

Submitted to:
City of Hamilton

Elfrida Subwatershed Study

Final Phase 1 Report

Appendices



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Reference: 65726

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APPENDIX A:

Groundwater and Piezometer Data:

MOECC Water Well Records

Well ID (Figure 3.11)	MOECC Well ID Number	Date Completed	Total Well Depth (m)	Depth to Bedrock (m)	Static Water Level (m)	Water Use
1	6801270	7/30/1954	14.00	13.70	4.00	Domestic
2	6801271	1/14/1952	11.00	10.10	3.70	Domestic
3	6801272	12/1/1967	11.00	5.50	2.70	Domestic
4	6801273	7/15/1954	13.10	6.40	3.00	Domestic
5	6801274	8/6/1955	9.40	3.70	4.60	Domestic
6	6801275	7/4/1956	8.50	4.90	2.10	Domestic
7	6801276	7/23/1956	9.10	5.80	2.40	Domestic
8	6801277	4/29/1957	9.10	4.90	0.00	Domestic
9	6801278	6/15/1957	7.30	6.10	3.00	Domestic
10	6801279	12/23/1957	17.10	7.00	4.60	Commercial
11	6801280	7/31/1959	7.60	4.00	1.80	Domestic
12	6801281	3/30/1960	9.10	4.90	1.50	Domestic
13	6801283	10/14/1960	7.00	4.90	2.40	Domestic
14	6801284	9/27/1967	10.70	7.60	6.40	Domestic
15	6807765	5/24/1971	13.70	9.80	6.10	Domestic
16	6808896	6/13/1974	11.00	3.40	2.40	Irrigation
17	6801486	11/28/1962	8.50	7.00	1.80	Domestic
18	6801487	5/7/1963	9.10	7.00	3.70	Domestic
19	6801488	9/16/1958	12.20	9.80	7.60	Domestic
20	6801489	11/8/1958	11.00	6.70	2.70	Domestic
21	6801490	11/11/1958	11.00	6.70	4.00	Domestic
22	6801491	9/9/1959	14.90	11.30	10.40	Domestic
23	6801492	2/1/1960	10.40	8.20	3.70	Domestic
24	6801493	12/8/1960	9.80	7.00	3.00	Domestic
25	6801494	1/7/1961	18.90	10.40	7.60	Domestic
26	6801495	11/15/1961	12.80	8.50	7.90	Domestic
27	6801496	4/5/1964	24.40	8.50	18.30	Domestic
28	6801497	6/24/1964	10.10	6.40	3.00	Domestic
29	6801498	8/10/1964	11.90	7.60	5.50	Domestic
30	6801499	10/28/1964	18.60	10.40	7.60	Domestic
31	6801500	1/22/1965	9.10	7.30	4.60	Domestic
32	6801501	1/27/1965	15.20	10.70	10.10	Domestic
33	6801502	7/27/1965	11.60	9.10	7.60	Domestic
34	6801503	8/16/1965	18.90	11.90	9.10	Domestic

35	6801504	12/8/1965	16.80	9.80	9.10	Domestic
36	6805100	6/18/1960	9.10	6.40	1.50	Domestic
37	6805101	9/9/1960	12.20	7.30	4.30	Domestic
38	6805102	12/3/1965	8.20	6.10	2.40	Domestic
39	6805103	5/30/1966	8.50	4.90	0.60	Domestic
40	6801481	7/19/1963	12.80	4.30	6.10	Domestic
41	6801482	7/8/1965	13.10	5.80	4.90	Domestic
42	6801484	5/17/1966	8.50	5.20	2.10	Domestic
43	6801361	12/10/1953	14.90	6.10	4.60	Domestic
44	6801362	6/29/1959	7.90	7.00	2.40	Domestic
45	6801363	11/3/1966	16.80	6.10	6.70	Livestock
46	6801364	6/16/1949	13.40	5.80	2.40	Domestic
47	6801367	6/23/1961	12.50	7.30	5.50	Domestic
48	6801369	7/1/1957	9.10	7.60	2.40	Domestic
49	6801374	2/5/1959	8.80	8.20	3.00	Domestic
50	6801378	6/7/1956	10.10	6.10	3.70	Domestic
51	6801379	9/22/1956	9.40	4.60	2.10	Domestic
52	6801381	8/15/1958	6.70	5.80	1.80	Domestic
53	6801382	3/1/1960	10.10	4.90	5.50	Domestic
54	6801383	5/8/1963	7.90	4.30	0.60	Domestic
55	6801385	9/18/1966	7.60	4.90	3.00	Domestic
56	6801386	6/8/1967	12.20	4.90	2.40	Domestic
57	6801268	7/28/1954	12.20	0.00	4.60	Domestic
58	6801269	8/20/1957	11.00	7.60	3.70	Domestic
59	6801505	2/25/1966	11.00	8.50	6.10	Domestic
60	6801506	9/16/1967	14.60	9.10	9.10	Domestic
61	6805251	5/28/1964	11.00	10.10	3.70	Domestic
62	6805253	8/29/1953	8.50	7.90	3.00	Domestic
63	6805254	12/11/1953	10.70	10.40	7.60	Domestic
64	6805255	12/8/1955	10.40	8.80	4.30	Domestic
65	6805099	11/2/1959	11.30	7.00	5.50	Domestic
66	6805256	6/21/1957	14.30	10.40	3.40	Domestic
67	6805257	7/6/1958	9.80	9.10	5.50	Domestic
68	6805258	10/18/1958	12.20	11.30	3.70	Domestic
69	6805259	1/2/1960	8.50	0.00	5.80	Domestic
70	6805260	5/5/1960	10.40	0.00	3.70	Domestic
71	6805261	11/26/1960	11.30	10.40	5.80	Domestic
72	6805262	7/2/1957	10.10	0.00	4.60	Domestic

73	6805263	7/26/1957	9.80	0.00	4.60	Domestic
74	6805264	11/6/1965	12.80	10.70	7.60	Domestic
75	6805265	7/12/1952	7.90	7.00	4.30	Domestic
76	6805266	8/1/1952	14.00	8.20	5.20	Domestic
77	6805267	5/14/1957	7.90	6.40	0.00	Domestic
78	6805268	7/16/1960	13.10	12.20	6.10	Commercial
79	6805270	5/11/1962	13.10	5.50	5.20	Domestic
80	6805271	11/6/1966	14.60	11.60	12.20	Domestic
81	6805272	9/1/1950	7.60	2.40	4.60	Domestic
82	6805273	11/5/1951	9.80	6.40	3.00	Commercial
83	6805274	12/9/1953	7.90	2.70	2.40	Domestic
84	6805275	10/4/1954	15.20	8.80	8.50	Domestic
85	6805276	6/19/1955	6.70	2.40	3.70	Domestic
86	6805277	5/8/1957	8.20	0.00	1.80	Domestic
87	6805278	1/5/1959	13.70	8.50	4.60	Domestic
88	6805279	3/28/1959	7.90	2.70	1.50	Domestic
89	6805280	7/4/1961	8.80	1.20	1.80	Livestock
90	6805281	5/29/1964	9.10	2.40	1.20	Domestic
91	6805283	7/13/1965	8.80	3.40	1.80	Domestic
92	6808229	8/15/1972	7.30	4.90	0.90	Domestic
93	6810807	5/15/1984	9.10	5.80	3.70	Domestic
94	6810808	12/4/1984	15.80	14.60	11.00	Domestic
95	6812298	10/16/1992	9.10	0.00	3.70	Commercial
96	6811859	1/16/1990	8.50	7.60	2.40	Domestic
97	6808951	8/30/1974	17.70	12.50	6.10	Domestic
98	6807342	11/18/1969	12.20	5.50	7.30	Domestic
99	6808384	10/31/1972	8.50	6.40	2.40	Domestic
100	6808668	7/29/1973	9.10	4.30	6.70	Domestic
101	6808042	9/14/1971	9.10	4.30	3.70	Domestic
102	6808045	12/13/1971	7.60	6.10	3.00	Domestic
103	6807504	6/30/1970	8.50	7.00	2.10	Domestic
104	6807505	7/6/1970	14.30	7.00	5.80	Commercial
105	6807522	3/7/1970	9.80	7.90	4.60	Domestic
106	6809042	7/2/1974	17.40	13.10	5.50	Domestic
107	6809060	12/4/1974	16.20	7.00	6.10	Domestic
108	6807951	7/1/1971	10.10	6.70	5.20	Livestock
109	6811185	7/28/1986	8.50	7.00	2.40	Livestock
110	6807028	6/11/1968	11.60	7.30	3.00	Irrigation

111	6807041	1/23/1968	13.40	12.80	4.60	Domestic
112	6807061	5/10/1969	10.10	9.80	4.30	Irrigation
113	6808082	11/22/1971	8.80	4.90	2.40	Commercial
114	6812928	10/24/1997	12.80	5.20	4.60	Domestic
115	6806743	9/9/1968	8.20	6.40	3.70	Domestic
116	6806749	5/6/1968	12.80	5.50	1.80	Domestic
117	6806753	6/1/1968	9.10	4.60	5.50	Domestic
118	6806755	1/19/1968	11.60	6.10	3.70	Domestic
119	6806757	6/8/1968	11.30	7.60	0.00	Domestic
120	6807211	6/2/1969	7.60	6.10	3.70	Domestic
121	6807212	6/5/1969	7.60	5.50	3.70	Domestic
122	6807215	8/21/1969	11.00	7.60	4.60	Domestic
123	6809327	9/15/1975	18.30	12.20	10.70	Domestic
124	6812864	3/7/1997	9.10	4.90	0.60	Domestic
125	6809658	11/2/1977	8.20	6.40	2.70	Commercial
126	6812964	7/5/1997	7.60	6.70	0.90	Domestic
127	6807435	9/24/1969	11.60	7.90	3.00	Domestic
128	6811926	9/9/1990	8.50	7.90	3.00	Domestic
129	6813079	12/5/1998	15.20	6.10	9.40	Domestic &
130	6807443	11/25/1969	9.10	7.30	3.70	Domestic
131	6807250	8/12/1969	8.80	4.30	1.80	Domestic
132	6808049	10/27/1971	12.80	0.00	3.00	Commercial
133	6809017	10/24/1974	12.80	6.70	3.00	Commercial
134	6812098	6/25/1991	7.90	4.90	2.40	Domestic
135	6807472	5/27/1970	13.40	7.90	3.70	Domestic
136	6809084	10/17/1974	7.60	5.20	4.00	Domestic
137	6811178	6/20/1986	7.30	5.50	2.40	Domestic
138	6811179	10/25/1986	9.10	5.80	4.60	Domestic
139	6812472	7/27/1994	14.30	8.50	8.80	Domestic
140	6810245	6/13/1980	14.60	12.20	6.10	Domestic
141	6812488	8/9/1994	15.20	14.30	9.40	Commercial
142	6812489	8/5/1994	16.20	14.60	10.10	Commercial
143	6810372	7/22/1981	13.70	10.70	7.60	Domestic
144	6811634	3/10/1989	8.50	5.80	3.00	Domestic
145	6811678	6/26/1989	7.90	4.90	0.00	Domestic
146	6811272	8/12/1987	9.10	3.00	4.30	Domestic
147	6809192	6/24/1975	6.70	5.20	1.20	Domestic
148	6811291	5/27/1987	5.50	4.90	1.20	Domestic

149	6812616	6/13/1995	9.10	7.90	6.70	Domestic
150	6812620	7/11/1995	17.10	0.00	8.80	Domestic &
151	6811485	5/21/1988	14.60	14.30	8.50	Commercial
152	6814585	8/28/2006	7.90	6.40	1.60	Domestic
153	6805282	5/7/1965	7.30	4.90	1.80	Domestic
154	6807741	6/4/1971	9.10	7.30	2.10	Domestic
155	6806762	8/22/1968	9.80	1.20	0.90	Domestic
156	6812615	5/10/1995	13.10	12.80	10.10	Domestic
157	7233965	10/15/2014	10.70	0.00	4.60	Domestic
158	7230789	8/22/2014	10.40	0.00	4.60	Domestic

Piezometer Monitoring Readings

Site (Figure 3.16)	Pipe Depth	Depth to Groundwater (m) (from ground surface)*			
		Dec 21-2015	Mar 18-2016	Jul 04-2016	Oct 28-2016
GW1	1.68	0.81	0.55	0.50	0.76
GW2	1.68	gw below peiz	0.48	0.35	gw below peiz
GW3	1.68	0.17	-0.24	-0.54	n/a
GW4	1.68	0.30	0.03	0.44	gw below peiz
GW5	1.68	0.34	n/a	-0.08	gw below peiz
GW6	2.00	0.55	0.40	0.35	gw below peiz
GW7	1.68	0.52	0.26	0.04	0.00
GW8	1.68	gw below peiz	-0.08	gw below peiz	gw below peiz
GW9	1.68	0.75	0.49	0.52	0.61
GW10	2.00	0.63	0.51	0.44	0.64
GW11	2.15	0.66	0.49	0.36	0.23
GW12	1.68	0.73	0.47	0.15	0.19
GW13	1.68	0.66	0.25	gw below peiz	gw below peiz
GW14	2.00	0.75	0.39	0.79	n/a
GW15	2.00	0.45	0.33	0.11	0.22

* values in blue indicate piezometric surface above ground surface

Site (Figure 3.16)	Pipe Depth	Diff. in Surface Water and Groundwater Level (m)			
		Dec 21-2015	Mar 18-2016	Jul 04-2016	oct 28-2016
GW1	1.68	0.81	0.65	0.50	0.76
GW2	1.68	gw below peiz	0.53	0.35	gw below peiz
GW3	1.68	0.40	0.12	-0.54	n/a
GW4	1.68	0.30	0.19	0.44	gw below peiz
GW5	1.68	0.49	n/a	n/a	gw below peiz
GW6	2.00	0.61	0.57	0.35	gw below peiz
GW7	1.68	0.71	0.56	0.04	0.22
GW8	1.68	gw below peiz	0.02	gw below peiz	gw below peiz
GW9	1.68	0.75	0.60	0.52	0.66
GW10	2.00	0.73	0.70	0.44	0.64
GW11	2.15	0.83	0.86	n/a	0.50
GW12	1.68	0.77	0.62	0.15	0.21
GW13	1.68	0.66	0.44	gw below peiz	gw below peiz
GW14	2.00	0.75	0.75	0.79	n/a
GW15	2.00	0.58	0.56	0.11	0.36

* values in blue indicate piezometric surface above surface water level (if any)