Table 2.1

Summary of AMP Monitoring Program
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

AMP Section Reference	Description of Requirement	Minimum Frequency	2017 Monitoring Reference
Performance Monitoring/Response Program			
3.1	Water level monitoring at trigger wells	Monthly - Manual Measurements Daily - Automated Water Level Recorders at 5 wells	5.2, 5.3
3.1	Water level monitoring at trigger wells - After extraction proceeds below water table in adjacent phase	Bi-weekly - Manual Measurements	5.2, 5.3
3.1	Water level monitoring at trigger wells - When dewatering influence is observed at recharge alignment wells	Weekly - Manual Measurements	5.2, 5.3
3.1	Water level monitoring at select trigger wells - Recharge initiation/modification, response to extraction, extraction within 100m of recharge alignment	Daily for 2 weeks - Manual Measurements	5.2, 5.3
3.2	Water Quality monitoring of reservoir	Monthly	7.2
3.2	Water Quality monitoring of recharge pumping station	Monthly	7.3
3.2	Water Quality monitoring of remote location on recharge system	Monthly	7.1
3.2	Water Quality monitoring of inflows to reservoir	Monthly	7.4
Supplemental Monitoring Program			
4.1	Groundwater levels at selected/new groundwater monitoring well locations	Monthly	5.5
4.2	Groundwater levels at minimum of four background monitoring locations beyond the study area in the general vicinity of the Milton Quarry	Monthly - Manual Measurements Daily - Automated water level recorders	5.5
4.3	Meteorological data	Milton Quarry Station - 6 Automated Readings per Day Georgetown Station - As Available	4.0
4.4	Water levels in the reservoir at the pumping station	"Continuous" - With Automated Water Level Recorder	5.1.1
4.4	Water levels in the lake/wetland	Weekly	5.1.1
4.4	Totalized water flow at inflow/transfer/outflow points	Weekly	6.0
4.5	Surface water and groundwater levels at 5 wetland stations (W10, W15, W17, W21, and W41) plus new station at western wetland (W5)	Monthly (biweekly for April-July)	5.5
4.5	Photos at photographic stations in minimum of 6 wetlands (as above)	Seasonally (see Section 4.5 of AMP)	9.2
4.5	Jefferson Salamander egg mass and frog calling surveys in minimum of 6 wetlands (as above)	Seasonally (see Section 4.5 of AMP)	9.2
4.5	Wetland vegetation monitoring in 6 wetlands (as above)	Seasonally (see Section 4.5 of AMP)	9.2
4.5	Brook Trout redd survey in Sixth Line Tributary north of Extension Lands	Seasonally (see Section 4.5 of AMP)	9.1.1
4.5	Benthic monitoring at two stations upstream of Townline Road	Seasonally (see Section 4.5 of AMP)	9.1.2
4.5	Groundwater temperature monitoring at four trigger wells and associated creek locations and recharge system locations	Monthly - Mar, Apr, May, Jun, Oct, Nov, Dec Weekly - Jan, Feb, Jul, Aug, and Sep	7.5
4.5	Water discharge from former pumphouse (SW4)	Monthly - Jan, Feb, Mar, Apr, May, Jun, Oct, Nov, Dec Weekly - Jul, Aug, Sep	5.5.3
4.6	Residential wells in monitoring zone (Figure 4.1 of AMP)	Quarterly	8.0

Table 2.1

Summary of AMP Monitoring Program
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

AMP Section Reference	Description of Requirement	Minimum Frequency	2017 Monitoring Reference
On-Site Wetlands Monitoring Program			
3.1 and Appendix C	Surface water level monitoring at on-Site wetlands	Monthly	5.3
Appendix C	Surface water level monitoring at on-Site wetlands - Extraction proceeds below water table	Bi-weekly	5.3
Appendix C	Surface water level monitoring at on-Site wetlands - Water Levels below target level	Twice Weekly	5.3

Notes:

This monitoring program includes the monitoring required by the AMP for the pre-extraction and extraction period as extraction began in the Extension in May 2013.
There are no criteria/limits for the monitoring results during the pre-extraction period.
See Table 2.2 for monitoring requirements associated with the West Cell portion of the groundwater recharge well system.

Table 2.2

Summary of Non-AMP Monitoring Requirements
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Reference to Permit or Agreement						
ECA	**PTTW**	**LRIA**	**CH Extension**			**2017 Monitoring**
3406-8U6RQ5	**0117-8BHQPL; 8575-A3BKYB**	**AUR-45-03/04**	**Quarry Agreement**	**Description of Requirement**	**Criterion / Limit**	**Report Reference**
7.4.1	NA	NA	2.14.2	Water quality monitoring of the Recharge Pond overflow effluent	TSS = 25 mg/L (arithmetic mean for month) Oil and Grease = 15 mg/L Un-ionized Ammonia = 0.02 mg/L pH = 6.0 to 9.5	NA
7.4.2	NA	NA	2.14.2	Water quality monitoring at upstream (SW10) and downstream (SW13) locations in the Sixth Line Tributary	Same as above	NA
7.4.4	NA	NA	2.14.2	Water quality monitoring of the discharge from the Recharge Pumping Station to the North Quarry Recharge System	Same as above	7.3.1
7.4.5	NA	F.4, F.5, F.6, F.7, and F.8	2.14.1(d)	Water quality monitoring from Main Quarry West Sump and/or Reservoir to the HFRT Flowrate and totalized flow:	Same as above	7.2
7.5	NA	NA	2.14.2	North Quarry Recharge Pond Overflow	NA	NA
NA	3.2	NA	2.14.2	North Quarry and Extension Dewatering	45,000 L/min; 64,800,000 L/day; 1,359,000,000 L/year (1)	6.2.1
9.4	3.2	NA	2.14.2	Recharge Pumping Station	36,000 L/min; 51,840,000 L/day; 18,921,600,000 L/year	6.2.2
7.5	3.7	NA	2.14.1(d)	Main Quarry Discharge, Interim Conditions	12,000 L/min; 17,280,000 L/Day; 4,464,000,000 L/year (2)	6.2.3
9.4	NA	NA	2.14.2	Individual Recharge Wells	NA	6.2.2
NA	4.3	NA	NA	Calculation of the overall Water Taking for the Milton Quarry	NA	6.3
NA	4.4	NA	2.14.1(b) and (c)	Water level monitoring at MW1, MW2, MW3, MW4, MW5, BH27, OW18-03, and OW19-03	NA	5.1.2, 5.5
NA	4.4	NA	2.14.2	Water level monitoring at BH37 and DW113A	NA	5.2.1, 5.5
8.1	4.4	NA	2.14.2	Water levels at Trigger Wells	NA	5.2.1, 5.3.1
8.1	4.4	NA	2.14.2	Water levels at Recharge Monitoring Wells	NA	5.2.2
NA	4.4	NA	2.14.1(e)	Water levels at Background Monitoring Wells	NA	5.5
NA	4.4	NA	2.14.1(b)	Water levels at W7, W8, and V2	NA	5.3.2
NA	4.4	NA	2.14.2	Water levels at wetlands W5, W10, W15, W17, W21, and W41	NA	5.5

Table 2.2

Summary of Non-AMP Monitoring Requirements
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Reference to Permit or Agreement						
ECA	**PTTW**	**LRIA**	**CH Extension**			**2017 Monitoring**
3406-8U6RQ5	**0117-8BHQPL; 8575-A3BKYB**	**AUR-45-03/04**	**Quarry Agreement**	**Description of Requirement**	**Criterion / Limit**	**Report Reference**
NA	4.4	NA	2.14.1(e)	Water level monitoring at domestic wells DW108A, DW111, and DW116A	NA	8.0
NA	4.4	NA	2.14.1(b)	Surface water level and flow at the weir on the Sixth Line Tributary (SW20)	NA	5.5.4
NA	4.4	NA	2.14.1(a)	Meteorological data, including air temperature, precipitation, and evaporation	NA	4.0
9.1, 9.2, and 9.3	NA	NA	2.14.2	Water quality monitoring at three Recharge Monitoring Wells (including the first and last recharge wells along the distribution header and the closest recharge well to DW103)	NA	7.1
10.0	NA	NA	2.14.2	Ecological monitoring of Brook Trout spawning Sixth Line Tributary near the North Quarry	NA	9.1.1
NA	NA	NA	2.14.1(f)	Main Quarry Ecological Monitoring	NA	9.0
11.0	4.5	NA	2.14.1	Performance reporting	NA	2016 Annual Water Monitoring Report

Note:

NA Not Applicable
(1) Annual limit is estimated from 2006 flow plus increased taking due to reduced evapotranspiration and capture runoff over additional extracted area of the North Quarry and Extension.
(2) The annual limit is less than expected given the relatively higher on the instantaneous and daily flows. The relatively lower annual limit has been found to be sufficient over many years of operation; therefore, Dufferin has no applied for a higher limit.

Table 4.1

2017 Monthly Precipitation/Evaporation
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Month	Milton Quarry Weather Station [1] (mm)	Georgetown WWTP [2] (mm)	Estimated Milton Quarry Precipitation Data [3] (mm)	136-Year Mean: Georgetown WWTP (mm)	Adjusted Lake Evaporation (mm)
January	-	99	99.0	63.9	-
February	-	76.4	76.4	57.1	-
March	0.8	62.2	58.2	62.4	-
April	20.3	131.3	152.8	68.5	58.9
May	614.4	165.1	151.3	75.4	70.1
June	0.0	101.1	105.2	73.0	112.7
July	51.6	55.0	51.6	77.5	75.3
August	56.9	65.5	56.9	76.8	71.1
September	24.1	29.6	24.1	70.6	72.4
October	56.4	59.5	68.8	67.7	38.4
November	68.1	64.8	69.3	71.1	7.0
December	11.2	51.0	52.6	64.9	-
Total Annual Precipitation/Evaporation	903.7	960.5	966.2	829.1	505.9

Notes:

(1) The Milton Quarry weather station was fitted for rainfall data collection (tipping bucket) from March 23, 2017 to December 8, 2017 (frozen from December 7, 2017 and decommissioned on December 8, 2017).

(2) Precipitation data was obtained for the Georgetown Wastewater Treatment Plant (WWTP). Data was ordered from the Ontario Climate Centre in January 2018.
Toronto International Airport and Oakville TWN data was utilized to supplement missing Georgetown WWTP data.
Data for Georgetown WWTP has only undergone preliminary quality checking by the OCC for January through December 2017.

(3) Georgetown WWTP precipitation data were used to fill in data for the missing periods.

Table 4.2

Annual Precipitation Comparison (1991 to 2017)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Year	Precipitation (mm) Milton Quarry [1]	Precipitation (mm) Georgetown WWTP	Lake Evaporation (mm) Milton Quarry [2]
1991	871	909	674
1992	1077	1066	549
1993	814	789	527
1994	913	823	605
1995	983	953	639
1996 [3]	1008	1061	-
1997 [3]	724	776	-
1998 [3]	691	753	-
1999 [3]	869	849	-
2000	994	997	573
2001	730	770	647
2002	671	613	632
2003	829	808	625
2004	777	752	592
2005	810	781	587
2006	983	977	566
2007	627	614	637
2008	1004	1024	588
2009	893	916	569
2010	861	864	568
2011	1038	1001	602
2012	772	756	562
2013	971	1037	468
2014	875	817	535
2015	794	763	571
2016	767	738	598
2017	966	961	506
27-Year Mean 1991 to 2017	863	858	583
136 -Year Mean 1882 to 2017	N/A	829	N/A

Notes:

(1) The Milton Quarry rain gauge is typically closed for the winter months each year (December through March). Acton WWTP and Georgetown WWTP data was used to supplement the missing months of the Milton Quarry data.

(2) Annual evaporation values for 1991 to 1998 are as reported in the Dames & Moore Canada 1998 Annual Monitoring Report of the Hydrogeologic Monitoring Program. Reliable evaporation data was not available during 1996 to 1999. From 2001 onward, when Site evaporation data have been unavailable, the resulting data gaps have been addressed by using the historical average evaporation data for the Site (from 1991 onward).

(3) Evaporation pan was not operating for this year, lake evaporation values could not be determined.

Table 4.3

Annual Precipitation Surplus (1991 to 2017)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Year	Precipitation (P) [1] (mm)	Lake Evaporation (E) [2] (mm)	Lake Water Surplus (P-E) (mm)	Lake Evaporation/ Precipitation (%)
1991	871	674	197	77
1992	1077	549	528	51
1993	814	527	287	65
1994	913	605	308	66
1995	983	639	344	65
1996 [3]	1008	-	-	-
1997 [3]	724	-	-	-
1998 [3]	691	-	-	-
1999 [3]	869	-	-	-
2000	994	573	421	58
2001	730	647	83	89
2002	671	632	38	94
2003	829	625	204	75
2004	777	592	185	76
2005	810	587	223	72
2006	983	566	417	58
2007	627	637	-10	102
2008	1004	588	416	59
2009	893	569	324	64
2010	861	568	294	66
2011	1038	602	436	58
2012	772	562	210	73
2013	971	468	502	48
2014	875	535	340	61
2015	794	571	223	72
2016	767	598	169	78
2017	966	506	460	52
27-Year Mean 1991 to 2017	863	583	287	69

Notes:

(1) Refer to Table 4.2, Note 1.
(2) Refer to Table 4.2, Note 2.
(3) Refer to Table 4.2, Note 3.

Table 5.1

Monitoring and Recharge Well Construction Details
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Monitor No.	Type	Diameter (4) (mm)	Screened Interval (m AMSL)	Filter Pack (m AMSL)	Seal (m AMSL)	Backfill (m AMSL)	Easting (m)	Northing (m)	Ground Surface (m AMSL)	Measuring Point Elevation (m AMSL)	Geologic Formation Screened
Monitoring Wells											
BH1-I	P	51	273.4 - 272.8	274.4 - 272.8	275.20 - 274.40	272.8 - 269.9 305.1 - 275.2	583800.0	4820820.0	305.11	305.76	Whirlpool Formation
BH1-II	P	51	281.6 - 281.0	282.5 - 281.3	283.50 - 282.50	305.1 - 283.5	583800.0	4820820.0	305.11	306.21	Manitoulin Formation
BH1-III	P	51	291.9 - 291.3	292.5 - 291.2	293.30 - 292.50	305.1 - 293.3	583800.0	4820820.0	305.11	306.10	Cabot Head Formation
BH1-IV	S	51	302.7 - 299.8	303.7 - 299.7	305.11 - 303.70		583800.0	4820820.0	305.11	305.94	Reynales Formation, and top of Cabot Head Formation
BH2-I	P	51	274.2 - 273.6	275.3 - 273.5	279.80 - 275.30	273.5 - 270.4 317.8 - 279.8	583275.0	4821080.0	317.82	318.37	Whirlpool Formation
BH2-III	P	51	292.2 - 291.6	293.3 - 291.5	294.00 - 293.30	291.5 - 291.3 317.8 - 294.0	583275.0	4821080.0	317.82	318.83	Cabot Head Formation
BH2-IV	P	51	303.2 - 302.6	304.1 - 302.5	304.70 - 304.10	317.8 - 304.7	583275.0	4821080.0	317.82	318.82	Reynales Formation
BH2-V	S	51	309.8 - 306.9	309.7 - 306.8	310.50 - 309.70	306.8 - 305.6 317.8 - 310.5	583275.0	4821080.0	317.82	318.65	Lower portion, Amabel Formation
BH3-I (1)	P	51	280.2 - 279.6	281.6 - 279.5	282.20 - 281.60	279.5 - 275.5 328.2 - 282.2	584260.0	4822020.0	328.21	328.35	Whirlpool Formation
BH3-II (1)	P	51	285.4 - 284.8	285.8 - 284.5	284.50 - 283.70 286.00 - 285.80		584260.0	4822020.0	328.21	328.85	Manitoulin Formation
BH3-III (1)	P	51	296.3 - 295.7	297.7 - 295.7	299.20 - 297.70	328.2 - 299.2	584260.0	4822020.0	328.21	329.24	Cabot Head Formation
BH3-IV (1)	P	51	307.2 - 306.6	308.4 - 306.6	309.60 - 308.40	328.2 - 309.6	584260.0	4822020.0	328.21	329.09	Reynales Formation
BH3-V	S	51	313.7 - 310.8	314.8 - 310.7	315.60 - 314.80	328.2 - 315.6	584260.0	4822020.0	328.21	329.33	Lower portion, Amabel Formation
BH4-I	P	51	276.5 - 275.9	277.1 - 275.8	278.60 - 277.10	275.8 - 272.1 323.6 - 278.6	584380.0	4820690.0	323.62	323.78	Whirlpool Formation
BH4-III	P	51	291.8 - 291.2	292.6 - 291.1	293.70 - 292.60	291.1 - 291.0 323.6 - 293.7	584380.0	4820690.0	323.62	324.54	Cabot Head Formation
BH4-IV	P	51	305.7 - 305.1	305.4 - 305.0	306.30 - 305.40	305.0 - 303.8 323.3 - 306.3	584380.0	4820690.0	323.62	324.50	Reynales Formation
BH4-V	S	51	310.2 - 307.3	311.2 - 307.2	312.10 - 311.20	323.6 - 312.1	584380.0	4820690.0	323.62	324.43	Lower portion, Amabel Formation
BH5-I	P	51	271.7 - 271.1	272.1 - 271.0	273.30 - 272.10	271.0 - 266.0 273.3 - 315.0	583560.0	4819785.0	315.04	315.13	Whirlpool Formation
BH5-II	P	51	275.6 - 275.0	275.8 - 274.9	276.20 - 275.80	315.0 - 276.2	583560.0	4819785.0	315.04	315.05	Manitoulin Formation
BH5-III	P	51	287.2 - 286.6	288.4 - 286.5	288.90 - 288.40	315.0 - 288.9	583560.0	4819785.0	315.04	315.81	Cabot Head Formation
BH5-IV	P	51	298.4 - 297.8	299.1 - 297.7	300.40 - 299.10	297.8 - 297.5 315.0 - 300.4	583560.0	4819785.0	315.04	315.75	Reynales Formation
BH5-V	S	51	304.6 - 301.7	306.5 - 301.6	307.40 - 306.50	301.9 - 301.7 315.0 - 307.4	583560.0	4819785.0	315.04	315.71	Lower portion, Amabel Formation
BH6-I	P	51	276.8 - 276.2	277.3 - 275.8	275.80 - 273.50 277.90 - 277.30	323.8 - 277.9	583520.0	4821495.0	323.80	323.88	Whirlpool Formation
BH6-II	P	51	282.6 - 282.0	283.0 - 281.9	282.70 - 283.00		583520.0	4821495.0	323.80	323.79	Manitoulin Formation
BH6-III	P	51	296.6 - 296.0	298.0 - 295.9	298.60 - 298.00	323.8 - 298.6	583520.0	4821495.0	323.80	324.02	Cabot Head Formation
BH6-IV	P	51	302.6 - 302.0	303.8 - 301.9	304.40 - 303.80	323.8 - 304.4	583520.0	4821495.0	323.80	324.32	Reynales and Cabot Head Formations
BH6-V	S	51	312.2 - 309.3	314.7 - 309.2	315.40 - 314.70	323.8 - 315.4	583520.0	4821495.0	323.80	324.91	Middle and Lower portions, Amabel Formation
BH7-I	P	51	275.7 - 275.1	276.0 - 275.0	276.60 - 276.00	305.6 - 276.6	584200.0	4820790.0	305.60	305.69	Whirlpool Formation
BH7-II	P	51	279.7 - 279.1	280.0 - 279.0	280.80 - 280.00	305.6 - 280.8	584200.0	4820790.0	305.60	305.85	Manitoulin Formation
BH7-III	P	51	294.0 - 293.4	294.4 - 293.3	295.20 - 294.40	293.3 - 289.8	584200.0	4820790.0	305.60	306.26	Cabot Head Formation

Table 5.1

Monitoring and Recharge Well Construction Details
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Monitor No.	Type	Diameter (4) (mm)	Screened Interval (m AMSL)	Filter Pack (m AMSL)	Seal (m AMSL)	Backfill (m AMSL)	Easting (m)	Northing (m)	Ground Surface (m AMSL)	Measuring Point Elevation (m AMSL)	Geologic Formation Screened
						305.6 - 295.2					
BH7-IV	S	51	302.0 - 299.1	303.1 - 299.0	299.00 - 298.60		584200.0	4820790.0	305.60	306.18	Reynales and Cabot Head Formations
BH8-I	P	51	270.9 - 270.3	271.2 - 269.9	269.90 - 268.50	313.5 - 272.3	584255.0	4819900.0	313.50	313.58	Whirlpool Formation
					272.30 - 271.20						
BH8-II	P	51	276.5 - 275.9	276.9 - 275.4	275.40 - 275.10	313.5 - 279.1	584255.0	4819900.0	313.50	313.70	Manitoulin Formation
					279.10 - 276.90						
BH8-III	P	51	291.0 - 290.4	291.0 - 289.7	289.70 - 289.40	289.7 - 284.5	584255.0	4819900.0	313.50	314.72	Cabot Head Formation
BH8-IV	P	51	296.8 - 296.2	297.8 - 296.1	299.00 - 297.80	313.5 - 299.0	584255.0	4819900.0	313.50	314.37	Reynales Formation
BH8-V	S	51	306.3 - 303.4	309.7 - 303.4		313.5 - 309.7	584255.0	4819900.0	313.50	314.41	Middle portion, Amabel Formation
BH9-I	P	51	271.9 - 271.3	271.8 - 269.3	269.30 - 269.00	269.0 - 268.1	583790.0	4820310.0	301.60	302.49	Whirlpool Formation
					301.60 - 271.80						
BH9-II	P	51	275.8 - 275.2	276.6 - 274.5	274.50 - 274.20		583790.0	4820310.0	301.60	302.39	Manitoulin Formation
					301.60 - 276.60						
BH9-III	P	51	287.4 - 286.8	288.3 - 286.7	289.00 - 288.30	286.7 - 284.8	583790.0	4820310.0	301.60	302.45	Cabot Head Formation
						301.6 - 289.0					
BH9-IV	S	51	298.5 - 295.6	299.2 - 295.5		301.6 - 299.2	583790.0	4820310.0	301.60	301.01	Lower portion, Amabel Formation and Reynales Formatic
BH10-II	P	51	280.6 - 279.9	280.8 - 279.9	281.30 - 280.80	279.9 - 278.9	583510.0	4820910.0	302.90	303.53	Manitoulin Formation
						302.9 - 281.3					
BH10-III	P	51	289.6 - 289.0	290.1 - 288.9	288.90 - 288.60	288.6 - 286.4	583510.0	4820910.0	302.90	303.81	Cabot Head Formation
					290.70 - 290.10	296.8 - 290.7					
					297.40 - 296.80	302.9 - 297.4					
BH10-IV	S	51	300.0 - 297.1	300.8 - 297.0	301.40 - 300.80	302.9 - 301.4	583510.0	4820910.0	302.90	303.81	Cabot Head Formation
BH11-I	P	51	271.7 - 271.1	271.5 - 270.3	270.30 - 267.70	317.5 - 272.4	582279.9	4821029.7	317.64	318.30	Whirlpool Formation
					272.40 - 271.50						
BH11-II	P	51	276.6 - 276.0	276.7 - 275.4	275.40 - 266.70	317.5 - 277.5	582277.9	4821028.1	317.60	318.31	Manitoulin Formation
					277.50 - 276.70						
BH11-III	P	51	289.0 - 288.4	289.6 - 288.2	288.20 - 287.90	287.9 - 286.7	582270.8	4821021.6	317.53	318.60	Cabot Head Formation
					289.80 - 289.60	317.5 - 289.8					
BH11-IV	P	51	297.7 - 297.1	298.1 - 297.1	297.10 - 296.80	317.5 - 298.6	582269.3	4821020.0	317.52	317.81	Reynales Formation
					298.60 - 298.10						
BH11-V	S	51	306.1 - 303.2	308.4 - 303.1	308.70 - 308.40	317.5 - 308.7	582272.3	4821023.2	317.61	318.61	Lower portion, Amabel Formation
BH12-I (1)	P	51	305.9 - 305.3	307.0 - 305.2	307.70 - 307.00	305.2 - 303.1	582990.0	4821755.0	335.70	335.71	Lower portion, Amabel Formation
						335.7 - 307.7					
BH12-II (1)	S	51	330.1 - 327.2	330.8 - 327.1		327.2 - 322.9	582990.0	4821755.0	335.70	335.77	Upper portion, Amabel Formation
						335.7 - 330.8					
BH13-I	P	51	301.0 - 300.4	301.7 - 300.3	302.90 - 301.70	300.4 - 299.7	582770.0	4821020.0	316.50	316.68	Lower portion, Amabel Formation
						316.5 - 302.9					
BH13-II	S	51	314.4 - 311.5	315.6 - 311.4		311.5 - 306.0	582770.0	4821020.0	316.50	316.79	Upper portion, Amabel Formation
						316.5 - 315.6					
BH14-I (1)	P	51	306.3 - 305.7	306.7 - 305.6	305.60 - 302.00	329.8 - 307.5	583840.0	4821815.0	329.80	330.97	Lower portion, Amabel Formation
					307.50 - 306.70						
BH14-II (1)	S	51	327.3 - 321.5	328.0 - 321.4	329.80 - 328.00		583840.0	4821815.0	329.80	330.70	Upper portion, Amabel Formation
BH15-I	P	51	297.7 - 297.1	299.2 - 297.0	300.20 - 299.20	297.0 - 296.9	584310.0	4821230.0	307.70	307.86	Cabot Head Formation
						307.7 - 300.2					
BH15-II	S	51	307.0 - 304.1	307.4 - 304.1	307.70 - 307.40		584310.0	4821230.0	307.70	307.76	Reynales Formation
BH16-I	S	51	298.3 - 295.4	301.8 - 295.4		305.8 - 301.8	584460.0	4820910.0	305.80	306.27	Cabot Head Formation
BH17-I	S	51	300.5 - 297.6	302.9 - 297.5		297.5 - 295.2	584255.0	4819225.0	315.10	315.17	Lower portion, Amabel Formation
						315.1 - 302.9					
BH18-I	P	51	291.5 - 290.9	291.8 - 290.8	292.80 - 291.80	290.8 - 289.4	583935.0	4819420.0	300.60	300.77	Cabot Head Formation
						300.6 - 292.8					

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Monitor No.	Type	Diameter (4) (mm)	Screened Interval (m AMSL)	Filter Pack (m AMSL)	Seal (m AMSL)	Backfill (m AMSL)	Easting (m)	Northing (m)	Ground Surface (m AMSL)	Measuring Point Elevation (m AMSL)	Geologic Formation Screened
BH18-II	S	51	299.6 - 296.7	300.0 - 296.6	300.60 - 300.00		583935.0	4819420.0	300.60	300.88	Lower portion, Amabel Formation
BH19-I	P	51	292.6 - 292.0	293.6 - 291.9	295.10 - 293.60	291.9 - 289.3	584090.0	4819720.0	300.30	300.37	Cabot Head Formation
						300.3 - 295.1					
BH19-II	S	51	299.7 - 296.8	299.7 - 296.7	300.30 - 299.70		584090.0	4819720.0	300.30	300.37	Reynales Formation
BH20-I	P	51	292.8 - 292.2	293.0 - 292.1	294.00 - 293.00	292.1 - 290.2	583825.0	4819920.0	301.20	301.93	Cabot Head Formation
						301.2 - 294.0					
BH20-II	S	51	300.2 - 297.3	300.9 - 297.2	301.20 - 300.90		583825.0	4819920.0	301.20	301.42	Reynales Formation
BH21-I	P	51	293.1 - 292.5	293.6 - 292.4	294.60 - 293.60	292.4 - 290.8	583530.0	4820120.0	301.50	301.66	Cabot Head Formation
						301.5 - 294.6					
BH21-II	S	51	300.5 - 297.6	300.6 - 297.5	301.50 - 300.60	297.6 - 297.1	583530.0	4820120.0	301.50	301.65	Reynales Formation
BH22-I	P	51	294.2 - 293.6	294.4 - 293.5	296.00 - 294.40	293.5 - 292.7	583670.0	4820610.0	303.40	303.63	Cabot Head Formation
						303.4 - 296.0					
BH22-II	S	51	302.0 - 299.1	302.6 - 299.0	303.40 - 302.60	293.5 - 292.7	583670.0	4820610.0	303.40	304.35	Reynales Formation
						303.4 - 296.0					
BH23-I	P	51	293.1 - 292.5	293.7 - 292.4	294.20 - 293.70	292.4 - 290.8	583250.0	4820270.0	301.50	301.68	Cabot Head Formation
						301.5 - 294.6					
BH23-II	S	51	300.6 - 297.7	300.9 - 297.6	301.50 - 300.90		583250.0	4820270.0	301.50	301.75	Reynales Formation
BH24-I	P	51	292.8 - 292.2	293.6 - 292.0	294.50 - 293.60	292.0 - 291.4	583370.0	4820770.0	302.10	303.00	Cabot Head Formation
						302.1 - 294.5					
BH24-II	S	51	301.4 - 298.5	301.3 - 298.3	302.10 - 301.30		583370.0	4820770.0	302.10	303.33	Reynales Formation
BH25-I	P	51	300.9 - 300.3	301.9 - 300.2	302.80 - 301.90	300.2 - 296.1	582870.0	4820465.0	309.80	310.25	Lower portion, Amabel Formation
						309.8 - 302.8					
BH25-II	S	51	308.2 - 305.3	309.2 - 305.2	309.80 - 309.20		582870.0	4820465.0	309.80	309.91	Middle portion, Amabel Formation
BH26-I (6)	P	51	272.4 - 271.8	272.5 - 271.7	274.20 - 272.50	303.0 - 274.2	583740.0	4820930.0	303.00	304.30	Whirlpool Formation
BH27 (6)	S	51	309.9 - 307.0		Surface	(2) 321 - 295.9	581863.9	4821660.2	320.73	321.40	Amabel Formation
BH28 (1)	S	51	316.0 - 313.1		Surface	(2) 328 - 299.0	582564.0	4821756.0	327.50	327.69	Amabel Formation
BH29	S	51	330.9 - 328.0		Surface	(2) 342 - 300.4	582389.0	4822497.0	342.03	342.48	Amabel Formation
BH30	S	51	328.6 - 325.7		Surface	(2) 340 - 304.5	582791.9	4823262.7	339.89	340.29	Amabel Formation
BH31	S	51	330.7 - 327.8		Surface	(2) 342 - 305.1	582922.0	4822765.0	341.77	342.28	Amabel Formation
BH32	S	51	314.1 - 311.0		327.04 - 326.43	(2) 326 - 302.3	582531.0	4821989.0	327.04	327.64	Amabel Formation
BH33	S	51	320.0 - 313.9		330.32 - 329.86	(2) 330 - 313.8	582715.0	4821955.0	330.32	331.14	Upper and Middle portions, Amabel Formation
BH34	S	51	316.9 - 313.9		330.34 - 330.04	(2) 330 - 301.3	581979.0	4822109.0	330.53	331.33	Amabel Formation
BH35	O	102	334.2 - 321.6		Surface		582662.0	4822115.0	337.23	337.90	Upper and Middle portions, Amabel Formation
BH36	O	102	338.5 - 284.5		Surface		582546.0	4822232.0	339.05	339.52	Amabel, Reynales, Cabot Head, and Manitoulin Formatio
BH38 (6)	O	102	337.4 - 301.6		Surface		582173.0	4822477.0	341.49	341.98	Amabel Formation
BH38-I (3,6)	P	25	305.5 - 303.5	306.5 - 303.1	303.10 - 301.60		582173.0	4822477.0	341.49	342.09	Lower portion, Amabel Formation
BH38-II (3,6)	P	25	314.7 - 312.0	316.5 - 311.5	311.50 - 306.50		582173.0	4822477.0	341.49	342.11	Middle portion, Amabel Formation
BH38-III (3,6)	S	19	333.5 - 328.1	341.5 - 316.5	327.50 - 316.50		582173.0	4822477.0	341.49	342.13	Upper portion, Amabel Formation
BH39	O	102	331.3 - 299.3		Surface		581786.0	4822430.0	334.94	335.70	Amabel Formation
BH39-I (3)	P	25	304.7 - 302.7	305.7 - 302.2	302.20 - 299.30		581786.0	4822430.0	334.94	335.81	Lower portion, Amabel Formation
BH39-II (3)	P	25	313.0 - 310.3	315.1 - 309.7	309.70 - 305.70		581786.0	4822430.0	334.94	335.80	Middle portion, Amabel Formation
BH39-III (3)	S	19	328.8 - 322.9	334.7 - 322.0	322.00 - 315.10		581786.0	4822430.0	334.94	335.81	Upper portion, Amabel Formation
BH40	O	102	341.6 - 305.3		Surface		582388.0	4822939.0	345.38	346.17	Amabel Formation
BH40-I (3)	P	25	309.1 - 307.1	310.8 - 306.8	306.80 - 305.60		582388.0	4822939.0	345.38	346.28	Lower portion, Amabel Formation
BH40-II (3)	P	25	318.7 - 315.9	320.3 - 315.4	315.40 - 310.80		582388.0	4822939.0	345.38	346.28	Middle portion Amabel Formation
					323.10 - 326.30						
BH40-III (3)	S	19	337.9 - 331.8	345.3 - 331.3	331.30 - 326.40		582388.0	4822939.0	345.38	346.28	Upper portion, Amabel Formation
BH41	O	102	343.5 - 304.9		Surface		582652.0	4822877.0	346.39	347.23	Amabel Formation
BH41-I (3)	P	25	309.5 - 307.5	310.8 - 307.1	307.10 - 304.90		582652.0	4822877.0	346.41	347.22	Lower portion, Amabel Formation
BH41-II (3)	P	25	318.6 - 315.8	320.4 - 315.5	315.50 - 310.80		582652.0	4822877.0	346.41	347.23	Middle portion, Amabel Formation

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Monitor No.	Type	Diameter (4) (mm)	Screened Interval (m AMSL)	Filter Pack (m AMSL)	Seal (m AMSL)	Backfill (m AMSL)	Easting (m)	Northing (m)	Ground Surface (m AMSL)	Measuring Point Elevation (m AMSL)	Geologic Formation Screened
BH41-III (3)	S	19	338.8 - 332.7	346.4 - 332.6	332.60 - 320.40		582652.0	4822877.0	346.41	347.23	Upper portion, Amabel Formation
BH42	S	51	337.3 - 334.2	337.4 - 334.2	341.77 - 337.40		582910.0	4822741.0	341.77	342.54	Upper portion, Amabel Formation
BH43-I	P	51	331.4 - 328.4	331.7 - 328.4	333.71 - 331.73		582968.0	4823238.0	336.00	336.86	Upper portion, Amabel Formation
BH43-II	S	32	335.2 - 333.7	335.3 - 331.7	336.00 - 335.31		582968.0	4823238.0	336.00	336.90	Overburden
BH44-I	P	51	330.4 - 327.4	330.6 - 327.4	331.80 - 330.63		582584.0	4823165.0	335.00	335.86	Overburden
BH44-II	S	32	333.5 - 332.0	334.2 - 331.8	335.00 - 334.24		582584.0	4823165.0	335.00	335.92	Overburden
BH45-I	P	51	331.5 - 328.4	331.8 - 328.1	332.68 - 331.77		582653.7	4823575.7	335.88	336.56	Upper portion, Amabel Formation
BH45-II	S	32	334.3 - 332.7	335.0 - 332.7	335.73 - 334.97		582653.7	4823575.7	335.88	336.54	Overburden
BH46	O	102	324.3 - 304.6		Surface		582587.0	4823166.0	335.10	335.92	Amabel Formation
BH47	O	102	331.1 - 305.2		Surface		582648.0	4823092.0	334.07	334.88	Amabel Formation
BH49	O	102	326.9 - 296.7		Surface		582373.4	4821841.7	334.83	335.25	Amabel and Reynales Formations
BH50	O	102	329.7 - 297.2		Surface		582164.8	4821998.8	332.30	332.98	Amabel, Reynales, and top of Cabot Head Formations
BH51	O	108	326.6 - 299.9		Surface		582283.6	4821899.0	329.64	329.96	Amabel and Reynales Formations
BH52	O	95	313.3 - 293.9		Surface		582180.2	4821704.3	322.17	322.54	Amabel, Reynales, and Cabot Head Formations
BH53	O	95	314.1 - 295.7		Surface		582145.0	4821634.1	327.83	328.18	Amabel, Reynales, and Cabot Head Formations
BH54-I (6)	O	102	313.5 - 297.8		Surface		582011.0	4821536.7	317.56	318.30	Amabel and Reynales Formations
BH54-II (6)	O	95	312.8 - 303.3		Surface		582013.6	4821536.9	317.66	318.29	Amabel Formation
BH57-I	P	38	302.5 - 301.1	303.0 - 300.6	304.40 - 303.00 (2)	316.5 - 304.4	581939.1	4821405.0	317.90	318.47	Amabel Formation
BH57-II	S	38	316.5 - 312.0	318.0 - 311.7			581938.9	4821403.1	318.01	318.39	Overburden and Amabel Formation
BH58-I	O	102	313.3 - 297.7		Surface		581958.9	4821432.7	317.88	318.27	Amabel and Reynales Formations
BH58-II	O	95	314.9 - 309.1		Surface		581960.1	4821434.5	317.90	318.33	Amabel Formation
BH61-I	P	38	300.7 - 299.3	301.7 - 298.9	306.37 - 301.67 (2)	315.4 - 306.4	581696.8	4821571.1	315.42	315.92	Amabel Formation
BH61-II	P	38	306.2 - 304.8	307.1 - 304.4	315.71 - 307.11		581696.5	4821573.7	315.70	316.39	Amabel Formation
BH61-IV	S	38	314.9 - 313.6	315.3 - 313.2			581700.5	4821559.6	315.29	315.87	Overburden and Amabel Formation
BH62 (7)	O	95	319.0 - 299.8		Surface		581960.6	4821851.7	321.53	322.21	Amabel Formation
BH63	O	95	323.9 - 296.1		Surface		581937.2	4821954.2	325.66	326.16	Amabel, Reynales, and Cabot Head Formations
BH64 (8)	O	95	331.5 - 313.8		Surface		583259.2	4822130.5	333.52	334.55	Amabel Formation
BH65 (8)	O	95	326.5 - 319.8		Surface		583462.5	4822372.9	329.02	330.50	Amabel Formation
BH66 (8)	O	89	327.0 - 297.4		Surface		583676.6	4822633.3	328.83	329.65	Amabel, Reynales, and Cabot Head Formations
BH67 (8)	O	102	333.8 - 297.6		Surface		583305.0	4823042.0	336.26	337.07	Amabel, Reynales, and Cabot Head Formations
BH68 (8)	O	89	331.8 - 325.4		Surface		583226.3	4823247.3	336.20	336.83	Amabel Formation
BH69 (8)	O	89	335.4 - 299.0		Surface		583053.9	4823595.0	339.85	340.71	Amabel, Reynales, and Cabot Head Formations
BH70 (8)	O	89	334.0 - 326.9		Surface		582878.1	4823765.9	337.77	338.21	Amabel Formation
BH71 (8)	O	102	339.1 - 305.0		Surface		583186.3	4822980.5	341.78	342.19	Amabel and Reynales Formations
BH72 (8)	O	89	324.1 - 302.4		Surface		583902.0	4822360.1	325.28	325.62	Amabel, Reynales, and Cabot Head Formations
BH73	S	51	305.1 - 295.1		Surface		582548.6	4820737.5	315.93	316.61	Amabel and Reynales Formations
BH74	S	51	304.7 - 294.7		Surface		582395.4	4820875.7	313.91	314.29	Amabel and Reynales Formations
BH75	S	51	308.0 - 298.0		Surface		582420.6	4820954.4	318.15	318.76	Amabel and Reynales Formations
BH76	S	51	306.1 - 296.1		Surface		582397.2	4820949.0	317.42	318.02	Amabel and Reynales Formations
BH77	S	51	305.8 - 295.8		Surface		582267.2	4820985.7	317.73	318.37	Amabel and Reynales Formations
BH78	S	51	305.8 - 295.8		Surface		582330.3	4821102.6	318.86	319.35	Amabel and Reynales Formations
BH79	S	51	304.5 - 294.5		Surface		582437.8	4821005.4	318.31	318.82	Amabel and Reynales Formations
BH80	S	51	309.6 - 299.6		Surface		582427.1	4821225.3	320.06	320.59	Amabel and Reynales Formations
BH81	S	51	306.9 - 296.9		Surface		582440.8	4821246.2	319.07	319.75	Amabel and Reynales Formations
BH82	S	51	308.3 - 298.3		Surface		582695.7	4821327.7	320.53	321.08	Amabel and Reynales Formations
BH83	S	51	307.2 - 297.2		Surface		582605.3	4821042.0	315.70	316.40	Amabel and Reynales Formations
BH84	S	51	307.6 - 297.6		Surface		582698.5	4821123.6	316.89	317.88	Amabel and Reynales Formations
BH85	S	51	308.3 - 298.3		Surface		582718.7	4821151.3	318.13	318.90	Amabel and Reynales Formations
BH86	S	51	307.1 - 297.1		Surface		582730.3	4821039.8	318.41	318.65	Amabel and Reynales Formations
BH87	S	51	306.5 - 296.5		Surface		582659.5	4820816.4	314.91	315.51	Amabel and Reynales Formations

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Monitor No.	Type	Diameter (4) (mm)	Screened Interval (m AMSL)	Filter Pack (m AMSL)	Seal (m AMSL)	Backfill (m AMSL)	Easting (m)	Northing (m)	Ground Surface (m AMSL)	Measuring Point Elevation (m AMSL)	Geologic Formation Screened
BH88	S	51	307.1 - 297.1		Surface		582744.2	4820586.4	314.47	315.06	Amabel and Reynales Formations
BH89	S	51	296.8 - 293.7		Surface		583759.3	4819981.3	300.88	301.66	Amabel and Reynales Formations
BH90	S	51	304.3 - 299.7		Surface		583812.1	4819905.0	306.14	307.21	Overburden
BH91	S	51	301.9 - 296.2		Surface		583845.7	4819911.8	301.86	302.44	Amabel and Reynales Formations
BH92-I	S	51	301.1 - 297.7		Surface		583842.2	4819624.0	303.82	304.47	Amabel and Reynales Formations
BH92-II	S	51	303.5 - 300.4		Surface		583843.3	4819623.7	303.93	305.08	Overburden
BH93	S	51	301.3 - 295.2		Surface		583858.4	4819615.4	303.21	304.43	Amabel and Reynales Formations
BH94	S	51	308.0 - 294.3		Surface		583992.1	4819360.4	321.22	321.78	Amabel and Reynales Formations
BH95	S	51	299.6 - 292.5		Surface		584200.6	4819154.6	308.94	309.43	Amabel and Reynales Formations
BH96	S	51	307.1 - 298.0		Surface		584241.0	4819197.5	316.09	316.58	Amabel and Reynales Formations
BH97	S	51	303.3 - 294.1		Surface		584291.0	4819199.3	313.92	314.67	Amabel and Reynales Formations
BH98	S	51	302.8 - 293.7		Surface		584241.4	4819489.7	311.84	312.42	Amabel and Reynales Formations
BH99	S	51	301.9 - 292.8		Surface		584262.4	4819486.6	310.86	311.19	Amabel and Reynales Formations
BH100	S	51	303.5 - 294.3		Surface		584243.5	4819886.9	312.52	313.01	Amabel and Reynales Formations
BH101	S	51	297.8 - 294.7		Surface		583323.3	4820160.3	301.14	301.71	Amabel and Reynales Formations
BH102	S	51	299.0 - 295.9		Surface		583210.3	4820319.0	301.05	301.89	Amabel and Reynales Formations
IW1	S	102	304.6 - 298.5		Surface		582424.2	4820951.2	318.28	318.89	Amabel and Reynales Formations
IW2	S	102	308.3 - 298.3		Surface		582432.5	4821227.5	319.78	320.37	Amabel and Reynales Formations
IW3	S	102	312.4 - 302.4		Surface		582699.7	4821129.1	317.34	317.84	Amabel and Reynales Formations
MW1	O	150	307.6 - 280.8		312.74 - 307.60		583488.6	4819837.0	312.74	313.26	Amabel/Reynales (water table)
MW2	O	150	308.7 - 280.5		312.55 - 310.45		584266.4	4819559.7	312.55	313.19	Cabot Head
MW3	O	150	324.1 - 301.9		325.24 - 321.94		584190.0	4822096.9	325.24	325.67	Amabel/Reynales (water table)
MW4	O	150	333.3 - 308.4		335.71 - 333.31		583108.0	4821850.0	335.70	336.45	Amabel/Reynales (water table)
MW4A	O	150					583082.0	4821854.9	336.53	337.41	Amabel/Reynales (water table)
MW4B	O	150	335.9 - 301.8		338.80 - 336.30		583079.0	4821873.1	338.35	338.79	Amabel/Reynales (water table)
MW4C	O	150	335.7 - 302.9		336.41 - 335.65		583132.6	4821889.3	336.41	336.72	Amabel/Reynales (water table)
MW5	O	150	319.1 - 299.6		322.97 - 319.17		582680.8	4821430.8	322.97	323.46	Amabel/Reynales (water table)
OW1-1	O	76	329.1 - 304.4		Surface		582524.0	4823202.0	334.26	335.40	Amabel Formation
OW1-2	O	76	329.4 - 304.4		Surface		582519.0	4823219.0	334.43	335.63	Amabel Formation
OW1-3	O	76	329.4 - 304.6		Surface		582549.0	4823233.0	334.59	335.58	Amabel Formation
OW1-4	O	76	329.2 - 304.4		Surface		582534.0	4823207.0	334.36	335.59	Amabel Formation
OW1-5	O	203	328.1 - 302.9		Surface		582528.8	4823210.7	334.53	334.94	Amabel Formation
OW1-5-I (3)	P	25	308.0 - 306.0	309.2 - 305.7	305.70 - 302.90		582528.8	4823210.7	334.53	334.94	Lower portion, Amabel Formation
OW1-5-II (3)	P	25	317.3 - 314.6	319.7 - 314.4	314.40 - 309.20		582528.8	4823210.7	334.53	334.94	Middle portion, Amabel Formation
OW1-5-III (3)	S	19	331.4 - 325.6	329.2 - 325.2	325.20 - 319.70 (2) 334.0 - 329.2		582528.8	4823210.7	334.53	334.92	Upper portion, Amabel Formation
OW2-1	O	76	332.6 - 319.1		Surface		581999.0	4822863.0	336.64	337.51	Amabel Formation
OW2-1S (3)	P	25	328.8 - 323.0	336.4 - 322.4	322.40 - 319.10		581999.0	4822863.0	336.64	337.57	Upper portion, Amabel Formation
OW2-2	O	76	332.3 - 304.4		Surface		581999.0	4822874.0	336.37	337.13	Amabel Formation
OW2-2D (3)	p	25	307.6 - 305.3	309.6 - 305.1	305.10 - 304.40		581999.0	4822874.0	336.37	337.20	Lower portion, Amabel Formation
					313.90 - 309.60 (2) 336.0 - 313.9						
OW2-3	O	76	331.9 - 306.7		Surface		582010.0	4822896.0	335.95	336.45	Amabel Formation
OW2-3I (3)	P	25	314.2 - 311.5	315.7 - 310.7	310.70 - 306.70		582010.0	4822896.0	335.95	336.82	Middle Portion, Amabel Formation
					324.80 - 315.70 (2) 336.0 - 324.8						
OW2-4 (7)	O	76	333.1 - 304.9		Surface		582021.0	4822861.0	336.92	338.19	Amabel Formation
OW3-1-I (3, 8)	O	89	341.6 - 303.8		Surface		583137.7	4822696.1	343.20	343.72	Amabel, Reynales, and Cabot Head Formations
OW3-1-II (3, 8)	O	89	341.8 - 326.0		Surface		583138.0	4822693.8	343.20	343.88	Amabel Formation
OW3-1-III (3, 8)	O	89	341.6 - 332.4		Surface		583138.0	4822694.9	343.20	343.72	Amabel Formation

Table 5.1

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Monitor No.	Type	Diameter (4) (mm)	Screened Interval (m AMSL)	Filter Pack (m AMSL)	Seal (m AMSL)	Backfill (m AMSL)	Easting (m)	Northing (m)	Ground Surface (m AMSL)	Measuring Point Elevation (m AMSL)	Geologic Formation Screened
OW3-2-I (3, 8)	O	89	340.2 - 305.1		Surface		583162.0	4822684.5	342.24	342.84	Amabel, Reynales, and Cabot Head Formations
OW3-2-II (3, 8)	O	89	340.4 - 325.3		Surface		583163.5	4822686.6	342.39	343.04	Amabel Formation
OW3-2-III (3, 8)	O	89	340.2 - 332.5		Surface		583154.8	4822675.4	342.05	342.77	Amabel Formation
OW3-3-I (3, 8)	O	89	343.3 - 303.0		Surface		583135.4	4822747.6	344.89	345.24	Amabel, Reynales, and Cabot Head Formations
OW3-3-II (3, 8)	O	89	343.5 - 326.5		Surface		583133.6	4822746.6	344.81	345.32	Amabel Formation
OW3-3-III (3, 8)	O	89	343.4 - 334.3		Surface		583134.5	4822747.1	344.87	345.30	Amabel Formation
OW18-03	O	76	309.2 - 303.1		344.87 - 338.87		582504.8	4822477.3	344.21	345.06	Amabel, Reynales, and Cabot Head Formations
OW19-03	O	76	307.9 - 301.8		344.21 - 338.21		582852.4	4822147.9	342.36	342.98	Amabel, Reynales, and Cabot Head Formations
OW67-07	O	76	336.0 - 309.5		336.89 - 335.97		583145.1	4823427.5	336.76	337.14	Amabel, Reynales, and Cabot Head Formations
OW69-08	O	72	334.3 - 303.6		335.86 - 332.61		583428.0	4822886.5	335.86	336.48	Amabel, Reynales, and Cabot Head Formations
OW72-08	O	72	337.5 - 305.5		341.75 - 337.48		582800.6	4822728.7	341.75	342.46	Amabel, Reynales, and Cabot Head Formations
OW73-08	O	72	334.9 - 306.0		336.76 - 332.76		582918.7	4823206.1	336.76	337.51	Amabel, Reynales, and Cabot Head Formations
OW74-08	O	72	330.2 - 305.4		335.07 - 330.19		582590.9	4823104.2	335.07	335.77	Amabel, Reynales, and Cabot Head Formations
OW75-09	O		313.9 - 297.0		316.61 - 313.87		581797.4	4821502.5	316.61	317.20	Amabel Formation
OW76-11	O	51	298.1 - 295.1		324.67 - 319.17		581583.7	4822130.6	324.67	325.29	Reynales, and Cabot Head Formations
OW77-11	O	150	321.0 - 305.8		334.09 - 324.49		582472.9	4823323.4	334.09	334.85	Amabel, Reynales, and Cabot Head Formations
PW1	O	152	328.2 - 299.3		Surface		582531.0	4823210.0	334.52	335.09	Amabel Formation
Recharge Monitoring Wells											
North Quarry											
BH58-III	O	152	315.7 - 300.1		Surface		581961.7	4821436.6	317.72	318.24	Amabel Formation
BH109	O	64	325.7 - 297.7				581668.6	4821716.9	327.15	327.86	Amabel and Reynales Formations
BH110	O	64	318.9 - 298.8				581803.9	4821604.9	323.44	324.16	Amabel and Reynales Formations
BH111	O	64	312.5 - 298.6				582112.1	4821330.4	316.76	317.44	Amabel and Reynales Formations
MW101A-07	O	150	303.2 - 300.8		322.25 - 316.25		582262.4	4821517.6	322.25	322.90	Amabel Formation
MW102A-07	O	150	303.5 - 300.8		323.56 - 316.16		582182.1	4821414.9	323.56	323.96	Amabel and Reynales Formation
MW103A-07	O	150	302.9 - 300.4		319.32 - 316.82		582141.0	4821363.5	319.32	319.76	Amabel and Reynales Formation
MW103C-07	O	150	303.0 - 300.7		317.43 - 312.53		582098.0	4821327.2	317.43	318.03	Amabel and Reynales Formation
MW104A-07	O	150	302.3 - 300.2		316.48 - 311.78		582067.2	4821356.0	316.48	317.41	Amabel and Reynales Formation
MW105A-07	O	150	302.7 - 300.3		318.15 - 311.35		581996.6	4821423.3	318.15	318.83	Amabel and Reynales Formation
MW106A-07	O	150	302.4 - 299.6		317.80 - 313.60		581929.7	4821486.4	317.80	318.02	Amabel and Reynales Formation
MW107A-07	O	150	302.9 - 300.5		320.60 - 315.60		581845.9	4821564.5	320.60	321.23	Amabel and Reynales Formation
MW108A-07	O	150	302.3 - 300.0		325.74 - 321.14		581776.5	4821630.8	325.74	326.42	Amabel and Reynales Formation
MW109A-07	O	150	303.1 - 301.5		326.58 - 323.78		581705.7	4821698.3	326.58	327.01	Amabel and Reynales Formation
MW109B-07	O	150	302.9 - 300.5		326.52 - 323.72		581688.4	4821743.6	326.52	327.15	Amabel and Reynales Formation
MW110A-07	O	150	303.5 - 301.1		323.71 - 320.91		581722.3	4821786.9	323.71	324.26	Amabel and Reynales Formation
MW111A-07	O	150	304.2 - 301.6		324.49 - 320.39		581780.4	4821861.5	324.49	324.92	Amabel and Reynales Formation
MW112A-07	O	150	304.9 - 302.4		321.66 - 315.76		581855.2	4821958.3	321.66	322.22	Amabel and Reynales Formation
MW113A-07	O	150	305.7 - 303.3		325.71 - 322.91		581912.6	4822028.0	325.71	326.39	Amabel and Reynales Formation

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Monitor No.	Type	Diameter (4) (mm)	Screened Interval (m AMSL)	Filter Pack (m AMSL)	Seal (m AMSL)	Backfill (m AMSL)	Easting (m)	Northing (m)	Ground Surface (m AMSL)	Measuring Point Elevation (m AMSL)	Geologic Formation Screened
West Cell											
MW201A-09	O	150	322.9 - 300.5		328.69 - 322.90		581950.1	4822150.5	328.69	329.53	Amabel and Reynales Formation
MW202A-09	O	150	326.0 - 302.1		329.84 - 326.03		581868.3	4822245.1	329.84	330.53	Amabel and Reynales Formation
MW203A-11	O	150	304.4 - 301.4		322.73 - 314.50		581417.4	4822151.4	322.73	323.53	Amabel, Reynales, and Cabot Head Formations
MW204A-09	O	150	322.1 - 303.1		324.73 - 322.14		581656.3	4822367.4	324.73	325.39	Amabel and Reynales Formation
MW204B-11	O	150	314.0 - 298.7		320.62 - 318.54		581490.8	4821983.0	321.59	322.29	Amabel, Reynales, and Cabot Head Formations
MW205A-15	O	200	310.1 - 300.9		330.32 - 329.00		581722.6	4822451.7	330.40	331.45	Amabel, Reynales, and Cabot Head Formations
MW208A-09	O	150	330.5 - 303.4		333.06 - 330.47		581914.7	4822834.8	333.06	333.73	Amabel and Reynales Formation
MW209A-09	O	150	331.8 - 303.7		334.35 - 331.78		581989.4	4822919.7	334.35	334.96	Amabel and Reynales Formation
OW20-04	O	51	311.1 - 298.9		328.19 - 324.69		581922.3	4822197.4	328.19	328.90	Reynales
OW21-04	O	51	312.3 - 300.1		323.61 - 317.61		581653.2	4822224.1	323.61	323.91	Amabel
OW22-04	O	51	312.7 - 300.5		323.10 - 320.35		581616.6	4822309.0	323.10	323.74	Amabel and Reynales Formations
OW23-04	O	51	314.9 - 302.7		328.63 - 323.03		581692.0	4822557.4	328.63	329.03	Amabel, Reynales, and Cabot Head Formations
OW24-04	O	51	313.0 - 300.8		330.25 - 322.50		581736.3	4822687.2	330.25	331.11	Amabel, Reynales, and Cabot Head Formations
OW25-04	O	51	313.3 - 301.1		332.17 - 327.92		581806.5	4822763.6	332.17	332.77	Amabel, Reynales, and Cabot Head Formations
OW26-04	O	51	313.8 - 301.6		333.62 - 329.87		581891.1	4822797.5	333.62	334.31	Amabel, Reynales, and Cabot Head Formations
MWX1-15	O	200	306.9 - 297.8		321.83 - 316.80		581489.5	4821867.4	321.83	322.42	Amabel, Reynales, and Cabot Head Formations
MWX2-15	O	200	306.8 - 297.7		320.53 - 317.79		581547.7	4821839.9	320.53	321.19	Amabel, Reynales, and Cabot Head Formations
East Cell											
MW302A-15	O	200	310.8 - 301.6		336.04 - 334.20		582295.1	4823158.9	336.08	336.98	Amabel, Reynales, and Cabot Head Formations
MW304A-10	O	150	336.3 - 300.8		341.94 - 335.54		582409.2	4823006.5	341.94	342.69	Amabel and Reynales Formation
MW305A-10	O	150	330.6 - 304.7		334.85 - 329.06		582523.4	4823138.9	334.85	335.68	Amabel and Reynales Formation
MW309B-10	O	150	335.8 - 306.6		338.27 - 334.31		582680.4	4823435.8	338.27	339.17	Amabel and Reynales Formation
MW311A-10	O	150	336.2 - 307.8		339.58 - 336.23		582881.3	4823412.3	339.58	340.30	Amabel and Reynales Formation
MW313A-10	O	150	332.9 - 302.3		339.75 - 335.33		583006.0	4823284.9	339.75	340.59	Amabel and Reynales Formation
MW315A-10	O	150	332.4 - 306.0		337.08 - 332.36		582969.1	4823133.6	337.08	338.00	Amabel and Reynales Formation
MW316A-11	O	150	309.5 - 306.4		342.38 - 340.40		583157.5	4823068.9	342.38	343.02	
MW319A-10	O	150	340.8 - 303.3		343.10 - 340.20		582846.6	4822575.9	343.10	343.83	Amabel and Reynales Formation
MW321A-10	O	150	335.8 - 301.8		340.19 - 335.77		582746.4	4822317.3	340.19	340.94	Amabel and Reynales Formation
OW42-07	O	76	331.5 - 304.7		335.14 - 331.48		582109.0	4822972.6	335.01	335.71	Amabel, Reynales, and Cabot Head Formations
OW43-07	O	76	329.1 - 302.9		334.02 - 329.14		582151.2	4823038.5	333.89	334.77	Amabel, Reynales, and Cabot Head Formations
OW44-07	O	76	327.8 - 303.9		335.30 - 327.83		582223.2	4823108.3	335.17	335.71	Amabel, Reynales, and Cabot Head Formations
OW45-07	O	76	338.0 - 305.4		340.44 - 338.00		582339.5	4822966.0	340.31	341.00	Amabel, Reynales, and Cabot Head Formations
OW46-07	O	76	337.1 - 305.0		338.19 - 337.12		582489.8	4823082.7	338.06	338.65	Amabel, Reynales, and Cabot Head Formations
OW47-07	O	76	330.0 - 303.0		334.24 - 329.97		582446.3	4823255.0	334.12	334.86	Amabel, Reynales, and Cabot Head Formations
OW48-07	O	75	328.5 - 303.7		335.98 - 328.51		582505.0	4823296.8	335.85	336.45	Amabel, Reynales, and Cabot Head Formations
OW49-07	O	76	330.8 - 303.4		335.70 - 330.82		582563.4	4823325.1	335.58	336.41	Amabel, Reynales, and Cabot Head Formations
OW50-07	O	76	334.1 - 307.9		338.03 - 334.07		582660.5	4823403.2	337.90	338.41	Amabel, Reynales, and Cabot Head Formations
OW51-07	O	76	336.6 - 303.7		337.49 - 336.58		582792.3	4823483.1	337.37	338.01	Amabel, Reynales, and Cabot Head Formations
OW53-07	O	76	336.7 - 305.6		339.16 - 336.72		582937.5	4823356.0	339.03	339.47	Amabel, Reynales, and Cabot Head Formations
OW54-07	O	76	336.5 - 306.4		337.52 - 336.45		583043.6	4823194.1	337.39	338.00	Amabel, Reynales, and Cabot Head Formations
OW55-07	O	76	324.4 - 304.6				582936.8	4823028.0	342.32	343.04	Amabel, Reynales, and Cabot Head Formations
OW56-07	O	76	345.2 - 306.6		346.25 - 345.18		582951.9	4822950.6	346.12	346.82	Amabel, Reynales, and Cabot Head Formations
OW57-07	O	76	342.3 - 305.4		345.03 - 342.28		583005.9	4822860.4	344.91	345.44	Amabel, Reynales, and Cabot Head Formations
OW58-07	O	76	339.1 - 304.7		340.95 - 339.12		582970.0	4822737.5	340.82	341.33	Amabel, Reynales, and Cabot Head Formations
OW59-07	O	76	340.4 - 303.2		343.75 - 340.39		582754.6	4822458.7	343.63	344.06	Amabel, Reynales, and Cabot Head Formations

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Trigger Wells											
North Quarry											
BH37	O	102	319.4 - 281.0		Surface		581632.0	4821665.0	320.65	320.92	Amabel, Reynales, Cabot Head, and Manitoulin Formatio
BH55	O	95	311.9 - 308.2		Surface		582067.2	4821287.9	316.97	317.45	Amabel Formation
BH56	O	95	314.4 - 311.7		Surface		582014.4	4821344.1	318.14	318.57	Amabel Formation
BH57-III	P	38	309.6 - 308.3	310.2 - 307.8	311.16 - 310.16 (2) 317.2 - 311.2		581938.8	4821402.2	318.05	318.57	Amabel Formation
BH59	O	95	313.1 - 308.8		Surface		581793.5	4821491.2	315.50	316.32	Amabel Formation
BH60	O	95	313.2 - 306.4		Surface		581750.3	4821545.5	315.97	316.42	Amabel Formation
BH61-III	P	38	311.6 - 310.2	312.4 - 309.9	315.46 - 312.35		581699.6	4821562.2	315.44	316.01	Amabel Formation
West Cell											
OW27-04	O	51	307.3 - 295.1		318.24 - 313.24		581460.4	4821799.6	318.17	318.85	Amabel, Reynales, and Cabot Head Formations
OW28-04	O	51	309.8 - 297.6		321.33 - 314.53		581440.0	4821921.5	321.41	322.18	Amabel, Reynales, and Cabot Head Formations
OW29-04	O	51	312.5 - 300.3		322.08 - 314.83		581413.3	4822021.0	321.98	322.75	Amabel and Reynales Formations
OW30-04	O	51	310.2 - 298.0		319.97 - 313.77		581365.3	4822190.8	319.97	320.84	Amabel, Reynales, and Cabot Head Formations
OW31-04	O	51	313.1 - 300.9		321.33 - 317.03		581565.5	4822320.5	321.33	321.87	Amabel and Reynales Formations
OW32-04	O	51	312.6 - 300.4		323.85 - 320.65		581602.6	4822467.8	323.85	324.52	Amabel, Reynales, and Cabot Head Formations
OW33-04	O	51	313.0 - 300.8		326.75 - 324.05		581579.0	4822622.8	326.75	327.27	Amabel, Reynales, and Cabot Head Formations
OW34-04	O	51	314.5 - 302.3		325.43 - 319.53		581599.9	4822702.3	325.43	325.82	Amabel, Reynales, and Cabot Head Formations
OW35-04	O	51	314.4 - 302.2		326.61 - 322.61		581689.2	4822753.3	326.61	327.21	Amabel, Reynales, and Cabot Head Formations
OW36-04	O	51	315.5 - 303.3		327.65 - 323.45		581777.7	4822815.1	327.65	328.34	Amabel, Reynales, and Cabot Head Formations
OW37-04	O	51	312.9 - 300.7		327.80 - 324.30		581838.1	4822871.7	327.80	328.44	Amabel, Reynales, and Cabot Head Formations
OW38-04	O	51	316.4 - 304.2		328.91 - 326.41		581949.4	4822943.0	328.91	329.54	Amabel, Reynales, and Cabot Head Formations
East Cell											
BH48	O	102	325.5 - 322.7		Surface		582406.8	4823332.6	330.89	331.60	Upper portion, Amabel Formation
OW5-80	O	89	338.3 - 322.4				583000.1	4823363.5	339.17	339.67	Amabel
OW52-07	O	76	338.8 - 305.5		340.28 - 338.78		582878.0	4823436.8	340.15	340.72	Amabel, Reynales, and Cabot Head Formations
OW60-07	O	76	325.6 - 302.7		326.34 - 325.58		582026.2	4823040.4	326.21	326.92	Amabel, Reynales, and Cabot Head Formations
OW61-07	O	76	322.6 - 304.6		330.19 - 322.57		582094.8	4823070.2	330.07	330.41	Amabel, Reynales, and Cabot Head Formations
OW62-07	O	76	328.5 - 303.9		329.23 - 328.47		582177.7	4823176.0	329.11	329.70	Amabel, Reynales, and Cabot Head Formations
OW63-07	O	76	326.1 - 300.9		326.83 - 326.07		582213.7	4823234.1	326.70	327.40	Amabel, Reynales, and Cabot Head Formations
OW64-07	O	76	327.3 - 303.5		330.34 - 327.29		582322.4	4823276.7	330.21	330.84	Amabel, Reynales, and Cabot Head Formations
OW65-07	O	76	334.7 - 306.2		335.42 - 334.66		582624.1	4823435.7	335.29	335.89	Amabel, Reynales, and Cabot Head Formations
OW66-07	O	76	337.3 - 305.5		338.40 - 337.33		582750.4	4823542.0	338.27	338.78	Amabel, Reynales, and Cabot Head Formations
OW70-08	O	72	341.3 - 304.1		342.93 - 339.68		583144.0	4822966.7	342.93	343.44	Amabel, Reynales, and Cabot Head Formations
OW71-08	O	72	338.3 - 306.1		339.32 - 336.32		583121.5	4823162.4	339.33	339.98	Amabel, Reynales, and Cabot Head Formations

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Recharge Wells											
North Quarry											
RW101B-07	O	150	314.8 - 300.7 (5)		321.28 - 314.78		582272.3	4821530.1	321.28		Amabel and Reynales Formations
RW102B-07	O	150	317.6 - 300.6 (5)		323.39 - 317.59		582189.8	4821425.0	323.39		Amabel and Reynales Formations
RW103A-07	O	150	317.4 - 300.1 (5)		318.88 - 317.38		582136.4	4821358.0	318.88		Amabel and Reynales Formations
RW103B-11	O	150	312.6 - 297.4		318.40 - 314.44		582124.0	4821348.2	318.40	319.09	Amabel, Reynales, and Cabot Head Formations
RW103C-07	O	150	311.2 - 294.9		315.92 - 311.23		582104.2	4821321.4	315.92	318.86	Amabel, Reynales, and Cabot Head Formations
RW103D-07	O	150	313.6 - 301.4 (5)		317.55 - 313.55		582089.5	4821334.8	317.55		Amabel and Reynales Formations
RW104A-07	O	150	311.9 - 301.4 (5)		316.63 - 313.33		582078.4	4821345.2	315.24	317.40	Amabel and Reynales Formations
RW104B-07	O	150	314.0 - 296.8		318.36 - 312.24		582057.0	4821365.8	316.63		Amabel, Reynales, and Cabot Head Formations
RW104C-09	O	150					582038.6	4821388.0	317.62	318.24	Amabel and Reynales Formations
RW104D-07	O	150	310.4 - 294.9		315.24 - 313.54		582022.2	4821399.5	318.36	319.06	Amabel, Reynales, and Cabot Head Formations
RW105A-09	O	150					582003.9	4821420.8	318.05	318.90	Amabel and Reynales Formations
RW105B-07	O	150	311.1 - 300.2 (5)		318.41 - 311.11		581989.5	4821430.2	318.41		Amabel and Reynales Formations
RW105C-13	O	300	304.9 295.7		317.68 314.63		581970.9	4821447.2	317.68	318.27	Amabel, Reynales, and Cabot Head Formations
RW105D-13	O	300	305.9 296.8		317.83 314.63		581952.9	4821465.3	317.83	318.29	Amabel, Reynales, and Cabot Head Formations
RW106A-07	O	150	313.8 - 299.8 (5)		317.85 - 313.85		581921.7	4821492.9	317.85		Amabel and Reynales Formations
RW106A-13	O	300	306.5 297.4		317.77 314.88		581924.2	4821497.0	317.77	318.36	Amabel, Reynales, and Cabot Head Formations
RW106C-11	O	150	309.8 - 294.5		317.99 - 316.01		581824.7	4821545.8	317.99	318.764	Amabel, Reynales, and Cabot Head Formations
RW106D-07	O	150	316.4 - 295.5		318.89 - 316.39		581858.6	4821553.0	318.89		Amabel, Reynales, and Cabot Head Formations
RW106D2-15	O	300	304.5 - 295.3		317.94 - 314.59		581873.5	4821540.9	317.94	318.71	Amabel, Reynales, and Cabot Head Formations
RW107B-15	O	300	306.4 - 297.3		324.08 - 322.24		581773.4	4821618.4	324.08	324.55	Amabel, Reynales, and Cabot Head Formations
RW107C-15	O	300	303.8 - 294.6		324.48 - 321.13		581796.6	4821618.1	324.49	325.44	Amabel, Reynales, and Cabot Head Formations
RW107A-07	O	150	318.0 - 299.5 (5)		321.97 - 317.97		581836.5	4821573.9	321.97		Amabel and Reynales Formations
RW107D-09	O	150					581811.8	4821600.5	323.22	324.02	Amabel and Reynales Formations
RW108A-07	O	150	323.3 - 300.4 (5)		326.27 - 323.27		581769.4	4821637.7	326.27		Amabel and Reynales Formations
RW108B-15	O	300	304.8 - 295.6		326.10 - 324.58		581761.3	4821643.5	326.10	326.93	Amabel, Reynales, and Cabot Head Formations
RW108C-15	O	200	305.3 - 296.1		324.47 - 321.10		581721.4	4821659.4	324.47	325.06	Amabel, Reynales, and Cabot Head Formations
RW108D-09	O	150					581712.4	4821687.4	325.64		Amabel and Reynales Formations
RW109A-07	O	150	325.8 - 300.3 (5)		327.01 - 325.81		581697.0	4821706.8	327.01		Amabel and Reynales Formations
RW109C-07	O	150	324.4 - 300.2 (5)		326.50 - 324.40		581679.6	4821731.6	326.50		Amabel and Reynales Formations
RW109D-07	O	150	324.0 - 300.7 (5)		325.50 - 324.00		581697.8	4821755.6	325.50		Amabel and Reynales Formations
RW110A-07	O	150	320.7 - 300.9 (5)		323.38 - 320.68		581728.6	4821794.8	323.38		Amabel and Reynales Formations
RW110C-14	O	300	313.5 - 298.3 (5)		323.34 - 319.83		581748.2	4821817.5	323.34		Amabel, Reynales, and Cabot Head Formations
RW110D-14	O	300	314.6 - 299.4 (5)		324.69 - 320.12		581767.2	4821841.1	324.69		Amabel, Reynales, and Cabot Head Formations
RW111A-07	O	150	321.0 - 301.7 (5)		323.65 - 320.95		581784.9	4821867.7	323.65		Amabel and Reynales Formations
RW111C-14	O	300	313.6 - 298.4 (5)		323.36 - 320.62	2.7	581804.6	4821888.4	323.36		Amabel, Reynales, and Cabot Head Formations
RW111D-14	O	300	314.6 - 299.4 (5)		321.37 - 314.82	6.6	581837.7	4821933.2	321.37		Amabel, Reynales, and Cabot Head Formations
RW112A-07	O	150	314.3 - 301.8 (5)		321.26 - 314.26	7.0	581861.7	4821965.4	321.26		Amabel and Reynales Formations
RW112C-14	O	300	315.4 - 300.2 (5)		321.65 - 319.21	2.4	581883.2	4821991.4	321.65		Amabel, Reynales, and Cabot Head Formations
RW112D-14	O	300	315.3 - 300.1 (5)		322.40 - 320.27	2.1	581895.8	4822005.9	322.40		Amabel, Reynales, and Cabot Head Formations
RW113A-07	O	150	324.7 - 303.2 (5)		327.15 - 324.75	2.4	581921.2	4822039.1	327.15		Amabel and Reynales Formations
RW113C-14	O	300	315.1 - 299.9 (5)		329.12 - 325.16	4.0	581949.4	4822073.5	329.12		Amabel, Reynales, and Cabot Head Formations
RW113D-14	O	300	315.6 - 300.4 (5)		329.97 - 326.01	4.0	581968.2	4822099.1	329.97		Amabel, Reynales, and Cabot Head Formations

Table 5.1

Monitoring and Recharge Well Construction Details
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Dufferin Milton Quarry
Region of Halton, Ontario

Monitor No.	Type	Diameter (4) (mm)	Screened Interval (m AMSL)	Filter Pack (m AMSL)	Seal (m AMSL)	Backfill (m AMSL)	Easting (m)	Northing (m)	Ground Surface (m AMSL)	Measuring Point Elevation (m AMSL)	Geologic Formation Screened
West Cell											
RW201A-09	O	150	327.3 - 299.6		328.67 - 327.25		581939.7	4822166.0	328.67	329.51	Amabel and Reynales Formations
RW201B-09	O	150	326.2 - 302.3		327.83 - 326.20		581896.2	4822218.0	327.83	328.45	Amabel and Reynales Formations
RW202A-09	O	150	327.1 - 302.3		329.78 - 327.11		581824.8	4822270.5	329.78	330.58	Amabel and Reynales Formations
RW203A-09	O	150	318.6 - 301.8		323.73 - 318.55		581675.8	4822201.8	323.73	324.68	Amabel and Reynales Formations
RW203B-09	O	150	317.1 - 301.7		322.57 - 317.09		581625.8	4822248.6	322.57	323.53	Amabel and Reynales Formations
RW203C-11	O	150	311.9 - 296.6		320.40 - 313.85		581415.7	4822124.3	320.40	321.11	Amabel, Reynales, and Cabot Head Formations
RW203D-11	O	150	313.4 - 298.2		321.06 - 312.98		581454.0	4822073.9	321.06	322.00	Amabel, Reynales, and Cabot Head Formations
RW204A-09	O	150	302.1 - 301.0		322.93 - 302.05		581637.2	4822286.0	322.93	323.58	Amabel and Reynales Formations
RW204B-09	O	150	320.7 - 302.8		323.79 - 320.74		581636.0	4822361.6	323.79	324.46	Amabel and Reynales Formations
RW204C-13	O	200	308.2 299.0		321.27 318.23		581465.6	4821979.8	321.27	321.98	Amabel, Reynales, and Cabot Head Formations
RW204D-11	O	150	315.3 - 300.2		320.64 - 313.33		581449.3	4822014.3	321.41	322.42	Amabel, Reynales, and Cabot Head Formations
RW204D2-15	O	200	307.8 - 299.8		324.78 - 322.98		581533.4	4822017.8	324.78	325.40	
RW205A-09	O	150	325.5 - 302.6		328.53 - 325.48		581688.7	4822518.5	328.53	329.12	Amabel and Reynales Formations
RW205B-14	O	200	316.3 - 301.1		329.17 - 327.95		581675.5	4822487.1	329.17		Amabel, Reynales, and Cabot Head Formations
RW205C-15	O	200	310.2 - 301.1		328.83 - 326.24		581699.3	4822582.2	328.91	329.44	Amabel, Reynales, and Cabot Head Formations
RW205D-16	O	216	309.4 - 300.2		327.96 - 325.82		581668.9	4822612.3	327.96	328.33	Amabel, Reynales, and Cabot Head Formations
RW205H-15	O	200	309.9 - 300.8		330.64 - 328.26		581714.5	4822463.5	330.72	331.56	Amabel, Reynales, and Cabot Head Formations
RW206A-09	O	150	325.9 - 302.8		329.21 - 325.86		581720.7	4822622.0	329.21	329.75	Amabel and Reynales Formations
RW206B-09	O	150	326.4 - 302.7		331.59 - 326.41		581757.5	4822735.1	331.59	332.30	Amabel and Reynales Formations
RW206C-14	O	200	318.1 - 302.9		331.59 - 329.15		581786.2	4822744.0	331.59		Amabel, Reynales, and Cabot Head Formations
RW207A-09	O	150	328.5 - 304.2		332.01 - 328.48		581862.3	4822786.6	332.01	332.53	Amabel and Reynales Formations
RW207B-09	O	150	331.4 - 305.4		332.93 - 331.41		581903.8	4822817.7	332.93	333.61	Amabel and Reynales Formations
RW207C-14	O	200	330.2 - 321.0		332.92 - 327.43		581827.6	4822765.6	332.92		Amabel, Reynales, and Cabot Head Formations
RW208A-09	O	150	334.3 - 302.0		337.30 - 334.25		581957.7	4822840.7	337.30	337.94	Amabel and Reynales Formations
RW208B-13	O	200	317.1 - 301.9		337.51 - 335.07		581944.5	4822816.9	337.51		Amabel, Reynales, and Cabot Head Formations
RW208D-13	O	200	315.1 306.0		337.36 - 334.92		581971.9	4822860.6	337.36	338.49	Amabel, Reynales, and Cabot Head Formations
RW208E-16	O	216	312.5 - 303.4		335.81 - 333.07		581959.9	4822880.2	335.81	336.34	Amabel, Reynales, and Cabot Head Formations
RW208F-97 (PW2)	O	152	330.2 - 304.3		Surface		582003.0	4822872.0	336.56	337.12	Amabel Formation
RW208G-16	O	216	312.2 - 303.1		336.02 - 332.98		582000.7	4822877.6	336.02	336.73	Amabel, Reynales, and Cabot Head Formations
RW208H-17	O	216	312.7 - 303.5		335.52 - 331.71		581965.5	4822884.4	335.52		Amabel and Reynales Formations
RW208I-17	O	216	314.5 - 305.3		332.31 - 328.73		581969.6	4822917.0	332.31		Amabel and Reynales Formations
RW209A-09	O	150	331.8 - 302.3		334.82 - 331.77		581999.4	4822907.4	334.82	335.58	Amabel and Reynales Formations
RW209B-13	O	200	312.6 303.4		336.34 - 333.90		581980.3	4822881.2	336.34	337.10	Amabel, Reynales, and Cabot Head Formations
RW209C-13	O	200			335.46 - 330.58		581985.5	4822895.9	335.46	336.20	Amabel, Reynales, and Cabot Head Formations
RW209C-16	O	216	311.7 - 302.6		335.32 - 331.28		581977.0	4822892.0	335.32	336.32	Amabel, Reynales, and Cabot Head Formations
RW209D-13	O	200	313.2 304.1		337.31 - 334.87		582022.5	4822922.1	337.31	337.94	Amabel, Reynales, and Cabot Head Formations

Table 5.1

Monitoring and Recharge Well Construction Details
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Dufferin Milton Quarry
Region of Halton, Ontario

Monitor No.	Type	Diameter (4) (mm)	Screened Interval (m AMSL)	Filter Pack (m AMSL)	Seal (m AMSL)	Backfill (m AMSL)	Easting (m)	Northing (m)	Ground Surface (m AMSL)	Measuring Point Elevation (m AMSL)	Geologic Formation Screened
East Cell											
RW301A-10	O	150	335.20 - 303.5		337.18 - 335.05		582079.9	4822946.8	337.18	337.79	
RW301B-13	O	200	318.4 - 303.2		337.94 - 335.50		582069.0	4822932.4	337.94		Amabel, Reynales, and Cabot Head Formations
RW301C-17	O	216	313.7 - 304.5		336.84 - 332.98		582084.5	4822953.5	336.84		Amabel and Reynales Formations
RW302A-10	O	150	325.55 - 303.5		333.02 - 325.70		582119.2	4823044.2	333.02	333.66	
RW302C-15	O	200	323.2 - 314.1		336.00 - 331.22		582251.0	4823121.5	336.44	337.14	Amabel Formations
RW302D-15	O	200	309.7 - 300.6		337.43 - 334.64		582278.1	4823141.0	337.51	338.51	Amabel, Reynales, and Cabot Head Formations
RW303A-10	O	150	335.80 - 303.2		340.06 - 335.34		582306.4	4822956.1	340.06	340.83	
RW303B-10	O	150	339.07 - 303.7		342.12 - 339.07		582374.2	4822991.2	342.12	342.83	
RW304A-10	O	150	341.26 - 303.5		343.08 - 341.10		582439.8	4823046.5	343.08	343.86	
RW305A-10	O	150	329.14 - 303.7		335.54 - 328.99		582524.0	4823158.8	335.54	336.44	
RW307A-10	O	150	330.99 - 303.9		332.67 - 330.99		582413.9	4823250.6	332.67	333.57	
RW307B-15	O	200	312.6 - 303.4		335.11 - 332.11		582348.2	4823197.8	335.11	336.01	Amabel, Reynales, and Cabot Head Formations
RW307C-15	O	200	313.5 - 304.3		335.88 - 333.90		582386.0	4823212.3	335.88	336.55	Amabel, Reynales, and Cabot Head Formations
RW307D-17	O	216	314.3 - 305.2		334.44 - 328.96		582442.0	4823268.1	334.44		Amabel and Reynales Formations
RW308A-10	O	150	327.64 - 304.7		335.56 - 327.64		582513.0	4823304.9	335.56	336.14	
RW308B-10	O	150	332.37 - 304.0		335.42 - 332.37		582591.3	4823335.5	335.42	336.36	
RW308C-17	O	216	314.7 - 305.6		334.86 - 326.63		582495.3	4823337.8	334.86		Amabel, Reynales, and Cabot Head Formations
RW308D-17	O	216	315.3 - 306.1		335.70 - 328.53		582463.8	4823302.8	335.70		Amabel and Reynales Formations
RW309A-10	O	150	331.41 - 306.3		337.04 - 331.40		582652.0	4823429.1	337.04	337.87	
RW309B-10	O	150	336.66 - 305.6		338.18 - 336.20		582693.3	4823452.1	338.18	339.06	
RW309C-17	O	216	316.4 - 307.2		336.51 - 332.85		582635.5	4823409.6	336.51		Amabel and Reynales Formations
RW310A-10	O	150	334.60 - 304.3		337.57 - 335.13		582764.9	4823516.0	337.57	338.39	
RW310B-17	O	216	315.0 - 305.8		336.92 - 334.59		582739.7	4823499.0	336.92		Amabel and Reynales Formations
RW310C-17	O	216	316.6 - 307.5		337.96 - 335.52		582775.4	4823508.7	337.96		Amabel and Reynales Formations
RW311A-10	O	150	336.73 - 307.0		338.25 - 336.73		582847.3	4823443.9	338.25	339.07	
RW311C-17	O	216	317.2 - 308.1		338.84 - 336.71		582826.1	4823462.4	338.84		Amabel and Reynales Formations
RW311F-17	O	216	317.0 - 307.8		340.14 - 337.70		582877.0	4823415.2	340.14		Amabel and Reynales Formations
RW311G-17	O	216	316.0 - 306.8		338.83 - 336.24		582860.2	4823424.6	338.83		Amabel and Reynales Formations
RW311K-17	O	216	316.2 - 307.1		339.05 - 336.62		582895.0	4823397.4	339.05		Amabel and Reynales Formations
RW312A-10	O	150	335.71 - 307.8		337.99 - 335.70		582913.7	4823379.7	337.99	338.72	
RW312C-17	O	216	316.8 - 307.7		338.47 - 336.03		582933.7	4823360.4	338.47		Amabel and Reynales Formations
RW312D-17	O	216	317.2 - 308.0		338.51 - 334.25		582929.5	4823364.7	338.51		Amabel and Reynales Formations
RW312E-17	O	216	316.2 - 307.0		339.64 - 335.78		582940.5	4823353.1	339.64		Amabel and Reynales Formations
RW313A-11	O	150	334.56 - 306.7		337.36 - 334.77		582968.7	4823320.1	337.36	338.05	
RW313B-14	O	200	322.3 - 307.1		337.49 - 335.36		582949.2	4823341.1	337.49		Amabel, Reynales, and Cabot Head Formations
RW313C-17	O	216	313.4 - 304.3		338.09 - 334.98		582983.3	4823295.9	338.09		Amabel and Reynales Formations
RW313D-17	O	216	317.1 - 307.9		337.18 - 334.74		582971.7	4823308.9	337.18		Amabel and Reynales Formations
RW313I-17	O	216	316.5 - 307.4		337.26 - 333.60		582963.0	4823326.9	337.26		Amabel and Reynales Formations
RW314A-10	O	150	337.70 - 308.6		339.38 - 336.79		583047.3	4823242.1	339.38	340.15	
RW314C-17	O	216	318.9 - 309.8		340.25 - 337.20		583015.9	4823277.2	340.25		Amabel, Reynales, and Cabot Head Formations
RW315A-10	O	150	333.35 - 308.5		337.16 - 333.35		583005.5	4823135.5	337.16	337.91	
RW316A-10	O	150	340.03 - 305.6		342.31 - 340.33		582962.6	4823059.8	342.31	343.03	
RW316A-16	O	216	314.5 - 305.3		341.46 - 338.41		583078.5	4822981.5	341.46	342.03	Amabel, Reynales, and Cabot Head Formations
RW316B-11	O	150	319.57 - 304.3		342.43 - 340.45		583143.6	4823100.8	342.43	343.13	Amabel, Reynales, and Cabot Head Formations
RW316B-14	O	200	322.1 - 306.9		342.86 - 341.34		583127.8	4823113.6	342.86		Amabel, Reynales, and Cabot Head Formations
RW316C-11	O	150	320.30 - 305.1		342.86 - 340.42		583187.4	4823016.9	342.86	343.49	Amabel, Reynales, and Cabot Head Formations
RW316C1-15	O	200	317.3 - 308.2		344.77 - 343.70		583164.0	4823010.3	344.78	344.28	Amabel and Reynales Formations
RW316C2-15	O	200	315.5 - 306.4		342.74 - 339.00		583178.5	4823034.8	342.75	343.57	Amabel, Reynales, and Cabot Head Formations

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Monitor No.	Type	Diameter (4) (mm)	Screened Interval (m AMSL)	Filter Pack (m AMSL)	Seal (m AMSL)	Backfill (m AMSL)	Easting (m)	Northing (m)	Ground Surface (m AMSL)	Measuring Point Elevation (m AMSL)	Geologic Formation Screened
RW316D-14	O	200	321.1 - 305.9		343.67 - 341.38		583113.1	4823051.0	343.67		Amabel, Reynales, and Cabot Head Formations
RW316E-17	O	216	315.4 - 306.3		341.33 - 339.20		583080.2	4823057.6	341.33		Amabel and Reynales Formations
RW316F-17	O	216	314.4 - 305.3		340.93 - 336.51		583091.1	4823012.3	340.93		Amabel and Reynales Formations
RW317A-10	O	150	342.59 - 303.7		344.57 - 342.59		582919.7	4822958.5	344.57	345.18	
RW317A-16	O	216	313.0 - 303.9		343.07 - 340.86		583029.4	4822950.6	343.07	343.93	Amabel, Reynales, and Cabot Head Formations
RW317B-10	O	150	344.21 - 303.5		346.19 - 343.90		582981.2	4822863.4	346.19	346.83	
RW317C-14	O	200	345.3 - 330.1		345.33 - 343.81		583024.4	4822900.3	345.33		Amabel, Reynales, and Cabot Head Formations
RW317D-11	O	150	320.65 - 305.4		345.03 - 342.84		583042.6	4822839.2	345.03	345.59	Amabel, Reynales, and Cabot Head Formations
RW317D-15	O	200	313.92 - 304.8		345.70 - 345.09		583053.5	4822851.9	345.70	346.35	Amabel, Reynales, and Cabot Head Formations
RW317D1-15	O	200	313.49 - 304.4		346.36 - 345.14		583042.1	4822865.0	346.36	346.93	Amabel, Reynales, and Cabot Head Formations
RW317E-17	O	216	311.9 - 302.7		345.41 - 343.42		582980.8	4822923.8	345.41		Amabel and Reynales Formations
RW317F-17	O	216	313.6 - 304.5		345.60 - 343.37		582993.9	4822938.8	345.60		Amabel and Reynales Formations
RW318A-10	O	150	340.17 - 303.7		342.15 - 340.17		582989.4	4822762.0	342.15	342.85	
RW318B-15	O	200	313.60 - 304.5		340.73 - 338.29		582962.4	4822727.0	340.73	341.14	Amabel, Reynales, and Cabot Head Formations
RW318C-16	O	216	328.7 - 319.5		342.39 - 340.25		583004.5	4822795.3	342.39	343.00	
RW318D-15	O	200	328.37 - 319.2		343.31 - 341.63		582976.6	4822772.9	343.31	343.39	Amabel Formation
RW319A-10	O	150	340.17 - 303.7		342.15 - 340.17		582869.6	4822604.5	342.15	342.81	
RW319B-15	O	200	314.05 - 304.9		341.18 - 336.84		582918.8	4822679.1	341.18	341.77	Amabel, Reynales, and Cabot Head Formations
RW319C-11	O	150	318.72 - 303.5		344.68 - 342.70		582827.7	4822550.0	344.68	345.31	Amabel, Reynales, and Cabot Head Formations
RW319AN1-16	O	216	313.8 - 304.7		341.10 - 338.00		582926.7	4822705.5	341.10	341.85	
RW319AN2-16	O	216	313.7 - 304.4		341.12 - 336.85		582899.8	4822644.9	341.12	341.76	
RW320A-10	O	150	342.07 - 302.4		346.80 - 342.08		582779.5	4822490.0	346.80	347.54	
RW320B-11	O	150	317.29 - 302.1		343.20 - 340.67		582735.6	4822434.2	343.20	343.99	Amabel, Reynales, and Cabot Head Formations
RW320D-15	O	200	312.50 - 303.4		346.95 - 341.46		582799.3	4822516.0	346.95	347.50	Amabel, Reynales, and Cabot Head Formations
RW321A-10	O	150	338.20 - 301.8		340.18 - 338.20		582720.7	4822345.8	340.18	340.76	
Background Wells											
BH112	O	64	334.8 305.5				581496.2	4823423.7	335.97	336.38	Amabel and Reynales Formations
BH113	O	64	333.5 305.6				582306.8	4823482.6	334.62	335.24	Amabel and Reynales Formations
OW39-04	O	51	314.6 - 302.4		324.99 - 322.49		581804.9	4823045.4	324.99	325.63	Amabel, Reynales, and Cabot Head Formations
OW40-04	O	51	309.1 - 296.9		320.06 - 317.56		581142.5	4822064.3	320.06	320.78	Amabel, Reynales, and Cabot Head Formations
OW41-04	O	51	310.1 - 297.9		321.07 - 313.37		581205.6	4822304.6	321.07	321.93	Amabel, Reynales, and Cabot Head Formations
OW68-07	O	76	346.8 - 308.1				582259.4	4824732.0	346.81	347.01	Amabel, Reynales, and Cabot Head Formations

Table 5.1

Monitoring and Recharge Well Construction Details
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Dufferin Milton Quarry
Region of Halton, Ontario

Monitor No.	Type	Diameter (4) (mm)	Screened Interval (m AMSL)	Filter Pack (m AMSL)	Seal (m AMSL)	Backfill (m AMSL)	Easting (m)	Northing (m)	Ground Surface (m AMSL)	Measuring Point Elevation (m AMSL)	Geologic Formation Screened
Lafarge Monitors											
BH1-80A	S	32					582937.4	4822642.2	341.10	341.68	Overburden
OW1-80 (8)	S	38					583280.3	4821774.0	329.84	Damaged	
OW2-80 (8)	O	89	339.7 - 331.1				582706.1	4822381.0	341.50	341.90	Amabel
OW3-80 (8)	O	76	342.2 - 327.1				582953.9	4822632.3	342.54	343.01	Amabel
OW4-80 (8)	S	38	342.5 - 335.5				583143.9	4822696.3	343.42	343.97	Amabel
OW6-80 (8)	O	76	331.4 - 314.7				583338.2	4823673.7	331.90	332.19	Amabel
OW7-80 (8)	S	32					583691.7	4824054.3	327.79	Destroyed	
OW8-80 (8)	S	32					583277.1	4824784.4	330.78	331.36	
OW9-80 (8)	O	76	334.0 - 320.7				582654.2	4823661.4	334.92	335.32	Amabel
OW10-80 (8)	P	38					583146.1	4822702.2	343.81	Damaged	
OW11-80 (8)	P	38	299.5 - 298.6				583144.6	4822699.5	343.58	343.72	Cabot Head
OW13-82 (8)							583715.4	4824196.3	333.13		
OW14-82 (8)	S	51	323.1 - 313.7				583659.5	4824144.0	329.16	329.80	Amabel
OW15-82 (8)	S	51	324.0 - 313.7				583631.3	4823684.7	324.58	324.79	Amabel
OW16-82 (8)							583259.2	4825183.3	326.44	326.55	
OW17-82 (8)	S	51	326.9 - 314.2				583450.7	4824241.7	327.48	328.14	Amabel
TW1-80	O	152	341.9 - 307.5				583147.3	4822698.2	343.44	344.06	Amabel
Halton Crushed Stone Monitors											
HCS1	P			301.0 - 299.0	302.0 - 301.0		583944.4	4819312.3	319.60	320.43	
HCS2	P			300.0 - 296.0	302.0 - 300.0		583671.9	4819575.3	318.05	318.40	
HCS3	P			299.0 - 296.0	300.0 - 299.0		583495.1	4819566.8	311.92	312.49	
HCS4	P			296.0 - 293.0	297.0 - 296.0		583165.2	4819146.8	307.14	307.71	
HCS5	P			294.0 - 281.0	295.0 - 294.0		583037.2	4819009.5	310.16	310.79	
HCS6	P			292.0 - 290.0	294.0 - 293.0		582882.9	4818800.1	304.52	305.30	
HCS7	P			293.0 - 290.0	293.0 - 293.0		583025.6	4818573.7	305.62	306.18	
HCS8	P			294.0 - 291.0	295.0 - 294.0		583478.4	4818426.0	312.81	313.45	
HCS9 (1)				296.0 - 293.5	297.60 - 296.00		583719.5	4818693.6	308.80	Destroyed	
HCS10 (1)	P			295.0 - 292.0	296.0 - 295.0		583880.1	4818519.2	302.80	Destroyed	
HCS11	P			295.0 - 293.0	296.0 -295.0		583852.2	4819060.1	316.83	317.68	
HCS12	P						584016.5	4818323.5	301.29	302.23	

Table 5.1

Monitoring and Recharge Well Construction Details
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Dufferin Milton Quarry
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Monitor No.	Monitor Type	Diameter (4) (mm)	Screened Interval (m AMSL)	Filter Pack (m AMSL)	Seal (m AMSL)	Backfill (m AMSL)	Easting (m)	Northing (m)	Ground Surface (m AMSL)	Measuring Point Elevation (m AMSL)	Geologic Formation Screened

Notes:

(m AMSL)	Metres above mean sea level
P	Piezometer
S	Standpipe
O	Open hole monitor
(1)	Monitor destroyed
(2)	Backfilled with aggregate screenings
(3)	Monitors installed in open hole monitor
(4)	Diameter is borehole diameter
(5)	Open hole set 0.6 m below top of rock
(6)	Well Abandoned in 2011
(7)	Well Abandoned in 2012
(8)	Located on Lafarge property and no longer accessible.

Screened interval in open hole monitors represents zone from bottom of hole to bottom of casing.
In 2009, BH53 was removed by quarrying and DH97-7, BH1-II, BH1-III, and BH1-IV were abandoned by All-Terrain Drilling because they were no longer being used..
In 2010, BH29, DW110, and DW110A were removed by quarrying and BH1-I and BH34 were abandoned by All-Terrain Drilling in preparation for quarry advancement.
In 2012, MW27, BH38, BH54-I, BH54-II, BH63, DW101, DW101A, BH62, DW108A, DW108B and OW2-4 were abandoned by Ontario Water Well Services Inc. in preparation for quarry advancement.

Table 5.2

Summary of 2018 Target Levels
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

	Winter				
Trigger Well	**2017**		**2018**		**Difference**
	(m AMSL)	**(m BTOC)**	**(m AMSL)**	**(m BTOC)**	
North Quarry					
BH37	315.36	5.56	315.61	5.31	0.25
BH55	312.91	4.54	312.99	4.46	0.08
BH56	312.61	5.96	312.68	5.89	0.07
BH57-III	313.33	5.24	313.43	5.14	0.10
BH59	313.80	2.52	313.89	2.43	0.09
BH60	314.24	2.18	314.32	2.10	0.08
BH61-III	314.13	1.88	314.20	1.81	0.07
West Cell					
OW27-04	317.34	1.51	317.39	1.46 (8)	0.05
OW28-04	317.56	4.62	317.92	4.26 (8)	0.36
OW29-04	317.68	5.07	318.01	4.74 (8)	0.33
OW30-04	317.75	3.09	318.05	2.79 (8)	0.30
OW31-04	318.63	3.24	318.99	2.88	0.36
OW32-04	319.87	4.65	320.13	4.39	0.26
OW33-04	321.89	5.38	322.18	5.09	0.29
OW34-04	323.32	2.50	323.39	2.43	0.07
OW35-04	323.50	3.71	323.58	3.63	0.08
OW36-04	323.62	4.72	323.69	4.65	0.07
OW37-04	323.63	4.81	323.70	4.74	0.07
OW38-04	324.30	5.24	324.67	4.87	0.37
East Cell					
BH48	330.10	1.50	330.17	1.43	0.07
OW52-07	335.35	5.37	335.54	5.18	0.19
OW5-80	335.64	4.03	335.79	3.88	0.15
OW60-07	323.51	3.41	323.57	3.35	0.06
OW61-07	324.30	6.11	324.44	5.97	0.14
OW62-07	324.06	5.64	324.16	5.54	0.08
	324.08 (7)	5.62	--	--	--
OW63-07	324.39	3.01	324.52	2.88	0.13
OW64-07	324.87	5.97	324.99	5.85	0.12
OW65-07	332.97	2.92	333.13	2.76	0.16
OW66-07	334.21	4.57	334.41	4.37	0.20
OW70-08	336.21	7.23	336.71	6.73	0.50
OW71-08	335.55	4.43	335.83	4.15	0.28
On-Site Wetlands					
W7	333.00	NA	333.13	NA	0.13
W8	335.95	NA	336.05	NA	0.10
V2	- (1)/340.30 (2)		- (1)/340.30 (2)		0.00 (3)

Table 5.2

Summary of 2018 Target Levels
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

	Spring					
Trigger Well	**2017**		**2018**			**Difference**
	(m AMSL)	**(m BTOC)**	**(m AMSL)**	**(m BTOC)**		
North Quarry						
BH37	315.55	5.37	315.59	5.33		0.04
BH55	312.83	4.62	312.85	4.60		0.02
BH56	312.55	6.02	312.56	6.01		0.01
BH57-III	313.41	5.16	313.42	5.15		0.01
BH59	313.87	2.45	313.89	2.43		0.02
BH60	314.18	2.24	314.19	2.23		0.01
BH61-III	314.08	1.93	314.09	1.92		0.01
West Cell						
OW27-04	317.39	1.46	317.25	1.60	(8)	-0.14
OW28-04	317.89	4.29	317.85	4.33	(8)	-0.04
OW29-04	317.93	4.82	317.89	4.86	(8)	-0.04
OW30-04	318.10	2.74	318.07	2.77	(8)	-0.03
OW31-04	319.93	1.94	319.99	1.88		0.06
OW32-04	320.79	3.73	320.83	3.69		0.04
OW33-04	322.16	5.11	322.21	5.06		0.05
OW34-04	323.33	2.49	323.34	2.48		0.01
OW35-04	323.58	3.63	323.60	3.61		0.02
OW36-04	323.72	4.62	323.73	4.61		0.01
OW37-04	323.78	4.66	323.79	4.65		0.01
OW38-04	325.62	3.92	325.67	3.87		0.05
East Cell						
BH48	330.48	1.12	330.49	1.11		0.01
OW52-07	336.36	4.36	336.41	4.31		0.05
OW5-80	336.58	3.09	336.62	3.05		0.04
OW60-07	323.69	3.23	323.70	3.22		0.01
OW61-07	324.80	5.61	324.84	5.57		0.04
OW62-07	324.21	5.49	324.22	5.48		0.01
OW63-07	324.62	2.78	324.64	2.76		0.02
OW64-07	325.11	5.73	325.13	5.71		0.02
OW65-07	333.78	2.11	333.82	2.07		0.04
OW66-07	335.21	3.57	335.26	3.52		0.05
OW70-08	339.22	4.22	339.35	4.09		0.13
OW71-08	337.02	2.96	337.09	2.89		0.07
On-Site Wetlands						
W7	333.93 (April)	NA	333.89 (April)	NA		-0.04
	333.64 (May)	NA	333.69 (May)	NA		0.05
	333.51 (June)	NA	333.59 (June)	NA		0.08
W8	336.63 (April)	NA	336.30 [(9)] (April)	NA		-0.33
	336.60 (May)	NA	336.30 [(9)] (May)	NA		-0.30
	336.60 (June)	NA	336.30 [(9)] (June)	NA		-0.30
V2	340.30 (April)	NA	340.30 (April)	NA		0.00[(3)]
	340.22 [(4)]/340.13 [(5)] (May)	NA	340.22 [(4)]/340.13 [(5)] (May)	NA		0.00[(3)]
	340.05 [(4)]/339.97 [(5)] (June)	NA	340.05 [(4)]/339.97 [(5)] (June)	NA		0.00[(3)]

Table 5.2

Summary of 2018 Target Levels
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Dufferin Milton Quarry
Region of Halton, Ontario

	Summer				
Trigger Well	**2017**		**2018**		**Difference**
	(m AMSL)	**(m BTOC)**	**(m AMSL)**	**(m BTOC)**	
North Quarry					
BH37	315.24	5.68	315.28	5.64	0.04
BH55	312.63	4.82	312.65	4.80	0.02
BH56	312.40	6.17	312.41	6.16	0.01
BH57-III	313.29	5.28	313.30	5.27	0.01
BH59	313.76	2.56	313.78	2.54	0.02
BH60	314.00	2.42	314.01	2.41	0.01
BH61-III	313.93	2.08	313.94	2.07	0.01
West Cell					
OW27-04	317.37	1.48	317.07	1.78 (8)	-0.30
OW28-04	317.73	4.45	317.65	4.53 (8)	-0.08
OW29-04	317.80	4.95	317.73	5.02 (8)	-0.07
OW30-04	317.95	2.89	317.89	2.95 (8)	-0.06
OW31-04	318.76	3.11	318.82	3.05	0.06
OW32-04	319.76	4.76	319.80	4.72	0.04
OW33-04	321.80	5.47	321.80	5.47	0.00
OW34-04	323.29	2.53	323.29	2.53	0.00
OW35-04	323.49	3.72	323.49	3.72	0.00
OW36-04	323.62	4.72	323.64	4.70	0.02
OW37-04	323.68	4.76	323.68	4.76	0.00
OW38-04	325.02	4.52	325.07	4.47	0.05
East Cell					
BH48	330.16	1.44	330.16	1.44	0.00
OW52-07	335.14	5.58	335.14	5.58	0.00
OW5-80	335.48	4.19	335.48	4.19	0.00
OW60-07	323.55	3.37	323.55	3.37	0.00
OW61-07	324.22	6.19	324.22	6.19	0.00
OW62-07	323.99	5.71	323.99	5.71	0.00
OW63-07	324.41	2.99	324.43	2.97	0.02
OW64-07	324.94	5.90	324.96	5.88	0.02
OW65-07	332.77	3.12	332.77	3.12	0.00
OW66-07	333.85	4.93	333.85	4.93	0.00
OW70-08	336.52	6.92	336.52	6.92	0.00
OW71-08	335.48	4.50	335.48	4.50	0.00
On-Site Wetlands					
W7	332.88	NA	332.88	NA	0.00
W8	336.04	NA	336.05	NA	0.01
V2	339.88 (4)/339.80 (5) (July)	NA	339.88 (4)/339.80 (5) (July)	NA	0.00(3)
	- (1) (August)	NA	- (1) (August)	NA	0.00(3)

Table 5.2

Summary of 2018 Target Levels
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

	Fall					
Trigger Well	**2017**		**2018**			**Difference**
	(m AMSL)	**(m BTOC)**	**(m AMSL)**	**(m BTOC)**		
North Quarry						
BH37	314.85	6.07	314.64	6.28		-0.21
BH55	312.60	4.85	312.53	4.92		-0.07
BH56	312.37	6.20	312.32	6.25		-0.05
BH57-III	313.13	5.44	313.04	5.53		-0.09
BH59	313.62	2.70	313.54	2.78		-0.08
BH60	313.98	2.44	313.91	2.51		-0.07
BH61-III	313.87	2.14	313.82	2.19		-0.05
West Cell						
OW27-04	317.25	1.60	316.80	2.05	(8)	-0.45
OW28-04	317.66	4.52	317.41	4.77	(8)	-0.25
OW29-04	317.73	5.02	317.50	5.25	(8)	-0.23
OW30-04	317.86	2.98	317.65	3.19	(8)	-0.21
OW31-04	317.93	3.94	317.62	4.25		-0.31
OW32-04	319.33	5.19	319.11	5.41		-0.22
OW33-04	321.38	5.89	321.20	--		--
			321.38[7]	5.89		0.00
OW34-04	323.20	2.62	323.16	2.66		-0.04
OW35-04	323.35	3.86	323.30	3.91		-0.05
OW36-04	323.49	4.85	323.43	4.91		-0.06
OW37-04	323.52	4.92	323.47	4.97		-0.05
OW38-04	324.12	5.42	323.83	--		--
			323.85[7]	5.69		-0.27
East Cell						
BH48	329.96	1.64	329.84	1.76		-0.12
OW52-07	334.60	6.12	334.28	6.44		-0.32
OW5-80	334.95	4.72	334.69	4.98		-0.26
OW60-07	323.49	3.43	323.46	3.46		-0.03
OW61-07	323.92	6.49	323.69	--		--
			323.74[7]	6.67		-0.18
OW62-07	323.90	5.80	323.83	5.87		-0.07
OW63-07	324.26	3.14	324.15	3.25		-0.11
OW64-07	324.77	6.07	324.66	6.18		-0.11
OW65-07	332.33	3.56	332.07	3.82		-0.26
OW66-07	333.39	5.39	333.07	5.71		-0.32
OW70-08	335.04	8.40	334.21	--		--
			335.04[7]	8.40		0.00
OW71-08	334.73	5.25	334.27	--		--
			334.37[7]	5.61		-0.36
On-Site Wetlands						
W7	332.80[6]	NA	332.71[6]	NA		-0.09
W8	335.57	NA	335.41	NA		-0.16
V2	-[1]	NA	-[1]	NA		0.00[3]

Table 5.2

Summary of 2018 Target Levels
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Notes:

NA Not applicable.
(1) No target level to be implemented during this period.
(2) Target level to be implemented in anticipation of spring freshet based on short-term weather forecast (typically occurs in mid to late March).
(3) V2 target levels do not change as per Section 6.0 of The Establishment of Extension Target Levels and Minimum Levels (CRA, 2011b).
(4) Target level for first half of month.
(5) Target level for second half of month.
(6) Feature to be allowed to go dry for 1 to 2 months every 2 to 3 years [refer to "Establishment of Target Levels and Minimum Levels" (CRA, 2011b)], however, due to the presence of a snapping turtle discovered in September 2014, it is recommended by GEC to maintain water levels year round to support turtle use.
(7) The Target level cannot be lower than the Minimum level; therefore, calculated Target must be replaced to match the Minimum.
(8) The associated background well was changed in 2018 due to beaver activity. This change is discussed in the text sections 5.3.1 and 5.4 (2018 AMR).
(9) The Target level cannot be higher than the maximum elevation of the edge/embankment surrounding the wetland (with an allowance for freeboard); therefore, calculated Target is replaced to match the maximum elevation.

Table 5.3

Surface Water Flow at SW4 (Pumphouse)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Date	Large Diameter Port (Upper) (L/s)	Small Diameter Port (Lower) (L/s)	Total Flow (L/s)	Water Temp. (deg. C)	Air Temp. (deg. C)	Notes:
11-Jan-05	1.49	0.16	1.64	-	-	
8-Feb-05	1.55	0.13	1.68	-	-	
8-Mar-05	2.00	0.15	2.15	-	-	
12-Apr-05	5.14 (1)	0.55	5.69	-	-	
10-May-05	3.64	0.53	4.17	-	-	
14-Jun-05	2.40	0.46	2.86	-	-	
28-Jun-05	1.05	0.45	1.51	-	-	
5-Jul-05	0.89	0.40	1.29	8.9	23.0	
12-Jul-05	0.92	0.43	1.35	9.2	27.5	
19-Jul-05	0.93	0.42	1.36	9.1	25.0	
26-Jul-05	0.73	0.45	1.17	10.8	22.0	
2-Aug-05	0.63	0.52	1.15	9.3	27.3	
9-Aug-05	0.43	0.49	0.93	10.2	23.0	
16-Aug-05	0.31	0.45	0.77	10.2	24.8	
23-Aug-05	0.22	0.48	0.70	10.5	15.0	
30-Aug-05	0.12	0.67	0.79	10.3	26.6	
6-Sep-05	0.01	0.37	0.38	10.2	25.0	
13-Sep-05	0.00	0.41	0.41	10.7	29.0	
20-Sep-05	0.00	0.38	0.38	10.9	24.5	
27-Sep-05	0.00	0.37	0.37	10.7	21.8	
12-Oct-05	0.00	0.33	0.33	10.7	14.0	
8-Nov-05	0.00	0.26	0.26	9.8	8.9	
13-Dec-05	0.11	0.21	0.31	3.4	-7.1	
10-Jan-06	0.68	0.43	1.11	6.7	3.9	
14-Feb-06	0.35	0.27	0.62	7.4	1.5	
14-Mar-06	3.31	0.62	3.94	6.6	0.8	
11-Apr-06	1.18	0.65	1.84	7.4	16.0	
9-May-06	1.06	0.67	1.73	8.7	19.9	
13-Jun-06	1.00	0.66	1.65	9.3	22.7	
3-Jul-06	1.10	0.61	1.72	-	29.0	
11-Jul-06	1.72	0.48	2.20	12.6	27.0	
18-Jul-06	1.69	0.41	2.10	11.1	26.6	
25-Jul-06	1.34	0.50	1.85	12.6	27.1	
1-Aug-06	1.26	0.45	1.71	13.6	38.2	
8-Aug-06	1.14	0.46	1.61	13.4	25.3	
15-Aug-06	0.98	0.49	1.47	13.9	29.2	
22-Aug-06	0.87	0.52	1.39	13.9	30.2	
29-Aug-06	0.58	0.45	1.03	10.3	19.1	
5-Sep-06	0.39	0.41	0.80	11.7	21.3	
13-Sep-06	0.39	0.41	0.80	13.4	21.9	
19-Sep-06	0.35	0.46	0.81	13.6	19.6	
26-Sep-06	0.31	0.39	0.70	13.3	21.5	
10-Oct-06	0.47	0.35	0.81	13.1	17.2	
14-Nov-06	1.30	0.32	1.62	9.9	11.3	
12-Dec-06	3.25	0.40	3.65	9.1	5.5	
9-Jan-07	2.88	0.40	3.28	5.7	-0.1	
13-Feb-07	2.23	0.31	2.53	-3.3	-3.8	
13-Mar-07	2.10	0.48	2.58	NM (2)	NM (2)	
11-Apr-07	4.02	0.33	4.35	6.0	2.1	
8-May-07	4.43	0.29	4.72	NM (2)	NM (2)	
12-Jun-07	3.10	0.24	3.34	8.0	28.0	
6-Jul-07	2.12	0.19	2.31	9.0	22.0	
10-Jul-07	1.96	0.15	2.11	9.0	30.0	
17-Jul-07	1.62	0.19	1.81	9.0	21.0	
24-Jul-07	1.28	0.18	1.46	10.5	22.0	
31-Jul-07	1.29	0.21	1.50	10.0	29.0	
10-Aug-07	1.15	0.18	1.34	10.0	22.0	
14-Aug-07	0.99	0.18	1.17	9.5	22.0	
24-Aug-07	0.75	0.22	0.97	10.5	25.0	
31-Aug-07	0.60	0.22	0.82	10.0	24.0	
5-Sep-07	0.52	0.20	0.72	NM	NM	
11-Sep-07	0.44	0.21	0.65	10.0	21.0	
24-Sep-07	0.18	0.23	0.42	11.0	24.0	
28-Sep-07	0.17	0.23	0.40	11.0	18.0	
9-Oct-07	0.10	0.21	0.30	10.0	21.0	
13-Nov-07	0 (4)	0.17	0.17	9.0	9.5	
12-Dec-07	0.02	0.20	0.22	7.0	-4.0	
9-Jan-08	2.57	0.17	2.74	7.5	3.5	
13-Feb-08	2.34	0.19	2.53	7.0	-6.0	
20-Mar-08	2.98	0.20	3.18	7.0	0.0	
9-Apr-08	6.81	0.33	7.14	7.0	12.0	
14-May-08	4.25	0.29	4.53	8.0	14.0	

Table 5.3

Surface Water Flow at SW4 (Pumphouse)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Date	Large Diameter Port (Upper) (L/s)	Small Diameter Port (Lower) (L/s)	Total Flow (L/s)	Water Temp. (deg. C)	Air Temp. (deg. C)	Notes:
11-Jun-08	3.56	0.19	3.75	8.0	24.0	
30-Jun-08	3.12	0.17	3.28	9.7	18.3	
9-Jul-08	2.21	0.18	2.39	9.5	27.0	
16-Jul-08	2.92	0.12	3.04	10.1	21.3	
23-Jul-08	3.48	0.11	3.59	10.1	17.4	
30-Jul-08	3.20	0.09	3.29	11.0	25.0	
8-Aug-08	3.49	0.11	3.60	10.3	15.9	
13-Aug-08	4.32	0.15	4.48	10.0	17.0	
17-Aug-08	1.63	0.13	1.76	NM	18.3	
20-Aug-08	3.42	0.12	3.54	11.0	15.0	
26-Aug-08	3.11	0.11	3.22	10.5	16.7	
3-Sep-08	2.66	0.11	2.77	11.8	22.9	
10-Sep-08	2.63	0.14	2.77	10.0	12.0	
17-Sep-08	1.63	0.13	1.76	NM	18.3	
23-Sep-08	2.41	0.12	2.53	10.7	15.9	
15-Oct-08	2.26	0.17	2.43	10.0	17.0	
12-Nov-08	1.55	0.16	1.72	9.5	7.0	
9-Dec-08	1.76	0.17	1.93	9.0	-3.0	
14-Jan-09	2.00	0.26	2.26	NM	-15.5	
11-Feb-09	1.73	0.23	1.96	8.0	13.0	
10-Mar-09	3.00	0.21	3.21	9.0	2.0	
15-Apr-09	2.82	0.21	3.02	7.0	14.0	
13-May-09	2.14	0.20	2.34	7.0	25.0	
10-Jun-09	2.08	0.17	2.25	8.0	23.0	
3-Jul-09	1.90	0.16	2.06	9.6	17.9	
9-Jul-09	1.49	0.15	1.64	7.8	17.3	
17-Jul-09	1.17	0.16	1.33	10.1	15.1	
23-Jul-09	2.59	0.12	2.71	10.2	17.1	
30-Jul-09	2.43	0.10	2.54	10.4	19.2	
6-Aug-09	2.02	0.10	2.12	10.4	17.3	
13-Aug-09	2.21	0.11	2.32	10.3	20.4	
20-Aug-09	1.85	0.10	1.95	11.4	20.8	
27-Aug-09	1.79	0.09	1.88	11.6	17.6	
3-Sep-09	1.65	0.09	1.75	11.3	16.6	
9-Sep-09	1.60	0.15	1.75	10.0	19.0	
17-Sep-09	1.27	0.10	1.37	10.5	18.6	
24-Sep-09	1.15	0.10	1.25	11.5	18.7	
16-Oct-09	1.15	0.11	1.27	9.0	5.0	
11-Nov-09	1.11	0.08	1.19	9.0	9.0	
10-Dec-09	1.66	0.29	1.95	8.0	-4.0	
13-Jan-10	2.16	0.18	2.34	4.0	-3.0	
10-Feb-10	1.98	0.16	2.14	7.0	-3.0	
10-Mar-10	2.06	0.11	2.17	8.0	7.0	
14-Apr-10	1.91	0.19	2.10	8.0	14.0	
12-May-10	1.90	0.18	2.08	8.0	12.0	
8-Jun-10	2.01	0.18	2.20	8.0	15.0	
6-Jul-10	1.51	0.14	1.64	11.2	28.1	
15-Jul-10	1.35	0.14	1.49	9.9	26.6	
22-Jul-10	1.35	0.15	1.50	9.9	25.1	
27-Jul-10	1.27	0.14	1.41	10.0	27.1	
5-Aug-10	0.00	3.31 [3]	3.31	13.3	24.3	
12-Aug-10	0.00	2.98	2.98	13.3	22.6	
19-Aug-10	0.00	2.55	2.55	11.4	22.4	
26-Aug-10	0.00	2.45	2.45	12.4	18.2	
1-Sep-10	0.00	2.26	2.26	13.7	26.8	
8-Sep-10	0.00	2.17	2.17	11.4	13.8	
15-Sep-10	0.00	1.82	1.82	10.9	16.8	
23-Sep-10	0.00	1.96	1.96	12.0	18.3	
30-Sep-10	0.00	2.11	2.11	12.3	16.8	
13-Oct-10	0.00	1.88	1.88	10.0	16.0	
10-Nov-10	0.00	1.92	1.92	9.5	6.5	
15-Dec-10	2.81 [5]	0.07 [5]	2.88	9.0	-4.0	
12-Jan-11	2.81 [5]	0.03 [5]	2.84	6.0	-4.0	
9-Feb-11	0.11	3.21	3.32	7.0	-9.0	
9-Mar-11	1.67	2.05	3.71	8.0	1.0	
13-Apr-11	0.00	6.72	6.72	7.0	8.0	
26-Apr-11	0.59	6.16	6.75	NM	NM	
10-May-11	1.32	6.82	8.14	10.0	18.0	
24-May-11	0.87	9.26	10.13	14.0	21.0	
14-Jun-11	0.62	6.93	7.55	9.0	21.0	
15-Jun-11	0.36	5.59	5.95	NM	22.0	
28-Jun-11	0.00	5.79	5.79	7.0	20.0	

Table 5.3

Surface Water Flow at SW4 (Pumphouse)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Date	Large Diameter Port (Upper) (L/s)	Small Diameter Port (Lower) (L/s)	Total Flow (L/s)	Water Temp. (deg. C)	Air Temp. (deg. C)	Notes:
8-Jul-11	0.00	5.22	5.22	9.3	24.1	
13-Jul-11	0.00	5.10	5.10	7.0	13.0	
22-Jul-11	0.00	4.41	4.41	9.7	20.9	
29-Jul-11	0.00	4.83	4.83	10.0	22.7	
5-Aug-11	0.00	3.65	3.65	10.1	17.2	
12-Aug-11	0.00	3.79	3.79	10.3	22.5	
19-Aug-11	0.00	3.56	3.56	10.4	24.4	
26-Aug-11	0.00	3.19	3.19	10.5	20.3	
2-Sep-11	0.00	2.76	2.76	10.6	22.2	
9-Sep-11	0.00	2.67	2.67	10.6	21.4	
15-Sep-11	0.00	2.39	2.39	10.5	12.2	
23-Sep-11	0.00	2.22	2.22	10.5	13.9	
30-Sep-11	0.00	2.17	2.17	10.5	12.3	
12-Oct-11	0.00	1.77	1.77	10.5	15.0	
16-Nov-11	2.16	4.12	6.28	9.6	9.1	
14-Dec-11	1.17	4.74	5.91	9.5	1.0	
12-Jan-12	1.09	4.04	5.13	9.0	1.2	
15-Feb-12	0.83	4.02	4.85	9.6	1.7	
9-Mar-12	0.99	4.09	5.07	8.0	5.0	
11-Apr-12	0.74	3.41	4.15	8.0	4.0	
9-May-12	0.82	2.95	3.77	7.0	16.0	
14-Jun-12	0.68	2.39	3.07	9.0	15.0	
5-Jul-12	0.00	3.07	3.07	8.9	23.9	
10-Jul-12	0.00	3.07	3.07	11.0	26.0	
19-Jul-12	0.00	2.27	2.27	9.2	19.2	
27-Jul-12	0.00	2.30	2.30	9.4	21.0	
2-Aug-12	0.00	2.25	2.25	9.6	23.7	
8-Aug-12	0.00	2.03	2.03	9.7	22.8	
15-Aug-12	0.00	1.94	1.94	10.0	17.0	
17-Aug-12	0.00	2.08	2.08	9.8	19.7	
12-Sep-12	0.00	1.56	1.56	12.0	16.9	
23-Sep-12	0.00	1.91	1.91	9.8	24.3	
30-Sep-12	0.00	1.72	1.72	10.0	27.2	
6-Oct-12	0.00	1.67	1.67	10.0	18.7	
11-Oct-12	0.00	1.31	1.31	10.6	5.9	
14-Oct-12	0.00	1.68	1.68	10.0	14.2	
20-Oct-12	0.00	1.65	1.65	9.9	13.2	
27-Oct-12	0.00	1.56	1.56	9.8	9.6	
14-Nov-12	0.00	2.32	2.32	8.0	4.0	
11-Dec-12	0.92	5.08	6.00	7.0	-3.7	
8-Jan-13	0.00	3.56	3.56	7.7	-2.0	
12-Feb-13	0.00	3.65	3.65	7.4	1.0	
12-Mar-13	0.00	4.24	4.24	7.6	0.0	
Apr-13	1.22	5.16	6.38	7.6	--	
14-May-13	1.21	5.00	6.21	7.7	10.0	
11-Jun-13	1.35	4.98	6.33	7.9	20.0	
4-Jul-13	1.05	4.99	6.04	8.8	22.7	
9-Jul-13	1.89	4.11	6.00	12.4	28.0	
18-Jul-13	1.84	3.85	5.69	9.6	26.1	
25-Jul-13	1.99	3.25	5.24	9.7	20.6	
31-Jul-13	1.93	3.38	5.31	9.8	18.4	
8-Aug-13	2.01	3.49	5.51	9.9	23.0	
13-Aug-13	1.94	3.37	5.31	13.5	20.0	
22-Aug-13	1.73	2.98	4.71	10.3	24.8	
29-Aug-13	1.75	2.82	4.57	10.5	19.4	
5-Sep-13	1.68	2.73	4.41	10.7	15.9	
10-Sep-13	1.82	2.83	4.66	--	34.0	
19-Sep-13	1.77	2.62	4.38	10.7	15.3	
26-Sep-13	1.91	2.75	4.66	10.7	13.0	
8-Oct-13	2.04	2.61	4.65	14.3	12.0	
12-Nov-13	2.40	3.24	5.65	13.2	0.0	
10-Dec-13	2.16	2.57	4.73	12.7	-8.0	
14-Jan-14	2.60	3.05	5.65	11.8	0.0	
11-Feb-14	2.57	2.83	5.40	10.4	-12.0	
11-Mar-14	3.10	2.46	5.56	-	-	
8-Apr-14	2.90	7.52	10.41	11.0	9.4	
13-May-14	0.00	6.82	6.82	7.1	20.0	
10-Jun-14	2.58	4.40	6.98	8.6	10.0	
3-Jul-14	0.00	6.32	6.32	9.4	20.1	
9-Jul-14	0.00	7.46	7.46	13.7	20.0	
17-Jul-14	0.00	5.64	5.64	9.8	18.4	

Table 5.3

Surface Water Flow at SW4 (Pumphouse)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Date	Large Diameter Port (Upper) (L/s)	Small Diameter Port (Lower) (L/s)	Total Flow (L/s)	Water Temp. (deg. C)	Air Temp. (deg. C)	Notes:
22-Jul-14	0.00	6.26	6.26	10.1	25.3	
30-Jul-14	0.00	5.98	5.98	10.3	17.9	
7-Aug-14	0.00	5.73	5.73	10.6	19.8	
13-Aug-14	0.00	6.24	6.24	11.1	20.0	
22-Aug-14	0.00	5.68	5.68	11.0	18.8	
29-Aug-14	0.00	5.57	5.57	10.3	20.1	
5-Sep-14	0.00	5.20	5.20	10.9	24.3	
9-Sep-14	0.00	5.98	5.98	11.1	20.0	
12-Sep-14	0.10	5.36	5.46	8.2	12.0	
18-Sep-14	0.00	5.65	5.65	11.3	10.2	
25-Sep-14	0.00	5.37	5.37	11.2	15.8	
14-Oct-14	0.00	6.55	6.55	-	20.0	
11-Nov-14	0.00	4.54	4.54	-	15.2	
9-Dec-14	0.00	6.38	6.38	9.3	2.0	
13-Jan-15	0.00	6.21	6.21	8.8	-16.9	
12-Feb-15	0.00	6.05	6.05	8.2	-12.3	
10-Mar-15	0.00	5.98	5.98	7.6	2.0	
14-Apr-15	0.00	6.25	6.25	7.9	9.8	
12-May-15	0.00	6.57	6.57	8.4	13.9	
10-Jun-15	0.14	6.41	6.55	8.8	18.6	
3-Jul-15	0.29	6.01	6.30	9.5	15.7	
10-Jul-15	0.34	5.22	5.56	9.6	19.3	
15-Jul-15	0.19	5.53	5.72	9.8	16.1	
17-Jul-15	0.31	5.37	5.68	8.9	18.2	
23-Jul-15	0.09	5.12	5.21	9.9	18.2	
31-Jul-15	0.00	4.78	4.78	10.0	21.6	
7-Aug-15	0.02	5.10	5.12	10.2	18.7	
12-Aug-15	0.00	5.30	5.30	10.5	17.6	
14-Aug-15	0.00	5.23	5.23	10.3	20.9	
21-Aug-15	0.00	4.65	4.65	10.5	16.6	
27-Aug-15	0.00	4.94	4.94	10.6	15.2	
4-Sep-15	0.00	5.57	5.57	10.8	21.8	
9-Sep-15	0.00	5.89	5.89	11.4	20.4	
18-Sep-15	0.00	4.91	4.91	11.2	19.9	
25-Sep-15	0.00	5.01	5.01	11.5	16.5	
30-Sep-15	0.00	5.00	5.00	11.5	12.3	
15-Oct-15	0.00	3.92	3.92	11.7	9.1	
10-Nov-15	1.54	2.95	4.49	11.2	5.6	
8-Dec-15	0.00	5.09	5.09	11.0	2.5	
9-Feb-16	0.64	5.13	5.77	9.2	0.0	
9-Mar-16	3.45	2.82	6.27	9.0	15.0	
12-Apr-16	4.51	2.36	6.87	7.6	5.0	
10-May-16	4.16	2.14	6.30	8.2	15.0	
14-Jun-16	5.40	0.00	5.40	9.2	25.0	
7-Jul-16	0.00	5.61	5.61	9.9	27.9	
12-Jul-16	4.13	0	4.13	10.0	32.0	
21-Jul-16	3.68	0	3.68	10.3	19.2	
28-Jul-16	3.72	0	3.72	10.5	24.3	
4-Aug-16	4.08	0	4.08	10.9	25.2	
9-Aug-16	3.85	0	3.85	11.5	35.0	
18-Aug-16	4.4	0	4.40	11.6	20.2	
25-Aug-16	4.15	0	4.15	11.9	24.6	
1-Sep-16	3.65	0	3.65	12.1	19	
8-Sep-16	3.39	0	3.39	12.2	23.4	
13-Sep-16	0.00	4.29	4.29		27.0	
22-Sep-16	3.03	0	3.03	12.1	18.3	
30-Sep-16	2.96	0	2.96	12.1	13.8	
12-Oct-16	2.28	0	2.28	15.3	20.0	
8-Nov-16	3.72	0	3.72	15.1	10.0	
13-Dec-16	3.44	0	3.44	14.1	-5.0	
10-Jan-17	4.06	0	4.06	9.5	-1.2	
14-Feb-17	4.65	0	4.65	8.5	-0.9	
14-Mar-17	4.66	0	4.66	7.3	-10.6	
11-Apr-17	6.60	0	6.60	8.4	14.6	
9-May-17	4.85	0	4.85	8.4	11.6	
13-Jun-17	5.13	0	5.13	8.7	19.2	
6-Jul-17	4.76	0	4.76	9.6	23.6	
12-Jul-17	4.60	0	4.60	10.1	24.2	
20-Jul-17	4.91	0	4.91	9.9	18.0	
27-Jul-17	4.50	0	4.50	10.1	23.7	
3-Aug-17	4.07	0	4.07	10.3	23.4	
11-Aug-17	3.79	0	3.79	10.5	18.7	
15-Aug-17	3.65	0	3.65	10.4	19.9	

Table 5.3

Surface Water Flow at SW4 (Pumphouse)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Date	Large Diameter Port (Upper) (L/s)	Small Diameter Port (Lower) (L/s)	Total Flow (L/s)	Water Temp. (deg. C)	Air Temp. (deg. C)	Notes:
24-Aug-17	3.39	0	3.39	10.6	16.2	
31-Aug-17	3.33	0	3.33	10.8	15.1	
7-Sep-17	3.03	0	3.03	10.7	15.8	
12-Sep-17	3.26	0	3.26	10.8	20.5	
21-Sep-17	2.72	0	2.72	10.7	20.7	
28-Sep-17	2.55	0	2.55	10.9	11.8	
11-Oct-17	2.67	0	2.67	10.9	8.9	
14-Nov-17	3.23	0	3.23	10.1	7.1	
12-Dec-17	2.67	0	2.67	8.7	-10.5	

Table 6.1

2017 North Quarry and Extension Dewatering
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Date	Daily Flow Totals[1] To Reservoir m^3	To Operations m^3	Total (PTTW Limit = 64,800) m^3
1/1/2017	11,400	0	11,400
1/2/2017	11,355	0	11,355
1/3/2017	11,317	0	11,317
1/4/2017	11,317	0	11,317
1/5/2017	12,919	0	12,919
1/6/2017	13,088	0	13,088
1/7/2017	8,420	0	8,420
1/8/2017	7,191	0	7,191
1/9/2017	7,634	0	7,634
1/10/2017	10,248	0	10,248
1/11/2017	13,925	0	13,925
1/12/2017	13,819	0	13,819
1/13/2017	13,147	0	13,147
1/14/2017	12,821	0	12,821
1/15/2017	12,821	0	12,821
1/16/2017	12,821	0	12,821
1/17/2017	10,409	0	10,409
1/18/2017	9,643	0	9,643
1/19/2017	11,934	0	11,934
1/20/2017	12,346	0	12,346
1/21/2017	12,374	0	12,374
1/22/2017	12,374	0	12,374
1/23/2017	5,763	0	5,763
1/24/2017	7,165	0	7,165
1/25/2017	10,281	0	10,281
1/26/2017	10,516	0	10,516
1/27/2017	9,097	0	9,097
1/28/2017	7,896	0	7,896
1/29/2017	7,896	0	7,896
1/30/2017	6,712	0	6,712
1/31/2017	5,456	0	5,456
2/1/2017	6,344	0	6,344
2/2/2017	6,118	0	6,118
2/3/2017	5,759	0	5,759
2/4/2017	5,748	0	5,748
2/5/2017	5,748	0	5,748
2/6/2017	5,185	0	5,185
2/7/2017	9,276	0	9,276
2/8/2017	11,427	0	11,427
2/9/2017	7,932	0	7,932
2/10/2017	5,781	0	5,781
2/11/2017	7,279	0	7,279
2/12/2017	7,055	0	7,055
2/13/2017	6,517	0	6,517
2/14/2017	6,953	0	6,953
2/15/2017	4,803	0	4,803
2/16/2017	7,959	0	7,959
2/17/2017	9,663	0	9,663
2/18/2017	9,415	0	9,415
2/19/2017	9,415	0	9,415
2/20/2017	9,415	0	9,415
2/21/2017	8,805	0	8,805
2/22/2017	8,500	0	8,500
2/23/2017	10,919	0	10,919
2/24/2017	10,964	0	10,964
2/25/2017	9,186	0	9,186
2/26/2017	9,186	0	9,186
2/27/2017	6,660	0	6,660
2/28/2017	8,503	0	8,503
3/1/2017	12,500	0	12,500
3/2/2017	12,533	0	12,533
3/3/2017	10,760	0	10,760
3/4/2017	7,804	0	7,804
3/5/2017	7,804	0	7,804
3/6/2017	9,083	0	9,083
3/7/2017	9,464	0	9,464
3/8/2017	7,204	0	7,204
3/9/2017	8,671	0	8,671
3/10/2017	9,669	0	9,669
3/11/2017	7,143	0	7,143
3/12/2017	5,931	0	5,931
3/13/2017	6,468	0	6,468
3/14/2017	5,985	0	5,985
3/15/2017	3,706	0	3,706
3/16/2017	7,189	0	7,189
3/17/2017	8,956	0	8,956
3/18/2017	7,704	0	7,704
3/19/2017	7,704	0	7,704
3/20/2017	7,575	0	7,575
3/21/2017	8,530	0	8,530
3/22/2017	9,021	0	9,021
3/23/2017	4,135	0	4,135
3/24/2017	5,070	0	5,070
3/25/2017	9,178	0	9,178
3/26/2017	9,178	0	9,178
3/27/2017	10,564	0	10,564
3/28/2017	12,505	0	12,505
3/29/2017	7,617	0	7,617
3/30/2017	5,269	0	5,269
3/31/2017	10,256	0	10,256
4/1/2017	11,360	0	11,360
4/2/2017	6,676	0	6,676
4/3/2017	4,334	0	4,334
4/4/2017	7,902	0	7,902
4/5/2017	11,257	0	11,257
4/6/2017	12,061	0	12,061
4/7/2017	12,135	0	12,135
4/8/2017	12,354	0	12,354
4/9/2017	12,354	0	12,354
4/10/2017	12,285	0	12,285
4/11/2017	12,250	0	12,250
4/12/2017	12,200	0	12,200
4/13/2017	8,058	0	8,058
4/14/2017	5,835	0	5,835
4/15/2017	5,835	0	5,835
4/16/2017	5,835	0	5,835
4/17/2017	9,628	0	9,628
4/18/2017	12,232	0	12,232
4/19/2017	11,998	0	11,998
4/20/2017	12,168	0	12,168
4/21/2017	9,368	0	9,368
4/22/2017	11,862	0	11,862
4/23/2017	14,751	0	14,751
4/24/2017	12,260	0	12,260
4/25/2017	10,238	0	10,238
4/26/2017	9,561	0	9,561
4/27/2017	10,438	0	10,438
4/28/2017	5,952	0	5,952
4/29/2017	6,972	0	6,972
4/30/2017	5,154	0	5,154
5/1/2017	7,514	0	7,514
5/2/2017	12,012	0	12,012
5/3/2017	11,749	0	11,749
5/4/2017	11,987	0	11,987
5/5/2017	12,045	0	12,045
5/6/2017	11,988	0	11,988
5/7/2017	11,988	0	11,988
5/8/2017	12,182	0	12,182
5/9/2017	11,854	0	11,854
5/10/2017	11,857	0	11,857
5/11/2017	11,575	0	11,575
5/12/2017	9,844	0	9,844
5/13/2017	8,693	0	8,693
5/14/2017	8,693	0	8,693
5/15/2017	8,693	0	8,693
5/16/2017	8,693	0	8,693
5/17/2017	9,304	0	9,304
5/18/2017	9,670	0	9,670
5/19/2017	9,670	0	9,670
5/20/2017	9,670	0	9,670
5/21/2017	9,670	0	9,670
5/22/2017	9,670	0	9,670
5/23/2017	9,670	0	9,670
5/24/2017	9,670	0	9,670
5/25/2017	11,107	0	11,107
5/26/2017	11,826	0	11,826
5/27/2017	11,826	0	11,826
5/28/2017	11,826	0	11,826
5/29/2017	11,688	0	11,688
5/30/2017	11,795	0	11,795
5/31/2017	11,511	0	11,511
6/1/2017	11,498	0	11,498
6/2/2017	11,354	0	11,354
6/3/2017	11,076	0	11,076
6/4/2017	11,076	0	11,076
6/5/2017	11,228	0	11,228
6/6/2017	11,100	0	11,100
6/7/2017	10,924	0	10,924
6/8/2017	7,668	0	7,668
6/9/2017	6,179	0	6,179
6/10/2017	5,923	0	5,923
6/11/2017	8,180	0	8,180
6/12/2017	8,691	0	8,691
6/13/2017	7,192	0	7,192
6/14/2017	7,192	0	7,192
6/15/2017	7,192	0	7,192
6/16/2017	7,192	0	7,192
6/17/2017	7,192	0	7,192
6/18/2017	4,385	0	4,385
6/19/2017	3,230	0	3,230
6/20/2017	3,230	0	3,230
6/21/2017	3,230	0	3,230
6/22/2017	3,230	0	3,230
6/23/2017	8,420	0	8,420
6/24/2017	11,015	0	11,015
6/25/2017	11,015	0	11,015
6/26/2017	11,015	0	11,015
6/27/2017	11,015	0	11,015
6/28/2017	11,015	0	11,015
6/29/2017	11,015	0	11,015
6/30/2017	11,015	0	11,015
7/1/2017	11,015	0	11,015
7/2/2017	9,312	0	9,312
7/3/2017	7,872	0	7,872
7/4/2017	6,351	0	6,351
7/5/2017	1,790	0	1,790
7/6/2017	1,790	0	1,790
7/7/2017	1,790	0	1,790
7/8/2017	1,790	0	1,790
7/9/2017	1,790	0	1,790
7/10/2017	6,139	0	6,139
7/11/2017	11,756	0	11,756
7/12/2017	11,490	0	11,490
7/13/2017	11,446	0	11,446
7/14/2017	10,650	0	10,650
7/15/2017	10,221	0	10,221
7/16/2017	10,221	0	10,221
7/17/2017	10,221	0	10,221
7/18/2017	10,221	0	10,221
7/19/2017	5,425	0	5,425
7/20/2017	3,826	0	3,826
7/21/2017	3,826	0	3,826
7/22/2017	3,826	0	3,826
7/23/2017	3,826	0	3,826
7/24/2017	5,985	0	5,985
7/25/2017	9,007	0	9,007
7/26/2017	9,007	0	9,007
7/27/2017	9,007	0	9,007
7/28/2017	9,007	0	9,007
7/29/2017	3,009	0	3,009
7/30/2017	10	0	10
7/31/2017	5,962	0	5,962
8/1/2017	9,999	0	9,999
8/2/2017	9,361	0	9,361
8/3/2017	9,361	0	9,361
8/4/2017	9,356	0	9,356
8/5/2017	9,332	0	9,332
8/6/2017	9,332	0	9,332
8/7/2017	9,332	0	9,332
8/8/2017	9,332	0	9,332
8/9/2017	9,332	0	9,332
8/10/2017	9,332	0	9,332
8/11/2017	8,785	0	8,785
8/12/2017	8,512	0	8,512
8/13/2017	8,512	0	8,512
8/14/2017	8,512	0	8,512
8/15/2017	8,512	0	8,512
8/16/2017	8,512	0	8,512
8/17/2017	9,985	0	9,985
8/18/2017	6,274	0	6,274
8/19/2017	3,910	0	3,910
8/20/2017	3,910	0	3,910
8/21/2017	8,699	0	8,699
8/22/2017	11,064	0	11,064
8/23/2017	10,929	0	10,929
8/24/2017	9,482	0	9,482
8/25/2017	6,585	0	6,585
8/26/2017	5,151	0	5,151
8/27/2017	5,151	0	5,151
8/28/2017	6,252	0	6,252
8/29/2017	5,586	0	5,586
8/30/2017	1,974	0	1,974
8/31/2017	3,931	0	3,931
9/1/2017	5,895	0	5,895
9/2/2017	5,895	0	5,895
9/3/2017	5,895	0	5,895
9/4/2017	4,599	0	4,599
9/5/2017	5,317	0	5,317
9/6/2017	9,431	0	9,431
9/7/2017	641	0	641
9/8/2017	5,651	0	5,651
9/9/2017	11,620	0	11,620
9/10/2017	11,620	0	11,620
9/11/2017	9,412	0	9,412
9/12/2017	3,889	0	3,889
9/13/2017	1,522	0	1,522
9/14/2017	5,281	0	5,281
9/15/2017	7,744	0	7,744
9/16/2017	7,744	0	7,744
9/17/2017	7,744	0	7,744
9/18/2017	6,837	0	6,837
9/19/2017	1,843	0	1,843
9/20/2017	8,420	0	8,420
9/21/2017	4,708	0	4,708
9/22/2017	799	0	799
9/23/2017	799	0	799
9/24/2017	3,420	0	3,420
9/25/2017	4,731	0	4,731
9/26/2017	4,731	0	4,731
9/27/2017	9,454	0	9,454
9/28/2017	10,927	0	10,927
9/29/2017	6,021	0	6,021
9/30/2017	3,751	0	3,751
10/1/2017	6,824	0	6,824
10/2/2017	6,626	0	6,626
10/3/2017	3,412	0	3,412
10/4/2017	3,412	0	3,412
10/5/2017	3,412	0	3,412
10/6/2017	3,412	0	3,412
10/7/2017	3,412	0	3,412
10/8/2017	3,412	0	3,412
10/9/2017	3,412	0	3,412
10/10/2017	3,412	0	3,412
10/11/2017	7,420	0	7,420
10/12/2017	10,282	0	10,282
10/13/2017	10,282	0	10,282
10/14/2017	10,282	0	10,282
10/15/2017	10,282	0	10,282
10/16/2017	10,282	0	10,282
10/17/2017	5,763	0	5,763
10/18/2017	6,396	0	6,396
10/19/2017	7,903	0	7,903
10/20/2017	3,658	0	3,658
10/21/2017	6	0	6
10/22/2017	7,421	0	7,421
10/23/2017	11,371	0	11,371
10/24/2017	11,239	0	11,239
10/25/2017	10,416	0	10,416
10/26/2017	5,425	0	5,425
10/27/2017	8,397	0	8,397
10/28/2017	3,483	0	3,483
10/29/2017	0	0	0
10/30/2017	3,105	0	3,105
10/31/2017	9,840	0	9,840
11/1/2017	8,871	0	8,871
11/2/2017	4,632	0	4,632
11/3/2017	8,444	0	8,444
11/4/2017	11,464	0	11,464
11/5/2017	11,464	0	11,464
11/6/2017	11,567	0	11,567
11/7/2017	10,865	0	10,865
11/8/2017	7,229	0	7,229
11/9/2017	5,992	0	5,992
11/10/2017	4,987	0	4,987
11/11/2017	4,355	0	4,355
11/12/2017	4,355	0	4,355
11/13/2017	8,679	0	8,679
11/14/2017	6,927	0	6,927
11/15/2017	5,312	0	5,312
11/16/2017	5,312	0	5,312
11/17/2017	5,312	0	5,312
11/18/2017	5,312	0	5,312
11/19/2017	5,312	0	5,312
11/20/2017	9,625	0	9,625
11/21/2017	11,726	0	11,726
11/22/2017	11,536	0	11,536
11/23/2017	11,496	0	11,496
11/24/2017	4,018	0	4,018
11/25/2017	273	0	273
11/26/2017	273	0	273
11/27/2017	6,910	0	6,910
11/28/2017	11,649	0	11,649
11/29/2017	11,498	0	11,498
11/30/2017	5,005	0	5,005
12/1/2017	8,952	0	8,952
12/2/2017	2,715	0	2,715
12/3/2017	2,715	0	2,715
12/4/2017	6,660	0	6,660
12/5/2017	9,791	0	9,791
12/6/2017	9,054	0	9,054
12/7/2017	7,590	0	7,590
12/8/2017	6,049	0	6,049
12/9/2017	6,049	0	6,049
12/10/2017	6,049	0	6,049
12/11/2017	6,396	0	6,396
12/12/2017	8,109	0	8,109
12/13/2017	3,472	0	3,472
12/14/2017	5,369	0	5,369
12/15/2017	9,738	0	9,738
12/16/2017	3,384	0	3,384
12/17/2017	5,805	0	5,805
12/18/2017	9,910	0	9,910
12/19/2017	9,180	0	9,180
12/20/2017	7,828	0	7,828
12/21/2017	8,564	0	8,564
12/22/2017	9,362	0	9,362
12/23/2017	4,681	0	4,681
12/24/2017	0	0	0
12/25/2017	0	0	0
12/26/2017	0	0	0
12/27/2017	0	0	0
12/28/2017	0	0	0
12/29/2017	8,882	0	8,882
12/30/2017	11,302	0	11,302
12/31/2017	10,848	0	10,848

Monthly Flow Totals[1][2]

Month	To Reservoir m^3	To Operations m^3	Total Monthly Dewatering m^3
January	324,103	0	324,103
February	220,516	0	220,516
March	255,173	0	255,173
April	295,313	0	295,313
May	329,944	0	329,944
June	253,691	0	253,691
July	207,588	0	207,588
August	244,295	0	244,295
September	176,344	0	176,344
October	193,999	0	193,999
November	220,401	0	220,401
December	188,452	0	188,452
TOTAL:	2,909,818		2,909,818

Note:

(1) Daily flow totals based on interpolation of periodic manual flowmeter readings and information on where the flow was directed (reservoir or operations) Where Dufferin has provided the date/time/flowmeter information associated with a switch in where the flow was directed this information is used to divide the flow accordingly. Where an observation of flow direction provided by Dufferin is different from the previously noted direction it is assumed that the change in direction occurred at 0:00 hrs on the day of the different observation.

Table 6.2

2017 North Quarry and Extension Dewatering Water Taking
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Step 1 Determine 2016 North Quarry and Extension Dewatering

941,562 m^3/year (2,579,620 L/day) (From Table 6.2, 2016 Annual Monitoring Report) (2)

Step 2 Determine Total Area Stripped in 2017 (1)

Approximately 39,452 m^2

Step 3 Estimated Increase Dewatering from 2016 to 2017

Per PTTW, flow estimated from increased taking due to reduced evapotranspiration (222 mm/year) and captured runoff (166 mm/year) over additional area

0.222 m/year + 0.166 m/year = 0.388 m/year

Additional dewatering required:
0.388 m/year X 39,452 m^2 = 15,307 m^3/year

Step 4 Calculate Total Dewatering for 2017

941,562 m^3/year + 15,307 m^3/year = 956,870 m^3/year (2,621,560 L/day)

Note:

(1) Area stripped of overburden, not extracted area.
(2) The total for 2016 has been corrected; Step 4 was not summed correctly in the 2016 Annual.

Table 6.3

Comparison of North Quarry and Extension Discharge Quantities (2001 To 2017)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Year	Water Taking (L)[1]	Water Handling (L)[2]	
2001	160,324,000	160,324,000	
2002	441,447,000	441,447,000	
2003	503,697,473	503,697,473	
2004	623,782,118	623,782,118	
2005	718,895,348	718,895,348	
2006	735,459,903	735,459,903	
2007	754,046,703	450,934,401	
2008	759,866,700	840,326,000	
2009	781,423,204	1,253,041,000	
2010	793,295,070	1,018,752,000	
2011	802,654,950	1,368,801,000	
2012	840,753,841	1,352,396,562	
2013	867,201,020	2,067,246,824	
2014	884,193,964	2,274,525,873	
2015	900,673,100	2,861,391,838	(4)
2016	941,562,480	2,548,292,791	(5)
2017	956,869,837	2,909,817,514	
PTTW[3]	1,359,000,000	23,652,000,000	

Notes:

(1) The water taking is calculated on an annual basis starting in 2007 because the North Quarry Recharge System became operational in 2007, at which time water taking and water handling are no longer the same because of the recirculation of water from the groundwater recharge well system. Prior to 2007 the water taking is based on a 1999 pump calibration by CRA.

(2) The water handling is not a taking from the environment, but rather the handling of both water taken from the environment and recharge water that recirculates back into the quarry cells.

(3) Limits of annual water taking and water handling allowed by the PTTW No. 0117-8BHQPL, effective December 16, 2010, and 8575-A3BKYB, effective November 23, 2015.

(4) This value has been corrected to match the total presented in Table 6.1 of the 2015 Annual Water Monitoring Report.

(5) This value has been corrected to fix an addition error.

Table 6.4

2017 Recharge System Flows
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Date	Total Daily Recharge Flow (PTTW Limit = 51,840) m^3	Date	Total Daily Recharge Flow (PTTW Limit = 51,840) m^3	Date	Total Daily Recharge Flow (PTTW Limit = 51,840) m^3	Date	Total Daily Recharge Flow (PTTW Limit = 51,840) m^3	Date	Total Daily Recharge Flow (PTTW Limit = 51,840) m^3	Date	Total Daily Recharge Flow (PTTW Limit = 51,840) m^3
1/1/2017	7,421	3/13/2017	6,360	5/23/2017	8,217	8/2/2017	7,742	10/12/2017	7,061	12/22/2017	9,416
1/2/2017	7,168	3/14/2017	6,257	5/24/2017	8,118	8/3/2017	11,280	10/13/2017	7,284	12/23/2017	8,933
1/3/2017	6,843	3/15/2017	6,493	5/25/2017	7,543	8/4/2017	6,920	10/14/2017	7,656	12/24/2017	8,688
1/4/2017	6,889	3/16/2017	7,181	5/26/2017	7,374	8/5/2017	7,590	10/15/2017	7,594	12/25/2017	8,692
1/5/2017	9,944	3/17/2017	7,000	5/27/2017	7,564	8/6/2017	7,589	10/16/2017	7,199	12/26/2017	8,639
1/6/2017	7,143	3/18/2017	6,987	5/28/2017	7,698	8/7/2017	7,663	10/17/2017	7,237	12/27/2017	9,403
1/7/2017	7,401	3/19/2017	6,874	5/29/2017	7,738	8/8/2017	7,884	10/18/2017	7,279	12/28/2017	9,406
1/8/2017	7,498	3/20/2017	7,552	5/30/2017	7,599	8/9/2017	8,213	10/19/2017	7,241	12/29/2017	9,625
1/9/2017	7,141	3/21/2017	8,102	5/31/2017	7,862	8/10/2017	8,013	10/20/2017	7,198	12/30/2017	9,600
1/10/2017	6,869	3/22/2017	8,233	6/1/2017	7,722	8/11/2017	8,049	10/21/2017	7,456	12/31/2017	9,443
1/11/2017	7,170	3/23/2017	8,760	6/2/2017	7,893	8/12/2017	8,190	10/22/2017	7,370		
1/12/2017	6,497	3/24/2017	8,480	6/3/2017	7,985	8/13/2017	8,135	10/23/2017	6,942		
1/13/2017	6,386	3/25/2017	8,296	6/4/2017	7,803	8/14/2017	8,007	10/24/2017	7,105		
1/14/2017	6,195	3/26/2017	7,928	6/5/2017	8,156	8/15/2017	7,805	10/25/2017	7,160		
1/15/2017	6,332	3/27/2017	8,143	6/6/2017	8,387	8/16/2017	8,067	10/26/2017	7,200		
1/16/2017	6,420	3/28/2017	8,335	6/7/2017	8,592	8/17/2017	7,708	10/27/2017	7,163		
1/17/2017	6,382	3/29/2017	9,261	6/8/2017	8,244	8/18/2017	7,743	10/28/2017	7,227		
1/18/2017	6,185	3/30/2017	9,244	6/9/2017	8,542	8/19/2017	7,759	10/29/2017	7,065		
1/19/2017	6,360	3/31/2017	8,598	6/10/2017	8,429	8/20/2017	7,842	10/30/2017	7,158		
1/20/2017	6,379	4/1/2017	8,808	6/11/2017	8,118	8/21/2017	7,707	10/31/2017	7,277		
1/21/2017	6,368	4/2/2017	8,296	6/12/2017	9,595	8/22/2017	7,497	11/1/2017	5,078		
1/22/2017	6,203	4/3/2017	8,124	6/13/2017	10,191	8/23/2017	7,869	11/2/2017	7,875		
1/23/2017	6,402	4/4/2017	7,883	6/14/2017	9,641	8/24/2017	7,849	11/3/2017	7,291		
1/24/2017	6,338	4/5/2017	7,778	6/15/2017	9,756	8/25/2017	7,314	11/4/2017	7,139		
1/25/2017	6,159	4/6/2017	7,316	6/16/2017	10,026	8/26/2017	7,325	11/5/2017	6,900		
1/26/2017	6,356	4/7/2017	6,869	6/17/2017	9,651	8/27/2017	7,617	11/6/2017	7,008		
1/27/2017	6,189	4/8/2017	6,978	6/18/2017	9,056	8/28/2017	7,091	11/7/2017	6,979		
1/28/2017	6,589	4/9/2017	6,915	6/19/2017	10,143	8/29/2017	6,942	11/8/2017	6,898		
1/29/2017	6,694	4/10/2017	6,777	6/20/2017	10,399	8/30/2017	6,911	11/9/2017	6,983		
1/30/2017	6,653	4/11/2017	7,018	6/21/2017	9,967	8/31/2017	6,954	11/10/2017	7,144		
1/31/2017	6,458	4/12/2017	7,154	6/22/2017	10,061	9/1/2017	6,926	11/11/2017	7,076		
2/1/2017	6,674	4/13/2017	7,535	6/23/2017	9,519	9/2/2017	6,818	11/12/2017	7,158		
2/2/2017	6,587	4/14/2017	7,444	6/24/2017	9,149	9/3/2017	6,878	11/13/2017	6,887		
2/3/2017	6,508	4/15/2017	7,209	6/25/2017	8,657	9/4/2017	6,812	11/14/2017	7,027		
2/4/2017	6,796	4/16/2017	7,336	6/26/2017	8,682	9/5/2017	6,870	11/15/2017	6,787		
2/5/2017	6,681	4/17/2017	7,576	6/27/2017	8,798	9/6/2017	6,874	11/16/2017	6,887		
2/6/2017	6,585	4/18/2017	7,758	6/28/2017	8,775	9/7/2017	6,691	11/17/2017	6,969		
2/7/2017	6,460	4/19/2017	7,591	6/29/2017	10,409	9/8/2017	6,959	11/18/2017	7,029		
2/8/2017	6,512	4/20/2017	11,199	6/30/2017	7,929	9/9/2017	7,022	11/19/2017	6,952		
2/9/2017	6,331	4/21/2017	7,339	7/1/2017	7,275	9/10/2017	7,100	11/20/2017	6,973		
2/10/2017	6,377	4/22/2017	7,500	7/2/2017	7,460	9/11/2017	6,975	11/21/2017	7,125		
2/11/2017	6,698	4/23/2017	7,528	7/3/2017	7,743	9/12/2017	7,201	11/22/2017	6,984		
2/12/2017	6,317	4/24/2017	7,609	7/4/2017	7,886	9/13/2017	7,151	11/23/2017	7,082		
2/13/2017	6,572	4/25/2017	3,748	7/5/2017	7,693	9/14/2017	7,213	11/24/2017	6,745		
2/14/2017	6,398	4/26/2017	3,748	7/6/2017	7,800	9/15/2017	7,081	11/25/2017	6,946		
2/15/2017	6,509	4/27/2017	7,755	7/7/2017	7,710	9/16/2017	7,207	11/26/2017	7,061		
2/16/2017	6,744	4/28/2017	8,064	7/8/2017	7,864	9/17/2017	7,176	11/27/2017	7,036		
2/17/2017	6,720	4/29/2017	7,987	7/9/2017	7,854	9/18/2017	7,011	11/28/2017	6,733		
2/18/2017	6,567	4/30/2017	7,931	7/10/2017	7,762	9/19/2017	6,836	11/29/2017	7,038		
2/19/2017	6,706	5/1/2017	7,147	7/11/2017	8,259	9/20/2017	6,810	11/30/2017	6,955		
2/20/2017	6,801	5/2/2017	6,932	7/12/2017	8,418	9/21/2017	6,816	12/1/2017	7,094		
2/21/2017	6,600	5/3/2017	7,438	7/13/2017	8,141	9/22/2017	6,878	12/2/2017	6,937		
2/22/2017	6,317	5/4/2017	7,223	7/14/2017	7,672	9/23/2017	6,842	12/3/2017	7,068		
2/23/2017	6,440	5/5/2017	6,265	7/15/2017	8,067	9/24/2017	6,857	12/4/2017	7,013		
2/24/2017	6,368	5/6/2017	6,070	7/16/2017	7,763	9/25/2017	6,823	12/5/2017	6,798		
2/25/2017	5,985	5/7/2017	6,290	7/17/2017	7,696	9/26/2017	6,753	12/6/2017	7,283		
2/26/2017	5,953	5/8/2017	6,802	7/18/2017	7,868	9/27/2017	7,000	12/7/2017	7,272		
2/27/2017	5,951	5/9/2017	6,696	7/19/2017	7,818	9/28/2017	7,038	12/8/2017	7,677		
2/28/2017	5,932	5/10/2017	6,572	7/20/2017	7,526	9/29/2017	6,925	12/9/2017	7,481		
3/1/2017	5,835	5/11/2017	6,671	7/21/2017	7,691	9/30/2017	6,977	12/10/2017	7,715		
3/2/2017	6,018	5/12/2017	6,893	7/22/2017	7,474	10/1/2017	6,841	12/11/2017	7,553		
3/3/2017	9,791	5/13/2017	7,072	7/23/2017	7,424	10/2/2017	7,044	12/12/2017	7,665		
3/4/2017	5,999	5/14/2017	7,117	7/24/2017	7,585	10/3/2017	6,914	12/13/2017	7,986		
3/5/2017	5,973	5/15/2017	7,184	7/25/2017	7,737	10/4/2017	6,870	12/14/2017	7,924		
3/6/2017	6,031	5/16/2017	7,436	7/26/2017	7,989	10/5/2017	10,742	12/15/2017	8,238		
3/7/2017	6,022	5/17/2017	7,560	7/27/2017	7,620	10/6/2017	7,043	12/16/2017	7,850		
3/8/2017	6,111	5/18/2017	11,222	7/28/2017	7,873	10/7/2017	6,919	12/17/2017	7,782		
3/9/2017	6,153	5/19/2017	7,958	7/29/2017	8,226	10/8/2017	7,177	12/18/2017	7,809		
3/10/2017	6,240	5/20/2017	7,751	7/30/2017	8,204	10/9/2017	7,159	12/19/2017	8,547		
3/11/2017	6,544	5/21/2017	7,797	7/31/2017	7,893	10/10/2017	7,019	12/20/2017	8,423		
3/12/2017	6,646	5/22/2017	7,774	8/1/2017	7,855	10/11/2017	7,072	12/21/2017	9,524		

Month	Monthly Flow Totals at Recharge Pump Station (m^3)	Monthly Sum of Recharge Well and Wetland Flow Totals (m^3)	
January	209,032	223,893	
February	181,089	173,562	
March	225,447	207,243	
April	222,772	205,566	
May	229,583	252,801	
June	270,275	254,738	
July	241,991	264,088	
August	241,130	206,055	
September	208,520	184,608	
October	225,672	247,162	
November	208,745	196,951	
December	253,484	233,711	
TOTAL:	2,717,740	2,650,378	(1)
PTTW Limit:	18,921,600		

Note:

(1) The difference between the total flow at the pump station and the total recharge well and wetland flow is less than 3%.

Table 6.5

Main Quarry Discharge Summary (2017)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Date	Daily Flow Totals: Lake Discharge 4" Pump m^3	Reservoir Discharge m^3	Total (PTTW Limit = 17,280) m^3
1/1/2017	650	461	1,111
1/2/2017	650	470	1,120
1/3/2017	649	465	1,114
1/4/2017	648	410	1,058
1/5/2017	648	388	1,036
1/6/2017	648	385	1,033
1/7/2017	648	367	1,015
1/8/2017	648	358	1,006
1/9/2017	648	367	1,015
1/10/2017	648	532	1,180
1/11/2017	648	557	1,205
1/12/2017	647	521	1,168
1/13/2017	647	435	1,082
1/14/2017	647	419	1,066
1/15/2017	647	433	1,080
1/16/2017	1,304	482	1,786
1/17/2017	285	502	787
1/18/2017	602	513	1,115
1/19/2017	602	514	1,116
1/20/2017	602	526	1,128
1/21/2017	602	557	1,159
1/22/2017	602	591	1,193
1/23/2017	602	591	1,193
1/24/2017	622	552	1,174
1/25/2017	648	466	1,114
1/26/2017	648	469	1,117
1/27/2017	648	463	1,111
1/28/2017	648	462	1,110
1/29/2017	648	457	1,105
1/30/2017	648	414	1,062
1/31/2017	648	451	1,099
2/1/2017	649	463	1,112
2/2/2017	649	459	1,108
2/3/2017	649	430	1,079
2/4/2017	649	433	1,082
2/5/2017	649	469	1,118
2/6/2017	649	454	1,103
2/7/2017	649	465	1,114
2/8/2017	650	477	1,127
2/9/2017	650	444	1,094
2/10/2017	650	453	1,103
2/11/2017	650	479	1,129
2/12/2017	650	501	1,151
2/13/2017	650	498	1,148
2/14/2017	650	482	1,132
2/15/2017	650	467	1,117
2/16/2017	650	449	1,099
2/17/2017	651	439	1,090
2/18/2017	651	497	1,148
2/19/2017	651	522	1,173
2/20/2017	651	497	1,148
2/21/2017	651	462	1,113
2/22/2017	651	366	1,017
2/23/2017	651	329	980
2/24/2017	651	316	967
2/25/2017	651	285	936
2/26/2017	651	235	886
2/27/2017	651	229	880
2/28/2017	651	243	894
3/1/2017	652	249	901
3/2/2017	652	320	972
3/3/2017	652	387	1,039
3/4/2017	652	378	1,030
3/5/2017	652	388	1,040
3/6/2017	652	452	1,104
3/7/2017	649	455	1,104
3/8/2017	645	425	1,070
3/9/2017	645	358	1,003
3/10/2017	645	346	991
3/11/2017	645	324	969
3/12/2017	645	318	963
3/13/2017	645	318	963
3/14/2017	645	338	983
3/15/2017	645	423	1,068
3/16/2017	646	412	1,058
3/17/2017	647	333	980
3/18/2017	647	337	984
3/19/2017	647	328	975
3/20/2017	647	340	987
3/21/2017	646	384	1,030
3/22/2017	646	391	1,037
3/23/2017	646	323	969
3/24/2017	646	335	981
3/25/2017	646	322	968
3/26/2017	646	302	948
3/27/2017	646	312	958
3/28/2017	646	307	953
3/29/2017	647	345	992
3/30/2017	648	463	1,111
3/31/2017	648	528	1,176
4/1/2017	648	528	1,176
4/2/2017	648	528	1,176
4/3/2017	648	528	1,176
4/4/2017	648	528	1,176
4/5/2017	650	528	1,178
4/6/2017	653	435	1,088
4/7/2017	653	320	973
4/8/2017	653	228	881
4/9/2017	653	243	896
4/10/2017	653	1,111	1,764
4/11/2017	653	3,190	3,843
4/12/2017	653	3,319	3,972
4/13/2017	654	3,159	3,813
4/14/2017	654	3,188	3,842
4/15/2017	654	3,205	3,859
4/16/2017	654	3,220	3,874
4/17/2017	654	3,163	3,817
4/18/2017	652	3,185	3,837
4/19/2017	649	3,232	3,881
4/20/2017	649	3,257	3,906
4/21/2017	649	3,268	3,917
4/22/2017	649	3,265	3,914
4/23/2017	649	3,230	3,879
4/24/2017	649	3,258	3,907
4/25/2017	649	4,156	4,805
4/26/2017	652	5,944	6,596
4/27/2017	655	5,388	6,043
4/28/2017	655	4,134	4,789
4/29/2017	655	4,198	4,853
4/30/2017	655	4,369	5,024
5/1/2017	655	7,595	8,250
5/2/2017	656	13,011	13,667
5/3/2017	657	15,236	15,893
5/4/2017	657	15,285	15,942
5/5/2017	657	15,657	16,314
5/6/2017	657	15,492	16,149
5/7/2017	657	15,212	15,869
5/8/2017	657	15,137	15,794
5/9/2017	657	15,433	16,090
5/10/2017	657	15,538	16,195
5/11/2017	664	15,449	16,113
5/12/2017	668	15,356	16,024
5/13/2017	668	15,299	15,967
5/14/2017	668	15,345	16,013
5/15/2017	668	15,101	15,769
5/16/2017	668	15,385	16,053
5/17/2017	661	15,385	16,046
5/18/2017	654	15,290	15,944
5/19/2017	654	15,055	15,709
5/20/2017	654	14,919	15,573
5/21/2017	654	14,943	15,597
5/22/2017	654	14,807	15,461
5/23/2017	654	14,616	15,270
5/24/2017	1,455	11,583	13,038
5/25/2017	2,511	6,821	9,332
5/26/2017	2,511	6,908	9,419
5/27/2017	2,511	6,930	9,441
5/28/2017	2,511	6,970	9,481
5/29/2017	2,511	7,007	9,518
5/30/2017	2,511	6,988	9,499
5/31/2017	2,531	6,970	9,501
6/1/2017	2,554	6,670	9,224
6/2/2017	2,554	6,907	9,461
6/3/2017	2,554	6,906	9,460
6/4/2017	2,554	6,982	9,536
6/5/2017	2,554	9,122	11,676
6/6/2017	2,561	11,842	14,403
6/7/2017	2,570	11,789	14,359
6/8/2017	2,570	11,736	14,306
6/9/2017	2,570	11,807	14,377
6/10/2017	2,570	11,770	14,340
6/11/2017	2,570	11,706	14,276
6/12/2017	2,570	11,629	14,199
6/13/2017	2,570	11,428	13,998
6/14/2017	2,570	11,036	13,606
6/15/2017	2,577	10,908	13,485
6/16/2017	2,581	7,391	9,972
6/17/2017	2,581	4,697	7,278
6/18/2017	2,581	4,731	7,312
6/19/2017	2,581	4,652	7,233
6/20/2017	2,589	4,576	7,165
6/21/2017	2,601	4,473	7,074
6/22/2017	2,601	4,446	7,047
6/23/2017	2,601	3,581	6,182
6/24/2017	2,601	3,202	5,803
6/25/2017	2,601	3,511	6,112
6/26/2017	2,601	3,573	6,174
6/27/2017	2,610	3,596	6,206
6/28/2017	2,622	3,624	6,246
6/29/2017	2,622	4,052	6,674
6/30/2017	2,622	5,439	8,061
7/1/2017	2,622	5,161	7,783
7/2/2017	2,622	5,160	7,782
7/3/2017	2,622	5,146	7,768
7/4/2017	2,622	5,319	7,941
7/5/2017	2,619	5,047	7,666
7/6/2017	2,613	5,051	7,664
7/7/2017	2,613	5,034	7,647
7/8/2017	2,613	4,915	7,528
7/9/2017	2,613	4,865	7,478
7/10/2017	2,613	4,872	7,485
7/11/2017	2,613	4,879	7,492
7/12/2017	2,613	4,924	7,537
7/13/2017	2,602	4,856	7,458
7/14/2017	2,592	4,908	7,500
7/15/2017	2,592	4,861	7,453
7/16/2017	2,592	4,904	7,496
7/17/2017	2,592	4,982	7,574
7/18/2017	2,592	4,890	7,482
7/19/2017	2,592	4,860	7,452
7/20/2017	1,761	4,788	6,549
7/21/2017	1,082	4,794	5,876
7/22/2017	1,082	4,752	5,834
7/23/2017	1,082	4,828	5,910
7/24/2017	1,082	4,756	5,838
7/25/2017	894	4,719	5,613
7/26/2017	745	4,681	5,426
7/27/2017	745	4,751	5,496
7/28/2017	745	4,693	5,438
7/29/2017	745	4,660	5,405
7/30/2017	745	4,631	5,376
7/31/2017	745	4,585	5,330
8/1/2017	576	4,672	5,248
8/2/2017	329	4,847	5,176
8/3/2017	329	4,829	5,158
8/4/2017	329	4,151	4,480
8/5/2017	329	4,886	5,215
8/6/2017	329	4,913	5,242
8/7/2017	329	4,924	5,253
8/8/2017	427	4,932	5,359
8/9/2017	562	4,896	5,458
8/10/2017	562	4,848	5,410
8/11/2017	562	4,860	5,422
8/12/2017	562	4,867	5,429
8/13/2017	562	4,843	5,405
8/14/2017	562	4,829	5,391
8/15/2017	562	4,826	5,388
8/16/2017	645	4,779	5,424
8/17/2017	750	4,752	5,502
8/18/2017	750	4,852	5,602
8/19/2017	750	4,772	5,522
8/20/2017	750	4,764	5,514
8/21/2017	750	4,745	5,495
8/22/2017	750	4,759	5,509
8/23/2017	751	4,615	5,366
8/24/2017	751	4,622	5,373
8/25/2017	751	4,591	5,342
8/26/2017	751	4,521	5,272
8/27/2017	751	4,556	5,307
8/28/2017	751	3,917	4,668
8/29/2017	751	3,834	4,585
8/30/2017	752	5,023	5,775
8/31/2017	752	4,991	5,743
9/1/2017	752	4,892	5,644
9/2/2017	752	4,916	5,668
9/3/2017	752	4,963	5,715
9/4/2017	752	4,988	5,740
9/5/2017	752	5,048	5,800
9/6/2017	754	5,883	6,637
9/7/2017	757	4,898	5,655
9/8/2017	757	4,905	5,662
9/9/2017	757	4,905	5,662
9/10/2017	757	4,829	5,586
9/11/2017	757	4,794	5,551
9/12/2017	757	4,771	5,528
9/13/2017	757	4,730	5,487
9/14/2017	756	4,705	5,461
9/15/2017	755	4,639	5,394
9/16/2017	755	4,587	5,342
9/17/2017	755	4,592	5,347
9/18/2017	755	4,611	5,366
9/19/2017	755	4,611	5,366
9/20/2017	754	4,492	5,246
9/21/2017	754	4,415	5,169
9/22/2017	754	4,432	5,186
9/23/2017	754	4,695	5,449
9/24/2017	754	4,683	5,437
9/25/2017	754	4,654	5,408
9/26/2017	754	4,596	5,350
9/27/2017	755	4,486	5,241
9/28/2017	755	4,323	5,078
9/29/2017	755	4,304	5,059
9/30/2017	755	4,112	4,867
10/1/2017	755	4,045	4,800
10/2/2017	755	1,685	2,440
10/3/2017	756	218	974
10/4/2017	757	227	984
10/5/2017	757	164	921
10/6/2017	757	223	980
10/7/2017	757	291	1,048
10/8/2017	757	275	1,032
10/9/2017	757	268	1,025
10/10/2017	757	226	983
10/11/2017	757	161	918
10/12/2017	758	278	1,036
10/13/2017	758	386	1,144
10/14/2017	758	402	1,160
10/15/2017	758	404	1,162
10/16/2017	758	331	1,089
10/17/2017	772	356	1,128
10/18/2017	788	328	1,116
10/19/2017	788	416	1,204
10/20/2017	788	496	1,284
10/21/2017	788	506	1,294
10/22/2017	788	510	1,298
10/23/2017	788	544	1,332
10/24/2017	791	493	1,284
10/25/2017	795	392	1,187
10/26/2017	795	395	1,190
10/27/2017	795	412	1,207
10/28/2017	795	405	1,200
10/29/2017	795	412	1,207
10/30/2017	795	386	1,181
10/31/2017	797	390	1,187
11/1/2017	799	385	1,184
11/2/2017	799	396	1,195
11/3/2017	799	355	1,154
11/4/2017	799	351	1,150
11/5/2017	799	343	1,142
11/6/2017	799	325	1,124
11/7/2017	796	293	1,089
11/8/2017	792	229	1,021
11/9/2017	792	239	1,031
11/10/2017	792	159	951
11/11/2017	792	153	945
11/12/2017	792	173	965
11/13/2017	792	280	1,072
11/14/2017	792	371	1,163
11/15/2017	792	392	1,184
11/16/2017	794	396	1,190
11/17/2017	794	350	1,144
11/18/2017	794	397	1,191
11/19/2017	794	341	1,135
11/20/2017	794	309	1,103
11/21/2017	795	323	1,118
11/22/2017	795	275	1,070
11/23/2017	795	245	1,040
11/24/2017	795	235	1,030
11/25/2017	795	221	1,016
11/26/2017	795	199	994
11/27/2017	795	180	975
11/28/2017	795	228	1,023
11/29/2017	795	331	1,126
11/30/2017	795	363	1,158
12/1/2017	795	360	1,155
12/2/2017	795	356	1,151
12/3/2017	795	349	1,144
12/4/2017	795	378	1,173
12/5/2017	794	409	1,203
12/6/2017	793	352	1,145
12/7/2017	793	340	1,133
12/8/2017	793	348	1,141
12/9/2017	793	350	1,143
12/10/2017	793	353	1,146
12/11/2017	793	367	1,160
12/12/2017	793	400	1,193
12/13/2017	793	386	1,179
12/14/2017	794	414	1,208
12/15/2017	794	435	1,229
12/16/2017	794	430	1,224
12/17/2017	794	406	1,200
12/18/2017	794	447	1,241
12/19/2017	794	442	1,236
12/20/2017	794	418	1,212
12/21/2017	794	415	1,209
12/22/2017	794	419	1,213
12/23/2017	794	422	1,216
12/24/2017	794	414	1,208
12/25/2017	794	445	1,239
12/26/2017	794	399	1,193
12/27/2017	793	391	1,184
12/28/2017	792	360	1,152
12/29/2017	792	376	1,168
12/30/2017	792	380	1,172
12/31/2017	792	326	1,118

Daily Flow Totals

Date	Lake Discharge 4" Pump m^3	Reservoir Discharge m^3	Total (PTTW Limit = 17,280) m^3

Actual Discharge Volume

Month	Lake Discharge 4" Pump (m^3)	Reservoir Discharge (m^3)	Total (m^3)	Actual Average Flow (1) (m^3/s)
January	20,076	14,578	34,654	0.013
February	18,202	11,843	30,045	0.012
March	20,060	11,241	31,301	0.012
April	19,549	78,306	97,855	0.038
May	34,208	400,723	434,931	0.162
June	77,462	217,782	295,244	0.114
July	61,011	151,272	212,283	0.079
August	18,813	146,216	165,029	0.062
September	22,645	141,459	164,104	0.063
October	23,975	16,025	40,000	0.015
November	23,845	8,837	32,682	0.013
December	24,604	12,087	36,691	0.014
TOTAL:	**364,449**	**1,210,369**	**1,574,818**	

Notes:

(1) Minimum annual discharge of 700,000 m^3 (per the October 2003 Main Quarry Water Management Agreement); Minimum 464,000 m^3 uniformly distributed between July 1 and September 30 (i.e., approximately 0.058 m^3/s average daily flows; per the April 2005 Storage and Operations Optimization Study by Philips Engineering Ltd.); Minimum 236,000 m^3 uniformly distributed between October 1 and June 30 (i.e., approximately 0.010 m^3/s average daily flows; per the April 2005 Storage and Operations Optimization Study by Philips Engineering Ltd.); Not-to-exceed discharge rate of 12,000 L/min (0.2 m^3/s; per Certificate of Approval No. 9119-7TSGXH and Permit to Take Water No. 0117-8BHQPL, 6445-GQZMES, and 8575-A3BKYB).

Table 6.6

Comparison of Main Quarry Discharge Quantities (1991 To 2017)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

	Volume of Water Pumped (L)									
Month	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
January	284,292,000	97,864,500	345,666,000	66,144,000	313,852,750	246,171,750	257,659,500	320,597,000	139,284,000	105,122,780
February	202,658,750	69,324,000	93,969,000	76,320,000	210,489,500	153,673,500	272,049,000	265,106,000	237,645,900	120,730,455
March	317,311,000	146,598,000	139,694,750	205,198,333	146,240,250	169,838,500	473,184,000	282,596,000	144,644,400	217,760,000
April	405,927,000	252,306,500	339,769,750	238,924,000	194,006,500	404,933,250	442,020,000	370,894,000	180,324,900	234,693,600
May	193,079,000	209,681,250	163,452,000	285,603,750	235,094,750	435,554,000	181,074,500	64,395,000	134,119,200	295,458,700
June	131,837,500	87,238,000	230,709,000	119,647,500	105,562,750	194,377,500	27,599,750	203,149,000	112,897,500	338,757,300
July	101,004,750	237,864,000	149,062,500	95,691,500	48,044,500	131,161,750	80,136,000	122,218,000	46,350,000	141,425,200
August	62,049,750	249,047,000	61,201,750	60,552,500	60,658,500	69,204,750	155,078,000	27,030,000	21,801,600	217,525,900
September	46,467,750	333,264,000	78,387,000	43,208,250	51,555,750	239,825,000	99,189,500	102,290,000	109,076,130	199,620,380
October	45,725,750	231,875,000	98,553,500	75,843,000	155,886,250	206,753,000	85,934,200	149,725,000	124,748,700	88,253,700
November	67,985,750	459,801,500	100,488,000	130,552,250	235,386,250	152,560,500	139,819,300	43,513,000	111,363,640	83,422,170
December	157,449,750	304,591,000	155,051,500	99,799,000	126,193,000	166,340,500	183,364,100	195,093,000	176,643,740	42,174,240
Total (L)	**2,015,788,750**	**2,679,454,750**	**1,956,004,750**	**1,497,484,083**	**1,882,970,750**	**2,570,394,000**	**2,397,107,850**	**2,146,606,000**	**1,538,899,710**	**2,084,944,425**

	Volume of Water Pumped (L)									
Month	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
January	34,988,610	317,925,251	64,239,400	217,825,500	128,987,370	38,266,350	14,346,000	47,546,000	366,850,654	26,638,000
February	234,412,200	250,571,120	61,125,600	221,380,500	26,877,000	33,111,180	7,709,000	18,131,000	366,081,034	25,148,000
March	315,862,630	223,426,590	125,526,310	373,956,900	21,726,000	19,836,090	6,972,000	28,374,000	446,768,000	228,249,000
April	225,026,680	226,518,650	227,154,800	358,357,800	69,204,990	52,002,000	10,547,000	24,587,816	425,298,000	275,476,000
May	219,863,940	164,961,800	216,571,000	433,116,000	79,021,890	150,270,460	57,375,000	29,020,377	371,337,000	32,091,000
June	111,169,430	112,964,940	219,146,500	302,220,600	21,921,200	143,594,240	37,920,000	24,871,373	49,161,000	51,017,000
July	70,322,710	70,893,000	219,216,400	77,334,000	72,760,000	62,041,000	81,265,000	120,670,552	147,548,000	159,706,000
August	86,470,260	156,273,800	48,751,900	70,319,100	102,080,500	92,949,000	131,565,000	188,255,496	156,152,000	152,345,000
September	80,469,500	118,369,050	194,385,200	22,827,300	143,058,730	123,422,000	176,423,000	174,145,000	138,366,000	149,670,000
October	12,908,000	71,687,320	235,523,500	0	171,914,600	138,923,600	119,461,000	32,686,000	36,363,000	36,801,000
November	55,071,470	48,097,190	151,477,600	90,775,800	87,839,200	214,885,701	64,070,000	35,226,865	25,896,000	29,128,000
December	378,883,288	49,654,280	180,956,400	0	1,537,000	277,212,000	69,996,000	159,780,000	22,090,000	28,875,000
Total (L)	**1,825,448,718**	**1,811,342,991**	**1,944,074,610**	**2,168,113,500**	**926,928,480**	**1,346,513,621**	**777,649,000**	**883,294,479**	**2,551,910,687**	**1,195,144,000**

Table 6.6

Comparison of Main Quarry Discharge Quantities (1991 To 2017)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

	Volume of Water Pumped (L)							Average (1991 thru 2017)
Month	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	
January	43,204,000	311,865,000	64,219,571	107,936,253	39,338,542	30,665,766	34,654,285	150,598,179
February	34,269,000	196,619,068	236,524,425	96,052,352	42,639,269	26,196,000	30,044,926	133,661,399
March	316,223,000	101,448,652	333,767,724	145,468,691	45,156,880	31,069,765	31,301,134	186,599,948
April	366,292,000	131,075,148	203,077,936	80,836,957	32,367,553	41,096,460	97,854,839	218,910,153
May	447,546,000	99,278,985	118,624,401	290,640,727	32,702,918	30,335,594	434,930,642	200,192,588
June	465,104,000	44,635,492	71,003,343	91,655,703	22,387,864	33,672,181	295,243,811	135,165,351
July	364,827,000	129,648,566	188,391,102	192,276,505	125,854,205	154,826,181	212,282,638	133,437,817
August	146,771,000	171,263,371	198,845,318	168,172,663	143,611,461	158,030,533	165,029,387	123,001,316
September	138,648,000	208,081,437	177,282,512	182,734,110	147,839,211	150,915,827	164,104,077	140,504,619
October	160,946,000	40,247,790	71,180,400	71,755,316	30,742,677	39,449,756	39,999,539	95,329,170
November	266,943,000	31,815,373	142,127,398	51,119,676	28,884,000	35,483,273	32,681,700	108,015,356
December	284,039,000	36,161,265	123,570,286	44,037,580	28,175,929	35,560,971	36,691,182	124,589,630
Total (L)	**3,034,812,000**	**1,502,140,146**	**1,928,614,418**	**1,522,686,532**	**719,700,510**	**767,302,307**	**1,574,818,161**	**1,750,005,527**

Table 6.7

2017 Overall Water Taking
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

	Main Quarry[1] Total (L)	North Quarry [3] and Extension Total (L)	Operations [4] Total (L)	Total Water Taking (L)
January	34,654,285	NA	NA	NA
February	30,044,926	NA	NA	NA
March	31,301,134	NA	NA	NA
April	97,854,839	NA	NA	NA
May	434,930,642	NA	NA	NA
June	295,243,811	NA	NA	NA
July	212,282,638	NA	NA	NA
August	165,029,387	NA	NA	NA
September	164,104,077	NA	NA	NA
October	39,999,539	NA	NA	NA
November	32,681,700	NA	NA	NA
December	36,691,182	NA	NA	NA
Total	**1,574,818,161**	**956,869,837**	**164,145,000**	**2,695,832,998**
PTTW [2]	**4,464,000,000**	**1,359,000,000**		**6,417,600,000**

Notes:

NA Not applicable.
(1) Includes discharge to the HFRT from the West Sump and the Reservoir.
(2) Limit of annual water taking allowed by the PTTW No. 0117-8BHQPL and 8575-A3BKYB.
(3) This water taking is calculated on an annual basis starting in 2007 because the Groundwater Recharge Well System became operational in 2007. Monthly water takings are not available subsequent to 2006.
(4) Per Appendix J.

Table 6.8

2017 Reservoir Water Balance
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

	Inflow					Outflow											
	North Quarry Sump (Direct to Reservoir) (6)(9) (m^3)	Central Sump (includes flow from Operations/Main Sump) (m^3)	Measured Precipitation(5) (mm)	Measured Precipitation(5) (m^3)	Total Inflow (m^3)	Loss Due to Evaporation (mm)	Loss Due to Evaporation (m^2) (1)	Loss Due to Evaporation (m^3)	Recharge System (m^3)	Reservoir Outfall (via Gravity Overflow or P01 Pump) to HFRT (7) (m^3)	Reservoir Outfall (via P02 Pump) to Lake/Wetland (m^3)	Reservoir Quarry Operation Pump Station (P-40 to Operations) (m^3)	Total Outflow (m^3)	Calculated Net Reservoir Change (m^3)	(4) Actual Reservoir Volume (m^3)	(2) Actual Net Reservoir Change (m^3)	Difference Between Net Reservoir Change (Calculated - Actual) (m^3)
				692,946 (3)											3,789,862 (4)		
January	324,103	176,746	99.0	68,602	569,451	-	680,032	0	209,032	14,578	32	5	223,647	345,804	4,110,241	320,379	25,425
February	220,516	122,041	76.4	52,941	395,498	-	681,954	0	181,089	11,843	0	0	192,932	202,566	4,329,986	219,744	-17,178
March	255,173	142,492	58.2	40,329	437,995	-	683,359	0	225,447	11,241	20	4,063	240,771	197,224	4,490,821	160,835	36,389
April	295,313	214,845	152.8	105,857	616,015	58.9	685,922	40,411	222,772	78,306	0	6,043	347,532	268,483	4,783,846	293,025	-24,542
May	329,944	285,174	151.3	104,833	719,951	70.1	686,389	48,116	229,583	400,723	34,501	6,552	719,475	476	4,837,444	53,598	-53,122
June	253,691	135,525 (10)	105.2	72,898	462,114	112.7	685,548	77,261	270,275	217,782	10	0 (10)	565,328	-103,214	4,741,118	-96,326	-6,888
July	207,588	135,015 (10)	51.6	35,756	378,359	75.3	684,437	51,538	241,991	151,272	0	12,635 (10)	457,436	-79,078	4,614,192	-126,926	47,849
August	244,295	99,803	56.9	39,429	383,526	71.1	683,000	48,561	241,130	146,216	0	51,512	487,419	-103,893	4,449,694	-164,498	60,605
September	176,344	83,055	24.1	16,700	276,099	72.4	681,326	49,328	208,520	141,459	0	46,482	445,789	-169,690	4,258,337	-191,357	21,667
October	193,999	57,594	68.8	47,675	299,267	38.4	681,206	26,158	225,672	16,025	71	22,618	290,544	8,723	4,244,704	-13,632	22,355
November	220,401	72,644	69.3	48,021	341,066	7.0	681,595	4,771	208,745	8,837	0	22,377	244,730	96,336	4,289,027	44,323	52,013
December	188,452	99,651	52.6	36,449	324,552	--	681,764	0	253,484	12,087	0	11,689	277,260	47,292	4,308,363	19,336	27,956
Totals	2,909,818	1,624,585	966.2	669,490	5,203,892	505.9		346,145	2,717,740	1,210,369 (8)	34,634	183,976	4,492,864	711,028		518,501	192,527

Notes:

(1) Actual reservoir surface area and volume calculated for each month by using the SW53 water level collected on the last day of the month (or interpolated between the days before and after the last day of the month) to determine the corresponding designed Reservoir surface area and volume.
(2) Net reservoir change is the difference between the current month's reservoir volume (calculated for the last day of the current month) to the previous month's reservoir volume (calculated for the last day of the previous month).
(3) Maximum designed reservoir surface area (to reflect total catchment area for precipitation).
(4) Actual reservoir volume measured at end of preceding year; volume calculated by using SW53 water level (measured December 31) to determine the corresponding stage-storage Reservoir volume and surface area.
(5) The Georgetown WWTP precipitation data was used to fill in this data; the Milton Quarry weather station was fitted for rainfall data collection from March 23, 2017 to December 8, 2017. See annual report text Section 4.2.
(6) Water flow into the dewatering watermain includes flow from West Cell dewatering.
(7) Excludes flow from Lake/Wetland to HFRT.
(8) This flow value is from Reservoir to HFRT, and does not include flow contribution from Lake/Wetland Complex to HFRT.
(9) The monthly North Quarry sump flow values were estimated using the manufacturer's pump curve and/or daily recorded pump rate data.
(10) Value is estimated based on interpolated reading using weekly manual readings. The datalogger became inoperable and hourly data is unavailable.

Table 6.9

Main Quarry Reservoir Stage - Storage Information
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Elevation From (m AMSL)	Elevation To (m AMSL)	Area (m^2)	Volume (m^3)	Cumulative Volume (m^3)
298.00	298.50	125	62	62
298.50	299.00	59,393	29,696	29,759
299.00	299.50	59,393	29,696	59,455
299.50	300.00	179,528	89,764	149,219
300.00	300.50	309,787	154,893	304,112
300.50	301.00	401,575	200,788	504,900
301.00	301.50	460,968	230,484	735,384
301.50	302.00	496,739	248,369	983,753
302.00	302.50	539,933	269,967	1,253,720
302.50	303.00	595,276	297,638	1,551,358
303.00	303.50	636,446	318,223	1,869,581
303.50	304.00	652,644	326,322	2,195,903
304.00	304.50	659,393	329,697	2,525,600
304.50	305.00	665,468	332,734	2,858,334
305.00	305.50	671,542	335,771	3,194,105
305.50	306.00	674,242	337,121	3,531,225
306.00	306.50	677,930	338,965	3,870,190
306.50	307.00	680,907	340,454	4,210,644
307.00	307.50	683,897	341,948	4,552,592
307.50	308.00	686,900	343,450	4,896,042
308.00	308.50	689,916	344,958	5,241,000
308.50	309.00	692,946	346,473	5,587,473

Note:

Source: CSS Inc. As Built drawing dated January 12, 2006.

Table 6.10

Extention Quarry Water Budget Evaluation
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

November 2011 Updated Water Budget:

Estimated Timeline			Areas						Inflows				Outflows						
Start Time	End Time	(1) Event at End of Increment	(2) Total Quarried Area (m^2)	(3) Area of No-Flow Cells (m^2)	Lake Being Filled	(4) Approx. Lake Area (m^2)	(5) Dry Quarry Floor Area (m^2)	(6) Approx. Upstream Area (m^2)	(7) Dry Quarry Recharge (m^3/yr)	(8) Lake Quarry Recharge (m^3/yr)	(9) Groundwater Inflow (m^3/yr)	(10) Upstream Runoff (m^3/yr)	(12) Recharge System (m^3/yr)	(13) Main Quarry Recharge (m^3/yr)	(14) Quarry Operations (m^3/yr)	(15) Outflow to HFRT (m^3/yr)	(16) Escarpment Leakage (m^3/yr)	(17) Vertical Leakage (m^3)	(18) Available Annual (m^3)
2012.0	2013.0	Mining North Quarry	3,687,333	3,325,000	MQ Reservoir	1,720,000	1,967,333	1,477,233	1,118,128	430,597	1,720,961	245,221	1,462,666	0	240,000	700,000	244,300	25,586	842,354
2013.0	2014.0	and West Cell	3,832,450	3,450,750	MQ Reservoir	1,720,000	2,112,450	1,477,233	1,200,042	430,139	2,410,681	245,221	2,193,999	0	240,000	700,000	244,300	26,269	881,514
2014.0	2015.0		3,977,567	3,576,500	MQ Reservoir	1,720,000	2,257,567	1,477,233	1,281,922	429,714	3,100,400	245,221	2,925,332	0	240,000	700,000	244,300	26,951	920,674
2015.0	2016.0		4,122,683	3,702,250	MQ Reservoir	1,720,000	2,402,683	1,477,233	1,363,772	429,319	3,790,120	245,221	3,656,665	0	240,000	700,000	244,300	27,633	959,833
2016.0	2017.0	Finish NQ&West Mining	4,267,800	3,828,000	North Quarry	2,377,000	1,890,800	1,477,233	1,072,821	592,800	4,479,839	245,221	4,387,998	0	240,000	700,000	244,300	28,315	790,067
2017.0	2018.0	Mine East Extension	4,317,013	3,863,088	North Quarry	2,377,000	1,940,013	1,290,603	1,099,930	591,803	4,683,982	214,240	4,596,825	0	240,000	700,000	244,300	28,941	779,889
2018.0	2019.0		4,366,226	3,898,176	North Quarry	2,377,000	1,989,226	1,290,603	1,127,017	590,828	4,888,125	214,240	4,805,652	0	240,000	700,000	244,300	29,567	800,691
2019.0	2020.0		4,415,439	3,933,264	North Quarry	2,377,000	2,038,439	1,290,603	1,154,082	589,875	5,092,268	214,240	5,014,479	0	240,000	700,000	244,300	30,193	821,493
2020.0	2021.0		4,464,652	3,968,352	North Quarry	2,377,000	2,087,652	1,290,603	1,181,126	588,944	5,296,411	214,240	5,223,306	0	240,000	700,000	244,300	30,819	842,295
2021.0	2022.0		4,513,865	4,003,440	North Quarry	2,377,000	2,136,865	1,290,603	1,208,150	588,032	5,500,554	214,240	5,432,133	0	240,000	700,000	244,300	31,445	863,098
2022.0	2023.0		4,563,078	4,038,528	North Quarry	2,377,000	2,186,078	1,290,603	1,235,154	587,140	5,704,697	214,240	5,640,960	0	240,000	700,000	244,300	32,071	883,900
2023.0	2024.0		4,612,291	4,073,616	North Quarry	2,377,000	2,235,291	1,290,603	1,262,139	586,267	5,908,840	214,240	5,849,787	0	240,000	700,000	244,300	32,697	904,702
2024.0	2025.0	All Quarry Areas Mined	4,661,500	4,108,700	North Quarry	2,377,000	2,284,500	1,359,157	1,289,103	585,413	6,112,981	225,620	6,058,611	0	240,000	700,000	244,300	33,319	936,887
Rehabilitation Case [11]																			
2063	All lakes full, east Main Quarry vegetated		4,661,500	3,073,500	MQ Reservoir	1,720,000	1,677,100	1,359,157	581,867	431,631	610,262	225,620	355,678	0	0	700,000	244,300	36,234	513,168

Notes:

(1) Actual timings are subject to change depending on extraction schedule.
(2) Refers to total extracted area of quarry. Linear interpolation applied between simulations.
(3) Total area of no-flow cells in groundwater model i.e., area which does not account for precipitation recharge. Linear interpolation applied between simulations.
(4) Cumulative area that is developed into lakes/wetlands (excluded from groundwater model).
(5) Area that is dry. Dry Quarry Floor Area = Total Quarried Area - Approx Lake Area.
(6) Upstream drainage area which contributes runoff into quarries; does not include portions of upstream quarries which will be retained when excavated.
(7) Precipitation recharge over (5) based on a recharge rate of 0.588 m/year for operation case and 0.366 m/year for rehabilitation case.
minus 200 mm/yr correction for portion of difference between (2) and (3). Dry Quarry recharge rate of 0.588 m/year is based on 0.888 m/year of precipitation minus 0.300 m/year of dry quarry floor evaporation. Under rehabilitation conditions the recharge rate is 0.366 m/year based on 0.888 m/year of precipitation minus 0.522 m/year of natural evapotranspiration.
(8) Precipitation recharge over (4) based on a recharge rate of 0.270 m/year (i.e., 0.888 m/year precipitation - 0.618 m/year lake evaporation) minus 0.200 m/year correction for portion of difference between (2) and (3).
(9) Simulated groundwater inflow into quarry area(s). Includes flow from recharge system. Linear interpolation applied between simulations.
Rehabilitation Case includes pond surplus/augmentation flows required to maintain final water level in the lakes.
(10) Runoff from upstream drainage area into open quarry based on effective precipitation runoff of 0.166 m/year.
(11) For the Rehabilitation Case, dry quarry recharge, and lake quarry recharge represent the Main Quarry only.
The North Quarry and Extension lands recharge are included in the groundwater model. i.e. no longer no-flow cells.
(12) Simulated recharge system flows. Includes recirculation from recharge system to quarry face. Linear interpolation between simulations.
(13) Main Quarry recharge has not been implemented, therefore it has been removed from the water budget. The groundwater inflow has been reduced by 727,221 m^3/yr for all years to compensate for this change, based on the difference between the base (MQ extracted) case groundwater inflow from the previous water balance (1,068,743 m^3/yr) compared to the base case groundwater inflow without MQ recharge predicted by the updated groundwater flow model (341,522 m^3/yr).
(14) Quarry operations water consumption for expansion, including dust control and aggregate washing.
(15) Main Quarry discharge requirement to Hilton Falls Reservoir Tributary (700,000m^3/yr).
(16) Horizontal leakage from quarry face. From Dames & Moore, 1998.
(17) Vertical leakage from quarry areas. Based on a leakage rate of 4.7 mm/yr for dry areas and 9.5 mm/yr for lakes.
(18) Available Annual Surplus = Total Inflow - Total Outflows.
(19) Cumulative surplus is stored in lakes and, if no storage is available, discharged to stream.
(20) Lake filling volumes estimated from available topographic information (December 2003):

Area	Volume (m^3)	Elevation (m amsl)
North Quarry Lake	9,839,000	318.5
West Extension Lake	3,965,000	326
East Extension Lake	9,545,000	333
Total	23,349,000	

Table 6.10

Extention Quarry Water Budget Evaluation
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Water Budget Update:

Timeline	Areas						Inflows				Outflows						Surplus	
	(2) Total Quarried Area (m^2)	(3) Area of No-Flow Cells (m^2)	Lake Being Filled	(4) Approx. Lake Area (m^2)	(5) Dry Quarry Floor Area (m^2)	(6) Approx. Upstream Area (m^2)	(7) Dry Quarry Recharge (m^3/yr)	(8) Lake Quarry Recharge (m^3/yr)	(9) Groundwater Inflow (m^3/yr)	(10) Upstream Runoff (m^3/yr)	(12) Recharge System (m^3/yr)	(13) Main Quarry Recharge (m^3/yr)	(14) Quarry Operations (m^3/yr)	(15) Outflow to HFRT (m^3/yr)	(16) Escarpment Leakage (m^3/yr)	(17) Vertical Leakage (m^3/yr)	(18) Available Annual (m^3/yr)	(19) Cumulative (m^3)
2011 Basic Adjustments:	3,578,510	3,325,000	MQ Reservoir	1,126,311	2,452,199	1,477,233	1,774,979	463,850	1,720,961	245,221	1,340,654	0	208,910	3,034,812	244,300	22,225	-645,890	NA
2011 Sensitivity Analysis:	3,578,510	3,325,000	MQ Reservoir	1,126,311	2,452,199	1,477,233	1,848,545	510,235	1,824,219	257,482	1,340,654	0	208,910	3,034,812	244,300	22,225	-410,421	NA
2012 Basic Adjustments:	3,713,280	3,325,000	MQ Reservoir	1,126,311	2,586,969	1,477,233	1,166,431	212,971	1,720,961	245,221	1,247,103	0	212,844	1,507,127	244,300	22,859	111,351	NA
2012 Sensitivity Analysis:	3,713,280	3,325,000	MQ Reservoir	1,126,311	2,586,969	1,477,233	1,057,778	183,155	1,480,026	210,890	1,247,103	0	212,844	1,507,127	244,300	22,859	-302,384	NA
2013 Basic Adjustments:	3,780,083	3,450,750	MQ Reservoir	1,126,311	2,653,772	1,477,233	1,734,440	546,909	2,410,681	245,221	1,867,215	0	150,444	1,928,614	244,300	23,173	723,504	NA
2013 Sensitivity Analysis:	3,780,083	3,450,750	MQ Reservoir	1,126,311	2,653,772	1,477,233	1,654,827	492,218	2,049,078	232,960	1,867,215	0	150,444	1,928,614	244,300	23,173	215,337	NA
2014 Basic Adjustments:	3,813,018	3,450,750	MQ Reservoir	1,125,120	2,687,898	1,477,233	1,494,467	361,162	2,410,681	245,221	2,591,198	0	183,016	1,522,687	244,300	23,322	-52,993	NA
2014 Sensitivity Analysis:	3,813,018	3,450,750	MQ Reservoir	1,125,120	2,687,898	1,477,233	1,534,785	379,220	2,458,894	257,482	2,591,198	0	183,016	1,522,687	244,300	23,322	65,859	NA
2015 Basic Adjustments:	3,901,973	3,576,500	MQ Reservoir	1,123,929	2,778,044	1,477,233	1,326,009	231,886	3,100,400	245,221	3,221,984	0	161,019	719,701	244,300	23,734	532,778	NA
2015 Sensitivity Analysis:	3,901,973	3,576,500	MQ Reservoir	1,123,929	2,778,044	1,477,233	1,200,997	208,698	2,480,320	220,699	3,221,984	0	161,019	719,701	244,300	23,734	-260,024	NA
2016 Basic Adjustments:	3,986,377	3,576,500	MQ Reservoir	1,124,227	2,862,150	1,477,233	1,277,767	166,876	3,100,400	245,221	3,135,591	0	183,892	767,302	244,300	24,132	435,046	NA
2016 Sensitivity Analysis:	3,986,377	3,576,500	MQ Reservoir	1,124,227	2,862,150	1,477,233	1,234,835	150,188	2,790,360	220,699	3,135,591	0	183,892	767,302	244,300	24,132	40,864	NA
2017 Basic Adjustments:	4,042,623	3,576,500	MQ Reservoir	1,128,284	2,914,339	1,477,233	1,873,744	492,992	3,100,400	245,221	2,717,740	0	164,145	1,574,818	244,300	24,416	986,937	NA
2017 Sensitivity Analysis:	4,042,623	3,576,500	MQ Reservoir	1,128,284	2,914,339	1,477,233	1,873,744	492,992	2,635,340	245,221	2,717,740	0	164,145	1,574,818	244,300	24,416	521,877	NA

Notes: For 2017 Basic Adjustments:

NC No Change
NA Not Applicable
(2) Refers to total extracted area of East Cell (130,075 m^2), West Cell (195,116 m^2), North Quarry (643,336 m^2) and Main Quarry (3,074,096 m^2).
(3) Per Year 2014 above. 2014 was selected because it is the most representative of current total quarried area, mining milestones, and approximate lake area.
(4) Refers to Wetland Lake (445,404 m^2 from "As Built Milton Quarry Drawing, CSS Inc., 01/12/06") and MQ Reservoir (682,880 m^2 from the stage-storage information presented in Table 6.9, is representative of the 2017 Reservoir average water level of ~307.33 m AMSL).
(5) Area that is dry. Dry Quarry Floor Area = Total Quarried Area - Approx. Lake Area.
(6) Per Year 2014 above. Year 2014 was selected because it is the most representative of current conditions with respect to total quarried area, mining milestones, and approximate lake area.
(7) "Dry Quarry Recharge" = "Dry Quarry Floor (5)" x "Dry Floor Area Recharge Rate" - ["Total Quarried Area (2)" - "Area of No-Flow Cells (3)"] x ["Dry Quarry Floor (5)" / "Total Quarried Area (2)"] x ["Groundwater Model Infiltration"]
Dry Floor Area Recharge Rate = 666 mm in 2017. Calculated as 966 mm (2017 precipitation per Table E.1) subtract 300mm (dry quarry floor evapotranspiration default value per AMP (CRA, December 2011)).
Groundwater Model Infiltration = 200 mm/year (per "Updated Adaptive Environmental Management and Protection Plan (AMP)" (CRA, December 2011))
(8) "Lake Quarry Recharge" = "Approx Lake Area (4)" x "Lake Floor Area Recharge Rate" - ["Total Quarried Area (2)" - "Area of No-Flow Cells (3)"] x ["Approx Lake Area (4)" / "Total Quarried Area (2)"] x ["Groundwater Model Infiltration"]
Lake Floor Area Recharge Rate = 460 mm in 2017. Calculated as 966 mm (2017 precipitation per Table E.1) subtract 506 mm (2017 evapotranspiration per Table E.1).
Groundwater Model Infiltration = 200 mm/year (per AMP (CRA, December 2011))
(9) Per Year 2014 above.
(10) Per Year 2014 above.
(12) Actual Recharge System flow, per Table 6.4.
(14) Quarry operations water consumption including dust control and aggregate washing, per Appendix J.
(15) Actual discharge to HFRT, per Table 6.5.
(16) Estimated horizontal leakage from quarry face. From Dames & Moore, 1998.
(17) Vertical leakage from quarry areas. Based on a leakage rate of 4.7 mm/year for dry areas and 9.5 mm/year for lakes (per AMP (CRA, December 2011)).
(18) Available Annual Surplus = Total Inflow - Total Outflows.
(19) Cumulative surplus.

Notes: For 2017 Sensitivity Analysis:

(9) Assume 15% less groundwater inflow from recharge system.

Table 6.11

Excess Water Estimate for 2018
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Volume of Water In Storage at end of 2017

Actual volume of water in Reservoir at the end of 2017 (m^3):	**4,308,363**	A
Volume of water in Reservoir at elevation 306 m AMSL (m^3):	**3,531,225**	B

Estimated 2018 Reservoir Water Balance:

Inflows

Description		Quantity (m^3)
North Quarry and Extension Dewatering[1]		3,782,763
Central Sump[2]		1,378,251
Precipitation - Lake Evaporation[3]		200,000
	Total	5,361,014

Outflows[4]

Description		Quantity (m^3)
1. HFRT		700,000
2. Mitigation[5]		3,810,000
3. Operations[6]		184,000
4. Main Quarry Rehabilitation - West Side[7]		0
5. Lake Filling - North Quarry and Extension		0
6. Main Quarry Rehabilitation - Progressive Rehabilitation of East Side		0
7. Main Quarry Rehabilitation - Final Rehabilitation of East Side		0
8. Ultimate After Use - East Side		0
	Total	4,694,000
Estimated 2018 Net Surplus		**667,014**
	Safety Factor	-500,000
Estimated 2018 Net Surplus With Safety Factor Applied		**167,014** [8]

Excess Water Available for 2018 [8] **777,000** **(A - B)** [9]

Notes:

(1) Quantity for 2018 is estimated based on the actual 2017 quantity of water pumped from the North Quarry and Extension to the Reservoir (i.e. excluding water directed to Operations), with a 30% increase to account for additional dewatering from the East Cell, and recharge recirculation.
(2) Quantity estimated based on 5 year average (2013-2017).
(3) Precipitation value of 863 mm is based on the 27-year mean quantities presented in the 2017 Annual Water Monitoring Report (Table E.1).
Evaporation value of 583 mm is based on the 27-year mean quantities presented in the 2017 Annual Water Monitoring Report (Table E.1).
Volume of water contributed by precipitation based on a surface area of 692,946 m^2, which is the maximum designed reservoir surface area (to reflect total catchment area for precipitation).
Volume of water removed by evaporation based on a surface area of 682,103 m^2, which is the projected average reservoir surface area.
(4) Outflow categories correspond to those presented in the Water Hierarchy (Schedule 6 of the Extension WMS Agreement).
(5) Estimate of flow from recharge pump station to North Quarry, West Cell, East Cell and on-Site wetlands based on actual 2017 flow increased to account for increasing recharge demands.
(6) Quantity estimated based on the actual 2017 quantity (water pumped from pump station P40 from the Reservoir, to Operations).
(7) It is anticipated that lake top-up will not be necessary, similar to 2016.
(8) Since there is a predicted surplus for 2018, excess water is A-B.
(9) Calculated Excess Water is positive, therefore there is Excess Water available in 2018.

Table 6.12

Lake/Wetland Stage - Storage Volume
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Lake-Wetland Stage-Storage Design Information [1]

Elevation From (m AMSL)	Elevation To (m AMSL)	Cumulative Volume (m^3)
--	302.00	493,341
302.00	302.10	528,541
302.10	302.20	575,599
302.20	302.30	613,722
302.30	302.40	652,533
302.40	302.50	692,026
302.50	302.60	732,197
302.60	302.70	773,040
302.70	302.80	814,552
302.80	302.90	856,739
302.90	303.00	899,890
303.00	303.10	957,088
303.10	303.20	1,001,633
303.20	303.30	1,046,574
303.30	303.40	1,091,997
303.40	303.50	1,130,700
303.50	303.60	1,184,056
303.60	303.70	1,230,897
303.70	303.80	1,277,473
303.80	303.90	1,324,699
303.90	304.00	1,372,498

Date	Water Elevation (m AMSL)		Estimated Stage-Storage Volume (m^3)
Lake/Wetland (location WestSump (SW49))			
December 28, 2016	302.650		-
December 31, 2016	302.650	(2)	752,618
January 2, 2017	302.650		-
December 27, 2017	302.770		-
December 31, 2017	302.764	(2)	799,608
January 2, 2018	302.760		-
Volume change (net increase) over 2017			46,989

Notes:

(1) - Volumes were estimated using AutoCAD Civil3D 2015 and based on Site contours from 1997, 2003, 2005 and 2006 surveys.
(2) - Interpolated water elevation.

Table 7.1

2017 Water Quality Results - West Sump Discharge to HFRT (SW15C)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location: Sample Date: Parameters	Units	Criteria	Number of Samples	Number of Detections	Number of Detections Above Effluent Limit or PWQO	Maximum Detected Concentration	Average of Detected Concentrations
Screening against Effluent Limits as per ECA requirements.							
General Chemistry							
Oil and grease	mg/L	15[(1)]	12	0	N/A	N/A	N/A
pH, lab	s.u.	6.0-9.5[(1)]	12	12	0	8.65	8.303
pH, field	s.u.	6.0-9.5[(1)]	12	12	0	8.48	8.205
Total suspended solids (TSS)	mg/L	25[(1)]	52	17	0	5.5	2.678
Un-ionized ammonia	mg/L	0.02[(1)(2)]	12	10	0	0.0138	0.006
Screening against PWQOs for comparison purposes only. The ECA does not require this discharge to meet PWQOs.							
Alkalinity, bicarbonate	mg/L	-	12	12	N/A	189	163.333
Alkalinity, carbonate	mg/L	-	12	2	N/A	12	11.000
Alkalinity, total (as CaCO3)	mg/L	-	12	12	N/A	189	166.083
Ammonia-N	mg/L	-	12	10	N/A	0.471	0.173
Bromide	mg/L	-	12	11	N/A	0.32	0.191
Chloride	mg/L	-	12	12	N/A	101	82.758
Conductivity	umhos/cm	-	12	12	N/A	904	778.417
Fluoride	mg/L	-	12	12	N/A	0.158	0.129
Hardness	mg/L	-	12	12	N/A	322	287.167
Nitrate (as N)	mg/L	-	12	5	N/A	0.133	0.071
Nitrite (as N)	mg/L	-	12	0	N/A	N/A	N/A
Orthophosphate (dissolved)	mg/L	-	12	0	N/A	N/A	N/A
Phosphorus	mg/L	0.03[(2)]	12	12	0	0.0134	0.009
Sulfate	mg/L	-	12	12	N/A	131	110.992
Temperature, field	Deg C	-	12	12	N/A	23.8	12.025
Total dissolved solids (TDS)	mg/L	-	12	12	N/A	498	457.000
Total kjeldahl nitrogen (TKN)	mg/L	-	12	12	N/A	0.97	0.725
Total organic carbon (TOC)	mg/L	-	12	12	N/A	9.6	8.450
Turbidity	NTU	-	12	12	N/A	3.14	1.381
Biological							
Escherichia coli	cfu/100mL	100[(2)]	12	11	0	26	5.455
Total coliform bacteria	cfu/100mL	-	12	12	N/A	1100	145.083
Metals							
Aluminum	mg/L	0.075[(2)]	12	1	0	0.011	0.011
Antimony	mg/L	0.02[(2)]	12	5	0	0.00012	0.000
Arsenic	mg/L	0.1[(2)]/0.005[(3)]	12	12	0	0.0033	0.002
Barium	mg/L	-	12	12	N/A	0.0278	0.023
Beryllium	mg/L	1.1[(2)]	12	0	N/A	N/A	N/A
Bismuth	mg/L	-	12	0	N/A	N/A	N/A
Boron	mg/L	0.2[(2)]	12	12	0	0.082	0.074
Cadmium	mg/L	0.0002[(2)]/0.0005[(3)]	12	0	N/A	N/A	N/A
Calcium	mg/L	-	12	12	N/A	55.1	43.700
Chromium	mg/L	-	12	0	N/A	N/A	N/A
Cobalt	mg/L	0.0009[(2)]	12	10	0	0.00022	0.000
Copper	mg/L	0.005[(2)]	12	1	0	0.0011	0.001
Iron	mg/L	0.3[(2)]	12	8	0	0.137	0.097
Lead	mg/L	0.025[(2)]/0.005[(3)]	12	4	0	0.00017	0.000
Magnesium	mg/L	-	12	12	N/A	48.9	43.275
Manganese	mg/L	-	12	12	N/A	0.0541	0.028
Molybdenum	mg/L	0.04[(2)]	12	12	0	0.00177	0.001
Nickel	mg/L	0.025[(2)]	12	12	0	0.00259	0.002
Potassium	mg/L	-	12	12	N/A	8.15	7.111
Selenium	mg/L	0.1[(2)]	12	10	0	0.000077	0.000
Silicon	mg/L	-	12	12	N/A	0.51	0.295
Silver	mg/L	0.0001[(2)]	12	0	N/A	N/A	N/A
Sodium	mg/L	-	12	12	N/A	52.3	44.142
Strontium	mg/L	-	12	12	N/A	0.808	0.667

Table 7.1

2017 Water Quality Results - West Sump Discharge to HFRT (SW15C)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location: **Sample Date:** **Parameters**	**Units**	**Criteria**	**Number of Samples**	**Number of Detections**	**Number of Detections Above Effluent Limit or PWQO**	**Maximum Detected Concentration**	**Average of Detected Concentrations**
Thallium	mg/L	0.0003(2)	12	2	0	0.000018	0.000
Tin	mg/L	-	12	0	N/A	N/A	N/A
Titanium	mg/L	-	12	1	N/A	0.00034	0.000
Vanadium	mg/L	0.006(2)	12	0	N/A	N/A	N/A
Zinc	mg/L	0.03(2)/0.02(3)	12	1	0	0.0047	0.005
Volatiles							
Benzene	µg/L	100(2)	12	0	N/A	N/A	N/A
Ethylbenzene	µg/L	8(2)	12	0	N/A	N/A	N/A
m&p-Xylenes	µg/L	-	12	0	N/A	N/A	N/A
o-Xylene	µg/L	40(2)	12	0	N/A	N/A	N/A
Toluene	µg/L	0.8(2)	12	0	N/A	N/A	N/A
Xylenes (total)	µg/L	-	12	0	N/A	N/A	N/A

Notes:

(1) - ECA Effluent Limit.
(2) - PWQO.
(3) - PWQO/Interim PWQO.
Exceedance of Effluent Limits.
0.034 Greater than PWQO value.
ND - Non-detect at associated detection limit.
- - Not applicable.
DLDS - Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM - Detection Limit Adjustment For Sample Matrix Effects.
HTC - Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).

Table 7.2

2017 Water Quality Results - Reservoir Outfall to HFRT (SW52B)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location: Sample Date: Parameters	Units	Criteria	Number of Samples	Number of Detections	Number of Detections Above Effluent Limit or PWQO	Maximum Detected Concentration	Average of Detected Concentrations
Screening against Effluent Limits as per ECA requirements.							
General Chemistry							
Oil and grease	mg/L	15[1]	12	0	N/A	N/A	N/A
pH, lab	s.u.	6.0-9.5[1]	12	12	0	8.52	8.280
pH, field	s.u.	6.0-9.5[1]	13	13	0	8.47	8.238
Total suspended solids (TSS)	mg/L	25[1]	52	13	0	4.9	2.422
Un-ionized ammonia	mg/L	0.02[1][2]	13	12	1	0.0473	0.007
Screening against PWQOs for comparison purposes only. The ECA does not require this discharge to meet PWQOs.							
Alkalinity, bicarbonate	mg/L	-	12	12	N/A	142	119.083
Alkalinity, carbonate	mg/L	-	12	0	N/A	N/A	N/A
Alkalinity, total (as CaCO3)	mg/L	-	12	12	N/A	142	120.000
Ammonia-N	mg/L	-	13	12	N/A	0.512	0.135
Bromide	mg/L	-	12	12	N/A	0.93	0.666
Chloride	mg/L	-	12	12	N/A	105	96.683
Conductivity	umhos/cm	-	12	12	N/A	983	923.333
Fluoride	mg/L	-	12	12	N/A	0.192	0.174
Hardness	mg/L	-	12	12	N/A	417	393.833
Nitrate (as N)	mg/L	-	12	9	N/A	0.329	0.185
Nitrite (as N)	mg/L	-	12	0	N/A	N/A	N/A
Orthophosphate (dissolved)	mg/L	-	12	0	N/A	N/A	N/A
Phosphorus	mg/L	0.03[2]	12	2	0	0.0043	0.004
Sulfate	mg/L	-	12	12	N/A	225	212.500
Temperature, field	Deg C	-	13	13	N/A	23.7	11.192
Total dissolved solids (TDS)	mg/L	-	12	12	N/A	650	605.167
Total kjeldahl nitrogen (TKN)	mg/L	-	12	12	N/A	0.55	0.403
Total organic carbon (TOC)	mg/L	-	12	12	N/A	5.1	3.742
Turbidity	NTU	-	12	12	N/A	3.01	1.224
Biological							
Escherichia coli	cfu/100mL	100[2]	12	11	0	6	0.909
Total coliform bacteria	cfu/100mL	-	11	9	N/A	1100	144.333
Metals							
Aluminum	mg/L	0.075[2]	12	6	0	0.027	0.020
Antimony	mg/L	0.02[2]	12	12	0	0.00047	0.000
Arsenic	mg/L	0.1[2]/0.005[3]	12	12	0	0.00295	0.002
Barium	mg/L	-	12	12	N/A	0.034	0.029
Beryllium	mg/L	1.1[2]	12	0	N/A	N/A	N/A
Bismuth	mg/L	-	12	0	N/A	N/A	N/A
Boron	mg/L	0.2[2]	12	12	0	0.126	0.116
Cadmium	mg/L	0.0002[2]/0.0005[3]	12	0	N/A	N/A	N/A
Calcium	mg/L	-	12	12	N/A	71.8	66.667
Chromium	mg/L	-	12	1	N/A	0.00322	0.003
Cobalt	mg/L	0.0009[2]	12	12	0	0.00075	0.000
Copper	mg/L	0.005[2]	12	0	N/A	N/A	N/A
Iron	mg/L	0.3[2]	12	0	N/A	N/A	N/A
Lead	mg/L	0.025[2]/0.005[3]	12	6	0	0.0003	0.000
Magnesium	mg/L	-	12	12	N/A	59.4	55.242
Manganese	mg/L	-	12	12	N/A	0.00678	0.003
Molybdenum	mg/L	0.04[2]	12	12	0	0.00877	0.008
Nickel	mg/L	0.025[2]	12	12	0	0.00433	0.003
Potassium	mg/L	-	12	12	N/A	5.62	5.388
Selenium	mg/L	0.1[2]	12	12	0	0.000104	0.000
Silicon	mg/L	-	12	12	N/A	1.02	0.816
Silver	mg/L	0.0001[2]	12	0	N/A	N/A	N/A
Sodium	mg/L	-	12	12	N/A	32.4	31.033
Strontium	mg/L	-	12	12	N/A	1.86	1.679
Thallium	mg/L	0.0003[2]	12	12	0	0.000086	0.000
Tin	mg/L	-	12	1	N/A	0.00011	0.000
Titanium	mg/L	-	12	4	N/A	0.00097	0.001
Vanadium	mg/L	0.006[2]	12	0	N/A	N/A	N/A
Zinc	mg/L	0.03[2]/0.02[3]	12	10	1	0.0244	0.008

Table 7.2

2017 Water Quality Results - Reservoir Outfall to HFRT (SW52B)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location: Sample Date: Parameters	Units	Criteria	Number of Samples	Number of Detections	Number of Detections Above Effluent Limit or PWQO	Maximum Detected Concentration	Average of Detected Concentrations
Volatiles							
Benzene	µg/L	100(2)	12	0	N/A	N/A	N/A
Ethylbenzene	µg/L	8(2)	12	0	N/A	N/A	N/A
m&p-Xylenes	µg/L	-	12	0	N/A	N/A	N/A
o-Xylene	µg/L	40(2)	12	0	N/A	N/A	N/A
Toluene	µg/L	0.8(2)	12	0	N/A	N/A	N/A
Xylenes (total)	µg/L	-	12	0	N/A	N/A	N/A

Notes:

(1) - ECA Effluent Limit.
(2) - PWQO.
(3) - PWQO/Interim PWQO.
Exceedance of Effluent Limits.
0.034 Greater than PWQO value.
ND - Non-detect at associated detection limit.
- - Not applicable.
DLDS - Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM - Detection Limit Adjustment For Sample Matrix Effects.
DLUI - Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
HTC - Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).

Table 7.3

2017 Water Quality Results - Recharge System Pumping Station (SW53)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location: Sample Date: Parameters	Units	Criteria	Number of Samples	Number of Detections	Number of Detections Above Effluent Limit or PWQO	Maximum Detected Concentration	Average of Detected Concentrations
Screening against Effluent Limits as per ECA requirements.							
General Chemistry							
Oil and Grease	mg/L	15[(1)]	12	0	N/A	N/A	N/A
pH (lab)	s.u.	6.0-9.5[(1)]	12	12	0	8.44	8.230
pH Field	s.u.	6.0-9.5[(1)]	12	12	0	8.44	8.121
Total Suspended Solids (TSS)	mg/L	25[(1)]	52	12	0	3.6	2.244
Un-ionized Ammonia	mg/L	0.02[(1)(2)]	12	12	0	0.0074	0.003
Ammonia-N	mg/L	-	12	12	N/A	0.153	0.070
Temperature, Field	Deg C	-	12	12	N/A	23.2	12.208

Notes:

(1) - ECA Effluent Limit.
(2) - PWQO.
Exceedance of Effluent Limits.
0.034 Greater than PWQO value.
ND - Non-detect at associated detection limit.
- - Not applicable.

Table 7.4

2017 Water Quality Results - North Quarry Recharge System Wells
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location: Sample Date: Parameters	Units	Criteria	Number of Samples	Number of Detections	Number of Detections Above Effluent Limit or PWQO	Maximum Detected Concentration	Average of Detected Concentrations
Screening against Effluent Limits for comparison purposes only. The ECA does not require this discharge to meet Effluent Limits.							
General Chemistry							
Oil and Grease	mg/L	15[1]	36	0	N/A	N/A	N/A
pH (lab)	s.u.	6.0-9.5[1]	36	36	0	8.46	8.247
pH Field	s.u.	6.0-9.5[1]	36	36	0	8.42	8.219
Total Suspended Solids (TSS)	mg/L	25[1]	36	8	0	3.4	2.800
Un-ionized Ammonia	mg/L	0.02[1][2]	36	36	1	0.0206	0.005
Screening against PWQOs for comparison purposes only. The ECA does not require this discharge to meet PWQOs.							
Alkalinity, Bicarbonate	mg/L	-	36	36	N/A	147	122.278
Alkalinity, Carbonate	mg/L	-	36	0	N/A	N/A	N/A
Alkalinity, Total (As CaCO3)	mg/L	-	36	36	N/A	147	123.000
Ammonia-N	mg/L	-	36	36	N/A	0.241	0.093
Bromide	mg/L	-	36	36	N/A	0.86	0.617
Chloride	mg/L	-	36	36	N/A	111	96.164
Conductivity	umhos/cm	-	36	36	N/A	1020	928.639
Fluoride	mg/L	-	36	36	N/A	0.201	0.175
Hardness	mg/L	-	36	36	N/A	439	399.389
Nitrate (as N)	mg/L	-	36	25	N/A	0.351	0.183
Nitrite (as N)	mg/L	-	36	0	N/A	N/A	N/A
Orthophosphate (dissolved)	mg/L	-	36	0	N/A	N/A	N/A
Phosphorous	mg/L	0.03[2]	36	9	0	0.0117	0.005
Sulphate	mg/L	-	36	36	N/A	233	211.139
Temperature, Field	Deg C	-	36	36	N/A	22.9	12.169
Total Dissolved Solids (TDS)	mg/L	-	36	36	N/A	648	594.472
Total Kjeldahl Nitrogen (TKN)	mg/L	-	36	35	N/A	0.74	0.352
Total Organic Carbon (TOC)	mg/L	-	36	36	N/A	5	3.811
Turbidity	NTU	-	36	36	N/A	3.8	1.162
Biological							
Escherichia coli	cfu/100mL	100[2]	36	33	0	9	0.818
Total Coliform Bacteria	cfu/100mL	-	34	29	N/A	800	70.966
Metals							
Aluminum	mg/L	0.075[2]	36	12	0	0.025	0.018
Antimony	mg/L	0.02[2]	36	36	0	0.00049	0.000
Arsenic	mg/L	0.1[2]/0.005[3]	36	36	0	0.00298	0.002
Barium	mg/L	-	36	36	N/A	0.0341	0.030
Beryllium	mg/L	1.1[2]	36	0	N/A	N/A	N/A
Bismuth	mg/L	-	36	0	N/A	N/A	N/A
Boron	mg/L	0.2[2]	36	36	0	0.132	0.118
Cadmium	mg/L	0.0002[2]/0.0005[3]	36	1	0	0.000011	0.000
Calcium	mg/L	-	36	36	N/A	75.5	67.803
Chromium Total	mg/L	-	36	3	N/A	0.00218	0.001
Cobalt	mg/L	0.0009[2]	36	36	0	0.00042	0.000
Copper	mg/L	0.005[2]	36	3	0	0.0013	0.001
Iron	mg/L	0.3[2]	36	1	0	0.071	0.071
Lead	mg/L	0.025[2]/0.005[3]	36	16	0	0.00017	0.000
Magnesium	mg/L	-	36	36	N/A	61.8	55.872
Manganese	mg/L	-	36	36	N/A	0.00516	0.003
Molybdenum	mg/L	0.04[2]	36	36	0	0.00867	0.008
Nickel	mg/L	0.025[2]	36	36	0	0.00425	0.003
Potassium	mg/L	-	36	36	N/A	5.93	5.402
Selenium	mg/L	0.1[2]	36	35	0	0.000093	0.000
Silicon	mg/L	-	36	36	N/A	1.05	0.823
Silver	mg/L	0.0001[2]	36	0	N/A	N/A	N/A
Sodium	mg/L	-	36	36	N/A	35.2	31.094
Strontium	mg/L	-	36	36	N/A	1.92	1.686
Thallium	mg/L	0.0003[2]	36	36	0	0.000089	0.000
Tin	mg/L	-	36	3	N/A	0.00026	0.000
Titanium	mg/L	-	36	5	N/A	0.00073	0.001
Vanadium	mg/L	0.006[2]	36	0	N/A	N/A	N/A
Zinc	mg/L	0.03[2]/0.02[3]	36	16	0	0.0077	0.005

Table 7.4

2017 Water Quality Results - North Quarry Recharge System Wells
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location: Sample Date: Parameters	Units	Criteria	Number of Samples	Number of Detections	Number of Detections Above Effluent Limit or PWQO	Maximum Detected Concentration	Average of Detected Concentrations
Volatiles							
Benzene	µg/L	100[(2)]	36	0	N/A	N/A	N/A
Ethylbenzene	µg/L	8[(2)]	36	0	N/A	N/A	N/A
m&p-Xylenes	µg/L	-	36	0	N/A	N/A	N/A
o-Xylene	µg/L	40[(2)]	36	0	N/A	N/A	N/A
Toluene	µg/L	0.8[(2)]	36	0	N/A	N/A	N/A
Xylenes (total)	µg/L	-	36	0	N/A	N/A	N/A

Notes:

(1) - ECA Effluent Limit.
(2) - PWQO.
(3) - PWQO/Interim PWQO.
0.034 Greater than Effluent Limits or PWQOs.
ND - Non-detect at associated detection limit.
- - Not applicable.
DLDS - Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC - Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM - Detection Limit Adjustment For Sample Matrix Effects.
DLUI - Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
HTC - Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).

Table 7.5

2017 Water Quality Results - North Quarry Sump (SW38)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location: Sample Date: Parameters	Units	Criteria	Number of Samples	Number of Detections	Number of Detections Above Effluent Limit or PWQO	Maximum Detected Concentration	Average of Detected Concentrations
Screening against Effluent Limits for comparison purposes only. The ECA does not require this discharge to meet Effluent Limits.							
General Chemistry							
Oil and Grease	mg/L	15[1]	12	0	N/A	N/A	N/A
pH (lab)	s.u.	6.0-9.5[1]	12	12	0	8.32	8.180
pH Field	s.u.	6.0-9.5[1]	12	12	0	8.3	8.032
Total Suspended Solids (TSS)	mg/L	25[1]	12	7	1	29.7	10.414
Un-ionized Ammonia	mg/L	0.02[1][2]	12	12	1	0.0526	0.009
Screening against PWQOs for comparison purposes only. The ECA does not require this discharge to meet PWQOs.							
Alkalinity, Bicarbonate	mg/L	-	12	12	N/A	191	165.500
Alkalinity, Carbonate	mg/L	-	12	0	N/A	N/A	N/A
Alkalinity, Total (As CaCO3)	mg/L	-	12	12	N/A	191	165.500
Ammonia-N	mg/L	-	12	12	N/A	0.997	0.289
Bromide	mg/L	-	12	12	N/A	0.67	0.486
Chloride	mg/L	-	12	12	N/A	95.6	78.400
Conductivity	umhos/cm	-	12	12	N/A	1050	936.000
Fluoride	mg/L	-	12	12	N/A	0.231	0.206
Hardness	mg/L	-	12	12	N/A	504	427.500
Nitrate (as N)	mg/L	-	12	12	N/A	1.5	0.555
Nitrite (as N)	mg/L	-	12	3	N/A	0.047	0.027
Orthophosphate (dissolved)	mg/L	-	12	0	N/A	N/A	N/A
Phosphorous	mg/L	0.03[2]	12	9	0	0.0288	0.008
Sulphate	mg/L	-	12	12	N/A	241	212.667
Temperature, Field	Deg C	-	12	12	N/A	22.6	11.183
Total Dissolved Solids (TDS)	mg/L	-	12	12	N/A	1190	661.750
Total Kjeldahl Nitrogen (TKN)	mg/L	-	12	11	N/A	1.09	0.398
Total Organic Carbon (TOC)	mg/L	-	12	12	N/A	3.1	1.717
Turbidity	NTU	-	12	12	N/A	61.1	8.614
Biological							
Escherichia coli	cfu/100mL	100[2]	12	11	0	68	15.455
Total Coliform Bacteria	cfu/100mL	-	12	12	N/A	1200	245.667
Metals							
Aluminum	mg/L	0.075[2]	12	12	4	1.44	0.190
Antimony	mg/L	0.02[2]	12	12	0	0.00107	0.001
Arsenic	mg/L	0.1[2]/0.005[3]	12	12	0	0.00265	0.002
Barium	mg/L	-	12	12	N/A	0.0422	0.034
Beryllium	mg/L	1.1[2]	12	0	N/A	N/A	N/A
Bismuth	mg/L	-	12	0	N/A	N/A	N/A
Boron	mg/L	0.2[2]	12	12	0	0.171	0.136
Cadmium	mg/L	0.0002[2]/0.0005[3]	12	5	0	0.000041	0.000
Calcium	mg/L	-	12	12	N/A	108	87.392
Chromium Total	mg/L	-	12	2	N/A	0.00209	0.001
Cobalt	mg/L	0.0009[2]	12	12	10	0.00603	0.003
Copper	mg/L	0.005[2]	12	3	0	0.0029	0.002
Iron	mg/L	0.3[2]	12	5	2	1.45	0.437
Lead	mg/L	0.025[2]/0.005[3]	12	12	0	0.00341	0.001

2017 Water Quality Results - North Quarry Sump (SW38)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location: Sample Date: Parameters	Units	Criteria	Number of Samples	Number of Detections	Number of Detections Above Effluent Limit or PWQO	Maximum Detected Concentration	Average of Detected Concentrations
Magnesium	mg/L	-	12	12	N/A	57.1	50.833
Manganese	mg/L	-	12	12	N/A	0.0673	0.016
Molybdenum	mg/L	0.04(2)	12	12	0	0.0116	0.008
Nickel	mg/L	0.025(2)	12	12	0	0.0149	0.009
Potassium	mg/L	-	12	12	N/A	6.24	5.342
Selenium	mg/L	0.1(2)	12	12	0	0.000151	0.000
Silicon	mg/L	-	12	12	N/A	3.53	1.700
Silver	mg/L	0.0001(2)	12	0	N/A	N/A	N/A
Sodium	mg/L	-	12	12	N/A	31.1	25.925
Strontium	mg/L	-	12	12	N/A	2.86	2.349
Thallium	mg/L	0.0003(2)	12	12	0	0.000157	0.000
Tin	mg/L	-	12	1	N/A	0.00014	0.000
Titanium	mg/L	-	12	7	N/A	0.0494	0.008
Vanadium	mg/L	0.006(2)	12	2	0	0.00271	0.002
Zinc	mg/L	0.03(2)/0.02(3)	12	12	1	0.0282	0.011
Volatiles							
Benzene	µg/L	100(2)	12	0	N/A	N/A	N/A
Ethylbenzene	µg/L	8(2)	12	0	N/A	N/A	N/A
m&p-Xylenes	µg/L	-	12	0	N/A	N/A	N/A
o-Xylene	µg/L	40(2)	12	0	N/A	N/A	N/A
Toluene	µg/L	0.8(2)	12	0	N/A	N/A	N/A
Xylenes (total)	µg/L	-	12	0	N/A	N/A	N/A

Notes:

(1) - ECA Effluent Limit.
(2) - PWQO.
(3) - PWQO/Interim PWQO.
0.034 Greater than Effluent Limits or PWQOs.
ND - Non-detect at associated detection limit.
- - Not applicable.
DLDS - Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC - Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM - Detection Limit Adjustment For Sample Matrix Effects.
DLUI - Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
HTC - Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).

Table 7.6

2017 Water Quality Results - Central Sump (SW51A)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location: Sample Date: Parameters	Units	Criteria	Number of Samples	Number of Detections	Number of Detections Above Effluent Limit or PWQO	Maximum Detected Concentration	Average of Detected Concentrations
Screening against Effluent Limits for comparison purposes only. The ECA does not require this discharge to meet Effluent Limits.							
General Chemistry							
Oil and Grease	mg/L	15[1]	12	0	N/A	N/A	N/A
pH (lab)	s.u.	6.0-9.5[1]	12	12	0	8.28	8.148
pH Field	s.u.	6.0-9.5[1]	12	12	0	8.13	7.999
Total Suspended Solids (TSS)	mg/L	25[1]	12	7	1	59.7	13.457
Un-ionized Ammonia	mg/L	0.02[1][2]	12	12	0	0.00524	0.002
Screening against PWQOs for comparison purposes only. The ECA does not require this discharge to meet PWQOs.							
Alkalinity, Bicarbonate	mg/L	-	12	12	N/A	213	183.417
Alkalinity, Carbonate	mg/L	-	12	0	N/A	N/A	N/A
Alkalinity, Total (As CaCO3)	mg/L	-	12	12	N/A	213	183.417
Ammonia-N	mg/L	-	12	12	N/A	0.166	0.087
Bromide	mg/L	-	12	12	N/A	1.98	0.953
Chloride	mg/L	-	12	12	N/A	203	141.842
Conductivity	umhos/cm	-	12	12	N/A	1440	1206.167
Fluoride	mg/L	-	12	12	N/A	0.244	0.188
Hardness	mg/L	-	12	12	N/A	700	536.500
Nitrate (as N)	mg/L	-	12	12	N/A	0.804	0.519
Nitrite (as N)	mg/L	-	12	1	N/A	0.018	0.018
Orthophosphate (dissolved)	mg/L	-	12	1	N/A	0.0033	0.003
Phosphorous	mg/L	0.03[2]	12	11	1	0.032	0.007
Sulphate	mg/L	-	12	12	N/A	359	264.333
Temperature, Field	Deg C	-	12	12	N/A	21.7	11.267
Total Dissolved Solids (TDS)	mg/L	-	12	12	N/A	1040	756.500
Total Kjeldahl Nitrogen (TKN)	mg/L	-	12	11	N/A	0.74	0.279
Total Organic Carbon (TOC)	mg/L	-	12	12	N/A	5.6	2.517
Turbidity	NTU	-	12	12	N/A	102	12.047
Biological							
Escherichia coli	cfu/100mL	100[2]	12	11	1	189	25.091
Total Coliform Bacteria	cfu/100mL	-	12	12	N/A	1500	197.833
Metals							
Aluminum	mg/L	0.075[2]	12	11	1	1	0.113
Antimony	mg/L	0.02[2]	12	12	0	0.00058	0.000
Arsenic	mg/L	0.1[2]/0.005[3]	12	12	0	0.00157	0.001
Barium	mg/L	-	12	12	N/A	0.0335	0.027
Beryllium	mg/L	1.1[2]	12	0	N/A	N/A	N/A
Bismuth	mg/L	-	12	0	N/A	N/A	N/A
Boron	mg/L	0.2[2]	12	12	0	0.183	0.122
Cadmium	mg/L	.0002[2]/0.0005(	12	12	0	0.000062	0.000
Calcium	mg/L	-	12	12	N/A	116	89.150
Chromium Total	mg/L	-	12	1	N/A	0.00144	0.001
Cobalt	mg/L	0.0009[2]	12	12	1	0.00118	0.000
Copper	mg/L	0.005[2]	12	3	0	0.0021	0.002
Iron	mg/L	0.3[2]	12	4	1	1.08	0.326
Lead	mg/L	0.025[2]/0.005[3]	12	12	1	0.00569	0.001
Magnesium	mg/L	-	12	12	N/A	99.9	76.225
Manganese	mg/L	-	12	12	N/A	0.0824	0.017
Molybdenum	mg/L	0.04[2]	12	12	0	0.0181	0.012
Nickel	mg/L	0.025[2]	12	12	0	0.00468	0.004

Table 7.6

2017 Water Quality Results - Central Sump (SW51A)
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location: **Sample Date:** **Parameters**	**Units**	**Criteria**	**Number of Samples**	**Number of Detections**	**Number of Detections Above Effluent Limit or PWQO**	**Maximum Detected Concentration**	**Average of Detected Concentrations**
Potassium	mg/L	-	12	12	N/A	9.45	7.235
Selenium	mg/L	0.1(2)	12	12	0	0.000147	0.000
Silicon	mg/L	-	12	12	N/A	2.76	1.052
Silver	mg/L	0.0001(2)	12	0	N/A	N/A	N/A
Sodium	mg/L	-	12	12	N/A	70.8	44.925
Strontium	mg/L	-	12	12	N/A	2.69	1.884
Thallium	mg/L	0.0003(2)	12	12	0	0.000267	0.000
Tin	mg/L	-	12	0	N/A	N/A	N/A
Titanium	mg/L	-	12	2	N/A	0.0303	0.016
Vanadium	mg/L	0.006(2)	12	1	0	0.00186	0.002
Zinc	mg/L	0.03(2)/0.02(3)	12	12	4	0.0426	0.020
Volatiles							
Benzene	ug/L	100(2)	12	0	N/A	N/A	N/A
Ethylbenzene	ug/L	8(2)	12	0	N/A	N/A	N/A
m&p-Xylenes	ug/L	-	12	0	N/A	N/A	N/A
o-Xylene	ug/L	40(2)	12	0	N/A	N/A	N/A
Toluene	ug/L	0.8(2)	12	0	N/A	N/A	N/A
Xylenes (total)	ug/L	-	12	0	N/A	N/A	N/A

Notes:

(1) - ECA Effluent Limit.
(2) - PWQO.
(3) - PWQO/Interim PWQO.
0.034 Greater than Effluent Limits or PWQOs.
ND - Non-detect at associated detection limit.
- - Not applicable.
DLDS - Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC - Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM - Detection Limit Adjustment For Sample Matrix Effects.
DLUI - Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
HTC - Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).

Table 8.1

Residential Well Monitoring Information
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Dufferin Milton Quarry
Region of Halton Ontario

Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
Private Residential Wells In AMP Study Area Residential Monitoring Zone								
DW103	2012	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 4, 2012		No	Softener, Filter, U.V.	Basement tap at pressure tank.
	2013	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 18, 2013		No	Softener, Filter, U.V.	Basement tap at pressure tank.
	2014	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 2, 2014		No	Softener, Filter, U.V.	Basement tap at pressure tank.
	2015	Q1 Water Level	Yes	March				
		Q1 Water Sample	Yes	Mar 13, 2015		No	Softener, Filter, U.V.	Basement tap at pressure tank.
		Q2 Water Level	Yes	June				
		Q2 Water Sample	Yes	June 5, 2015		No	Softener, Filter, U.V.	Basement tap at pressure tank.
		Q3 Water Level	Yes	September				
		Q3 Water Sample	Yes	Sept 22, 2015		No	Softener, Filter, U.V.	Basement tap at pressure tank.
		Q4 Water Level	Yes	November				
		Q4 Water Sample	Yes	Nov 25, 2015		No	Softener, Filter, U.V.	Basement tap at pressure tank.
	2016	Q1 Water Level	Yes	March				
		Q1 Water Sample	Yes	Mar 15, 2016		No	Softener, Filter, U.V.	Basement tap at pressure tank.
		Q2 Water Level	Yes	May				
		Q2 Water Sample	Yes	May 12, 2016		No	Softener, Filter, U.V.	Basement tap at pressure tank.
		Q2 Water Level	Yes	June				
		Q2 Water Sample	Yes	Jun 21, 2016		No	Softener, Filter, U.V.	Basement tap at pressure tank.
		Q3 Water Level	Yes	September				
		Q3 Water Sample	Yes	Sep 28, 2016		No	Softener, Filter, U.V.	Basement tap at pressure tank.
		Q4 Water Level	Yes	November				
		Q4 Water Sample	Yes	Dec 14, 2016		No	Softener, Filter, U.V.	Basement tap at pressure tank.
	2017	Q1 Water Level	Yes	March				
		Q1 Water Sample	Yes	Mar 21, 2017		No	Softener, Filter, U.V.	Basement tap at pressure tank.
		Q2 Water Level	Yes	June				
		Q2 Water Sample	Yes	Jun 20, 2017		No	Softener, Filter, U.V.	Basement tap at pressure tank.
		Q3 Water Level	Yes	September				
		Q3 Water Sample	Yes	Sep 19, 2017		No	Softener, Filter, U.V.	Basement tap at pressure tank.
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 7, 2017		No	Softener, Filter, U.V.	Basement tap at pressure tank.

Table 8.1

Residential Well Monitoring Information
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Dufferin Milton Quarry
Region of Halton Ontario

Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
Private Residential Wells In AMP Baseline Survey Zone								
DW95	2012	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 8, 2012		No	Yes	Outside tap at south side of house.
	2013	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 17, 2013		No	Yes	Outside tap at south side of house.
	2014	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	November				
		Q4 Water Sample	Yes	Nov 18, 2014		No	Yes	Outside tap at south side of house.
	2015	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 9, 2015		No	Yes	Outside tap at south side of house.
	2016	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	No	September	Unable to contact resident			
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 8, 2016		No	Yes	Outside tap at south side of house.
	2017	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 13, 2017		No	Yes	Outside tap at south side of house.
DW99	2012	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 10, 2012		No	U.V., Filter	Basement tap at pressure tank (sampled through hose).
	2013	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 9, 2013		No	U.V., Filter	Basement tap at pressure tank (sampled through hose).
	2014	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	November				
		Q4 Water Sample	Yes	Nov 18, 2014		No	U.V., Filter	Basement tap at pressure tank (sampled through hose).

Table 8.1

Residential Well Monitoring Information
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Dufferin Milton Quarry
Region of Halton Ontario

Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
	2015	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 2, 2015		No	U.V., Filter	Basement tap at pressure tank (sampled through hose).
	2016	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 5, 2016		No	U.V., Filter	Basement tap at pressure tank (sampled through hose).
	2017	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 5, 2017		No	U.V., Filter	Basement tap at pressure tank (sampled through hose).
DW100	2012	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 7, 2012		No	No	Kitchen sink.
	2013	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 18, 2013		No	No	Kitchen sink.
	2014	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	November				
		Q4 Water Sample	Yes	Nov 26, 2014		No	No	Kitchen sink.
	2015	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 2, 2015		No	No	Kitchen sink.
	2016	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 6, 2016		No	No	Kitchen sink.
	2017	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 19, 2017		No	No	Kitchen sink.

Table 8.1

Residential Well Monitoring Information
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Region of Halton Ontario

Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
DW102	2012	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 17, 2012		No	Softener	Basement tap at pressure tank.
	2013	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 13, 2013		No	Softener	Basement tap at pressure tank.
	2014	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	November				
		Q4 Water Sample	Yes	Nov 25, 2014		No	Softener	Basement tap at pressure tank.
	2015	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 15, 2015		No	Softener	Basement tap at pressure tank.
	2016	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 9, 2016		No	Softener	Basement tap at pressure tank.
	2017	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 5, 2017		No	Softener	Basement tap at pressure tank.
DW104	2012	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 12, 2012		No	U.V., Filter (bypassed)	Kitchen sink.
	2013	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 11, 2013		No	U.V., Filter (bypassed)	Kitchen sink.
	2014	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	November				
		Q4 Water Sample	Yes	Nov 19, 2014		No	U.V., Filter (bypassed)	Kitchen sink.

Table 8.1

Residential Well Monitoring Information
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Dufferin Milton Quarry
Region of Halton Ontario

Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
	2015	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 9, 2015		No	U.V., Filter (bypassed)	Kitchen sink.
	2016	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 8, 2016		No	U.V., Filter (bypassed)	Kitchen sink.
	2017	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 11, 2017		No	U.V., Filter (bypassed)	Kitchen sink.
DW106	2012	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December			Softener and some treatment	
		Q4 Water Sample	Yes	Dec 17, 2012		No	Softener was bypassed	Kitchen sink.
	2013	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December			Softener and some treatment	
		Q4 Water Sample	Yes	Dec 30, 2013		No	Softener was bypassed	Kitchen sink.
	2014	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December			Softener and some treatment	
		Q4 Water Sample	Yes	Dec 16, 2014		No	Softener was bypassed	Kitchen sink.
	2015	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December			Softener and some treatment	
		Q4 Water Sample	Yes	Dec 9, 2015		No	Softener was bypassed	Kitchen sink.
	2016	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 28, 2016		No	Softener and some treatment	Kitchen sink.
		Q4 Water Resample	Yes	Jan 9, 2017		No	Softener was bypassed	Re-sample due to exceedance
	2017	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December			Softener and some treatment	
		Q4 Water Sample	Yes	Dec 12, 2017		No	Softener was bypassed	Kitchen sink.

Residential Well Monitoring Information
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Region of Halton Ontario

Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
DW127	2012	Q1 Water Level	No	March	Vacant			
		Q2 Water Level	No	June	Vacant			
		Q3 Water Level	No	September	Vacant			
		Q4 Water Level	No	December	Vacant			
		Q4 Water Sample	No		Vacant			
	2013	Q1 Water Level	No	March	Vacant			
		Q2 Water Level	No	June	Vacant			
		Q3 Water Level	No	September	Vacant			
		Q4 Water Level	No	December	Vacant			
		Q4 Water Sample	No		Vacant			
	2014	Q1 Water Level	No	March	Vacant			
		Q2 Water Level	No	June	Vacant			
		Q3 Water Level	No	September	Vacant			
		Q4 Water Level	No	December	Vacant			
		Q4 Water Sample	No		Vacant			
	2015	Q1 Water Level	No	March	Vacant			
		Q2 Water Level	No	June	Vacant			
		Q3 Water Level	No	September	Vacant			
		Q4 Water Level	No	December	Vacant			
		Q4 Water Sample	No		Vacant			
	2016	Q1 Water Level	No	March	Vacant			
		Q2 Water Level	No	June	Vacant			
		Q3 Water Level	No	September	Vacant			
		Q4 Water Level	No	December	Vacant			
		Q4 Water Sample	No		Vacant			
	2017	Q1 Water Level	No	March	Vacant			
		Q2 Water Level	No	June	Vacant			
		Q3 Water Level	No	September	Vacant			
		Q4 Water Level	No	December	Vacant			
		Q4 Water Sample	No		Vacant			
DW128	2012	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 5, 2012		Yes	Softener	Main floor bathroom sink.
	2013	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 5, 2013		Yes	Softener	Main floor bathroom sink.
	2014	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	November				
		Q4 Water Sample	Yes	Nov 19, 2014		Yes	Softener	Main floor bathroom sink.

Table 8.1

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Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
	2015	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 9, 2015		Yes	Softener	Main floor bathroom sink.
	2016	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 9, 2016		Yes	Softener	Main floor bathroom sink.
	2017	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 4, 2017		Yes	Softener	Main floor bathroom sink.
DW128A	2012	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 5, 2012		Yes	Filter	Main floor kitchen sink.
	2013	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 5, 2013		Yes	Filter	Main floor kitchen sink.
	2014	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	November				
		Q4 Water Sample	Yes	Nov 19, 2014		Yes	Filter	Main floor kitchen sink.
	2015	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 9, 2015		Yes	Filter	Main floor kitchen sink.
	2016	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 9, 2016		Yes	Filter	Main floor kitchen sink.
	2017	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 4, 2017		Yes	Filter	Main floor kitchen sink.

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Dufferin Milton Quarry
Region of Halton Ontario

Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
DW129	2012	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 4, 2012		No	Yes	Outside tap at east side of house.
	2013	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 9, 2013		No	Yes	Outside tap at east side of house.
	2014	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	November				
		Q4 Water Sample	Yes	Nov 18, 2014		No	Yes	Outside tap at east side of house.
	2015	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	November				
		Q4 Water Sample	Yes	Dec 2, 2015		No	Yes	Outside tap at east side of house.
	2016	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	November				
		Q4 Water Sample	Yes	Dec 7, 2016		No	Yes	Outside tap at east side of house.
	2017	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 5, 2017		No	Yes	Outside tap at east side of house.
DW130	2012	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 5, 2012		No	Yes	Kitchen sink.
	2013	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	No	December	Frozen, couldn't open.			
		Q4 Water Sample	Yes	Dec 13, 2013		No	Yes	Kitchen sink.
	2014	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	No	November				
		Q4 Water Sample	Yes	Nov 25, 2014		No	Yes	Kitchen sink.

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Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
	2015	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 3, 2015		No	Yes	Kitchen sink.
	2016	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 14, 2016		No	Yes	Kitchen sink.
	2017	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 5, 2017		No	Yes	Kitchen sink.
DW131	2012	Q1 Water Level	No	March	Homeowner does not wish to participate in Dufferin residential well monitoring program.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No					
	2013	Q1 Water Level	No	March	Homeowner does not wish to participate in Dufferin residential well monitoring program.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No					
	2014	Q1 Water Level	No	March	Homeowner does not wish to participate in Dufferin residential well monitoring program.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No					
	2015	Q1 Water Level	No	March	Homeowner does not wish to participate in Dufferin residential well monitoring program.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No					
	2016	Q1 Water Level	No	March	Homeowner does not wish to participate in Dufferin residential well monitoring program.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No					
	2017	Q1 Water Level	No	March	Homeowner does not wish to participate in Dufferin residential well monitoring program.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No					

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Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
DW132	2012	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No		Not used in water system			According to resident the well is not connected to the water system.
	2013	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No		Not used in water system			According to resident the well is not connected to the water system.
	2014	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No		Not used in water system			According to resident the well is not connected to the water system.
	2015	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No		Not used in water system			According to resident the well is not connected to the water system.
	2016	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No		Not used in water system			According to resident the well is not connected to the water system.
	2017	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No		Not used in water system			According to resident the well is not connected to the water system.
DW132A	2012	Q1 Water Level	No	March	No contact with resident.			
		Q2 Water Level	No	June	No contact with resident.			
		Q3 Water Level	No	September	No contact with resident.			
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 12, 2012		No	U.V., Filter	Basement tap at pressure tank.
	2013	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 20, 2013		No	U.V., Filter	Basement tap at pressure tank.
	2014	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 2, 2014		No	U.V., Filter	Basement tap at pressure tank.

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Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
	2015	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 22, 2015		No	U.V., Filter	Basement tap at pressure tank.
	2016	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 20, 2016		No	U.V., Filter	Basement tap at pressure tank.
	2017	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 20, 2017		No	U.V., Filter	Basement tap at pressure tank.
DW133	2012	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 12, 2012		No	Softener, Filter, U.V., R.O.	Outside tap by pool.
	2013	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 17, 2013		No	Softener, Filter, U.V., R.O.	Outside tap by pool.
	2014	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	November				
		Q4 Water Sample	Yes	Nov 27, 2014		No	Softener, Filter, U.V., R.O.	Outside tap by pool.
	2015	Q1 Water Level	No	March	No access to wellhead, quarterly water levels not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 3, 2015		No	Softener, Filter, U.V., R.O.	Outside tap by pool.
	2016	Q1 Water Level	No	March	No access to wellhead, quarterly not conducted.			
		Q2 Water Level	No	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 8, 2016		No	Softener, Filter, U.V., R.O.	Outside tap by pool.
	2017	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	No		Sample refused.			

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Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
DW134	2012	Q1 Water Level	No	March	Homeowner does not wish to participate in Dufferin residential well monitoring program.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No			No	Yes	
	2013	Q1 Water Level	No	March	Homeowner does not wish to participate in Dufferin residential well monitoring program.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No			No	Yes	
	2014	Q1 Water Level	No	March	Homeowner does not wish to participate in Dufferin residential well monitoring program.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No			No	Yes	
	2015	Q1 Water Level	No	March	Homeowner does not wish to participate in Dufferin residential well monitoring program.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No			No	Yes	
	2016	Q1 Water Level	No	March	Homeowner does not wish to participate in Dufferin residential well monitoring program.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No			No	Yes	
	2017	Q1 Water Level	No	March	Homeowner does not wish to participate in Dufferin residential well monitoring program.			
		Q2 Water Level	No	June				
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	No			No	Yes	
DW135	2012	Q1 Water Level	No	March	Unable to contact resident			
		Q2 Water Level	No	June	Unable to contact resident			
		Q3 Water Level	No	September	Unable to contact resident			
		Q4 Water Level	No	December	Unable to contact resident			
		Q4 Water Sample	No		Unable to contact resident			
	2013	Q1 Water Level	No	March	Unable to contact resident			
		Q2 Water Level	No	June	Unable to contact resident			
		Q3 Water Level	No	September	Unable to contact resident			
		Q4 Water Level	No	December	Unable to contact resident			
		Q4 Water Sample	No		Unable to contact resident			
	2014	Q1 Water Level	No	March	Unable to contact resident			
		Q2 Water Level	No	June	Unable to contact resident			
		Q3 Water Level	No	September	Unable to contact resident			
		Q4 Water Level	No	December	Unable to contact resident			
		Q4 Water Sample	No		Unable to contact resident			

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Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
	2015	Q1 Water Level	No	March	Unable to contact resident			
		Q2 Water Level	No	June	Unable to contact resident			
		Q3 Water Level	No	September	Unable to contact resident			
		Q4 Water Level	No	December	Unable to contact resident			
		Q4 Water Sample	No		Unable to contact resident			
	2016	Q1 Water Level	No	March	Unable to contact resident			
		Q2 Water Level	No	June	Unable to contact resident			
		Q3 Water Level	No	September	Unable to contact resident			
		Q4 Water Level	No	December	Unable to contact resident			
		Q4 Water Sample	No		Unable to contact resident			
	2017	Q1 Water Level	No	March	Unable to contact resident			
		Q2 Water Level	No	June	Unable to contact resident			
		Q3 Water Level	No	September	Unable to contact resident			
		Q4 Water Level	No	December	Unable to contact resident			
		Q4 Water Sample	No		Unable to contact resident			
DW136	2012	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 6, 2012		No	Softener	Main floor laundry tub.
	2013	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 18, 2013		No	Softener	Main floor laundry tub.
	2014	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	November				
		Q4 Water Sample	Yes	Nov 18, 2014		No	Softener	Main floor laundry tub.
	2015	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 3, 2015		No	Softener	Main floor laundry tub.
	2016	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 12, 2016		No	Softener	Main floor laundry tub.
	2017	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 7, 2017		No	Softener	Main floor laundry tub.

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Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
DW137	2012	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 7, 2012		No	Softener	Main floor kitchen sink (small).
	2013	Q1 Water Level	No	March	Frozen, couldn't open.			
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 11, 2013		No	Softener	Main floor kitchen sink (small).
	2014	Q1 Water Level	No	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	November				
		Q4 Water Sample	Yes	Nov 25, 2014		No	Softener	Main floor kitchen sink (small).
	2015	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 9, 2015		No	Softener	Main floor kitchen sink (small).
	2016	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 16, 2016		No	Softener	Main floor kitchen sink (small).
	2017	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 8, 2017		No	Softener	Main floor kitchen sink (small).
Residential Wells Included Under Dufferin's Neighbourhood Relations Plan								
DW139	2012	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 10, 2012		No	Filter	Outside tap in garage.
	2013	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 11, 2013		No	Filter	Outside tap in garage.
	2014	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	November				
		Q4 Water Sample	Yes	Nov 27, 2014		No	Filter	Outside tap in garage.

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	2015	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 10, 2015		No	Filter	Outside tap in garage.
	2016	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 6, 2016		No	Filter	Outside tap in garage.
	2017	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 7, 2017		No	Filter	Outside tap in garage.
DW140	2012	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 6, 2012		No	N/A	Yard hydrant at rear of house in garden.
	2013	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 3, 2013		No	N/A	Yard hydrant at rear of house in garden.
	2014	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	November				
		Q4 Water Sample	Yes	Nov 27, 2014		No	N/A	Yard hydrant at rear of house in garden.
	2015	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 3, 2015		No	N/A	Yard hydrant at rear of house in garden.
	2016	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 6, 2016		No	N/A	Yard hydrant at rear of house in garden.
	2017	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 1, 2017		No	N/A	Yard hydrant at rear of house in garden.

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Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
DW140A	2012	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 6, 2012		No	N/A	Yard hydrant at maple syrup shed.
	2013	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 3, 2013		No	N/A	Yard hydrant at maple syrup shed.
	2014	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	November				
		Q4 Water Sample	Yes	Nov 27, 2014		No	N/A	Yard hydrant at maple syrup shed.
	2015	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 3, 2015		No	N/A	Yard hydrant at maple syrup shed.
	2016	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 6, 2016		No	N/A	Yard hydrant at maple syrup shed.
	2017	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 1, 2017		No	N/A	Yard hydrant at maple syrup shed.
Dufferin-Owned Residential Wells								
DW105	2012	Q1 Water Level	No	March				
		Q2 Water Level	No	June	No access to wellhead for water level monitoring.			
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 6, 2012		No	Yes	Outside tap at rear of house.
	2013	Q1 Water Level	No	March				
		Q2 Water Level	No	June	No access to wellhead for water level monitoring.			
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 11, 2013		No	Yes	Outside tap at rear of house.
	2014	Q1 Water Level	No	March				
		Q2 Water Level	No	June	No access to wellhead for water level monitoring.			
		Q3 Water Level	No	September				
		Q4 Water Level	No	November				
		Q4 Water Sample	Yes	Nov 19, 2014		No	Yes	Outside tap at rear of house.

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Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
	2015	Q1 Water Level	No	March				
		Q2 Water Level	No	June	No access to wellhead for water level monitoring.			
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 2, 2015		No	Yes	Outside tap at rear of house.
	2016	Q1 Water Level	No	March				
		Q2 Water Level	No	June	No access to wellhead for water level monitoring.			
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 16, 2016		No	Yes	Outside tap at rear of house.
	2017	Q1 Water Level	No	March				
		Q2 Water Level	No	June	No access to wellhead for water level monitoring.			
		Q3 Water Level	No	September				
		Q4 Water Level	No	December				
		Q4 Water Sample	Yes	Dec 13, 2017		No	Yes	Outside tap at rear of house.
DW107	2012	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 5, 2012		Yes	U.V., Filter	Outside tap at front of house.
	2013	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 13, 2013		Yes	U.V., Filter	Outside tap at front of house.
	2014	Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	April				
		Q2 Water Level	Yes	May				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	July				
		Q3 Water Level	Yes	August				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	October				
		Q4 Water Level	Yes	November				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Nov 26, 2014		Yes	U.V., Filter	Outside tap at front of house.
	2015	Q1 Water Level	No	January	Inaccessible			
		Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	April				
		Q2 Water Level	Yes	May				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	July				
		Q3 Water Level	Yes	August				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	October				
		Q4 Water Level	Yes	November				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 3, 2015		Yes	U.V., Filter	Outside tap at front of house.

Table 8.1

Residential Well Monitoring Information
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton Ontario

Well	Year	Quarter and Sample type	Collected? (Yes/No)	Date Sampled	If No why?	Sample Treated? (Yes/No)	Treatment System	Comments (e.g., where sampled, changes since last year)
	2016	Q1 Water Level	Yes	February				
		Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	April				
		Q2 Water Level	Yes	May				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	July				
		Q3 Water Level	Yes	August				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	October				
		Q4 Water Level	Yes	November				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 14, 2016		Yes	U.V., Filter	Outside tap at front of house.
	2017	Q1 Water Level	Yes	January				
		Q1 Water Level	Yes	February				
		Q1 Water Level	Yes	March				
		Q2 Water Level	Yes	April				
		Q2 Water Level	Yes	May				
		Q2 Water Level	Yes	June				
		Q3 Water Level	Yes	July				
		Q3 Water Level	Yes	August				
		Q3 Water Level	Yes	September				
		Q4 Water Level	Yes	October				
		Q4 Water Level	Yes	November				
		Q4 Water Level	Yes	December				
		Q4 Water Sample	Yes	Dec 8, 2017		Yes	U.V., Filter	Outside tap at front of house.

Table 8.2

Residential Well Water Level Data
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location	Sample Date	Measuring Point Elevation (m AMSL)	Water Elevation (m AMSL)	Depth to Water (m bref)
DW95	3/29/2017	321.167	315.61	5.56
DW95	6/28/2017	321.167	315.04	6.13
DW95	9/27/2017	321.167	313.80	7.37
DW95	12/13/2017	321.167	314.30	6.87
DW99	3/27/2017	312.832	305.12	7.72
DW99	6/22/2017	312.832	304.93	7.91
DW99	9/26/2017	312.832	303.84	8.99
DW99	12/5/2017	312.832	303.73	9.10
DW100	3/29/2017	319.380	313.91	5.47
DW100	6/23/2017	319.380	313.74	5.64
DW100	9/22/2017	319.380	313.34	6.04
DW100	12/19/2017	319.380	313.49	5.90
DW102	3/27/2017	324.437	316.32	8.12
DW102	6/30/2017	324.437	315.82	8.62
DW102	9/21/2017	324.437	315.24	9.20
DW102	12/5/2017	324.437	315.29	9.15
DW103	3/21/2017	319.353	315.80	3.55
DW103	9/19/2017	319.353	315.38	3.98
DW103	12/7/2017	319.353	315.45	3.90
DW104	3/27/2017	320.667	315.64	5.03
DW104	6/27/2017	320.667	315.48	5.19
DW104	9/26/2017	320.667	315.21	5.46
DW104	12/11/2017	320.667	315.31	5.36
DW107	1/20/2017	326.773	318.11	8.66
DW107	2/14/2017	326.773	317.80	8.97
DW107	3/14/2017	326.773	318.25	8.52
DW107	4/11/2017	326.773	319.01	7.76
DW107	5/9/2017	326.773	319.16	7.62
DW107	7/13/2017	326.773	317.36	9.41
DW107	8/15/2017	326.773	317.04	9.73
DW107	9/25/2017	326.773	317.24	9.53
DW107	10/11/2017	326.773	317.28	9.49
DW107	11/14/2017	326.773	317.55	9.22
DW107	12/12/2017	326.773	317.59	9.18
DW130	3/24/2017	333.012	330.16	2.85
DW130	6/23/2017	333.012	329.96	3.05
DW130	9/26/2017	333.012	327.78	5.23

Table 8.2

Residential Well Water Level Data
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location	Sample Date	Measuring Point Elevation (m AMSL)	Water Elevation (m AMSL)	Depth to Water (m bref)
DW130	12/5/2017	333.012	327.47	5.54
DW132A	3/27/2017	343.568	337.27	6.30
DW132A	6/27/2017	343.568	337.04	6.53
DW132A	9/26/2017	343.568	336.01	7.56
DW132A	12/20/2017	343.568	336.21	7.36
DW133	3/30/2017	344.511	340.22	4.29
DW133	6/27/2017	344.511	339.84	4.67
DW133	9/29/2017	344.511	337.97	6.54
DW133	12/21/2017	344.511	338.62	5.89
DW136	3/24/2017	325.407	322.37	3.04
DW136	6/22/2017	325.407	322.16	3.25
DW136	9/26/2017	325.407	321.71	3.70
DW136	12/7/2017	325.407	322.03	3.38
DW137	3/24/2017	322.347	320.45	1.90
DW137	6/22/2017	322.347	319.34	3.01
DW137	9/26/2017	322.347	318.98	3.37
DW137	12/8/2017	322.347	319.37	2.98
DW139	3/23/2017	344.377	341.02	3.36
DW139	6/23/2017	344.377	340.78	3.60
DW139	9/26/2017	344.377	339.82	4.56
DW139	12/7/2017	344.377	340.12	4.26
DW140	3/23/2017	351.398	343.58	7.82
DW140	6/30/2017	351.398	342.95	8.45
DW140	9/26/2017	351.398	341.41	9.99
DW140	12/1/2017	351.398	341.10	10.30
DW140A	3/22/2017	350.324	343.62	6.71
DW140A	6/30/2017	350.324	342.98	7.34
DW140A	9/26/2017	350.324	341.18	9.14
DW140A	12/1/2017	350.324	341.08	9.24

Note:

Measuring point elevations based on GHD survey data.
m bref - meters below reference elevation.

Table 8.3

Residential Well Analytical Data
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location:		**DW95**	**DW99**	**DW100**	**DW102**	**DW103**	**DW103**
Sample ID:		**GW-10978-162-47-121317-RC101**	**GW-10978-162-47-120517-RC-102**	**GW-10978-162-47-121917-RC103**	**GW-10978-162-47-120517-RC-104**	**GW-10978-032117-RC105**	**GW-10978-062017-RC105**
Sample Date:		**12/13/2017**	**12/5/2017**	**12/19/2017**	**12/5/2017**	**3/21/2017**	**6/20/2017**
Parameters	**Units**						
Metals							
Aluminum	mg/L	0.0324	0.0282	ND (0.0050)	ND (0.0050)	0.013	ND (0.10) DLHC
Antimony	mg/L	ND (0.00010)	0.00013	ND (0.00010)	ND (0.00010)	0.00015	ND (0.0010) DLHC
Arsenic	mg/L	0.00030	0.00016	0.00010	0.00010	0.00011	ND (0.0010) DLHC
Barium	mg/L	0.0164	0.0290	0.00618	0.00884	0.0222	1.09 DLHC
Beryllium	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.0010) DLHC
Bismuth	mg/L	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.00050) DLHC
Boron	mg/L	0.059	0.029	0.016	0.012	0.055	0.29 DLHC
Cadmium	mg/L	0.0000693	0.0000604	0.0000403	0.0000358	0.000063	ND (0.00010) DLHC
Caesium	mg/L	ND (0.000010)	0.000018	ND (0.000010)	ND (0.000010)	ND (0.000010)	0.00064 DLHC
Calcium	mg/L	103	119	94.4	81.6	82.7	216 DLHC
Chromium Total	mg/L	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.0050) DLHC
Cobalt	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.0013 DLHC
Copper	mg/L	0.0094	0.0022	0.0115	0.0419	0.0271	ND (0.010) DLHC
Iron	mg/L	0.061	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	18.7 DLHC
Lead	mg/L	0.000891	0.000209	0.000207	0.0121	0.00205	0.00214 DLHC
Lithium	mg/L	ND (0.0010)	0.0018	0.0010	ND (0.0010)	0.0042	0.052 DLHC
Magnesium	mg/L	41.3	36.9	45.0	41.1	53.2	43.2 DLHC
Manganese	mg/L	0.00308	0.00072	ND (0.00050)	ND (0.00050)	0.00070	0.478 DLHC
Molybdenum	mg/L	0.000239	0.000470	0.000172	0.000374	0.000868	0.00254 DLHC
Nickel	mg/L	0.00077	0.00126	ND (0.00050)	0.00359	0.00167	ND (0.0050) DLHC
Phosphorous	mg/L	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	0.64 DLHC
Potassium	mg/L	1.12	1.94	0.475	0.581	2.61	24.9 DLHC
Rubidium	mg/L	0.00089	0.00152	0.00051	0.00039	0.00133	0.0330 DLHC
Selenium	mg/L	0.000075	0.000170	0.000140	0.000117	ND (0.000050)	ND (0.00050) DLHC
Silicon	mg/L	3.07	2.37	1.71	1.91	1.77	18.7 DLHC
Silver	mg/L	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.00050) DLHC
Sodium	mg/L	16.6	132 DLHC	10.3	27.6	18.1	467 DLHC
Strontium	mg/L	0.0883	0.241	0.0702	0.0753	0.719	4.15 DLHC
Sulphur	mg/L	10.6	24.5	13.0	4.32	44.1	18.3 DLHC
Tellurium	mg/L	ND (0.00020)	ND (0.00020)	ND (0.00020)	ND (0.00020)	ND (0.00020)	ND (0.0020) DLHC
Thallium	mg/L	0.000022	0.000034	ND (0.000010)	ND (0.000010)	0.000044	ND (0.00010) DLHC
Thorium	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.0010) DLHC
Tin	mg/L	0.00023	ND (0.00010)	ND (0.00010)	0.00111	0.00044	ND (0.0010) DLHC
Titanium	mg/L	0.00148	0.00031	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.0030) DLHC
Tungsten	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.0010) DLHC
Uranium	mg/L	0.000343	0.00110	0.000155	0.000297	0.000341	0.00050 DLHC
Vanadium	mg/L	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.0050) DLHC
Zinc	mg/L	0.0203	0.0437	0.0203	0.0225	0.0662	0.280 DLHC
Zirconium	mg/L	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.0030) DLHC
Biological							
Escherichia coli	cfu/100mL	0	0	0	0	0	0
Total Coliform Bacteria	cfu/100mL	0	13	0	0	0	2

Table 8.3

Residential Well Analytical Data
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location:		DW95	DW99	DW100	DW102	DW103	DW103
Sample ID:		GW-10978-162-47-121317-RC101	GW-10978-162-47-120517-RC-102	GW-10978-162-47-121917-RC103	GW-10978-162-47-120517-RC-104	GW-10978-032117-RC105	GW-10978-062017-RC105
Sample Date:		12/13/2017	12/5/2017	12/19/2017	12/5/2017	3/21/2017	6/20/2017
Parameters	**Units**						
General Chemistry							
Alkalinity, Bicarbonate	mg/L	371	358	378	332	265	182
Alkalinity, Carbonate	mg/L	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Alkalinity, Hydroxide	mg/L	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Alkalinity, Total (As CaCO3)	mg/L	371	358	378	332	265	182
Ammonia-N	mg/L	0.080	0.063	0.041	0.133	ND (0.020)	0.134
Bromide	mg/L	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	0.45	0.74
Chloride	mg/L	20.4	223	16.5	67.4	57.7	80.7
Conductivity	umhos/cm	742	1460	723	834	874	906
Fluoride	mg/L	0.032	0.055	0.058	0.052	0.078	0.122
Hardness	mg/L	428 HTC	450 HTC	421 HTC	373 HTC	425 HTC	718 HTC
Nitrate (as N)	mg/L	2.85	0.839	1.39	1.47	0.129	0.241
Nitrite (as N)	mg/L	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Orthophosphate (dissolved)	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
pH (lab)	s.u.	7.57	7.63	7.78	7.98	7.82	7.84
Phosphorous	mg/L	0.0043	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
Sulphate	mg/L	27.8	68.2	35.0	11.9	123	180
Total Dissolved Solids (TDS)	mg/L	437 DLDS	811 DLDS	419	428 DLDS	512 DLDS	576 DLDS
Total Kjeldahl Nitrogen (TKN)	mg/L	0.25 TKNI	ND (0.15)	0.20	ND (0.15)	ND (0.15)	ND (0.15)
Total Organic Carbon (TOC)	mg/L	1.2	1.1	1.2	1.2	1.8	ND (1.0)
Total Suspended Solids (TSS)	mg/L	4.9	8.1	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Turbidity	NTU	1.37	2.65	0.23	0.78	ND (0.10)	0.60

Notes:

DLDS - Detection limit raised: Dilution due to high Dissolved Solids/Electrical Conductivity.
DLHC - Detection Limit Raised: Dilution due to high concentration of test analyte(s).
DLM - Detection limit adjusted for sample matrix
HTC - Hardness calculated from Total Ca and/or Mg; may bias high (dissolved Ca/Mg unavailable).
DLUI - Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
PEHT - Parameter Exceeded Recommended Holding Time Prior to Analysis
TKNI - TKN result is likely biased low due to Nitrate interference. Nitrate-N is > 10x TKN.
ND - Non-detect at associated value.
-- Not applicable.

Table 8.3

Residential Well Analytical Data
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location:		**DW103**	**DW103**	**DW104**	**DW105**	**DW106**
Sample ID:		**GW-10978-162-47-091917-RC105**	**GW-10978-162-47-120717-RC105**	**GW-10978-162-47-121117-RC106**	**GW-10978-162-47-121317-RC107**	**GW-10978-010917-RC108**
Sample Date:		**9/19/2017**	**12/7/2017**	**12/11/2017**	**12/13/2017**	**1/9/2017**
Parameters	**Units**					
Metals						
Aluminum	mg/L	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.010)
Antimony	mg/L	0.00015	0.00012	ND (0.00010)	ND (0.00010)	ND (0.00010)
Arsenic	mg/L	0.00014	0.00015	0.00016	ND (0.00010)	0.00012
Barium	mg/L	0.0232	0.0268	0.0347	0.0140	0.00717
Beryllium	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Bismuth	mg/L	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron	mg/L	0.094	0.087	ND (0.010)	0.098	0.013
Cadmium	mg/L	0.000041	0.0000497	0.0000243	0.0000144	0.000056
Caesium	mg/L	ND (0.000010)	ND (0.000010)	ND (0.000010)	0.000011	ND (0.000010)
Calcium	mg/L	76.4	81.0	76.7	39.0	97.7
Chromium Total	mg/L	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Cobalt	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Copper	mg/L	0.0107	0.0088	0.0121	0.0116	0.0122
Iron	mg/L	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Lead	mg/L	0.000786	0.00118	0.000245	0.000326	0.00099
Lithium	mg/L	0.0092	0.0077	ND (0.0010)	0.0020	ND (0.0010)
Magnesium	mg/L	53.0	54.5	36.6	67.2	45.3
Manganese	mg/L	ND (0.00050)	0.00053	ND (0.00050)	0.00079	ND (0.00050)
Molybdenum	mg/L	0.00266	0.00184	0.000587	0.00110	0.000290
Nickel	mg/L	0.00060	0.00122	ND (0.00050)	ND (0.00050)	0.00107
Phosphorous	mg/L	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Potassium	mg/L	4.14	4.06	0.610	6.99	0.963
Rubidium	mg/L	0.00191	0.00198	0.00062	0.00138	0.00043
Selenium	mg/L	ND (0.000050)	ND (0.000050)	0.000081	ND (0.000050)	0.000202
Silicon	mg/L	1.30	1.41	2.74	1.69	1.86
Silver	mg/L	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Sodium	mg/L	27.7	27.3	10.1	85.1	61.0
Strontium	mg/L	1.19	1.10	0.257	0.269	0.0571
Sulphur	mg/L	69.1	67.8	7.82	74.3	4.01
Tellurium	mg/L	0.00023	ND (0.00020)	ND (0.00020)	ND (0.00020)	ND (0.00020)
Thallium	mg/L	0.000057	0.000055	0.000010	0.000026	ND (0.000010)
Thorium	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Tin	mg/L	0.00012	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Titanium	mg/L	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)
Tungsten	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Uranium	mg/L	0.000431	0.000355	0.000253	0.000396	0.000163
Vanadium	mg/L	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Zinc	mg/L	0.0372	0.0454	0.0163	0.0133	0.0186
Zirconium	mg/L	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)
Biological						
Escherichia coli	cfu/100mL	0	0	0	0	0
Total Coliform Bacteria	cfu/100mL	1	0	2	0	210 DLM

Table 8.3

Residential Well Analytical Data
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location:		**DW103**	**DW103**	**DW104**	**DW105**	**DW106**
Sample ID:		**GW-10978-162-47-091917-RC105**	**GW-10978-162-47-120717-RC105**	**GW-10978-162-47-121117-RC106**	**GW-10978-162-47-121317-RC107**	**GW-10978-010917-RC108**
Sample Date:		**9/19/2017**	**12/7/2017**	**12/11/2017**	**12/13/2017**	**1/9/2017**
Parameters	**Units**					
General Chemistry						
Alkalinity, Bicarbonate	mg/L	187	180	304	188	377
Alkalinity, Carbonate	mg/L	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Alkalinity, Hydroxide	mg/L	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Alkalinity, Total (As CaCO3)	mg/L	187	180	304	188	377
Ammonia-N	mg/L	0.061	0.185	ND (0.020)	0.086	0.039
Bromide	mg/L	0.40	0.44	ND (0.10)	0.46	ND (0.10)
Chloride	mg/L	82.8	85.6	18.9	102	124
Conductivity	umhos/cm	922	921	639	959	1030
Fluoride	mg/L	0.124	0.092	0.048	0.073	0.067
Hardness	mg/L	409 HTC	427 HTC	342 HTC	374 HTC	431 HTC
Nitrate (as N)	mg/L	0.137	0.148	0.157	0.210	2.95
Nitrite (as N)	mg/L	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Orthophosphate (dissolved)	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
pH (lab)	s.u.	7.96	7.96	7.86	7.96	7.51
Phosphorous	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	0.0163
Sulphate	mg/L	183	188	21.4	199	9.73
Total Dissolved Solids (TDS)	mg/L	576 DLDS	604 DLDS	327 DLDS	594 DLDS	552 DLDS
Total Kjeldahl Nitrogen (TKN)	mg/L	ND (0.15)	0.34	ND (0.15)	ND (0.15)	0.36
Total Organic Carbon (TOC)	mg/L	1.5	1.0	ND (1.0)	ND (1.0)	2.3
Total Suspended Solids (TSS)	mg/L	ND (2.0)	ND (2.0)	ND (2.0)	2.8	ND (2.0)
Turbidity	NTU	0.17	0.15	0.27	0.24	0.14

Notes:

DLDS - Detection limit raised: Dilution due to high Dissolved Solids/Electrical Conductivity.
DLHC - Detection Limit Raised: Dilution due to high concentration of test analyte(s).
DLM - Detection limit adjusted for sample matrix
HTC - Hardness calculated from Total Ca and/or Mg; may bias high (dissolved Ca/Mg unavailable).
DLUI - Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
PEHT - Parameter Exceeded Recommended Holding Time Prior to Analysis
TKNI - TKN result is likely biased low due to Nitrate interference. Nitrate-N is > 10x TKN.
ND - Non-detect at associated value.
-- Not applicable.

Table 8.3

Residential Well Analytical Data
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location:		**DW106**	**DW107**	**DW128**	**DW128A**	**DW129**
Sample ID:		**GW-10978-162-47-121217-RC108**	**GW-10978-162-47-120817-RC109**	**GW-10978-162-47-120417-RC114**	**GW-10978-162-47-120417-RC115**	**GW-10978-162-47-120517-RC-116**
Sample Date:		**12/12/2017**	**12/8/2017**	**12/4/2017**	**12/4/2017**	**12/5/2017**
Parameters	**Units**					
Metals						
Aluminum	mg/L	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
Antimony	mg/L	ND (0.00010)	0.00012	ND (0.00010)	ND (0.00010)	ND (0.00010)
Arsenic	mg/L	0.00013	0.00012	0.00016	0.00066	0.00012
Barium	mg/L	0.00750	0.0220	0.00048	0.137	0.0215
Beryllium	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Bismuth	mg/L	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron	mg/L	0.013	0.028	0.054	0.027	0.012
Cadmium	mg/L	0.0000667	0.0000530	0.0000165	ND (0.0000050)	0.000158
Caesium	mg/L	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)
Calcium	mg/L	96.6	87.0	0.52	72.7	80.7
Chromium Total	mg/L	ND (0.00050)	ND (0.00050)	0.00082	ND (0.00050)	ND (0.00050)
Cobalt	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Copper	mg/L	0.0143	0.0719	0.0083	ND (0.0010)	0.0059
Iron	mg/L	ND (0.050)	ND (0.050)	ND (0.050)	0.281	ND (0.050)
Lead	mg/L	0.00150	0.00603	0.000491	0.000059	0.000684
Lithium	mg/L	ND (0.0010)	0.0017	0.0106	0.0048	ND (0.0010)
Magnesium	mg/L	47.4	39.0	0.219	28.0	40.1
Manganese	mg/L	ND (0.00050)	ND (0.00050)	ND (0.00050)	0.0116	ND (0.00050)
Molybdenum	mg/L	0.000330	0.00151	0.00213	0.00191	0.00133
Nickel	mg/L	0.00090	0.00054	ND (0.00050)	ND (0.00050)	0.00285
Phosphorous	mg/L	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Potassium	mg/L	0.727	1.12	0.526	0.974	0.399
Rubidium	mg/L	0.00033	0.00110	0.00063	0.00103	0.00046
Selenium	mg/L	0.000134	0.000093	ND (0.000050)	ND (0.000050)	0.000089
Silicon	mg/L	1.69	2.16	2.72	3.14	1.66
Silver	mg/L	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Sodium	mg/L	97.0	11.4	177 DLHC	8.06	1.96
Strontium	mg/L	0.0549	0.267	0.0062	1.05	0.0459
Sulphur	mg/L	3.31	29.5	37.0	13.5	3.94
Tellurium	mg/L	ND (0.00020)	ND (0.00020)	ND (0.00020)	ND (0.00020)	ND (0.00020)
Thallium	mg/L	ND (0.000010)	0.000054	0.000021	ND (0.000010)	0.000020
Thorium	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Tin	mg/L	ND (0.00010)	0.00228	ND (0.00010)	ND (0.00010)	ND (0.00010)
Titanium	mg/L	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)
Tungsten	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Uranium	mg/L	0.000157	0.000388	0.000211	0.000065	0.000380
Vanadium	mg/L	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Zinc	mg/L	0.0228	0.0453	0.0051	0.0094	0.168
Zirconium	mg/L	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)
Biological						
Escherichia coli	cfu/100mL	0	0	0	0	0
Total Coliform Bacteria	cfu/100mL	0	0	0	0	88

Table 8.3

Residential Well Analytical Data
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Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location:		**DW106**	**DW107**	**DW128**	**DW128A**	**DW129**
Sample ID:		**GW-10978-162-47-121217-RC108**	**GW-10978-162-47-120817-RC109**	**GW-10978-162-47-120417-RC114**	**GW-10978-162-47-120417-RC115**	**GW-10978-162-47-120517-RC-116**
Sample Date:		**12/12/2017**	**12/8/2017**	**12/4/2017**	**12/4/2017**	**12/5/2017**
Parameters	**Units**					
General Chemistry						
Alkalinity, Bicarbonate	mg/L	352	255	244	265	372
Alkalinity, Carbonate	mg/L	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Alkalinity, Hydroxide	mg/L	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Alkalinity, Total (As CaCO3)	mg/L	352	255	244	265	372
Ammonia-N	mg/L	0.050	0.062	0.109	0.142	0.034
Bromide	mg/L	ND (0.10)	0.17	0.19	ND (0.10)	ND (0.10)
Chloride	mg/L	195	38.1	47.2	11.6	3.65
Conductivity	umhos/cm	1180	729	828	581	682
Fluoride	mg/L	0.052	0.048	0.088	0.059	0.051
Hardness	mg/L	436 HTC	378 HTC	ND (10) HTC	297 HTC	367 HTC
Nitrate (as N)	mg/L	1.90	0.346	ND (0.020)	ND (0.020)	1.35
Nitrite (as N)	mg/L	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Orthophosphate (dissolved)	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
pH (lab)	s.u.	7.78	7.91	8.14	8.08	7.79
Phosphorous	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
Sulphate	mg/L	7.97	82.9	103	38.0	10.1
Total Dissolved Solids (TDS)	mg/L	687 DLDS	458 DLDS	476 DLDS	309 DLDS	351 DLDS
Total Kjeldahl Nitrogen (TKN)	mg/L	0.22	0.16	ND (0.15)	ND (0.15)	ND (0.15)
Total Organic Carbon (TOC)	mg/L	1.2	ND (1.0)	1.5	1.6	1.1
Total Suspended Solids (TSS)	mg/L	2.2	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Turbidity	NTU	0.22	0.22	0.14	3.26	0.17

Notes:

DLDS - Detection limit raised: Dilution due to high Dissolved Solids/Electrical Conductivity.
DLHC - Detection Limit Raised: Dilution due to high concentration of test analyte(s).
DLM - Detection limit adjusted for sample matrix
HTC - Hardness calculated from Total Ca and/or Mg; may bias high (dissolved Ca/Mg unavailable).
DLUI - Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
PEHT - Parameter Exceeded Recommended Holding Time Prior to Analysis
TKNI - TKN result is likely biased low due to Nitrate interference. Nitrate-N is > 10x TKN.
ND - Non-detect at associated value.
-- Not applicable.

Table 8.3

Residential Well Analytical Data
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location:		**DW130**	**DW132A**	**DW136**	**DW137**	**DW139**
Sample ID:		**GW-10978-162-47-120517-RC-117**	**GW-10978-162-47-122017-RC120**	**GW-10978-162-47-120717-RC110**	**GW-10978-162-47-120817-RC111**	**GW-10978-162-47-120717-RC124**
Sample Date:		**12/5/2017**	**12/20/2017**	**12/7/2017**	**12/8/2017**	**12/7/2017**
Parameters	**Units**					
Metals						
Aluminum	mg/L	ND (0.0050)	0.0106	0.0050	ND (0.0050)	0.0058
Antimony	mg/L	ND (0.00010)	0.00018	ND (0.00010)	ND (0.00010)	ND (0.00010)
Arsenic	mg/L	0.00011	0.00017	0.00026	0.00023	0.00360
Barium	mg/L	0.0148	0.0723	0.0779	0.0951	0.0211
Beryllium	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Bismuth	mg/L	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron	mg/L	0.015	ND (0.010)	0.017	0.016	0.022
Cadmium	mg/L	0.000169	0.000145	0.0000471	0.0000756	ND (0.0000050)
Caesium	mg/L	ND (0.000010)	ND (0.000010)	ND (0.000010)	0.000011	ND (0.000010)
Calcium	mg/L	97.9	87.3	98.3	99.5	88.9
Chromium Total	mg/L	0.00111	0.00085	0.00108	ND (0.00050)	ND (0.00050)
Cobalt	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.00021
Copper	mg/L	0.0170	0.0100	0.0149	0.0196	0.0195
Iron	mg/L	ND (0.050)	0.065	ND (0.050)	0.147	2.14
Lead	mg/L	0.000350	0.00139	0.000264	0.000349	0.000762
Lithium	mg/L	ND (0.0010)	ND (0.0010)	0.0022	0.0027	ND (0.0010)
Magnesium	mg/L	40.0	33.4	36.6	36.1	37.6
Manganese	mg/L	ND (0.00050)	0.00169	ND (0.00050)	0.00431	0.0693
Molybdenum	mg/L	0.00124	0.00514	0.00126	0.00158	0.00220
Nickel	mg/L	0.00202	0.00493	0.00081	0.00136	0.00179
Phosphorous	mg/L	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Potassium	mg/L	0.476	0.658	3.36	2.61	1.27
Rubidium	mg/L	0.00071	0.00072	0.00187	0.00216	0.00088
Selenium	mg/L	0.000081	0.000109	0.000237	0.000198	0.000064
Silicon	mg/L	2.01	2.26	4.50	4.92	2.98
Silver	mg/L	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Sodium	mg/L	16.4	63.2	127 DLHC	103 DLHC	6.95
Strontium	mg/L	0.0708	0.0793	0.213	0.324	0.0601
Sulphur	mg/L	5.02	6.56	10.8	15.5	7.35
Tellurium	mg/L	ND (0.00020)	ND (0.00020)	ND (0.00020)	ND (0.00020)	ND (0.00020)
Thallium	mg/L	0.000043	0.000056	0.000067	0.000107	ND (0.000010)
Thorium	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Tin	mg/L	ND (0.00010)	0.00037	ND (0.00010)	ND (0.00010)	0.00018
Titanium	mg/L	ND (0.00030)	ND (0.00040) DLI	ND (0.00030)	ND (0.00030)	ND (0.00030)
Tungsten	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Uranium	mg/L	0.000453	0.00118	0.000564	0.000863	0.000241
Vanadium	mg/L	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Zinc	mg/L	0.168	0.204	0.0314	0.0480	0.0083
Zirconium	mg/L	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	0.00038
Biological						
Escherichia coli	cfu/100mL	0	0	0	0	0
Total Coliform Bacteria	cfu/100mL	0	0	0	1	1

Table 8.3

Residential Well Analytical Data
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Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location:		**DW130**	**DW132A**	**DW136**	**DW137**	**DW139**
Sample ID:		**GW-10978-162-47-120517-RC-117**	**GW-10978-162-47-122017-RC120**	**GW-10978-162-47-120717-RC110**	**GW-10978-162-47-120817-RC111**	**GW-10978-162-47-120717-RC124**
Sample Date:		**12/5/2017**	**12/20/2017**	**12/7/2017**	**12/8/2017**	**12/7/2017**
Parameters	**Units**					
General Chemistry						
Alkalinity, Bicarbonate	mg/L	389	327	311	317	370
Alkalinity, Carbonate	mg/L	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Alkalinity, Hydroxide	mg/L	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Alkalinity, Total (As CaCO3)	mg/L	389	327	311	317	370
Ammonia-N	mg/L	ND (0.020)	0.053	0.064	0.108	0.151
Bromide	mg/L	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.50) DLM	ND (0.10)
Chloride	mg/L	33.0	112	213	182 DLM	5.73
Conductivity	umhos/cm	805	853	1300	1180	680
Fluoride	mg/L	0.047	0.188	0.045	ND (0.10) DLM	0.027
Hardness	mg/L	409 HTC	355 HTC	396 HTC	397 HTC	377 HTC
Nitrate (as N)	mg/L	0.901	1.03	4.27	2.79 DLM	ND (0.020)
Nitrite (as N)	mg/L	ND (0.010)	0.257	ND (0.010)	ND (0.050) DLM	ND (0.010)
Orthophosphate (dissolved)	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
pH (lab)	s.u.	7.77	8.00	7.81	7.90	7.63
Phosphorous	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	0.0077
Sulphate	mg/L	13.6	35.8	29.9	42.7 DLM	21.8
Total Dissolved Solids (TDS)	mg/L	427 DLDS	514	706 DLDS	691 DLDS	392 DLDS
Total Kjeldahl Nitrogen (TKN)	mg/L	ND (0.15)	0.30	0.41 TKNI	0.32	0.37
Total Organic Carbon (TOC)	mg/L	ND (1.0)	1.6	1.5	2.3	5.2
Total Suspended Solids (TSS)	mg/L	ND (2.0)	3.3 PEHT	ND (2.0)	ND (2.0)	ND (2.0)
Turbidity	NTU	0.25	1.43	0.17	0.52	13.2

Notes:

DLDS - Detection limit raised: Dilution due to high Dissolved Solids/Electrical Conductivity.
DLHC - Detection Limit Raised: Dilution due to high concentration of test analyte(s).
DLM - Detection limit adjusted for sample matrix
HTC - Hardness calculated from Total Ca and/or Mg; may bias high (dissolved Ca/Mg unavailable).
DLUI - Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
PEHT - Parameter Exceeded Recommended Holding Time Prior to Analysis
TKNI - TKN result is likely biased low due to Nitrate interference. Nitrate-N is > 10x TKN.
ND - Non-detect at associated value.
-- Not applicable.

Table 8.3

Residential Well Analytical Data
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Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location:		**DW140**	**DW140A**
Sample ID:		**GW-10978-162-47-120117-RC125**	**GW-10978-162-47-120117-RC126**
Sample Date:		**12/1/2017**	**12/1/2017**
Parameters	**Units**		
Metals			
Aluminum	mg/L	ND (0.0050)	ND (0.0050)
Antimony	mg/L	ND (0.00010)	ND (0.00010)
Arsenic	mg/L	0.00022	0.00015
Barium	mg/L	0.0179	0.0182
Beryllium	mg/L	ND (0.00010)	ND (0.00010)
Bismuth	mg/L	ND (0.000050)	ND (0.000050)
Boron	mg/L	0.044	0.021
Cadmium	mg/L	0.000324	0.000191
Caesium	mg/L	ND (0.000010)	ND (0.000010)
Calcium	mg/L	106	93.6
Chromium Total	mg/L	ND (0.00050)	ND (0.00050)
Cobalt	mg/L	ND (0.00010)	ND (0.00010)
Copper	mg/L	0.0065	0.0040
Iron	mg/L	ND (0.050)	ND (0.050)
Lead	mg/L	0.000733	0.00110
Lithium	mg/L	ND (0.0010)	ND (0.0010)
Magnesium	mg/L	29.7	22.2
Manganese	mg/L	ND (0.00050)	ND (0.00050)
Molybdenum	mg/L	0.000446	0.000136
Nickel	mg/L	0.00220	0.00163
Phosphorous	mg/L	ND (0.050)	ND (0.050)
Potassium	mg/L	7.70	5.69
Rubidium	mg/L	0.00102	0.00116
Selenium	mg/L	0.000705	0.000414
Silicon	mg/L	3.50	3.22
Silver	mg/L	ND (0.000050)	ND (0.000050)
Sodium	mg/L	15.9	9.63
Strontium	mg/L	0.101	0.123
Sulphur	mg/L	6.79	6.16
Tellurium	mg/L	ND (0.00020)	ND (0.00020)
Thallium	mg/L	0.000112	0.000081
Thorium	mg/L	ND (0.00010)	ND (0.00010)
Tin	mg/L	ND (0.00010)	ND (0.00010)
Titanium	mg/L	ND (0.00030)	ND (0.00030)
Tungsten	mg/L	ND (0.00010)	ND (0.00010)
Uranium	mg/L	0.000372	0.000203
Vanadium	mg/L	ND (0.00050)	ND (0.00050)
Zinc	mg/L	0.303	0.285
Zirconium	mg/L	ND (0.00030)	ND (0.00030)
Biological			
Escherichia coli	cfu/100mL	0	0
Total Coliform Bacteria	cfu/100mL	0	0

Table 8.3

Residential Well Analytical Data
2017 Annual Monitoring Report
Dufferin Milton Quarry
Region of Halton, Ontario

Sample Location:		**DW140**	**DW140A**
Sample ID:		**GW-10978-162-47-120117-RC125**	**GW-10978-162-47-120117-RC126**
Sample Date:		**12/1/2017**	**12/1/2017**
Parameters	**Units**		
General Chemistry			
Alkalinity, Bicarbonate	mg/L	349	319
Alkalinity, Carbonate	mg/L	ND (10)	ND (10)
Alkalinity, Hydroxide	mg/L	ND (10)	ND (10)
Alkalinity, Total (As CaCO3)	mg/L	349	319
Ammonia-N	mg/L	0.058	0.114
Bromide	mg/L	ND (0.10)	ND (0.10)
Chloride	mg/L	22.3	16.7
Conductivity	umhos/cm	809	715
Fluoride	mg/L	0.053	0.067
Hardness	mg/L	386 HTC	325 HTC
Nitrate (as N)	mg/L	10.2	7.09
Nitrite (as N)	mg/L	ND (0.010)	ND (0.010)
Orthophosphate (dissolved)	mg/L	ND (0.0030)	ND (0.0030)
pH (lab)	s.u.	8.06	8.01
Phosphorous	mg/L	ND (0.0030)	ND (0.0030)
Sulphate	mg/L	17.8	19.0
Total Dissolved Solids (TDS)	mg/L	476 DLDS	420 DLDS
Total Kjeldahl Nitrogen (TKN)	mg/L	0.38	0.31 TKNI
Total Organic Carbon (TOC)	mg/L	1.4	ND (1.0)
Total Suspended Solids (TSS)	mg/L	ND (2.0)	ND (2.0)
Turbidity	NTU	0.75	0.28

Notes:

DLDS - Detection limit raised: Dilution due to high Dissolved Solids/Electrical Conductivity.
DLHC - Detection Limit Raised: Dilution due to high concentration of test analyte(s).
DLM - Detection limit adjusted for sample matrix
HTC - Hardness calculated from Total Ca and/or Mg; may bias high (dissolved Ca/Mg unavailable).
DLUI - Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
PEHT - Parameter Exceeded Recommended Holding Time Prior to Analysis
TKNI - TKN result is likely biased low due to Nitrate interference. Nitrate-N is > 10x TKN.
ND - Non-detect at associated value.
-- Not applicable.