

REPORT



DURHAM YORK ENERGY CENTRE

COURTICE, ONTARIO

2020 Q1 AMBIENT AIR QUALITY MONITORING REPORT

RWDI #1803743

May 14, 2020

SUBMITTED TO:

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1 INTRODUCTION

RWDI AIR Inc. (RWDI) was retained by Durham Region and York Region (the Regions) to conduct discrete and continuous air quality ambient monitoring at the Durham York Energy Centre (DYEC) monitoring stations. The facility address is 1835 Energy Drive, Clarington, Ontario. The DYEC is a facility that manages post diversion municipal solid waste from Durham Region and York Region to create energy from waste combustion. Commercial operation of the DYEC commenced on February 1, 2016. The site location is shown below in Figure 1.

Condition 11 of the Environmental Assessment Notice of Approval and Condition 7(4) of the Environmental Compliance Approval (ECA) requires ambient air monitoring to be undertaken by the DYEC. An Ambient Air Monitoring and Reporting Plan was prepared and approved by the Ministry of Environment, Conservation and Parks (MECP) to satisfy these conditions. Two (2) monitoring stations were established to monitor ambient air quality around the DYEC and quantify the background ambient air quality levels and DYEC contributed emissions to ambient air quality levels.

This monitoring plan was developed based on the Regional Council mandate to provide ambient monitoring in the area of the DYEC. The purposes of the ambient monitoring program are to:

- Quantify any measurable ground level concentrations resulting from emissions from the DYEC cumulative to local air quality, including validating the predicted concentrations from the dispersion modelling conducted in the Environmental Assessment (2009a);
- Monitor concentration levels of EFW-related air contaminants in nearby residential areas; and,
- Quantify background ambient levels of air contaminants in the area.

The facility has two (2) monitoring stations which collect continuous and discrete ambient measurements, known as the Courtice Station and Rundle Road Station. The station locations are shown in Figure 1. The Courtice and Rundle Road Stations were operational in May of 2013 and have been operated on behalf of the Region of Durham by Stantec Consulting Ltd. since that time up until July 31, 2018. RWDI has overseen the operation of the stations on behalf of the Region of Durham since August 1, 2018.

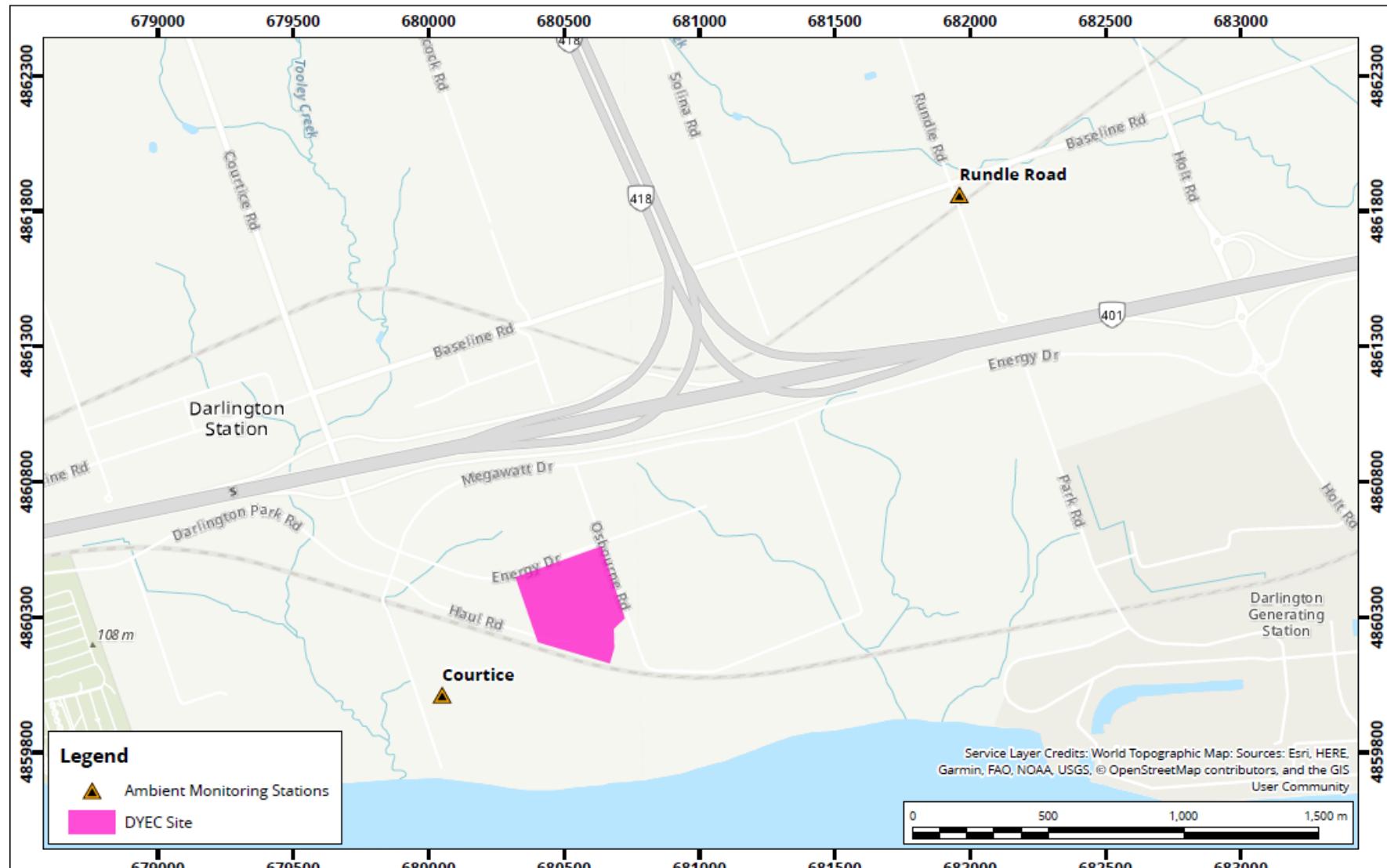
The Courtice and Rundle Road Stations continuously monitor the following air quality parameters: Particulate Matter less than 2.5 microns (PM2.5), Nitrogen Oxides (NO_x) and Sulfur Dioxide (SO₂). In addition, both discretely monitor the following air quality parameters: Total Suspended Particulate (TSP), Metals, Dioxins and Furans (D&F) and Polycyclic Aromatic Hydrocarbons (PAHs).

Continuous meteorological data is collected at the Courtice and Rundle Road Stations. The Rundle Road Station collects the following meteorological parameters: wind speed, wind direction, ambient temperature, precipitation and relative humidity. The meteorological tower there, is approximately 10 meters tall. The Courtice Station collects the following meteorological parameters: ambient temperature, ambient pressure, precipitation and relative humidity. For purposes of this report, wind speed and wind direction data for the Courtice Station have been obtained from the adjacent Courtice Water Pollution Control Plant (WPCP) meteorological tower, which is approximately 20 meters tall.

Throughout this monitoring period, there was one (1) exceedance of the AAQC for Benzo(a) Pyrene which occurred on March 28th at the Rundle Road Station, one (1) exceedance of the rolling 10-minute AAQC for SO₂ at the Courtice Station on January 24th and four (4) exceedance events of the rolling 1-hour AAQC for SO₂ at the Courtice Station on January 24th. Data recovery rates were acceptable and valid for all measured Q1 parameters.

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DYEC Site and Ambient Monitoring Station Locations

Map Projection: NAD 1983 UTM Zone 17N
DYEC - Region of Durham, Ontario



True North

Drawn by: DJH

Figure: 1

Approx. Scale: 1:20,000

Project #: 1803743



1.1 Sampling Locations

The Station sites were selected in consultation with a working group that included representatives from the MECP, the Region of Durham, York Region, and the Energy from Waste Advisory Committee (EFWAC), as required by Condition 11.3 of the Environmental Assessment Notice of Approval. The Courtice Station is predominantly upwind of the DYEC and is located on the Courtice WPCP property just southwest of the DYEC. The Rundle Road Station is predominantly downwind of the DYEC and is located just southeast of the intersection of Baseline Road and Rundle Road just northeast of the DYEC. Pictures of the two (2) Stations are presented as Figure 2 and 3.

Figure 2. Rundle Road Station



Figure 3. Courtice Station





2 SAMPLING METHODOLOGY

The Rundle Road and Courtice Stations are both equipped with the following continuous monitors: Thermo Scientific Model 5030 SHARP (Synchronized Hybrid Ambient Real-time Particulate) monitor (PM_{2.5} analyzer), Teledyne Nitrogen Oxides Analyzer Model T200 (NO_x analyzer), and a Teledyne Sulfur Dioxide Analyzer Model T100 (SO₂ analyzer). Both Stations also have the following periodic monitors: High Volume (Hi-Vol) Air Sampler outfitted with a TSP inlet head as approved by the United States Environmental Protection Agency (U.S. EPA), and a Hi-Vol Air Sampler outfitted with a polyurethane foam plug and circular quartz filter for measuring PAH's and D&F's as approved by U.S. EPA.

2.1 Nitrogen Oxide Analyzers

The Teledyne T200 Nitrogen Oxide (NO_x) analyzers use chemiluminescence detection, coupled with microprocessor technology to provide sensitivity and stability for ambient air quality applications. The instrument determines real-time concentration of nitric oxide (NO), total nitrogen oxides (NO_x) (the sum of NO and NO₂), and nitrogen dioxide (NO₂). The amount of NO is measured by detecting the chemiluminescence reaction that occurs in the reaction cell when NO molecules are exposed to ozone (O₃). The NO and O₃ molecules collide in the reaction cell and enter a higher energy state. When these excited molecules return to a stable energy state, they emit a photon of light which is proportional to the amount of NO in the sample stream of gas entering the analyzer. To determine the total NO_x (NO+NO₂) measurement, sample gas is periodically bypassed through a heated molybdenum converter cartridge that converts any NO₂ molecules in the sample stream into NO (any existing NO molecules in the stream remain as is). The instrument will switch the sample stream through the converter periodically and then through the reaction cell where the same chemiluminescence reaction occurs with ozone. The resultant response produced is now the sum of NO and converted NO₂ producing a NO_x measurement. The resultant NO₂ determination is the NO_x measurement subtracted from the NO measurement.

The NO_x analyzers were zero and span checked daily using the internal zero and span (IZS) system and calibrated once a month using either EPA protocol span gases and a dilution system or an ESA permeation tube calibrator. Automatic IZS checks were performed on a daily basis commencing at approximately 1:45 and ending at 02:15. The checks consisted of a 10-minute zero check, a 10-minute span check and a 10-minute purge. These checks provide a way to monitor daily performance of the analyzer using an external charcoal and purafil zeroing cartridge for the zero, and an internal permeation oven with a permeation tube for the span. These IZS checks are not for calibration purposes but are merely a diagnostic tool to identify instrument drift.

The instrument collects data using its own data acquisition system (DAS) on a 5-minute interval. Data is collected from the instrument directly to an EnviDAS logger at 1-min, 5-min and 60-min intervals. The logger can be accessed remotely, and all instrument parameters can be examined as well as the measurement data. This allows the tracking of instrument performance. Data was also collected at 1-minute intervals by an external datalogger using analog output connections as a back-up. The measurement data was averaged using Envista processing software over a 1-hour and 24-hour period to compare to the applicable ambient air quality criteria.



2.2 Sulphur Dioxide Analyzers

The Teledyne T100 Sulphur Dioxide (SO_2) Analyzer is a microprocessor-controlled analyzer that determines the concentration of SO_2 in a sample gas drawn through the instrument. In the sample chamber, sample gas is excited by ultraviolet light causing the SO_2 to absorb energy from the light and move to an active state (SO_2^*). These active SO_2^* molecules must decay into a stable state back to SO_2 , and when this happens a photon of light is released which is recognized by the instrument as fluorescence. The instrument measures the amount of fluorescence to determine the amount of SO_2 present in the sample gas.

The SO_2 analyzers were zero and span checked daily using the IZS system and calibrated once a month using either EPA protocol span gases and a dilution system or an ESA permeation tube calibrator. Automatic IZS checks were performed on a daily basis commencing at approximately 1:45 and ending at 02:15. The checks consisted of a 10-minute zero check, a 10-minute span check and a 10-minute purge. These checks provide a way to monitor daily performance of the analyzer using an external charcoal and purafil zeroing cartridge for the zero, and an internal permeation oven with a permeation tube for the span. These IZS checks are not for calibration purposes but are merely a diagnostic tool to identify instrument drift.

The instrument collects data using its own data acquisition system (DAS) on a 5-minute interval. Data is collected from the instrument directly to an EnviDAS logger at 1-min, 5-min and 60-min intervals. The logger can be accessed remotely, and all instrument parameters can be examined as well as the measurement data. This allows the tracking of instrument performance. Data was also collected at 1-minute intervals by an external datalogger using analog output connections as a back-up. The measurement data was averaged using Envista processing software over a 1-hour and 24-hour period to compare to the applicable ambient air quality criteria.

2.3 SHARP 5030 PM_{2.5} Analyzers

The SHARP 5030 is a hybrid nephelometric/radiometric particulate mass monitor capable of providing precise, real-time measurements with a superior detection limit. The SHARP incorporates a high sensitivity light scattering photometer whose output signal is continuously referenced to the time-averaged measurement of an integral beta attenuating mass sensor. The SHARP also incorporates a dynamic inlet heating system designed to maintain the relative humidity of the air passing through the filter tape constant.

The SHARP is calibrated once a month to ensure accuracy and validity of its data. The PM_{2.5} inlet head and sharp cut cyclone is cleaned monthly as well to ensure proper performance. The monthly calibration process consists of the following: zeroing the nephelometer if necessary, calibration of ambient temperature, calibration of barometric pressure, and calibration of the flow.



The instrument collects data using its own data acquisition system (DAS) on a 5-minute interval. Data is collected from the instrument directly to an EnviDAS logger at 1-min, 5-min and 60-min intervals. The logger can be accessed remotely, and all instrument parameters can be examined as well as the measurement data. This allows the tracking of instrument performance. Data was also collected at 1-minute intervals by an external datalogger using analog output connections as a back-up. The measurement data was averaged using Envista processing software over a 1-hour and 24-hour period to compare to the applicable ambient air quality criteria.

2.4 TSP High Volume Air Samplers

The Tisch TE-5170 Total Suspended Particulate (TSP) high volume (Hi-Vol) air samplers were outfitted with a TSP gabled inlet capable of collecting particulate of all aerodynamic diameters. Each Hi-Vol is equipped with a mass flow controller, which ensures a flow rate of 40 cubic feet per minute (CFM), a chart recorder for measuring cfm flow throughout the run time, an elapsed timer and a wheel timer for starting and stopping each sample. In the latter part of 2019, the pin-based wheel timer was modified with an automated relay system controlled by a data logger to toggle the sampler on and off, and the chart recorder system was replaced by a digital pressure transducer to record the blower output pressure. Teflon coated glass fibre filters are outfitted at the top of the hi-vol samplers where air is drawn through the filter, thereby collecting TSP. Each Hi-Vol is calibrated quarterly (every three months) to ensure accuracy and validity of the volume of air drawn through the sampler.

The Teflon coated glass fibre filter media was pre and post weighed by ALS Laboratories in Burlington, Ontario. The filters are then analyzed for total particulate weight, metals analysis and mercury.

2.5 Polyurethane Foam Samplers

The D&F, and PAH samples were collected using Tisch TE-1000 samplers, which are listed as reference devices for U.S. EPA Methods TO-9 and TO-13. The samplers use a collection filter that is 'backed-up' by a polyurethane foam (PUF) plug. The airborne compounds present in the particulate phase are collected on the Teflon coated glass fibre filter and any compounds present in the vapour phase are absorbed in the PUF plug. Each PUF sampler is equipped with a mass flow controller, which can sustain 8 CFM of flow over the sampling period, an elapsed timer and a wheel timer for starting and stopping each sample. In the latter part of 2019, the pin-based wheel timer was modified with an automated relay system controlled by a data logger to toggle the sampler on and off, and the chart recorder system was replaced by a digital pressure transducer to record the blower output pressure. Each PUF sampler is calibrated quarterly (every three months) to ensure accuracy and validity of the volume of air drawn through the sampler.

The filter and PUF media/glassware is proofed and analyzed by ALS Laboratories in Burlington, Ontario. The filters and PUF/XAD plugs are then analyzed for PAH's and D&F's.



2.6 Meteorological Towers

Meteorological data was collected from the Rundle Road and Courtice Stations. This is done so that a vector could be associated with the applicable contaminant concentrations. The Rundle Road and Courtice Stations are outfitted with a Campbell Scientific HMP60 Temperature / Relative Humidity probe, and a Texas Instruments TE525M rain gauge. Meteorological data was collected at 1-minute intervals and was averaged using Envista processing software over a 1-hour period.

3 AIR QUALITY CRITERIA AND STANDARDS

The monitored contaminant concentrations were compared to air quality criteria and standards set by the MECP and by Environment Canada. The MECP developed Ambient Air Quality Criteria (AAQCs) which are the maximum desirable concentrations in the outdoor air, based on effects to the environment and health (MECP, 2012). Not all contaminants have an applicable regulatory limit; therefore, other criteria were used for comparison. These included human health risk assessment (HHRA) criteria. New AAQC's for SO₂ were implemented in 2020, including a 10-minute rolling average AAQC of 67 ppb, a 1-hour rolling average AAQC of 40 ppb and an annual AAQC of 4 ppb. There is no longer a 24-hour rolling average AAQC for SO₂.

Environment Canada has established a Canadian Ambient Air Quality Standard (CAAQS) which are health-based air quality objectives for the outdoor air (Environment Canada, 2013). The current CAAQS' for PM_{2.5} are 27 µg/m³ for the 3-year average of annual 98th percentile 24-hour concentration, and 8.8 µg/m³ for the 3-year average of annual average concentrations (in effect as of 2020). The CAAQS' are listed in **Table 1**. No direct comparison to the 2020 CAAQS' is appropriate for this report, as the standards are only applicable to 3-year averaged data which is provided in the annual reports.

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Table 1. PM_{2.5}, SO₂ and NO₂ CAAQS' by Implementation Year

Parameter	Averaging Time	Year Applied		Statistical Form
		2020	2025	
Fine Particulate Matter (PM_{2.5})	24-hour	27		The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations
		µg/m ³		
	Annual	8.8		The 3-year average of the annual average of all 1-hour concentrations
		µg/m ³		
Sulphur Dioxide (SO₂)	1-hour	70	65	The 3-year average of the annual 99th percentile of the SO ₂ daily maximum 1-hour average concentrations
		ppb	ppb	
	Annual	5	4	The average over a single calendar year of all 1-hour average SO ₂ concentrations
		ppb	ppb	
Nitrogen Dioxide (NO₂)	1-hour	60	42	The 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations
		ppb	ppb	
	Annual	17	12	The average over a single calendar year of all 1-hour average concentrations
		ppb	ppb	

(CCME,2019)

All applicable criteria and standards are shown in the 'Summary of Ambient Measurements' section of this report.

4 MECP AUDITS

There was no MECP audit during Q1.

5 SUMMARY OF AMBIENT MEASUREMENTS

Ambient air quality monitoring results for all contaminants sampled at the Courtice and Rundle Road Stations are discussed herein. Summary statistics from January 1, 2020 to March 31, 2020 are presented in a summary format below and in a more detailed matrix format in **Appendix A** for continuous measurements and **Appendix B** for discrete measurements.

5.1 Meteorological Station Results

5.1.1 Courtice Station Results

The Courtice Station collected the following meteorological parameters: relative humidity, ambient temperature, ambient pressure and precipitation. For purposes of this report, wind speed and wind direction data for the Courtice Station have been obtained from the adjacent Courtice Water Pollution Control Plant (WPCP) meteorological tower, which is approximately 20 meters tall. The Courtice Station maintained a minimum 99.9% of data collection for all of the parameters measured during Q1. Hourly statistics from the meteorological station are presented in **Table 2**. A wind rose showing trends in wind speed and wind direction during Q1 is provided in **Figure 4**.

Figure 4. Wind Roses of Hourly Wind Speed and Wind Direction – January to March 2020

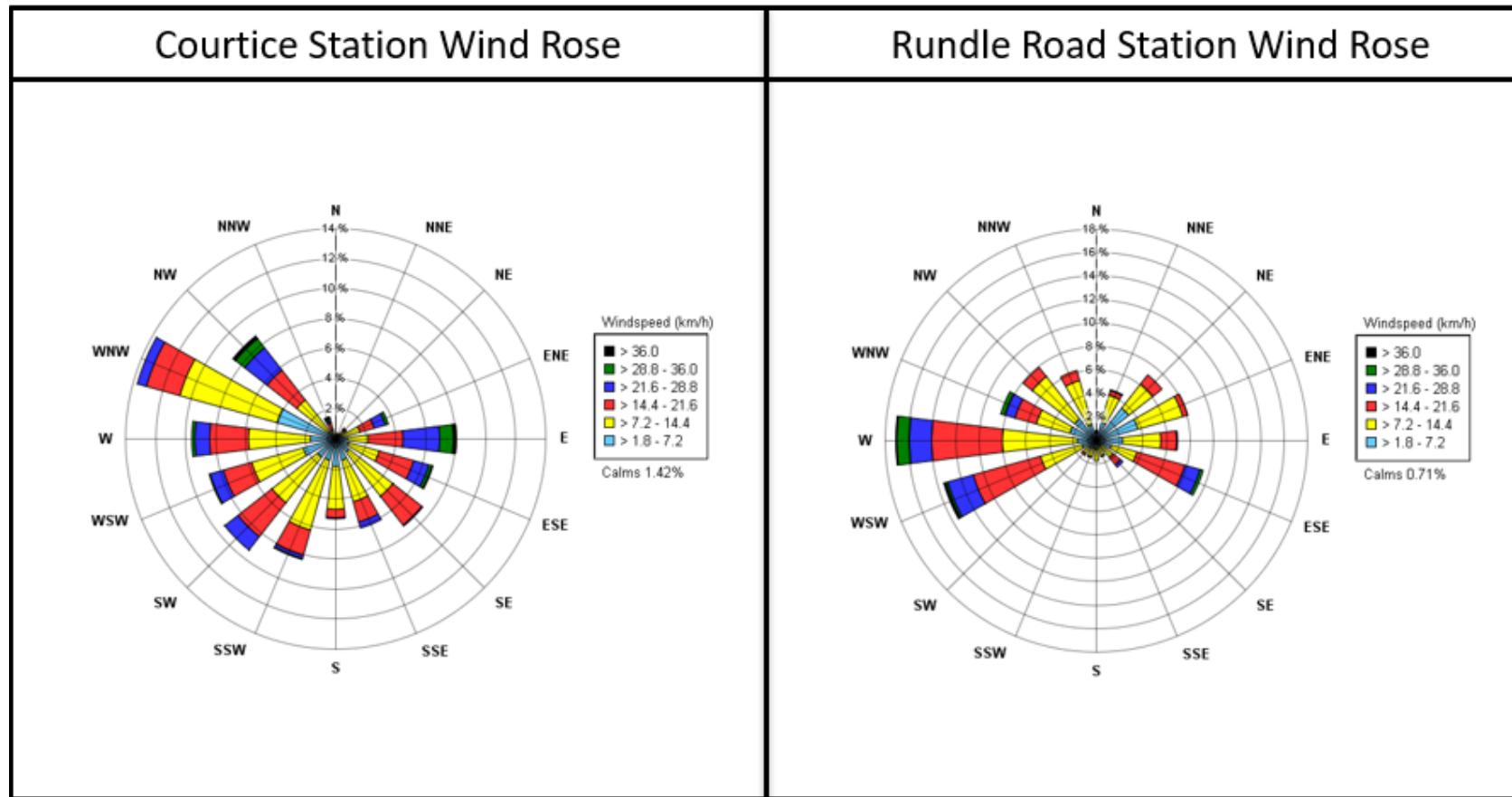


Table 2: Hourly Statistics from the Courtice Station and WPCP (WS and WD) Meteorological Station

Courtice Station MET Statistics	Maximum 1 hr Mean					Minimum 1 hr Mean					Monthly Mean					Total	% valid hours					
Parameter	WS	Temp	RH	Pres	Rain	WS	Temp	RH	Pres	Rain	WS	Temp	RH	Pres	Rain	Rain	WS	WD	Temp	RH	Pres	Rain
Units	(km/hr)	(°C)	(%)	"Hg	mm	(km/hr)	(°C)	(%)	"Hg	mm	(km/hr)	(°C)	(%)	"Hg	mm	mm	(%)					
January	37	11	97	30.6	5.4	1	-16	42	29.2	0.0	13	-1	73	29.8	0.2	130.7	99.9	99.9	100.0	100.0	100.0	
February	38	6	97	30.3	1.3	1	-22	35	29.0	0.0	14	-3	68	29.7	0.0	26.9	100.0	100.0	100.0	100.0	100.0	
March	38	13	97	30.4	5.3	0	-15	25	29.1	0.0	14	3	70	29.8	0.1	104.1	100.0	100.0	100.0	100.0	100.0	
Q1 Arithmetic Mean											14	0	70	29.8	0.1	261.7	100.0	100.0	100.0	100.0	100.0	

5.1.2 Rundle Road Station Results

The Rundle Road Station collected the following meteorological parameters: wind speed, wind direction, relative humidity, ambient temperature and precipitation. The meteorological tower at the station is at a height of approximately 10 meters tall. The Rundle Road Station maintained a minimum 96.2% data collection for all of the meteorological parameters measured during Q1. Hourly statistics from the meteorological station is presented in **Table 3**. A wind rose showing trends in wind speed and wind direction during Q1 is provided in **Figure 4**.

Table 3: Hourly Statistics from the Rundle Road Meteorological Station

Rundle Road Station MET Statistics	Maximum 1 hr Mean					Minimum 1 hr Mean					Monthly Mean					Total	% Valid Hours				
Parameter	WS	Temp	RH	Rain	WS	Temp	RH	Rain	WS	Temp	RH	Rain	Rain	WS	WD	Temp	RH	Rain			
Units	(km/hr)	(°C)	(%)	mm	(km/hr)	(°C)	(%)	mm	(km/hr)	(°C)	(%)	mm	mm	(%)							
January	32	11	99	6.4	0	-19	44	0.0	12	-2	77	0.2	116.1	100.0	96.2	100.0	100.0	100.0			
February	39	7	99	2.0	0	-23	32	0.0	12	-3	70	0.0	21.9	100.0	98.9	100.0	100.0	100.0			
March	34	15	99	5.2	0	-17	26	0.0	12	2	73	0.1	82.2	100.0	96.2	100.0	100.0	100.0			
Q1 Arithmetic Mean											12	-1	73	0.1	220.2	100.0	97.1	100.0	100.0	100.0	

5.2 NO_x, SO₂ and PM_{2.5} Summary Table Results

Table 4 provides a summary of Maximum 1-hour Rolling Means, Maximum 24-hour Rolling Means, Monthly Means, Quarterly Means and Percent valid data for the Courtice Station. **Table 5** provides a summary of Maximum 1-hour Means, Maximum 24-hour Means, Monthly Means, Quarterly Means and Percent valid data for the Rundle Road Station. **Table 6** provides a summary of exceedance statistics for both Courtice and Rundle Road Stations. There was one (1) exceedance event of the rolling 10-minute AAQC for SO₂ at the Courtice Station on January 24th and four (4) exceedance events of the rolling 1-hour AAQC for SO₂ at the Courtice Station on January 24th.

Table 4: Summary of Percent Valid Data for Courtice Station

Courtice Monitoring Station Data Statistics	Maximum Rolling 10 min Mean	Maximum Rolling 1 hr Mean					Maximum 24 hr Rolling Mean					Monthly Mean					% Valid Hours					
Compound	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂	
Units	ppb	(µg/m ³)	ppb				(µg/m ³)	ppb				(µg/m ³)	ppb				(%)					
AAQC	67					200	40	27 ^A				100										
January	79.067	45.2	98.8	59.7	40.1	56.223	19.9	38.3	14.5	25.6	20.407	6.2	8.9	1.7	7.2	1.953	99.9	99.7	99.7	99.7	99.7	
February	48.302	33.5	45.9	17.4	33.5	25.315	16.1	13.0	1.9	12.2	4.828	6.1	5.5	0.5	5.2	1.031	99.7	99.4	99.4	99.4	99.7	
March	36.724	42.6	70.2	48.3	38.4	21.798	16.9	21.7	3.8	18.0	4.865	6.1	5.9	1.1	4.8	1.076	99.6	99.3	99.3	99.3	99.6	
Q1 Arithmetic Mean														6.1	6.7	1.1	5.7	1.353	99.7	99.5	99.5	99.7

^A The 24-hour PM_{2.5} criterion applies to the 98th percentile over 3 consecutive years

Table 5: Summary of Percent Valid Data for Rundle Road Station

Rundle Road Monitoring Station Data Statistics	Maximum Rolling 10 min Mean	Maximum Rolling 1 hr Mean					Maximum 24 hr Rolling Mean					Monthly Mean					% Valid Hours					
Compound	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂	
Units	ppb	(µg/m ³)	ppb				(µg/m ³)	ppb				(µg/m ³)	ppb				(%)					
AAQC	67					200	40	27 ^A				100										
January	18.873	51.6	66.9	31.7	35.3	15.181	17.3	22.1	5.0	17.2	1.976	5.7	6.9	1.1	5.9	0.556	99.7	99.1	99.1	99.1	99.7	
February	3.723	28.7	43.6	16.4	28.9	2.044	14.9	14.9	2.9	12.3	0.937	5.8	5.4	0.9	4.6	0.368	99.9	99.7	99.7	99.7	99.7	
March	16.816	43.4	55.7	33.9	26.3	5.452	12.6	14.4	4.0	12.2	0.638	5.2	5.3	1.1	4.3	0.141	99.7	98.0	98.0	98.0	99.7	
Q1 Arithmetic Mean														5.6	5.9	1.0	4.9	0.355	99.8	98.9	98.9	98.9

^A The 24-hour PM_{2.5} criterion applies to the 98th percentile over 3 consecutive years.

Table 6: Summary of Exceedance Statistics

Event Statistics	Rolling Mean > 10 min AAQC for Courtice	Rolling Mean > 10 min AAQC for Rundle Road	Mean > 1 hr AAQC for Courtice Monitoring Station			Mean > 1 hr AAQC for Rundle Road Monitoring Station			Rolling Mean > 24 hr AAQC for Courtice Monitoring Station			Rolling Mean > 24 hr AAQC for Rundle Road Monitoring Station		
Compound	SO ₂	SO ₂	PM _{2.5}	NO ₂	SO ₂	PM _{2.5}	NO ₂	SO ₂	PM _{2.5}	NO ₂	SO ₂	PM _{2.5}	NO ₂	SO ₂
Units	No.	No.	No.			No.			No.			No.		
January	1	0		0	4		0	0	N/A	0		N/A	0	
February	0	0		0	0		0	0	N/A	0		N/A	0	
March	0	0		0	0		0	0	N/A	0		N/A	0	
Q1 Arithmetic Mean	1	0		0	4		0	0	N/A	0		N/A	0	

5.3 Oxides of Nitrogen Results

5.3.1 Courtice Station Results

Data recovery levels were high for oxides of nitrogen (99.5% valid data). Monitoring results were compared to the AAQC for NO₂ only, as it is the only parameter that has AAQC values for 1-hour and 24-hour averaging periods (there are no AAQC's for NO or NO_x). There were no exceedances above the AAQC values for the entirety of the sampling period for rolling 1-hour and 24-hour averaged data. The highest NO₂ value seen among the 1-hour averages was 40.1 ppb, which is 20.1% of the AAQC. The highest NO₂ value seen among the rolling 24-hour averages was 25.6 ppb, which is 25.6% of the AAQC. The measurements are summarized in **Table 4** above. A pollution rose is presented in **Figure 5** for the Courtice Station during Q1 composed of hourly average NO₂ concentrations. A pollution rose indicates the percentage of time that the wind originates from a given direction coupled with the pollutant measurement for that time in either ppb or micrograms per meter cubed. In order to show where possible major sources of pollutants are coming from, levels below 5 ppb were omitted from the graphic wind rose representation.

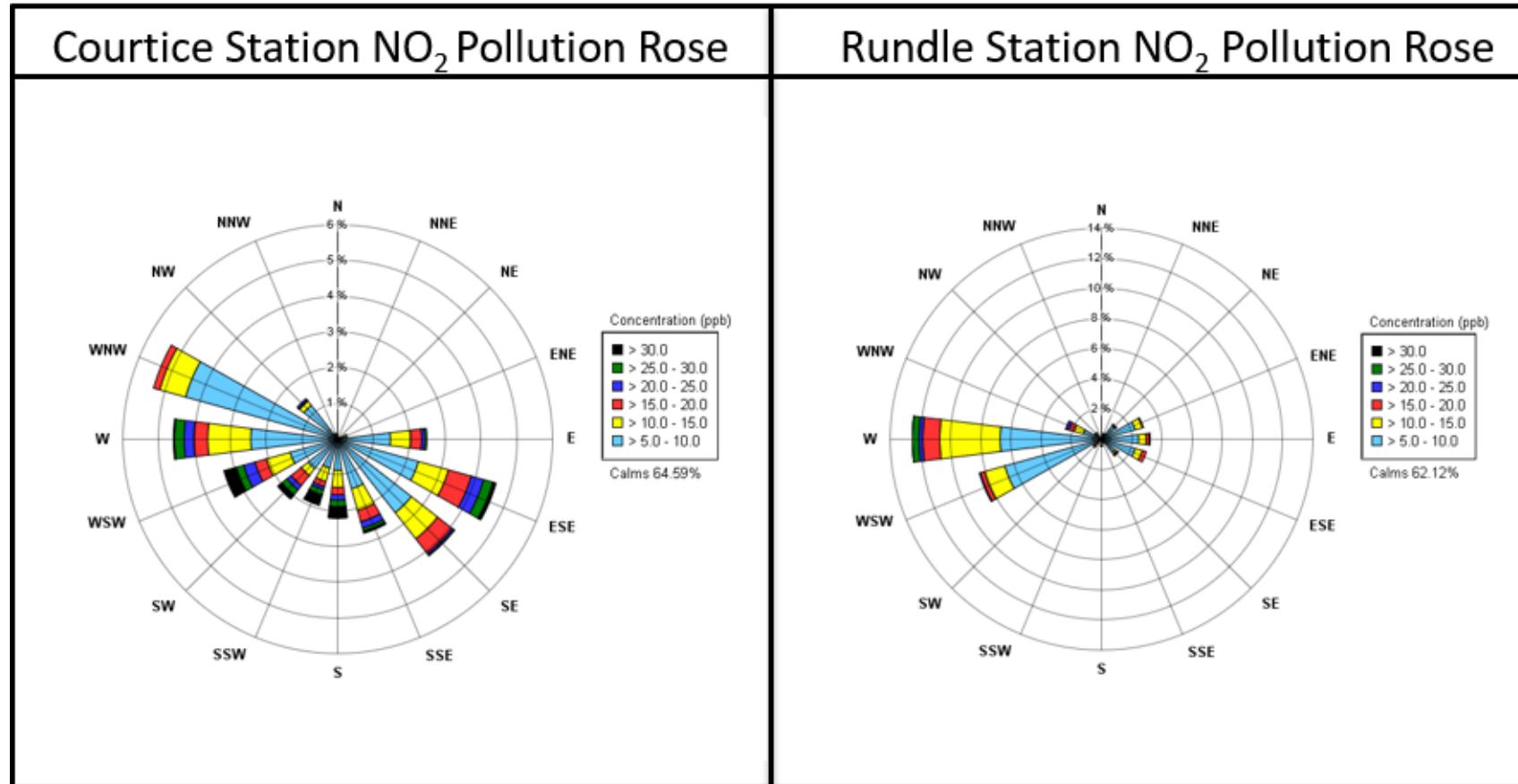
The Courtice Station pollution rose in **Figure 5** shows the majority of the NO₂ impacts were largely between the ESE and WNW directions. The Station would be downwind of the DYEC if winds were from the northeast and east-northeast components, which happened to be very minimal, therefore it is unlikely that any significant impact came from the DYEC. There are larger impacts from the ESE and SE which indicates likely impacts from the surrounding industry along the lakeshore, and from the W and WNW which is likely from roadway traffic emissions.

5.3.2 Rundle Road Station Results

Data recovery levels were high for oxides of nitrogen (98.9% valid data). There were no exceedances above the AAQC values for the entirety of the sampling period for rolling 1-hour and 24-hour averaged data. The highest NO₂ value seen among the 1-hour averages was 35.3 ppb, which is 17.6% of the AAQC. The highest NO₂ value seen among the rolling 24-hour averages was 17.2 ppb, which is 17.2% of the AAQC. The measurements are summarized in **Table 5** above. A pollution rose is presented in **Figure 5** for the Rundle Road Station during Q1 composed of hourly average NO₂ concentrations. In order to show where possible major sources of pollutants are coming from, levels below 5 ppb were omitted from the graphic wind rose representation.

The Rundle Road Station pollution rose in **Figure 5** shows that the majority of elevated NO₂ events at the Rundle Road Station occurred when winds were from the west and west-southwest which is in line with high traffic areas and urban background, with a possible contribution from DYEC in the WSW quadrant. It is unlikely that the DYEC was a major contributor to NO₂ levels at the station.

Figure 5. Pollution Roses of Hourly Average NO₂ Concentrations – January to March 2020





5.4 Sulphur Dioxide Results

5.4.1 Courtice Station Results

Data recovery levels were high for sulphur dioxide (99.7% valid data). Monitoring results were compared to the AAQC for 10-minute and 1-hour rolling average periods. The highest SO₂ value seen among the 10-min rolling averages was 79.067 ppb, which is 118.0% of the AAQC. The highest SO₂ value seen among the 1-hour rolling averages was 56.223 ppb, which is 140.6% of the AAQC. There was one (1) exceedance event of the rolling 10-minute AAQC and four (4) exceedance events of the rolling 1-hour AAQC. Figures outlining the pollution roses during the exceedance periods and a breakdown of how the exceedances are calculated are included in **Appendix E**. The exceedances were as follows:

- An exceedance of the SO₂ 10-minute AAQC occurred on January 24th at 17:55 EST (which includes averaged 5-min data from 17:50-17:55) with 72.01 ppb. The exceedance period included concentrations ranging from a minimum of 72.01 ppb to a maximum of 79.067 ppb.
 - The pollution rose generated during this exceedance period of 10-minutes suggests that elevated SO₂ events occurred from the E direction. This suggests that sources could include industrial sources along the lakeshore. It is unlikely that any significant contribution of measured SO₂ came from the DYEC as confirmed by the continuous emissions monitoring system (CEMS) on-site.
- An exceedance of the SO₂ 1-hour AAQC occurred at 16:40 EST (which includes averaged 5-min data from 15:45-16:40) on January 24th when the 1-hour running average was 43.857 ppb. During the exceedance period, successive running averages ranged between 43.857 ppb and 51.553 ppb.
 - The pollution rose generated during this exceedance period of 1-hour suggests that elevated SO₂ events occurred from the E and ESE directions. This suggests that sources could include industrial sources along the lakeshore. It is unlikely that any significant contribution of measured SO₂ came from the DYEC as confirmed by the continuous emissions monitoring system (CEMS) on-site.
- An exceedance of the SO₂ 1-hour AAQC occurred at 17:40 EST (which includes averaged 5-min data from 16:45-17:40) on January 24th when the 1-hour running average was 50.054 ppb. During the exceedance period, successive running averages ranged between 50.054 ppb and 56.223 ppb.
 - The pollution rose generated during this exceedance period of 1-hour suggests that elevated SO₂ events occurred from the E and ESE directions. This suggests that sources could include industrial sources along the lakeshore. It is unlikely that any significant contribution of measured SO₂ came from the DYEC as confirmed by the continuous emissions monitoring system (CEMS) on-site.
- An exceedance of the SO₂ 1-hour AAQC occurred at 18:40 EST (which includes averaged 5-min data from 17:45-18:40) on January 24th when the 1-hour running average was 52.432 ppb. During the exceedance period, successive running averages ranged between 37.113 ppb and 52.432 ppb.



- The pollution rose generated during this exceedance period of 1-hour suggests that elevated SO₂ events occurred from the E and ESE directions. This suggests that sources could include industrial sources along the lakeshore. It is unlikely that any significant contribution of measured SO₂ came from the DYEC as confirmed by the continuous emissions monitoring system (CEMS) on-site.
- An exceedance of the SO₂ 1-hour AAQC occurred at 20:30 EST (which includes averaged 5-min data from 19:35-20:30) on January 24th when the 1-hour running average was 41.201 ppb. During the exceedance period, successive running averages ranged between 29.213 ppb and 49.403 ppb.
 - The pollution rose generated during this exceedance period of 1-hour suggests that elevated SO₂ events occurred from the E and ESE directions. This suggests that sources could include industrial sources along the lakeshore. It is unlikely that any significant contribution of measured SO₂ came from the DYEC as confirmed by the continuous emissions monitoring system (CEMS) on-site.

The SO₂ statistical results are summarized in **Table 4** above. A pollution rose is presented in **Figure 6** for the Courtice Station during Q1 composed of hourly average SO₂ concentrations. In order to show where possible major sources of pollutants are coming from, levels below 5 ppb were omitted from the graphic wind rose representation.

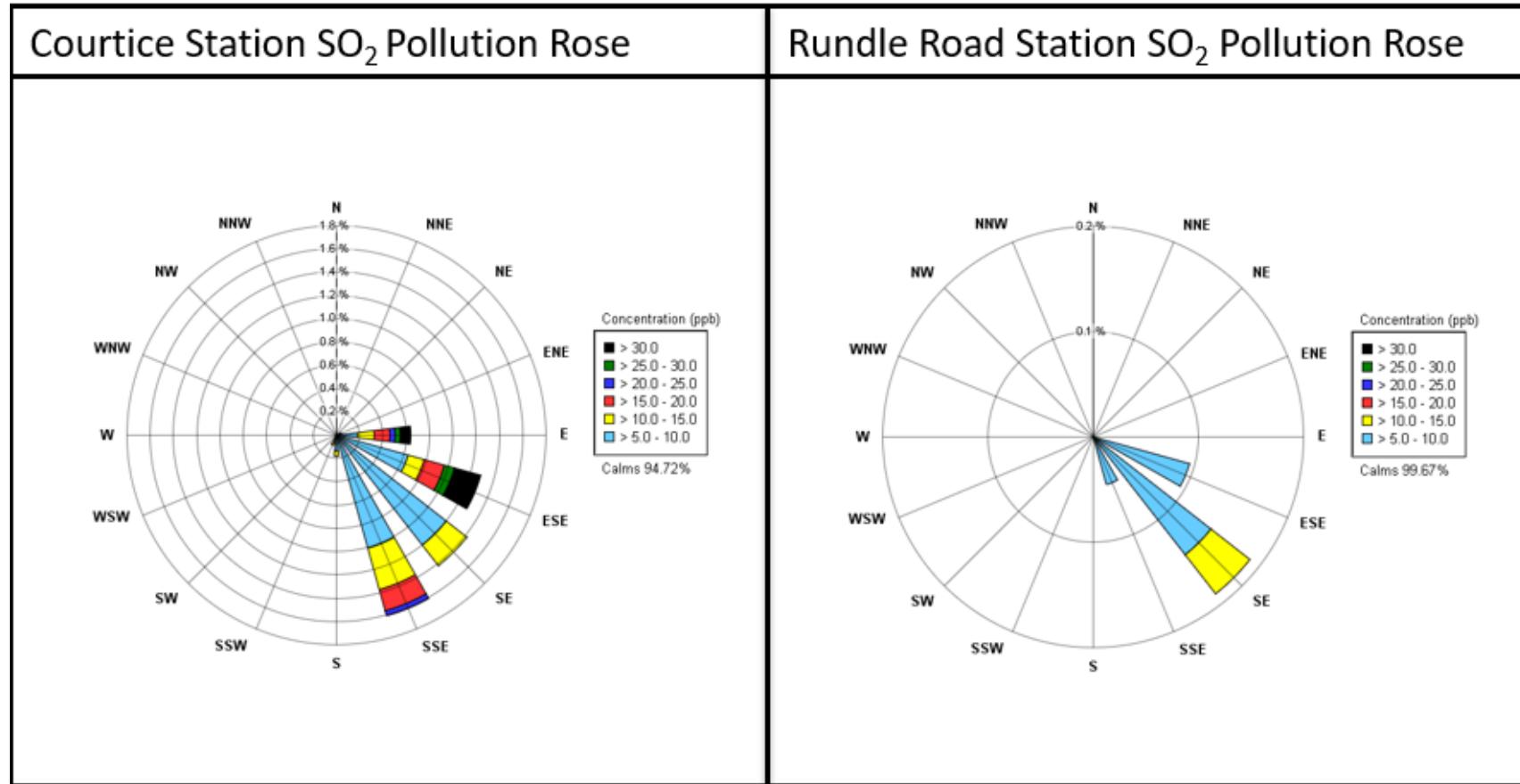
The Courtice Station pollution rose in **Figure 6** shows that the majority of elevated SO₂ events at Courtice occurred from the E to SSE directions. The events were possibly a result of emissions from industrial sources along the lakeshore. It is unlikely that any significant contribution of measured SO₂ came from the DYEC.

5.4.2 Rundle Road Station Results

Data recovery levels were high for sulphur dioxide (99.7% valid data). Monitoring results were compared to the AAQC for 10-minute and 1-hour rolling average periods. There were no exceedances above these AAQC values for the entirety of the sampling period for 10-minute and 1-hour rolling averaged data. The highest SO₂ value seen among the 10-min rolling averages was 18.873 ppb, which is 28.2% of the AAQC. The highest SO₂ value seen among the 1-hour rolling averages was 15.181 ppb, which is 38.0% of the AAQC. The results are summarized in **Table 5** above. A pollution rose is presented in **Figure 6** for the Rundle Road Station during Q1 composed of hourly average SO₂ concentrations. In order to show where possible major sources of pollutants are coming from, levels below 5 ppb were omitted from the graphic wind rose representation.

The Rundle Road Station pollution rose in **Figure 6** shows that the majority of elevated SO₂ events at the Rundle Road Station occurred when winds were from the E to SE. The pollution rose indicates that the DYEC was a not major contributor to SO₂ levels at the station and that the levels may be related to other industrial activity.

Figure 6. Pollution Roses of Hourly Average SO₂ Concentrations January to March 2020





5.5 Fine Particulate Matter (PM_{2.5}) Results

5.5.1 Courtice Station Results

Data recovery levels were high for particulate matter less than 2.5 microns (99.7% valid data). There is no 1-hour AAQC or standard for PM_{2.5}, but there is a 24-hour CAAQS of 27 µg/m³ for the 3-year average of annual 98th percentile 24-hour concentrations, and 8.8 µg/m³ for the 3-year average of annual average concentrations (in effect as of 2020). Note that since the reported data is only quarterly and the CAAQS is applicable to the 3-year average, the CAAQS' for PM_{2.5} was not applicable to the data. The highest PM_{2.5} value seen among the 1-hour rolling averages was 45.2 µg/m³ and the highest value seen among the 24-hour rolling averages was 19.9 µg/m³. The results are summarized in **Table 4** above. A pollution rose is presented in **Figure 7** for the Courtice Station during Q1 composed of hourly average PM_{2.5} concentrations. In order to show where possible major sources of pollutants are coming from, levels below 5 µg/m³ were omitted from the graphic wind rose representation.

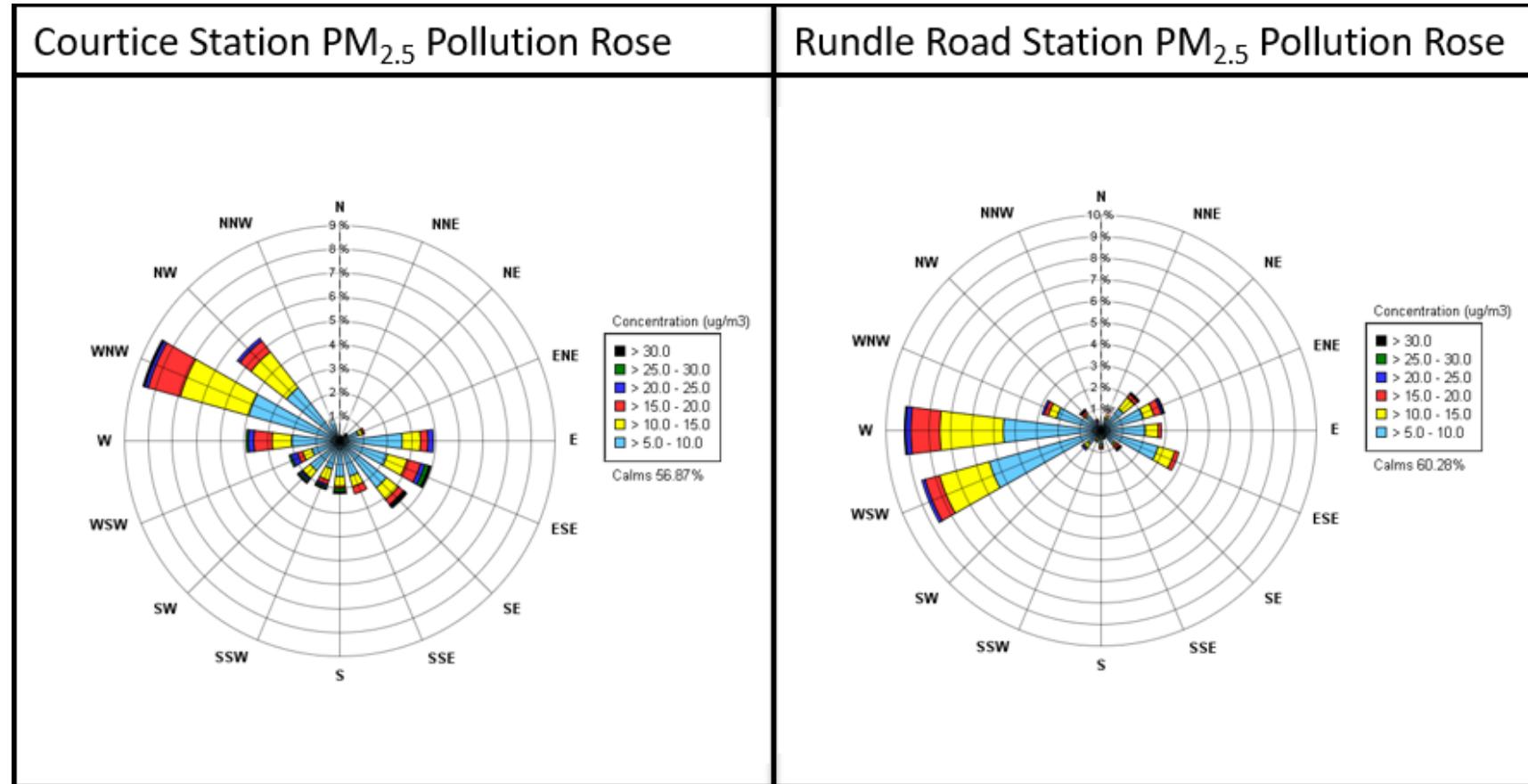
The Courtice Station pollution rose in **Figure 7** shows that the majority of elevated PM_{2.5} events at Courtice were largely from the W to NW. Elevated PM_{2.5} measurements were likely related to urban background, roadway emissions and other nearby industrial sources.

5.5.2 Rundle Road Station Results

Data recovery levels were high for particulate matter less than 2.5 microns (99.8% valid data). The highest PM_{2.5} value seen among the 1-hour rolling averages was 51.6 µg/m³ and the highest value seen among the 24-hour rolling averages was 17.3 µg/m³. The results are summarized in **Table 5** above. A pollution rose is presented in **Figure 7** for the Rundle Road Station during Q1 composed of hourly average PM_{2.5} concentrations. In order to show where possible major sources of pollutants are coming from, levels below 5 µg/m³ were omitted from the graphic wind rose representation.

The Rundle Road pollution rose in **Figure 7** shows that the majority of elevated PM_{2.5} events at the Rundle Road Station occurred when winds were from WSW and W, which is in line with high traffic areas and urban background, with a possible contribution from DYEC in the WSW quadrant.

Figure 7. Pollution Roses of Hourly Average PM_{2.5} Concentrations – January to March 2020





5.6 TSP and Metals Hi-Vol Results

All of the TSP Hi-Vols operated on a discrete schedule every 6 days according to the NAPS schedule during Q1 with the sample days being: January 4, 10, 16, 22, 28, February 3, 9, 15, 21, 27, and March 4, 10, 16, 22, 28, 2020.

5.6.1 Courtice Station Results

Data recovery levels were high for the TSP sampler at the Courtice Station (93% valid data). There were no exceedances of any of the AAQC's or HHRA Criteria for TSP, mercury or metals during Q1. **Table 7** is a summary of the statistics for this station.

Table 7: Summary of TSP Sampler Courtice Station

Contaminant	Units	MECP Criteria	HHRA Health Based Criteria	No. > Criteria	Geometric Mean	Arithmetic Mean	Q1 Minimum Concentration	Q1 Maximum Concentration	January Maximum Concentration	February Maximum Concentration	March Maximum Concentration	Number of Valid Samples	% Valid Data
Particulate (TSP)	$\mu\text{g}/\text{m}^3$	120	120	0	12.31	13.44	4.88	22.24	21.28	16.33	22.24	14	93
Total Mercury (Hg)	$\mu\text{g}/\text{m}^3$	2	2	0	7.67E-06	1.12E-05	2.83E-06	2.75E-05	2.75E-05	1.07E-05	9.34E-06	14	93
Aluminum (Al)	$\mu\text{g}/\text{m}^3$	4.8	-	0	5.18E-02	6.62E-02	1.17E-02	1.98E-01	5.03E-02	1.13E-01	1.98E-01	14	93
Antimony (Sb)	$\mu\text{g}/\text{m}^3$	25	25	0	7.50E-04	1.00E-03	3.25E-04	4.06E-03	4.06E-03	1.03E-03	8.12E-04	14	93
Arsenic (As)	$\mu\text{g}/\text{m}^3$	0.3	0.3	0	8.95E-04	8.95E-04	8.47E-04	9.43E-04	9.43E-04	8.85E-04	9.42E-04	14	93
Barium (Ba)	$\mu\text{g}/\text{m}^3$	10	10	0	3.42E-03	3.74E-03	1.86E-03	7.35E-03	4.49E-03	7.35E-03	6.16E-03	14	93
Beryllium (Be)	$\mu\text{g}/\text{m}^3$	0.01	0.01	0	2.98E-05	2.98E-05	2.82E-05	3.14E-05	3.14E-05	2.95E-05	3.14E-05	14	93
Bismuth (Bi)	$\mu\text{g}/\text{m}^3$	-	-	-	5.37E-04	5.37E-04	5.08E-04	5.66E-04	5.66E-04	5.31E-04	5.65E-04	14	93
Boron (B)	$\mu\text{g}/\text{m}^3$	120	-	0	1.19E-02	1.19E-02	1.13E-02	1.26E-02	1.26E-02	1.18E-02	1.26E-02	14	93
Cadmium (Cd)	$\mu\text{g}/\text{m}^3$	0.025	0.025	0	5.96E-04	5.97E-04	5.65E-04	6.29E-04	6.29E-04	5.90E-04	6.28E-04	14	93
Chromium (Cr)	$\mu\text{g}/\text{m}^3$	0.5	-	0	1.49E-03	1.49E-03	1.41E-03	1.57E-03	1.57E-03	1.48E-03	1.57E-03	14	93
Cobalt (Co)	$\mu\text{g}/\text{m}^3$	0.1	0.1	0	5.96E-04	5.97E-04	5.65E-04	6.29E-04	6.29E-04	5.90E-04	6.28E-04	14	93
Copper (Cu)	$\mu\text{g}/\text{m}^3$	50	-	0	1.06E-02	1.36E-02	3.54E-03	3.69E-02	3.12E-02	3.69E-02	1.37E-02	14	93
Iron (Fe)	$\mu\text{g}/\text{m}^3$	4	-	0	1.86E-01	2.04E-01	8.43E-02	4.96E-01	2.03E-01	2.77E-01	4.96E-01	14	93
Lead (Pb)	$\mu\text{g}/\text{m}^3$	0.5	0.5	0	1.69E-03	1.93E-03	8.48E-04	4.24E-03	2.30E-03	3.22E-03	4.24E-03	14	93
Magnesium (Mg)	$\mu\text{g}/\text{m}^3$	-	-	-	1.02E-01	1.22E-01	2.93E-02	3.64E-01	1.00E-01	1.75E-01	3.64E-01	14	93
Manganese (Mn)	$\mu\text{g}/\text{m}^3$	0.4	-	0	5.03E-03	5.73E-03	2.17E-03	1.28E-02	7.45E-03	9.65E-03	1.28E-02	14	93
Molybdenum (Mo)	$\mu\text{g}/\text{m}^3$	120	-	0	4.98E-04	6.20E-04	2.82E-04	1.61E-03	1.61E-03	2.95E-04	8.48E-04	14	93
Nickel (Ni)	$\mu\text{g}/\text{m}^3$	0.2	-	0	8.95E-04	8.95E-04	8.47E-04	9.43E-04	9.43E-04	8.85E-04	9.42E-04	14	93
Phosphorus (P)	$\mu\text{g}/\text{m}^3$	-	-	-	3.34E-01	4.08E-01	2.12E-01	1.36E+00	2.36E-01	1.36E+00	6.23E-01	14	93
Selenium (Se)	$\mu\text{g}/\text{m}^3$	10	10	0	2.98E-03	2.98E-03	2.82E-03	3.14E-03	3.14E-03	2.95E-03	3.14E-03	14	93
Silver (Ag)	$\mu\text{g}/\text{m}^3$	1	1	0	2.98E-04	2.98E-04	2.82E-04	3.14E-04	3.14E-04	2.95E-04	3.14E-04	14	93
Strontium (Sr)	$\mu\text{g}/\text{m}^3$	120	-	0	2.32E-03	2.80E-03	8.78E-04	8.61E-03	2.26E-03	4.02E-03	8.61E-03	14	93
Thallium (Tl)	$\mu\text{g}/\text{m}^3$	-	-	-	2.68E-05	2.69E-05	2.54E-05	2.83E-05	2.83E-05	2.66E-05	2.83E-05	14	93
Tin (Sn)	$\mu\text{g}/\text{m}^3$	10	10	0	6.01E-04	6.59E-04	2.93E-04	9.60E-04	9.46E-04	9.60E-04	9.34E-04	14	93
Titanium (Ti)	$\mu\text{g}/\text{m}^3$	120	-	0	3.80E-03	4.13E-03	3.11E-03	1.09E-02	3.46E-03	7.35E-03	1.09E-02	14	93
Uranium (Ur)	$\mu\text{g}/\text{m}^3$	1.5	-	0	2.98E-05	2.98E-05	2.82E-05	3.14E-05	3.14E-05	2.95E-05	3.14E-05	14	93
Vanadium (V)	$\mu\text{g}/\text{m}^3$	2	1	0	1.49E-03	1.49E-03	1.41E-03	1.57E-03	1.57E-03	1.48E-03	1.57E-03	14	93
Zinc (Zn)	$\mu\text{g}/\text{m}^3$	120	-	0	3.12E-02	3.96E-02	8.44E-03	9.38E-02	8.72E-02	9.38E-02	4.15E-02	14	93
Zirconium (Zr)	$\mu\text{g}/\text{m}^3$	20	-	0	6.76E-04	7.94E-04	5.65E-04	3.33E-03	6.29E-04	3.33E-03	6.28E-04	14	93

Note: All non-detectable results were reported as 1/2 of the detection limit

5.6.2 Rundle Road Station Results

Data recovery levels were moderate for the TSP sampler at the Rundle Road Station (80% valid data). There were no exceedances of any of the AAQC's or HHRA Criteria for TSP, mercury or metals during Q1. **Table 8** is a summary of the statistics for this station.

Table 8: Summary of TSP Sampler Rundle Road Station

Contaminant	Units	MECP Criteria	HHRA Health Based Criteria	No. > Criteria	Geometric Mean	Arithmetic Mean	Q1 Minimum Concentration	Q1 Maximum Concentration	January Maximum Concentration	February Maximum Concentration	March Maximum Concentration	Number of Valid Samples	% Valid Data
Particulate (TSP)	µg/m³	120	120	0	15.3	17.2	6.5	33.9	26.2	33.9	21.6	12	80
Total Mercury (Hg)	µg/m³	2	2	0	7.61E-06	1.30E-05	2.92E-06	4.40E-05	4.40E-05	2.97E-06	1.17E-05	12	80
Aluminum (Al)	µg/m³	4.8	-	0	5.60E-02	7.25E-02	1.18E-02	1.73E-01	8.83E-02	9.63E-02	1.73E-01	12	80
Antimony (Sb)	µg/m³	25	25	0	4.94E-04	5.94E-04	1.50E-04	1.34E-03	1.01E-03	7.49E-04	1.34E-03	12	80
Arsenic (As)	µg/m³	0.3	0.3	0	8.91E-04	8.91E-04	8.46E-04	9.18E-04	9.07E-04	8.92E-04	9.18E-04	12	80
Barium (Ba)	µg/m³	10	10	0	3.79E-03	4.41E-03	1.80E-03	8.38E-03	6.90E-03	8.38E-03	7.10E-03	12	80
Beryllium (Be)	µg/m³	0.01	0.01	0	2.97E-05	2.97E-05	2.82E-05	3.06E-05	3.02E-05	2.97E-05	3.06E-05	12	80
Bismuth (Bi)	µg/m³	-	-	-	5.35E-04	5.35E-04	5.08E-04	5.51E-04	5.44E-04	5.35E-04	5.51E-04	12	80
Boron (B)	µg/m³	120	-	0	1.19E-02	1.19E-02	1.13E-02	1.22E-02	1.21E-02	1.19E-02	1.22E-02	12	80
Cadmium (Cd)	µg/m³	0.025	0.025	0	5.94E-04	5.94E-04	5.64E-04	6.12E-04	6.05E-04	5.95E-04	6.12E-04	12	80
Chromium (Cr)	µg/m³	0.5	-	0	1.49E-03	1.49E-03	1.41E-03	1.53E-03	1.51E-03	1.49E-03	1.53E-03	12	80
Cobalt (Co)	µg/m³	0.1	0.1	0	5.94E-04	5.94E-04	5.64E-04	6.12E-04	6.05E-04	5.95E-04	6.12E-04	12	80
Copper (Cu)	µg/m³	50	-	0	1.33E-02	1.64E-02	6.38E-03	3.75E-02	3.28E-02	1.21E-02	3.75E-02	12	80
Iron (Fe)	µg/m³	4	-	0	2.16E-01	2.62E-01	6.60E-02	5.46E-01	5.46E-01	2.71E-01	5.33E-01	12	80
Lead (Pb)	µg/m³	0.5	0.5	0	1.19E-03	1.38E-03	8.75E-04	3.73E-03	2.71E-03	8.92E-04	3.73E-03	12	80
Magnesium (Mg)	µg/m³	-	-	-	1.06E-01	1.29E-01	2.93E-02	2.63E-01	1.21E-01	1.81E-01	2.63E-01	12	80
Manganese (Mn)	µg/m³	0.4	-	0	5.90E-03	7.82E-03	1.53E-03	2.27E-02	1.22E-02	2.27E-02	1.14E-02	12	80
Molybdenum (Mo)	µg/m³	120	-	0	6.44E-04	8.12E-04	2.92E-04	1.75E-03	1.23E-03	5.86E-04	1.75E-03	12	80
Nickel (Ni)	µg/m³	0.2	-	0	8.91E-04	8.91E-04	8.46E-04	9.18E-04	9.07E-04	8.92E-04	9.18E-04	12	80
Phosphorus (P)	µg/m³	-	-	-	2.84E-01	3.16E-01	2.12E-01	6.77E-01	2.27E-01	2.23E-01	6.77E-01	12	80
Selenium (Se)	µg/m³	10	10	0	2.97E-03	2.97E-03	2.82E-03	3.06E-03	3.02E-03	2.97E-03	3.06E-03	12	80
Silver (Ag)	µg/m³	1	1	0	2.97E-04	2.97E-04	2.82E-04	3.06E-04	3.02E-04	2.97E-04	3.06E-04	12	80
Strontium (Sr)	µg/m³	120	-	0	3.00E-03	3.83E-03	8.79E-04	7.47E-03	4.05E-03	6.72E-03	7.47E-03	12	80
Thallium (Tl)	µg/m³	-	-	-	2.67E-05	2.67E-05	2.54E-05	2.75E-05	2.72E-05	2.68E-05	2.75E-05	12	80
Tin (Sn)	µg/m³	10	10	0	6.21E-04	8.01E-04	2.93E-04	2.57E-03	1.30E-03	9.92E-04	2.57E-03	12	80
Titanium (Ti)	µg/m³	120	-	0	3.69E-03	3.87E-03	3.10E-03	7.34E-03	3.33E-03	3.27E-03	7.34E-03	12	80
Uranium (Ur)	µg/m³	1.5	-	0	2.97E-05	2.97E-05	2.82E-05	3.06E-05	3.02E-05	2.97E-05	3.06E-05	12	80
Vanadium (V)	µg/m³	2	1	0	1.49E-03	1.49E-03	1.41E-03	1.53E-03	1.51E-03	1.49E-03	1.53E-03	12	80
Zinc (Zn)	µg/m³	120	-	0	1.46E-02	2.11E-02	5.34E-03	8.34E-02	4.95E-02	8.34E-02	1.83E-02	12	80
Zirconium (Zr)	µg/m³	20	-	0	5.94E-04	5.94E-04	5.64E-04	6.12E-04	6.05E-04	5.95E-04	6.12E-04	12	80

Note: All non-detectable results were reported as 1/2 of the detection limit

5.7 PAH Results

All of the PUF Hi-Vols operated on a discrete schedule every 12 days for PAH's according to the NAPS schedule during Q1 with the sample days being: January 4, 16, 28, February 9, 21, March 4, 16, 28, 2020.

5.7.1 Courtice Station Results

Data recovery levels were high for the PAH results at the Courtice Station (100% valid data). There were no exceedances of any of the AAQC's or HHRA Criteria. **Table 9** outlines the statistics summary for this station.

Table 9: Statistics Summary of PAH Results for Courtice Station

Contaminant	Units	MECP Criteria ($\mu\text{g}/\text{m}^3$)	No. > Criteria	Arithmetic Mean	Minimum Q1 Concentration	Maximum Q1 Concentration	January Maximum Concentration	February Maximum Concentration	March Maximum Concentration	Number of Valid Samples	% Valid data
1-Methylnaphthalene	ng/m^3	12000	0	3.40E+00	1.81E+00	7.55E+00	2.78E+00	3.25E+00	7.55E+00	8	100
2-Methylnaphthalene	ng/m^3	10000	0	5.36E+00	3.12E+00	1.17E+01	3.97E+00	5.17E+00	1.17E+01	8	100
Acenaphthene	ng/m^3	-	-	8.87E-01	1.79E-01	4.20E+00	6.48E-01	2.94E-01	4.20E+00	8	100
Acenaphthylene	ng/m^3	3500	0	9.69E-02	3.05E-02	1.94E-01	1.94E-01	3.38E-02	1.65E-01	8	100
Anthracene	ng/m^3	200	0	3.67E-02	1.00E-02	1.14E-01	3.76E-02	2.64E-02	1.14E-01	8	100
Benzo(a)Anthracene	ng/m^3	-	-	1.63E-02	4.95E-03	2.94E-02	1.06E-02	2.60E-02	2.94E-02	8	100
Benzo(a)fluorene	ng/m^3	-	-	2.92E-02	1.28E-02	7.40E-02	3.72E-02	2.82E-02	7.40E-02	8	100
Benzo(a)Pyrene (Historically High)	ng/m^3	0.05	0	1.89E-02	1.49E-03	3.92E-02	6.67E-03	3.65E-02	3.92E-02	8	100
Benzo(b)Fluoranthene	ng/m^3	-	-	7.09E-02	2.83E-02	1.44E-01	3.95E-02	1.00E-01	1.44E-01	8	100
Benzo(b)fluorene	ng/m^3	-	-	1.58E-02	7.80E-03	3.48E-02	2.60E-02	1.86E-02	3.48E-02	8	100
Benzo(e)Pyrene	ng/m^3	-	-	4.33E-02	1.72E-02	7.68E-02	3.18E-02	5.20E-02	7.68E-02	8	100
Benzo(g,h,i)Perylene	ng/m^3	-	-	4.31E-02	1.46E-02	7.99E-02	2.97E-02	5.51E-02	7.99E-02	8	100
Benzo(k)Fluoranthene	ng/m^3	-	-	5.19E-02	2.02E-02	8.68E-02	3.92E-02	7.15E-02	8.68E-02	8	100
Biphenyl	ng/m^3	-	-	1.89E+00	1.00E+00	4.48E+00	1.29E+00	2.40E+00	4.48E+00	8	100
Chrysene	ng/m^3	-	-	9.93E-02	4.10E-02	1.86E-01	6.64E-02	1.37E-01	1.86E-01	8	100
Dibenzo(a,h)Anthracene	ng/m^3	-	-	5.40E-03	2.59E-03	9.91E-03	3.55E-03	6.59E-03	9.91E-03	8	100
Fluoranthene	ng/m^3	-	-	4.67E-01	2.45E-01	1.40E+00	3.85E-01	5.08E-01	1.40E+00	8	100
Indeno(1,2,3-cd)Pyrene	ng/m^3	-	-	1.11E+00	4.56E-01	3.79E+00	7.76E-01	7.64E-01	3.79E+00	7	88
Naphthalene	ng/m^3	22500	-	4.56E-02	2.47E-02	7.99E-02	3.39E-02	5.33E-02	7.99E-02	8	100
o-Terphenyl	ng/m^3	-	0	2.25E+01	1.14E+01	3.79E+01	2.47E+01	2.64E+01	3.79E+01	8	100
Perylene	ng/m^3	-	-	1.04E-02	4.25E-03	2.01E-02	1.01E-02	1.11E-02	2.01E-02	8	100
Phenanthrene	ng/m^3	-	-	4.37E-03	3.32E-04	1.21E-02	2.39E-03	1.21E-02	1.09E-02	8	100
Pyrene	ng/m^3	-	-	1.98E+00	8.74E-01	7.08E+00	1.79E+00	1.77E+00	7.08E+00	8	100
Tetralin	ng/m^3	-	-	2.38E-01	1.45E-01	6.02E-01	2.37E-01	2.35E-01	6.02E-01	8	100
Fluorene ¹	ng/m^3	-	-	2.09E+00	1.48E+00	2.87E+00	2.34E+00	2.04E+00	2.87E+00	8	100
Total PAH	ng/m^3	-	-	4.04E+01	2.22E+01	8.27E+01	3.76E+01	4.26E+01	8.27E+01	8	100

Note: All non-detectable results were reported as 1/2 of the detection limit

[1] Fluorene was not reported only once which occurred on the January 4th sampling event. The fluorene levels below instrument response were not listed on that analytical report.

5.7.2 Rundle Road Station Results

Data recovery levels were low for the PAH results at the Rundle Road Station (75% valid data). There was one (1) exceedance of the Benzo(a) Pyrene AAQC on March 28th. There were no other exceedances of any of the AAQC's or HHRA Criteria.

According to the Rundle meteorological data, the Rundle Road Station was neither upwind nor downwind of the DYEC during the sampling period. Since the winds were coming from the East, it is likely that the measured BaP exceedances may be attributed to sources other than the Energy Centre operations. The exceedance documentation is attached in **Appendix E**. **Table 10** outlines the statistics summary for this station.

Table 10: Statistics Summary of PAH Results for Rundle Road Station

Contaminant	Units	MECP Criteria ($\mu\text{g}/\text{m}^3$)	No. > Criteria	Arithmetic Mean	Minimum Q1 Concentration	Maximum Q1 Concentration	January Maximum Concentration	February Maximum Concentration	March Maximum Concentration	Number of Valid Samples	% Valid data
1-Methylnaphthalene	ng/m ³	12000	0	3.74E+00	1.56E+00	5.33E+00	1.56E+00	4.35E+00	5.33E+00	6	75
2-Methylnaphthalene	ng/m ³	10000	0	5.81E+00	2.24E+00	7.68E+00	2.24E+00	7.05E+00	7.68E+00	6	75
Acenaphthene	ng/m ³	-	-	9.29E-01	3.83E-02	2.46E+00	1.41E-01	6.09E-01	2.46E+00	6	75
Acenaphthylene	ng/m ³	3500	0	1.38E-01	5.16E-02	3.56E-01	1.18E-01	3.56E-01	1.08E-01	6	75
Anthracene	ng/m ³	200	0	4.74E-02	2.19E-02	9.93E-02	2.77E-02	9.93E-02	6.77E-02	6	75
Benzo(a)Anthracene	ng/m ³	-	-	2.47E-02	1.05E-02	3.88E-02	1.05E-02	2.84E-02	3.88E-02	6	75
Benzo(a)fluorene	ng/m ³	-	-	3.85E-02	1.11E-02	7.06E-02	1.11E-02	7.06E-02	6.74E-02	6	75
Benzo(a)Pyrene (Historically High)	ng/m ³	0.05	1	3.26E-02	1.15E-02	5.80E-02	1.15E-02	3.29E-02	5.80E-02	6	75
Benzo(b)Fluoranthene	ng/m ³	-	-	1.00E-01	3.63E-02	1.62E-01	3.63E-02	1.62E-01	1.38E-01	6	75
Benzo(b)fluorene	ng/m ³	-	-	2.04E-02	9.18E-03	4.42E-02	9.18E-03	4.42E-02	2.98E-02	6	75
Benzo(e)Pyrene	ng/m ³	-	-	6.06E-02	2.80E-02	9.77E-02	2.80E-02	9.77E-02	7.36E-02	6	75
Benzo(g,h,i)Perylene	ng/m ³	-	-	5.99E-02	2.77E-02	8.05E-02	2.77E-02	6.96E-02	8.05E-02	6	75
Benzo(k)Fluoranthene	ng/m ³	-	-	8.11E-02	2.68E-02	1.41E-01	2.68E-02	1.10E-01	1.41E-01	6	75
Biphenyl	ng/m ³	-	-	2.08E+00	9.05E-01	3.92E+00	9.05E-01	2.21E+00	3.92E+00	8	75
Chrysene	ng/m ³	-	-	1.36E-01	4.86E-02	2.32E-01	4.86E-02	2.32E-01	1.76E-01	6	75
Dibenzo(a,h)Anthracene	ng/m ³	-	-	6.37E-03	2.59E-03	9.17E-03	2.59E-03	9.17E-03	8.78E-03	6	75
Fluoranthene	ng/m ³	-	-	5.60E-01	2.46E-01	9.28E-01	2.46E-01	8.84E-01	9.28E-01	6	75
Indeno(1,2,3-cd)Pyrene	ng/m ³	-	-	1.07E+00	3.30E-01	2.53E+00	4.07E-01	9.97E-01	2.53E+00	6	75
Naphthalene	ng/m ³	22500	-	5.91E-02	2.71E-02	8.24E-02	2.71E-02	7.76E-02	8.24E-02	6	75
o-Terphenyl	ng/m ³	-	0	2.28E+01	1.07E+01	3.39E+01	1.07E+01	2.89E+01	3.39E+01	6	75
Perylene	ng/m ³	-	-	1.04E-02	4.26E-03	2.21E-02	4.26E-03	9.78E-03	2.21E-02	6	75
Phenanthrene	ng/m ³	-	-	7.52E-03	6.27E-04	1.47E-02	3.06E-03	1.40E-02	1.47E-02	6	75
Pyrene	ng/m ³	-	-	2.29E+00	9.91E-01	4.26E+00	9.91E-01	3.37E+00	4.26E+00	6	75
Tetralin	ng/m ³	-	-	2.99E-01	1.45E-01	4.75E-01	1.45E-01	4.75E-01	4.64E-01	6	75
Fluorene ¹	ng/m ³	-	-	2.48E+00	1.55E+00	3.61E+00	2.91E+00	2.51E+00	3.61E+00	6	75
Total PAH	ng/m ³	-	-	4.29E+01	2.07E+01	6.49E+01	2.07E+01	4.98E+01	6.49E+01	6	75

Note: All non-detectable results were reported as 1/2 of the detection limit

5.8 Dioxin and Furan Results

All of the PUF Hi-Vols operated on a discrete schedule every 24 days for D&F's according to the NAPS schedule during Q1 with the sample days being: January 16, February 9, and March 4 and 28, 2020.

5.8.1 Courtice Station Results

Data recovery levels were high for the D&F results at the Courtice Station (100% valid data). There were no exceedances of any of the AAQC's or HHRA Criteria for any of the D&F's during Q1. Table 11 is a summary of the statistics for this station.

Table 11: Courtice Station Q1 Monitoring Results for Dioxins and Furans

Contaminant	Units	MECP Criteria	HHRA Health Based Criteria	No. > Criteria	Arithmetic Mean	Q1 Minimum Concentration	Q1 Maximum Concentration	January Maximum Concentration	February Maximum Concentration	March Maximum Concentration	Number of Valid Samples	% Valid Data
2,3,7,8-TCDD	pg/m ³	-	-	-	1.26E-03	8.31E-04	1.69E-03	1.53E-03	9.82E-04	1.69E-03	4	100
1,2,3,7,8-PeCDD	pg/m ³	-	-	-	1.02E-03	1.57E-06	1.78E-03	7.97E-04	1.51E-03	1.78E-03	4	100
1,2,3,4,7,8-HxCDD	pg/m ³	-	-	-	9.59E-05	1.89E-06	2.11E-04	8.14E-05	2.11E-04	8.90E-05	4	100
1,2,3,6,7,8-HxCDD	pg/m ³	-	-	-	2.43E-04	7.81E-06	6.95E-04	1.00E-04	6.95E-04	1.69E-04	4	100
1,2,3,7,8,9-HxCDD	pg/m ³	-	-	-	2.73E-04	3.44E-06	5.80E-04	7.63E-05	5.80E-04	4.33E-04	4	100
1,2,3,4,6,7,8-HpCDD	pg/m ³	-	-	-	4.23E-04	1.02E-04	7.01E-04	3.97E-04	7.01E-04	4.91E-04	4	100
OCDD	pg/m ³	-	-	-	1.10E-04	2.72E-05	3.12E-04	2.72E-05	5.26E-05	3.12E-04	4	100
2,3,7,8-TCDF	pg/m ³	-	-	-	1.31E-04	1.33E-06	2.51E-04	1.14E-04	2.51E-04	1.60E-04	4	100
1,2,3,7,8-PeCDF	pg/m ³	-	-	-	3.33E-05	1.94E-06	6.35E-05	2.24E-05	4.53E-05	6.35E-05	4	100
2,3,4,7,8-PeCDF	pg/m ³	-	-	-	4.31E-04	3.54E-06	7.82E-04	2.03E-04	7.34E-04	7.82E-04	4	100
1,2,3,4,7,8-HxCDF	pg/m ³	-	-	-	8.94E-05	1.52E-06	1.51E-04	9.15E-05	1.51E-04	1.13E-04	4	100
1,2,3,6,7,8-HxCDF	pg/m ³	-	-	-	1.84E-04	3.78E-06	4.47E-04	8.47E-05	4.47E-04	1.99E-04	4	100
2,3,4,6,7,8-HxCDF	pg/m ³	-	-	-	1.91E-04	6.49E-06	4.88E-04	8.98E-05	1.81E-04	4.88E-04	4	100
1,2,3,7,8,9-HxCDF	pg/m ³	-	-	-	2.35E-04	2.33E-06	5.23E-04	1.03E-04	5.23E-04	3.10E-04	4	100
1,2,3,4,6,7,8-HpCDF	pg/m ³	-	-	-	5.03E-05	1.76E-05	9.60E-05	3.93E-05	4.83E-05	9.60E-05	4	100
1,2,3,4,7,8,9-HpCDF	pg/m ³	-	-	-	1.83E-05	5.36E-06	4.26E-05	6.95E-06	4.26E-05	1.81E-05	4	100
OCDF	pg/m ³	-	-	-	6.49E-06	2.09E-06	1.28E-05	2.09E-06	6.68E-06	1.28E-05	4	100
Total Toxic Equivalency	pg TEQ/m ³	0.1 [1]	-	0	4.79E-03	1.32E-03	7.16E-03	3.76E-03	7.16E-03	6.93E-03	4	100

Note: All non-detectable results were reported as 1/2 of the detection limit

[1] O. Reg. 419/05 Schedule Upper Risk Thresholds

5.8.2 Rundle Road Station Results

Data recovery levels were acceptable for the D&F results at the Rundle Road Station (75% valid data). There were no exceedances of any of the AAQC's or HHRA Criteria for any of the D&F's during Q1. **Table 12** is a summary of the statistics for this station.

Table 12: Rundle Road Station Q1 Monitoring Results for Dioxins and Furans

Contaminant	Units	MECP Criteria	HHRA Health Based Criteria	No. > Criteria	Arithmetic Mean	Q1 Minimum Concentration	Q1 Maximum Concentration	January Maximum Concentration	February Maximum Concentration	March Maximum Concentration	Number of Valid Samples	% Valid Data
2,3,7,8-TCDD	pg/m ³	-	-	-	2.46E-03	5.11E-04	6.04E-03	-	6.04E-03	8.31E-04	3	75
1,2,3,7,8-PeCDD	pg/m ³	-	-	-	1.39E-03	2.50E-06	2.76E-03	-	1.42E-03	2.76E-03	3	75
1,2,3,4,7,8-HxCDD	pg/m ³	-	-	-	2.26E-04	1.07E-06	5.68E-04	-	5.68E-04	1.10E-04	3	75
1,2,3,6,7,8-HxCDD	pg/m ³	-	-	-	3.43E-04	2.22E-06	6.50E-04	-	6.50E-04	3.76E-04	3	75
1,2,3,7,8,9-HxCDD	pg/m ³	-	-	-	2.71E-04	3.98E-06	5.91E-04	-	5.91E-04	2.19E-04	3	75
1,2,3,4,6,7,8-HpCDD	pg/m ³	-	-	-	3.27E-04	7.76E-05	5.89E-04	-	3.14E-04	5.89E-04	3	75
OCDD	pg/m ³	-	-	-	1.14E-04	5.61E-05	2.26E-04	-	5.61E-05	2.26E-04	3	75
2,3,7,8-TCDF	pg/m ³	-	-	-	7.26E-05	1.66E-06	1.52E-04	-	1.52E-04	6.43E-05	3	75
1,2,3,7,8-PeCDF	pg/m ³	-	-	-	3.97E-05	5.31E-06	5.92E-05	-	5.45E-05	5.92E-05	3	75
2,3,4,7,8-PeCDF	pg/m ³	-	-	-	3.15E-04	5.77E-06	5.45E-04	-	5.45E-04	3.95E-04	3	75
1,2,3,4,7,8-HxCDF	pg/m ³	-	-	-	1.76E-04	1.68E-06	4.06E-04	-	4.06E-04	1.19E-04	3	75
1,2,3,6,7,8-HxCDF	pg/m ³	-	-	-	2.09E-04	4.03E-06	3.86E-04	-	3.86E-04	2.38E-04	3	75
2,3,4,6,7,8-HxCDF	pg/m ³	-	-	-	1.31E-04	6.74E-06	1.98E-04	-	1.98E-04	1.88E-04	3	75
1,2,3,7,8,9-HxCDF	pg/m ³	-	-	-	1.83E-04	3.32E-06	3.48E-04	-	1.98E-04	3.48E-04	3	75
1,2,3,4,6,7,8-HpCDF	pg/m ³	-	-	-	7.50E-05	7.15E-06	1.20E-04	-	9.74E-05	1.20E-04	3	75
1,2,3,4,7,8,9-HpCDF	pg/m ³	-	-	-	1.73E-05	1.02E-06	3.45E-05	-	1.65E-05	3.45E-05	3	75
OCDF	pg/m ³	-	-	-	5.92E-06	2.28E-06	1.05E-05	-	2.28E-06	1.05E-05	3	75
Total Toxic Equivalency	pg TEQ/m ³	0.1 [1]	-	0	6.36E-03	8.72E-04	1.17E-02	-	1.17E-02	6.51E-03	3	75

Note: All non-detectable results were reported as 1/2 of the detection limit

[1] O. Reg. 419/05 Schedule Upper Risk Thresholds



6 DATA REQUESTS

The following sections outline any instrumentation issues encountered that have caused data loss at any of the monitors at each of the stations.

Appendix C contains monthly IZS zero trends for the NO_x and SO₂ analyzers at the Courtice and Rundle Road Stations.

Edit logs identifying missing data, maintenance times, calibrations and any other missing data have been included in **Appendix D**.

6.1 Courtice Road Station

6.1.1 Continuous Monitoring

On February 4th, RWDI personnel responded to falling overnight IZS results from the NO_x unit. A single point calibration check was performed, confirming proper operation of the analyzer, and confirming that the cause of the dropping span checks was a result of perm tube depletion. This check also confirmed that there is no need for any data invalidation related to this issue. Following the calibration check, a new permeation tube was installed.

On March 6th, gas phase titration (GPT) converter checks were performed on the NO_x unit.

On March 20th, a power failure occurred that affected all of the continuous criteria air contaminant parameters recorded at the station between 07:00 and 08:00.

6.1.2 Discrete Monitoring

On January 15th, the hardwiring of the Hi-Vol and PUF units at the Courtice Station was started and was completed on January 17th.

In early January, it was noted by the RWDI field technician that the PUF motor couldn't get up to the correct setpoint. After discussion with the laboratory, ALS, it was revealed that they had changed suppliers of the quartz filters. On January 20, the RWDI field technician experimented with both filters and found that it was indeed the change in supplier filter that caused the issue. This error resulted in the January 4th and 16th samples being invalid, as they were not able to reach the correct sample volumes based on the existing calibration at the time. The supplier filter was changed back to what had been used previously.

The TSP sample on February 21st was invalid due to sample volume capture being outside of the allowable bounds.

On March 5th, the hivol and PUF pressure transducers and relay bypass switches were enclosed in an electrical box.



On March 6th, the PUF sampler was calibrated, and on March 7th the hivol brushes were changed and the sampler was calibrated. The pressure transducers were also calibrated on March 7th.

6.2 Rundle Road Station

6.2.1 Continuous Monitoring

On January 7th, RWDI personnel responded to falling overnight IZS results from the NOx unit. A single point calibration check was performed, confirming proper operation of the analyzer, and confirming that the cause of the dropping span checks was a result of perm tube depletion. This check also confirmed that there is no need for any data invalidation related to this issue. The permeation tube was replaced on January 16th.

On March 3rd, annual maintenance was performed at Rundle Road Station. This included cleaning the reaction cell and rebuilding the critical orifices.

On March 4th, GPT converter checks were performed on the NOx unit.

6.2.2 Discrete Monitoring

On January 7th, the hardwiring of the Hi-Vol and PUF units at the Rundle Road Station was started and was completed on January 8th.

On January 20th, ice was found on the TSP Hi-vol filter at the Rundle Road Station. The January 16th sample was not submitted and was invalidated.

On February 5th, the hivol pressure transducer was calibrated and rezeroed

The TSP sample on February 21st was invalid due to sample volume capture being outside of the allowable bounds.

On February 28th, snow was found inside the TSP Hi-vol inlet at Rundle Road Station. The snow may have restricted flow through the motor causing the GFCI to trip. The February 27th sample was therefore invalid and not submitted for analysis.

On March 6th, the PUF samplers was calibrated, and on March 7th the hivol brushes were changed and the sampler was calibrated.

On March 7th, the hivol and PUF pressure transducers and relay bypass switches were enclosed in an electrical box. The pressure transducers were also calibrated on March 7th.



7 CONCLUSIONS

This Q1 report provides a summary of the ambient air quality data collected at the Courtice and Rundle Road Stations. Throughout this monitoring period, there was one (1) exceedance of the AAQC for Benzo(a) Pyrene which occurred on March 28th at the Rundle Road Station, one (1) exceedance event of the rolling 10-minute AAQC for SO₂ at the Courtice Station on January 24th and four (4) exceedance events of the rolling 1-hour AAQC for SO₂ at the Courtice Station on January 24th. The Benzo(a) Pyrene exceedance which occurred on March 28th at the Rundle Road Station was likely attributed to sources other than the DYEC based on the interpretation of the wind rose. The SO₂ exceedances that occurred at the Courtice Station on January 24th originated from the E and ESE directions suggesting that sources could include industrial sources along the lakeshore. It is unlikely that any significant contribution of measured SO₂ came from the DYEC. Data recovery rates were acceptable and valid for all measured Q1 parameters.

8 REFERENCES

1. Canadian Council of Ministers of the Environment (CCME), 2012. Guidance Document on Achievement Determination Canadian Ambient Air Quality Standards for Fine Particulate Matter and Ozone. PN 1483 978-1-896997-91-9 PDF
2. Canadian Council of Ministers of the Environment (CCME), 2019. Guidance Document on Air Zone Management. PN 1593 978-1-77202-050-2 PDF
3. Ontario Ministry of the Environment and Climate Change, 2018. [Technical Assessment and Standards Development Branch] Ontario Air Standards for Sulphur Dioxide (SO₂). [Online]
4. Ontario Ministry of the Environment and Climate Change, 2012. [Standards Development Branch] Ontario's Ambient Air Quality Criteria (Sorted by Contaminant Name). PIBS #6570e01

APPENDIX A



Table A1: 2020 Summary Statistics for Q1

Courtice Monitoring Station Data Statistics	Maximum 10 min Rolling Mean	Maximum 1 hr Rolling Mean					Maximum 24 hr Rolling Mean					Monthly Mean					% valid hours				
Compound	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂
Units	ppb	(µg/m ³)	ppb				(µg/m ³)	ppb				(µg/m ³)	ppb				(%)				
AAQC	67				200	40	27 ^A			100											
January	79.067	45.2	98.8	59.7	40.1	56.223	19.9	38.3	14.5	25.6	20.407	6.2	8.9	1.7	7.2	1.953	99.9	99.7	99.7	99.7	99.7
February	48.302	33.5	45.9	17.4	33.5	25.315	16.1	13.0	1.9	12.2	4.828	6.1	5.5	0.5	5.2	1.031	99.7	99.4	99.4	99.4	99.7
March	36.724	42.6	70.2	48.3	38.4	21.798	16.9	21.7	3.8	18.0	4.865	6.1	5.9	1.1	4.8	1.076	99.6	99.3	99.3	99.3	99.6
Q1 Arithmetic Mean												6.1	6.7	1.1	5.7	1.353	99.7	99.5	99.5	99.5	99.7

Rundle Monitoring Station Data Statistics	Maximum 10 min Rolling Mean	Maximum 1 hr Rolling Mean					Maximum 24 hr Rolling Mean					Monthly Mean					% valid hours				
Compound	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂	PM _{2.5}	NO _x	NO	NO ₂	SO ₂
Units	ppb	(µg/m ³)	ppb				(µg/m ³)	ppb				(µg/m ³)	ppb				(%)				
AAQC	67				200	40	27 ^A			100											
January	18.873	51.6	66.9	31.7	35.3	15.181	17.3	22.1	5.0	17.2	1.976	5.7	6.9	1.1	5.9	0.556	99.7	99.1	99.1	99.1	99.7
February	3.723	28.7	43.6	16.4	28.9	2.044	14.9	14.9	2.9	12.3	0.937	5.8	5.4	0.9	4.6	0.368	99.9	99.7	99.7	99.7	99.7
March	16.816	43.4	55.8	33.9	26.3	5.452	12.6	14.4	4.0	12.2	0.638	5.2	5.3	1.1	4.3	0.141	99.7	98.0	98.0	98.0	99.7
Q1 Arithmetic Mean												5.6	5.9	1.0	4.9	0.355	99.8	98.9	98.9	98.9	99.7

Event Statistics	Rolling Mean > 10 min AAQC for Courtice	Rolling Mean > 10 min AAQC for Rundle	Rolling Mean > 1 hr AAQC for Courtice	Rolling Mean > 1 hr AAQC for Rundle	Rolling Mean > 24 hr AAQC for Courtice Monitoring Station	Rolling Mean > 24 hr AAQC for Rundle Monitoring Station											
Compound	SO ₂	SO ₂	PM _{2.5}	NO ₂	SO ₂	PM _{2.5}	NO ₂	SO ₂	PM _{2.5}	NO ₂	SO ₂	PM _{2.5}	NO ₂	SO ₂	PM _{2.5}	NO ₂	SO ₂
Units	No.	No.			No.			No.			No.			No.			No.
January	1	0			0	4		0	0	N/A	0			N/A	0		
February	0	0			0	0		0	0	N/A	0			N/A	0		
March	0	0			0	0		0	0	N/A	0			N/A	0		
Q1 Total	1	0			0	4		0	0	N/A	0			N/A	0		

Courtice Station MET Statistics	Maximum 1 hr Mean					Minimum 1 hr Mean					Monthly Mean					Total	% valid hours					
Parameter	WS	Temp	RH	Pres	Rain	WS	Temp	RH	Pres	Rain	WS	Temp	RH	Pres	Rain	Rain	WS	WD	Temp	RH	Pres	Rain
Units	(km/hr)	(°C)	(%)	mm	(km/hr)	(°C)	(%)	mm	(km/hr)	(°C)	(%)	mm	(km/hr)	(%)	"Hg	mm	(%)					
January	37	11	97	30.6	5.4	1	-16	42	29.2	0.0	13	-1	73	29.8	0.2	130.7	99.9	99.9	100.0	100.0	100.0	
February	38	6	97	30.3	1.3	1	-22	35	29.0	0.0	14	-3	68	29.7	0.0	26.9	100.0	100.0	100.0	100.0	100.0	
March	38	13	97	30.4	5.3	0	-15	25	29.1	0.0	14	3	70	29.8	0.1	104.1	100.0	100.0	100.0	100.0	100.0	
Q1 Arithmetic Mean											14	0	70	29.8	0.1	261.7	100.0	100.0	100.0	100.0	100.0	

| Rundle Station MET Statistics |
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Table A2: 2020 Q1 Station Courtice Monitoring Results for PM_{2.5}

Data Statistics	Rolling Mean > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of valid Hours	% valid data
Month	PM _{2.5}	PM _{2.5}	PM _{2.5}	PM _{2.5}	PM _{2.5}	PM _{2.5}
	No.	(ug/m ³)	(ug/m ³)	(ug/m ³)	No.	%
January	N/A	6.2	45.2	19.9	743	99.9
February	N/A	6.1	33.5	16.1	694	99.7
March	N/A	6.1	42.6	16.9	741	99.6

Table A3: 2020 Q1 Station Rundle Monitoring Results for PM_{2.5}

Data Statistics	Rolling Mean > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Mean	Maximum 24 hr Rolling Mean	Number of valid Hours	% valid data
Month	PM _{2.5}	PM _{2.5}	PM _{2.5}	PM _{2.5}	PM _{2.5}	PM _{2.5}
	No.	(ug/m ³)	(ug/m ³)	(ug/m ³)	No.	%
January	N/A	5.7	51.6	17.3	742	99.7
February	N/A	5.8	28.7	14.9	695	99.9
March	N/A	5.2	43.4	12.6	742	99.7

Table A4: 2020 Q1 Station Courtice Monitoring Results for NOx

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of valid Hours	% valid data
Month	NO _x	NO _x	NO _x	NO _x	NO _x	NO _x	NO _x
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
January	N/A	N/A	8.9	98.8	38.3	742	99.7
February	N/A	N/A	5.5	45.9	13.0	692	99.4
March	N/A	N/A	5.9	70.2	21.7	739	99.3

Table A5: 2020 Q1 Station Rundle Monitoring Results for NO_x

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of valid Hours	% valid data
Month	NO _x	NO _x	NO _x	NO _x	NO _x	NO _x	NO _x
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
January	N/A	N/A	6.9	66.9	22.1	737	99.1
February	N/A	N/A	5.4	43.6	14.9	694	99.7
March	N/A	N/A	5.3	55.8	14.4	729	98.0

Table A6: 2020 Q1 Station Courtice Monitoring Results for NO

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of valid Hours	% valid data
Month	NO	NO	NO	NO	NO	NO	NO
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
January	N/A	N/A	1.7	59.7	14.5	742	99.7
February	N/A	N/A	0.5	17.4	1.9	692	99.4
March	N/A	N/A	1.1	48.3	3.8	739	99.3

Table A7: 2020 Q1 Station Rundle Monitoring Results for NO

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of valid Hours	% valid data
Month	NO	NO	NO	NO	NO	NO	NO
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
January	N/A	N/A	1.1	31.7	5.0	737	99.1
February	N/A	N/A	0.9	16.4	2.9	694	99.7
March	N/A	N/A	1.1	33.9	4.0	729	98.0

Table A8: 2020 Q1 Station Courtice Monitoring Results for NO₂

Data Statistics	Events > 1 hr AAQC	Rolling Mean > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of valid Hours	% valid data
Month	NO ₂	NO ₂	NO ₂	NO ₂	NO ₂	NO ₂	NO ₂
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
January	0	0	7.2	40.1	25.6	742	99.7
February	0	0	5.2	33.5	12.2	692	99.4
March	0	0	4.8	38.4	18.0	739	99.3

Table A9: 2020 Q1 Station Rundle Monitoring Results for NO₂

Data Statistics	Events > 1 hr AAQC	Rolling Mean > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of valid Hours	% valid data
Month	NO ₂	NO ₂	NO ₂	NO ₂	NO ₂	NO ₂	NO ₂
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
January	0	0	5.9	35.3	17.2	737	99.1
February	0	0	4.6	28.9	12.3	694	99.7
March	0	0	4.3	26.3	12.2	729	98.0

Table A10: 2020 Q1 Station Courtice Monitoring Results for SO₂

Data Statistics	Events > 10 min AAQC	Events > 1 hr AAQC	Arithmetic Mean	Maximum 10 min Rolling Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of valid Hours	% valid data
Month	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂
	No.	No.	(ppb)	(ppb)	(ppb)	(ppb)	No.	%
January	1	4	1.953	79.067	56.223	20.407	742	99.7
February	0	0	1.031	48.302	25.315	4.828	694	99.7
March	0	0	1.076	36.724	21.798	4.865	741	99.6

Table A11: 2020 Q1 Station Rundle Monitoring Results for SO₂

Data Statistics	Events > 10 min AAQC	Events > 1 hr AAQC	Arithmetic Mean	Maximum 10 min Rolling Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of valid Hours	% valid data
Month	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂
	No.	No.	(ppb)	(ppb)	(ppb)	(ppb)	No.	%
January	0	0	0.556	18.873	15.181	1.976	742	99.7
February	0	0	0.368	3.723	2.044	0.937	694	99.7
March	0	0	0.141	16.816	5.452	0.638	742	99.7

Table A12: 2020 Q1 Courtice Meteorological Station Windspeed Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Quarterly Mean	% valid hours
Month	Wind Speed	Wind Speed	Wind Speed	Wind Speed
	(km/hr)	(km/hr)	(km/hr)	(%)
January	37.3	0.5	13.1	99.9
February	38.0	1.0	13.8	100.0
March	38.0	0.3	13.6	100.0

Table A13: 2020 Q1 Rundle Meteorological Station Windspeed Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Quarterly Mean	% valid hours
Month	Wind Speed	Wind Speed	Wind Speed	Wind Speed
	(km/hr)	(km/hr)	(km/hr)	(%)
January	32.2	0.3	11.5	100.0
February	38.7	0.4	12.4	100.0
March	34.4	0.4	12.0	100.0

Table A14: 2020 Q1 Courtice Meteorological Station Wind Direction Data Summary

MET Statistics	% valid hours
Month	Wind Direction
	(%)
January	99.9
February	100.0
March	100.0

Table A15: 2020 Q1 Rundle Meteorological Station Wind Direction Data Summary

MET Statistics	% valid hours
Month	Wind Direction
	(%)
January	96.2
February	98.9
March	96.2

Table A16: 2020 Q1 Courtice Meteorological Station Temperature Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Quarterly Mean	% valid hours
Month	Temperature	Temperature	Temperature	Temperature
	(°C)	(°C)	(°C)	(%)
January	10.6	-16.0	-1.5	100.0
February	5.7	-21.8	-2.5	100.0
March	13.0	-15.3	2.6	100.0

Table A17: 2020 Q1 Rundle Meteorological Station Temperature Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Quarterly Mean	% valid hours
Month	Temperature	Temperature	Temperature	Temperature
	(°C)	(°C)	(°C)	(%)
January	10.7	-18.9	-2.0	100.0
February	6.7	-22.8	-3.0	100.0
March	14.9	-17.4	2.2	100.0

Table A18: 2020 Q1 Courtice Meteorological Station Relative Humidity Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Monthly Mean	% valid hours
Month	Relative Humidity	Relative Humidity	Relative Humidity	Relative Humidity
	(%)	(%)	(%)	(%)
January	96.6	41.7	72.9	100.0
February	96.5	35.1	67.6	100.0
March	96.7	24.5	70.2	100.0

Table A19: 2020 Q1 Rundle Meteorological Station Relative Humidity Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Monthly Mean	% valid hours
Month	Relative Humidity	Relative Humidity	Relative Humidity	Relative Humidity
	(%)	(%)	(%)	(%)
January	99.2	43.8	76.5	100.0
February	99.0	31.8	70.4	100.0
March	99.0	26.1	72.9	100.0

Table A20: 2020 Q1 Courtice Meteorological Station Precipitation Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Monthly Mean	Total	% valid hours
Month	Precipitation	Precipitation	Precipitation	Precipitation	Precipitation
	(mm)	(mm)	(mm)	(mm)	(mm)
January	5.4	0.0	0.2	130.7	100.0
February	1.3	0.0	0.0	26.9	100.0
March	5.3	0.0	0.1	104.1	100.0

Table A21: 2020 Q1 Rundle Meteorological Station Precipitation Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Monthly Mean	Total	% valid hours
Month	Precipitation	Precipitation	Precipitation	Precipitation	Precipitation
	(mm)	(mm)	(mm)	(mm)	(mm)
January	6.4	0.0	0.2	116.1	100.0
February	2.0	0.0	0.0	21.9	100.0
March	5.2	0.0	0.1	82.2	100.0

Table A22: 2020 Q1 Courtice Meteorological Station Pressure Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Quarterly Mean	% valid hours
Month	Pressure	Pressure	Pressure	Pressure
	(mmHg)	(mmHg)	(mmHg)	(%)
January	30.6	29.2	29.8	100.0
February	30.3	29.0	29.7	100.0
March	30.4	29.1	29.8	100.0

APPENDIX B



Table B1: Summary of Sample Flow Rate and Sample Duration for Dioxins & Furans

Sample Date	Courtice			Rundle		
	Filter ID	Sample Duration	Sample Volume	Filter ID	Sample Duration	Sample Volume
	No.	(min)	(m ³)	No.	(min)	(m ³)
January 16, 2020	L2408725-2	1440	295		Invalid Sample	
February 9, 2020	L2416088-1	1441	331	L2416088-2	1441	303
March 4, 2020	L2426134-1	1441	326	L2426134-2	1438	313
March 28, 2020	L2433655-2	1441	319	L2433655-1	1440	319

Table B2: 2020 Courtice Station Q1 Monitoring Results for Dioxins & Furans

Contaminant	Units	MECP Criteria	HHRA Health Based Criteria	16-Jan-20	9-Feb-20	4-Mar-20	28-Mar-20	No. > Criteria	Arithmetic Mean	Q1 Minimum Concentration	Q1 Maximum Concentration	January Maximum Concentration	February Maximum Concentration	March Maximum Concentration	Number of Valid Samples	% Valid data
2,3,7,8-TCDD	pg/m ³	-	-	1.53E-03	9.82E-04	1.69E-03	8.31E-04	-	1.26E-03	8.31E-04	1.69E-03	1.53E-03	9.82E-04	1.69E-03	4	100
1,2,3,7,8-PeCDD	pg/m ³	-	-	7.97E-04	1.51E-03	1.78E-03	1.57E-06	-	1.02E-03	1.57E-06	1.78E-03	7.97E-04	1.51E-03	1.78E-03	4	100
1,2,3,4,7,8-HxCDD	pg/m ³	-	-	8.14E-05	2.11E-04	8.90E-05	1.89E-06	-	9.59E-05	1.89E-06	2.11E-04	8.14E-05	2.11E-04	8.90E-05	4	100
1,2,3,6,7,8-HxCDD	pg/m ³	-	-	1.00E-04	6.95E-04	1.69E-04	7.81E-06	-	2.43E-04	7.81E-06	6.95E-04	1.00E-04	6.95E-04	1.69E-04	4	100
1,2,3,7,8,9-HxCDD	pg/m ³	-	-	7.63E-05	5.80E-04	4.33E-04	3.44E-06	-	2.73E-04	3.44E-06	5.80E-04	7.63E-05	5.80E-04	4.33E-04	4	100
1,2,3,4,6,7,8-HpCDD	pg/m ³	-	-	3.97E-04	7.01E-04	4.91E-04	1.02E-04	-	4.23E-04	1.02E-04	7.01E-04	3.97E-04	7.01E-04	4.91E-04	4	100
OCDD	pg/m ³	-	-	2.72E-05	5.26E-05	4.77E-05	3.12E-04	-	1.10E-04	2.72E-05	3.12E-04	2.72E-05	5.26E-05	3.12E-04	4	100
2,3,7,8-TCDF	pg/m ³	-	-	1.14E-04	2.51E-04	1.60E-04	1.33E-06	-	1.31E-04	1.33E-06	2.51E-04	1.14E-04	2.51E-04	1.60E-04	4	100
1,2,3,7,8-PeCDF	pg/m ³	-	-	2.24E-05	4.53E-05	6.35E-05	1.94E-06	-	3.33E-05	1.94E-06	6.35E-05	2.24E-05	4.53E-05	6.35E-05	4	100
2,3,4,7,8-PeCDF	pg/m ³	-	-	2.03E-04	7.34E-04	7.82E-04	3.54E-06	-	4.31E-04	3.54E-06	7.82E-04	2.03E-04	7.34E-04	7.82E-04	4	100
1,2,3,4,7,8-HxCDF	pg/m ³	-	-	9.15E-05	1.51E-04	1.13E-04	1.52E-06	-	8.94E-05	1.52E-06	1.51E-04	9.15E-05	1.51E-04	1.13E-04	4	100
1,2,3,6,7,8-HxCDF	pg/m ³	-	-	8.47E-05	4.47E-04	1.99E-04	3.78E-06	-	1.84E-04	3.78E-06	4.47E-04	8.47E-05	4.47E-04	1.99E-04	4	100
2,3,4,6,7,8-HxCDF	pg/m ³	-	-	8.98E-05	1.81E-04	4.88E-04	6.49E-06	-	1.91E-04	6.49E-06	4.88E-04	8.98E-05	1.81E-04	4.88E-04	4	100
1,2,3,7,8,9-HxCDF	pg/m ³	-	-	1.03E-04	5.23E-04	3.10E-04	2.33E-06	-	2.35E-04	2.33E-06	5.23E-04	1.03E-04	5.23E-04	3.10E-04	4	100
1,2,3,4,6,7,8-HpCDF	pg/m ³	-	-	3.93E-05	4.83E-05	9.60E-05	1.76E-05	-	5.03E-05	1.76E-05	9.60E-05	3.93E-05	4.83E-05	9.60E-05	4	100
1,2,3,4,7,8,9-HpCDF	pg/m ³	-	-	6.95E-06	4.26E-05	1.81E-05	5.36E-06	-	1.83E-05	5.36E-06	4.26E-05	6.95E-06	4.26E-05	1.81E-05	4	100
OCDF	pg/m ³	-	-	2.09E-06	6.68E-06	4.43E-06	1.28E-05	-	6.49E-06	2.09E-06	1.28E-05	2.09E-06	6.68E-06	1.28E-05	4	100
Total Toxic Equivalency	pg TEQ/m ³	0.1 1 ^[1]	-	3.76E-03	7.16E-03	6.93E-03	1.32E-03	0	4.79E-03	1.32E-03	7.16E-03	3.76E-03	7.16E-03	6.93E-03	4	100

NOTE: All non-detectable results were reported as 1/2 of the detection limit

[1] O. Reg. 419/05 Schedule Upper Risk Thresholds

Table B3: 2020 Rundle Station Q1 Monitoring Results for Dioxins & Furans

Contaminant	Units	MECP Criteria	HHRA Health Based Criteria	16-Jan-20	9-Feb-20	4-Mar-20	28-Mar-20	MECP Criteria ($\mu\text{g}/\text{m}^3$)	No. > Criteria	Arithmetic Mean	Q1 Minimum Concentration	Q1 Maximum Concentration	January Maximum Concentration	February Maximum Concentration	March Maximum Concentration	Number of Valid Samples	% Valid data
2,3,7,8-TCDD	pg/m^3	-	-	Invalid Sample	6.04E-03	5.11E-04	8.31E-04	-	-	2.46E-03	5.11E-04	6.04E-03	0.00E+00	6.04E-03	8.31E-04	3	75
1,2,3,7,8-PeCDD	pg/m^3	-	-		1.42E-03	2.50E-06	2.76E-03	-	-	1.39E-03	2.50E-06	2.76E-03	0.00E+00	1.42E-03	2.76E-03	3	75
1,2,3,4,7,8-HxCDD	pg/m^3	-	-		5.68E-04	1.07E-06	1.10E-04	-	-	2.26E-04	1.07E-06	5.68E-04	0.00E+00	5.68E-04	1.10E-04	3	75
1,2,3,6,7,8-HxCDD	pg/m^3	-	-		6.50E-04	2.22E-06	3.76E-04	-	-	3.43E-04	2.22E-06	6.50E-04	0.00E+00	6.50E-04	3.76E-04	3	75
1,2,3,7,8,9-HxCDD	pg/m^3	-	-		5.91E-04	3.98E-06	2.19E-04	-	-	2.71E-04	3.98E-06	5.91E-04	0.00E+00	5.91E-04	2.19E-04	3	75
1,2,3,4,6,7,8-HpCDD	pg/m^3	-	-		3.14E-04	7.76E-05	5.89E-04	-	-	3.27E-04	7.76E-05	5.89E-04	0.00E+00	3.14E-04	5.89E-04	3	75
OCDD	pg/m^3	-	-		5.61E-05	2.26E-04	5.86E-05	-	-	1.14E-04	5.61E-05	2.26E-04	0.00E+00	5.61E-05	2.26E-04	3	75
2,3,7,8-TCDF	pg/m^3	-	-		1.52E-04	1.66E-06	6.43E-05	-	-	7.26E-05	1.66E-06	1.52E-04	0.00E+00	1.52E-04	6.43E-05	3	75
1,2,3,7,8-PeCDF	pg/m^3	-	-		5.45E-05	5.31E-06	5.92E-05	-	-	3.97E-05	5.31E-06	5.92E-05	0.00E+00	5.45E-05	5.92E-05	3	75
2,3,4,7,8-PeCDF	pg/m^3	-	-		5.45E-04	5.77E-06	3.95E-04	-	-	3.15E-04	5.77E-06	5.45E-04	0.00E+00	5.45E-04	3.95E-04	3	75
1,2,3,4,7,8-HxCDF	pg/m^3	-	-		4.06E-04	1.68E-06	1.19E-04	-	-	1.76E-04	1.68E-06	4.06E-04	0.00E+00	4.06E-04	1.19E-04	3	75
1,2,3,6,7,8-HxCDF	pg/m^3	-	-		3.86E-04	4.03E-06	2.38E-04	-	-	2.09E-04	4.03E-06	3.86E-04	0.00E+00	3.86E-04	2.38E-04	3	75
2,3,4,6,7,8-HxCDF	pg/m^3	-	-		1.98E-04	6.74E-06	1.88E-04	-	-	1.31E-04	6.74E-06	1.98E-04	0.00E+00	1.98E-04	1.88E-04	3	75
1,2,3,7,8,9-HxCDF	pg/m^3	-	-		1.98E-04	3.32E-06	3.48E-04	-	-	1.83E-04	3.32E-06	3.48E-04	0.00E+00	1.98E-04	3.48E-04	3	75
1,2,3,4,6,7,8-HpCDF	pg/m^3	-	-		9.74E-05	7.15E-06	1.20E-04	-	-	7.50E-05	7.15E-06	1.20E-04	0.00E+00	9.74E-05	1.20E-04	3	75
1,2,3,4,7,8,9-HpCDF	pg/m^3	-	-		1.65E-05	1.02E-06	3.45E-05	-	-	1.73E-05	1.02E-06	3.45E-05	0.00E+00	1.65E-05	3.45E-05	3	75
OCDF	pg/m^3	-	-		2.28E-06	1.05E-05	5.03E-06	-	-	5.92E-06	2.28E-06	1.05E-05	0.00E+00	2.28E-06	1.05E-05	3	75
Total Toxic Equivalency	$\text{pg TEQ}/\text{m}^3$	0.1 1 [1]	-		1.17E-02	8.72E-04	6.51E-03	0.1	0	6.36E-03	8.72E-04	1.17E-02	0.00E+00	1.17E-02	6.51E-03	3	75

NOTE: All non-detectable results were reported as 1/2 of the detection limit

[1] O. Reg. 419/05 Schedule Upper Risk Thresholds

Table B4: Summary of Sample Flow Rate and Sample Duration for PAHs

Sample Date	Courtice			Rundle			
	Filter ID	Sample Duration	Sample Volume	Filter ID	Sample Duration	Sample Volume	
	No.	(min)	(m ³)	No.	(min)	(m ³)	
January 4, 2020	L2402834-1	1441	301	Invalid Sample			
January 16, 2020	L2408725-2	1440	295	Invalid Sample			
January 28, 2020	L2411504-2	1441	327	L2411504-1	1441	317	
February 9, 2020	L2416088-1	1441	331	L2416088-2	1441	303	
February 21, 2020	L2421603-1	1441	323	L2421603-2	1441	322	
March 4, 2020	L2426134-1	1441	326	L2426134-2	1438	313	
March 16, 2020	L2429741-1	1441	322	L2429741-2	1441	307	
March 28, 2020	L2433655-2	1441	319	L2433655-1	1440	319	

Table B5: 2020 Courtice Station Q1 Monitoring Results for PAHs

Contaminant	Units	MECP Criteria	HHRA Health Based Criteria	4-Jan-20	16-Jan-20	28-Jan-20	9-Feb-20	21-Feb-20	4-Mar-20	16-Mar-20	28-Mar-20	No. > Criteria	Arithmetic Mean	Minimum Q1 Concentration	Maximum Q1 Concentration	January Maximum Concentration	February Maximum Concentration	March Maximum Concentration	Number of Valid Samples	% Valid data
1-Methylnaphthalene	ng/m ³	12000	-	2.54E+00	2.78E+00	1.81E+00	3.14E+00	3.25E+00	3.19E+00	2.89E+00	7.55E+00	0	3.40E+00	1.81E+00	7.55E+00	2.78E+00	3.25E+00	7.55E+00	8	100
2-Methylnaphthalene	ng/m ³	10000	-	3.52E+00	3.97E+00	3.12E+00	5.17E+00	5.08E+00	5.95E+00	4.38E+00	1.17E+01	0	5.36E+00	3.12E+00	1.17E+01	3.97E+00	5.17E+00	1.17E+01	8	100
Acenaphthene	ng/m ³	-	-	6.48E-01	3.80E-01	3.21E-01	1.79E-01	2.94E-01	5.00E-01	5.71E-01	4.20E+00	-	8.87E-01	1.79E-01	4.20E+00	6.48E-01	2.94E-01	4.20E+00	8	100
Acenaphthylene	ng/m ³	3500	-	1.94E-01	9.53E-02	9.24E-02	3.38E-02	3.05E-02	8.83E-02	7.64E-02	1.65E-01	0	9.69E-02	3.05E-02	1.94E-01	1.94E-01	3.38E-02	1.65E-01	8	100
Anthracene	ng/m ³	200	-	3.72E-02	3.33E-02	3.76E-02	2.64E-02	1.00E-02	2.00E-02	1.53E-02	1.14E-01	0	3.67E-02	1.00E-02	1.14E-01	3.76E-02	2.64E-02	1.14E-01	8	100
Benzo(a)Anthracene	ng/m ³	-	-	1.06E-02	4.95E-03	1.01E-02	1.16E-02	2.60E-02	1.26E-02	2.53E-02	2.94E-02	-	1.63E-02	4.95E-03	2.94E-02	1.06E-02	2.60E-02	2.94E-02	8	100
Benzo(a)fluorene	ng/m ³	-	-	3.72E-02	1.79E-02	1.28E-02	2.82E-02	2.32E-02	1.42E-02	2.64E-02	7.40E-02	-	2.92E-02	1.28E-02	7.40E-02	3.72E-02	2.82E-02	7.40E-02	8	100
Benzo(a)Pyrene (Historically High)	ng/m ³	0.05 ^[1] 5 ^[2] 1.1 ^[3]	1	5.85E-03	1.49E-03	6.67E-03	1.50E-02	3.65E-02	1.29E-02	3.32E-02	3.92E-02	0	1.89E-02	1.49E-03	3.92E-02	6.67E-03	3.65E-02	3.92E-02	8	100
Benzo(b)Fluoranthene	ng/m ³	-	-	3.95E-02	2.83E-02	2.84E-02	7.79E-02	1.00E-01	4.60E-02	1.03E-01	1.44E-01	-	7.09E-02	2.83E-02	1.44E-01	3.95E-02	1.00E-01	1.44E-01	8	100
Benzo(b)fluorene	ng/m ³	-	-	2.60E-02	9.02E-03	7.80E-03	1.86E-02	1.00E-02	7.82E-03	1.22E-02	3.48E-02	-	1.58E-02	7.80E-03	3.48E-02	2.60E-02	1.86E-02	3.48E-02	8	100
Benzo(e)Pyrene	ng/m ³	-	-	3.18E-02	1.72E-02	2.65E-02	5.17E-02	5.20E-02	3.31E-02	5.78E-02	7.68E-02	-	4.33E-02	1.72E-02	7.68E-02	3.18E-02	5.20E-02	7.68E-02	8	100
Benzo(g,h,i)Perylene	ng/m ³	-	-	2.97E-02	1.46E-02	2.39E-02	4.41E-02	5.51E-02	3.87E-02	5.87E-02	7.99E-02	-	4.31E-02	1.46E-02	7.99E-02	2.97E-02	5.51E-02	7.99E-02	8	100
Benzo(k)Fluoranthene	ng/m ³	-	-	3.92E-02	2.02E-02	2.72E-02	4.95E-02	7.15E-02	4.08E-02	8.01E-02	8.68E-02	-	5.19E-02	2.02E-02	8.68E-02	3.92E-02	7.15E-02	8.68E-02	8	100
Biphenyl	ng/m ³	-	-	1.29E+00	1.17E+00	1.00E+00	2.40E+00	1.88E+00	1.52E+00	1.41E+00	4.48E+00	-	1.89E+00	1.00E+00	4.48E+00	1.29E+00	2.40E+00	4.48E+00	8	100
Chrysene	ng/m ³	-	-	6.64E-02	5.63E-02	4.10E-02	1.37E-01	1.29E-01	5.80E-02	1.21E-01	1.86E-01	-	9.93E-02	4.10E-02	1.86E-01	6.64E-02	1.37E-01	1.86E-01	8	100
Dibenzo(a,h)Anthracene	ng/m ³	-	-	2.59E-03	3.05E-03	3.55E-03	5.50E-03	6.59E-03	5.89E-03	6.15E-03	9.91E-03	-	5.40E-03	2.59E-03	9.91E-03	3.55E-03	6.59E-03	9.91E-03	8	100
Fluoranthene	ng/m ³	-	-	3.85E-01	2.54E-01	2.45E-01	5.08E-01	3.59E-01	2.60E-01	3.17E-01	1.40E+00	-	4.67E-01	2.45E-01	1.40E+00	3.85E-01	5.08E-01	1.40E+00	8	100
Fluorene	ng/m ³	-	-	-	7.76E-01	4.56E-01	7.64E-01	7.15E-01	5.92E-01	6.99E-01	3.79E+00	-	1.11E+00	4.56E-01	3.79E+00	7.76E-01	7.64E-01	3.79E+00	7	88
Indeno(1,2,3-cd)Pyrene	ng/m ³	-	-	3.39E-02	2.47E-02	2.72E-02	4.62E-02	5.33E-02	3.28E-02	6.68E-02	7.99E-02	-	4.56E-02	2.47E-02	7.99E-02	3.39E-02	5.33E-02	7.99E-02	8	100
Naphthalene	ng/m ³	22500	22500	2.47E+01	2.01E+01	1.14E+01	2.64E+01	2.60E+01	1.54E+01	1.79E+01	3.79E+01	0	2.25E+01	1.14E+01	3.79E+01	2.47E+01	2.64E+01	3.79E+01	8	100
o-Terphenyl	ng/m ³	-	-	1.01E-02	7.29E-03	4.25E-03	1.08E-02	1.11E-02	1.36E-02	5.71E-03	2.01E-02	-	1.04E-02	4.25E-03	2.01E-02	1.01E-02	1.11E-02	2.01E-02	8	100
Perylene	ng/m ³	-	-	3.32E-04	1.25E-03	2.39E-03	3.90E-03	1.21E-02	1.09E-02	3.51E-03	6.27E-04	-	4.37E-03	3.32E-04	1.21E-02	2.39E-03	1.21E-02	1.09E-02	8	100
Phenanthrene	ng/m ³	-	-	1.79E+00	1.16E+00	9.82E-01	1.77E+00	1.10E+00	8.74E-01	1.09E+00	7.08E+00	-	1.98E+00	8.74E-01	7.08E+00	1.79E+00	1.77E+00	7.08E+00	8	100
Pyrene	ng/m ³	-	-	2.37E-01	1.45E-01	1.66E-01	2.35E-01	1.85E-01	1.53E-01	1.83E-01	6.02E-01	-	2.38E-01	1.45E-01	6.02E-01	2.37E-01	2.35E-01	6.02E-01	8	100
Tetralin	ng/m ³	-	-	1.86E+00	1.52E+00	2.34E+00	1.48E+00	2.04E+00	2.87E+00	1.76E+00	2.86E+00	-	2.09E+00	1.48E+00	2.87E+00	2.34E+00	2.04E+00	2.87E+00	8	100
Total PAH ^[4]	ng/m ³	-	-	3.76E+01	3.26E+01	2.22E+01	4.26E+01	4.15E+01	3.17E+01	3.19E+01	8.27E+01	-	4.04E+01	2.22E+01	8.27E+01	3.76E+01	4.26E+01	8.27E+01	8	100

NOTE: All non-detectable results were reported as 1/2 of the detection limit

[1] AAQC

[2] O. Reg. 419/05 Schedule Upper Risk Thresholds

[3] O. Reg. 419/05 24 Hour Guideline

[4] Total PAH sums all PAH contaminants

Table B6: 2020 Rundle Station Q1 Monitoring Results for PAHs

Contaminant	Units	MECP Criteria	HHRA Health Based Criteria	4-Jan-20	16-Jan-20	28-Jan-20	9-Feb-20	21-Feb-20	4-Mar-20	16-Mar-20	28-Mar-20	No. > Criteria	Arithmetic Mean	Minimum Q1 Concentration	Maximum Q1 Concentration	January Maximum Concentration	February Maximum Concentration	March Maximum Concentration	Number of Valid Samples	% Valid data
1-Methylnaphthalene	ng/m ³	12000	-			1.56E+00	3.76E+00	4.35E+00	3.61E+00	3.81E+00	5.33E+00	0	3.74E+00	1.56E+00	5.33E+00	1.56E+00	4.35E+00	5.33E+00	6	75
2-Methylnaphthalene	ng/m ³	10000	-			2.24E+00	5.64E+00	7.05E+00	5.91E+00	6.32E+00	7.68E+00	0	5.81E+00	2.24E+00	7.68E+00	2.24E+00	7.05E+00	7.68E+00	6	75
Acenaphthene	ng/m ³	-	-			1.41E-01	3.83E-02	6.09E-01	7.28E-01	1.59E+00	2.46E+00	-	9.29E-01	3.83E-02	2.46E+00	1.41E-01	6.09E-01	2.46E+00	6	75
Acenaphthylene	ng/m ³	3500	-			1.18E-01	3.56E-01	5.16E-02	1.08E-01	9.45E-02	9.66E-02	0	1.38E-01	5.16E-02	3.56E-01	1.18E-01	3.56E-01	1.08E-01	6	75
Anthracene	ng/m ³	200	-			2.77E-02	9.93E-02	2.61E-02	4.19E-02	2.19E-02	6.77E-02	0	4.74E-02	2.19E-02	9.93E-02	2.77E-02	9.93E-02	6.77E-02	6	75
Benzo(a)Anthracene	ng/m ³	-	-			1.05E-02	2.73E-02	2.84E-02	1.66E-02	3.88E-02	2.67E-02	-	2.47E-02	1.05E-02	3.88E-02	1.05E-02	2.84E-02	3.88E-02	6	75
Benzo(a)fluorene	ng/m ³	-	-			1.11E-02	7.06E-02	3.32E-02	2.39E-02	2.49E-02	6.74E-02	-	3.85E-02	1.11E-02	7.06E-02	1.11E-02	7.06E-02	6.74E-02	6	75
Benzo(a)Pyrene (Historically High)	ng/m ³	0.05 [1] 5 [2] 1.1 [3]	1			1.15E-02	2.14E-02	3.29E-02	2.64E-02	4.56E-02	5.80E-02	1	3.26E-02	1.15E-02	5.80E-02	1.15E-02	3.29E-02	5.80E-02	6	75
Benzo(b)Fluoranthene	ng/m ³	-	-			3.63E-02	1.62E-01	1.05E-01	5.05E-02	1.08E-01	1.38E-01	-	1.00E-01	3.63E-02	1.62E-01	3.63E-02	1.62E-01	1.38E-01	6	75
Benzo(b)fluorene	ng/m ³	-	-			9.18E-03	4.42E-02	1.52E-02	1.05E-02	1.37E-02	2.98E-02	-	2.04E-02	9.18E-03	4.42E-02	9.18E-03	4.42E-02	2.98E-02	6	75
Benzo(e)Pyrene	ng/m ³	-	-			2.80E-02	9.77E-02	6.52E-02	4.15E-02	7.36E-02	5.77E-02	-	6.06E-02	2.80E-02	9.77E-02	2.80E-02	9.77E-02	7.36E-02	6	75
Benzo(g,h,i)Perylene	ng/m ³	-	-			2.77E-02	6.96E-02	6.06E-02	5.21E-02	8.05E-02	6.90E-02	-	5.99E-02	2.77E-02	8.05E-02	2.77E-02	6.96E-02	8.05E-02	6	75
Benzo(k)Fluoranthene	ng/m ³	-	-			2.68E-02	1.10E-01	8.35E-02	4.70E-02	1.41E-01	7.77E-02	-	8.11E-02	2.68E-02	1.41E-01	2.68E-02	1.10E-01	1.41E-01	6	75
Biphenyl	ng/m ³	-	-			9.05E-01	1.86E+00	2.21E+00	1.77E+00	1.81E+00	3.92E+00	-	2.08E+00	9.05E-01	3.92E+00	9.05E-01	2.21E+00	3.92E+00	8	75
Chrysene	ng/m ³	-	-			4.86E-02	2.32E-01	1.41E-01	7.09E-02	1.50E-01	1.76E-01	-	1.36E-01	4.86E-02	2.32E-01	4.86E-02	2.32E-01	1.76E-01	6	75
Dibenzo(a,h)Anthracene	ng/m ³	-	-			2.59E-03	9.17E-03	3.94E-03	5.69E-03	8.08E-03	8.78E-03	-	6.37E-03	2.59E-03	9.17E-03	2.59E-03	9.17E-03	8.78E-03	6	75
Fluoranthene	ng/m ³	-	-			2.46E-01	8.84E-01	4.47E-01	3.93E-01	4.59E-01	9.28E-01	-	5.60E-01	2.46E-01	9.28E-01	2.46E-01	8.84E-01	9.28E-01	6	75
Fluorene	ng/m ³	-	-			4.07E-01	3.30E-01	9.97E-01	8.72E-01	1.29E+00	2.53E+00	-	1.07E+00	3.30E-01	2.53E+00	4.07E-01	9.97E-01	2.53E+00	6	75
Indeno(1,2,3-cd)Pyrene	ng/m ³	-	-			2.71E-02	7.76E-02	6.09E-02	3.71E-02	8.24E-02	6.96E-02	-	5.91E-02	2.71E-02	8.24E-02	2.71E-02	7.76E-02	8.24E-02	6	75
Naphthalene	ng/m ³	22500	22500			1.07E+01	2.41E+01	2.89E+01	2.09E+01	1.82E+01	3.39E+01	0	2.28E+01	1.07E+01	3.39E+01	1.07E+01	2.89E+01	3.39E+01	6	75
o-Terphenyl	ng/m ³	-	-			4.26E-03	8.71E-03	9.78E-03	1.27E-02	4.98E-03	2.21E-02	-	1.04E-02	4.26E-03	2.21E-02	4.26E-03	9.78E-03	2.21E-02	6	75
Perylene	ng/m ³	-	-			3.06E-03	5.41E-03	1.40E-02	7.32E-03	1.47E-02	6.27E-04	-	7.52E-03	6.27E-04	1.47E-02	3.06E-03	1.40E-02	1.47E-02	6	75
Phenanthrene	ng/m ³	-	-			9.91E-01	3.37E+00	1.68E+00	1.41E+00	2.03E+00	4.26E+00	-	2.29E+00	9.91E-01	4.26E+00	9.91E-01	3.37E+00	4.26E+00	6	75
Pyrene	ng/m ³	-	-			1.45E-01	4.75E-01	2.39E-01	2.34E-01	2.36E-01	4.64E-01	-	2.99E-01	1.45E-01	4.75E-01	1.45E-01	4.75E-01	4.64E-01	6	75
Tetralin	ng/m ³	-	-			2.91E+00	1.55E+00	2.51E+00	3.61E+00	1.78E+00	2.54E+00	-	2.48E+00	1.55E+00	3.61E+00	2.91E+00	2.51E+00	3.61E+00	6	75
Total PAH ^[4]	ng/m ³	-	-			2.07E+01	4.34E+01	4.98E+01	4.00E+01	3.84E+01	6.49E+01	-	4.29E+01	2.07E+01	6.49E+01	2.07E+01	4.98E+01	6.49E+01	6	75

NOTE: All non-detectable results were reported as 1/2 of the detection limit

[1] AAQC

[2] O. Reg. 419/05 Schedule Upper Risk Thresholds

[3] O. Reg. 419/05 24 Hour Guideline

[4] Total PAH sums all PAH contaminants

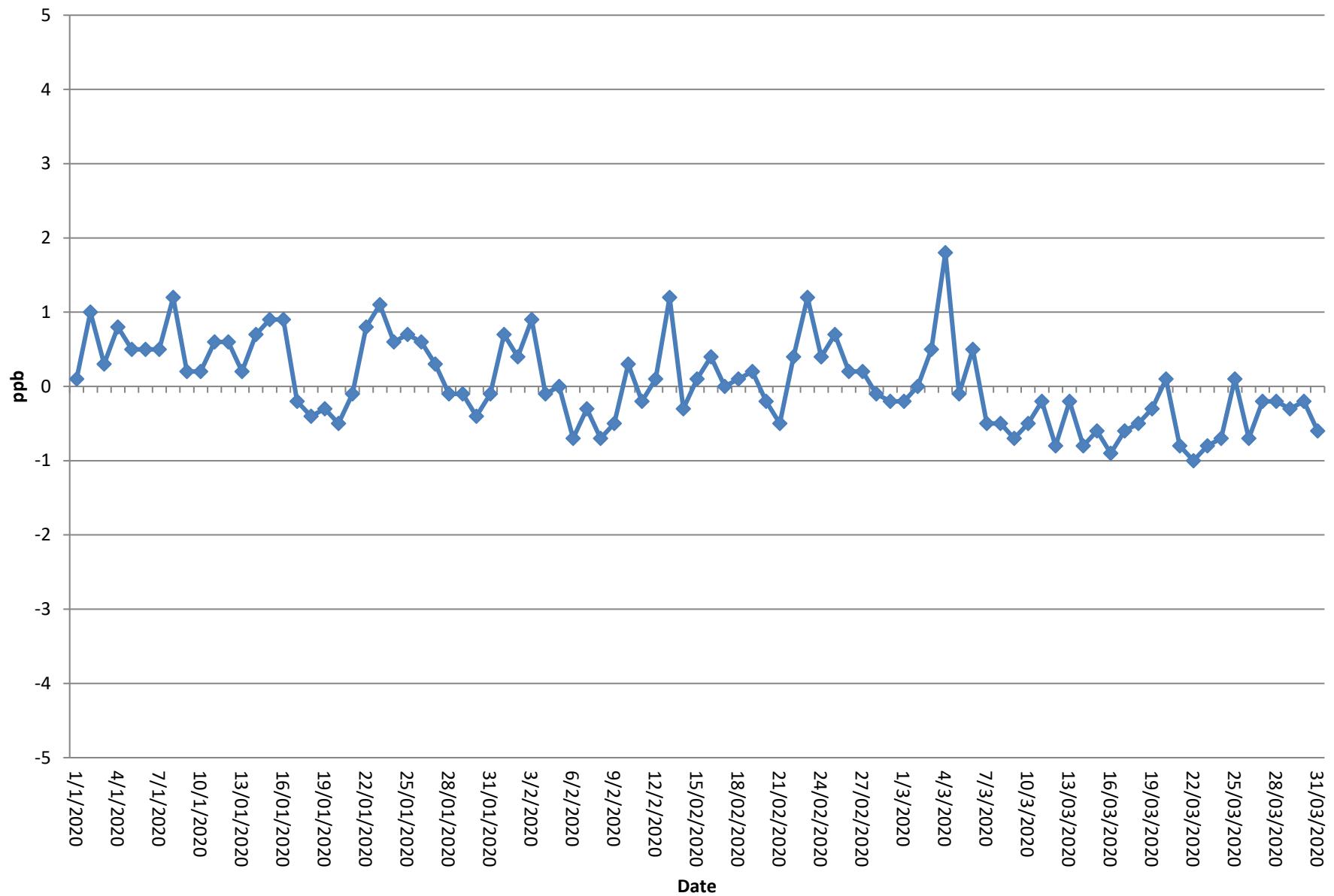
Table B7: Summary of Sample Flow Rate and Sample Duration for TSP

Sample Date	Courtice			Rundle		
	Filter ID	Sample Duration	Sample Volume	Filter ID	Sample Duration	Sample Volume
	No.	(min)	(m ³)	No.	(min)	(m ³)
January 4, 2020	739998	1441	1672	739997	1441	1701
January 10, 2020	740026	1441	1591	740027	1441	1653
January 16, 2020	739999	1440	1709	Invalid		
January 22, 2020	740230	1441	1692	740229	1441	1773
January 28, 2020	740232	1441	1682	740233	1441	1667
February 3, 2020	740235	1441	1741	740234	1441	1682
February 9, 2020	740237	1441	1768	740236	1441	1707
February 15, 2020	740301	1441	1770	740238	1441	1714
February 21, 2020	Invalid			Invalid		
February 27, 2020	740304	1441	1694	Invalid		
March 4, 2020	740307	1441	1606	740306	1438	1649
March 10, 2020	740308	1441	1592	740378	1441	1634
March 16, 2020	740311	1441	1650	740310	1441	1714
March 22, 2020	740313	1441	1706	740312	1440	1647
March 28, 2020	740380	1441	1614	740379	1440	1661

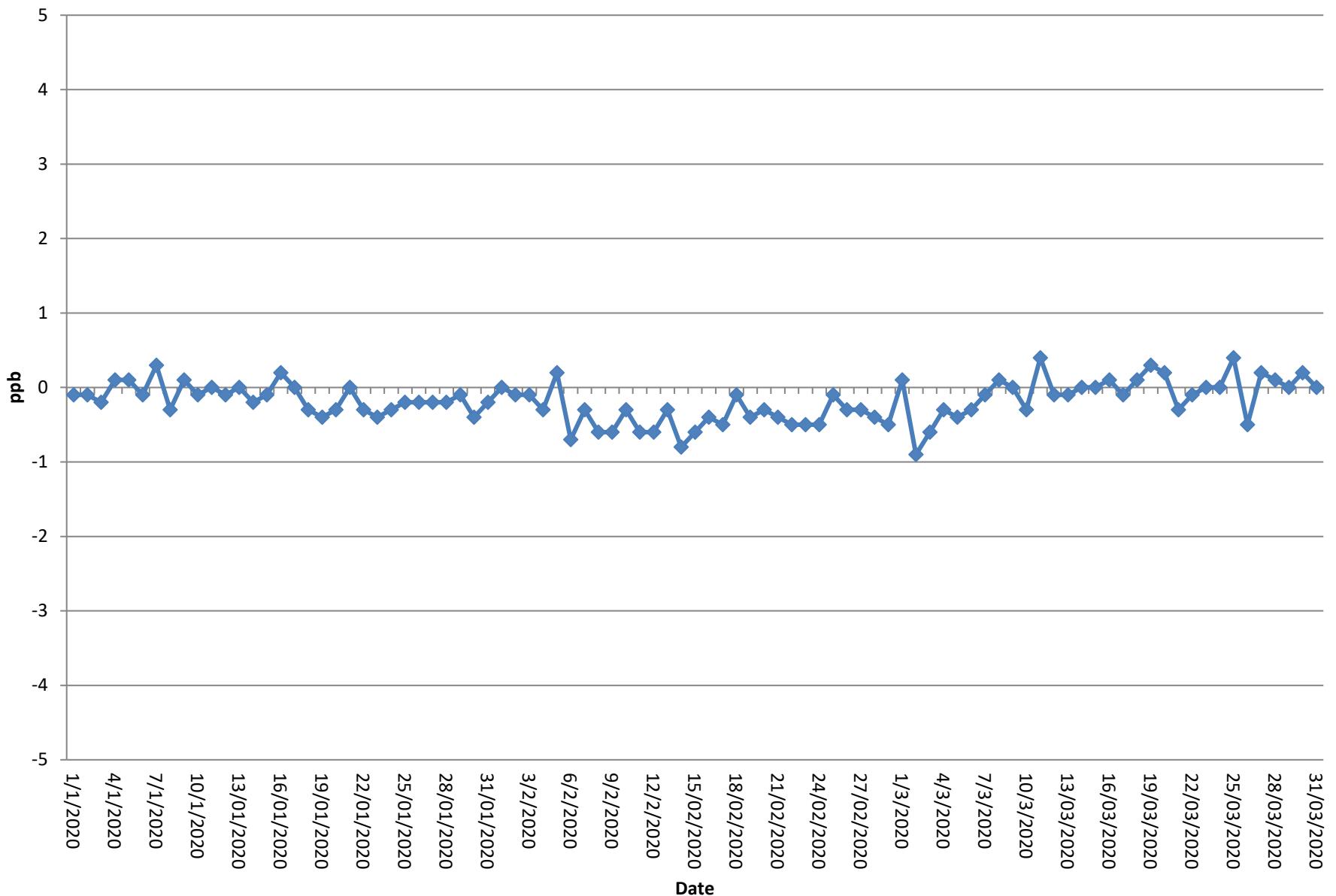
APPENDIX C

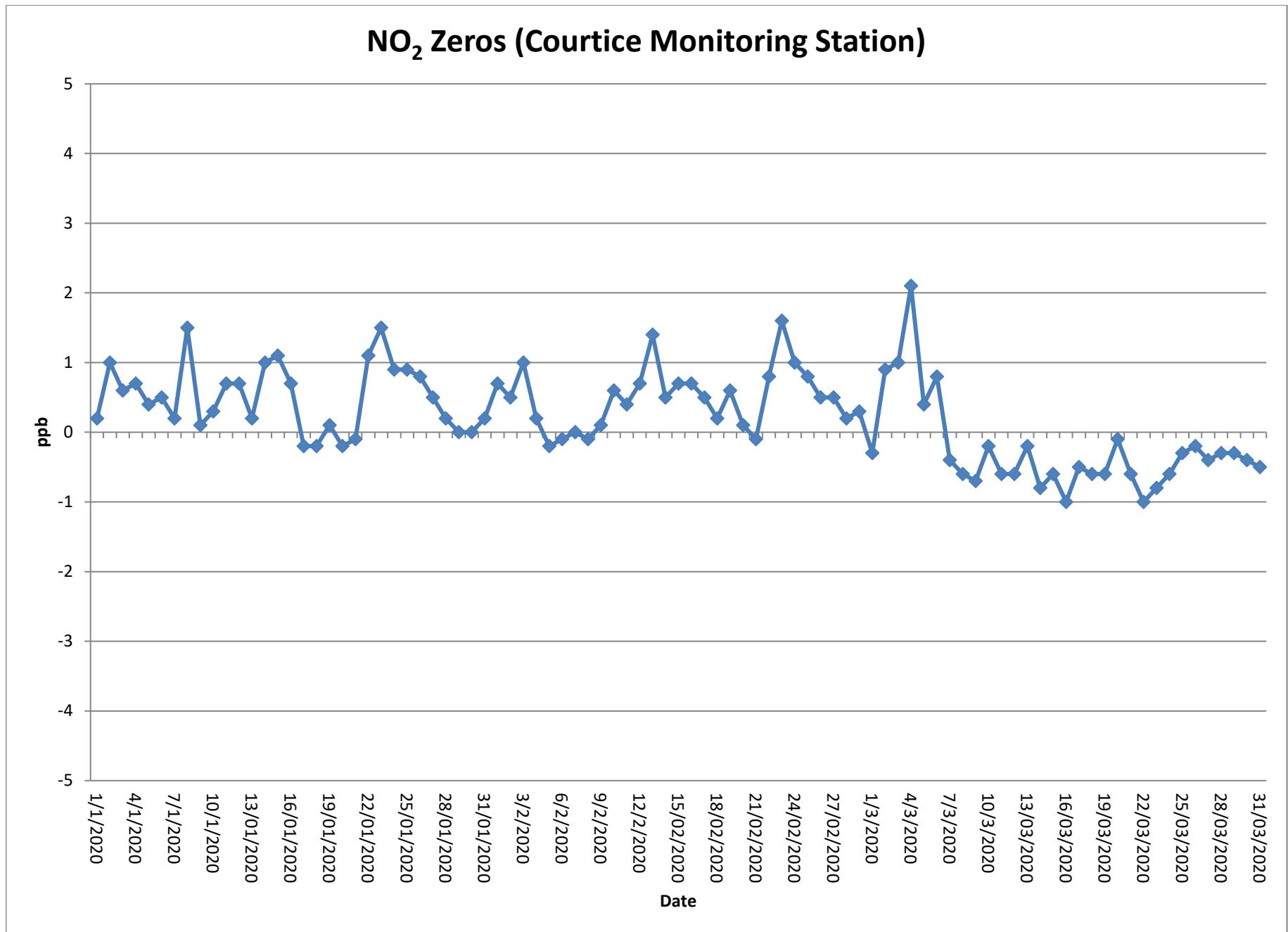


NO_x Zeros (Courtice Monitoring Station)

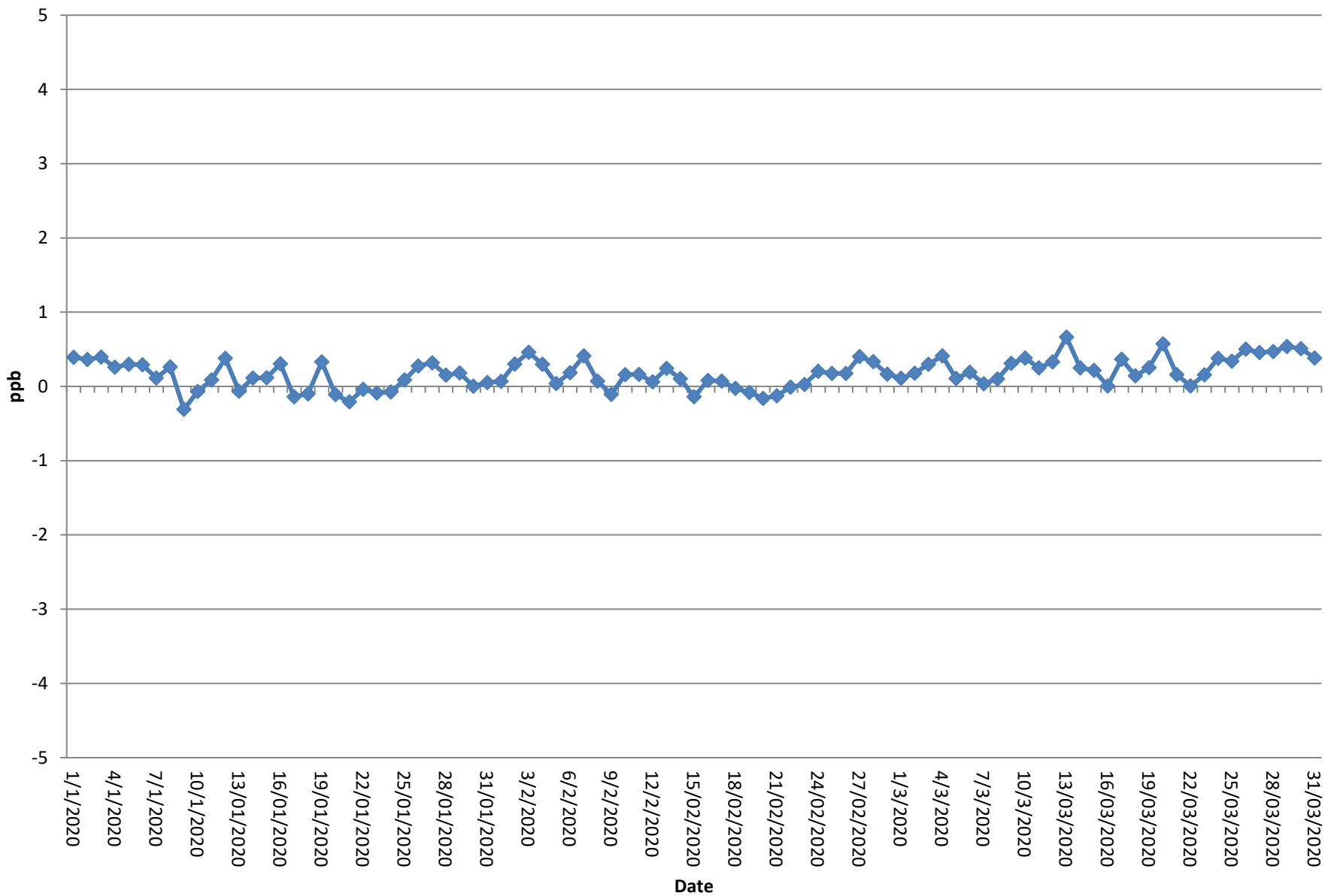


NO Zeros (Courtice Monitoring Station)

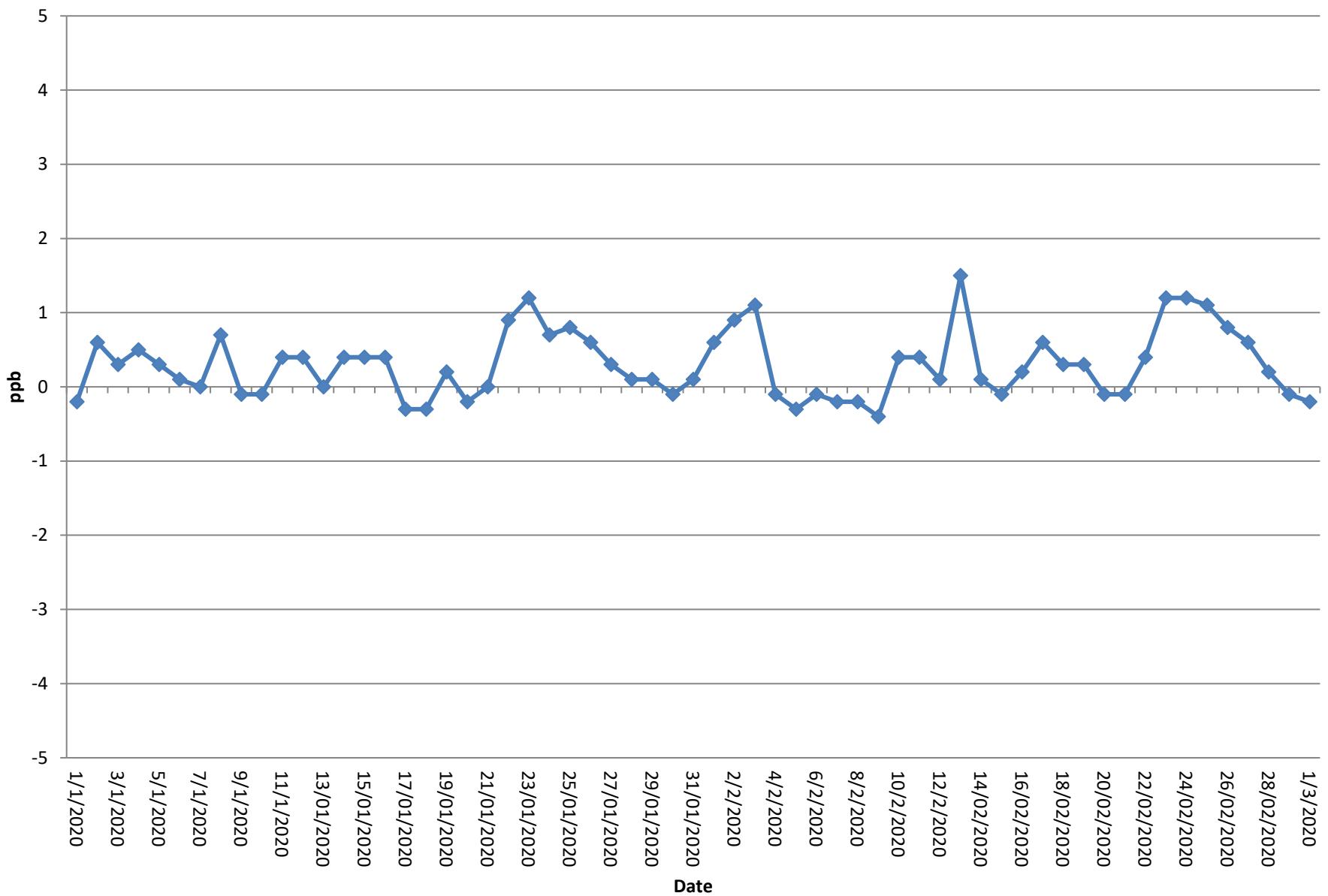




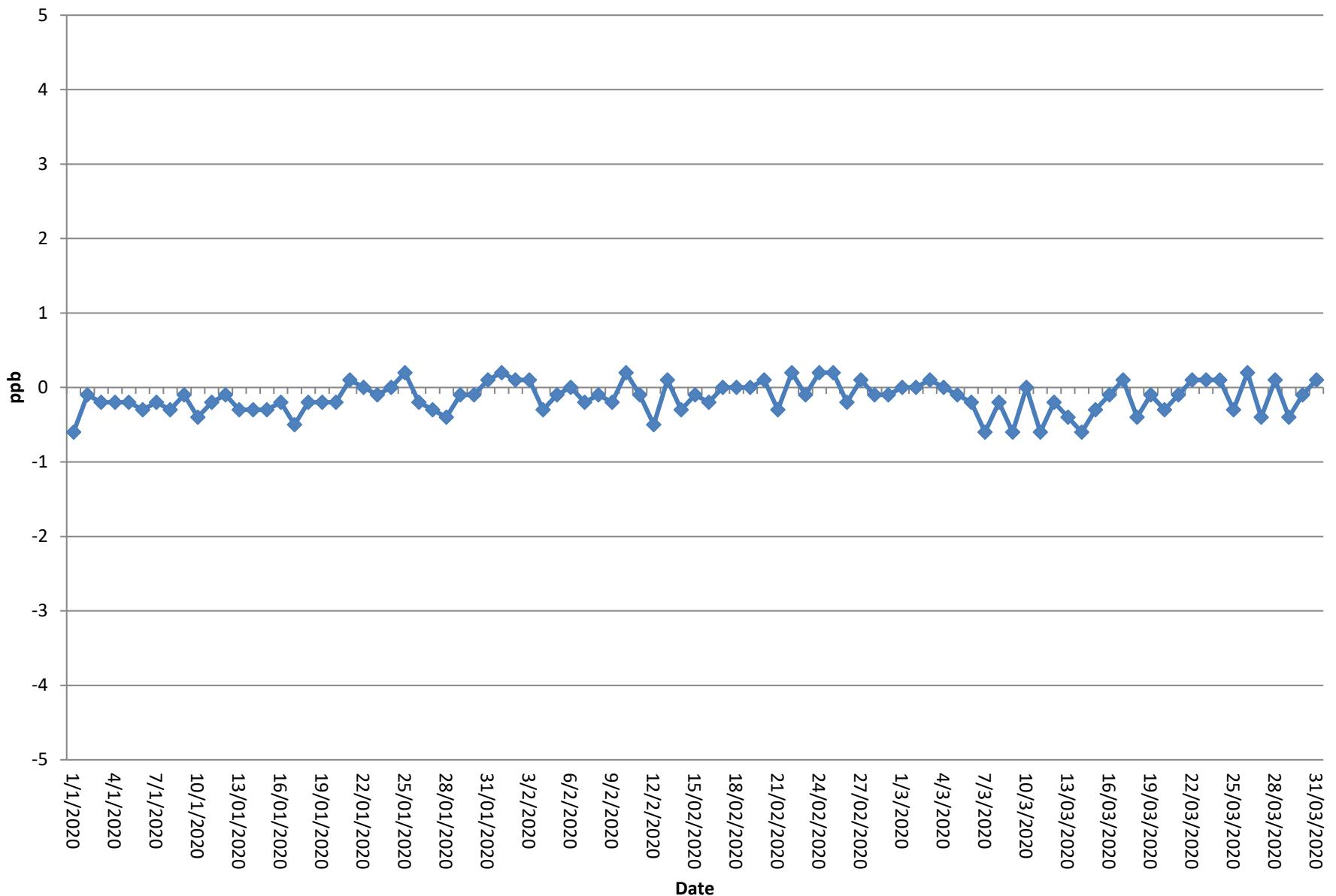
SO₂ Zeros (Courtice Monitoring Station)



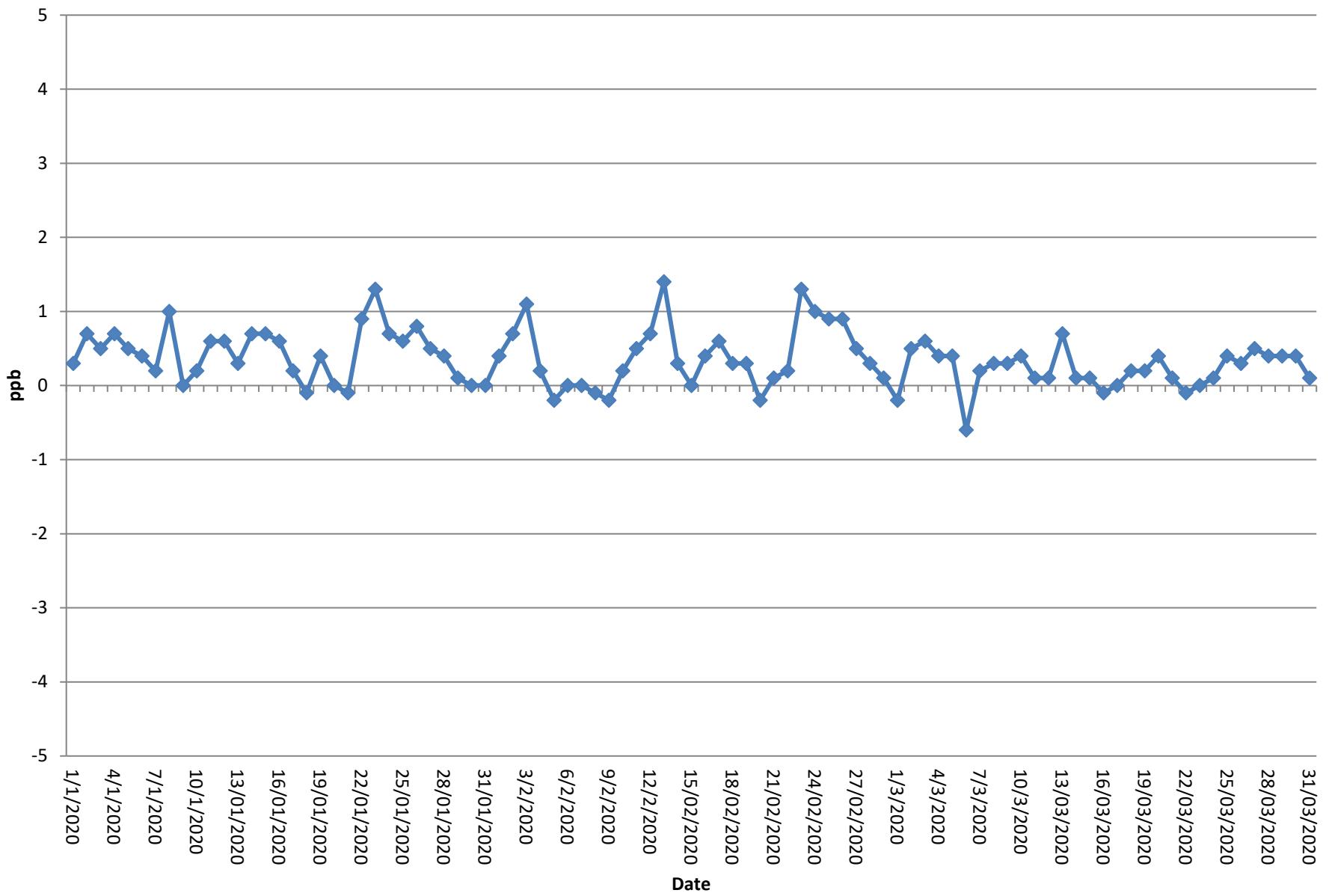
NO_x Zeros (Rundle Monitoring Station)



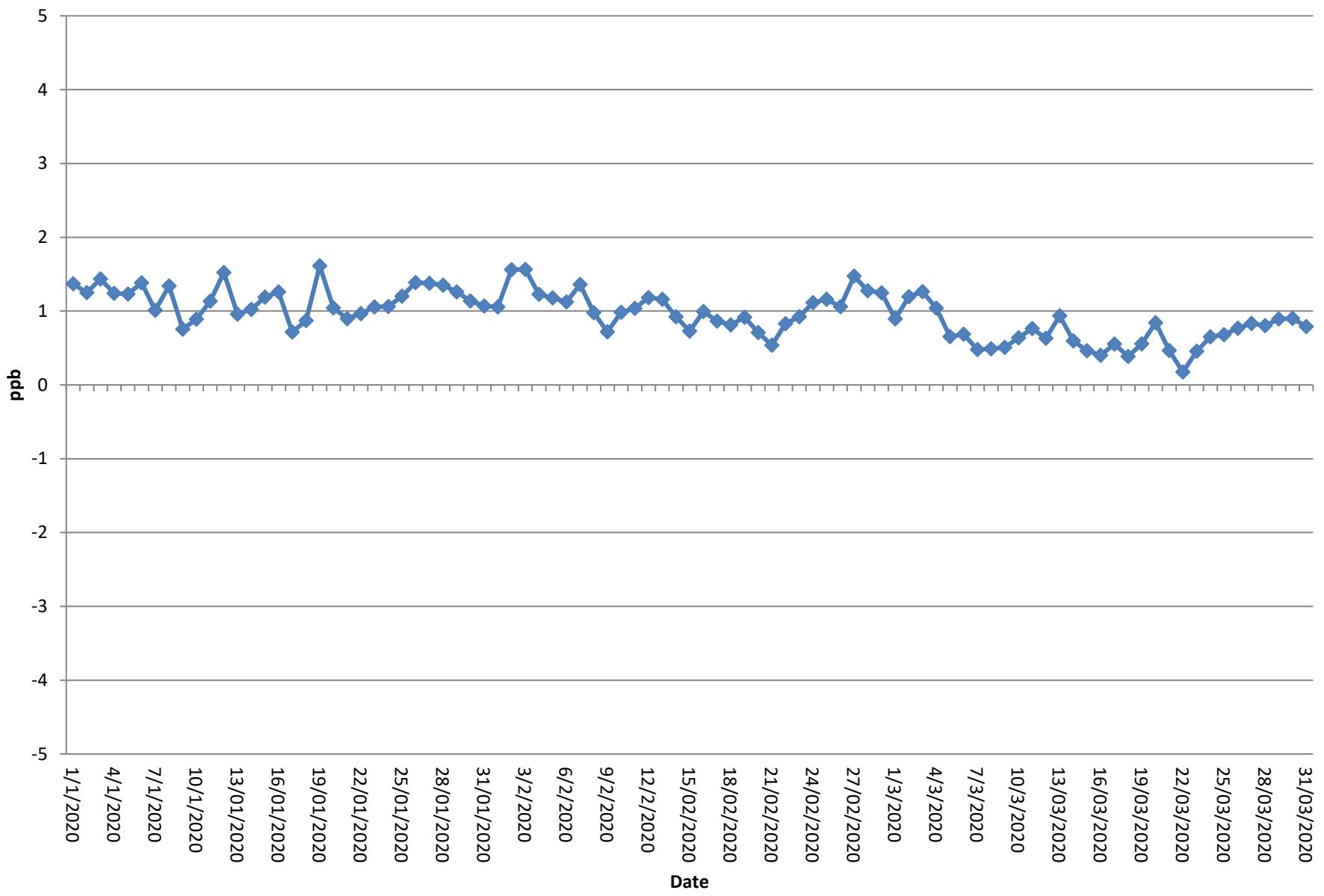
NO Zeros (Rundle Monitoring Station)



NO₂ Zeros (Rundle Monitoring Station)



SO₂ Zeros (Rundle Monitoring Station)



APPENDIX D



Table D1: 1st Quarter Edit Log for PM_{2.5} at Courtice Station

Emitter's Name: Durham York Energy Centre								
Contact	Name: Ms. Lyndsay Waller	Phone: (905) 404-0888 ext 4107	Email: Lyndsay.Waller@Durham.ca					
Station Number: 45201			Station Name: Courtice Station					
Station Address: 100 Osbourne Road			Emitter Address: The Region of Durham, 605 Rossland Road, Whitby, ON					
Pollutants or Parameter: PM _{2.5}		Instrument Make & Model: Thermo Scientific Model 5030 SHARP Monitor				s/n: E-1563		
Data Edit Period		Start Date: January 1, 2020		End Date: March 31, 2020		All testing done in EST		
Edit #	Edit date (dd/mm/yyyy)	Editor's Name	Edit Action	Starting Date (dd/mm/yyyy)	Hour (xx:xx)	Ending Date (dd/mm/yyyy)	Hour (xx:xx)	Reason
1	16/01/2020	SRS	Deleted Hours	16/01/2020	15:00	16/01/2020	16:00	Monthly Calibration
2	05/02/2020	SRS	Deleted Hours	05/02/2020	14:00	05/02/2020	16:00	Monthly Calibration
3	06/03/2020	SRS	Deleted Hours	06/03/2020	16:00	06/03/2020	18:00	Monthly Calibration
4	09/03/2020	VML	Deleted Hours	06/03/2020	23:25	06/03/2020	23:35	Anomalous data - Extreme high concentrations deemed to be false values
5	20/03/2020	VML	Deleted Hours	20/03/2020	07:00	20/03/2020	08:00	Power Failure

Table D2: 1st Quarter Edit Log for PM_{2.5} at Rundle Road Station

Emitter's Name: Durham York Energy Centre									
Contact	Name: Ms. Lyndsay Waller	Phone: (905) 404-0888 ext 4107	Email: Lyndsay.Waller@Durham.ca						
Station Number: 45200		Station Name: Rundle Road Station							
Station Address: Rundle Road		Emitter Address: The Region of Durham, 605 Rossland Road, Whitby, ON							
Pollutants or Parameter: PM _{2.5}		Instrument Make & Model: Thermo Scientific Model 5030 SHARP Monitor			s/n: E-1569				
Data Edit Period		Start Date: January 1, 2020	End Date: March 31, 2020	All testing done in EST					
Edit #	Edit date (dd/mm/yyyy)	Editor's Name	Edit Action	Starting		Ending		Reason	
				Date (dd/mm/yyyy)	Hour (xx:xx)	Date (dd/mm/yyyy)	Hour (xx:xx)		
1	17/01/2020	SRS	Deleted Hours	17/01/2020	12:00	17/01/2020	14:00	Monthly Calibration	
2	05/02/2020	SRS	Deleted Hours	05/02/2020	17:00	05/02/2020	18:00	Monthly Calibration	
3	07/03/2020	SRS	Deleted Hours	07/03/2020	17:00	07/03/2020	19:00	Monthly Calibration	

Table D3: 1st Quarter Edit Log for NO_x at Courtice Station

Emitter's Name: Durham York Energy Centre											
Contact	Name: Ms. Lyndsay Waller	Phone: (905) 404-0888 ext 4107	Email: Lyndsay.Waller@Durham.ca								
Station Number: 45201		Station Name: Courtice Station									
Station Address: 100 Osbourne Road		Emitter Address: The Region of Durham, 605 Rossland Road, Whitby, ON									
Pollutants or Parameter: NOx		Instrument Make & Model: Teledyne Nitrogen Oxide Analyzer Model T200				s/n: 675					
Data Edit Period		Start Date: January 1, 2020		End Date: March 31, 2020		All testing done in EST					
Edit #	Edit date (dd/mm/yyyy)	Editor's Name	Edit Action	Starting		Ending		Reason			
				Date (dd/mm/yyyy)	Hour (xx:xx)	Date (dd/mm/yyyy)	Hour (xx:xx)				
1	16/01/2020	SRS	Deleted Hours	16/01/2020	14:00	16/01/2020	16:00	Monthly Calibration			
2	18/02/2020	VML	Zero correction	01/01/2020	00:00	31/01/2020	23:00	Correcting values <0 to 0			
3	04/02/2020	SRS	Deleted Hours	04/02/2020	16:00	04/02/2020	19:00	Monthly Calibration and replacement of the permeation tube			
4	05/02/2020	SRS	Deleted Hours	05/02/2020	14:00	05/02/2020	15:00	Post Maintenance Calibration			
5	17/03/2020	VML	Zero correction	01/02/2020	00:00	29/02/2020	23:00	Correcting values <0 to 0			
6	17/03/2020	VML	Zero offset adjustment	03/03/2020	02:15	05/03/2020	01:45	Correcting zero drift: March 4			
7	06/03/2020	SRS	Deleted Hours	06/03/2020	15:00	06/03/2020	19:00	Monthly Calibration and GPT			
8	20/03/2020	VML	Deleted Hours	20/03/2020	07:00	20/03/2020	08:00	Power Failure			
9	17/04/2020	VML	Zero correction	01/03/2020	00:00	31/03/2020	23:00	Correcting values <0 to 0			

Table D4: 1st Quarter Edit Log for NO_x at Rundle Road Station

Emitter's Name: Durham York Energy Centre									
Contact	Name: Ms. Lyndsay Waller	Phone: (905) 404-0888 ext 4107	Email: Lyndsay.Waller@Durham.ca						
Station Number: 45200		Station Name: Rundle Road Station							
Station Address: Rundle Road		Emitter Address: The Region of Durham, 605 Rossland Road, Whitby, ON							
Pollutants or Parameter: NOx		Instrument Make & Model: Teledyne Nitrogen Oxide Analyzer Model T200			s/n: 676				
Data Edit Period		Start Date: January 1, 2020		End Date: March 31, 2020		All testing done in EST			
Edit #	Edit date (dd/mm/yyyy)	Editor's Name	Edit Action	Starting		Ending		Reason	
				Date (dd/mm/yyyy)	Hour (xx:xx)	Date (dd/mm/yyyy)	Hour (xx:xx)		
1	07/01/2020	SRS	Deleted Hours	07/01/2020	14:00	07/01/2020	16:00	Calibration check: Takeout cal performed and determined a new permeation device is needed	
2	16/01/2020	SRS	Deleted Hours	16/01/2020	17:00	16/01/2020	20:00	Monthly Calibration and replacement of permeation device	
3	17/01/2020	SRS	Deleted Hours	17/01/2020	11:00	17/01/2020	13:00	Calibration check	
4	18/02/2020	VML	Zero correction	01/01/2020	00:00	01/01/2020	23:00	Correcting values <0 to 0	
5	05/02/2020	SRS	Deleted Hours	05/02/2020	16:00	05/02/2020	18:00	Monthly Calibration	
6	17/03/2020	VML	Zero correction	29/02/2020	00:00	29/02/2020	23:00	Correcting values <0 to 0	
7	03/03/2020	SRS	Deleted Hours	03/03/2020	15:00	03/03/2020	21:00	Monthly Calibration and annual maintenance	
8	04/03/2020	SRS	Deleted Hours	04/03/2020	14:00	04/03/2020	22:00	Calibration: GPT	
9	06/03/2020	SRS	Deleted Hours	06/03/2020	13:00	06/03/2020	14:00	Calibration check	
10	17/04/2020	VML	Zero correction	01/03/2020	00:00	31/03/2020	23:00	Correcting values <0 to 0	

Table D5: 1st Quarter Edit Log for SO₂ at Courtice Station

Emitter's Name: Durham York Energy Centre											
Contact	Name: Ms. Lyndsay Waller	Phone: (905) 404-0888 ext 4107	Email: Lyndsay.Waller@Durham.ca								
Station Number: 45201		Station Name: Courtice Station									
Station Address: 100 Osbourne Road		Emitter Address: The Region of Durham, 605 Rossland Road, Whitby, ON									
Pollutants or Parameter: SO ₂		Instrument Make & Model: Teledyne Sulfur Dioxide Analyzer Model T100				s/n: 565					
Data Edit Period		Start Date: January 1, 2020		End Date: March 31, 2020		All testing done in EST					
Edit #	Edit Date (dd/mm/yyyy)	Editor's Name	Edit Action	Starting		Ending		Reason			
				Date (dd/mm/yyyy)	Hour (xx:xx)	Date (dd/mm/yyyy)	Hour (xx:xx)				
1	16/01/2020	SRS	Deleted Hours	16/01/2020	15:00	16/01/2020	17:00	Monthly Calibration			
2	18/02/2020	VML	Zero correction	01/01/2020	00:00	31/01/2020	23:00	Correcting values <0 to 0			
3	05/02/2020	SRS	Deleted Hours	05/02/2020	14:00	05/02/2020	16:00	Monthly Calibration			
4	17/03/2020	VML	Zero correction	01/02/2020	00:00	29/02/2020	23:00	Correcting values <0 to 0			
5	06/03/2020	SRS	Deleted Hours	07/03/2020	13:00	07/03/2020	15:00	Monthly Calibration			
6	20/03/2020	VML	Deleted Hours	20/03/2020	07:00	20/03/2020	08:00	Power Failure			
7	17/04/2020	VML	Zero correction	01/03/2020	00:00	31/03/2020	23:00	Correcting values <0 to 0			

Table D6: 1st Quarter Edit Log for SO₂ at Rundle Road Station

Emitter's Name: Durham York Energy Centre											
Contact	Name: Ms. Lyndsay Waller	Phone: (905) 404-0888 ext 4107	Email: Lyndsay.Waller@Durham.ca								
Station Number: 45200		Station Name: Rundle Road Station									
Station Address: Rundle Road		Emitter Address: The Region of Durham, 605 Rossland Road, Whitby, ON									
Pollutants or Parameter: SO ₂		Instrument Make & Model: Teledyne Sulfur Dioxide Analyzer Model T100				s/n: 566					
Data Edit Period		Start Date: January 1, 2020		End Date: March 31, 2020		All testing done in EST					
Edit #	Edit date (dd/mm/yyyy)	Editor's Name	Edit Action	Starting		Ending		Reason			
				Date (dd/mm/yyyy)	Hour (xx:xx)	Date (dd/mm/yyyy)	Hour (xx:xx)				
1	17/01/2020	SRS	Deleted Hours	17/01/2020	12:00	17/01/2020	14:00	Monthly Calibration			
2	18/02/2020	VML	Zero correction	01/01/2020	00:00	01/01/2020	23:00	Correcting values <0 to 0			
3	05/02/2020	SRS	Deleted Hours	05/02/2020	17:00	05/02/2020	19:00	Monthly Calibration			
4	17/03/2020	VML	Zero correction	29/02/2020	00:00	29/02/2020	23:00	Correcting values <0 to 0			
5	03/03/2020	SRS	Deleted Hours	03/03/2020	18:00	03/03/2020	19:35	Monthly Calibration			
6	17/04/2020	VML	Zero offset adjustment	03/03/2020	19:35	31/03/2020	23:55	Correcting low zero calibration: March 3 to March 31, 2020			
7	17/04/2020	VML	Zero correction	01/03/2020	00:00	31/03/2020	23:00	Correcting values <0 to 0			

Table D7: 1st Quarter Edit Log for Meteorological Parameters at Courtice Road Station

Emitter's Name: Durham York Energy Centre									
Contact	Name: Ms. Lyndsay Waller	Phone: (905) 404-0888 ext 4107	Email: Lyndsay.Waller@Durham.ca						
Station Number: 45201		Station Name: Courtice Station							
Station Address: 100 Osbourne Road		Emitter Address: The Region of Durham, 605 Rossland Road, Whitby, ON							
Pollutants or Parameter: WS, WD, Ambient T, P, RH and Rain		Instrument Make & Model: Miscellaneous Meterological Instrumentation			s/n: N/A				
Data Edit Period		Start Date: January 1, 2020	End Date: March 31, 2020		All testing done in EST				
Edit #	Edit date (dd/mm/yyyy)	Editor's Name	Edit Action	Starting Date (dd/mm/yyyy)	Ending Hour (xx:xx)	Date (dd/mm/yyyy)	Hour (xx:xx)	Reason	
1	18/02/2020	VML	Deleted Hours	29/01/2020	11:00	29/01/2020	12:00	Missing Data	

Table D8: 1st Quarter Edit Log for Meteorological Parameters at Rundle Road Station

Emitter's Name: Durham York Energy Centre								
Contact	Name: Ms. Lyndsay Waller	Phone: (905) 404-0888 ext 4107	Email: Lyndsay.Waller@Durham.ca					
Station Number: 45200		Station Name: Rundle Station						
Station Address: Rundle Road		Emitter Address: The Region of Durham, 605 Rossland Road, Whitby, ON						
Pollutants or Parameter: WS, WD, Ambient T, P, RH and Rain	Instrument Make & Model: Miscellaneous Meterological Instrumentation	s/n: N/A						
Data Edit Period	Start Date: January 1, 2020	End Date: March 31, 2020	All testing done in EST					
Edit #	Edit date (dd/mm/yyyy)	Editor's Name	Edit Action	Starting Date (dd/mm/yyyy)	Hour (xx:xx)	Ending Date (dd/mm/yyyy)	Hour (xx:xx)	Reason

Table D9: 1st Quarter Edit Log for Discrete Sampling at Courtice Station

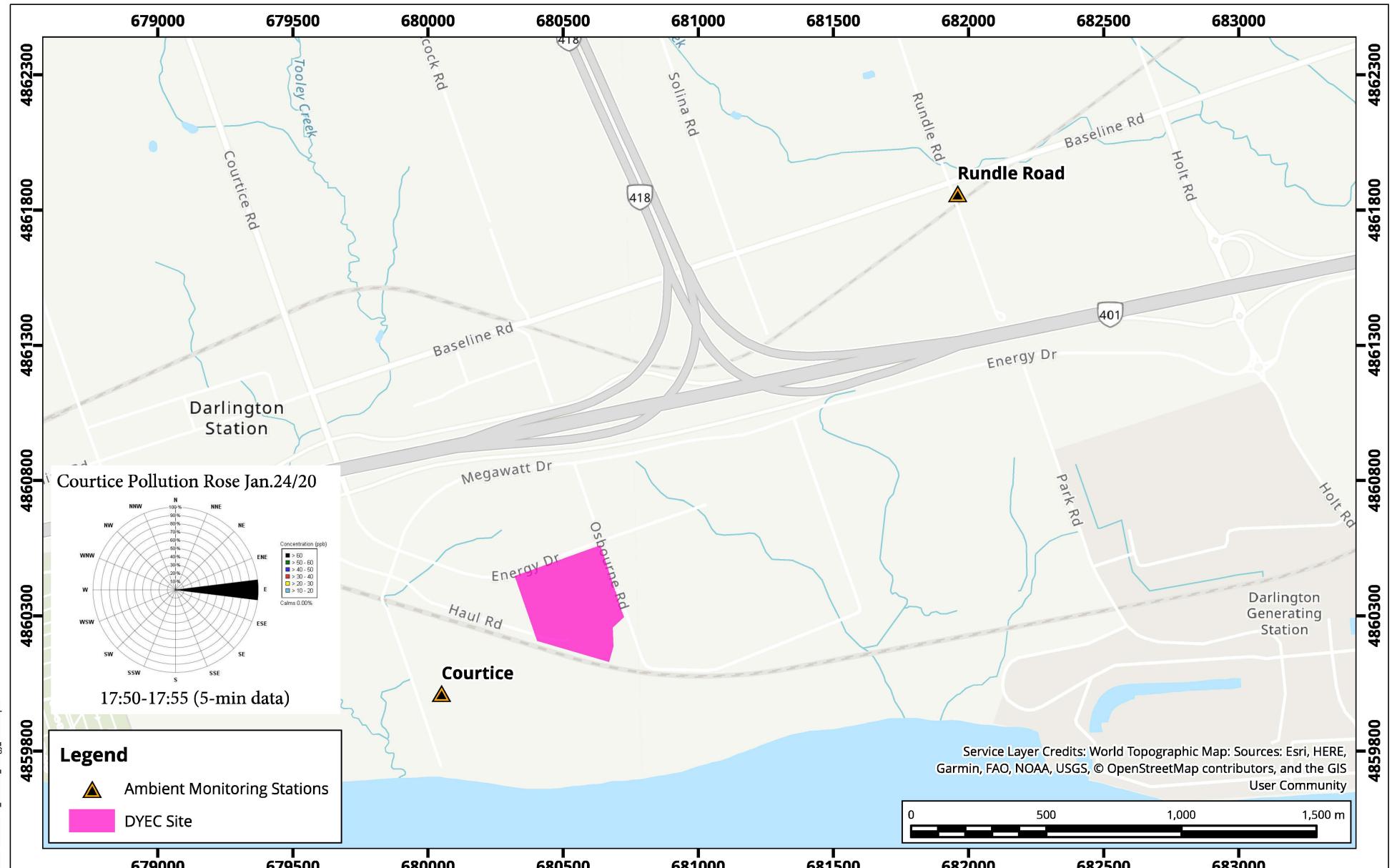
Emitter's Name: Durham York Energy Center								
Contact	Name: Ms. Lyndsay Waller	Phone: (905) 404-0888 ext 4107		Email: Lyndsay.Waller@Durham.ca				
Station Number: 45201			Station Name: Courtice Station					
Station Address: 100 Osbourne Road			Emitter Address: The Region of Durham, 605 Rossland Road, Whitby, ON					
Pollutants or Parameter: N/A		Instrument Make & Model: N/A					s/n:	
Data Edit Period		Start Date: January 1, 2020		End Date: March 31, 2020		All testing done in EST		
Edit #	Edit date (dd/mm/yyyy)	Editor's Name	Edit Action	Starting		Ending		Reason
				Date (dd/mm/yyyy)	Hour (xx:xx)	Date (dd/mm/yyyy)	Hour (xx:xx)	
1	15/01/2020	SRS	Maintenance	15/01/2020	16:00	15/01/2020	17:00	Began hardwiring of electrical for Hivol and PS1
2	17/01/2020	SRS	Maintenance	17/01/2020	15:00	17/01/2020	16:00	Finished hardwiring of electrical for Hivol and PS1
3	20/01/2020	MT	Troubleshooting (PS1)	20/01/2020	14:00	20/01/2020	15:00	Troubleshooting: PUF motors weren't able to get up to the correct pressure. Investigation revealed the lab had supplied different filter brands. This caused the January 4 and 16 samples to not reach the correct sample volumes.
4	05/03/2020	SRS	Maintenance	05/03/2020	12:00	05/03/2020	13:00	Enclosed pressure transducers and relay bypass switches in an electrical box (Hivol and PS1)
5	06/03/2020	SRS	Calibration (PS1)	06/03/2020	17:00	06/03/2020	17:00	Quarterly calibration (PS1)
6	07/03/2020	SRS	Calibration (Hivol)	07/03/2020	14:00	07/03/2020	15:00	Quarterly calibration (Hivol) and calibrated pressure transducers (PS1 and Hivol)

Table D10: 1st Quarter Edit Log for Discrete Sampling at Rundle Station

Emitter's Name: Durham York Energy Center								
Contact	Name: Ms. Lyndsay Waller	Phone: (905) 404-0888 ext 4107	Email: Lyndsay.Waller@Durham.ca					
Station Number: 45200		Station Name: Rundle Station						
Station Address: Rundle Rd		Emitter Address: The Region of Durham, 605 Rossland Road, Whitby, ON						
Pollutants or Parameter: N/A		Instrument Make & Model: N/A				s/n:		
Data Edit Period		Start Date: January 1, 2020		End Date: March 31, 2020		All testing done in EST		
Edit #	Edit date (dd/mm/yyyy)	Editor's Name	Edit Action	Starting		Ending		Reason
				Date (dd/mm/yyyy)	Hour (xx:xx)	Date (dd/mm/yyyy)	Hour (xx:xx)	
1	07/01/2020	SRS	Maintenance	07/01/2020	17:00	07/01/2020	18:00	Began hardwiring of electrical for Hivol and PS1
2	17/01/2020	SRS	Maintenance	08/01/2020	11:00	08/01/2020	12:00	Finished hardwiring of electrical for Hivol and PS1
3	20/01/2020	MT	Invalidated Sample (Hivol)	20/01/2020	13:00	20/01/2020	14:00	Invalid Hivol Sample on January 16: Filter covered in ice
4	20/01/2020	MT	Troubleshooting (PS1)	20/01/2020	13:00	20/01/2020	14:00	Troubleshooting: PUF motors weren't able to get up to the correct pressure. Investigation revealed the lab had supplied different filter brands.
5	27/01/2020	MT	Invalidated Sample (Hivol)	27/01/2020	12:00	27/01/2020	13:00	Invalid Hivol Sample on January 22: GFCI tripped
6	05/02/2020	SRS	Maintenance	05/02/2020	16:00	05/02/2020	17:00	Adjusted baseline offset on hivol pressure transducer
7	28/02/2020	MT	Invalidated Sample (Hivol)	28/02/2020	14:00	28/02/2020	15:00	Invalid Hivol Sample on February 27: Snow found inside of hivol inlet and tripped GFCI
8	06/03/2020	SRS	Calibration (Hivol & PS1)	06/03/2020	12:00	06/03/2020	13:00	Quarterly calibration (Hivol and PS1)
9	07/03/2020	SRS	Maintenance	07/03/2020	15:00	07/03/2020	16:00	Enclosed pressure transducers and relay bypass switches in an electrical box (Hivol and PS1). Calibrated pressure transducers.

APPENDIX E

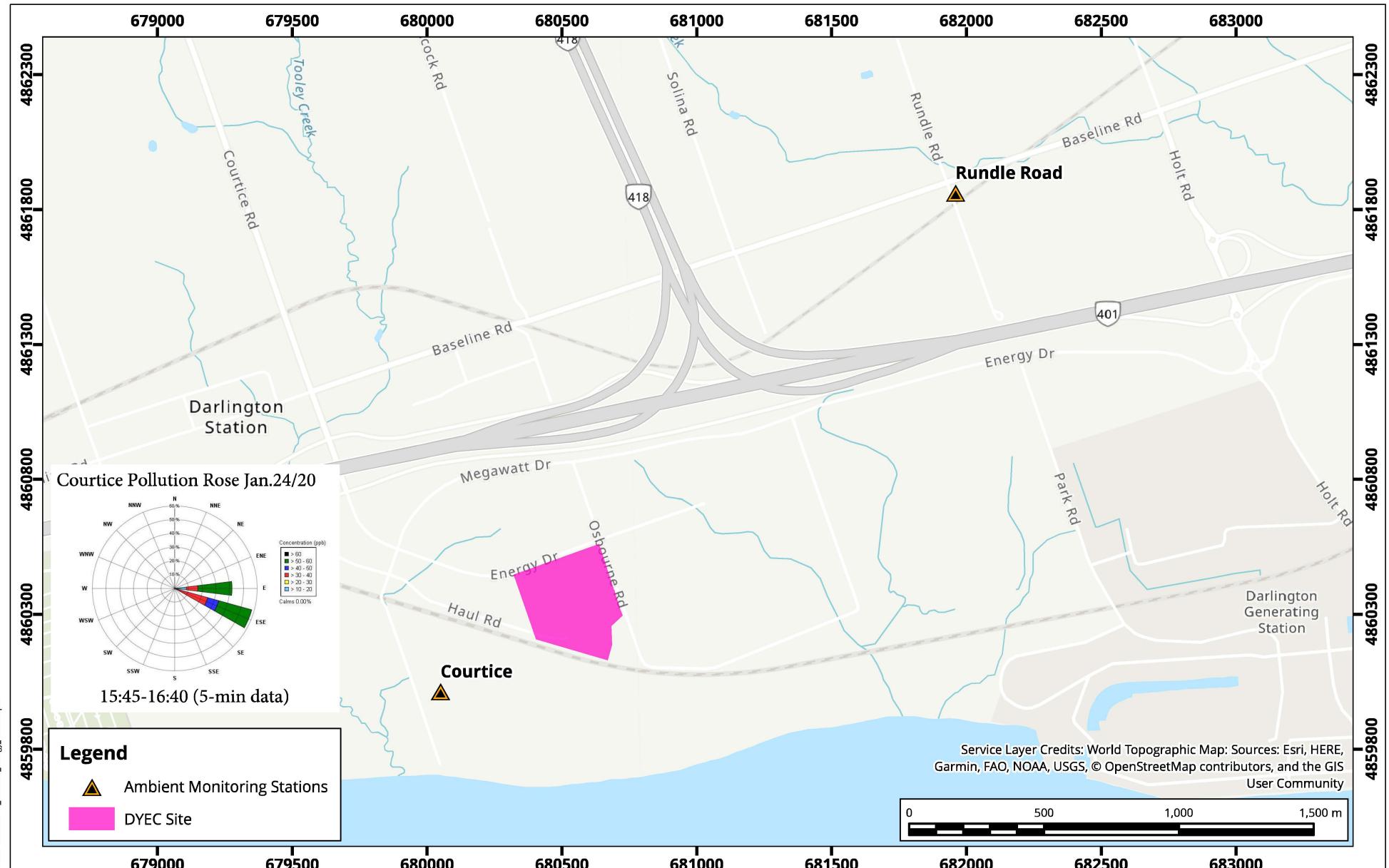




SO₂ 10-min Running Average Exceedance: January 24, 2020 17:55

Map Projection: NAD 1983 UTM Zone 17N
DYEC - Region of Durham, Ontario

Project #: 1803743

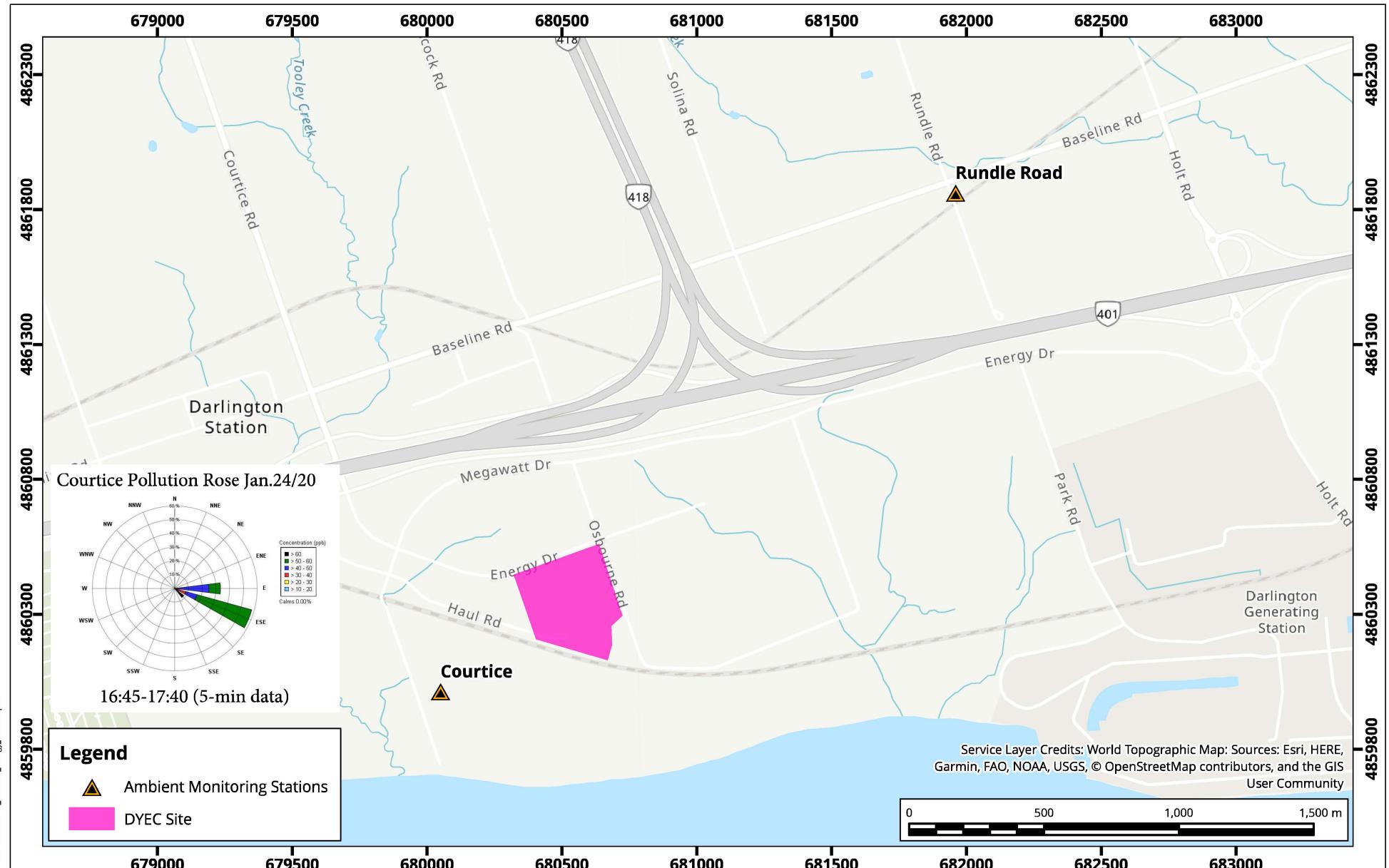


SO₂ 1-Hour Running Average Exceedance: January 24, 2020 16:40

Map Projection: NAD 1983 UTM Zone 17N
DYEC - Region of Durham, Ontario



Drawn by: VML	Figure: 2	
Approx. Scale: 1:20,000		
Date Revised: May 5, 2020		



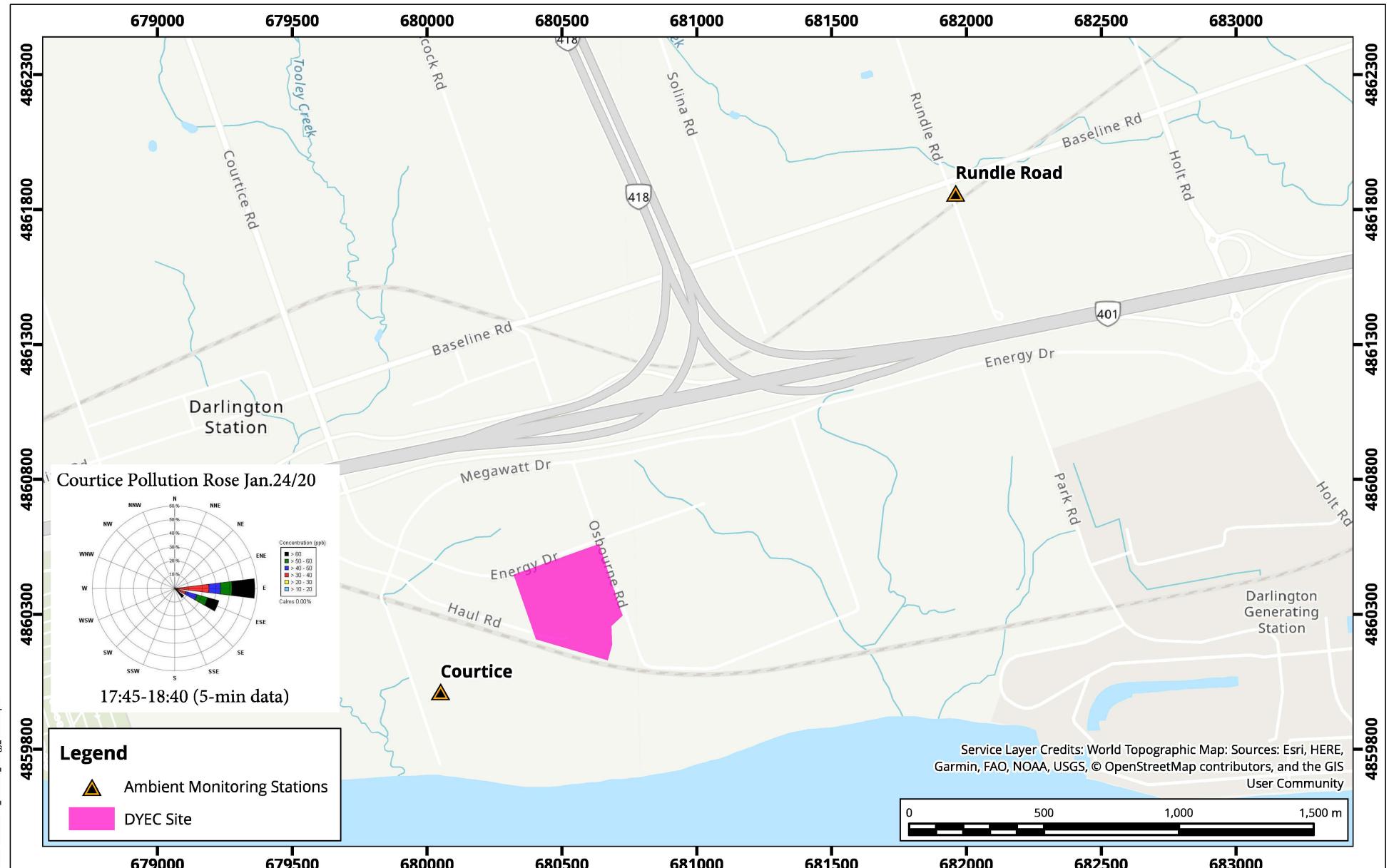
SO₂ 1-Hour Running Average Exceedance: January 24, 2020 17:40

Map Projection: NAD 1983 UTM Zone 17N
DYEC - Region of Durham, Ontario



Drawn by: VML
Figure: 3
Approx. Scale: 1:20,000
Project #: 1803743
Date Revised: May 5, 2020

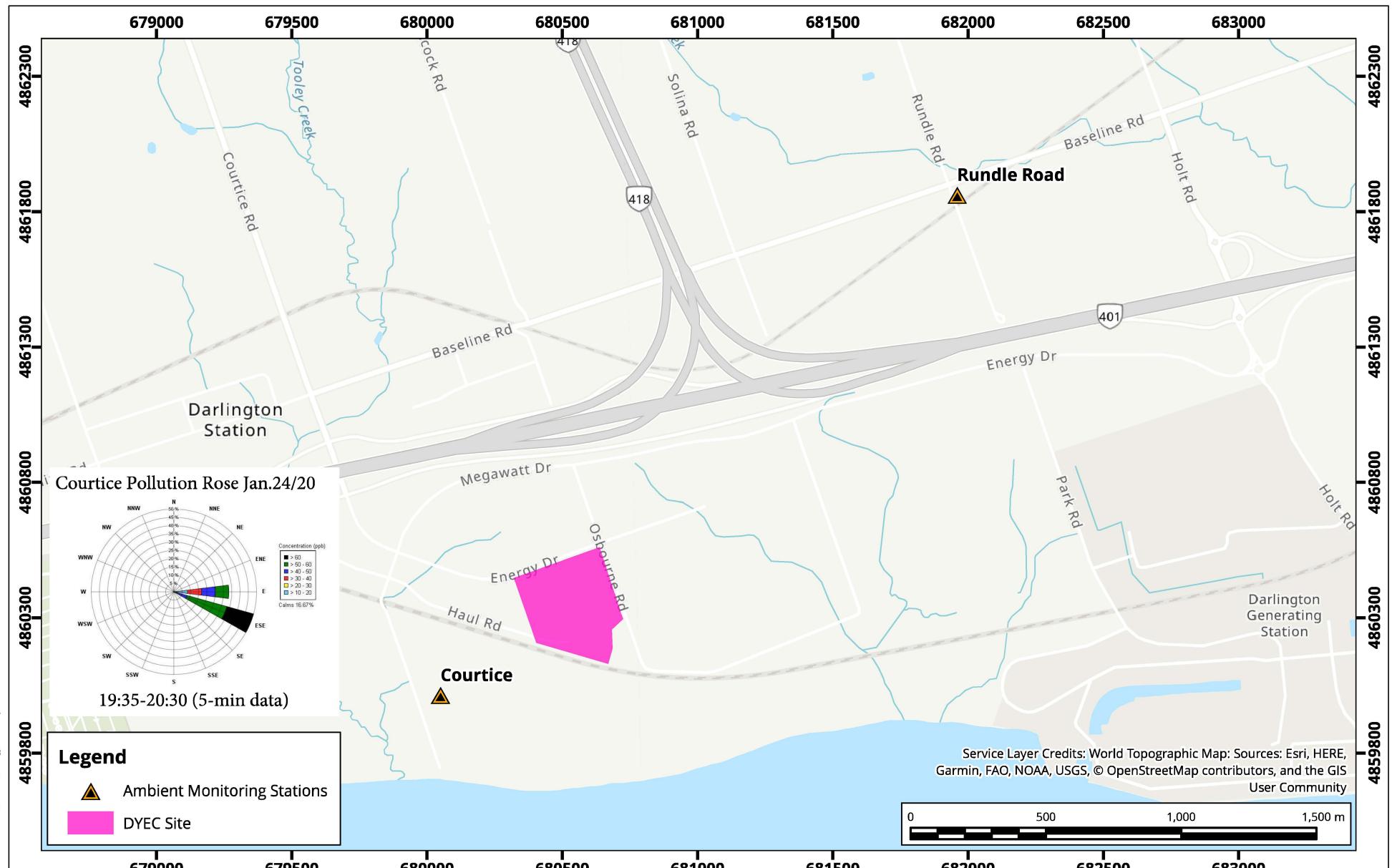




SO₂ 1-Hour Running Average Exceedance: January 24, 2020 18:40

Map Projection: NAD 1983 UTM Zone 17N
DYEC - Region of Durham, Ontario





SO₂ 1-Hour Running Average Exceedance: January 24, 2020 20:30

Map Projection: NAD 1983 UTM Zone 17N
DYEC - Region of Durham, Ontario

Project #: 1803743

Table E1. SO₂ Courtice Monitoring Station 10-min Running Average Exceedance Period on January 24, 2020

Date & Time	SO ₂ 5-min Avg.	SO ₂ 10-min Running Avg.
EST	ppb	ppb
24/01/2020 17:30	55.517	53.902
24/01/2020 17:35	41.936	48.727
24/01/2020 17:40	63.922	52.929
24/01/2020 17:45	65.415	64.668
24/01/2020 17:50	61.628	63.522
24/01/2020 17:55	82.391	<u>72.01</u>
24/01/2020 18:00	75.743	<u>79.067</u>
24/01/2020 18:05	49.038	62.39
24/01/2020 18:10	37.644	43.341
24/01/2020 18:15	50.972	44.308

D, T & V	Date, Time & Exceedance Value Reported (Reported exceedance is the first running avg. value highlighted)
<u>Max</u>	Maximum of the Range
<u>Min</u>	Minimum of the Range
Faded Values	These values are not used to calculate the number of reportable exceedances
	Range of 5-minute measurements that contribute to the exceedance value reported
}	Range of running average values during exceedance period
	Exceedance number

Table E2. SO₂ Courtice Monitoring Station 1-Hour Running Average Exceedance Periods on January 24, 2020

Date & Time	SO ₂ 5-min Avg.	SO ₂ 1-hr Running Avg.
EST	ppb	ppb
24/01/2020 15:00	0.899	5.352
24/01/2020 15:05	1.012	4.951
24/01/2020 15:10	1.797	3.842
24/01/2020 15:15	8.581	3.021
24/01/2020 15:20	15.327	3.303
24/01/2020 15:25	15.006	4.217
24/01/2020 15:30	5.486	4.518
24/01/2020 15:35	2.31	4.58
24/01/2020 15:40	3.415	4.738
24/01/2020 15:45	14.285	5.844
24/01/2020 15:50	38.518	8.968
24/01/2020 15:55	46.771	12.784
24/01/2020 16:00	50.29	16.9
24/01/2020 16:05	37.827	19.968
24/01/2020 16:10	33.705	22.627
24/01/2020 16:15	38.554	25.125
24/01/2020 16:20	50.816	28.082
24/01/2020 16:25	58.051	31.669
24/01/2020 16:30	55.436	35.832
24/01/2020 16:35	50.044	39.809
24/01/2020 16:40	51.985	43.857
24/01/2020 16:45	53.954	47.163
24/01/2020 16:50	54.247	48.473
24/01/2020 16:55	55.017	49.161
24/01/2020 17:00	57.267	49.742
24/01/2020 17:05	47.699	50.565
24/01/2020 17:10	43.399	51.372
24/01/2020 17:15	40.722	51.553
24/01/2020 17:20	34.681	50.209
24/01/2020 17:25	52.286	49.728
24/01/2020 17:30	55.517	49.735
24/01/2020 17:35	41.936	49.059
24/01/2020 17:40	63.922	50.054
24/01/2020 17:45	65.415	51.009
24/01/2020 17:50	61.628	51.624
24/01/2020 17:55	82.391	53.905
24/01/2020 18:00	75.743	55.445
24/01/2020 18:05	49.038	55.556
24/01/2020 18:10	37.644	55.077
24/01/2020 18:15	50.972	55.931
24/01/2020 18:20	38.181	56.223
24/01/2020 18:25	30.201	54.382
24/01/2020 18:30	35.003	52.673
24/01/2020 18:35	49.585	53.31
24/01/2020 18:40	53.377	52.432
24/01/2020 18:45	46.207	50.831
24/01/2020 18:50	33.014	48.446
24/01/2020 18:55	24.92	43.657
24/01/2020 19:00	33.687	40.152
24/01/2020 19:05	63.208	41.333
24/01/2020 19:10	55.207	42.797
24/01/2020 19:15	46.471	42.422
24/01/2020 19:20	50.38	43.438
24/01/2020 19:25	25.53	43.049
24/01/2020 19:30	7.706	40.774
24/01/2020 19:35	5.646	37.113
24/01/2020 19:40	9.654	33.469
24/01/2020 19:45	10.804	30.519
24/01/2020 19:50	33.511	30.56
24/01/2020 19:55	49.731	32.628
24/01/2020 20:00	52.039	34.157
24/01/2020 20:05	51.412	33.174
24/01/2020 20:10	54.13	33.085
24/01/2020 20:15	46.141	33.057
24/01/2020 20:20	60.034	33.862
24/01/2020 20:25	63.572	37.032
24/01/2020 20:30	57.735	41.201
24/01/2020 20:35	50.756	44.96
24/01/2020 20:40	43.893	47.813
24/01/2020 20:45	29.878	49.403
24/01/2020 20:50	12.592	47.659
24/01/2020 20:55	13.683	44.655
24/01/2020 21:00	18.591	41.868
24/01/2020 21:05	16.755	38.98
24/01/2020 21:10	8.49	35.177
24/01/2020 21:15	18.448	32.869
24/01/2020 21:20	38.095	31.041
24/01/2020 21:25	41.641	29.213
24/01/2020 21:30	43.064	27.991
24/01/2020 21:35	35.232	26.697
24/01/2020 21:40	33.221	25.807
24/01/2020 21:45	44.172	26.999
24/01/2020 21:50	36.804	29.016
24/01/2020 21:55	32.044	30.546
24/01/2020 22:00	39.016	32.249

D, T & V	Date, Time & Exceedance Value Reported (Reported exceedance is the first running avg. value highlighted)
<u>Max</u>	Maximum of the Range
<u>Min</u>	Minimum of the Range
Faded Values	These values are not used to calculate the number of reportable exceedances
	Range of 5-minute measurements that contribute to the exceedance value reported
<u>}</u>	Range of running average values during exceedance period
	Exceedance number

General Information

Information requested in this notification form is collected under the authority of the *Environmental Protection Act*, R.S.O. 1990 (EPA) and O. Reg. 419/05 and will be used to collect information relating to a measured or modelled air related exceedence as required by s.25(9), s.28(1) and s.30(3) of O. Reg. 419/05. The Ministry of the Environment (MOE) may also request additional information.

1. Questions regarding completion and submission of this notification form should be directed to your local MOE District Office. A list of these District Offices (including fax numbers) is available on the Ministry of the Environment Internet site at <http://www.ene.gov.on.ca/envision/org/op.htm#Reg/Dist>. A copy of this form may be acquired through the MOE public web site (www.ene.gov.on.ca) or by contacting any MOE office.
2. For notification under s.25(9) or 28(1), the completed notification form should be faxed, as soon as practicable, to the local Ministry of Environment (MOE) District Office which has jurisdiction over the area in which the facility is located.
3. For notification under s. 30, the completed notification form should be immediately faxed to the local Ministry of Environment (MOE) District Office which has jurisdiction over the area which the facility is located. If the exceedance is determined outside of the business hours of the District Office then the completed notification form should be faxed to the Spills Action Center (1-800-268-6061).
4. Information contained in this notification form may not be considered confidential and may be made available to the public upon request. Information may be claimed as confidential but will be subject to the *Freedom of Information and Protection of Privacy Act* (FOIPPA) and the EBR. If you do not claim confidentiality at the time of submitting the information, the Ministry of the Environment may make the information available to the public without further notice to you.

Instructions

This form should be used to notify the MOE of a measured or modeled air related exceedence as required under O. Reg. 419/05. Failure to notify the MOE as required by regulation constitutes an offence under the O. Reg. 419/05 and the EPA.

The generic term "limits" in the context of this form means any numerical Point of Impingement Concentration limit set by the MOE including standards in O. Reg. 419/05 and guidelines provided by the MOE (Ministry POI Limits). For a comprehensive list of MOE POI Limits please refer to the publication titled "Summary of O. Reg. 419/05 Standards, Point of Impingement Guidelines, and Ambient Air Quality Criteria (AAQC's)" available on the Ministry of the Environment Internet site at <http://www.ene.gov.on.ca/envision/gp/2424e01.htm>. Note that contaminants that have guidelines limits or recommended levels for chemicals with no standard or guideline may be considered "contaminants not listed in any of Schedules 1, 2 and 3 and discharges of the contaminant may cause an adverse effect" as this language appears in O. Reg. 419/05.

This form may be used for notification of exceedences of more than one contaminant; Table 1 (or equivalent) should be completed for each contaminant. If this notification is made pursuant to s. 30 in combination with ss. 25(9) or 28(1) then this form must be submitted immediately in accordance with s.30.

Regulatory Authority

28. (1) *A person who discharges or causes or permits the discharge of a contaminant shall, as soon as practicable, notify a provincial officer in writing if,*
 - (a) *the person uses an approved dispersion model to predict concentrations of the contaminant that result from the discharges and,*
 - (i) *the use of the model indicates that discharges of the contaminant may result in a contravention of section 18, 19 or 20;* or
 - (ii) *the contaminant is not listed in any of Schedules 1, 2 and 3 and the use of the model indicates that discharges of the contaminant may cause an adverse effect;*
 - (b) *measurements of air samples indicate that discharges of the contaminant may result in a contravention of section 18, 19 or 20;* or
 - (c) *the contaminant is not listed in any of Schedules 1, 2 and 3 and measurements of air samples indicate that discharges of the contaminant may cause an adverse effect.*
25. (9) *A person who is required under subsection (8) to complete the update of a report not later than March 31 in a year shall, as soon as practicable after that date, notify a provincial officer in writing if the person has started to use an approved dispersion model with respect to a contaminant for the purpose of completing the update but has not yet complied with section 12, and,*
 - (a) *the use of the model indicates that discharges of the contaminant may result in a contravention of section 18, 19 or 20; or*
 - (b) *the contaminant is not listed in any of Schedules 1, 2 and 3 and the use of the model indicates that discharges of the contaminant may cause an adverse effect.*
30. (1) *A person who discharges or causes or permits the discharge of a contaminant listed in Schedule 6 into the air shall comply with subsections (3) and (4) if there is reason to believe, based on any relevant information, that discharges of the contaminant may result in the concentration of the contaminant exceeding the half hour upper risk threshold or other time period upper risk threshold set out for that contaminant in Schedule 6 at a point of impingement.*
- (2) *Without limiting the generality of subsection (1), the reference in that subsection to relevant information includes relevant information from predictions of a dispersion model, including,*
 - (a) *an approved dispersion model or other dispersion model; or*
 - (b) *a dispersion model that is not used in accordance with this Regulation.*
- (3) *If subsection (1) applies to a discharge, the person who discharged or caused or permitted the discharge of the contaminant shall immediately notify the Director in writing.*



Notification of Exceedence – Regulation 419/05

Ministry of the Environment

1. Ministry of the Environment District Office Information

Date Form Submitted (Faxed)	Date Exceedednce Determined April 17, 2020
District Office York-Durham District Office	Fax Number (905) 427-5602
Supporting information attached? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
If yes, number of pages: 2	

2. Site Information

Name of Person Making the Notification Lyndsay Waller	Business Name Durham York Energy Centre				
North American Industry Classification System (NAICS) Code 562210	Business Activity Description <i>(a description of the business endeavour, this may include products sold, services provided, equipment used, etc.)</i> Waste Treatment and Disposal				
Site Name Courtice AQ Station And Rundle AQ Station	MOE District Office York-Durham District Office				
Address Information:					
Site Address - Street information (address that has civic numbering and street information includes street number, name, type and direction) 1835 Energy Drive	Unit Identifier (i.e. suite or apartment number)				
Survey Address (used for a rural location specified for a subdivided township, an unsubdivided township or unsurveyed territory)					
Lot and Conc.: used to indicate location within a subdivided township and consists of a lot number and a concession number Lot _____ Conc. _____	Part and Reference: used to indicate location within an unsubdivided township or unsurveyed territory, and consists of a part and a reference plan number indicating the location within that plan. Attach copy of the plan Part _____ Reference Plan _____				
Non Address Information (includes any additional information to clarify applicants' physical location)					
Municipality/Unorganized Township Courtice	County/District York-Durham	Postal Code L1E2R2			
Geo Reference					
Map Datum	Zone	Accuracy Estimate	Geo Referencing Method	UTM Easting	UTM Northing
Certificate of Approval Number (s) – attach a separate list if more space is required 7306-8FDKNX					

3. Type of Notification: Limit Exceedence – Table 1 or Table 2 should be completed and submitted with this notification of exceedence.

<input checked="" type="checkbox"/> This is a notification under Section 28(1) – Notice to Provincial Officer as a result of modelling or measurements relating to an exceedence of: (select all that apply)
<input type="checkbox"/> Schedule 1 <input type="checkbox"/> Schedule 2 <input type="checkbox"/> Schedule 3 <input type="checkbox"/> POI Guideline <input checked="" type="checkbox"/> Ambient Air Quality Criteria
<input type="checkbox"/> Other Limit (explain): _____
<input type="checkbox"/> This is a notification under Section 25 (9) – Notice to Provincial Officer as a result an update of an Emission Summary and Dispersion Modelling Report (select all that apply)
<input type="checkbox"/> Schedule 1 <input type="checkbox"/> Schedule 2 <input type="checkbox"/> Schedule 3 <input type="checkbox"/> POI Guideline <input type="checkbox"/> Ambient Air Quality Criteria
<input type="checkbox"/> Other Limit (explain): _____
Date that Refinement is anticipated to be complete (dd/mm/yyyy): _____
<input type="checkbox"/> This is a notification under Section 30 (3) – Notice to the Director as a result of an exceedence of Upper Risk Thresholds (Schedule 6)
<input type="checkbox"/> Yes <input type="checkbox"/> No

4. Follow-Up Action

Section 28 Notifications		
Will an Abatement Plan be submitted to the Ministry within 30 days of this notice as per s.29?		
<input type="checkbox"/> Yes	Type of Previously Approved Abatement Plan	Date Approved under s.29 of O. Reg. 419/05 (dd/mm/yyyy)
<input type="checkbox"/> No	If No, please provide the following:	
Section 30 (3) Notifications for URT exceedence		
Has an Emission Summary and Dispersion Modelling (ESDM) Report been prepared in accordance with s.30(4) and submitted to the Ministry?		
<input type="checkbox"/> Yes		
<input type="checkbox"/> No	If No, what is the anticipated submission date for the ESDM* (dd/mm/yyyy)? _____	
<small>* Note: The ESDM must be submitted within three months of the discharge</small>		

5. Model Based Assessment – please complete this section if notifying of a modelled exceedence (complete Table 1)

Was an ESDM Report prepared in accordance with s.26 O. Reg. 419/05?

 Yes NoIf yes, was the ESDM Report prepared to fulfill (*select all that apply*):

- s.22 of O. Reg. 419/05 - Application for Certificate of Approval under section 9 of the *Environmental Protection Act*
 s.23 of O. Reg. 419/05 - Requirement for Schedule 4 or 5 sector facilities
 s.24 of O. Reg. 419/05 - Notice issued by Director
 s.25 of O. Reg. 419/05 - Requirement for updating ESDM Report
 s.30(4) of O. Reg 419/05 – Required as result of URT exceedence
 s.32(13) of O. Reg. 419/05 – Required as part of a Request for Alternative Standard
 Other (please specify): _____

Was the approved dispersion model refined as required by s.12 O. Reg. 419/05 (i.e. operating conditions, emission rates)?

 Yes NoHave you modelled for additional receptor locations other than the maximum POI? (*please include figure showing maximum POI location*) Yes NoIf Yes, specify additional locations (i.e., land use) at which the exceedence may occur (*select all that apply – please include figure showing additional modelled locations*):

- Health Care Seniors Residence /
Long Term Care Facility Child Care Facility Educational Facility Dwelling Unknown
 Location Specified by
The Director (explain): _____ Other Location (explain): _____

6. Measurement Based Assessment – please complete this section if notifying of a measured exceedence (Complete Table 2 or equivalent)

Type of Monitor / Measurement Type	Date of Exceedence (dd/mm/yyyy)	Duration of Exceedence
PS-1 Air Sampler	28/03/2020	1 Events (24 hours)

Is the monitoring approved by the Ministry of the Environment?

 Yes If yes, please describe the approval: **7306-8FDKNX** No

Monitoring Reference Number: (if available)

Specify the location (i.e., land use) at which the exceedence did occur (*select all that apply*):

- Health Care Seniors Residence /
Long Term Care Facility Child Care Facility Educational Facility Dwelling Unknown
 Location Specified by
The Director (explain): _____ Other Location (explain): **Rundle AQ Station**

7. Statement of Company Official

I, the undersigned hereby declare that, to the best of my knowledge:

- The information contained herein and the information submitted is complete and accurate in every way and I am aware of the penalties against providing false information as per s.184(2) of the *Environmental Protection Act*.
- I have been authorized to act on behalf of the company identified in this form for the purpose of providing this notification of exceedence under O.Reg 419/05 to the Ministry of the Environment
- I have used the most recent notification form (as obtained from the Ministry of the Environment Internet site at <http://www.ene.gov.on.ca/envision/gp/index.htm#PartAir> or from my local Ministry District Office and I have included all necessary information required by O. Reg. 419/05 and identified on this form.

Name of Signing Authority (<i>please print</i>)	Title
Lyndsay Waller	Operations Technician

Civic Address (address that has civic numbering and street information includes street number, name, type and direction)	Unit Identifier (i.e. suite or apartment number)
1835 Energy Dr	

Delivery Designator:

If signing authority mailing address is a Rural Route, Suburban Service, Mobile Route or General Delivery (i.e., RR#3)

Municipality	Postal Station	Province/State	Country	Postal Code
Courtice		Ontario	Canada	L1E 2R2

Telephone Number (including area code & extension)	Fax Number (including area code)	E-mail Address
905-404-0888 x 4107		lyndsay.waller@durham.ca

Signature	Date (dd/mm/yyyy)

Table 1 - Information About Modelled Air Limit Exceedence – Contaminant Information

Location of Maximum POI Concentration (e.g. UTM, street address, etc.)						Land Use at Maximum Point of Impingement (if known)			
Contaminant ^(a)		CAS ^(b) Number	Type of Assessment (Air Dispersion Model Used)	Maximum POI ^(c) Concentration ($\mu\text{g}/\text{m}^3$)	Averaging Period (hours)	Current MOE AAQC or POI Limit ($\mu\text{g}/\text{m}^3$)	Limiting Effect	Schedule (1, 2 or 3)	Percentage of MOE AAQC or POI Limit
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									

Notes:

(a) Proper Chemical Name should be given (Abbreviations, acronyms, numeric codes, trade names and mixtures NOT ACCEPTABLE).

(b) CAS Number : Chemical Abstracts Services Number (UNIQUE Identifier for a chemical)

(c) POI Concentration : Point of Impingement Concentration

Table 2 - Information About Measured Air Limit Exceedence – Contaminant Information

Location of Monitor (Describe)			Date (dd/mm/yyyy)	Time	Sampling Period	Land Use at Monitor			
Rundle Station			28/03/2020	N/A	24-Hours				
		Type of Assessment (Measurement Method)	Maximum POI Concentration ($\mu\text{g}/\text{m}^3$)	Averaging Period (hours)	Current MOE AAQC POI Limi ($\mu\text{g}/\text{m}^3$)	Limiting Effect	Schedule (1, 2 or 3)	Percentage of MOE AAQC POI Limit	
1	Benzo(a)Pyrene	50-32-8	PUF	0.000058	24	0.00005	Health	AAQS	116%
3									
5									
7									
9									
11									
13									
15									
17									
19									

* For additional measurement locations / sampling times, please included additional tables

** If you are reporting more than one exceedence, include the time of the exceedence in the contaminant column

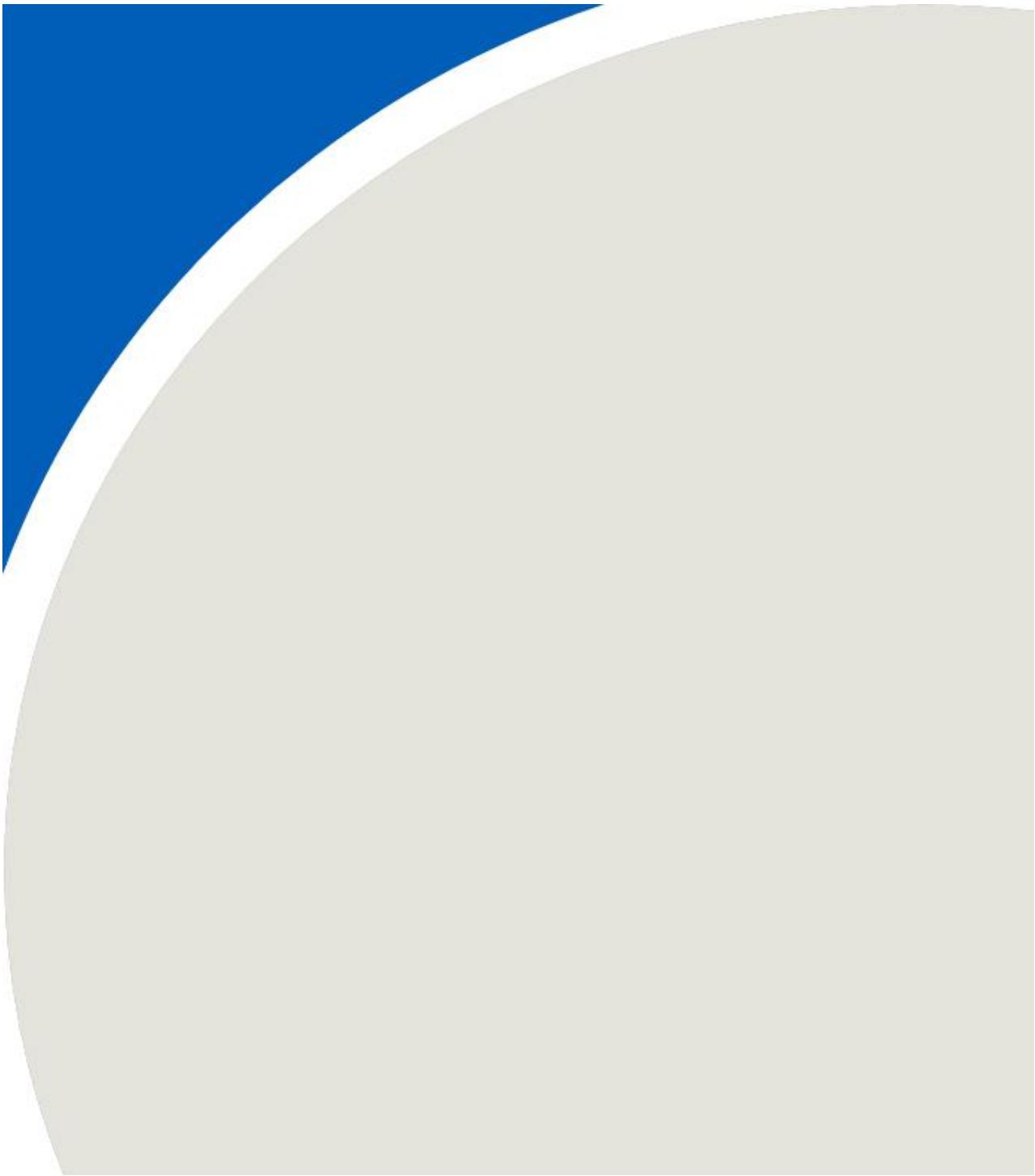
Notes:

(a) Proper Chemical Name should be given (Abbreviations, acronyms, numeric codes, trade names and mixtures NOT ACCEPTABLE).

(b) CAS Number : Chemical Abstracts Services Number (UNIQUE Identifier for a chemical)

(c) POI Concentration : Point of Impingement Concentration

MEMO





600 Southgate Drive
Guelph ON Canada
N1G 4P6

Tel: +1.519.823.1311
Fax: +1.519.823.1316
E-mail: solutions@rwdi.com

MEMORANDUM

DATE:	2020-04-20	RWDI Reference No.: 1803743
TO:	Lyndsay Waller	EMAIL: Lyndsay.Waller@Durham.ca
CC:	Andrew Evans	EMAIL: Andrew.Evans@Durham.ca
CC:	Gioseph Anello	EMAIL: Gioseph.Anello@Durham.ca
FROM:	John DeYoe	EMAIL: jd@rwdi.com
RE:	Exceedance Report – Benzo(a)Pyrene March 28, 2020 Region of Durham, DYEC	

On April 17, 2020 the results from ALS Environmental were received regarding the PAH results from the March 28, 2020 sampling event. On April 20, 2020, the results were entered and assessed, and it was found that there was a measured Benzo(a)Pyrene concentration in excess of the 24-hour AAQC on the March 28 sampling date. Attached is the Exceedance Form PIBS 5354e for your reference. Below is a summary of the event.

March 28, 2020

On Saturday, March 28, 2020, there was one exceedance of the Benzo(a)Pyrene 24-hour AAQC, which occurred at the Rundle Road Station measured at the onsite PUF PS-1 sampler. Attached is a figure depicting the wind rose (indicating the wind speed and direction during the sampling day), and the location of the sampling station relative to the DYEC.

The following summarizes the BaP concentration and onsite conditions during the March 28th sampling date:

1. The guideline concentration for BaP is 0.00005 ug/m³. The measured concentration at the Rundle Road Station sampler was 0.000058 ug/m³. During the sampling day the wind was recorded predominantly from the ENE to ESE as recorded at the Rundle Meteorological Tower. Wind speeds ranged from 6.3 kph to 26.5 kph.
2. According to the Rundle meteorological data, the Rundle Road Station was neither upwind or downwind of the DYEC during the sampling period. Since the winds were coming from the East, it is likely that the measured BaP exceedances may be attributed to sources other than the Energy Centre operations.



Lyndsay Waller
Durham York Energy Centre
RWDI#1803743
APRIL 20, 2020

At the Rundle Station, the NO₂ and SO₂ values were less than 5% of the criteria for the same period. The PM_{2.5} 24-hour average value was 3.54 micrograms per cubic meter.

The Rundle Road March 28th BaP exceedance was likely the result of localized temporary source or unidentified error related to handling or analysis.

We have also attached the raw data files for the sample in question to aid with the review.

Respectfully submitted by:

RWDI AIR Inc.

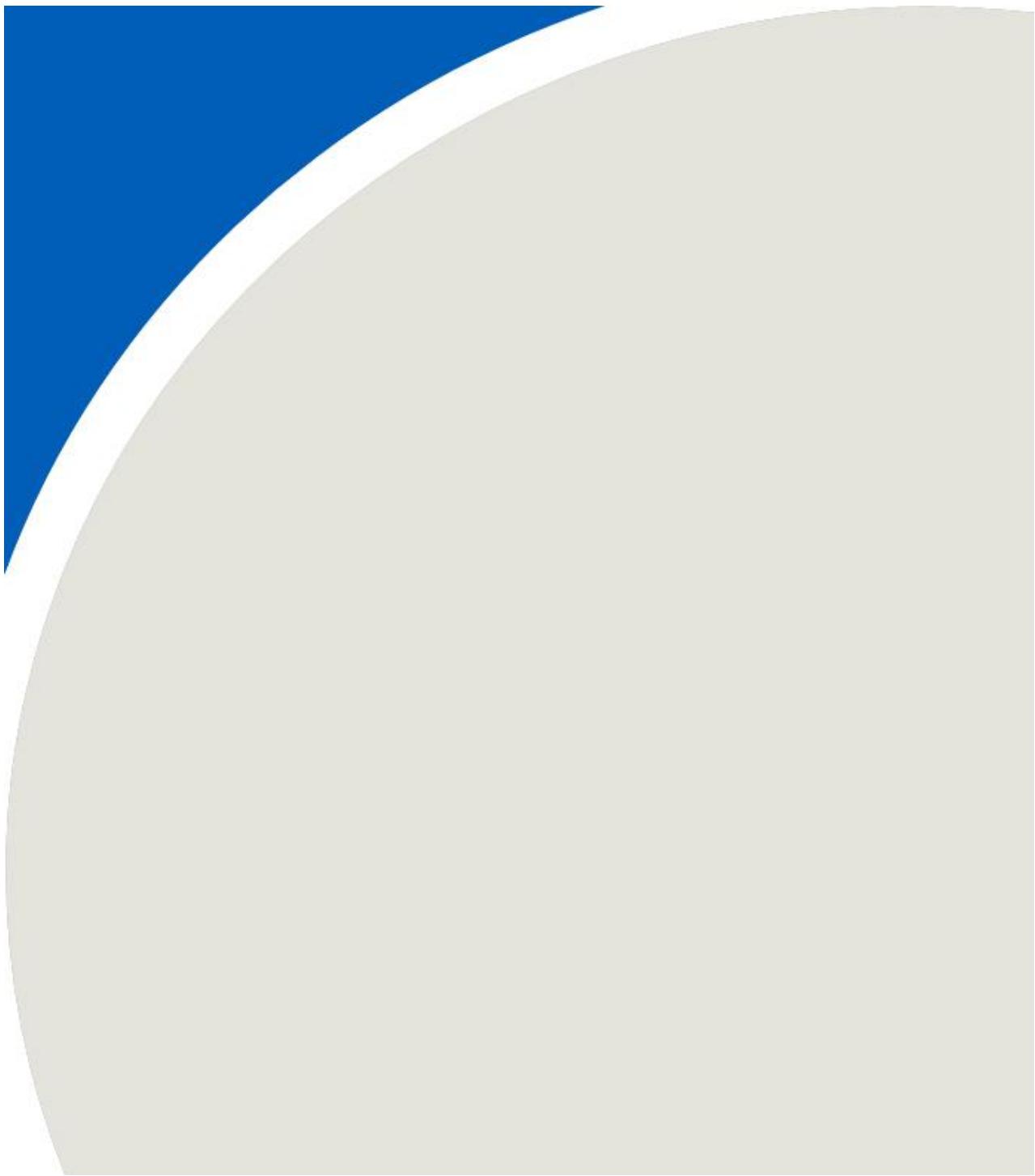
A handwritten signature in black ink that reads "John DeYoe".

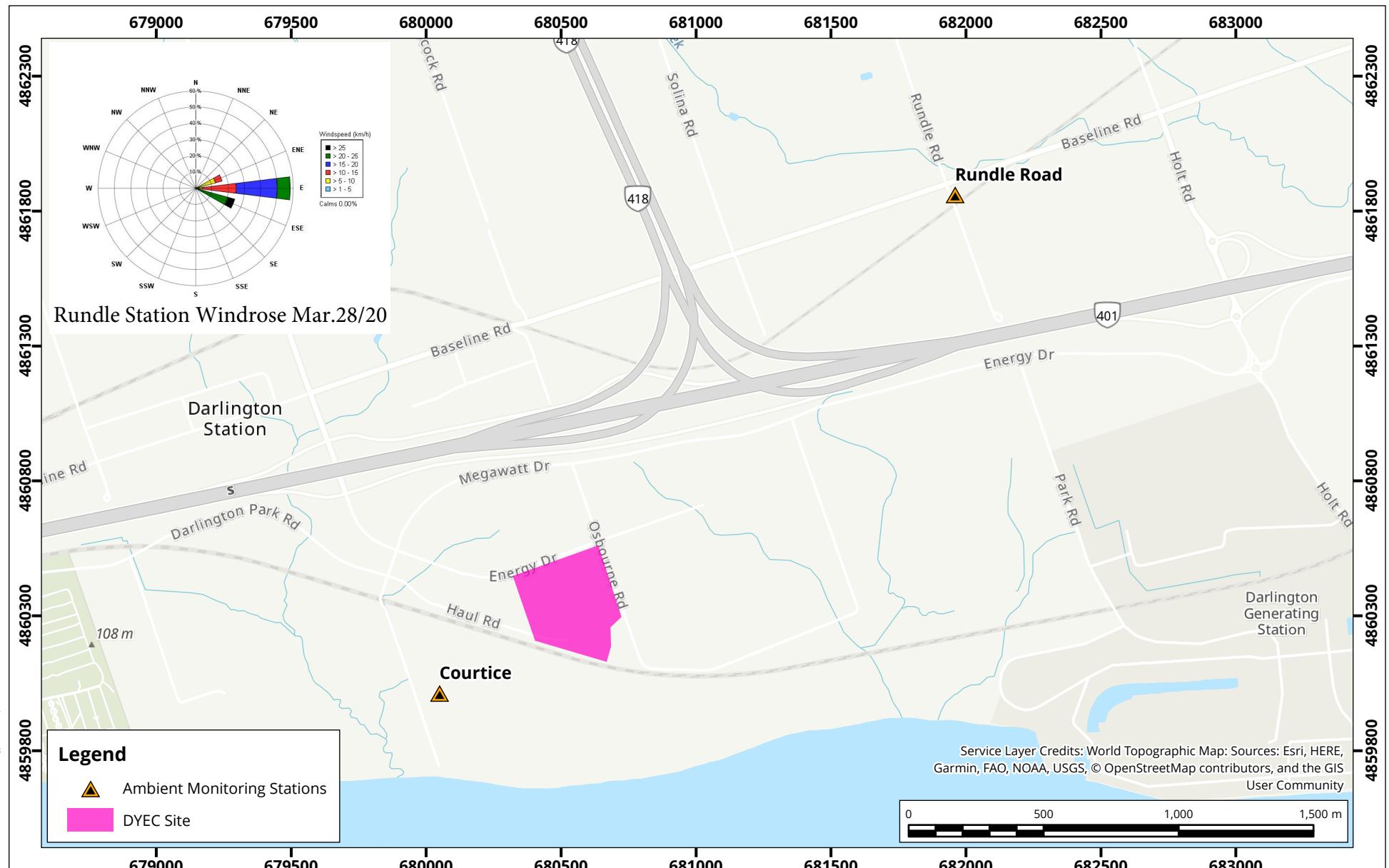
John DeYoe, B.A.
Senior Consultant / Principal

JD

Attach.

FIGURE





DYEC Site and Ambient Monitoring Station Locations

Map Projection: NAD 1983 UTM Zone 17N
DYEC - Region of Durham, Ontario

	True North	Drawn by: DJH Figure: 1	
	Approx. Scale: 1:20,000		
	Date Revised: Apr 17, 2020		

SUPPORTING DATA





1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
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Certificate of Analysis

ALS Project Contact: Claire Kocharakkal
ALS Project ID: 23601
ALS WO#: L2433655
Date of Report: 17-Apr-20
Date of Sample Receipt: 2-Apr-20

Client Name: RWDI Air Inc.
Client Address: 600 Southgate Drive
Guelph, ON N1G 4P6
Canada
Client Contact: John DeYoe
Client Project ID: DYEC

COMMENTS: PAH by CARB method 429 (LR option)- Isotope dilution

The recoveries of a few of the labelled standards were below the method control limit. Native target data are not expected to be biased as a result. Field standard recoveries are within limits.

Certified by:

A handwritten signature in black ink that appears to read "Steve Kennedy".

Steve Kennedy
Technical Supervisor

Results in this certificate relate only to the samples as submitted to the laboratory.

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ALS Life Sciences						
Sample Analysis Summary Report						
Sample Name	Method Blank	Method Blank	RUNDLE-DX/PAH-MAR28	COURTICE-DX/PAH-MAR28	Laboratory Control Sample	
ALS Sample ID	WG3302880-1	WG3302880-4	L2433655-1	L2433655-2	WG3302880-2	
Sample Size	1	1	1	1	1	1
Sample units	sample	sample	sample	sample	n/a	n/a
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	QC	QC	Puf	Puf	QC	QC
Sampling Date	n/a	n/a	28-Mar-20	28-Mar-20	n/a	n/a
Extraction Date	3-Apr-20	3-Apr-20	3-Apr-20	3-Apr-20	3-Apr-20	3-Apr-20
Target Analytes	ng/sample	ng/sample	ng/sample	ng/sample	ng/sample	%
Naphthalene	126 R	26.0 R	10800	12100	93.1	
2-Methylnaphthalene	8.42	3.18 M	2450	3730	92.5	
1-Methylnaphthalene	6.38	2.26	1700	2410	101.3	
Acenaphthylene	<0.40 U	<0.40 U	30.8 R	52.6 R	86.5	
Acenaphthene	<0.40 U	<0.40 U	786	1340	70.5	
Fluorene	4.36 R	1.20 R	806	1210	76.2	
Phenanthrene	8.14	2.90	1360	2260	93.5	
Anthracene	1.18	<0.40 U	21.6 M	36.3 M	87.0	
Fluoranthene	3.40 R	1.20	296	448	88.0	
Pyrene	3.50	1.14	148	192	89.7	
Benz(a)Anthracene	<0.40 U	<0.40 U	8.52 R	9.38 R	99.4	
Chrysene	<0.40 U	<0.40 U	56.1	59.3	90.2	
Benz(b)Fluoranthene	<0.40 U	<0.40 U	44.1	45.8	107.1	
Benz(k)Fluoranthene	<0.40 U	<0.40 U	24.8 M	27.7 M	103.9	
Benz(e)Pyrene	<0.40 U	<0.40 U	18.4 M	24.5	94.0	
Benz(a)Pyrene	<0.40 U	<0.40 U	18.5	12.5 M	88.6 M	
Perylene	<0.40 U	<0.40 U	<0.40 U	<0.40 U	113.9	
Indeno(1,2,3-cd)Pyrene	<0.40 U	<0.40 U	22.2	25.5	86.5	
Dibenzo(a,h)Anthracene	<0.40 U	<0.40 U	2.80 R	3.16	86.6	
Benz(g,h,i)Perylene	<0.40 U	<0.40 U	22.0	25.5	89.7	
Additional Analytes						
Tetralin	56.8	1.34 R	811	913		
Biphenyl	3.20	1.22	1250	1430		
o-Terphenyl	<0.40 U	<0.40 U	7.04	6.42		
Benz(a)fluorene	<0.40 U	<0.40 U	21.5 M	23.6 M		
Benz(b)fluorene	<0.40 U	<0.40 U	9.50	11.1		
Field Sampling Standards	% Rec	% Rec	% Rec	% Rec	% Rec	
1-Methylnaphthalene-D10	NS	NS	86.6	103.5	NS	
Fluorene D10	NS	NS	83.7	98.4	NS	
Terphenyl D14 (Sur.)	NS	NS	128.9 M	132.5 M	NS	
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	
Naphthalene D8	31.1	54.9	30.4 R	33.1 R	38.1	
2-Methylnaphthalene-D10	39.3	66.5	40.6	43.8	50.0	
Acenaphthylene D8	62.3	105.3	60.4	58.0	83.1	
Phenanthrene D10	54.4	103.0	47.1	49.5	67.0	
Anthracene-D10	55.0	113.8	50.5	54.2	76.6	
Fluoranthene D10	65.9	133.6	65.8	68.3	83.4	
Benz(a)Anthracene-D12	58.6	116.7	47.7	53.2	76.7	
Chrysene D12	59.2	125.3	51.8	55.5	88.7	
Benz(b)Fluoranthene-D12	69.4	129.4	43.1	47.7	72.2	
Benz(k)Fluoranthene-D12	52.3	106.2 R	41.1 R	45.1	68.8	
Benz(a)Pyrene D12	56.1 M	96.1 M	38.4 M	45.7 M	71.5 M	
Perylene D12	55.0	101.8	42.0	39.2	69.1	
Indeno(1,2,3-cd)Pyrene-D12	63.7	110.9	39.4	38.0	70.6	
Dibenzo(a,h)Anthracene-D14	58.2	106.4	37.4	35.1	68.7	
Benz(g,h,i)Perylene D12	57.1	105.8	38.2	37.2	67.0	
U	Indicates that this compound was not detected above the LOD.					
M	Indicates that a peak has been manually integrated.					
NS	Indicates that this compound was not spiked in					
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.					

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Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date n/a	Extraction Date 3-Apr-20	Approved: <i>Andrew Reid</i> --e-signature-- 09-Apr-2020
ALS Sample ID	WG3302880-1			
Analysis Method				
PAH by CARB 429				
Analysis Type				
blank				
Sample Matrix				
MEDIA				
Sample Size	1	sample	Workgroup	WG3302880
Percent Moisture	n/a			
Split Ratio	2			
Run Information				
Run 1				
Filename	20040807.D			
Run Date	4/8/2020 7:44			
Final Volume	0.1 mL			
Dilution Factor	1			
Analysis Units	ng/sample			
Instrument	MSD-5			
Column	HP5MS UST530312H			
Target Analytes				
Target Analytes	Ret. Time	Concentration ng/sample	Flags	
Naphthalene	2.79	126	R	
2-Methylnaphthalene	3.39	8.42		
1-Methylnaphthalene	3.50	6.38		
Acenaphthylene	NotFnd	<0.40	U	
Acenaphthene	NotFnd	<0.40	U	
Fluorene	5.71	4.36	R	
Phenanthrene	7.86	8.14		
Anthracene	7.98	1.18		
Fluoranthene	11.23	3.40	R	
Pyrene	11.86	3.50		
Benzo(a)Anthracene	NotFnd	<0.40	U	
Chrysene	NotFnd	<0.40	U	
Benzo(b)Fluoranthene	NotFnd	<0.40	U	
Benzo(k)Fluoranthene	NotFnd	<0.40	U	
Benzo(e)Pyrene	NotFnd	<0.40	U	
Benzo(a)Pyrene	NotFnd	<0.40	U	
Perylene	NotFnd	<0.40	U	
Indeno(1,2,3-cd)Pyrene	NotFnd	<0.40	U	
Dibenzo(a,h)Anthracene	NotFnd	<0.40	U	
Benzo(g,h,i)Perylene	NotFnd	<0.40	U	
Additional Analytes				
Tetralin	2.67	56.8		
Biphenyl	3.92	3.20		
o-Terphenyl	NotFnd	<0.40	U	
Benzo(a)fluorene	NotFnd	<0.40	U	
Benzo(b)fluorene	NotFnd	<0.40	U	
Extraction Standards				
		% Rec	Limits	
Naphthalene D8	200	2.78	31.1	50-150
2-Methylnaphthalene-D10	200	3.36	39.3	50-150
Acenaphthylene D8	200	4.49	62.3	50-150
Phenanthrene D10	200	7.81	54.4	50-150
Anthracene-D10	200	7.93	55.0	50-150
Fluoranthene D10	200	11.18	65.9	50-150
Benz(a)Anthracene-D12	200	15.67	58.6	50-150
Chrysene D12	200	15.79	59.2	50-150
Benzo(b)Fluoranthene-D12	200	19.00	69.4	50-150
Benzo(k)Fluoranthene-D12	200	19.08	52.3	50-150
Benzo(a)Pyrene D12	200	19.88	56.1 M	50-150
Perylene D12	200	20.10	55.0	50-150
Indeno(1,2,3-cd)Pyrene-D12	200	23.29	63.7	50-150
Dibenzo(a,h)Anthracene-D14	200	23.44	58.2	50-150
Benzo(g,h,i)Perylene D12	200	24.18	57.1	50-150
M	Indicates that a peak has been manually integrated.			
U	Indicates that this compound was not detected above the MDL.			
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.			

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Sample Analysis Report

Sample Name	Method Blank	Sampling Date n/a	Extraction Date 3-Apr-20	
ALS Sample ID	WG3302880-4			
Analysis Method	PAH by CARB 429			
Analysis Type	sample			
Sample Matrix	REAGENT			
Sample Size	1 sample			
Percent Moisture	n/a			
Split Ratio	2			
		Workgroup	WG3302880	Approved: <i>Andrew Reid</i> --e-signature-- 09-Apr-2020
Run Information		Run 1		
Filename	20040808.D			
Run Date	4/8/2020 8:20			
Final Volume	0.1 mL			
Dilution Factor	1			
Analysis Units	ng/sample			
Instrument	MSD-5			
Column	HP5MS UST530312H			
Target Analytes	Ret. Time	Concentration ng/sample	Flags	
Naphthalene	2.78	26.0	R	
2-Methylnaphthalene	3.38	3.18 M		
1-Methylnaphthalene	3.49	2.26		
Acenaphthylene	NotFnd	<0.40	U	
Acenaphthene	NotFnd	<0.40	U	
Fluorene	5.71	1.20	R	
Phenanthrene	7.86	2.90		
Anthracene	7.98	<0.40	U	
Fluoranthene	11.22	1.20		
Pyrene	11.86	1.14		
Benzo(a)Anthracene	NotFnd	<0.40	U	
Chrysene	NotFnd	<0.40	U	
Benzo(b)Fluoranthene	NotFnd	<0.40	U	
Benzo(k)Fluoranthene	NotFnd	<0.40	U	
Benzo(e)Pyrene	NotFnd	<0.40	U	
Benzo(a)Pyrene	NotFnd	<0.40	U	
Perylene	NotFnd	<0.40	U	
Indeno(1,2,3-cd)Pyrene	NotFnd	<0.40	U	
Dibenzo(a,h)Anthracene	NotFnd	<0.40	U	
Benzo(g,h,i)Perylene	NotFnd	<0.40	U	
Additional Analytes				
Tetralin	2.66	1.34	R	
Biphenyl	3.92	1.22		
o-Terphenyl	NotFnd	<0.40	U	
Benzo(a)fluorene	NotFnd	<0.40	U	
Benzo(b)fluorene	NotFnd	<0.40	U	
Extraction Standards		% Rec	Limits	
Naphthalene D8	200	2.76	54.9	50-150
2-Methylnaphthalene-D10	200	3.35	66.5	50-150
Acenaphthylene D8	200	4.49	105.3	50-150
Phenanthrene D10	200	7.81	103.0	50-150
Anthracene-D10	200	7.93	113.8	50-150
Fluoranthene D10	200	11.18	133.6	50-150
Benz(a)Anthracene-D12	200	15.68	116.7	50-150
Chrysene D12	200	15.79	125.3	50-150
Benzo(b)Fluoranthene-D12	200	19.00	129.4	50-150
Benzo(k)Fluoranthene-D12	200	19.08	106.2 R	50-150
Benzo(a)Pyrene D12	200	19.87	96.1 M	50-150
Perylene D12	200	20.10	101.8	50-150
Indeno(1,2,3-cd)Pyrene-D12	200	23.29	110.9	50-150
Dibenzo(a,h)Anthracene-D14	200	23.44	106.4	50-150
Benzo(g,h,i)Perylene D12	200	24.18	105.8	50-150
M	Indicates that a peak has been manually integrated.			
U	Indicates that this compound was not detected above the MDL.			
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.			

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Sample Analysis Report

Sample Name	RUNDLE-DX/PAH-MAR28	Sampling Date	28-Mar-20 00:00			
ALS Sample ID	L2433655-1	Extraction Date	3-Apr-20			
Analysis Method	PAH by CARB 429					
Analysis Type	sample					
Sample Matrix	Puf					
Sample Size	1	Workgroup	WG3302880			
Percent Moisture	n/a					
Split Ratio	2					
			Approved: Andrew Reid --e-signature-- 09-Apr-2020			
Run Information	Run 1	Run 2				
Filename	20040811.D	20040809.D				
Run Date	4/8/2020 10:07	4/8/2020 8:56				
Final Volume	0.1 mL	0.1 mL				
Dilution Factor	1	10				
Analysis Units	ng/sample	ng/sample				
Instrument	MSD-5	MSD-5				
Column	HP5MS UST530312H	HP5MS UST530312H				
Target Analytes	Ret. Time	Concentration ng/sample	Flags	Ret. Time.	Concentration ng/sample	Flags
Naphthalene				2.79	10800	
2-Methylnaphthalene				3.39	2450	
1-Methylnaphthalene				3.50	1700	
Acenaphthylene	4.51	30.8	R			
Acenaphthene				4.80	786	
Fluorene				5.71	806	
Phenanthrene				7.86	1360	
Anthracene	7.98	21.6 M				
Fluoranthene	11.22	296				
Pyrene	11.86	148				
Benzo(a)Anthracene	15.74	8.52	R			
Chrysene	15.87	56.1				
Benzo(b)Fluoranthene	19.07	44.1				
Benzo(k)Fluoranthene	19.11	24.8 M				
Benzo(e)Pyrene	19.81	18.4 M				
Benzo(a)Pyrene	19.94	18.5				
Perylene	NotFnd	<0.40	U			
Indeno(1,2,3-cd)Pyrene	23.37	22.2				
Dibenz(a,h)Anthracene	23.56	2.80	R			
Benzo(g,h,i)Perylene	24.28	22.0				
Additional Analytes						
Tetralin				2.67	811	
Biphenyl				3.92	1250	
o-Terphenyl	9.14	7.04				
Benzo(a)fluorene	13.02	21.5 M				
Benzo(b)fluorene	13.25	9.50				
Field Sampling Standards	ng spiked	% Rec		% Rec		
1-Methylnaphthalene-D10	400	3.46		86.6		
Fluorene D10	400	5.65		83.7		
Terphenyl D14(Surr.)	400	12.68		128.9 M		
Extraction Standards		% Rec	Limits		% Rec	
Naphthalene D8	200		50-150	2.78	30.4	R
2-Methylnaphthalene-D10	200		50-150	3.36	40.6	
Acenaphthylene D8	200	4.49	50-150			
Phenanthrene D10	200	7.81	50-150			
Anthracene-D10	200	7.93	50-150			
Fluoranthene D10	200	11.18	50-150			
Benz(a)Anthracene-D12	200	15.68	50-150			
Chrysene D12	200	15.79	50-150			
Benzo(b)Fluoranthene-D12	200	19.00	50-150			
Benzo(k)Fluoranthene-D12	200	19.09	50-150			
Benzo(a)Pyrene D12	200	19.87	50-150			
Perylene D12	200	20.11	50-150			
Indeno(1,2,3,cd)Pyrene-D12	200	23.30	50-150			
Dibenz(a,h)Anthracene-D14	200	23.44	50-150			
Benzo(g,h,i)Perylene D12	200	24.18	50-150			
M	Indicates that a peak has been manually integrated.					
U	Indicates that this compound was not detected above the MDL.					
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.					

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Sample Analysis Report

Sample Name	COURTICE-DX/PAH-MAR28	Sampling Date	28-Mar-20 00:00			
ALS Sample ID	L2433655-2	Extraction Date	3-Apr-20			
Analysis Method	PAH by CARB 429					
Analysis Type	sample					
Sample Matrix	Puf					
Sample Size	1	Workgroup	WG3302880			
Percent Moisture	n/a					
Split Ratio	2					
			Approved: Andrew Reid --e-signature-- 09-Apr-2020			
Run Information	Run 1	Run 2				
Filename	20040812.D	20040810.D				
Run Date	4/8/2020 10:43	4/8/2020 9:31				
Final Volume	0.1 mL	0.1 mL				
Dilution Factor	1	10				
Analysis Units	ng/sample	ng/sample				
Instrument	MSD-5	MSD-5				
Column	HP5MS UST530312H	HP5MS UST530312H				
Target Analytes	Ret. Time	Concentration ng/sample	Flags	Ret. Time.	Concentration ng/sample	Flags
Naphthalene				2.79	12100	
2-Methylnaphthalene				3.39	3730	
1-Methylnaphthalene				3.50	2410	
Acenaphthylene	4.51	52.6	R			
Acenaphthene				4.80	1340	
Fluorene				5.71	1210	
Phenanthrene				7.86	2260	
Anthracene	7.98	36.3 M				
Fluoranthene				11.22	448	
Pyrene	11.86	192				
Benzo(a)Anthracene	15.74	9.38	R			
Chrysene	15.86	59.3				
Benzo(b)Fluoranthene	19.07	45.8				
Benzo(k)Fluoranthene	19.11	27.7 M				
Benzo(e)Pyrene	19.81	24.5				
Benzo(a)Pyrene	19.94	12.5 M				
Perylene	NotFnd	<0.40	U			
Indeno(1,2,3-cd)Pyrene	23.38	25.5				
Dibenzo(a,h)Anthracene	23.56	3.16				
Benzo(g,h,i)Perylene	24.28	25.5				
Additional Analytes						
Tetralin				2.67	913	
Biphenyl				3.92	1430	
o-Terphenyl	9.14	6.42				
Benzo(a)fluorene	13.02	23.6 M				
Benzo(b)fluorene	13.25	11.1				
Field Sampling Standards	ng spiked	% Rec				
1-Methylnaphthalene-D10	400	3.45	103.5			
Fluorene D10	400	5.65	98.4			
Terphenyl D14(Surr.)	400	12.68	132.5 M			
Extraction Standards		% Rec	Limits	% Rec		
Naphthalene D8	200		50-150	2.78	33.1	R
2-Methylnaphthalene-D10	200		50-150	3.36	43.8	
Acenaphthylene D8	200	4.49	58.0	50-150		
Phenanthrene D10	200	7.81	49.5	50-150		
Anthracene-D10	200	7.93	54.2	50-150		
Fluoranthene D10	200	11.18	68.3	50-150		
Benz(a)Anthracene-D12	200	15.68	53.2	50-150		
Chrysene D12	200	15.79	55.5	50-150		
Benzo(b)Fluoranthene-D12	200	19.00	47.7	50-150		
Benzo(k)Fluoranthene-D12	200	19.09	45.1	50-150		
Benzo(a)Pyrene D12	200	19.87	45.7 M	50-150		
Perylene D12	200	20.11	39.2	50-150		
Indeno(1,2,3,cd)Pyrene-D12	200	23.29	38.0	50-150		
Dibenzo(a,h)Anthracene-D14	200	23.45	35.1	50-150		
Benzo(g,h,i)Perylene D12	200	24.18	37.2	50-150		
M	Indicates that a peak has been manually integrated.					
U	Indicates that this compound was not detected above the MDL.					
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.					

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Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date n/a	Extraction Date 3-Apr-20
ALS Sample ID	WG3302880-2		
Analysis Method	PAH by CARB 429		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1	n/a	
Percent Moisture	n/a		
Split Ratio	2		
Workgroup	WG3302880		
			Approved: Andrew Reid --e-signature-- 09-Apr-2020
Run Information	Run 1		
Filename	20040805.D		
Run Date	4/8/2020 6:33		
Final Volume	0.1 mL		
Dilution Factor	1		
Analysis Units	% Rec		
Instrument	MSD-5		
Column	HP5MS UST530312H		
Target Analytes	Ret. ug spiked	Time	%
			Flags
Naphthalene	200	2.77	93.1
2-Methylnaphthalene	200	3.38	92.5
1-Methylnaphthalene	200	3.49	101.3
Acenaphthylene	200	4.51	86.5
Acenaphthene	200	4.80	70.5
Fluorene	200	5.71	76.2
Phenanthrene	200	7.86	93.5
Anthracene	200	7.98	87
Fluoranthene	200	11.23	88
Pyrene	200	11.86	89.7
Benzo(a)Anthracene	200	15.74	99.4
Chrysene	200	15.87	90.2
Benzo(b)Fluoranthene	200	19.07	107.1
Benzo(k)Fluoranthene	200	19.14	103.9
Benzo(e)Pyrene	200	19.81	94
Benzo(a)Pyrene	200	19.94	88.6 M
Perylene	200	20.18	113.9
Indeno(1,2,3-cd)Pyrene	200	23.37	86.5
Dibenzo(a,h)Anthracene	200	23.56	86.6
Benzo(g,h,i)Perylene	200	24.28	89.7
Extraction Standards		% Rec	Limits
Naphthalene D8	200	2.76	38.1
2-Methylnaphthalene-D10	200	3.35	50.0
Acenaphthylene D8	200	4.49	83.1
Phenanthrene D10	200	7.81	67.0
Anthracene-D10	200	7.93	76.6
Fluoranthene D10	200	11.18	83.4
Benz(a)Anthracene-D12	200	15.68	76.7
Chrysene D12	200	15.79	88.7
Benzo(b)Fluoranthene-D12	200	19.00	72.2
Benzo(k)Fluoranthene-D12	200	19.08	68.8
Benzo(a)Pyrene D12	200	19.88	71.5 M
Perylene D12	200	20.11	69.1
Indeno(1,2,3-cd)Pyrene-D12	200	23.29	70.6
Dibenzo(a,h)Anthracene-D14	200	23.44	68.7
Benzo(g,h,i)Perylene D12	200	24.18	67.0

M Indicates that a peak has been manually integrated.



**Chain of Custody (COC) / Analytical
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L2433648-COFC

L2433655-COFC

Report To		Contact and company name below will appear on the final report		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)											
Company	RWDI	Select Report Format:	<input checked="" type="checkbox"/> PDF	<input type="checkbox"/> EXCEL	<input type="checkbox"/> EDD (DIGITAL)	Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply											
Contact:	John Deyoe	Quality Control (QC) Report with Report	<input type="checkbox"/> YES	<input type="checkbox"/> NO	4 day [P4-20%] <input type="checkbox"/>												
Phone:		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked				3 day [P3-25%] <input type="checkbox"/>											
Company address below will appear on the final report		Select Distribution:	<input checked="" type="checkbox"/> EMAIL	<input type="checkbox"/> MAIL	<input type="checkbox"/> FAX	2 day [P2-50%] <input type="checkbox"/>											
Street:	600 Southgate Dr.	Email 1 or Fax	EMERGENCY <input type="checkbox"/> 1 Business day [E - 100%] <input type="checkbox"/>														
City/Province:	Guelph, ON	Email 2	Same Day, Weekend or Statutory holiday [E2 - 200%] <input type="checkbox"/>														
Postal Code:	N1G 4P6	Email 3	(Laboratory opening fees may apply) <input type="checkbox"/>														
Invoice To	Same as Report To <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm														
Copy of Invoice with Report	<input type="checkbox"/> YES	<input type="checkbox"/> NO	For tests that can not be performed according to the service level selected, you will be contacted.														
Company:			Analysis Request														
Contact:			indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below														
Project Information		Oil and Gas Required Fields (client use)															
ALS Account # / Quote #:		AFE/Cost Center:	PO#														
Job #:	DYEC	Major/Minor Code:	Routing Code:														
PO/AFE:	1803743 - 1000-100	Requisitioner:															
LSD:		Location:															
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler:														
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type				NUMBER OF CONTAINERS	TSP, TCP or High Gaff	PAH	DX	Sample Volume (m3)	SUSPECTED HAZARD (see Special Instructions)	SAMPLES ON HOLD		
1	740312 - Rundle Hi Vol Mar 22		22-03-20	00:00	Ambient											X	
2	740313 - Courtice Hi Vol Mar 22		22-03-20	00:00					X				1706				
3	740379 - Rundle Hi Vol Mar 28		28-03-20	00:00					X				1661				
4	740380 - Courtice Hi Vol Mar 28		28-03-20	00:00					X				1614				
1	L2428310-2 Rundle PUF Mar 28		28-03-20	00:00					X	X			319				
2	L2428310-3 Courtice PUF Mar 28		28-03-20	00:00	V				X	X			319				
Drinking Water (DW) Samples ¹ (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)						SAMPLE CONDITION AS RECEIVED (lab use only)									
Are samples taken from a Regulated DW System?								Frozen <input type="checkbox"/>	SIF Observations Yes <input type="checkbox"/>	No <input type="checkbox"/>							
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO								Ice Packs <input checked="" type="checkbox"/>	Ice Cubes <input type="checkbox"/>	Custody seal intact Yes <input type="checkbox"/>	No <input type="checkbox"/>						
Are samples for human consumption/ use?								Cooling Initiated <input checked="" type="checkbox"/>									
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO								INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C						
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)						9.4°C	20.8°C								
Released by:	Date: Apr. 2 '20	Time: 10:45	Received by: ARROW AERON	Date: 2-Apr-2020	Time: 10:45	Received by:	Date:										

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

¹ If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Station: RofD Rundle Daily: 28/03/2020 Type: AVG 1 Hr. [5 Mins.]

Date & Time	PM2.5	NO	NO2	NOX	SO2	Batt Min	Temperature - Ambient	Tr_Temp	RH AVG	Rain total	WS km/hr	WD
	ug/m3	ppb	ppb	ppb	ppb	Volts	C°	C°	%	mm	km/hr	Deg
28/03/2020 00:00	13.14	7.7	12	19.7	0.063	13.2	0	21	96.3	0	6.83	68.73
28/03/2020 01:00	9.4	0.4	9.5	10	0.001	13.2	0.2	20.9	90	0	6.34	62.27
28/03/2020 02:00	6.24	0.1	2.7	2.9	0.009	13.2	0.9	21	84.4	0	7.23	71.14
28/03/2020 03:00	4.22	7.2	6.1	13.4	0.105	13.2	1.3	20.9	79.8	0	9.42	80.72
28/03/2020 04:00	3.39	0	2.5	2.3	0.018	13.2	1.8	20.9	76.3	0	11.1	81.68
28/03/2020 05:00	3.25	0.2	2.7	2.9	0.015	13.2	2.1	20.9	75.3	0	10.04	78.47
28/03/2020 06:00	2.88	0	2.3	2.1	0.005	13.2	2.6	20.8	70.9	0	12.43	80.45
28/03/2020 07:00	3.17	0.6	3	3.6	0.023	13.2	3.5	20.8	65.2	0	13	80.24
28/03/2020 08:00	2.71	0.2	2.1	2.3	0.058	13.2	4.8	21	61.2	0	14.1	83.72
28/03/2020 09:00	1.99	6.1	6.3	12.4	0.141	13.2	5.9	20.8	55.7	0	14.08	96.86
28/03/2020 10:00	2.15	0.3	2.3	2.5	0.052	13.2	5	20.6	64.9	0.1	21.14	108.85
28/03/2020 11:00	2.95	0.2	1.8	2	0.093	13.2	4.7	20.7	71.8	0.2	22.4	104.44
28/03/2020 12:00	3.48	4.4	2.9	7.3	0.152	13.2	5.3	20.6	74.4	0.2	21.43	102.13
28/03/2020 13:00	3.45	0.2	2	2.2	0.064	13.2	6.6	20.8	72	0	17.73	90.65
28/03/2020 14:00	3.31	0.4	2.2	2.6	0.067	13.2	7.6	21.5	73	0	17.86	98.25
28/03/2020 15:00	2.76	2.8	8.1	10.9	0.097	13.2	8.3	22.1	72.3	0	19.96	98.72
28/03/2020 16:00	2.55	5.3	4.6	9.9	0.135	13.2	7.8	22.3	75.7	0	23.46	104.33
28/03/2020 17:00	2.43	0	2.3	2.2	0.007	13.2	6.8	22	80	0	21.2	109.43
28/03/2020 18:00	2.49	0	2.2	2.2	0.048	13.2	6.1	21.6	85.1	0	19.71	94.25
28/03/2020 19:00	2.27	0	1.8	1.7	0.034	13.2	6	21	94.5	0	19.02	92.45
28/03/2020 20:00	2.19	0	1.9	1.8	0.023	13.2	5.8	20.7	95.8	0	16.73	87.8
28/03/2020 21:00	1.57	0.1	1.8	1.7	0.06	13.2	6.3	20.4	95.2	0	20.46	96.65
28/03/2020 22:00	1.47	0.1	1.7	1.6	0.043	13.2	6.5	20.9	93.7	0	24.24	100.26
28/03/2020 23:00	1.45	0.1	1.6	1.5	0.08	13.2	6.5	20.4	93.1	0	26.49	102.98
Minimum	1.45	0	1.6	1.5	0.001	13.2	0	20.4	55.7	0	6.34	62.27
MinDate	23:00	04:00	23:00	23:00	01:00	00:00	00:00	21:00	09:00	00:00	01:00	01:00
Maximum	13.14	7.7	12	19.7	0.152	13.2	8.3	22.3	96.3	0.18	26.49	109.43
MaxDate	00:00	00:00	00:00	00:00	12:00	00:00	15:00	16:00	00:00	12:00	23:00	17:00
Avg	3.54	1.5	3.6	5.1	0.058	13.2	4.7	21	79	0.01	16.52	90.64
Num	24	24	24	24	24	24	24	24	24	24	24	24
Data[%]	100	100	100	100	100	100	100	100	100	100	100	100
STD	2.6	2.5	2.7	4.8	0	No Data	2.5	0.5	11.6	0	5.8	12.8

Table B6: 2020 Rundle Station Q1 Monitoring Results for PAHs

Contaminant	Units	MECP Criteria	HHRA Health Based Criteria	28-Mar-20
1-Methylnaphthalene	ng/m ³	12000	-	5.33E+00
2-Methylnaphthalene	ng/m ³	10000	-	7.68E+00
Acenaphthene	ng/m ³	-	-	2.46E+00
Acenaphthylene	ng/m ³	3500	-	9.66E-02
Anthracene	ng/m ³	200	-	6.77E-02
Benzo(a)Anthracene	ng/m ³	-	-	2.67E-02
Benzo(a)fluorene	ng/m ³	-	-	6.74E-02
Benzo(a)Pyrene	ng/m ³	0.05 ^[1] 5 ^[2] 1.1 ^[3]	1	5.80E-02
Benzo(b)Fluoranthene	ng/m ³	-	-	1.38E-01
Benzo(b)fluorene	ng/m ³	-	-	2.98E-02
Benzo(e)Pyrene	ng/m ³	-	-	5.77E-02
Benzo(g,h,i)Perylene	ng/m ³	-	-	6.90E-02
Benzo(k)Fluoranthene	ng/m ³	-	-	7.77E-02
Biphenyl	ng/m ³	-	-	3.92E+00
Chrysene	ng/m ³	-	-	1.76E-01
Dibenzo(a,h)Anthracene	ng/m ³	-	-	8.78E-03
Fluoranthene	ng/m ³	-	-	9.28E-01
Fluorene	ng/m ³	-	-	2.53E+00
Indeno(1,2,3-cd)Pyrene	ng/m ³	-	-	6.96E-02
Naphthalene	ng/m ³	22500	22500	3.39E+01
o-Terphenyl	ng/m ³	-	-	2.21E-02
Perylene	ng/m ³	-	-	6.27E-04
Phenanthrene	ng/m ³	-	-	4.26E+00
Pyrene	ng/m ³	-	-	4.64E-01
Tetralin	ng/m ³	-	-	2.54E+00
Total PAH ^[4]	ng/m ³	-	-	6.49E+01

Station: RofD Rundle Periodically: 28/03/2020 00:00-28/03/2020 23:59 Type: AVG 1 Min. [1 Min.]

Date & Time	Courice		Pressure in HG	Pressure kPa	Hi-Vol Pressure in H2O	HiVol		PUF Pressure in H2O	PUF	
	Temperature - Ambient C°	Temperature - Ambient K°				cfm	m3		cfm	m3
28/03/2020 23:31	6.5	279.65	29.61	100.27	4.26	40.07	1.13	49.4	7.72	0.22
28/03/2020 23:32	6.5	279.65	29.61	100.27	4.25	40.01	1.13	49.33	7.72	0.22
28/03/2020 23:33	6.5	279.65	29.61	100.27	4.29	40.25	1.14	49.47	7.73	0.22
28/03/2020 23:34	6.5	279.65	29.61	100.27	4.32	40.43	1.14	49.77	7.75	0.22
28/03/2020 23:35	6.5	279.65	29.61	100.27	4.27	40.13	1.14	49.21	7.71	0.22
28/03/2020 23:36	6.5	279.65	29.61	100.27	4.28	40.19	1.14	49.6	7.74	0.22
28/03/2020 23:37	6.5	279.65	29.61	100.27	4.27	40.13	1.14	50.21	7.78	0.22
28/03/2020 23:38	6.5	279.65	29.61	100.27	4.3	40.31	1.14	49.84	7.75	0.22
28/03/2020 23:39	6.5	279.65	29.61	100.27	4.32	40.43	1.14	49.97	7.76	0.22
28/03/2020 23:40	6.5	279.65	29.6	100.24	4.29	40.25	1.14	49.57	7.73	0.22
28/03/2020 23:41	6.5	279.65	29.61	100.27	4.28	40.19	1.14	48.96	7.69	0.22
28/03/2020 23:42	6.5	279.65	29.61	100.27	4.32	40.43	1.14	49.43	7.72	0.22
28/03/2020 23:43	6.5	279.65	29.61	100.27	4.27	40.13	1.14	49.2	7.71	0.22
28/03/2020 23:44	6.5	279.65	29.61	100.27	4.26	40.07	1.13	49.49	7.73	0.22
28/03/2020 23:45	6.5	279.65	29.6	100.24	4.28	40.19	1.14	49.22	7.71	0.22
28/03/2020 23:46	6.5	279.65	29.61	100.27	4.3	40.31	1.14	49.67	7.74	0.22
28/03/2020 23:47	6.6	279.75	29.6	100.24	4.32	40.42	1.14	48.87	7.68	0.22
28/03/2020 23:48	6.6	279.75	29.6	100.24	4.24	39.94	1.13	49.88	7.75	0.22
28/03/2020 23:49	6.5	279.65	29.6	100.24	4.33	40.49	1.15	49.79	7.75	0.22
28/03/2020 23:50	6.5	279.65	29.6	100.24	4.28	40.19	1.14	49.67	7.74	0.22
28/03/2020 23:51	6.5	279.65	29.6	100.24	4.29	40.25	1.14	49.67	7.74	0.22
28/03/2020 23:52	6.5	279.65	29.59	100.2	4.27	40.12	1.14	49.19	7.71	0.22
28/03/2020 23:53	6.5	279.65	29.59	100.2	4.26	40.06	1.13	48.95	7.69	0.22
28/03/2020 23:54	6.5	279.65	29.6	100.24	4.27	40.13	1.14	49.21	7.71	0.22
28/03/2020 23:55	6.5	279.65	29.6	100.24	4.3	40.31	1.14	49.38	7.72	0.22
28/03/2020 23:56	6.5	279.65	29.61	100.27	4.27	40.13	1.14	49.63	7.74	0.22
28/03/2020 23:57	6.6	279.75	29.61	100.27	4.27	40.13	1.14	49.67	7.74	0.22
28/03/2020 23:58	6.6	279.75	29.61	100.27	4.31	40.36	1.14	49.56	7.73	0.22
28/03/2020 23:59	6.6	279.75	29.61	100.27	4.25	40.01	1.13	49.34	7.72	0.22

Total V: 1661

Total V: 319