



June 14<sup>th</sup>, 2013

Corporation of the Town of Oakville  
1225 Trafalgar Road  
Environmental Policy  
Oakville, Ontario L6H 0H3

Attention: **Mr. Jeffrey Lee, P.Eng., EP**  
**Research Policy Analyst - Air**

Re: **Peer Review of the Health Protection Air Quality By-Law (HPAQB) Application for Approval Suncor Energy Phase 2: Response to Peer Review of the Complete Application (Addendum Review)**

1155 North Service  
Road West  
Unit 14  
Oakville, Ontario  
Canada  
L6M3E3  
Telephone  
(905) 901-2912  
Fax  
(905) 901-2918

Dear Mr. Lee,

Dillon Consulting Limited (Dillon) completed the *Phase (2): Review of the Complete Application* of the Health Protection Air Quality By-Law (HPAQB), for the Suncor Energy Products Partnership Inc. (SEPPI) (the Applicant) Application for Approval of the Oakville Distribution Terminal (the Application) on April 9<sup>th</sup>, 2013.

The HPAQB seeks to safeguard the health, safety and well-being of Oakville residents by gathering information on emissions of fine particulate matter (FPM) and its precursors, and regulating major emitters of these pollutants.

The overall findings of Dillon's *Review of the Complete Application* for the SEPPI Application were that further information is required to support the conclusions provided within the Application. The Application indicates that, based on the emission estimates and dispersion modelling analysis, the Suncor Terminal is predicted to not significantly affect the existing air quality in Oakville. This assertion is centered on the modelled predictions that facility induced FPM concentrations are less than the HPAQB threshold of 0.2 µg/m<sup>3</sup> (annual basis). Clarification and/or further information were requested in the *Review of the Complete Application* so that these assessment results can be confirmed.

In a letter dated May 9, 2013, the Applicant responded to the *Review of the Complete Application*; Dillon has reviewed these responses and provided a detailed summary of this review and conclusions (see Appendix 1).

Overall, Dillon's conclusions are that it is not likely that the overall modelled predictions of facility induced FPM concentrations will exceed the HPAQB threshold of 0.2 µg/m<sup>3</sup> (annual basis) and so the Suncor Terminal is predicted to not significantly affect the existing air quality in Oakville.

*Continued...*

Corporation of the Town of Oakville  
June 14<sup>th</sup>, 2013  
Page 2

We trust that this satisfies Dillon's requirements of the second stage of the *Peer Review Phase (2): Review of the Complete Application (Addendum Review)* of the HPAQB By-Law. Please feel free to contact the undersigned with any questions or clarifications.

Sincerely,

**DILLON CONSULTING LIMITED**



Jennifer Ahluwalia, P.Eng.  
Partner

JA/tlm



---

## **APPENDIX 1**

---



## Appendix 1 – Detailed Review/Conclusions to Applicant’s Response to Peer Review

<b>Applicant Response</b>	<b>Dillon Review/Conclusions</b>
<p>1. Item 3.2 Concentration and Risk Contour Mapping – As advised in previous communication, concentration and risk contour mapping were not required for the Suncor submittal as the facility will not have Fine Particulate Matter (FPM) concentrations in excess of 0.2 ug/m3 on an annual basis. Suncor did advise that they would be willing to provide such mapping as a good will gesture, upon the Town accepting the application as submitted. We note that this acceptance has not yet occurred, and that the process is instead being prolonged by ongoing requests for further information.</p>	<p>No comments.</p>
<p>2. Item 3.6 Control Efficiencies for each emission control device and/or pollution prevention practice are not provided as it is not practical to do so for a complex facility and operation. There are two main sources of Volatile Organic Compounds (VOC’s) at this facility; the loading racks and storage tanks. There is a vapour recovery unit (VRU) at the loading racks. The VRU and its associated Continuous Emission Monitoring (CEM) is tested yearly. In 2012, the unit efficiency was 99.9%.</p>	<p>As stated in the <i>Review of the Complete Application</i>, control efficiencies for each emission control device and/or pollution prevention practice are not provided however it is acknowledged that this is difficult to provide for the types of sources at the Suncor Terminal. No further information is requested.</p>
<p>3. Item 3.7 Number of tanks – There are twenty (20) large tanks on site. An approximation based on experience is that the paint lasts approximately 10 years on a tank, and on average one tank is painted at the facility each year. Note that as a maximum, two tanks would be painted each year.</p> <p>Averaging calculations – Daily average concentrations are calculated from the annual average. The annual average value is divided by 365 days to determine the daily average. For the Max emission scenarios the annual emissions are divided by the specific number of days the activity would occur to determine the max daily emissions.</p>	<p>Stating that there are 20 large tanks and that the paint lasts approximately 10 years implies that on average 2 tanks could be painted a year. With this explanation, as reviewers we are led to understand that tanks will go unpainted, even though may need repainting, for several years; so the maximum number of tanks painted per year is two. Provided this is correct, there are no further comments.</p> <p>Thank you for clarification on the calculation of the average emission scenarios; however it is still not clear how the maximum annual VOC emissions for Sources 1-4 were determined. There appears to be a discrepancy between the maximum daily value (252.6 kg/day) for Sources 1-4 on page 120 of the PDF file 122301219_HPAQB_submission_2012Sep25_FINAL.pdf and that</p>

<p><b>Applicant Response</b></p> <p>TANKS input files – The tanks version 4.09 files are provided electronically on optical media (CD). There are two (2) input (MS Access) files and 1 output file (MS Excel). The naming is as follows- “tankdata.mdb” has composition data and “Sunmax.mdb” has the tank parameters. “Avg_forMaxDay.xls” contains results (“emission” tab contains raw data; the other tabs are processed data).</p> <p>TANKS speciation – The TANKS model default speciation was used in the emission results presented and then used for dispersion analysis. The actual speciation at Suncor, where available, is provided in the report for comparison, but it was deemed that modification of the established and proven defaults would not materially influence emission prediction outcomes, and a more consistent set of output would result from using the defaults.</p>	<p><b>Dillon Review/Conclusions</b></p> <p>provided in Table 2-2 (191 kg/day). It seems that the maximum daily VOC emissions listed in the Attachment 5 is in line with maximum annual emissions in Table 2.2.</p> <p>Thank you for providing the complete TANKS input files. Based on a review of the TANKS input files:</p> <ul style="list-style-type: none"> <li>• It is clear that TANKS default speciation was used in the modelling and different gasoline mixtures were used during the year;</li> <li>• It was possible to replicate the TANKS outputs files provided in the Application using the input files provided (in the Applicants response dated May 9<sup>th</sup>, 2013) with the exception of one source (Tank 51). The total throughput is inconsistent with the sum of the throughputs resulting in an error message. There appears to be a connection to this and the error described above with the maximum overall VOC emissions presented for Sources 1 – 4. This should be checked, and further clarification on the calculation of these daily emissions should be provided if warranted.</li> </ul> <p>Overall, although some items above remain unresolved, it is not likely that the overall modelled predictions of facility induced FPM concentrations will exceed the HPAQB threshold of 0.2 µg/m<sup>3</sup> (annual basis).</p>
<p>4. Item 4.2.1 Frequency of emissions within 90% of the worst-case emissions – Based on the available data, this cannot be conclusively determined. The variability of emissions can be inferred from the difference between the maximum and average values presented in the data contained in the submission. The complex inter relationship of sources and related emissions does not allow conclusions to easily establish frequency of 90% of the worst case emissions. As the impact of emissions results are not significant, this analysis is determined to not be</p>	<p>As stated in the <i>Review of the Complete Application</i>, additional information for this item will only be required if the other information requested (related to Item 3.7 above) results in significant change to the impact results (i.e., impacts are greater than the Town’s 0.20 µg/m<sup>3</sup> (annual) threshold value). Even though further clarification is required for Item 3.7 it is not expected that potential changes to the calculation of emissions from the tanks will result in a significant change to the overall impact results and so further information is not requested.</p>

Applicant Response	Dillon Review/Conclusions
<p>material.</p> <p>5. Item 5 – Mapping – See 1) Item 3.2 Concentration and Risk Contour Mapping above. Suncor’s offer of providing this mapping as a goodwill gesture is conditional on written acceptance of the Suncor HPAQB submission by the Town.</p> <p>6. Appendix 2 – Stantec is unable to comment on Dillon’s challenge with the CALPUFF runs using the input files provided for the HPAQB by the bylaw specified CALPUFF Ver 5.8 model code. We note that version 5.8 is a circa 2007 CALPUFF code. We acknowledge there have now been several revisions since the bylaw mandated version was released. Stantec obtained results with the bylaw mandated version. It was our understanding Dillon carried out CALPUFF modeling with the software on a desktop system setup and was required to use a different version from the one mandated by the bylaw as there were numerical concerns with version 5.8. Stantec maintains a high performance computing cluster (HPC) specifically for air dispersion modeling in our Stantec Calgary office. This system is available to our Stantec Atmospheric Environment team across Canada and the USA to reduce the turnaround time for our modeling runs. The HPC system is a Linux based operating system, and Stantec complies and validates the source code distributed by publishers (in this case EPA maintained by TRC for version 5.8 of CALPUFF) on this system. Stantec would be pleased to discuss Dillon’s challenges with the Version 5.8 code as part of a separate follow up assignment on behalf of the account of the Town or Dillon should that be necessary. However, as Dillon verifies that the results of the modeling provided by Stantec are valid for all scenarios, we request deletion in its entirety of the third paragraph of Appendix 2.</p>	<p>No comments.</p> <p>As per our discussions with the CALPUFF developer, there were two bugs that are related with the US EPA approved version (version 5.8) running PRIME building downwash algorithms. The numerical instability resulting from the two bugs has nothing to do with the computing platforms. We understand that these two bugs had been fixed by the developer in the past, however, the US EPA has never approved that version with the bug fixed, therefore, is not available on the public domain (TRC web site).</p> <p>Overall, although this discrepancy remains unresolved, it is not likely that the overall modelled predictions of facility induced FPM concentrations will exceed the HPAQB threshold of 0.2 µg/m<sup>3</sup> (annual basis), so no further action is recommended.</p>

