

# TABLES



**Table 1: Monitoring Well Construction Details - Current Monitoring Program**

Current Well Designation	Installation Date	Stratigraphic Unit	Ground Surface Elevation (1) (m ASL)	Measuring Point Elevation (m ASL)	Stickup (1) (m)	Riser Inside Diameter (1) (mm)	Screen Length (1) (m)	Screened Interval (1)		Well Status/ Condition
								(m bgs)	(m ASL)	
051	15-Dec-77	LT	287.14	288.13	0.99	32	0.6	26.7 - 27.3	260.47 - 259.86	✓
052	15-Dec-77	LT	287.14	288.15	1.01	32	0.8	14.6 - 15.4	272.51 - 271.75	✓
053	15-Dec-77	FT	287.14	287.96	0.82	32	4.6	2.4 - 7.0	284.70 - 280.13	✓
061	20-Dec-77	LT	291.45	292.40	0.95	32	0.6	18.3 - 18.9	273.16 - 272.55	✓
063	20-Dec-77	UT	291.50	292.34	0.84	32	4.9	2.1 - 7.0	289.37 - 284.49	✓
071	21-Dec-77	LT	299.90	300.86	0.96	32	0.6	17.2 - 17.8	282.68 - 282.07	✓
102	3-Jan-78	LT	292.32	293.20	0.88	32	6.1	4.0 - 10.1	288.36 - 282.26	✓
111	5-Jan-78	FT	295.08	295.98	0.90	32	4.9	2.4 - 7.3	292.64 - 287.76	Replaced by 111R in July 2017
121	5-Jan-78	UT	294.17	295.09	0.92	32	6.4	4.0 - 10.4	290.21 - 283.81	✓
131	5-Jan-78	UT	304.33	305.34	1.01	32	6.4	4.0 - 10.4	300.37 - 293.97	✓
161	26-Jul-78	LT	296.55	297.39	0.84	32	0.6	11.3 - 11.9	285.27 - 284.66	✓
162	26-Jul-78	ITS	296.56	297.36	0.80	32	3.0	4.6 - 7.6	291.99 - 288.94	✓
191	28-Sep-83	LT	301.33	303.54	2.21	51	0.6	21.6 - 22.3	279.68 - 279.07	✓
192	28-Sep-83	UT	301.33	303.34	2.01	51	0.6	12.2 - 12.8	289.13 - 288.52	✓
193	28-Sep-83	UT	301.33	303.52	2.19	32	3.0	3.4 - 6.4	297.97 - 294.92	✓
202	20-Oct-83	FT	295.05	295.63	0.58	32	3.0	1.7 - 4.7	293.37 - 290.32	✓
242	26-Oct-83	UT	291.48	291.71	0.23	32	3.2	2.1 - 5.3	289.35 - 286.15	✓
281	7-Oct-83	FT	295.29	297.96	2.67	32	2.3	0.8 - 3.0	294.53 - 292.24	✓
391	6-Oct-83	FT	290.47	291.54	1.07	32	4.0	0.6 - 4.6	289.86 - 285.90	Damaged riser
401	6-Oct-83	UT	289.10	289.96	0.86	32	5.3	1.1 - 6.4	288.04 - 282.70	✓
421	6-Oct-83	UT	294.13	294.72	0.59	32	5.2	1.8 - 7.0	292.30 - 287.12	✓
431	21-Oct-83	UT	295.56	296.02	0.46	32	4.1	2.4 - 6.6	293.13 - 289.01	✓
541	15-Jul-87	FT	295.10	295.57	0.59	51	2.7	3.1 - 5.8	292.05 - 289.31	✓
561	15-Jul-87	ITS	289.60	290.02	0.51	51	2.4	9.2 - 11.6	280.42 - 278.02	✓
562	15-Jul-87	FT	289.50	290.04	0.58	51	2.7	1.8 - 4.6	287.67 - 284.93	✓
571	15-Jul-87	ITS	296.30	296.73	0.52	51	1.4	19.1 - 20.4	277.25 - 275.88	✓
581	13-Jul-87	FT	299.20	299.74	0.61	51	2.7	1.8 - 4.6	297.36 - 294.63	✓
591		ITS	300.02	300.75	0.73	51				✓
98-2	25-May-98	FT	296.83	297.34	0.51	51	3.0	3.7 - 6.7	293.18 - 290.13	✓
98-4	26-May-98	FT	298.91	299.43	0.52	51	1.5	3.1 - 4.6	295.83 - 294.31	✓
98-7	27-May-98	FT	295.98	296.82	0.84	51	1.5	5.2 - 6.7	290.80 - 289.28	✓
98-9	27-May-98	FT	295.59	296.25	0.66	51	1.5	5.2 - 6.7	290.41 - 288.89	✓
98-11	28-May-98	FT	296.72	297.57	0.85	51	3.0	2.2 - 5.2	294.57 - 291.52	✓
98-12	28-May-98	FT	296.59	297.32	0.73	51	1.5	4.6 - 6.1	292.01 - 290.49	✓
98-13	28-May-98	FT	295.76	296.04	0.28	51	3.0	6.2 - 9.2	289.61 - 286.56	✓
98-14	29-May-98	FT	302.38	303.13	0.75	51	3.0	6.1 - 9.1	296.33 - 293.28	✓
00-01	25-May-00	UT	298.92	299.74	0.82	51	3.0	6.9 - 9.9	292.06 - 289.01	✓
00-02	26-May-00	UT	299.00	299.67	0.67	51	1.5	5.5 - 6.7	293.51 - 292.29	✓

Notes: (1) Data estimated based on borehole log or MOE well record.

(2) Data based on field measurements during 2010.

· Measuring point elevations as of October 1989

· FT - Fractured Till or Glacio-lacustrine Deposits

· UT - Upper Till

· ITS - Inter-till Sands

· LT - Lower Till

· B - Bedrock

**Table 1: Monitoring Well Construction Details - Current Monitoring Program**

Current Well Designation	Installation Date	Stratigraphic Unit	Ground Surface Elevation (1) (m ASL)	Measuring Point Elevation (m ASL)	Stickup (1) (m)	Riser Inside Diameter (1) (mm)	Screen Length (1) (m)	Screened Interval (1)		Well Status/ Condition
								(m bgs)	(m ASL)	
00-03	26-May-00	ITS	295.34	296.18	0.84	51	3.0	12.2 - 15.2	283.15 - 280.10	✓
00-04	25-May-00	UT	299.89	300.67	0.78	51	3.0	6.9 - 9.9	293.03 - 289.98	✓
2P	26-May-00	FT	296.94	297.84	0.90	100	3.0	4.6 - 7.6	292.37 - 289.32	✓
7P	24-May-00	FT	296.03	296.89	0.86	100	1.5	4.6 - 6.1	291.46 - 289.93	✓
10P	23-May-00	FT	295.54	296.49	0.97	100	1.5	4.9 - 6.4	290.66 - 289.14	✓
2obs	29-May-00	FT	296.94	297.78	0.87	51	3.0	4.6 - 7.6	292.37 - 289.32	✓
7obs	23-May-00	FT	295.60	296.76	1.24	51	1.5	5.2 - 6.7	290.42 - 288.89	✓
999	22-May-91	B	300.64	300.93	0.30	127	25.0	65.5 - 90.5	235.14 - 210.11	✓
012R	18-Mar-03	ITS	298.50	299.29	0.76	51	1.5	15.2 - 16.8	283.26 - 281.74	✓
013R	18-Mar-03	UT	298.70	299.41	0.72	51	1.5	7.0 - 8.5	291.69 - 290.17	✓
551R	19-Mar-03	ITS	296.70	297.53	0.86	51	1.5	13.7 - 15.2	282.98 - 281.46	✓
552R	19-Mar-03	FT	296.80	297.32	0.71	51	1.5	4.0 - 5.5	292.84 - 291.31	✓
03-3	11-Sep-03	UT	297.00	297.88	0.84	51	1.5	3.7 - 5.2	293.34 - 291.82	✓
03-4	11-Sep-03	UT	297.30	298.21	0.89	51	3.0	3.4 - 6.4	293.95 - 290.90	✓
03-5	11-Sep-03	UT	297.30	298.14	0.86	51	3.0	3.0 - 6.1	294.25 - 291.20	✓
03-6	12-Sep-03	UT	297.50	298.37	0.87	51	3.0	4.6 - 7.6	292.93 - 289.88	✓
03-7s	12-Sep-03	FT	298.04	299.30	1.26	51	1.5	2.8 - 4.3	295.28 - 293.75	well extended in Sept 2017
03-7d	12-Sep-03	UT	297.71	299.17	1.46	51	1.5	7.0 - 8.5	290.70 - 289.18	well extended in Sept 2017
03-8	15-Sep-03	R	310.60	311.39	0.77	51	4.6	7.0 - 11.6	303.59 - 299.02	✓
141R	23-Aug-04	FT	297.42	297.43	0.66	51	3.0	4.4 - 7.5	293.00 - 289.95	✓
022R	26-Aug-04	LT	305.34	305.34	0.69	51	1.5	20.1 - 21.6	285.22 - 283.70	✓
023R	25-Aug-04	UT	305.87	305.37	0.81	51	3.0	2.9 - 5.9	302.97 - 299.93	✓
531R	25-Aug-04	FT	298.81	298.81	0.69	51	3.0	2.4 - 5.5	296.37 - 293.32	✓
381R	25-Aug-04	UT	297.29	297.29	0.74	51	3.0	2.1 - 5.2	295.16 - 292.11	✓
101R	25-Aug-04	LT	292.83	292.83	0.76	51	1.5	15.2 - 16.8	277.59 - 276.07	✓
231R	26-Aug-05	LT	295.89	296.83	0.94	51	1.7	18.1 - 19.7	277.82 - 276.15	✓
232R	23-Aug-05	UT	295.90	296.73	0.83	51	1.5	7.4 - 9.0	288.45 - 286.91	✓
233R	23-Aug-05	FT	296.00	296.77	0.77	51	3.0	1.8 - 4.9	294.17 - 291.12	✓
261R	23-Aug-05	LT	292.80	293.64	0.84	51	1.5	13.4 - 14.9	279.39 - 277.86	✓
262R	23-Aug-05	UT	292.65	293.54	0.89	51	1.5	7.6 - 9.1	285.03 - 283.51	✓
263R	23-Aug-05	FT	292.58	293.32	0.74	51	3.0	3.0 - 6.1	289.53 - 286.48	✓
05-01	26-Aug-05	UT	299.26	300.16	0.90	51	3.0	2.9 - 5.9	296.36 - 293.32	✓
592	12-Sep-14	FT	297.56	298.76	1.20	51	3.2	1.4 - 4.6	296.14 - 292.94	✓
593	12-Sep-14	UT	297.50	298.69	1.19	51	3.2	7.3 - 10.5	290.18 - 286.98	✓
594	11-Sep-14	ITS	297.34	298.53	1.19	51	1.7	13.4 - 15.1	283.90 - 282.25	✓
595	15-Sep-14	LT	295.38	296.51	1.14	51	3.2	10.4 - 13.6	285.02 - 281.82	✓
111R	5-Jul-17	FT	298.62	299.35	0.73	51	4.6	4.5 - 9.1	294.12 - 289.48	✓
998	16-Jul-87	ITS	298.90	299.44	0.62	130	3.1	17.7 - 20.7	281.22 - 278.17	✓

Notes: (1) Data estimated based on borehole log or MOE well record.

(2) Data based on field measurements during 2010.

· Measuring point elevations as of October 1989

· FT - Fractured Till or Glacio-lacustrine Deposits

· UT - Upper Till

· ITS - Inter-till Sands

· LT - Lower Till

· B - Bedrock

**Table 2: 2017 Groundwater Level Elevations**

Well No.	Unit	Current Elevation		8-May-17		17-Oct-17	
		Top of Pipe	Ground	mBTOP	mASL	mbTOP	mASL
051	LT	288.13	287.14	6.35	281.78	7.61	280.52
052	LT	288.15	287.14	3.85	284.30	4.16	283.99
053	FT	287.96	287.14	1.20	286.76	3.99	283.97
061	LT	292.40	291.45	3.49	288.91	6.06	286.34
063	UT	292.34	291.50	1.94	290.40	6.00	286.34
071	LT	300.86	299.90	9.85	291.01	11.30	289.56
102	LT	293.20	292.32	1.36	291.84	4.31	288.89
111	FT	295.98	295.08	1.96	294.02	-	-
121	UT	295.09	294.17	1.44	293.65	8.87	286.22
131	UT	305.34	304.33	1.28	304.06	3.36	301.98
161	LT	297.39	296.55	6.12	291.27	7.84	289.55
162	ITS	297.36	296.56	1.46	295.90	5.67	291.69
191	LT	303.54	301.33	12.18	291.36	13.89	289.65
192	UT	303.34	301.33	9.05	294.29	10.90	292.44
193	UT	303.52	301.33	1.24	302.28	5.07	298.45
202	FT	295.63	295.05	1.10	294.53	2.32	293.31
242	UT	291.71	291.48	0.98	290.73	2.94	288.77
281	FT	297.96	295.29	2.54	295.42	3.40	294.56
391	FT	291.54	290.47	Damaged		Damaged	
401	UT	289.96	289.10	2.52	287.44	5.70	284.26
421	UT	294.72	294.13	1.39	293.33	6.70	288.02
431	UT	296.02	295.56	1.26	294.76	4.25	291.77
541	FT	295.57	295.10	1.15	294.42	2.98	292.59
561	ITS	290.02	289.60	2.18	287.84	3.83	286.19
562	FT	290.04	289.50	1.80	288.24	4.89	285.15
571	ITS	296.73	296.30	5.78	290.95	7.28	289.45
581	FT	299.74	299.20	0.84	298.90	3.28	296.46
591	ITS	300.75	300.02	7.99	292.76	8.25	292.50
98-2	FT	297.34	296.83	0.74	296.60	2.34	295.00
98-4	FT	299.43	298.91	2.03	297.40	3.85	295.58
98-7	FT	296.82	295.98	1.58	295.24	2.39	294.43
98-9	FT	296.25	295.59	1.75	294.50	2.33	293.92
98-11	FT	297.57	296.72	1.90	295.67	2.37	295.20
98-12	FT	297.32	296.59	1.01	296.31	2.78	294.54
98-13	FT	296.04	295.76	1.80	294.24	2.55	293.49
98-14	FT	303.13	302.38	5.36	297.77	7.48	295.65
00-01	UT	299.74	298.92	4.11	295.63	4.12	295.62
00-02	UT	299.67	299.00	4.20	295.47	4.87	294.80
00-03	ITS	296.18	295.34	0.86	295.32	2.85	293.33
00-04	UT	300.67	299.89	4.95	295.72	5.80	294.87
2P	FT	297.84	296.94	3.08	294.76	3.31	294.53
7P	FT	296.89	296.03	2.91	293.98	3.25	293.64
10P	FT	296.49	295.54	2.72	293.77	3.09	293.40
2obs	FT	297.78	296.94	2.90	294.88	3.18	294.60
7obs	FT	296.76	295.60	2.23	294.53	1.11	295.65
999	B	300.93	-	-	-	-	-
012R	ITS	299.29	298.50	3.74	295.55	5.74	293.55
013R	UT	299.41	298.70	3.22	296.19	5.05	294.36
551R	ITS	297.53	296.70	2.09	295.44	4.05	293.48
552R	FT	297.32	296.80	2.12	295.20	2.92	294.40

Notes:

- mBTOP - metres below top of pipe
- mASL - metres above sea level
- FT - Fractured Till or Glacio-lacustrine Deposits
- UT - Upper Till
- ITS - Inter-till Sands
- LT - Lower Till
- B - Bedrock
- R - Refuse

**Table 2: 2017 Groundwater Level Elevations**

Well No.	Unit	Current Elevation		8-May-17		17-Oct-17	
		Top of Pipe	Ground	mBTOP	mASL	mbTOP	mASL
03-3	UT	297.88	297.00	2.13	295.75	2.73	295.15
03-4	UT	298.21	297.30	2.59	295.62	3.20	295.01
03-5	UT	298.14	297.30	1.51	296.63	3.12	295.02
03-6	UT	298.37	297.50	2.58	295.79	3.94	294.43
03-7S*	FT	299.30	298.04	1.29	296.20	3.69	295.61
03-7D*	UT	299.17	297.71	1.38	296.28	3.94	295.23
03-8	R	311.39	310.60	6.11	305.28	7.25	304.14
141R	FT	297.43	297.42	0.94	296.49	2.66	294.77
022R	LT	305.34	305.34	11.17	294.17	13.08	292.26
023R	UT	305.37	305.87	3.32	302.05	5.89	299.48
531R	FT	298.81	298.81	1.31	297.50	4.80	294.01
381R	UT	297.29	297.29	0.83	296.46	2.48	294.81
101R	LT	292.83	292.83	2.52	290.31	4.12	288.71
231R	LT	296.83	295.89	6.68	290.15	8.17	288.66
232R	UT	296.73	295.90	3.56	293.17	4.97	291.76
233R	FT	296.77	296.00	0.88	295.89	2.35	294.42
261R	LT	293.64	292.80	6.25	287.39	8.57	285.07
262R	UT	293.54	292.65	4.84	288.70	7.62	285.92
263R	FT	293.32	292.58	2.82	290.50	5.83	287.49
05-01	UT	300.16	299.26	3.98	296.18	4.51	295.65
592	FT	298.76	297.56	1.37	297.39	3.37	295.39
593	UT	298.69	297.50	6.17	292.52	7.84	290.85
594	ITS	298.53	297.34	9.19	289.34	10.68	287.85
595	LT	296.51	295.38	1.90	294.61	3.20	293.31
111R	FT	299.35	298.62	-	-	2.16	297.19
998	ITS	299.44	298.90	5.08	294.36	6.88	292.56

Notes:

- mBTOP - metres below top of pipe
- mASL - metres above sea level
- \* 03-7S and 03-7D extended in Sept 2017
- FT - Fractured Till or Glacio-lacustrine Deposits
- UT - Upper Till
- ITS - Inter-till Sands
- LT - Lower Till
- B - Bedrock
- R - Refuse

**Table 3: 2017 Leachate Level Elevations**

<b>Manhole / Well No.</b>	<b>1</b>	<b>7</b>	<b>8</b>	<b>12</b>	<b>16</b>	<b>17</b>	<b>03-8</b>
<b>Measuring Point Elevation</b>	<b>301.42</b>	<b>299.53</b>	<b>308.39</b>	<b>312.03</b>	<b>297.86</b>	<b>302.20</b>	<b>312.16</b>
Jan-17	295.53	sealed	sealed	sealed	292.62	sealed	305.50
Feb-17	296.58	sealed	sealed	sealed	293.08	sealed	305.58
Mar-17	296.31	sealed	sealed	sealed	289.78	sealed	305.56
Apr-17	296.48	sealed	sealed	sealed	291.54	sealed	306.14
May-17	295.49	sealed	sealed	sealed	292.75	sealed	305.99
Jun-17	295.53	sealed	sealed	sealed	292.62	sealed	305.50
Jul-17	295.28	sealed	sealed	sealed	290.61	sealed	305.82
Aug-17	295.72	sealed	sealed	sealed	291.34	sealed	305.79
Sep-17	296.58	sealed	sealed	sealed	291.09	sealed	305.73
Oct-17	295.44	sealed	sealed	sealed	291.39	sealed	305.64
Nov-17	295.64	sealed	sealed	sealed	292.76	sealed	305.63
Dec-17	297.16	sealed	sealed	sealed	291.11	sealed	305.73

Notes: · All elevations in metres above sea level  
· Blank indicates data not available

**Table 4: 2017 Groundwater Chemical Results**

Monitor	Date	Unit	pH	Cond.	Temp.	pH	Conductivity	Turbidity	Colour	Hardness	Alkalinity	Bicarbonate	Carbonate
			Field	Field	Field								
ODWQS			6.5 - 8.5			6.5 - 8.5		5	5	80 - 100	30 - 500		
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC
											404		
98-7	May-17	FT	7.74	663	9.70								
98-11	May-17	FT	6.90	1180	8.12								
98-12	May-17	FT	7.85	659	9.39								
98-13	May-17	FT	7.33	462	10.66								
03-7s	May-17	FT	7.23	692	8.26	8.24	827	415	5	341	328	328	<5
	Oct-17	FT	7.23	823	16.32	8.24	1020	5370	7	454	354	354	<5
111	May-17	FT	Unable to sample due to well deficiencies										
111R	Oct-17	FT	7.65	271	11.70	7.73	345	414	6	93.1	98	98	<5
141R	May-17	FT	6.70	2080	10.17	7.99	2560	7740	15	1410	708	708	<5
	Oct-17	FT	7.10	954	11.96	8.06	1280	5400	11	736	494	494	<5
233R	May-17	FT	6.94	1270	9.13	8.04	1550	674	<5	851	583	583	<5
	Oct-17	FT	6.56	1150	12.69	8.06	1440	230	<5	910	571	571	<5
263R	May-17	FT	7.52	792	9.30	8.21	974	77.6	<5	421	305	305	<5
	Oct-17	FT	7.55	627	13.60	8.23	765	191	<5	397	310	310	<5
531R	May-17	FT	7.39	704	9.72	8.24	869	271	<5	371	293	293	<5
	Oct-17	FT	7.56	585	12.61	8.33	720	75.3	7	368	291	283	8
541	May-17	FT	7.62	602	8.65	8.28	651	3040	<5	280	255	255	<5
	Oct-17	FT	7.65	495	13.10	8.25	633	170	<5	328	315	315	<5
552R	May-17	FT	6.80	1420	9.22	8.08	1560	51.3	<5	685	415	415	<5
	Oct-17	FT	6.96	1320	9.98	8.10	1210	480	7	550	451	451	<5
562	May-17	FT	7.73	483	7.39	8.18	619	364	<5	242	233	233	<5
	Oct-17	FT	7.44	542	12.00	8.13	715	1580	<5	373	255	255	<5
581	May-17	FT	7.73	456	8.55	8.19	552	354	<5	243	218	218	<5
	Oct-17	FT	7.05	426	13.41	8.15	550	542	<5	288	250	250	<5
592	May-17	FT	7.20	614	10.21	8.23	758	3540	<5	347	333	333	<5
	Oct-17	FT	6.75	557	13.44	8.25	703	1090	<5	393	358	358	<5
00-01	May-17	UT	7.78	648	9.90								
00-02	May-17	UT	7.40	766	9.89								
00-04	May-17	UT	7.88	649	10.50	8.28	788	412	<5	281	284	282	<5
	Oct-17	UT	7.57	529	14.33	8.21	690	61.9	5	274	289	289	<5
013R	May-17	UT	7.67	447	10.04								
023R	May-17	UT	7.24	1220	9.42	8.20	1510	11.0	<5	725	384	384	<5
	Oct-17	UT	7.43	1050	11.85	8.13	1290	45.2	<5	761	390	390	<5
03-3	May-17	UT	7.04	967	8.40	8.21	1200	843	6	423	378	378	<5
03-4	May-17	UT	7.16	1530	9.08	8.07	1810	197	<5	1130	312	312	<5
03-5	May-17	UT	7.27	1520	9.89	8.10	1750	17800	<5	686	352	352	<5
03-6	May-17	UT	7.68	723	9.71								
03-7d	May-17	UT	7.80	426	8.80	7.85	518	45.8	7	112	126	126	<5
	Oct-17	UT	7.84	384	14.67	7.79	469	27.4	13	130	128	128	<5
05-01	May-17	UT	7.64	493	9.41	8.26	606	233	5	228	259	259	<5
	Oct-17	UT	7.98	424	11.56	8.06	526	470	<5	238	253	253	<5
232R	May-17	UT	7.76	467	9.96	8.25	550	13.4	5	185	233	233	<5
	Oct-17	UT	7.07	389	10.90	8.29	498	266	<5	201	228	228	<5

Notes: · ODWQS - Ontario Drinking Water Quality Standard (June 2003) · AO - Aesthetic Objective  
 · NC - No criteria · OG - Operational Guideline  
 · MAC - Maximum Acceptable Concentration · † - sampled by Oxford County Board of Health  
 · IMAC - Interim Maximum Acceptable Concentration



Table 4: 2017 Groundwater Chemical Results

Monitor	Date	Unit	Sulphate mg/L	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Phenols mg/L	DOC mg/L
		ODWQS	500		250	1.5			200	10	1		5
		AO		NC	AO	MAC	NC	NC	AO	MAC	MAC	NC	AO
		Guideline B-7	335		127				113	2.63	0.32		3.1
98-7	May-17	FT			36.6								
98-11	May-17	FT			36.4								
98-12	May-17	FT			84.9								
98-13	May-17	FT			1.97								
03-7s	May-17	FT	14.4	101	57.7	<0.10	9.48	21.6	21.2	<0.10	<0.10	<0.001	2.9
	Oct-17	FT	19.3	133	140	<0.25	12.1	29.6	33.4	<0.25	<0.25	<0.001	3.6
111	May-17	FT											
111R	Oct-17	FT	80.8	22.7	2.99	1.60	1.43	8.85	39.7	<0.05	<0.05	<0.001	2.1
141R	May-17	FT	882	414	8.70	<0.5	2.01	91.7	30.7	<0.5	<0.5	<0.001	13.7
	Oct-17	FT	353	191	4.77	<0.25	1.66	63.0	34.1	1.02	<0.25	<0.001	4.5
233R	May-17	FT	375	231	4.80	<0.25	1.97	66.5	10.8	<0.25	<0.25	<0.001	2.2
	Oct-17	FT	383	250	3.74	<0.25	2.13	69.3	11.4	<0.25	<0.25	<0.001	2.7
263R	May-17	FT	200	91.1	4.12	<0.10	2.58	47.1	27.9	0.22	<0.10	<0.001	1.1
	Oct-17	FT	139	83.7	3.37	<0.25	2.65	45.6	24.9	<0.25	<0.25	<0.001	1.3
531R	May-17	FT	163	82.8	4.76	0.18	2.07	39.8	22.2	<0.10	<0.10	<0.001	1.6
	Oct-17	FT	143	79.8	4.18	0.37	2.13	40.9	23.6	<0.10	<0.10	<0.001	2.2
541	May-17	FT	67.1	64.2	4.49	0.33	1.37	29.0	16.6	0.06	<0.05	<0.001	1.6
	Oct-17	FT	64.6	80.6	3.58	0.30	1.61	30.7	18.0	<0.10	<0.10	<0.001	1.7
552R	May-17	FT	27.2	194	214	<0.25	1.53	48.7	55.0	<0.25	<0.25	<0.001	3.0
	Oct-17	FT	36.2	150	160	<0.25	1.66	42.7	49.1	<0.25	<0.25	<0.001	2.3
562	May-17	FT	64.1	58.3	8.36	0.54	0.89	23.4	18.1	<0.05	<0.05	<0.001	1.9
	Oct-17	FT	158	85.4	4.82	0.41	1.80	38.7	19.0	<0.25	<0.25	<0.001	3.0
581	May-17	FT	46.5	56.1	3.92	0.38	1.14	24.9	8.94	5.37	<0.05	<0.001	2.1
	Oct-17	FT	42.0	65.1	3.27	0.32	1.61	30.5	10.9	4.40	<0.25	<0.001	2.1
592	May-17	FT	68.5	89.8	4.60	<0.10	1.88	29.9	14.4	0.29	<0.10	<0.001	2.3
	Oct-17	FT	52.4	100	3.55	<0.25	2.34	34.9	9.98	<0.25	<0.25	<0.001	2.5
00-01	May-17	UT			64.0								
00-02	May-17	UT			53.7								
00-04	May-17	UT	48.6	54.1	46.3	0.46	2.22	35.5	41.1	<0.10	<0.10	<0.001	1.8
	Oct-17	UT	46.3	52.5	45.1	0.79	2.26	34.7	48.7	<0.10	<0.10	<0.001	1.9
013R	May-17	UT			9.23								
023R	May-17	UT	455	137	24.7	<0.25	3.06	92.9	27.9	<0.25	<0.25	<0.001	2.2
	Oct-17	UT	447	141	20.8	<0.25	2.94	99.2	29.6	<0.25	<0.25	<0.001	2.7
03-3	May-17	UT	105	128	93.2	<0.25	3.97	25.0	56.1	0.33	<0.25	<0.001	3.8
03-4	May-17	UT	48.7	292	323	<0.25	5.73	96.4	176	<0.25	<0.25	<0.001	2.7
03-5	May-17	UT	237	153	205	<0.25	2.75	73.9	76.1	<0.25	<0.25	<0.001	4.1
03-6	May-17	UT			62.8								
03-7d	May-17	UT	98.5	27.2	10.9	1.17	1.26	10.8	54.2	<0.05	<0.05	<0.001	1.9
	Oct-17	UT	102	32.4	11.7	0.97	1.63	11.9	49.5	0.37	0.06	<0.001	2.5
05-01	May-17	UT	41.4	38.9	9.64	0.73	1.72	31.8	28.1	<0.05	<0.05	<0.001	1.5
	Oct-17	UT	42.7	39.9	8.55	0.91	1.78	33.5	27.7	<0.10	<0.10	<0.001	1.7
232R	May-17	UT	41.5	29.6	6.01	1.04	1.45	27.0	35.4	0.12	<0.05	<0.001	1.1
	Oct-17	UT	45.6	32.4	6.63	0.86	1.46	29.2	37.9	0.16	<0.05	<0.001	2.1

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 · NC - No criteria · OG - Operational Guideline  
 · MAC - Maximum Acceptable Concentration · † - sampled by Oxford County Board of Health  
 · IMAC - Interim Maximum Acceptable Concentration





**Table 4: 2017 Groundwater Chemical Results**

Monitor	Date	Unit	pH	Cond.	Temp.	pH	Conductivity	Turbidity	Colour	Hardness	Alkalinity	Bicarbonate	Carbonate
			6.5 - 8.5	Field	NC		NC	6.5 - 8.5	µS/cm	5	TCU	mg/L	mg/L
			OG	NC	NC	OG	NC	AO	AO	80 - 100	30 - 500	NC	NC
			Guideline B-7										404
381R	May-17	UT	7.36	761	8.33	8.29	918	357	<5	403	399	375	24
	Oct-17	UT	7.43	662	13.60	8.17	837	163	<5	458	419	419	<5
593	May-17	UT	7.57	530	10.50	8.23	658	2550	<5	242	241	241	<5
	Oct-17	UT	7.14	429	12.50	8.10	576	1630	<5	256	236	236	<5
551R	May-17	ITS	7.77	457	10.18	8.34	540	60.6	<5	233	223	216	7
	Oct-17	ITS	7.73	392	11.17	7.51	483	48.8	9	239	238	238	<5
561	May-17	ITS	7.92	354	9.42	8.26	427	678	<5	168	217	214	<5
	Oct-17	ITS	7.60	299	10.50	8.17	375	1260	<5	185	212	212	<5
571	May-17	ITS	7.65	392	9.79	8.20	484	51.7	<5	200	232	232	<5
	Oct-17	ITS	7.26	333	11.12	7.95	428	64.3	<5	219	229	229	<5
591	May-17	ITS	8.19	602	11.68	7.61	728	61.9	<5	94.5	61	61	<5
	Oct-17	ITS	7.76	515	12.13	7.59	654	335	9	110	63	63	<5
594	May-17	ITS	8.29	345	10.97	8.28	434	10500	5	86.9	195	195	<5
	Oct-17	ITS	7.46	283	10.90	8.11	351	697	9	90.5	174	174	<5
998	May-17	ITS	8.53	287	9.80	8.13	365	348	<5	96.5	165	165	<5
	Oct-17	ITS	8.10	213	12.09	7.84	294	4680	8	138	119	119	<5
00-03	May-17	ITS	7.58	460	9.69	8.16	551	327	<5	235	229	229	<5
	Oct-17	ITS	7.65	396	11.00	8.22	486	317	<5	246	237	237	<5
012R	May-17	ITS	7.61	451	10.38								
022R	May-17	LT	7.58	579	8.64	8.22	695	35700	17	296	257	257	<5
	Oct-17	LT	8.15	289	11.30	8.06	356	6440	6	130	175	175	<5
101R	May-17	LT	7.70	379	10.68	8.02	474	685	<5	195	232	232	<5
	Oct-17	LT	7.62	365	10.70	8.05	414	357	<5	207	224	224	<5
191	May-17	LT	7.81	502	12.29	8.27	652	1530	<5	259	260	254	5
	Oct-17	LT	8.00	395	13.81	8.13	501	252	<5	228	235	235	<5
231R	May-17	LT	8.43	294	10.40	7.71	365	8380	7	87.4	164	164	<5
	Oct-17	LT	7.38	255	11.03	8.10	320	287	<5	93.8	155	155	<5
595	May-17	LT	8.16	568	9.39	8.01	726	3760	9	139	108	108	<5
	Oct-17	LT	7.65	466	12.00	8.05	601	5640	6	148	103	103	<5
999	May-17	B	8.42	311	17.60	8.15	356	<0.5	7	69.3	168	168	<5
	Oct-17	B	7.62	402	17.50	8.15	444	2.4	<5	191	210	210	<5
03-08	May-17	R	7.00	7480	16.25	7.99	9410	161	480	1080	3620	3620	<5
	Oct-17	R	6.91	8560	20.30	7.94	7420	350	414	1230	3720	3720	<5

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 · AO - Aesthetic Objective  
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 · † - sampled by Oxford County Board of Health

**Table 4: 2017 Groundwater Chemical Results**

Monitor	Date	Unit	Sulphate	Calcium	Chloride	Fluoride	Potassium	Magnesium	Sodium	Nitrate	Nitrite	Phenols	DOC
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			500		250	1.5			200	10	1		5
			AO	NC	AO	MAC	NC	NC	AO	MAC	MAC	NC	AO
			335		127				113	2.63	0.32		3.1
381R	May-17	UT	98.4	82.8	5.02	0.21	2.12	47.7	25.7	<0.10	<0.10	<0.001	2.1
	Oct-17	UT	87.9	98.7	4.43	<0.25	2.37	51.3	22.8	<0.25	<0.25	<0.001	2.5
593	May-17	UT	93.4	42.0	4.45	0.56	1.99	33.3	32.5	0.06	<0.05	<0.001	1.3
	Oct-17	UT	86.6	44.0	4.07	0.40	1.87	35.6	31.8	<0.25	<0.25	<0.001	1.5
551R	May-17	ITS	39.0	47.1	7.69	0.68	1.14	28.0	12.0	<0.05	<0.05	<0.001	0.9
	Oct-17	ITS	37.7	47.5	6.73	0.84	1.19	29.3	12.8	<0.05	0.06	<0.001	1.2
561	May-17	ITS	9.53	29.6	0.84	1.06	1.22	22.9	14.6	0.06	<0.05	<0.001	0.9
	Oct-17	ITS	9.09	32.9	0.74	0.99	1.26	25.0	15.0	0.11	<0.05	<0.001	1.6
571	May-17	ITS	15.7	41.6	1.81	0.90	1.24	23.3	12.2	<0.05	<0.05	<0.001	0.6
	Oct-17	ITS	14.8	46.0	1.24	0.79	1.33	25.4	12.6	<0.05	<0.05	<0.001	1.0
591	May-17	ITS	252	15.6	4.89	0.96	1.16	13.5	99.1	<0.10	<0.10	<0.001	1.5
	Oct-17	ITS	250	19.9	4.24	1.20	1.12	14.6	103	<0.25	<0.25	<0.001	2.0
594	May-17	ITS	25.8	14.7	2.27	1.56	2.00	12.2	55.2	0.08	<0.05	<0.001	3.8
	Oct-17	ITS	22.2	16.3	1.71	1.48	2.01	12.1	50.5	0.16	<0.05	<0.001	1.4
998	May-17	ITS	16.7	14.9	4.22	0.79	1.50	14.4	28.7	<0.05	<0.05	0.003	1.5
	Oct-17	ITS	30.8	32.6	5.46	0.48	1.33	13.7	6.89	0.98	0.38	<0.001	2.1
00-03	May-17	ITS	39.0	48.6	7.57	0.64	1.25	27.7	11.9	<0.05	<0.05	<0.001	0.9
	Oct-17	ITS	38.5	50.6	7.33	0.80	1.23	29.1	13.2	<0.05	<0.05	<0.001	1.2
012R	May-17	ITS			7.89								
022R	May-17	LT	97.9	73.5	1.26	0.28	1.54	27.4	11.2	1.96	<0.05	<0.001	5.7
	Oct-17	LT	29.3	29.6	1.04	0.84	1.49	13.7	31.1	0.11	<0.05	<0.001	1.9
101R	May-17	LT	15.5	38.9	1.61	0.92	1.37	23.8	14.3	<0.05	<0.05	<0.001	1.0
	Oct-17	LT	14.8	40.7	1.08	0.82	1.36	25.6	14.9	<0.05	<0.05	<0.001	1.0
191	May-17	LT	76.7	42.7	4.20	0.85	1.84	37.0	21.6	0.74	<0.05	<0.001	2.8
	Oct-17	LT	53.5	35.9	2.53	0.93	1.59	33.6	22.5	0.42	<0.10	<0.001	2.8
231R	May-17	LT	25.7	14.4	1.15	1.76	1.26	12.5	37.7	<0.05	<0.05	<0.001	1.1
	Oct-17	LT	23.0	15.3	0.84	1.51	1.48	13.5	39.0	<0.05	<0.05	<0.001	1.8
595	May-17	LT	207	35.2	4.04	0.98	1.35	12.4	67.7	0.29	<0.05	<0.001	1.8
	Oct-17	LT	219	37.4	2.10	1.23	1.66	13.2	75.9	<0.10	<0.10	<0.001	2.3
999	May-17	B	8.46	13.5	1.08	2.41	0.99	8.65	46.9	<0.05	<0.05	<0.001	1.8
	Oct-17	B	31.9	39.5	4.73	1.54	1.47	22.4	26.0	<0.05	<0.05	<0.001	2.5
03-08	May-17	R	<10	133	827	<5	382	181	611	<5	<5	0.057	249
	Oct-17	R	17.1	154	725	<2.5	392	205	646	<2.5	<2.5	0.025	233

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 · IMAC - Interim Maximum Acceptable Concentration

Table 5: 2017 Groundwater Duplicate Results

Parameter	Unit	MDL	09-May-17			09-May-17			11-May-17			10-May-17		
			571	DUP1	RPD (%)	592	DUP2	RPD (%)	541	DUP3	RPD (%)	012R	C-DUP	RPD (%)
pH	NA	NA	8.20	8.32	1	8.23	8.18	1	8.28	7.61	8	-	-	-
Conductivity	µS/cm	2	484	481	1	758	742	2	651	660	1	-	-	-
Turbidity	NTU	0.5	52	52	1	3540	2520	<b>34</b>	3040	2970	2	-	-	-
Colour	TCU	5	<5	<5	<2xMDL	<5	<5	<2xMDL	<5	<5	<2xMDL	-	-	-
Hardness	mg/L	0.5	200	202	1	347	349	1	280	308	10	-	-	-
Alkalinity	mg/L	5	232	235	1	333	366	9	255	266	4	-	-	-
Bicarbonate	mg/L	5	232	235	1	333	366	9	255	266	4	-	-	-
Carbonate	mg/L	5	<5	<5	<2xMDL	<5	<5	<2xMDL	<5	<5	<2xMDL	-	-	-
Sulphate	mg/L	0.10	15.7	15.6	1	68.5	68.7	0	67.1	66.9	0	-	-	-
Calcium	mg/L	0.05	41.6	42.5	2	89.8	90.1	0	64.2	74.7	15	-	-	-
Chloride	mg/L	0.10	1.81	1.80	1	4.60	4.60	0	4.49	4.45	1	7.89	7.94	1
Fluoride	mg/L	0.05	0.90	0.90	<2xMDL	<0.10	<0.05	<2xMDL	0.33	0.33	0	-	-	-
Potassium	mg/L	0.05	1.24	1.22	2	1.88	1.86	1	1.37	1.55	12	-	-	-
Magnesium	mg/L	0.05	23.3	23.4	0	29.9	30.1	1	29.0	29.4	1	-	-	-
Sodium	mg/L	0.05	12.2	12.2	0	14.4	13.9	4	16.6	16.7	1	-	-	-
Nitrate	mg/L	0.05	<0.05	<0.05	<2xMDL	0.29	0.36	<b>22</b>	0.06	<0.05	<2xMDL	-	-	-
Nitrite	mg/L	0.05	<0.05	<0.05	<2xMDL	<0.10	<0.05	<2xMDL	<0.05	<0.05	<2xMDL	-	-	-
Phenols	mg/L	0.001	<0.001	<0.001	<2xMDL	<0.001	<0.001	<2xMDL	<0.001	<0.001	<2xMDL	-	-	-
DOC	mg/L	0.5	0.6	1.0	<2xMDL	2.3	1.6	<2MDL	1.6	1.9	17	-	-	-

Notes:

- mg/L - milligrams per litre
- µS/cm - microSiemens per centimetre
- NTU - nephelometric turbidity units
- TCU - true colour units
- MDL - Method Detection Limit
- RPD - Relative Percent Difference
- for values >5xMDL, RPDs of >20% are bold and shaded
- for values <5xMDL, RPDs of >2xMDL are bold and shaded

Table 5: 2017 Groundwater Duplicate Results

Parameter	Unit	MDL	17-Oct-17			18-Oct-17			18-Oct-17		
			561	DUP1	RPD (%)	551R	DUP2	RPD (%)	141R	DUP3	RPD (%)
pH	NA	NA	8.17	8.12	1	7.51	8.02	7	8.06	8.03	0
Conductivity	µS/cm	2	375	377	1	483	482	0	1280	1260	2
Turbidity	NTU	0.5	1260	1400	11	48.8	47.2	3	5400	5250	3
Colour	TCU	5	<5	<5	<2xMDL	9	<5	<2xMDL	11	12	9
Hardness	mg/L	0.5	185	183	1	239	239	0	736	713	3
Alkalinity	mg/L	5	212	212	0	238	241	1	494	495	0
Bicarbonate	mg/L	5	212	212	0	238	241	1	494	495	0
Carbonate	mg/L	5	<5	<5	<2xMDL	<5	<5	<2xMDL	<5	<5	<2xMDL
Sulphate	mg/L	0.10	9.1	9.3	2	37.7	37.6	0	353	332	6
Calcium	mg/L	0.05	32.9	32.7	1	47.5	47.6	0	191	184	4
Chloride	mg/L	0.10	0.74	0.76	3	6.73	6.72	0	4.77	4.64	3
Fluoride	mg/L	0.05	0.99	0.91	8	0.84	1.01	18	<0.25	<0.25	<2xMDL
Potassium	mg/L	0.05	1.26	1.42	12	1.19	1.18	1	1.66	1.74	5
Magnesium	mg/L	0.05	25.0	24.6	2	29.3	29.2	0	63.0	61.6	2
Sodium	mg/L	0.05	15.0	15.1	1	12.8	12.8	0	34.1	33.6	1
Nitrate	mg/L	0.05	0.11	0.14	<2xMDL	<0.05	<0.05	<2xMDL	1.02	0.97	5
Nitrite	mg/L	0.05	<0.05	<0.05	<2xMDL	0.06	<0.05	<2xMDL	<0.25	<0.25	<2xMDL
Phenols	mg/L	0.001	<0.001	<0.001	<2xMDL	<0.001	<0.001	<2xMDL	<0.001	<0.001	<2xMDL
DOC	mg/L	0.5	1.6	1.3	<2xMDL	1.2	0.9	<2xMDL	4.5	3.8	17

Notes:

- mg/L - milligrams per litre
- µS/cm - microSiemens per centimetre
- NTU - nephelometric turbidity units
- TCU - true colour units
- MDL - Method Detection Limit
- RPD - Relative Percent Difference
- for values >5xMDL, RPDs of >20% are bold and shaded
- for values <5xMDL, RPDs of >2xMDL are bold and shaded

**Table 6: 2017 Leachate Quality Summary**

Parameter	Ontario Drinking Water Quality Standards	Leachate Concentrations				
		Historical Range		2017 Range		Typical Landfill Leachate (source)
		(2005 - 2016)				
pH	6.5 - 8.5	7.12 - 8.37	7.94 - 7.99	6 - 7	<sup>2</sup>	
Conductivity		6,390 - 12,200	7,490 - 9,410			
Hardness	80 - 100	863 - 1,670	1,080 - 1,230			
Alkalinity	30 - 500	2,520 - 5,950	3,620 - 3,720	300 - 2,000	<sup>2</sup>	
Sulphate	500	<2 - <50	<10 - 17.1	<1 - 300	<sup>2</sup>	
Calcium		84.9 - 195	133 - 154	100 - 1,000	<sup>2</sup>	
Chloride	250	253 - 1250	725 - 827	20 - 2,500	<sup>2</sup>	
Fluoride	1.5	<0.05 - <10	<2.5 - <5			
Potassium		310 - 830	382 - 392	200 - 1,000	<sup>1</sup>	
Magnesium		158 - 321	181 - 205	100 - 1,500	<sup>1</sup>	
Sodium	200	547 - 1400	611 - 646	200 - 1,200	<sup>1</sup>	
Nitrate	10	<0.05 - <2	<2.5 - <5	<0.1 - 0.5	<sup>2</sup>	
Nitrite	1	<0.05 - <2	<2.5 - <5	<1	<sup>2</sup>	
Phenols		<0.001 - 0.180	0.025 - 0.057			
DOC	5	108 - 490	233 - 249	200 - 30,000	<sup>1</sup>	

Notes: All concentrations in milligrams per litre (mg/L) unless otherwise indicated.

Shading indicates concentration exceeds Ontario Drinking Water Quality Standard.

<sup>1</sup> Typical leachate characteristics data from Freeze & Cherry (1979).

<sup>2</sup> Typical leachate characteristics data from the Ministry of the Environment (1993).

**Table 7: Diagnostic Indicator Parameters**

Parameter	Leachate Concentrations (Well 03-8)	Downgradient Southeast				Adjacent South					
		Fractured Till Well		Inter-till Sands Well		Fractured Till Well		Upper Till Well		Lower Till Well	
		Well 581		Well 571		Well 233R		Well 232R		Well 231R	
		2017 Range	Historic Range	2017 Range	Historic Range	2017 Range	Historic Range	2017 Range	Historic Range	2017 Range	Historic Range
Alkalinity	3,620 - 3,720	230 - 298	218 - 250	211 - 242	229 - 232	310 - 612	571 - 583	220 - 260	228 - 233	130 - 178	155 - 164
Chloride	725 - 827	3.0 - 12	3.27 - 3.92	1.0 - 12	1.24 - 1.81	<2.0 - 7.0	3.74 - 4.80	<2.0 - 8.8	6.01 - 6.63	1.0 - 7.0	0.84 - 1.15
Potassium	382 - 392	1.0 - 4.9	1.14 - 1.61	1.0 - 5.1	1.24 - 1.33	1.96 - 7.6	1.97 - 2.13	1.45 - 3.6	1.45 - 1.46	1.0 - 2.0	1.26 - 1.48
DOC	233 - 249	0.6 - 19.6	2.1	<0.5 - 9.7	0.6 - 1.0	1.0 - 8.4	2.2 - 2.7	1.3 - 7.0	1.1 - 2.1	0.7 - 6.8	1.1 - 1.8

Parameter	Leachate Concentrations (Well 03-8)	Downgradient South								Adjacent East	
		Fractured Till Wells				Inter-till Sands Well		Lower Till Well		Fractured Till Well	
		Well 263R		Well 562		Well 561		Well 101R		Well 141R	
		2017 Range	Historic Range	2017 Range	Historic Range	2017 Range	Historic Range	2017 Range	Historic Range	2017 Range	Historic Range
Alkalinity	3,620 - 3,720	273 - 322	305 - 310	230 - 315	233 - 255	200 - 224	212 - 217	200 - 260	224 - 232	242 - 521	494 - 708
Chloride	725 - 827	4.0 - 10	3.37 - 4.12	2.0 - 9.4	4.82 - 8.36	0.37 - 6.0	0.74 - 0.84	1.2 - 13	1.08 - 1.61	3.0 - 8.5	4.77 - 8.70
Potassium	382 - 392	2.08 - 5.0	2.58 - 2.65	1.0 - 2.8	0.89 - 1.80	1.0 - 2.0	1.22 - 1.26	1.0 - 3.3	1.36 - 1.37	1.50 - 2.6	1.66 - 2.01
DOC	233 - 249	<1 - 10.8	1.1 - 1.3	<0.7 - 7.1	1.9 - 3.0	<0.5 - 6.8	0.9 - 1.6	0.8 - 4.7	1.0	1.0 - 14.4	4.5 - 13.7

Parameter	Leachate Concentrations (Well 03-8)	Adjacent West				Downgradient West					
		Upper Till Well		Inter-till Sands Well		Fractured Till Well		Upper Till Well		Inter-till Sands Well	
		Well 381R		Well 591		Well 592		Well 593		Well 594	
		2017 Range	Historic Range	2017 Range	Historic Range	2017 Range	Historic Range †	2017 Range	Historic Range †	2017 Range	Historic Range †
Alkalinity	3,620 - 3,720	267 - 429	399 - 419	34 - 151	61 - 63	280 - 378	333 - 358	210 - 250	236 - 241	137 - 200	174 - 195
Chloride	725 - 827	1.60 - 6.03	4.43 - 5.02	4.6 - 24	4.24 - 4.89	5.02 - 7.88	3.55 - 4.6	3.67 - 4.58	4.07 - 4.45	2.42 - 4.50	1.71 - 2.27
Potassium	382 - 392	2.0 - 6.1	2.12 - 2.37	1.01 - 5.4	1.12 - 1.16	2.07 - 4.53	1.88 - 2.34	1.62 - 3.15	1.87 - 1.99	1.64 - 2.74	2.00 - 2.01
DOC	233 - 249	1.0 - 14.2	2.1 - 2.5	1.0 - 16.8	1.5 - 2.0	2.1 - 5.5	2.3 - 2.5	1.0 - 2.6	1.3 - 1.5	1.3 - 5.5	1.4 - 3.8

Parameter	Leachate Concentrations (Well 03-8)	Adjacent Northwest				Downgradient Northwest			
		Fractured Till Well		Lower Till Well		Fractured Till Well		Lower Till Well	
		Well 531R		Well 191		Well 541		Well 595	
		2017 Range	Historic Range	2017 Range	Historic Range	2017 Range	Historic Range †	2017 Range	
Alkalinity	3,620 - 3,720	251 - 324	291 - 293	220 - 300	235 - 260	260 - 330	255 - 315	98 - 123	103 - 108
Chloride	725 - 827	5.32 - 13	4.18 - 4.76	1.0 - 23	2.53 - 4.20	4.69 - 20	3.58 - 4.49	2.59 - 7.35	2.10 - 4.04
Potassium	382 - 392	1.76 - 4.0	2.07 - 2.13	1.6 - 8.8	1.59 - 1.84	1.4 - 2.0	1.37 - 1.61	1.82 - 3.08	1.35 - 1.66
DOC	233 - 249	1.0 - 6.8	1.6 - 2.2	0.6 - 7.0	2.8	0.6 - 15	1.6 - 1.7	2.7 - 3.8	1.8 - 2.3

Notes: All concentrations are in mg/L.  
 † Well incorporated into sampling program in fall 2014; a limited historic range is available for comparison.

Table 7: Diagnostic Indicator Parameters

Parameter	Leachate Concentrations (Well 03-8) 2017 Range	Adjacent North						Downgradient North			
		Upper Till Wells						Fractured Till Wells			
		Well 03-3		Well 03-4		Well 03-5		Well 03-7s		Well 111R	
		Historic Range *	2017 Range	Historic Range *	2017 Range	Historic Range *	2017 Range	Historic Range *	2017 Range	Historic Range (111)	2017 Range
Alkalinity	3,620 - 3,720	335 - 395	378	301 - 324	312	347 - 430	352	2.68 - 372	328 - 354	100 - 147	98
Chloride	725 - 827	130 - 765	93.2	259 - 503	323	168 - 796	205	31.0 - 163	57.7 - 140	5.0 - 72	2.99
Potassium	382 - 392	4.61 - 5.94	3.97	2.85 - 3.22	5.73	2.48 - 2.91	2.75	9.14 - 13.6	9.48 - 12.1	0.7 - 2.07	1.43
DOC	233 - 249	3.3 - 5.2	3.8	2.6 - 6.7	2.7	3.4 - 7.2	4.1	2.6 - 6.9	2.9 - 3.6	1.2 - 13.0	2.1

Parameter	Leachate Concentrations (Well 03-8) 2017 Range	Downgradient North									
		Fractured Till Wells		Upper Till Wells							
		Well 552R		Well 023R		Well 03-7d		Well 00-04		Well 05-01	
		Historic Range	2017 Range	Historic Range *	2017 Range	Historic Range *	2017 Range	Historic Range *	2017 Range	Historic Range *	2017 Range
Alkalinity	3,620 - 3,720	227 - 389	415 - 451	290 - 393	384 - 390	107 - 125	126 - 128	250 - 293	284 - 289	235 - 255	253 - 259
Chloride	725 - 827	48.3 - 119	160 - 214	20.9 - 27.7	20.8 - 24.7	9.0 - 13.1	10.9 - 11.7	13 - 61	45.1 - 46.3	5.9 - 10.8	8.55 - 9.64
Potassium	382 - 392	0.9 - 2.0	1.53 - 1.66	2.82 - 3.38	2.94 - 3.06	1.15 - 1.31	1.26 - 1.63	2.00 - 3.02	2.22 - 2.26	1.62 - 2.04	1.72 - 1.78
DOC	233 - 249	<1 - 5.4	2.3 - 3.0	2.6 - 6.5	2.2 - 2.7	2.1 - 6.5	1.9 - 2.5	1.8 - 6.8	1.8 - 1.9	1.8 - 5.3	1.5 - 1.7

Parameter	Leachate Concentrations (Well 03-8) 2017 Range	Downgradient North								Bedrock Well	
		Inter-till Sands Wells						Lower Till Well		Well 999	
		Well 551R		Well 998		Well 00-03		Well 022R			
		Historic Range	2017 Range	Historic Range	2017 Range	Historic Range	2017 Range	Historic Range *	2017 Range	Historic Range	2017 Range
Alkalinity	3,620 - 3,720	223 - 256	223 - 238	97 - 170	119 - 165	220 - 251	229 - 237	140 - 253	175 - 257	151 - 206	168 - 210
Chloride	725 - 827	5.0 - 12.1	6.73 - 7.69	<2 - 10	4.22 - 5.46	4.0 - 122	7.33 - 7.57	0.3 - 3.18	1.04 - 1.26	1.0 - 8.0	1.08 - 4.73
Potassium	382 - 392	0.8 - 2.0	1.14 - 1.19	1.0 - 3.9	1.33 - 1.5	<0.2 - 1.59	1.23 - 1.25	1.15 - 1.91	1.49 - 1.54	0.9 - 4.1	0.99 - 1.47
DOC	233 - 249	0.6 - 7.4	0.9 - 1.2	<0.5 - 6.9	1.5 - 2.1	<0.5 - 6.7	0.9 - 1.2	2.4 - 10.4	1.9 - 5.7	0.8 - 7.0	1.8 - 2.5

Notes: All concentrations are in mg/L.

\* Well incorporated into sampling program in 2013; a limited historic range is available for comparison.

Table 8: 2017 Groundwater Chemical Results - Private Wells

Monitor	Date	pH	Conductivity	Turbidity	Colour	Hardness	Calcium	Chloride	Fluoride	Magnesium	Nitrate	Nitrite	Phenols	DOC
			µS/cm	NTU	TCU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWQS		6.5 - 8.5 OG	NC	5.0 AO	5 AO	80 - 100 OG	NC	250 AO	1.5 MAC	NC	10 MAC	1 MAC	NC	5.0 AO
902	Apr-17	8.36	343	5.94	11.6	54	11.1	1.56	2.72	6.37	0.020	<0.010	0.0067	2.8
904	Apr-17	8.01	553	0.43	3.6	290	90.1	14.2	0.144	15.9	0.095	<0.010	0.0011	2.5
906	Apr-17	8.34	333	0.72	6.7	76	15.5	1.03	2.23	9.05	<0.020	<0.010	0.0025	1.7
907	Apr-17	8.40	350	0.36	3.3	<10*	<0.50*	1.78	2.26	<0.050*	<0.020	<0.010	0.0013	1.7
908	Apr-17	8.32	336	0.29	4.2	<10*	<0.50*	1.22	2.14	<0.050*	<0.020	<0.010	<0.0010	1.4
909	Apr-17	8.28	423	0.61	<2.0	198	39.4	0.90	0.966	24.2	<0.020	<0.010	0.0011	<1.0
911	Apr-17	8.31	387	0.31	5.6	22	3.75	6.10	2.10	3.12	0.238	<0.010	0.0014	1.5
912	Apr-17	8.44	474	0.45	<2.0	<10*	<0.50*	2.21	0.948	<0.050*	<0.020	<0.010	0.0026	<1.0
913	Apr-17	8.33	352	0.80	6.3	82	16.9	1.48	2.29	9.77	<0.020	<0.010	0.0013	1.4
916	Apr-17	8.39	546	0.20	<2.0	<10*	<0.50*	12.4	1.03	<0.050*	<0.020	<0.010	0.0023	<1.0
917	Apr-17	8.39	366	0.28	4.5	<10*	<0.50*	3.03	2.31	<0.050*	<0.020	<0.010	0.0012	1.8
918	Apr-17	8.25	410	1.54	4.9	164	34.1	1.82	1.33	19.2	<0.020	<0.010	<0.0010	1.4
920	Apr-17	8.26	342	2.42	5.2	115	21.9	0.79	1.73	14.6	<0.020	<0.010	<0.0010	1.1
921	Apr-17	8.20	346	0.34	3.6	73	16.2	1.39	2.02	7.89	0.034	0.442	0.0062	4.3
922	Apr-17	8.30	388	0.54	6.3	80	16.9	2.08	1.90	9.20	<0.020	<0.010	0.0017	2.4

- Notes:
- ODWQS - Ontario Drinking Water Quality Standard (June 2003)
  - NC - No criteria
  - MAC - Maximum Acceptable Concentration
  - IMAC - Interim Maximum Acceptable Concentration
  - AO - Aesthetic Objective
  - OG - Operational Guideline
  - \* - indicates anomalous data, water likely softened



**Table 9: 2017 Surface Water Chemistry**

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L	unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PWQO		6.5 - 8.5	NC	NC	NC	6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
<b>SW1</b>	Mar-17	7.89	689	5.52	10.02	8.08	690	25	59.1	225	362	179	60.4		62.9
<b>(971)</b>	May-17	8.27	577	8.53	7.98	8.33	626	34	36.3	227	340	220	25.2		52.2
	Aug-17	8.30	339	22.4	6.23	7.75	401	37	165	109	266	137	47.0		13.6
	Oct-17	7.76	392	10.95	7.47	8.08	485	25	207	159	310	135	51.4		51.1
<b>SW4</b>	Mar-17	7.05	415	2.91	8.73	8.01	397	76	11.0	180			4.36	57.0	
<b>(974)</b>	May-17	8.08	368	7.18	5.35	8.14	398	67	11.0	178			2.36	56.2	
	Aug-17			DRY											
	Oct-17			DRY											
<b>SW7</b>	Mar-17	7.98	579	4.77	5.52	8.16	582	12	215	208	304	160	37.6		72.0
<b>(977)</b>	Mar-17	7.96	490	9.0	6.24	8.09	259				114	66	17.1		28.0
	Apr-17	8.03	568	10.01	8.7	8.00	584				320	189	39.1		62.5
	May-17	8.30	581	9.13	6.76	8.22	635	25	168	196	312	199	37.2		60.8
	Aug-17	8.08	426	22.74	6.19	7.88	516	16	61.4	156	286	156	44.8		44.0
	Oct-17	7.21	402	13.13	5.16	8.10	500	17	39.2	170	300	130	46.8		63.9
<b>SW8</b>	Mar-17	7.90	435	5.66	6.67	7.99	426	43	718	150			28.7	45.1	
<b>(978)</b>	May-17	8.13	508	9.44	9.63	8.24	574	40	57.9	200			29.5	61.0	
	Aug-17	7.46	916	17.7	5.32	8.12	1180	26	54.0	586			78.7	171	
	Oct-17	6.98	504	13.46	5.39	8.09	621	76	289	249			62.6	70.0	
<b>SW9</b>	Mar-17	7.62	558	7.02	8.47	8.01	455	49	1080	167			35.4	49.9	
<b>(979)</b>	May-17	8.11	529	8.16	6.88	8.23	581	43	60.0	212			30.5	63.5	
	Aug-17	7.75	998	19.53	6.05	7.85	752	18	1070	294			49.1	82.8	
	Oct-17	6.97	502	13.64	6.65	8.12	619	50	510	245			60.3	67.1	

Notes: · PWQO - Provincial Water Quality Objectives (July 1994) · \* Values should be interpreted with caution · Units provided  
 · NC - No criteria · Blank - Indicates data not available  
 · \*\* Calculated value using the fraction of NH<sub>3</sub> from  $f = 1/(10^{pKa-pH+1})$ ; where  $pKa = 0.09018 + 2729.92/T$  and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.

**Table 9: 2017 Surface Water Chemistry**

Surface Water Station	Date	Fluoride	Magnesium	Ammonia	Un-ionized Ammonia **	Nitrate	Nitrite	TKN	Phenols	BOD <sub>5</sub>	COD	Phosphorous	DOC	Ortho-phosphate	Iron	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<b>PWQO</b>		NC	NC	NC	0.02	NC	NC	NC	0.001	NC	NC	0.03	NC	NC	0.30	NC
<b>SW1</b>	Mar-17	<0.25		1.80	0.018	0.62	<0.25	3.06	<0.001	<5	36	0.10	10.9		0.548	42
<b>(971)</b>	May-17	<0.10		1.04	0.031	0.75	<0.10	2.09	<0.001	<5	31	0.07	10.1		0.38	30
	Aug-17	0.35		0.52	0.045	<0.05	<0.05	6.16	<0.001	27	176	0.35	23.8		2.26	123
	Oct-17	<0.05		0.04	<0.001	0.06	<0.05	6.43	<0.001	23	195	0.72	22.8		10.1	257
<b>SW4</b>	Mar-17	0.10	9.06	<0.02	<0.001	<0.05	<0.05	0.80	<0.001			0.08	10.9	<0.10	0.390	
<b>(974)</b>	May-17	<0.05	9.13	0.10	0.002	<0.05	<0.05	1.03	<0.001			0.11	9.8	<0.10	0.69	
	Aug-17															
	Oct-17															
<b>SW7</b>	Mar-17	0.09		1.17	0.014	0.42	<0.05	2.19	<0.001	<5	20	0.10	6.5		3.55	139
<b>(977)</b>	Mar-17			0.81	0.012	0.20	<0.05	1.24	<0.001	<5	<5	0.03			0.045	12
	Apr-17			1.96	0.038	0.46	<0.05	3.19	<0.001	<5	21	0.18			0.63	73
	May-17	<0.10		2.18	0.073	0.32	<0.10	3.45	<0.001	10	32	0.18	9.6		1.03	113
	Aug-17	0.53		0.14	0.008	0.08	<0.05	1.35	<0.001	<5	41	0.10	10.1		0.44	42
	Oct-17	0.09		0.26	0.001	0.08	<0.05	1.44	<0.001	<5	37	0.09	10.1		0.35	26
<b>SW8</b>	Mar-17	0.11	9.18	<0.02	<0.001	4.88	<0.05	2.61	<0.001			0.71	7.0	<0.10	1.77	
<b>(978)</b>	May-17	<0.05	11.7	0.24	0.006	1.73	<0.05	1.15	<0.001			0.17	5.8	<0.10	0.663	
	Aug-17	<0.25	38.7	0.15	0.001	2.56	<0.25	1.29	<0.001			0.09	20.9	<0.50	0.311	
	Oct-17	<0.10	18.1	0.24	0.001	2.14	<0.10	3.79	<0.001			0.52	22.8	<0.20	2.40	
<b>SW9</b>	Mar-17	0.09	10.2	2.04	0.012	5.32	<0.05	5.01	0.002			1.10	23.6	<0.10	1.40	
<b>(979)</b>	May-17	<0.05	13.0	0.28	0.006	2.60	<0.05	1.33	<0.001			0.19	6.2	<0.10	0.523	
	Aug-17	0.20	21.1	0.70	0.015	0.57	<0.05	1.60	<0.001			0.16	9.3	<0.10	2.06	
	Oct-17	<0.10	18.8	0.15	<0.001	1.82	<0.10	5.33	<0.001			1.86	14.6	0.43	4.79	

Notes: · PWQO - Provincial Water Quality Objectives (July 1994)

· \* Values should be interpreted with caution

· Units provided

· NC - No criteria

· Blank - Indicates data not available

· \*\* Calculated value using the fraction of NH<sub>3</sub> from  $f = 1/(10^{pKa-pH+1})$ ; where  $pKa = 0.09018 + 2729.92/T$  and  $T = \text{ambient water temperature in Kelvin (K = } ^\circ\text{C} + 273.16)$ . Field pH is used in the equation.

**Table 10: 2017 Surface Water Duplicate Results**

Parameter	Unit	MDL	March 7, 2017			May 8, 2017			August 2, 2017			October 17, 2017		
			SW9	SWDUP	RPD	SW8	SWDUP	RPD	SW8	SW100	RPD	SW8	SW100	RPD
pH	NA	NA	8.01	8.00	0	8.24	8.21	0	8.12	8.08	0	8.09	8.08	0
Conductivity	µS/cm	2	455	504	10	574	559	3	1180	1180	0	621	626	1
Colour	NTU	5	49	52	6	40	41	2	26	26	0	76	79	4
Turbidity	TCU	0.5	1080	1060	2	57.9	58.1	0	54.0	56.8	5	289	148	<b>65</b>
Hardness	mg/L	0.5	167	191	13	200	201	0	586	587	0	249	250	0
Chloride	mg/L	0.10	35.4	34.7	2	29.5	29.5	0	78.7	78.8	0	62.6	62.7	0
Calcium	mg/L	0.05	49.9	58.6	16	61.0	61.1	0	171	171	0	70.0	70.8	1
Fluoride	mg/L	0.10	0.09	0.09	0	<0.05	<0.05	<2xMDL	<0.25	<0.25	<2xMDL	<0.10	<0.10	<2xMDL
Magnesium	mg/L	0.05	10.2	10.9	7	11.7	11.8	1	38.7	38.9	1	18.1	17.8	2
Ammonia	mg/L	0.02	2.04	1.85	10	0.24	0.28	15	0.15	0.16	6	0.24	0.14	<b>53</b>
Un-ionized Ammonia	mg/L	0.001	0.012	0.011	9	0.006	0.007	15	0.001	0.002	<2xMDL	0.001	<0.001	<2xMDL
Nitrate	mg/L	0.05	5.32	5.01	6	1.73	1.96	12	2.56	2.57	0	2.14	2.14	0
Nitrite	mg/L	0.10	<0.05	<0.05	<2xMDL	<0.05	<0.05	<2xMDL	<0.25	<0.25	<2xMDL	<0.10	<0.10	<2xMDL
TKN	mg/L	0.10	5.01	4.39	13	1.15	1.27	10	1.29	1.17	10	3.79	3.67	3
Phenols	mg/L	0.001	0.002	0.002	0	<0.001	<0.001	<2xMDL	<0.001	<0.001	<2xMDL	<0.001	<0.001	<2xMDL
Phosphorous	mg/L	0.02	1.10	1.20	9	0.17	0.19	11	0.09	0.09	0	0.52	0.49	6
DOC	mg/L	0.5	23.6	21.6	9	5.8	5.7	2	20.9	20.0	4	22.8	22.1	3
Ortho-phosphate	mg/L	0.20	<0.10	<0.10	<2xMDL	<0.10	<0.10	<2xMDL	<0.50	<0.50	<2xMDL	<0.20	<0.20	<2xMDL
Iron	mg/L	0.010	1.40	2.42	<b>53</b>	0.663	0.630	5	0.311	0.327	5	2.40	2.42	1

- Notes:
- mg/L - milligrams per litre
  - µS/cm - microSiemens per centimetre
  - NTU - nephelometric turbidity units
  - TCU - true colour units
  - MDL - Method Detection Limit
  - RPD - Relative Percent Difference
  - for values >5xMDL, RPDs of >20% are bold and shaded
  - for values <5xMDL, RPDs of >2xMDL are bold and shaded

**Table 11: 2017 Surface Water Quality Compliance with PWQO**

Surface Water Station	Parameter	PWQO	Mar-17	May-17	Aug-17	Oct-17
<b>978</b>	pH	6.5 - 8.5	7.99	8.24	8.12	8.09
<b>(SW8)</b>	Un-ionized Ammonia	0.02	<0.001	0.006	0.001	0.001
Background - Entering Site via Hooper Drain	Phenols	0.001	<0.001	<0.001	<0.001	<0.001
	Phosphorous	0.03	<b>0.71</b>	<b>0.17</b>	<b>0.09</b>	<b>0.52</b>
	Iron	0.3	<b>1.77</b>	<b>0.663</b>	<b>0.311</b>	<b>2.40</b>
<b>979</b>	pH	6.5 - 8.5	8.01	8.23	7.85	8.12
<b>(SW9)</b>	Un-ionized Ammonia	0.02	0.012	0.006	0.015	<0.001
Downgradient - Leaving site via Hooper Drain	Phenols	0.001	<b>0.002</b>	<0.001	<0.001	<0.001
	Phosphorous	0.03	<b>1.10</b>	<b>0.19</b>	<b>0.16</b>	<b>1.86</b>
	Iron	0.3	<b>1.40</b>	<b>0.523</b>	<b>2.06</b>	<b>4.79</b>
<b>974</b>	pH	6.5 - 8.5	8.01	8.14		
<b>(SW4)</b>	Un-ionized Ammonia	0.02	<0.001	0.002	D	D
Wet Area on West Boundary	Phenols	0.001	<0.001	<0.001	R	R
	Phosphorous	0.03	<b>0.08</b>	<b>0.11</b>	Y	Y
	Iron	0.3	<b>0.39</b>	<b>0.69</b>		
<b>971</b>	pH	6.5 - 8.5	8.08	8.33	7.75	8.08
<b>(SW1)</b>	Un-ionized Ammonia	0.02	0.018	<b>0.031</b>	<b>0.045</b>	<0.001
Sedimentation Pond A	Phenols	0.001	<0.001	<0.001	<0.001	<0.001
	Phosphorous	0.03	<b>0.10</b>	<b>0.07</b>	<b>0.35</b>	<b>0.72</b>
	Iron	0.3	<b>0.548</b>	<b>0.38</b>	<b>2.26</b>	<b>10.1</b>
<b>977</b>	pH	6.5 - 8.5	8.16	8.22	7.88	8.10
<b>(SW7)</b>	Un-ionized Ammonia	0.02	0.014	<b>0.073</b>	0.008	0.001
Sedimentation Pond B	Phenols	0.001	<0.001	<0.001	<0.001	<0.001
	Phosphorous	0.03	<b>0.10</b>	<b>0.18</b>	<b>0.10</b>	<b>0.09</b>
	Iron	0.3	<b>3.55</b>	<b>1.03</b>	<b>0.44</b>	<b>0.35</b>

Notes: • Concentrations are in mg/L except pH  
 • Bold and shading indicates concentration exceeds Provincial Water Quality Objective.  
 • Blank indicates sampling station was dry at the time of sampling.

**Table 12: 2017 Leachate Chemical Results**

Monitor	Date	pH	Conductivity	Colour	Turbidity	TKN	TSS	H <sub>2</sub> S	Sulphate	Hardness	Total O&G	BOD	Chloride	Fluoride	DOC	Phenol	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth
		unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<b>By-law limits</b>		<b>5.5 to 10.5</b>					<b>350</b>		<b>1500</b>		<b>100</b>	<b>300</b>	<b>1500</b>	<b>10</b>		<b>1</b>	<b>50</b>	<b>5</b>	<b>1</b>			<b>5</b>
<b>MH16</b>	Jan-18	8.07	10800	800	-	644	25	<0.02	<2	1000	<2	64	1500	0.57	437	0.052	0.23	<0.02	0.02	1.22	<0.0009	<0.05
	Feb-18	7.89	7320	460	91.3	396	62	0.02	<2	931	7	410	1100	0.39	170	0.056	1.37	0.03	0.01	0.756	<0.0009	<0.05
	Mar-18	7.75	5920	340	297	320	29	0.31	3	1190	9	1220	900	0.33	510	0.150	0.88	<0.02	0.01	0.751	<0.0009	<0.05
	Apr-18	7.93	9280	940	24.0	780	17	<0.02	<2	1110	<2	198	1500	0.49	266	0.033	0.32	<0.02	0.02	0.994	<0.0009	<0.05
	May-18	7.82	5510	270	56.7	221	62	0.03	<2	1060	5	927	750	0.29	221	0.170	0.84	<0.02	<0.01	0.513	<0.0009	<0.05
	Jun-18	8.17	9390	560	20.3	86	42	<0.02	4	1260	<2	56	1100	0.53	172	0.090	0.19	<0.02	0.02	1.25	<0.0009	<0.05
	Jul-18	7.93	10400	700	40.4	582	45	<0.02	<2	1050	<2	99	1300	0.56	180	0.007	1.45	<0.02	<0.01	1.00	<0.0009	<0.05
	Aug-18	7.91	12300	750	201	761	184	<0.02	<2	955	<2	112	1800	0.71	186	0.013	5.97	<0.02	0.01	1.39	<0.0009	<0.05
	Sep-18	7.96	11800	830	106	723	97	0.02	<2	962	4	142	1700	0.58	343	0.018	1.70	<0.02	0.02	0.878	<0.0009	<0.05
	Oct-18	7.54	9820	450	256	385	37	0.13	210	1110	5	1140	1600	0.57	249	0.280	4.69	<0.02	0.02	1.13	<0.0009	<0.05
	Nov-18	7.68	6930	390	276	297	125	0.14	170	839	6	693	980	0.32	163	0.290	2.10	<0.02	0.01	0.700	<0.0009	<0.05
	Dec-18	7.62	3910	410	295	154	157	0.75	350	1230	7	1600	750	0.37	224	0.330	1.39	0.06	<0.01	0.535	<0.0009	<0.05

Notes: · Concentrations in mg/L unless otherwise noted

· By-law limits = Oxford County Sewer Discharge By-Law No. 2719-87

**Table 12: 2017 Leachate Chemical Results**

Monitor	Date	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silver	Tin	Titanium	Vanadium	Zinc	COD	Total Cyanide
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
By-law limits		1	5	5	2	50	5	5	0.1	5	2	10	5	5	5	5	5	2		2
MH16	Jan-18	<0.001	0.094	0.024	0.054	2.14	<0.007	0.495	0.00003	<0.01	0.109	5.54	<0.01	<0.08	<0.02	0.063	0.016	0.086	800	0.01
	Feb-18	<0.001	0.057	0.015	0.331	3.17	0.011	0.855	0.00009	<0.01	0.072	3.23	<0.01	<0.08	<0.02	0.046	0.011	0.352	1120	<0.01
	Mar-18	<0.001	0.051	0.014	0.019	7.00	<0.007	1.55	0.00004	<0.01	0.074	3.06	<0.01	<0.08	<0.02	0.059	0.010	0.270	2020	<0.01
	Apr-18	<0.001	0.133	0.030	0.006	3.64	<0.007	0.695	0.00001	<0.01	0.114	6.86	<0.01	<0.08	<0.02	0.066	0.014	0.031	910	0.01
	May-18	<0.001	0.032	0.010	0.014	4.78	<0.007	1.56	0.00003	<0.01	0.057	2.63	<0.01	<0.08	<0.02	0.053	0.007	0.068	2000	<0.01
	Jun-18	<0.001	0.072	0.021	0.007	4.10	<0.007	0.789	<0.00001	<0.01	0.087	4.15	<0.01	<0.08	<0.02	0.048	0.012	0.022	680	<0.01
	Jul-18	<0.001	0.087	0.027	0.007	3.15	<0.007	0.561	0.00001	<0.01	0.102	4.79	<0.01	<0.08	<0.02	0.114	0.018	0.014	730	<0.01
	Aug-18	<0.001	0.102	0.043	0.043	9.72	<0.007	0.563	0.00006	<0.01	0.163	4.20	<0.01	<0.08	0.03	0.405	0.038	0.045	860	<0.01
	Sep-18	<0.001	0.108	0.031	0.012	3.97	<0.007	0.493	0.00002	<0.01	0.133	5.61	<0.01	<0.08	<0.02	0.116	0.024	0.022	970	0.01
	Oct-18	<0.001	0.066	0.026	0.034	9.12	<0.007	0.695	<0.00001	<0.01	0.131	3.98	<0.01	<0.08	<0.02	0.250	0.026	0.150	1180	0.02
	Nov-18	<0.001	0.049	0.017	0.020	5.32	0.008	1.03	0.00006	<0.01	0.078	3.52	<0.01	<0.08	<0.02	0.089	0.016	0.215	1190	0.01
	Dec-18	0.002	0.048	0.015	0.038	9.57	0.013	1.63	0.00005	<0.01	0.072	5.02	0.02	<0.08	<0.02	0.055	0.015	0.700	2000	0.01

Notes: · Concentrations in mg/L unless otherwise noted

· By-law limits = Oxford County Sewer Discharge By-Law No. 2719-87

**Table 13 2018 Environmental Monitoring Program**

Activity	Location	Sampling Frequency	Analysis / Measurement
<b>Groundwater and Leachate Level Monitoring</b>	<p><b>Glaciolacustrine Unit:</b> 98-7, 98-11, 98-12, 98-13</p> <p><b>Fractured Till Unit:</b> 053, 98-2, 98-4, 98-9, 98-14, 111R, 141R, 202, 233R, 263R, 281, 391, 531R, 541, 552R, 562, 581, 592, 2P, 2obs, 7P, 7obs, 10P, 03-7s</p> <p><b>Upper Till Unit:</b> 013R, 023R, 063, 121, 131, 192, 193, 232R, 242, 262R, 381R, 401, 421, 431, 593, 03-3, 03-4, 03-5, 03-6, 00-01, 00-02, 00-04, 03-7d, 05-01</p> <p><b>Inter-Till Sands Unit:</b> 012R, 162, 551R, 561, 571, 591, 594, 998, 00-03</p> <p><b>Lower Till Unit:</b> 022R, 051, 052, 061, 071, 101R, 102, 161, 191, 231R, 261R, 595</p> <p><b>Leachate Well:</b> 03-8</p>	Semi-Annual (spring and fall)	Water level measurement
<b>Groundwater and Leachate Sampling</b>	<p><b>Fractured Till Unit:</b> 111R, 141R, 233R, 263R, 531R, 541, 552R, 562, 581, 592, 03-7s</p> <p><b>Upper Till Unit:</b> 023R, 232R, 381R, 593, 00-04, 03-7d, 05-01</p> <p><b>Inter-Till Sands Unit:</b> 551R, 561, 571, 591, 594, 998, 00-03</p> <p><b>Lower Till Unit:</b> 022R, 101R, 191, 231R, 595</p> <p><b>Shallow Bedrock Unit:</b> 999</p> <p><b>Leachate Well:</b> 03-8</p>	Semi-Annual (spring and fall)	<p><b>General Parameters:</b> pH, conductivity, hardness, turbidity, colour</p> <p><b>Major &amp; Minor Ions:</b> alkalinity, sulphate, carbonate, bicarbonate, calcium, chloride, fluoride, potassium, magnesium, sodium</p> <p><b>Nutrients/Organic Indicators:</b> DOC, phenols, nitrate, nitrite</p>
	<p><b>Upper Till Unit:</b> 03-3, 03-4, 03-5</p>	Annual (spring)	
	<p><b>Glaciolacustrine Unit:</b> 98-7, 98-11, 98-12, 98-13</p> <p><b>Upper Till Unit:</b> 013R, 03-6, 00-01, 00-02</p> <p><b>Inter-Till Sands Unit:</b> 012R</p>	Annual (spring)	<b>Chloride</b>
<b>Private Well Sampling</b> (completed by Oxford County Board of Health)	<p><b>Private Well:</b> 902, 904, 906, 907, 908, 909, 911, 912, 913, 916, 917, 918, 920, 921, 922</p>	Annual (spring)	<p><b>General Parameters:</b> pH, conductivity, hardness, turbidity, colour</p> <p><b>Major &amp; Minor Ions:</b> calcium, chloride, fluoride, magnesium</p> <p><b>Nutrients/Organic Indicators:</b> DOC, phenols, nitrate, nitrite</p>
<b>Leachate Collection System Sampling</b> (completed by Oxford County Water and Wastewater staff)	MH16	Monthly	<p><b>General Parameters:</b> pH, conductivity, hardness, turbidity, colour, TSS</p> <p><b>Major &amp; Minor Ions:</b> sulphate, chloride, fluoride,</p> <p><b>Nutrients/Organic Indicators:</b> DOC, phenols, TKN, COD, BOD<sub>5</sub></p> <p><b>Metals:</b> aluminum, antimony, arsenic, barium, beryllium, bismuth, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, phosphorus, selenium, silver, tin, titanium, vanadium, zinc</p> <p><b>Other:</b> total cyanide, H<sub>2</sub>S, oil &amp; grease</p>



Activity	Location and Geologic Unit	Frequency	Analysis / Measurement
Surface Water Sampling	Surface Water Station: SW4, SW8, SW9	Quarterly	<p><b>Field Measurements:</b> pH, conductivity, temperature, dissolved oxygen</p> <p><b>General Parameters:</b> pH, conductivity, turbidity, colour, hardness</p> <p><b>Major &amp; Minor Ions:</b> chloride, magnesium, calcium, fluoride, ortho-phosphate</p> <p><b>Nutrients/Organic Indicators:</b> ammonia, TKN, nitrate, nitrite, total phosphorus, phenols, DOC</p> <p><b>Total Metals:</b> iron</p>
	Stormwater Management Pond: SW1, SW7	Quarterly	<p><b>Field Measurements:</b> pH, conductivity, temperature, dissolved oxygen</p> <p><b>General Parameters:</b> pH, conductivity, TSS, TDS, turbidity, colour, hardness</p> <p><b>Major &amp; Minor Ions:</b> alkalinity, chloride, sulphate, fluoride</p> <p><b>Nutrients/Organic Indicators:</b> ammonia, TKN, nitrate, nitrite, total phosphorus, phenols, DOC, COD, BOD<sub>5</sub></p> <p><b>Total Metals:</b> iron</p>
	Stormwater Management Pond: SW7	Four times annually, as required †	<p><b>Field Measurements:</b> pH, conductivity, temperature, dissolved oxygen</p> <p><b>General Parameters:</b> pH, conductivity, TSS, TDS</p> <p><b>Major &amp; Minor Ions:</b> alkalinity, chloride, sulphate</p> <p><b>Nutrients/Organic Indicators:</b> ammonia, TKN, nitrate, nitrite, total phosphorus, phenols, COD, BOD<sub>5</sub></p> <p><b>Total Metals:</b> iron</p>

**Note:** † - Samples shall be collected within 24 hours after a rainfall event resulting in a stormwater discharge from SWM Pond B during the period between March 15 and November 30 ensuring that a minimum of 1 month period is set between consecutive sampling events, as per the CofA (Sewage).