Table 5.--Records of wells in the Holland area

Diameter: Minimum diameter listed.

Altitude: Feet above mean sea level. Those reported to tenths of a foot were determined by the City of Holland or industrial firms by instrumental leveling; those reported to feet were taken from U. S. Geological Survey topographic maps.

Use: D - domestic; I - industrial; O - observation; P - public supply (City of Holland wells no longer in use); S - stock; T - test.

Remarks: L - log, see table 8; C - chemical analysis, see table 9.

Well designation T.R.sec-no.	Location ¼ ¼ ¼	Owner	Driller	Year Drilled	Depth (ft.)	Diameter (in.)	Altitude	Use	Remarks
Ottawa County, Park Township (T. 5 N., R. 16 W.)									
5N 16W									
21-1	SW SE NW	Getz Farm	-	1930	50	36	600	DS	L
21-2	do.	do.	-	-	27	-	600	DS	L
21-3	NW NE SW	G. Combs	Hamilton Mfg. and Supply Co.	1951	40	4	605	D	L
21-4	NE NE SE	Lakewood School	-	-	35	-	605	P	
23-2	SE SE NW	R. Anys	-	-	12	-	610	D	Sand aquifer
23-3	NE NW SE	Waukazoo School	-	1948	20	3	610	P	do.
28-1	SW NE SW	City of Holland	Ranney Water Methods Co.	1953	54	-	585.4	T	L
33-1	NW NE NW	do.	do.	1953	100	-	585.7	T	L
33-2	SW NE NW	do.	do.	1953	70	-	585.8	T	L
33-3	NW SE NW	do.	do.	1954	34	-	585.5	T	L
33-4	SW SE NW	do.	do.	1953	45	-	585.6	T	L
33-5	SE SE NW	Holland State Park	-	-	257	-	595	T	L
33-6	do.	do.	-	1940	70	4	595	T	
33-7	NE NE SW	W. Murphy	-	-	80	-	595	D	L, C
33-8	NW NE SW	Holland State Park	L. Riegler	1941	71	8	595	P	
33-9	NE NW SW	City of Holland	Ranney Water Methods Co.	1953	99	6	585.9	T	L
33-10	SW NE SW	do.	do.	1953	38	-	585.2	T	L, C
33-11	NE SE SW	do.	do.	1953	95	-	593.0	T	L
35-1	- SE NE	J. Keift	Hamilton Mfg. and Supply Co.	1954	40	2	590	D	Sand aquifer
35-2	SE SW NE	D. VanderYacht	D. VanderYacht	-	17	-	615	D	Coarse gravel
35-3	SE SE NE	J. Bowman	J. Bowman	1936	24	1¼	605	D	Gravel
36-1	- SE NE	D. Muller	Hamilton Mfg. and Supply Co.	-	111	4	600	D	L
36-2	- SE SW	R. VanVoorst	do.	1951	28	2	630	D	L
36-3	- SE SW	J. Harsten	Hamilton Mfg. and Supply Co.	1951	35	2½	610	D	L
36-4	- SE SE	A. VanDyke	do.	1952	119	2	620	D	L
Ottawa County, Holland Township and the City of Holland (T. 5 N., R. 15 W.)									
5N 15W									
18-2	NW SW NE	H. J. Rowan	-	-	14	1¼	610	D	Gravel aquifer
18-5	NE NW NW	R. Anys	R. Anys	1954	27	1¼	610	D	Sand and gravel from 13 to 27 ft.
19-1	SE SW NE	P. Knoll	W. Kool	1946	25	1¼	600	D	Sand, fine, and gravel aquifer
19-2	NE NE SW	DeVecht	-	-	24	1½	600	D	Sand aquifer

Table 5.--Records of wells in the Holland area.--Continued

Well designation T.R.sec-no.	Location ¼ ¼ ¼	Owner	Driller	Year Drilled	Depth (ft.)	Diameter (in.)	Altitude	Use	Remarks
5N 15W									
19-3	SE SE SW	Chris Craft Corp.	IXL Machine Shop	1939	26	4	610	PI	
19-4	do.	do.	do.	1939	26	4	610	PI	
19-5	do.	do.	Hamilton Mfg. and Supply Co.	1941	26	4	610	PI	
19-6	do.	do.	do.	1943	26	4	610	PI	
19-7	NE SE SE	Parke, Davis and Co.	-	-	34	-	606.5	PI	
19-8	do.	do.	-	-	31	-	605.2	PI	
19-9	do.	do.	-	-	33	-	603.5	PI	
19-10	do.	do.	-	-	32	-	603.1	PI	
19-11	do.	do.	-	-	-	-	604.1	PI	
19-12	do.	do.	-	-	31	-	603.8	PI	
19-13	do.	do.	-	-	-	-	607.7	PI	
19-14	do.	do.	-	-	29	-	601.3	PI	
19-15	do.	do.	-	-	-	-	604.0	PI	
19-16	do.	do.	-	-	35	-	603.9	PI	
19-17	do.	do.	-	-	34	-	602.9	PI	
19-18	do.	do.	-	-	30	-	604.0	PI	
19-19	do.	do.	-	-	31	-	608.5	PI	
19-20	do.	do.	-	-	33	-	606.2	PI	
19-21	do.	do.	-	-	33	-	606.2	PI	
19-22	do.	do.	-	-	-	-	605.6	PI	
19-23	do.	do.	-	-	33	-	604.1	PI	
19-24	do.	do.	-	-	35	-	605.0	PI	
19-25	do.	do.	-	-	31	-	607.9	PI	
19-26	do.	do.	-	-	31	-	607.6	PI	
19-27	do.	do.	-	-	-	-	606.0	PI	
19-28	do.	do.	-	-	32	-	605.9	PI	
19-29	do.	do.	-	-	31	-	605.3	PI	
20-9	NW SW SW	do.	-	-	32	-	605.1	PI	
20-10	do.	do.	-	-	39	-	613.2	PI	
20-11	do.	do.	-	-	31	-	605.9	PI	
20-12	do.	do.	-	-	29	-	603.9	PI	
20-13	do.	do.	-	-	26	-	603.1	PI	
20-14	do.	do.	-	-	30	-	605.6	PI	
20-15	SW SW SW	do.	Busk and Ormiston	1951	1634	6	587.7	I	Mich. Dept. Conserv. Brine Disposal Permit No. 52. Log published by Mich. Geol. Survey
20-16	SE SW SW	do.	C. S. Raymer	1950	64	-	583.8	T	L
20-17	do.	do.	do.	1950	62	-	583.2	T	L
20-19	SW SW SW	do.	do.	1950	63	-	582.7	T	L
20-20	do.	do.	do.	1950	45	-	584.3	T	L
20-21	do.	do.	do.	1950	37	-	584.5	T	L
20-25	do.	do.	do.	1950	52	6	604.5	T	L
20-26	do.	do.	do.	1950	35	-	591.0	T	L
20-36	NE SW SW	do.	do.	1950	79	-	587.5	T	L
20-37	do.	do.	do.	1950	81	-	589.6	T	L
20-38	do.	do.	do.	1950	56	-	585.7	T	L
21-25	NE SE SE	H. Tubergen	-	-	22	4	590	D	C, in Marshall formation.
21-26	SE SE SE	City of Holland	L. Riegler	1945	45	-	591.6	T	L

Table 5.--Records of wells in the Holland area.--Continued

Well designation T.R.sec-no.	Location ¼ ¼ ¼	Owner	Driller	Year Drilled	Depth (ft.)	Diameter (in.)	Altitude	Use	Remarks
5N 15W									
21-42	NE SE SW	City of Holland	Ranney Water Methods Co.	1953	34	-	586.0	T	L
21-50	NW SW SW	do.	do.	1953	45	-	583.0	T	L
21-52	SE NW SW	do.	do.	1954	65	-	592.0	T	L
26-3	NW SW SW	P. Wabeke	Hamilton Mfg. and Supply Co.	1954	61	3	675	D	
27-1	SE NW NW	City of Holland	L. Riegler	1945	60	-	607.2	T	L
27-2	NE SW NW	do.	do.	1945	122	-	609.9	T	L
27-3	SE SE NW	F. Todd	Hamilton Mfg. and Supply Co.	1951	72	-	640	D	L
27-4	NW NE SW	City of Holland	L. Riegler	1945	160	-	639.1	T	L
27-5	SW NE SW	do.	do.	1946	146	-	642.6	T	L
27-6	NW SW SW	do.	Layne-Northern Co.	1947	158	26	641.6	P	L, C, formerly OtHo 4, Waverly Rd. Station
27-7	do.	do.	L. Riegler	1946	166	-	641.6	T	L
27-8	do.	do.	do.	1946	102	1¼	640	O	Formerly OtHo 10
27-9	do.	do.	do.	1946	175	-	647.4	T	L
27-10	SW SW SW	do.	Layne-Northern	1947	178	26	655	P	L, formerly OtHo 11
27-20	SE NE NW	A. Timmer	Hamilton Mfg. and Supply Co.	1954	76	4	630	D	
27-21	SW NW NE	M. DeRidder	do.	1954	80	4	630	D	
28-6	NE NW NE	Holland Rendering Works	A. Webber	-	87	6	600	I	L, C
28-7	NE NE NE	City of Holland	L. Riegler	1945	80	-	597.5	T	L
28-8	SE NE NE	F. Cherven	Hamilton Mfg. and Supply Co.	1951	58	2	610	D	L
28-9	NE SE NE	City of Holland	H. Menken	1921	96	-	605	T	L
28-10	SE SE NE	do.	L. Riegler	1945	132	-	605.6	T	L
28-11	do.	do.	do.	1946	129	-	610.3	T	L
28-12	SW SE NE	do.	H. Menken	1921	104	-	600	T	L
28-13	NW SE NE	do.	do.	1921	128	-	600	T	L
28-14	NE SW NE	do.	do.	1921	134	-	600	T	L
28-15	NW SW NE	do.	do.	1921	145	-	600	T	L
28-16	do.	do.	American Water Corp.	1927	100	-	600	T	L
28-17	do.	do.	do.	1927	28	-	600	T	L
28-18	do.	do.	do.	1947	87	-	600	T	L
28-19	SE NW NE	Holland Pattern Co.	Hamilton Mfg. and Supply Co.	1951	180	-	600	T	L, Dry hole
28-20	SW NW NE	City of Holland	American Water Corp.	1927	78	-	590	T	L
28-21	SE NE NW	do.	H. Menken	1929	93	-	600	T	L
28-22	do.	do.	do.	1929	88	-	600	T	L
28-23	do.	do.	American Water Corp.	1927	107	-	600	T	L
28-24	NE SE NW	do.	Ranney Water Methods Co.	1953	112	-	584.1	T	L
28-25	NW SE NW	do.	American Water Corp.	1927	102	-	600	T	L
28-26	do.	do.	do.	1927	100	-	600	T	L
28-27	do.	do.	do.	1927	83	-	600	T	L
28-28	SW SE NW	do.	do.	1927	74	-	600	T	L
28-29	NW SE NW	A. Teitsma	-	1927	16	-	600	D	Gravel aquifer.

Table 5.--Records of wells in the Holland area.--Continued

Well designation T.R.sec-no.	Location ¼ ¼ ¼	Owner	Driller	Year Drilled	Depth (ft.)	Diameter (in.)	Altitude	Use	Remarks
5N 15W									
28-33	NW NE NW	City of Holland	Ranney Water Methods Co.	1953	80	-	582.6	T	L
28-34	SW NE NW	do.	do.	1953	42	-	582.3	T	L
28-35	do.	do.	do.	1953	65	-	582.0	T	L
28-36	NE NE NW	do.	do.	1953	77	-	582.3	T	L
28-37	SE NE NW	do.	H. Menken	1929	60	-	590	T	L
28-38	NW NW SW	H. Arnoldink	Knoll	-	15	-	600	D	Sand aquifer, sand from 13 to 15 ft.
28-39	NW SE SW	City of Holland	American Water Corp.	1927	37	-	608	T	L
28-40	do.	do.	do.	1927	64	-	607.7	T	L
28-41	NE NW SE	do.	H. Menken	1921	112	-	600	T	L
28-42	do.	do.	do.	1921	130	-	600	T	L
28-43	do.	do.	Kelly Well Co.	1922	73	25	600	P	L, C 8th St. Station
28-44	do.	do.	L. Riegler	1949	140	6	600	T	L
28-45	do.	do.	R. F. Dunbar and Sons	1950	131	16	600	P	L, C
28-46	do.	do.	Layne Ohio Co.	1932	83	-	600	T	L
28-47	NW NE SE	City of Holland	Kelly Well Co.	1932	83	25	605	P	L, C
28-48	do.	do.	Fairbanks-Morse Water Supply Co.	1929	90	24	605	P	L, C
28-49	do.	do.	H. Menken	1921	91	-	605	T	L
28-50	do.	do.	Layne-Northern Co.	1947	110	26	605	P	L, C, formerly OtHo 3
28-51	- NE SE	do.	H. Menken	1921	41	6	610.0	P	
28-52	do.	do.	do.	1921	43	1¼	609.8	O	Formerly OtHo 2
28-53	do.	do.	do.	1921	42	6	609.6	P	
28-54	do.	do.	do.	1921	47	5	609.3	P	
28-55	do.	do.	do.	1921	49	6	609.1	O	Formerly OtHo 5
28-56	do.	do.	do.	1921	43	5	609.1	P	
28-57	do.	do.	do.	1921	50	6	608.6	P	
28-58	do.	do.	do.	1921	38	5	608.6	P	
28-59	do.	do.	Meyers	1921	54	6	608.1	P	
28-60	do.	do.	H. Menken	1921	35	5	607.9	P	
28-61	do.	do.	Meyers	1921	49	6	607.9	P	
28-62	do.	do.	H. Menken	1921	33	5	607.7	P	
28-63	- NW SE	do.	Meyers	1921	45	6	607.3	P	
28-64	do.	do.	do.	1921	41	6	606.5	P	
28-65	NE NE SE	do.	L. Riegler	1945	142	-	610.1	T	L
28-66	do.	do.	do.	1945	140	-	616.5	T	L
28-67	SW NE SE	do.	H. Menken	1921	72	-	620	T	L
28-68	SE NW SE	do.	do.	1921	93	-	620	T	L
28-69	SW NE SE	do.	Ranney Water Methods Co.	1953	160	-	634.1	T	
28-70	NE SE SE	do.	L. Riegler	1945	140	-	634.9	T	L, formerly OtHo 6
28-71	do.	do.	do.	1946	108	1¼	640	T	Formerly OtHo 9
28-72	SE SE SE	do.	do.	1946	84	1¼	661.6	T	L, formerly OtHo 7, NaCl 3.4 gr.
28-74	SE NE NW	do.	do.	1954	70	12	-	P	No. 6 Station. Buried outwash aquifer
29-1	SE NW NE	do.	American Water Corp.	1927	78	-	585	T	L

Table 5.--Records of wells in the Holland area.--Continued

Well designation T.R.sec-no.	Location ¼ ¼ ¼	Owner	Driller	Year Drilled	Depth (ft.)	Diameter (in.)	Altitude	Use	Remarks
5N 15W									
29-9	NE SW NE	City of Holland	Ranney Water Methods Co.	1953	125	-	600	T	L
29-11	NE SW NE	City of Holland	R. F. Dunbar and Sons	1940	103	6	600	T	L
29-12	SW SW NE	Center Theatre	do.	1939	20	8	605	I	
29-13	do.	Warm Friends Hotel	-	-	13	6	605	P	
29-14	SW SE NW	City of Holland	American Water Corp.	1927	75	-	600	T	L
29-15	SW NE SW	Park Theatre	Hamilton Mfg. and Supply Co.	1954	31	8	605	I	L
29-16	NE NW SE	Holland Theatre	-	-	30	8	605	I	
29-17	SE NE SE	Mich. Gas and Elec. Co.	Layne-Northern Co.	-	35	8	610	I	
29-18	do.	do.	do.	1935	58	-	610	I	L
29-19	do.	do.	do.	1943	34	-	610	I	L
29-20	do.	do.	do.	1946	31	-	610	T	L
29-21	NE NW NW	Parke, Davis and Co.	C. S. Raymer	1950	63	-	582.7	T	L
29-49	- SE NE	City of Holland	-	1883	20	144	600	P	5th St. Station Dug well
29-50	- SE NE	City of Holland	-	1883	-	-	600	P	5th St. Station. Dug well
29-51	do.	do.	-	1883	65	192	600	P	do.
29-52	do.	do.	-	1883	24	2	600	P	44 drive-point wells at 5th St. Station
30-11	NW NE SE	Superior Pure Ice and Mach. Co.	Layne Northern Co.	1938	35	-	595	T	L
30-12	NW NE SE	Superior Pure Ice and Mach. Co.	Layne-Northern Co.	1923	22	6	595	I	L, C
30-13	NE NW SE	City of Holland	American Water Corp.	1927	65	-	585	T	L
30-14	NW SW SE	H. J. Heinz Co.	R. F. Dunbar and Sons	1942	26	-	595	I	L
30-15	do.	do.	do.	1942	30	-	595	I	L
30-16	do.	do.	do.	-	110	6	590	T	L
30-17	do.	do.	do.	-	30	-	590	T	L
30-18	do.	do.	do.	-	22	-	590	T	L
30-19	SW SE SW	City of Holland	American Water Corp.	1927	71	-	590	T	L
30-20	SW SE SE	G. VanDerBie	G. VanDerBie	-	20	1¼	605	D	Gravel aquifer
30-23	SE SE SE	D. Lam	D. Lam	1922	25	2	605	D	Fine gravel aquifer
31-1	SE SE NW	A. VanMaurick	-	1917	30	1	600	D	
31-2	NW SW SW	P. Brandsen	Hamilton Mfg. and Supply Co.	1951	46	3	610	D	L
31-3	SW NE SW	City of Holland	L. Riegler	1945	85	-	610	T	L
31-4	do.	do.	do.	1945	24	-	610	T	L
31-5	SE NE SW	do.	do.	1945	115	-	605	T	L
31-6	NW NW SE	do.	R. F. Dunbar and Sons	-	38	6	610	T	L
31-7	do.	do.	do.	-	45	6	610	T	L
31-8	do.	do.	do.	-	135	6	610	T	L
31-9	SW NW SE	do.	do.	-	35	6	610	T	L
31-10	do.	do.	-	1939	29	18	610	O	Formerly OtHo 12, gravel aquifer

Table 5.--Records of wells in the Holland area.--Continued

Well designation T.R.sec-no.	Location ¼ ¼ ¼	Owner	Driller	Year Drilled	Depth (ft.)	Diameter (in.)	Altitude	Use	Remarks
5N 15W									
31-11	do.	do.	R. F. Dunbar	-	35	6	610	T	L
31-12	do.	do.	do.	-	38	6	610	T	L
31-13	SW NE SE	do.	Kelly Well Co.	1923	29	24	633	P	L
31-14	do.	do.	do.	1923	28	24	633.2	P	L
31-15	NE SE SE	do.	do.	1922	28	24	633.2	P	L
31-16	NW SW SE	H. Bontekoe	J. Knoll	1946	15	1½	635	D	Sand aquifer
31-17	SE SW SE	A. Bushee	A. Bushee	1946	20	1¼	635	D	Sand and gravel aquifer
31-18	SW SW SE	G. Groenewoud	-	-	12	1½	635	D	
31-19	NE SE SE	City of Holland	-	1955	26	1½	-	P	28th St. Station. 50 drive-point wells for emergency supply
31-20	NW NE SE	do.	-	1956	26	1½	-	P	25th St. Station. 50 drive-point wells for emergency supply
32-1	- NW NE	do.	-	1896-7	39	5	620	P	Sand aquifer
32-2	do.	do.	-	1896-7	43	5	620	P	do.
32-3	do.	do.	-	-	42	5	620	P	do.
32-4	do.	do.	-	-	39	5	620	P	
32-5	do.	do.	-	-	26	5	620	P	
32-6	do.	do.	-	-	37	5	620	P	Sand aquifer
32-7	do.	do.	-	1896-7	-	-	620	T	
32-8	do.	do.	-	1896-7	-	-	620	T	
32-9	do.	do.	-	-	-	-	620	T	
32-10	do.	do.	-	-	-	-	620	T	
32-11	do.	do.	-	-	-	-	620	T	
32-12	do.	do.	-	-	-	-	620	T	
32-13	do.	do.	-	-	-	-	620	T	
32-14	do.	do.	-	-	-	-	620	T	
32-15	do.	do.	-	-	-	-	620	T	
32-16	do.	do.	-	-	-	-	620	T	
32-17	do.	do.	-	1896	30	280	620	P	Dug well, 19th St. Station
32-18	do.	do.	-	-	35	5	620	P	Sand aquifer
32-19	do.	do.	-	-	-	-	620	T	
32-20	do.	do.	-	-	-	-	620	T	
32-21	do.	do.	-	-	-	-	620	T	
32-22	do.	do.	-	-	33	5	620	P	Sand aquifer
32-23	do.	do.	-	1903	111	-	615	T	L, saline water
32-24	- SW NE	do.	-	-	35	5	620	P	Sand aquifer
32-25	do.	do.	-	-	-	-	620	T	
32-26	do.	do.	-	-	34	-	620	P	Sand aquifer
32-27	do.	do.	-	-	33	5	620	P	do.
32-28	do.	do.	-	1896-7	33	5	620	P	do.
32-29	do.	do.	-	-	33	5	620	P	do.
32-30	do.	do.	-	-	32	5	620	P	do.
32-31	do.	do.	-	-	31	5	620	P	do.
32-32	do.	do.	-	-	-	-	620	T	
32-33	do.	do.	-	-	-	-	620	T	
32-34	do.	do.	-	-	-	-	620	T	
32-35	do.	do.	-	-	-	-	620	T	
32-36	- NE NW	do.	-	1920	-	5	620	P	

Table 5.--Records of wells in the Holland area.--Continued

Well designation T.R.sec-no.	Location ¼ ¼ ¼	Owner	Driller	Year Drilled	Depth (ft.)	Diameter (in.)	Altitude	Use	Remarks
5N 15W									
32-37	- NE NW	City of Holland	-	1920	-	5	620	P	
32-38	do.	do.	-	1920	-	5	620	P	
32-39	do.	do.	-	1920	-	5	620	P	
32-40	do.	do.	-	1920	-	5	620	P	
32-41	do.	do.	-	1912	32	360	620	P	21st St. Station. Dug well
32-42	do.	do.	-	1912	33 to 47	5	620	P	11 wells of 21st St. Station.
32-43	do.	do.	-	1912	33 to 47	5	620	P	4 wells of 21st St. Station hooked in with 19th St. Station in 1920.
32-45	SE SW NW	A. Speet	Hamilton Mfg. and Supply Co.	1944	24	2	620	D	Sand aquifer
32-46	SE NW SW	G. Mannes	-	1925	22	2	625	D	Fine gravel
32-47	- NW SW	City of Holland	Kelly Well Co.	1922	27	24	630.4	P	L
32-48	do.	do.	do.	1922	28	24	632.1	P	L
32-49	do.	do.	do.	1923	27	24	631.9	P	L
32-50	do.	do.	do.	1923	28	24	632.5	P	L
32-51	NW SW SW	A. Pommerening	-	1929	20	-	630	D	
32-52	NW SE SW	C. DePree	C. DePree	1948	23	1¼	630	D	Sand aquifer
32-53	do.	F. Bouman	F. Bouman	-	14	2	630	D	do.
32-54	SW SE SW	D. Piersma	-	1938	12	-	635	D	do.
32-55	SE SE SW	Mrs. J. Franks	-	-	21	-	635	D	do.
32-56	SW SE SE	City of Holland	American Water Corp.	1927	62	-	630	T	L
32-57	NW SW SE	M. Elterbeek	M. Elterbeek	1940	15	1½	630	D	Sand aquifer
32-58	SW NW SE	W. Miller	-	1940	15	-	630	D	do.
32-59	SW NE SW	K. Beeden	K. Beeden	1946	20	-	620	D	do.
32-60	SE SW NE	R. Brink	R. Brink	1942	20	3	620	D	do.
32-61	SW SE NE	City of Holland	R. F. Dunbar and Sons	1940	100	6	630	T	L
32-62	NE SE NE	do.	American Water Corp.	1927	62	-	620	T	L
32-63	- SW NE	do.	-	-	-	-	615	T	
32-64	do.	do.	-	1896-7	-	-	615	T	
33-1	NE NE NE	do.	R. F. Dunbar and Sons	1940	105	6	660	T	L
33-2	NW NE NE	do.	do.	1940	90	6	645	T	L
33-4	SE NE NE	do.	do.	1940	120	6	680	T	L
33-5	do.	do.	do.	1940	100	6	680	T	L
33-8	SW NE NE	do.	do.	1940	85	-	650	T	L
33-9	do.	do.	do.	1940	85	10	650	T	
33-16	do.	do.	do.	1940	90	-	660	T	L
33-24	SE SE NE	do.	L. Riegler	1946	210	-	669.3	T	L
33-25	NE NE SE	J. Boreman	-	-	124	-	670	D	
33-26	NW NE SE	D. Por	-	-	45	-	675	D	
33-27	NW SW NW	A. Reinink	-	-	-	-	635	D	
34-12	NW NE SE	City of Holland	L. Riegler	1946	290	6	640.6	T	L
34-16	SW SE NW	L. Schaap	H. Mulder	-	133	2	660	D	C
34-19	NW NW SE	J. Vandervaarden	-	-	55	-	660	D	
34-21	NW NE SE	City of Holland	L. Riegler	1949	289	1	640.6	O	L, formerly OtHo 21
34-22	do.	do.	do.	1949	67	1	640.6	O	L, formerly OtHo 22
34-32	SE SE SW	A. Elferdink	-	-	92	-	660	D	
35-1	SW NE NE	H. Atman	Hamilton Mfg. and Supply Co.	1951	42	2	600	D	L

Table 5.--Records of wells in the Holland area.--Continued

Well designation T.R.sec-no.	Location ¼ ¼ ¼	Owner	Driller	Year Drilled	Depth (ft.)	Diameter (in.)	Altitude	Use	Remarks
5N 15W									
35-2	NE NE SW	W. Naber	-	-	134	-	660	D	
35-3	NE NW SW	J. Helder	-	-	103	-	660	D	
35-6	NW NW NW	DeHaan	-	-	65	2	650	P	
Allegan County, Laketown Township (T. 4 N., R. 16 W.)									
4N 16W									
4-1	SE SE NW	City of Holland	Ranney Water Methods Co.	-	90	-	598.0	T	L
4-2	SE SW SE	do.	do.	1953	84	-	605.0	T	L
Allegan County, Fillmore Township (T. 4 N., R. 15 W.)									
4N 15W									
2-1	NE NE NW	E. Helder	-	-	18	-	665	D	
2-2	SW SW NW	N. Dykheries	-	-	95	-	675	D	
3-1	NE NE NE	-	S. Cook	-	200	10	660	-	
3-2	do.	J. Pelon	-	-	72	-	660	D	
3-3	NE NW NW	J. Schaap	-	-	112	-	700	D	
3-4	SE SE NW	J. Wescott	-	-	128	-	685	D	
3-5	NE NW SW	C. Pelon	-	-	100	-	700	D	
4-1	NW NW NE	T. Westing	-	-	58	-	650	D	
4-2	NE NW NW	F. Kooyers	-	-	16	-	645	D	
5-1	NE SE NE	City of Holland	L. Riegler	1945	174	2	670	T	
6-1	NE SW NE	L. W. Lamb Construction Co.	Hamilton Mfg. and Supply Co.	1951	168	3	660	I	L

Table 6.--Records of borings in the Holland area

Logs published for all borings except 5N 15W 21-15 and 29-2 to 29-7. See Table 8.

Borings 5N 15W 33-6, 33-7, and 33-10 to 33-22 were 2½ inches in diameter; other diameter records not available.

Altitude: Feet above mean sea level.

Number	Location ¼ ¼ ¼	Owner	Year Drilled	Depth	Altitude
Ottawa County (T. 5 N., R. 16 W.)					
5N 16W					
13-1	- SE SW	City of Holland	1910	30	595
24-1	NW NE SE	do.	1910	27	588
25-1	SW NE NE	do.	1910	27	590
25-2	SE SE NE	do.	1910	33	600
Ottawa County (T. 5 N., R. 15 W.)					
5N 15W					
16-1	SW SE SE	City of Holland	1910	3	610
16-2	SW SW SE	do.	1910	12	610
16-3	SE SW SW	do.	1910	10	610
17-1	NE NE SE	do.	1910	24	620
18-1	NW NW NW	do.	1910	31	610
18-3	NW SW NW	do.	1910	26	600
20-1	- - SW	State Highway Dept.	1930	50	589.3
20-2	do.	do.	1930	63	589.6
20-3	do.	do.	1930	48	581.8
20-4	do.	do.	1930	48	582
20-5	do.	do.	1930	50	581.4
20-6	do.	do.	1930	49	580.7
20-7	do.	do.	1930	60	588.6
20-8	do.	do.	1930	53	581.7
20-18	SE SW SW	Parke, Davis and Co.	1950	70	584.2
20-22					
20-22	SW SW SW	do.	1950	62	586.4
20-23	do.	do.	1950	40	587.6
20-24	do.	do.	1950	67	591.0
20-27	NW SW SW	do.	1950	40	591.9
20-28	do.	do.	1950	66	592.2
20-29	do.	do.	1950	64	590.6
20-30	do.	do.	1950	71	586.7
20-31	do.	do.	1950	78	590
20-32	do.	do.	1950	83	599
20-33	do.	do.	1950	67	605.1
20-34	do.	do.	1950	68	605.3
20-35	NE SW SW	do.	1950	75	588.4
21-1	NE NE SE	City of Holland	1910	7	596.3
21-2	NW NE SE	do.	1910	7	590.2
21-3	do.	do.	1910	5	601.7
21-4	SE SW NE	State Highway Dept.	1945	23	600.6
21-5	do.	do.	1945	21	601.1
Ottawa County (T. 5 N., R. 15 W.) Continued					
5N 15W					
21-6	SE SW NE	State Highway Dept.	1945	23	602.2
21-7	do.	do.	1945	19	601.3
21-8	NE NW SE	City of Holland	1910	6	601.5
21-9	NE NE SW	do.	1910	15	600.8
21-10	NW NE SW	do.	1910	24	602.6
21-11	NE NW SW	do.	1910	16	597.9
21-12	NW NW SW	do.	1910	23	603.9
21-13	NW NE SW	do.	1910	18	595.2
21-14	NE NE SW	do.	1910	14	594.2
21-15	NW NW SE	do.	1910	14	591.4
21-16	SE NW SE	do.	1910	55	589.7
21-17	SW NE SE	State Highway Dept.	1945	12	585.7
21-18	do.	do.	1945	16	585.7
21-19	do.	do.	1945	22	592.8
21-20	do.	do.	1945	22	593.3
21-21	do.	do.	1945	25	595.7
21-22	do.	City of Holland	1910	4	583.4
21-23	SE NW SE	do.	1910	7	584.1
21-24	SW NE SE	do.	1910	10	583.8
21-27	- NW SE	State Highway Dept.	1946	24	585.2
21-28	do.	do.	1946	25	585.2
21-29	do.	do.	1946	7	590.6
21-30	do.	do.	1946	23	591.1
21-31	do.	do.	1946	21	580.5
21-32	do.	do.	1946	19	580.5
21-33	do.	do.	1946	3	580.5
21-34	do.	do.	1946	20	581.4
21-35	do.	do.	1946	9	580.5
21-36	do.	do.	1946	44	580.8
21-37	- SW SE	City of Holland	1910	14	584.1
21-38	do.	do.	1910	16	584.8
21-39	- NW SE	do.	1910	19	584.0
21-40	- NE SW	do.	1910	14	596.6
21-41	- SE SW	do.	1910	19	584.1
21-43	- SW SE	do.	1910	23	583.8
21-44	- SE SW	do.	1910	12	583.8
21-45	- SW SW	do.	1910	16	583.4
21-46	do.	do.	1910	16	600
21-47	do.	do.	1910	24	600
21-48	do.	do.	1910	8	582.7

Table 6.--Records of borings in the Holland area.--Continued

Number	Location ¼ ¼ ¼	Owner	Year Drilled	Depth	Altitude
Ottawa County (T. 5 N., R. 15 W.) Continued					
5N 15W					
21-49	- SW SW	City of Holland	1910	15	605.7
21-51	- NW SW	do.	1910	25	602.8
21-53	do.	do.	1910	16	603.7
21-54	do.	do.	1910	16	603.4
22-1	SE SW NW	State Highway Dept.	1929	24	585.2
22-2	do.	do.	1929	21	584
22-3	do.	do.	1929	21	585.9
22-4	do.	do.	1929	17	584.3
28-1	- NE NE	do.	1952	44	593.6
28-2	do.	do.	1952	35	591.5
28-3	do.	do.	1952	32	599.4
28-4	do.	do.	1952	32	598.7
28-5	do.	do.	1952	33	597.4
28-30	- NW NW	City of Holland	1910	34	600
28-31	SE NW NW	do.	1910	36	600
28-32	- NW NW	do.	1910	36	600
29-2	- SW NE	do.	-	-	582.3
29-3	do.	do.	-	-	584.3
29-4	- SE NE	do.	-	-	595.7
29-5	do.	do.	-	-	598.2
29-6	do.	do.	-	-	597.7
29-7	do.	do.	-	-	600.2
29-8	do.	do.	-	15	601.2
29-22	NW NE NW	do.	1938	58	588.9
29-23	do.	do.	1938	60	584.3
29-24	do.	do.	1938	61	581.3
29-25	do.	do.	1938	55	580.2
29-26	do.	do.	1938	60	583.0
29-27	- - NW	do.	1938	71	582.8
29-28	do.	do.	1938	81	583.0
29-29	do.	do.	1938	84	582.2
29-30	do.	do.	1938	84	580
29-31	NW NE NW	do.	1938	57	580.5
29-32	do.	do.	1938	59	580.5
29-33	do.	do.	1938	68	580.2
29-34	do.	do.	1938	57	581
29-35	do.	do.	1938	60	582.9
29-36	do.	do.	1938	63	585.3
29-37	do.	do.	1938	60	586.1
29-38	do.	do.	1938	63	583.5
29-39	do.	do.	1938	74	585.2
29-40	do.	do.	1938	64	583
29-41	do.	do.	1938	67	582.9
29-42	do.	do.	1938	67	585.7
29-43	do.	do.	1938	61	580.4
29-44	do.	do.	1938	66	584.8
29-45	do.	do.	1938	66	586.6
29-46	do.	do.	1938	61	580.7
29-47	do.	do.	1938	56	589
29-48	do.	do.	1938	62	581
30-1	SE SE NE	Medusa Portland Cement Co.	1938	92	583.6
30-2	do.	do.	1938	82	582.6
Ottawa County (T. 5 N., R. 15 W.) Continued					
5N 15W					
30-3	SE SE NE	Medusa Portland Cement Co.	1938	90	584.5
30-4	do.	do.	1938	90	585.6
30-5	do.	City of Holland	1938	68	582.9
30-6	do.	do.	1938	87	583.2
30-7	do.	do.	1938	62	584.2
30-8	do.	do.	1938	80	583.8
30-9	NE NE SE	do.	1938	85	590.7
30-10	do.	do.	1938	77	584.7
30-21	- SW NW	do.	1910	35	600
30-22	- NE NW	do.	1910	31	605
33-6	- SW NE	General Electric Co.	1953	19	653
33-7	do.	do.	1953	22	646
33-10	do.	do.	1953	20	650
33-11	do.	do.	1953	25	645
33-12	do.	do.	1953	18	649
33-13	do.	do.	1953	17	653
33-14	do.	do.	1953	19	656
33-15	do.	do.	1953	20	661
33-17	do.	do.	1953	15	655
33-18	do.	do.	1953	16	650
33-19	do.	do.	1953	19	647
33-20	do.	do.	1953	17	655
33-21	do.	do.	1953	19	662
33-22	do.	do.	1953	21	640
Allegan County (T. 4 N., R. 15 W.)					
4N 15W					
4-3	NW NW SW	State Highway Dept.	-	42	656.0
4-4	do.	do.	-	62	657.3
4-5	SW SW NW	do.	-	52	657.2
4-6	do.	do.	-	44	656.3
4-7	do.	do.	-	38	655.5
4-8	do.	do.	-	63	655.9
4-9	do.	do.	-	52	654.6
4-10	do.	do.	-	40	655.0
4-11	do.	do.	-	49	653.9
4-12	do.	do.	-	50	655.1

Table 7.--Selected information from oil-drilling records in the Holland area.

MDC permit: Michigan Department of Conservation permit number. (Refer requests for logs and related information to the Michigan Geological Survey.)

Altitude in feet above mean sea level; LS - land surface, BR - bedrock surface.

Number	Location ¼ ¼ ¼	MDC Permit	Year Drilled	Altitude LS	Altitude BR
Ottawa County (T. 5 N., R. 16 W.)					
5N 16W					
13-2	NE SE SW	109	1929	604.7	505
23-1	SW NW NW	8092	1940	609.1	279
Ottawa County (T. 5 N., R. 15 W.)					
5N 15W					
14-1	NW NW SW	11035	1944	623.4	488
16-4	- SW SW	6970	1939	612.9	523
16-5	- SE SE	120	1928	618	453
18-4	SW SW SW	15529	1949	614.8	485
19-30	NE SW SE	5593	1938	603.8	476
20-39	NE NW SE	11814	1945	627.6	505
20-40	NE NE SE	5012	1938	602.4	512
21-55	NE SW NE	76	1928	602	565
22-5	NW NW SE	8113	1940	604	542
26-1	SE NE NW	10454	1943	591.4	503
26-2	NW NW NW	7495	1940	633.4	577
27-11	NE SW SW	11662	1945	646.3	522
27-12	SE SW SW	12021	1946	663.6	529
27-13	SW SE SW	11567	1945	668.7	529
27-14	SE NE SW	7490	1940	646	536
27-15	SW NW SE	7454	1940	648.1	545
27-16	SW SW SE	11975	1945	677.0	521
27-17	SE SW SE	11863	1945	680.7	538
27-18	NW SE SE	12057	1946	673.1	515
27-19	SE SE SE	7509	1940	677.1	542
28-73	NW NE NE	4777	1938	600	510
29-10	NE SW NE	7738	1940	583.3	459
33-3	NE NE NE	11314	1945	666.8	555
33-23	NE SW NE	7582	1940	647.1	447
33-28	SW SW SE	12765	1946	651.2	389
34-1	NE NW NW	7440	1940	686.3	526
34-2	NE NE NW	11707	1945	677.6	510
34-3	NW NW NE	8248	1941	675.1	459
34-4	SE NW NE	11789	1945	665.9	419
34-5	SW NW NE	7337	1940	664	439
34-6	SE NE NW	7441	1940	663.4	463
34-7	NW SE NW	11465	1945	663.2	303
34-8	NW SW NE	7585	1940	656.6	362
34-9	NE SW NE	7442	1940	681.2	350
34-10	do.	12246	1946	677.9	366
34-11	SW SE NE	11209	1944	635.4	241
34-13	SE SW NE	11420	1945	657.0	230
34-14	SW SW NE	11507	1945	663.9	186
34-15	SE SE NW	11386	1945	667.0	191
34-17	SW NW SW	7840	1940	666.9	214
34-18	SE NE SW	10908	1944	653.4	300
34-20	NW NW SE	11486	1945	667.6	205
34-23	NE NW SE	11298	1945	650.6	191
Ottawa County (T. 5 N., R. 15 W.) Cont'd)					
5N 15W					
34-24	NW NE SE	11300	1945	658.0	201
34-25	SW NE SE	11014	1944	658.9	247
34-26	SE NW SE	11133	1944	641.8	223
34-27	NE SW SE	11458	1945	671.2	371
34-28	NW SE SE	11011	1944	667.4	367
34-29	SE SE SE	10692	1944	660.8	466
34-30	SW SE SE	11101	1944	657.4	466
34-31	SE SW SE	11214	1944	652.9	433
35-4	SE SE NE	10363	1943	670.8	351
35-5	NW NE NW	7497	1940	629.9	382
35-7	SE SW NW	10953	1944	665.1	171
35-8	SE NW SW	10700	1944	672	276
35-9	NW SW SW	10749	1944	675	332
35-10	SW SW SW	10776	1944	666.5	410
35-11	SE SW SW	10689	1944	664.2	436
35-12	NW SE SW	10954	1944	668.0	346
35-13	SW NW SE	11797	1945	660.2	392
35-14	SE NW SE	11359	1945	665.4	401
35-15	NW SE SE	11925	1945	668.7	399
35-16	NW NE SE	12026	1946	661.9	392
Allegan County (T. 4 N., R. 16 W.)					
4N 16W					
2-1	NE NE SE	5859	1939	640.4	505
11-1	SE SE NE	15142	1949	692.6	497
11-2	- SE NW	647	1929	661	469
Allegan County (T. 4 N., R. 15 W.)					
4N 15W					
2-3	NW NW NE	7483	1940	670.9	471
2-4	NW NE NW	10690	1944	660.3	185
2-5	NW NW NW	10781	1944	660.7	480
2-6	SW NW NW	11056	1944	662.2	519
2-7	SE NW NW	10627	1944	660.5	529
2-8	NW SE NW	10948	1944	660.3	513
2-9	NE SW NW	11104	1944	665.0	531
2-10	NW SW NW	10491	1944	666	556
2-11	SW SW NW	11586	1945	670.2	567
2-12	SE SW NW	10742	1944	670.4	566
2-13	SE SE NW	10323	1943	622.8	528
2-14	NW NE SW	10955	1944	681.8	572
2-15	NE NW SW	11658	1945	672.6	573
2-16	NW NW SW	10229	1943	670.1	580
2-17	NE SW SW	10946	1944	659.3	574
2-18	NW SE SW	10693	1944	663.3	493
2-19	SE NE SW	12750	1946	661.3	551
2-20	SE NE SW	10809	1944	661.4	599

Table 7.--Selected information from oil drilling records in the Holland area.--Continued

Number	Location ¼ ¼ ¼	MDC Permit	Year Drilled	Altitude LS	Altitude BR
Allegan County (T. 4 N., R. 15 W.) Cont'd)					
4N 15W					
2-21	SE SW SE	10092	1943	665.6	586
2-22	SE SE SW	10729	1944	663.2	595
2-23	SW SW SW	5316	1938	661.6	481
3-6	NE NE NE	11134	1944	658.0	484
3-7	NW NE NE	10843	1944	666.8	517
3-8	NE NW NE	11089	1944	642.6	492
3-9	NE NE NW	11255	1945	665.2	515
3-10	SE NW NE	11208	1944	663.0	453
3-11	SW NE NE	11229	1944	671.9	511
3-12	SE NE NE	10614	1944	664.1	518
3-13	NE SE NE	11309	1945	669.0	554
3-14	NW SE NE	11362	1945	662.2	534
3-15	NW SW NE	11823	1945	665.0	512
3-16	NE SE NW	11246	1945	683.8	466
3-17	SW SE NW	11401	1945	713.1	488
3-18	SW SW NE	11699	1945	668.0	458
3-19	SE SW NE	11494	1945	663.8	489
3-20	SW SE NE	11596	1945	652.5	422
3-21	SE SE NE	10438	1943	667.4	572
3-22	SE NE SE	10309	1943	655.5	411
3-23	NW NW SE	11933	1945	673.7	506

Number	Location ¼ ¼ ¼	MDC Permit	Year Drilled	Altitude LS	Altitude BR
Allegan County (T. 4 N., R. 15 W.) Cont'd)					
4N 15W					
3-24	SE SW SW	7491	1940	695.4	525
5-2	NW NE SW	12896	1947	650.5	405
5-3	SE SE SW	12265	1946	687.0	437
6-2	SW NE NE	13694	1947	679.5	444
7-1	NE NW NE	11020	1944	677.2	419
8-1	SW SW NE	13330	1947	670.3	485
9-1	SW SW NW	12467	1946	671.0	461
10-1	SE NW NE	8750	1941	656.2	496
11-1	NE NW NE	10753	1944	681.8	572
11-2	NE NE NW	10900	1944	666.7	571
11-3	NE SE NW	10571	1944	669.2	556
11-4	SE NW NE	10341	1943	675.4	575
11-5	SW NE NE	10711	1944	674.3	560
11-6	SE NE NE	11037	1944	670.1	572
11-7	NE SE NE	10601	1944	665.3	560
11-8	NW SE NE	11437	1945	681.6	580
11-9	SE SW NE	10238	1943	684.2	511
11-10	SW SE NE	10093	1943	674.8	551
11-11	NE NE SE	10405	1943	667.2	452
11-12	SW NE SE	10508	1943	670.4	460

Table 8.--Logs of wells and test borings in the Holland area.

Alt.: Altitude approximate or estimated in feet above mean sea level.

Thickness in feet. Depth in feet below land surface.

	Thickness	Depth
5N 16W 13-1 Alt. 595		
Muck	4	4
Sand, fine	26	30
5N 16W 21-1 Alt. 600		
Sand and gravel, sandy	32	32
Sand, very fine	18	50
5N 16W 21-2 Alt. 600		
Sand	21	21
Sand, water-bearing	7	28
5N 16W 21-3 Alt. 605		
Sand	30	30
Sand, clayey	4	34
Sand	6	40
5N 16W 24-1 Alt. 588		
Muck	5	5
Sand, fine	22	27
5N 16W 25-1 Alt. 590		
Sand, fine	27	27
5N 16W 25-2 Alt. 600		
Sand, fine	33	33
5N 16W 28-1 Alt. 585		
Sand, fine to medium, silty	10	10
Sand, medium to coarse, gravelly	8	18
Sand, buff, fine, silty	21	39
Sand, gray, fine, silty	15	54
5N 16W 33-1 Alt. 586		
Sand, beach	7	7
Sand, medium to coarse, gravelly	13	20
Sand, fine to medium	6	26
Sand, fine, hard, clayey, silty	74	100
5N 16W 33-2 Alt. 586		
Sand, beach	8	8
Sand, medium to coarse, gravelly	16	24
Sand, fine to medium	25	49
Sand, coarse, gravelly	3	52
Clay, gray, hard, sandy	18	70
5N 16W 33-3 Alt. 585		
Sand, beach	5	5
Sand, medium to coarse, and medium gravel	18	23
Sand, medium	7	30
Sand, medium, gravelly	4	34
5N 16W 33-4 Alt. 586		
Sand, beach	3	3
Sand, medium to coarse, and medium gravel	34	37
Sand, fine, silty	7	44
Clay balls	1	45
5N 16W 33-5 Alt. 595		
Sand, tan, coarse	25	25
Sand, fine to coarse, and gravel	5	30
Sand, coarse	5	35
Sand, tan, coarse, and gravel	5	40
5N 16W 33-5 Cont'd.		
Sand, tan, coarse	27	67
Sand and gravel	3	70
Clay and sand	15	85
Sand, gray, fine to medium, clayey	33	118
Sand, tan, fine to medium	13	131
Clay, sandy	5	136
Clay, gray, and shale	40	176
Shale, blue	81	257
5N 16W 33-7 Alt. 595		
Sand	30	30
Clay, red	3	33
Sand	10	43
Clay, red	5	48
Sand	15	63
Clay, red	7	70
Gravel	10	80
5N 16W 33-9 Alt. 586		
Sand, fine to medium	19	19
Sand, fine to medium, and gravel	5	24
Sand, fine to medium	36	60
Sand, fine to medium, and medium gravel	9	69
Sand, fine to medium, silty, clay balls	13	82
Sand, silty, hard, and clay balls	9	91
Clay, gray, sandy	8	99
5N 16W 33-10 Alt. 585		
Sand, beach	5	5
Sand, medium to coarse, and medium gravel	30	35
Sand, silty, fine	3	38
5N 16W 33-11 Alt. 593		
Sand, fine to medium, and silt	19	19
Sand, medium to coarse	41	60
Clay, gray	1	61
Sand, medium to coarse	9	70
Sand, coarse, and clay balls	3	73
Sand, medium to coarse	3	76
Clay, black, and sand, interbedded	6	82
Clay, blue to gray, soft	13	95
5N 16W 36-1 Alt. 600		
Soil	1	1
Sand, brown	12	13
Sand, water-bearing	5	18
Clay, sandy	38	56
Sand, fine	4	60
Gravel, water-bearing	1	61
Sand, fine	5	66
Clay, sandy	36	102
Sand, coarse	9	111
5N 16W 36-2 Alt. 630		
Sand	24	24
Sand, water-bearing	4	28
5N 16W 36-3 Alt. 610		
Sand	15	15
Clay	15	30
Gravel, clayey	5	35
5N 16W 36-4 Alt. 620		
Sand	14	14
Clay	1	15
Sand, clay, and gravel	98	113
Sand	6	119
Clay	-	-
5N 15W 16-1 Alt. 610		
Soil and sand	2	2
Sand	1	3
Clay	-	-
5N 15W 16-2 Alt. 610		
Soil and sand	2	2
Sand	10	12
Clay	-	-
5N 15W 16-3 Alt. 610		
Sand	10	10
Clay	-	-
5N 15W 17-1 Alt. 620		
Sand, fine, and clay	24	24
Clay	-	-
5N 15W 18-1 Alt. 610		
Sand, fine	31	31
5N 15W 18-3 Alt. 600		
Sand, fine	26	26
5N 15W 20-1 Alt. 589		
Sand, fill	10	10
Muck, wood fragments	4	14
Sand, wood fragments	17	31
Clay, marl	14	45
Sand	5	50
Gravel	-	-
5N 15W 20-2 Alt. 590		
Sand, fill	13	13
Muck	2	15
Sand, wood fragments	18	33
Clay, marl	12	45
Sand	18	63
Gravel	-	-
5N 15W 20-3 Alt. 582		
Water	15	15
Sand	5	20
Clay, marl	21	41
Sand, water-bearing	7	48
Gravel	-	-
(Boring in river bottom)		
5N 15W 20-4 Alt. 582		
Water	2	2
Mud	4	6
Sand, wood fragments	14	20
Clay, marl	23	43
Sand, water-bearing	5	48
(Boring in river bottom)		
5N 15W 20-5 Alt. 581		
Ashes, river silt	3	3
Sand, gray, coarse	10	13
Gravel, compact	4	17
Sand, gray, fine	8	25
Clay, lake	21	46
Sand, gray	4	50
Rock	-	-

Table 8.-- Logs of wells and test borings in the Holland area.--Continued

	Thickness	Depth
5N 15W 20-6 Alt. 581		
Silt, river	3	3
Sand, gray, water-bearing	3	6
Sand, gray, coarse	25	31
No record	15	46
Sand, gray	3	49
Rock	-	-
5N 15W 20-7 Alt. 589		
Sand and gravel	10	10
Sand, gray, coarse	10	20
Gravel, fine	11	31
No record	18	49
Sand, gray	11	60
Rock	-	-
5N 15W 20-8 Alt. 582		
Sand, gray, coarse	21	21
No record	17	38
Sand, gray, coarse	15	53
Rock	-	-
5N 15W 20-16 Alt. 584		
Muck and fill	7	7
Sand	18	25
Silt	30	55
Sand	4	59
Sand and gravel	5	64
5N 15W 20-17 Alt. 583		
Muck and fill	7	7
Sand	15	22
Silt	29	51
Sand, gas reported	6	57
Sand and gravel	5	62
Clay and stones	-	-
5N 15W 20-18 Alt. 584		
Fill	7	7
Sand, coarse	16	23
Silt, brown, soft	20	43
Sand, coarse, gas reported	19	62
Clay, gravel, and sand, hard	8	70
Stones and hardpan	-	-
5N 15W 20-19 Alt. 583		
Fill and muck	6	6
Sand	11	17
Sand and silt	5	22
Silt	24	46
Sand, gas reported	11	57
Sand and gravel	6	63
Clay	-	-
5N 15W 20-20 Alt. 584		
Fill	2	2
Muck	5	7
Sand	17	24
Gravel, fine	4	28
Clay, sandy	10	38
Clay	7	45
5N 15W 20-21 Alt. 584		
Fill	6	6
Sand and gravel	9	15
Sand	22	37
Clay	-	-
5N 15W 20-22 Alt. 586		
Fill	11	11
Sand, medium	19	30
Sand, seams of clay	14	44
Clay	18	62
Hardpan	-	-
5N 15W 20-23 Alt. 588		
Fill	8	8
Sand	15	23
5N 15W 20-23 Cont'd.		
Sand and gravel	4	27
Clay, sandy	13	40
5N 15W 20-24 Alt. 591		
Fill	9	9
Sand, medium	20	29
Sand, seams of clay	24	53
Clay	14	67
Hardpan	-	-
5N 15W 20-25 Alt. 604		
Sand	37	37
Silt and clay	15	52
5N 15W 20-26 Alt. 591		
Fill	2	2
Sand	14	16
Sand, fine, and silt	19	35
Clay	-	-
5N 15W 20-27 Alt. 592		
Fill	6	6
Sand	16	22
Sand, coarse	3	25
Sand, very fine	9	34
Sand, very fine, and clay	2	36
Clay	4	40
5N 15W 20-28 Alt. 592		
Fill	8	8
Sand, medium	5	13
Sand, fine	16	29
Sand, seams of clay	19	48
Clay	18	66
Hardpan	-	-
5N 15W 20-29 Alt. 591		
Fill	7	7
Sand	18	25
Sand and gravel	3	28
Clay, sandy	4	32
Clay, soft	32	64
Hardpan	-	-
5N 15W 20-30 Alt. 587		
Sand	17	17
Sand and gravel	4	21
Sand, fine, and clay	11	32
Clay, soft	29	61
Clay and stones	10	71
Hardpan	-	-
5N 15W 20-31 Alt.		
Fill	5	5
Sand	10	15
Sand and gravel	11	26
Clay, soft	39	65
Clay and small stones	13	78
Hardpan	-	-
5N 15W 20-32		
Fill	7	7
Sand	26	33
Sand, very fine, and clay	7	40
Clay, soft	30	70
Clay and stones	13	83
Hardpan	-	-
5N 15W 20-33 Alt. 605		
Fill	5	5
Sand, medium	19	24
Sand, seams of clay	38	62
Clay	5	67
5N 15W 20-34 Alt. 605		
Fill	5	5
Sand, coarse	9	14
5N 15W 20-34 Cont'd.		
Sand, fine	15	29
Sand, seams of clay	33	62
Clay	6	68
5N 15W 20-35 Alt. 588		
Fill	3	3
Sand and gravel	20	23
Clay, soft	40	63
Clay with stones	12	75
5N 15W 20-36 Alt. 587		
Fill	7	7
Clay, sandy, soft	11	18
Clay, soft	44	62
Clay and stones	17	79
Hardpan	-	-
5N 15W 20-37 Alt. 590		
Cinders	1	1
Sand	15	16
Sand and gravel	5	21
Clay, soft	44	65
Clay and stones	16	81
5N 15W 20-38 Alt. 586		
Fill	6	6
Muck	12	18
Sand, coarse	5	23
Silt	20	43
Silt and sand	5	48
Sand and clay	5	53
Sand	3	56
Clay	-	-
5N 15W 21-1 Alt. 596		
Sand	7	7
Clay	1	8
5N 15W 21-2 Alt. 590		
Sand, fine	7	7
Rock (?)	1	8
5N 15W 21-3 Alt. 602		
Sand	5	5
Clay	1	6
5N 15W 21-4 Alt. 601		
Sand, medium, gravelly	8	8
Clay, blue, soft	1	9
Sand, gray, medium, and blue clay	1	10
Clay, blue, plastic, sandy, gravelly	1	11
Sandstone, hard	1	12
Sandstone and shale interbedded	2	14
Sandstone, hard	1	15
Shale, blue, hard	1	16
Sandstone, gray	3	19
Shale, sandy, hard	3	22
Sandstone and shale interbedded, hard	1	23
5N 15W 21-5 Alt. 601		
Sand, yellow-brown, medium, gravelly	8	8
Clay, blue, plastic, and gravel	2	10
Clay, blue, sand, and gravel	2	12
Sand, gray, fine	1	13
Sand, fine, gravelly, and clay	1	14
Gravel, coarse, and blue clay, sandy	1	15
Clay, blue, stiff, gravelly	1	16
Sand, gray, fine	1	17
Clay, blue, stiff	1	18
Gravel and coarse sand	2	20
Sandstone, hard	1	21

Table 8.--Logs of wells and test borings in the Holland area.--Continued

	Thickness	Depth
5N 15W 21-6 Alt. 602		
Sand and gravel	8	8
Clay, blue, plastic, gravelly	6	14
Sand, gray, blue clay, and gravel	2	16
Clay, blue, gravelly	2	18
Sand, gray, fine	2	20
Clay, blue, hard	1	21
Sand, gray, fine	1	22
Sandstone, hard	1	23
5N 15W 21-7 Alt. 601		
Sand, yellow, medium, and gravel	7	7
Clay, blue, plastic, and gravel	5	12
Sand, gray, fine	1	13
Clay, blue, gravelly	3	16
Clay, blue	1	17
Gravel, sandy	1	18
Gravel, hard, and sand, cemented	1	19
5N 15W 21-8 Alt. 602		
Sand	6	6
Clay	-	-
5N 15W 21-9 Alt. 601		
Sand, fine to coarse	14	14
Clay	1	15
5N 15W 21-10 Alt. 603		
Sand	8	8
Sand, coarse	16	24
5N 15W 21-11 Alt. 598		
Sand	12	12
Sand, hardpacked	2	14
Clay	2	16
5N 15W 21-12 Alt. 604		
Sand	3	3
Sand, coarse	6	9
Clay, sandy	1	10
Sand	13	23
Clay	-	-
5N 15W 21-13 Alt. 595		
Sand, fine	5	5
Sand, coarse	13	18
Clay	-	-
5N 15W 21-14 Alt. 594		
Sand, fine	6	6
Clay	8	14
5N 15W 21-16 Alt. 590		
Sand and gravel	6	6
Clay	-	-
5N 15W 21-17 Alt. 586		
Water	1	1
Soil, peaty	1	2
Sand, yellow	2	4
Clay, yellow to blue, silty	2	6
Clay, blue, and sandstone	1	7
Sandstone, gray and shale	2	9
Shale, blue, and sandstone	3	12
Sandstone	-	-
(Boring in river bottom)		
5N 15W 21-18 Alt. 586		
Water	1	1
Soil, peaty	1	2
Sand, yellow, and gravel	2	4
5N 15W 21-18 Cont'd.		
Clay, yellow to blue	4	8
Clay, blue, and sandstone	2	10
Shale, blue	2	12
Sandstone	1	13
Shale, blue, and sandstone	3	16
Sandstone	-	-
(Boring in river bottom)		
5N 15W 21-19 Alt. 593		
Sand and gravel, fill	5	5
Cinders, fill	4	9
Sand, yellow, clay, and gravel	2	11
Clay, yellow, sandy	1	12
Sand, yellow to gray, and clay	2	14
Clay, blue, silty and sandstone	3	17
Sandstone	5	22
5N 15W 21-20 Alt. 593		
Cinders, fill	3	3
Clay, blue, and thin sand lenses	4	7
Clay, blue	2	9
Sand, gravelly, and clay	1	10
Sand, gray, fine	10	20
Clay, sand, and gravel	1	21
Sand and sandstone	1	22
5N 15W 21-21 Alt. 596		
Sand, brown	2	2
Sand, yellow	2	4
Clay, yellow to blue, sandy	2	6
Clay, yellow to blue, sandy, gravelly	3	9
Clay, blue, sandy	2	11
Sand, yellow to gray, fine	2	13
Sand, gray, fine	10	23
Clay, blue, and sand, fine	2	25
Sandstone	1	26
5N 15W 21-22 Alt. 583		
Clay, sand, and gravel	4	4
Sandstone	-	-
5N 15W 21-23 Alt. 584		
Soil, sandy, black	3	3
Sand	3	6
Clay	1	7
5N 15W 21-24 Alt. 584		
Clay and sand	6	6
Clay	4	10
Sandstone	-	-
5N 15W 21-26 Alt. 592		
Sand, clean	5	5
Sand and gravel	10	15
Clay and gravel	5	20
Sandstone and fine gravel	20	40
Clay, blue	5	45
5N 15W 21-27 Alt. 582		
Topsoil, sandy	2	2
Sand, yellow, fine	4	6
Sand, yellow, fine, peaty	2	8
Sand, peaty	4	12
Peat, sandy	4	16
Sand, gray, medium to coarse	5	21
Sand, fine, gravel, and sandstone	4	25
5N 15W 21-28 Alt. 585		
Sand	2	2
Sand, yellow, fine	4	6
Sand, yellow, fine, and clay blue	2	8
Sand, medium, peaty	5	13
Peat and sand	4	17
Sand, fine, peaty	2	19
Sand, medium to coarse, and fine gravel	3	22
Sand, fine, and fine gravel	2	24
Sandstone, soft to hard	1	25
5N 15W 21-29 Alt. 591		
Sand, brown to yellow	1	1
Soil, yellow, sandy	1	2
Clay, blue to yellow, sandy, plastic	1	3
Clay, blue to yellow, firm	3	6
Clay, blue to yellow, and gravel	1	7
Sand, yellow, and fine gravel	1	8
Sandstone, hard	-	-
5N 15W 21-30 Alt. 591		
Sand, brown to yellow	1	1
Clay, blue to yellow, plastic	1	2
Clay, blue to yellow, silty	4	6
Clay, blue to yellow, sandy	1	7
Sand, yellow, gravelly	1	8
Clay, blue, sandy, gravelly	2	10
Sand, yellow, fine, and sandstone	9	19
Shale, blue, and very fine gray sand	1	20
Shale, blue, silty, with sandstone	3	23
Sandstone, hard	-	-
5N 15W 21-31 Alt. 580		
Water	4	4
Sand, peaty, and silt	4	8
Peat, soft	2	10
Sand, gray, medium	4	14
Gravel and shells	2	16
Sand, gravel, and clay	2	18
Clay, blue, plastic, silty	4	22
Sandstone, hard	-	-
(Boring in river bottom)		
5N 15W 21-32 Alt. 580		
Water	4	4
Silt and clay	1	5
Sand, wood fragments	4	9
Peat, soft	4	13
Sand, gray, and gravel	3	16
Sand, gravel, and sandstone	2	18
Shale, blue, soft, and sandstone	2	20
(Boring in river bottom)		
5N 15W 21-33 Alt. 580		
Water	3	3
Sandstone, yellow, hard	1	4
(Boring in river bottom)		
5N 15W 21-34 Alt. 581		
Water	1	1
Clay, soft, and silt	1	2
Sand, yellow, and sandstone	6	8
Shale, blue, and sandstone	2	10
Shale, blue, hard	9	19
Sandstone, hard	1	20
(Boring in river bottom)		

Table 8.--Logs of wells and test borings in the Holland area.--Continued

	Thickness	Depth
5N 15W 21-35 Alt. 580		
Water	3	3
Sand, yellow and sandstone	1	4
Sandstone, yellow, soft	4	8
Sandstone, yellow, hard	1	9
(Boring in river bottom)		
5N 15W 21-36 Alt. 581		
Sand, yellow to gray, clay and silt	1	1
Sand, brown, fine	1	2
Sandstone, yellow, hard	3	5
5N 15W 21-37 Alt. 584		
Clay	3	3
Sand, very fine	4	7
Sand and clay	5	12
Sand, coarse	2	14
Sandstone	-	-
5N 15W 21-38 Alt. 585		
Clay and soil	3	3
Sand, fine	4	7
Sand and clay	5	12
Sand, coarse	4	16
Sandstone	-	-
5N 15W 21-39 Alt. 584		
Muck	16	16
Sand	2	18
Clay, hard	1	19
5N 15W 21-40 Alt. 596		
Sand, fine	4	4
Sand, coarse	5	9
Clay	5	14
5N 15W 21-41 Alt. 584		
Muck	15	15
Sand and clay	3	18
Clay or stone	1	19
5N 15W 21-42 Alt. 586		
Clay, sandy	7	7
Gravel, coarse, and coarse sand	10	17
Clay, gray, soft	3	20
Clay, blue, sandy	3	23
Clay, gray, sandy	9	32
Sandstone, gray	2	34
5N 15W 21-43 Alt. 584		
Muck and clay	14	14
Sand, very fine, and clay	6	20
Sand	3	23
5N 15W 21-44 Alt. 584		
Muck	2	2
Sand, coarse	10	12
Clay	-	-
5N 15W 21-45 Alt. 583		
Sand, coarse, and clay	2	2
Sand, fine, dirty	14	16
Clay	1	17
5N 15W 21-46 Alt. 583		
No record	13	13
Clay	3	16
5N 15W 21-47 Alt. 600		
Muck	23	23
Sand	1	24
5N 15W 21-48 Alt. 583		
Gravel	8	8
Clay	-	-
5N 15W 21-49 Alt. 606		
Sand, fine	15	15
Sandstone and shale	-	-
5N 15W 21-50 Alt. 583		
Muck, black, clay, and gravel	21	21
Clay, gray, soft, and gravel	10	31
Sand, medium to coarse, and gravel	2	33
Clay, gray, hardpan	5	38
Clay, gray	6	44
Sandstone	1	45
5N 15W 21-51 Alt. 603		
Sand, fine to coarse	24	24
Clay	1	25
5N 15W 21-52 Alt. 592		
Sand, medium to coarse, gravel	10	10
Clay, sandy	28	38
Clay, gray, hard	14	52
Shale, blue	13	65
5N 15W 21-53 Alt. 604		
Sand, fine to coarse	16	16
Clay	-	-
5N 15W 21-54 Alt. 603		
Sand, fine to coarse	16	16
Clay	-	-
5N 15W 22-1 Alt. 585		
Sand, yellow	4	4
Sand, gray, fine	8	12
Gravel, coarse, sandy	8	20
Clay, blue, hard	4	24
5N 15W 22-2 Alt. 584		
Sand, fine	12	12
Gravel, fine	3	15
Clay, blue, hard	6	21
5N 15W 22-3 Alt. 586		
Soil, sandy	5	5
Clay, blue, sandy, hard	4	9
Gravel, fine	3	12
Clay, blue, hard, stony	9	21
5N 15W 22-4 Alt. 584		
Sand, yellow	3	3
Clay, blue	2	5
Sand, water-bearing	6	11
Gravel, fine	2	13
Gravel, coarse, compact	4	17
5N 15W 27-1 Alt. 607		
Top soil	3	3
Clay, blue, firm	25	28
Clay, blue, and fine gravel	32	60
5N 15W 27-2 Alt. 610		
Soil	5	5
Clay, hard	18	23
Clay, sandy	7	30
Clay, gravelly	10	40
Clay, blue	82	122
5N 15W 27-3 Alt. 640		
Sand	20	20
Clay	30	50
Sand	3	53
Clay	16	69
Sandstone	3	72
5N 15W 27-4 Alt. 639		
Sand, clean	5	5
Sand and gravel	15	20
Clay, blue, soft, sandy	98	118
Clay, blue, hard	42	160
5N 15W 27-5 Alt. 643		
Soil	2	2
Sand, clean	13	15
Clay, red	3	18
Clay, blue, firm	57	75
Clay, soft, sandy	54	129
Sand, water-bearing	12	141
Clay, blue	5	146
5N 15W 27-6 Alt. 642		
Soil	2	2
Sand, brown	3	5
Clay, blue	43	48
Sand, muddy	7	55
Sand, coarse, clean	25	80
Sand, medium	35	115
Gravel and sand	15	130
Sand, medium	10	140
Sand and gravel	10	150
Gravel, coarse	10	160
Shale	1	161
5N 15W 27-7 Alt. 642		
Soil	2	2
Clay, sandy	8	10
Clay, blue	40	50
Sand and gravel	55	105
Gravel and sand	56	161
Clay	5	166
5N 15W 27-9 Alt. 647		
Soil	2	2
Clay, red	13	15
Clay, blue	30	45
Sand, coarse, and fine gravel	27	72
Sand, sharp	10	82
Gravel, fine, and coarse sand	22	104
Sand, coarse	8	112
Sand, coarse, and gravel	3	115
Gravel, fine, clean	15	130
Sand, coarse, and gravel	1	131
Gravel, fine, clean	16	147
Sand, coarse, and gravel	2	149
Gravel, fine, and sand	21	170
Clay, blue	5	175
5N 15W 27-10 Alt. 655		
Soil	1	1
Clay, brown	4	5
Clay, blue	43	48
Sand, muddy	7	55
Sand, coarse	25	80
Sand and clay, interbedded	27	107
Sand, medium	8	115
Gravel, coarse	15	130
Sand, medium	5	135
Sand and gravel, interbedded	21	156
Sand and gravel	3	159

Table 8.--Logs of wells and test borings in the Holland area.--Continued

	Thickness	Depth
5N 15W 27-10 Cont'd.		
Clay	1	160
Sand and gravel	2	162
Gravel, coarse	4	166
Sand and gravel, clay balls	12	178
Clay	1	179
5N 15W 28-1 Alt. 594		
Soil	1	1
Clay, blue, plastic, pebbly, sandy	3	4
Sand and gravel, clayey	2	6
Sandstone	1	7
Sand and gravel	1	8
Sand, yellow, fine, silty	2	10
Sand, yellow, fine to medium	8	18
Sand, yellow to gray, fine	23	41
Sand and gravel	2	43
Sandstone, soft	1	44
Sandstone, hard	-	-
5N 15W 28-2 Alt. 591		
Soil	1	1
Sand, yellow, fine	2	3
Sand, yellow, fine, gravelly	1	4
Sandstone, soft	1	5
Gravel	2	7
Sand and gravel, silty	1	8
Sand, yellow, fine to medium, gravelly	7	15
Gravel, fine to medium, sandy	5	20
Sand, yellow, fine to coarse	3	23
Sand, yellow, fine	5	28
Sand, gray, fine, silty	1	29
Clay, blue, stiff, sandy	1	30
Sandstone, soft	1	31
Sand, gray, fine, silty, gravelly	1	32
Sand and gravel, compact	1	33
Sandstone, soft	1	34
Sandstone, hard	1	35
5N 15W 28-3 Alt. 599		
Sand, fill	3	3
Clay, yellow to blue	2	5
Clay, blue, silty	1	6
Clay, blue, plastic, sandy	1	7
Sand, gravel, and clay	1	8
Sand, yellow, fine to coarse, silty	9	17
Sand, yellow, coarse	1	18
Sand, yellow, fine	3	21
Clay, blue, stiff	2	23
Sand, gray, fine, and medium to coarse gravel	1	24
Shale, blue	1	25
Sandstone, soft	1	26
Sandstone, gray	3	29
Shale, blue, firm	1	30
Sandstone, gray	2	32
5N 15W 28-4 Alt. 599		
Sand and gravel	5	5
Soil, sandy	1	6
Sand, yellow, medium	1	7
Clay, yellow to blue, firm, sandy, gravelly	3	10
Clay, blue, stiff	1	11
Boulder	8	19
Clay, blue, stiff, sandy, gravelly	1	20
Sand, gray, fine	1	21
Sand, yellow to gray, medium	1	22
5N 15W 28-4 Cont'd.		
Gravel, clayey	1	23
Sand, gray, fine to coarse and coarse gravel	2	25
Sand, gray, fine, silty, and coarse gravel	3	28
Sand, gray, fine, silty	2	30
Sandstone, soft to hard	2	32
5N 15W 28-5 Alt. 597		
Sand, fill	5	5
Clay, yellow to blue, firm	2	7
Sandstone, brown, soft	1	8
Clay, blue, pebbly, sandy	7	15
Sand, yellow, medium to coarse, and gravel	2	17
Sand, gray, fine, silty, and gravel	3	20
Sandstone, soft	1	21
Sand, gray, fine, silty	4	25
Clay, blue, stiff	1	26
Sand, gray, fine, silty	3	29
Sandstone, soft	1	30
Sand, gray, fine, silty, and gravel	3	33
Sandstone, hard	-	-
5N 15W 28-6 Alt. 577		
Drift	135	135
5N 15W 28-7 Alt. 598		
Soil	3	3
Clay, sandy	15	18
Sand, dry	6	24
Sand, sharp, water-bearing	16	40
Sandstone	4	44
Shale, blue	36	80
5N 15W 28-8 Alt. 610		
Sand	58	58
5N 15W 28-9 Alt. 605		
Clay	10	10
Sand, fine	30	40
Sand, coarse	43	83
Sand, coarse, and gravel	13	96
Clay	-	-
5N 15W 28-10 Alt. 606		
Soil	2	2
Clay, hard	14	16
Sand, medium to coarse	95	121
Sand, coarse, and gravel	6	127
Clay, blue	5	132
5N 15W 28-11 Alt. 610		
Soil	2	2
Clay, blue	27	29
Sand, sharp	76	105
Sand, coarse	19	124
Clay, blue	5	129
5N 15W 28-12 Alt. 600		
Soil	5	5
Clay	15	20
Sand, medium	20	40
Gravel	13	53
Sand, medium	51	104
Clay	-	-
5N 15W 28-13 Alt. 600		
Sand, very fine	60	60
Sand, fine	15	75
Sand, coarse	20	95
Gravel, coarse	33	128
Clay	-	-
5N 15W 28-14 Alt. 600		
Soil	20	20
Sand, very fine	55	75
Sand, fine	54	129
Sand, medium, and gravel	5	134
5N 15W 28-15 Alt. 600		
Sand	8	8
Clay	8	16
Sand, medium to coarse	67	83
Sand, coarse	53	136
Gravel	9	145
Clay	-	-
5N 15W 28-16 Alt. 600		
Sand	22	22
Clay, blue, and boulders	10	32
Clay, blue, and gravel	19	51
Clay, blue, soft, sandy	49	100
5N 15W 28-18 Alt. 600		
Sand and gravel	7	7
Clay, blue, sandy	28	35
Sand, water-bearing	52	87
5N 15W 28-19 Alt. 600		
Sand	20	20
Clay	40	60
Shale	3	63
Clay, blue	57	120
Sandstone	1	121
Clay, blue	14	135
Clay	5	140
Clay and shale	40	180
5N 15W 28-20 Alt. 600		
Sand	9	9
Clay, blue	29	38
Sand, water-bearing	40	78
5N 15W 28-21 Alt. 600		
Clay, marsh	11	11
Clay, blue	8	19
Sand, yellow, and gravel	8	27
Sand, water-bearing	52	79
Sand and gravel	3	82
Clay, sandy	6	88
Sand, water-bearing	2	90
Clay, blue	3	93
5N 15W 28-22 Alt. 600		
Clay, marsh	22	22
Clay, blue, soft	5	27
Sand, very fine, water-bearing	48	75
Sand, fine	13	88
5N 15W 28-23 Alt. 600		
Sand	8	8
Clay, blue	39	47
Sand, medium to coarse, water-bearing	50	97
Sand, water-bearing, and blue clay	8	105
Clay, blue	2	107
5N 15W 28-24 Alt. 584		
Muck, black	22	22
Clay, sandy	10	32
Sand, medium	3	35
Boulders	1	36
Sand, fine to medium, silty	68	104
Hardpan	2	106
Clay, blue	6	112

Table 8.--Logs of wells and test borings in the Holland area.--Continued

	Thickness	Depth
5N 15W 28-25 Alt. 600		
Sand	9	9
Clay, blue, and boulders	35	44
Clay, blue, and sand, interbedded	58	102
5N 15W 28-26 Alt. 600		
Sand	7	7
Sand and gravel	27	34
Gravel, clay, blue, and boulders	6	40
Clay, blue, and boulders	7	47
Clay, blue, and sand, interbedded	53	100
5N 15W 28-27 Alt. 600		
Sand	8	8
Sand and gravel	22	30
Gravel and clay, blue	6	36
Clay, blue, and boulders	11	47
Sand	5	52
Clay, blue, soft, and boulders	13	65
Sand	3	68
Clay, blue	15	83
5N 15W 28-28 Alt. 600		
Soil, sandy	16	16
Clay, gravelly	11	27
Sand, gravel, and blue clay	10	37
Sand and clay, interbedded	37	74
5N 15W 28-30 Alt. 600		
Muck	32	32
Sand, coarse	2	34
5N 15W 28-31 Alt. 600		
Muck	32	32
Sand	4	36
Clay	-	-
5N 15W 28-32 Alt. 600		
Muck	34	34
Gravel	2	36
5N 15W 28-33 Alt. 600		
Clay, soft	30	30
Clay, gray, hard	21	51
Clay and gravel	1	52
Clay, gray, and boulders	8	60
Sand, fine, silty	8	68
Clay, blue, and boulders	2	70
Clay, blue, hard	10	80
5N 15W 28-34 Alt. 582		
Clay, soft	32	32
Clay, gray, hard, and boulders	10	42
5N 15W 28-35 Alt. 582		
Clay, blue, soft	32	32
Clay, gray, hard	19	51
Sand and gravel	1	52
Boulders and clay, gray	5	57
Sand, fine to medium, silty, and gray clay	8	65
5N 15W 28-36 Alt. 582		
Clay, gray, soft	22	22
Sand, clay, and silt, water-bearing	10	32
Sand, fine, and gravel	10	42
Silt, clayey	8	50
Clay, gray, hardpan	10	60
Clay, gray	7	67
Clay, blue	-	-
5N 15W 28-37 Alt. 600		
Clay, marsh	22	22
Sand and gravel	9	31
Clay, blue	12	43
Clay, blue, and rock	17	60
5N 15W 28-39 Alt. 608		
Soil	2	2
Sand, fine, and blue clay	15	17
Clay, blue, sand, and gravel	20	37
5N 15W 28-40 Alt. 607		
Soil	2	2
Sand, fine, and blue clay	15	17
Clay, blue, sand, and gravel	13	30
Clay, blue, and boulders	34	64
5N 15W 28-41 Alt. 600		
Clay	30	30
Gravel, fine	5	35
Sand, medium	43	78
Clay	34	112
5N 15W 28-42 Alt. 600		
Soil	10	10
Clay	10	20
Gravel	110	130
5N 15W 28-43 Alt. 600		
Soil	2	2
Sand	3	5
Clay	19	24
Gravel and boulders	20	44
Sand	5	49
Sand, clean	12	61
Gravel, small boulders	12	73
Rock	-	-
5N 15W 28-44 Alt. 600		
Soil	3	3
Sand	5	8
Clay, gray	12	20
Clay and gravel	3	23
Gravel and boulders	25	48
Gravel, fine	14	62
Gravel and stones	73	135
Shale	5	140
5N 15W 28-45 Alt. 600		
Sand, clay, and gravel	8	8
Gravel, clayey	15	23
Sand and gravel, clayey	25	48
Sand and gravel	39	87
Sand, gravel, and clay, interbedded	8	95
Sand and gravel	36	131
5N 15W 28-46 Alt. 600		
Clay, fill	20	20
Gravel, fine	9	29
Sand, coarse	5	34
Sand, medium, and gravel	21	55
Gravel, coarse to fine	28	83
5N 15W 28-47 Alt. 605		
Soil	1	1
Sand and gravel	3	4
Clay, blue	6	10
Clay and gravel	9	19
Sand, fine	7	26
Sand, medium	12	38
Sand, fine, and gravel	9	47
Sand and gravel	5	52
Sand, coarse, and gravel	5	57
Sand and gravel	26	83
Clay, blue, and gravel	-	-
5N 15W 28-48 Alt. 605		
Soil	3	3
Clay, blue, and gravel	15	18
Sand and gravel	9	27
Sand, coarse	12	39
Sand and gravel	11	50
Sand, coarse	9	59
Gravel and boulders	26	85
Clay, blue	2	87
Gravel and boulders	3	90
Rock	-	-
5N 15W 28-49 Alt. 605		
Soil	4	4
Clay	21	25
Sand, coarse	13	38
Gravel	34	72
Sand, gravelly	12	84
Sand, clayey	7	91
5N 15W 28-50 Alt. 605		
Soil	2	2
Clay, very hard	11	13
Sand, fine, and gravel	4	17
Sand, fine	18	35
Gravel, coarse	2	37
Sand, fine, and gravel	33	70
Gravel, very coarse	20	90
Gravel, coarse, and sand	21	111
Clay	3	114
5N 15W 28-65 Alt. 610		
Soil	5	5
Clay, blue, hard	10	15
Sand, coarse, and fine gravel	100	115
Clay, balls, soft	1	116
Sand, coarse	10	126
Sand, fine	8	134
Gravel, coarse, clay	6	140
Clay, blue, hard	2	142
5N 15W 28-66 Alt. 616		
Soils	3	3
Clay, blue, hard	12	15
Gravel, medium	85	100
Sand, coarse, clean	5	105
Sand and gravel	25	130
Clay and gravel	5	135
Clay, blue, hard	5	140
5N 15W 28-67 Alt. 620		
Soil	4	4
Clay	16	20
Sand, coarse	25	45
Gravel, coarse	27	72
Clay	-	-
5N 15W 28-68 Alt. 620		
Soil	4	4
Clay	89	93
5N 15W 28-69 Alt. 634		
Soil	2	2
Sand and gravel	16	18
Clay, blue	14	32
Clay, brown, hardpan	6	38
Clay, gray, hard	23	61
Sand and clay, water-bearing	8	69
Sand, yellow to gray, coarse, fine to coarse, and gravel	41	110
Sand, coarse, medium gravel, and clay balls, silty	10	120
Sand, medium to coarse, and silt	9	129

Table 8.--Logs of wells and test borings in the Holland area.--Continued

	Thickness	Depth
5N 15W 28-69 Cont'd.		
Sand, coarse, medium to coarse, gravel, boulders, and silt	9	138
Boulders and medium to coarse gravel	7	145
Sand, coarse, and medium gravel	9	154
Sand, cemented, and gravel	2	156
Clay, blue, hard	4	160
5N 15W 28-70 Alt. 635		
Sand and gravel	15	15
Clay, blue	39	54
Sand, coarse, clean	36	90
Sand, sharp, clayey	4	94
Sand, coarse	6	100
Sand, fine, and gravel	12	112
Gravel, fine, clean	3	115
Sand, coarse, and fine gravel	15	130
Gravel, coarse, and clay	5	135
Clay, blue	5	140
5N 15W 28-72 Alt. 662		
Soil	2	2
Clay, yellow	10	12
Clay, blue	48	60
Clay, red	20	80
Sand	5	85
Clay, red	15	100
Sand and gravel	5	105
Sand, coarse	53	158
Clay, blue	5	163
5N 15W 29-1 Alt. 585		
Sand	27	27
Clay, blue, sand, gravel, and boulders	51	78
5N 15W 29-8 Alt. 601		
Sand	7	7
Sand and gravel	6	13
Sand	2	15
5N 15W 29-9 Alt. 600		
Sand, medium to coarse	6	6
Sand and gravel	21	27
Clay, sandy	7	34
Clay, gray, soft	27	61
Gravel	1	62
Clay, gray, hardpan	17	79
Sand, coarse, coarse gravel and boulders	1	80
Sand and gravel, cemented	1	81
Hardpan	1	82
Sand and gravel, cemented	4	86
Clay, gray, hardpan and boulders	4	90
Sand, coarse, and medium to coarse gravel	4	94
Sand and gravel, hardpacked, clayey, silty	9	103
Gravel, medium to coarse, and coarse sand	4	107
Sand and gravel, clayey, silty, hard	2	109
Sand and gravel, silty, cemented	2	111
Sand and gravel, silty, hard	2	113
Sand, coarse, and medium to coarse gravel	1	114
Sand, coarse, gravel, and clay balls	4	118
Clay, blue, hardpan	2	120
Clay, blue, hard	5	125
5N 15W 29-11 Alt. 600		
Muck, black	19	19
Sand, yellow, fine	8	27
Gravel, coarse	3	30
Clay, blue, soft	20	50
Hardpan, gravelly	28	78
Gravel and clay	6	84
Gravel, coarse	19	103
5N 15W 29-14 Alt. 600		
Soil and cinders	5	5
Clay, sand, and gravel	10	15
Clay, blue, mucky	50	65
Clay, blue, soft, and boulders	10	75
5N 15W 29-15 Alt. 605		
Stone and sand	15	15
Sand	3	18
Sand, fine	7	25
Sand, coarse	7	32
5N 15W 29-18 Alt. 610		
Sand, fill	15	15
Sand, coarse	12	27
Sand, coarse, and gravel	8	35
Clay	23	58
5N 15W 29-19 Alt. 610		
Fill	4	4
Sand, brown	13	17
Sand, coarse, and gravel	15	32
Sand, medium	2	34
5N 15W 29-20 Alt. 610		
Soil	1	1
Sand, medium to coarse	14	15
Sand, coarse, and gravel	5	20
Sand, coarse, and fine gravel	11	31
Clay	-	-
5N 15W 29-21 Alt. 583		
Fill and muck	7	7
Sand	16	23
Silt	20	43
Sand, gas reported	10	53
Sand and gravel	10	63
Clay	-	-
5N 15W 29-22 Alt. 588		
Sand, gray, sharp, peaty	32	32
Peat	16	48
Sand, gray, fine	8	56
Gravel, coarse	2	58
"Impossible to penetrate"		
5N 15W 29-23 Alt. 584		
Sand, gray, sharp, peaty	32	32
Sand, gray, sharp, and peat	2	34
Peat	14	48
Sand, gray, fine	10	58
Gravel, coarse	2	60
"Impossible to penetrate"		
5N 15W 29-24 Alt. 581		
Stones, gray, sharp, peaty	28	28
Peat	22	50
Sand, gray, sharp	4	54
Gravel, wood fragments	1	55
Gravel	6	61
"Impossible to penetrate"		
5N 15W 29-25 Alt. 580		
Sand, gray, sharp	14	14
Gravel	6	20
Sand, very fine, and blue clay	14	34
Clay, blue, soft	11	55
Rock	-	-
5N 15W 29-26 Alt. 583		
Sand, gray, sharp	19	19
Sand and peat	1	20
Gravel	9	29
Sand, very fine, clayey	10	39
Clay, blue, soft	21	60
"Impossible to penetrate"		
5N 15W 29-27 Alt. 583		
Sand, gray, fine, peaty, and fill	10	10
Silt, brown, sandy, peaty	3	13
Silt, brown, peaty, soft	18	31
Sand, gray, medium, and fine gravel, compact, clayey	4	35
Sand, gray, very fine, compact	5	40
Clay, blue, medium to hard, sandy, and fine gravel	32	72
5N 15W 29-28 Alt. 583		
Sand, gray, fine, peaty, and fill	16	16
Silt, brown, peaty, soft	6	22
Sand, gray, medium, compact, and fine gravel	2	24
Sand, gray, very fine, compact	19	43
Clay, blue, medium, very hard, gravelly	39	82
5N 15W 29-29 Alt. 582		
Sand, gray, fine, peaty, fill	5	5
Peat, brown, soft	1	6
Sand, gray, fine to medium, peaty	11	17
Silt, brown, soft, peaty	3	20
Sand, gray, fine, silty	1	21
Sand and gravel, compact, clayey	2	23
Sand, gray, very fine, compact	8	31
Clay, blue	1	32
Sand, gray, very fine, compact	10	42
Clay, blue, medium to very hard, sandy, fine, and medium gravel	42	84
5N 15W 29-30 Alt. 580		
Sand, gray, fine to coarse, fill	4	4
Silt, brown, soft, peaty	1	5
Peat, brown, soft	1	6
Sand, gray, fine, firm	6	12
Peat, brown, soft, silty	1	13
Sand, gray, fine	4	17
Peat, brown, soft, and silt	1	18
Silt, brown, soft	8	26
Sand, gray, fine, compact, clayey, gravelly	5	31
Sand, gray, very fine, compact	9	40
Clay, blue, medium to very hard, sandy, gravelly	44	84

Table 8.--Logs of wells and test borings in the Holland area.--Continued

	Thickness	Depth
5N 15W 29-31 Alt. 580		
Sand, gray, peaty	1	1
Sand, yellow, sharp	14	15
Gravel	1	16
Gravel, clayey, blue	5	21
Clay, blue, soft	15	36
Clay, blue, firm	6	42
Clay, blue, stiff	14	56
Rock, may be boulder	1	57
5N 15W 29-32 Alt. 580		
Muck, silt	1	1
Sand, gray, sharp, peaty	11	12
Sand, gray, fine, and peat	10	22
Peat	16	38
Peat, sandy	5	43
Sand, gray, fine, clayey	2	45
Clay, blue, soft	5	50
Clay, blue, medium firm	2	52
Clay, blue, firm	1	53
Gravel	1	54
Clay, blue, sandy	5	59
Rock	-	-
5N 15W 29-33 Alt. 580		
Sand, gray, sharp, peaty	14	14
Gravel, fine, peaty	7	21
Gravel, clayey, blue	1	22
Clay, blue, soft	20	42
Clay, blue, sandy	8	50
Clay, blue	1	51
Clay, blue, sandy, hard	7	58
Hardpan	-	-
5N 15W 29-34 Alt. 581		
Muck	2	2
Sand, gray, sharp, peaty	17	19
Gravel	2	21
Sand, gray, very fine, clayey	16	37
Clay, blue, soft	17	54
Clay, blue, firm	3	57
Rock	-	-
5N 15W 29-35 Alt. 583		
Sand, gray, peaty	11	11
Sand, gray, gravelly, and peat	8	19
Peat, water-bearing	2	21
Gravel, sandy	2	23
Clay, blue, soft	2	25
Sand, water-bearing	3	28
Clay, blue, soft	6	34
Clay, blue, stiff, and sandstone	26	60
Clay, blue, stiff	-	-
5N 15W 29-36 Alt. 585		
Sand, peaty	20	20
Peat	3	23
Gravel	11	34
Sand, very fine, clayey	7	41
Clay, blue, soft	14	55
Clay, blue, stony	4	59
Sand, yellow	1	60
Clay, blue, stony	3	63
5N 15W 29-37 Alt. 586		
Sand, gray, sharp, peaty	25	25
Peat	4	29
Gravel	5	34
Sand, very fine, clayey	6	40
Clay, blue, soft	10	50
Clay, blue	2	52
5N 15W 29-37 Cont'd.		
Clay, blue, stony	12	64
Sand, gray, sharp	2	66
Rock	-	-
5N 15W 29-38 Alt. 584		
Sand, gray, sharp, peaty	28	28
Peat	1	29
Gravel, water-bearing	6	35
Sand, gray, very fine	4	39
Clay, blue, soft	22	61
Sand, gray, sharp	2	63
Large rock in casing at 65 ft.	-	-
5N 15W 29-39 Alt. 585		
Sand, gray, peaty	28	28
Peat	3	31
Gravel, sandy	6	37
Sand, very fine, clayey, blue	6	43
Clay, blue, soft	31	74
Clay, soft, stony	-	-
5N 15W 29-40 Alt. 583		
Sand, gray, sharp, peaty	23	23
Peat	6	29
Gravel, fine	4	33
Sand, gray, very fine, clayey	4	37
Clay, blue, soft	7	44
Clay, blue	4	48
Clay, blue, soft	12	60
Clay, blue, hard, stony	4	64
"Impossible to penetrate"		
5N 15W 29-41 Alt. 583		
Sand, gray, sharp, peaty	23	23
Gravel	3	26
Sand, gray, very fine, clayey	12	38
Clay, blue, soft	19	57
Sand, sharp, gray	1	58
Clay, blue, soft	3	61
Clay, blue, stony	2	63
"Impossible to penetrate"		
5N 15W 29-42 Alt. 586		
Sand, gray, sharp, peaty	18	18
Peat	5	23
Peat and sand, sharp	5	28
Gravel	6	34
Sand, gray, very fine, clayey	4	38
Clay, blue, soft	19	57
Clay, blue, stony	4	61
Clay, blue, hard, stony	6	67
"Impossible to penetrate"		
5N 15W 29-43 Alt. 580		
Peat	5	5
Sand, gray, peaty	11	16
Sand, gray, peaty	4	20
Gravel, sandy	2	22
Clay, blue, soft	5	27
Sand, water-bearing	1	28
Clay, blue, soft	5	33
Clay, blue, stiff	28	61
5N 15W 29-44 Alt. 585		
Sand, gray, sharp, peaty	16	16
Peat	4	20
Gravel	11	31
Sand, gray, fine, clayey	13	44
Clay, blue, soft	6	50
Clay, blue	16	66
Clay, blue, hard	-	-
5N 15W 29-45 Alt. 587		
Silt	7	7
Sand, gray, and peat	9	16
Peat	4	20
Sand, gray, sharp, peaty	5	25
Sand, very fine, clayey, blue	7	42
Clay, blue, soft	17	52
Clay, blue, firm, sandy	10	63
Clay, blue, layered, very hard	11	66
Clay, blue, hard	3	-
5N 15W 29-46 Alt. 581		
Peat and silt	5	5
Peat, gray, sandy	9	14
Peat, greenish	3	17
Gravel, sandy	4	21
Clay, blue, soft	4	25
Sand, brown, very fine, water-bearing	2	27
Clay, blue, soft	11	38
Clay, blue, stiff	23	61
5N 15W 29-47 Alt. 589		
Sand, gray, peat, and shells	16	16
Peat, sandy	5	21
Gravel	11	32
Clay, blue, soft	24	56
5N 15W 29-48 Alt. 581		
Silt	4	4
Sand, gray, and peat	12	16
Peat	3	19
Gravel	12	31
Sand, very fine, clayey	2	33
Clay, blue, soft	1	34
Sand, very fine	8	42
Clay, blue, soft	6	48
Clay, firm	14	62
5N 15W 30-1 Alt. 584		
Cinder and coal fill	2	2
Sand and gravel, fragments of wood	8	10
Peat, black, soft	1	11
Sand, yellow, fine, firm, gravelly	4	15
Sand, gray, very fine	15	30
Clay, blue	4	34
Sand, gray, compact	8	42
Clay, blue	8	50
Sand, gray, very fine, compact with thin clay partings	5	55
Clay, blue, medium to hard, sandy, and fine gravel	32	87
Sand, very hard, clayey, and fine to coarse gravel	1	88
Clay, blue, very hard, sandy, and gravel	5	93
5N 15W 30-2 Alt. 583		
Sandstone, cinders, and fragments of wood	5	5
Peat, black, soft, and fine yellow sand	7	12
Sand, yellow, firm, medium, and black peat	4	16
Sand, gray, very fine	20	36
Clay, blue	4	40
Sand, gray, very fine, compact	17	57
Clay, blue, medium to hard, sandy, and fine gravel	26	83

Table 8.--Logs of wells and test borings in the Holland area.--Continued

	Thickness	Depth
5N 15W 30-3 Alt. 585		
Concrete floor	1	1
Sandstone, coal, and cinder fill	7	8
Sand, yellow, fine, firm, peaty	8	16
Sand, gray, very fine, compact	30	46
Clay, blue, medium to very hard, fine, sand and gravel	44	90
5N 15W 30-4 Alt. 586		
Soil, sandy, clayey, and fill	4	4
Sand, and woody fill	3	7
Sand, yellow, medium to compact	10	17
Sand, gray, very fine	27	44
Clay, blue, medium to very hard, sand, and fine gravel	46	90
5N 15W 30-5 Alt. 583		
Sand, gray, and shells	6	6
Sand, gray to brown, gravelly	7	13
Sand, gray, and gravel, peaty	7	20
Sand, water-bearing	1	21
Sand, gray, gravelly	1	22
Sand, gray, very fine	12	34
Clay, blue, stiff	14	48
Clay, blue, soft	8	56
Clay, blue, stiff	12	68
5N 15W 30-6 Alt. 583		
Sand, gray, gravelly, and peat	8	8
Sand, gray, peaty	9	17
Gravel, fine	2	19
Sand, very fine, water-bearing	2	21
Clay, blue	17	38
Clay, blue, soft	4	42
Clay, blue, stiff	42	84
Hardpan	3	87
5N 15W 30-7 Alt. 584		
Sand, yellow	14	14
Sand, gray, fine, and fine gravel	4	18
Sand, very fine	4	22
Sand, very fine, clayey	6	28
Clay, blue	10	38
Clay, blue, soft	24	62
5N 15W 30-8 Alt. 584		
Sand, gray, gravelly, and peat	16	16
Sand, sharp	8	24
Sand, very fine, traces of gravel	3	27
Clay, blue	16	43
Clay, blue, soft	37	80
5N 15W 30-9 Alt. 591		
Sand, yellow, clayey	19	19
Sand, gray, very fine	4	23
Clay, blue, soft	31	54
Clay, blue, stony	14	68
Sand, gray, very fine	6	74
Sand, gray, very fine, clayey	6	80
Clay, blue, stony, hard	3	83
Hardpan	2	85
5N 15W 30-10 Alt. 585		
Sand, yellow, sharp, peaty	8	8
Sand, gray, stony	2	10
Sand, yellow, sharp	9	19
Sand, gray, sharp	2	21
Sand, gray, very fine, clayey	1	22
Clay, blue, soft	26	48
Clay, blue, soft, stony	19	67
Sand, gray, fine, clayey	10	77
"Impossible to penetrate"		
5N 15W 30-11 Alt. 595		
Sand, fill	7	7
Clay	11	18
Sand, fine	14	32
Clay	3	35
5N 15W 30-12 Alt. 595		
Sand, white	20	20
Clay	1	21
Sand, white	1	22
5N 15W 30-13 Alt. 585		
Soil and sand	7	7
Clay, blue, and boulders	58	65
5N 15W 30-14 Alt. 595		
Sand, yellow, fine	8	8
Sand, yellow	2	10
Sand, yellow, coarse	7	17
Sand, yellow, coarse and fine gravel	9	26
5N 15W 30-15 Alt. 595		
Sand, yellow, fine	10	10
Sand, yellow, coarse, gravelly	10	20
Sand, gray, coarse, and gravel	10	30
5N 15W 30-16 Alt. 590		
Sand, yellow, fine	2	2
Sand, yellow and gravel	2	4
Sand, yellow, fine	6	10
Sand, yellow, coarse	6	16
Sand and clay	39	55
Clay, soft	30	85
Hardpan, sandy	25	110
5N 15W 30-17 Alt. 590		
Sand, yellow, clean	4	4
Sand, clean	5	9
Sand, yellow, coarse	3	12
Clay, soft, sandy	18	30
5N 15W 30-18 Alt. 590		
Sand, yellow, fine	8	8
Sand, yellow	2	10
Sand, yellow, coarse	1	11
Sand, yellow, fine, clean	6	17
Sand, yellow, coarse, and fine gravel	5	22
5N 15W 30-19 Alt. 590		
Sand	16	16
Clay, gravelly	55	71
5N 15W 30-21 Alt. 600		
Sand, fine	35	35
5N 15W 30-22 Alt. 605		
Sand, fine	31	31
5N 15W 31-2 Alt. 610		
Sand	17	17
Clay	22	39
Sand	7	46
5N 15W 31-3 Alt. 610		
Sand, dry	2	2
Sand, dark, water-bearing	8	10
Sand, coarse, light	13	23
Clay, soft, sandy	32	55
Clay, gravelly	4	59
Sand and clay	5	64
Clay, sandy	5	69
Sand and clay	9	78
Clay, blue, sand, and gravel	7	85
5N 15W 31-4 Alt. 610		
Soil	2	2
Sand, clean, water-bearing	8	10
Sand and clay	2	12
Sand, coarse, clean	10	22
Sand, coarse, clean, and gravel, fine	1	23
Clay	1	24
5N 15W 31-5 Alt. 605		
Soil, dry	6	6
Sand, water-bearing	19	25
Sand	40	65
Hardpan	15	80
Clay, sandy	35	115
5N 15W 31-6 Alt. 610		
Sand, fine, gravelly	20	20
Clay	18	38
5N 15W 31-7 Alt. 610		
Sand and gravel	22	22
Clay	17	39
Hardpan	5	44
Clay	1	45
5N 15W 31-8 Alt. 610		
Sand and gravel, fine	24	24
Clay, sandy, soft	51	75
Hardpan	14	89
Sand, dirty	6	95
Sand and gravel	22	117
Clay	1	118
Sand, dirty and fine gravel	12	130
Clay, sandy	5	135
5N 15W 31-9 Alt. 610		
Sand and gravel	25	25
Clay	10	35
5N 15W 31-11 Alt. 610		
Sand and gravel	15	15
Sand, coarse, and gravel	13	28
Clay	7	35
5N 15W 31-12 Alt. 610		
Sand and gravel	20	20
Gravel, coarse	3	23
Clay	15	38
5N 15W 31-13 Alt. 633		
Soil	2	2
Sand	4	6
Sand, fine	6	12
Sand and gravel, coarse	6	18
Gravel, coarse	2	20

Table 8.-- Logs of wells and test borings in the Holland area.--Continued

	Thickness	Depth
5N 15W 31-13 Cont'd.		
Sand, coarse	6	26
Sand, fine	2	28
Clay	-	-
5N 15W 31-14 Alt. 633		
Soil	1	1
Sand, fine to coarse	14	15
Sand, coarse and gravel	6	21
Sand, fine	7	28
Clay	-	-
5N 15W 31-15 Alt. 633		
Sand, fine to coarse	28	28
Clay	-	-
5N 15W 32-23 Alt. 615		
Sand, medium, beach	29	29
Clay, blue, gravelly	3	32
Clay, blue	57	89
Clay, stony	22	111
Gravel, very sharp, water-bearing, mixed with silt	-	-
5N 15W 32-47 Alt. 630		
Soil	3	3
Sand, fine to coarse	24	27
Clay	-	-
5N 15W 32-48 Alt. 632		
Sand, fine	10	10
Sand, coarse, and gravel	5	15
Sand, fine	6	21
Sand, coarse, and gravel	7	28
Clay	-	-
5N 15W 32-49 Alt. 632		
Soil	2	2
Sand, fine	5	7
Sand	3	10
Sand, coarse, and gravel	5	15
Sand, fine	3	18
Sand, coarse	6	24
Sand, fine, and clay	3	27
Clay	-	-
5N 15W 32-50 Alt. 633		
Soil	2	2
Sand	9	11
Sand, sharp	4	15
Sand, fine	5	20
Sand, coarse	4	24
Gravel	4	28
Clay	-	-
5N 15W 32-56 Alt. 630		
Sand	27	27
Clay, blue, sand, gravel, and boulders	35	62
5N 15W 32-61 Alt. 630		
Sand, fine	7	7
Sand, coarse, yellow	5	12
Sand and gravel	18	30
Clay, blue	20	50
Clay, blue, soft	20	70
Hardpan	11	81
Gravel, clayey	6	87
Sand, fine	4	91
Gravel, clayey	2	93
Sand, clayey	7	100
5N 15W 32-62 Alt. 620		
Soil and sand	8	8
Clay, blue, sand, gravel, and boulders	54	62
5N 15W 33-1 Alt. 660		
Clay, yellow	15	15
Clay, blue	25	40
Clay, red	3	43
Hardpan	10	53
Sand and gravel, fine	50	103
Clay, blue	2	105
5N 15W 33-2 Alt. 645		
Clay, yellow	12	12
Hardpan	18	30
Gravel, coarse, and sand	30	60
Clay	3	63
Gravel, coarse	3	66
Hardpan	24	90
5N 15W 33-4 Alt. 680		
Clay, yellow	15	15
Clay, blue	35	50
Clay, red	15	65
Hardpan, gray	10	75
Sand, coarse	13	88
Gravel, fine	4	92
Sand	11	103
Gravel and sand	4	107
Sand, dirty, and gravel	7	114
Gravel, coarse	3	117
Hardpan	3	120
5N 15W 33-5 Alt. 680		
Clay, yellow	22	22
Hardpan	30	52
Clay, red	13	65
Hardpan, gravelly	5	70
Hardpan, sandy	30	100
5N 15W 33-6 Alt. 646		
Soil, sandy	1	1
Sand, vari-colored, medium, clayey, gravelly	3	4
Clay, hard, sandy, gravelly	6	10
Clay, blue, hard, sandy, gravelly	3	13
Clay, blue, and medium sand, gravelly	6	19
Clay, blue, hard, sandy, gravelly	3	22
5N 15W 33- 7 Alt. 653		
Sand, brown, clayey, gravelly	2	2
Clay, hard, vari-colored, sandy, gravelly	18	20
5N 15W 33-8 Alt. 650		
Clay, yellow	25	25
Sand, yellow	15	40
Gravel, dirty	8	48
Gravel, coarse, clean	20	68
Gravel, coarse	5	73
Gravel, coarse, dirty	2	75
Hardpan	10	85
5N 15W 33-10 Alt. 650		
Sand, clayey	1	1
Clay, vari-colored, sandy, gravelly	2	3
Clay, hard, vari-colored, sandy, gravelly	6	9
Clay, hard, yellow, gravelly	6	15
Sand, red, medium, clayey, gravelly	1	16
Clay, hard, blue, sandy, gravelly	2	18
Sand, yellow, medium to coarse, gravelly, compact	2	20
5N 15W 33-11 Alt. 645		
Sand, clayey	2	2
Clay, hard, sandy, gravelly	6	8
Sand, yellow, medium, clayey, gravelly	11	19
Sand, yellow, medium to coarse, gravelly, compact	6	25
5N 15W 33-12 Alt. 649		
Sand, clayey	1	1
Sand, yellow, medium, clayey, gravelly	3	4
Clay, hard, sandy, gravelly	5	9
Sand, yellow, medium, and sand, interbedded	8	17
Sand, yellow, coarse, and gravel, clayey, compact	1	18
5N 15W 33-13 Alt. 653		
Sand, clayey	1	1
Clay, hard, vari-colored, sandy, gravelly	4	5
Sand, yellow, medium, clayey, gravelly	4	9
Clay, hard, vari-colored, sandy, gravelly	4	13
Clay, hard, blue, sandy, gravelly	3	16
Sand, yellow, coarse, and gravel, compact	1	17
5N 15W 33-14 Alt. 656		
Sand, medium, and clay, interbedded	5	5
Clay, hard, blue, sandy, gravelly	15	20
5N 15W 33-15 Alt. 661		
Sand, yellow, clayey, gravelly	11	11
Sand, gray, medium, gravelly	3	14
Clay, hard, blue, sandy, and gravelly	6	20
5N 15W 33-16 Alt. 660		
Clay, yellow	23	23
Sand, yellow, coarse	32	55
Sand, coarse, and gravel	21	76
Sand, fine	2	78
Sand, and gravel	3	81
Hardpan	9	90
5N 15W 33-17 Alt. 655		
Soil, sandy	1	1
Sand, yellow, clayey, gravelly	2	3
Clay, vari-colored, sandy, gravelly	6	9
Clay, soft, yellow, sandy, gravelly	3	12
Clay, blue, sandy, gravelly	2	14
Sand, yellow, coarse, and gravel, clayey, compact	1	15
5N 15W 33-18 Alt. 650		
Soil, sandy	1	1
Sand, clayey	1	2
Clay, hard, yellow, sandy, gravelly	2	4
Clay, medium-hard, vari-colored, gravelly, sandy	6	10
Sand, yellow, coarse, and gravel, clayey, compact	6	16

Table 8.--Logs of wells and test borings in the Holland area.--Continued

	Thickness	Depth
5N 15W 33-19 Alt. 647		
Soil, sandy	1	1
Sand, yellow, medium	6	7
Sand, yellow, coarse, and gravel, clayey	1	8
Clay, hard, blue, sandy, gravelly	10	18
Clay, hard, red to blue, sandy, gravelly	1	19
5 5N 15W 33-20 Alt. 655		
Soil, sandy	1	1
Sand, clayey	1	2
Clay, hard, vari-colored, sandy, gravelly	4	6
Clay, yellow, sandy, gravelly	2	8
Clay, hard, yellow, sandy, gravelly	3	11
Sand, yellow, coarse, and gravel, clayey, compact	6	17
5N 15W 33-21 Alt. 662		
Sand, yellow, medium, clayey, gravelly	10	10
Clay, hard, blue, sandy, gravelly	8	18
Sand, yellow, fine, clayey, gravelly, compact	1	19
5N 15W 33-22 Alt. 640		
Soil, peaty	1	1
Sand, medium, dirty	6	7
Sand, gray, fine to medium, gravelly, clayey	7	14
Clay, medium-hard, blue, sandy, gravelly	8	22
5N 15W 33-24 Alt. 669		
Soil	2	2
Clay, yellow	13	15
Clay, blue, firm	20	35
Clay, blue, sandy	45	80
Hardpan, red	80	160
Clay, sandy	50	210
5N 15W 34-12 Alt. 641		
Soil	2	2
Clay, red	12	14
Clay, sand, and gravel	51	65
Sand, clean, and gravel, water-bearing	7	72
Clay, sand, and gravel	113	185
Clay, sandy	20	205
Clay	75	280
Clay, sandy	7	287
Sand, clean, sharp, water-bearing	3	290
5N 15W 34-21 Alt. 641		
Soil	2	2
Clay, red	12	14
Clay, sand and gravel	51	65
Sand, clean, and gravel, water-bearing	7	72
Clay, sand, and gravel	113	185
Clay, sandy	20	205
Clay	75	280
Clay, sandy	7	287
Sand, clean, sharp, water-bearing	3	290
5N 15W 34-22 Alt. 641		
Soil	2	2
Clay, red	12	14
5N 15W 34-22 Cont'd.		
Clay, sand and gravel	51	65
Sand, clean, and gravel, water-bearing	7	72
Clay, sand, and gravel	113	185
Clay, sandy	20	205
Clay	75	280
Clay, sandy	7	287
Sand, clean, sharp, water-bearing	3	290
5N 15W 35-1 Alt. 600		
Sand	17	17
Clay	21	38
Sand	4	42
4N 16W 4-1 Alt. 598		
Sand, fine to medium	25	25
Clay, yellow	1	26
Sand, fine and silt	54	80
Clay, gray, sandy	10	90
4N 16W 4-2 Alt. 605		
Sand, medium	20	20
Sand, medium, gravelly	24	44
Sand, fine, hard, silty	36	80
Clay, gray	4	84
4N 15W 4-4 Alt. 657		
Cinders and sand, fill	8	8
Peat and sand	2	10
Sand, yellow, medium	3	13
Clay, blue, stony	5	18
Clay, blue, soft	9	27
Sand, gray, medium	3	30
Clay, blue, soft	12	42
Boulders, small	1	43
Clay, blue, soft	6	49
Sand, gray	1	50
Clay, blue, hard, sandy	4	54
Sand, fine	3	57
Clay, blue, hard, sandy, stony	5	62
4N 15W 4-5 Alt. 657		
Cinders and sand, fill	7	7
Peat and sand	1	8
Sand, yellow, medium	4	12
Clay, blue, stony	6	18
Clay, blue, soft	12	30
Sand, red, fine	3	33
Clay, blue, soft	7	40
Boulders, small	1	41
Clay, blue, soft, sandy	9	50
Clay, blue, hard, sandy, stony	2	52
4N 15W 4-6 Alt. 656		
Cinders and sand, fill	7	7
Sand, yellow, medium	5	12
Clay, blue, stony	6	18
Clay, blue, soft	12	30
Sand, gray, very fine	3	33
Clay, blue, soft, and boulders	11	44
4N 15W 4-7 Alt. 656		
Cinders and sand, fill	8	8
Sand, yellow, medium	5	13
Clay, blue, stony	5	18
Clay, blue, soft	12	30
Clay, blue, soft, sandy, boulders	8	38
Boulder	-	-
4N 15W 4-8 Alt. 656		
Cinders and sand, fill	8	8
Sand, yellow, medium	5	13
Gravel, medium	2	15
Clay, blue, stony	4	19
Clay, blue, soft	33	52
Clay, blue, hard, stony	1	53
Sand, yellow, medium, hard	3	56
Clay, blue, hard, stony	3	59
Sand, yellow, medium	1	60
Clay, blue, hard, stony	3	63
4N 15W 4-9 Alt. 655		
Cinders, fill	3	3
Sand, yellow, fine to medium	9	12
Clay, blue, stony	6	18
Clay, blue, soft	12	30
Clay, blue, sandy, soft, with small boulders	20	50
Clay, blue, hard, stony	2	52
4N 15W 4-10 Alt. 655		
Cinders and sand, fill	8	8
Sand, yellow, medium	4	12
Clay, blue, stony	6	18
Clay, blue, soft	12	30
Clay, blue, soft, and small boulders	10	40
4N 15W 4-11 Alt. 654		
Cinders and sand, fill	7	7
Sand, yellow, medium	5	12
Clay, blue, stony	6	18
Clay, blue, soft	14	32
Clay, blue, soft, sandy, with small boulders	15	47
Clay, blue, hard, stony	2	49
Boulder	-	-
4N 15W 4-12 Alt. 655		
Cinders and sand, fill	7	7
Sand, yellow, medium	5	12
Gravel, medium	1	13
Clay, blue, stony	6	19
Clay, blue, soft	11	30
Clay, blue, soft, boulders	18	48
Clay, blue, hard, stony	2	50
Boulder	-	-
4N 15W 6-1 Alt. 660		
Clay, red	68	68
Sand	37	105
Clay and sand	10	115
Clay, blue	18	133
Sand and gravel	4	137
Gravel	2	139
Sand	1	140

Table 9.--Chemical analyses of ground-water samples in the Holland area.

Analyst: M - Michigan Department of Health; I - Infilco, Inc.

Well number or pumping station	Analyst	Date	Chemical constituents (parts per million) Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium(Na) and Potassium(K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total solids	Hardness as $CaCO_3$	Specific conductance (micromhos at 25°C.)	pH	Temperature (°F.)
Samples from individual wells																		
5N 16W 33-7	-	7-31-24	9.6	0.4	66	14	6.4	252	-	16	10	-	-	252	-	-	-	-
33-10	-	2-10-54	-	0.1	-	-	-	-	-	-	7	0	0	-	150	-	7.4	-
5N 15W 21-25	M	2-12-52	6.7	0.4	68	23	16	281	0	50	18	0	0	328	265	-	7.6	51.3
	M	10-30-52	-	-	-	-	-	262	0	52	18	-	-	-	250	550	-	-
	M	9-28-54	-	-	-	-	-	-	-	-	-	-	-	-	-	570	-	-
27-6	I	6-17-47	15	1.2	78	31	6.0	305	-	64	12	-	-	334	323	-	7.5	-
	M	2- 6-51	7.2	0.7	85	35	11	354	-	74	10	0.2	0	400	357	-	-	-
	M	2-12-52	9.5	0.7	84	37	14	373	0	63	11	0.1	-	412	360	555	7.5	51.4
	M	9- 9-52	11	0.6	88	34	14	372	0	52	15	1.4	-	420	360	750	7.9	-
	M	8-13-53	-	-	-	-	-	-	-	67	-	-	-	-	-	-	-	-
	M	9-27-54	-	-	-	-	-	-	-	-	-	-	-	-	-	790	-	-
28-6	M	2-12-52	6.7	4.2	190	50	26	505	0	285	24	0.1	0	890	680	-	7.2	50.0
	M	10-30-52	-	-	-	-	-	481	-	260	27	-	-	-	650	-	-	-
	M	8-13-53	-	-	-	-	-	-	-	340	-	-	-	-	-	-	-	-
28-43	M	6-26-22	18	-	68	27	9.1	328	-	19	9	-	-	312	-	-	-	-
	M	9-21-23	7.2	-	64	31	6.9	318	-	30	8	-	-	310	-	-	-	-
	M	3-24-26	8.8	2.9	73	31	12	323	-	55	11	-	-	360	307	-	-	-
	M	11- 5-29	9.6	0.6	82	32	6.9	333	0	60	12	-	-	366	330	-	-	-
	M	4-25-31	6.4	1.7	84	37	Tr.	324	0	67	16	-	-	376	355	-	-	-
	M	11- 3-33	6.4	0.6	87	33	11	339	0	77	13	-	-	400	350	-	-	-
	M	10- 1-36	4.0	0.8	98	39	2.7	328	0	119	12	-	-	472	404	-	-	-
	M	12- 8-43	14	1.4	109	40	12	344	0	156	12	-	-	538	435	-	-	-
	I	9-27-45	9.0	1.0	105	32	6.0	336	-	112	17	0.1	-	416	402	-	6.8	-
28-45	M	2- 6-51	5.6	1.4	117	41	15	376	-	158	14	0.8	0	560	460	-	-	-
	M	2-12-52	10	1.3	112	39	18	368	0	150	17	-	-	550	440	-	7.6	50.6
	M	9- 8-52	8.0	1.3	112	41	14	384	0	135	19	0.7	0	540	450	880	7.2	-
	M	8-12-53	-	-	-	-	-	-	-	103	-	-	-	-	-	-	-	-
	M	9-27-54	-	-	-	-	-	-	-	-	-	-	-	-	-	840	-	-
28-47	M	11- 3-33	8.0	0.6	85	34	4.8	349	0	60	8	-	-	374	348	-	-	-
	M	10- 1-36	8.0	0.4	80	34	4.4	343	0	51	9	-	-	358	335	-	-	-
	M	12-22-43	8.8	0.4	83	33	11	349	0	67	8	0.1	-	384	342	-	-	-
	I	9-27-45	8.0	0.3	90	28	1.0	338	-	48	11	0.1	-	343	340	-	7.3	
28-48	M	5- 7-30	20	0.8	71	32	7.8	341	0	30	11	-	-	324	310	-	-	-
28-50	I	3-31-47	14	0.8	64	27	22	315	-	38	16	0.2	-	320	272	-	7.3	-
	M	9- 9-52	12	0.3	80	30	5.8	282	0	91	7	0.1	0	410	325	700	7.4	-
	M	9-27-54	-	-	-	-	-	-	-	-	-	-	-	-	-	710	-	-
28-74	M	5-25-55	15	1.4	76	33	27	368	0	13	47	0	0	444	325	710	7.7	-
30-12	M	8- 2-23	4.0	-	73	18	18	205	-	80	32	-	-	452	-	-	-	-
34-16	M	2-12-52	7.5	0.6	72	28	14	293	0	64	12	0	0	346	295	540	7.5	-
	M	1-23-53	-	-	-	-	-	329	-	75	75	-	-	-	420	900	-	-
	M	9-27-54	-	-	-	-	-	412	-	159	35	-	-	-	510	980	-	-
Composite samples from pumping stations																		
19th Street Station	M	8-22-23	8.8	-	63	17	0	162	-	67	10	-	-	306	-	-	-	-
	M	3-15-26	8.0	Tr.	68	16	Tr.	193	-	57	12	-	-	256	230	-	-	-
	M	11- 5-29	11	1.7	72	18	4.6	221	0	62	13	-	-	364	252	-	-	-
	M	11- 3-33	5.6	-	71	17	7.8	201	0	69	11	-	-	-	248	-	-	-
	M	10- 2-36	7.2	Tr.	75	20	Tr.	212	0	73	12	-	Tr.	336	268	-	-	-
	M	2-12-52	6.7	Tr.	72	20	11	236	0	54	18	0	9	320	260	-	7.7	53.2
	M	9- 9-52	8.3	-	74	20	11	238	0	51	20	1.0	12	348	265	610	7.9	-
	M	9-27-54	-	-	-	-	-	-	-	-	-	-	-	-	-	600	-	-
28th Street Station	M	9-19-23	6	-	32	7.3	4	84	-	43	3	-	-	151	-	-	-	-
	M	5-26-26	10	Tr.	35	8.9	1.8	111	-	24	8	-	-	143	121	-	-	-
	M	11- 3-33	4.8	0	35	9.4	4.6	112	0	29	6	-	-	160	125	-	-	-
	M	10- 2-36	7.2	Tr.	35	9.6	Tr.	101	0	29	8	-	Tr.	162	122	-	-	-

Table 10.--Chemical analyses of surface-water samples in the Holland area.

Analyst: Michigan Department of Health

Pumping station	Date	Chemical constituents (parts per million)													Specific conductance (micromhos at 25°C.)	pH	Temperature (°F.)
		Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium(Na) and Potassium(K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total solids	Hardness as $CaCO_3$			
Black River at Paw Paw Drive	11-14-52	6.3	0.4	62	24	53	250	0	47	81	0.1	18	456	255	800	7.6	-
	8-13-53	-	-	-	-	-	-	-	55	-	-	-	-	-	-	-	-
	9-27-54	-	-	-	-	-	224	-	45	62	-	-	-	240	710	-	-
	2-12-52	4.6	0.5	41	13	15	133	0	46	26	0.1	Tr.	260	156	356	7.8	-
Black River at 120th Avenue	10-30-52	-	-	-	-	-	262	0	52	81	-	-	-	254	780	-	-
Black River at River Avenue	10-30-52	-	-	-	-	-	189	0	36	38	-	-	-	185	523	-	-
Lake Macatawa at Kollen Park	2-12-52	3.3	0.6	27	7.8	9.0	84	0	30	11	-	7	186	100	235	7.6	-
	10-30-52	-	-	-	-	-	165	-	29	30	-	-	-	154	440	-	-
	8-13-53	-	-	-	-	-	-	-	25	-	-	-	-	-	-	-	-
	9-27-54	-	-	-	-	-	-	-	-	-	-	-	-	-	430	-	-
Lake Michigan, Grand Rapids intake	8-27-52	3	0	34	12	4.3	134	0	21	7	-	-	160	132	360	7.7	-
Abandoned Waverly Quarry	2-12-52	1.3	0.1	34	12	4.0	140	0	24	4	0	0	158	135	260	7.8	-
	10-30-52	-	-	-	-	-	152	0	29	4	-	-	-	146	350	-	-
	9-27-54	-	-	-	-	-	-	-	-	-	-	-	-	-	350	-	-