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Appendix J

Noise Impact Assessment Report

Sheridan Park Drive Extension Municipal Class Environmental Assessment
Noise Impact Assessment Report

City of Mississauga

R.J. Burnside & Associates Limited
6990 Creditview Road, Unit 2
Mississauga ON L5N 8R9 CANADA

October 25, 2017
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Distribution List

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R.J. Burnside & Associates Limited

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Executive Summary

As part of the Sheridan Park Drive Extension Environmental Assessment (EA), a noise study was undertaken to determine noise impacts as a result of the proposed Sheridan Park Drive extension. The noise study followed the Ontario Ministry of Transportation's (MTO) Environmental Guide for Noise (MTO Noise Guide) (MTO, 2006) and the City of Mississauga Policy 09-03-03, Noise Attenuation Barriers on Major Roadways (City Noise Policy) (CoM, March 2015).

Noise levels are predicted in decibels in the A-weighted dBA scale, which best approximates the human perception of sound over a specified time period. An increase of 2 to 3 decibels in noise levels is considered to be just perceivable to the average person. It should be noted that a 3 dBA increase in noise equates to a doubling of traffic volumes.

Based on the MTO Noise Guide, where an existing roadway is proposed to be modified / widened adjacent to a Noise Sensitive Area (NSA) or a new road is proposed, MTO requires that the future noise levels without the proposed improvements be compared to the future noise level with the proposed improvements. The assessment is done at the outdoor living area (typically backyards) of each NSA. The provision of noise mitigation is to be investigated should the future noise level with the proposed improvements result in a greater than 5 dBA increase over the future noise level without the proposed improvements. If noise mitigation is provided, the objective is a minimum 5 dBA reduction. Mitigation will attempt to achieve levels as close to, or lower than, the objective level.

For the purpose of the noise analysis carried out for this Class EA study, the City Noise Policy state "Noise barriers may be constructed by the City in conjunction with a road widening project if no noise attenuation barriers exist, and the proposed additional lanes of traffic are found to adversely affect the daytime noise level beyond the established criteria (the noise level must be greater than 60 dBA (Leq daytime). (Leq means "equivalent sound level" and daytime means 7:00 AM to 11 PM. Leq daytime means daytime average.)

The STAMSON 5.0 computer modelling program, which is approved for use in Ontario by the MTO, was used to assess existing and future noise levels on Sheridan Park Drive. This program is used to predict noise levels generated from the road at the outdoor living areas (typically backyards) of NSA's.

The Sheridan Homelands neighbourhood to the north of the Study Area is considered an NSA. The outdoor living areas of three residential houses adjacent to the utility corridor as well as the Homelands Senior Public School yard were selected as representative

Points of Reception (PORs) for the purposes of assessing future noise levels within the NSA.

The future sound levels at the four PORs were predicted based on the traffic forecast for 2031 calendar year for three scenarios: Current, Future No Build, and Future Build. Future No Build scenario represents conditions in the future without proposed road extension; while Future Build scenario includes proposed road extension in the future.

Based on the Future Build Scenario, the future sound level is reduced at two of the PORs (POR2 and POR4) because the traffic that currently drives on the closest road will be reduced if the extension is built. For instance, at POR4 during the day, the traffic on Homelands Drive will be 6,100 vehicles per day without the extension but only 5,200 vehicles per day if the extension is built.

Based on the noise analysis, the difference between the projected future noise levels with and without the Sheridan Park Drive extension was determined to be less than 1 dBA. Therefore the extension has negligible impact on the noise levels in the neighbourhood and the consideration of noise mitigation is not warranted based on the Provincial guidelines and City Noise Policy.

Table of Contents

Tables

Figures

Appendices

Glossary of Terms and Acronyms

AADT	Annual Average Daily Traffic
Burnside	R.J. Burnside & Associates Limited
City Noise Policy	City of Mississauga Policy 09-03-03, Noise Attenuation Barriers on Major Roadways, March 2015
EA	Environmental Assessment
MOECC	Ontario Ministry of the Environment and Climate Change
MTO	Ontario Ministry of Transportation
MTO Noise Guide	Ontario Ministry of Transportation Environmental Guide for Noise, October 2006
OLA	Outdoor Living Area
POR	Point of Reception

Disclaimer

1.0 Introduction

The City of Mississauga (City) has undertaken a Municipal Class Environmental Assessment (EA) to investigate the proposed extension of Sheridan Park Drive between Homelands Drive and Speakman Drive in the southwestern area of Mississauga. R.J. Burnside & Associates Limited (Burnside) has facilitated the EA on behalf of the City.

The EA Study has followed a comprehensive planning and design process in order to explore the opportunity to connect the east and west sections of Sheridan Park Drive, improve the road network connectivity in the residential neighborhood and business area, create options for alternative routes and improve multi-modal network connectivity. The EA Study has been completed in accordance with the requirements of a Schedule B Undertaking as outlined in the Municipal Engineers Association Municipal Class Environmental Assessment Document (October 2000, as amended 2007, 2011 & 2015), which is an approved process under the *Ontario Environmental Assessment Act*.

As part of the EA Study, Burnside has completed a Noise Impact Assessment to identify whether the proposed Sheridan Park Drive extension will change noise levels within the Study Area and determine if any potential mitigation measures are required.

2.0 Study Area

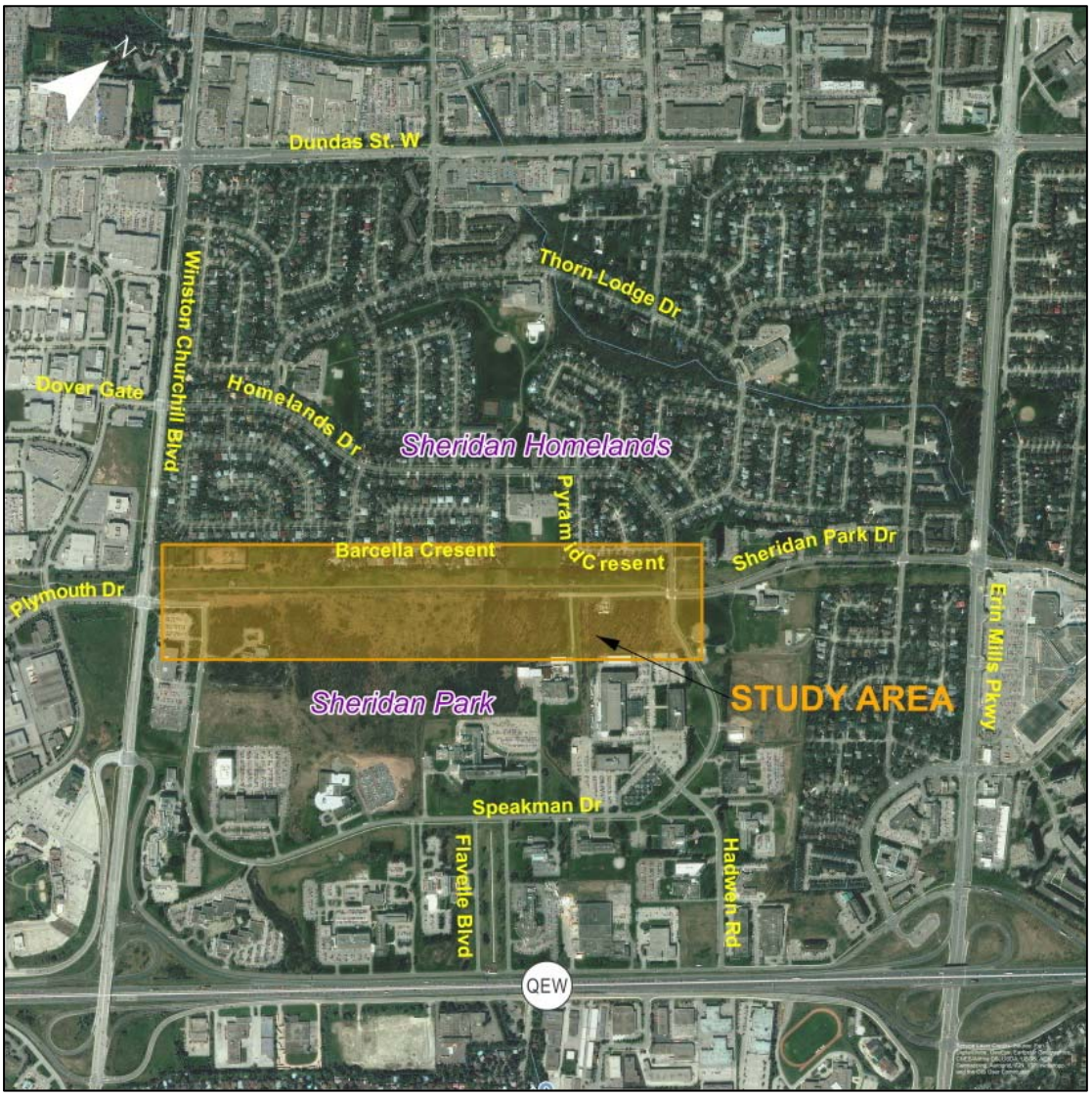
The Study Area is generally bordered by a utility corridor to the north, Winston Churchill Boulevard to the west, Speakman Drive/Homelands Drive to the east and naturalized private lands to the south. The Study Area is illustrated on Figure 1. The proposed extension of Sheridan Park Drive falls within the existing City of Mississauga owned right-of-way (ROW), which runs through the centre part of the Study Area.

The Study Area includes a unique combination of uses including the Sheridan Park Corporate Centre (Sheridan Park), a utility corridor that includes a multi-use trail and the Sheridan Homelands residential neighbourhood.

Sheridan Park is a 340 acre corporate centre, which is primarily designated Business Employment in the City of Mississauga's Official Plan (MOP). The majority of the Park is occupied by private industries and businesses, which include in their landholdings significant natural areas on the north side of the corporate centre, within the Study Area. These naturalized areas include two wooded areas that are identified as Significant Natural Areas in the City's Natural Areas Survey (2016 Update). Sheridan Park is also identified as one of the City's cultural landscape due to its scenic and distinct visual qualities.

The City maintains a paved multi-use trail through the utility corridor from Winston Churchill Boulevard to Homelands Drive/Speakman Drive. The trail then continues east along the south side of Sheridan Park Drive to Erin Mills Parkway. To the west of Winston Churchill Boulevard, the trail continues through the hydro corridor in Oakville. The trail provides recreational opportunities to the local residents and commuter cyclists.

Figure 1: Study Area



3.0 Noise Assessment

3.1 Sensitive Receptors

Noise sensitive land use, as described by the Ministry of the Environment and Climate Change (MOECC, 2013), means:

- A property of a person that accommodates a dwelling and includes a legal nonconforming residential use; or
- A property of a person that accommodates a building used for a noise sensitive commercial purpose; or
- A property of a person that accommodates a building used for a noise sensitive institutional purpose.

There are residential land uses to the north of the Study Area which are part of the Sheridan Homelands neighbourhood that would be a sensitive land use. The only institutional purpose sensitive land use in the Study Area is Homelands Sr. Public School. There are no commercial purpose sensitive land uses within the Study Area.

The residential dwelling at 2536 Barcella Crescent north of the proposed road extension was determined to be the location where the impact from the proposed roadway would result in the largest change in sound level and so was designated as one of the points of reception (POR1) and selected for the purpose of this assessment. This dwelling is the closest building to the proposed road extension alignment and furthest from all other existing road noise. The distance is 70 m from the centre of the proposed road alignment to the backyard (3 m from the building). The rest of the buildings along the road corridor including Homelands Sr. Public School are the same distance or further away from the proposed Sheridan Park Drive extension. Since the road noise decreases with the distance, all other dwellings are expected to experience the same or lower sound levels than POR1 as a result of the proposed road extension.

In addition to POR1, the following receptors were also assessed:

- POR2 - 2682 Hollington Crescent
- POR3 - Homelands Sr. Public School
- POR4 - 2248 Pyramid Crescent

Figure 2: Sensitive Receptors

The “most exposed side” of the dwelling must be assessed according to the Ontario Ministry of Transportation (MTO) Environmental Guide for Noise (Noise Guide) (MTO, 2006). The most exposed side refers to the closest side of the dwelling unit even if there is no Outdoor Living Area (OLA) associated with this side and without the shielding of the building. However, required mitigation measures (if applicable) should be based on sound levels predicted at the OLA. In the case of POR1, the most exposed side and OLA are located on the same side of the building (i.e., the backyard side).

3.2 Existing Sound Levels

Measurements of the existing acoustical environment were performed by taking sound level measurements at the backyard of the sensitive receptor POR1. A noise meter was placed within the utility corridor, close to the backyard fenceline. The location was 4.1 m south east of the property line and 1.4 m northeast of the southwest corner of the property for 2536 Barcella Crescent. This location is closer to the proposed road extension corridor than the rear of the house or OLA and also closer to the QEW. Therefore, the sound levels measured at this location are expected to be louder than experienced at the OLA of 2536 Barcella Crescent. This provides for a more conservative approach than the Noise Guide recommendation that existing sound levels to be measured at locations approximately 3 m away from the dwelling wall.

The sound level is measured by a sound level meter collecting measurements 20,000 times every second for an entire hour.

At the end of the hour, the “Leq-1h” is calculated as the average of all the measurements within that hour (Leq means “equivalent sound level” and 1h means one hour. Leq-1h one hour average). When deciding the background noise level for a location, a proponent must measure the sound level for at least 48 hours and then use the lowest Leq-1h measured for both daytime and nighttime. The measured level is compared to the default level and the higher level is used. The longer the measurement, the more likely a lower number will be measured.

Sound level measurements were collected from 11:42 AM on Thursday, April 13, 2017 through 8:07 AM on Friday, April 21, 2017. This time period corresponded to the Easter weekend and following week, during which time existing sound levels were expected to measure the lowest in relation to impact from traffic on local roads. This was a more conservative approach since the sound levels during this period would be lower than the typical weekday levels and lower than the default levels.

The measured background average 1-h Leq sound levels during daytime period (between 7 AM and 11 PM) were between 47 dBA and 61 dBA. Nighttime period (between 11 PM and 7 AM) sound levels were measured to be between 40 dBA and 56 dBA. The background sound levels take into account any noise sources that were active and audible during the measurement period and include all the traffic on surrounding roads and all the industrial operations that were running during that time. The minimum hour recorded during the monitoring was screened for airplane impacts. No airplanes were found so the minimum 1h-Leq was not reduced below the measured value.

Current noise levels experienced by residents is noise from the adjacent arterial and collector roads, the Sheridan Park to the south, and the QEW, which is approximately 1 km away.

Standard practice is to use the higher of default noise values taken from the Ontario Ministry of Transportation’s (MTO) Environmental Guide for Noise (MTO Noise Guide) (MTO, 2006) or the lowest of the noise levels measured for each time period. The higher of the two is selected. As a result of these measurements, it was confirmed that the default background values applied to the project. Those default background values are 50 dBA during the day and 45 dBA during the night.

3.3 Noise Impact Assessment Criteria

The noise impact due to the proposed road extension was assessed based on MTO Noise Guide criteria and the City of Mississauga Policy 09-03-03, Noise Attenuation Barriers on Major Roadways (City Noise Policy)(CoM, March 2015).

According to the MTO Noise Guide, where an increase in sound level is predicted, mitigation measures may be required as summarized in Table 1.

Table 1: Mitigation Effort Required for the Projected Noise Level with the Proposed Improvements above the Current Noise Levels

Change in Noise Level Above Current / Projected Noise Levels with Proposed Improvements	Mitigation Effort Required
< 5 dBA[1] change AND < 65 dBA	• None
≥5 dBA change OR ≥65 dBA	• Investigate noise control measures on right-of-way. • Introduce noise control measures within right-of-way and mitigate to current noise level if technically, economically and administratively feasible. • Noise control measures, where introduced, should achieve a minimum of 5 dBA attenuation, over first row receivers.

Mitigation measures, if applicable, must attempt to achieve levels that otherwise would be experienced without the proposed project if technically, economically, and administratively feasible.

For this project, the change noted in Table 1 is the difference between the default background and the predicted sound level.

According to the City Noise Policy, the installation of new noise attenuation barriers is subject to the following:

- The noise level must be greater than 60 dBA (LEQ daytime). (LEQ means "equivalent sound level" and daytime means 7:00 a.m. to 11:00 p.m. LEQ daytime means daytime average.), and
- The residential area must be adjacent to arterial and major collector roads.

Note that this policy indicates a noise wall will be installed at a lower sound level than required by the MTO Noise Guide.

3.4 Noise Impact Assessment Methodology

The noise impact assessment was performed following the MTO Noise Guide. In order to determine the potential noise impact, future predicted sound levels with and without the proposed road extension were compared for the OLA, which coincides with the most exposed side of each POR. Sound levels were predicted using traffic noise prediction

1dBA (A-weighted decibel) is an expression of the relative loudness of sounds in air as perceived by the human ear.

model ORNAMENT (Ontario Road Noise Analysis Method), implemented through the STAMSON (version 5.04) computer program as required by MTO.

The future sound levels were predicted based on the Annual Average Daily Traffic (AADT) value forecast for 2031 calendar year for three scenarios: Current, Future No Build, and Future Build.

Future No Build scenario represents conditions in the future without proposed road extension; while Future Build scenario includes proposed road extension in the future. The AADT and percentages of commercial vehicles are summarized in Table 2.

Table 2: Traffic Volumes

Road	Time Frame	AADT	Max Hourly	% of Medium Trucks	% of Heavy Trucks
Sheridan Park Drive Extension	Present	0	0	0	0
Sheridan Park Drive Extension	Future No Build	0	0	0	0
Sheridan Park Drive Extension	Future Build	2,200	220	3.64 %	1.36 %
Homelands Drive	Present	5,300	605	3.64 %	1.36 %
Homelands Drive	Future No Build	6,100	690	3.64 %	1.36 %
Homelands Drive	Future Build	5,200	580	3.64 %	1.36 %
Winston Churchill Blvd	Present	26,000	2,623	3.64 %	1.36 %
Winston Churchill Blvd	Future No Build	36,350	3,700	3.64 %	1.36 %
Winston Churchill Blvd	Future Build	37,000	3,760	3.64 %	1.36 %

3.5 Results

Current and predicted sound levels including calculated change in sound levels due to the proposed road extension in the Future No Build Scenario and Future Build Scenario are summarized in Table 3.

Table 3: Predicted (Modelled) Sound Levels for Future No Build and Future Build Scenarios

Receiver Location	Current Levels (dBA)	Future Sound Levels for No Build Scenario (dBA)	Future Sound Levels for Build Scenario (dBA)	Change due to Proposed Road Extension (dBA)[2]
POR1 Daytime	50 (default)	50	51.0	1.0
POR1 Nighttime	45 (default)	45	45.8	0.8
POR2 Daytime	55.5	56.5	55.6	-0.9
POR2 Nighttime	52.4	53.4	53.5	0.1
POR3 Daytime[3]	50 (default)	50	50.2	0.2
POR4 Daytime	54.0	55.0	54.2	-0.8
POR4 Nighttime	47.6	48.8	47.2	-1.6

[2] Negative values indicate that the sound level will decrease if the extension is built.
[3] POR3 is a school so nighttime impacts were not assessed.

As shown in Table 3, the predicted sound levels for the Future Build Scenario are low and the increase due to the undertaking is expected to be well below 5 dBA; therefore, no mitigation measures are required at these receptors.

Further, the Future Sound Level will be below 60 dBA so the City Noise Policy indicates a noise wall is not required and will not be installed.

Based on the Future Build Scenario, the future sound level is reduced at POR2 and POR4 because the traffic that currently drives on the closest road will be reduced if the extension is built. For instance, at POR4 during the day, the traffic on Homelands Drive will be 6,100 vehicles per day without the extension but only 5,200 vehicles per day if the extension is built (see Table 2 above).

The predicted future sound levels were performed for a variety of locations throughout the Study Area and none of the locations meet the criteria for a noise wall so noise mitigation is not required at any location within the Study Area.

4.0 Conclusions

If the Sheridan Park Drive extension is constructed, the increase in sound levels expected throughout the area will be less than 5 dBA therefore noise mitigation is not warranted.

5.0 References

Computer Program STAMSON Version 5.04. Ministry of the Environment.

Environmental Guide for Noise. Ministry of Transportation, October 2006 (MTO, 2006).

Noise Attenuation Barriers on Major Roadways, City of Mississauga, Policy Number: 09-03-03 March 2015 (CoM, March 2015)

Environmental Noise Guideline. Stationary and Transportation Sources – Approval and Planning. Publication NPC-300.Ministry of the Environment and Climate Change, August 2013 (MOECC, 2013).

ORNAMENT – Ontario Road Noise Analysis Method for Environment and Transportation. Technical Document. Ministry of the Environment, October 1989.

Transit Noise and Vibration Impact Assessment, Office of Planning and Environment Federal Transit Administration, May 2006 (FTA, 2006).

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Appendix A

Sample Noise Modelling Printout

STAMSON 5.0 NORMAL REPORT Date: 28-07-2017 14:06:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: por01.te Time Period: Day/Night 16/8 hours
Description: POR01 AADT4,400vpd

Road data, segment # 1: ShrdPrkwy (day/night)

Car traffic volume : 3762/418 veh/TimePeriod *
Medium truck volume : 144/16 veh/TimePeriod *
Heavy truck volume : 54/6 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 4400
Percentage of Annual Growth : 0.00
Number of Years of Growth : 5.00
Medium Truck % of Total Volume : 3.64
Heavy Truck % of Total Volume : 1.36
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: ShrdPrkwy (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 70.00 / 70.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

♀
Results segment # 1: ShrdPrkwy (day)

Source height = 1.08 m

ROAD (0.00 + 47.16 + 0.00) = 47.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	59.72	0.00	-11.11	-1.46	0.00	0.00	0.00	47.16

Segment Leq : 47.16 dBA

Total Leq All Segments: 47.16 dBA

♀
Results segment # 1: ShrdPrkwy (night)

Source height = 1.08 m

ROAD (0.00 + 41.28 + 0.00) = 41.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.58	53.19	0.00	-10.59	-1.32	0.00	0.00	0.00	41.28

Segment Leq : 41.28 dBA

Total Leq All Segments: 41.28 dBA

♀

TOTAL Leq FROM ALL SOURCES (DAY): 47.16
(NIGHT): 41.28

AADT double to avoid <40 vph at night so subtract 3 dBA
TOTAL Leq FROM ALL SOURCES (DAY): 44.16
(NIGHT): 38.28

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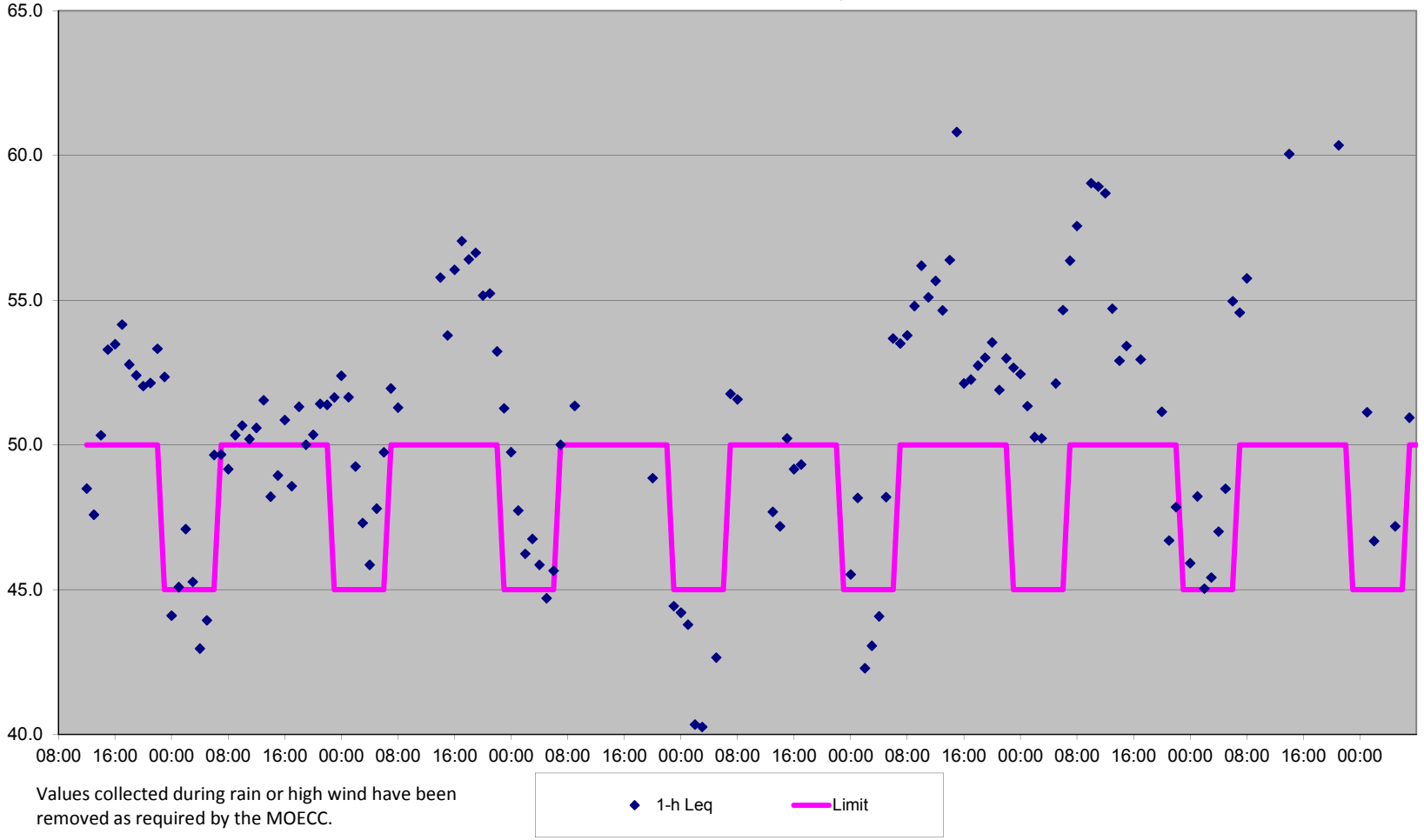
Appendix B

Background Measurements

Sheridan Park Drive POR Impact Prior to Construction 8:00 am Thursday April 13, 2017 to 8:00 am Friday April 21, 2017



Values collected during rain or high wind have been removed as required by the MOECC.

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Appendix C

Weather Conditions

Station Name	TORONTO INTL A
Province	ONTARIO
Latitude	43.68
Longitude	-79.63
Elevation	173.4
Climate Identifier	6158731
WMO Identifier	71624
TC Identifier	YYZ

All times are specified in Local Standard Time (LST). Add 1 hour to adjust for Daylight Saving Time where and when it is observed.

Legend

E	Estimated
M	Missing
NA	Not Available
‡	Partner data that is not subject to review by the National Climate Archives

Date/Time	Year	Temp (°C)	Dew Point	Rel Hum (%	Wind Dir (1	Wind Spd (	Visibility (k	Stn Press (	Weather
13Apr2017 0:00	2017	1.8	-2.7	72	28	13	24.1	100.96	NA
13Apr2017 1:00	2017	2.4	-2.5	70	31	17	24.1	100.94	Mainly Clear
13Apr2017 2:00	2017	1.8	-2.3	74	33	13	24.1	100.94	NA
13Apr2017 3:00	2017	1.6	-2.7	73	32	10	24.1	100.97	NA
13Apr2017 4:00	2017	1.8	-2.9	71	36	3	24.1	100.99	Cloudy
13Apr2017 5:00	2017	2	-3.1	69	25	5	24.1	101	NA
13Apr2017 6:00	2017	2.1	-2.4	72	29	5	24.1	101.03	NA
13Apr2017 7:00	2017	3.5	-1.5	70	28	5	24.1	101.12	Mainly Clear
13Apr2017 8:00	2017	6.6	-1.3	57	26	5	24.1	101.14	NA
13Apr2017 9:00	2017	8.3	-4.2	41	27	8	24.1	101.22	NA
13Apr2017 10:00	2017	9.2	-3	42	35	5	24.1	101.18	Mostly Cloudy
13Apr2017 11:00	2017	10.2	-2.8	40	36	2	24.1	101.14	NA
13Apr2017 12:00	2017	11	-3.9	35	25	5	24.1	101.09	NA
13Apr2017 13:00	2017	12.2	-1.7	38	26	7	24.1	101.02	Mostly Cloudy
13Apr2017 14:00	2017	13.3	-2.2	34	36	2	24.1	100.94	NA
13Apr2017 15:00	2017	12.3	-2.7	35	16	18	24.1	100.87	NA
13Apr2017 16:00	2017	12.6	-1.7	37	20	16	24.1	100.8	Mostly Cloudy
13Apr2017 17:00	2017	12.2	-2.4	36	17	13	24.1	100.78	NA
13Apr2017 18:00	2017	11.6	-1.5	40	16	10	24.1	100.81	NA
13Apr2017 19:00	2017	9.8	-3.8	38	14	9	24.1	100.77	Mostly Cloudy
13Apr2017 20:00	2017	8.7	-4.5	39	16	7	24.1	100.79	NA
13Apr2017 21:00	2017	9.1	-5.2	36	22	5	24.1	100.85	NA
13Apr2017 22:00	2017	7.5	-2.5	49	27	12	24.1	100.87	Mostly Cloudy
13Apr2017 23:00	2017	8	-4.8	40	34	14	24.1	100.88	NA
14Apr2017 0:00	2017	6.7	-4.4	45	36	12	24.1	100.87	NA
14Apr2017 1:00	2017	6	-3.9	49	36	13	24.1	100.86	Mostly Cloudy
14Apr2017 2:00	2017	4.9	-3.9	53	34	13	24.1	100.84	NA
14Apr2017 3:00	2017	4.9	-4.4	51	35	12	24.1	100.83	NA
14Apr2017 4:00	2017	5	-4.8	49	34	10	24.1	100.83	Mostly Cloudy
14Apr2017 5:00	2017	4.8	-5.6	47	34	9	24.1	100.86	NA
14Apr2017 6:00	2017	4.3	-5	51	33	12	24.1	100.91	NA
14Apr2017 7:00	2017	4.9	-4.9	49	34	11	24.1	100.95	Mostly Cloudy
14Apr2017 8:00	2017	6.6	-4.2	46	36	13	24.1	100.97	NA
14Apr2017 9:00	2017	9.2	-3.7	40	2	8	24.1	100.95	NA
14Apr2017 10:00	2017	11.3	-3.6	35	28	3	24.1	100.96	Clear
14Apr2017 11:00	2017	12.3	-1.6	38	13	11	24.1	100.92	NA
14Apr2017 12:00	2017	13.1	-2	35	16	11	24.1	100.88	NA
14Apr2017 13:00	2017	13.4	-6.2	25	13	15	24.1	100.82	Clear
14Apr2017 14:00	2017	14.6	-5.2	25	14	15	24.1	100.77	NA
14Apr2017 15:00	2017	14.5	-6.9	22	14	13	24.1	100.68	NA
14Apr2017 16:00	2017	14.3	-6.5	23	12	9	24.1	100.64	Clear
14Apr2017 17:00	2017	14.2	-6.6	23	15	16	24.1	100.61	NA
14Apr2017 18:00	2017	13.2	-7.5	23	14	10	24.1	100.61	NA
14Apr2017 19:00	2017	11.6	-8.3	24	14	9	24.1	100.58	Mainly Clear
14Apr2017 20:00	2017	10.3	-7.9	27	9	8	24.1	100.56	NA
14Apr2017 21:00	2017	9.5	-7.7	29	13	5	24.1	100.58	NA
14Apr2017 22:00	2017	8.3	-4.8	39	10	5	24.1	100.57	Clear
14Apr2017 23:00	2017	7.2	-4.2	44	4	8	24.1	100.54	NA
15Apr2017 0:00	2017	7	-4.4	44	4	9	24.1	100.47	NA
15Apr2017 1:00	2017	5.7	-3.1	53	3	9	24.1	100.39	Mainly Clear
15Apr2017 2:00	2017	5.3	-3.3	54	2	8	24.1	100.3	NA
15Apr2017 3:00	2017	5.5	-3.3	53	36	6	24.1	100.2	NA
15Apr2017 4:00	2017	5	-2.8	57	34	4	24.1	100.13	Mostly Cloudy
15Apr2017 5:00	2017	5.2	-2.6	57	33	6	24.1	100.1	NA
15Apr2017 6:00	2017	5.7	-2.4	56	36	9	24.1	100.08	NA
15Apr2017 7:00	2017	6.7	-2.5	52	2	4	24.1	100.05	Mostly Cloudy
15Apr2017 8:00	2017	7.8	-2	50	19	4	19.3	100.02	Rain
15Apr2017 9:00	2017	6.8	0.5	64	36	1	19.3	99.98	Rain
15Apr2017 10:00	2017	6.6	3.2	79	14	5	16.1	99.91	Rain
15Apr2017 11:00	2017	6.5	5	90	15	13	12.9	99.78	Rain
15Apr2017 12:00	2017	5.4	4.5	94	15	10	12.9	99.7	Rain
15Apr2017 13:00	2017	7.4	6	91	14	10	24.1	99.6	Mostly Cloudy
15Apr2017 14:00	2017	10.7	7.6	81	14	10	24.1	99.45	NA
15Apr2017 15:00	2017	13.9	8.6	70	16	15	24.1	99.3	NA
15Apr2017 16:00	2017	13.7	7.7	67	17	18	24.1	99.21	Mostly Cloudy
15Apr2017 17:00	2017	15	8.5	65	18	13	24.1	99.17	NA

Station Name	TORONTO INTL A
Province	ONTARIO
Latitude	43.68
Longitude	-79.63
Elevation	173.4
Climate Identifier	6158731
WMO Identifier	71624
TC Identifier	YYZ

All times are specified in Local Standard Time (LST). Add 1 hour to adjust for Daylight Saving Time where and when it is observed.

Legend

E	Estimated
M	Missing
NA	Not Available
‡	Partner data that is not subject to review by the National Climate Archives

Date/Time	Year	Temp (°C)	Dew Point	Rel Hum (%	Wind Dir (1	Wind Spd (	Visibility (k	Stn Press (	Weather
15Apr2017 18:00	2017	14.3	8.3	67	14	12	24.1	99.1	NA
15Apr2017 19:00	2017	12	7.4	73	15	8	24.1	99.04	Clear
15Apr2017 20:00	2017	11.2	7.4	77	17	8	24.1	99	NA
15Apr2017 21:00	2017	14	9.5	74	16	4	24.1	99.03	NA
15Apr2017 22:00	2017	20	12.1	60	22	21	24.1	99	Mostly Cloudy
15Apr2017 23:00	2017	19.6	11.7	60	23	22	24.1	98.98	NA
16Apr2017 0:00	2017	19	11.2	60	24	18	24.1	98.96	NA
16Apr2017 1:00	2017	18.6	10.5	59	23	19	24.1	98.91	Clear
16Apr2017 2:00	2017	19.3	9.9	54	23	21	24.1	98.86	NA
16Apr2017 3:00	2017	18.6	10	57	22	19	24.1	98.83	NA
16Apr2017 4:00	2017	17.4	10.1	62	21	15	24.1	98.8	Mostly Cloudy
16Apr2017 5:00	2017	17.3	10	62	24	21	24.1	98.79	NA
16Apr2017 6:00	2017	16.9	10.4	65	24	13	24.1	98.8	NA
16Apr2017 7:00	2017	17.7	9.7	59	23	25	24.1	98.76	Mostly Cloudy
16Apr2017 8:00	2017	18.6	10	57	23	23	24.1	98.72	NA
16Apr2017 9:00	2017	19.7	10	53	22	31	24.1	98.61	NA
16Apr2017 10:00	2017	21.3	10.9	51	23	33	24.1	98.56	Mostly Cloudy
16Apr2017 11:00	2017	21	11.2	53	24	43	24.1	98.54	NA
16Apr2017 12:00	2017	20.9	11.4	54	26	57	24.1	98.57	NA
16Apr2017 13:00	2017	20.8	12.1	57	28	42	24.1	98.64	Mostly Cloudy
16Apr2017 14:00	2017	21.1	12.6	58	27	41	24.1	98.66	NA
16Apr2017 15:00	2017	19.6	12.9	65	28	36	24.1	98.69	Rain Showers
16Apr2017 16:00	2017	20	12.8	63	28	33	24.1	98.76	Mostly Cloudy
16Apr2017 17:00	2017	20.1	12.5	61	27	34	24.1	98.76	NA
16Apr2017 18:00	2017	19.6	12	61	27	28	24.1	98.8	NA
16Apr2017 19:00	2017	18.8	12.2	65	27	24	24.1	98.85	Mostly Cloudy
16Apr2017 20:00	2017	16.1	14	87	30	27	24.1	98.95	NA
16Apr2017 21:00	2017	12.8	11.4	91	35	28	24.1	99.12	NA
16Apr2017 22:00	2017	10.9	9.3	90	33	21	24.1	99.19	Mainly Clear
16Apr2017 23:00	2017	10.7	9.1	90	31	10	24.1	99.27	NA
17Apr2017 0:00	2017	10.9	6.3	73	31	19	24.1	99.3	NA
17Apr2017 1:00	2017	10.5	4	64	29	18	24.1	99.35	Mostly Cloudy
17Apr2017 2:00	2017	10	2.6	60	31	23	24.1	99.36	NA
17Apr2017 3:00	2017	9.2	2.1	61	30	28	24.1	99.41	NA
17Apr2017 4:00	2017	8.5	1.7	62	31	24	24.1	99.43	Mainly Clear
17Apr2017 5:00	2017	7.3	1.8	68	30	25	24.1	99.52	NA
17Apr2017 6:00	2017	6.2	1.9	74	32	17	24.1	99.67	NA
17Apr2017 7:00	2017	6.4	1.7	72	32	23	24.1	99.77	Mainly Clear
17Apr2017 8:00	2017	7.1	2	70	32	26	24.1	99.8	NA
17Apr2017 9:00	2017	8.4	2	64	32	32	24.1	99.89	NA
17Apr2017 10:00	2017	9.4	2.3	61	31	26	24.1	99.93	Mainly Clear
17Apr2017 11:00	2017	10	1.9	57	30	33	24.1	99.98	NA
17Apr2017 12:00	2017	10.2	3.1	61	34	17	24.1	99.97	NA
17Apr2017 13:00	2017	11.6	3.2	56	34	18	24.1	99.97	Mainly Clear
17Apr2017 14:00	2017	11.8	3.6	57	3	21	24.1	99.98	NA
17Apr2017 15:00	2017	11.8	3.4	56	36	14	24.1	99.99	NA
17Apr2017 16:00	2017	11.5	2.8	55	1	22	24.1	100.03	Mainly Clear
17Apr2017 17:00	2017	10.1	1.5	55	36	28	24.1	100.1	NA
17Apr2017 18:00	2017	7.8	0.5	60	36	25	24.1	100.18	NA
17Apr2017 19:00	2017	5	-1.2	64	34	28	24.1	100.28	Mainly Clear
17Apr2017 20:00	2017	3.2	-1.7	70	35	28	24.1	100.4	NA
17Apr2017 21:00	2017	2.5	-2.2	71	35	28	24.1	100.47	NA
17Apr2017 22:00	2017	2	-2.7	71	35	26	24.1	100.5	Clear
17Apr2017 23:00	2017	1.6	-2.7	73	35	19	24.1	100.56	NA
18Apr2017 0:00	2017	1.1	-2.8	75	36	18	24.1	100.61	NA
18Apr2017 1:00	2017	0.9	-2.7	77	34	11	24.1	100.67	Clear
18Apr2017 2:00	2017	0.4	-2.5	81	36	11	24.1	100.69	NA
18Apr2017 3:00	2017	0.4	-2.3	82	36	10	24.1	100.73	NA
18Apr2017 4:00	2017	0.2	-2.5	82	1	10	24.1	100.76	Clear
18Apr2017 5:00	2017	0.2	-2.5	82	2	10	24.1	100.82	NA
18Apr2017 6:00	2017	0.8	-3.3	74	7	9	24.1	100.86	NA
18Apr2017 7:00	2017	2.1	-2.6	71	7	13	24.1	100.93	Mainly Clear
18Apr2017 8:00	2017	3.3	-2.5	66	8	10	24.1	100.98	NA
18Apr2017 9:00	2017	4.5	-2.6	60	14	10	24.1	100.97	NA
18Apr2017 10:00	2017	5.4	-1.5	61	14	14	24.1	100.98	Mainly Clear
18Apr2017 11:00	2017	5.9	-1	61	14	20	24.1	100.95	NA

Station Name	TORONTO INTL A
Province	ONTARIO
Latitude	43.68
Longitude	-79.63
Elevation	173.4
Climate Identifier	6158731
WMO Identifier	71624
TC Identifier	YYZ

All times are specified in Local Standard Time (LST). Add 1 hour to adjust for Daylight Saving Time where and when it is observed.

Legend

E	Estimated
M	Missing
NA	Not Available
‡	Partner data that is not subject to review by the National Climate Archives

Date/Time	Year	Temp (°C)	Dew Point	Rel Hum (%	Wind Dir (1	Wind Spd (	Visibility (k	Stn Press (	Weather
18Apr2017 12:00	2017	6.3	-0.4	62	12	17	24.1	100.91	NA
18Apr2017 13:00	2017	6.7	-0.5	60	11	15	24.1	100.9	Mostly Cloudy
18Apr2017 14:00	2017	8.1	-2.2	48	8	18	24.1	100.8	NA
18Apr2017 15:00	2017	8.8	-2.8	44	15	18	24.1	100.74	NA
18Apr2017 16:00	2017	9.1	-3.8	40	12	12	24.1	100.68	Mostly Cloudy
18Apr2017 17:00	2017	8.1	-4	42	7	14	24.1	100.62	NA
18Apr2017 18:00	2017	6.2	-4.3	47	10	15	24.1	100.57	NA
18Apr2017 19:00	2017	5.2	-6.4	43	8	16	24.1	100.53	Mostly Cloudy
18Apr2017 20:00	2017	5	-6	45	8	12	24.1	100.54	NA
18Apr2017 21:00	2017	4.8	-4.8	50	8	8	24.1	100.45	NA
18Apr2017 22:00	2017	4.8	-4.5	51	8	9	24.1	100.39	Mostly Cloudy
18Apr2017 23:00	2017	5	-3.1	56	8	9	24.1	100.39	NA
19Apr2017 0:00	2017	5.1	-2	60	9	13	24.1	100.27	NA
19Apr2017 1:00	2017	6.2	-1.9	56	8	10	24.1	100.18	Mostly Cloudy
19Apr2017 2:00	2017	6.4	-1.3	58	9	8	24.1	100.03	NA
19Apr2017 3:00	2017	6.2	0.1	65	6	9	19.3	99.94	Rain Showers
19Apr2017 4:00	2017	6.3	0.8	68	11	10	24.1	99.84	Cloudy
19Apr2017 5:00	2017	6.6	1.3	69	6	6	24.1	99.76	NA
19Apr2017 6:00	2017	6.8	1.5	69	13	5	24.1	99.73	NA
19Apr2017 7:00	2017	7.2	2.7	73	15	4	24.1	99.68	Cloudy
19Apr2017 8:00	2017	7.3	4.8	84	16	4	24.1	99.66	Rain Showers
19Apr2017 9:00	2017	9.9	5.9	76	19	7	24.1	99.59	NA
19Apr2017 10:00	2017	10.5	7.6	82	16	15	24.1	99.49	Mostly Cloudy
19Apr2017 11:00	2017	14	9.7	75	18	13	24.1	99.51	NA
19Apr2017 12:00	2017	17.1	12.5	74	20	20	24.1	99.4	NA
19Apr2017 13:00	2017	17.9	14.3	79	21	24	24.1	99.38	Cloudy
19Apr2017 14:00	2017	17.1	14.8	86	22	22	24.1	99.39	NA
19Apr2017 15:00	2017	19.2	15.5	79	22	27	19.3	99.36	NA
19Apr2017 16:00	2017	20.2	15.1	72	27	22	19.3	99.4	Mostly Cloudy
19Apr2017 17:00	2017	20.3	11.1	55	32	32	24.1	99.46	NA
19Apr2017 18:00	2017	18.4	9.3	55	32	27	24.1	99.54	NA
19Apr2017 19:00	2017	15.9	8.7	62	36	20	24.1	99.63	Mostly Cloudy
19Apr2017 20:00	2017	13.3	7.6	68	36	20	24.1	99.72	NA
19Apr2017 21:00	2017	11.6	6.4	70	35	23	24.1	99.81	NA
19Apr2017 22:00	2017	10.7	5.9	72	35	25	24.1	99.81	Mostly Cloudy
19Apr2017 23:00	2017	9.6	5.6	76	1	18	24.1	99.86	NA
20Apr2017 0:00	2017	8.9	4.9	76	36	21	24.1	99.92	NA
20Apr2017 1:00	2017	8.3	5.3	81	1	18	24.1	99.91	Mostly Cloudy
20Apr2017 2:00	2017	7.5	5	84	2	9	24.1	99.97	NA
20Apr2017 3:00	2017	8.3	5.4	82	4	13	24.1	99.99	NA
20Apr2017 4:00	2017	8.2	5.2	81	5	14	24.1	99.99	Cloudy
20Apr2017 5:00	2017	7.9	4.7	80	5	15	24.1	99.99	NA
20Apr2017 6:00	2017	7.9	4.7	80	8	19	24.1	99.91	NA
20Apr2017 7:00	2017	7.1	3.7	79	9	15	24.1	100.05	Cloudy
20Apr2017 8:00	2017	6.5	3.1	79	10	26	24.1	99.98	NA
20Apr2017 9:00	2017	5.7	3.4	85	9	15	19.3	100.28	Rain
20Apr2017 10:00	2017	5.1	3.8	91	7	19	8.1	100	Moderate Rain Showers,Fog
20Apr2017 11:00	2017	5	4	93	9	21	9.7	99.92	Rain Showers,Fog
20Apr2017 12:00	2017	4.9	3.6	91	9	24	19.3	99.78	Rain Showers
20Apr2017 13:00	2017	5.4	3.6	88	9	16	24.1	99.7	Cloudy
20Apr2017 14:00	2017	5.4	3.1	85	10	28	24.1	99.58	Rain Showers
20Apr2017 15:00	2017	5.3	3.3	87	8	19	16.1	99.51	Rain Showers
20Apr2017 16:00	2017	5.2	3.9	91	8	26	16.1	99.35	Rain Showers
20Apr2017 17:00	2017	5.4	4.2	92	8	22	12.9	99.28	Rain Showers
20Apr2017 18:00	2017	5.8	4.8	93	8	16	19.3	99.31	Rain Showers
20Apr2017 19:00	2017	6.2	5.3	94	10	18	9.7	99.21	Moderate Rain Showers
20Apr2017 20:00	2017	6	5.1	94	9	23	24.1	99.05	NA
20Apr2017 21:00	2017	5.9	5.2	95	10	20	16.1	99.07	Rain Showers
20Apr2017 22:00	2017	5.8	5.1	95	11	17	16.1	98.97	Rain Showers
20Apr2017 23:00	2017	5.8	5.2	96	11	14	16.1	98.89	Rain
21Apr2017 0:00	2017	5.9	5.3	96	7	10	12.9	98.82	NA
21Apr2017 1:00	2017	5.9	5.3	96	16	7	3.2	98.81	Fog
21Apr2017 2:00	2017	6	5.6	97	36	2	1.2	98.76	Drizzle,Fog
21Apr2017 3:00	2017	6.2	5.8	97	27	9	2	98.78	Drizzle,Fog
21Apr2017 4:00	2017	6.3	5.9	97	28	5	6.4	98.74	Fog
21Apr2017 5:00	2017	6.3	5.9	97	25	12	1	98.77	Drizzle,Fog

Station Name	TORONTO INTL A
Province	ONTARIO
Latitude	43.68
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Elevation	173.4
Climate Identifier	6158731
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All times are specified in Local Standard Time (LST). Add 1 hour to adjust for Daylight Saving Time where and when it is observed.

Legend

E	Estimated
M	Missing
NA	Not Available
‡	Partner data that is not subject to review by the National Climate Archives

Date/Time	Year	Temp (°C)	Dew Point	Rel Hum (%	Wind Dir (1	Wind Spd (	Visibility (k	Stn Press (	Weather
21Apr2017 6:00	2017	6.8	6.4	97	25	13	16.1	98.84	NA
21Apr2017 7:00	2017	8	7.7	98	25	18	16.1	98.88	Cloudy
21Apr2017 8:00	2017	9.7	8.2	90	25	19	16.1	98.87	NA
21Apr2017 9:00	2017	10.6	8	84	23	19	19.3	98.9	NA
21Apr2017 10:00	2017	10.7	6.9	77	25	24	24.1	98.93	Rain Showers
21Apr2017 11:00	2017	11.2	8.1	81	26	22	24.1	98.94	NA
21Apr2017 12:00	2017	11.3	5.9	69	28	28	24.1	98.97	NA
21Apr2017 13:00	2017	12.2	5	61	26	28	24.1	99	Cloudy
21Apr2017 14:00	2017	11.9	4	58	28	34	24.1	99.03	NA
21Apr2017 15:00	2017	11.9	4	58	26	28	24.1	99.01	NA
21Apr2017 16:00	2017	11.2	3	57	26	30	24.1	99.11	Mostly Cloudy
21Apr2017 17:00	2017	10.1	2.5	59	28	28	24.1	99.22	NA
21Apr2017 18:00	2017	8.6	2.4	65	28	31	24.1	99.31	NA
21Apr2017 19:00	2017	7.8	2.1	67	30	26	24.1	99.37	Cloudy
21Apr2017 20:00	2017	7.1	1.6	68	30	18	24.1	99.43	NA
21Apr2017 21:00	2017	6	1.4	72	28	18	24.1	99.51	NA
21Apr2017 22:00	2017	6.1	1.6	73	27	14	24.1	99.5	Mostly Cloudy
21Apr2017 23:00	2017	6.4	1.5	71	29	20	24.1	99.54	NA