CN Milton Logistics Hub: 2022 Construction Ambient Air Quality Monitoring Follow-Up Program Results

Final Report

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Acronyms / Abbreviations

$\mu g/m^3$	Micrograms per cubic metre, a unit of concentration
AAQC	Ambient Air Quality Criteria
The Air TDR	*Milton Logistics Hub – Technical Data Report Air Quality (Appendix E.1)* (Stantec, 2015)
AQ	Air Quality
AQA	Air Quality Assessment
B(a)P	Benzo(a)pyrene
BAQA	Baseline air quality assessment (July 2015 – August 2016)
CAS Number	Chemical Abstracts Service Identification Number for chemical compounds
CAAQS	Canadian Ambient Air Quality Standards
CAQMP	Construction Air Quality Monitoring Program
CCME	Canadian Council of the Ministers of the Environment
CN	Canadian National Railway Company
DCC	Dufferin Construction Company, CN Project Contractor
The Decision	The Minister of Environment and Climate Change's Decision Statement on the Milton Logistics Hub issued January 21, 2021, and amended July 16, 2022

FUP	Follow-up program
HRMS	High Resolution Mass Spectroscopy
IAAC	Impact Assessment Agency of Canada
The Manual	Operations Manual for Air Quality Monitoring in Ontario
MECP	(Ontario) Ministry of Environment, Conservation and Parks
MLH	Milton Logistics Hub
NAPS	National Air Pollutants Survey
ng/m^3	nanograms per cubic metre, a unit of concentration
NO, NO_2, NO_X	Oxides of Nitrogen
OAAQC	Ontario Ambient Air Quality Criteria
PAH	Polyaromatic hydrocarbons
PDA	Project Development Area
PM_{10}	Particulate matter less than 10 µm in size
$PM_{2.5}$	Particulate matter less than 2.5 µm in size
ppb	Parts per billion (volume), unit of concentration
The Project	CN Milton Logistics Hub, construction and operations
PUF	Polyurethane foam

Q1, Q2, Q3, Q4	Quarter 1 (January – March), Quarter 2 (April – June), Quarter 3 (July – September), Quarter 4 (October – December)
Stantec	Stantec Consulting Ltd.
SWM	stormwater management
UBAQA	Updated Baseline Air Quality Assessment (May – September 2021), and supplemented with data from October – December 2021 before construction began in Q1 2022
USEPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator, a geographical co-ordinate system
VOC	Volatile Organic Compound

Glossary

1-hour average concentrations	This is the average of all concentration readings taken over a singular clock hour (e.g., 01:01 – 02:00). This is also referred to as the 1-hr concentration. All continuous monitors directly provide a 1-hr concentration. Non-continuous monitors do not provide 1-hr concentrations.
24-hour average concentrations	This is the average of all concentration readings taken over a 24-hr period within a singular calendar day. This is also referred to as the daily average concentration. For continuous monitors, this is the average of all 1-hr concentrations; non-continuous monitors directly provide a 24-hr average concentration.
Monthly average concentrations	This concentration average is used as a surrogate for annual averages. Unless the CAAQS requires a different annual average methodology, this is the average of all 24-hr average concentrations within a singular calendar month.
Annual average concentration	Unless otherwise required by CAAQS, this is the average of all 24-hr average concentrations within a singular calendar year.

1 Introduction

Stantec Consulting Ltd. (Stantec) has been retained by the Canadian National Railway Company (CN) to conduct an ambient air quality monitoring follow-up program for the Milton Logistics Hub (the Project) in the Town of Milton, within the Regional Municipality of Halton (Halton Region), Ontario.

This report documents the implementation of the Air Quality Follow-up Program (FUP) (Stantec, 2020) during the 2022 construction period. The monitoring period reported is from January 1, 2022, to December 31, 2022.

1.1 Program Design Considerations

This FUP has been developed to comply with the conditions of approval in the Minister of Environment and Climate Change's Decision Statement issued January 21, 2021, and amended July 16, 2022. As described in the Air Quality Follow-up Program (Stantec, 2022), the FUP for air quality monitoring has been developed in accordance with Condition 4.21 of the Decision Statement, and consists of three components:

- Update the 2015 – 2016 air quality baseline information including particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), coarse particulate matter, ozone, nitrogen dioxide (NO_2), sulphur dioxide (SO_2), benzene, 1,3-butadiene, benzo(a)pyrene and carbon monoxide (CO) (Condition 4.21.1). This has been completed with the submission of *CN Milton Logistics Hub: Update of Air Quality Baseline Information* (Stantec, 2021);
- Monitor during construction particulate matter[1], fine particulate matter[2] and nitrogen dioxide continuously (1-hr average concentrations); benzene and benzo(a)pyrene (B(a)P) non-continuously (24-hr average concentrations every 6 days); and meteorological conditions (wind speed, wind direction, temperature and relative humidity) (Condition 4.21.2);
- Monitor the same contaminants and frequencies as above during the first five years of operation, or until the end of the third year during which the Designated Project operates at its full operational capacity, whichever comes later (Condition 4.21.3). As operations have not commenced, this condition will be met at a future date.

[1] For the purposes of this analysis, "particulate matter" is interpreted to be particulate matter less than 10 µm (PM_{10})
[2] For the purposes of this analysis, "fine particulate matter" is interpreted to be particulate matter less than 2.5 µm ($PM_{2.5}$)

The results of the monitoring program are, where appropriate, to be compared to Canadian Council of Ministers of the Environment's (CCME) *Canadian Ambient Air Quality Standards* (CAAQS) or, in the absence of federal criteria, to the Ontario Ambient Air Quality Criteria (OAAQC) (Condition 4.21.4.1). Since revised modelling was not warranted after the baseline update, Condition 4.21.4.2 is not applicable.

Through the established community consultation committee process, concerns raised by the local community related to air quality or any air quality complaints received through the complaints protocol were to be addressed through the adaptive management process. The adaptative management process and mitigation measures are carried out by CN's construction contractor, Dufferin Construction Company (DCC), as presented in the document *CN Milton Logistics Hub Air Quality Best Management Practice Plan* (DCC, 2022) (see Section 4.2 for more information).

1.2 Activities Undertaken During Reporting Year

In Q1 of 2022, CN undertook Phase One site preparation activities, such as surveying, delineating construction site boundaries, and installing site fencing; installation of monitoring equipment; placement of stakes/demarcation materials for site safety; clearing and grubbing of vegetated areas; access road and laydown area construction; and the installation of construction site offices and other components.

In Q2, site activities included excavation of stormwater management (SWM) pond #2; preparation of the habitat enhancement areas accessible during this time of year; continued excavation work; removal of CN-owned buildings; initiation of grading activities on the realignment of Indian Creek and Tributary A; and work on access roads, including the installation of a temporary bridged access road over Indian Creek.

Following the fisheries timing window (March 15 to June 30), CN commenced construction of the portion of the Tributary A realignment channel within the existing agricultural pond and continued with construction of the associated Tributary A habitat structures and offline portions of culverts 2A and 2B. Other activities in Q3 included site grading activities; continued construction of SWM pond #2, including the outlet structure, and initiation of SWM pond 1; site grading and earth moving activities; continued offline construction of the Indian Creek realignment channel and associated habitat structures; and the construction of an interim noise berm along Lower Base Line and the eastern property boundary near lay down area 1.

Finally, in Q4, CN connected the new realigned portion of Tributary A, as well as culvert 2B and the downstream portion of culvert 2A, to the existing Tributary A. Other activities included realignment of the Sun Canadian pipeline; removal of the temporary bridge over Indian Creek; completion of in-water and bank enhancements along Indian Creek; continued offline construction of the Indian Creek realignment channel and associated habitat structures; initiation of the realignment of the existing mainline, including grading and drainage; and completion of site stabilization measures in preparation for the winter period.

2 Methods

The following sections provide a brief description of the assessment methodologies that were employed during the FUP CAQMP.

2.1 Monitor Locations

The monitoring station locations for the air quality assessments (AQAs) were selected considering the siting criteria for ambient monitoring in the CCME *Ambient Air Monitoring Guidelines* (CCME, 2019) and the Ontario Ministry of the Environment, Conservation, and Parks (MECP) document *Operations Manual for Air Quality Monitoring in Ontario* (MECP, 2018) (the Manual). The siting criteria considered are listed below and can be found in Table 3 of the Manual (MECP, 2018):

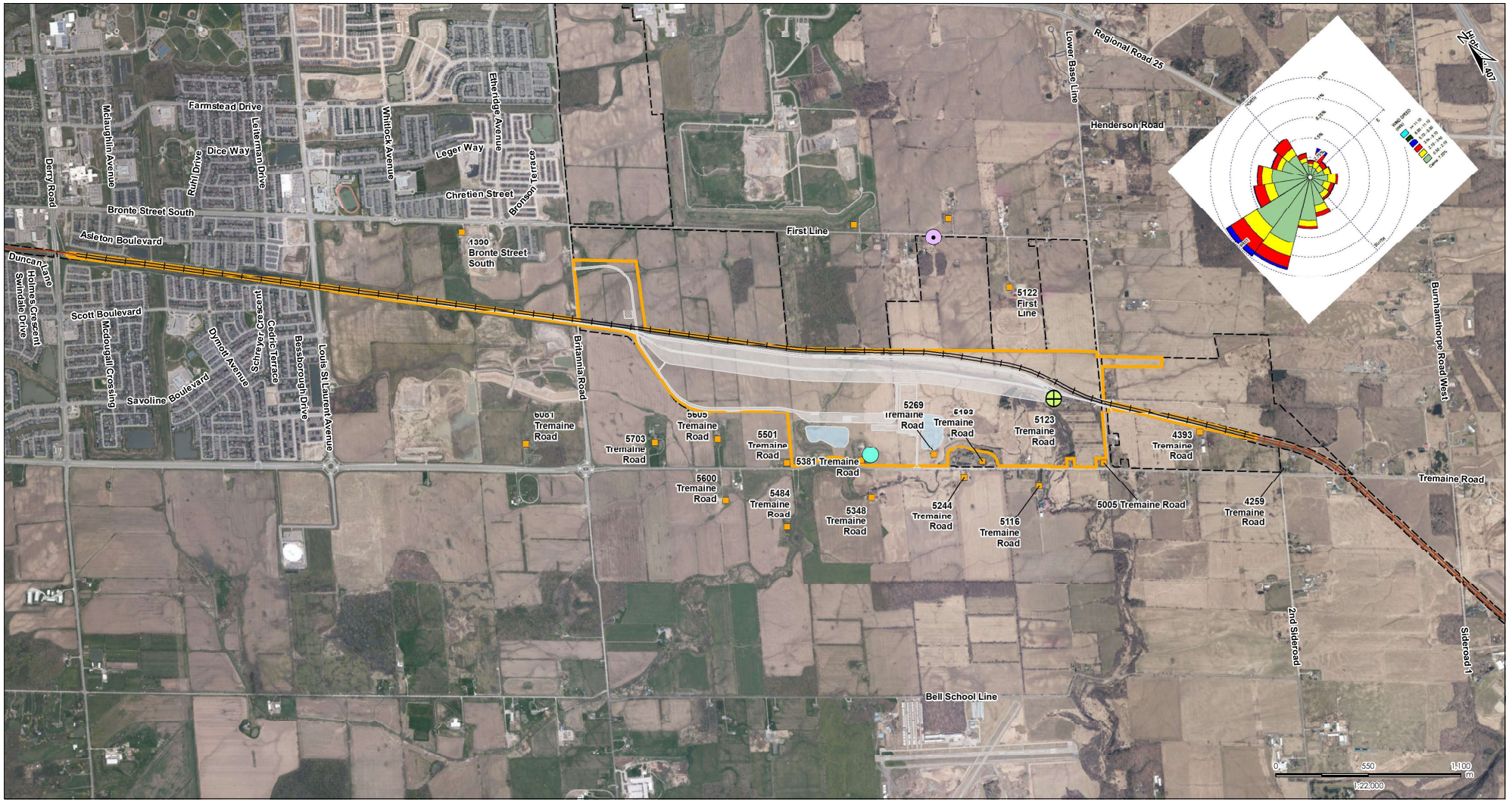
- >20 metres from trees;
- Distance from the sampler to any air flow obstacle, i.e., buildings, must be >2x height of obstacle above the sampler;
- Unrestricted air flow in 3 of the 4 wind quadrants;
- No nearby furnace or incinerator flues;
- Distance of sample from major roadways should be >20-25 metres for sampler inlet heights of 2 to 5 metres;
- >5 metres from chimneys with natural gas combustion emissions; and
- No nearby sources which could interfere with sample results.

The UTM coordinates for the monitoring stations used are presented in Table 2-1; the locations are depicted in Figure 2-1. These were the same air quality monitoring stations used for the baseline update monitoring presented in *CN Milton Logistics Hub: Update of Air Quality Baseline Information* (Stantec, 2021). These locations were identified in and consulted on during the finalization of the FUP CAQMP.

Table 2-1: Coordinates of Monitoring Station Location

Monitoring Site	Description	UTM Zone	Easting (m)	Northing (m)
CN FUP – Station 1 (operational May 2021)	Station is located in a field adjacent to 5258 First Line, approximately 750m north of the CN tracks and generally downwind of the Project Area.	17T	594896	4812924
CN FUP – Station 2 (operational September 2021)	Station is located in a farmer's field at 5358 Tremaine Rd, approximately 500m south of the CN tracks and generally upwind of the Project Area. 1	17T	593783	4812227

Notes
1 – Activities generally occur more than 100m from the station. There is potential for some construction activities to occur between 20 – 100 m from this station, these activities would generate emissions from off-road vehicle transportation or dirt storage piles.



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Revised: 2023-02-03 By: dhanley

February 2023
160960844

Stantec

Notes

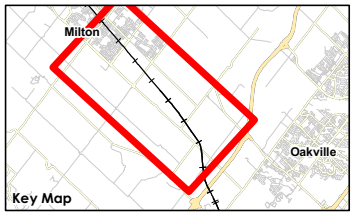
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2015. Site layout: July 10, 2015.
3. Orthoimagery © First Base Solutions, 2015. Imagery taken in 2019.
4. The windrose graphic is shown for convenience, a full depiction of the windrose is included as Figure 3 of Appendix A.

Legend

- CN BAQA
- CN FUP CAQMP – Station 1
- CN FUP CAQMP – Station 2

Project Components

- Project Development Area
- Local Assessment Area (LAA)
- Existing Single Track Mainline
- Existing Double Track Mainline
- Double Track - Mainline
- Project Component
- CN-Owned Property
- SWM Pond
- Address Point



Client/Project
Canadian National Railway
Milton Logistics Hub

Figure No.
2-1

Title
Air Monitoring Stations Locations in relation to the Project

2.2 Instrumentation

The monitoring stations include both continuous and non-continuous monitors to sample air contaminant concentrations. Monitoring for $PM_{2.5}$, PM_{10}, and NO_2 was conducted on a continuous basis (5-minute concentrations). Monitoring for B(a)P and benzene was conducted with non-continuous monitors (24-hr average concentrations). All monitoring was performed as per the methodology and analysis recommended by the CCME and the MECP Operations Manual (MECP, 2018), where applicable. Table 2-2 provides a summary of the specific equipment models and methodologies used at each Station.

Table 2-2: Monitoring Equipment for FUP Air Quality Monitoring

Contaminant	Station 1	Station 2
Particulate matter less than 2.5µm (PM2.5)	BAM1020 [1]	Teledyne T640 [1]
Particulate matter less than 10µm (PM10)	BAM1020 [1]	
Nitrogen oxides (NO, NO2, NOX)	TECO 42i	TECO 42i
Polycyclic aromatic hydrocarbons (PAHs, including B(a)P)	Hi-Vol with PUF[2] and quartz pre-filter [3]	
Volatile Organic Compounds (VOCs, including benzene)	SUMMA Cannisters [3]	
Ambient Temperature, Relative Humidity, Wind Speed, Wind Direction	Vaisala HMP60 [4] and RM Young 05103 anemometer [5]	

Notes:
1 – One monitor for each contaminant is used at Station 1, while a single monitor simultaneously monitors both contaminants at Station 2
2 – Polyurethane foam
3 – Methodology collects non-continuous 24-hr samples
4 – Collects ambient temperature and relative humidity
5 – Collects wind speed and direction

During the FUP, benzene was analyzed using the USEPA Method TO-14A and B(a)P was analyzed using the USEPA Method TO-13A targeted High-Resolution Mass Spectroscopy (HRMS).

2.3 Sample Validation

Continuous monitors were calibrated and validated by qualified technicians. Calibration records are provided in Appendix A.

Collected non-continuous samples were visually inspected to ensure validity (e.g., no rips or tears in the filters) and preliminary collection data was compared to expected values (e.g., elapsed sample time, cannister pressure). Samples considered valid were sent for laboratory analysis at Bureau Veritas. Samples were re-evaluated for validity based on the analytical result and laboratory comments. During the 2022 FUP CAQMP, the following sampling issues were encountered.

Station 1

- VOC – One (1) of 61 samples was deemed invalid because of equipment malfunctions (98% validity)
- PAH – One (1) of 61 samples was destroyed by wildlife and deemed invalid before laboratory analysis (98% validity)

Station 2

- PAH – Two (2) of 61 samples were deemed invalid because of equipment malfunctions (97% validity)
- VOC – One (1) of 61 samples was deemed invalid because of an anomalous laboratory result not representative of background concentrations (98% validity). The exclusion of anomalous laboratory sample analysis results is carried out to ensure the averaging data trends are not adversely influenced by potentially erroneous results. Outlier analysis data points are triggered for validity review when individual result values suddenly differ by a nominal order of magnitude to expected values with no known reason of actual site condition resulting in such an outcome.

2.4 Other Ambient Air Quality Monitoring Datasets

Other ambient air quality monitoring datasets presented in this report are summarized below. Locations are presented in Table 2-3.

- CN Milton Logistics Hub (MLH) Baseline Air Quality Assessment (BAQA)
  - The BAQA was operational for 13 months from July 2015 – August 2016. Complete results were provided in *Milton Logistics Hub – Technical Data Report Air Quality (Appendix E.1)* (Stantec, 2015) (the Air TDR)

- National Air Pollutants Survey (NAPS) Halton Air Monitor
  - The NAPS program operates an ambient air monitor in the Town of Milton, known as the Halton air monitor (monitoring NO_2 and $PM_{2.5}$). The latest available public data at the time of writing this report is 2020.

Table 2-3: Coordinates of Monitoring Station Locations

Monitoring Site	Description	UTM Zone	Easting (m)	Northing (m)
CN BAQA	Station was located in a field northeast of the intersection of Tremaine Rd. and Lower Base Line, approximately 30 metres to the west of the CN tracks.	17T	594809	4811731
NAPS ID: 67001 (Halton)	Station is located in the parking lot of 1120 Main Street East, located in an urban area of the Town of Milton	17T	591875	4820274

2.5 Ambient Air Quality Criteria

Table 2-4 presents the ambient air quality criteria (AAQC) to be used for comparison, where appropriate.

Table 2-4: Ambient Air Quality Criteria

Contaminant	CAS Number	Averaging Period (hr)	Air Quality Objectives / Criteria				Guidance
			ppb		µg/m³		
NO_2	10102-44-0	1	(2020) 60 *	(2025) 42 *	(2020) 119	(2025) 83	CAAQS [1]
		Annual	17.0 *	12.0 *	32	23	
		24	100 *		200 *		OAAQC [2]
PM_{10}	N/A (PM_{10})	24	-		50 *		OAAQC [3]
$PM_{2.5}$	N/A ($PM_{2.5}$)	24	-		27 *		CAAQS [4]
		Annual	-		8.8 *		
Benzene	71-43-2	24	-		2.3 *		OAAQC
		Annual	-		0.45 *		OAAQC
Benzo(a)pyrene	50-32-8	24	-		0.00005 *		OAAQC
		Annual	-		0.00001 *		OAAQC

Notes
* Denotes concentration unit provided in guidance.
1 – CAAQS guidance concentrations are used. The statistical form of the 1-hr average for CAAQS NO_2 is determined from the 3-year average of the annual 98th percentile of the daily maximum 1-hr average concentrations. The statistical form for the annual NO_2 average is the average over a single calendar year of all 1-hr average concentrations. CCME has reported CAAQS for NO_2 in ppb. Values have been converted to µg/m³ by multiplying by 1.98 based on the molecular weight of NO_2 and assuming an atmospheric pressure of 1 atm, and 10 degrees Celsius.
2 – The OAAQC applies to all nitrogen oxides (i.e., NO_x), but can be applied to NO_2 concentrations.
3 – This is a guidance value provided without conversions to other averaging periods.
4 – CAAQS guidance concentrations are used. The statistical form of the 24-hr average for CAAQS $PM_{2.5}$ is determined from the 3-year average of the annual 98th percentile of the daily maximum 24-hour average concentrations. The statistical form for the annual $PM_{2.5}$ average is the 3-year average of the annual average of the daily 24-hr average concentrations. The Ontario MECP has adopted the CAAQS as the OAAQC.

2.6 CAAQS Percentile Analysis

The CAAQS have a specific methodology to determine appropriate percentiles for comparison to criteria. This comparison is based on a specific ranked concentration, depending on the available days of data, and as a 3-year average. Complete methodology can be found in the CAAQS guidance documents for NO_2 and $PM_{2.5}$. As less than 3 years of data is available, comparison to the correct statistical form of the 3-year average criteria is not possible at this time.

2.7 Background Concentrations

Background concentrations are used in dispersion modelling to represent the effect of other existing emissions sources in addition to any new sources being included for evaluation in the dispersion modelling. Sources of ambient air emissions in the study area may include residential, commercial, industrial, construction, transportation, or naturally occurring sources. Modelling was completed for the Air TDR and was not required to be updated for this report.

The 90th percentile ambient monitoring data is used to conservatively account for a reasonable worst-case concentration and is added to the dispersion model predictions to conservatively account for existing ambient concentrations. The 90th percentile values are used for short-term averaging periods as it provides a conservative estimate of ambient levels, while at the same time providing some consideration for the fact that the location and time for the occurrence of maximum ground level concentrations from background sources varies from that for the source(s) being considered in the modeling assessment.

2.8 Comparison of Ambient Air Quality Monitoring Results to Environmental Impact Predictions

Comparison of 2022 ambient air quality monitoring results to the environmental impact predictions will be discussed in Section 4.1. The technical submission documents prepared for the Federal Joint Panel Hearing will be referenced as appropriate. The data presented in the Air TDR is the base reference document.

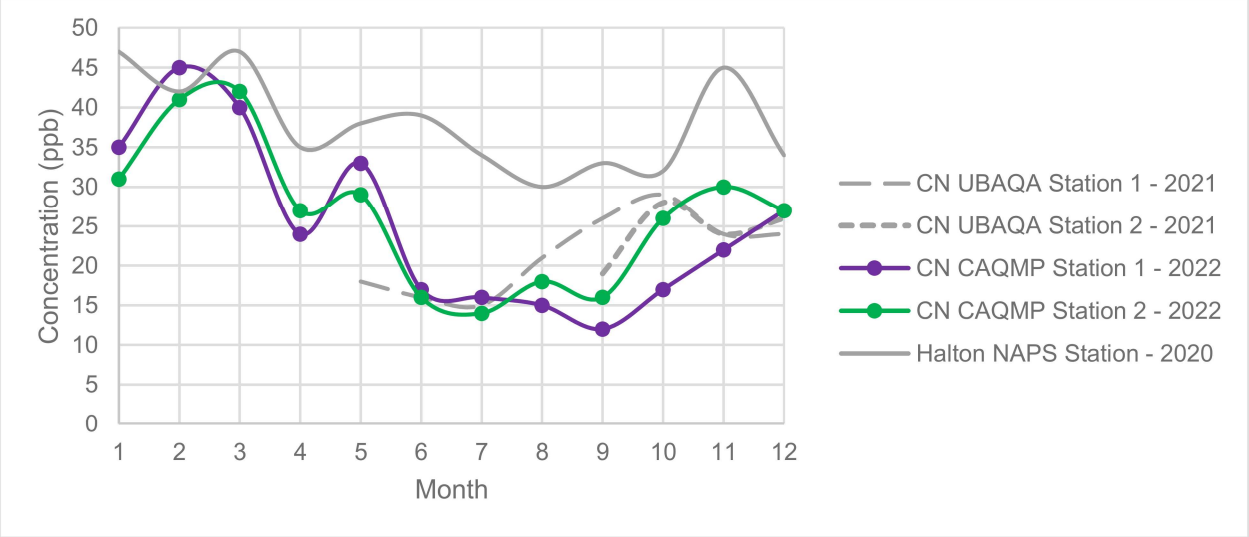
3 Results of 2022 FUP CAQMP

The following sections present the FUP monitoring results of the construction air quality monitoring program (CAQMP) for the year 2022. Data from the Updated Baseline Air Quality Assessment (UBAQA) is taken from *CN Milton Logistics Hub: Update of Air Quality Baseline Information* (Stantec, 2021) for May – September 2021, and supplemented with data collected from October – December 2021 at the FUP AQ stations before construction began in January 2022. Where available, data from the NAPS Halton air monitor is presented as well (latest available data is 2020).

3.1 Nitrogen Dioxide

3.1.1 1-hr Averaging Period

Figure 3-1 presents the monthly maximum 1-hr NO_2 concentrations.



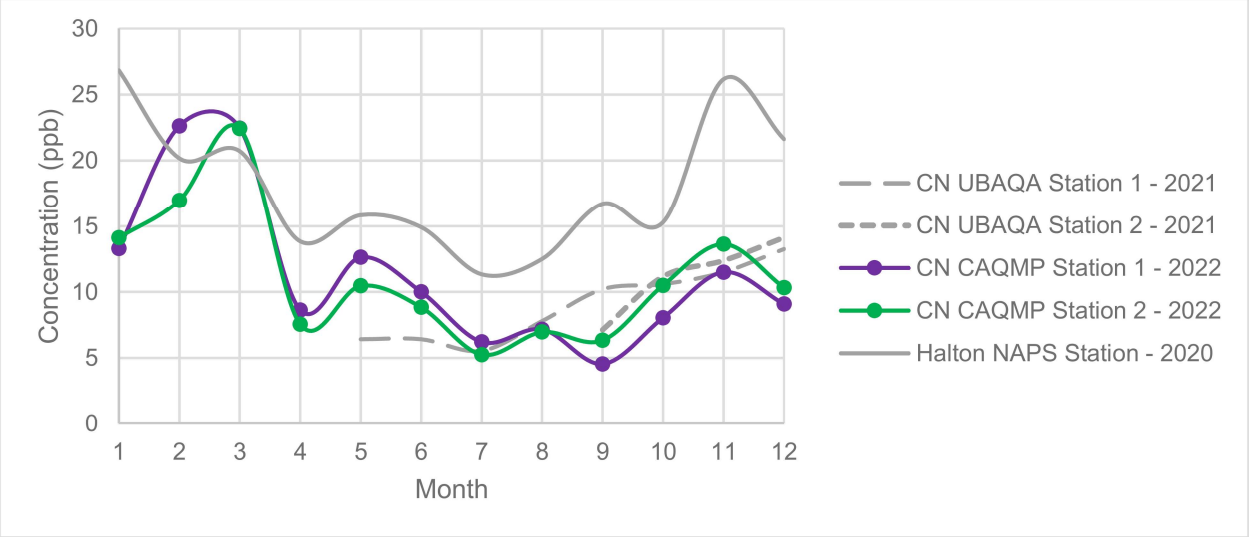
Notes
1. Lines were added between consecutive data points to aid in the visual representation of any trends or differences between the stations and years; they do not represent any interpolated concentration readings.

Figure 3-1 2022 FUP CAQMP – Measured Monthly Maximum 1-hr NO2 Concentrations

For the 2022 FUP CAQMP, the NO_2 concentrations are comparable to the UBAQA and generally lower than Halton NAPS station.

3.1.2 24-hr Averaging Period

Figure 3-2 presents the monthly maximum 24-hr average NO_2 concentrations.



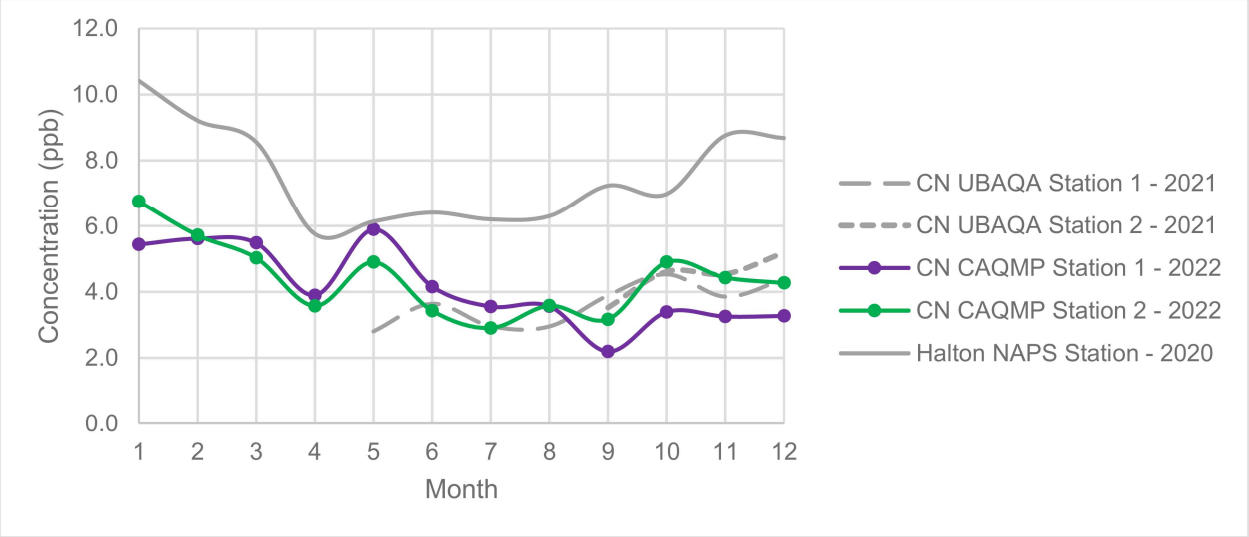
Notes:
1. Lines were added between consecutive data points to aid in the visual representation of any trends or differences between the stations and years; they do not represent any interpolated concentration readings.

Figure 3-2 2022 FUP CAQMP – Monthly Maximum 24-hr Average NO2 Concentrations

For the 2022 FUP CAQMP, the NO_2 concentrations are generally lower than the Halton NAPS station and comparable to the UBAQA. The 2022 FUP NO_2 maximum 24-hr average concentrations are well below the OAAQC of 100 ppb or 200 µg/m^3.

3.1.3 Monthly Averaging Period

Figure 3-3 presents monthly average 1-hr NO_2 concentrations. The shorter-term values can serve as a surrogate for understanding the variation of overall NO_2 concentrations. An annual comparison is provided in Section 3.1.4.



Notes:

1. Lines were added between consecutive data points to aid in the visual representation of any trends or differences between the stations and years; they do not represent any interpolated concentration readings.

Figure 3-3 2022 FUP CAQMP – Monthly Average NO2 Concentrations

For the 2022 FUP CAQMP, the NO_2 concentrations are lower than the Halton NAPS station and comparable to the UBAQA.

3.1.4 AAQC Comparison

Table 3-1 provides the AAQC comparison for NO_2. Sufficient data is not available for comparison to the 1-hr CAAQS criterion in this 1-year monitoring data set. During the 2022 FUP, the relevant NO_2 averages were well below the annual CAAQS values as well as the 24-hr OAAQC of 100 ppb or 200 µg/m^3.

Table 3-1: NO_2 AAQC Comparison

Averaging Period	CAAQS [1] ($\mu g/m^3$)	OAAQC ($\mu g/m^3$)	Location	Concentration [2] ($\mu g/m^3$)
1-hr	119 [3] 83 [4]	-	Station 1	89
			Station 2	83
24-hr	-	200	Station 1	45
			Station 2	44
Annual	34 [3] 24 [4]	-	Station 1	8
			Station 2	9

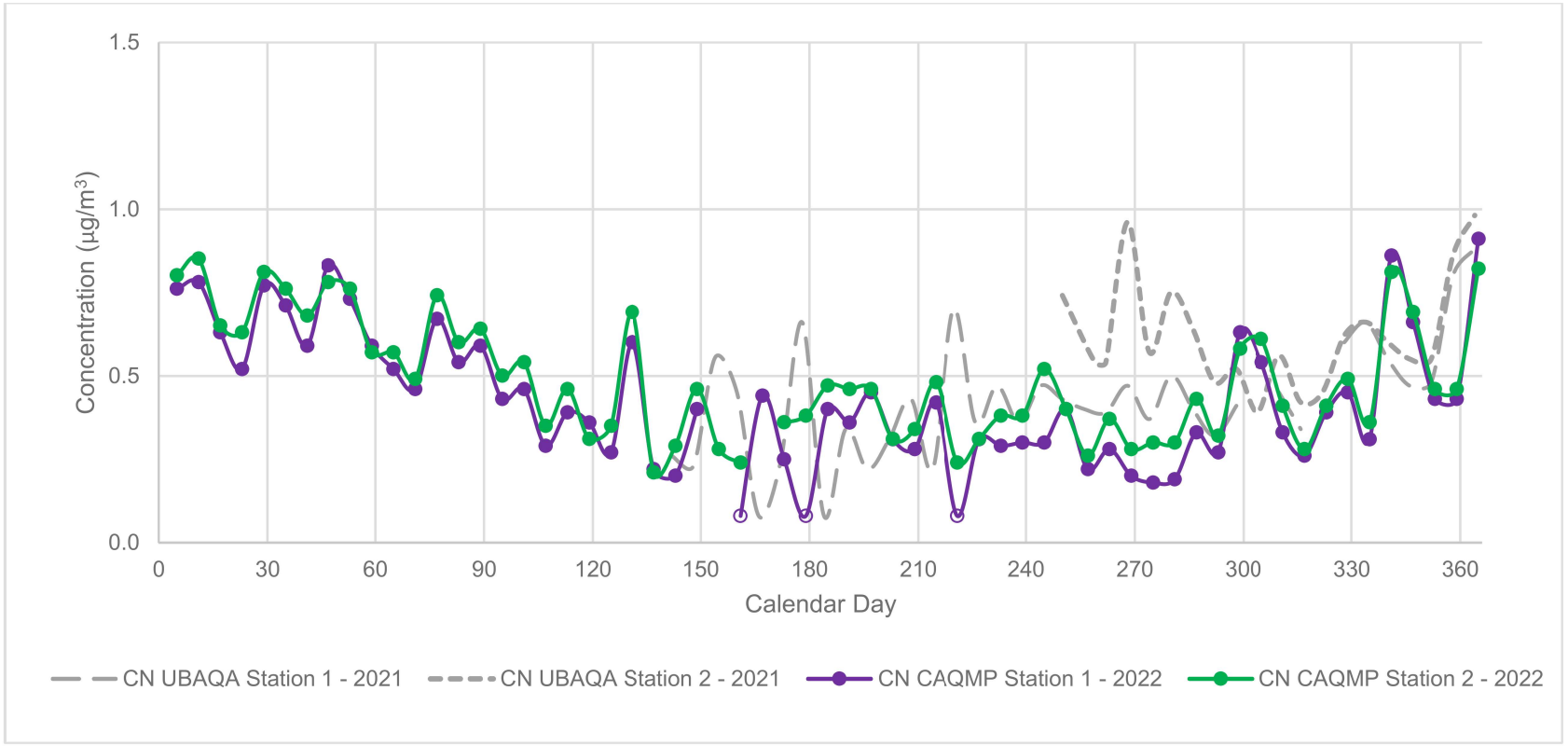
Notes:
1. Criteria have specific averaging statistics as presented in Section 2.5. Maximum monitored concentration is presented, but is not compared to the CAAQS as discussed in Section 2.6.
2. Maximum 1-hr average concentration, maximum 24-hr average concentration and annual average of all 1-hr concentrations
3. 2020 CAAQS
4. 2025 CAAQS

3.2 Benzene

3.2.1 24-hr Averaging Period

Figure 3-4 presents the 24-hr average benzene concentrations.

For the 2022 FUP CAQMP, the benzene concentrations are comparable to the UBAQA.



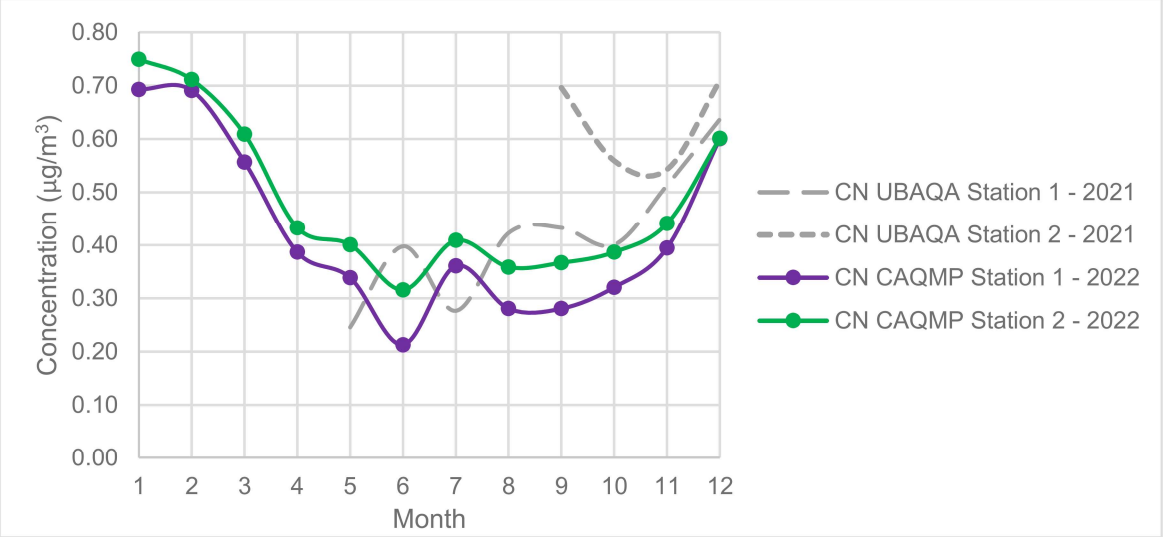
Notes
1. Unfilled data markers are below the method detection limit. Gaps in line segment represent an invalid sample.
2. Lines were added between consecutive data points to aid in the visual representation of any trends or differences between the stations and years; they do not represent any interpolated concentration readings.

Figure 3-4 2022 FUP CAQMP – Measured 24-hr Average Benzene Concentrations

3.2.2 Monthly Averaging Period

Figure 3-5 presents monthly average benzene concentrations. The shorter-term values can serve as a surrogate for understanding the variation of overall benzene concentrations. An annual comparison is provided in Section 3.2.3.

For the 2022 FUP CAQMP, the benzene concentrations are comparable to the UBAQA.



Notes
1. Lines were added between consecutive data points to aid in the visual representation of any trends or differences between the stations and years; they do not represent any interpolated concentration readings.

Figure 3-5 2022 FUP CAQMP – Monthly Average Benzene Concentrations

3.2.3 AAQC Comparison

Table 3-2 provides the AAQC comparison for benzene. Benzene in the air results from the combustion of hydrocarbon fuels and coal, gasoline service stations and motor vehicle exhaust. The maximum 24-hr average benzene values were all below the 24-hr criterion. The annual average values for the 2022 FUP were expected to be above criterion because of the background concentrations reflected in the Air TDR. That proved accurate for station 2 benzene, which was marginally above the criterion (108% of annual criterion), while station 1 was marginally below the criterion (96% of annual criterion). Refer to Section 4 for further discussion on benzene predictions.

Table 3-2: Benzene AAQC Comparison

Averaging Period	OAAQC ($\mu g/m^3$)	Location	Concentration [1] ($\mu g/m^3$)
24-hr	2.3	Station 1	0.9
		Station 2 [2]	0.9
Annual	0.45	Station 1	0.43
		Station 2	0.49

Notes:
1. The maximum 24-hr average concentration and the annual average concentration is presented
2. One (1) VOC sample was invalidated as an anomalous laboratory result (Section 2.3)

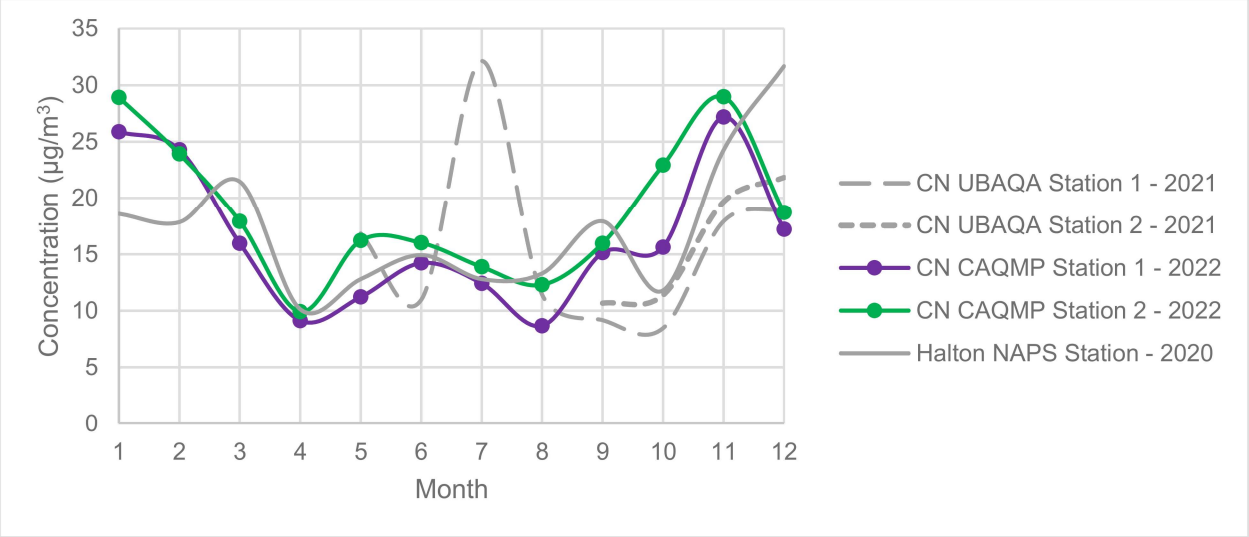
3.3 $PM_{2.5}$

3.3.1 24-hr Averaging Period

Figure 3-6 presents the monthly maximum 24-hr average $PM_{2.5}$ concentrations.

For the 2022 FUP CAQMP, the $PM_{2.5}$ concentrations are comparable to the UBAQA and the Halton NAPS Station.

Wildfires in northern Ontario during June and July 2021 resulted in Special Air Quality Statements for the Halton Region and are a likely source for the elevated $PM_{2.5}$ readings during the month of July 2021 (MECP, 2023).



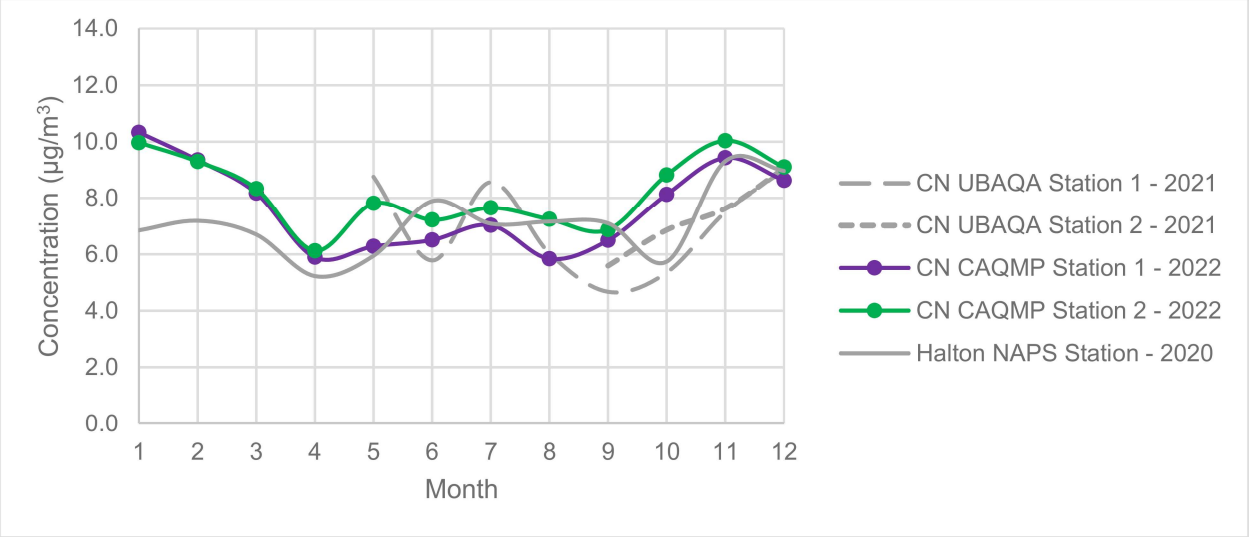
Notes:
1. Lines were added between consecutive data points to aid in the visual representation of any trends or differences between the stations and years; they do not represent any interpolated concentration readings.

Figure 3-6 2022 FUP CAQMP – Monthly Maximum 24-hr Average PM2.5 Concentrations

3.3.2 Monthly Averaging Period

Figure 3-7 presents the monthly average $PM_{2.5}$ concentrations. The shorter-term values can serve as a surrogate for understanding the variation of overall $PM_{2.5}$ concentrations. A direct annual comparison is provided in Section 3.3.3.

For the 2022 FUP CAQMP, the $PM_{2.5}$ concentrations are comparable to the UBAQA and the Halton NAPS station.



Notes:
1. Lines were added between consecutive data points to aid in the visual representation of any trends or differences between the stations and years; they do not represent any interpolated concentration readings.

Figure 3-7 2022 FUP CAQMP – Monthly Average PM2.5 Concentrations

3.3.3 AAQC Comparison

Table 3-3 provides the AAQC summary for $PM_{2.5}$. During the 2022 FUP, the 24-hr maximum $PM_{2.5}$ average raw value had events above 27 ug/m^3 four (4) days out of a total seven hundred and twenty-eight (728) valid days of data.

Table 3-3: PM2.5 AAQC Comparison

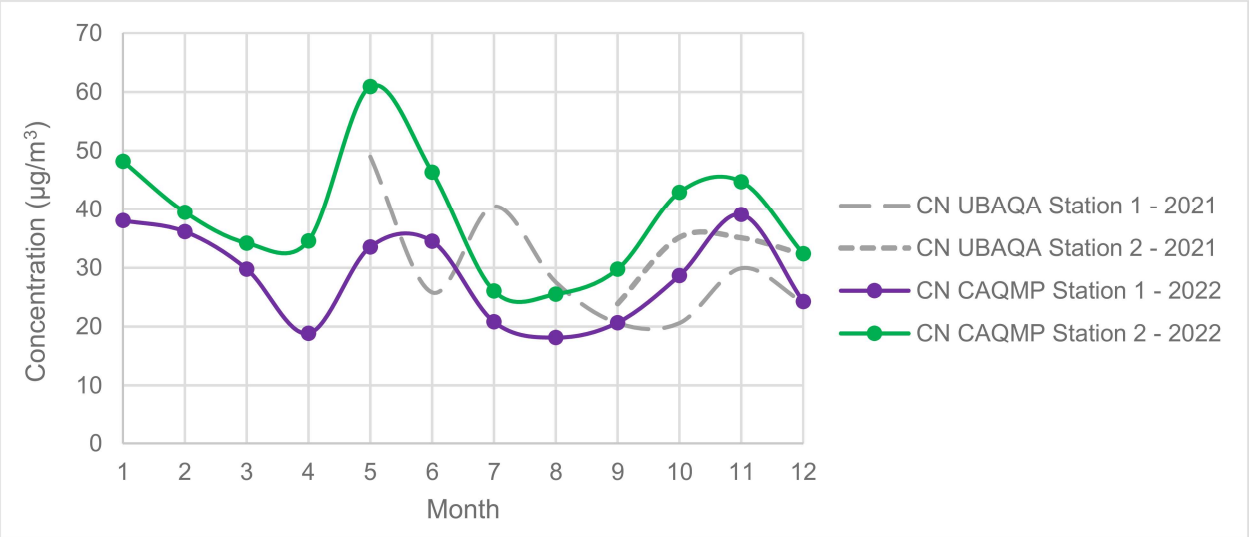
Averaging Period	CAAQS [1] (µg/m^3)	OAAQC (µg/m^3)	Location	Concentration (µg/m^3) [2]
24-hr	27	-	Station 1	27
			Station 2	29
Annual	8.8	-	Station 1	7.7
			Station 2	8.2

Notes:
1. Criteria have specific averaging statistics as presented in Section 2.5. Maximum monitored concentration is presented, but is not compared to the CAAQS as discussed in Section 2.6.
2. Maximum 24-hr average and annual average concentrations are presented

3.4 PM_{10}

3.4.1 24-hr Averaging Period

Figure 3-8 presents the monthly maximum 24-hr average PM_{10} concentrations.



Notes:
1. Lines were added between consecutive data points to aid in the visual representation of any trends or differences between the stations and years; they do not represent any interpolated concentration readings.

Figure 3-8 2022 FUP CAQMP – Maximum 24-hr average PM10 Concentrations

For the 2022 FUP CAQMP, the PM_{10} concentrations are generally comparable to the UBAQA.

3.4.2 AAQC Comparison

Table 3-4 provides the AAQC comparison for PM_{10}. During the 2022 FUP, the 24-hr maximum PM_{10} average raw value had events above 50 ug/m^3 two (2) days out of a total seven hundred and twenty-eight (728) valid days of data.

Table 3-4: PM10 AAQC Comparison

Averaging Period	OAAQC [1] (µg/m^3)	Location	Concentration (µg/m^3) [2]
24-hr	50	Station 1	39
		Station 2	61

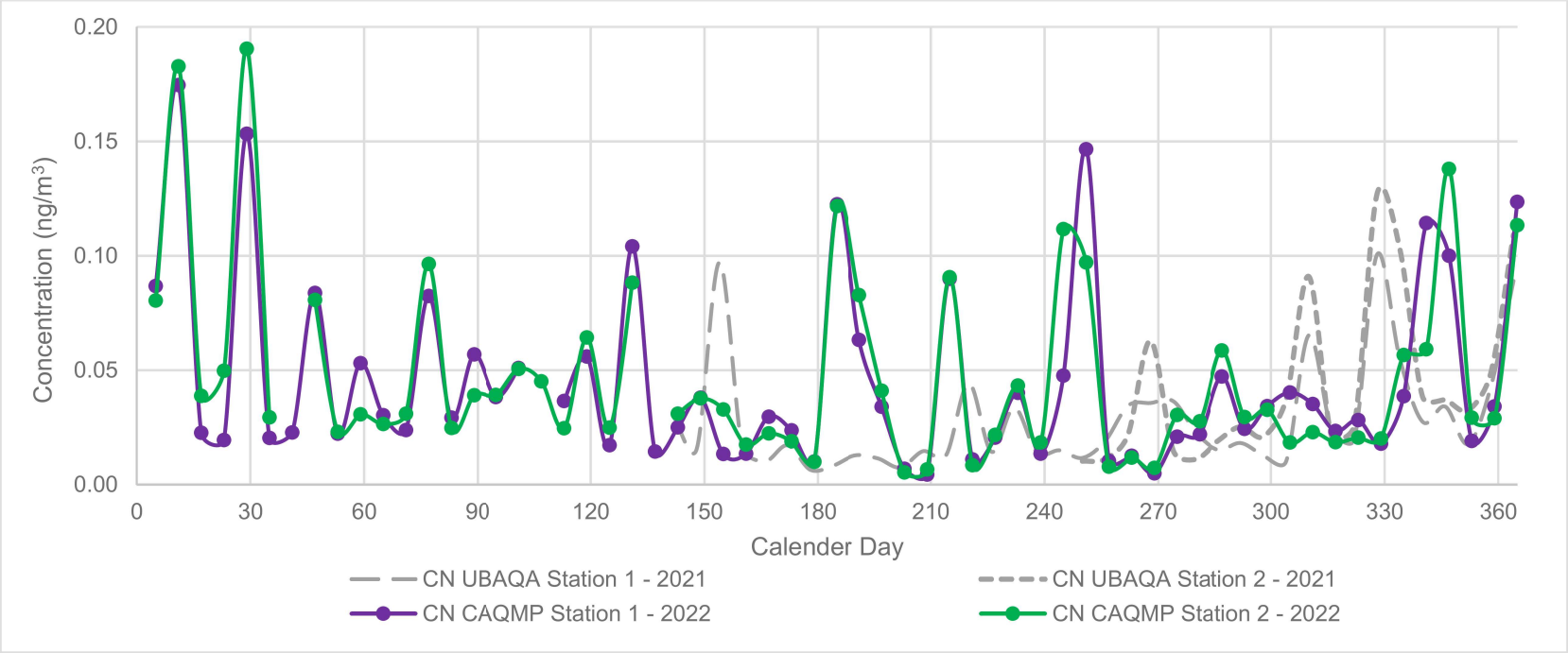
Notes
1. Criterion is provided as a guideline only without conversions to other averaging periods.
2. Maximum 24-hr average concentration is presented

3.5 Benzo(a)pyrene

3.5.1 24-hr Averaging Period

Figure 3-9 presents the 24-hr average B(a)P concentrations.

During the 2022 FUP CAQMP, the B(a)P concentrations are comparable to the UBAQA.



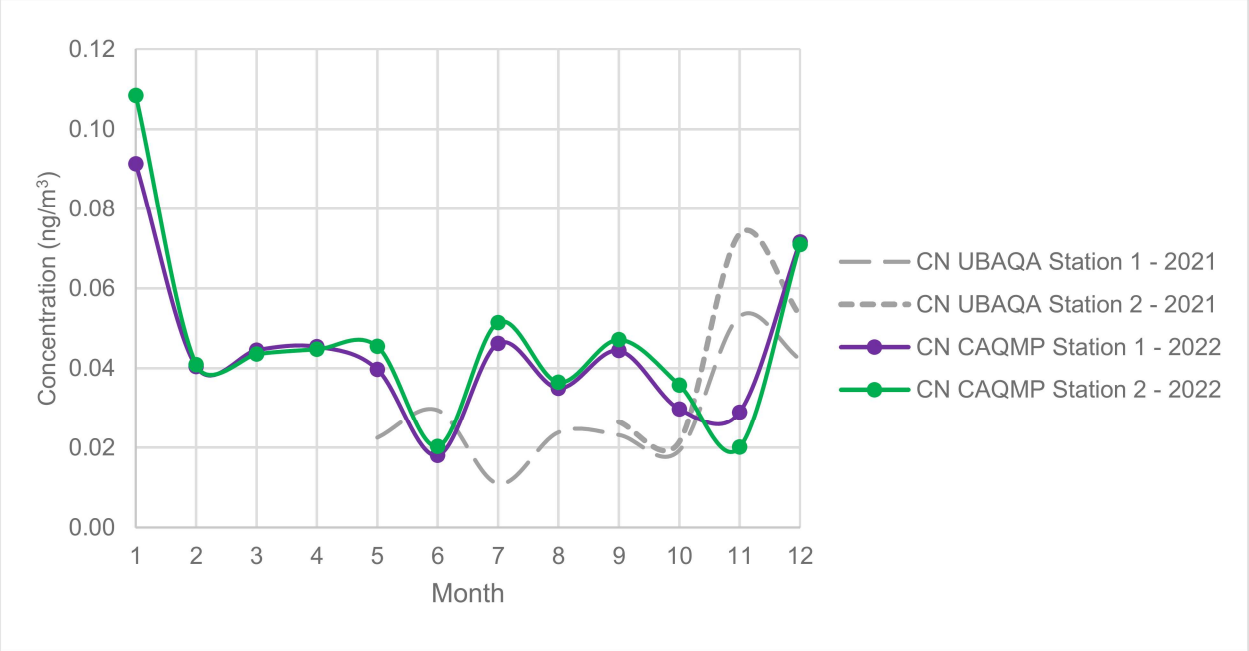
Notes:
1. Unfilled data markers are below the method detection limit. Gaps in line segment represent an invalid sample.
2. Lines were added between consecutive data points to aid in the visual representation of any trends or differences between the stations and years; they do not represent any interpolated concentration readings.

Figure 3-9 2022 FUP CAQMP – Measured 24-hr Average B(a)P Concentrations

3.5.2 Monthly Averaging Period

Figure 3-10 presents monthly average B(a)P concentrations. The shorter-term values can serve as a surrogate for understanding the variation of overall B(a)P concentrations. An annual comparison is provided in Section 3.5.3.

For the 2022 FUP CAQMP, the B(a)P concentrations are comparable to the UBAQA.



Notes
1. Lines were added between consecutive data points to aid in the visual representation of any trends or differences between the stations and years; they do not represent any interpolated concentration readings

Figure 3-10 2022 FUP CAQMP – Monthly Average B(a)P Concentrations

3.5.3 AAQC Comparison

Table 3-5 provides the AAQC comparison for B(a)P. B(a)P is a by-product of a wide variety of natural and man-made combustion processes (including motor vehicles, natural gas, wood, refuse, oil, forest fires, etc.) and is widely present in the environment (including being present in soil and water). The current Ontario 24-hour B(a)P AAQC was introduced in 2011 and levels above this AAQC are ubiquitous throughout urban areas in Ontario. Consistent with that expectation, elevated annual and 24-hr B(a)P background values were identified in the surrounding area in the Air TDR. Refer to Section 4 for further discussion on B(a)P predictions.

Table 3-5: B(a)P AAQC Comparison

Averaging Period	OAAQC (ng/m^3)	Location	Concentration [1] (ng/m^3)
24-hr	0.05	Station 1	0.17
		Station 2	0.19
Annual	0.01	Station 1	0.05
		Station 2	0.05

Notes:
1. Maximum 24-hr average and annual average concentrations are presented

3.6 Summary of Ambient Air Quality

Table 3-6 summarizes results of the 2022 FUP CAQMP for contaminants with an OAAQC.

Table 3-6 Summary of Contaminants with OAAQC

Contaminant	Averaging Period	OAAQC (µg/m^3)	Location	Maximum Concentration (µg/m^3)	Number of Exceedances
PM_{10}	24-hr	50	Station 1	39	0
			Station 2	61	2
NO_2		200 [1]	Station 1	45	0
			Station 2	44	0
Benzene		2.3	Station 1	0.9	0
			Station 2	0.9	0
B(a)P [3]		0.05 [3]	Station 1	0.17 [3]	17
			Station 2	0.19 [3]	18
Benzene	Annual	0.45	Station 1	0.43	0 [2]
			Station 2	0.49	1
B(a)P [3]		0.01 [3]	Station 1	0.05 [3]	1
			Station 2	0.05 [3]	1

Notes:
1. OAAQC is for NO_X and can be used for NO_2 when sufficient data is available
2. One (1) VOC sample was invalidated due to anomalous laboratory results
3. Criterion is presented in units of ng/m^3 for clarity

Table 3-7 summarizes results of the 2022 FUP CAQMP for contaminants with an CAAQS.

Table 3-7 Summary of Contaminants with CAAQS

Contaminant	Averaging Period	CAAQS [1] (µg/m^3)	Location	Maximum Concentration (µg/m^3)
NO_2	1-hr	119 [2] 83 [3]	Station 1	89
			Station 2	83
$PM_{2.5}$	24-hr	27 [2]	Station 1	27
			Station 2	29
NO_2	Annual	34 [2] 24 [3]	Station 1	8
			Station 2	9
$PM_{2.5}$		8.8 [2]	Station 1	7.7
			Station 2	8.2

Notes:
1. Criteria have specific averaging statistics as presented in Section 2.4. Maximum monitored concentration is presented, but is not compared to the CAAQS as discussed in Section 2.6
2. 2020 CAAQS
3. 2025 CAAQS

4 Discussion

4.1 Conformity with Assessment Predictions

Environmental impact predictions were initially presented in the Air TDR. These predictions assessed a cumulative background concentration based on estimated ambient concentrations combined with conservatively modeled concentrations during construction. The predictions were updated using background concentrations monitored during the UBAQA (no modelling was updated as background concentrations were generally below or comparable to the data presented in the Air TDR). The UBAQA cumulative concentrations were updated for this report using all available pre-construction data (May to December 2021). These predicted cumulative concentrations are compared to the 2022 FUP CAQMP maximum monitored concentrations. Table 4-1 presents the comparison for contaminants with an OAAQC, and Table 4-2 presents the comparison for those with a CAAQS.

The data presented enables comparison between the original Air TDR modelled cumulative concentration predictions (Air TDR Cumulative Concentration) and updated predictions where the initial background value is updated with the latest May to December 2021 UBAQA data, and this background is combined with the same Project construction emissions predictions as carried out in the Air TDR (UBAQA Cumulative Concentration). Finally, the results of the 2022 FUP monitoring are shown with values processed for the averaging period, these are the maximum values.

Table 4-1 Environmental Impact Predictions (Construction) and Comparison to 2022 FUP Monitoring (OAAQC)

Contaminant	CAS	Averaging Period (hr)	Air Quality Objectives[1] / Criteria ($\mu g/m^3$)	Air TDR Cumulative Concentration [2] ($\mu g/m^3$)	UBAQA Cumulative Concentration [3] ($\mu g/m^3$)	Maximum 2022 FUP Monitored Concentration[4] ($\mu g/m^3$)	Notes for Observed Events above Criterion (2022)
NO_2	10102-44-0	24	200	92.6	69	45	-
PM_{10}	-	24	50	56.2	48	61	2 days of 728 days of data
Benzene	71-43-2	24	2.3	1.711	1.0	0.9	Section 4.2
		Annual	0.45	0.813	0.45	0.49	
Benzo(a)pyrene	50-32-8	24	0.00005	0.00066	0.00013	0.00019	
		Annual	0.00001	0.00025	0.00003	0.00005	

Notes:
1. Only applicable criteria for comparison are presented.
2. As presented in the Air TDR
3. As presented in the UBAQA report (Stantec, 2021), and updated with data to end of Q4 2021.
4. Values determined from 2022 Construction FUP

Table 4-2 Environmental Impact Predictions (Construction) and Comparison to 2022 FUP Monitoring (CAAQS)

Contaminant	CAS	Averaging Period (hr)	Air Quality Objectives [1] / Criteria (µg/m³)	Air TDR Cumulative Concentration [2] (µg/m³)	UBAQA Cumulative Concentration [3] (µg/m³)	Maximum 2022 FUP Monitored Concentration [4] (µg/m³)
NO_2 [5]	10102-44-0	1	119	164.6	157	89
		Annual	34	36.4	21	9
$PM_{2.5}$ [6]	-	24	27	20.4	28	29
		Annual	8.8	8.0	8.5	8.2

Notes:
1. See section 2.6 for discussion of CAAQS values.
2. As presented in the Air TDR
3. As presented in the UBAQA report (Stantec, 2021), and updated with data to end of Q4 2021.
4. Values determined from 2022 Construction FUP
5. The statistical form of the CAAQS 1-hr average for NO_2 is determined from the 3-year average of the annual 98th percentile of the daily maximum 1-hr average concentrations. The statistical form for the annual NO_2 average is the average over a single calendar year of all 1-hr average concentrations. The 2020 CAAQS are provided for informational purposes only.
6. The statistical form of 24-hr PM2.5 value is the 3-year average of the annual 98th percentile of the daily 24-hr average concentration. The statistical form for the annual PM2.5 average is the 3-year average of the annual average of the daily 24-hr average concentrations. The 2020 CAAQS are provided for informational purposes only.

The NO_2 2022 FUP monitored concentrations are all well below the modelled and predicted values, the values are approximately one half of the conservative predictions.

Discussion on dust ($PM_{2.5}$, PM_{10}), benzene and B(a)P can be found in Section 4.2 that follows.

4.2 Mitigation Measures and Adaptive Management

4.2.1 CN Milton Logistics Hub Air Quality Best Management Practice Plan

The mitigation measures and adaptative management process are carried out on behalf of CN by its contractor, Dufferin Construction Company (DCC) and are presented in the document *CN Milton Logistics Hub Air Quality Best Management Practice Plan* (BMPP Contractor, 2022). DCC, as per their BMPP, also carried out monitoring for the Project (BMPP Monitoring). The BMPP monitoring provides that DCC will on a daily basis identify potential environmental concerns and, since November 2021, has resulted in weekly and/or monthly summary reports. Starting midway through Q1 2022, DCC uses ongoing air quality measures as outlined in the BMPP for local and targeted deployment of primarily handheld style air quality monitoring equipment to assist in objectively evaluating the potential PM_{10} emissions releases.

Incident alerts based on the identification of levels of PM_{10} are forwarded to DCC, which then assesses and implements mitigation measures. These measures included the use of a water truck on uncovered piles and roadways, allowing vegetation to cover piles and graded areas where possible (including natural environmental seeding and the use of hydroseed where immediate relief is required). Other stabilization methods for exposed areas are also employed where feasible. The scheduling of operations to adjust active work areas was employed when working close to boundaries.

The ongoing identification and subsequent abatement action by the BMPP Contractor limited any possible offsite occurrences to the two (2) PM_{10} events that were observed during the 2022 FUP monitoring. This contributed to an improvement over the environmental impact modelled prediction in the Air TDR that up to 5 PM_{10} events could potentially be expected in immediate proximity to the project (CEAR 930, page 2112, line14). Most importantly, the BMPP Contractor activities were numerous and diligent over the year, ensuring that identification of concerns and required mitigation actions were indeed carried out. Fugitive dust from construction was at a low level, and measured values from the FUP ambient air quality monitoring stations are located in very close proximity to the site boundary. It is expected that at a further distance from the project site in the community, where residents and other receptors are located, the airborne dust values will be much lower.

4.2.2 FUP 2022 Monitoring for Benzene and B(a)P

Both benzene and B(a)P were identified in the environmental impact assessment as being elevated without the project. B(a)P is a by-product of a wide variety of natural and man-made combustion processes (including motor vehicles, natural gas, wood, refuse, oil, forest fires, etc.) and is widely present in the urban environment (including being present in soil and water). Benzene is released from fuel storage, and coal and fuel combustion.

The maximum 2022 FUP monitored annual benzene concentration was 0.49 ug/m^3, which is significantly lower than (almost half of) the Air TDR conservative cumulative prediction of 0.813 ug/m^3.

For B(a)P, the maximum 2022 FUP monitored values were 0.19 ng/m^3 (24-hr average) and 0.05 ng/m^3 (annual average). These monitored values were also significantly lower than predicted, about 25% of the comparable Air TDR conservative cumulative prediction of 0.66 ng/m^3 and 0.25 ng/m^3 respectively.

The air emissions from the project construction activities of benzene and B(a)P were lower than expected in part because of initiatives CN implemented to address the Decision Statement conditions. These initiatives include the contractor’s use of diesel engines that meet Tier 4 emissions wherever possible, observing speed limits for vehicle site operation and the site no idling policy.

5 Summary and Conclusions

This report summarizes the results of the air quality FUP for 2022, which represents year 1 of the construction phase of the Milton Logistics Hub.

Monitored concentrations during the 2022 FUP CAQMP were compared to the BAQA and the UBAQA values and the graphical presentation of the results is shown in section 3 for each of the airborne contaminants considered. The graphical presentation reflects the trend and range of values that were expected.

Where appropriate, comparison of the 2022 FUP CAQMP concentrations to the MECP OAAQC are presented in Section 3.6. Concentrations of those contaminants comparable to the CCME CAAQS are summarized, but as the one year of FUP data does not allow generation of the correct statistical form for comparison, detailed evaluation and comparison is not yet possible. The FUP monitored concentrations were consistent with the predicted cumulative concentrations in the Air TDR and as updated with the UBAQA.

The NO_2 2022 FUP monitored concentrations are all well below the conservatively modelled and predicted values, the values are approximately one half of the predictions.

The 2022 FUP monitored annual benzene concentration was significantly lower (almost half) of the Air TDR conservative cumulative prediction.

For B(a)P, the 2022 FUP monitored values were also significantly lower than predicted, about 25% of the comparable Air TDR conservative cumulative prediction.

Dust, represented by PM_{10} and $PM_{2.5}$, had predicted values that were very close to predictions. For PM_{10}, there were two single day events close to the project boundary. This was consistent with predicted modelling results, as up to 5 events were identified as being possible. The data for $PM_{2.5}$ is also close to that predicted. Compliance with CAAQs can only be determined when sufficient data is available to generate the correct statistical form for comparison to the applicable standard.

In-depth upwind/downwind analysis to isolate any specific project offsite air emissions impacts was not conducted as the 2022 FUP monitored results were as predicted in the modelled data. Data demonstrated the typical expected variance of contaminant concentrations over the course of 2022. All data records, including accompanying meteorological data will be retained for five years should subsequent analysis prove beneficial.

Mitigation measures and adaptative management processes were carried out by the construction contractor, DCC, on behalf of CN. The mitigation measures and adaptative management processes are presented in the document *CN Milton Logistics Hub Air Quality Best Management Practice Plan* (BMPP Contractor, 2022). The implementation of the BMPP provides DCC with a mechanism to determine daily conditions and make adjustments to mitigation measures as identified through the adaptive management approach as soon as conditions warrant. These measures included the use of water trucks, re-vegetation of exposed areas, and adjustment of work activities/locations.

A copy of this report will be provided to the Impact Assessment Agency of Canada, in accordance with Condition 4.21, as well as to Environment and Climate Change Canada, Health Canada, the Ontario Ministry of the Environment, Conservation and Parks, Halton Region, the Town of Milton, the Mississaugas of the Credit First Nation, and the Six Nations of the Grand River per the commitments in the Air Quality Follow-up Program (Stantec, 2022). In addition, this report will be posted to CN's project website (www.cn.ca/en/about-cn/milton-logistics-hub/) and a summary will be included in CN's 2022 Annual Report.

6 References

Canadian Ministers of the Environment (CCME). 2019. Ambient Air Monitoring Guidelines.

Dufferin Construction Company. 2022. CN Milton Logistics Hub Air Quality Best Management Practice Plan.

National Air Pollutants Survey Program Data. Available online: https://www.canada.ca/en/environment-climate-change/services/air-pollution/monitoring-networks-data/national-air-pollution-program.html [Accessed March 17, 2023].

Ontario Ministry of the Environment, Conservation and Parks (MECP). 2018. Operations Manual for Air Quality Monitoring in Ontario.

MECP. Summary of Special Air Quality Statements and Smog and Air Health Advisories 2015 to 2023. Available online: http://www.airqualityontario.com/aqhi/advisories_stats.php [Last accessed March 17, 2023].

Stantec Consulting Ltd. (Stantec). 2015. Milton Logistics Hub – Technical Data Report Air Quality (Appendix E.1)

Stantec. 2020. CN Milton Logistics Hub: Air Quality Follow-up Program.

Stantec. 2021. CN Milton Logistics Hub: Update of Air Quality Baseline Information

Appendices

Appendix A Calibration Records

Rotek Environmental Field Audit

PUF

Station Identifier	: First Line
Station Location	: 5258 Fisrt Line Rd
Latitude Co-ordinates	: 43.463177
Longitude Co-ordinates	: -79.826923

Audit Date	: October 5, 2021
Audit Time	: 12:32 EST
Audit Criteria	: **PASS**

Client Company :	**Client Contact Name :**	**Client Contact Number :**
CN Rail / Stantec	Marco Quattrociocchi	437-922-6396
Auditor Name :	**Auditor Contact Number :**	**Auditor Signature :**
Ryan German	905-573-9533	

PUF Sampler Information

Instrument Make / Model :	**Instrument SN :**	**Inlet Height from Ground :**
Tisch TE-1000	10314	14.0 feet
TE-1004 Motor SN :	**TE-5007 Timer SN :**	**TE-5010 ETI SN :**
1530	5349	10346
Electrical / Mechanical Inspection :	**Cleanliness of Equipment :**	**ETI Reading As Left :**
Good	Cleaned	8945.26

Calibration Equipment

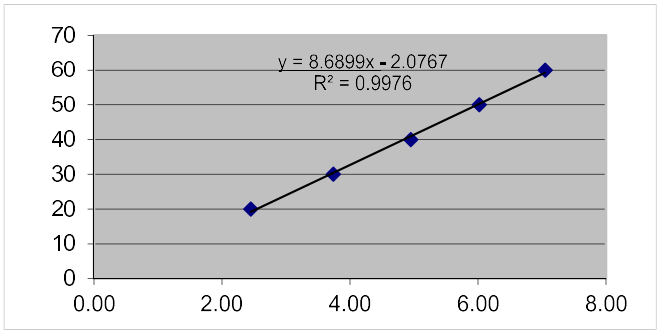
Calibration Orifice :	**Calibration Orifice SN :**	**Certification Expiration Date :**
TE-5040A	663	April 20, 2022
Qstd Slope Value (m) :	**Qstd Intercept Value (b) :**	**Manometer Model :**
9.86522	-0.02402	HHP-90
Temperature / Pressure Calibrator :	**Temperature / Pressure Calibrator SN :**	**Certification Expiration Date**
BGI TetraCal	275	September 1, 2022

Audit Results

Measured Temperature (˚C) :	**Corrected Temperature (˚K) :**	**Measured Pressure (mmHg) :**
18.4	291.4	751.5

Calibration

Flow Set Point (Magn)	Flow (Corrected)	H2O (in)	QStd (m3/min)
60	7.79	7.05	0.273
50	7.11	6.02	0.253
40	6.36	4.95	0.229
30	5.51	3.74	0.200
20	4.50	2.45	0.162



Linear Regression

Slope =	**Intercept =**	**Corrected Coefficient =**
29.5839	-0.3525	0.9990

Comments / Recommendations

Sampler passes audit criteria. RG.

Rotek Environmental Field Audit

PUF

Station Identifier	: First Line	**Audit Date**	: February 11, 2022
Station Location	: 5258 First Line Rd	**Audit Time**	: 13:00 EST
Latitude Co-ordinates	: 43.463177	**Audit Criteria**	: **PASS**
Longitude Co-ordinates	: -79.826923		

Client Company :	**Client Contact Name :**	**Client Contact Number :**
CN Rail / Stantec	Marco Quattrociocchi	437-922-6396
Auditor Name :	**Auditor Contact Number :**	**Auditor Signature :**
Ryan German	905-573-9533	

PUF Sampler Information

Instrument Make / Model :	**Instrument SN :**	**Inlet Height from Ground :**
Tisch TE-1000	10314	14.0 feet
TE-1004 Motor SN :	**TE-5007 Timer SN :**	**TE-5010 ETI SN :**
512	5349	10346
Electrical / Mechanical Inspection :	**Cleanliness of Equipment :**	**ETI Reading As Left :**
Good	Cleaned	N/A

Calibration Equipment

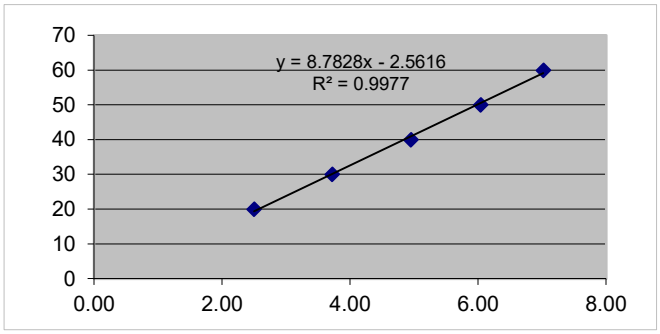
Calibration Orifice :	**Calibration Orifice SN :**	**Certification Expiration Date :**
TE-5040A	663	April 20, 2022
Qstd Slope Value (m) :	**Qstd Intercept Value (b) :**	**Manometer Model :**
9.86522	-0.02402	HHP-90
Temperature / Pressure Calibrator :	**Temperature / Pressure Calibrator SN :**	**Certification Expiration Date**
BGI TetraCal	275	September 1, 2022

Audit Results

Measured Temperature (˚C) :	**Corrected Temperature (˚K) :**	**Measured Pressure (mmHg) :**
3.2	276.2	734.5

Calibration

Flow Set Point (Magn)	**Flow** (Corrected)	**H2O** (in)	**QStd** (m3/min)
60	7.91	7.02	0.277
50	7.22	6.04	0.257
40	6.46	4.95	0.233
30	5.59	3.72	0.202
20	4.57	2.50	0.166



Linear Regression

Slope =	**Intercept =**	**Corrected Coefficient =**
29.9896	-0.4544	0.9992

Comments / Recommendations

Sampler passes audit criteria.
New motor and brushes installed.

Rotek Environmental Field Audit

PUF

Station Identifier	: First Line
Station Location	: 5258 First Line Rd
Latitude Co-ordinates	: 43.463177
Longitude Co-ordinates	: -79.826923

Audit Date	: July 26, 2022
Audit Time	: 11:15 EST
Audit Criteria	: **PASS**

Client Company :	**Client Contact Name :**	**Client Contact Number :**
CN Rail / Stantec	Marco Quattrociocchi	437-922-6396
Auditor Name :	**Auditor Contact Number :**	**Auditor Signature :**
Ryan German	905-573-9533	

PUF Sampler Information

Instrument Make / Model :	**Instrument SN :**	**Inlet Height from Ground :**
Tisch TE-1000	10314	14.0 feet
TE-1004 Motor SN :	**TE-5007 Timer SN :**	**TE-5010 ETI SN :**
512	5349	10346
Electrical / Mechanical Inspection :	**Cleanliness of Equipment :**	**ETI Reading As Left :**
Good	Cleaned	10066.99

Calibration Equipment

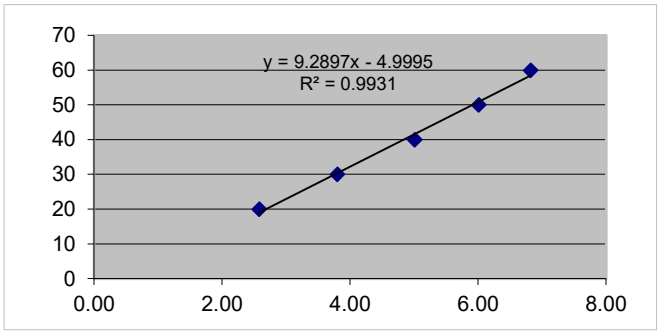
Calibration Orifice :	**Calibration Orifice SN :**	**Certification Expiration Date :**
TE-5040A	663	May 23, 2023
Qstd Slope Value (m) :	**Qstd Intercept Value (b) :**	**Manometer Model :**
9.89174	-0.03875	HHP-90
Temperature / Pressure Calibrator :	**Temperature / Pressure Calibrator SN :**	**Certification Expiration Date**
BGI TetraCal	154345	September 23, 2022

Audit Results

Measured Temperature (˚C) :	**Corrected Temperature (˚K) :**	**Measured Pressure (mmHg) :**
28.2	301.2	748.0

Calibration

Flow Set Point (Magn)	**Flow** (Corrected)	**H2O** (in)	**QStd** (m3/min)
60	7.64	6.82	0.264
50	6.98	6.01	0.248
40	6.24	5.01	0.227
30	5.40	3.80	0.198
20	4.41	2.58	0.164



Linear Regression

Slope =	**Intercept =**	**Corrected Coefficient =**
31.7242	-0.8602	0.9976

Comments / Recommendations

Sampler passes audit criteria.
New motor and brushes installed.

Rotek Environmental Field Audit

PUF

Station Identifier	: First Line	**Audit Date**	: August 16, 2022
Station Location	: 5258 First Line Rd	**Audit Time**	: 9:00
Latitude Co-ordinates	: 43.463177	**Audit Criteria**	: **PASS**
Longitude Co-ordinates	: -79.826923		

Client Company :	**Client Contact Name :**	**Client Contact Number :**
CN Rail / Stantec	Marco Quattrociocchi	437-922-6396
Auditor Name :	**Auditor Contact Number :**	**Auditor Signature :**
Ryan German	905-573-9533	

PUF Sampler Information

Instrument Make / Model :	**Instrument SN :**	**Inlet Height from Ground :**
Tisch TE-1000	10314	14.0 feet
TE-1004 Motor SN :	**TE-5007 Timer SN :**	**TE-5010 ETI SN :**
1701	5349	10346
Electrical / Mechanical Inspection :	**Cleanliness of Equipment :**	**ETI Reading As Left :**
Good	Cleaned	10154.114

Calibration Equipment

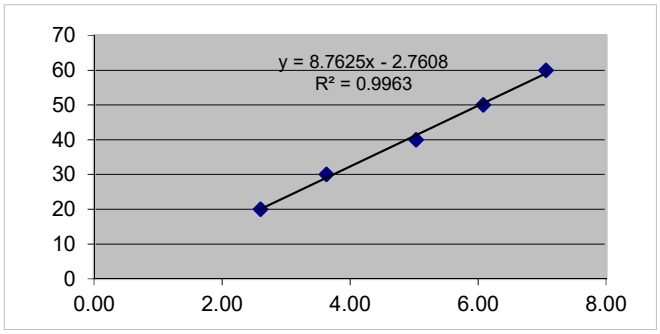
Calibration Orifice :	**Calibration Orifice SN :**	**Certification Expiration Date :**
TE-5040A	663	May 23, 2023
Qstd Slope Value (m) :	**Qstd Intercept Value (b) :**	**Manometer Model :**
9.89174	-0.03875	HHP-90
Temperature / Pressure Calibrator :	**Temperature / Pressure Calibrator SN :**	**Certification Expiration Date**
BGI TetraCal	154345	September 23, 2022

Audit Results

Measured Temperature (˚C) :	**Corrected Temperature (˚K) :**	**Measured Pressure (mmHg) :**
18.5	291.5	750.0

Calibration

Flow Set Point (Magn)	**Flow** (Corrected)	**H2O** (in)	**QStd** (m3/min)
60	7.78	7.06	0.274
50	7.10	6.08	0.254
40	6.35	5.03	0.232
30	5.50	3.63	0.197
20	4.49	2.60	0.168



Linear Regression

Slope =	**Intercept =**	**Corrected Coefficient =**
30.2541	-0.5596	0.9984

Comments / Recommendations

Sampler passes audit criteria.
New motor and brushes installed.

Rotek Environmental Field Audit

PUF

Station Identifier	: First Line	**Audit Date**	: December 14, 2022
Station Location	: 5258 First Line Rd	**Audit Time**	: 14:10 EST
Latitude Co-ordinates	: 43.463177	**Audit Criteria**	: **PASS**
Longitude Co-ordinates	: -79.826923		

Client Company :	**Client Contact Name :**	**Client Contact Number :**
CN Rail / Stantec	Marco Quattrociocchi	437-922-6396
Auditor Name :	**Auditor Contact Number :**	**Auditor Signature :**
Ryan German	905-573-9533	

PUF Sampler Information

Instrument Make / Model :	**Instrument SN :**	**Inlet Height from Ground :**
Tisch TE-1000	10314	14.0 feet
TE-1004 Motor SN :	**TE-5007 Timer SN :**	**TE-5010 ETI SN :**
1701	5349	10346
Electrical / Mechanical Inspection :	**Cleanliness of Equipment :**	**ETI Reading As Left :**
Good	Cleaned	10604.86

Calibration Equipment

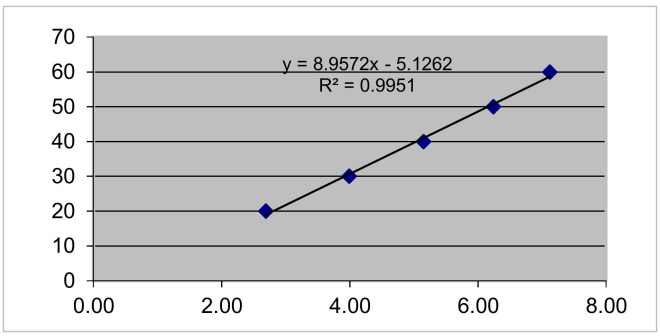
Calibration Orifice :	**Calibration Orifice SN :**	**Certification Expiration Date :**
TE-5040A	663	May 23, 2023
Qstd Slope Value (m) :	**Qstd Intercept Value (b) :**	**Manometer Model :**
9.89174	-0.03875	HHP-90
Temperature / Pressure Calibrator :	**Temperature / Pressure Calibrator SN :**	**Certification Expiration Date**
BGI TetraCal	1065	November 3, 2023

Audit Results

Measured Temperature (˚C) :	**Corrected Temperature (˚K) :**	**Measured Pressure (mmHg) :**
-1.7	271.3	754.0

Calibration

Flow Set Point (Magn)	Flow (Corrected)	H2O (in)	QStd (m3/min)
60	8.09	7.12	0.286
50	7.38	6.24	0.268
40	6.60	5.15	0.243
30	5.72	3.99	0.215
20	4.67	2.69	0.177



Linear Regression

Slope =	**Intercept =**	**Corrected Coefficient =**
31.2433	-0.9334	0.9983

Comments / Recommendations

Sampler passes audit criteria.
New brushes installed. Motor life at 75%.

Rotek Environmental Field Audit

TSP

Station Identifier	: First Line Rd
Station Location	: 5258 First Line Rd Milton
Latitude Co-ordinate	: 43.463177
Longitude Co-ordinate	: -79.826923

Audit Date	: October 5, 2021
Audit Time	: 13:30 EST
Audit Criteria	: **PASS**

Client Company	Client Contact Name	Client Contact Number
CN Rail / Stantec	Marco Quattrociocchi	437-922-6396

Auditor Name	Auditor Contact Number	Auditor Signature
Ryan German	905-573-9533	

TSP Sampler Information

Instrument Make	Instrument Model	Instrument Serial Number
Tisch	TE-5170	10199
TE-300-310 Flow Controller SN	**TE-5007 Timer SN**	**TE-5005 Motor SN**
2712	5457	3963
TE-5009 Flow Recorder SN	**TE-5012 ETI SN**	**ETI Reading As Left**
N/A	2109	5091.75

Calibration Equipment

Calibration Orifice	Calibration Orifice Serial Number	Certification Expiration Date
Tisch TE-5028A	3796	September 10, 2022
Qstd Slope Value (m)	**Intercept Value (b)**	**Coefficient Value (r)**
1.64516	-0.00418	0.99999
Temperature Calibrator	**Temperature Calibrator SN**	**Certification Expiration Date**
BGI TetraCal	275	September 1, 2022
Pressure Calibrator	**Pressure Calibrator SN**	**Certification Expiration Date**
BGI TriCal	275	September 1, 2022

Audit Results

Measured Temperature (DegC)	Measured Pressure (mmHg)	Manometer Reading (inH_20)
18.4	751.5	3.22
Calculated Flow (cfm)	**Calculated Tolerance (%)**	**Siting Criteria**
38.82	-2.95	acceptable
Flow Chart Reading (cfm)	**Gasket Inspection**	**Cleanliness of Equipment**
N/A	Good	Good
Electrical Inspection	**Mechanical Inspection**	**Inlet Height from Ground**
Good	Good	14.0 feet

Comments / Recommendations

Sampler meets audit criteria. RG.

Rotek Environmental Field Audit

TSP

Station Identifier	: First Line Rd	**Audit Date**	: February 11, 2022
Station Location	: 5258 First Line Rd Milton	**Audit Time**	: 13:15 EST
Latitude Co-ordinate	: 43.463177	**Audit Criteria**	: **PASS**
Longitude Co-ordinate	: -79.826923		

Client Company	Client Contact Name	Client Contact Number
CN Rail / Stantec	Marco Quattrociocchi	437-922-6396

Auditor Name	Auditor Contact Number	Auditor Signature
Ryan German	905-573-9533	

TSP Sampler Information

Instrument Make	Instrument Model	Instrument Serial Number
Tisch	TE-5170	10199
TE-300-310 Flow Controller SN	**TE-5007 Timer SN**	**TE-5005 Motor SN**
2712	5457	3963
TE-5009 Flow Recorder SN	**TE-5012 ETI SN**	**ETI Reading As Left**
N/A	2109	5607.32

Calibration Equipment

Calibration Orifice	Calibration Orifice Serial Number	Certification Expiration Date
Tisch TE-5028A	3796	September 10, 2022
Qstd Slope Value (m)	**Intercept Value (b)**	**Coefficient Value (r)**
1.64516	-0.00418	0.99999
Temperature Calibrator	**Temperature Calibrator SN**	**Certification Expiration Date**
BGI TetraCal	275	September 1, 2022
Pressure Calibrator	**Pressure Calibrator SN**	**Certification Expiration Date**
BGI TetraCal	275	September 1, 2022

Audit Results

Measured Temperature (DegC)	Measured Pressure (mmHg)	Manometer Reading (inH_20)
3.2	734.5	3.21
Calculated Flow (cfm)	**Calculated Tolerance (%)**	**Siting Criteria**
39.36	-1.61	Acceptable
Flow Chart Reading (cfm)	**Gasket Inspection**	**Cleanliness of Equipment**
N/A	Good	Good
Electrical Inspection	**Mechanical Inspection**	**Inlet Height from Ground**
Good	Good	14.0 feet

Comments / Recommendations

New motor and brushes installed

Rotek Environmental Field Audit

TSP

Station Identifier	: First Line Rd	**Audit Date**	: July 26, 2022
Station Location	: 5258 First Line Rd Milton	**Audit Time**	: 11:20 EST
Latitude Co-ordinate	: 43.463177	**Audit Criteria**	: **PASS**
Longitude Co-ordinate	: -79.826923		

Client Company	Client Contact Name	Client Contact Number
CN Rail / Stantec	Marco Quattrociocchi	437-922-6396

Auditor Name	Auditor Contact Number	Auditor Signature
Ryan German	905-573-9533	

TSP Sampler Information

Instrument Make	Instrument Model	Instrument Serial Number
Tisch	TE-5170	10199
TE-300-310 Flow Controller SN	**TE-5007 Timer SN**	**TE-5005 Motor SN**
2712	5457	3963
TE-5009 Flow Recorder SN	**TE-5012 ETI SN**	**ETI Reading As Left**
N/A	2109	6238.61

Calibration Equipment

Calibration Orifice	Calibration Orifice Serial Number	Certification Expiration Date
Tisch TE-5028A	651	September 23, 2022
Qstd Slope Value (m)	**Intercept Value (b)**	**Coefficient Value (r)**
1.58316	-0.01658	0.99989
Temperature Calibrator	**Temperature Calibrator SN**	**Certification Expiration Date**
BGI TetraCal	154345	September 23, 2022
Pressure Calibrator	**Pressure Calibrator SN**	**Certification Expiration Date**
BGI TetraCal	154345	September 23, 2022

Audit Results

Measured Temperature (DegC)	Measured Pressure (mmHg)	Manometer Reading (inH_20)
28.4	748.0	3.29
Calculated Flow (cfm)	**Calculated Tolerance (%)**	**Siting Criteria**
40.28	0.69	Acceptable
Flow Chart Reading (cfm)	**Gasket Inspection**	**Cleanliness of Equipment**
N/A	Good	Good
Electrical Inspection	**Mechanical Inspection**	**Inlet Height from Ground**
Good	Good	14.0 feet

Comments / Recommendations

New motor and brushes installed

Rotek Environmental Field Audit

TSP

Station Identifier	: First Line Rd	**Audit Date**	: August 16, 2022
Station Location	: 5258 First Line Rd Milton	**Audit Time**	: 09:00 EST
Latitude Co-ordinate	: 43.463177	**Audit Criteria**	: **PASS**
Longitude Co-ordinate	: -79.826923		

Client Company	Client Contact Name	Client Contact Number
CN Rail / Stantec	Marco Quattrociocchi	437-922-6396

Auditor Name	Auditor Contact Number	Auditor Signature
Ryan German	905-573-9533	

TSP Sampler Information

Instrument Make	Instrument Model	Instrument Serial Number
Tisch	TE-5170	10199
TE-300-310 Flow Controller SN	**TE-5007 Timer SN**	**TE-5005 Motor SN**
2712	5457	3963
TE-5009 Flow Recorder SN	**TE-5012 ETI SN**	**ETI Reading As Left**
N/A	2109	6334.2

Calibration Equipment

Calibration Orifice	Calibration Orifice Serial Number	Certification Expiration Date
Tisch TE-5028A	651	September 23, 2022
Qstd Slope Value (m)	**Intercept Value (b)**	**Coefficient Value (r)**
1.58316	-0.01658	0.99989
Temperature Calibrator	**Temperature Calibrator SN**	**Certification Expiration Date**
BGI TetraCal	154345	September 23, 2022
Pressure Calibrator	**Pressure Calibrator SN**	**Certification Expiration Date**
BGI TetraCal	154345	September 23, 2022

Audit Results

Measured Temperature (DegC)	Measured Pressure (mmHg)	Manometer Reading (inH_20)
18.5	750.0	3.21
Calculated Flow (cfm)	**Calculated Tolerance (%)**	**Siting Criteria**
40.51	1.27	Acceptable
Flow Chart Reading (cfm)	**Gasket Inspection**	**Cleanliness of Equipment**
N/A	Good	Good
Electrical Inspection	**Mechanical Inspection**	**Inlet Height from Ground**
Good	Good	14.0 feet

Comments / Recommendations

New motor and brushes installed

Rotek Environmental Field Audit

TSP

Station Identifier	: First Line Rd	**Audit Date**	: December 14, 2022
Station Location	: 5258 First Line Rd Milton	**Audit Time**	: 14:00 EST
Latitude Co-ordinate	: 43.463177	**Audit Criteria**	: **PASS**
Longitude Co-ordinate	: -79.826923		

Client Company	Client Contact Name	Client Contact Number
CN Rail / Stantec	Marco Quattrociocchi	437-922-6396

Auditor Name	Auditor Contact Number	Auditor Signature
Ryan German	905-573-9533	

TSP Sampler Information

Instrument Make	Instrument Model	Instrument Serial Number
Tisch	TE-5170	10199
TE-300-310 Flow Controller SN	**TE-5007 Timer SN**	**TE-5005 Motor SN**
2712	5457	3963
TE-5009 Flow Recorder SN	**TE-5012 ETI SN**	**ETI Reading As Left**
N/A	1814	647.07

Calibration Equipment

Calibration Orifice	Calibration Orifice Serial Number	Certification Expiration Date
Tisch TE-5028A	3796	September 27, 2023
Qstd Slope Value (m)	**Intercept Value (b)**	**Coefficient Value (r)**
1.65207	0.00826	0.99999
Temperature Calibrator	**Temperature Calibrator SN**	**Certification Expiration Date**
BGI TetraCal	1065	November 3, 2023
Pressure Calibrator	**Pressure Calibrator SN**	**Certification Expiration Date**
BGI TetraCal	1065	November 3, 2023

Audit Results

Measured Temperature (DegC)	Measured Pressure (mmHg)	Manometer Reading (inH_20)
-1.7	754.0	3.29
Calculated Flow (cfm)	**Calculated Tolerance (%)**	**Siting Criteria**
40.29	0.73	Acceptable
Flow Chart Reading (cfm)	**Gasket Inspection**	**Cleanliness of Equipment**
N/A	Good	Good
Electrical Inspection	**Mechanical Inspection**	**Inlet Height from Ground**
Good	Good	14.0 feet

Comments / Recommendations

New brushes installed. Motor life at 75%.

Rotek Environmental Field Audit

PUF

Station Identifier	: Tremaine Rd
Station Location	: 5381 Tremaine Road, Milton
Latitude Co-ordinates	: 43.457143
Longitude Co-ordinates	: -79.840747

Audit Date	: October 5, 2021
Audit Time	: 11:20 EST
Audit Criteria	: **PASS**

Client Company :	**Client Contact Name :**	**Client Contact Number :**
CN Rail / Stantec	Marco Quattrociocchi	437-922-6396
Auditor Name :	**Auditor Contact Number :**	**Auditor Signature :**
Ryan German	905-573-9533	

PUF Sampler Information

Instrument Make / Model :	**Instrument SN :**	**Inlet Height from Ground :**
Tisch TE-1000	10129	14.0 Feet
TE-1004 Motor SN :	**TE-5007 Timer SN :**	**TE-5010 ETI SN :**
512	5984	132
Electrical / Mechanical Inspection :	**Cleanliness of Equipment :**	**ETI Reading As Left :**
Good	Cleaned	5691.04

Calibration Equipment

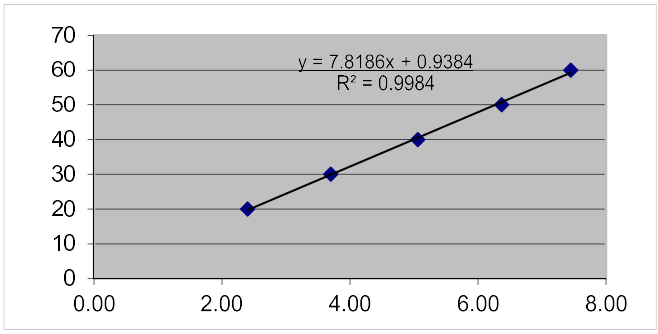
Calibration Orifice :	**Calibration Orifice SN :**	**Certification Expiration Date :**
TE-5040A	663	April 20, 2022
Qstd Slope Value (m) :	**Qstd Intercept Value (b) :**	**Manometer Model :**
9.86522	-0.02402	HHP-90
Temperature / Pressure Calibrator :	**Temperature / Pressure Calibrator SN :**	**Certification Expiration Date**
BGI TetraCal	275	September 1, 2022

Audit Results

Measured Temperature (˚C) :	**Corrected Temperature (˚K) :**	**Measured Pressure (mmHg) :**
18.6	291.6	751.5

Calibration

Flow Set Point (Magn)	Flow (Corrected)	H2O (in)	QStd (m3/min)
60	7.79	7.45	0.281
50	7.11	6.37	0.260
40	6.36	5.06	0.232
30	5.51	3.70	0.198
20	4.50	2.40	0.160



Linear Regression

Slope =	**Intercept =**	**Corrected Coefficient =**
27.0276	0.1395	0.9993

Comments / Recommendations

Sampler passes audit criteria. RG.

Rotek Environmental Field Audit

PUF

Station Identifier	: Tremaine Road	**Audit Date**	: February 11, 2022
Station Location	: 5381 Tremaine Road	**Audit Time**	: 11:35 EST
Latitude Co-ordinates :	: 43.457166	**Audit Criteria**	: **PASS**
Longitude Co-ordinates :	: -79.840826		

Client Company :	**Client Contact Name :**	**Client Contact Number :**
CN Rail/Stantec	Marco Quattrociocchi	437-922-6396
Auditor Name :	**Auditor Contact Number :**	**Auditor Signature :**
Ryan German	905-573-9533	

PUF Sampler Information

Instrument Make / Model :	**Instrument SN :**	**Inlet Height from Ground :**
Tisch TE-1000	10129	14.0 feet
TE-1004 Motor SN :	**TE-5007 Timer SN :**	**TE-5010 ETI SN :**
1529	5984	132
Electrical / Mechanical Inspection :	**Cleanliness of Equipment :**	**ETI Reading As Left :**
Good	Cleaned	6219.17

Calibration Equipment

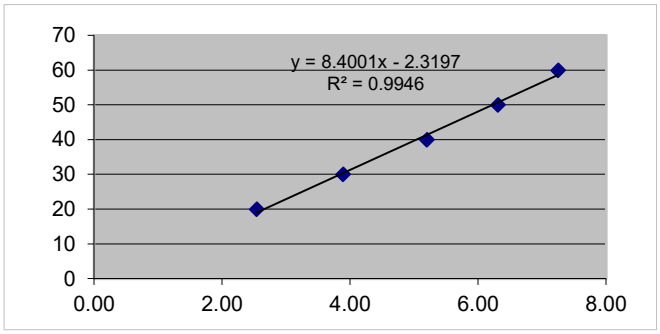
Calibration Orifice :	**Calibration Orifice SN :**	**Certification Expiration Date :**
TE-5040A	663	April 20, 2022
Qstd Slope Value (m) :	**Qstd Intercept Value (b) :**	**Manometer Model :**
9.86522	-0.02402	HHP-90
Temperature / Pressure Calibrator :	**Temperature / Pressure Calibrator SN :**	**Certification Expiration Date**
BGI TetraCal	275	September 1, 2022

Audit Results

Measured Temperature (˚C) :	**Corrected Temperature (˚K) :**	**Measured Pressure (mmHg) :**
3.4	276.4	734.5

Calibration

Flow Set Point (Magn)	**Flow** (Corrected)	**H2O** (in)	**QStd** (m3/min)
60	7.91	7.25	0.281
50	7.22	6.31	0.262
40	6.46	5.20	0.238
30	5.59	3.89	0.207
20	4.57	2.54	0.167



Linear Regression

Slope =	**Intercept =**	**Corrected Coefficient =**
29.0615	-0.3695	0.9978

Comments / Recommendations

Sampler meets criteria.
New motor and brushes installed.

Rotek Environmental Field Audit

PUF

Station Identifier	: Tremaine Road	**Audit Date**	: July 26, 2022
Station Location	: 5381 Tremaine Road	**Audit Time**	: 12:30 EST
Latitude Co-ordinates :	: 43.457166	**Audit Criteria**	: **PASS**
Longitude Co-ordinates :	: -79.840826		

Client Company :	**Client Contact Name :**	**Client Contact Number :**
CN Rail/Stantec	Marco Quattrociocchi	437-922-6396
Auditor Name :	**Auditor Contact Number :**	**Auditor Signature :**
Ryan German	905-573-9533	

PUF Sampler Information

Instrument Make / Model :	**Instrument SN :**	**Inlet Height from Ground :**
Tisch TE-1000	10129	14.0 feet
TE-1004 Motor SN :	**TE-5007 Timer SN :**	**TE-5010 ETI SN :**
1529	5984	132
Electrical / Mechanical Inspection :	**Cleanliness of Equipment :**	**ETI Reading As Left :**
Good	Cleaned	6794.17

Calibration Equipment

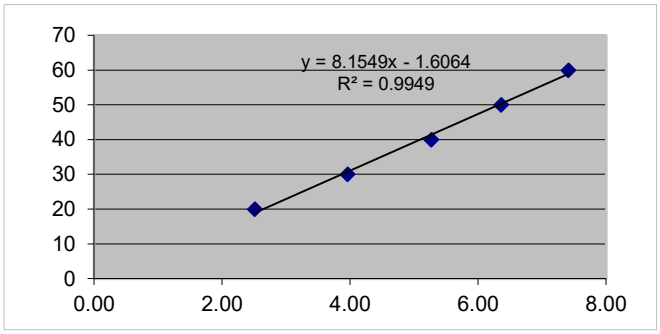
Calibration Orifice :	**Calibration Orifice SN :**	**Certification Expiration Date :**
TE-5040A	663	May 23, 2023
Qstd Slope Value (m) :	**Qstd Intercept Value (b) :**	**Manometer Model :**
9.89174	-0.03875	HHP-90
Temperature / Pressure Calibrator :	**Temperature / Pressure Calibrator SN :**	**Certification Expiration Date**
BGI TetraCal	154345	September 23, 2022

Audit Results

Measured Temperature (˚C) :	**Corrected Temperature (˚K) :**	**Measured Pressure (mmHg) :**
27.7	300.7	748.0

Calibration

Flow Set Point (Magn)	**Flow** (Corrected)	**H2O** (in)	**QStd** (m3/min)
60	7.65	7.41	0.276
50	6.98	6.36	0.256
40	6.25	5.27	0.233
30	5.41	3.96	0.203
20	4.42	2.51	0.162



Linear Regression

Slope =	**Intercept =**	**Corrected Coefficient =**
28.3879	-0.2701	0.9976

Comments / Recommendations

Sampler meets criteria.
New motor and brushes installed.

Rotek Environmental Field Audit

PUF

Station Identifier	: Tremaine Road	**Audit Date**	: August 16, 2022
Station Location	: 5381 Tremaine Road	**Audit Time**	: 9:30 EST
Latitude Co-ordinates :	: 43.457166	**Audit Criteria**	: **PASS**
Longitude Co-ordinates :	: -79.840826		

Client Company :	**Client Contact Name :**	**Client Contact Number :**
CN Rail/Stantec	Marco Quattrociocchi	437-922-6396
Auditor Name :	**Auditor Contact Number :**	**Auditor Signature :**
Ryan German	905-573-9533	

PUF Sampler Information

Instrument Make / Model :	**Instrument SN :**	**Inlet Height from Ground :**
Tisch TE-1000	10129	14.0 feet
TE-1004 Motor SN :	**TE-5007 Timer SN :**	**TE-5010 ETI SN :**
1681	5984	132
Electrical / Mechanical Inspection :	**Cleanliness of Equipment :**	**ETI Reading As Left :**
Good	Cleaned	6887.49

Calibration Equipment

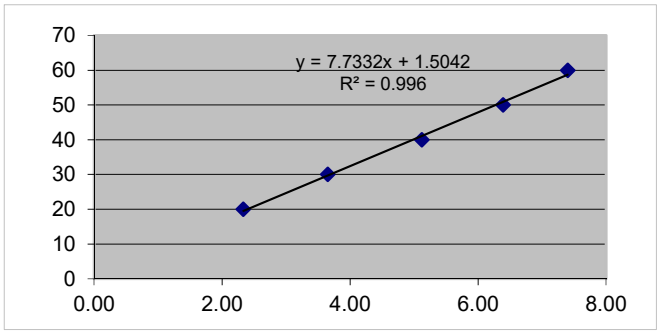
Calibration Orifice :	**Calibration Orifice SN :**	**Certification Expiration Date :**
TE-5040A	663	May 23, 2023
Qstd Slope Value (m) :	**Qstd Intercept Value (b) :**	**Manometer Model :**
9.89174	-0.03875	HHP-90
Temperature / Pressure Calibrator :	**Temperature / Pressure Calibrator SN :**	**Certification Expiration Date**
BGI TetraCal	154345	September 23, 2022

Audit Results

Measured Temperature (˚C) :	**Corrected Temperature (˚K) :**	**Measured Pressure (mmHg) :**
20.0	293.0	750.0

Calibration

Flow Set Point (Magn)	**Flow** (Corrected)	**H2O** (in)	**QStd** (m3/min)
60	7.76	7.40	0.279
50	7.08	6.39	0.260
40	6.34	5.12	0.233
30	5.49	3.65	0.197
20	4.48	2.33	0.159



Linear Regression

Slope =	**Intercept =**	**Corrected Coefficient =**
26.6027	0.2260	0.9983

Comments / Recommendations

Sampler meets criteria.
New motor and brushes installed.

Rotek Environmental Field Audit

PUF

Station Identifier	: Tremaine Road
Station Location	: 5381 Tremaine Road
Latitude Co-ordinates :	: 43.457166
Longitude Co-ordinates :	: -79.840826

Audit Date	: December 14, 2022
Audit Time	: 14:40 EST
Audit Criteria	: **PASS**

Client Company :	**Client Contact Name :**	**Client Contact Number :**
CN Rail/Stantec	Marco Quattrociocchi	437-922-6396
Auditor Name :	**Auditor Contact Number :**	**Auditor Signature :**
Ryan German	905-573-9533	

PUF Sampler Information

Instrument Make / Model :	**Instrument SN :**	**Inlet Height from Ground :**
Tisch TE-1000	10129	14.0 feet
TE-1004 Motor SN :	**TE-5007 Timer SN :**	**TE-5010 ETI SN :**
1681	5984	132
Electrical / Mechanical Inspection :	**Cleanliness of Equipment :**	**ETI Reading As Left :**
Good	Cleaned	7368.2

Calibration Equipment

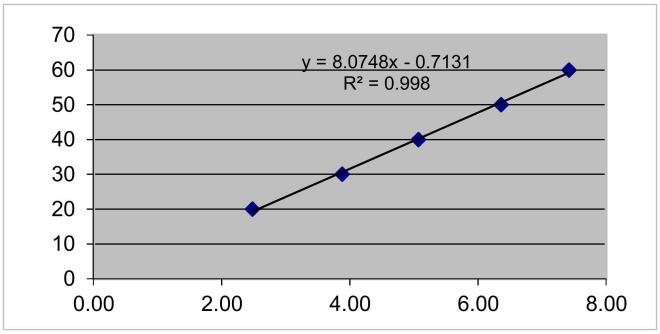
Calibration Orifice :	**Calibration Orifice SN :**	**Certification Expiration Date :**
TE-5040A	663	May 23, 2023
Qstd Slope Value (m) :	**Qstd Intercept Value (b) :**	**Manometer Model :**
9.89174	-0.03875	HHP-90
Temperature / Pressure Calibrator :	**Temperature / Pressure Calibrator SN :**	**Certification Expiration Date**
BGI TetraCal	1065	November 3, 2023

Audit Results

Measured Temperature (˚C) :	**Corrected Temperature (˚K) :**	**Measured Pressure (mmHg) :**
-1.8	271.2	754.0

Calibration

Flow Set Point (Magn)	Flow (Corrected)	H2O (in)	QStd (m3/min)
60	8.09	7.42	0.291
50	7.38	6.36	0.270
40	6.60	5.07	0.242
30	5.72	3.88	0.212
20	4.67	2.48	0.170



Linear Regression

Slope =	**Intercept =**	**Corrected Coefficient =**
28.1117	-0.1707	0.9991

Comments / Recommendations

Sampler meets criteria.
New brushes installed. Motor life at 75%.