

October 2, 2018  
File: 160950528

**Attention: Ms. Emilee O'Leary, Regional Environmental Assessment Coordinator**  
Ministry of the Environment, Conservation and Parks  
Technical Support Section  
5775 Yonge Street, 8th Floor  
North York, ON M2M 4J1

Dear Ms. O'Leary,

**Reference: Durham York Energy Centre, MECP Data Validation Review of Q1 2018  
Quarterly Report (January to March 2018)**

The Ministry of the Environment, Conservation and Parks (MECP) conducted a review and issued a comment letter (dated August 20, 2018) regarding the Q1 2018 quarterly report for the Durham York Energy Centre (DYEC) project. This letter provides our responses to the MECP's comments and is an addendum to the report.

## **1.0 CONTINUOUS PARAMETERS**

**MECP Comment #1 (page 2 of 3):** *Based on the supporting documentation provided, the continuous parameters (NO<sub>2</sub>, PM<sub>2.5</sub>, and SO<sub>2</sub>) are deemed to be valid for the first quarter of 2018.*

**Stantec Response:** Noted.

## **2.0 NON-CONTINUOUS PARAMETERS**

**MECP Comment #1 (page 2 of 3):** *Based on the supporting documentation provided, total suspended particulate matter (TSP) and metals are deemed to be valid for the first quarter of 2018.*

**Stantec Response:** Noted.

**MECP Comment #2 (page 2 of 3):** In regards to the PAHs and Dioxins/Furans data, further clarification on the reported flows is required as noted below.

- a. *Please clarify why the flows for PAHs HiVol samples collected on February 7, February 19, March 3, March 15 and March 27, 2018 at the Rundle Station were lower than the recommended acceptable flow range (7.2 to 8.8 CFM). Table 3-5 "Summary of Instrument issues at the Rundle Road Station" did not address any equipment issues for the above noted dates for the PAH HiVol Sampler.*
- b. *The flows were also below the acceptable flow range for the Dioxins and Furans samples collected on February 19 and March 15, 2018 at Rundle Station. Please clarify.*

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**Reference:** Durham York Energy Centre, MECP Data Validation Review of Q1 2018 Quarterly Report (January to March 2018)

**Stantec Response:** In response to both a. and b, the cause of the low flow was determined to be a new technician who did not follow sampling protocols. The technician was removed from the project. At the start of the sampling program it was confirmed with the MECP that the PAH/Dioxin and Furan samplers were to be operated at their maximum achievable flow rate and thus the MECP requirement of the flow rate being  $\pm 10\%$  of the nominal flow was not considered to be in effect for these samples. Therefore, these instances were not reported as an equipment issue. However, in consideration of the MECP comment, an updated version of Table 3-5 is provided in Attachment 1.

**MECP Comment #3 (page 2 of 3):** *For future quarterly report submissions, when the quarterly period does not meet the minimum requirement of 75% valid data, the quarterly average should be reported as "INS" (insufficient data). Since during Q1 2018, the HiVol samples collected at Rundle station comprised of 53% valid data for TSP and metals, it is therefore recommended to report the Q1 average as insufficient data. The rationale provided for the invalid data is acceptable which comprised of the Hi-Vol being improperly initialized, resulting in the flow rates exceeding the acceptable range.*

**Stantec Response:** Noted, however, the quarterly reports have not presented quarterly average TSP and metals concentrations. Maximum and minimum 24-hour average TSP and metals concentrations have historically been reported for each station in the Quarterly reports. Quarterly average concentrations have only been provided for the continuous parameters in the quarterly reports.

**MECP Comment #4 (page 2 of 3):** *During our review, the following typographical errors and discrepancies were noted for your consideration:*

- a. *The submitted excel data for Dioxin and Furans at Courtice station has 2017 dates rather than 2018 dates. Please revisit the submitted data, and ensure that all measurements given are for the first quarter of 2018.*
- b. *Table 4-3 "Summary of Measured Ambient TSP/Metals Concentrations" there were discrepancies found in the calculated Maximum and Minimum concentrations at Courtice station - they do not correlate with the submitted data. This discrepancy was also noted in the minimum concentrations reported at Courtice station in Table 4-4. Please revisit the data to ensure the correct calculations were performed.*

**Stantec Response:**

- a. A revised excel spreadsheet (electronic format) is provided with this response letter. The data in the revised spreadsheet is consistent with the Courtice Station Dioxin and Furans data in Appendix I of the 2018 Q1 Report. Stantec has confirmed that the data provided in Appendix I of the Q1 report are correct.
- b. Stantec reviewed the calculations for the data in Tables 4-3 and 4-4 and verified that the submitted data in Appendices G and H are correct. However, typographic errors were found within the report tables. Updated versions of Tables 4-3 and 4-4 are provided in Attachments 2 and 3 of this response letter, respectively.

**Reference:** Durham York Energy Centre, MECP Data Validation Review of Q1 2018 Quarterly Report (January to March 2018)

We trust that this letter has addressed the MECP's questions and comments. Please contact the undersigned if you would like to discuss further.

Yours truly,

**Stantec Consulting Ltd.**



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**Attachments:**

- Attachment 1 – Table 3-5 Summary of Instrument Issues at the Rundle Road Station  
(Predominately Downwind)  
Attachment 2 – Table 4-3 Summary of Measured Ambient TSP/Metals Concentrations  
Attachment 3 – Table 4-4 Summary of Measured Ambient PAH Concentrations

**Table 3-5: Summary of Instrument Issues at the Rundle Road Station  
(Predominately Downwind)**

Parameter	Issues	Time Frame	Remedial Action
SO <sub>2</sub>	None		
NO <sub>x</sub>	None		
PM <sub>2.5</sub>	None		
TSP/Metals Hi-Vol	Power failure during sampling.	January 8	Power failed after 21 minutes of sampling. Sample invalidated. Follow-up testing confirmed that unit was fully functional and was returned to service.
	The Hi-Vol mass flow controller was improperly set, resulting in a flow rate outside of the range to be considered valid.	February 25 through March 27	The cause was determined to be a new technician who did not follow sampling protocols. The technician was removed from the project. The samples were invalidated.
PAH/ D/F Hi-Vol	Motor failure	January 14	Sample invalidated. PUFF motor was replaced with spare motor.
	The Hi-Vol ball valve was likely partly closed during sample collection, resulting in a low flow rate.	February 7 and 19 March 3, 15 and 27	The cause was determined to be a new technician who did not follow sampling protocols. The technician was removed from the project.
Other	None		

**Table 4-3: Summary of Measured Ambient TSP/Metals Concentrations**

Contaminant	Units	MECP Criteria	HHRA Health Based Criteria	Courtice WPCP (Predominately Upwind)			Rundle Road (Predominately Downwind)			Fence Line		
				Maximum	Minimum	No. of Exceedances	Maximum	Minimum	No. of Exceedances	Maximum	Minimum	No. of Exceedances
Particulate	µg/m <sup>3</sup>	120	120	28.4	8.48	0	74.8	18.9	0	70.0	14.4	0
Total Mercury (Hg)	µg/m <sup>3</sup>	2	2	4.19E-05	6.55E-06 <sup>A</sup>	0	2.05E-05	6.29E-06 <sup>A</sup>	0	4.32E-05	6.26E-06 <sup>A</sup>	0
Aluminum (Al)	µg/m <sup>3</sup>	4.8	-	1.68E-01	1.99E-02 <sup>A</sup>	0	3.55E-01	1.94E-02 <sup>A</sup>	0	2.68E-01	1.62E-02 <sup>A</sup>	0
Antimony (Sb)	µg/m <sup>3</sup>	25	25	7.14E-03	3.28E-03 <sup>A</sup>	0	4.39E-03 <sup>A</sup>	3.14E-03 <sup>A</sup>	0	4.14E-03 <sup>A</sup>	3.13E-03 <sup>A</sup>	0
Arsenic (As)	µg/m <sup>3</sup>	0.3	0.3	4.29E-03	1.97E-03 <sup>A</sup>	0	2.63E-03 <sup>A</sup>	1.89E-03 <sup>A</sup>	0	2.48E-03 <sup>A</sup>	1.88E-03 <sup>A</sup>	0
Barium (Ba)	µg/m <sup>3</sup>	10	10	6.65E-03	3.04E-03	0	1.08E-02	3.42E-03	0	1.06E-02	3.17E-03	0
Beryllium (Be)	µg/m <sup>3</sup>	0.01	0.01	7.14E-04	3.28E-04 <sup>A</sup>	0	4.39E-04 <sup>A</sup>	3.14E-04 <sup>A</sup>	0	4.14E-04 <sup>A</sup>	3.13E-04 <sup>A</sup>	0
Bismuth (Bi)	µg/m <sup>3</sup>	-	-	4.29E-03	1.97E-03 <sup>A</sup>	-	2.63E-03 <sup>A</sup>	1.89E-03 <sup>A</sup>	-	2.48E-03 <sup>A</sup>	1.88E-03 <sup>A</sup>	-
Boron (B)	µg/m <sup>3</sup>	120	-	4.29E-03	1.97E-03 <sup>A</sup>	0	4.97E-03	1.89E-03 <sup>A</sup>	0	2.48E-03 <sup>A</sup>	1.88E-03 <sup>A</sup>	0
Cadmium (Cd)	µg/m <sup>3</sup>	0.025	0.025	1.43E-03	6.55E-04 <sup>A</sup>	0	8.77E-04 <sup>A</sup>	6.29E-04 <sup>A</sup>	0	8.27E-04 <sup>A</sup>	6.26E-04 <sup>A</sup>	0
Chromium (Cr)	µg/m <sup>3</sup>	0.5	-	5.16E-03	1.64E-03 <sup>A</sup>	0	2.19E-03 <sup>A</sup>	1.57E-03 <sup>A</sup>	0	7.21E-03	1.59E-03 <sup>A</sup>	0
Cobalt (Co)	µg/m <sup>3</sup>	0.1	0.1	1.43E-03	6.55E-04 <sup>A</sup>	0	8.77E-04 <sup>A</sup>	6.29E-04 <sup>A</sup>	0	8.27E-04 <sup>A</sup>	6.26E-04 <sup>A</sup>	0
Copper (Cu)	µg/m <sup>3</sup>	50	-	1.81E-02	1.64E-03 <sup>A</sup>	0	3.73E-02	5.47E-03	0	1.43E-02	4.92E-03	0
Iron (Fe)	µg/m <sup>3</sup>	4	-	3.96E-01	9.29E-02	0	7.22E-01	1.12E-01	0	7.76E-01	9.07E-02	0
Lead (Pb)	µg/m <sup>3</sup>	0.5	0.5	5.52E-03	9.83E-04 <sup>A</sup>	0	5.41E-03	1.02E-03 <sup>A</sup>	0	7.53E-03	9.53E-04 <sup>A</sup>	0
Magnesium (Mg)	µg/m <sup>3</sup>	-	-	2.08E-01	1.77E-02 <sup>A</sup>	-	5.54E-01	4.43E-02	-	5.90E-01	1.62E-02 <sup>A</sup>	-
Manganese (Mn)	µg/m <sup>3</sup>	0.4	-	1.21E-02	3.52E-03	0	2.52E-02	3.26E-03	0	3.91E-02	3.30E-03	0
Molybdenum (Mo)	µg/m <sup>3</sup>	120	-	2.14E-03	9.83E-04 <sup>A</sup>	0	1.32E-03 <sup>A</sup>	9.43E-04 <sup>A</sup>	0	1.24E-03 <sup>A</sup>	9.40E-04 <sup>A</sup>	0
Nickel (Ni)	µg/m <sup>3</sup>	0.2	-	2.14E-03	9.83E-04 <sup>A</sup>	0	2.87E-03	9.43E-04 <sup>A</sup>	0	1.24E-03 <sup>A</sup>	9.40E-04 <sup>A</sup>	0
Phosphorus (P)	µg/m <sup>3</sup>	-	-	1.79E-02	8.19E-03 <sup>A</sup>	-	4.49E-02	8.54E-03 <sup>A</sup>	-	2.88E-02	7.95E-03 <sup>A</sup>	-
Selenium (Se)	µg/m <sup>3</sup>	10	10	7.14E-03	3.28E-03 <sup>A</sup>	0	4.39E-03 <sup>A</sup>	3.14E-03 <sup>A</sup>	0	4.14E-03 <sup>A</sup>	3.13E-03 <sup>A</sup>	0
Silver (Ag)	µg/m <sup>3</sup>	1	1	3.57E-03	1.64E-03 <sup>A</sup>	0	2.19E-03 <sup>A</sup>	1.57E-03 <sup>A</sup>	0	2.07E-03 <sup>A</sup>	1.57E-03 <sup>A</sup>	0
Strontium (Sr)	µg/m <sup>3</sup>	120	-	6.38E-03	1.20E-03	0	1.14E-02	1.55E-03	0	2.93E-02	1.42E-03	0
Thallium (Tl)	µg/m <sup>3</sup>	-	-	7.14E-03	3.28E-03 <sup>A</sup>	-	4.39E-03 <sup>A</sup>	3.14E-03 <sup>A</sup>	-	4.14E-03 <sup>A</sup>	3.13E-03 <sup>A</sup>	-
Tin (Sn)	µg/m <sup>3</sup>	10	10	7.14E-03	3.28E-03 <sup>A</sup>	0	4.39E-03 <sup>A</sup>	3.14E-03 <sup>A</sup>	0	4.14E-03 <sup>A</sup>	3.13E-03 <sup>A</sup>	0
Titanium (Ti)	µg/m <sup>3</sup>	120	-	8.83E-03	3.28E-03 <sup>A</sup>	0	2.84E-02	3.42E-03 <sup>A</sup>	0	1.32E-02	3.18E-03 <sup>A</sup>	0
Vanadium (V)	µg/m <sup>3</sup>	2	1	3.57E-03	1.64E-03 <sup>A</sup>	0	2.19E-03 <sup>A</sup>	1.57E-03 <sup>A</sup>	0	2.07E-03 <sup>A</sup>	1.57E-03 <sup>A</sup>	0
Zinc (Zn)	µg/m <sup>3</sup>	120	-	9.57E-02	1.34E-02	0	5.45E-02	1.42E-02	0	1.55E-01	1.50E-02	0
Zirconium (Zr)	µg/m <sup>3</sup>	20	-	3.57E-03	1.64E-03 <sup>A</sup>	0	2.19E-03 <sup>A</sup>	1.57E-03 <sup>A</sup>	0	2.07E-03 <sup>A</sup>	1.57E-03 <sup>A</sup>	0
Total Uranium (U)	µg/m <sup>3</sup>	1.5	-	1.64E-03 <sup>A</sup>	1.47E-04 <sup>A</sup>	0	1.97E-04 <sup>A</sup>	1.41E-04 <sup>A</sup>	0	1.86E-04 <sup>A</sup>	1.41E-04 <sup>A</sup>	0

A. Measured concentration was less than the laboratory method detection limit.

**Table 4-4: Summary of Measured Ambient PAH Concentrations**

Contaminant	Units	MECP Criteria	HHRA Health Based Criteria	Courtice WPCP (Predominately Upwind)			Rundle Road (Predominately Downwind)		
				Maximum	Minimum	No. of Exceedances	Maximum	Minimum	No. of Exceedances
Benzo(a)pyrene	ng/m <sup>3</sup>	0.05 <sup>A</sup> 5 <sup>B</sup> 1.1 <sup>C</sup>	1	7.93E-02	1.05E-02	2 0 0	1.26E-01	1.15E-02	3 0 0
1-Methylnaphthalene	ng/m <sup>3</sup>	12,000	-	4.53E+00	9.52E-01	0	5.37E+00	7.94E-01	0
2-Methylnaphthalene	ng/m <sup>3</sup>	10,000	-	7.14E+00	1.40E+00	0	8.66E+00	1.19E+00	0
Acenaphthene	ng/m <sup>3</sup>	-	-	2.02E+00	7.94E-02 <sup>F</sup>	-	1.79E+00	9.93E-02 <sup>F</sup>	-
Acenaphthylene	ng/m <sup>3</sup>	3,500	-	3.77E-01	7.94E-02 <sup>F</sup>	0	5.16E-01	9.93E-02 <sup>F</sup>	0
Anthracene	ng/m <sup>3</sup>	200	-	1.19E-01 <sup>F</sup>	7.26E-02 <sup>F</sup>	0	1.46E-01 <sup>F</sup>	9.93E-02 <sup>F</sup>	0
Benzo(a)anthracene	ng/m <sup>3</sup>	-	-	1.19E-01 <sup>F</sup>	7.26E-02 <sup>F</sup>	-	1.46E-01 <sup>F</sup>	9.93E-02 <sup>F</sup>	-
Benzo(a)fluorene	ng/m <sup>3</sup>	-	-	2.38E-01 <sup>AF</sup>	1.45E-01 <sup>F</sup>	-	2.91E-01 <sup>F</sup>	1.99E-01 <sup>F</sup>	-
Benzo(b)fluoranthene	ng/m <sup>3</sup>	-	-	2.90E-01	7.41E-02 <sup>F</sup>	-	1.46E-01 <sup>F</sup>	9.93E-02 <sup>F</sup>	-
Benzo(b)fluorene	ng/m <sup>3</sup>	-	-	2.38E-01 <sup>F</sup>	1.45E-01 <sup>F</sup>	-	2.91E-01 <sup>F</sup>	1.99E-01 <sup>F</sup>	-
Benzo(e)pyrene	ng/m <sup>3</sup>	-	-	2.38E-01 <sup>F</sup>	1.45E-01 <sup>F</sup>	-	2.91E-01 <sup>F</sup>	1.99E-01 <sup>F</sup>	-
Benzo(g,h,i)perylene	ng/m <sup>3</sup>	-	-	1.19E-01 <sup>F</sup>	7.26E-02 <sup>F</sup>	-	1.46E-01 <sup>F</sup>	9.93E-02 <sup>F</sup>	-
Benzo(k)fluoranthene	ng/m <sup>3</sup>	-	-	1.19E-01 <sup>F</sup>	7.26E-02 <sup>F</sup>	-	1.46E-01 <sup>F</sup>	9.93E-02 <sup>F</sup>	-
Biphenyl	ng/m <sup>3</sup>	-	-	2.41E+00	7.62E-01	-	3.02E+00	6.36E-01	-
Chrysene	ng/m <sup>3</sup>	-	-	3.02E-01	7.94E-02 <sup>F</sup>	-	1.46E-01 <sup>F</sup>	9.93E-02 <sup>F</sup>	-
Dibenz(a,h)anthracene <sup>D</sup>	ng/m <sup>3</sup>	-	-	1.19E-01 <sup>F</sup>	7.26E-02 <sup>F</sup>	-	1.46E-01 <sup>F</sup>	9.93E-02 <sup>F</sup>	-
Dibenzo(a,c)anthracene + Picene <sup>D</sup>	ng/m <sup>3</sup>	-	-	2.38E-01 <sup>F</sup>	1.45E-01 <sup>F</sup>	-	2.91E-01 <sup>F</sup>	9.44E-02 <sup>F</sup>	-
Fluoranthene	ng/m <sup>3</sup>	-	-	9.17E-01	7.94E-02 <sup>F</sup>	-	1.15E+00	9.93E-02 <sup>F</sup>	-
Indeno (1,2,3-cd)pyrene	ng/m <sup>3</sup>	-	-	1.19E-01 <sup>F</sup>	7.26E-02 <sup>F</sup>	-	1.46E-01 <sup>F</sup>	9.93E-02 <sup>F</sup>	-

**Table 4-4: Summary of Measured Ambient PAH Concentrations**

Contaminant	Units	MECP Criteria	HHRA Health Based Criteria	Courtice WPCP (Predominately Upwind)			Rundle Road (Predominately Downwind)		
				Maximum	Minimum	No. of Exceedances	Maximum	Minimum	No. of Exceedances
Naphthalene	ng/m <sup>3</sup>	22,500	22,500	3.17E+01	6.92E+00	0	3.57E+01	5.16E+00	0
o-Terphenyl	ng/m <sup>3</sup>	-	-	2.38E-01 <sup>F</sup>	1.45E-01 <sup>F</sup>	-	2.91E-01 <sup>F</sup>	1.99E-01 <sup>F</sup>	-
Perylene	ng/m <sup>3</sup>	-	-	2.38E-01 <sup>F</sup>	1.45E-01 <sup>F</sup>	-	2.91E-01 <sup>F</sup>	1.99E-01 <sup>F</sup>	-
Phenanthrene	ng/m <sup>3</sup>	-	-	2.64E+00	6.35E-01	-	3.93E+00	8.26E-01	-
Pyrene	ng/m <sup>3</sup>	-	-	6.10E-01	7.94E-02 <sup>F</sup>	-	6.45E-01	9.93E-02 <sup>F</sup>	-
Tetralin	ng/m <sup>3</sup>	-	-	1.84E+00	8.25E-01	-	2.29E+00	5.96E-01	-
Total PAH <sup>E</sup>	ng/m <sup>3</sup>	-	-	5.43E+01	1.34E+01	-	6.35E+01	1.16E+01	-

- A. Ontario Ambient Air Quality Criteria. The standard for benzo(a)pyrene (B(a)P) is for B(a)P as a surrogate for PAHs.
- B. O. Reg. 419/05 Schedule 6 Upper Risk Thresholds.
- C. O. Reg. 419/05 24 Hour Guideline.
- D. Based on laboratory analyses, dibenzo(a,c)anthracene co-elutes with dibenz(a,h)anthracene. Picene elutes after dibenz(a,h)anthracene.
- E. The reported total PAH is the sum of all analyzed PAH species.
- F. Measured concentration was less than the laboratory method detection limit.