

Background

The Beachville area air quality assessment has been ongoing since June 2014 in response to community concerns about air quality stemming from quarry operations. Southwestern Public Health (SWPH) and the Ministry of the Environment, Conservation and Parks (MECP) made a commitment to members of the community to provide updates on air monitoring results and other initiatives aimed at improving air quality and reducing the number of dust events caused by quarry operations.

The following is an update on the outcomes of the Ministry's particulate and air quality sampling program and the independent sampling conducted by SWPH for 2018.

Particulate sampling results –Ministry of Environment, Conservation and Parks

As a commitment to provide updates on air monitoring results in the Beachville, the MECP monitored total suspended particulates (TSP) using four monitoring stations in the Beachville area throughout 2018. In addition to TSP, the MECP also monitored particulate matter concentrations of PM₁₀ and metal concentrations in PM₁₀ at station 17006/17506 (Figure 1).

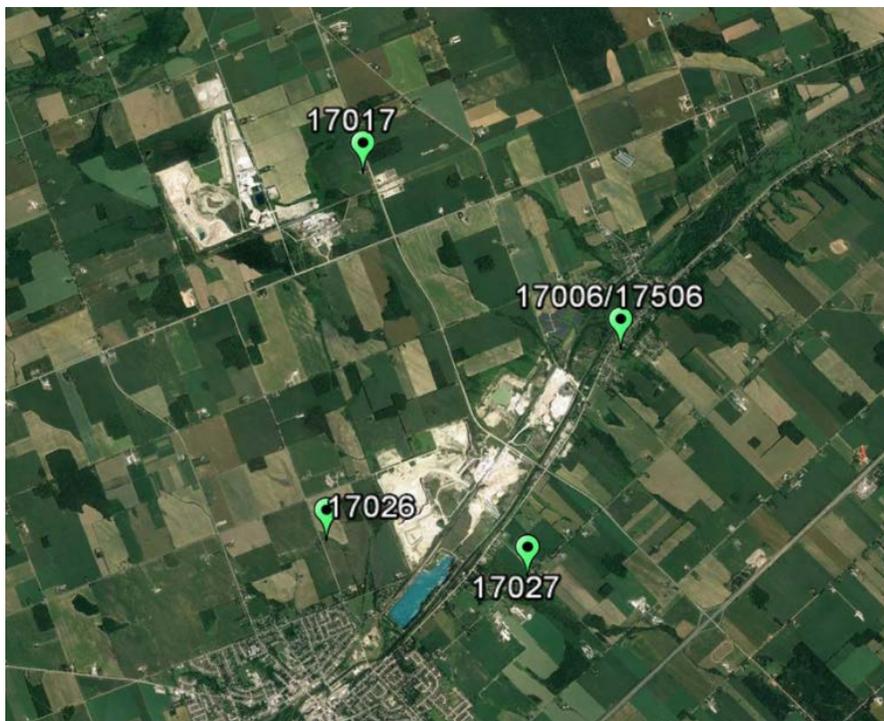


Figure 1: 2018 MECP particulate monitoring stations in the Beachville area.

The results show:

1. Particulate concentrations were generally below the applicable Ambient Air Quality Criteria (AAQC).
2. TSP concentrations were below the MECP's annual AAQC (60 $\mu\text{g}/\text{m}^3$, based on a geometric mean).
3. Exceedances of the 24-hour AAQC for TSP (120 $\mu\text{g}/\text{m}^3$) were observed in 1 of the 49 samples collected at station 17017 and 2 of the 55 samples collected at station 17027. TSP exceedances were not observed at the other two monitoring stations.
4. An exceedance of the 24-hour AAQC for PM_{10} (50 $\mu\text{g}/\text{m}^3$) was observed in one of the 47 samples collected at station 17506.
5. Analytical results of metals sampling showed very low concentrations with no exceedances of applicable AAQC.
6. Based on the results from station 17006 (the MECP's longest running station, now located at the Bell building, TSP concentrations in the Beachville area in the last six years (2013-2018) have decreased from historical levels (Figure 2). Concentrations over the last six years (2013-2018) are stable; that is, neither an increasing nor decreasing trend in concentrations is present.

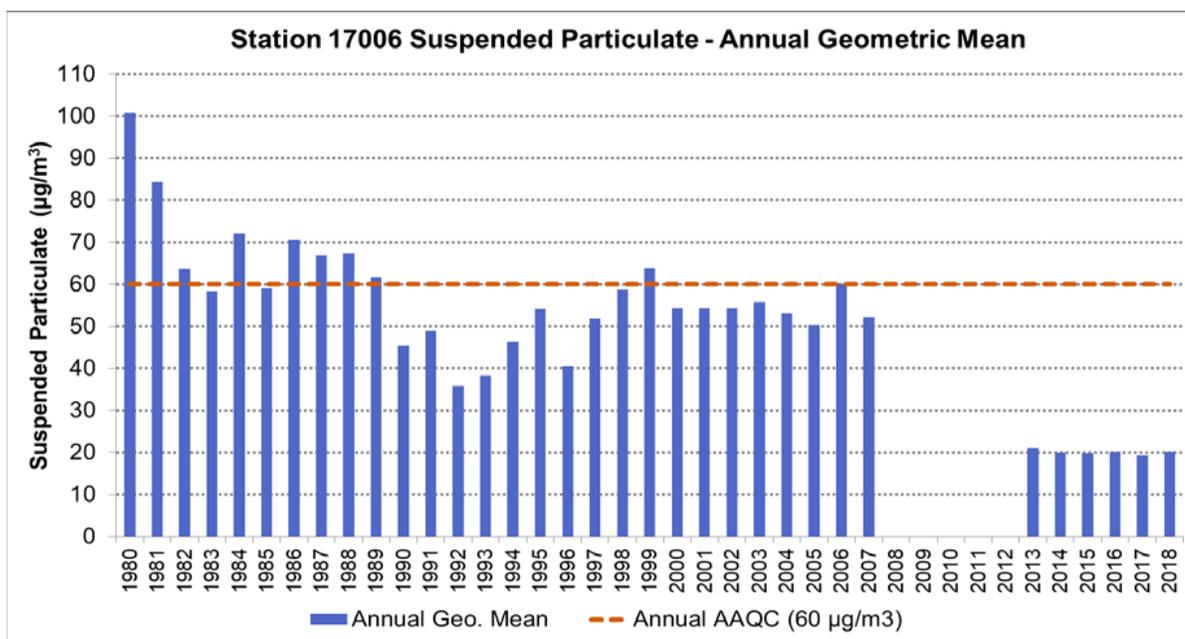


Figure 2: Annual geometric mean TSP concentrations at station 17006 between 1980 and 2018, in comparison to the MECP annual AAQC of 60 $\mu\text{g}/\text{m}^3$. This station moved from 12 Vine Street to the Bell building on Canfield Lane in September 2017. Between 2008 and 2012, TSP was measured using a different instrument (a Low Volume air monitor). Results during this time are not shown as they are not directly comparable to TSP measurements collected with Hi-Vol air monitors.

Station 17506 showed a decreasing trend of PM_{10} . The MECP will continue to review the PM_{10} monitoring data to confirm the trend.

A complete copy of the [Report](#), as well as the accompanying [technical memo](#) can be found on our website.

2018 Mobile Air Monitoring Survey of Carmeuse Lime – Ministry of Environment, Conservation and Parks

In addition, mobile air monitoring was conducted over four days in August – October 2018 near the Carmeuse Lime Beachville Operation. This was to collect data on site specific particulate matter concentrations and Volatile Organic Compounds (VOCs). The results show that none of the VOCs exceeded the assessment values. On average, concentrations of PM_{2.5}, PM₁₀, and TSP were higher downwind of the facility than upwind.

2019 Changes to the Air Monitoring Network – Ministry of Environment, Conservation and Parks

The MECP has installed and is piloting the use of two continuous particulate Beta Attenuation monitors in Beachville. The Beta Attenuation monitors measure PM₁₀ on an hourly basis. The monitors are located at two existing monitoring locations and will remain until the MECP is satisfied with the data integrity of the units. The Beta Attenuation monitors were installed and began collecting data in May 2018.

The MECP reviewed all the 2018 air monitoring station data and continues the operation of the Beta Attenuation monitors. The review of the 2018 data determined that the Beta Attenuation monitors offer a significant advantage over HiVol monitoring. The Beta Attenuation monitors provide faster access to more data. The Beta Attenuation monitors measure concentrations every hour, 24-hours a day, every day while HiVols only measure the 24-hour average concentration every six days. Data from the Beta Attenuation monitors reliably indicate when concentrations are elevated or low. The review also identified that TSP monitoring at stations 17026 and 17027 are not necessary for an assessment of particulate levels in the Beachville area. The annual TSP concentrations measured at these locations have generally been lower than or comparable to those measured at station 17006.

After reviewing the air monitoring data, the MECP:

- Decided to continue the Beta Attenuation monitor pilot in order to provide faster access to more data and to obtain more information to further to understand the accuracy of specific concentrations measured.
- Removed the two Hi-Vol monitors at stations 17026 and 17027, reducing the overall monitoring locations in Beachville from four to two; and
- Converted the station 17017 TSPHi-Vol to a PM₁₀ Hi-Vol.

The PM₁₀ HiVol at station 17506 will continue to collect data once every six days. The MECP will also continue measuring TSP with the HiVol at station 17006 and will continue to review the operation of the Beta Attenuation monitors to verify the quality of the data.

Independent Air Monitoring Conducted by Southwestern Public Health

SWPH continues to monitor the air quality in the areas surrounding Beachville, Ingersoll and Zorra using a Dustrax Monitor. This has been conducted at the Beachville District Museum (due to its proximity to Carmeuse) and is in its final year of a 3-year study. For 2018, the results indicated that 24-hour average PM_{2.5} and PM₁₀ concentrations for each day from June 13 to July 17, 2018 were well below the CAAQS 24-hour PM_{2.5} guideline of 28 µg/m³ and the AAQC PM₁₀ guideline of 50 µg/m³. A report on the 3 year 1-month sampling study on PM_{2.5}, and PM₁₀ (2017-2019) will be available as of mid-March, 2020. SWPH will continue to respond to complaints and concerns of air quality on a case-by-case basis.