAGE NO.

METHANE GAS PROBE SKETCH

GP-33

NOT TO SCALE



AS BUILT DATA	
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C	16.3'
D	15.0'
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GROUND SURFACE ELEVATION	
ELEVATION OF TOP OF UPPER MOST PVC	
EL. OF TOP OF CASING LID OPEN	

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DRAWN BY:	DJM
CHECKED BY:	DH
JOB. NO.:	L-51,402
DATE:	NOVEMBER 2000

PAGE NO.

Ill.' of Public Health
Yellow - ell Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam 7.75 in. Depth____ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Bentonite	60.05	3

2. Well furnishes water for human consumption? Yes____ No X
3. Date well drilled 8/25/94
4. Permanent pump installed? Yes ___ Date_____ No X
   Manufacturer_____ Type_____
   Location_____
   Capacity _____gpm. Depth of setting_____ft.
5. Well top sealed? Yes X No___ Type_____
6. Pitless adapter installed? Yes___ No X
   Manufacturer_____ Model No._____
   How attached to casing?_____
7. Well disinfected? Yes___ No X
8. Pump and equipment disinfected Yes___ No___

IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Testing Service Corporation License No. Not Require
10. Well Site Address 701 Green Bay Road GII4
11. Property Owner Browning-Ferris Ind Well No._____
12. Permit No. N/A Date Issued --- ____
13. Location: 112+37.3N 85.+10.7E
    County Lake
    Sec. 7
    Twp. 46.N
    Rge 12E

X			

Show location in section plat

14. Water from Drift at depth 73 ft to 77 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
2	Sched. 40 PVC Riser	+2.3	56.8
2	304 Stainless Steel Riser	56.8	66.8
2	304 Stainless Steel Riser	66.8	76.8

B-208

16. Screen: Diam. 2 in, Length 120 in, Slot Size 0.010"
17. Size hole below casing____in. 18. Ground Elev._____ ft msl.
19. Static level____ft below casing top which is ____ft. above ground level. Pumping level ____ft, pumping gpm for ____ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Glacial Till - Brown, Grey Silty Clay, Little Sand/Gravel	0'	17.5'
Glacial Till - Grey Silty Clay, Little Sand and Gravel		77.'
Occasional thin sand and silt seams		

Continue on separate sheet if necessary.

Signed_____ Date_____

Illinois Environmental Protection Agency B-207 Well Completion Report

#: 0978020001 County Lake Well # GT14

Na BFI Zion Landfill Grid Coordinate: Northing 112+37.3 Easting 85+10.7

ing Contractor: Testing Service Corporation Date Drilled Start: 08/25/94

er: Dan Frazier Geologist: Frank Santella Date Completed: 08/26/94

ing Method: 4.25 I.D. Hollowstem Augers Drilling Fluids (type): None

ıular Space Details

of Surface Seal: Concrete

of Annular Sealant: Bentonite Grout

Amount of cement: # of bags ____ lbs. per bag ____

Amount of bentonite: # of bags 8 lbs. per bag 50

of Bentonite Seal (Granular, Pellet): Bentonite Chips

nt of bentonite: # of Bags 1 lbs. per bag 50

of Sand Pack: Coarse Grained (10-02 Grade) Silica Sand

e of Sand: Colorado Silica

mount of Sand: # of bags 6 lbs. per bag 50

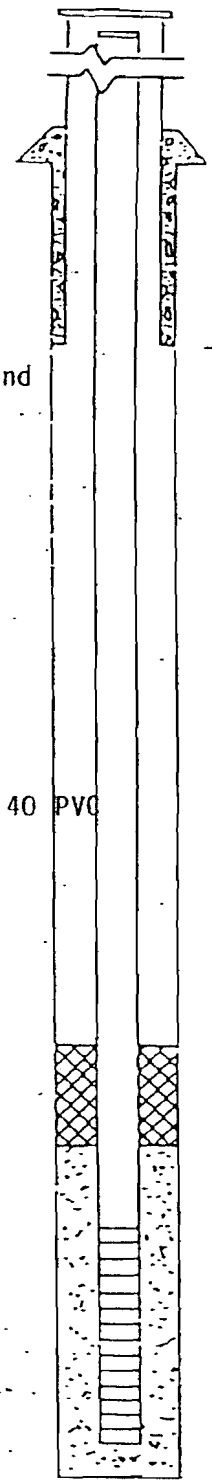
C truction Materials

	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
r coupling joint	N/A	Flush Threaded		
r pipe above w.t.	304 Stainless Steel		& Sched. 40 PVC	
r pipe below w.t.	304 Stainless Steel			
en	304 Stainless Steel			
ling joint screen to riser	304 Flush Threaded			
ective casing	Steel			

surements

to .01 ft. (where applicable)

pipe length	69.08
ctive casing length	5 Feet
n length	10 Feet
m of screen to end cap	2 inches
f screen to first joint	3 inches
length of casing	79.28 Foot
n slot size	0.010 inches
op s in screen	----
eter of borehole (in)	7.75
riser pipe (in)	2



Elevations — .01 ft.

2.49	761.04	MSL Top of Protective Casing
2.28	760.83	MSL Top of Riser Pipe
2.28	2.28	ft. Casing Stickup
0	758.55	MSL Ground Surface
1.5	757.05	ft. Top of Surface seal
3.0	755.55	ft. Top of annular sealar
60.5	698.05	ft. Top of Seal
2.5	---	ft. Total Seal Interval
63.0	695.55	ft. Top of Sand
66.8	691.75	ft. Top of Screen
10	----	ft. Total Screen Interval
76.8	681.75	ft. Bottom of Screen
77.0	681.55	ft. Bottom of Borehole *

*From Group Surf

eted by: Frank Santella Surveyed by: Howard Surveying Co. Inc. IL registration # 2342

Illinois Environmental Protection Agency

Well Completion Report

Site #: 097802001 County: Lake Well #: GT 15

Name: BFI Zion Landfill Grid Coordinate: Northing 10471.61 Easting 8627.33

Drilling Contractor: TESTING SERVICE CORPORATION Date Drilled Start: 9-8-95

Driller: Greg Donovan Geologist: Frank Santella Date Completed: 9-11-95

Drilling Method: 4.25" Hollowstem Auger Drilling Fluids (type): None

Annular Space Details

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite Grout

Amount of cement: # of bags _____ lbs. per bag _____

Amount of bentonite: # of bags 5 lbs. per bag 50

Type of Bentonite Seal (Granular, Pellet): Bentonite Chips

Amount of bentonite: # of Bags 1 lbs. per bag 50

Type of Sand Pack: Coarse Grained (10-20) Grade Silica Sand

Source of Sand: Colorado Silica

Amount of Sand: # of bags 5 lbs. per bag 50

Construction Materials

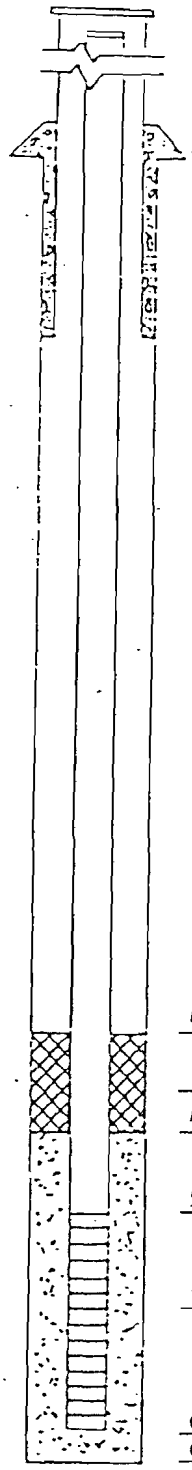
	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint	N/A Flush Joint			
Riser pipe above w.t.	304 Stainless Steel & Sched.40 PVC			
Riser pipe below w.t.	304 Stainless Steel			
Screen	304 Stainless Steel			
Coupling joint screen to riser	304 Flush Thread			
Protective casing	Steel			

Measurements

to .01 ft. (where applicable)

Riser pipe length	52.46 feet
Protective casing length	5 feet
Screen length	10 feet
Bottom of screen to end cap	2 inches
Top of screen to first joint	3 inches
Total length of casing	62.46
Screen slot size	0.010 inches
# openings in screen	---
Diameter of borehole (in)	7.75
ID of riser pipe (in)	2

Elevations — .01 ft.



2.55	741.65	MSL Top of Protective Casing
2.25	741.35	MSL Top of Riser Pipe
2.25	----	ft. Casing Stickup
0	739.10	MSL Ground Surface
1.5	736.60	ft. Top of annular sealant
2.5	736.60	ft. Top of annular seal
47.5	691.60	ft. Top of Seal
2.5	----	ft. Total Seal Interval
45.0	694.10	ft. Top of Sand
50.3	688.8	ft. Top of Screen
10.0	----	ft. Total Screen Interval
60.25	678.85	ft. Bottom of Screen
60.5	678.60	ft. Bottom of Borehole

Completed by: David M. Ferriss Surveyed by: Howard Surveying Co. Ill. registration # 2342

B-211

097802001 County Lake Well # GT16

e Name: BFI Zion Landfill Grid Coordinate: Northing 108 + 66.7 Easting 81+57.7

lling Contractor: Testing Service Corporation Date Drilled Start: 8/31/94

ller: Dan Frazier Geologist: Frank Santella Date Completed: 09/01/94

lling Method: 4.25 I.D. Hollowstem Avgers Drilling Fluids (type): None

nular Space Details

pe of Surface Seal: Concrete

pe of Annular Sealant: Bentonite Grout

Amount of cement: # of bags ____ lbs. per bag ____

Amount of bentonite: # of bags 7 lbs. per bag 50

pe of Bentonite Seal (Granular, Pellet): Bentonite Chips

unt of bentonite: # of Bags 1 lbs. per bag 50

e of Sand Pack: Coarse Grained (10.20 Grade) Siera Sand

pe of Sand: Colorado Silica

Amount of Sand: # of bags 6 lbs. per bag 50

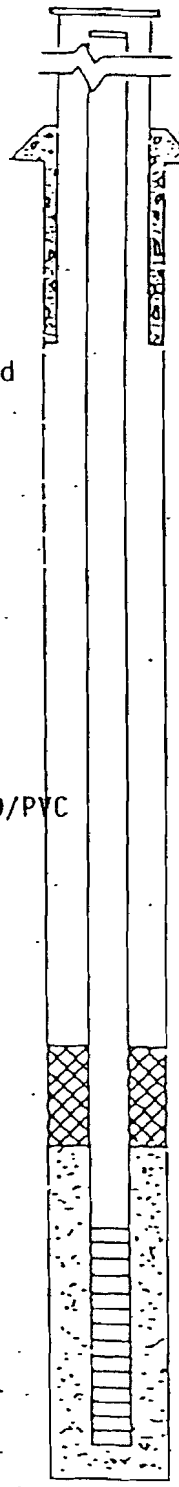
ll Construction Materials

	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
ser coupling joint	N/A	Flush Threaded		
ser pipe above w.t.	304 Stainless Steel & Sched 40/PVC			
ser pipe below w.t.	304 Stainless Steel			
reen	304 Stainless Steel			
pling joint screen to riser	304 Flush Thread			
tective casing	Steel			

asurements to .01 ft (where applicable)

er pipe length	47.7 Feet
tective casing length	5 Feet
een length	10 Feet
tom of screen to end cap	2 Inches
of screen to first joint	3 Inches
al length of casing	57.9 Feet
een slot size	0.010 Inches
ings in screen	---
meter of borehole (in)	7.75
of riser pipe (in)	2

Elevations — .01 ft.



2.82	742.28	ft. MSL Top of Protective Casing
2.90	742.36	ft. MSL Top of Riser Pipe
2.90	2.9	ft. Casing Stickup
0	739.46	ft. MSL Ground Surface
2.0	737.46	ft. Top of Surface seal
3.0	736.46	ft. Top of annular sealar
38.7	700.76	ft. Top of Seal
2.3	---	ft. Total Seal Interval
41.0	698.46	ft. Top of Sand
44.8	694.66	ft. Top of Screen
10	---	ft. Total Screen Interval
54.8	684.66	ft. Bottom of Screen
55.0	684.46	ft. Bottom of Borehole

pleted by: Frank Santella Surveyed by: Howard Surveying Co., Inc. registration # 2342

White - Dept. of Public Health
Yellow - Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 7.75 in. Depth____ft
   Buried Slab: Yes__ No__
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift X In Rock____

   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Bentonite	38.7	3

2. Well furnishes water for human consumption? Yes___ No X
3. Date well drilled 08/31/94
4. Permanent pump installed? Yes ___ Date_____ No X
   Manufacturer_____ Type_____
   Location_____
   Capacity _____gpm. Depth of setting_____ _____ft.
5. Well top sealed? Yes X No___ Type_____ _____
6. Pitless adapter installed? Yes___ No X
   Manufacturer_____ Model No._____
   How attached to casing?_____
7. Well disinfected? Yes___ No X
8. Pump and equipment disinfected Yes___ No X

IMPORTANT NOTICE

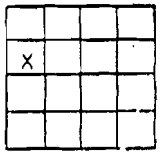
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Testing Service Corp. License No. Not Required
10. Well Site Address 701 Green Bay Road
11. Property Owner Browning- Ferris Ind. Well No. GT16
12. Permit No. N/A Date Issued ---
13. Location: 108 + 66.7N
    County Lake
    Sec. 7
    Twp. 46N
    Rge. 12E



Show location in section plat

14. Water from Drift at depth 47. ft to 47.5 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
2	Scheduled 40 PVC Riser	+2.9	34.8
2	304 Stainless Steel Riser	34.8	44.8
2	304 Stainless Steel Screen	44.8	54.8

16. Screen: Diam. 2 in, Length 120 in, Slot Size 0.010"
17. Size hole below casing____in. 18. Ground Elev._____ ft msl.
19. Static level____ft below casing top which is ____ft. above ground level. Pumping level ____ft, pumping gpm for ____ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Glacial Till - Brown-Grey Silty Clay Little Sand and Gravel	0'	11.5'
Glacial Till - Grey Silty Clay, Little Sand/Gravel & Silt Seams	11.5'	55.'

Continue on separate sheet if necessary.

Signed_____ Date_____

B-212

Illinois Environmental Protection Agency B-215 **Well Completion Report**

097802001 County Lake Well # GT17

m BFI Zion Landfill Grid Coordinate: Northing 104 + 28.9 Easting 81 + 34.3

Contractor: Testing Service Corporation Date Drilled Start: 11/30/94

Greg Donavin Geologist: Frank Santella Date Completed: 12/01/94

Method: 4.25 I.D. Hollowstem Avger Drilling Fluids (type): None

lar Space Details

Surface Seal: Concrete

Annular Sealant: Bentonite Grout

ount of cement: # of bags _____ lbs. per bag ____

ount of bentonite: # of bags 7 lbs. per bag 50

Bentonite Seal (Granular, Pellet): Bentonite Chips

of bentonite: # of Bags 1 lbs. per bag 50

Sand Pack: Coarse Grained (10-20) Grade Silica Sand

f Sand: Colorado Silica

ount of Sand: # of bags 6 lbs. per bag 50

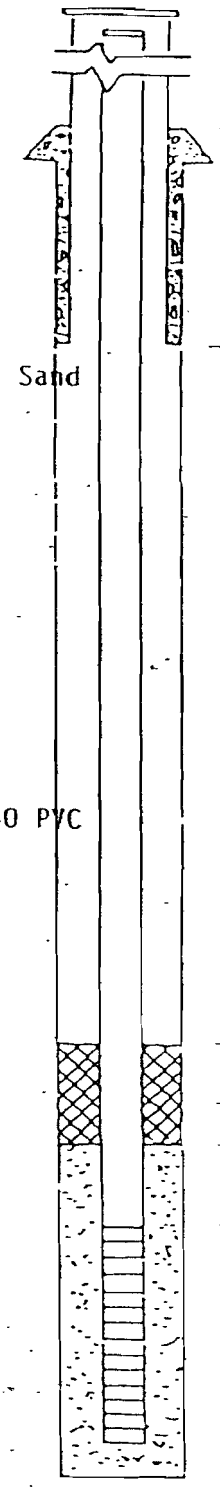
o. uction Materials

	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
oupling joint	N/A Flush Joint			
ipe above w.t.	304 Stainless Steel & Sched. 40 PVC			
ipe below w.t.	304 Stainless Steel			
	304 Stainless Steel			
g joint screen to riser	304 Flush Thread			
ive casing	Steel			

rements to .01 ft. (where applicable)

pe length	56.2 Feet
ve casing length	5 Feet
ength	10 Feet
of screen to end cap	2 Inches
creen to first joint	3 Inches
ngth of casing	66.4 Feet
slo e	0.010 Inches
ni in screen	---
er of borehole (in)	7.75
per pipe (in)	2

Elevations — .01 ft.



2.20	736.21	MSL Top of Protective Casing
2.40	736.36	MSL Top of Riser Pipe
2.40	2.40	ft. Casing Stickup
0	733.96	MSL Ground Surface
1.5	732.46	ft. Top of Surface seal
2.7	731.46	ft. Top of annular sealar
48.3	658.66	ft. Top of Seal
3.2	---	ft. Total Seal Interval
51.5	682.46	ft. Top of Sand
53.8	680.16	ft. Top of Screen
10	---	ft. Total Screen Interval
63.8	670.16	ft. Bottom of Screen
64.0	669.96	ft. Bottom of Borehole

d by: Frank Santella Surveyed by: Howard Surveying Co. Ill. registration # 2342

Ill. of Public Health
Yello. Well Contractor
Golden Copy Well Owner

Well Construction Report

THIS FORM HUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam. 7.75 in. Depth____ ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____ in. Depth____ ft
   c. Drilled X Finished in Drift X In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Bentonite	48.3	2.5

2. Well furnishes water for human consumption? Yes___ No X
3. Date well drilled 12/01/94
4. Permanent pump installed? Yes ___ Date_____ No X
   Manufacturer_____ Type_____
   Location_____
   Capacity _____gpm. Depth of setting_____ft.
5. Well top sealed? Yes X No___ Type_____
6. Pitless adapter installed? Yes___ No X
   Manufacturer_____ Model No._____
   How attached to casing?_____
7. Well disinfected? Yes___ No X
8. Pump and equipment disinfected Yes___ No X

IMPORTANT NOTICE

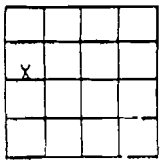
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Testing Service Corp. License No. Not Required
10. Well Site Address 701 Green Bay Rd.
11. Property Owner Browning-Ferris Ind. Well No. GI17
12. Permit No._____ Date Issued ---
13. Location: 104 + 28.9N
    81 + 34.3E
    County Lake
    Sec. 7
    Twp. 46N
    Rge. 12E



Show location in section plat

14. Water from Drift at depth 62 ft to 62.5 ft
15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
2	Sched. 40 PVC Riser	+2.4	43.8
2	304 Stainless Steel Riser	43.8	53.8
2	304 Stainless Steel Riser	53.8	63.8

B-216

16. Screen: Diam. 2 in, Length 120 in, Slot Size 0.010"
17. Size hole below casing____in. 18. Ground Elev._____ ft msl.
19. Static level____ft below casing top which is ____ft. above ground level. Pumping level ____ft, pumping gpm for ____ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Glacial Till-Brown/Grey Silty Clay Trace Sand and Gravel	0'	18'
Glacial Till-Grey Silty Clay Trace Sand and Gravel	18'	64'
Occasional thin silty sand seams.		

Continue on separate sheet if necessary.

Signed_____ Date_____

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 8 in. Depth 100 ft.
   Curb material ____. Buried Slab: Yes ____ No X
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock ____.
   Tubular ____. Gravel Packed X.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Neat Cement	5"	74'
	above grade	

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast Iron) ____
   Privy ____ Sewer (Cast Iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes ____ No X
4. Date well completed 9/27/85
5. Permanent Pump Installed? Yes ____ Date ____ No ____
   Manufacturer ____ Type ____ Location ____
   Capacity ____ gpm. Depth of Setting ____ Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No ____
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes ____ No ____
9. Pump and Equipment Disinfected? Yes ____ No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No ____

REMARKS:

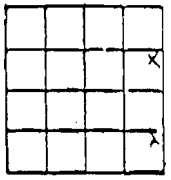
THIS IS A REPLACEMENT MONITORING WELL.

Completed 9/27/85

IDPH 4.065
1/71 - 5M/0-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Browning-Ferris Industries Winthrop Harbor Landfill Well No. G 121
    Address Winthrop Harbor, IL.
    Driller Peerless-Midwest, Inc. License No. 102-002995
11. Permit No. 118385 Date 6/14/85
12. Water from ____ (Formation). 13. County Lake
    at depth 91 to 96 ft. Sec. 12, 16
    14. Screen: Diam. 2 in. Twp. Newport
    Length: 5 ft. Slot .010 Rge. 11E
    Elev. 723'



SHOW LOCATION IN SECTION PLAT
NE SE NE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
2"	Flush-Joint, Schedule 1½'		91'
	5, 316 SS Triloc	above	
		ground	

16. Size Hole below casing: 8" in.
17. Static level 49 ft. below casing top which is 1½ ft. above ground level. Pumping level - ft. when pumping at ____ gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Topsoil	2'	2'
Gray Sandy Clay	6'	8'
Gray Clay	37'	45'
Gray Clay, Occasional Sand or Gravel	25'	70'
Gray Fine Sand & Gravel & Clay	12'	82'
Gray Clay, Sand & Gravel Traces	4'	86'
Gray Sandy Gravelly Clay	6'	92'
Gray Fine Sand, Clay Traces	4'	96'
Gray Silty Clay	4'	100'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED J. P. Osborne DATE 12/4/85

B-221

SITE #: 0978020001 COUNTY: Lake WELL #: GT24

SITE NAME: Zion Site 1 Phase B Landfill BOREHOLE #: GT24

NORTHING 10,963.8 EASTING 8,052.4 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. RD-n-P Drilling, Inc. DRILLER: Paul Eger

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Mike Hirt

DRILLING METHOD: 4.25" I.D. Hollow Stem Auger DRILLING FLUIDS (TYPE): None

LOGGED BY: Mike Hirt DATE STARTED: 07/19/05 DATE FINISHED: 09/01/05

REPORT FORM COMPLETED BY: Joe Miller DATE: 10/20/05

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Not Applicable

INSTALLATION METHOD: Not Applicable

SETTING TIME: Not Applicable

TYPE BENTONITE SEAL- GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

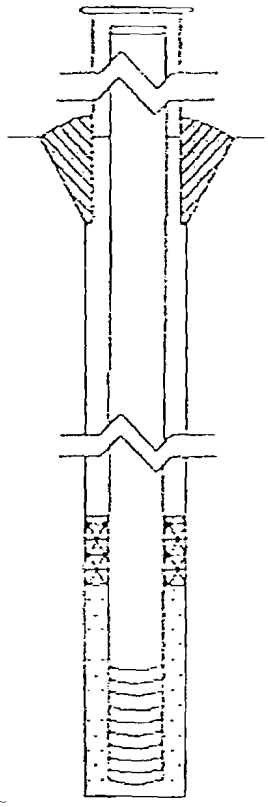
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: Silica Sand (IF APPLICABLE)

INSTALLATION METHOD: Gravity Fall



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
744.78	3.2	TOP OF PROTECTIVE CASING
744.29	2.7	TOP OF RISER PIPE
741.6	0.0	GROUND SURFACE
NA	NA	TOP OF ANNULAR SEALANT
726.65	17.64	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
738.6	3.0	TOP OF SEAL
700.7	40.9	TOP OF SANDPACK
696.9	44.7	TOP OF SCREEN
692.1	49.5	BOTTOM OF SCREEN
691.7	49.9	BOTTOM OF WELL
686.6	55.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

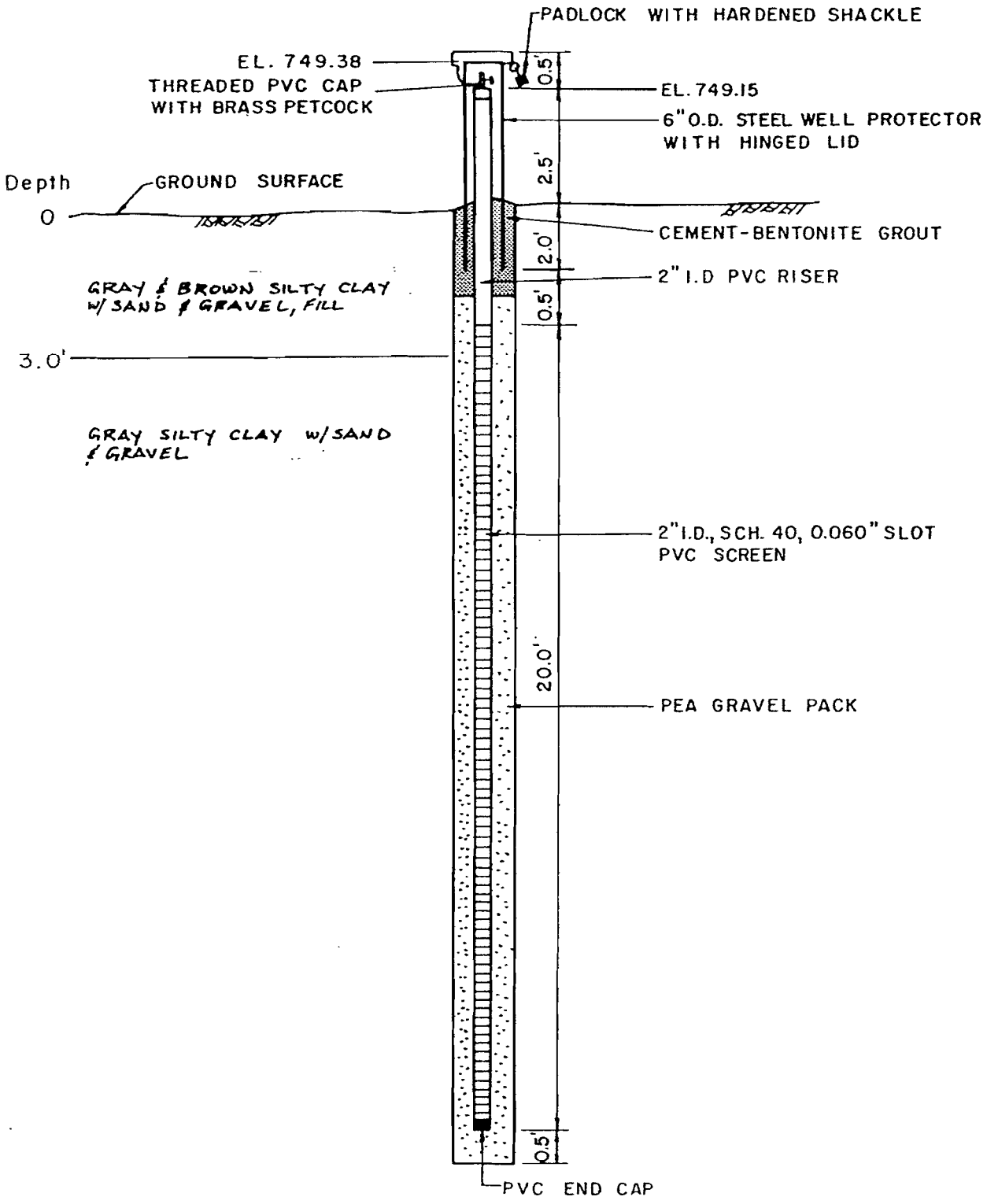
WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	8.0
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	47.39
BOTTOM OF SCREEN TO END CAP (ft)	0.42
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.81
TOTAL LENGTH OF CASING (ft)	52.62
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE



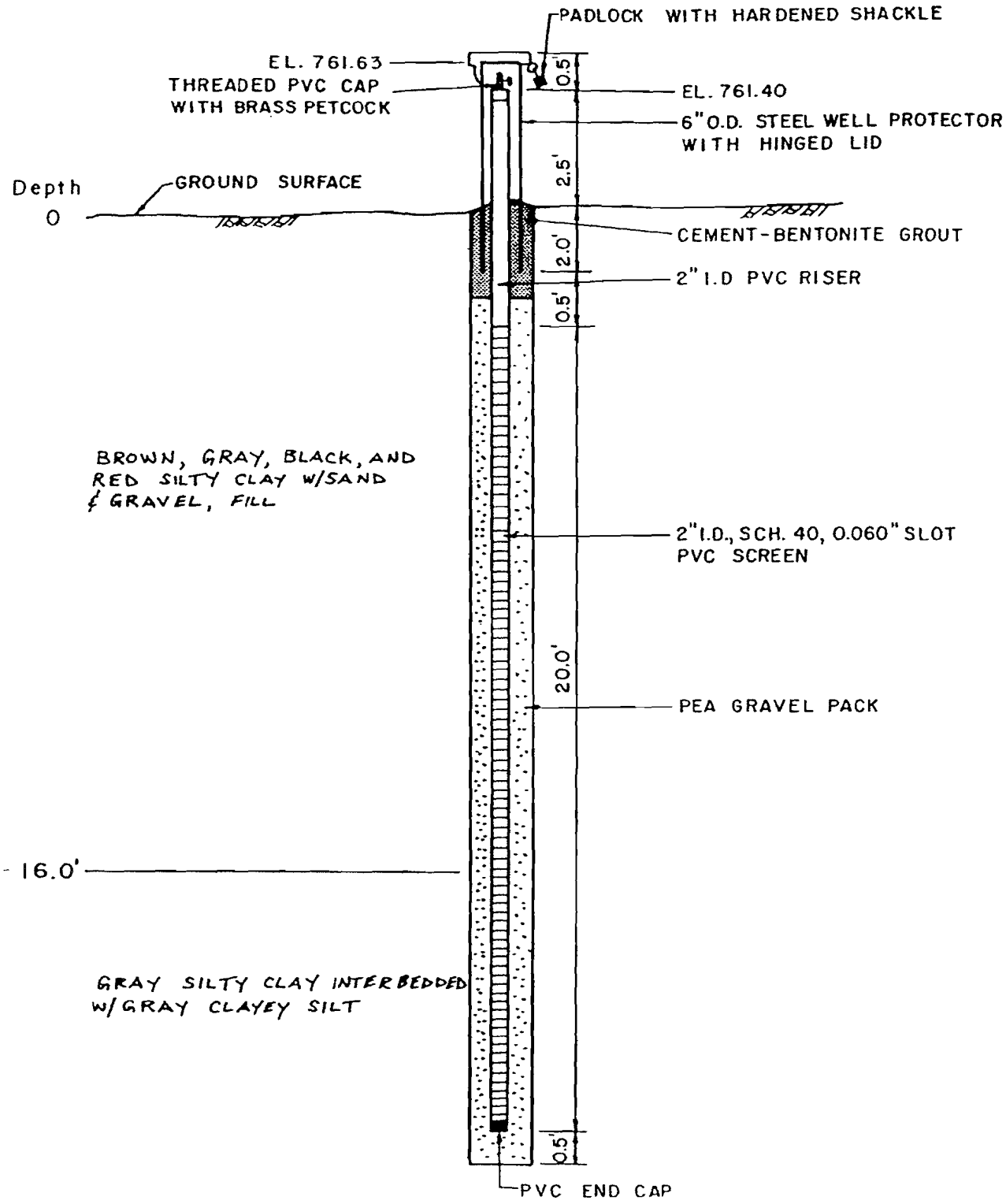
NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: MARCH 1, 1989	JOB NUMBER D178

METHANE PROBE NO.
MP-1

PATRICK ENGINEERING INC
Engineers • Architects • Hydrologists
Geologists • Surveyors
Glen Ellyn, Illinois



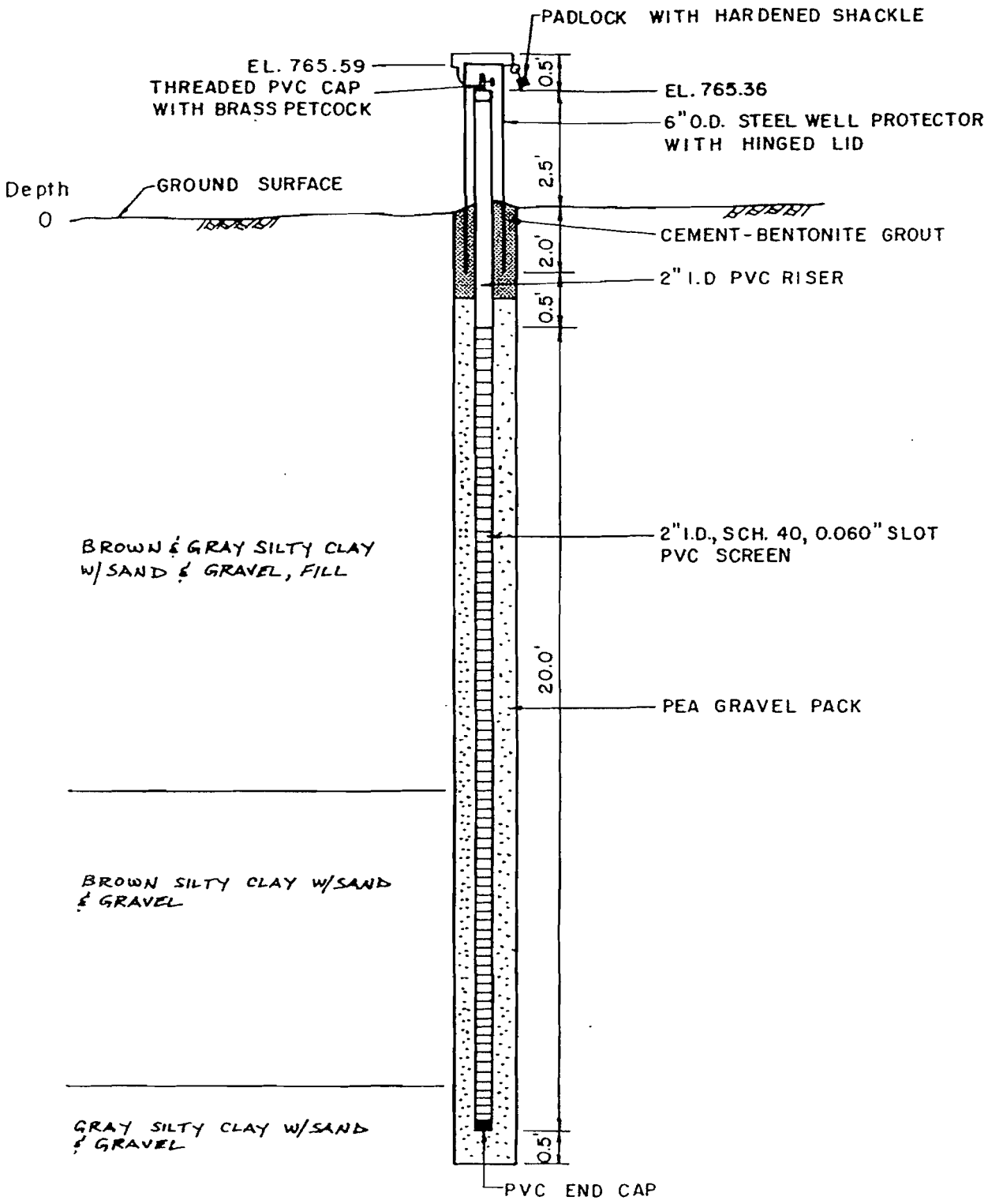
NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 28, 1989	JOB NUMBER D178

METHANE PROBE NO.
MP-2

PATRICK ENGINEERING INC.
Engineers • Architects • Hydrologists
Geologists • Surveyors
Glen Ellyn, Illinois



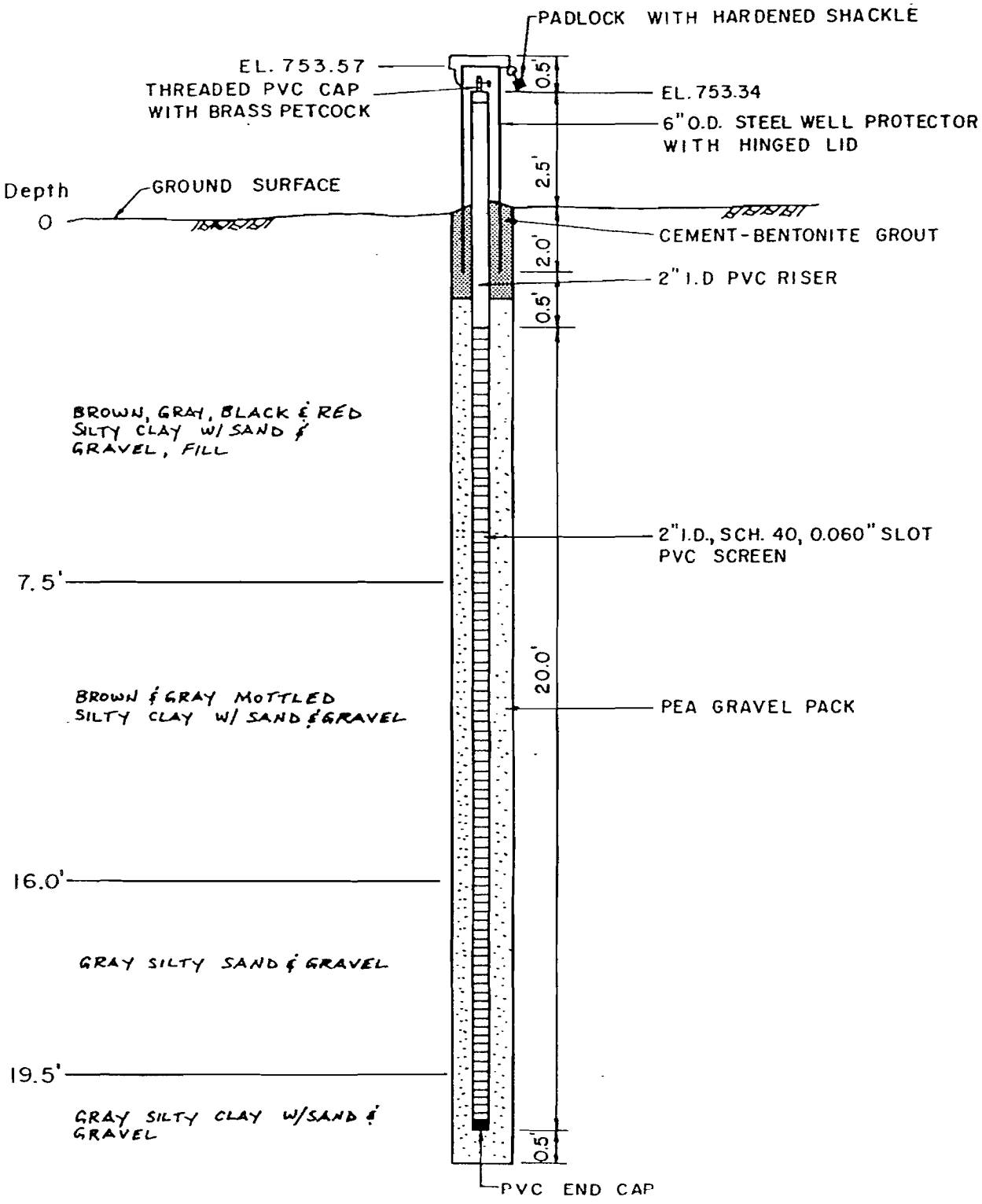
NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 28, 1989	JOB NUMBER D178

METHANE PROBE NO.
MP-3

PATRICK ENGINEERING INC.
Engineers • Architects • Hydrologists
Geologists • Surveyors
Glen Ellyn, Illinois



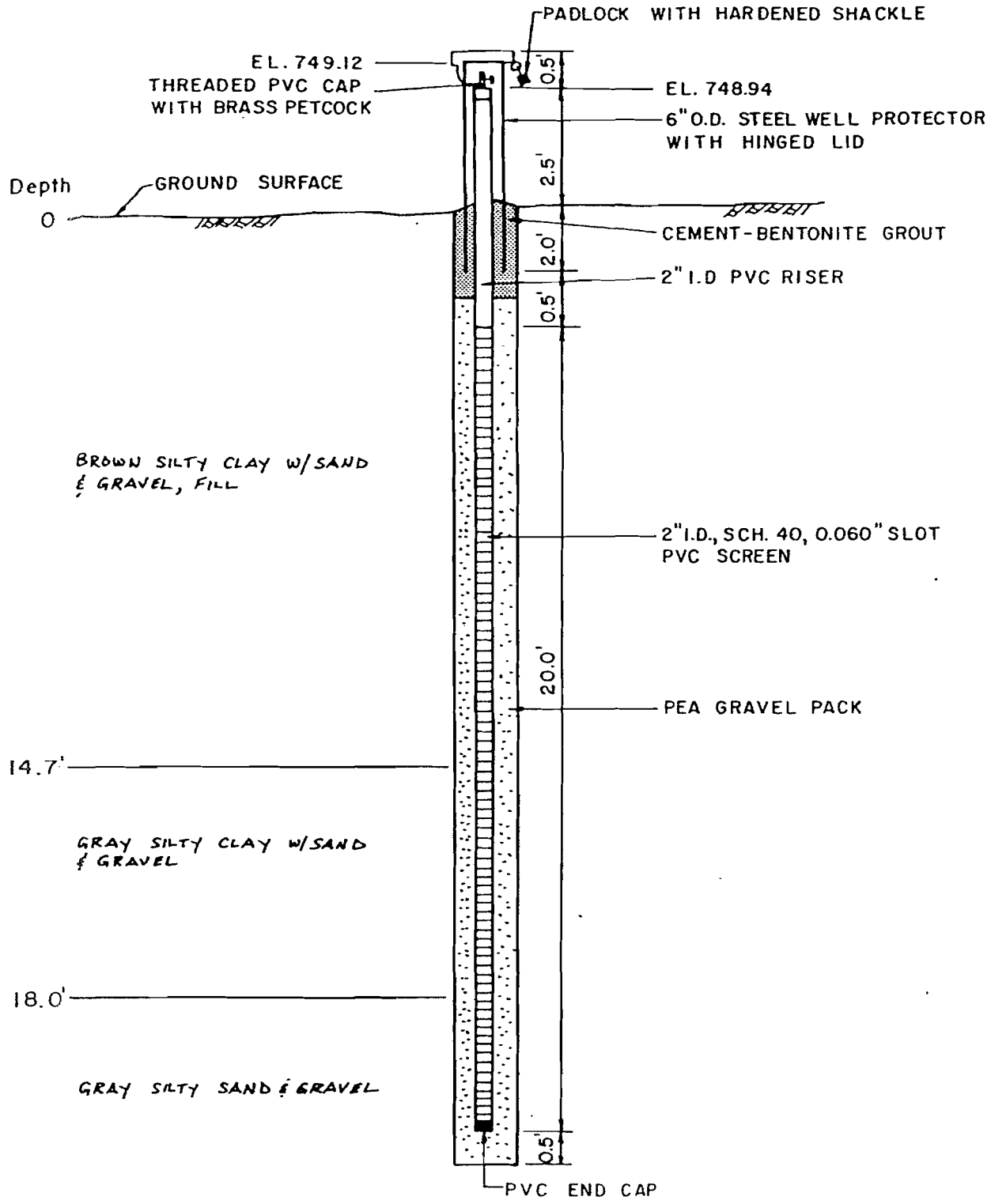
NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 27, 1989	JOB NUMBER D178

METHANE PROBE NO. MP-4

PATRICK ENGINEERING INC.
Engineers • Architects • Hydrologists
Geologists • Surveyors
Glen Ellyn, Illinois



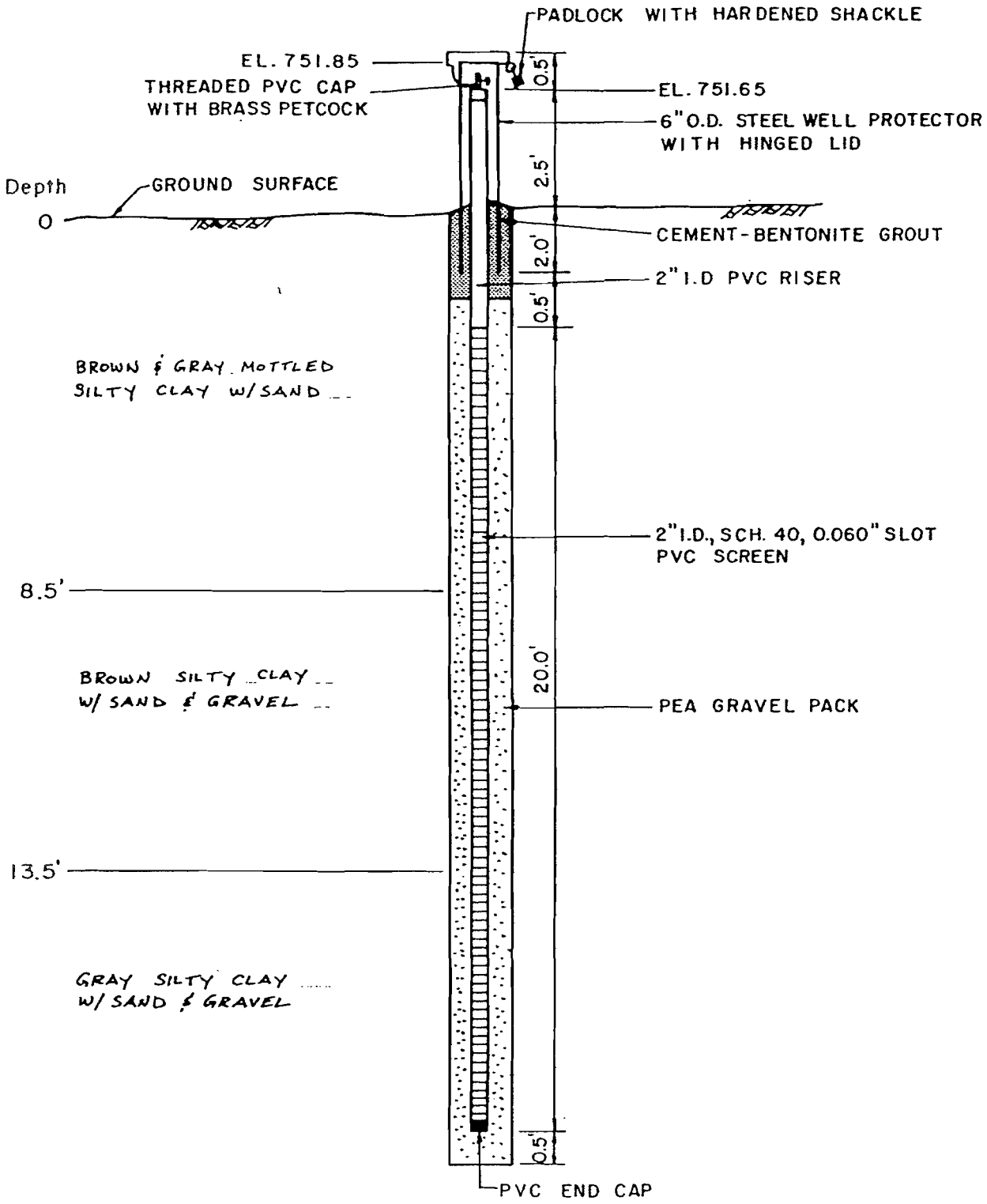
NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 27, 1989	JOB NUMBER D178

METHANE PROBE NO. MP-5

PATRICK ENGINEERING INC
Engineers • Architects • Hydrologists
Geologists • Surveyors
Glen Ellyn, Illinois



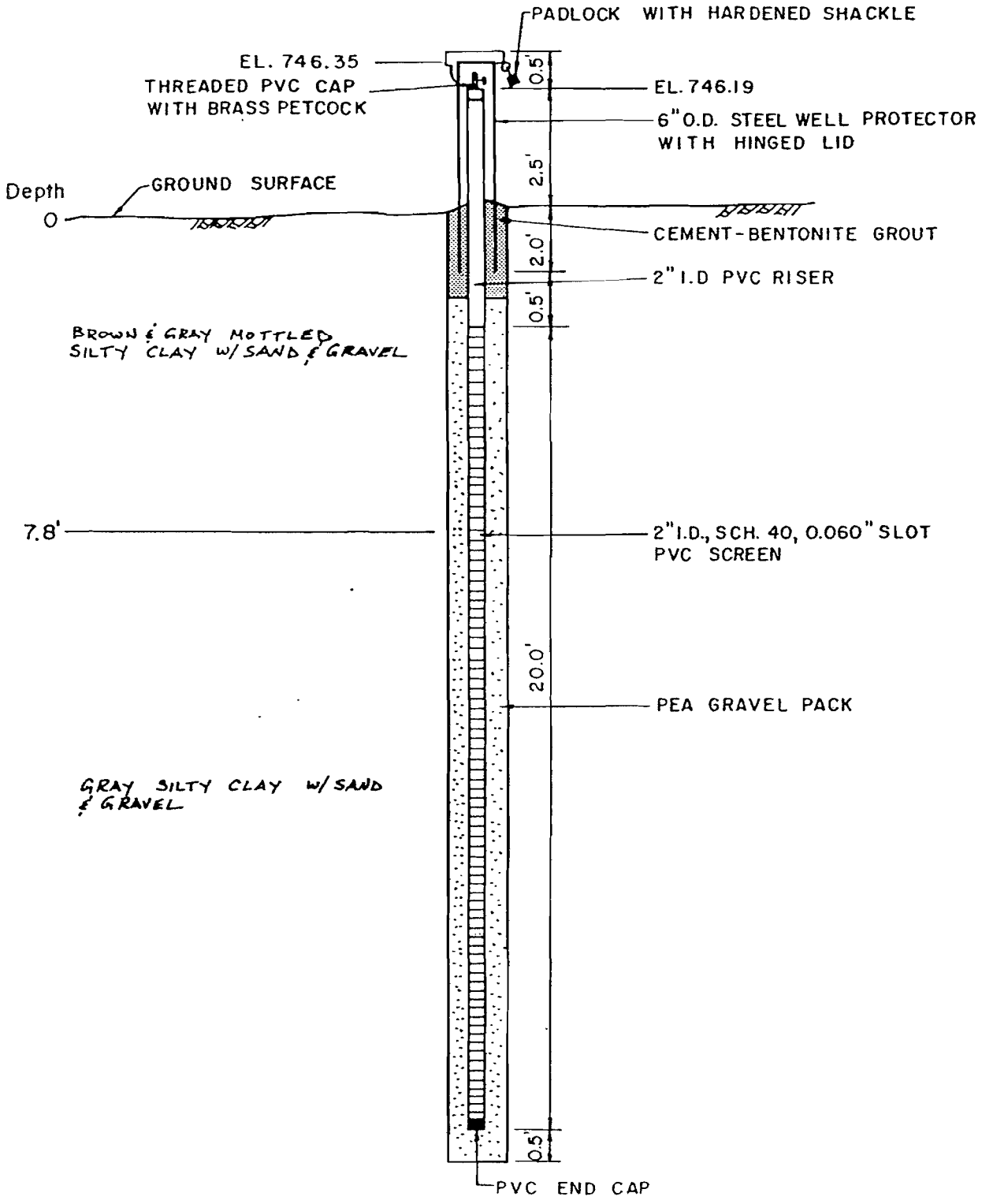
NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 24, 1989 | JOB NUMBER D178

METHANE PROBE NO. MP-6

PATRICK ENGINEERING INC
Engineers • Architects • Hydrologists
Geologists • Surveyors



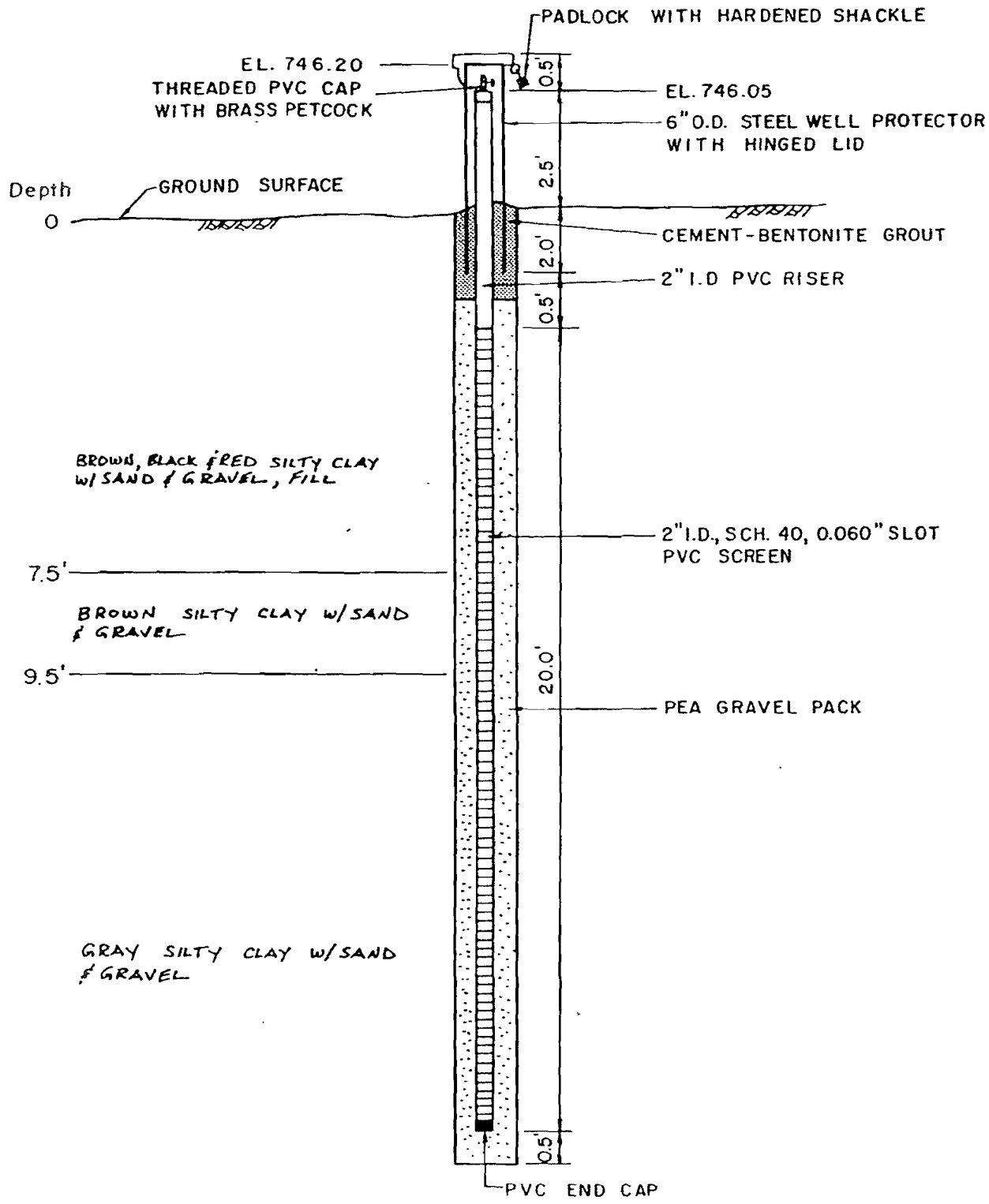
NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 28, 1989 | JOB NUMBER D178

METHANE PROBE NO. MP-7

PATRICK ENGINEERING INC
Engineers • Architects • Hydrologists
Geologists • Surveyors



NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 23, 1989	JOB NUMBER D178

METHANE PROBE NO. MP-8

PATRICK ENGINEERING INC.
Engineers • Architects • Hydrologists
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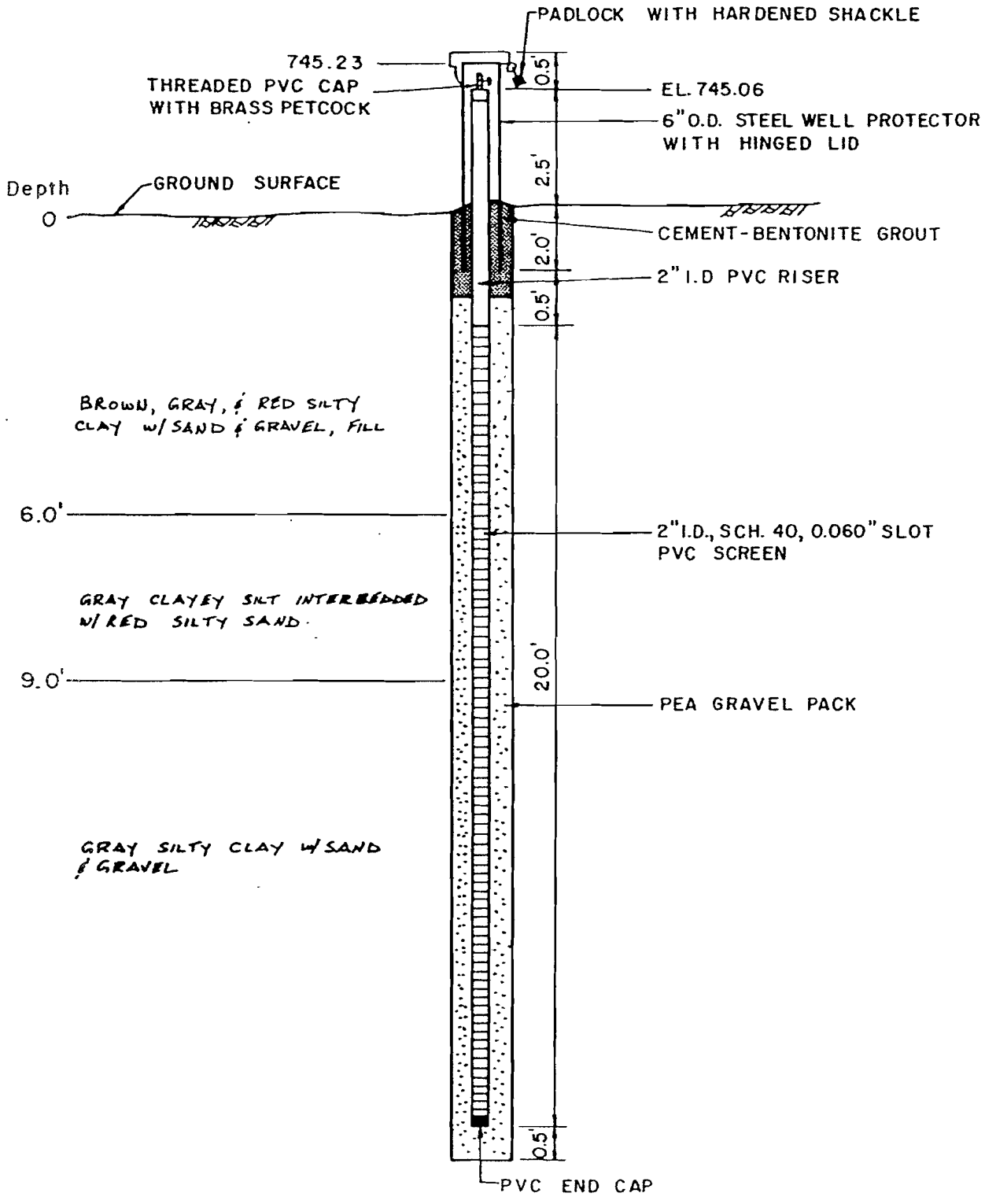
Glen Ellyn, Illinois



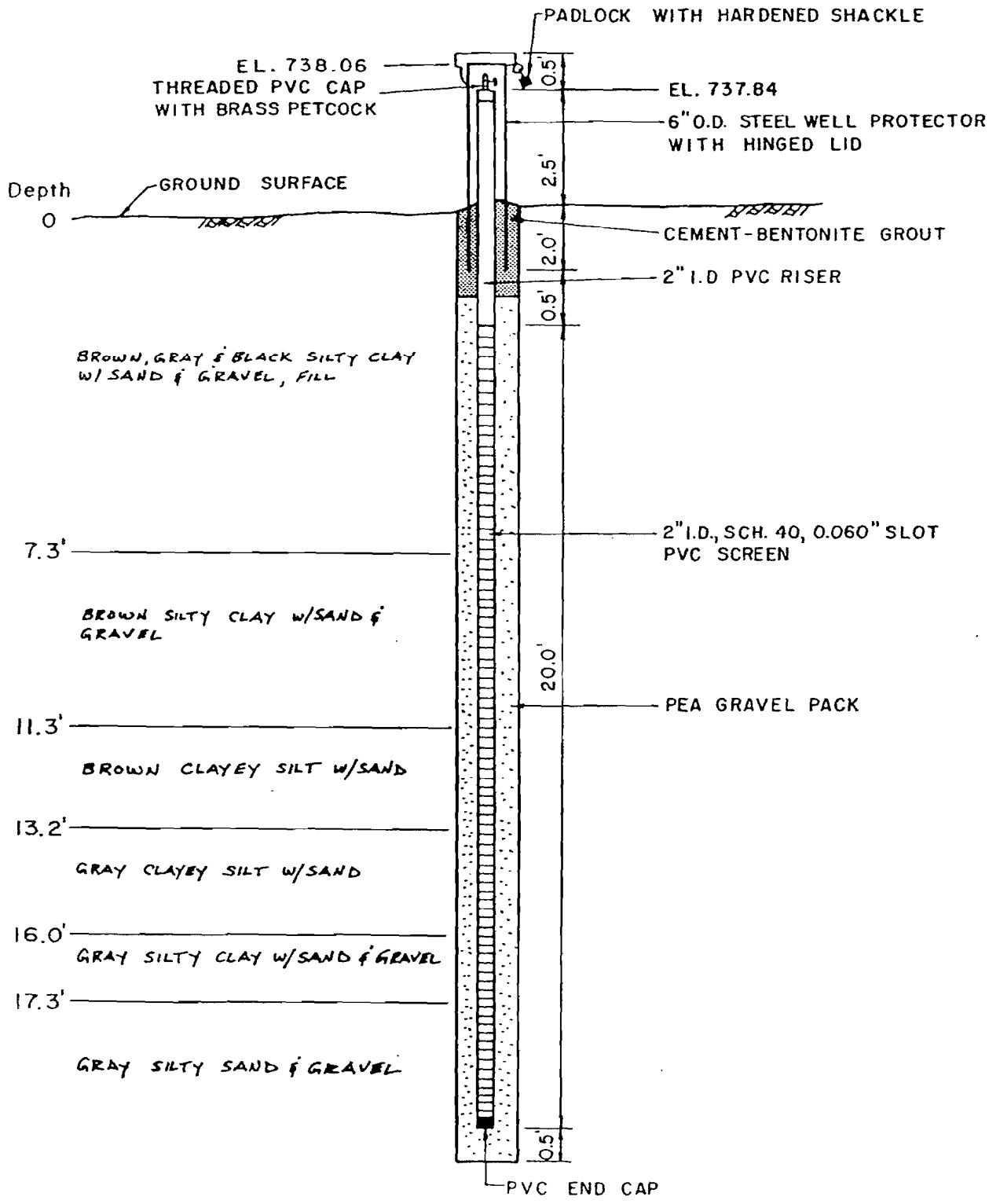
NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 23, 1989 | JOB NUMBER D178

METHANE PROBE NO.
MP-9

PATRICK ENGINEERING INC.
Engineers • Architects • Hydrologists
Geologists • Surveyors
Glen Ellyn, Illinois



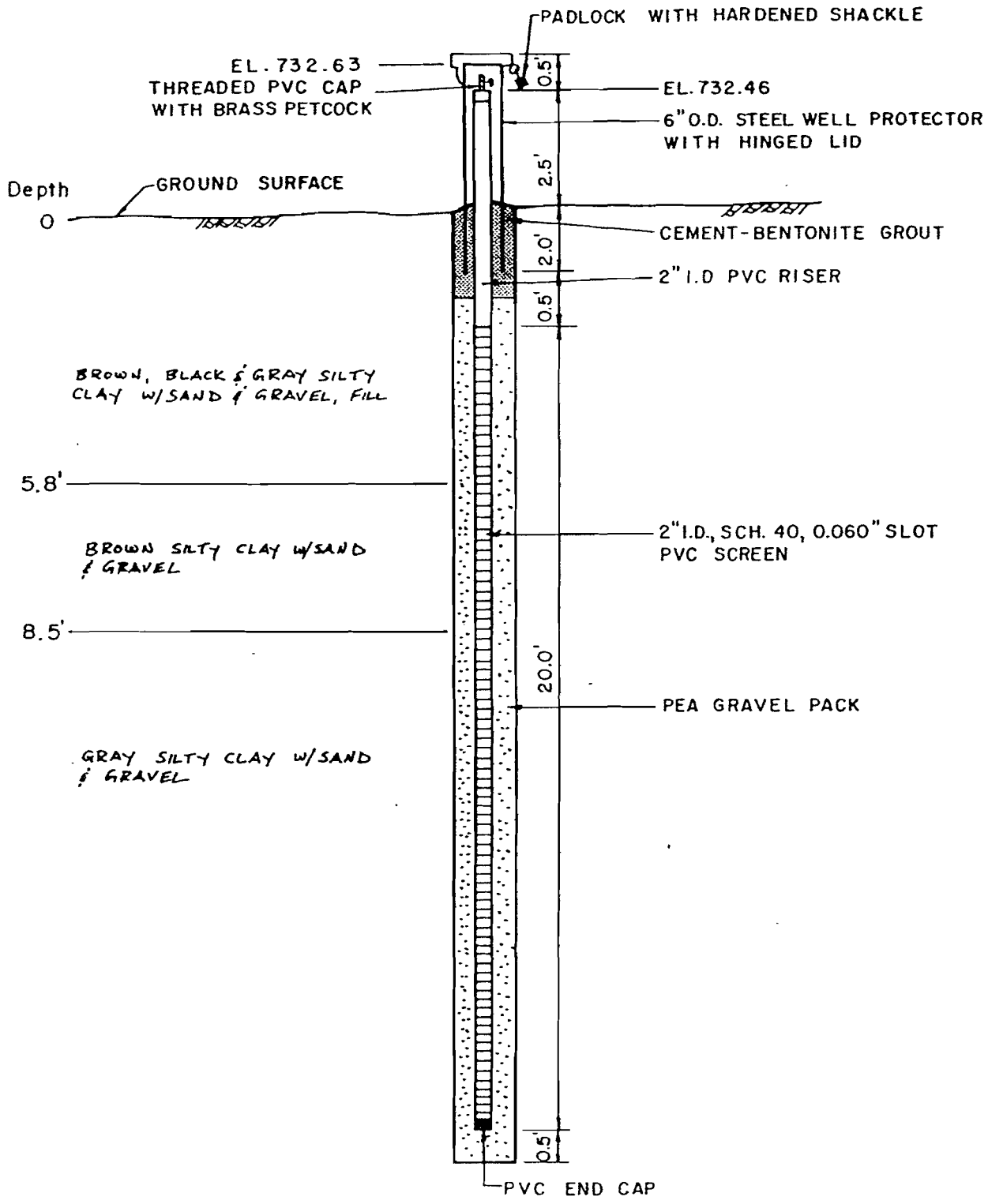
NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 23, 1989	JOB NUMBER D178

METHANE PROBE NO. MP-10

PATRICK ENGINEERING INC.
Engineers • Architects • Hydrologists
Geologists • Surveyors
Glen Ellyn, Illinois



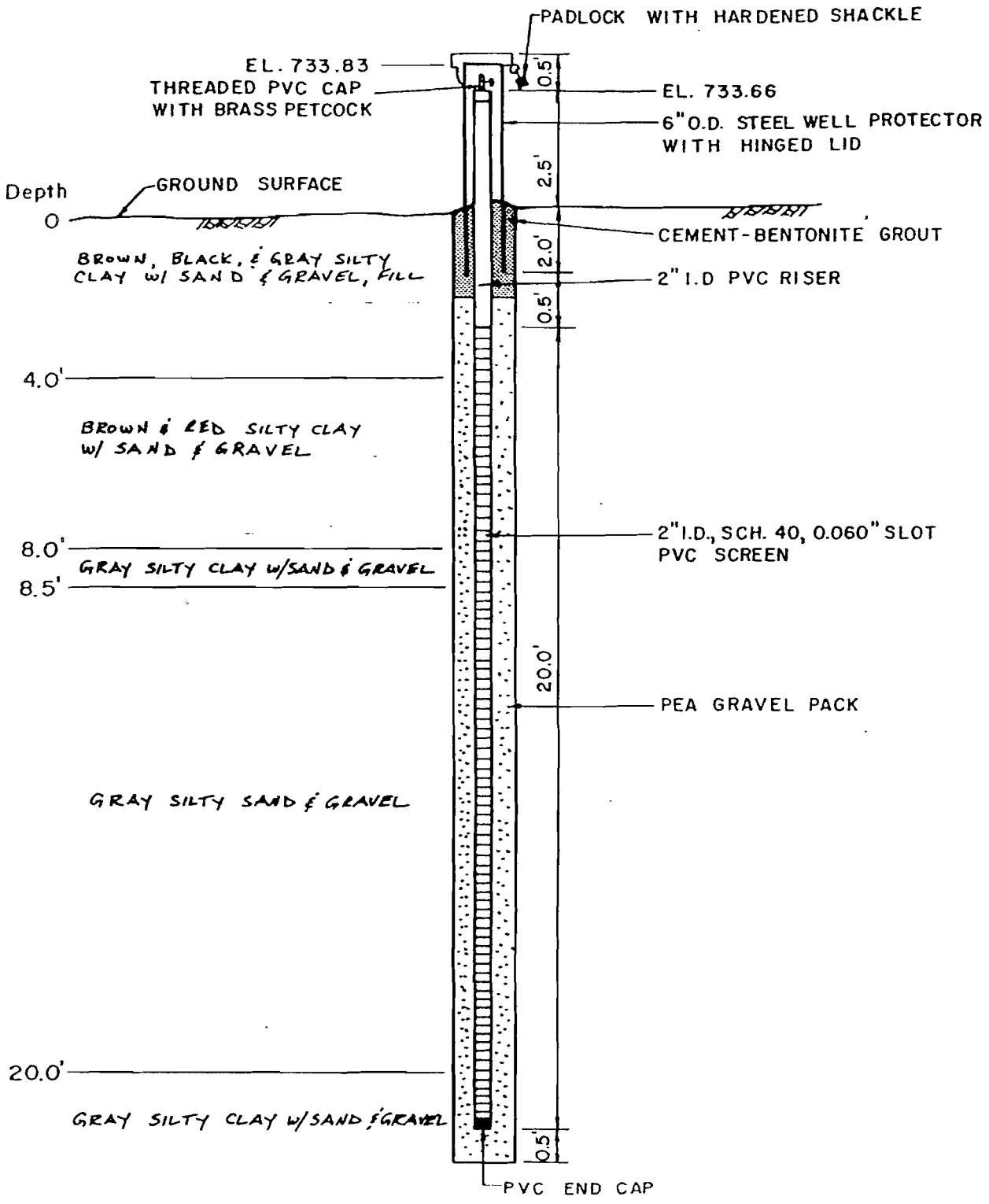
NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 22, 1989	JOB NUMBER D178

METHANE PROBE NO.
MP-11

PATRICK ENGINEERING INC
Engineers • Architects • Hydrologist:
Geologists • Surveyors



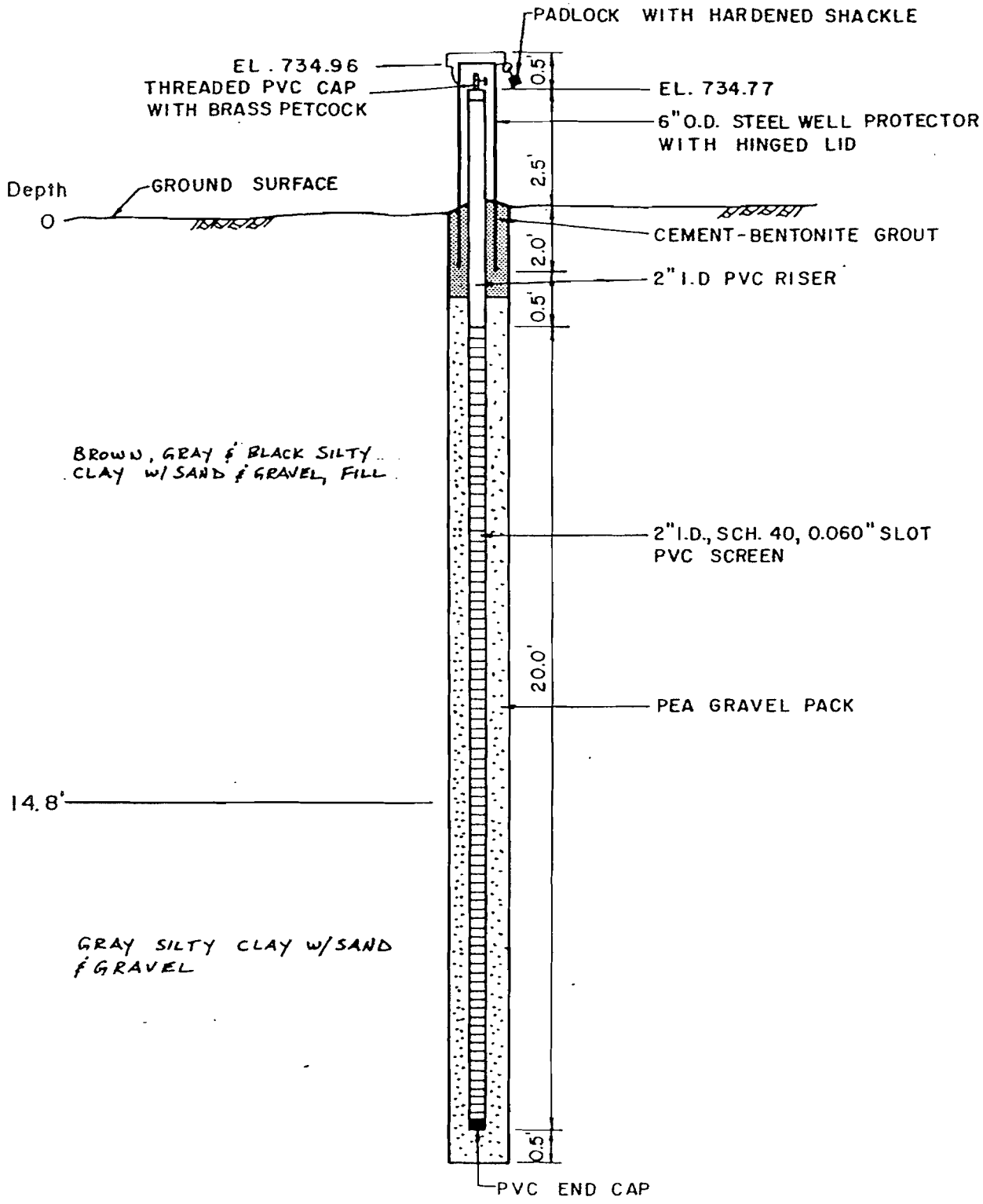
NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: FEB. 22, 1989 | JOB NUMBER D178

METHANE PROBE NO.
MP-12

PATRICK ENGINEERING INC
Engineers • Architects • Hydrologists
Geologists • Surveyors
Glen Ellyn, Illinois



NOT TO SCALE

BFI WINTHROP HARBOR LANDFILL

DATE: MARCH 2, 1989	JOB NUMBER D178

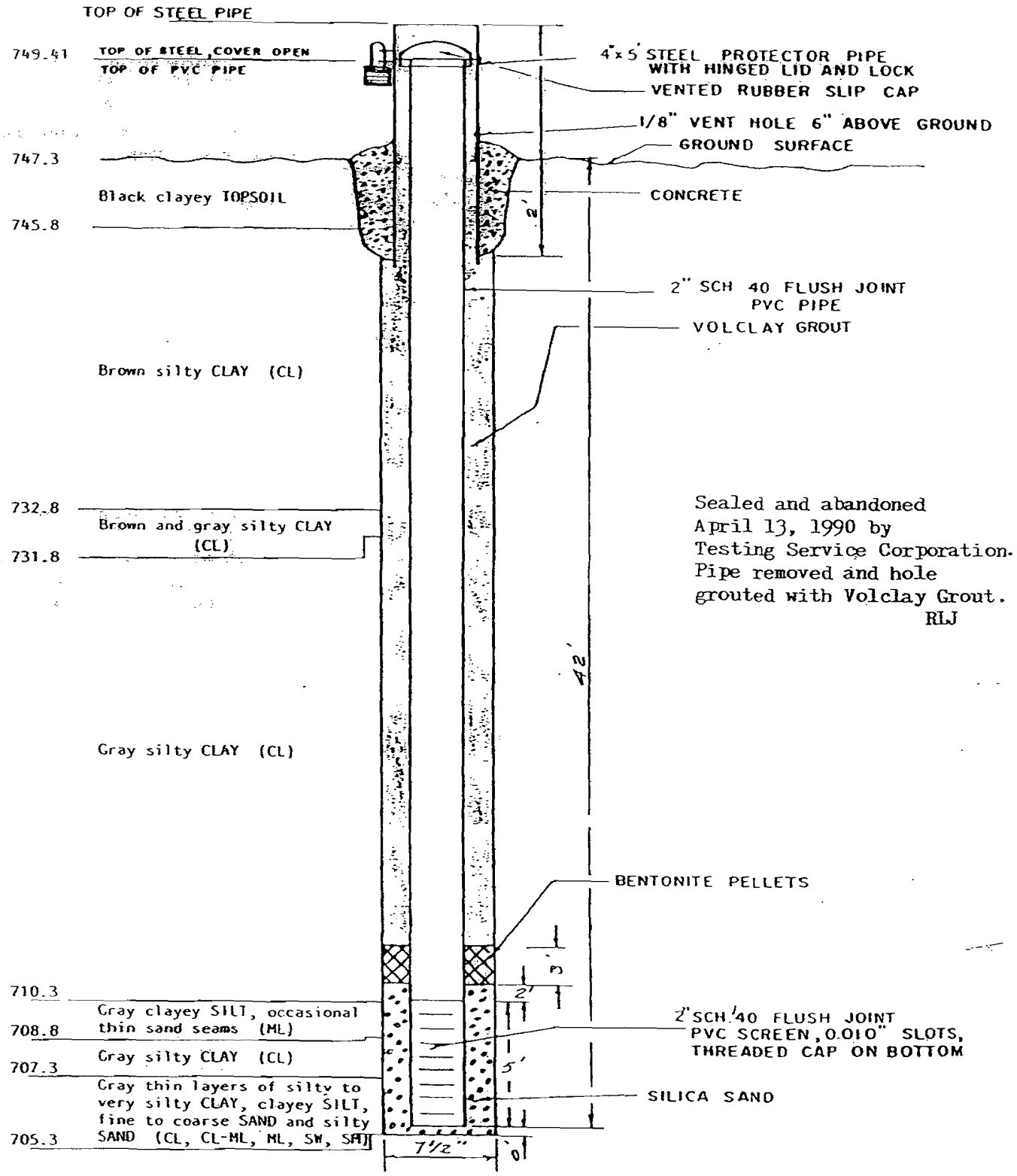
METHANE PROBE NO.
MP-13

PATRICK ENGINEERING INC
Engineers • Architects • Hydrologists
Geologists • Surveyors
Glen Ellyn, Illinois

GROUNDWATER MONITORING WELL P-1

B-29

(NOT TO SCALE)



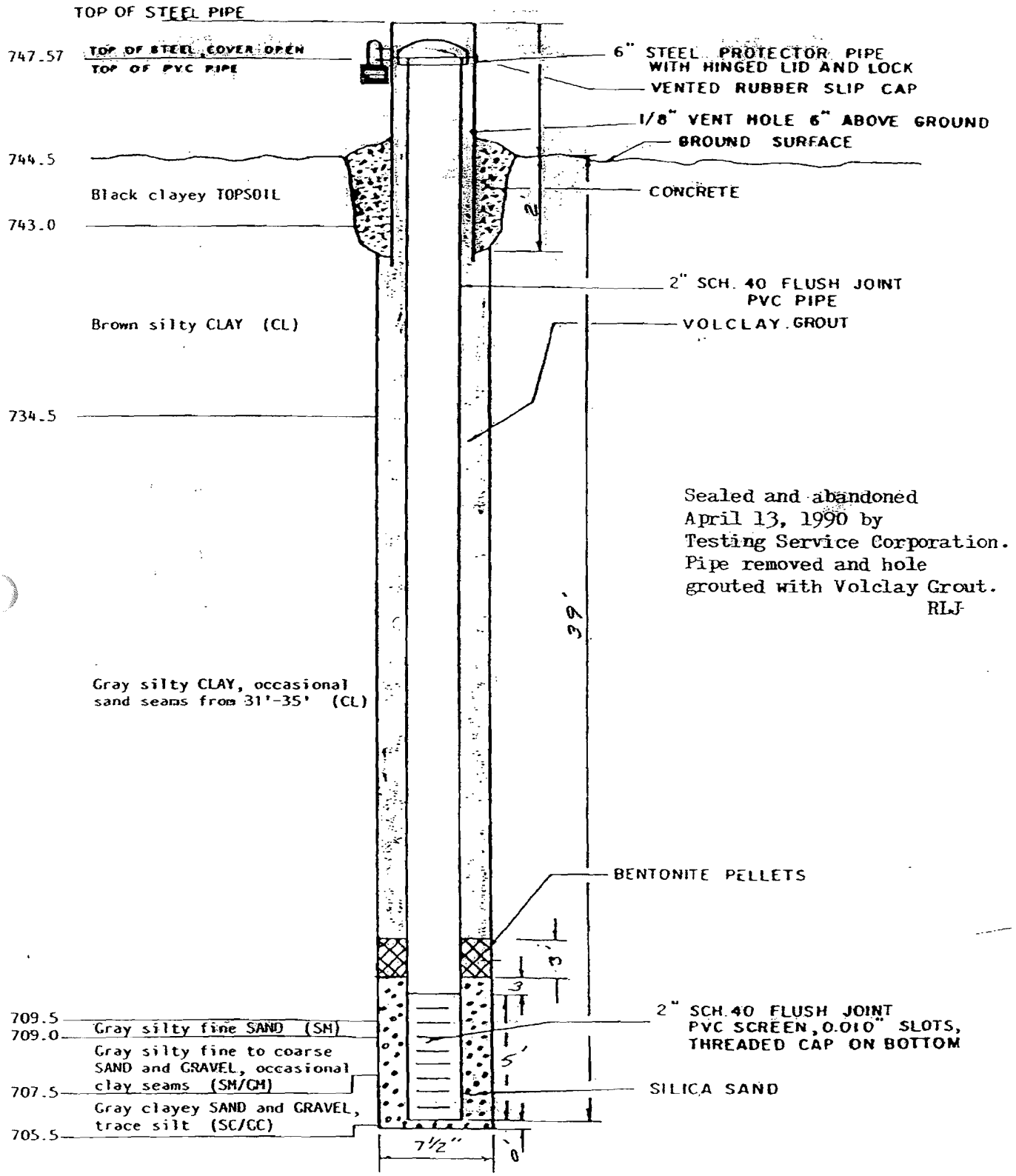
GROUNDWATER DATA	12-3-86
STATIC WATER LEVEL ELEV.	--
TEMPERTURE (°F)	49
CONDUCTIVITY (UMHOS)	756
PH	8.1

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DECEMBER 15 1986 L-23,390

GROUNDWATER MONITORING WELL P-2

(NOT TO SCALE)

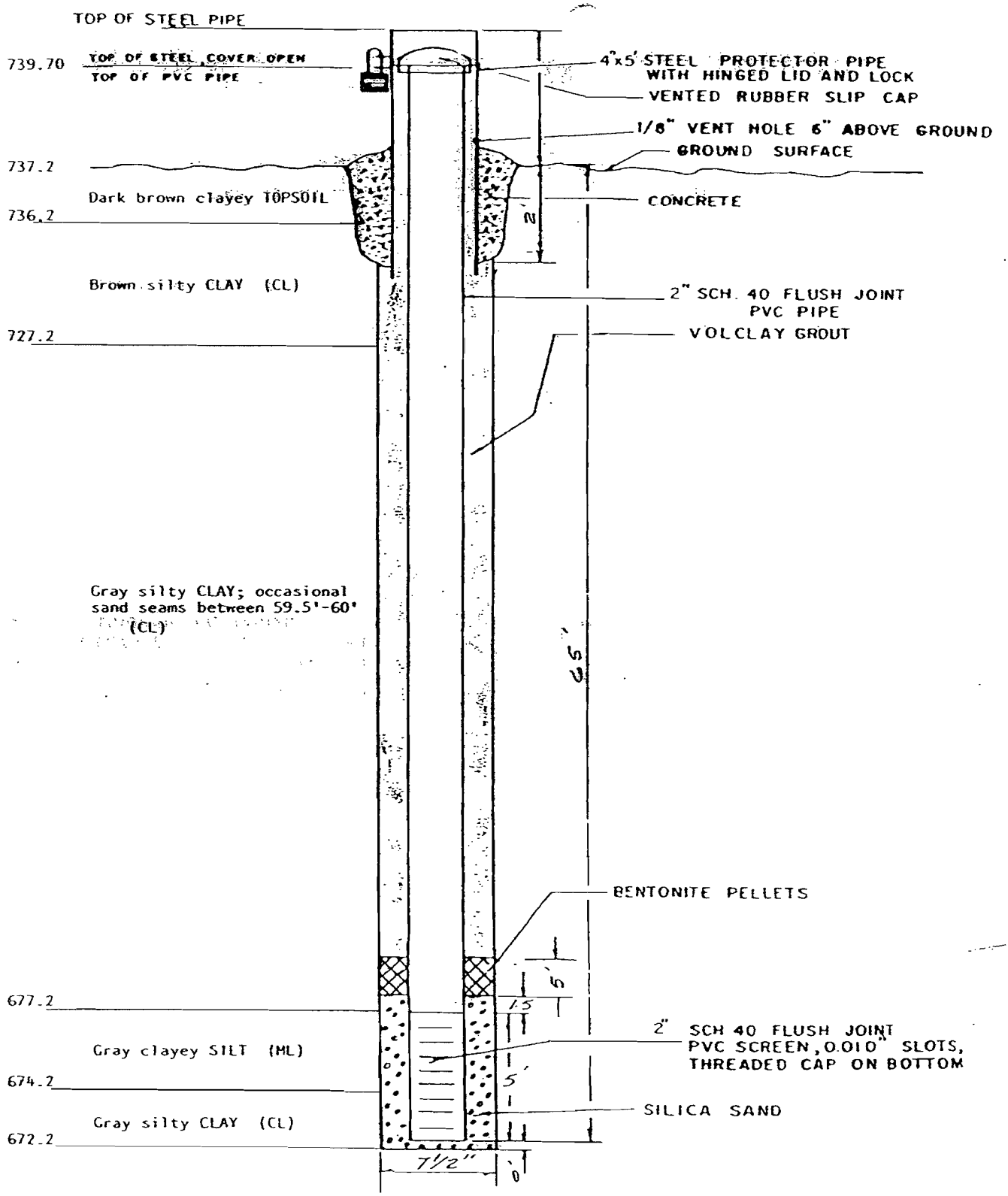


GROUNDWATER DATA	11-24-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	47
CONDUCTIVITY (UMHOS)	803
PH	7.5

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 15 1986 L-23,390

GROUNDWATER MONITORING WELL P-3

(NOT TO SCALE)



GROUNDWATER DATA	12-2-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	--
CONDUCTIVITY (UMHOS)	636
PH	9.6

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 15 1986 L-23 390

COMPLETION REPORT: GROUND WATER MONITORING WELL — WELL NO.: D3

Location of Site: WINTHROP HARBOR SANITARY LANDFILL
Well Drilling Contractor: TESTING SERVICE CORPORATION
Driller: G. Eberhard — Geologist: M. Roche & B. Walker
Purpose of Well: Piezometer
Comments:

Northing: 10254.02
Easting: 7827.51
Collar Elevation:
Date Completed: 4-6-87
Total Depth: 92.5'

WELL CONSTRUCTION DETAILS

LOCK:
CAP: Hinged lid - Elevation 729.63 (closed)
TYPE OF SURFACE CASING: 6" x 5' square design - steel

. MSL - Surf. Casing Collar Elev.
729.13 MSL - Riser Pipe Collar Elev.
2.5 FT. - Riser Pipe Height Above Ground Elev.
NA . MSL - Drainhole Elev.
727.1 - GROUND ELEV., MSL

2.5 FT. - Depth of Surface Seal Below Ground
Type of Surface Seal: CONCRETE
Quan. Used: 3 - 50 lb. bags
2.5 FT.- Depth of Surface Casing Below Ground
5.9 IN.- Inner Diam. of Surf. Casing
6.0 IN.- Diam. of Borehole

Type of Riser Pipe: PVC, Schedule 40
2.05 IN.- Inner Diam.- Riser Pipe
2.38 IN.- Outer Diam.- Riser Pipe
Type of Riser Joint/Coupling: Flush - thread, teflon taped

644.2 MSL- Top of Screen Elev.
Type of Coupling/Joint-Screen to Riser Pipe: Flush thread
Type of Screen: PVC, Schedule 40
Opening Size: 0.010"
Opening Spacing: 0.71"
3.0 I Openings in Screen
635.0 MSL- Bottom of Screen Elev.

0.4 FT.- Length of Tailpiece/Blank Section/Cup.
634.6 MSL- Plug Elevation
Type of Plug: Threaded male plug
92.5 FT.- Total Depth of Well

641.6 MSL - Water 1st. Encountered
. MSL - Static (Stable) Water Level

GENERALIZED GEOLOGICAL LOGS

Note: Show Elev. where water 1st. encountered & Static Level.

Upper Soil Zone:
From: 727.1 MSL Elev.
To: 720.1 MSL Elev.
Dark gray silty CLAY FILL and TOPSOIL (OL & CL)

Till/Alluvium/Weathered Zone:
From: 720.1 MSL Elev.
To: 644.1 MSL Elev.
Brown (near surface) and gray silty CLAY, occasional silt seams (CL)

Soil/Rock Above Aquifer:
From: 644.1 MSL Elev.
To: 641.6 MSL Elev.
1.0' Gray clayey SILT layer underlain by 1.5' gray silty CLAY layer (ML-CL)

AQUIFER MONITORED:
From: 641.6 MSL Elev.
To: 634.6 MSL Elev.
Ave. Perm. 6.6 x10⁻⁴ cm/sec.
Gray SAND and GRAVEL (GW/SW)

Soil/Rock Below Aquifer: NA
From: . MSL Elev.
To: . MSL Elev.

ANNULAR SPACE DETAILS

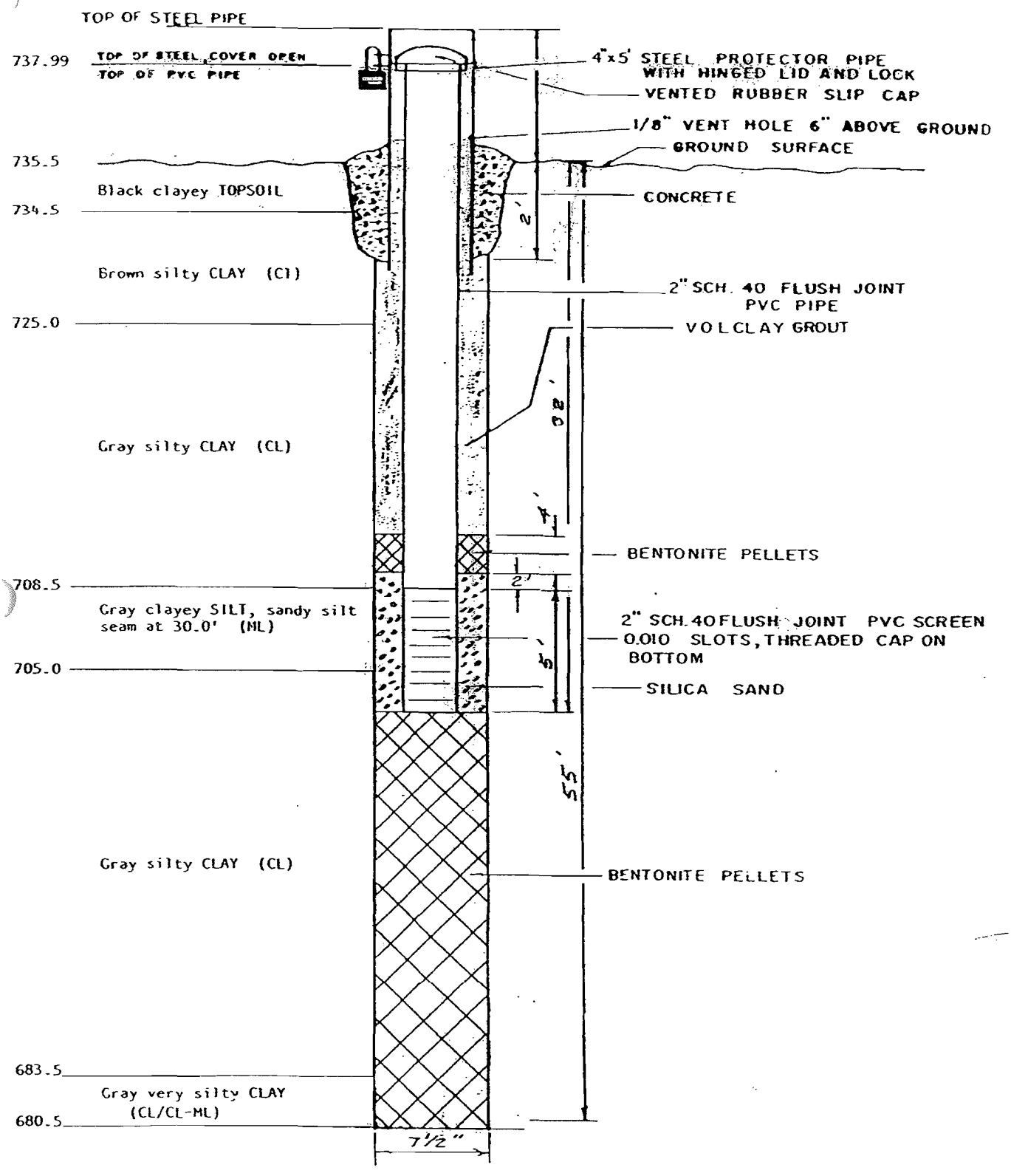
727.1 MSL Ground Surface Elevation
2.5 MSL Top of Backfill Elevation
Type of Backfill: VOLCLAY GROUT
No. Bags Volclay 4
No. Bags Bentonite: NA
Type of Bentonite: NA

73.5 FT. Depth to Top of Seal
653.6 MSL Top of Seal Elev.
5.0 FT. Total Seal Interval
Type of Seal: Bentonite Pellets
78.5 Ft. Depth to top of Sand Pack from Ground Surf.
648.6 MSL Elev. of Top of Sand
Type of Sand Pack: Coarse silica sand
Source of Sand: BEST SAND, INC.
Quantity of Sand Used: 4 - 50 lb. bags
14.0 FT. Total Sand Pack Interval

634.6 MSL Bottom of Sand Pack Elevation
Type of Backfill Below Sand Pack: NA
92.5 Ft. Total Borehole Depth
634.6 MSL Elev. of Borehole Bottom

GROUNDWATER MONITORING WELL P-4

(NOT TO SCALE)



GROUNDWATER DATA	12-1-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	51
CONDUCTIVITY (UMHOS)	746
PH	7.9

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DECEMBER 15 1986 L-23,390

TION REPORT: GROUND WATER MONITORING WELL | WELL NO.: P4

Location of Site: WINTHROP HARBOR SANITARY LANDFILL
Well Drilling Contractor: TESTING SERVICE CORPORATION
Driller: G. Eberhard Geologist: B. Walker
Purpose of Well: Piezometer
Comments:

Northing: 10044.10
Easting: 7929.68
Collar Elevation:
Date Completed: 4-3-87
Total Depth: 88.5

WELL CONSTRUCTION DETAILS

LOCK:
CAP: Hinged lid - Elevation 733.95 (closed)
TYPE OF SURFACE CASING: 6" x 5' Square design - steel
MSL - Surf. Casing Collar Elev.
733.28 MSL - Riser Pipe Collar Elev.
2.6 FT. - Riser Pipe Height Above Ground Elev.
NA MSL - Drainhole Elev.
731.3 - GROUND ELEV., MSL

GENERALIZED GEOLOGIC COLUMN

Note: Show Elev. where water lst. encountered, & Static Level.

Upper Soil Zone:
From: 731.3 MSL Elev.
To: 719.3 MSL Elev.
Brown and gray silty CLAY, occasional closed joints (CL)

Till/Alluvium/ Weathered Zone:
From: 719.3 MSL Elev.
To: 649.6 MSL Elev.
Gray silty CLAY, occasional thin sand seam (CL)

Soil/Rock Above Aquifer: NA
From: MSL Elev.
To: MSL Elev.

AQUIFER MONITORED:
From: 649.6 MSL Elev.
To: 641.3 MSL Elev.
Ave. K= 7.4 x10⁻³ cm/sec.
Gray clayey SAND and gray fine to coarse SAND and GRAVEL

Soil/Rock Below Aquifer:
From: MSL Elev.
To: MSL Elev.
NA

649.6 MSL - Water lst. Encountered
MSL - Static (Stable) Water Level

2.5 FT. - Depth of Surface Seal Below Ground
Type of Surface Seal: CONCRETE
Quan. Used: 3 - 50 lb bags
2.4 FT. - Depth of Surface Casing Below Ground
5.9 IN. - Inner Diam. of Surf. Casing
6.0 IN. - Diam. of Borehole

Type of Riser Pipe: PVC, Schedule 40
2.05 IN. - Inner Diam. - Riser Pipe
2.38 IN. - Outer Diam. - Riser Pipe
Type of Riser Joint/Coupling: Flush thread

652.4 MSL - Top of Screen Elev.
Type of Coupling/Joint-Screen to Riser Pipe: Flush thread
Type of Screen: PVC, Schedule 40
Opening Size: 0.010"
Opening Spacing: 0.71"
3.0 % Openings in Screen
643.2 MSL - Bottom of Screen Elev.

0.4 FT. - Length of Tailpiece/ Blank Section/Cup.
642.8 MSL - Plug Elevation
Type of Plug: Threaded male plug
88.5 FT. - Total Depth of Well

ANNULAR SPACE DETAILS

731.3 MSL Ground Surface Elevation
728.8 MSL Top of Backfill Elevation
Type of Backfill: Volclay Grout
No. Bags Cement: 4 Bags
No. Bags Bentonite:
Type of Bentonite:

70.0 FT. Depth to Top of Seal
661.3 MSL Top of Seal Elev.
5.0 FT. Total Seal Interval
Type of Seal: Bentonite Pellets
75.0 FT. Depth to top of Sand Pack from Ground Surf.
656.3 MSL Elev. of Top of Sand
Type of Sand Pack: Coarse Silica Sand
Source of Sand: BEST SAND, INC.
Quantity of Sand Used: 4 - 50 lb bags

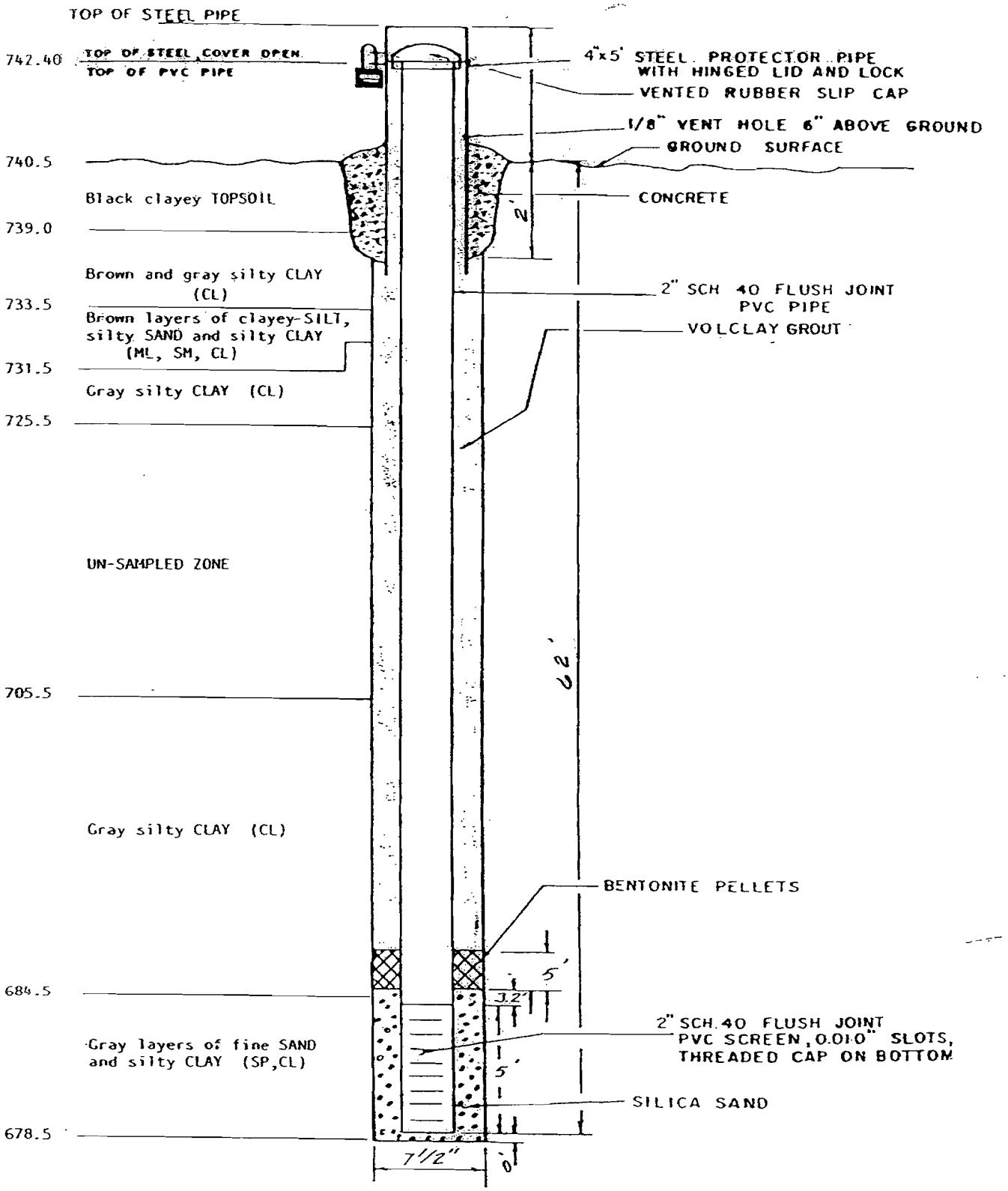
15.0 FT. Total Sand Pack Interval

641.3 MSL Bottom of Sand Pack Elevation
Type of Backfill Below Sand Pack: NA

90.0 FT. Total Borehole Depth
641.3 MSL Elev. of Borehole Bottom

GROUNDWATER MONITORING WELL P-5

(NOT TO SCALE)



GROUNDWATER DATA	12-1-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	50
CONDUCTIVITY (UMHOS)	506
PH	8.4

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 16 1986 L-23 390

REPORT: GROUND WATER MONITORING WELL

WELL NO.: P5

Site: WINTHROP HARBOR SANITARY LANDFILL

Drilling Contractor: TESTING SERVICE CORPORATION

C. Eberhard Geologist: B. Walker

e of Well: Piezometer

Northing: 10038.57

Easting: 8192.85

Collar Elevation:

Date Completed: 4-8-87

Total Depth: 102.0

WELL CONSTRUCTION DETAILS

LOCK:

CAP: Hinged lid: Elevation 732.43 (closed)

TYPE OF SURFACE CASING: 6" x 5' Square Design Steel

. MSL - Surf. Casing Collar Elev.

731.86 MSL - Riser Pipe Collar Elev.

2.6 FT. - Riser Pipe Height Above Ground Elev.

NA MSL - Drainhole Elev.

729.8 - GROUND ELEV., MSL

2.5 FT. - Depth of Surface Seal Below Ground

Type of Surface Seal: CONCRETE

Quan. Used: 3 - 50 lb bags

2.4 FT.- Depth of Surface Casing Below Ground

5.9 IN.- Inner Diam. of Surf. Casing

6.0 IN.- Diam. of Borehole

Type of Riser Pipe: PVC, Schedule 40

2.05 IN.- Inner Diam.- Riser Pipe

2.38 IN.- Outer Diam.- Riser Pipe

Type of Riser Joint/Coupling: Flush thread, teflon taped

632.4 MSL- Top of Screen Elev.

Type of Coupling/Joint-Screen to Riser Pipe: Flush thread

Type of Screen: PVC, Schedule 40

Opening Size: 0.010"

Opening Spacing: 0.21"

3.0 % Openings in Screen

628.2 MSL- Bottom of Screen Elev.

0.4 FT.- Length of Tailpiece/ Blank Section/Cup.

627.8 MSL- Plug Elevation

Type of Plug: Threaded male plug

102.0 FT.- Total Depth of Well

635.3 MSL - Water 1st. Encountered

. MSL - Static (Stable) Water Level

ANNULAR SPACE DETAILS

729.8 MSL Ground Surface Elevation

727.3 MSL Top of Backfill Elevation

Type of Backfill: VOLCLAY GROUT

No. Bags Volclay: 5

No. Bags Bentonite:

Type of Bentonite:

87.5 FT. Depth to Top of Seal

642.3 MSL Top of Seal Elev.

5.0 FT. Total Seal Interval

Type of Seal: BENTONITE PELLETS

92.5 FT. Depth to top of Sand Pack from Ground Surf.

637.3 MSL Elev. of Top of Sand

Type of Sand Pack: Coarse Silica Sand

Source of Sand: BEST SAND, INC.

Quantity of Sand Used: 3 - 50 lb bags

12.5 FT. Total Sand Pack Interval

624.8 MSL Bottom of Sand Pack Elevation

Type of Backfill Below Sand Pack: NA

105.0 FT. Total Borehole Depth

624.8 MSL Elev. of Borehole Bottom

IZED

Note: Show Elev. Where water 1st. encountered, & Static Level.

pper Soil Zone:

om: 729.8 MSL Elev.

g: 718.8 MSL Elev.

OPSOIL and brown/ ray silty CLAY (OL CL)

Soil/Alluvium/ ed Zone:

18.8 MSL Elev.

644.3 MSL Elev.

ay silty CLAY (CL)

Soil/Rock Above

uifer:

om: 644.3 MSL Elev.

635.3 MSL Elev.

terbedded gray clayey LT and silty CLAY (ML/CL)

AQUIFER MONITORED:

om: 635.3 MSL Elev.

626.8 MSL Elev.

5.7 x 10^-4 cm/sec.

y fine to coarse SAND small to large VEL (SW/GW)

Soil/Rock Below

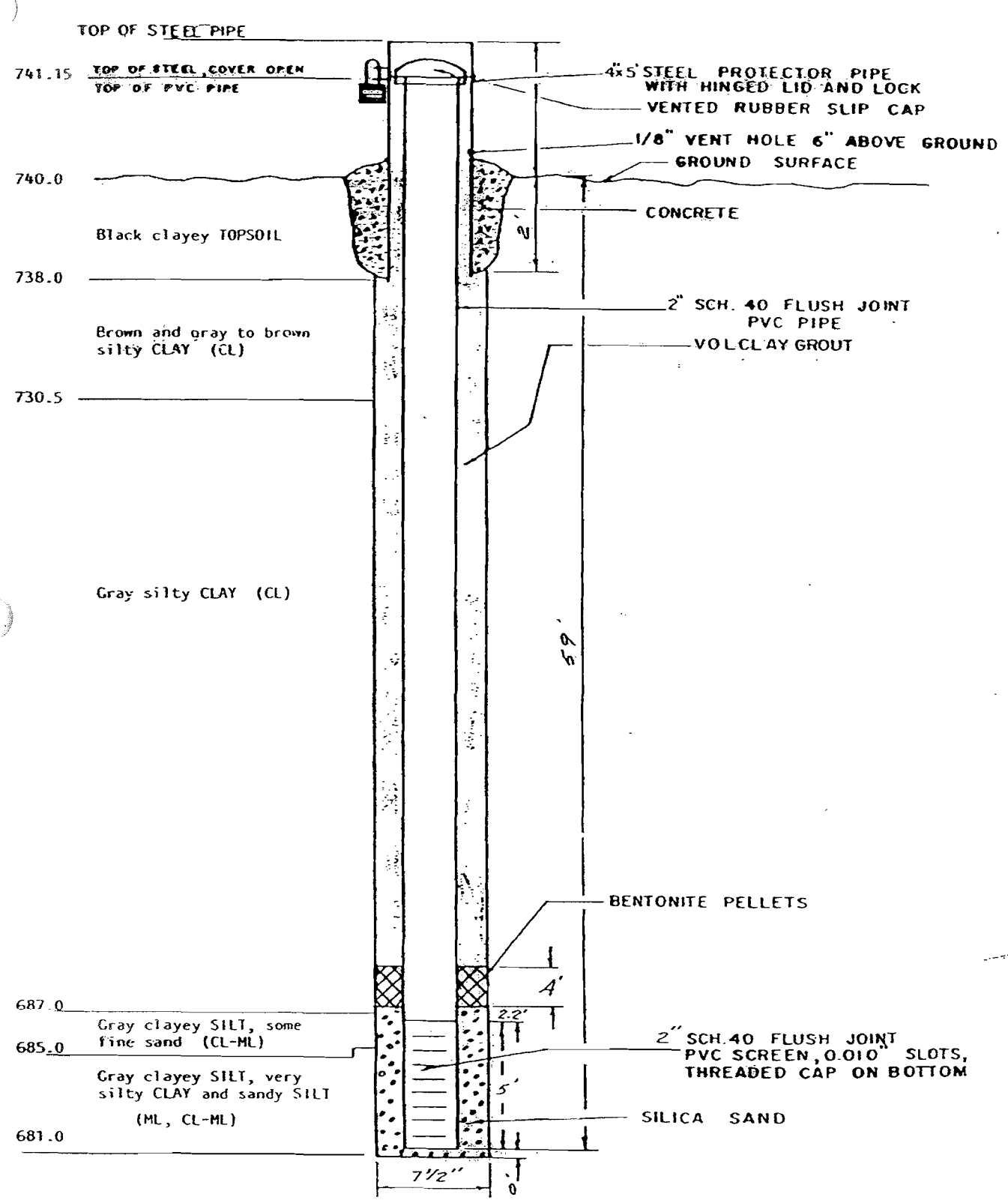
om: 625.8 MSL Elev.

8 MSL Elev.

T (ML)

GROUNDWATER MONITORING WELL P-6

(NOT TO SCALE)



GROUNDWATER DATA	12-2-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	49
CONDUCTIVITY (UMHOS)	526
PH	8.3

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 16,1986 L-23,390

N REPORT: GROUND WATER MONITORING WELL

WELL NO.: P6

ation of Site: WINTHROP HARBOR SANITARY LANDFILL

Northing: 10036.51

Easting: 8911.95

Collar Elevation:

Date Completed: 4-16-87

Total Depth: 105.0

l Drilling Contractor: TESTING SERVICE CORPORATION

ller: G. Eyerhard Geologist: T. Stasi

pose of Well: Piezometer

ents:

CONSTRUCTION DETAILS

LOCK:

CAP: Hinged Lid: Elevation 739.50 (closed)

TYPE OF SURFACE CASING: 6" x 5' Square Design Steel

MSL - Surf. Casing Collar Elev.

738.9 MSL - Riser Pipe Collar Elev.

5.8 Ft. - Riser Pipe Height Above Ground Elev.

NA MSL - Drainhole Elev.

733.8 - GROUND ELEV., MSL

2.5 Ft. - Depth of Surface Seal Below Ground

Type of Surface Seal: CONCRETE

Quan. Used: 3 - 50 lb bags

* Ft.- Depth of Surface Casing Below Ground

5.9 IN.- Inner Diam. of Surf. Casing

6.0 IN.- Diam. of Borehole

* Casing extended above ground surface with concrete forms due to planned berm extension

Type of Riser Pipe: PVC, Schedule 40

2.05 IN.- Inner Diam.- Riser Pipe

2.38 IN.- Outer Diam.- Riser Pipe

Type of Riser Joint/Coupling: Flush thread, teflon taped

533.4 MSL- Top of Screen Elev.

Type of Coupling/Joint-Screen to Riser Pipe: Flush thread

Type of Screen: PVC, Schedule 40

Opening Size: 0.010"

Opening Spacing: 0.71"

3.0 ^ Openings in Screen

629.2 MSL- Bottom of Screen Elev.

0.4 Ft.- Length of Tailpiece/Blank Section/Cup.

628.8 MSL- Plug Elevation

Type of Plug: Threaded male plug

105.0 Ft.- Total Depth of Well

632.3 MSL - Water 1st. Encountered

MSL - Static (Stable) Water Level

Note: Show Elev. where water 1st. encountered, & Static Level.

Upper Soil Zone:

From: 732.8 MSL Elev.

To: 720.3 MSL Elev.

Brown silty CLAY and brown and gray clayey SILT layers (CL & ML)

Transition Zone:

From: 720.3 MSL Elev.

To: 632.3 MSL Elev.

Gray silty to very silty CLAY, silt layers from 671.8 - 676.8 & 645.8 - 648.3

Soil/Rock Above Aquifer:

From: MSL Elev.

To: MSL Elev.

NA

AQUIFER MONITORED:

From: 632.3 MSL Elev.

To: 628.8 MSL Elev.

Apx. Perm. x10^ cm/sec.

Gray GRAVEL and SAND (GW)

Soil/Rock Below Aquifer:

From: 628.8 MSL Elev.

To: 625.3 MSL Elev.

SILT (ML)

ANNULAR SPACE DETAILS

733.8 MSL Ground Surface Elevation

731.3 MSL Top of Backfill Elevation

Type of Backfill: VOLCLAY GROUT

No. Bags 6

No. Bags Bentonite:

Type of Bentonite:

93.0 Ft. Depth to Top of Seal

640.8 MSL Top of Seal Elev.

5.0 Ft. Total Seal Interval

Type of Seal: BENTONITE PELLETS

88.0 Ft. Depth to top of Sand Pack from Ground Surf.

535.8 MSL Elev. of Top of Sand

Type of Sand Pack: Coarse SILICA SAND

Source of Sand: BEST SAND, INC.

Quantity of Sand Used: 3 - 50 lb bags

9.5 Ft. Total Sand Pack Interval

626.3 MSL Bottom of Sand Pack Elevation

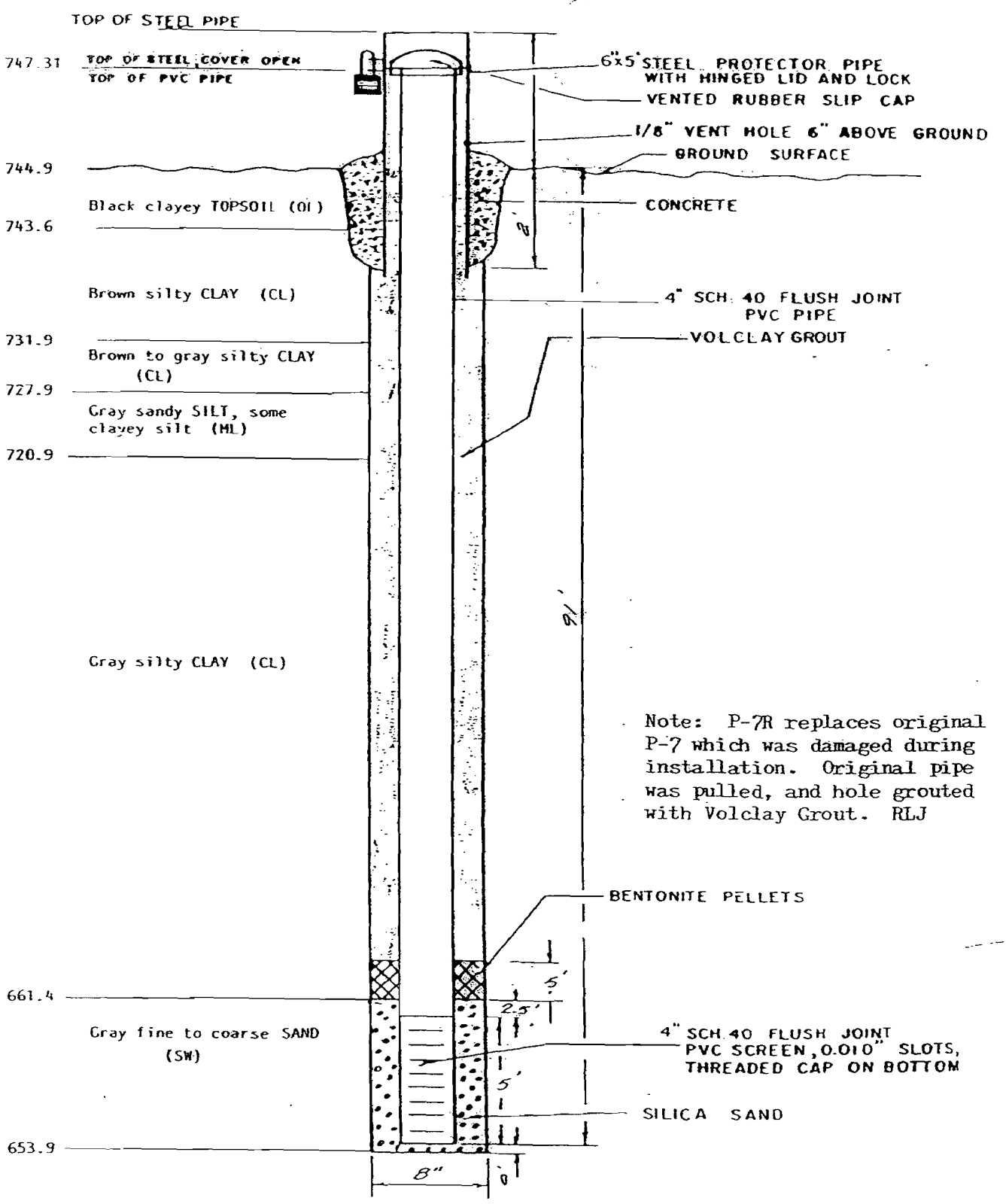
Type of Backfill Below Sand Pack: NA

107.5 Ft. Total Borehole Depth

625.3 MSL Elev. of Borehole Bottom

GROUNDWATER MONITORING WELL P-7R

(NOT TO SCALE)



Note: P-7R replaces original P-7 which was damaged during installation. Original pipe was pulled, and hole grouted with Volclay Grout. RLJ

GROUNDWATER DATA	12-18-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	50
CONDUCTIVITY (UMHOS)	548
PH	8.3

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DECEMBER 16 1986 L-23,390

COMPLETION REPORT: GROUND WATER MONITORING WELL | WELL NO.: D7

Location of Site: WINTHROP HARBOR SANITARY LANDFILL
Well Drilling Contractor: TESTING SERVICE CORPORATION
Driller: G. Everhard Geologist: T. Stam & D. Rav
Purpose of Well: Piezometer
Comments:

Northing: 10037.08
Easting: 9230.77
Collar Elevation:
Date Completed: 5-19-87
Total Depth: 110.5'

WELL CONSTRUCTION DETAILS

LOCK:
CAP: Hinged lid - Elevation 745.08
TYPE OF SURFACE CASING: 6" x 5' Square Design Steel

_____ MSL - Surf. Casing Collar Elev.
744.68 MSL - Riser Pipe Collar Elev.
3.2 FT. - Riser Pipe Height Above Ground Elev.
NA MSL - Drainhole Elev.
741.9 - GROUND ELEV., MSL

2.5 FT. - Depth of Surface Seal Below Ground
Type of Surface Seal: CONCRETE
Quan. Used: 3 - 50 lb bags

1.8 FT.- Depth of Surface Casing Below Ground
5.9 IN.- Inner Diam. of Surf. Casing
6.0 IN.- Diam. of Borehole

Type of Riser Pipe: PVC, Schedule 40
2.05 IN.- Inner Diam.- Riser Pipe
2.38 IN.- Outer Diam.- Riser Pipe
Type of Riser Joint/Coupling: Flushed thread, teflon taped

636.0 MSL- Top of Screen Elev.
Type of Coupling/Joint-Screen to Riser Pipe: Flush thread
Type of Screen: PVC, Schedule 40
Opening Size: 0.010"
Opening Spacing: 0.21"
3.0 % Openings in Screen

631.8 MSL- Bottom of Screen Elev.

0.4 FT.- Length of Tailpiece/Blank Section/Cup.

631.4 MSL- Plug Elevation
Type of Plug: Threaded male plug

110.5FT.- Total Depth of Well

DRY MSL - Water 1st. Encountered
_____ MSL - Static (Stable) Water Level

GENERALIZED GEOLOGIC COLUMN

Note: Show Elev. where water 1st. encountered, & Static Level.

Soil Zone:
From: 741.9 MSL Elev.
To: 729.9 MSL Elev.
Brown silty CLAY (CL)

Till/Alluvium/Weathered Zone:
From: 729.9 MSL Elev.
To: 647.4 MSL Elev.
Gray silty to very silty CLAY, clayey silt layer from 679.9 to 674.9 (CL & ML)

Soil/Rock Above Aquifer:
From: _____ MSL Elev.
To: _____ MSL Elev.
NA

AQUIFER MONITORED:
From: 647.4 MSL Elev.
To: 625.9 MSL Elev.
Avg. Perm. x10⁻ cm/sec.
Interbedded layers of clayey SILT and silty CLAY (ML & CL)

Soil/Rock Below Aquifer:
From: 625.9 MSL Elev.
To: 591.9 MSL Elev.
(silty to very silty CLAY (CL)

ANNULAR SPACE DETAILS

741.9 MSL Ground Surface Elevation
739.4 MSL Top of Backfill Elevation
Type of Backfill: VOLCLAY GROUT
No. Bags Volclay: 5
No. Bags Bentonite: NA
Type of Bentonite: NA

91.0 Ft. Depth to Top of Seal
650.9 MSL Top of Seal Elev.
5.0 FT. Total Seal Interval
Type of Seal: BENTONITE PELLETS

96.0 Ft. Depth to top of Sand Pack from Ground Surf.
645.9 MSL Elev. of Top of Sand
Type of Sand Pack: COARSE SILICA SAND
Source of Sand: BEST SAND, INC.
Quantity of Sand Used: 5 - 50 lb bags

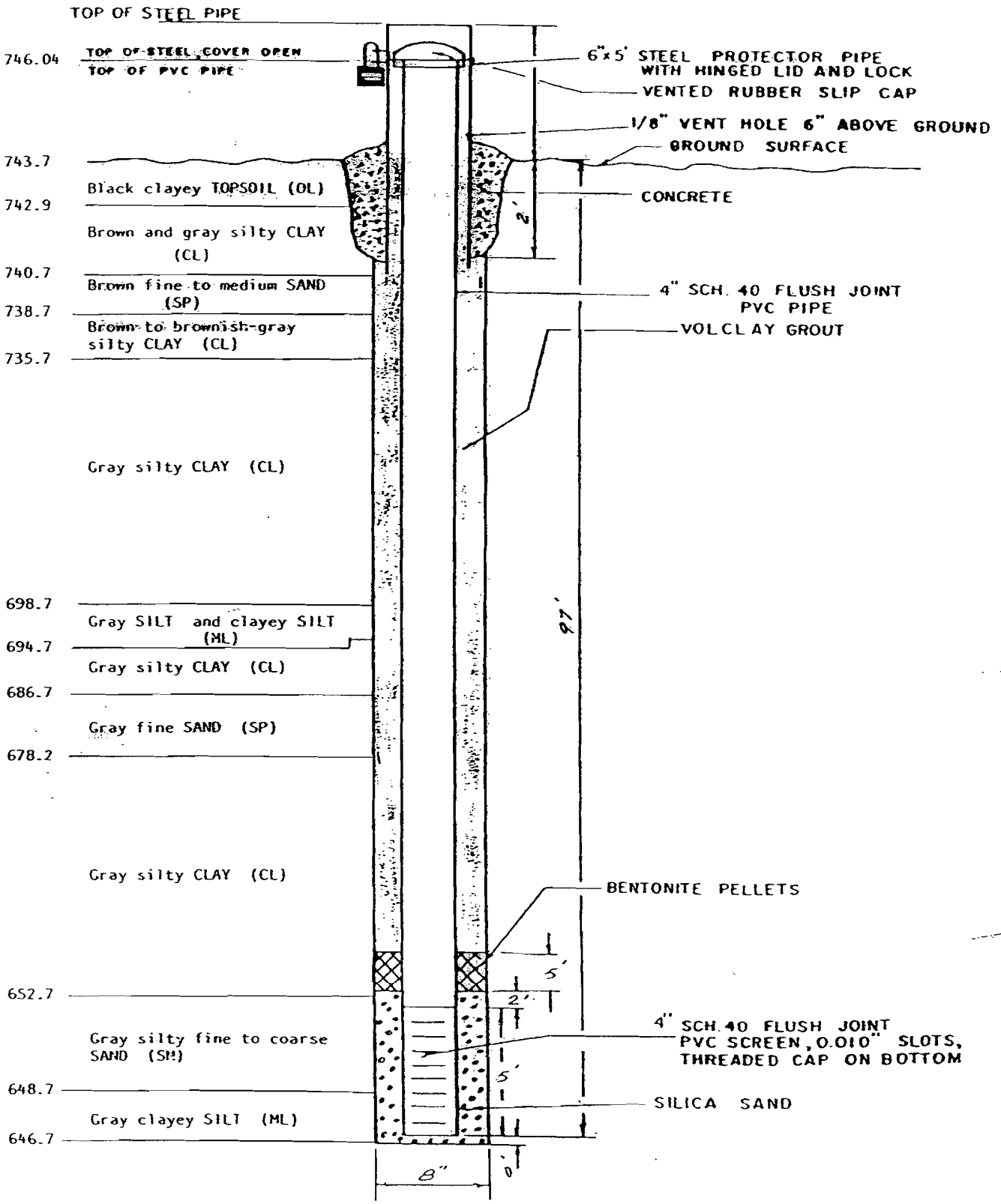
15.5 FT. Total Sand Pack Interval

630.4 MSL Bottom of Sand Pack Elevation
Type of Backfill Below Sand Pack: HOLE PLUG

150.0 FT. Total Borehole Depth
591.9 MSL Elev. of Borehole Bottom

GROUNDWATER MONITORING WELL P-8

(NOT TO SCALE)

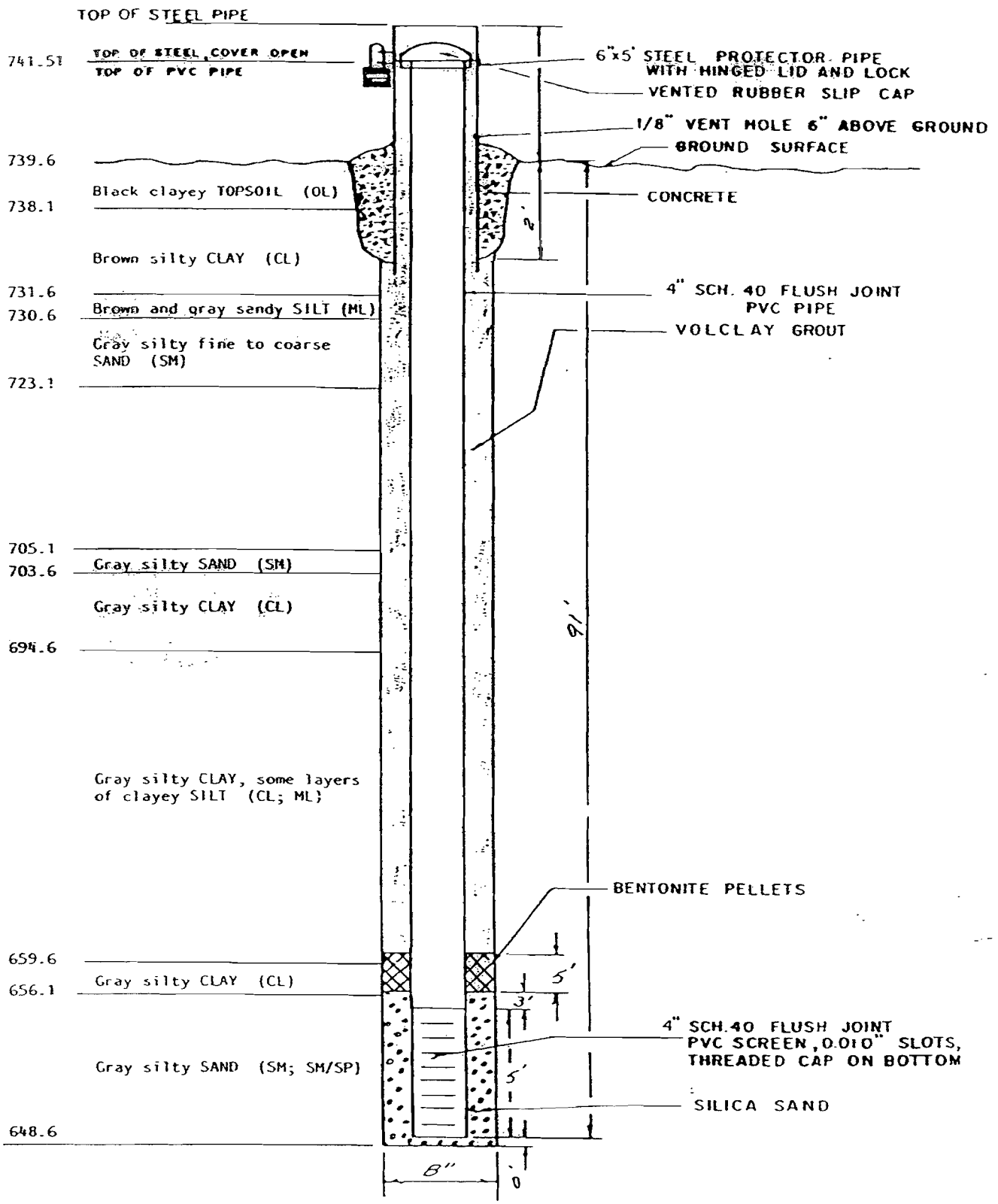


GROUNDWATER DATA	12-17-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	50
CONDUCTIVITY (UMHOS)	471
PH	8.4

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 16, 1986 L-23390

GROUNDWATER MONITORING WELL P-9

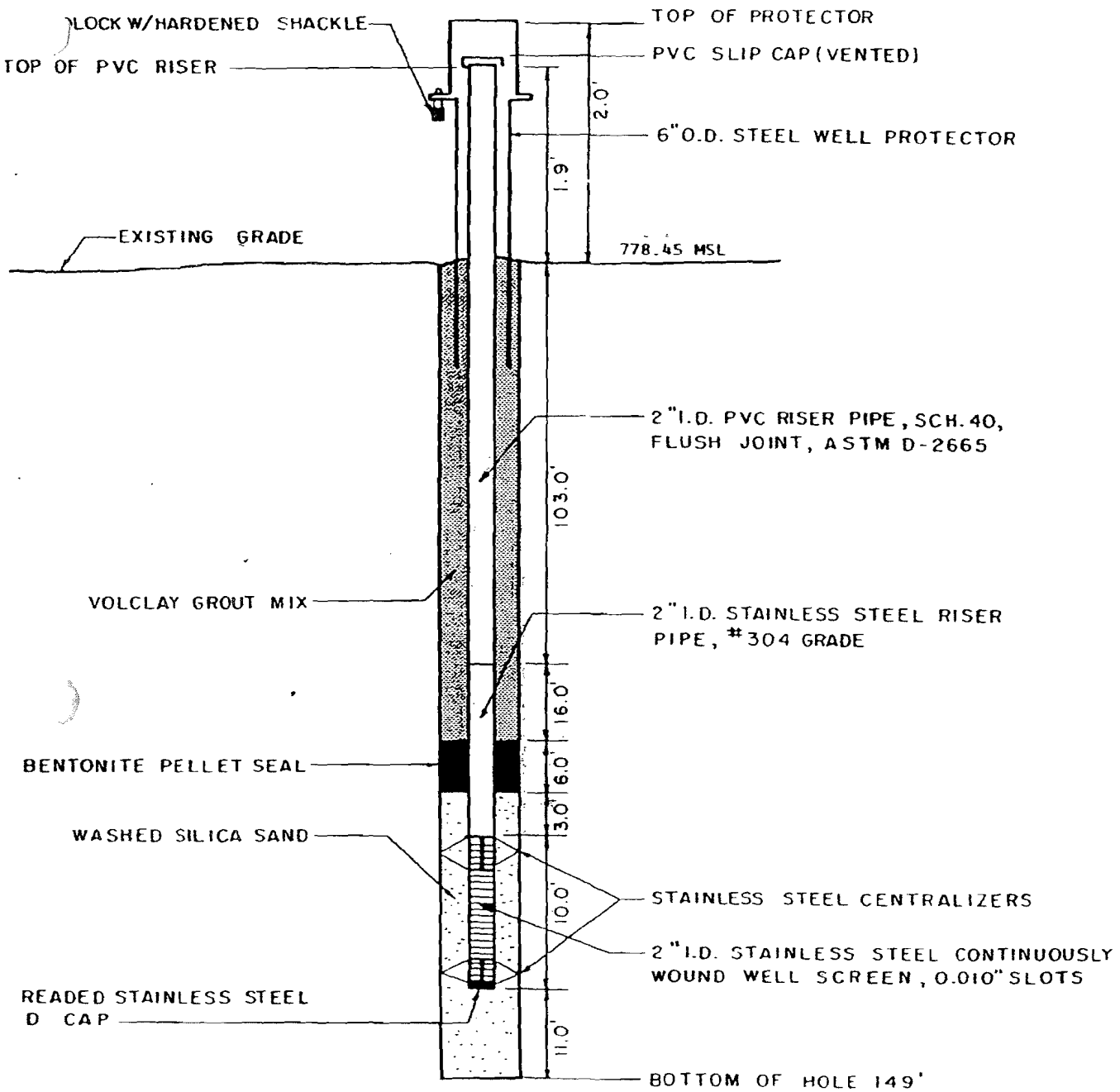
(NOT TO SCALE)



GROUNDWATER DATA	12-17-86
STATIC WATER LEVEL ELEV	--
TEMPERTURE (°F)	50
CONDUCTIVITY (UMHOS)	441
PH	8.6

TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188
DECEMBER 16 1986 L-23390

B-455



NOT TO SCALE

BFI WINTHROP HARBOR FACILITY

DATE: JAN. 1988	JOB NUMBER: 0151

WELL NO. P-9
MONITORING WELL CONSTRUCTION RECORD

PATRICK ENGINEERING INC.
Engineers • Geologists • Hydrologists

FIGURE 2

COMPLETION REPORT: GROUND WATER MONITORING WELL B-456 | WELL NO.: P-9

Location of Site: BFI Winthrop Harbor Facility
Well Drilling Contractor: Patrick Engineering
Driller: Pat Bolger, Geologist: Craig R. Smith
Purpose of Well: Monitor Interglacial Sand Aquifer
Comments:

Northing: 11930.51
Easting: 9370.40
Collar Elevation:
Date Completed: 11/25/87
Total Depth: 149.0

WELL CONSTRUCTION DETAILS

LOCK:
CAP: 6" O.D. Steel well protector
TYPE OF SURFACE CASING:

780.41 MSL - Surf. Casing Collar Elev.
780.31 MSL - Riser Pipe Collar Elev.
1.9 FT. - Riser Pipe Height Above Ground Elev.
778.41 MSL - Drainhole Elev.
____ MSL - GROUND ELEV., MSL

4.0 FT. - Depth of Surface Seal Below Ground
Type of Surface Seal: Portland Cement
Quan. Used: 3 bags
3.0 FT.- Depth of Surface Casing Below Ground
____ IN.- Inner Diam. of Surf. Casing
8 IN.- Diam. of Borehole
Type of Riser: PVC flush joint, Schedule 40 2.067" I.D. riser pipe 2.375" O.D. riser pipe to 103.0' below ground surface
Type of Riser Pipe: stainless steel flush joing, Sched.10
2.067 IN.- Inner Diam.- Riser Pipe
2.375 IN.- Outer Diam.- Riser Pipe
Type of Riser Joint/Coupling: flush joint, o-ring & teflon taped joints

650.41 MSL- Top of Screen Elev.
Type of Coupling/Joint-Screen to Riser Pipe: flush joint, teflon taped
Type of Screen: 0.010" slot, continuously wound No. 304 stainless steel
Opening Size: 0.010"
Opening Spacing:
____ % Openings in Screen
640.41 MSL- Bottom of Screen Elev.

0.2 FT.- Length of Tailpiece/Blank Section/Cup.
____ MSL- Plug Elevation
Type of Plug: Screw on stainless steel cap
138.0 FT.- Total Depth of Well without well cap

ANNULAR SPACE DETAILS

____ MSL Ground Surface Elevation
N/A MSL Top of Backfill Elevation
Type of Backfill: N/A
No. Bags Cement:
No. Bags Bentonite: 12
Type of Bentonite: Volclay Grout Mix

119.0 FT. Depth to Top of Seal
659.94 MSL Top of Seal Elev.
6.0 FT. Total Seal Interval
Type of Seal: 3/8" bentonite pellets
125.0 FT. Depth to top of Sand Pack from Ground Sur
640.41 MSL Elev. of Top of Sand
Type of Sand Pack: #40 washed Silica Sand
Source of Sand: Wedron Silica Co.
Quantity of Sand Used: 10, 100 lb. bags
19.6 FT. Total Sand Pack Inte
____ MSL Bottom of Sand Pack Elevation
Type of Backfill Below Sand Pack: Natural Formation Sand below 144.6 feet
149.0 FT. Total borehole Depth
____ MSL Elev. of Borehole Bo

GENERALIZED SUBSURFACE SOILS

Note: Show Elev. where water 1st. encountered & Static Level.

Soil Zone:
From: ____ MSL Elev.
To: ____ MSL Elev.

Soil/Alluvium/Weathered Zone:
From: ____ MSL Elev.
To: ____ MSL Elev.

Soil/Rock Above Aquifer:
From: ____ MSL Elev.
To: ____ MSL Elev.

AQUIFER MONITORED:
From: ____ MSL Elev.
To: ____ MSL Elev.
Avg. Perm. ____ cm/sec.

Soil/Rock Below Aquifer:
From: ____ MSL Elev.
To: ____ MSL Elev.

____ MSL - Water 1st. Encountered
662.52 MSL - Static (Stable) Water Level

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **R002**

SITE NAME: Onyx Zion Landfill BOREHOLE #: **R002**

NORTHING 11,832.9 EASTING 11,783.2 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. K&S Engineering, Inc. DRILLER: Ruben Perez

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Kristen Schneider

DRILLING METHOD: 6" Wash Rotary DRILLING FLUIDS (TYPE): None

LOGGED BY: Kristen Schneider DATE STARTED: 10/29/02 DATE FINISHED: 11/14/02

REPORT FORM COMPLETED BY: Joe Miller DATE: 12/02/02

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Bentonite Chips

TYPE OF ANNULAR SEALANT: Bentonite Chips

INSTALLATION METHOD: Gravity Fall

SETTING TIME: > 24 hrs

TYPE BENTONITE SEAL- GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

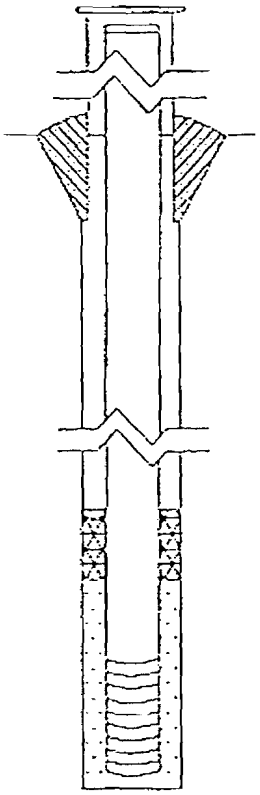
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: 40/60 Sand (IF APPLICABLE)

INSTALLATION METHOD: Gravity Fall



ELEVATIONS (MSL)*	DEPTHS (.01 ft) (BGS)	
694.18	2.7	TOP OF PROTECTIVE CASING
694.05	2.5	TOP OF RISER PIPE
691.5	0.0	GROUND SURFACE
691.5	0.0	TOP OF ANNULAR SEALANT
657.55	36.50	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
688.5	3.0	TOP OF SEAL
652.7	38.8	TOP OF SANDPACK
647.2	44.3	TOP OF SCREEN
637.7	53.8	BOTTOM OF SCREEN
637.3	54.3	BOTTOM OF WELL
* 634.0	57.5	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

Note:
The bottom borehole depth indicated on this form may differ from that shown on the geologic log based on grading performed around the well after it was drilled

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**:	Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	6.0
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	46.82
BOTTOM OF SCREEN TO END CAP (ft)	0.46
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	9.52
TOTAL LENGTH OF CASING (ft)	56.80
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

SITE #: 0978020001 COUNTY: Lake WELL #: R123

TE NAME: Zion Site 1 Phase A and Zion Site 1 Phase B Landfills BOREHOLE: R123

NORTHING 12,616.2 EASTING 8,895.8 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. RD-n-P Drilling, Inc. DRILLER: Paul Eger

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Brian McQueen

DRILLING METHOD: 6" and 10" Wash/Mud Rotary DRILLING FLUIDS (TYPE): Clean Water/Bentonite

LOGGED BY: Brian McQueen DATE STARTED: 08/11/05 DATE FINISHED: 09/01/05

REPORT FORM COMPLETED BY: Joe Miller DATE: 10/20/05

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Cement/Bentonite

TYPE OF ANNULAR SEALANT: Not Applicable

INSTALLATION METHOD: Not Applicable

SETTING TIME: Not Applicable

TYPE BENTONITE SEAL- GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

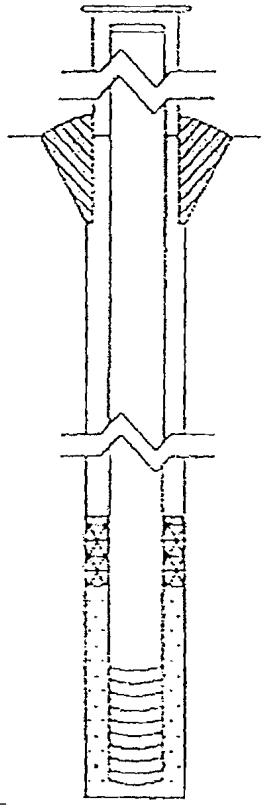
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA (IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
763.61	2.8	TOP OF PROTECTIVE CASING
763.16	2.4	TOP OF RISER PIPE
760.8	0.0	GROUND SURFACE
NA	NA	TOP OF ANNULAR SEALANT
657.82	105.34	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
757.8	3.0	TOP OF SEAL
650.8	110.0	BOTTOM OF SECONDARY STEEL CASING
650.1	110.7	TOP OF SANDPACK
645.6	115.2	TOP OF SCREEN
640.9	119.9	BOTTOM OF SCREEN
640.4	120.4	BOTTOM OF WELL
639.8	121.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

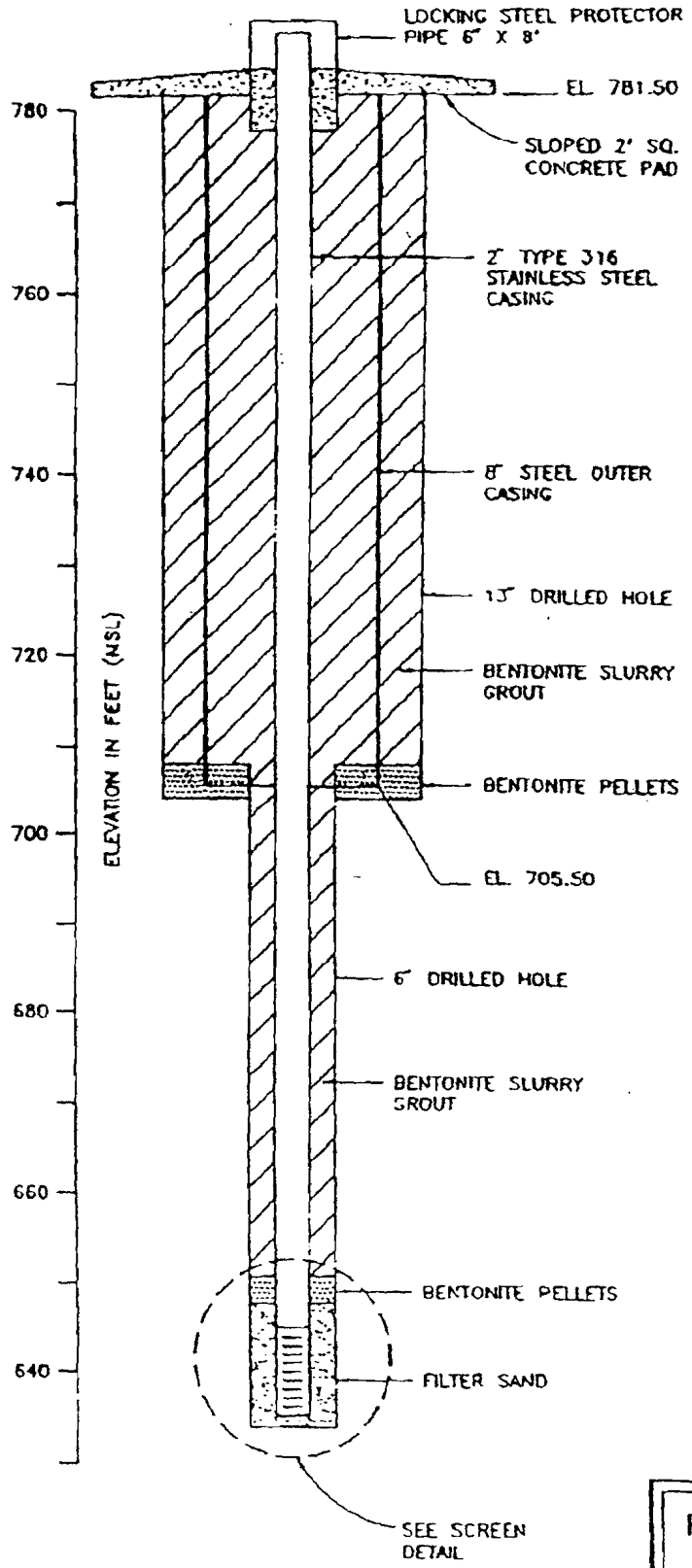
WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	6 & 10
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	117.60
BOTTOM OF SCREEN TO END CAP (ft)	0.46
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.70
TOTAL LENGTH OF CASING (ft)	122.76
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE



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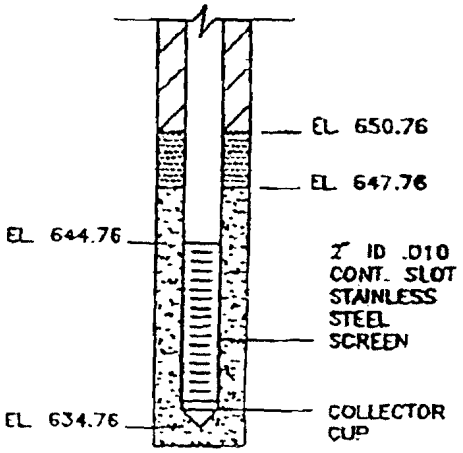


SCREEN DETAIL

NTS

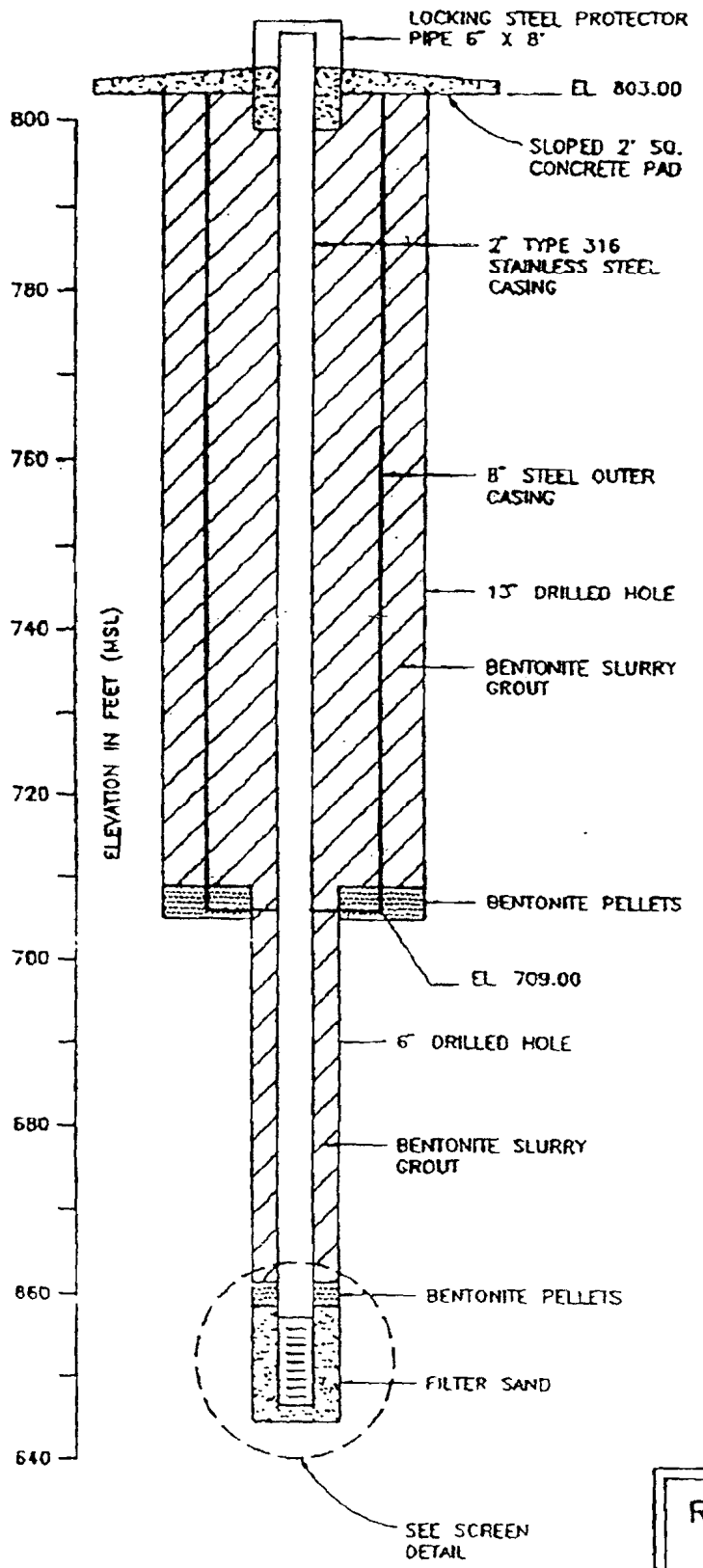
06114A3
MAP101293

REPLACEMENT MONITOR WELL
R124
CONSTRUCTION DIAGRAM

WINTHROP HARBOR LANDFILL
ZION, ILLINOIS

OCTOBER 1993 06114.10

WW Engineering & Science



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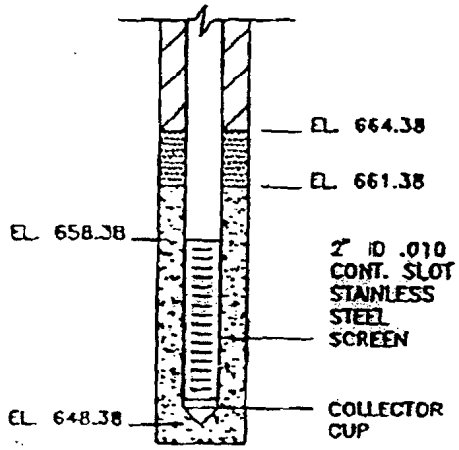


SCREEN DETAIL

NTS

08114A4
MAP101293

REPLACEMENT MONITOR WELL
R126
CONSTRUCTION DIAGRAM

WINTHROP HARBOR LANDFILL
ZION, ILLINOIS

OCTOBER, 1993 08114.10

WW Engineering & Science

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

SITE #: 0978020001 COUNTY: Lake WELL #: **R127**

SITE NAME: Zion Site 1 Phase A and Zion Site 1 Phase B Landfills BOREHOLE #: **R127**

NORTHING 11,302.6 EASTING 8,512.8 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. RD-n-P Drilling, Inc. DRILLER: Paul Eger

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Brian McQueen

DRILLING METHOD: 6" and 10" Wash/Mud Rotary DRILLING FLUIDS (TYPE): Clean Water/Bentonite

LOGGED BY: Brian McQueen DATE STARTED: 07/06/05 DATE FINISHED: 09/01/05

REPORT FORM COMPLETED BY: Joe Miller DATE: 10/20/05

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Cement/Bentonite

TYPE OF ANNULAR SEALANT: Not Applicable

INSTALLATION METHOD: Not Applicable

SETTING TIME: Not Applicable

TYPE BENTONITE SEAL- GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

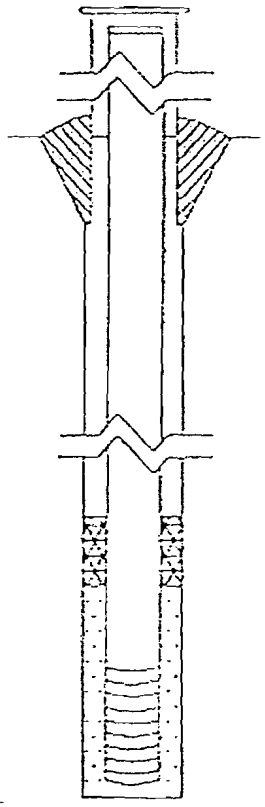
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA (IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
763.79	3.0	TOP OF PROTECTIVE CASING
763.36	2.6	TOP OF RISER PIPE
760.8	0.0	GROUND SURFACE
NA	NA	TOP OF ANNULAR SEALANT
657.74	105.62	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
757.8	3.0	TOP OF SEAL
661.8	99.0	BOTTOM OF SECONDARY STEEL CASING
660.5	100.3	TOP OF SANDPACK
656.1	104.7	TOP OF SCREEN
651.4	109.4	BOTTOM OF SCREEN
650.9	109.9	BOTTOM OF WELL
650.8	110.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

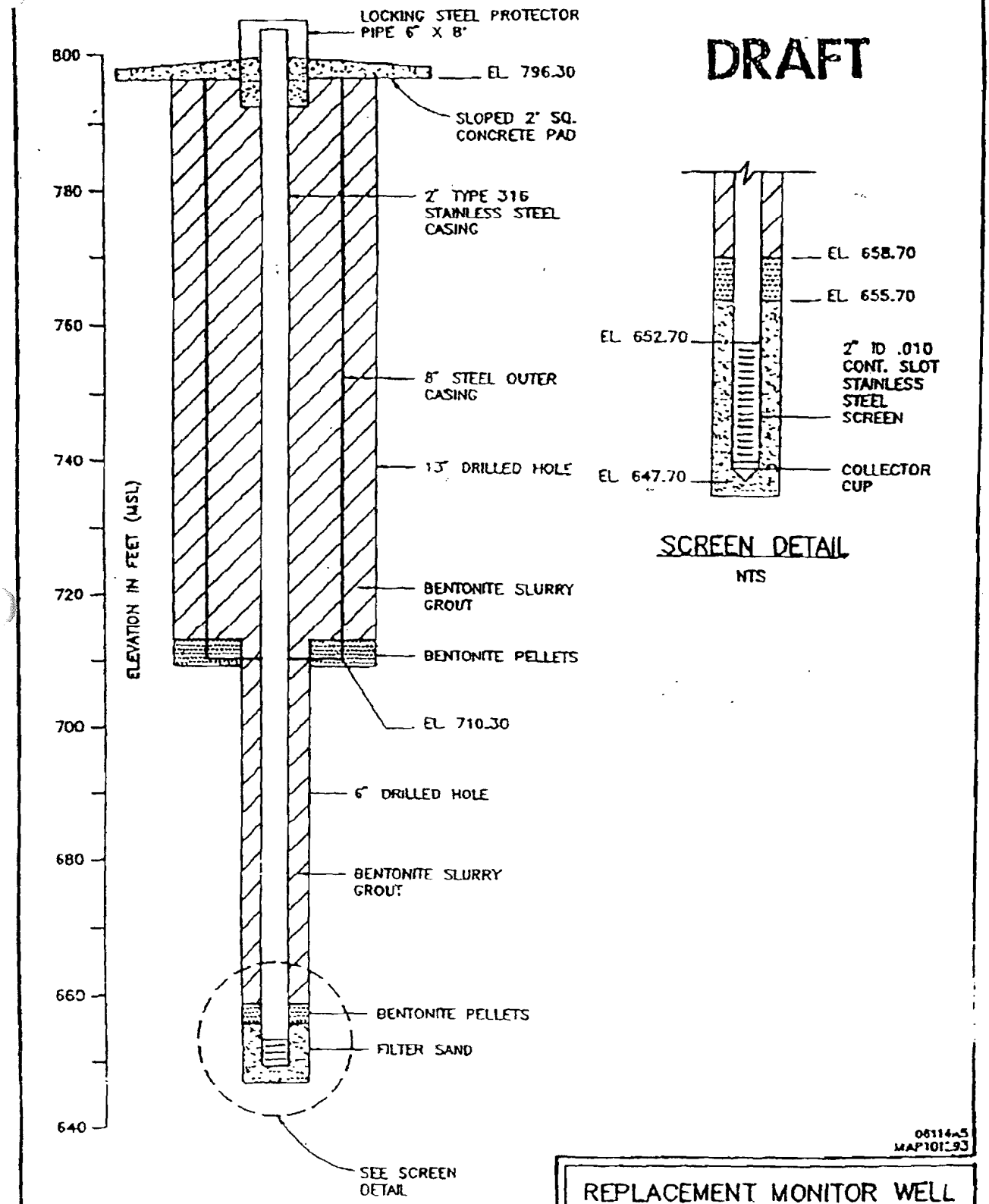
WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	6 & 10
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	107.27
BOTTOM OF SCREEN TO END CAP (ft)	0.46
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.70
TOTAL LENGTH OF CASING (ft)	112.43
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

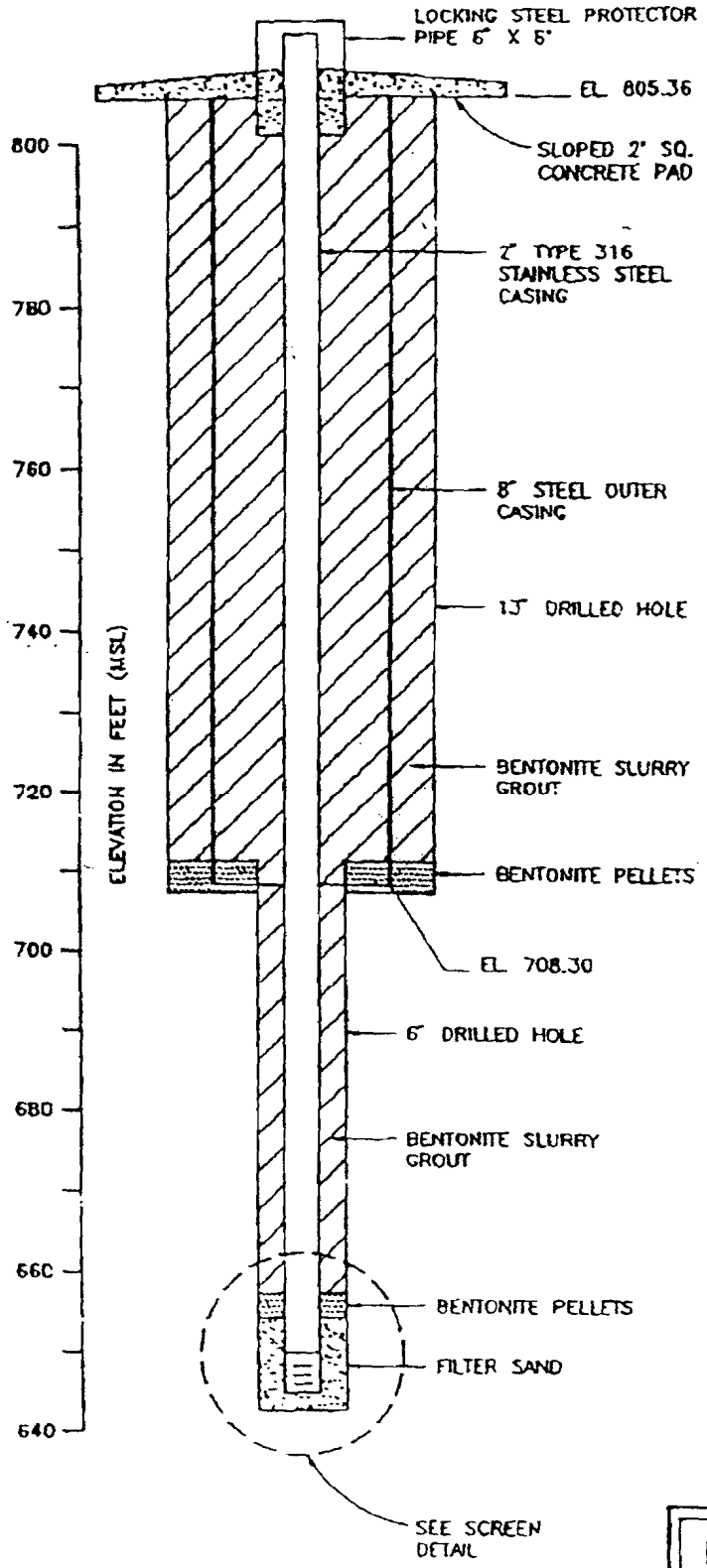


REPLACEMENT MONITOR WELL
R128
CONSTRUCTION DIAGRAM

WINTHROP HARBOR LANDFILL
ZION, ILLINOIS

OCTOBER, 1993 06114.10

WW Engineering & Science



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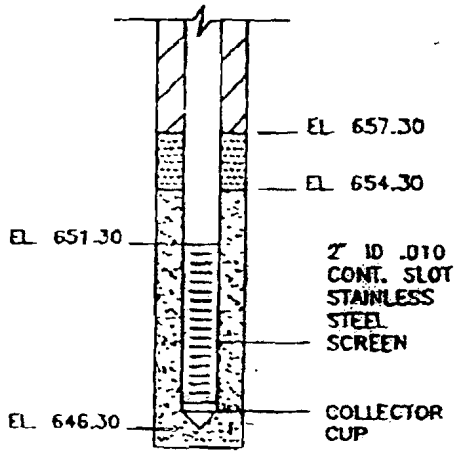


SCREEN DETAIL

NTS

06114A8
MAP10129

REPLACEMENT MONITOR WELL
R129
CONSTRUCTION DIAGRAM

WINTHROP HARBOR LANDFILL
ZION, ILLINOIS

OCTOBER, 1993 06114.10

WW Engineering & Science

SITE #: 0978020001 COUNTY: Lake WELL #: **R136**

SITE NAME: Zion Site 1 Phase A and Zion Site 1 Phase B Landfills BOREHOLE: **R136**

NORTHING 10,760.4 EASTING 8,632.0 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. RD-n-P Drilling, Inc. DRILLER: Paul Eger

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Brian McQueen

DRILLING METHOD: 6" and 10" Wash/Mud Rotary DRILLING FLUIDS (TYPE): Clean Water/Bentonite

LOGGED BY: Brian McQueen DATE STARTED: 07/08/05 DATE FINISHED: 09/01/05

REPORT FORM COMPLETED BY: Joe Miller DATE: 10/20/05

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Cement/Bentonite

TYPE OF ANNULAR SEALANT: Not Applicable

INSTALLATION METHOD: Not Applicable

SETTING TIME: Not Applicable

TYPE BENTONITE SEAL- GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

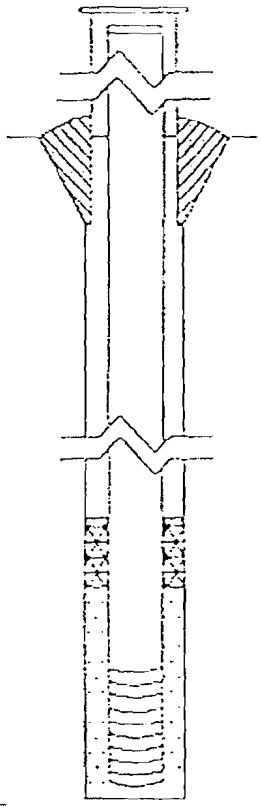
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA (IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
748.58	2.9	TOP OF PROTECTIVE CASING
748.12	2.4	TOP OF RISER PIPE
745.7	0.0	GROUND SURFACE
NA	NA	TOP OF ANNULAR SEALANT
657.29	90.83	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
742.7	3.0	TOP OF SEAL
650.2	95.5	BOTTOM OF SECONDARY STEEL CASING
649.2	96.5	TOP OF SANDPACK
644.5	101.2	TOP OF SCREEN
634.7	111.0	BOTTOM OF SCREEN
634.2	111.5	BOTTOM OF WELL
634.2	111.5	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	6 & 10
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	103.62
BOTTOM OF SCREEN TO END CAP (ft)	0.46
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	9.80
TOTAL LENGTH OF CASING (ft)	113.88
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020001 COUNTY: Lake WELL #: **R145**

SITE NAME: Veolia ES Zion Landfill BOREHOLE #: **R145**

NORTHING 11,235.2 EASTING 8,528.3 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. I.L. REGISTRATION #: 2342

DRILLING CONTR. Precon Drilling, Inc. DRILLER: Jerry Copak

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Steve Chillson

DRILLING METHOD: Well Set in Borehole for G145 DRILLING FLUIDS (TYPE): Clean Water/Bentonite

LOGGED BY: Steve Chillson DATE STARTED: 03/28/07 DATE FINISHED: 04/03/07

REPORT FORM COMPLETED BY: Joe Miller DATE: 06/15/07

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Not Applicable

INSTALLATION METHOD: Not Applicable

SETTING TIME: Not Applicable

TYPE BENTONITE SEAL- GRANULAR, PELLET, **SLURRY**
(CIRCLE ONE)

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

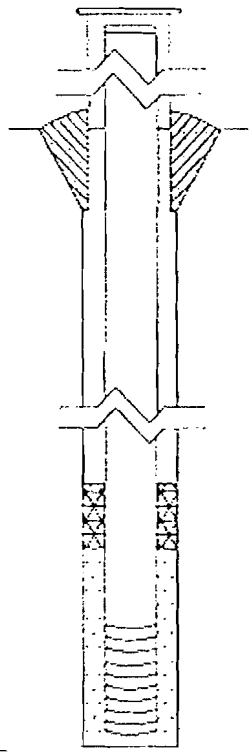
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA
(IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
761.33	3.7	TOP OF PROTECTIVE CASING
760.93	3.3	TOP OF RISER PIPE
757.6	0.0	GROUND SURFACE
NA	NA	TOP OF ANNULAR SEALANT
661.91	99.0	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
754.6	3.0	TOP OF SEAL
661.6	96.0	TOP OF SANDPACK
656.9	100.7	TOP OF SCREEN
647.3	110.3	BOTTOM OF SCREEN
647.1	110.6	BOTTOM OF WELL
646.6	111.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	8
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	104.03
BOTTOM OF SCREEN TO END CAP (ft)	0.23
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	9.62
TOTAL LENGTH OF CASING (ft)	113.88
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **R166**

SITE NAME: Veolia ES Zion Landfill BOREHOLE: **R166**

NORTHING 12,504.0 EASTING 11,250.1 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. Precon Drilling, Inc. DRILLER: Jerry Copak

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Wojciech Dubis

DRILLING METHOD: 8.25" I.D. HSA & 8" Wash/Mud Rotary DRILLING FLUIDS (TYPE): Clean Water/Bentonite

LOGGED BY: Wojciech Dubis DATE STARTED: 10/10/06 DATE FINISHED: 11/03/06

REPORT FORM COMPLETED BY: Joe Miller DATE: 11/27/06

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Cement/Bentonite

TYPE OF ANNULAR SEALANT: Not Applicable

INSTALLATION METHOD: Not Applicable

SETTING TIME: Not Applicable

TYPE BENTONITE SEAL- GRANULAR, PELLET, **SLURRY**
(CIRCLE ONE)

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

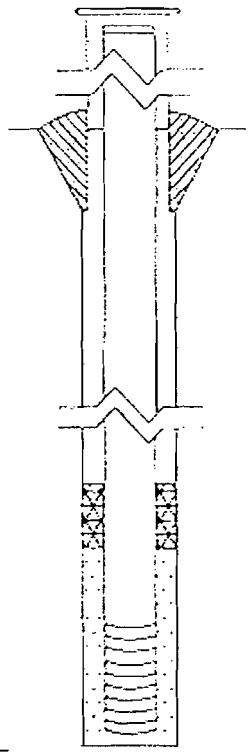
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA
(IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
751.90	3.0	TOP OF PROTECTIVE CASING
751.38	2.5	TOP OF RISER PIPE
748.9	0.0	GROUND SURFACE
NA	NA	TOP OF ANNULAR SEALANT
657.56	93.82	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
745.9	3.0	TOP OF SEAL
666.1	82.8	BOTTOM OF 8.0" SECONDARY STEEL CASING
658.0	90.9	TOP OF SANDPACK
654.7	94.2	TOP OF SCREEN
645.1	103.8	BOTTOM OF SCREEN
644.6	104.3	BOTTOM OF WELL
641.9	107.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	8 & 12
ID OF RISER PIPE (in)	4.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	96.69
BOTTOM OF SCREEN TO END CAP (ft)	0.47
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	9.59
TOTAL LENGTH OF CASING (ft)	106.75
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: R182

NAME: Zion Site 2 Landfill BOREHOLE : R182

NORTHING 10,470.5 EASTING 10,944.3 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. RD-n-P Drilling, Inc. DRILLER: Paul Eger

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Wojciech Dubis

DRILLING METHOD: 8" and 12" Wash/Mud Rotary DRILLING FLUIDS (TYPE): Clean Water/Bentonite

LOGGED BY: Wojciech Dubis DATE STARTED: 05/04/06 DATE FINISHED: 06/06/06

REPORT FORM COMPLETED BY: Joe Miller DATE: 06/08/06

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Cement/Bentonite

TYPE OF ANNULAR SEALANT: Not Applicable

INSTALLATION METHOD: Not Applicable

SETTING TIME: Not Applicable

TYPE BENTONITE SEAL- GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

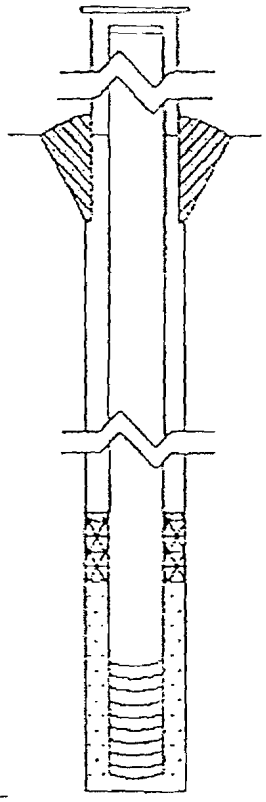
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA (IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
742.50	4.0	TOP OF PROTECTIVE CASING
741.76	3.3	TOP OF RISER PIPE
738.5	0.0	GROUND SURFACE
NA	NA	TOP OF ANNULAR SEALANT
659.10	82.66	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
735.5	3.0	TOP OF SEAL
668.2	70.3	BOTTOM OF 8.0" SECONDARY STEEL CASING
655.6	82.9	TOP OF SANDPACK
650.9	87.6	TOP OF SCREEN
646.4	92.1	BOTTOM OF SCREEN
646.0	92.5	BOTTOM OF WELL
645.0	93.5	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	8 & 12
ID OF RISER PIPE (in)	4.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	90.82
BOTTOM OF SCREEN TO END CAP (ft)	0.48
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.50
TOTAL LENGTH OF CASING (ft)	95.80
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **R193**

SITE NAME: Onyx Zion Landfill BOREHOLE #: **R193**

NORTHING 10,440.5 EASTING 11,508.6 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. RD-n-P Drilling, Inc. DRILLER: Eric Kaelin

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Kristen Schneider

DRILLING METHOD: 10" Wash Rotary DRILLING FLUIDS (TYPE): Clean Water

LOGGED BY: Kristen Schneider DATE STARTED: 04/13/04 DATE FINISHED: 04/15/04

REPORT FORM COMPLETED BY: Joe Miller DATE: 06/14/04

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Not Applicable

INSTALLATION METHOD: Not Applicable

SETTING TIME: Not Applicable

TYPE BENTONITE SEAL- GRANULAR, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

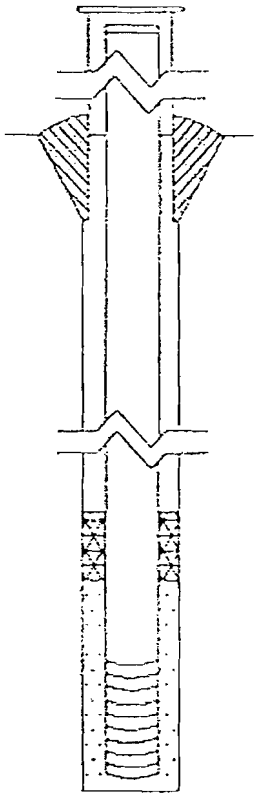
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: 40/60 Sand (IF APPLICABLE)

INSTALLATION METHOD: Gravity Fall



ELEVATIONS (MSL)*	DEPTHS (.01 ft) (BGS)	
737.61	2.7	TOP OF PROTECTIVE CASING
737.18	2.3	TOP OF RISER PIPE
734.9	0.0	GROUND SURFACE
660.17	77.01	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
731.9	3.0	TOP OF SEAL
647.9	87.0	TOP OF SANDPACK
643.9	91.0	TOP OF SCREEN
639.4	95.5	BOTTOM OF SCREEN
638.9	96.0	BOTTOM OF WELL
636.9	98.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**:	Alum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10.0
ID OF RISER PIPE (in)	4.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	93.28
BOTTOM OF SCREEN TO END CAP (ft)	0.57
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.46
TOTAL LENGTH OF CASING (ft)	98.31
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

WELL COMPLETION REPORT

#: 0978020002 COUNTY: Lake WELL #: RC2S

SITE NAME: Onyx Zion LandFill BOREHOLE #: RC2S

Site COORDINATE: Northing 10825.2 Easting 9371.7 (OR) LATITUDE: — ° — ' — " LONGITUDE: — ° — ' — "

SURVEYED BY: Howard Surveying Co. Inc. IL REGISTRATION #: 2342

DRILLING CONTRACTOR: K & S Engineering, Inc DRILLER: Pete de la Cruz

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Judith Kinch

DRILLING METHOD: mud rotary DRILLING FLUIDS (TYPE): Bentonite mud

LOGGED BY: Judith Kinch DATE STARTED: 8/23/01 DATE FINISHED: 9/17/01

REPORT FORM COMPLETED BY: Judith Kinch DATE: 10/1/01

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: NA

INSTALLATION METHOD: NA

SETTING TIME: NA

TYPE OF BENTONITE SEAL – GRANULAR, PELLET, (SLURRY) (CIRCLE ONE)

INSTALLATION METHOD: tremie

SETTING TIME: 24 hrs

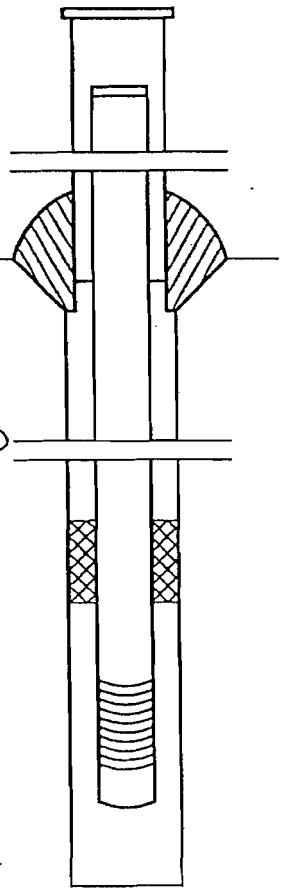
TYPE OF SAND PACK: quartz sand

GRAIN SIZE: 20/40 (SIEVE SIZE)
100 secondary

INSTALLATION METHOD: tremie w water

TYPE OF BACKFILL MATERIAL: 100 sand (IF APPLICABLE)

INSTALLATION METHOD: tremie w water



ELEVATIONS (MSL)*	ELEVATIONS (BGS) (0.1 FT.)	
—	—	TOP OF PROTECTIVE CASING (not surveyed)
804.01	-2.9	TOP OF RISER PIPE
802.18	-1.1	Top of 6" steel casing
801.1	0	GROUND SURFACE
NA	NA	TOP OF ANNULAR SEALANT
727.66	73.4	STATIC WATER LEVEL (AFTER COMPLETION)
739.4	61.7	Top of SS riser
798.1	3.0	TOP OF SEAL
718.20	82.8	Bottom of 6" steel casing
708.9	92.2	TOP OF SANDPACK
704.1	97.0	TOP OF SCREEN
699.4	101.7	BOTTOM OF SCREEN
699.1	102.0	BOTTOM OF WELL
698.1	103.0	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:
RISER PIPE BELOW W.T.	(SS304) SS316, PTFE, PVC OR OTHER:
SCREEN	(SS304) SS316, PTFE, PVC OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (IN)	8" to 18' to depth
ID OF RISER PIPE (IN)	2
PROTECTIVE CASING LENGTH (FT)	3.5
RISER PIPE LENGTH (FT)	99.89
BOTTOM OF SCREEN TO END CAP (FT)	0.34
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (FT)	4.69
TOTAL LENGTH OF CASING (FT)	104.92
SCREEN SLOT SIZE **	0.010 in.

Illinois Environmental Protection Agency — Well Completion Report

SITE #: 0978020002 COUNTY: LAKE WELL #: RE-25

SITE NAME: BFI-ZION SANITARY LANDFILL BOREHOLE #: RE-25

STATE PLANE COORDINATE: X 10056.77 Y 12573.53 (ft) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: HOWARD SURVEYING CO. INC. (C. BERQUIST) ILL REGISTRATION #: 2342

DRILLING CONTRACTOR: LAYNE-NW DRILLER: D HUHN

CONSULTING FIRM: GOLDER ASSOC. GEOLOGIST: S BURTON

DRILLING METHOD: TRI-CONE DRILLING FLUIDS (TYPE): NONE

LOGGED BY: B. BURTON DATE STARTED: 5-12-99 DATE FINISHED: 5-15-99

REPORT FORM COMPLETED BY: B BURTON DATE: 6-9-99

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: CONCRETE

TYPE OF ANNULAR SEALANT: HIGH SOLIDS BENT. GROUT

INSTALLATION METHOD: TREMIE

SETTING TIME: > 24 HRS

TYPE OF BENTONITE SEAL - GRANULAR, PELLET, SLURRY (CIRCLE ONE): CHIP

INSTALLATION METHOD: TREMIE

SETTING TIME: > 24 HRS

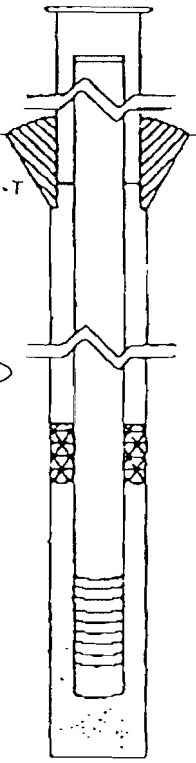
TYPE OF SAND PACK: SILICA SAND

GRAIN SIZE: 20-40 (SIEVE SIZE)

INSTALLATION METHOD: TREMIE

TYPE OF BACKFILL MATERIAL: NONE (IF APPLICABLE)

INSTALLATION METHOD: N/A



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
760.50	-3.10	TOP OF PROTECTIVE CASING
760.05	-2.65	TOP OF RISER PIPE
757.40	0.00	GROUND SURFACE
753.40	4.00	TOP OF ANNULAR SEALANT
721.40	36.00	STATIC WATER LEVEL (AFTER COMPLETION)
704.00	53.40	TOP OF SEAL
702.00	55.40	TOP OF SANDPACK
700.00	57.40	TOP OF SCREEN
695.50	61.90	BOTTOM OF SCREEN
695.00	62.40	BOTTOM OF WELL
695.00	62.40	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER: (ALUM)
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:
RISER PIPE BELOW W.T.	(SS304) SS316, PTFE, PVC OR OTHER:
SCREEN	(SS304) SS316, PTFE, PVC OR OTHER:

(0.010")

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	10.0
ID OF RISER PIPE (in)	4.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	60.05
BOTTOM OF SCREEN TO END CAP (ft)	0.5
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.5
TOTAL LENGTH OF CASING (ft)	65.05
SCREEN SLOT SIZE **	0.010

** MACHINE-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **RG3S**

SITE NAME: Veolia ES Zion Landfill BOREHOLE #: **RG3S**

NORTHING 10,445.4 EASTING 10,666.6 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Howard Surveying Co., Inc. ILL. REGISTRATION #: 2342

DRILLING CONTR. Precon Drilling, Inc. DRILLER: Jerry Copak

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Steve Chillson

DRILLING METHOD: 8.25" I.D. HSA & 6" Wash/Mud Rotary DRILLING FLUIDS (TYPE): Clean Water/Bentonite

LOGGED BY: Steve Chillson DATE STARTED: 03/27/07 DATE FINISHED: 04/04/07

REPORT FORM COMPLETED BY: Joe Miller DATE: 06/15/07

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Cement/Bentonite

TYPE OF ANNULAR SEALANT: Bentonite Grout

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

TYPE BENTONITE SEAL- **GRANULAR**, PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Gravity

SETTING TIME: > 24 hrs

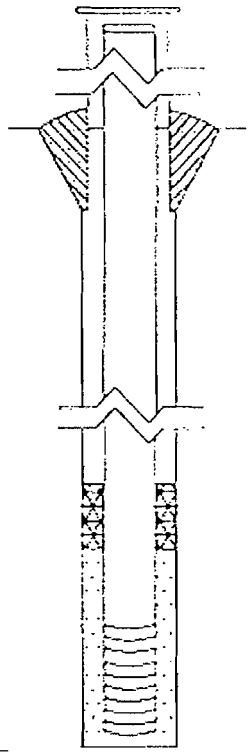
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 40/60 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA (IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (.01 ft) (BGS)	
756.22	4.4	TOP OF PROTECTIVE CASING
755.65	3.9	TOP OF RISER PIPE
751.8	0.0	GROUND SURFACE
748.8	3.0	TOP OF ANNULAR SEALANT
713.80	41.85	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
701.8	50.0	TOP OF SEAL
720.0	31.8	BOTTOM OF 6.0" SECONDARY STEEL CASING
699.4	52.4	TOP OF SANDPACK
695.4	56.4	TOP OF SCREEN
690.5	61.3	BOTTOM OF SCREEN
690.0	61.8	BOTTOM OF WELL
689.8	62.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, **PVC** OR OTHER:
SCREEN	SS304, SS316, PTFE, **PVC** OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	6 & 12
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	60.21
BOTTOM OF SCREEN TO END CAP (ft)	0.47
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	4.97
TOTAL LENGTH OF CASING (ft)	65.65
SCREEN SLOT SIZE **	0.006

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency — Well Completion Report

097802001 COUNTY: Lake WELL #: RG 8S

SITE NAME: Zion Landfill, Zion IL BOREHOLE #: RG 8S

SITE COORDINATE: X 10943.0 Y 10665.0 (or) LATITUDE ____ ° ____ ' ____ " LONGITUDE ____ ° ____ ' ____ "

SURVEYED BY: Howard Surveying ILL. REGISTRATION #: 2342

DRILLING CONTRACTOR: Testing Service Corporation DRILLER: Larry Trybull

CONSULTING FIRM: Testing Service Corporation GEOLOGIST: Joel Marko

DRILLING METHOD: Wet Rotary with 8" Tricone Bit DRILLING FLUIDS (TYPE): Bio Bore

LOGGED BY: Joel Marko DATE STARTED: 10/20/98 DATE FINISHED: 10/21/98

REPORT FORM COMPLETED BY: Joel Marko DATE: 1/15/98

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Bentonite Grout

INSTALLATION METHOD: Tremie/Pumped

SETTING TIME: 1 Day

TYPE OF BENTONITE SEAL - GRANULAR (PELLET) SLURRY (CIRCLE ONE)

INSTALLATION METHOD: Gravity

SETTING TIME: 1-1/4 Hours

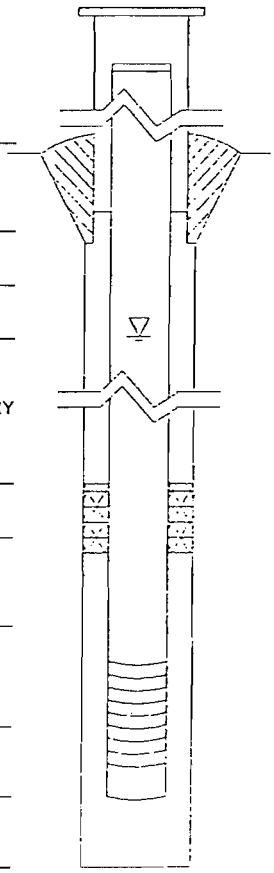
TYPE OF SAND PACK: Silica Primary/Secondary

GRAIN SIZE 10/20 & 40/60 (SIEVE SIZE)

INSTALLATION METHOD: Gravity/Tremie

TYPE OF BACKFILL MATERIAL: N/A (IF APPLICABLE)

INSTALLATION METHOD: ____



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
748.68	-2.6	TOP OF PROTECTIVE CASING
748.37	-2.3	TOP OF RISER PIPE
746.06	0.00	GROUND SURFACE
743.66	2.4	TOP OF ANNULAR SEALANT
715.16	30.9	STATIC WATER LEVEL (AFTER COMPLETION)
723.66	22.4	TOP OF SEAL
720.20	25.9	TOP OF FILTER PACK
718.66	27.4	TOP OF SANDPACK
716.16	29.9	TOP OF SCREEN
706.56	39.5	BOTTOM OF SCREEN
705.86	40.2	BOTTOM OF WELL
705.56	40.50	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304	SS316	PTFE	PVC	OTHER Anod Alum
RISER PIPE ABOVE W.T.	SS304	SS316	PTFE	(PVC)	OTHER
RISER PIPE BELOW W.T	SS304	SS316	PTFE	(PVC)	OTHER
SCREEN	(SS304)	SS316	PTFE	PVC	OTHER

CASING MEASUREMENTS

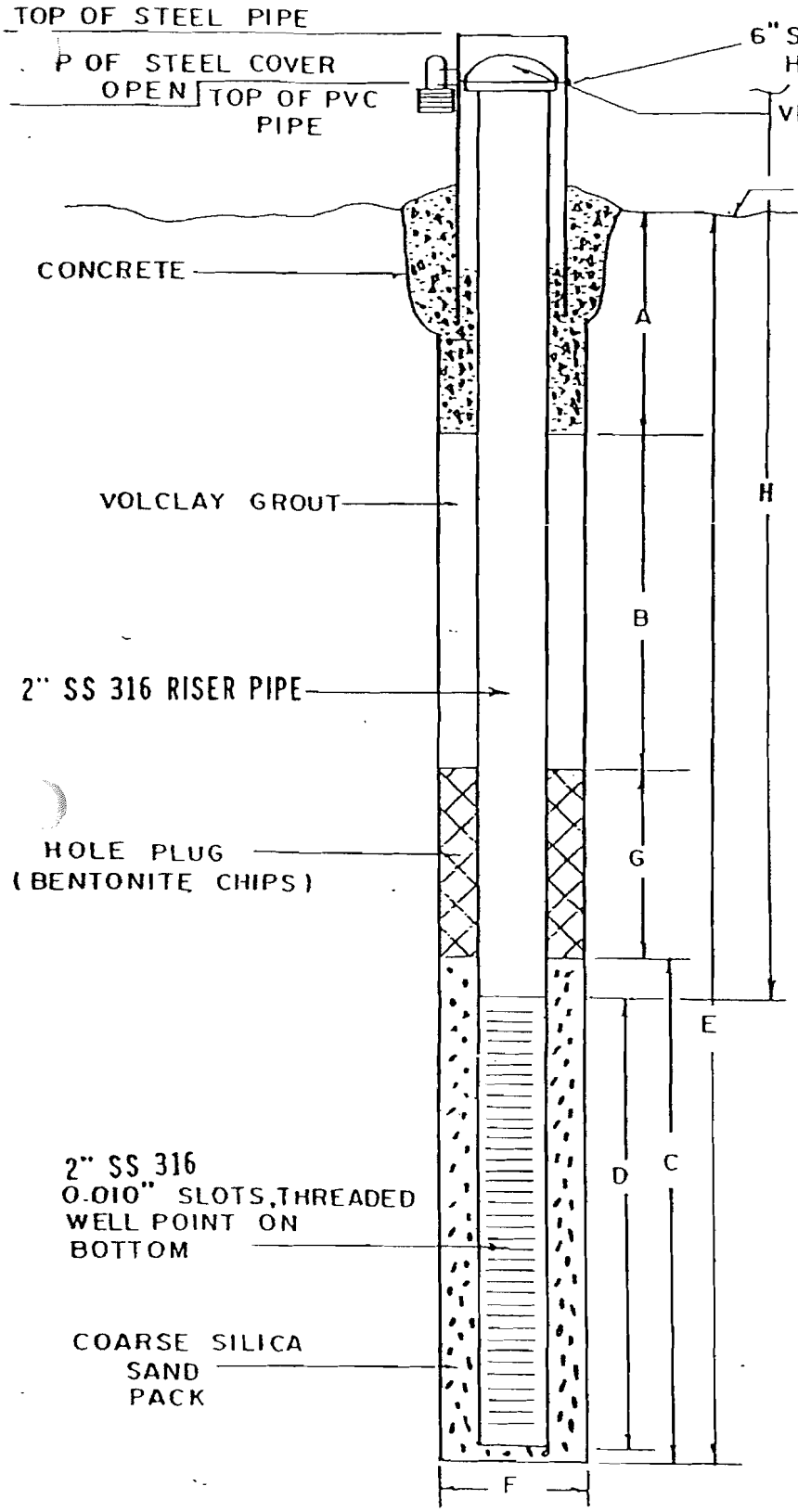
DIAMETER OF BOREHOLE	(in)	8
ID OF RISER PIPE	(in)	4
PROTECTIVE CASING LENGTH	(ft)	5
RISER PIPE LENGTH	(ft)	10.5
BOTTOM OF SCREEN TO END CAP	(ft)	0.5
SCREEN LENGTH (ft; SLOT TO LAST SLOT)	(ft)	9.6
TOTAL LENGTH OF CASING	(ft)	32.3
SCREEN SLOT SIZE **	(in)	0.010

**HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

(5/10/13)

BORING (WELL) NO. **RGK-1(D)**

B-487



AS BUILT DATA	
A	0'-3'
B	3'-99'
C	102'-109'
D	104'-109'
E	0'-109'
F	6 INCHES
G	99'-102'
H	+3'-104'
GROUND SURFACE ELEVATION	
ELEVATION OF TOP OF PVC PIPE	

GROUNDWATER MONITORING WELL
(ABOVE GROUND)

WELL COMPLETION REPORT

I.E. #: 097802002 COUNTY: Lake WELL #: T-001

SITE NAME: Onyx Zion Landfill BOREHOLE #: T-001

STATE PLANE COORDINATE: X 1178150 Y 1221849 (OR) LATITUDE: ——— LONGITUDE: ———

SURVEYED BY: Carl Bergquist obo/Howard Surveying Co. IL REGISTRATION #: 2342

DRILLING CONTRACTOR: Fox Drilling DRILLER: Willy Goodwin

CONSULTING FIRM: EIL GEOLOGIST: A. Michael Hirt

DRILLING METHOD: 3¼" HSA w/ES sampling to 10 ft; 6" tricone wash rotary to 90 ft DRILLING FLUIDS (TYPE): water

LOGGED BY: A. Michael Hirt DATE STARTED: 11-22-00 DATE FINISHED: 11-22-00 (well casing & sand); 12-1-00 (protective cover)

REPORT FORM COMPLETED BY: A. Michael Hirt DATE: 12-1-00

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Bentonite grout

INSTALLATION METHOD: tremie pipe

SETTING TIME: 5 days

TYPE OF BENTONITE SEAL – GRANULAR, PELLET, SLURRY (CHIPS) (CIRCLE ONE)

INSTALLATION METHOD: pour

SETTING TIME: 30 minutes

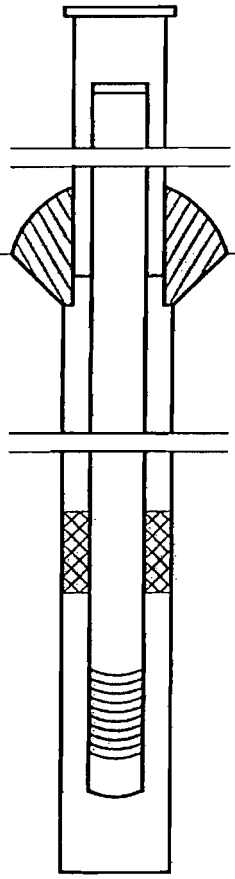
TYPE OF SAND PACK: silica sand

GRAIN SIZE: No. 7/8 (SIEVE SIZE)

INSTALLATION METHOD: pour

TYPE OF BACKFILL MATERIAL: silica sand (IF APPLICABLE)

INSTALLATION METHOD: pour



ELEVATIONS

ELEVATIONS (MSL)*	ELEVATIONS (BGS)	(0.1 FT.)
732.39	3.1	TOP OF PROTECTIVE CASING
731.76	2.5	TOP OF RISER PIPE
729.30	0.0	GROUND SURFACE
727.80	4.5	TOP OF ANNULAR SEALANT
663.47	68.29	STATIC WATER LEVEL (AFTER COMPLETION) (BTOC)
659.5	69.8	TOP OF SEAL
653.9	75.4	TOP OF SANDPACK
649.7	79.6	TOP OF SCREEN
645.2	84.1	BOTTOM OF SCREEN
644.7	84.6	BOTTOM OF WELL
641.3	88.0	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR (OTHER: anodized aluminum)
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:
SCREEN	SS304, SS316, PTFE, (PVC) OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (IN)	6.0
ID OF RISER PIPE (IN)	2.0
PROTECTIVE CASING LENGTH (FT)	5.0
RISER PIPE LENGTH (FT)	82.09'
BOTTOM OF SCREEN TO END CAP (FT)	0.50'
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (FT)	4.5'
TOTAL LENGTH OF CASING (FT)	87.09'
SCREEN SLOT SIZE **	0.006-inch

WELL COMPLETION REPORT

#: 097802002 COUNTY: Lake WELL #: T-002

SITE NAME: Onyx Zion Landfill BOREHOLE #: T-002

STATE PLANE COORDINATE: X 11776.79 Y 11843.35 (OR) LATITUDE: ____ ° ____ ' ____ " LONGITUDE: ____ ° ____ ' ____ "

SURVEYED BY: Carl Bergquist obo/ Howard Surveying Co. IL REGISTRATION #: 2342

DRILLING CONTRACTOR: Fox Drilling DRILLER: Willy Goodwin

CONSULTING FIRM: EIL GEOLOGIST: A. Michael Hirt

DRILLING METHOD: 3¼" HSA w/ES sampling to 10 ft; 6" tricone wash rotary to 83 ft DRILLING FLUIDS (TYPE): Water

LOGGED BY: A. Michael Hirt DATE STARTED: 11-30-00 DATE FINISHED: 11-30-00 (well casing + sample); 12-1-00 (protective cover)

REPORT FORM COMPLETED BY: A. Michael Hirt DATE: 12-1-00

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Bentonite grout

INSTALLATION METHOD: tremie pipe

SETTING TIME: 1 day

TYPE OF BENTONITE SEAL – GRANULAR, (CHIPS), PELLET, SLURRY (CIRCLE ONE)

INSTALLATION METHOD: pour

SETTING TIME: 100 minutes

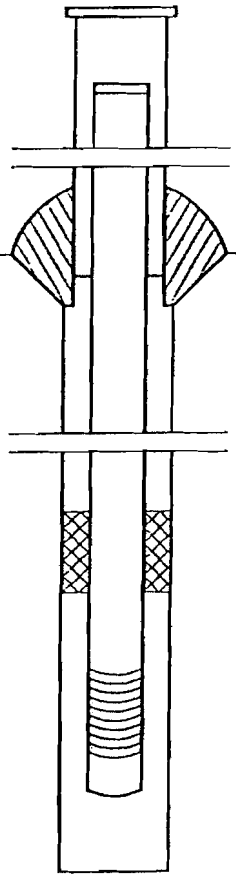
TYPE OF SAND PACK: silica sand

GRAIN SIZE: No. 7/8 (SIEVE SIZE)

INSTALLATION METHOD: pour

TYPE OF BACKFILL MATERIAL: silica sand (IF APPLICABLE)

INSTALLATION METHOD: pour



ELEVATIONS

ELEVATIONS (MSL)*	ELEVATIONS (BGS) (0.1 FT.)	
723.07	3.0	TOP OF PROTECTIVE CASING
722.57	2.6	TOP OF RISER PIPE
720.80	0.0	GROUND SURFACE
715.00	5.8	TOP OF ANNULAR SEALANT
663.29	59.28	STATIC WATER LEVEL (AFTER COMPLETION) (BTOC)
661.0	59.0	TOP OF SEAL
656.8	68.2	TOP OF SANDPACK
647.9	72.9	TOP OF SCREEN
638.0	82.0	BOTTOM OF SCREEN
637.5	82.5	BOTTOM OF WELL
637.0	83.0	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR (OTHER: anodized aluminum)	
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:	
SCREEN	SS304, SS316, PTFE, (PVC) OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (IN)	6.0
ID OF RISER PIPE (IN)	2.0
PROTECTIVE CASING LENGTH (FT)	5.0
RISER PIPE LENGTH (FT)	75.50'
BOTTOM OF SCREEN TO END CAP (FT)	0.50'
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (FT)	9.1'
TOTAL LENGTH OF CASING (FT)	85.10'
SCREEN SLOT SIZE **	0.006-inch

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **T003**

SITE NAME: Veolia ES Zion Landfill BOREHOLE #: **T003**

NORTHING 12,216.9 EASTING 12,179.1 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Douglas L. Howard, P.L.S. ILL. REGISTRATION #: 2669

DRILLING CONTR. RD-n-P Drilling, Inc. DRILLER: Jerry Copak

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Joe Miller

DRILLING METHOD: 4.25-inch I.D. HSA DRILLING FLUIDS (TYPE): —

LOGGED BY: Ryan Patton DATE STARTED: 02/04/08 DATE FINISHED: 02/19/08

REPORT FORM COMPLETED BY: Ryan Patton DATE: 02/27/08

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Bentonite Grout

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

TYPE BENTONITE SEAL- GRANULAR, PELLET, SLURRY
(CIRCLE ONE)

INSTALLATION METHOD: Gravity

SETTING TIME: > 24 hrs

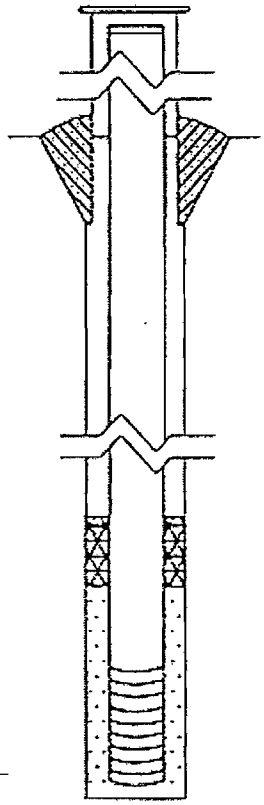
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 20/40 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA
(IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (BGS) (.01 ft)	
689.44	3.0	TOP OF PROTECTIVE CASING
688.97	2.6	TOP OF RISER PIPE
686.4	0.0	GROUND SURFACE
683.9	2.5	TOP OF ANNULAR SEALANT
661.07	27.90	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
654.9	31.5	TOP OF SEAL
651.4	35.0	TOP OF SANDPACK
648.8	37.6	TOP OF SCREEN
639.2	47.2	BOTTOM OF SCREEN
638.8	47.6	BOTTOM OF WELL
638.4	48.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	8.0
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	40.17
BOTTOM OF SCREEN TO END CAP (ft)	0.38
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	9.57
TOTAL LENGTH OF CASING (ft)	50.12
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Well Completion Report

SITE #: 0978020002 COUNTY: Lake WELL #: **T004**

SITE NAME: Veolia ES Zion Landfill BOREHOLE #: **T004**

NORTHING 11,842.0 EASTING 12,178.4 (or) LATITUDE: ° ' " LONGITUDE: ° ' "

SURVEYED BY: Douglas L. Howard, P.L.S. ILL. REGISTRATION #: 2669

DRILLING CONTR. RD-n-P Drilling, Inc. DRILLER: Jerry Copak

CONSULTING FIRM: Env. Information Logistics, LLC GEOLOGIST: Joe Miller

DRILLING METHOD: 4.25-inch I.D. HSA DRILLING FLUIDS (TYPE): ---

LOGGED BY: Ryan Patton DATE STARTED: 12/04/07 DATE FINISHED: 02/19/08

REPORT FORM COMPLETED BY: Ryan Patton DATE: 02/27/08

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Bentonite Grout

INSTALLATION METHOD: Tremie

SETTING TIME: > 24 hrs

TYPE BENTONITE SEAL- GRANULAR, **PELLET**, SLURRY
(CIRCLE ONE)

INSTALLATION METHOD: Gravity

SETTING TIME: > 24 hrs

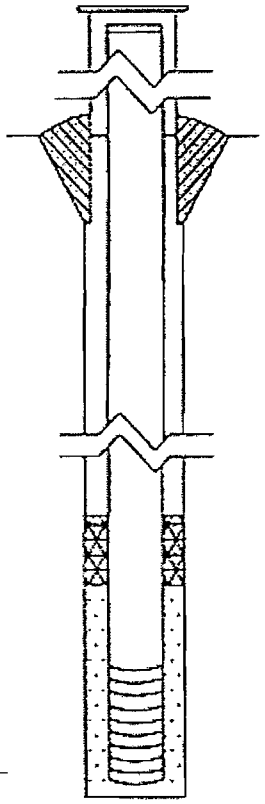
TYPE OF SAND PACK: Silica Sand

GRAIN SIZE: 20/40 (SIEVE SIZE)

INSTALLATION METHOD: Gravity Fall

TYPE OF BACKFILL MATERIAL: NA
(IF APPLICABLE)

INSTALLATION METHOD: NA



ELEVATIONS (MSL)*	DEPTHS (.01 ft) (BGS)	
692.16	3.0	TOP OF PROTECTIVE CASING
691.82	2.6	TOP OF RISER PIPE
689.2	0.0	GROUND SURFACE
686.7	2.5	TOP OF ANNULAR SEALANT
661.01	30.81	STATIC WATER LEVEL (MEASURED FROM TOC AFTER COMPLETION)
657.7	31.5	TOP OF SEAL
654.2	35.0	TOP OF SANDPACK
650.0	39.2	TOP OF SCREEN
640.4	48.8	BOTTOM OF SCREEN
639.9	49.4	BOTTOM OF WELL
638.2	51.0	BOTTOM OF BOREHOLE

*REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS (CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR **OTHER**: Aluminum
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in)	8.0
ID OF RISER PIPE (in)	2.0
PROTECTIVE CASING LENGTH (ft)	5.0
RISER PIPE LENGTH (ft)	41.85
BOTTOM OF SCREEN TO END CAP (ft)	0.52
SCREEN LENGTH (1ST SLOT TO LAST SLOT) (ft)	9.60
TOTAL LENGTH OF CASING (ft)	51.97
SCREEN SLOT SIZE **	0.01

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

G.5 – Piezometer Development Forms (Most Recent Investigation)

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 2/4/2019;2/4/2019

Well/Piez. No.: P-01-18IT Date Installed: 1/17/2019 Csg. Diameter (I.D.): 2”

Method of Development: Submersible Whale Pump/Polyethylene Tubing Total Depth (ft. TOC): 44.47

☒ Surging ❑ Bailing ☒ Pumping Development Date: 2/4/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 31.05 Depth to bottom before developing well (ft. TOC): 44.47

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	13.42	feet	0.163 gal/ft.	=	2.19 gal. *	5	= 10.95

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 34.6-41.98 (ft. BGL) Time purging begins: 1223 Weather: Cloudy 41-50 °F

Screened Interval (ft. BGL): 36.85-41.52

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
2/4/2019	1228	0.6	31.38	3	11.0	7.67	0.97	>1000	-	-	Dark gray, high turbidity, trace very fine sand and silt, no odor.
2/4/2019	1231	1.0	36.45	6	10.8	7.79	1.00	>1000	-	-	Same. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
2/4/2019	1245	-	35.40	-	-	-	-	-	-	-	Start pump.
2/4/2019	1250	0.6	42.95	9	10.7	7.62	1.08	>1000	-	-	Dark gray, high turbidity, trace very fine sand and silt, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
2/4/2019	1310	-	33.70	-	-	-	-	-	-	-	Start pump.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-01-18IT

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
2/4/2019	1314	0.75	43.03	12	10.8	7.56	1.10	>1000	-	-	Dark gray, high turbidity, trace very fine sand and silt, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
2/4/2019	1330	-	34.50	-	-	-	-	-	-	-	Start pump.
2/4/2019	1333	1.0	43.04	15	10.6	7.56	1.12	>1000	-	-	Gray, high turbidity, trace silt, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
2/4/2019	1350	-	34.50	-	-	-	-	-	-	-	Start pump.
2/4/2019	1355	0.6	42.95	18	10.1	8.05	1.12	>1000	-	-	Gray, high turbidity, trace silt, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
2/4/2019	1410	-	34.83	-	-	-	-	-	-	-	Start pump.
2/4/2019	1413	1.0	42.95	21	10.5	7.65	1.15	623	-	-	Light grayish brown, moderate turbidity, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
2/4/2019	1430	-	34.42	-	-	-	-	-	-	-	Start pump.
2/4/2019	1434	0.75	42.97	24	10.5	7.69	1.15	728	-	-	Light grayish brown, moderate turbidity, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
2/4/2019	1445	-	35.52	-	-	-	-	-	-	-	Start pump.
2/4/2019	1449	0.75	43.04	27	10.2	7.74	1.16	595	-	-	Light grayish brown, moderate turbidity, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
2/4/2019	1505	-	35.32	-	-	-	-	-	-	-	Start pump.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-01-18IT

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
2/4/2019	1508	1.0	43.12	30	10.0	7.77	1.16	359	-	-	Light grayish brown, moderate turbidity, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
2/4/2019	1525	-	34.15	-	-	-	-	-	-	-	Start pump.
2/4/2019	1528	1.0	43.04	33	10.0	7.89	1.17	239	-	-	Very light grayish brown, low turbidity, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
2/4/2019	1543	-	34.90	-	-	-	-	-	-	-	Start pump.
2/4/2019	1548	1.0	43.10	36	9.8	7.60	1.17	182	-	-	Very light grayish brown, low turbidity, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
2/4/2019	1603	-	34.60	-	-	-	-	-	-	-	Start pump.
2/4/2019	1607	0.75	42.85	39	9.5	7.68	1.16	165	-	-	Very light grayish brown, low turbidity, no odor. Water stopped flowing after 3 gal. Stopped pumping. Removed pump from piezometer.
2/4/2019	1620		35.30	Total Purged = 39 Gal.							Final DTB(ft. below TOC) = 44.47

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 2/26/2019;2/26/2019

Well/Piez. No.: P-01-18SD Date Installed: 1/16/2019 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 94.53

☒ Surging ❑ Bailing ☒ Pumping Development Date: 2/26/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 67.68 Depth to bottom before developing well (ft. TOC): 94.34

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	26.85	feet	0.163 gal/ft.	=	4.4	gal. *	5	=	22

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 79-91.93 (ft. BGL) Time purging begins: 0745 Weather: Cloudy/Light Snow 13-23 °F

Screened Interval (ft. BGL): 81.78-91.44

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
2/26/2019	0820	0.14	74.13	5	1.8	7.22	0.437	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, slight sulfur/organic odor.
2/26/2019	0840	0.25	77.65	10	5.8	7.30	0.317	>1000	-	-	Same.
2/26/2019	0900	0.25	76.35	15	4.6	7.45	0.285	>1000	-	-	Same.
2/26/2019	0910	0.5	76.43	20	5.2	7.70	0.279	>1000	-	-	Same.
2/26/2019	0920	0.5	76.08	25	6.3	7.77	0.279	>1000	-	-	Grayish brown, high turbidity, trace very fine sand and silt, slight sulfur/organic odor.
2/26/2019	0930	0.5	76.58	30	5.4	7.40	0.281	>1000	-	-	Same.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-01-18SD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
2/26/2019	0940	0.5	76.85	35	5.4	8.04	0.270	>1000	-	-	Grayish brown, high turbidity, trace very fine sand and silt, slight sulfur/organic odor.
2/26/2019	0950	0.5	76.88	40	6.4	6.91	0.271	>1000	-	-	Same.
2/26/2019	1000	0.5	76.25	45	5.6	7.12	0.266	>1000	-	-	Same.
2/26/2019	1010	0.5	76.70	50	5.7	7.16	0.267	>1000	-	-	Same.
2/26/2019	1020	0.5	76.45	55	7.1	6.99	0.266	>1000	-	-	Same.
2/26/2019	1030	0.5	76.73	60	7.2	7.29	0.265	>1000	-	-	Same.
2/26/2019	1040	0.5	76.43	65	7.8	8.09	0.260	>1000	-	-	Same.
2/26/2019	1050	0.5	76.28	70	7.7	6.41	0.260	>1000	-	-	Same.
2/26/2019	1100	0.5	75.50	75	7.4	7.24	0.265	>1000	-	-	Same.
2/26/2019	1110	0.5	75.25	80	7.1	6.45	0.256	>1000	-	-	Same.
2/26/2019	1120	0.5	75.88	85	7.4	7.03	0.258	>1000	-	-	Same.
2/26/2019	1130	0.5	75.41	90	6.6	6.75	0.258	918	-	-	Light grayish brown, high turbidity, trace silt, no odor.
2/26/2019	1140	0.5	76.18	95	6.3	6.83	0.257	811	-	-	Same.
2/26/2019	1150	0.5	76.53	100	7.3	6.95	0.254	>1000	-	-	Same. Stopped pumping, removed pump from piezometer.
2/26/2019	1205		69.18(and rising)	Total Purged = 100 Gal.							Final DTB(ft. below TOC) = 94.53

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 3/1/2019;3/1/2019

Well/Piez. No.: P-03-18SD Date Installed: 12/26/2018 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 106.79

☒ Surging ❑ Bailing ☒ Pumping Development Date: 3/1/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 82.37 Depth to bottom before developing well (ft. TOC): 106.25

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	24.42	feet	0.163 gal/ft.	=	4	gal. *	5	=	20

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 90-104.36 (ft. BGL) Time purging begins: 0940 Weather: Cloudy 23-31 °F

Screened Interval (ft. BGL): 94.22-103.88

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
3/1/2019	1015	0.14	83.82	5	8.0	6.36	0.384	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/1/2019	1030	0.33	83.85	10	7.9	6.22	0.360	>1000	-	-	Same.
3/1/2019	1045	0.33	83.28	15	7.6	6.21	0.332	>1000	-	-	Same.
3/1/2019	1055	0.5	83.74	20	7.8	6.17	0.338	>1000	-	-	Same.
3/1/2019	1105	0.5	83.87	25	8.3	6.02	0.327	>1000	-	-	Same.
3/1/2019	1115	0.5	84.14	30	8.3	5.91	0.323	>1000	-	-	Same.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-03-18SD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
3/1/2019	1125	0.5	83.28	35	7.4	5.87	0.324	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/1/2019	1140	0.33	83.06	40	8.3	5.84	0.322	>1000	-	-	Same.
3/1/2019	1150	0.5	84.12	45	7.8	5.68	0.324	891	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/1/2019	1200	0.5	83.76	50	8.2	5.80	0.320	647	-	-	Light grayish brown, moderate turbidity, trace silt, no odor.
3/1/2019	1210	0.5	83.52	55	7.8	5.77	0.320	484	-	-	Same.
3/1/2019	1220	0.5	83.22	60	8.4	6.05	0.315	407	-	-	Very light grayish brown, low turbidity, no odor.
3/1/2019	1230	0.5	83.69	65	8.5	6.35	0.314	330	-	-	Very light grayish brown tint, low turbidity, no odor.
3/1/2019	1240	0.5	83.52	70	8.6	6.45	0.313	291	-	-	Same. Stopped pumping, removed pump from piezometer.
3/1/2019	1247		82.37	Total Purged = 70 Gal.							Final DTB(ft. below TOC) = 106.79

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 2/26/2019;2/26/2019

Well/Piez. No.: P-04-18LSD Date Installed: 12/13/2018 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 114.6

☒ Surging ❑ Bailing ☒ Pumping Development Date: 2/26/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 70.81 Depth to bottom before developing well (ft. TOC): 114.45

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	43.79	feet	0.163 gal/ft.	=	7.14 gal. *	5	= 35.7

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 104.59-112.07 (ft. BGL) Time purging begins: 1230 Weather: Cloudy/Light Snow 17-23 °F

Screened Interval (ft. BGL): 106.91-111.59

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
2/26/2019	1255	0.2	78.45	5	7.4	7.35	0.429	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/26/2019	1305	0.5	79.33	10	7.7	7.11	0.404	>1000	-	-	Same.
2/26/2019	1320	0.33	77.88	15	7.8	7.49	0.408	>1000	-	-	Same.
2/26/2019	1335	0.33	77.80	20	7.9	7.79	0.403	>1000	-	-	Same.
2/26/2019	1350	0.33	77.27	25	8.6	8.68	0.395	>1000	-	-	Same.
2/26/2019	1400	0.5	80.92	30	8.8	8.74	0.407	>1000	-	-	Same.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-04-18LSD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
2/26/2019	1410	0.5	79.78	35	8.3	9.20	0.400	898	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/26/2019	1420	0.5	80.05	40	8.3	9.00	0.395	>1000	-	-	Same.
2/26/2019	1430	0.5	80.61	45	8.5	9.34	0.398	612	-	-	Light grayish brown, moderate turbidity, no odor.
2/26/2019	1440	0.5	80.42	50	8.6	8.73	0.396	457	-	-	Same.
2/26/2019	1450	0.5	80.92	55	8.4	8.28	0.397	372	-	-	Same.
2/26/2019	1500	0.5	80.38	60	7.8	8.75	0.399	>1000	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/26/2019	1510	0.5	80.57	65	8.1	9.06	0.397	853	-	-	Light grayish brown, high turbidity, no odor.
2/26/2019	1520	0.5	79.55	70	8.2	9.28	0.395	455	-	-	Same. Stopped pumping, removed pump from piezometer.
2/26/2019	1530		77.73	Total Purged = 70 Gal.							Final DTB(ft. below TOC) = 114.6

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 2/27/2019;2/27/2019

Well/Piez. No.: P-04-18USD Date Installed: 12/14/2018 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 96.77

☒ Surging ❑ Bailing ☒ Pumping Development Date: 2/27/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 67.39 Depth to bottom before developing well (ft. TOC): 96.61

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	29.38	feet	0.163 gal/ft.	=	4.8 gal. *	5	= 24

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 81.52-94.12 (ft. BGL) Time purging begins: 0800 Weather: Cloudy 25-27 °F

Screened Interval (ft. BGL): 83.97-93.59

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
2/27/2019	0820	0.25	71.61	5	8.0	9.69	0.532	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/27/2019	0835	0.33	70.88	10	7.2	10.24	0.482	>1000	-	-	Same.
2/27/2019	0850	0.33	72.59	15	8.5	9.90	0.410	>1000	-	-	Same.
2/27/2019	0905	0.33	72.65	20	8.4	9.29	0.418	>1000	-	-	Same.
2/27/2019	0915	0.5	71.33	25	8.6	9.45	0.411	>1000	-	-	Same.
2/27/2019	0925	0.5	73.70	30	8.5	9.50	0.410	>1000	-	-	Same.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-04-18USD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
2/27/2019	0940	0.33	72.84	35	9.9	9.89	0.407	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/27/2019	0955	0.33	68.85	40	5.6	9.39	0.403	913	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/27/2019	1015	0.25	69.30	45	8.1	8.71	0.411	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/27/2019	1030	0.33	72.68	50	8.7	8.71	0.416	>1000	-	-	Same.
2/27/2019	1045	0.33	72.40	55	9.1	9.24	0.415	>1000	-	-	Same.
2/27/2019	1100	0.33	72.85	60	7.6	9.27	0.408	>1000	-	-	Same.
2/27/2019	1115	0.33	72.82	65	7.6	8.92	0.397	559	-	-	Light grayish brown, moderate turbidity, no odor.
2/27/2019	1130	0.33	73.22	70	7.9	9.29	0.197	319	-	-	Very light grayish brown, low turbidity, no odor.
2/27/2019	1155	0.33	68.83	75	7.8	9.10	0.397	223	-	-	Very light grayish brown tint, very low turbidity, no odor. Stopped pumping, removed pump from piezometer.
2/27/2019	1235		69.74	Total Purged = 75 Gal.							Final DTB(ft. below TOC) = 96.77

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 2/27/2019;2/27/2019

Well/Piez. No.: P-05-18SD Date Installed: 11/29/2018 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 122.59

☒ Surging ❑ Bailing ☒ Pumping Development Date: 2/27/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 85.23 Depth to bottom before developing well (ft. TOC): 121.6

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	37.36	feet	0.163 gal/ft.	=	6	gal. *	5	=	30

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 112.25-120.03 (ft. BGL) Time purging begins: 1330 Weather: Cloudy 25-27 °F

Screened Interval (ft. BGL): 114.86-119.55

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
2/27/2019	1350	0.25	89.36	5	8.2	9.83	0.342	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/27/2019	1405	0.33	90.13	10	9.1	8.87	0.324	>1000	-	-	Same.
2/27/2019	1415	0.5	90.25	15	9.0	8.45	0.300	>1000	-	-	Same.
2/27/2019	1420	0.5	90.53	20	8.6	8.52	0.295	>1000	-	-	Same.
2/27/2019	1430	0.5	90.30	25	8.7	8.84	0.284	>1000	-	-	Same.
2/27/2019	1440	0.5	90.32	30	8.3	8.75	0.280	>1000	-	-	Same.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-05-18SD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
2/27/2019	1450	0.5	89.25	35	8.5	8.66	0.281	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/27/2019	1500	0.5	89.94	40	8.8	8.59	0.279	>1000	-	-	Same.
2/27/2019	1510	0.5	90.83	45	8.5	8.91	0.277	>1000	-	-	Same.
2/27/2019	1520	0.5	89.42	50	7.3	8.59	0.276	961	-	-	Grayish brown, high turbidity, trace silt, no odor.
2/27/2019	1530	0.5	88.34	55	7.6	8.64	0.274	873	-	-	Light grayish brown, moderate turbidity, no odor.
2/27/2019	1540	0.5	88.32	60	9.0	8.71	0.275	720	-	-	Very light grayish brown, moderate turbidity, no odor.
2/27/2019	1550	0.5	88.85	65	9.4	8.73	0.277	748	-	-	Same.
2/27/2019	1600	0.5	88.93	70	8.5	9.19	0.273	720	-	-	Same. Stopped pumping, removed pump from piezometer.
2/27/2019	1605		87.70(and rising)	Total Purged = 70 Gal.							Final DTB(ft. below TOC) = 122.59

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 2/28/2019;2/28/2019

Well/Piez. No.: P-06-18LSD Date Installed: 12/19/2018 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 134.6

☒ Surging ❑ Bailing ☒ Pumping Development Date: 2/28/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 88.28 Depth to bottom before developing well (ft. TOC): 134.3

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	46.32	feet	0.163 gal/ft.	=	7.55 gal. *	5	= 37.75

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 119.55-132.14 (ft. BGL) Time purging begins: 0815 Weather: Cloudy/Partly Sunny 10-25 °F

Screened Interval (ft. BGL): 122-131.62

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
2/28/2019	0840	0.25	90.23	5	6.7	7.52	0.463	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/28/2019	0850	0.5	89.92	10	6.5	9.10	0.414	>1000	-	-	Same.
2/28/2019	0905	0.33	89.76	15	7.1	8.99	0.408	>1000	-	-	Same.
2/28/2019	0920	0.33	89.18	20	7.8	8.92	0.409	>1000	-	-	Same.
2/28/2019	0935	0.33	89.42	25	8.4	9.18	0.405	>1000	-	-	Same.
2/28/2019	0950	0.33	89.28	30	8.0	9.24	0.394	>1000	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$ø_s$ = porosity of the sand pack
r_c = radius of the well casing and screen in feet
L_c = length of water column inside the casing and screen in feet
r_w = radius of the well bore in feet
L_s = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-06-18LSD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
2/28/2019	1005	0.33	89.08	35	7.8	9.28	0.399	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/28/2019	1020	0.33	88.78	40	7.4	9.41	0.395	>1000	-	-	Same.
2/28/2019	1035	0.33	88.50	45	8.5	9.43	0.403	536	-	-	Light grayish brown, moderate turbidity, trace silt, no odor.
2/28/2019	1050	0.33	88.77	50	7.9	9.29	0.400	355	-	-	Very light grayish brown tint, low turbidity, no odor.
2/28/2019	1105	0.33	89.05	55	8.1	9.27	0.395	289	-	-	Same.
2/28/2019	1120	0.33	88.84	60	7.7	9.11	0.398	267	-	-	Same.
2/28/2019	1135	0.33	88.90	65	7.8	9.16	0.398	236	-	-	Same. Stopped pumping, removed pump from piezometer.
2/28/2019	1140		88.40	Total Purged = 65 Gal.							Final DTB(ft. below TOC) = 134.6

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 2/28/2019;2/28/2019

Well/Piez. No.: P-06-18USD Date Installed: 12/19/2018 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 112.6

☒ Surging ❑ Bailing ☒ Pumping Development Date: 2/28/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 82.33 Depth to bottom before developing well (ft. TOC): 112.4

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	30.27	feet	0.163 gal/ft.	=	4.93(~5)	gal. *	5	=	25

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 97.52-109.74 (ft. BGL) Time purging begins: 1230 Weather: Cloudy/Partly Sunny 17-25 °F

Screened Interval (ft. BGL): 99.59-109.21

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
2/28/2019	1300	0.16	86.20	5	8.4	8.2	0.458	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/28/2019	1310	0.5	85.82	10	6.9	9.25	0.412	>1000	-	-	Same.
2/28/2019	1330	0.25	84.10	15	7.2	9.52	0.408	>1000	-	-	Same.
2/28/2019	1340	0.5	84.92	20	7.5	9.69	0.937	>1000	-	-	Same.
2/28/2019	1355	0.33	83.23	25	8.0	9.92	0.395	>1000	-	-	Same.
2/28/2019	1410	0.33	82.85	30	8.5	9.66	0.386	>1000	-	-	Same.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-06-18USD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
2/28/2019	1430	0.25	83.10	35	9.1	9.44	0.384	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/28/2019	1445	0.33	82.87	40	8.5	9.80	0.374	949	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/28/2019	1500	0.33	82.71	45	8.0	8.59	0.375	473	-	-	Very light grayish brown, low turbidity, trace silt, no odor.
2/28/2019	1515	0.33	83.12	50	8.4	9.35	0.376	321	-	-	Very light grayish brown tint, low turbidity, no odor.
2/28/2019	1530	0.33	82.63	55	8.8	9.79	0.376	262	-	-	Same.
2/28/2019	1545	0.33	82.73	60	7.4	9.12	0.377	226	-	-	Same. Stopped pumping, removed pump from piezometer.
2/28/2019	1550		82.63	Total Purged = 60 Gal.							Final DTB(ft. below TOC) = 112.6

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 3/4/2019;3/4/2019

Well/Piez. No.: P-07-18LSD Date Installed: 12/11/2018 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 118.55

☒ Surging ❑ Bailing ☒ Pumping Development Date: 3/4/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 71.30 Depth to bottom before developing well (ft. TOC): 118.31

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	47.25	feet	0.163 gal/ft.	=	7.7 gal. *	5	= 38.5

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 103.4-116.13 (ft. BGL) Time purging begins: 0810 Weather: Sunny -1-9 °F

Screened Interval (ft. BGL): 105.99-115.52

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
3/4/2019	0825	0.33	77.38	5	3.2	6.44	0.441	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/4/2019	0835	0.5	76.43	10	2.5	7.04	0.411	>1000	-	-	Same.
3/4/2019	0845	0.5	73.78	15	2.6	7.03	0.412	>1000	-	-	Same. (Water freezing in tubing)
3/4/2019	0925	0.125	73.91	20	2.9	7.49	0.258	>1000	-	-	Same.
3/4/2019	0940	0.33	75.19	25	6.3	6.76	0.370	>1000	-	-	Same.
3/4/2019	0950	0.5	75.14	30	6.5	6.79	0.391	>1000	-	-	Same.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-07-18LSD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
3/4/2019	1005	0.33	74.58	35	7.0	7.01	0.411	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/4/2019	1015	0.5	75.21	40	6.9	6.88	0.400	>1000	-	-	Same.
3/4/2019	1030	0.33	75.39	45	7.3	7.17	0.395	>1000	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/4/2019	1040	0.5	74.43	50	5.6	6.61	0.407	800	-	-	Same.
3/4/2019	1050	0.5	76.31	55	7.2	6.75	0.401	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/4/2019	1100	0.5	76.37	60	7.4	6.97	0.404	>1000	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/4/2019	1110	0.5	76.45	65	7.8	7.19	0.403	925	-	-	Same.
3/4/2019	1120	0.5	76.78	70	7.9	7.46	0.400	490	-	-	Light grayish brown, moderate turbidity, trace silt, no odor.
3/4/2019	1130	0.5	77.10	75	7.0	7.67	0.400	>1000	-	-	Grayish brown, high turbidity, trace silt, no odor.
3/4/2019	1140	0.5	77.27	80	7.0	7.92	0.397	432	-	-	Very light grayish brown, low turbidity, no odor.
3/4/2019	1150	0.5	76.73	85	7.8	7.99	0.395	321	-	-	Very light grayish brown tint, low turbidity, no odor.
3/4/2019	1200	0.5	76.64	90	7.5	8.13	0.400	240	-	-	Same.
3/4/2019	1210	0.5	76.89	95	7.8	8.15	0.400	209	-	-	Same. Stopped pumping, removed pump from piezometer.
3/4/2019	1220		74.35	Total Purged = 95 Gal.							Final DTB(ft. below TOC) = 118.55

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 3/4/2019;3/4/2019

Well/Piez. No.: P-07-18USD Date Installed: 12/11/2018 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 90.5

☒ Surging ❑ Bailing ☒ Pumping Development Date: 3/4/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 68.65 Depth to bottom before developing well (ft. TOC): 90.47

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	21.85	feet	0.163 gal/ft.	=	3.56 gal. *	5	= 17.8

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 75.6-87.94 (ft. BGL) Time purging begins: 1220 Weather: Sunny 7-11 °F

Screened Interval (ft. BGL): 77.8-87.34

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
3/4/2019	1240	0.25	78.96	5	7.4	8.48	0.635	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/4/2019	1300	0.25	83.05	10	8.1	8.27	0.626	>1000	-	-	Same.
3/4/2019	1310	0.5	85.06	15	5.4	8.04	0.610	>1000	-	-	Same.
3/4/2019	1320	0.5	86.03	20	7.1	8.24	0.681	>1000	-	-	Same.
3/4/2019	1340	0.25	86.07	25	6.1	7.85	0.720	730	-	-	Grayish brown, high turbidity, trace silt, no odor.
3/4/2019	1355	0.33	86.44	30	6.7	7.86	0.723	340	-	-	Very light grayish brown tint, low turbidity, no odor.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-07-18USD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
3/4/2019	1410	0.5	86.71	35	6.9	7.65	0.733	166	-	-	Very light grayish brown tint, low turbidity, no odor.
3/4/2019	1420	0.5	86.30	40	6.9	7.64	0.737	105	-	-	Same. Stopped pumping, removed pump from piezometer.
3/4/2019	1435		83.29	Total Purged = 40 Gal.							Final DTB(ft. below TOC) = 90.5

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 3/8/2019;3/8/2019

Well/Piez. No.: P-08-18D Date Installed: 11/19/2018 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Submersible Whale Pump/ Polyethylene Tubing Total Depth (ft. TOC): 208.54

☒ Surging ❑ Bailing ☒ Pumping Development Date: 3/7/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 83.58 Depth to bottom before developing well (ft. TOC): 207.42

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	124.96	feet	0.163 gal/ft.	=	20.4	gal. *	5	=	102

$V = (B*r_C^2*L_C*7.48) + (B*(r_W-r_C)^2*L_S*ø_S*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 193.6-206.08 (ft. BGL) Time purging begins: 0845 Weather: Cloudy 21-32 °F

Screened Interval (ft. BGL): 195.94-205.49

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
3/8/2019	0935	0.1	84.33	5	5.3	8.59	0.545	>1000	-	-	Pneumatic Air Lift Pump (Pump at bottom of piezometer): Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/8/2019	1005	0.16	84.35	10	5.5	8.57	0.541	>1000	-	-	Same.
3/8/2019	1030	0.2	84.37	15	5.6	8.55	0.534	>1000	-	-	Same.
3/8/2019	1100	0.16	84.34	20	5.5	8.43	0.559	>1000	-	-	Same.
3/8/2019	1130	0.16	84.36	25	5.7	8.56	0.556	>1000	-	-	Same.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-08-18D

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
3/8/2019	1155	0.2	84.38	30	5.5	8.44	0.540	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/8/2019	1155-1245	-	-	-	-	-	-	-	-	-	Pneumatic Air Lift pump not pumping. Pulled pump/cleaned out sediment from pump/reinserted pump back into piezometer – several times. Removed sediment from bottom of piezometer. Pneumatic Air Lift Pump still not operating properly. Submersible Whale Pump: insert pump into piezometer (`90 BGL-limited depth based on electrical cord); Continue pumping with Whale Pump – Restart at 1245.
3/8/2019	1255	0.5	83.93	35	12.0	8.28	2.32	812	-	-	Grayish brown, high turbidity, trace silt, no odor.
3/8/2019	1305	0.5	Top of pump @89.90' BTOC; Groundwater below.	40	10.7	8.54	2.19	>1000	-	-	Same.
3/8/2019	1315	0.5	Same.	45	10.2	8.43	0.573	>1000	-	-	Dark grayish brown, high turbidity, trace silt, no odor.
3/8/2019	1325	0.5	Same.	50	10.1	8.30	0.545	>1000	-	-	Same.
3/8/2019	1335	0.5	89.85	55	9.9	8.24	0.572	>1000	-	-	Same.
3/8/2019	1345	0.5	Top of pump @89.90' BTOC; Groundwater below.	60	9.3	8.22	0.587	787	-	-	Grayish brown, moderate turbidity, trace silt, no odor.
3/8/2019	1355	0.5	Same.	65	9.1	8.19	0.589	338	-	-	Very light grayish brown, low turbidity, trace silt, no odor.
3/8/2019	1405	0.5	Same.	70	9.3	8.23	0.589	154	-	-	Very light grayish brown tint, low turbidity, no odor.
3/8/2019	1415	0.5	88.72	75	9.1	8.25	0.590	134	-	-	Same.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-08-18D

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
3/8/2019	1425	0.5	88.65	80	9.4	8.22	0.593	74.6	-	-	Clear.
3/8/2019	1435	0.5	88.78	85	10.0	8.21	0.586	76.8	-	-	Same.
3/8/2019	1445	0.5	88.73	90	10.0	8.23	0.597	61.6	-	-	Same.
3/8/2019	1455	0.5	88.74	95	10.2	8.25	0.596	68.5	-	-	Same.
3/8/2019	1505	0.5	89.45	100	10.5	8.26	0.591	55.4	-	-	Same. Stopped pumping. Removed pump from piezometer.
3/8/2019	1527		83.94	Total Purged = 100 Gal.							Final DTB(ft. below TOC) = 208.54

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 1/28/2019;1/28/2019

Well/Piez. No.: P-08-18IT Date Installed: 11/21/2018 Csg. Diameter (I.D.): 2”

Method of Development: Submersible Whale Pump/Polyethylene Tubing Total Depth (ft. TOC): 60.56

☒ Surging ❑ Bailing ☒ Pumping Development Date: 1/28/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 42.59 Depth to bottom before developing well (ft. TOC): 60.55

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	17.97	feet	0.163 gal/ft.	=	2.9	gal. *	5	=	14.5

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 50.60-58.29 (ft. BGL) Time purging begins: 0842 Weather: Cloudy/Snow 24-31 °F

Screened Interval (ft. BGL): 53.13-57.81

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
1/28/2019	0850	0.5	46.75	4	7.8	7.35	1.09	>1000	-	-	Dark gray, high turbidity, trace very fine sand and silt, no odor.
1/28/2019	0900	0.4	58.60	8	4.9	8.14	0.767	>1000	-	-	Same. Water stopped flowing after 4 gal. Stopped pumping, let piezometer recharge.
1/28/2019	0924	-	43.33	-	-	-	-	-	-	-	Start pump.
1/28/2019	0930	0.67	58.80	12	8.7	7.73	0.73	>1000	-	-	Gray, high turbidity, trace very fine sand and silt, no odor. Water stopped flowing after 4 gal. Stopped pumping, let piezometer recharge.
1/28/2019	0945	-	43.90	-	-	-	-	-	-	-	Start pump.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-08-18IT

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
1/28/2019	0950	0.6	58.10	15	8.2	7.79	0.732	>1000	-	-	Gray, high turbidity, trace very fine sand and silt, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
1/28/2019	1000	-	46.70	-	-	-	-	-	-	-	Start pump.
1/28/2019	1004	0.75	58.17	18	9.6	7.76	0.75	>1000	-	-	Gray, high turbidity, trace silt, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
1/28/2019	1015	-	45.95	-	-	-	-	-	-	-	Start pump.
1/28/2019	1018	1.0	58.35	21	8.3	7.75	0.701	>1000	-	-	Gray, high turbidity, trace silt, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
1/28/2019	1030	-	45.70	-	-	-	-	-	-	-	Start pump.
1/28/2019	1033	1.0	58.30	24	7.0	7.77	0.754	847	-	-	Gray, high turbidity, trace silt, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
1/28/2019	1040	-	46.20	-	-	-	-	-	-	-	Start pump.
1/28/2019	1045	0.6	58.45	27	8.1	7.67	0.74	>1000	-	-	Gray, high turbidity, trace silt, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
1/28/2019	1050	-	46.30	-	-	-	-	-	-	-	Start pump.
1/28/2019	1055	0.6	57.60	30	7.7	7.71	0.746	>1000	-	-	Gray, high turbidity, trace silt, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
1/28/2019	1114	-	43.30	-	-	-	-	-	-	-	Start pump.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-08-18IT

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
1/28/2019	1118	0.75	57.90	33	7.8	7.71	0.727	>1000	-	-	Gray, high turbidity, trace silt, no odor. Water stopped flowing after 3 gal. Stopped pumping, let piezometer recharge.
1/28/2019	1126	-	45.84	-	-	-	-	-	-	-	Start pump.
1/28/2019	1130	0.75	57.70	36	8.2	7.62	0.716	>1000	-	-	Gray, high turbidity, trace silt, no odor. Water stopped flowing after 3 gal. Stopped pumping. Removed pump from piezometer.
1/28/2019	1145		44.57	Total Purged = 36 Gal.							Final DTB(ft. below TOC) = 60.55

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 3/7/2019;3/7/2019

Well/Piez. No.: P-08-18SD Date Installed: 11/20/2018 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 124.46

☒ Surging ❑ Bailing ☒ Pumping Development Date: 3/7/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 85.67 Depth to bottom before developing well (ft. TOC): 124.2

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	38.79	feet	0.163 gal/ft.	=	6.32 gal. *	5	= 31.6

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 114.5-121.92 (ft. BGL) Time purging begins: 0840 Weather: Partly Cloudy/Cloudy 14-24 °F

Screened Interval (ft. BGL): 116.76-121.44

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
3/7/2019	0915	0.14	89.17	5	6.7	7.24	0.323	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/7/2019	0940	0.2	87.83	10	7.4	8.94	0.300	>1000	-	-	Same.
3/7/2019	1005	0.2	87.91	15	9.0	8.57	0.300	>1000	-	-	Same.
3/7/2019	1025	0.25	87.57	20	10.5	9.25	0.299	>1000	-	-	Same.
3/7/2019	1040	0.33	87.73	25	9.3	8.08	0.292	>1000	-	-	Same.
3/7/2019	1055	0.33	87.37	30	8.6	8.36	0.299	>1000	-	-	Same.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-08-18SD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
3/7/2019	1055-1220	-	-	-	-	-	-	-	-	-	Not pumping. Pull pump. Cleaned out inside of pump, check ball getting stuck on shards of PVC. OK. Put pump back into piezometer. Restart pump at 1220.
3/7/2019	1240	0.5	86.85	40	8.9	8.08	0.326	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/7/2019	1250	0.5	86.99	45	8.0	7.89	0.311	>1000	-	-	Same.
3/7/2019	1305	0.33	87.08	50	8.6	7.76	0.305	>1000	-	-	Same.
3/7/2019	1315	0.5	87.89	55	8.4	7.53	0.301	>1000	-	-	Grayish brown, high turbidity, trace silt, no odor.
3/7/2019	1325	0.5	87.05	60	7.8	7.46	0.299	>1000	-	-	Same.
3/7/2019	1335	0.5	86.88	65	8.2	7.47	0.300	>1000	-	-	Same.
3/7/2019	1345	0.5	87.12	70	7.3	7.47	0.295	940	-	-	Same.
3/7/2019	1355	0.5	87.76	75	7.2	7.48	0.304	918	-	-	Same.
3/7/2019	1405	0.5	87.77	80	7.5	7.55	0.308	810	-	-	Same.
3/7/2019	1415	0.5	87.25	85	7.8	7.47	0.298	739	-	-	Light grayish brown, moderate turbidity, trace silt, no odor.
3/7/2019	1425	0.5	87.42	90	7.3	7.50	0.302	710	-	-	Same.
3/7/2019	1435	0.5	86.93	95	7.6	7.52	0.300	755	-	-	Same.
3/7/2019	1445	0.5	87.34	100	7.5	7.46	0.297	732	-	-	Same.
3/7/2019	1455	0.5	86.92	105	7.8	7.42	0.298	718	-	-	Same.
3/7/2019	1505	0.5	86.95	110	7.5	7.39	0.295	767	-	-	Same.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-08-18SD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
3/7/2019	1515	0.5	87.28	115	7.6	7.43	0.294	687	-	-	Light grayish brown, moderate turbidity, trace silt, no odor.
3/7/2019	1525	0.5	86.82	120	7.0	7.41	0.295	725	-	-	Light grayish brown, moderate turbidity, trace silt, no odor. Stopped pumping. Removed pump from piezometer.
3/7/2019	1545		85.97	Total Purged = 120 Gal.							Final DTB(ft. below TOC) = 124.46

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 3/6/2019;3/6/2019

Well/Piez. No.: P-09-18SD Date Installed: 1/7/2019 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 106.75

☒ Surging ❑ Bailing ☒ Pumping Development Date: 3/6/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 75.65 Depth to bottom before developing well (ft. TOC): 106.64

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	31.1	feet	0.163 gal/ft.	=	5	gal. *	5	=	25

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 91-104.22 (ft. BGL) Time purging begins: 0730 Weather: Sunny 9-15 °F

Screened Interval (ft. BGL): 94.07-103.72

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
3/6/2019	0805	0.14	97.14	5	7.6	6.81	0.517	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/6/2019	0835	0.16	100.53	10	8.1	7.10	0.485	>1000	-	-	Same.
3/6/2019	0850	0.33	Top of pump @103.40’ BTOC; Groundwater below.	13	9.3	7.43	0.463	>1000	-	-	Same. Pumping very slowly, groundwater level going down, small amount of groundwater in piezometer.
3/6/2019	0920	0.16	Same.	17	8.6	7.37	0.414	>1000	-	-	Same.
3/6/2019	0945	0.2	Same.	18	10.2	7.83	0.377	>1000	-	-	Same.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-09-18SD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
3/6/2019	1005	0.25	Top of pump @103.40' BTOC; Groundwater below.	18.5	10.6	7.72	0.371	>1000	-	-	Same. Pumping very slowly, groundwater level going down, small amount of groundwater in piezometer. Stopped pumping. Removed pump from piezometer.
3/6/2019	1010		105.82	Total Purged = 18.5 Gal.							Final DTB(ft. below TOC) = 106.75

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 3/1/2019;3/1/2019

Well/Piez. No.: P-10-18SD Date Installed: 1/11/2019 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 102.52

☒ Surging ❑ Bailing ☒ Pumping Development Date: 3/1/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 71.18 Depth to bottom before developing well (ft. TOC): 102.08

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	31.34	feet	0.163 gal/ft.	=	5.11 gal. *	5	= 25.55

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 87-99.63 (ft. BGL) Time purging begins: 1430 Weather: Cloudy/Partly Sunny 25-31 °F

Screened Interval (ft. BGL): 89.49-99.14

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
3/1/2019	1455	0.2	72.11	5	9.5	6.51	0.645	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/1/2019	1510	0.33	72.28	10	9.2	6.27	0.651	>1000	-	-	Same.
3/1/2019	1525	0.33	72.53	15	9.3	6.27	0.664	>1000	-	-	Same.
3/1/2019	1535	0.5	72.92	20	8.8	6.25	0.662	>1000	-	-	Same.
3/1/2019	1545	0.5	72.33	25	8.8	6.13	0.662	>1000	-	-	Same.
3/1/2019	1555	0.5	72.28	30	8.1	6.09	0.669	>1000	-	-	Same.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:-

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-10-18SD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
3/1/2019	1605	0.5	72.73	35	7.8	6.11	0.665	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/1/2019	1615	0.5	72.81	40	8.4	6.11	0.665	703	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/1/2019	1625	0.5	72.85	45	8.6	6.33	0.653	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/1/2019	1635	0.5	72.14	50	7.9	6.01	0.664	>1000	-	-	Same.
3/1/2019	1645	0.5	72.15	55	8.4	6.10	0.665	560	-	-	Light grayish brown, moderate turbidity, trace silt, no odor.
3/1/2019	1655	0.5	72.03	60	8.9	6.10	0.662	338	-	-	Very light grayish brown tint, low turbidity, no odor.
3/1/2019	1705	0.5	71.64	65	8.6	6.16	0.665	299	-	-	Same. Stopped pumping. Removed pump from piezometer.
3/1/2019	1712			Total Purged = 65 Gal.							Final DTB(ft. below TOC) = 102.52

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 3/6/2019;3/6/2019

Well/Piez. No.: P-11-18SD Date Installed: 12/6/2018 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 122.24

☒ Surging ❑ Bailing ☒ Pumping Development Date: 3/6/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 76.42 Depth to bottom before developing well (ft. TOC): 120.7

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	45.82	feet	0.163 gal/ft.	=	7.47 gal. *	5	= 37.35

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 107.5-119.71 (ft. BGL) Time purging begins: 1300 Weather: Sunny/Partly Cloudy 21-27 °F

Screened Interval (ft. BGL): 109.58-119.71

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
3/6/2019	1335	0.14	83.12	5	8.9	7.83	0.552	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/6/2019	1405	0.17	84.33	10	9.4	7.54	0.482	>1000	-	-	Same.
3/6/2019	1425	0.25	87.84	15	9.6	7.42	0.455	>1000	-	-	Same.
3/6/2019	1440	0.33	88.95	20	9.2	7.40	0.464	>1000	-	-	Same.
3/6/2019	1450	0.5	88.35	25	8.8	7.49	0.461	>1000	-	-	Same.
3/6/2019	1500	0.5	88.75	30	8.8	7.07	0.451	>1000	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:-

B = 3.14
$Ø_s$ = porosity of the sand pack
r_c = radius of the well casing and screen in feet
L_c = length of water column inside the casing and screen in feet
r_w = radius of the well bore in feet
L_s = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-11-18SD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
3/6/2019	1510	0.5	88.05	35	8.4	6.92	0.452	>1000	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/6/2019	1520	0.5	87.68	40	9.0	6.71	0.452	946	-	-	Grayish brown, high turbidity, trace silt, no odor.
3/6/2019	1540	0.25	81.71	45	9.2	6.76	0.480	>1000	-	-	Surging Pump up/down at bottom of piezometer. Dark grayish brown, high turbidity, trace silt, no odor.
3/6/2019	1540-1615	-	-	-	-	-	-	-	-	-	Not pumping. Pulled pump out of piezometer, had to reset stuck check ball on pump. Reinsert pump into piezometer. Start pumping at 1615.
3/6/2019	1635	0.25	85.62	50	8.1	7.18	0.445	>1000	-	-	Dark grayish brown, high turbidity, trace silt, no odor.
3/6/2019	1645	0.5	87.63	55	7.3	7.30	0.440	>1000	-	-	Grayish brown, high turbidity, trace silt, no odor.
3/6/2019	1655	0.5	88.33	60	7.0	7.31	0.442	929	-	-	Same.
3/6/2019	1705	0.5	89.55	65	7.1	7.37	0.433	675			Light grayish brown, moderate turbidity, trace silt, no odor.
3/6/2019	1715	0.5	88.73	70	7.5	8.18	0.446	465			Very light grayish brown, low turbidity, trace silt, no odor.
3/6/2019	1725	0.5	89.20	75	8.1	7.79	0.441	297			Very light grayish brown tint, low turbidity, no odor. Stopped pumping. Removed pump from piezometer.
3/6/2019	1745		80.25	Total Purged = 75 Gal.							Final DTB(ft. below TOC) = 122.24

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 1/28/2019;1/28/2019

Well/Piez. No.: P-12-18IT Date Installed: 1/2/2019 Csg. Diameter (I.D.): 2”

Method of Development: Submersible Whale Pump/Polyethylene Tubing Total Depth (ft. TOC): 61.88

☒ Surging ❑ Bailing ☒ Pumping Development Date: 1/28/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 43.31 Depth to bottom before developing well (ft. TOC): 61.88

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	18.57	feet	0.163 gal/ft.	=	3.03 gal. *	5	= 15.15

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 46.62-59.29 (ft. BGL) Time purging begins: 1225 Weather: Cloudy 24-31 °F

Screened Interval (ft. BGL): 49.15-58.72

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
1/28/2019	1230	0.6	57.95	3	8.9	9.75	0.504	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
1/28/2019	1235	0.6	60.30	6	9.2	8.7	0.79	>1000	-	-	Same.
1/28/2019	1239	0.75	60.20	9	8.5	8.16	0.83	>1000	-	-	Same.
1/28/2019	1242	1.0	60.50	12	8.6	8.01	0.85	>1000	-	-	Same.
1/28/2019	1245	1.0	60.11	15	8.4	7.94	0.85	>1000	-	-	Grayish brown, high turbidity, trace silt, no odor. Water flowing very slowly after 3 gal. Stopped pumping, let piezometer recharge.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$ø_s$ = porosity of the sand pack
r_c = radius of the well casing and screen in feet
L_c = length of water column inside the casing and screen in feet
r_w = radius of the well bore in feet
L_s = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-12-18IT

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
1/28/2019	1255	-	57.85	-	-	-	-	-	-	-	Start pump.
1/28/2019	1258	1.0	60.02	18	8.3	8.22	0.84	>1000	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.
1/28/2019	1302	0.75	59.85	21	8.1	7.91	0.88	>1000	-	-	Grayish brown, high turbidity, trace silt, no odor.
1/28/2019	1306	0.75	59.82	24	8.7	7.88	0.88	664	-	-	Very light grayish brown, moderate turbidity, no odor.
1/28/2019	1309	1.0	59.85	27	8.9	7.91	0.77	331	-	-	Same.
1/28/2019	1312	1.0	59.75	30	8.1	7.84	0.91	314	-	-	Same.
1/28/2019	1315	1.0	59.78	33	8.5	7.88	0.84	403	-	-	Same.
1/28/2019	1318	1.0	59.75	36	8.3	7.84	0.88	649	-	-	Same.
1/28/2019	1321	1.0	59.80	39	8.4	7.82	0.92	>1000	-	-	Grayish brown, high turbidity, no odor.
1/28/2019	1324	1.0	59.78	42	9.0	7.81	0.91	>1000	-	-	Same. Stopped pumping. Removed pump from piezometer.
1/28/2019	1340		58.17	Total Purged = 42 Gal.							Final DTB(ft. below TOC) = 61.88

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #
-

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 3/5/2019;3/5/2019

Well/Piez. No.: P-12-18SD Date Installed: 1/2/2019 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 108.72

☒ Surging ❑ Bailing ☒ Pumping Development Date: 3/5/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 78.88 Depth to bottom before developing well (ft. TOC): 108.62

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	29.84	feet	0.163 gal/ft.	=	4.86 gal. *	5	= 24.3

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 93.55-106.28 (ft. BGL) Time purging begins: 1145 Weather: Sunny 15-19 °F

Screened Interval (ft. BGL): 96.09-105.70

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
3/5/2019	1210	0.2	89.39	5	7.8	7.56	0.391	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/5/2019	1225	0.33	93.64	10	7.9	8.29	0.357	>1000	-	-	Same.
3/5/2019	1235	0.5	96.23	15	8.3	9.52	0.360	>1000	-	-	Same.
3/5/2019	1250	0.33	98.13	20	7.9	8.79	0.347	>1000	-	-	Same.
3/5/2019	1300	0.5	98.41	25	7.9	8.86	0.332	>1000	-	-	Same.
3/5/2019	1315	0.33	98.78	30	8.9	8.14	0.370	>1000	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:-

B = 3.14
$Ø_s$ = porosity of the sand pack
r_c = radius of the well casing and screen in feet
L_c = length of water column inside the casing and screen in feet
r_w = radius of the well bore in feet
L_s = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

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WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-12-18SD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
3/5/2019	1325	0.5	100.18	35	8.7	8.25	0.357	>1000	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/5/2019	1345	0.5	100.22	40	8.9	8.61	0.352	>1000	-	-	Same.
3/5/2019	1400	0.33	101.10	45	9.0	7.30	0.364	728	-	-	Grayish brown, high turbidity, trace silt, no odor.
3/5/2019	1415	0.33	101.81	50	8.9	7.77	0.340	557	-	-	Light grayish brown, moderate turbidity, trace silt, no odor.
3/5/2019	1430	0.33	102.33	55	7.2	7.30	0.332	513	-	-	Same.
3/5/2019	1445	0.33	102.43	60	6.9	7.34	0.333	411	-	-	Very light grayish brown, low turbidity, no odor.
3/5/2019	1500	0.33	103.03	65	7.0	7.67	0.327	333	-	-	Very light grayish brown tint, low turbidity, no odor.
3/5/2019	1515	0.33	103.44	70	7.3	7.34	0.333	491			Very light grayish brown, low turbidity, no odor. Stopped pumping. Removed pump from piezometer.
3/5/2019	1525		102.96	Total Purged = 70 Gal.							Final DTB(ft. below TOC) = 108.72

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 2/5/2019;2/5/2019

Well/Piez. No.: P-13-18IT Date Installed: 1/15/2019 Csg. Diameter (I.D.): 2”

Method of Development: Submersible Whale Pump/Polyethylene Tubing Total Depth (ft. TOC): 52.67

☒ Surging ❑ Bailing ☒ Pumping Development Date: 2/5/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 35.14 Depth to bottom before developing well (ft. TOC): 52.67

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	17.54	feet	0.163 gal/ft.	=	2.9	gal. *	5	=	14.5

$V = (B*r_C^2*L_C*7.48) + (B*(r_W-r_C)^2*L_S*ø_S*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 42.35-49.94 (ft. BGL) Time purging begins: 0753 Weather: Cloudy 25-28 °F

Screened Interval (ft. BGL): 44.80-49.48

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
2/5/2019	0758	0.6	39.84	3	9.8	7.55	1.09	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/5/2019	0803	0.6	40.14	6	9.1	7.52	1.25	627	-	-	Light grayish brown, moderate turbidity, trace very fine sand and silt, no odor.
2/5/2019	0806	1.0	40.44	9	8.9	7.54	1.27	456	-	-	Same.
2/5/2019	0810	0.75	40.75	12	9.4	7.54	1.25	>1000	-	-	Grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/5/2019	0813	1.0	41.12	15	8.5	7.54	1.28	651	-	-	Same.
2/5/2019	0816	1.0	41.20	18	9.2	7.55	1.28	233	-	-	Light grayish brown, moderate turbidity, trace very fine sand and silt, no odor.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L

Where:

B = 3.14
$ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet

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- Turbidity report in NTU nearest whole #

7.48 gallons / cubic foot = conversion from cubic feet to gallons

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-13-18IT

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
2/5/2019	0820	0.75	41.35	21	9.4	7.55	1.29	160	-	-	Very light grayish brown tint, low turbidity, no odor.
2/5/2019	0823	1.0	41.50	24	8.8	7.52	1.28	171	-	-	Same.
2/5/2019	0826	1.0	41.75	27	8.7	7.53	1.29	53.1	-	-	Clear.
2/5/2019	0829	1.0	41.84	30	9.3	7.53	1.28	33.9	-	-	Same.
2/5/2019	0832	1.0	41.95	33	8.9	7.56	1.28	26.7	-	-	Same.
2/5/2019	0835	1.0	42.03	36	9.0	7.57	1.29	23.9	-	-	Same. Stopped pumping. Removed pump from piezometer.
2/5/2019	0846		37.75	Total Purged = 36 Gal.							Final DTB(ft. below TOC) = 52.67

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #
-

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 2/25/2019;2/25/2019

Well/Piez. No.: P-13-18SD Date Installed: 1/14/2019 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 98.53

☒ Surging ❑ Bailing ☒ Pumping Development Date: 2/25/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 70.06 Depth to bottom before developing well (ft. TOC): 98.53

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	28.18	feet	0.163 gal/ft.	=	4.6 gal. *	5	= 23

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 83.5-96.02 (ft. BGL) Time purging begins: 1000 Weather: Partly Sunny 7-18 °F

Screened Interval (ft. BGL): 85.87-95.54

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
2/25/2019	1035	0.14	70.14	5	5.9	4.04	0.736	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/25/2019	1045	0.5	70.13	10	6.1	3.02	0.721	>1000	-	-	Same.
2/25/2019	1105	0.25	70.13	15	6.4	4.19	0.699	>1000	-	-	Same.
2/25/2019	1115	0.5	70.11	20	5.5	4.31	0.717	>1000	-	-	Same.
2/25/2019	1125	0.5	70.11	25	6.3	5.58	0.748	>1000	-	-	Same.
2/25/2019	1135	0.5	70.11	30	6.2	5.82	0.708	>1000	-	-	Grayish brown, high turbidity, trace silt, no odor.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:-

B = 3.14
$ø_s$ = porosity of the sand pack
r_c = radius of the well casing and screen in feet
L_c = length of water column inside the casing and screen in feet
r_w = radius of the well bore in feet
L_s = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

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WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-13-18SD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
2/25/2019	1145	0.5	70.11	35	6.0	6.30	0.745	568	-	-	Light grayish brown, moderate turbidity, no odor.
2/25/2019	1155	0.5	70.11	40	6.0	6.75	0.749	352	-	-	Very light grayish brown tint, low turbidity, no odor.
2/25/2019	1205	0.5	70.11	45	6.4	6.79	0.743	294	-	-	Same.
2/25/2019	1215	0.5	70.11	50	6.3	6.99	0.708	245	-	-	Same.
2/25/2019	1225	0.5	70.11	55	6.3	7.37	0.755	239	-	-	Same.
2/25/2019	1235	0.5	70.11	60	6.9	7.49	0.748	244	-	-	Same. Stopped pumping. Removed pump from piezometer.
2/25/2019	1240		70.15	Total Purged = 60 Gal.							Final DTB(ft. below TOC) = 98.53

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 2/5/2019;2/5/2019

Well/Piez. No.: P-14-18IT Date Installed: 12/5/2018 Csg. Diameter (I.D.): 2”

Method of Development: Submersible Whale Pump/Polyethylene Tubing Total Depth (ft. TOC): 86.6

☒ Surging ❑ Bailing ☒ Pumping Development Date: 2/5/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 64.65 Depth to bottom before developing well (ft. TOC): 86.47

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	21.99	feet	0.163 gal/ft.	=	3.6 gal. *	5	= 18

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 76.5-84.27 (ft. BGL) Time purging begins: 1005 Weather: Cloudy 25-28 °F

Screened Interval (ft. BGL): 79.11-83.79

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
2/5/2019	1014	0.55	84.5	5	8.3	8.43	0.77	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor. Water stopped flowing after 5 gal. Stopped pumping, let piezometer recharge.
2/5/2019	1030	-	75.55	-	-	-	-	-	-	-	Start pump.
2/5/2019	1034	0.25	84.44	6	7.9	7.95	0.90	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor. Water stopped flowing after 1 gal. Stopped pumping, let piezometer recharge.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

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WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-13-18IT

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
2/5/2019	1050	-	83.50	-	-	-	-	-	-	-	Start pump.
2/5/2019	1052	0.25	84.80	6.5	4.7	8.12	0.792	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor. Water stopped flowing after 0.5 gal. Stopped pumping, let piezometer recharge.
2/5/2019	1120	-	83.45	-	-	-	-	-	-	-	Start pump.
2/5/2019	1122	0.25	85.20	7.0	6.1	8.09	0.764	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor. Water stopped flowing after 0.5 gal. Stopped pumping, let piezometer recharge.
2/5/2019	1220	-	83.50	-	-	-	-	-	-	-	Start pump.
2/5/2019	1222	0.25	85.50	7.5	9.0	8.39	0.74	>1000	-	-	Dark grayish brown, high turbidity, trace silt, no odor. Water stopped flowing after 0.5 gal. Stopped pumping, let piezometer recharge.
2/5/2019	1320	-	83.30	-	-	-	-	-	-	-	Start pump.
2/5/2019	1322	0.25	Top of pump @86' BTOC; Groundwater below.	8.0	5.7	8.40	0.716	>1000	-	-	Dark grayish brown, high turbidity, trace silt, no odor. Water stopped flowing after 0.5 gal. Stopped pumping, let piezometer recharge.
2/5/2019	1420	-	83.40	-	-	-	-	-	-	-	Start pump.
2/5/2019	1422	0.25	Top of pump @86' BTOC; Groundwater below.	8.5	6.4	8.39	0.719	>1000			Dark grayish brown, high turbidity, trace silt, no odor. Water stopped flowing after 0.5 gal. Stopped pumping. Removed pump from piezometer.
2/5/2019	1430		85.60	Total Purged = 8.5 Gal. (See 2/21/2019 for redevelopment)							Final DTB(ft. below TOC) = 86.6

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

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WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 2/21/2019;2/21/2019

Well/Piez. No.: P-14-18IT Date Installed: 12/5/2018 Csg. Diameter (I.D.): 2”

Method of Development: Submersible Whale Pump/Polyethylene Tubing Total Depth (ft. TOC): 86.64

☒ Surging ❑ Bailing ☒ Pumping Development Date: 2/21/2019

❑ Original Development ☒ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 64.92 Depth to bottom before developing well (ft. TOC): 86.64

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	21.72	feet	0.163 gal/ft.	=	3.6 gal. *	5	= 18

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 76.5-84.27 (ft. BGL) Time purging begins: 0800 Weather: Sunny 25-31 °F

Screened Interval (ft. BGL): 79.11-83.79

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
2/21/2019	0803	0.67	80.84	2	9.3	8.49	0.74	312	-	-	Very light grayish brown, moderate turbidity, trace silt, no odor.
2/21/2019	0806	0.67	83.83	4	6.4	8.29	0.752	641	-	-	Same. Water stopped flowing after 4 gal. Stopped pumping, let piezometer recharge.
2/21/2019	0915	-	82.19	-	-	-	-	-	-	-	Start pump.
2/21/2019	0920	0.05	Top of pump @86’ BTOC; Groundwater below.	4.25	0.6	8.63	0.767	>1000	-	-	Dark grayish brown, high turbidity, trace silt, no odor. Water stopped flowing after 0.25 gal. Stopped pumping, Removed pump from piezometer.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$ø_s$ = porosity of the sand pack
r_c = radius of the well casing and screen in feet
L_c = length of water column inside the casing and screen in feet
r_w = radius of the well bore in feet
L_s = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-14-18IT

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
2/21/2019	0942	-	82.52	Total Purged = 4.25 Gal. (See 2/5/2019 for original development)	-	-	-	-	-	-	Final DTB (ft. below TOC) = 86.64

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 2/21/2019;2/22/2019

Well/Piez. No.: P-14-18SD Date Installed: 12/5/2018 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 124.56

☒ Surging ❑ Bailing ☒ Pumping Development Date: 2/21/2019-2/22/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 78.63 Depth to bottom before developing well (ft. TOC): 123.83

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	45.93	feet	0.163 gal/ft.	=	7.48	gal. *	5	=	37.4

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 114.3-122.04 (ft. BGL) Time purging begins: 1045(2/21/2019) Weather: Sunny 19-32 °F(2/21/2019-2/22/2019)

Screened Interval (ft. BGL): 116.88-121.56

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
2/21/2019	1130	0.11	103.75	5	5.7	8.90	0.574	>1000	-	-	Pumping very slowly (Using MP-10 unit to power pump/need to get MP-10H unit which is more powerful); Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/21/2019	1350	0.06	103.30	9	5.1	9.0	0.484	>1000	-	-	Same.
2/21/2019	1450	0.03	105.34	11	4.5	9.06	0.535	>1000	-	-	Same. Stopped pumping. Removed pump from piezometer.
2/21/2019				Total Purged on 2/21/2019 = 11 Gal.							

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:-

B = 3.14
$ø_s$ = porosity of the sand pack
r_c = radius of the well casing and screen in feet
L_c = length of water column inside the casing and screen in feet
r_w = radius of the well bore in feet
L_s = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-14-18SD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
2/22/2019	0725	-	79.45 (Before pump is installed)	-	-	-	-	-	-	-	
2/22/2019	0730	-	-	-	-	-	-	-	-	-	Install pump, using MP-10 unit to power pump until MP-10H unit arrives on site. Start pumping at 0730.
2/22/2019	0900	0.03	94.34	3	5.1	8.82	0.405	>1000	-	-	Pumping very slowly. Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
2/22/2019	1015	0.05	109.15	7	6.2	9.02	0.368	>1000	-	-	Same.
2/22/2019	1015-1100	-	-	-	-	-	-	-	-	-	Stopped pumping. Now using MP-10H unit to power pump. Start pumping at 1100.
2/22/2019	1120	0.2	Top of pump @120.65' BTOC; Groundwater below.	11	10.2	9.18	0.408	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor. Water flowing very slowly after 4 gal. purged.
2/22/2019	1220	0.03	Same.	14	9.2	8.97	0.366	>1000	-	-	Same.
2/22/2019	1320	0.03	Same.	17	8.5	8.86	0.340	>1000	-	-	Same.
2/22/2019	1420	0.03	Same.	20	6.2	8.88	0.325	>1000	-	-	Same.
2/22/2019	1520	0.03	Same.	23	6.5	8.91	0.335	>1000	-	-	Same.
2/22/2019	1620	0.03	Same.	26	5.5	8.83	0.310	>1000	-	-	Same. Stopped pumping. Removed pump from piezometer.
2/22/2019	1625		123.45	Total Purged on 2/22/2019 = 26 Gal.							Final DTB(ft. below TOC) = 124.56
				Total Purged (2/21/2019-2/22/2019) = 37 Gal.							

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Location: Zion, IL. Personnel Ralph Bonk Date (Start/End): 3/5/2019;3/5/2019

Well/Piez. No.: P-15-18SD Date Installed: 1/24/2019 Csg. Diameter (I.D.): 2”

Method of Development: Pneumatic Air Lift Pump/Polyethylene Tubing Total Depth (ft. TOC): 102.5

☒ Surging ❑ Bailing ☒ Pumping Development Date: 3/5/2019

☒ Original Development ❑ Redevelopment ❑ Other (State Method)

Depth to water before developing well (ft. TOC): 71.16 Depth to bottom before developing well (ft. TOC): 102.5

			Volume (V)		Purge Factor		Volume To Purge (Gal.)
Height of Water Column:	31.34	feet	0.163 gal/ft.	=	5.11 gal. *	5	= 25.55

$V = (B*r_c^2*L_c*7.48) + (B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ _____ gallons (See Notes below)

Depth purging from: 86-100.16 (ft. BGL) Time purging begins: 0730 Weather: Sunny 9-19 °F

Screened Interval (ft. BGL): 90.02-99.67

Equipment Nos.: pH Meter YSI Pro Plus SC Meter YSI Pro Plus Turbidity Meter Hach 2100Q

Equipment decontaminated prior to development Y X N ____ Describe: Alconox/Distilled Water

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments: (Surging pump up/down within screened interval to bottom; initially set pump above sediment, working way to bottom of piezometer)
3/5/2019	0800	0.16	92.65	5	7.4	7.09	4.42	>1000	-	-	Dark grayish brown, high turbidity, trace very fine sand and silt, no odor.
3/5/2019	0825	0.2	Top of pump @98.97’ BTOC; Groundwater below.	10	8.3	10.95	1.39	>1000	-	-	Same. Water flowing very slowly after 10 total gal. purged.
3/5/2019	0920	0.05	Same.	13	8.4	10.15	0.48	>1000	-	-	Same. Water flowing very slowly during purging.
3/5/2019	1000	0.125	Same.	14	8.8	9.81	0.468	>1000	-	-	Same. Water flowing very slowly during purging.

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:-

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

APTIM

WELL DEVELOPMENT RECORD

Project Name: Advanced Disposal; Zion Landfill Site 2 North Expansion

Continued from previous page. Piezometer P-15-18SD

Date	Time	Purge Rate (gal/min)	Water Level (ft. below TOC)	Volume Removed (Cumulative) (gal.)	Temp (°C)	pH +/- 0.1	Specific Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l or %)	Oxidation Reduction Potential (mV) +/- 10 mV	Comments
3/5/2019	1030	0.016	Same.	14.5	8.9	9.66	0.418	>1000	-	-	Same. Stopped pumping. Removed pump from piezometer.
3/5/2019	1036		101.35	Total Purged = 14.5 Gal.							Final DTB(ft. below TOC) = 102.5

Notes:

- Water Levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to .01 pH units
- Specific conductivity (SC) – Reported to the nearest 10% mS/cm or µmS/cm @ 25 °C
- Water Temperature – Reported to the nearest 0.1 °C or °F
- Dissolved oxygen (D.O.) report in 0.1 mg/L
- Turbidity report in NTU nearest whole #

Where:

B = 3.14
$Ø_S$ = porosity of the sand pack
r_C = radius of the well casing and screen in feet
L_C = length of water column inside the casing and screen in feet
r_W = radius of the well bore in feet
L_S = length of saturated portion of the sand pack in feet
7.48 gallons / cubic foot = conversion from cubic feet to gallons

G.6 – Groundwater Elevation Summary Table

ZION LANDFILL SITE 2 NORTH EXPANSION - WELL DETAILS AND POTENTIOMETRIC SURFACE ELEVATIONS

WELL ID	NORTHING (Y)	EASTING (X)	GROUND SURFACE ELEVATION	TOP OF PVC RISER PIPE (TOR)		DEPTH TO TOP OF ANNULAR SEALANT		DEPTH TO TOP OF SEAL ABOVE SAND PACK		DEPTH TO TOP OF SAND PACK		DEPTH TO TOP OF SCREEN		DEPTH TO BOTTOM OF SCREEN		DEPTH TO BOTTOM OF WELL		DEPTH TO GROUNDWATER AND POTENTIOMETRIC SURFACE ELEVATION																	
																		2/26/2019		3/6/2019		5/23/2019		6/12/2019		7/9/2019		10/9/2019		2/27/2020		5/27/2020		8/27/2020		10/29/2020		2/26/2021		5/24/2021		8/31/2021		11/30/2021		2/9/2022	
			(MSL)	STICK UP (ft. AGS)	ELEV. (MSL)	DEPTH (ft. BGS)	ELEV. (MSL)	DEPTH (ft. BGS)	ELEV. (MSL)	DEPTH (ft. BGS)	ELEV. (MSL)	DEPTH (ft. BGS)	ELEV. (MSL)	DEPTH (ft. BGS)	ELEV. (MSL)	DEPTH (ft. BGS)	ELEV. (MSL)	DEPTH (ft. BTOR)	ELEV. (MSL)	DEPTH (ft. BTOR)	ELEV. (MSL)	DEPTH (ft. BTOR)	ELEV. (MSL)	DEPTH (ft. BTOR)	ELEV. (MSL)	DEPTH (ft. BTOR)	ELEV. (MSL)	DEPTH (ft. BTOR)	ELEV. (MSL)	DEPTH (ft. BTOR)	ELEV. (MSL)	DEPTH (ft. BTOR)	ELEV. (MSL)	DEPTH (ft. BTOR)	ELEV. (MSL)	DEPTH (ft. BTOR)	ELEV. (MSL)	DEPTH (ft. BTOR)	ELEV. (MSL)	DEPTH (ft. BTOR)	ELEV. (MSL)	DEPTH (ft. BTOR)	ELEV. (MSL)	DEPTH (ft. BTOR)	ELEV. (MSL)
P-8	12,596.00	13,060.00	744.00	1.81	745.81	2.00	742.00	85.00	659.00	90.00	654.00	92.00	652.00	97.00	647.00	97.00	647.00	80.72	665.09	80.69	665.12	80.05	665.76	80.05	665.76	80.39	665.42	81.33	664.48	79.63	666.18	79.62	666.19	82.55	663.26	83.17	662.64	82.91	662.90	82.52	663.29	85.84	659.97	85.51	660.30	84.06	661.75
RW-03-07	12,040.00	13,077.00	741.80	1.65	743.45	3.50	738.30	70.00	671.80	82.00	659.80	87.70	654.10	97.70	644.10	98.00	643.80	78.26	665.19	78.02	665.43	77.63	665.82	77.65	665.80	77.95	665.50	78.80	664.65	77.20	666.25	77.18	666.27	80.13	663.32	80.94	662.51	80.62	662.83	80.23	663.22	83.59	659.86	83.23	660.22	81.77	661.68
MW-06-07-D	11,400.75	13,283.41	744.10	2.55	746.65	3.50	740.60	194.00	550.10	210.00	534.10	214.58	529.52	224.51	220.00	224.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EP-10D	*11,400.75	*13,283.41	744.00	2.06	746.06	2.00	742.00	96.00	648.00	98.00	646.00	100.00	644.00	110.00	634.00	110.00	634.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EP-10I	*11,400.75	*13,283.41	743.80	2.12	745.92	2.00	741.80	40.00	703.80	42.00	701.80	44.00	699.80	54.00	689.80	54.00	689.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EP-10SR	*11,400.75	*13,283.41	743.70	2.62	746.32	2.00	741.70	21.00	722.70	25.00	718.70	27.00	716.70	32.00	711.70	32.00	711.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
G168	12,506.70	11,844.60	746.58	2.60	749.18	2.50	744.08	84.00	662.58	89.00	657.58	93.20	653.38	102.80	643.78	103.40	643.18	83.41	665.77	83.10	666.08	82.71	666.47	82.65	666.53	82.98	666.20	84.03	665.15	82.21	666.97	82.22	666.96	85.19	663.99	85.87	663.31	85.60	663.58	85.33	663.85	88.70	660.48	88.21	660.97	86.75	662.43
G169	12,505.60	12,141.50	747.32	2.60	749.92	2.50	744.82	87.00	660.32	91.30	656.02	96.50	650.82	106.00	641.32	106.60	640.72	84.34	665.58	84.10	665.82	83.67	666.25	83.62	666.30	83.98	665.94	84.95	664.97	83.24	666.68	83.21	666.71	86.17	663.75	86.71	663.21	86.46	663.46	86.06	663.86	89.48	660.44	89.06	660.86	87.61	662.31
G178	10,872.00	11,817.00	735.30	2.66	737.27	4.00	731.30	84.00	651.30	86.00	649.30	89.10	646.20	93.70	641.60	94.60	640.70	72.55	664.72	71.16	666.11	70.95	666.32	71.13	666.14	71.37	665.90	72.08	665.19	70.59	666.68	70.52	666.75	73.49	663.78	74.37	662.90	73.86	663.41	73.75	663.52	--	--	--	--	--	--
G191	12,567.80	11,666.30	741.61	2.10	743.71	3.00	738.61	82.80	658.81	86.70	654.91	91.00	650.61	100.40	641.21	100.90	640.71	77.98	665.73	77.70	666.01	77.29	666.42	77.25	666.46	77.59	666.12	78.64	665.07	76.86	666.85	76.90	666.81	79.86	663.85	80.27	663.44	80.12	663.59	79.77	663.94	83.17	660.54	82.73	660.98	81.29	662.42
G201	12,425.00	12,721.00	745.49	2.60	748.09	3.00	742.49	84.00	661.49	88.60	656.89	93.60	651.89	98.00	647.49	98.60	646.89	82.81	665.28	82.57	665.52	82.15	665.94	82.15	665.94	82.49	665.60	83.45	664.64	81.72	666.37	81.73	666.36	84.63	663.46	85.34	662.75	85.08	663.01	84.68	663.41	88.04	660.05	87.67	660.42	86.20	661.89
G202	12,366.03	13,021.00	743.46	2.40	745.86	3.00	740.46	78.60	664.86	85.10	658.36	91.40	652.06	95.80	647.66	96.40	647.06	80.51	665.35	80.29	665.57	79.89	665.97	79.89	665.97	80.21	665.65	81.16	664.70	79.57	666.29	79.02	666.84	82.39	663.47	83.20	662.66	82.95	662.91	82.55	663.31	85.87	659.99	85.54	660.32	84.08	661.78
G203	12,167.00	13,073.00	742.79	2.10	744.89	3.00	739.79	83.60	659.19	88.00	654.79	93.30	649.49	97.70	645.09	98.30	644.49	79.55	665.34	79.37	665.52	78.95	665.94	78.92	665.97	79.27	665.62	80.20	664.69	78.49	666.40	78.50	666.39	81.45	663.44	82.22	662.67	81.93	662.96	81.55	663.34	84.88	660.01	84.55	660.34	83.10	661.79
G204	11,968.00	13,075.00	742.33	1.80	744.13	3.00	739.30	90.30	652.03	94.00	648.33	100.20	642.13	104.60	637.73	105.20	637.13	78.90	665.23	78.69	665.44	78.24	665.89	78.25	665.88	78.60	665.53	79.54	664.59	77.87	666.26	77.80	666.33	80.80	663.33	81.53	662.60	81.21	662.92	80.84	663.29	84.16	659.97	83.82	660.31	82.38	661.75
G205	11,768.00	13,074.00	742.56	2.10	744.66	3.00	739.50	83.40	659.16	88.80	653.76	96.00	646.56	100.40	642.16	101.00	641.56	79.37	665.29	79.13	665.53	78.68	665.98	78.69	665.97	79.05	665.61	79.99	664.67	78.28	666.38	78.25	666.41	81.21	663.45	81.99	662.67	81.71	662.95	81.28	663.38	84.67	659.99	84.31	660.35	82.84	661.82
G206	11,565.00	13,074.00	743.50	1.80	745.30	3.00	740.50	86.30	657.20	91.50	652.00	98.90	644.60	103.40	640.10	104.00	639.50	80.05	665.25	80.02	665.28	79.58	665.72	79.61	665.69	79.93	665.37	80.86	664.44	79.18	666.12	79.14	666.16	82.16	663.14	82.92	662.38	82.60	662.70	82.10	663.20	85.57	659.73	85.20	660.10	83.81	661.49
MW-08-07	10,869.00	12,490.00	740.00	5.09	745.09	3.50	736.50	70.00	670.00	78.00	662.00	81.70	658.30	91.70	648.30	92.00	648.00	80.39	664.70	80.13	664.96	79.71	665.38	79.79	665.30	79.74	665.35	80.69	664.40	79.02	666.07	78.91	666.18	81.93	663.16	82.82	662.27	82.56	662.53	82.22	662.87	85.55	659.54	85.14	659.95	83.75	661.34
MW-09-07	10,925.00	12,901.00	744.90	2.67	747.57	3.50	741.40	82.00	662.90	87.00	657.90	89.77	655.13	99.77	645.13	100.00	644.90	82.68	664.89	82.47	665.10	81.99	665.58	82.05	665.52	82.37	665.20	83.25	664.32	81.63	665.94	81.54	666.03	84.59	662.98	85.29	662.28	84.99	662.58	84.66	662.91	87.99	659.58	87.56	660.01	86.21	661.36
EP-6D	12,592.00	11,706.00	737.90	2.30	740.20	2.00	735.90	83.00	654.90	85.00	652.90	90.00	647.90	100.00	637.90	100.00	637.90	74.46	665.74	74.09	666.11	73.72	666.48	73.75	666.45	74.08	666.12	75.13	665.07	73.30	666.90	73.30	666.90	76.40	663.80	76.85	663.35	76.57	663.63	76.23	663.97	79.76	660.44	79.20	661.00	77.81	662.39
EP-6I	12,594.00	11,713.00	738.30	2.08	740.38	2.00	736.30	43.00	695.30	45.00	693.30	47.00	691.30	57.00	681.30	57.00	681.30	42.9	697.48	42.87	697.51	41.11	699.27	40.62	699.76	40.58	699.80	43.56	696.82	43.85	696.53	43.66	696.72	44.96	695.42	46.50	693.88	46.41	693.97	46.37	694.01	46.92	693.46	47.51	692.87	47.08	693.30
EP-6S	12,594.00	11,718.00	738.50	1.55	740.05	2.00	736.50	31.00	707.50	33.00	705.50	35.00	703.50	40.00	698.50	40.00	698.50	32.63	707.42	32.51	707.54	34.41	705.64	31.19	708.86	31.09	708.96	32.03	708.02	32.50	707.55	32.84	707.21	33.30	706.75	34.25	705.80	34.61	705.44	34.49	705.56	35.30	704.75	35.75	704.30	35.48	704.57
EP-6SS	12,594.00	11,724.00	737.90	2.37	740.27	2.00	735.90	16.00	721.90	18.00	719.90	20.00	717.90	25.00	712.90	25.00	712.90	14.59	725.68	14.61	725.66	14.30	725.97	14.11	726.16	13.98	726.29	13.89	726.38	14.46	725.81	14.54	725.73	15.14	725.13	15.58	724.69	15.02	725.25	15.64	724.63	17.08	723.19	15.56	724.71	15.69	724.58
P-01-18IT	13,134.36	11,523.09	731.99	2.49	734.48	2.00	729.99	27.95	704.04	34.60	697.39	36.85	695.14	41.52	690.47	41.98	690.01	31.25	703.23	30.93	703.55	29.90	704.58	29.39	705.09	29.29	705.19	30.91	703.57	32.18	702.30	32.97	701.51	32.93	701.55	33.66	700.82	34.44	700.04	34.19	700.29	31.95	702.53	33.65	700.83	33.35	701.13
P-01-18SD	13,129.54	11,523.43	731.99	2.60	734.59	2.00	729.99	71.70	660.29	79.00	652.99	81.78	650.21	91.44	640.55	91.93	640.06	68.67	665.92	68.33	666.26	68.02	666.57	68.01	666.58	68.29	666.30	69.33	665.26	68.55	666.04	68.04	666.55	70.53	664.06	71.06	663.53	70.76	663.83	70.44	664.15	73.93	660.66	73.38	661.21	71.91	662.68
P-03-18SD	13,129.62	13,038.69	745.58	2.43	748.01	2.00	743.58	84.25	661.33	90.00	655.58	94.22	651.36	103.88	641.70	104.36	641.22	82.63	665.38	82.36	665.65	82.01	666.00	81.99	666.02	82.29	665.72	83.30	664.71	81.57	666.44	81.53	666.48	84.45	663.56	85.27	662.74	84.99	663.02	84.56	663.45	87.92	660.09	87.54	660.47	86.11	661.90
P-04-18USD	13,621.32	11,614.82	731.14	2.65	733.79	2.00	729.14	75.50	655.64	81.52	649.62	83.97	647.17	93.59	637.55	94.12	637.02	67.66	666.13	67.32	666.47	66.98	666.81	66.98	666.81	67.26	666.53	68.32	665.47	66.53	667.26	66.54	667.25	69.42	664.37	70.06	663.73	69.81	663.98	69.53	664.26	72.91	660.88	72.40	661.39	71.01	662.78
P-04-18LSD	13,615.89	11,614.85	731.18	2.53	733.71	2.00	729.18	99.80	631.38	104.59	626.59	106.91	624.27	111.59	619.59	112.07	619.11	72.03	661.68	70.69	663.02	70.53	663.18	70.71	663.00	71.28	662.43	71.74	661.97	70.10	663.61	70.47	663.24	73.93	659.78	73.78	659.93	73.24	660.47	73.64	660.07	74.24	659.47	75.89	657.82	74.59	659.12
P-05-18SD	13,628.73	12,391.54	742.54	2.56	745.10	2.00	740.54	106.00	636.54	112.25	630.29	114.86	627.68	119.55	622.99	120.03	622.51	85.23	659.87	85.54	659.56	85.72	659.38	85.71	659.39	86.68	658.42	86.48	658.62	84.98	660.12	86.12	658.98	89.63	655.47	88.96	656.14	88.43	656.67	88.24	656.86	92.84	652.26	90.89	654.21	89.63	655.47
P-06-18USD	13,638.28	13,043.36	744.70	2.86	747.56	2.00	742.70	91.40	653.30	97.52	647.18	99.59	645.11	109.21	635.49	109.74	634.96	82.53	665.03	82.37	665.19	81.98	665.58	82.02	665.54	82.41	665.15	89.37	658.19	87.75	659.81	89.01	658.55	92.49	655.07	91.63	655.93	91.10	656.46	84.65	662.91	88.02	659.54	87.44	660.12	86.14	661.42
P-06-18LSD	13,632.77	13,043.36	745.01	2.46	747.47	2.00	743.01	114.25	630.76	119.55	625.46	122.00	623.01	131.62	613.39	132.14	612.87	88.42	659.05	88.25	659.22	88.45	659.02	88.43	659.04	89.48	657.99	83.21	664.26	81.52	665.95	81.56	665.91	84.54	662.93	85.20	662.27	84.86	662.61	90.88	656.59	95.47	652.00	93.48	653.99	92.21	655.26
P-07-18USD	14,157.94	11,602.38	732.25	2.56	734.81	2.00	730.25	69.60	662.65	75.60	656.65	77.80	654.45	87.34	644.91	87.94	644.31	68.92	665.89	69.15	665.66	68.88	665.93	68.91	665.90	69.34	665.47	70.06	664.75	68.38	666.43	68.49	666.32	71.56	663.25	71.86	662.95	71.53	663.28	71.56	663.25	74.91	659.90	74.12	660.69	72.71	662.10
P-07-18LSD	14,162.75	11,601.29	732.59	2.42	735.01	2.00	730.59	98.60	633.99	103.40	629.19	105.99	626.60	115.52	617.07	116.13	616.46	71.49	663.52	71.41	663.60	71.29	663.72	71.45	663.56	72.08	662.93	72.40	662.61	70.79	664.22	71.18	663.83	74.64	660.37	74.50	660.51	73.94	661.07	74.48	660.53	77.99	657.02	76.57	658.44	75.20	659.81
P-08-18IT	14,142.76	12,384.45	743.03	2.27	745.30	2.00	741.03	45.00	698.03	50.60	692.43	53.13	689.90	57.81	685.22	58.29	684.74	42.82	702.48	42.64	702.66	42.33	702.97	42.29	703.01	42.34	702.96	42.59	702.71	41.75	703.55	41.74	703.56	42.56	702.74	43.17	702.13	44.38	700.92	43.79	701.51	44.42	700.88	45.58	699.72	44.91	700.39
P-08-18SD	14,139.51	12,384.45	742.80	2.64	745.44	2.00	740.80	110.00	632.80	114.50	628.30	116.76	626.04	121.44	621.36	121.92	620.88	85.81	656.53	85.71	656.63	85.94	656.40	85.98	656.36	86.81	655.53	86.65	655.69	85.16	656.18	86.32	655.02	89.72	652.12	89.75	652.09	89.94	651.90	89.21	652.63	92.81	652.53	90.91	654.43	89.65	655.69
P-08-18D	14,134.91	12,383.73	742.94	2.46	745.40	2.00	740.94	189.00	553.94	193.60	549.34	195.94	547.00	205.49	537.45	206.08	536.86	83.72	661.68	83.58	661.82	87.09	658.31	85.89	659.51	90.55	654.85	89.43	655.97	83.32	662.08	89.03	656.37	92.80	652.60	87.06	658.34	86.37	659.03	95.10	650.30	96.02	649.38	89.11	656.29	87.56	657.84
P-09-18SD	14,125.68	13,178.87	738.27	2.53	740.80	2.00	736.27	89.90	648.37	91.00	647.27	94.07	644.20	103.72	634.55	104.22	634.05	75.76	665.04	75.64	665.16	75.25	665.55	75.36	665.44	79.76	661.04	76.43	664.37	74.83	665.97	74.99	665.81	78.06	662.74	78.29	662.51	78.02	662.78	77.95	662.85	81.29	659.51	80.48	660.32	79.26	661.54
P-10-18SD	14,652.76	11,602.68	732.64	2.89	735.53	2.00	730.64	80.60	652.04	87.00	645.64	89.49	643.15	99.14	633.50	99.63	633.01	71.43	664.10	71.19	664.34	71.09	664.44	71.22	664.31	71.89	663.64	72.18	663.35	70.58	664.95	70.93	664.60	74.34	661.19	74.34	661.19	73.77	661.76	74.34	661.19	77.79	657.74	76.44	659.09	75.00	660.53
P-11-18SD	14,545.78	12,392.18	733.76	2.53	736.29	2.00	731.76	100.90	632.86	107.50	626.26	109.58	624.18	119.14	614.62	119.71	614.05	76.18	660.11	76.03	660.26	76.43	659.86	76.38	659.91	77.31	658.98	77.20	659.09	75.71	660.58	76.78	659.51	80.23	656.06	79.61	656.68	79.11	657.18	79.83	656.46	83.45	652.84	81.59	654.70	80.32	655.97
P-12-18IT	14,641.44	13,210.12	741.52	2.59	744.11	2.00	739.52	41.00	700.52	46.62	694.90	49.15	692.37	58.72	682.80	59.29	682.23	43.51	700.60	43.31	700.80	42.93	701.18	42.93	701.18	47.98	696.13	44.35	699.76	42.25	701.86	42.21	701.90	42.97	701.14	43.56	700.55	44.00	700.11	43.89	700.22	44.80	699.31	45.81	698.30	45.44	698.67
P-12-18SD	14,646.46	13,209.63	741.32	2.44	743.76	2.00	739.32	86.80	654.52	93.55	647.77	96.09	645.23	105.70	635.62	106.28	635.04	80.58	663.18	80.44	663.32	78.32	665.44	78.44	665.32	78.82	664.94	79.54	664.22	77.94	665.82	78.09	665.67	81.32	662.44	81.29	662.47	80.91	662.85	81.01	662.75	84.38	659.38	83.39	660.37	82.32	661.44
P-13-18IT	15,107.46	11,532.14	730.39	2.73	733.12	2.00	728.39	37.00	693.39	42.35	688.04	44.80	685.59	49.48	680.91	49.94	680.45	35.22	697.90	35.08	698.04	34.81	698.31	34.79	698.33	34.83	698.29	35.19	697.93	34.45	698.67	34.34	698.78	35.06	698.06	35.64	697.48	36.12	697.00	35.89	697.23	36.66	696.46	37.47	695.65	73.84	659.28
P-13-18SD	15,112.47	11,532.48	730.31	2.51	732.82	2.00	728.31	76.50	653.81	83.50	646.81	85.87	644.44	95.54	634.77	96.02	634.29	70.16	662.66	69.93	662.89	69.93	662.89	70.10	662.72	70.93	661.89	71.07	661.75	69.42	663.40	69.94	662.88	73.80	659.02	73.17	659.65	72.42	660.40	73.40	659.42	76.84	655.98	75.12	657.70	73.07	659.75
P-14-18IT	15,154.47	12,399.61	739.25	2.33	741.58	2.00	737.25	71.00	668.25	76.50	662.75	79.11	660.14	83.79	655.46	84.27	654.98	64.70	676.88	64.98	676.60	64.20	677.38	64.23	677.35	64.36	677.22	64.63	676.95	63.33	678.25	63.18	678.40	65.04	676.54	65.40	676.18	65.33	676.25	65.48	676.10	67.60	673.98	67.38	674.20	66.96	674.62
P-14-18SD	15,154.58	12,405.35	739.10	2.52	741.62	2.00	737.10	109.00	630.10	114.30	624.80	116.88	622.22	121.56	617.54	122.04	617.06	79.28	662.34	79.08	662.54	79.19	662.43	79.43	662.19	80.54	661.08	80.33	661.29	78.53	663.09	79.59	662.03	83.18	658.44	82.25	659.37	81.56	660.06	82.98	658.64	86.33	655.29	84.25	657.37	82.87	658.75
P-15-18SD	15,144.13	13,213.52	736.70	2.34	739.04	2.00	734.70	80.00	656.70	86.00	650.70	90.02	646.68	99.67	637.03	100.16	636.54	73.94	665.10	73.79	665.25	71.88	667.16	71.96	667.08	71.34	667.70	71.68	667.36	67.12	671.92	71.51	667.53	75.51	663.53	75.36	663.68	73.06	665.98	71.79	667.25	73.97	665.07	70.68	668.36	66.69	672.35

Notes:

1. ft. AGS = Feet above ground surface
2. ft. BGS = Feet below ground surface
3. ft. MSL = Feet above mean sea level
4. ft. BTOR = Feet below top of pvc riser pipe
5. * = Northings and eastings are unknown and are therefore based on nested deep well location.

G.7 – Horizontal and Vertical Gradient Summary Tables

Horizontal Gradient Summary Table Lower Shallow Drift Zion Landfill Site 2 North Expansion		
Date	**Gradient**	**Combined Gradient**
Feb-19	0.00184	0.00184
Mar-19	0.00266	0.00266
May-19	0.00291	0.00291
Jun-19	0.00277	0.00277
Jul-19	0.00311	0.00311
Oct-19	0.00265	0.00265
Feb-20	0.00266	0.00266
May-20	0.00328	0.00328
Aug-20	0.00330	0.00330
Oct-20	0.00280	0.00280
Feb-21	0.00281	0.00281
Overall Lower Shallow Drift Average		**0.00280**

Horizontal Gradient Summary Table Upper Shallow Drift Zion Landfill Site 2 North Expansion			
Date	**Section**	**Gradient**	**Combined Gradient**
Feb-19	Northerly	0.00339	0.001873
	Easterly	0.000356	
Mar-19	Northerly	0.00291	0.001657
	Easterly	0.000403	
May-19	Northerly	0.00319	0.001783
	Easterly	0.000376	
Jun-19	Northerly	0.003340	0.001855
	Easterly	0.00037	
Jul-19	Northerly	0.00374	0.002062
	Easterly	0.000383	
Oct-19	Northerly	0.000899	0.000631
	Easterly	0.000363	
Feb-20	Northerly	0.000857	0.000561
	Easterly	0.000264	
May-20	Northerly	0.000993	0.000520
	Easterly	0.0000462	
Aug-20	Northerly	0.00141	0.000870
	Easterly	0.000330	
Oct-20	Northerly	0.000899	0.000710
	Easterly	0.000521	
Feb-21	Northerly	0.000700	0.000617
	Easterly	0.000534	
		Northerly Average	**0.002030**
		Easterly Average	**0.000359**
		Overall Upper Shallow Drift Average	**0.001194**

APTIM

Vertical Gradient Measured Through Lower Till

Sampling Point	Top of Sandpack	Bottom of Sandpack	2/26/2019 Water Elevation	3/6/2019 Water Elevation	5/23/2019 Water Elevation	6/12/2019 Water Elevation	7/9/2019 Water Elevation	10/9/2019 Water Elevation	2/27/2020 Water Elevation	5/27/2020 Water Elevation	8/27/2020 Water Elevation	10/29/2020 Water Elevation	2/26/2021 Water Elevation	Vertical Gradient 2/26/2019	Vertical Gradient 3/6/2019	Vertical Gradient 5/23/2019	Vertical Gradient 6/12/2019	Vertical Gradient 7/9/2019	Vertical Gradient 10/9/2019	Vertical Gradient 2/27/2020	Vertical Gradient 5/27/2020	Vertical Gradient 8/27/2020	Vertical Gradient 10/29/2020	Vertical Gradient 2/26/2021	Average	Direction
P-08-18D	549.34	536.86	661.68	661.82	658.31	659.51	654.85	655.97	662.08	656.37	652.60	658.34	659.03	-0.03	-0.03	0.02	-0.01	0.05	0.04	-0.03	0.04	0.04	-0.03	-0.03	0.002	Downward
P-08-18SD	628.30	620.88	659.53	659.63	659.40	658.56	658.53	658.69	660.18	659.02	655.59	656.40	656.90													

Vertical Gradients Measured Through Shallow Drift

Sampling Point	Top of Sandpack	Bottom of Sandpack	2/26/2019 Water Elevation	3/6/2019 Water Elevation	5/23/2019 Water Elevation	6/12/2019 Water Elevation	7/9/2019 Water Elevation	10/9/2019 Water Elevation	2/27/2020 Water Elevation	5/27/2020 Water Elevation	8/27/2020 Water Elevation	10/29/2020 Water Elevation	2/26/2021 Water Elevation	Vertical Gradient 2/26/2019	Vertical Gradient 3/6/2019	Vertical Gradient 5/23/2019	Vertical Gradient 6/12/2019	Vertical Gradient 7/9/2019	Vertical Gradient 10/9/2019	Vertical Gradient 2/27/2020	Vertical Gradient 5/27/2020	Vertical Gradient 8/27/2020	Vertical Gradient 10/29/2020	Vertical Gradient 2/26/2021	Average	Direction
P-04-18LSD	626.59	619.11	661.68	663.02	663.18	663.00	662.43	661.97	663.61	663.24	659.78	659.93	660.47	0.43	0.33	0.35	0.37	0.39	0.34	0.35	0.38	0.44	0.36	0.34	0.37	Downward
P-04-18USD	649.62	637.02	666.13	666.47	666.81	666.81	666.53	665.47	667.26	667.25	664.37	663.73	663.98													
P-06-18LSD	625.46	612.87	659.05	659.22	659.02	659.04	657.99	658.19	659.81	658.55	655.07	655.93	656.46	0.63	0.63	0.69	0.68	0.75	0.64	0.65	0.77	0.83	0.67	0.65	0.69	Downward
P-06-18USD	647.18	634.96	665.03	665.19	665.58	665.54	665.15	664.26	665.95	665.91	662.93	662.27	662.61													
P-07-18LSD	629.19	616.46	663.52	663.60	663.72	663.56	662.93	662.61	664.22	663.83	660.37	660.51	661.07	0.16	0.14	0.15	0.15	0.17	0.14	0.15	0.16	0.19	0.16	0.15	0.16	Downward
P-07-18LSD	656.65	644.31	665.89	665.66	665.93	665.90	665.47	664.75	666.43	666.32	663.25	662.95	663.28													
													Maximum	**0.63**	**0.63**	**0.69**	**0.68**	**0.75**	**0.64**	**0.65**	**0.77**	**0.83**	**0.67**	**0.65**	**0.83**	Downward
													Minimum	**0.16**	**0.14**	**0.15**	**0.15**	**0.17**	**0.14**	**0.15**	**0.16**	**0.19**	**0.16**	**0.15**	**0.14**	
													Average	**0.40**	**0.37**	**0.39**	**0.40**	**0.44**	**0.37**	**0.38**	**0.44**	**0.49**	**0.40**	**0.38**	**0.41**	

Vertical Gradients Measured Through Wadsworth Till

Sampling Point	Top of Sandpack	Bottom of Sandpack	2/26/2019 Water Elevation	3/6/2019 Water Elevation	5/23/2019 Water Elevation	6/12/2019 Water Elevation	7/9/2019 Water Elevation	10/9/2019 Water Elevation	2/27/2020 Water Elevation	5/27/2020 Water Elevation	8/27/2020 Water Elevation	10/29/2020 Water Elevation	2/26/2021 Water Elevation	Vertical Gradient 2/26/2019	Vertical Gradient 3/6/2019	Vertical Gradient 5/23/2019	Vertical Gradient 6/12/2019	Vertical Gradient 7/9/2019	Vertical Gradient 10/9/2019	Vertical Gradient 2/27/2020	Vertical Gradient 5/27/2020	Vertical Gradient 8/27/2020	Vertical Gradient 10/29/2020	Vertical Gradient 2/26/2021	Average	Direction
EP6D	652.90	637.90	665.74	666.11	666.48	666.45	666.12	665.07	666.90	666.90	663.80	663.35	663.63	0.70	0.69	0.65	0.71	0.71	0.72	0.68	0.67	0.72	0.71	0.70	0.70	Downward
EP6S	719.90	712.90	707.72	707.54	705.64	708.86	708.96	708.02	707.55	707.21	706.75	705.80	705.44													
P-01-18SD	652.99	640.06	665.92	666.26	666.57	666.58	666.30	665.26	666.04	666.55	664.06	663.53	663.83	1.01	1.01	0.63	0.98	1.05	1.03	0.98	0.94	1.01	1.01	0.98	0.97	Downward
P-01-18IT	697.39	690.01	703.23	703.55	704.58	705.09	705.19	703.57	702.30	701.51	701.55	700.82	700.04													
P-08-18SD	628.30	620.88	659.53	659.63	659.40	658.56	658.53	658.69	660.18	659.02	655.59	656.40	656.90	0.76	0.76	0.73	0.78	0.79	0.78	0.77	0.79	0.84	0.81	0.78	0.78	Downward
P-08-18IT	692.43	684.74	702.48	702.66	702.97	703.01	702.96	702.71	703.55	703.56	702.74	702.13	700.92													
P-12-18SD	647.77	635.44	663.18	663.32	665.44	665.32	664.94	664.22	665.82	665.67	662.44	662.47	662.85	1.09	1.09	0.60	1.08	0.91	1.03	1.05	1.05	1.12	1.11	1.08	1.02	Downward
P-12-18IT	694.90	682.23	700.60	700.80	701.18	701.18	696.13	699.76	701.86	701.90	701.14	700.55	700.11													
P-13-18SD	646.81	634.29	662.66	662.89	662.89	662.72	661.89	661.75	663.40	662.88	659.02	659.65	660.40	1.05	1.04	0.59	1.09	1.08	1.08	1.05	1.07	1.16	1.12	1.09	1.04	Downward
P-13-18IT	688.04	680.45	697.90	698.04	698.31	698.33	698.29	697.93	698.67	698.78	698.06	697.48	697.00													
P-14-18SD	624.80	617.06	662.34	662.54	662.43	662.19	661.08	661.29	663.09	662.03	658.44	659.37	660.06	0.48	0.47	0.25	0.54	0.53	0.52	0.50	0.54	0.60	0.56	0.54	0.50	Downward
P-14-18IT	662.75	654.98	676.88	676.60	677.38	677.35	677.22	676.95	678.25	678.40	676.54	676.18	676.25													
													Maximum	**1.09**	**1.09**	**0.73**	**1.09**	**1.08**	**1.08**	**1.05**	**1.07**	**1.16**	**1.12**	**1.09**	**1.16**	Downward
													Minimum	**0.48**	**0.47**	**0.25**	**0.54**	**0.53**	**0.52**	**0.50**	**0.54**	**0.60**	**0.56**	**0.54**	**0.25**	
													Average	**0.85**	**0.84**	**0.57**	**0.86**	**0.85**	**0.86**	**0.84**	**0.84**	**0.91**	**0.89**	**0.86**	**0.83**	

G.8 – Horizontal Velocity Calculation for Shallow Drift Aquifer

APTIM

Client: GFL Everglades Holdings, LLC
Project: Site 2 North Expansion
Proj. #: 631020105
Calculated By: SJW **Date:** 05/2022
Checked By: MNF **Date:** 05/2022

TITLE: HORIZONTAL VELOCITY WITHIN THE SHALLOW DRIFT AQUIFER

Problem Statement

Calculate the horizontal velocity within the Shallow Drift Aquifer.

Given

- ❑ Permeability and gradient calculations utilized data from all "-18" groundwater monitoring wells screened within the Upper Shallow Drift Aquifer.
- ❑ Measured horizontal permeability geometric mean of 3.57×10^{-4} cm/sec from slug testing of the Shallow Drift Aquifer.
- ❑ Average measured horizontal gradient of 0.000386 for the Shallow Drift Aquifer.
- ❑ Effective porosity of 0.367 for the Shallow Drift Aquifer which is calculated from the site specific total porosity (obtained through geotechnical test results for the shallow drift aquifer deposits).

Assumptions

- ❑ The following equation is used to calculate horizontal Darcy Velocity:

$$V_D = Ki$$

Where,

V_D = Darcy Velocity (cm/sec)
K = Hydraulic Conductivity (cm/sec)
i = Horizontal Gradient (cm/cm)

- ❑ The following equation is used to calculate horizontal seepage velocity:

$$V_s = \frac{V_D}{N}$$

Where,

V_S = SeepageVelocity(m/yr)
V_D = Darcy Velocity (m/yr)
n = Porosity

APTIM

Client: GFL Everglades Holdings, LLC

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Proj. #: 631020105

Calculated By: SJW **Date:** 05/2022

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TITLE: HORIZONTAL VELOCITY WITHIN THE SHALLOW DRIFT AQUIFER

Calculations

Calculate the Darcy Velocity within the Shallow Drift Aquifer:

$$V_D = Ki = (3.57 \times 10^{-4} \text{cm/ sec})(0.000386) = 1.38 \times 10^{-7} \text{cm/sec}$$

$$\left(\frac{1.38 \times 10^{-7} \text{ cm}}{1 \text{ sec}}\right)\left(\frac{1 \text{ m}}{100 \text{ cm}}\right)\left(\frac{31536000 \text{ sec}}{1 \text{ yr}}\right) = 0.04 \text{ m/yr}$$

$$\left(\frac{0.04 \text{ m}}{1 \text{ yr}}\right)\left(\frac{1 \text{ ft}}{0.3048 \text{ m}}\right) = 0.13 \text{ ft/yr}$$

Calculate the seepage velocity within the Shallow Drift Aquifer:

$$V_S = \frac{V_D}{n} = \frac{0.04 \text{ m/yr}}{0.367} = 0.11 \text{ m/yr}$$

$$\left(\frac{0.11 \text{ m}}{1 \text{ yr}}\right)\left(\frac{1 \text{ ft}}{0.3048 \text{ m}}\right) = 0.36 \text{ ft/yr}$$

Results

A Darcy Velocity of 0.04 m/yr (0.13 ft/yr) was calculated. Based on an effective porosity of 0.367, a seepage velocity of 0.11 m/yr (0.36 ft/yr) was calculated.