Stantec Consulting Ltd.
401 Wellington Street West, Suite 100, Toronto ON M5V 1E7

April 27, 2016
File: 160950528

Attention:

Ms. Amanda Graham
Air Quality Analyst
Central Region, Tech Support, APEP
5775 Yonge Street, 8th Floor
Toronto, ON M2M 4J1

Mr. Stephen Belanger
Environmental Scientist
Central Region, Tech Support, APEP
5775 Yonge Street, 8th Floor
Toronto, ON M2M 4J1

Dear Ms. Graham and Mr. Belanger

Reference: Durham York Energy Centre, MOECC Data Validation Review of Q1 and Q2 2015 Quarterly Reports (January 2015 to June 2015)

The Ministry of the Environment and Climate Change (MOECC) conducted a data validation review and issued a comment letter (dated October 21, 2015) for the Q1 and Q2 2015 quarterly reports (January 2015 to June 2015) for the Durham York Energy Centre project. As requested by the MOECC, this letter is an addendum to these two reports and provides our responses to the MOECC's comments.

1.0 CONTINUOUS PARAMETERS (JANUARY TO JUNE 2015)

MOECC has requested clarification on the validity of nine (9) individual hourly $PM_{2.5}$ measurements collected in this period. All the continuous measurement data underwent a data validation process by Stantec following guidance provided by MOECC (Operations Manual for Ambient Air Quality Monitoring in Ontario, 2008). Monitoring data was only invalidated based on information available at the time of the initial data review and only if sufficient justification was available to provide a high degree of confidence that the data was not representative of actual conditions.

1.1 VALIDITY OF $PM_{2.5}$ MEASUREMENTS AT THE RUNDLE ROAD STATION ON FEBRUARY 18, 2015

The MOECC has requested clarification of the validity of the hourly $PM_{2.5}$ measurement recorded at the Rundle Road Station on February 18, 2015 at 4:00 pm, as an elevated hourly measurement was recorded at this time without similar levels being measured at the Courtice WPCP Station or the Oshawa AQI Station.

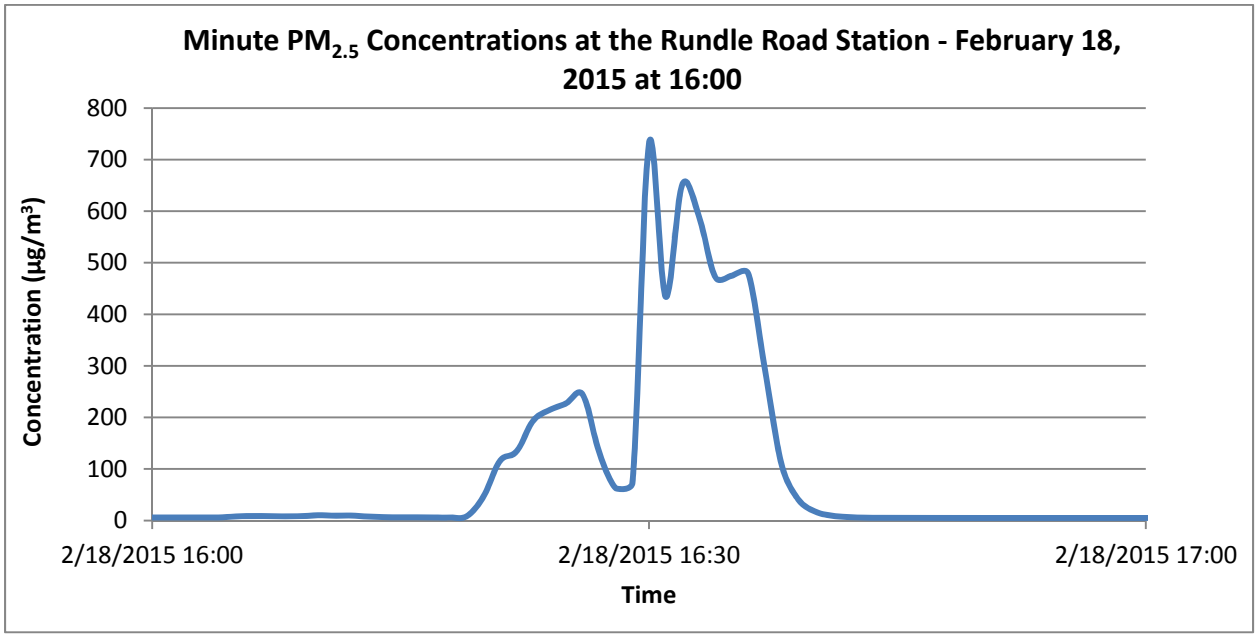
During Stantec's data validation process, this hour was not invalidated as the previous two hourly measurements showed an increasing trend consistent with generally increasing hourly average $PM_{2.5}$ levels at this station.

Reference: Durham York Energy Centre, MOECC Data Validation Review of Q1 and Q2 2015 Quarterly Reports (January 2015 to June 2015)

In response to the MOECC's inquiry, Stantec reviewed the measured minute average $PM_{2.5}$ data for this hour, as well as the hourly average wind speed and direction for the hour. A plot of the minute average $PM_{2.5}$ data for the hour is presented in **Figure 1**. A short period (18-minutes) of elevated concentrations is observed in the data, with the rest of the hour having relatively low measurements (about 99% lower than the maximum minute). During this hour, the measured wind direction at Rundle was blowing from 293° with a relatively low wind speed (5.1 km/hr). In this wind direction, commercial businesses along Rundle Road, and agricultural areas are upwind of the station.

Since the elevated hourly $PM_{2.5}$ concentration in this hour was due to a very brief 18-minute period of elevated $PM_{2.5}$ levels, with wind blowing from a direction in which local sources may have been influencing the measurements, this hour was invalidated upon subsequent detailed review, as the measurement was not likely representative of neighbourhood scale air quality but likely affected by a nearby, transitory emission source.

Figure 1: One Minute Average $PM_{2.5}$ Concentrations at the Rundle Road Station - February 18, 2015



Reference: Durham York Energy Centre, MOECC Data Validation Review of Q1 and Q2 2015 Quarterly Reports (January 2015 to June 2015)

1.2 VALIDITY OF $PM_{2.5}$ MEASUREMENTS AT THE RUNDLE ROAD STATION ON FEBRUARY 22, 2015

Clarification has been requested of the validity of the $PM_{2.5}$ measurements recorded at the Rundle Road Station on February 22, 2015 at 10:00 am, 11:00 am and 12:00 pm, as elevated hourly measurements were recorded at these times without similar levels being measured at the Courtice WPCP Station or the Oshawa AQI Station.

The elevated concentrations correspond to a period of time when the wind was blowing from the west-southwest (251° to 268°) with moderate wind speeds (9 to 19 km/hr). Commercial businesses along Rundle Road, agricultural areas and the CP rail line are located upwind of the station in these directions. The DYEC was not considered to be upwind of the Rundle Station during for this time period, as the DYEC is located approximately to the south-west of the Rundle Station.

Stantec reviewed the measured minute average $PM_{2.5}$ data for this time period, which show elevated minute average readings throughout the entire period which is indicative of consistent emissions/ambient levels during this period. The $PM_{2.5}$ levels may have been due to local sources such as wind erosion off a farmer's field or from train traffic on the CP rail line which would affect neighbourhood scale air quality levels at this station.

Additionally, the monthly calibration for February 2015 was performed on February 27, 2015 and an audit of the instrument was performed by the MOECC on March 4, 2015. All continuous monitors at the Rundle Road Station met the Ministry's performance, site audit and calibration criteria.

During Stantec's data validation process for the quarterly report, these hours were not invalidated as they showed a trend consistent with generally increasing hourly average $PM_{2.5}$ levels at this station. After conducting the data review for this addendum, Stantec sees no justification for invalidating the data for this period, as elevated minute average measurements were observed throughout the period, and there were no issues recorded for the monitor during this period.

1.3 VALIDITY OF $PM_{2.5}$ MEASUREMENTS AT THE RUNDLE ROAD STATION ON MARCH 9, 2015

The validity of the $PM_{2.5}$ measurement recorded at the Rundle Road Station on March 9, 2015 at 8:00 am was questioned by the MOECC, due to the elevated measured hourly $PM_{2.5}$ level at this station relative to the Courtice WPCP Station or the Oshawa AQI Station.

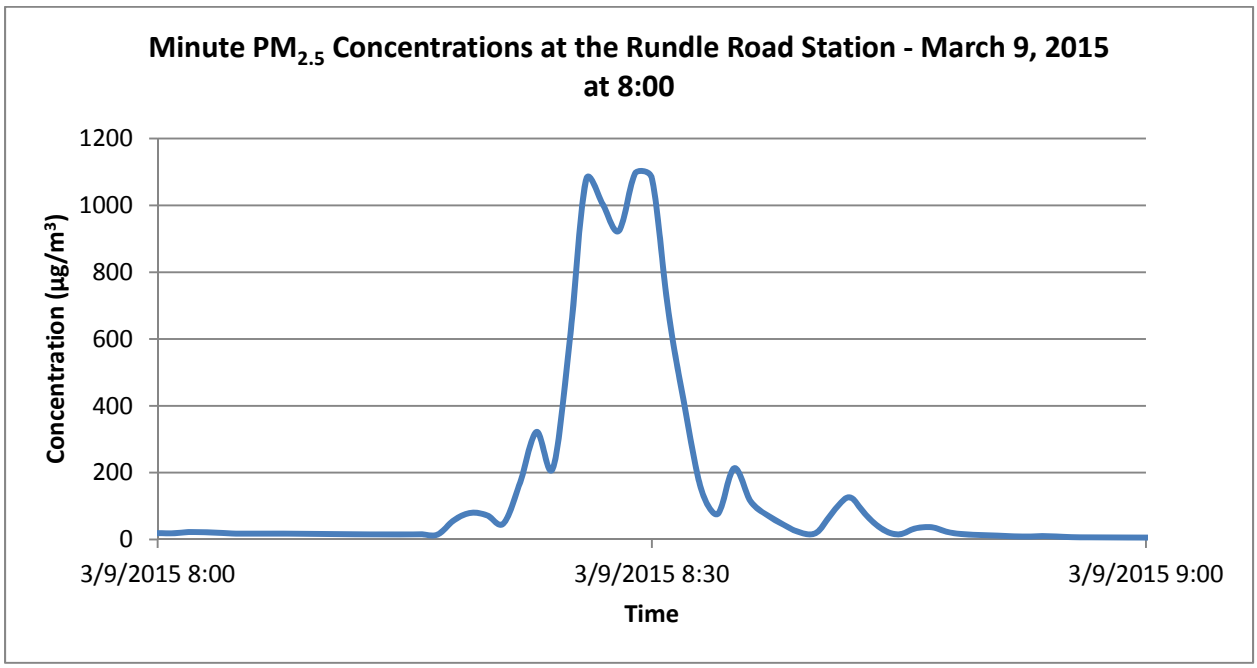
In the initial data validation process, this hour was not invalidated since there was variability in hourly measurements through the day, with two periods of increasing $PM_{2.5}$ levels evident during the day. The concentration level at 8:00 am was not considered to be high enough relative to other hourly concentrations in the day to invalidate the hour based on rate of change concerns.

Stantec reviewed the measured $PM_{2.5}$ minute concentrations for this hour and the hourly average wind speed and direction. **Figure 2** presents the plotted minute average $PM_{2.5}$ data for this hour.

Higher concentrations were observed in the minute over a short 15-minute period, with the other data in the hour having relatively low concentrations (approximately 98% lower than the maximum minute).

Measured wind speed in this hour was moderate at 10.3 km/hr and winds were blowing from 12º. In this direction, Baseline Road and some agricultural areas are upwind of the station. Since a short 15-minute period of elevated $PM_{2.5}$ minute concentrations was responsible for the elevated $PM_{2.5}$ hourly concentration and because winds were blowing from a direction in which the measurements may have been influenced by local sources, this hour was invalidated upon further detailed review. The invalidated measurement was likely affected by a nearby, transient emission source and not likely to be representative of neighbourhood scale air quality.

Figure 2: One Minute Average $PM_{2.5}$ Concentrations at the Rundle Road Station – March 9, 2015



1.4 VALIDITY OF $PM_{2.5}$ MEASUREMENTS AT THE RUNDLE ROAD STATION ON APRIL 6, 2015

The MOECC has requested clarification of the validity of the $PM_{2.5}$ measurements recorded at the Rundle Road Station on April 6, 2015 at 5:00, 6:00, 7:00 and 8:00, due to the elevated measured hourly $PM_{2.5}$ levels at this station relative to the Courtice WPCP Station or the Oshawa AQI Station.

Stantec's initial data validation process for the quarterly report did not invalidate these hours as the measured $PM_{2.5}$ concentrations were trending upwards in the hours before this time period and trended downwards smoothly in the subsequent hours at the Rundle Road Station.

The elevated concentration corresponds to a period of time when the wind was blowing from east-northeasterly to east-southeasterly directions (72° to 101°) with low to average wind speeds (3.6 to 11.3 km/hr). The St. Mary's Cement Facility and the CP rail line are located upwind of the station in this direction.

Based upon a review of measured minute average $PM_{2.5}$ concentrations for this time period, elevated readings were observed throughout the entire period indicative of a consistent/continuous emission source(s) contributing to ambient levels in this period. The higher $PM_{2.5}$ levels may have been due to local sources of $PM_{2.5}$ in the area such as the St. Mary's Cement Facility or train traffic on the CP rail line which would affect neighbourhood scale air quality levels at this station.

In conducting the data validation review, Stantec sees no justification for invalidating the data for this period as the elevated measurements were observed throughout the period (as seen in the minute average data), and there were no issues recorded for the monitor during this period.

1.4 SUMMARY OF RESPONSES

Based on a detailed review of the Rundle Road $PM_{2.5}$ data in response to the MOECC requests for clarification, two measurement hours were invalidated. An updated data recovery rate table and ambient CAC summary table for the Rundle Road station (Tables 3-6 and 4-2 in the Q1 2015 Report) are provided in Attachment A of this letter. An updated Data Summary Table – Rundle Road Station – February and March 2015 (Q1 2015 report) is also provided in Attachment A.

Relative to the previously reported values, the following revisions were made:

- The $PM_{2.5}$ data recovery rate for the Rundle Road Station between January and March 2015 changed from 99.8% to 99.7%;
- The mean $PM_{2.5}$ level at the Rundle Road Station for February decreased from 11.2 to 11.1 µg/m^3,
- The mean $PM_{2.5}$ level at the Rundle Road Station for March decreased from 12.6 to 12.4 µg/m^3
- The mean $PM_{2.5}$ level at the Rundle Road Station for the Q1 period decreased from 10.9 to 10.8 µg/m^3
- The $PM_{2.5}$ standard deviation at the Rundle Road Station for the period decreased from 7.7 to 7.6 µg/m^3.
- The 98th percentile $PM_{2.5}$ level at the Rundle Road Station for the period July 2014 – March 2015 decreased from 26.6 µg/m^3 to 26.3 µg/m^3.

April 27, 2016

Ms. Amanda Graham
Page 6

Mr. Stephen Belanger

Reference: Durham York Energy Centre, MOECC Data Validation Review of Q1 and Q2 2015 Quarterly Reports (January 2015 to June 2015)

These minor data edits did not affect the results or conclusions of the Q1 2015 Report with regard to ambient $PM_{2.5}$ levels. No revisions were made to the data provided in the Q2 2015 report.

Regards,

STANTEC CONSULTING LTD.

Timothy Hung, B.A.Sc.
Air Quality Specialist
Phone: (905) 944-4809
Fax: (905) 474-9889
timothy.hung@stantec.com

Connie Lim, B.A.Sc
Project Manager
Phone: (905) 415-6385
Fax: (905) 474-9889
connie.lim@stantec.com

Gregory Crooks, M.Eng., P.Eng.
Principal, Environmental Services
Phone: (416) 598-7687
Fax: (416) 596-6680
gregory.crooks@stantec.com

Attachment A: Updated Table 3-6, Table 4-2 and Data Summary Tables – Rundle Road Station – February and March 2015

c. Mirka Januszkiewicz, The Regional Municipality of Durham
Laura McDowell, The Regional Municipality of York
Ross Lashbrook, Technical Support Manager, Central Region
Celeste Dugas, District Manager (A), York-Durham District Office
Sandra Thomas, Issues Coordinator, York-Durham District Office
Paul Martin, APEP Supervisor (A), Technical Support Section
Greg Borchuk, Region of Durham

mcs v:\01609\active\160950528\planning\correspondence\moecc\2015q1q2_review\160950528_moecc comments_2015q1q2_2015_04_27_final.docx

April 27, 2016

Attachment A
Updated TABLES

Table 3-6 Data Recovery Rate Table

Table 4-2 Ambient CAC Summary Table for the Rundle Road Station

Data Summary Table – Rundle Road Station:
February 2015 (Q1 2015 report)

Data Summary Table – Rundle Road Station:
March 2015 (Q1 2015 report)

Table 3-6 Summary of Data Recovery Rates for the Rundle Road Station (Predominately Downwind) – January to March 2015

Parameter	Valid Measurement Hours	Data Recovery Rate (%)
SO_2	2156	99.8%
NO_X	2156	99.8%
$PM_{2.5}$	2153	99.7%
Temperature	2160	100.0%
Rainfall	2160	100.0%
Relative Humidity	2160	100.0%
Wind Speed/Direction	2160	100.0%
TSP/Metals	N/A [A]	N/A [A]
PAHs	N/A [A]	N/A [A]
Dioxins and Furans	N/A [A]	N/A [A]

Note:

A. Monitoring of these parameters was temporarily discontinued after June 28, 2014. Monitoring will resume when the EFW Facility is fully operational.

Table 4-2 Summary of Ambient CAC Monitoring Data – January to March 2015

Pollutant	Averaging Period	AAQC / Schedule 3 / HHRA Health-Based Standards			Courtice WPCP Station (Predominately Upwind)		Rundle Road Station (Predominately Downwind)	
		ppb	µg/m³		Concentration (ppbv)	Concentration (µg/m³)	Concentration (ppbv)	Concentration (µg/m³)
SO_2	1	250	690	Maximum	19.6	60.2	18.4	53.0
				Minimum	0.0	0.0	0.0	0.0
				Mean (January)	0.8	2.4	0.7	2.1
				Mean (February)	1.0	3.0	0.6	1.8
				Mean (March)	0.9	2.6	0.8	2.4
				Mean (Period)	0.9	2.6	0.7	2.1
				Standard Deviation	1.3	3.9	0.9	2.8
				# of Exceedances	0	0	0	0
	24	100	275	Maximum	3.4	10.5	3.5	10.0
				Minimum	0.0	0.0	0.0	0.0
				Mean (January)	0.8	2.3	0.7	2.1
				Mean (February)	1.0	3.0	0.6	1.8
				Mean (March)	0.9	2.6	0.9	2.5
				Mean (Period)	0.9	2.6	0.7	2.1
				Standard Deviation	0.7	2.0	0.6	1.7
				# of Exceedances	0	0	0	0

Table 4-2 Summary of Ambient CAC Monitoring Data – January to March 2015

Pollutant	Averaging Period	AAQC / Schedule 3 / HHRA Health-Based Standards			Courtice WPCP Station (Predominately Upwind)		Rundle Road Station (Predominately Downwind)	
		ppb	µg/m³		Concentration (ppbv)	Concentration (µg/m³)	Concentration (ppbv)	Concentration (µg/m³)
$PM_{2.5}$	24	N/A	30 [A]	Maximum	-	41.4	-	43.6
				Minimum	-	0.2	-	1.9
				Mean (January)	-	7.8	-	8.9
				Mean (February)	-	10.6	-	11.1
				Mean (March)	-	10.1	-	12.4
				Mean (Period)	-	9.5	-	10.8
				Standard Deviation	-	7.3	-	7.6
				# of Exceedances	-	N/A	-	N/A
NO_2	1	200 [B]	400 [B]	Maximum	62.3	135.2	42.6	86.4
				Minimum	0.0	0.0	0.0	0.0
				Mean (January)	9.8	20.7	7.5	15.7
				Mean (February)	12.6	26.9	8.4	17.9
				Mean (March)	8.8	18.3	7.6	15.8
				Mean (Period)	10.3	21.8	7.8	16.4
				Standard Deviation	8.8	18.9	6.7	14.0
				# of Exceedances	0	0	0	0
	24	100 [B]	200 [B]	Maximum	25.9	55.2	22.6	45.9
				Minimum	0.7	1.5	0.0	0.0
				Mean (January)	9.7	20.5	7.4	15.6
				Mean (February)	12.5	26.8	8.3	17.7
				Mean (March)	9.0	18.8	7.8	16.2
				Mean (Period)	10.3	21.8	7.8	16.4
				Standard Deviation	5.1	10.9	4.5	9.4

Table 4-2 Summary of Ambient CAC Monitoring Data – January to March 2015

Pollutant	Averaging Period	AAQC / Schedule 3 / HHRA Health-Based Standards			Courtice WPCP Station (Predominately Upwind)		Rundle Road Station (Predominately Downwind)	
		ppb	µg/m³		Concentration (ppbv)	Concentration (µg/m³)	Concentration (ppbv)	Concentration (µg/m³)
				# of Exceedances	0	0	0	0
NO[C]	1	NA	NA	Maximum	88.5	125.3	44.6	62.3
				Minimum	0.0	0.0	0.5	0.7
				Mean (January)	3.8	5.2	2.4	3.3
				Mean (February)	5.4	7.5	2.6	3.7
				Mean (March)	2.2	3.0	2.0	2.8
				Mean (Period)	3.7	5.2	2.4	3.2
				Standard Deviation	5.7	8.0	3.1	4.2
				# of Exceedances	N/A	N/A	N/A	N/A
	24	NA	NA	Maximum	18.9	26.3	8.1	11.3
				Minimum	0.1	0.1	0.7	1.0
				Mean (January)	3.7	5.1	2.4	3.3
				Mean (February)	5.3	7.5	2.6	3.6
				Mean (March)	2.3	3.1	2.1	2.8
				Mean (Period)	3.7	5.2	2.4	3.2
				Standard Deviation	2.9	4.1	1.3	1.7
				# of Exceedances	N/A	N/A	N/A	N/A

Table 4-2 Summary of Ambient CAC Monitoring Data – January to March 2015

Pollutant	Averaging Period	AAQC / Schedule 3 / HHRA Health-Based Standards			Courtice WPCP Station (Predominately Upwind)		Rundle Road Station (Predominately Downwind)	
		ppb	µg/m³		Concentration (ppbv)	Concentration (µg/m³)	Concentration (ppbv)	Concentration (µg/m³)
NO_X	1	200 [B]	400 [B]	Maximum	148.5	322.2	77.5	166.2
				Minimum	0.0	0.0	0.0	0.0
				Mean (January)	11.5	24.3	9.0	18.9
				Mean (February)	15.8	33.8	10.1	21.5
				Mean (March)	10.6	22.0	8.7	18.0
				Mean (Period)	12.5	26.5	9.2	19.4
				Standard Deviation	13.3	28.4	8.5	17.8
				# of Exceedances	0	0	0	0
	24	100 [B]	200 [B]	Maximum	42.6	91.0	28.0	58.3
				Minimum	0.8	1.5	0.0	0.0
				Mean (January)	11.4	24.0	8.9	18.7
				Mean (February)	15.7	33.5	10.0	21.3
				Mean (March)	10.8	22.5	8.9	18.5
				Mean (Period)	12.5	26.5	9.3	19.4
				Standard Deviation	7.4	15.9	5.4	11.4
				# of Exceedances	0	0	0	0

Note:

A. Canadian Ambient Air Quality Standard for Respirable Particulate Matter. The Respirable Particulate Matter Objective is referenced to the 98th percentile over 3 consecutive years.

B. As per current version (April 2012) of Reg 419 Summary of Standards and Guidelines, the air standard for NO_X is compared to a monitored NO_X concentration, although the Reg419 Schedule 3 standard for NO_X is based on health effects of NO_2.

C. NO has no regulatory criteria.

$PM_{2.5}$ - February ($\mu g/m^3$) Rundle Road 2015

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average
1	28.2	26.6	5.8	4.4	5.0	6.3	5.0	3.4	2.4	2.1	2.1	2.2	2.3	2.4	2.9	2.7	2.7	2.7	3.1	3.1	3.2	2.8	2.7	2.5	24	28.2	2.1	5.3
2	2.6	2.7	2.6	2.6	2.3	2.2	2.5	2.5	2.9	3.7	3.8	3.6	2.8	2.5	3.1	4.2	3.7	11.4	8.9	5.8	19.2	12.3	8.1	5.7	24	19.2	2.2	5.1
3	5.4	6.8	3.6	2.9	3.6	5.3	5.1	6.1	7.2	7.7	19.8	37.8	12.3	6.9	5.9	35.4	23.2	12.4	4.3	6.5	7.5	10.9	14.6	15.3	24	37.8	2.9	11.1
4	14.6	16.4	19.4	21.8	21.8	24.8	33.2	33.1	37.3	44.3	77.9	28.0	26.3	30.3	34.9	34.2	23.1	13.3	4.5	3.0	2.4	2.4	2.2	2.4	24	77.9	2.2	23.0
5	3.1	3.3	2.9	3.1	3.2	4.4	7.6	4.6	4.4	3.9	2.7	2.9	2.7	2.4	2.2	2.8	5.9	4.8	16.4	11.8	8.8	11.4	8.0	6.5	24	16.4	2.2	5.4
6	7.7	7.8	8.0	7.9	8.6	10.0	11.3	13.3	13.0	13.9	15.7	16.1	15.5	15.9	16.9	17.3	17.3	18.7	20.4	22.3	22.4	23.0	24.1	22.4	24	24.1	7.7	15.4
7	23.9	28.7	32.4	35.1	36.7	35.2	24.5	12.9	9.9	10.6	7.4	6.8	7.2	8.1	7.4	9.3	7.4	9.0	8.9	7.3	5.8	5.4	4.5	3.7	24	36.7	3.7	14.5
8	4.1	3.8	4.3	4.8	4.8	4.2	3.9	4.5	5.5	7.3	7.6	7.0	5.4	4.5	4.3	4.1	4.2	4.0	3.8	3.9	3.9	4.3	4.1	4.1	24	7.6	3.8	4.7
9	3.6	3.3	3.2	3.6	3.9	4.6	5.3	5.2	5.4	4.8	5.0	4.9	5.5	5.9	6.3	6.5	7.8	8.8	8.2	9.4	9.1	8.5	9.2	10.6	24	10.6	3.2	6.2
10	10.3	10.2	10.4	9.8	10.5	10.9	10.7	9.4	9.6	7.7	7.7	6.1	5.2	5.5	5.8	5.4	5.8	23.7	36.3	30.5	21.3	19.3	20.0	21.9	24	36.3	5.2	13.1
11	17.7	19.1	17.8	15.6	10.1	6.8	6.8	7.8	7.1	4.8	6.1	8.2	8.2	8.8	11.5	16.8	16.0	18.0	21.6	27.7	35.0	36.0	31.0	28.6	24	36.0	4.8	16.1
12	28.7	7.5	2.4	2.1	2.2	2.1	2.6	2.4	3.7	6.7	3.5	3.9	3.6	4.0	6.1	5.4	3.6	3.9	6.8	9.3	4.1	3.2	3.3	3.1	24	28.7	2.1	5.2
13	3.0	4.0	5.2	6.9	7.5	8.7	11.2	11.0	12.1	14.2	7.4	10.4	9.2	15.5	18.6	89.0	8.4	7.8	7.6	4.5	3.9	2.7	3.0	3.6	24	89.0	2.7	11.5
14	4.7	6.3	7.2	7.6	8.9	10.0	10.0	11.6	12.4	11.3	6.0	2.6	2.7	3.2	3.5	3.7	3.7	4.1	6.5	8.0	8.2	7.9	7.9	8.3	24	12.4	2.6	6.9
15	6.5	6.0	6.3	6.6	5.6	5.6	6.2	6.4	6.2	5.3	4.9	4.9	4.8	5.0	5.0	5.3	5.3	5.2	5.4	5.6	5.5	5.4	5.6	4.9	24	6.6	4.8	5.6
16	5.0	5.2	5.2	5.5	5.5	6.0	6.1	13.5	10.3	22.3	2.2	2.4	2.5	2.0	2.6	3.7	53.2	49.4	6.3	34.7	13.9	9.5	8.4	13.5	24	53.2	2.0	12.0
17	9.6	8.9	8.7	8.3	5.9	5.4	4.5	5.0	5.9	4.9	4.8	4.4	3.9	90.8	8.5	32.4	53.0	2.8	3.5	3.8	4.3	6.3	7.8	9.7	24	90.8	2.8	12.6
18	10.8	15.2	16.4	15.3	18.7	18.3	20.8	21.6	25.7	20.8	17.2	25.4	17.8	6.2	20.1	35.6	R	5.0	5.1	3.9	2.7	2.0	1.7	1.7	23	35.6	1.7	14.3
19	2.0	2.3	2.8	2.7	3.3	3.4	3.3	3.4	3.2	2.6	2.3	2.3	4.2	2.9	3.2	3.5	3.6	4.2	4.7	7.7	5.0	6.2	5.1	4.7	24	7.7	2.0	3.7
20	5.3	6.0	5.7	5.2	5.2	5.3	5.2	4.9	5.3	7.5	4.4	11.7	5.0	6.1	6.3	28.4	76.5	50.6	8.3	3.6	5.4	5.3	5.4	9.0	24	76.5	3.6	11.7
21	5.0	6.7	6.4	6.3	6.5	6.5	6.4	6.8	6.9	6.5	6.9	6.8	6.4	6.2	6.9	7.2	9.2	15.1	22.3	19.1	16.2	50.6	31.2	19.1	24	50.6	5.0	12.0
22	19.1	23.4	24.8	22.1	23.9	24.2	24.9	26.8	32.1	32.4	97.2	192.9	229.3	48.9	20.8	21.6	5.3	4.1	3.5	3.1	3.3	5.5	3.8	3.8	24	229.3	3.1	37.4
23	4.1	3.6	3.5	3.4	4.1	3.4	6.5	3.7	3.7	5.3	3.1	4.1	3.0	4.5	4.8	4.0	5.2	10.3	6.5	7.2	8.2	8.0	8.0	9.9	24	10.3	3.0	5.3
24	9.6	9.6	10.6	12.1	11.2	11.7	11.8	14.8	15.6	32.3	28.2	8.3	7.3	5.8	5.5	6.1	16.0	29.7	30.0	5.8	6.2	6.8	7.9	9.0	24	32.3	5.5	13.0
25	10.6	12.3	14.3	17.0	19.5	16.6	2.9	3.6	4.5	3.7	4.0	5.1	3.8	4.5	4.3	5.0	4.5	5.1	5.6	6.8	5.8	6.7	12.4	16.1	24	19.5	2.9	8.1
26	21.8	10.6	7.7	8.7	7.0	6.1	6.7	12.8	5.4	4.4	4.4	4.4	4.1	4.2	3.9	4.5	4.8	6.6	7.5	9.1	7.8	7.1	7.1	6.0	24	21.8	3.9	7.2
27	6.2	6.9	6.7	6.8	7.2	7.6	16.9	12.2	10.8	10.1	6.9	9.8	4.8	4.8	C	11.6	11.4	21.8	10.3	10.8	11.1	10.9	12.8	11.9	23	21.8	4.8	10.0
28	11.5	10.6	15.0	16.9	20.5	23.2	23.7	24.6	26.6	25.3	20.8	17.3	14.3	12.5	14.5	16.1	15.8	14.1	14.3	14.9	14.1	14.0	23.8	47.6	24	47.6	10.6	18.8
29																									0			
30																									0			
31																									0			
Count	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	27	28	28	28	28	28	28	28	670	28	27	27.9
Maximum	28.7	28.7	32.4	35.1	36.7	35.2	33.2	33.1	37.3	44.3	97.2	192.9	229.3	90.8	34.9	89.0	76.5	50.6	36.3	34.7	35.0	50.6	31.2	47.6	24	229.3	28.7	60.1
Minimum	2.0	2.3	2.4	2.1	2.2	2.1	2.5	2.4	2.4	2.1	2.1	2.2	2.3	2.0	2.2	2.7	2.7	2.7	3.1	3.0	2.4	2.0	1.7	1.7	0	6.6	1.7	
Average	10.2	9.8	9.3	9.5	9.7	10.0	10.2	10.3	10.5	11.7	13.6	15.7	15.0	11.4	8.7	15.1	14.7	13.1	10.4	10.3	9.4	10.5	10.1	10.9	22	42	4	11.3

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100	Maximum
													229.3
													37.4
Data	3.0	3.9	4.8	5.6	6.7	8.1	10.7	15.7	23.7	32.2	60.5	229.3	11.3

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down R - Rate of Change

$PM_{2.5}$ - March ($\mu g/m^3$) Rundle Road 2015

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average
1	38.4	40.7	34.9	46.3	29.4	22.8	23.7	24.0	25.0	18.3	12.7	9.2	10.0	12.6	12.9	10.1	11.2	13.4	16.1	16.9	21.4	28.8	27.0	26.3	24	46.3	9.2	22.2
2	25.0	22.0	28.9	30.8	35.1	39.3	42.4	38.7	29.8	15.0	11.0	5.7	4.0	3.5	2.8	2.5	2.3	2.3	2.6	3.4	6.8	8.5	8.2	6.4	24	42.4	2.3	15.7
3	5.8	5.2	6.1	8.3	10.0	14.4	18.7	21.4	20.7	3.9	3.2	2.9	3.7	5.3	5.0	6.4	6.3	6.0	6.6	6.8	7.6	8.2	8.8	11.3	24	21.4	2.9	8.4
4	13.0	11.0	10.5	8.7	8.1	9.6	9.6	14.2	22.3	23.6	19.6	19.0	12.2	A	9.0	9.4	8.7	8.3	6.9	6.6	6.5	6.8	6.4	5.3	23	23.6	5.3	11.1
5	5.0	4.5	4.2	4.4	4.7	5.4	6.3	6.9	6.8	5.1	4.9	5.6	4.1	4.6	5.9	6.3	7.2	6.3	6.3	8.0	7.0	7.2	8.7	9.7	24	9.7	4.1	6.0
6	10.4	9.7	8.6	8.7	9.1	9.3	10.8	12.6	13.7	13.1	22.0	28.6	72.3	7.2	6.0	6.1	6.9	7.7	6.4	6.9	7.8	10.0	12.0	13.0	24	72.3	6.0	13.3
7	14.7	16.6	18.1	18.9	19.5	20.5	21.8	23.3	24.5	26.7	30.6	30.8	28.1	26.3	27.4	28.7	28.0	27.8	31.3	36.1	42.2	47.8	54.5	68.8	24	68.8	14.7	29.7
8	63.5	51.9	53.2	48.7	57.4	56.4	57.9	45.5	15.1	3.5	3.2	2.4	2.1	4.6	2.4	2.1	2.1	3.1	7.0	13.4	18.5	32.6	42.2	41.0	24	63.5	2.1	26.3
9	41.6	48.7	52.8	36.9	32.4	20.6	20.4	26.9	R	5.0	6.9	10.4	29.7	23.9	27.8	66.6	68.1	11.9	9.4	8.1	8.6	9.3	12.4	17.1	23	68.1	5.0	25.9
10	21.0	26.5	30.0	32.3	37.0	41.1	43.9	47.4	51.5	42.4	27.7	21.4	29.4	23.6	25.4	24.8	22.0	21.4	24.1	28.9	30.2	29.5	30.3	32.8	24	51.5	21.0	31.0
11	38.3	43.1	56.0	71.5	70.9	62.9	53.6	39.5	29.6	15.9	9.9	5.9	3.9	2.3	1.7	4.2	11.2	1.5	1.4	1.7	2.0	2.3	2.1	2.2	24	71.5	1.4	22.2
12	2.3	2.3	2.8	2.7	2.6	3.1	3.5	3.7	2.2	2.1	2.1	1.9	1.4	1.3	1.3	4.9	6.8	7.8	7.8	9.0	11.7	14.7	14.2	21.5	24	21.5	1.3	5.6
13	19.0	19.2	15.7	11.0	8.8	7.7	7.0	9.3	2.9	2.1	1.9	1.9	2.7	3.4	3.2	3.3	3.7	5.1	6.7	8.9	8.9	8.7	8.5	7.5	24	19.2	1.9	7.4
14	8.2	16.0	21.8	22.4	18.5	24.8	20.9	14.6	14.1	13.1	11.4	8.2	5.8	7.0	7.6	15.8	18.7	12.8	14.0	8.0	2.8	2.4	2.6	3.1	24	24.8	2.4	12.3
15	5.1	7.0	5.5	5.6	5.2	3.9	3.7	3.5	3.1	3.1	3.3	3.1	2.8	3.0	3.0	3.0	5.9	8.1	9.3	16.1	15.3	14.4	17.3	20.3	24	20.3	2.8	7.1
16	21.2	28.8	25.2	22.2	27.0	25.3	21.5	19.2	16.6	10.1	9.6	10.1	10.9	12.4	15.8	29.0	35.9	29.0	26.8	29.9	33.8	38.6	43.6	43.3	24	43.6	9.6	24.4
17	40.1	40.4	28.0	15.2	2.0	0.9	2.3	2.6	0.6	1.4	1.9	1.4	1.4	1.4	1.4	1.5	1.8	2.2	2.5	2.5	2.2	2.2	2.2	2.1	24	40.4	0.6	6.7
18	2.1	2.1	2.2	2.4	2.4	2.7	3.1	2.5	1.6	1.5	1.4	1.4	1.4	1.5	1.4	1.4	1.3	1.4	1.7	2.3	2.7	3.5	3.8	4.2	24	4.2	1.3	2.2
19	6.2	7.4	6.5	6.1	5.9	5.6	4.7	3.2	2.8	1.7	1.4	1.6	1.8	2.1	1.8	2.3	2.3	2.3	3.6	4.7	5.9	9.0	12.0	8.2	24	12.0	1.4	4.6
20	3.2	3.5	4.9	5.2	4.9	5.0	5.7	7.1	5.9	6.7	7.4	6.5	6.8	7.2	7.3	8.8	8.6	11.7	18.7	18.9	24.6	22.2	18.3	17.1	24	24.6	3.2	9.8
21	18.3	17.6	17.5	16.9	17.8	17.8	23.3	30.6	35.0	39.9	43.4	49.0	5.8	1.3	1.6	2.1	2.0	2.1	3.0	3.6	3.8	4.7	5.2	5.0	24	49.0	1.3	15.3
22	5.5	5.6	5.8	5.1	6.2	6.3	6.3	4.9	3.9	4.2	4.3	4.2	4.2	4.7	3.5	3.9	4.2	4.7	5.3	5.3	5.5	8.1	6.6	7.4	24	8.1	3.5	5.2
23	6.3	3.3	3.4	3.7	3.6	3.8	3.9	3.3	3.5	4.1	4.3	5.2	4.3	4.1	4.5	4.2	6.5	7.8	8.5	8.9	8.7	9.4	7.8	7.5	24	9.4	3.3	5.4
24	6.1	6.0	6.2	6.1	5.5	5.5	6.2	5.5	4.1	3.8	4.0	5.3	5.3	5.0	4.5	4.6	4.0	4.3	6.0	9.1	10.4	13.3	12.3	9.9	24	13.3	3.8	6.4
25	8.8	9.1	8.4	8.4	8.0	8.6	9.2	10.5	10.1	9.1	8.7	9.5	12.1	13.7	15.1	17.0	16.6	18.9	29.0	29.2	30.3	28.0	28.1	29.3	24	30.3	8.0	15.7
26	25.3	18.0	19.7	17.8	16.4	22.0	23.7	26.7	21.5	19.5	18.9	13.6	11.8	15.7	4.7	C	13.5	13.1	14.8	18.7	13.4	5.0	4.5	4.2	23	26.7	4.2	15.8
27	4.0	4.0	3.6	3.9	2.6	2.1	2.1	2.2	2.6	3.1	2.8	2.4	2.5	2.6	2.3	2.5	2.7	3.2	3.7	3.8	4.0	3.6	3.2	2.9	24	4.0	2.1	3.0
28	3.2	3.9	3.9	3.9	3.3	3.6	3.6	3.3	3.9	4.3	4.1	3.9	3.4	3.5	3.8	3.3	3.2	4.0	4.8	7.2	6.3	5.8	5.3	5.4	24	7.2	3.2	4.2
29	5.6	5.7	6.0	6.3	6.1	5.9	12.3	7.9	3.8	4.1	5.8	7.0	6.9	5.2	5.7	5.8	7.1	7.7	8.3	7.7	7.7	6.2	7.0	5.9	24	12.3	3.8	6.6
30	4.5	4.6	6.3	7.6	10.9	7.3	3.1	2.2	2.4	1.6	2.3	1.5	2.6	1.9	1.7	0.8	1.2	1.3	1.6	5.9	3.5	3.4	3.4	3.2	24	10.9	0.8	3.5
31	3.6	3.3	3.6	3.8	3.8	4.0	8.8	8.0	2.2	2.2	4.1	3.8	2.3	1.8	1.8	1.5	1.6	1.9	3.3	8.6	7.2	6.1	5.9	5.8	24	8.8	1.5	4.1
Count	31	31	31	31	31	31	31	31	30	31	31	31	31	30	31	30	31	31	31	31	31	31	31	31	741	31	30	30.9
Maximum	63.5	51.9	56.0	71.5	70.9	62.9	57.9	47.4	51.5	42.4	43.4	49.0	72.3	26.3	27.8	66.6	68.1	29.0	31.3	36.1	42.2	47.8	54.5	68.8	24	72.3	26.3	51.6
Minimum	2.1	2.1	2.2	2.4	2.0	0.9	2.1	2.2	0.6	1.4	1.4	1.4	1.4	1.3	1.3	0.8	1.2	1.3	1.4	1.7	2.0	2.2	2.1	2.1	23	4.0	0.6	1.6
Average	15.3	15.7	16.1	15.9	15.3	15.1	15.6	15.2	12.7	10.0	9.5	9.1	9.5	7.1	7.0	9.4	10.4	8.4	9.6	11.1	11.9	12.9	13.7	14.5	24	30	4	12.1

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100	Maximum
													72.3
													31.0
Data	2.2	3.2	4.1	5.5	6.8	8.7	13.0	20.3	29.4	40.7	60.9	72.3	12.2

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down R - Rate of Change