



CRH Canada Group Inc.
2300 Steeles Ave W, 4th floor
Concord, Ontario
L4K 5X6 Canada

T. 905-761-7100
F. 905-761-7200

www.crhcanada.com

March 28, 2018

Mr. Vincent Bulman
Group Leader, Hydrogeologist
Water Unit
Ministry of Environment & Climate Change
Place Nouveau 9th Floor
5775 Young St.
Toronto, ON M2M 4J1

Re: Dufferin Aggregates Teedon Pit – 2017 Monitoring Report

Mr. Bulman,

As per your request, a 2017 Monitoring Report for the Dufferin Aggregates Teedon Pit was developed and is enclosed. An Annual Monitoring Report is not a requirement of the PTTW. Notwithstanding, the report presents data collected under PTTW No. 5003-APFH26. Dufferin Aggregates is a division of CRH Canada Group Inc.

Please do not hesitate to contact me if you have any questions or comments.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'M. Topalovic'.

Maria Topalovic
Environment Manager
CRH Canada Group Inc.
DL : 905-532-3232
M : 647-924-5498
E: maria.topalovic@ca.crh.com



2017 Annual Monitoring Report

Dufferin Teedon Pit

Township of Tiny, County of Simcoe, Ontario

GHD | 455 Phillip Street Waterloo Ontario N2L 3X2 Canada

11155365 | Report No 2 | March 28 2018



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1. Introduction

This report presents the results of the 2017 Annual Monitoring Report conducted by Dufferin Aggregates, a division of CRH Canada Group Inc. (Dufferin) and GHD Limited (GHD) on behalf of Dufferin at the Dufferin Teedon Pit (Site) located in the Township of Tiny, County of Simcoe, Ontario.

Details of the 2017 Monitoring Program are provided in the following sections:

Section 1 Introduction

Section 2 Field Activities

Section 3 Data Assessment

This monitoring report satisfies the requirements of the monitoring program in response to a request by the Ontario Ministry of the Environment and Climate Change (MOECC). This monitoring report also satisfies the requirements of the monitoring program under the MOECC Section 34.1 of the Ontario Water Resources Act (OWRA) Permit to Take Water (PTTW), Amended PTTW Number 5003-APFH26. The monitoring requirements include:

- Installation and maintenance of a flow meter on the Wash Pond (also referred to as Sump Pond) and pumping well PW1-09
- Dataloggers installed at the pumping well (PW1-09) plus one on-Site well of comparable depth (MW1-09) and one on-Site well terminating within the shallower aquifer (MW1 and MW4-10)

The Teedon Pit was acquired by Dufferin in 2017, and was previously owned by Cedarhurst Quarries & Crushing Limited since 1987.

Note that the accuracy of the hydraulic monitoring data collected prior to ownership by Dufferin, could not be confirmed because these data were collected by the previous owner.

2. Field Activities

The 2017 Monitoring Program consisted of groundwater hydraulic monitoring at one pumping well (PW1-09), three on-Site groundwater monitoring wells (MW1-09, MW1, and MW4-10) and three nearby domestic wells (#50632, #25425, and #17709). Hydraulic monitoring events were conducted at the Site on March 16, July 14, October 5, and November 1, 2017. Groundwater depths were measured using a water level meter to the nearest 0.005 metre (m).

Surface water hydraulic monitoring was completed at one location (SW1), whereby surface water measurements were measured from the surveyed staff gauge. Measurements were recorded at SW1 daily Monday to Friday between August 21 and December 4, 2017.

Dataloggers were downloaded at each groundwater monitoring well and domestic well location during the March 16 and November 1 hydraulic monitoring events. Dataloggers were operating continuously in 2017 at the pumping well PW1-09, groundwater monitoring well MW1 and domestic



wells #50632 and #17709. Data was collected from MW1-09 and MW4-10 until March 16 when issues were encountered with the datalogger, which were subsequently resolved on November 1, 2017. The barologger was replaced in 2017 due to signs of failure. The owners of domestic well #25425 did not provide access following the March 16 monitoring event.

During the November 1, 2017 monitoring event, a well inspection was completed by GHD on behalf of Dufferin for all on-Site monitoring wells and domestic wells. Each of the wells was found to be in satisfactory condition and no repairs are necessary.

The monitoring well completion details are provided in Table 1 and the groundwater and surface water monitoring locations are provided on Figure 1. The groundwater and surface water elevations measured in 2017 are provided in Table 2. Historical water level measurements are provided in Appendix A.1 and hydrographs for each on-Site monitoring location are provided in Appendix A.2.

Water quality samples were collected from five nearby domestic wells (20 Darby, 30 Darby, 1189 Marshall Rd, 6970 Highway 93, and 7062 Highway 93) in late summer 2017. The water quality samples were collected from the nearby domestic wells due to complaints of silt in the wells. The water quality samples were submitted to Maxxam Analytics located in Mississauga, Ontario and analyzed for general chemistry and metals. The groundwater quality data from the nearby domestic wells are provided in Table 3.

3. Data Assessment

3.1 Hydraulic Monitoring

Groundwater monitoring wells at the Site are all screened in the unconfined overburden aquifer (shallow and deep). The locations of the groundwater monitoring wells are shown on Figure 1. Groundwater elevations measured in 2017 are provided in Table 2.

Hydrographs of all the unconfined overburden aquifer groundwater monitoring wells and nearby domestic wells are provided in Figure 2, and hydrographs for individual on-Site monitoring wells using datalogger groundwater elevation data and manual measurements are provided in Appendix A.2. The hydrographs include precipitation data obtained from Environment Canada for Collingwood, Ontario.

All groundwater elevations measured in 2017 are within historical ranges for each of the locations (within historical lows and highs).

Surface water elevations are measured at location SW1, as shown on Figure 1. Surface water elevations are provided in Appendix A.1 and the SW1 hydrograph is presented in Appendix A.2. Data prior to August 2017 could not be obtained for this location, therefore a comparison with historical elevations was not possible. However, the surface water elevation monitoring is not a requirement of the PTTW. The SW1 water elevations did not fluctuate significantly (less than 0.1 m) in the period from August to December 2017.



3.2 Water Quality

The groundwater analytical results were compared to the Ontario Drinking Water Quality Standards, Objectives and Guidelines (ODWQS; MOECC June 2003, revised June 2006). The water quality samples collected from five domestic wells in late summer 2017 due to complaints of silt in their wells are summarized in Table 3.

The groundwater quality from these five domestic wells is in line with the regional groundwater quality reported in the Singer et al. (1999) Severn Sound Study. (Singer S., T. Cheng, M., and M. Scafe, 1999. The Groundwater Resources of the Severn Sound Remedial Action Plan Area. Prepared in Cooperation with the Severn Sound Remedial Action Plan and the Ministry of the Environment and Climate Change).

3.3 Water Taking

The PTTW allows for the water taking from PW1-09 with takings up to 24 hours per day and up to 210 days per year. Routine takings are up to 1,136 litres per minute (L/min) (maximum of 1,635,840 litres per day [L/day]). The PTTW also allows for the water taking for the Wash Pond with takings up to 12 hours per day and up to 210 days per year. Routine takings are up to 7,274 L/min (maximum of 5,237,280 L/day).

The water taking data for 2017 is provided in Appendix A.3.

Water taking at the Teedon Pit occurred between August 21 and December 4, 2017. There were no exceedances of the permitted water taking quantities or rates during 2017 for PW1-09 or the Sump Pond.

3.4 Summary

In summary, the water level elevations and water quality results for the 2017 Monitoring Program were consistent with historical trends at the Site and the data indicate that Dufferin Teedon Pit has not affected the groundwater quantity or quality of nearby water takers.

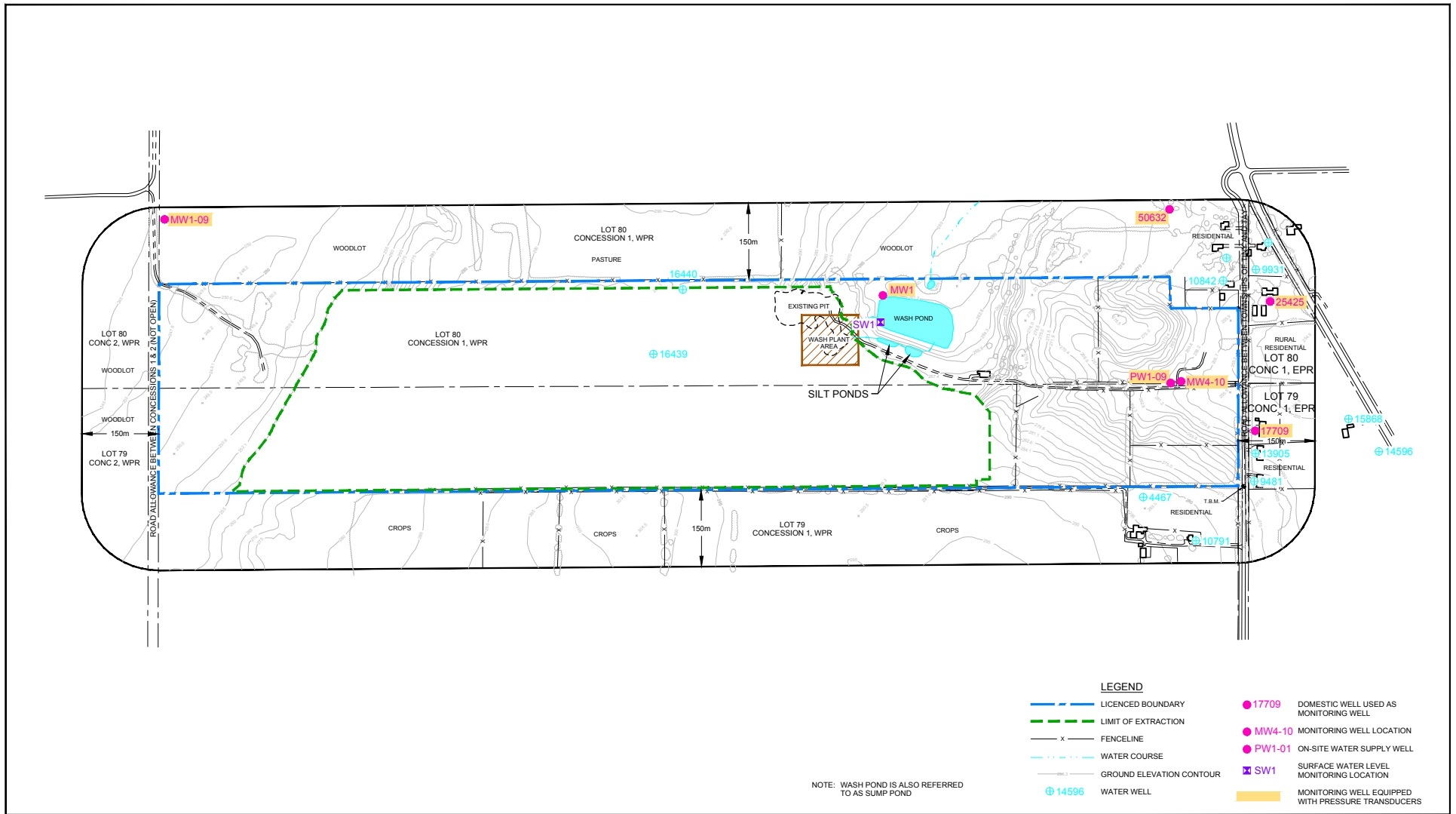


All of Which is Respectfully Submitted,

GHD



Gary I. Lagos, M.Sc., P. Geo.



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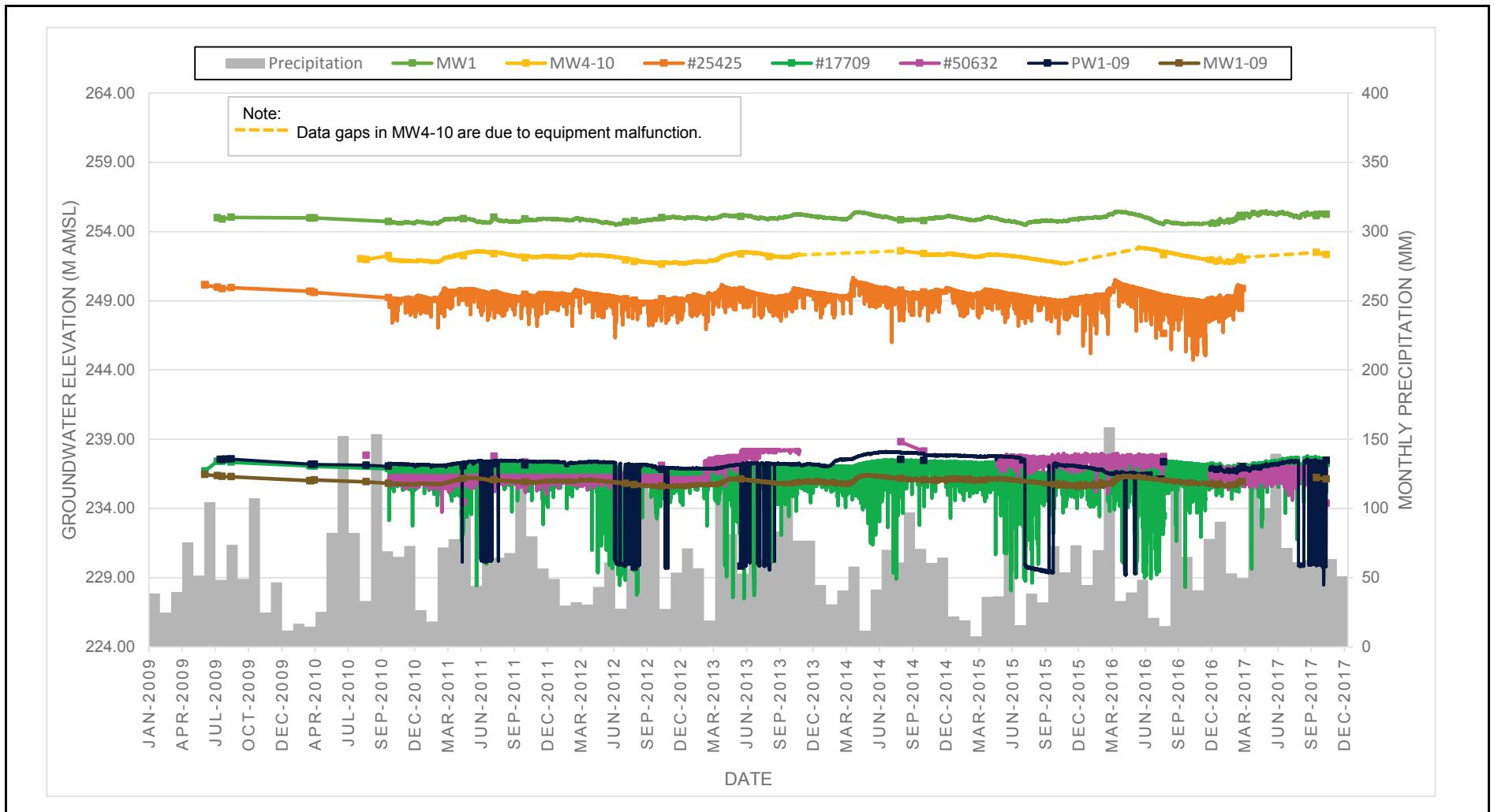


DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

GROUNDWATER AND SURFACE WATER
MONITORING LOCATIONS

11155365-00
Mar 28, 2018

FIGURE 1



Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

11155365 (2)

3/28/2018

Groundwater Hydrograph

FIGURE 2

Table 1

**Monitoring Well Completion Details
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario**

Monitoring Well	MOECC Well ID	Completion Date	Easting	Northing	Ground Elevation (m AMSL)	Reference Elevation (m AMSL)	Static Water Elevation (m AMSL)	Water Found Elevation (m AMSL)	Well Bottom Elevation (m AMSL)	Well Depth (m bgs)
PW1-09	7124734	4/29/2009	592343	4945072	260.00	260.62	237.7	202.1	191.4	68.6
MW1-09	7124729	6/2/2009	590513	4944298	247.50	247.96	236.0	235.3	180.4	67.1
MW1	7054134	11/8/2007	591776	4944922	263.00	263.20	254.8	NA	245.0	18.3
MW4-10	7150631	8/5/2010	592350	4945080	260.00	260.82	252.2	244.8	242.3	17.7
#50632	7150632	8/4/2010	592282	4945366	260.50	261.05	253.0	244.5	181.3	79.2
#25425	5725425	8/8/1989	592435	4945324	254.00	NA	252.2	242.4	234.2	19.8
#17709	5717709	9/23/1981	592539	4945093	256.00	256.40	234.2	199.6	198.0	57.9
#16440	5716440	NA	591461	4944573	293.00	NA	DRY	DRY	252.3	NA

Notes:

m AMSL Metres above mean sea level.

m bgs Metres below ground surface.

NA Information not available.

Table 2

**Summary of 2017 Groundwater Elevations
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario**

Well Location	Ground Surface Elevation (m AMSL)	Reference Elevation (m AMSL)	March 16, 2017		July 14, 2017		October 5, 2017		November 1, 2017	
			Depth to Water (m bref)	Groundwater Elevation (m AMSL)	Depth to Water (m bref)	Groundwater Elevation (m AMSL)	Depth to Water (m bref)	Groundwater Elevation (m AMSL)	Depth to Water (m bref)	Groundwater Elevation (m AMSL)
PW1-09	260.00	260.62	23.61	237.01	NA	NA	30.45	230.17	23.15	237.47
MW1-09	247.50	247.96	12.03	235.93	NA	NA	11.74	236.22	11.84	236.12
MW1	263.00	263.20	8.14	255.06	NA	NA	8.06	255.14	7.96	255.24
MW4-10	260.00	260.82	8.89	251.93	NA	NA	8.33	252.49	8.49	252.33
#50632	260.50	261.05	24.22	236.83	NA	NA	30.45	230.60	26.68	234.37
#25425	254.00	254.50	4.63	249.87	NA	NA	NA	NA	NA	NA
#17709	256.00	256.40	19.54	236.86	18.98	237.42	19.45	236.95	19.17	237.23

Notes:

m AMSL Metres above mean sea level.
m bref Metres below reference elevation.

Table 3

Summary of 2017 Groundwater Quality Results from Domestic Wells
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

Calculated Parameter	Unit	Ontario Drinking Water Quality Standards		20 Darby Road			30 Darby Road			1189 Marshall Rd		6970 Highway 93		7062 Highway 93	
		Test 1 - Aug. 17	Test 2 - Sept. 8	Test 1 - Aug. 17	Test 2 - Sept. 8	Test 2 - Sept. 8 (post filter)	Test 1 - Aug. 17	Test 2 - Sept. 8	Test 1 - Aug. 17	Test 2 - Sept. 8	Test 1 - Aug. 17	Test 2 - Sept. 8	Test 1 - Aug. 17	Test 2 - Sept. 8	
Anion Sum	me/L	NS	4.23	3.80	3.56	3.60	3.66	4.28	4.21	5.18	5.13	5.91	5.69		
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	NS	190	180	160	160	160	190	190	200	200	240	240		
Calculated TDS	mg/L	500 ⁽²⁾	220	200	190	190	190	220	220	270	270	300	300		
Carb. Alkalinity (calc. as CaCO3)	mg/L	30 - 500 ⁽¹⁾	2.3	2.2	1.5	1.9	1.8	2.1	2.0	2.4	2.3	2.6	2.0		
Cation Sum	me/L	NA	3.93	3.80	3.23	3.47	3.40	4.05	4.21	4.69	4.85	5.39	5.65		
Hardness (CaCO3)	mg/L	80 - 100 ⁽¹⁾	190	180	150	170	160	190	200	200	210	250	260		
Ion Balance (% Difference)	%	NS	3.73	0.0400	4.88	1.85	3.67	2.71	0.00	4.93	2.86	4.59	0.390		
Langelier Index (@ 20C)	N/A	NS	0.779	0.753	0.559	0.685	0.673	0.669	0.680	0.757	0.772	0.903	0.809		
Langelier Index (@ 4C)	N/A	NS	0.529	0.503	0.309	0.435	0.423	0.419	0.430	0.507	0.522	0.654	0.560		
Saturation pH (@ 20C)	N/A	NS	7.33	7.38	7.44	7.40	7.40	7.40	7.38	7.34	7.32	7.15	7.14		
Saturation pH (@ 4C)	N/A	NS	7.58	7.63	7.69	7.65	7.65	7.65	7.63	7.59	7.57	7.40	7.39		
Inorganics															
Total Ammonia-N	mg/L	NS	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050		
Conductivity	µmho/cm	NS	360	360	320	340	350	360	390	480	500	530	540		
Dissolved Organic Carbon	mg/L	5 ⁽²⁾	0.75	0.93	0.91	0.84	0.89	0.50	0.43	0.48	0.62	0.70	0.64		
Orthophosphate (P)	mg/L	NS	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010		
pH	pH	6.5 - 8.5 ⁽¹⁾	8.11	8.13	8.00	8.09	8.07	8.07	8.06	8.10	8.09	8.06	7.95		
Dissolved Sulphate (SO4)	mg/L	500 ⁽²⁾	15	11	8.9	7.7	7.7	21	21	12	12	13	9.5		
Turbidity	NTU	NS	<0.1	<0.1	<0.1	<0.1	<0.1	3.5	2.1	0.2	0.1	<0.1	0.1		
Alkalinity (Total as CaCO3)	mg/L	NS	190	180	160	160	170	190	190	200	200	240	240		
Dissolved Chloride (Cl)	mg/L	250 ⁽²⁾	1.6	<1.0	1.7	1.9	1.7	1.1	1.2	28	27	20	19		
Nitrite (N)	mg/L	1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
Nitrate (N)	mg/L	10	0.12	0.16	1.93	1.58	1.65	<0.10	<0.10	1.25	1.23	2.86	2.61		
Nitrate + Nitrite (N)	mg/L	NS	0.12	0.16	1.93	1.58	1.65	<0.10	<0.10	1.25	1.23	2.86	2.61		
Metals															
Dissolved Aluminum (Al)	µg/L	100 ⁽¹⁾	5.1	<5.0	5.6	<5.0	<5.0	100	300	<5.0	<5.0	<5.0	<5.0		
Dissolved Antimony (Sb)	µg/L	6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		
Dissolved Arsenic (As)	µg/L	25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
Dissolved Barium (Ba)	µg/L	1,000	26	25	9.9	12	11	88	94	41	42	44	48		
Dissolved Beryllium (Be)	µg/L	NS	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		
Dissolved Boron (B)	µg/L	NS	<10	<10	<10	<10	<10	10	10	22	23	11	12		
Dissolved Cadmium (Cd)	µg/L	5	<0.10	<0.10	<0.10	<0.10	0.12	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		
Dissolved Calcium (Ca)	µg/L	NS	59,000	58,000	55,000	59,000	58,000	52,000	55,000	57,000	62,000	76,000	80,000		
Dissolved Chromium (Cr)	µg/L	50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0		
Dissolved Cobalt (Co)	µg/L	NS	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		
Dissolved Copper (Cu)	µg/L	1,000 ⁽²⁾	5.2	3.6	12	9.1	15	<1.0	<1.0	5.5	2.8	6.9	12		
Dissolved Iron (Fe)	µg/L	300 ⁽²⁾	<100	<100	<100	<100	<100	130	470	<100	<100	<100	<100		
Dissolved Lead (Pb)	µg/L	10	<0.50	<0.50	1.4	0.77	0.92	<0.50	<0.50	<0.50	<0.50	<0.50	0.74		
Dissolved Magnesium (Mg)	µg/L	NS	10,000	9,400	4,100	4,600	4,400	15,000	15,000	14,000	14,000	14,000	15,000		
Dissolved Manganese (Mn)	µg/L	50	<2.0	<2.0	<2.0	<2.0	<2.0	15	29	<2.0	<2.0	<2.0	<2.0		
Dissolved Molybdenum (Mo)	µg/L	NS	<0.50	<0.50	<0.50	<0.50	<0.50	0.87	0.74	0.57	0.51	<0.50	<0.50		
Dissolved Nickel (Ni)	µg/L	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
Dissolved Phosphorus (P)	µg/L	NS	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100		
Dissolved Potassium (K)	µg/L	NS	1,100	1,100	610	670	680	2,200	2,200	1,500	1,500	1,200	1,200		
Dissolved Selenium (Se)	µg/L	50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0		
Dissolved Silicon (Si)	µg/L	NS	5,100	5,400	4,500	4,700	4,600	5,200	5,500	5,000	5,200	4,700	5,000		
Dissolved Silver (Ag)	µg/L	NS	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		
Dissolved Sodium (Na)	µg/L	200,000 ⁽²⁾	2,500	2,600	3,200	3,400	3,300	4,200	3,900	14,000	14,000	9,500	9,400		
Dissolved Strontium (Sr)	µg/L	NS	84	80	93	100	96	150	150	230	230	130	130		
Dissolved Thallium (Tl)	µg/L	NS	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050		
Dissolved Titanium (Ti)	µg/L	NS	<5.0	<5.0	<5.0	<5.0	<5.0	10	26	<5.0	<5.0	<5.0	<5.0		
Dissolved Uranium (U)	µg/L	20	0.22	0.17	<0.10	<0.10	<0.10	1.3	1.2	1.2	1.2	0.24	0.24		
Dissolved Vanadium (V)	µg/L	NS	1.6	1.5	0.82	0.86	0.76	<0.50	1.0	2.0	2.1	0.72	0.75		
Dissolved Zinc (Zn)	µg/L	5,000	38	12	170	150	160	<5.0	<5.0	16	16	6.8	12		

Notes:

- (1) Operational Guideline
- (2) Aesthetic Objective
- N/A Not applicable
- NS No Standard, Objective, or Guideline
- ☐ Above Standard, Objective, or Guideline

Appendices

Appendix A

Hydraulic Monitoring and Water Taking Data

Appendix A.1

Historical Groundwater and Surface Water Elevations

Table A.1

**Historical Groundwater and Surface Water Elevations
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario**

PW1-09			MW4-10		
Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)	Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)
GS =	260.00		GS =	260.00	
REF =	260.62		REF =	260.82	
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
7/15/2009 09:00	23.09	237.53	-	-	-
7/20/2009 13:00	23.10	237.52	-	-	-
7/29/2009 10:51	23.07	237.55	-	-	-
8/14/2009 13:23	23.05	237.57	-	-	-
-	-	-	-	-	-
3/22/2010 07:53	23.43	237.19	-	-	-
3/30/2010 11:35	23.44	237.18	-	-	-
-	-	-	8/4/2010 14:36	8.80	252.02
8/19/2010 13:25	23.50	237.12	8/19/2010 11:10	8.85	251.97
10/19/2010 12:20	23.58	237.04	10/19/2010 12:35	9.98	250.84
5/12/2011 12:10	23.55	237.07	5/12/2011 12:25	8.57	252.25
8/4/2011 14:23	23.43	237.20	8/4/2011 14:45	8.44	252.38
10/28/2011 11:54	23.48	237.14	10/28/2011 12:17	8.73	252.09
-	-	-	7/30/2012 15:38	8.89	251.93
8/23/2012 15:09	30.87	229.75	8/23/2012 14:58	9.00	251.83
11/6/2012 11:41	23.80	236.82	11/6/2012 11:39	9.18	251.64
6/11/2013 12:25	30.79	229.83	6/11/2013 12:47	8.45	252.37
8/23/2014 11:05	23.08	237.54	8/23/2014 11:55	8.22	252.60
10/25/2014 10:04	23.16	237.46	10/25/2014 10:18	8.41	252.41
3/16/2017 14:20	23.61	237.01	3/16/2017 14:10	8.89	251.93
-	-	-	-	-	-
10/5/2017 09:53	30.45	230.17	10/5/2017 09:58	8.33	252.49
11/1/2017 11:35	23.15	237.47	11/1/2017 12:00	8.49	252.33

Table A.1

**Historical Groundwater and Surface Water Elevations
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario**

MW1			MW1-09		
GS =	263.00		GS =	247.50	
REF =	263.20		REF =	247.96	
Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)	Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)
-	-	-	6/3/2009 11:23	11.52	236.45
-	-	-	-	-	-
7/7/2009 11:30	8.20	255.00	7/7/2009 13:00	11.60	236.36
-	-	-	-	-	-
7/20/2009 16:08	8.31	254.89	7/20/2009 13:35	11.65	236.31
-	-	-	-	-	-
8/14/2009 12:42	8.18	255.02	8/14/2009 14:38	11.67	236.29
3/18/2010 10:43	8.22	254.98	3/18/2010 11:23	11.96	236.00
3/22/2010 8:04	8.24	254.96	3/22/2010 8:36	11.96	236.00
3/30/2010 12:13	8.22	254.98	3/30/2010 1:23	11.91	236.05
-	-	-	-	-	-
-	-	-	8/19/2010 15:00	12.04	235.92
10/19/2010 12:50	8.48	254.72	10/19/2010 13:58	12.15	235.82
5/12/2011 12:45	8.27	254.93	5/12/2011 13:42	11.80	236.16
8/4/2011 15:08	8.17	255.03	8/4/2011 15:30	11.90	236.06
10/28/2011 12:33	8.29	254.91	10/28/2011 13:15	12.05	235.91
7/30/2012 15:58	8.51	254.69	7/30/2012 16:26	12.15	235.81
8/23/2012 14:38	8.44	254.76	8/23/2012 13:00	12.24	235.73
11/6/2012 12:10	8.21	254.99	11/6/2012 12:50	12.36	235.61
6/11/2013 13:09	8.12	255.08	6/11/2013 14:52	11.84	236.12
8/23/2014 10:50	8.36	254.84	8/23/2014 13:20	11.79	236.17
10/25/2014 9:49	8.41	254.79	10/25/2014 9:18	11.89	236.07
3/16/2017 14:00	8.14	255.06	3/16/2017 15:47	12.03	235.93
-	-	-	-	-	-
10/5/2017 10:24	8.06	255.14	10/5/2017 11:45	11.74	236.22
11/1/2017 12:35	7.96	255.24	11/1/2017 14:00	11.84	236.12

Table A.1

**Historical Groundwater and Surface Water Elevations
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario**

#50632			#25425		
Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)	Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)
GS =	260.50		GS =	254.00	
REF =	261.05		REF =	254.50	
-	-	-	6/3/2009 10:00	4.36	250.14
-	-	-	6/4/2009 14:12	4.37	250.13
-	-	-	7/7/2009 13:34	4.53	249.97
-	-	-	-	-	-
-	-	-	7/20/2009 14:55	4.63	249.87
-	-	-	-	-	-
-	-	-	8/14/2009 14:10	4.56	249.94
-	-	-	3/18/2010 12:25	4.825	249.68
-	-	-	3/22/2010 9:30	4.85	249.65
-	-	-	3/30/2010 13:02	4.91	249.59
-	-	-	-	-	-
8/19/2010 14:13	23.21	237.84	-	-	-
10/19/2010 13:05	28.79	232.26	10/19/2010 14:40	5.28	249.22
5/12/2011 14:18	26.60	234.45	5/12/2011 14:50	5.33	249.17
8/4/2011 15:58	23.28	237.77	8/4/2011 16:20	5.28	249.22
10/28/2011 13:39	23.71	237.34	10/28/2011 13:56	5.06	249.44
7/30/2012 16:51	24.65	236.40	7/30/2012 17:16	5.36	249.14
8/23/2012 13:32	24.66	236.40	8/23/2012 13:50	5.48	249.02
11/6/2012 13:16	23.95	237.10	11/6/2012 13:35	5.36	249.14
6/11/2013 14:00	23.43	237.62	6/11/2013 13:44	4.71	249.79
8/23/2014 14:40	22.25	238.81	8/23/2014 12:25	4.75	249.75
10/25/2014 11:06	22.92	238.13	10/25/2014 10:50	4.88	249.62
3/16/2017 12:30	24.22	236.83	3/16/2017 13:06	4.63	249.87
-	-	-	-	-	-
10/5/2017 11:15	30.45	230.60	-	-	-
11/1/2017 10:30	26.68	234.37	-	-	-

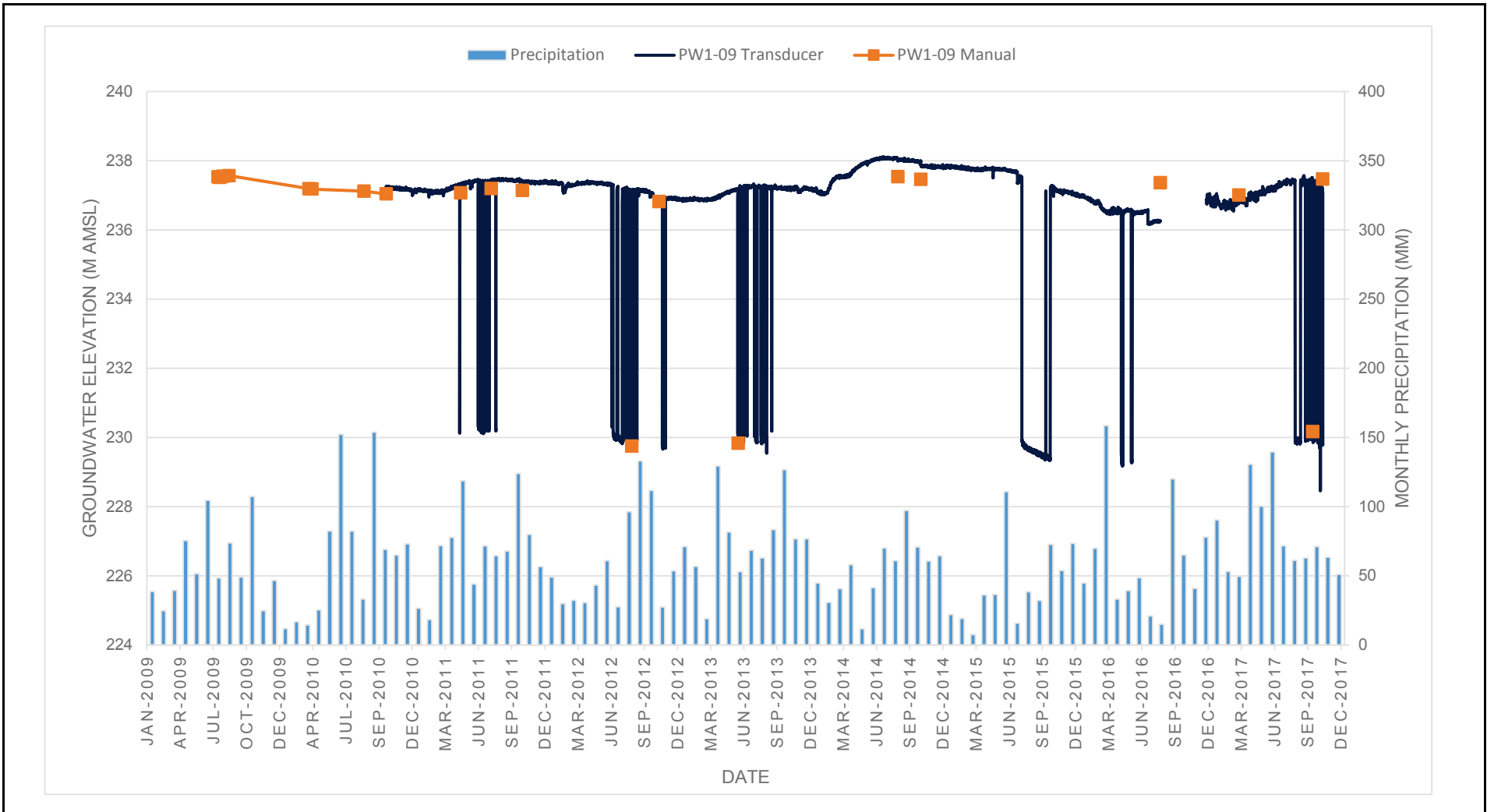
Table A.1

**Historical Groundwater and Surface Water Elevations
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario**

#17709			Staff Gauge		
GS =	256.00		GS =	NA	
REF =	256.40		REF =	264.37	
Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)	Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)
6/3/2009 13:08	19.70	236.70	8/21/2017	0.20	263.57
-	-	-	8/22/2017	0.22	263.59
7/7/2009 13:50	19.00	237.40	8/23/2017	0.23	263.60
-	-	-	8/24/2017	0.25	263.62
7/20/2009 15:10	19.01	237.39	8/25/2017	0.31	263.68
-	-	-	8/28/2017	0.37	263.74
8/14/2009 13:45	19.06	237.34	8/29/2017	0.41	263.78
3/18/2010 13:45	19.32	237.08	8/30/2017	0.49	263.86
3/22/2010 9:09	19.33	237.07	8/31/2017	0.55	263.92
3/30/2010 12:42	19.36	237.04	9/01/2017	0.60	263.97
-	-	-	9/05/2017	0.59	263.96
-	-	-	9/06/2017	0.49	263.86
10/19/2010 14:58	19.53	236.87	9/07/2017	0.44	263.81
5/12/2011 15:08	22.75	233.65	9/08/2017	0.38	263.75
8/4/2011 16:33	19.35	237.05	9/11/2017	0.33	263.70
10/28/2011 14:10	19.40	237.00	9/12/2017	0.27	263.64
7/30/2012 17:30	20.73	235.67	9/13/2017	0.21	263.58
8/23/2012 14:19	20.05	236.35	9/14/2017	0.26	263.63
11/6/2012 13:48	20.30	236.10	9/15/2017	0.30	263.67
6/11/2013 13:27	19.90	236.50	9/18/2017	0.24	263.61
8/23/2014 12:15	18.94	237.46	9/19/2017	0.24	263.61
10/25/2014 10:39	19.03	237.37	9/20/2017	0.21	263.58
3/16/2017 13:30	19.54	236.86	9/21/2017	0.21	263.58
7/14/2017 13:15	18.98	237.42	9/22/2017	0.30	263.67
10/5/2017 10:50	19.45	236.95	9/25/2017	0.20	263.57
11/1/2017 11:15	19.17	237.23	9/26/2017	0.21	263.58
			9/27/2017	0.22	263.59
			9/28/2017	0.16	263.53
			9/29/2017	0.16	263.53
			10/02/2017	0.16	263.53
			10/03/2017	0.12	263.49
			10/04/2017	0.17	263.54
			10/05/2017	0.14	263.51
			10/06/2017	0.15	263.52
			10/10/2017	0.13	263.50
			10/11/2017	0.19	263.56
			10/12/2017	0.14	263.51
			10/13/2017	0.19	263.56
			10/16/2017	0.18	263.55
			10/17/2017	0.18	263.55
			10/18/2017	0.11	263.48
			10/19/2017	0.18	263.55
			10/20/2017	0.17	263.54
			10/23/2017	0.15	263.52
			10/24/2017	0.21	263.58
			10/25/2017	0.17	263.54
			10/26/2017	0.24	263.61
			10/27/2017	0.19	263.56
			10/30/2017	0.21	263.58
			10/31/2017	0.22	263.59
			11/01/2017	0.28	263.65
			11/02/2017	0.25	263.62
			11/03/2017	0.29	263.66
			11/06/2017	0.29	263.66
			11/07/2017	0.36	263.73
			11/08/2017	0.34	263.71
			11/09/2017	0.36	263.73
			11/13/2017	0.33	263.70
			11/14/2017	0.40	263.77
			11/16/2017	0.39	263.76
			11/17/2017	0.33	263.70
			11/20/2017	0.31	263.68
			11/21/2017	0.31	263.68
			11/22/2017	0.40	263.77
			11/23/2017	0.36	263.73
			11/24/2017	0.31	263.68
			11/27/2017	0.39	263.76
			11/28/2017	0.34	263.71
			11/29/2017	0.31	263.68
			11/30/2017	0.33	263.70
			12/01/2017	0.30	263.67
			12/04/2017	0.33	263.70

Appendix A.2

Individual Hydrographs



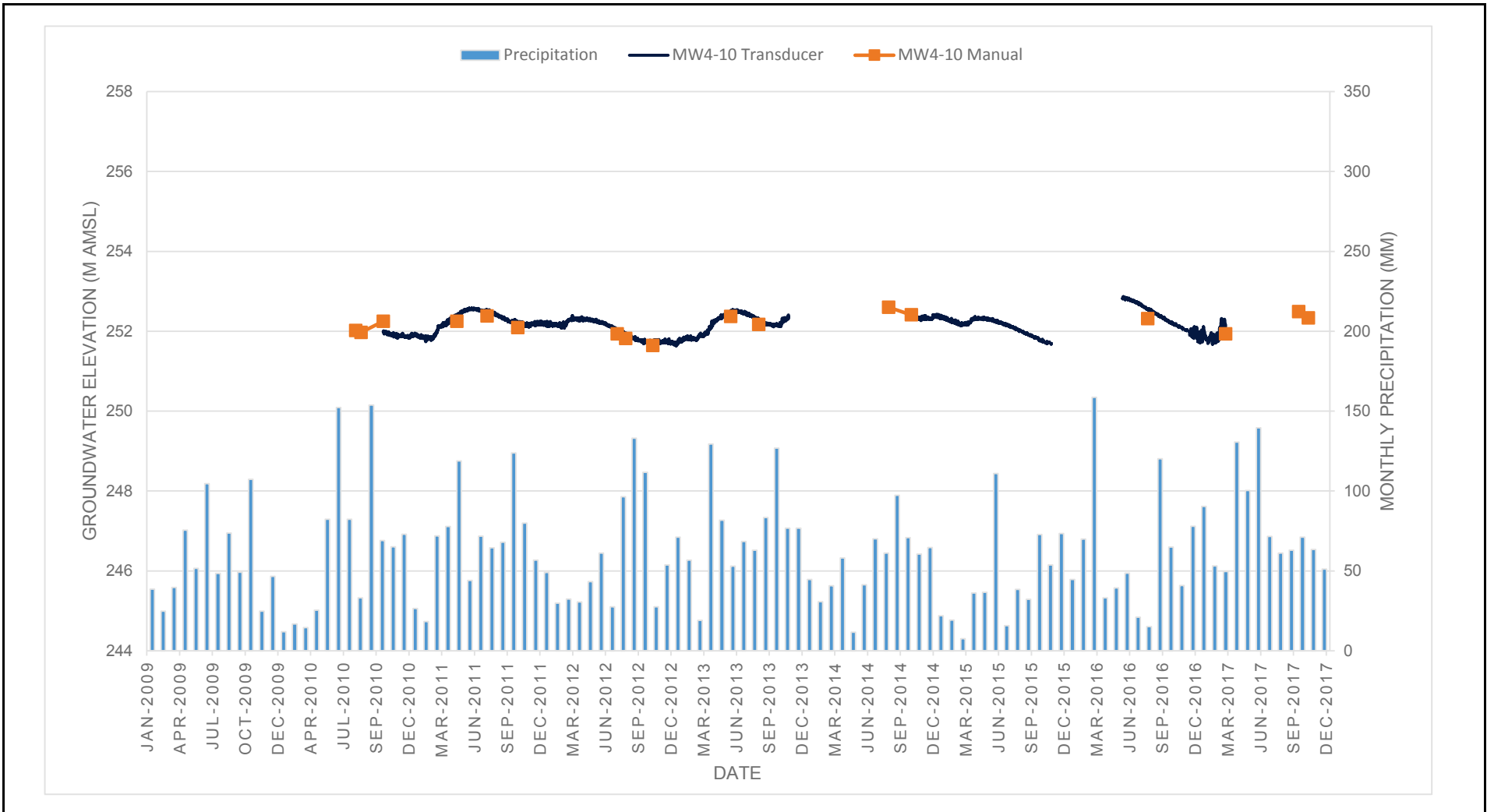
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

11155365 (2)

3/28/2018

PW1-09 Hydrograph

FIGURE 1



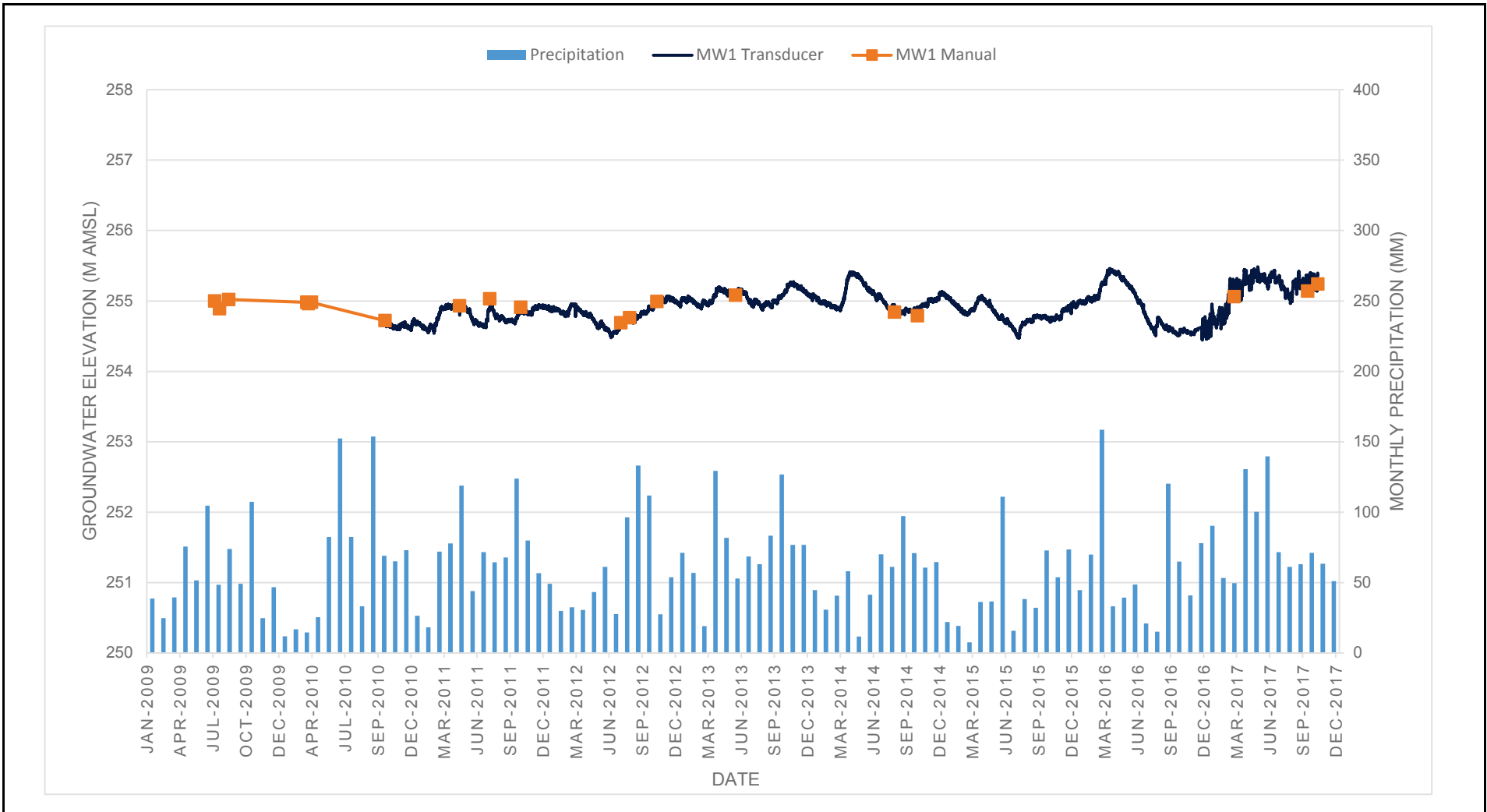
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

11155365 (2)

3/28/2018

MW4-10 Hydrograph

FIGURE 2



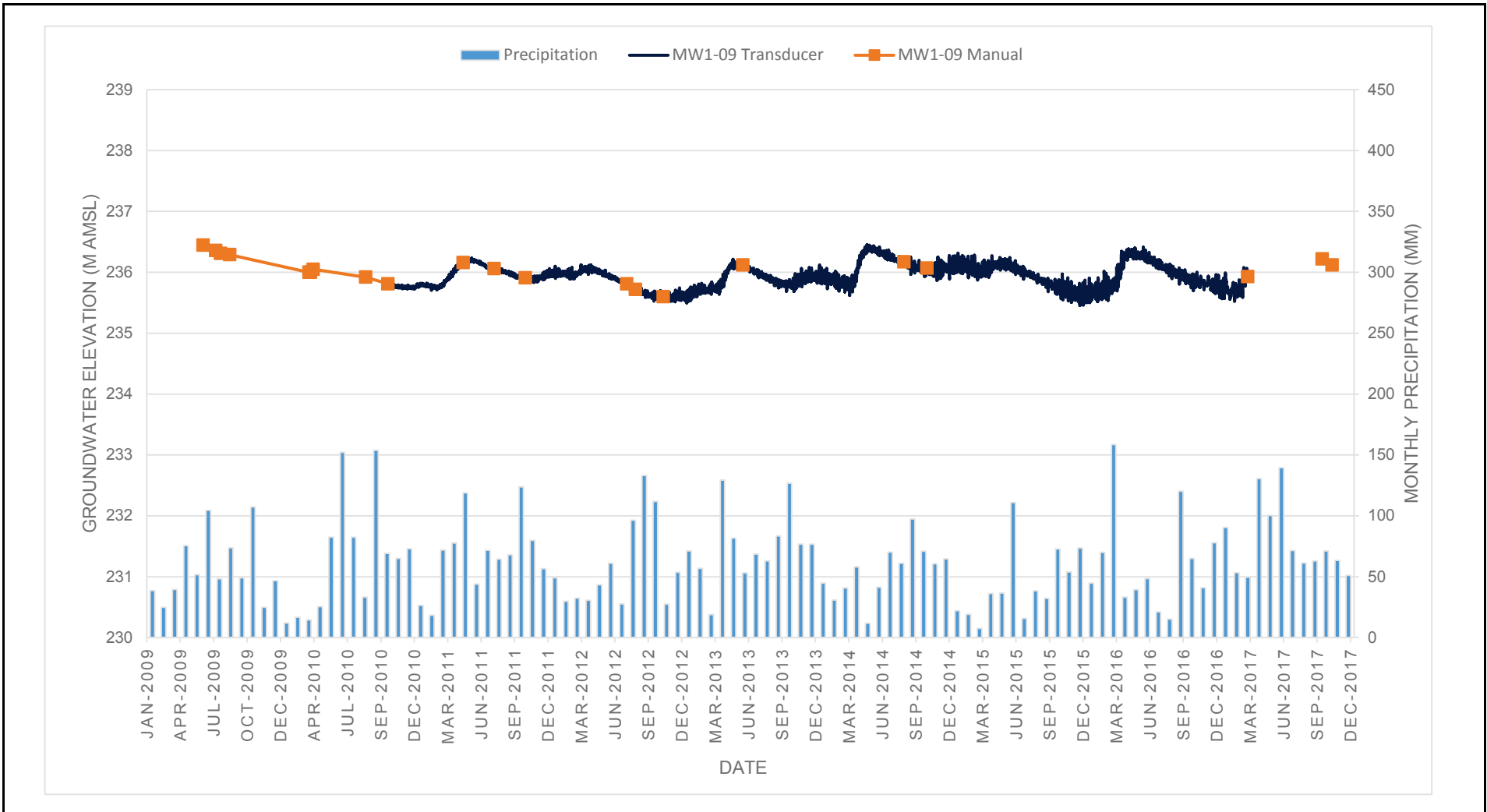
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

11155365 (2)

3/28/2018

MW1 Hydrograph

FIGURE 3



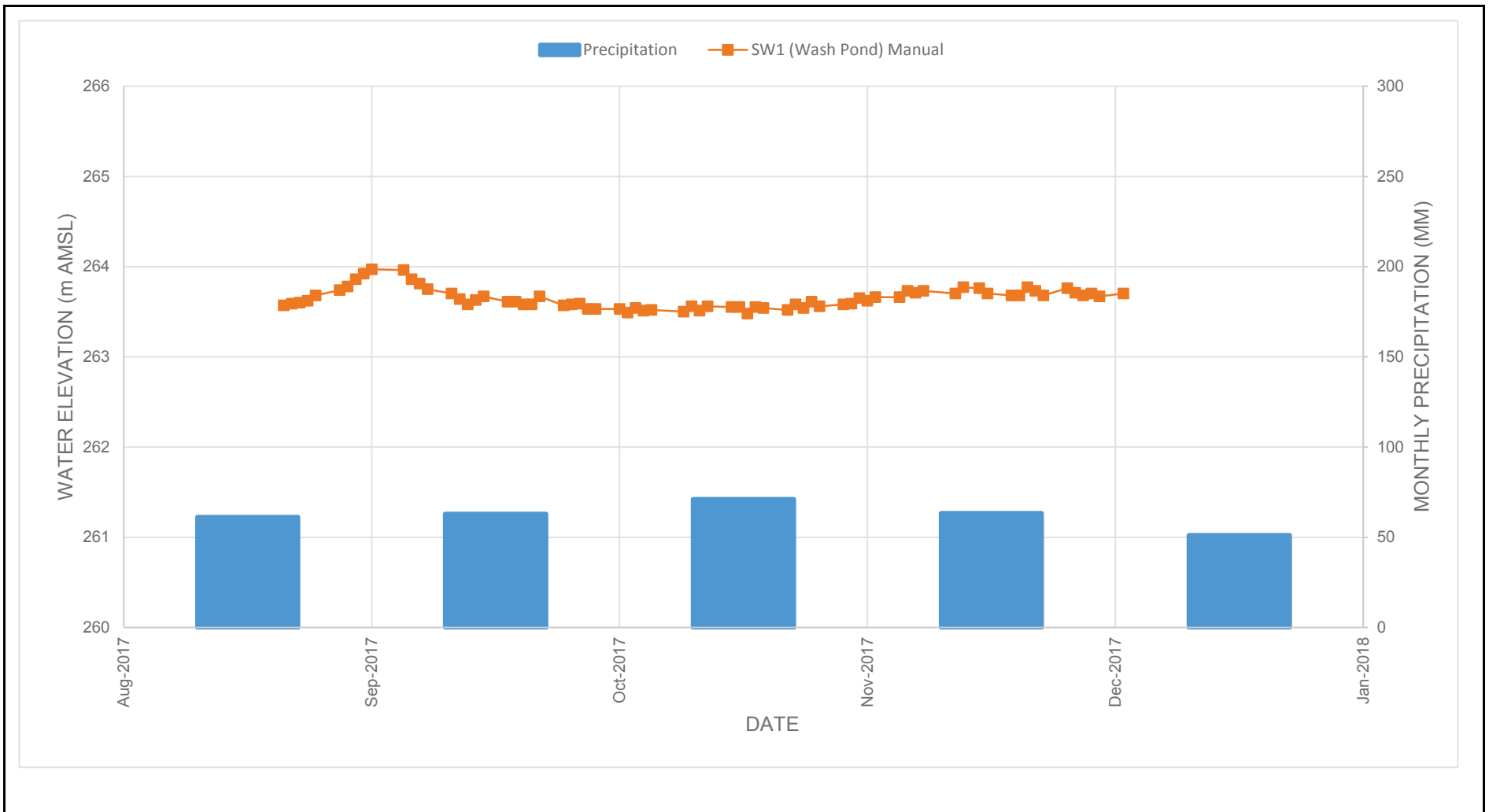
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

11155365 (2)

3/28/2018

MW1-09 Hydrograph

FIGURE 4



Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

11155365 (2)

3/28/2018

SW1 (Wash Pond) Hydrograph

FIGURE 5

Appendix A.3

2017 Water Takings

PW1-09 Water Taking Summary
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

The permitted rates for PW1-09 are as follows:

Max. Num. of Days Taken Per Year	Max. Taken Per Day (litres)	Max. Num. of Hrs Taken Per Day	Max. Taken Per Minute (litres)
210	1,635,840	24	1,136

Date & Time	Meter Readings (imp. gallons)	Litres Between Readings (litres)	Minutes Between Readings (min)	Litres/Minute (L/min)	Comments
Thursday August 17 2017, 10:40	21,358,561	-	-	-	First day
Friday August 18 2017, 07:10	21,516,153	716,427	1,230	582	Charging the pond
Saturday August 19 2017, 00:00		831,948			
Sunday August 20 2017, 00:00		831,948			
Monday August 21 2017, 06:35	22,065,162	831,948	4,285	582	Charging the pond (over the weekend)
Tuesday August 22 2017, 07:50	22,258,869	880,609	1,515	581	Charging the pond
Wednesday August 23 2017, 06:51	22,435,443	802,721	1,381	581	Charging the pond
Thursday August 24 2017, 07:46	22,626,035	866,448	1,495	580	Charging the pond
Friday August 25 2017, 06:45	22,894,928	1,222,412	2,120	577	Charging the pond
Saturday August 26 2017, 00:00		696,873			
Sunday August 27 2017, 00:00		696,873			
Monday August 28 2017, 07:12	23,354,800	696,873	3,606	580	Charging the pond (over the weekend)
Tuesday August 29 2017, 19:32	23,632,687	1,263,299	2,180	579	Charging the pond
Wednesday August 30 2017, 09:16	23,738,618	481,572	824	584	Charging the pond
Thursday August 31 2017, 07:40	23,908,914	774,181	1,344	576	Charging the pond
Friday September 01 2017, 07:00	24,087,222	810,604	1,400	579	Charging the pond
Saturday September 02 2017, 00:00					
Sunday September 03 2017, 00:00					
Monday September 04 2017, 00:00					Long weekend
Tuesday September 05 2017, 00:00	-	-	-	-	
Wednesday September 06 2017, 00:00	-	-	-	-	
Thursday September 07 2017, 00:00	-	-	-	-	
Friday September 08 2017, 10:52	24,088,116	4,064	10,312	0	Water Sample
Saturday September 09 2017, 00:00					
Sunday September 10 2017, 00:00					
Monday September 11 2017, 10:40	-	-	-	-	
Tuesday September 12 2017, 10:40	-	-	-	-	
Wednesday September 13 2017, 10:40	-	-	-	-	
Thursday September 14 2017, 10:40	24,088,116	-	-	-	
Friday September 15 2017, 18:15	-	-	-	-	Meter Error
Saturday September 16 2017, 00:00					
Sunday September 17 2017, 00:00					
Monday September 18 2017, 14:08	24,090,469	10,697	4,073	3	Flow Meter Test/Service
Tuesday September 19 2017, 10:40	-	-	-	-	
Wednesday September 20 2017, 10:30	24,097,383	31,432	2,662	12	
Thursday September 21 2017, 18:15	24,341,143	1,108,155	1,905	582	Charging the pond
Friday September 22 2017, 10:40	-	-	-	-	
Saturday September 23 2017, 00:00					
Sunday September 24 2017, 00:00					
Monday September 25 2017, 10:40	-	-	-	-	
Tuesday September 26 2017, 10:40	-	-	-	-	Not Running
Wednesday September 27 2017, 10:40	-	-	-	-	Not Running
Thursday September 28 2017, 10:40	-	-	-	-	
Friday September 29 2017, 08:30	24,341,143	-	-	-	
Saturday September 30 2017, 12:30	24,556,472	978,905	1,680	583	Charging the pond
Sunday October 01 2017, 00:00					
Monday October 02 2017, 10:40	-	-	-	-	
Tuesday October 03 2017, 10:40	-	-	-	-	
Wednesday October 04 2017, 10:40	24,556,472	-	-	-	
Thursday October 05 2017, 10:40	24,775,636	996,339	1,440	692	Charging the pond
Friday October 06 2017, 10:40	-	-	-	-	
Saturday October 07 2017, 00:00					
Sunday October 08 2017, 00:00					
Monday October 09 2017, 00:00					Long weekend
Tuesday October 10 2017, 12:00	24,775,636	-	-	-	
Wednesday October 11 2017, 11:00	24,952,758	805,213	1,380	583	Charging the pond

PW1-09 Water Taking Summary
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

The permitted rates for PW1-09 are as follows:

Max. Num. of Days Taken Per Year	Max. Taken Per Day (litres)	Max. Num. of Hrs Taken Per Day	Max. Taken Per Minute (litres)
210	1,635,840	24	1,136

Date & Time	Meter Readings (imp. gallons)	Litres Between Readings (litres)	Minutes Between Readings (min)	Litres/Minute (L/min)	Comments
Thursday October 12 2017, 10:40	-	-	-	-	-
Friday October 13 2017, 10:40	-	-	-	-	-
Saturday October 14 2017, 00:00					
Sunday October 15 2017, 00:00					
Monday October 16 2017, 10:40	-	-	-	-	-
Tuesday October 17 2017, 10:40	-	-	-	-	-
Wednesday October 18 2017, 06:30	24,952,758	-	-	-	-
Thursday October 19 2017, 18:30	25,225,698	1,240,810	2,160	574	Charging the pond
Friday October 20 2017, 10:40	-	-	-	-	-
Saturday October 21 2017, 00:00					
Sunday October 22 2017, 00:00					
Monday October 23 2017, 10:30	25,225,698	-	-	-	Pump turned on
Tuesday October 24 2017, 10:40	25,417,066	869,976	1,450	600	Pump Turned off
Wednesday October 25 2017, 16:30	25,417,066	-	-	-	Pump Turned on
Thursday October 26 2017, 17:10	25,604,732	853,147	4,720	181	Pump turned off
Friday October 27 2017, 10:40	-	-	-	-	-
Saturday October 28 2017, 00:00					
Sunday October 29 2017, 00:00					
Monday October 30 2017, 10:30	25,604,732	-	-	-	Pump turned on
Tuesday October 31 2017, 07:45	25,790,394	844,036	1,275	662	Pump turned off
Wednesday November 01 2017, 10:40	-	-	-	-	-
Thursday November 02 2017, 10:40	-	-	-	-	-
Friday November 03 2017, 18:30	25,854,125	289,727	4,965	58	Pump turned on at 10:30. Pump turned off
Saturday November 04 2017, 00:00					
Sunday November 05 2017, 00:00					
Monday November 06 2017, 17:15	25,854,125	-	-	-	Pump turned on
Tuesday November 07 2017, 16:45	26,033,578	815,809	1,410	579	Pump turned off
Wednesday November 08 2017, 10:40	-	-	-	-	-
Thursday November 09 2017, 10:40	-	-	-	-	-
Friday November 10 2017, 10:40	-	-	-	-	-
Saturday November 11 2017, 00:00					
Sunday November 12 2017, 00:00					
Monday November 13 2017, 17:15	26,033,578	-	-	-	Pump turned on
Tuesday November 14 2017, 17:15	26,215,920	828,943	1,440	576	Pump turned off
Wednesday November 15 2017, 10:40	-	-	-	-	-
Thursday November 16 2017, 10:40	-	-	-	-	-
Friday November 17 2017, 10:40	-	-	-	-	-
Saturday November 18 2017, 00:00					
Sunday November 19 2017, 00:00					
Monday November 20 2017, 10:40	-	-	-	-	-
Tuesday November 21 2017, 10:40	26,215,920	-	-	-	Pump turned on
Wednesday November 22 2017, 10:40	26,444,120	1,037,418	1,440	720	Pump turned off
Thursday November 23 2017, 10:40	-	-	-	-	-
Friday November 24 2017, 10:40	-	-	-	-	-
Saturday November 25 2017, 00:00					
Sunday November 26 2017, 00:00					
Monday November 27 2017, 10:40	-	-	-	-	-
Tuesday November 28 2017, 13:30	-	-	-	-	-
Wednesday November 29 2017, 18:30	-	-	-	-	-
Thursday November 30 2017, 10:40	-	-	-	-	-
Friday December 01 2017, 10:40	-	-	-	-	-
Saturday December 02 2017, 00:00					
Sunday December 03 2017, 00:00					
Monday December 04 2017, 10:40	-	-	-	-	-
Tuesday December 05 2017, 10:40	-	-	-	-	-
Wednesday December 06 2017, 10:40	-	-	-	-	-

**PW1-09 Water Taking Summary
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario**

The permitted rates for PW1-09 are as follows:				
	Max. Num. of Days Taken Per Year	Max. Taken Per Day (litres)	Max. Num. of Hrs Taken Per Day	Max. Taken Per Minute (litres)
	210	1,635,840	24	1,136

Date & Time	Meter Readings (imp. gallons)	Litres Between Readings (litres)	Minutes Between Readings (min)	Litres/Minute (L/min)	Comments
Thursday December 07 2017, 10:40	-	-	-	-	
Friday December 08 2017, 10:40	-	-	-	-	
Saturday December 09 2017, 00:00					
Sunday December 10 2017, 00:00					
Monday December 11 2017, 10:40	-	-	-	-	
Tuesday December 12 2017, 10:40	-	-	-	-	
Wednesday December 13 2017, 10:40	-	-	-	-	
Thursday December 14 2017, 10:40	-	-	-	-	
Friday December 15 2017, 10:40	-	-	-	-	
Saturday December 16 2017, 00:00					
Sunday December 17 2017, 00:00					
Monday December 18 2017, 10:40	-	-	-	-	
Tuesday December 19 2017, 10:40	-	-	-	-	
Wednesday December 20 2017, 10:40	-	-	-	-	
Thursday December 21 2017, 10:40	-	-	-	-	
Friday December 22 2017, 10:40	-	-	-	-	
Saturday December 23 2017, 00:00					
Sunday December 24 2017, 00:00					
Monday December 25 2017, 10:40	-	-	-	-	
Tuesday December 26 2017, 10:40	-	-	-	-	
Wednesday December 27 2017, 10:40	-	-	-	-	
Thursday December 28 2017, 10:40	-	-	-	-	
2017 TOTAL:				23,119,409	Litres

Note:

Data from previous owner could not be obtained prior to August 17, 2017 (when CRH began operations at the Site).

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