Q1-Q3 2024 Atmospheric Compliance Monitoring Program Report

Hope Bay Mine (Doris and Madrid Sites)

Prepared for:

Agnico Eagle Mines Limited

Prepared by:

Nunami Stantec Limited

March 26, 2025

Project No.: 160930542

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Executive Summary

This report presents the results of ambient air quality, dustfall, and meteorological monitoring conducted by Agnico Eagle Mines Limited (Agnico Eagle) at the Hope Bay Mine, Doris and Madrid sites (the Sites) from January 2024 to September 2024 as outlined under the Air Quality Management Plan (AQMP; TMAC 2017, 2019). To calculate annual average concentrations for requisite parameters, data from October to December 2023 (already reported by Agnico Eagle) were also utilized and are included in this report.

The 2024 monitoring program included the following:

- Monthly dustfall sampling at six locations in the vicinity of the Doris site utilizing dustfall canisters for the period May - August 2024.
- Monthly dustfall sampling at nine locations in the vicinity of the Madrid site utilizing dustfall canisters for the same period and methodology as for the Doris site.
- Snow core sampling for dustfall at six locations in the vicinity of the Doris site utilizing snow cores over the period October 23, 2023, to April 30, 2024.
- Snow core sampling for dustfall at seven locations in the vicinity of the Madrid Site utilizing snow cores over the same period.
- TSP and $PM_{2.5}$ using continuous monitors at one location at the Doris site.
- Monitoring of NO_2 using a continuous monitor at one location at the Doris site.
- Meteorological monitoring for wind speed, wind direction, temperature, relative humidity, snowfall, rainfall, solar radiation, and barometric pressure at one location. The meteorological data were used in the interpretation of the air quality measurements.

The results of the Q1-Q3 2024 ambient monitoring program were compared to:

1. Relevant ambient air quality Standards, Objectives and Guidelines (SOGs)
2. Dustfall predictions downwind of the Tailings Impoundment Area included in the 2016 Doris North Project Certificate and Type A Water License Amendment Application (the 2016 Amendment, TMAC 2016)
3. The Madrid Project dispersion model predictions for dustfall presented in the Final Environmental Impact Statement (FEIS) Air Quality Assessment (Nunami Stantec, 2017)

A summary of the results and conclusions of the Q1-Q3 2024 compliance monitoring program are presented in Table ES-1.1.

Table ES-1.1 Summary of Q1-Q3 Compliance Monitoring Results

Measurement Parameter	Monitoring Period	Averaging Period	Results	Report Section	Action
Dustfall using Snow Core Sampling – Doris Site	October 2023 - April 2024	30-day	• All measurements are below the ambient air quality objective for industrial and commercial areas. • All measurements are less than the maximum dustfall predictions in the 2017 FEIS.	4.1.1	Results Satisfactory
Dustfall using Snow Core Sampling – Madrid Site	October 2023 - April 2024	30-day	• All measurements are below the ambient air quality objective for industrial and commercial areas. • All measurements are less than the maximum dustfall predictions in the 2017 FEIS.	4.1.2	Results Satisfactory
Dustfall using Canisters – Doris Sites	May - August 2024	30-day	• All dustfall measurements around the Doris site are below the ambient air quality objective for industrial and commercial areas. • All measurements are below the maximum dustfall prediction in the 2016 Amendment.	4.2.1	Results Satisfactory
Dustfall using Canisters – Madrid Sites	May - August 2024	30-day	• One dustfall measurement at the Madrid site is above the ambient air quality objective for industrial and commercial areas. This elevated dustfall level was likely due to construction activities in close proximity to the monitor and not expected to be reflective of dustfall levels in the overall Madrid area. • Six measurements are above the maximum dustfall prediction in the 2017 FEIS. Five of these measurements are within the expected range of variability for dispersion modelling predictions, while the other measurement was likely due to construction activities in close proximity to the monitor.	4.2.2	Agnico Eagle will monitor for visible dust emissions from construction activities and implement additional mitigation measures, as required.

Measurement Parameter	Monitoring Period	Averaging Period	Results	Report Section	Action
TSP	January - September 2024	24-hour	• All measurements are below the 2011 Government of Nunavut (GN) ambient air quality objective. • One measurement is above the maximum 2017 FEIS prediction. The measured elevated TSP concentration is likely attributable to long-range transport of forest fire smoke from the forest fires in Northern Canada.	4.3.1	Results Satisfactory
	October 2023 - September 2024	annual	• The annual geometric mean of the measured TSP concentrations is below the 2011 Government of Nunavut (GN) air quality objective.	4.3.1	Results Satisfactory
$PM_{2.5}$	October 2023 - September 2024	24-hour	• The measured 98th percentile concentration is below the GN air quality objective and the Canadian Ambient Air Quality Standards (CAAQS). • The measured 98th percentile concentration is above the maximum 2017 FEIS prediction but is within the expected range of variability for the dispersion modelling predictions. The elevated concentration is likely attributable to the forest fires in Northern Canada.	4.3.2	Results Satisfactory
	October 2023 - September 2024	annual	• The measured annual average concentration is below the GN air quality objective and the CAAQS. • The maximum measured annual average concentration is less than the maximum 2017 FEIS prediction.	4.3.2	Results Satisfactory
NO_2	October 2023 – September 2024	1-hour	• The 98th percentile of the measured daily maximum 1-hour average NO_2 concentrations is below the GN air quality objective and the CAAQS.	4.4	Results Satisfactory
	October 2023 - September 2024	annual	• The annual average is below the GN ambient air quality objective and the CAAQS.	4.4	

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Abbreviations

µg	Microgram
AAAQO	Alberta Ambient Air Quality Objective
Agnico Eagle	Agnico Eagle Mines Limited
ALS	ALS Laboratory Group
AMSL	Above Mean Sea Level
ASTM	ASTM International
AWR	All-weather road
BC	British Columbia
BC MOE	British Columbia Ministry of Environment
CAAQS	Canadian Ambient Air Quality Standards
CALA	Canadian Association for Laboratory Accreditation
CCME	Canadian Council of Ministers of the Environment
cm	Centimetre
dm^2	Square decimetre (equal to 100 square centimetres)
ECCC	Environment and Climate Change Canada
ERM	ERM Consultants Canada Ltd.

FEIS	Final Environmental Impact Statement
GN	Government of Nunavut
hr	Hour
km	Kilometre
m	Metre
m^2	Square metre
m^3	Cubic metre
mg	Milligram
$mg/dm^2/d$	Milligrams per square decimeter per day
$mg/100\text{-}cm^2/30\text{-days}$	Milligram per 100 square centimetres per 30-day period
mg/L	Milligram per Litre
NAPS	National Air Pollution Surveillance Program
NIRB	Nunavut Impact Review Board
Nunami Stantec	Nunami Stantec Ltd.
NWB	Nunavut Water Board
PM	Particulate Matter
PM_{10}	Particulate Matter less than 10 µm in diameter
$PM_{2.5}$	Particulate Matter less than 2.5 µm in diameter

Project	Doris North Project or Site
Q1 – Q3 2024	January to September 2024
Sites	Doris and Madrid Sites
SOGs	Standards, Objectives and Guidelines
SWE	Snow-Water Equivalent
TIA	Tailings Impoundment Area (Doris)
TMAC	TMAC Resources Inc.
TSP	Total Suspended Particulate
US	United States
US EPA	United States Environmental Protection Agency

1 Introduction

This report presents the results of ambient air quality, dustfall, and meteorological monitoring conducted by Agnico Eagle Mines Limited (Agnico Eagle) at the Hope Bay Mine, Doris and Madrid sites (the Sites) from January 2024 to September 2024 as outlined under the Air Quality Management Plan (AQMP; TMAC 2017/2019). To calculate annual average concentrations for requisite parameters, data from October to December 2023 (already reported by Agnico Eagle) were also utilized in this report.

The 2024 monitoring program included the following:

- Dustfall sampling at six locations in the vicinity of the Doris site utilizing dustfall canisters for the period May - August 2024.
- Dustfall sampling at nine locations in the vicinity of the Madrid site utilizing dustfall canisters for May - August 2024.
- Snow core sampling for dustfall at six locations in the vicinity of the Doris site over the period October 23, 2023 (first snow fall) to April 30, 2024.
- Snow core sampling for dustfall at seven locations in the vicinity of the Madrid Site utilizing snow cores over the same period.
- Total Suspended Particulate (TSP) and particulate less than 2.5 microns ($PM_{2.5}$) using continuous particulate monitors at one location at the Doris site.
- Nitrogen Dioxide (NO_2) using a continuous monitor at one location at the Doris site.
- Meteorological monitoring for wind speed, wind direction, temperature, relative humidity, snowfall, rainfall, solar radiation, and barometric pressure at one location. The meteorological data were used in the interpretation of the air quality measurements.

The results of the Quarter 1 to Quarter 3 2024 (Q1-Q3 2024) ambient monitoring were compared to:

- Relevant ambient air quality Standards, Objectives and Guidelines (SOGs). In March 2023, the Nunavut Department of Environment (ENV) issued an Environmental Guideline for Ambient Air Quality (Government of Nunavut 2023) that supersedes the previous 2011 version (Government of Nunavut 2011) and contains updated objectives for NO_2 and removed the standards for TSP. This report utilizes the updated NO_2 objectives but continues to compare TSP to the standards in the 2011 Guideline for consistency.
- Dustfall predictions downwind of the Tailings Impoundment Area (TIA) included in the 2016 Doris North Project Certificate and Type A Water License Amendment Application (the 2016 Amendment, TMAC 2016).
- The Madrid Project dispersion model predictions for dustfall presented in the Final Environmental Impact Statement (FEIS) Air Quality Assessment (Nunami Stantec, 2017).

Madrid North activities in Q1-Q3 2024 corresponded with the operations phase air quality assessment presented in the 2017 FEIS (Nunami Stantec, 2017), so this study was used for comparison to the Madrid measurements. Activities at the Doris Site in Q1-Q3 2024 also most closely corresponded to the operations phase of the 2017 FEIS, so the Doris measurements were compared to the 2017 FEIS and the 2016 Amendment modelling of TIA deposition. Operations at both the Doris and Madrid North sites were reduced in 2024 due to the mine being placed in Care and Maintenance.

Dust suppression activities occurred on the Doris Camp roads, the TIA road, the airstrip, the Roberts Bay Road, and the Windy Road during the summer months. Dust suppressants were applied on an as-needed basis during the summer months (May to September 2024).

2 Ambient Monitoring Data Comparisons

The results of the Q1-Q3 2024 ambient monitoring program were compared to relevant air quality standards, objectives and guidelines and Doris / Madrid site dispersion modelling studies, as detailed in the following sections.

2.1 Air Quality Standards, Objectives and Guidelines

Ambient air quality SOGs have been developed by the Canadian federal government and individual provinces and territories to assist or mandate the management of common air contaminants.

The assessment incorporates the Nunavut Environmental Guideline for Ambient Air Quality (Government of Nunavut 2023 and 2011). The ENV issued an updated Guideline in 2023 that supersedes the 2011 version and contains updated objectives for NO_2 and removed the standards for TSP. This report utilizes the updated NO_2 objectives but continues to compare TSP to the standards in the 2011 Guideline for consistency. Nunavut does not have guidelines or standards for some of the air contaminants. In these cases, guidelines, objectives, or standards from the Alberta government (Alberta Environment and Parks 2019) have been used.

The ambient air quality SOGs that are used in this report are summarized in Table 2.1.

2.2 Dispersion Model Prediction Comparisons

Air quality dispersion models employ assumptions to simplify the random behaviour of the atmosphere into short periods of average behaviour. These assumptions limit the capability of the model to replicate every individual meteorological event. To compensate for these simplifications, a full year of meteorological data are applied to evaluate a wide range of possible conditions. Regulatory models are also designed to have a bias toward over estimation of contaminant concentrations (e.g., to be conservative under most conditions).

The 2017 FEIS modelling is expected to be conservative because the emission rates used in the modeling were conservatively estimated based on a combination of emission factors, engineering estimates and maximum production levels, and the dispersion modeling is expected to be conservative. The dispersion modelling utilized a maximum emissions scenario that was expected to result in the maximum predicted concentration of each contaminant outside of the modelled property boundary. On a day-to-day basis, the actual Doris-Madrid operations will likely differ from the maximum emissions scenario and therefore measured concentrations may differ from the model predictions for the location of the monitor.

2.2.1 Doris Site

During Q1-Q3 2024, the Doris site had reduced operations due to the mine being placed in temporary Care and Maintenance with the suspension of production at the Hope Bay Mine. Of the scenarios assessed for the Doris site in the 2017 FEIS (construction and operation), these activities more closely correspond to the operations phase of the Madrid-Boston Project (as the construction scenario considered the Doris site operating plus construction activities that would generate additional emissions relative to the operations scenario). The 2017 FEIS predicted deposition rates in the vicinity of the monitors that varied between 7.4 and 25.7 mg/100-cm^2/30-days.

The 2016 Doris North Project Certificate and Type A Water License Amendment Application (the 2016 Amendment) also contained predictions for dustfall. The Amendment predicted that TIA maximum monthly dustfall contributions (modelled over three years) would be more than 53 mg/100-cm^2/30-days up to 250 m from the TIA and would drop to 2.1 mg/100-cm^2/30-days at approximately 1 km from the TIA (ERM 2016). These predictions were for dustfall resulting from the subaerial deposition of tailings in the TIA only and did not include dust emissions from any other sources (e.g., unpaved roads) or project phases (e.g., construction), nor did these predictions include background (non-project related) dust contributions.

Dustfall predictions for the Doris Site were compared to the 2016 Amendment/2017 FEIS modelling for dustfall locations downwind of the TIA and the 2017 FEIS modelling for all other dustfall locations. Maximum Doris site FEIS predictions are presented in Table 2.1.

Table 2.1 Ambient Air Quality Standards, Objective and Guidelines Compared to the 2017 FEIS Predictions

Contaminant	Units	Averaging Period	Nunavut Ambient Air Quality Guidelines [a]	Guidelines or Standards from Other Government Agencies		Maximum 2017 FEIS Predictions at Monitoring Sites	
				Value	Agency	Doris	Madrid
Total Suspended Particulate (TSP)	µg/m³	24-hour	120	-	-	69.9	-
		Annual (geometric mean)	60	-	-	13.3	-
Particulate Matter <2.5 µm diameter ($PM_{2.5}$)	µg/m³	24-hour	27	27 [b]	CAAQS [d]	12.1	-
		Annual	8	8.8 [c]	CAAQS [d]	5.0	-
Dust Deposition	mg/100-cm²/30 days	30-day	-	158 (commercial and industrial areas)	Alberta Ambient Air Quality Objectives and Guidelines [e]	7.4 - 27.5	10.6 - 54
Nitrogen Dioxide	µg/m³ (ppb)	1-hour	113 (60)	113 (60) [f]	CAAQS [h]	253 (134)	-
		Annual	32 (17)	23 (12) [g]	CAAQS [h]	65.4 (34.6)	-

Note:

Dash (-) = not applicable

a: Reference: Government of Nunavut 2023 (2011 version for TSP)

b: The 24-hour $PM_{2.5}$ value is calculated from the 3-year average of the annual 98th percentile of the daily 24-hour average concentration.

c: The annual $PM_{2.5}$ value is calculated from the 3-year average of the annual average concentrations.

d: Canadian Ambient Air Quality Standards for O_3 and $PM_{2.5}$. Reference: CCME 2020.

e: Reference: Alberta Environment and Parks 2020.

f: The 1-hour NO_2 value is calculated from the 3-year average of the 98th percentile of the daily maximum 1-hour average concentrations over a calendar year.

g: The annual NO_2 value is calculated from the average of all 1-hour average concentrations over a single calendar year.

h: Canadian Ambient Air Quality Standard for NO_2. Reference: CCME 2020.

2.2.2 Madrid Site

Dustfall measurements made in the vicinity of the Madrid North site (under care and maintenance in Q1 – Q3 2024) were compared to operations predictions made in the air quality modelling study in the 2017 FEIS (Nunami Stantec, 2017). Operations phase dustfall predictions in the 2017 FEIS at the locations of the Madrid dust fall monitoring sites ranged from 10.6 to 54 mg/100-cm^2/30-days.

3 Monitoring Program Description

3.1 Monitoring Siting Criteria

Nunavut does not have established siting requirements for ambient air samplers. Therefore, the siting criteria from the BC MoE (BC MoE 2020a) and the United States Environmental Protection Agency (US EPA 1999, 2009) were used. The monitoring locations were selected based on the following criteria:

- A stable 120 VAC power source is available (for continuous monitoring)
- The sampler is not in an area of future infrastructure development
- The sampler inlet is mounted at a height of 2 to 15 m above ground level (for continuous monitoring)
- The locations are accessible year-round
- The sampler is away from structures, vegetation, and topographic features
- Dustfall samplers are sited up and down wind of the surface facilities and zones of high activity, considering the dominant wind direction during the summer months
- The samplers are more than 20 m away from structures, vegetation, and topographic features

3.2 Dustfall

Dustfall is the measure of airborne particulate that has settled onto a given surface. The main dust generation sources will be from wind erosion from tailings facilities, the use of the crushers, and the movement of vehicles and large equipment on site. The dustfall monitoring program measures the quantities of dust deposited near project sites. Dustfall is monitored using dustfall canisters in the summer and by snow core sampling in the winter. Results of the monitoring program can be used to modify dust management procedures at the site, if required. Since dustfall measurements are a non-continuous methodology requiring laboratory analysis, the sampling is only used to retroactively confirm the effectiveness of mitigation measures. Real-time dust management on the site is carried out through application of water or approved chemical dust suppressants based on on-site observations of dust generation.

3.2.1 Doris Dustfall

Dustfall monitoring at the Doris site is undertaken at six locations, including a control station. The reasons for each selected location are provided in Table 3.1 and shown in Figure 3.1.

Table 3.1 Reasons for Doris Site Dustfall Sampling Locations

Station	Reason for Selected Location	UTM Coordinates (Zone 13W)		Elevation (m above mean sea level)
		Easting (m)	Northing (m)	
DFA1	This location has historical data and represents dustfall from the general site area, is located downwind of crushing activities, and close to the camp and mill site.	433731	7559047	28
CDF4	This station is located approximately 200 m away from Quarry 2, where crushing activities occur, to monitor dustfall from crushing activities.	432616	7558982	80
TIA-DF1	This station is located approximately 250 m downwind of the TIA tailings beach at a distance which corresponds with the maximum predicted monthly Project-generated dustfall of 53 mg/100-cm^2/30-days in the 2016 Amendment.	435881	7556806	51
TIA-DF2	This station is located approximately 1.65 km downwind (east) of the TIA tailings beach. This location is approximately 300 m west (upwind) of the location predicted to have a maximum annual TIA-generated dustfall level of 23 mg/100-cm^2/year (1.9 mg/100-cm^2/30-days) in the 2016 Amendment.	437318	7557017	46
TIA-DF3	This station is located approximately 3 km downwind of the TIA tailings beach at a distance which corresponds with minimal annual predicted Project-generated dustfall.	438574	7557252	23
ControlDF	This station is located well away from potential project contributions and represents background conditions. The station is approximately 2 km southwest of Windy Camp.	430993	7549219	35

Legend

- Project Development Area (PDA)
- Roads

0 1 2 km

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Project Location
Hope Bay,
Nunavut

160930343 REVA
Prepared by BCC on 2020-10-28
Technical Review by Greg Crooks on 2020-10-28

Client/Project
AGNICO EAGLE-HOPE BAY
NUNAMI STANTEC LIMITED

Figure No.
3.1

Title
Locations of the Doris Ambient Monitoring Stations

Notes

1. Coordinate System: NAD 1983 UTM Zone 13N
2. Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community
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3.2.2 Madrid Dustfall

Dustfall monitoring stations around the Madrid site were installed in the Spring of 2019. Dustfall monitoring was undertaken at nine locations around the Madrid North and Madrid South locations, including a control station in the predominantly upwind location and three locations to quantify dustfall with perpendicular distance from the Doris-Madrid Road. The reasons for each selected location are provided in Table 3.2 and are shown in Figure 3.2.

Table 3.2 Reasons for Madrid Site Dustfall Sampling Location Selection

Station	Reason for Selected Location	UTM Coordinates (Zone 13W)		Elevation (m above mean sea level)
		Easting (m)	Northing (m)	
M-DF01	Control station in a predominantly upwind location to the Madrid sites – in the vicinity of the Windy Radio Tower.	432840	7549835	26
M-DF02	This station is located in the vicinity of the predicted maximum dustfall along the property boundary for the overall Madrid operations – 2 km east of Madrid North processing plant.	435586	7550597	44
M-DF03	This station is located in the vicinity of the predicted maximum dustfall along the property boundary in the vicinity of Madrid South operations – 2 km east of the Madrid South Portal.	436338	7547550	45
M-DF04	Station is located to assess the maximum impact inside the property boundary but outside the PDA near the Madrid North operations – along vent raise pad access road east of the ore stockpile.	433848	7549908	44
M-DF05	Station is located to assess the maximum impact inside the property boundary but outside the PDA near the Madrid South operations – along shore of Patch Lake east of the waste rock pile.	435052	7547168	52
M-DF06	Upwind station for roadway dustfall study – 50 m west of Doris-Madrid All-Weather Road.	432661	7552874	62
M-DF07	Downwind station for roadway dustfall study – 50 m east of Doris-Madrid All-Weather Road (in a perpendicular line to road).	432768	7552891	62
M-DF08	Downwind station for roadway dustfall study 100 m east of Doris-Madrid All-Weather Road (in a perpendicular line to road).	432823	7552891	66
M-DF09	Downwind station for roadway dustfall study (200 m east of Doris-Madrid All-Weather Road (in a perpendicular line to road).	432922	7552895	45

Legend

- Project Development Area (PDA)
- Roads

0 1 2 km

1:35,000 (At Original document size of 11x17)

NUNAMI STANTEC

Project Location
Hope Bay,
Nunavut

160930343 REVA
Prepared by BCC on 2020-10-28
Technical Review by Greg Crooks on 2020-10-28

Client/Project
AGNICO EAGLE - RESOURCES-HOPE BAY
NUNAMI STANTEC LIMITED

Figure No.
3.2

Title
Locations of the Madrid Ambient Monitoring Stations

Notes

1. Coordinate System: NAD 1983 UTM Zone 13N
2. Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community
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3.2.3 Methods

Dustfall collection is a passive monitoring method which provides a measure of particulates that would be directly deposited onto vegetation or soil. The basis of the methodologies is that field-deposited dust is collected in a manner that is quantifiable in terms of area (cm^2) and exposure length (days), and that samples are then sent to a laboratory for analysis.

Dustfall is monitored at each station via dustfall canisters during summer and through snow core sampling in winter. The details of each methodology are provided below.

3.2.3.1 Summer Dustfall Sampling

Summer dustfall is quantified by the American Society for Testing and Materials (ASTM) D1739-98 sampling method (ASTM 2010). For the Q1-Q3 2024 monitoring period one dustfall sample canister was deployed at each station. Laboratory cleaned canisters of standard size and shape containing a liquid sampling matrix (deionized water and algaecide) are attached to 2 m tall poles and are exposed to the atmosphere for an approximate 30-day period. Windscreens around the sample containers improves the dustfall collection efficiency. The samplers collect particles small enough to pass through a 1-millimetre (mm) screen and large enough to settle by their own weight.

During sampling periods when air temperatures were below 0 degrees Celsius (°C), an isopropyl alcohol solution was added to the dustfall monitoring station canisters to reduce the captured precipitation from freezing. The stations are checked regularly to ensure that the canisters did not overfill or evaporate.

Following exposure, the canisters are collected and sent to ALS Laboratory Group (ALS) – a Canadian Association for Laboratory Accreditation Quality Assurance (CALA) accredited laboratory (accreditation No. 1719) for analysis. The condition of the canisters was evaluated at the time of collection. If canisters were found to be full of precipitation upon collection, indicating the canister had overflowed, the dustfall canister was not sent for analysis because the sample was considered void.

At the laboratory, samples are analyzed for total particulates, anions, cations, and total metals. The data are standardized to units of (mg/100-cm^2/30-days or kg/ha/year). For canister samples, this standardization is based on canister opening dimensions and the duration of exposure. Both containers were combined for each station and sampling period at the laboratory. The combined samples were then analyzed for particulates (total, soluble, and insoluble), anions (sulphate, nitrate, chloride, and ammonia) and total metals.

3.2.3.2 Snow Core Sampling

Snow core sampling for the Doris site was instituted in 2016 to record dustfall during the winter months due to issues with using the canister method during winter months. Snow core sampling was implemented at the new Madrid dustfall stations starting in winter 2019-2020. At each dustfall station, snow core subsamples are collected using a snow corer to retrieve a cylindrical snow core from the snowpack. A minimum of three snow cores are collected along a transect at each monitoring location. The samples are composited in the field to produce a single representative composite snow sample for the location. Composite samples are bagged, labelled, and shipped to an accredited laboratory (ALS) for

processing. Processing of snow cores require filtration, drying and weighing in the laboratory. For quality assurance/quality control (QA/QC), a duplicate sample is collected from one of the snow core sampling locations.

In the event that the snow depth is insufficient at a location to collect a snow core sample, a bucket method is used. This entails collecting scoop samples through the entire depth of the snow and depositing them into a pre-weighed bucket of known dimensions, measuring the weight of the snow sample and then bagging, labelling and shipping the sample to the laboratory.

Snow core samples are analyzed by the laboratory as water samples and are reported in units of mg/L. These units are converted to dustfall units of mg/100-cm^2 and standardized to mg/100cm^2/30-days over the monitoring period. The surface loading rate was calculated by multiplying the parameter concentration (mg/L or mg/1000 cm^3) by the average snow-water-equivalent of the transect samples (measured in cm of water) and dividing by the number of days snow had accumulated (time from the first snowfall to the sampling day).

The accuracy of the snow core sampling method is dependent on a number of factors including accurately determining the length of time over which the sampled snow on ground had been accumulating, snow drifting affecting particulate accumulations, and potential contamination/disturbance of the snowpack by wildlife or human activity. Dustfall measurements using snow core sampling should therefore be considered approximate with comparisons to regulatory criteria made for informational purposes only.

3.2.4 Data Analysis

Standardized dustfall is compared to the Alberta AAQO for dustfall (Table 2-1) as Nunavut does not currently have a dustfall standard. Analysis of temporal trends is undertaken to identify any trends in the measured dustfall levels with time of year or meteorological conditions. A qualitative comparison to the 2017 FEIS and 2016 Amendment predictions was also made. Review of dustfall levels with distance from the tailings management area was also made to determine spatial trends in dustfall.

3.2.5 Schedule

Summer dustfall canister samples are normally collected from May through September, inclusive, with access to the sampling locations being via helicopter.

Winter dustfall is collected at the end of winter (late April/early May). The snow core composite sample reflects cumulative winter dust deposition since the date of first snowfall (October) to the sampling period end (approximately October through April/May, inclusive).

3.3 Suspended Particulate Monitoring ($PM_{2.5}$ and TSP)

Suspended particulate matter includes both airborne solid and low-vapour-pressure liquid particles having aerodynamic diameters ranging in size from 0.01 to about 44 µm. The generation of particulate matter results from the movement of vehicles, mobile equipment, crushing, blasting, bulk handling and storage and other activities associated with mineral processing and construction. Wind erosion from sources such as tailings can also generate particulate emissions.

3.3.1 Sampling Location

Sampling is conducted at monitoring location DFA1 in the Doris site. This location is free from obstructions and nearby pollutant sources that may cause interference in suspended particulate monitoring.

3.3.2 Sampling Methods

At the Doris site, ambient particulate monitoring for TSP and $PM_{2.5}$ in Q1-Q3 2024 used Thermo Scientific 5014i continuous particulate monitors following the protocols described in the AQMP (TMAC, 2019). The Thermo Scientific monitors are housed inside a temperature-controlled shelter to ensure the monitors are maintained within their required operating temperature range.

The instruments are calibrated and maintained following Environment and Climate Change Canada (ECCC) protocols given in the document National Air Pollution Surveillance Network Quality Assurance and Quality Control Guidelines (ECCC 2021).

Agnico Eagle technicians visit the station bi-weekly and perform checks to ensure the equipment is working properly.

3.3.3 Data Analysis

Data collected from the continuous monitors were screened for any suspicious data including outliers, instrumentation drift and missing data. The particulate sampling provides 24-hour average ground-level concentrations for each size fraction. These were compared to the relevant 24-hour and annual standards (Table 2.1). In addition, temporal trends of the TSP and $PM_{2.5}$ ambient concentrations were examined, taking into consideration the time of year and meteorological conditions during the sampling period.

3.3.4 Schedule

The Thermo Fisher Scientific Model 5014i Beta Monitors operate continuously, collecting hourly average particulate concentrations.

3.4 Nitrogen Dioxide (NO_2) Monitoring Program

Sampling is conducted at monitoring location DFA1 in the Doris site. This location is free from obstructions and nearby pollutant sources that may cause interference in suspended particulate monitoring.

3.4.1 Sampling Methods

Ambient NO_2 is measured using a Thermo Scientific 42qi continuous NOx monitor following the protocol described in the AQMP (TMAC, 2019). The NO_2 monitor is housed inside the same temperature-controlled shelter as the two continuous particulate monitors to ensure the monitors are maintained within their required operating temperature range.

The instrument is calibrated and maintained following Environment and Climate Change Canada (ECCC) protocols given in the document National Air Pollution Surveillance Network Quality Assurance and Quality Control Guidelines (ECCC 2021).

3.4.2 Data analysis

Data collected from the continuous monitor was screened for any suspicious data including outliers, instrumentation drift and missing data. The NO_2 monitor currently records 5-minute average concentrations that were then averaged to produce hourly, daily, and annual average concentrations following ECCC protocols. The results were compared to the relevant 1-hour, 24-hour and annual standards (Table 2.1).

3.4.3 Schedule

The Thermo Scientific 42qi operates continuously, collecting 5-minute average NO_2 concentrations.

3.5 Meteorological Monitoring Program

The Doris meteorological station has recorded air temperature, relative humidity, wind speed and direction, precipitation, and solar radiation since 2004. Barometric pressure has been recorded since 2010.

3.5.1 Sampling Location

The meteorological station was chosen in consultation with Environment Canada and Health Canada officials and is located at UTM coordinates 432840 E, 7549835 N (Zone 13W).

3.5.2 Sampling Methods

The meteorological station is a self-contained, solar/battery-powered system and includes instrumentation to measure hourly values of temperature, wind speed, wind direction, relative humidity, solar radiation, and rainfall. Data is recorded by a data logger located at the station and is downloaded manually.

3.5.3 Data Analysis

Meteorological data are analyzed on a monthly basis and compiled into summary tables. Data validity checks are conducted and missing / invalid data are flagged. For the Q1-Q3 2024 period, 34 hours of wind speed and 5 hours of wind direction data were invalidated. These hours were invalidated due to calibration/maintenance activities or icing of the sensor. The data recovery rates for all meteorological instruments in this period were better than 97%.

3.5.4 Schedule

Meteorological data is collected continuously and is downloaded at the beginning of each month, or on an as-needed basis.

4 Monitoring Program Results and Discussion

4.1 Snow Core Dustfall Results

4.1.1 Doris Site

The measurement period for each snow core sample at the Doris site is provided in Table 4.1. Measured dustfall rates estimated for each monitoring location in 2023 – 2024 are summarized in Table 4.2.

Table 4.1 Snow Core Sampling Periods – Doris Site

Snow Core Station	Date of First Snowfall [a]	Sample Date	Sample Time (days)
CDF4	10/23/2023	4/30/2024	190
DFA1		4/30/2024	190
TIA-DF1		4/30/2024	190
TIA-DF2		4/30/2024	190
TIA-DF3		4/30/2024	190
ControlDF		4/30/2024	190

Note:
a: SOURCE: Environment and Climate Change Canada's Cambridge Bay Meteorological Station

Table 4.2 Measured Deposition from Snow Core Sampling – Doris Site

Snow Core Station	Alberta Ambient Air Quality Objective (AAAQO) (mg/100-cm²/30-days)	Measured Dustfall Level (mg/100-cm²/30-days)	Percentage of AAAQO (Commercial and Industrial Area)
CDF4	158 (commercial and industrial areas)	4.0	3%
DFA1		9.9	6%
TIA-DF1		2.1	1%
TIA-DF2		1.3	1%
TIA-DF3		0.9	1%
ControlDF		1.3	1%

Dustfall levels estimated from the snow core sampling ranged from 0.9 mg/100-cm^2/30-days (at TIA-DF3) to 9.9 mg/100-cm^2/30-days (at DFA1) during the October 2023 to April 2024 monitoring period (190 days). All measured dustfall levels are less than the AAAQO of 158 mg/100-cm^2/30-days for commercial and industrial areas. The maximum measured dustfall (9.9 mg/100-cm^2/30 days) occurred at Station DFA1 which is located east of the mill site.

The dustfall measurements at locations TIA-DF1, TIA-DF2 and TIA-DF3 (monitoring locations downwind of the TIA) are consistent with the predicted dustfall level in the 2016 Amendment modelling of <53 mg/100 cm^2/30-days outside of 250 m from the TIA. The dustfall rates from all Doris Site monitoring stations were less than the maximum predicted dustfall level at each location in the 2017 FEIS modelling.

4.1.2 Madrid Site

The measurement period for each snow core sample at the Madrid Site is provided in Table 4.3. Measured dustfall rates estimated for each monitoring location in 2023-2024 are summarized in Table 4.4. Snow core measurements were collected from all Madrid locations in 2023-2024.

Table 4.3 Snow Core Sampling Periods – Madrid Site

Snow Core Station	Date of First Snowfall [a]	Sample Date	Sample Time (days)
MDF01	10/23/2023	4/30/2024	190
MDF02		4/30/2024	190
MDF03		4/30/2024	190
MDF04		4/30/2024	190
MDF05		4/30/2024	190
MDF06		4/30/2024	190
MDF07		4/30/2024	190
MDF08		4/30/2024	190
MDF09		4/30/2024	190

Note:
a: SOURCE: Environment and Climate Change Canada's Cambridge Bay Meteorological Station

Table 4.4 Measured Deposition Rates from Snow Core Sampling – Madrid Site

Snow Core Station	Alberta Ambient Air Quality Objective (AAAQO) (mg/100-cm^2/30-days)	Measured Dustfall Level (mg/100-cm^2/30-days)	Percentage of AAAQO (Commercial and Industrial Area)
MDF01	158 (commercial and industrial areas)	3.8	2%
MDF02		1.1	1%
MDF03		0.7	0.5%
MDF04		0.6	0.4%
MDF05		2.3	1%
MDF06		1.0	1%
MDF07		4.1	3%
MDF08		6.3	4%
MDF09		18.0	11%

Dustfall levels estimated from the snow core sampling ranged from 0.6 mg/100-cm^2/30-days (at MDF04) to 18 mg/100-cm^2/30-days (MDF09) during the October 2023 to April 2024 monitoring period (190 days). All measured dustfall levels were less than the AAAQO of 158 mg/100-cm^2/30-days for commercial and industrial areas. The maximum deposition rate (18 mg/100-cm^2/30-days) occurred at Station MDF09 which is 200 m east of the Doris-Madrid All-Weather Road.

The dustfall rates from all Madrid Site monitoring stations were less than the maximum predicted dustfall level at each location in the 2017 FEIS modelling.

4.2 Canister Sampling Dustfall Results

4.2.1 Doris Site

A summary of the measured monthly dustfall levels at each monitoring location using dustfall canisters in 2024 is presented in Table 4.5. Dustfall levels estimated from the canister sampling ranged from 1.5 mg/100-cm^2/30-days (CDF4) to 22.2 mg/100 cm^2/30 days (DFA1). All measured dustfall levels are less than the AAAQO of 158 mg/100-cm^2/30-days for commercial and industrial areas. The maximum measured dustfall (22.2 mg/100-cm^2/30 days) occurred at Station DFA1 which is located east of the mill site.

Table 4.5 also presents the predominant wind direction over each month based on the Doris meteorological data. Winds were predominantly blowing from easterly directions through the sampling period.

The measured monthly dustfall levels at locations TIA-DF1, TIA-DF2, and TIA-DF3 are plotted versus distance from the TIA in Figure 4.1.

All monthly dustfall rates from the Doris monitoring stations are less than the maximum predicted dustfall level of 53 mg/100-cm^2/30-days (at 250 m from the TIA) in the 2016 Amendment modelling.

Table 4.5 Summary of Measured Dustfall Levels from Canister Sampling in 2024 – Doris Site

Sample Month	AAAQO	Units	Dustfall Location						Monthly Average	Prevailing Wind Direction
			CDF4	DFA1	TIA-DF1	TIA-DF2	TIA-DF3	Control DF		
May [a]	158 (commercial and industrial areas)	mg/100-cm^2/30-days	1.5 [b]	4.8	9.0	12.9	- [c]	- [c]	7.1	SE
June [a]		mg/100-cm^2/30-days	1.5 [b]	4.8	9.0	12.9	- [c]	- [c]	7.1	W
July		mg/100-cm^2/30-days	14.4	22.2	3.3 [b]	2.6 [b]	21.6	3.2 [b]	11.2	W
August		mg/100-cm^2/30-days	6.9 [b]	6.5 [b]	6.5 [b]	6.9 [b]	6.9 [b]	6.9 [b]	6.8	SW
September		mg/100-cm^2/30-days	- [d]	- [d]	- [d]	- [d]	- [d]	- [d]	-	-
Maximum		mg/100-cm^2/30-days	14.4	22.2	9.0	12.9	21.6	6.9		
Average		mg/100-cm^2/30-days	6.1	9.6	6.9	8.8	14.3	5.0		
Max Percentage of Alberta AAQO for Commercial and Industrial Areas		%	9.1%	14.1%	5.7%	8.2%	13.7%	4.4%		

Notes:

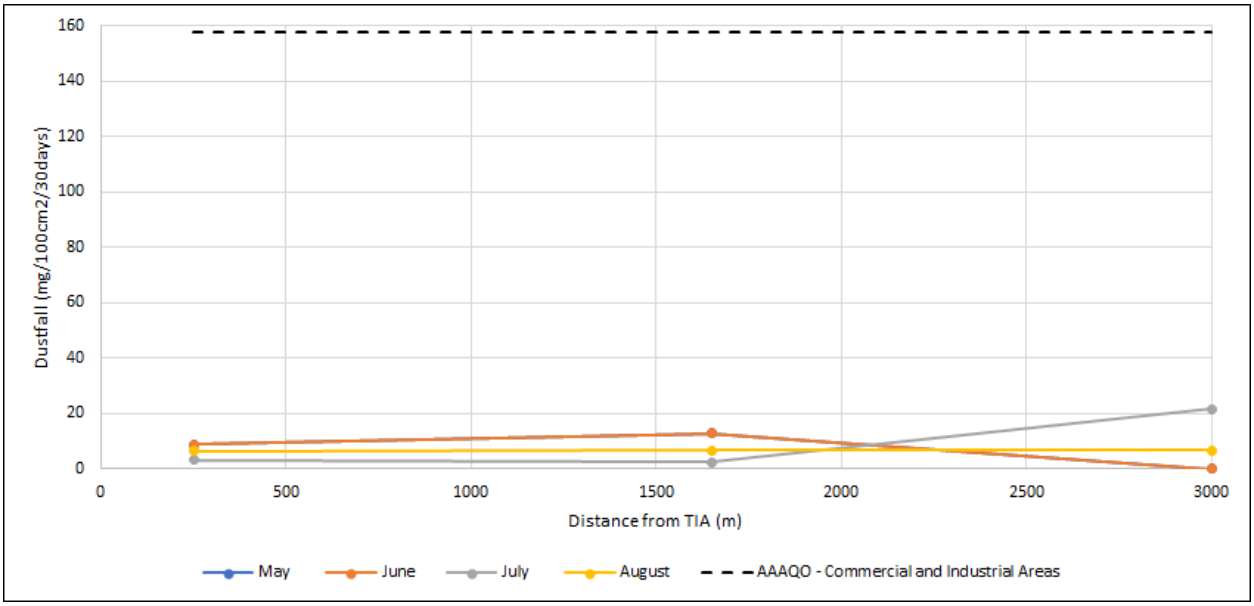
a. Dustfall jars were installed at the stations on April 10, 2024, however they could not be collected until July 10, 2024, as such the months of May and June have the same dustfall concentrations.

b. Measurement was below the laboratory minimum detection limit. A value of ½ the detection limit was used in the assessment.

c. Samples were not submitted to the external laboratory for analysis as the jars had fallen from the stands either due to wind or bears.

d. No dustfall jars installed in September 2024.

Figure 4.1 Variation in Measured Monthly Dustfall Level with Distance from the Doris TIA



4.2.2 Madrid Site

A summary of the estimated monthly dustfall levels at each monitoring location using dustfall canisters in 2024 is presented in Table 4.6. Dustfall levels estimated from the canister sampling ranged from 1.5 mg/100-cm^2/30-days (M-DF05) to 333.0 mg/100-cm^2/30 days (M-DF04). All measured dustfall levels are less than the AAAQO of 158 mg/100-cm^2/30-days for commercial and industrial areas, except for the August dustfall level at M-DF04. The elevated dustfall level is likely due to construction activities and material hauling at the Exploration Track and Naartok Pad, respectively, during August 2024. These activities were in close proximity to the M-DF04 monitoring station and therefore the measurement is not expected to be reflective of dustfall levels in the overall Madrid area.

The measured monthly dustfall levels at locations M-DF06, M-DF07, M-DF08 and M-DF09 are plotted versus distance from the Doris-Madrid All Weather Road (AWR) in Figure 4.2. These monitoring locations were chosen to study the variation in dustfall levels with distance from the roadway. M-DF06 is located 50 m from the road in the predominantly upwind direction, while the other three stations are located 50 m, 100 m, and 200 m downwind. Dustfall levels were relatively consistent from May to August.

All dustfall measurements from May – August 2024 are less than the maximum predicted dustfall levels in the 2017 FEIS modelling at the M-DF01, M-DF02, M-DF03 and M-DF05 monitoring stations. Dustfall levels greater than those predicted in the 2017 FEIS modelling were measured at stations M-DF04, M-DF06, M-DF07, and M-DF08, with the measurements at the latter three stations being within the expected range of variability for dispersion modelling predictions. As discussed above, the elevated dustfall level at M-DF04 is likely due to short-term construction activities in close proximity to the monitor.

Table 4.6 Summary of Measured Dustfall Levels from Canister Sampling in 2024 – Madrid Site

Sample Month	AAAQO	Units	Dustfall Location									Monthly Average	Prevailing Wind Direction
			M-DF01	M-DF02	M-DF03	M-DF04	M-DF05	M-DF06	M-DF07	M-DF08	M-DF09		
May [a]	158 (commercial and industrial areas)	mg/100-cm^2/30-days	4.0	-	4.0	9.0	1.6 [b]	27.0	58.3 [d]	34.7	19.2	19.7	SE
June [a]		mg/100-cm^2/30-days	3.9	-	3.9	8.7	1.5 [b]	26.1	56.4 [d]	33.6	18.6	19.1	W
July		mg/100-cm^2/30-days	2.3 [b]	2.3 [b]	2.3 [b]	10.2	2.3 [b]	21.6	56.1 [d]	57.3 [d]	29.1	20.4	W
August		mg/100-cm^2/30-days	6.9 [b]	6.9 [b]	6.9 [b]	333.0 [e]	6.9 [b]	36.9 [d]	-	-	-	66.3	SW
September		mg/100-cm^2/30-days	- [c]	- [c]	- [c]	- [c]	- [c]	- [c]	- [c]	- [c]	- [c]	-	-
Maximum		mg/100-cm^2/30-days	6.9	6.9	6.9	333.0	6.9	36.9	58.3	57.3	29.1		
Average		mg/100-cm^2/30-days	4.3	4.6	4.3	90.2	3.1	27.9	56.9	41.9	22.3		
Max Percentage of Alberta AAQO for Commercial and Industrial Areas		%	4.4%	4.4%	4.4%	211%	4.4%	23.4%	36.9%	36.3%	18.4%		

Notes:

a. Dustfall jars were installed at the stations in April 10, 2024, however they could not be collected until July 10, 2024, as such the months of May and June have the same dustfall concentrations.

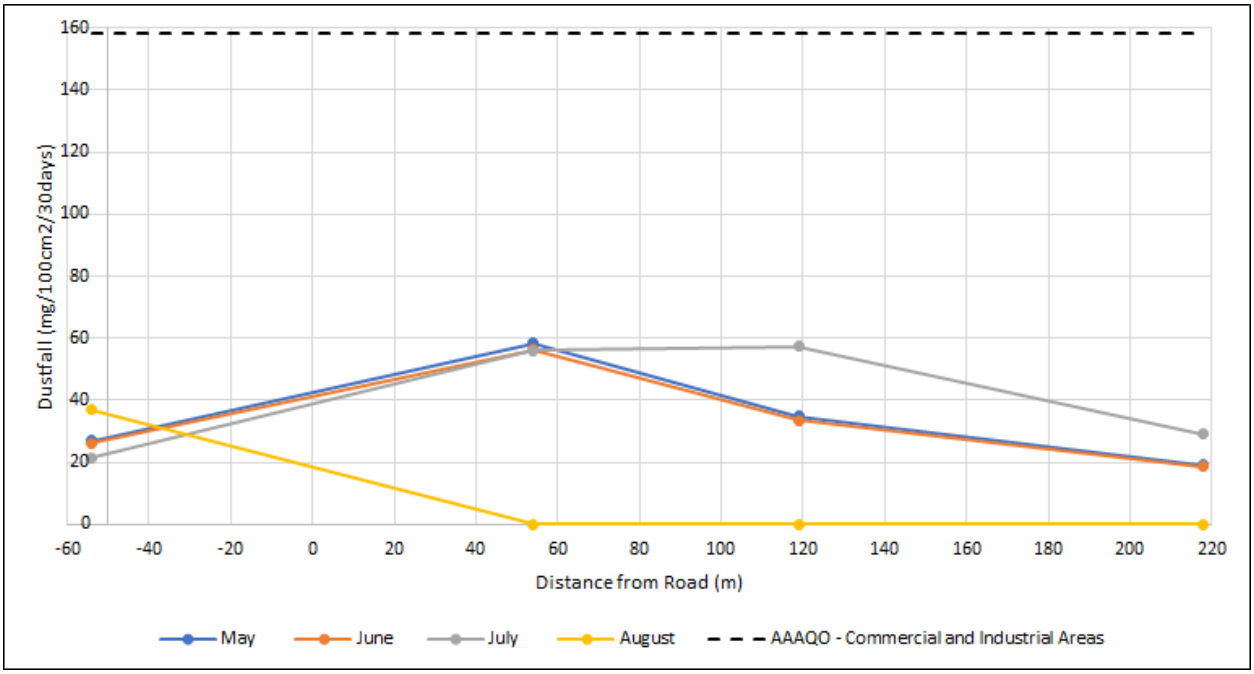
b. Measurement was below the laboratory minimum detection limit. A value of ½ the detection limit was used in the assessment.

c. No dustfall jars installed in September 2024.

d. Dustfall levels greater than those predicted in the 2017 FEIS but are within the expected range of variability for dispersion modelling predictions.

e. Dustfall level is greater than the 2017 FEIS and is likely due to short-term construction activities in close proximity to the monitor.

Figure 4.2 Variation in Measured Monthly Dustfall Levels with Distance from the Doris-Madrid Road



4.3 Particulate Matter Sampling

TSP and $PM_{2.5}$ ambient monitoring in Q1-Q3 2024 was conducted at location DFA1 at the Doris site. A summary of the measured ambient TSP and $PM_{2.5}$ concentrations for the study period are presented in Table 4-7. Data recovery rates are presented in Table 4-8. Calibration records are presented in Appendix A.

Table 4.7 Summary of Ambient TSP and $PM_{2.5}$ Measurements

Parameter	Air Quality Standard / Objective		24-Hour Average (µg/m³)				Annual Average (µg/m³)	
	24-Hour	Annual	Maximum [a]	98th Percentile [b]	Range	% of Criteria	Average	% of Criteria
TSP	120	60	102	-	1.5 - 102	85%	6.2	10%
$PM_{2.5}$	27	8.8	83	19.6	1.1 - 83	73%	4.5	51%

Notes:

a - Results reported for Jan 2024 to Sep 2024.

b - Results reported for Oct 2023 to Sep 2024.

Table 4.8 Summary of Data Recovery Rates for Continuous Particulate Sampling (Jan – Sep 2024)

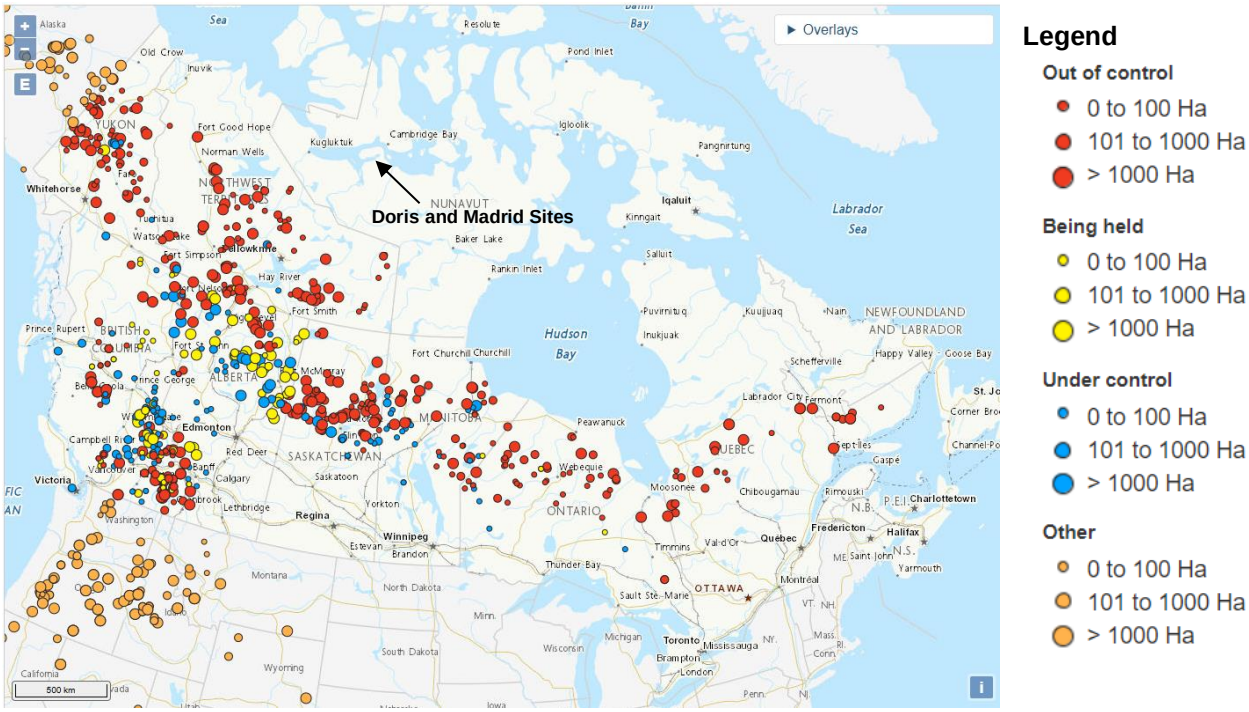
Month	Data Recovery Rate (%)	
	TSP	$PM_{2.5}$
January 2024	0%	97%
February 2024	9%	98%
March 2024	76%	92%
April 2024	93%	92%
May 2024	86%	77%
June 2024	94%	82%
July 2024	96%	88%
August 2024	97%	89%
September 2024	97%	91%
Annual (October 2023 – September 2024)	77%	88%

4.3.1 TSP

The annual (October 2023 to September 2024) data recovery rate for TSP is 77% which is above the data recovery objective of 75% required for calculating an annual average concentration. Other than January and February 2024, the monthly recovery rates for the continuous TSP monitoring are above the data recovery objective of 75%. On December 29, 2023, the TSP monitor pump malfunctioned. Repair attempts by Agnico Eagle were unsuccessful and the monitor was replaced on February 25, 2024.

The maximum measured 24-hour average TSP concentration in the January to September 2024 period was 102 µg/m^3 which is 85% of the 2011 Government of Nunavut (GN) air quality objective and is greater than the maximum predicted TSP concentration in the 2017 FEIS of 69.9 µg/m^3. The 24-hour average $PM_{2.5}$ concentration that was measured concurrently on this day (August 9, 2024) was 83 µg/m^3 - indicating that the TSP was primarily composed of fine particulate matter. Due to its small diameter, fine particulate matter can remain suspended in the air and is readily able to be transported long distances. The Doris meteorological tower recorded wind directions on August 9, 2024, initially blowing from south-easterly directions in the morning, but then shifting through the south to blow from south-westerly directions by 9 AM. On August 9, 2024, there were dozens of forest fires burning in the Northwest Territories to the southwest and west of the Sites, as shown in Figure 4.3. In this figure, each red dot indicates the location of an uncontrolled forest fire, with the largest dots representing forest fires greater than 1,000 hectares in size. The measured elevated TSP concentration is likely attributable to long-range transport of forest fire smoke by the south-westerly winds that occurred in the afternoon of August 9th.

Figure 4.3 Active Forest Fires on August 9, 2024



Ref: Natural Resources Canada, Canadian Wildland Fire Information System available at https://cwfis.cfs.nrcan.gc.ca/home

TSP monitoring data for October - December 2023, which have been previously reported, were used in conjunction with the January - September 2024 TSP measurements to calculate an annual average concentration. The annual geometric mean of the measured TSP concentrations for the period October 2023 to September 2024 was 6.2 µg/m^3 which is 10% of the 2011 Government of Nunavut (GN) air quality objective. This concentration is below the maximum predicted annual average TSP concentration in the 2017 FEIS of 13.3 µg/m^3.

A time history plot of measured 24-hour average TSP concentrations for the period October 2023 to September 2024 is presented in Figure 4.4. TSP concentrations were generally low throughout the monitoring period, with some higher levels seen during in August when forest fires were impacting air quality in Northern Canada.

4.3.2 $PM_{2.5}$

The annual (October 2023 – September 2024) $PM_{2.5}$ data recovery rate is 88% which is above the objective for calculating an annual average concentration. Monthly data recovery rates for the continuous sampling are above the objective of 75% for all months in Q1-Q3 2024. The continuous $PM_{2.5}$ monitor was replaced on March 24, 2024.

The calculated 98th percentile of the measured 24-hour average $PM_{2.5}$ concentrations in the October 2023 to September 2024 period is 19.6 µg/m^3 which is below the CAAQS of 27 µg/m^3. An explicit comparison to the CAAQS for $PM_{2.5}$ requires averaging the 98th percentile daily average levels in each of three consecutive calendar years, with a valid comparison requiring valid data for a minimum of two of the three years. An explicit comparison to the CAAQS cannot be made as two-years of valid data are not available, as such comparison to the CAAQS is provided for informational purposes only; not to assess compliance. The 98th percentile of the measured 24-hour average $PM_{2.5}$ concentrations is greater than the maximum predicted 98th percentile $PM_{2.5}$ concentration in the 2017 FEIS of 12.1 µg/m^3 but is within the expected range of variability for dispersion models and includes some measurements likely influenced by forest fires.

The annual average of the measured $PM_{2.5}$ concentrations for the period of October 2023 to September 2024 is 4.5 µg/m^3, which is less than the annual CAAQS of 8.8 µg/m^3. As with the 24-hour CAAQS, compliance with the annual average CAAQS requires averaging daily measurements in each of three consecutive calendar years, with a valid comparison requiring valid data for a minimum of two of the three years. Since two-years of valid data are not available, comparison to the annual CAAQS is provided for informational purposes only; not to assess compliance. The measured annual average concentration is below the maximum predicted annual average $PM_{2.5}$ concentration in the 2017 FEIS of 5.0 µg/m^3.

A time history plot of measured 24-hour average $PM_{2.5}$ concentrations for the period October 2023 to September 2024 is presented in Figure 4.5. $PM_{2.5}$ concentrations were generally low through most of the monitoring period with some higher levels seen during in August when forest fires were impacting regional air quality.

Figure 4.4 Summary of Measured 24-hour Average TSP Concentrations (Oct 2023 – Sep 2024)

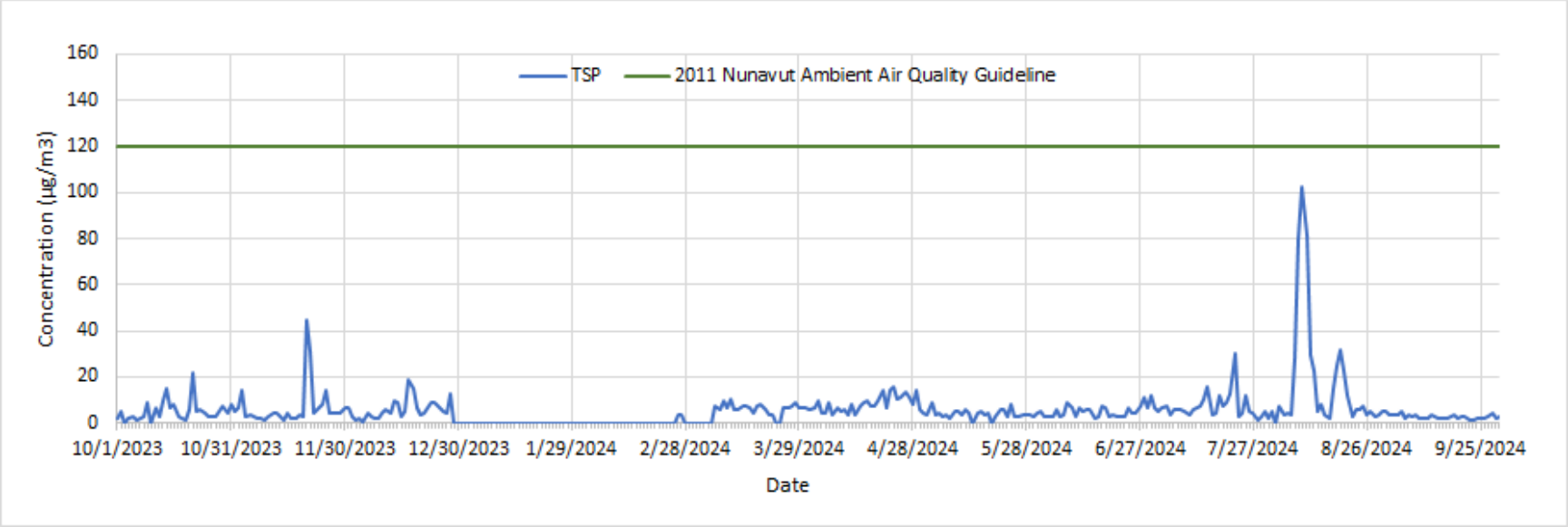
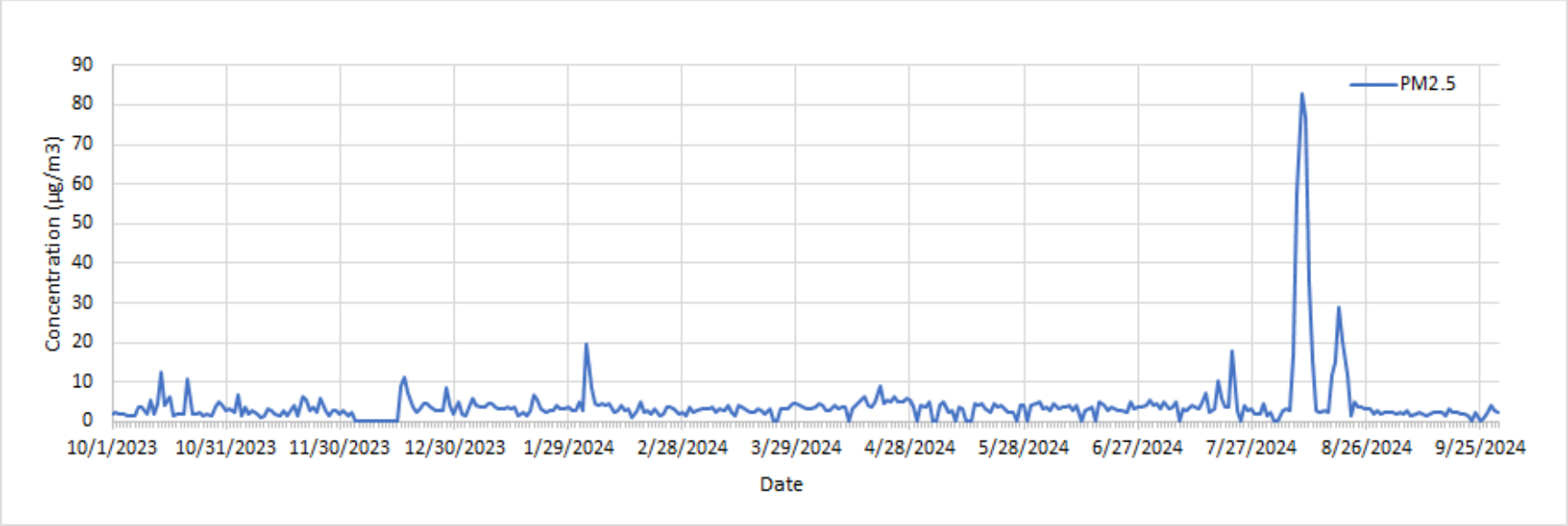


Figure 4.5 Summary of Measured 24-hour Average $PM_{2.5}$ Concentrations (Oct 2023 – Sep 2024)



4.3.3 Historical Trends in Ambient Particulate

4.3.3.1 January to September Reporting Period Trends

Table 4.9 below provides a comparison of maximum measured 24-hour and annual average TSP and $PM_{2.5}$ measurements in the January to September period over the last 4 years. The highest 24-hour average TSP concentration was measured in 2023 and exceeded the 2011 Government of Nunavut (GN) air quality objective by 29%. This 24-hour average TSP exceedance was discussed in the Q1-Q3 2023 Atmospheric Compliance Monitoring Program Report and is not likely attributable to the Agnico Eagle operations.

Measured 24-hour average $PM_{2.5}$ concentrations was low in 2021, with higher concentrations measured throughout the 2022 to 2024 period, which is likely attributable to transitioning from non-continuous (6-day) measurements to continuous monitoring with a larger number of measurements in 2022 to 2024.

Table 4.9 Summary of Maximum Measured 24-hour and Annual Average TSP and $PM_{2.5}$ Concentrations for 2021-2024

Contaminant	Averaging Period	Criteria	Jan -Sep 2021	Jan -Sep 2022	Jan -Sep 2023	Jan -Sep 2024
TSP (µg/m³)	24-hour	120	22.1	59.6	155	102
	Annual [(a)]	60	5.0	N/A	N/A	6.2
$PM_{2.5}$ (µg/m³)	24-hour [(b)]	28-27 [(c)]	5.4	15.2	16.5	19.6
	Annual [(a)]	10-8.8 [(d)]	2.0	N/A	3.3	4.5

Notes:
Annual averages for the period Oct to Sep of the prior and subsequent year.
98th percentile of the period Oct to Sep of the prior and subsequent year.
CAAQS 24-hour criteria of 27 µg/m³ became effective in 2020. Prior to 2020, the criterion was 28 µg/m³.
CAAQS annual criterion of 8.8 µg/m³ became effective in 2020. Prior to 2020, the criterion was 10 µg/m³.

4.3.3.2 Four Year Trend in Air Quality

Time history plots of measured TSP and $PM_{2.5}$ concentrations at DFA1 over the last 4 years are presented in Figure 4.6 and Figure 4.7, respectively. In Figure 4.6, the 24-hour average guideline of 120 µg/m³ for TSP is presented as a green line. There has been only one day (24-hour period) of measured exceedances of the TSP guideline in the last 4 years. For $PM_{2.5}$, the current CAAQS is 27 µg/m³ and is based on the average of the 98th percentile concentration in each of three consecutive years (with at least two valid years of data available). As seen in Figure 4.7, measured $PM_{2.5}$ concentrations at the station have been below this level except for nine measurements in 2023 and 2024 which were likely influenced by forest fires.

Table 4.10 presents summary statistics from the last four years of particulate monitoring. The 90th percentile concentrations are well below the maximum measured levels, indicating that elevated particulate concentrations occur infrequently.

Table 4.10 Summary of Particulate Monitoring Statistics (2020 – 2024)

Statistic	TSP	$PM_{2.5}$
Maximum (µg/m³)	155	148
90th Percentile (µg/m³)	15.1	6.9
Median (µg/m³)	5.7	3.0
25th Percentile (µg/m³)	3.6	2.1

Figure 4.6 Four Year Time History Plot of Measured 24-Hour Average Ambient TSP Concentrations

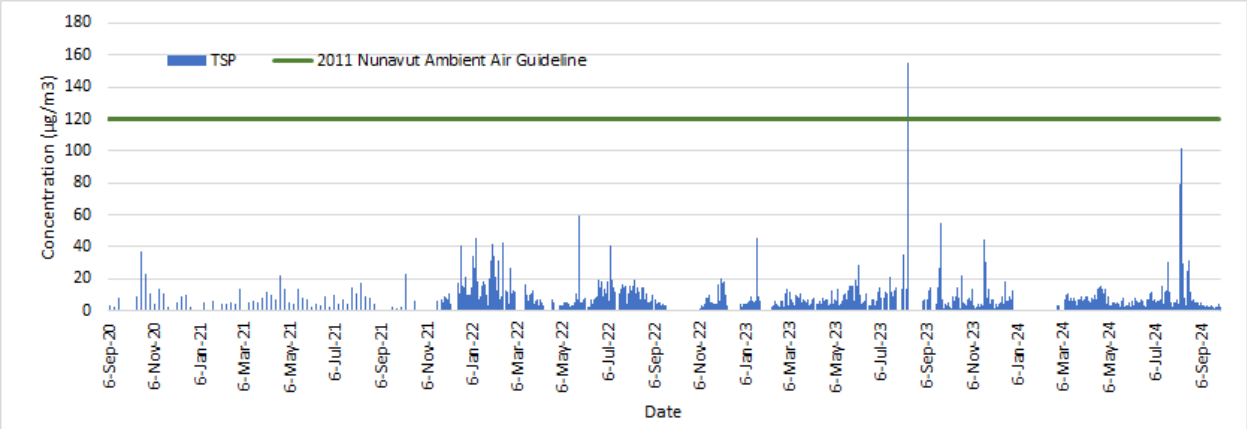
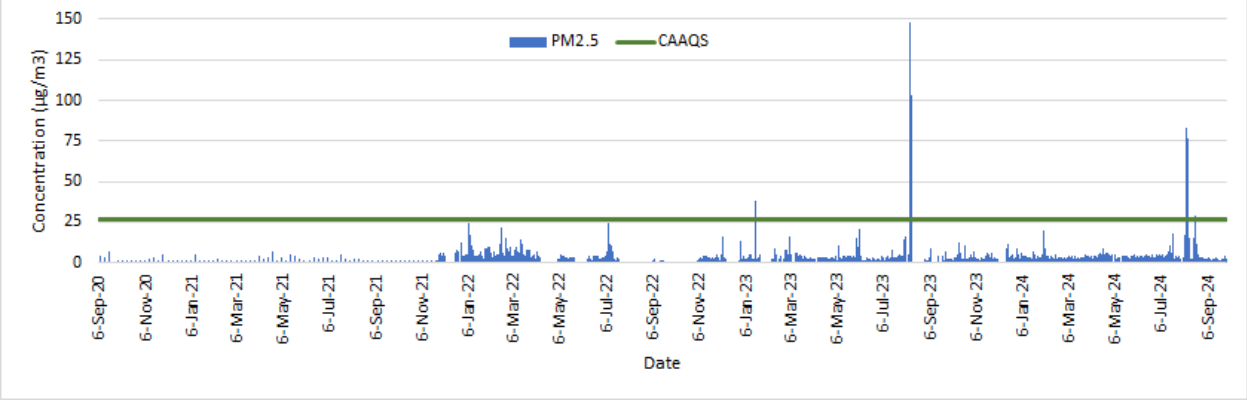


Figure 4.7 Four Year Time History Plot of Measured 24-Hour Average Ambient $PM_{2.5}$ Concentrations



4.4 Nitrogen Dioxide

NO_2 ambient monitoring in Q1-Q3 2024 was conducted at location DFA1 at the Doris site. A summary of the measured ambient NO_2 concentrations for the study period are presented and compared to the relevant hourly, daily, and annual standards in Table 4.11. Data recovery rates are presented in Table 4.12. The annual data recovery rate for NO_2 is 99% which is above acceptable levels for calculating an annual average concentration. Calibration records are presented in Appendix A.

Table 4.11 Summary of NO_2 Monitoring Results

Averaging Period	Units	Air Quality Standard/Objective	Agency	Measured Value	% of Criteria
1-hour (98th percentile) [a]	ppb	60	GN Ambient Air Quality Objective / CAAQS	15	N/A[b]
Annual [a]	ppb	12		1.1	N/A[c]

Notes:
a: Results reported for October 2023 to September 2024.
b: Comparison to the CAAQS requires a minimum of two years of data over calendar years.
d: Comparison to the CAAQS requires an average over a calendar year.

Table 4.12 Summary of Data Recovery Rates for Continuous NO_2 Sampling (Jan – Sep 2024)

Month	NO_2 Data Recovery Rate
January 2024	100%
February 2024	100%
March 2024	100%
April 2024	100%
May 2024	100%
June 2024	100%
July 2024	100%
August 2024	99%
September 2024	100%
Annual (October 2023 – September 2024)	99.9%

The calculated 98th percentile of the measured daily maximum 1-hour average NO_2 concentrations in the October 2023 to September 2024 period is 15 ppb which is below the GN air quality objective and the Canadian Ambient Air Quality Standard (CAAQS) of 60 ppb.

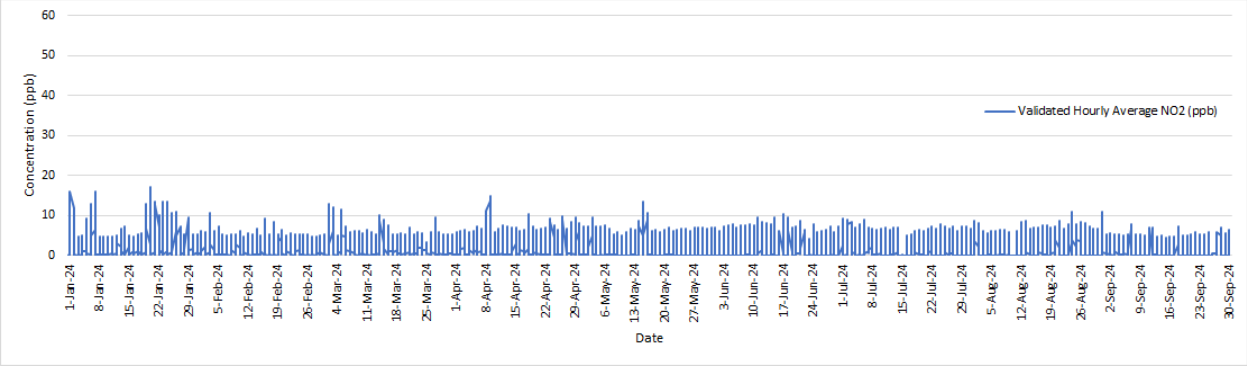
With the completion of Q1-Q3 2024 NO_2 monitoring, three years of measurements have been collected which is sufficient to make comparisons to the NO_2 CAAQS. The available three years of data are not calendar years, therefore the comparisons to the NO_2 CAAQS are provided for informational purposes only. A summary of the 98th percentile daily maximum 1-hour and 1-year average NO_2 concentrations in each 1-year period, and the average of the three periods is presented in Table 4.13. The NO_2 measurements over the three-year period are less than both the daily and annual CAAQS.

Table 4.13 Comparison of NO_2 Measurements to the CAAQS

CAAQS Metric	Averaging Period	CAAQS (ppb)	Concentration (ppb)				Percentage of CAAQS
			October 2021 - September 2022	October 2022 - September 2023	October 2023 - September 2024	CAAQS Metric Value	
98th Percentile Daily Maximum 1-Hour Average Concentrations	Daily	60	16	25	15	19	31%
Maximum Annual Average	Annual	17	0.6	2.6	1.1	2.6	15%

A time history plot of measured 1-hour average NO_2 concentrations for the period January to September 2024 is presented in Figure 4.8. NO_2 concentrations were generally low throughout the monitoring period.

Figure 4.8 Time History of Measured 1-hour Average NO_2 Concentrations (Jan – Sep 2024)



4.5 Meteorology

A summary of the maximum, minimum, and average of the hourly average meteorological parameters in each month of January to September 2024 are presented in Table 4.14.

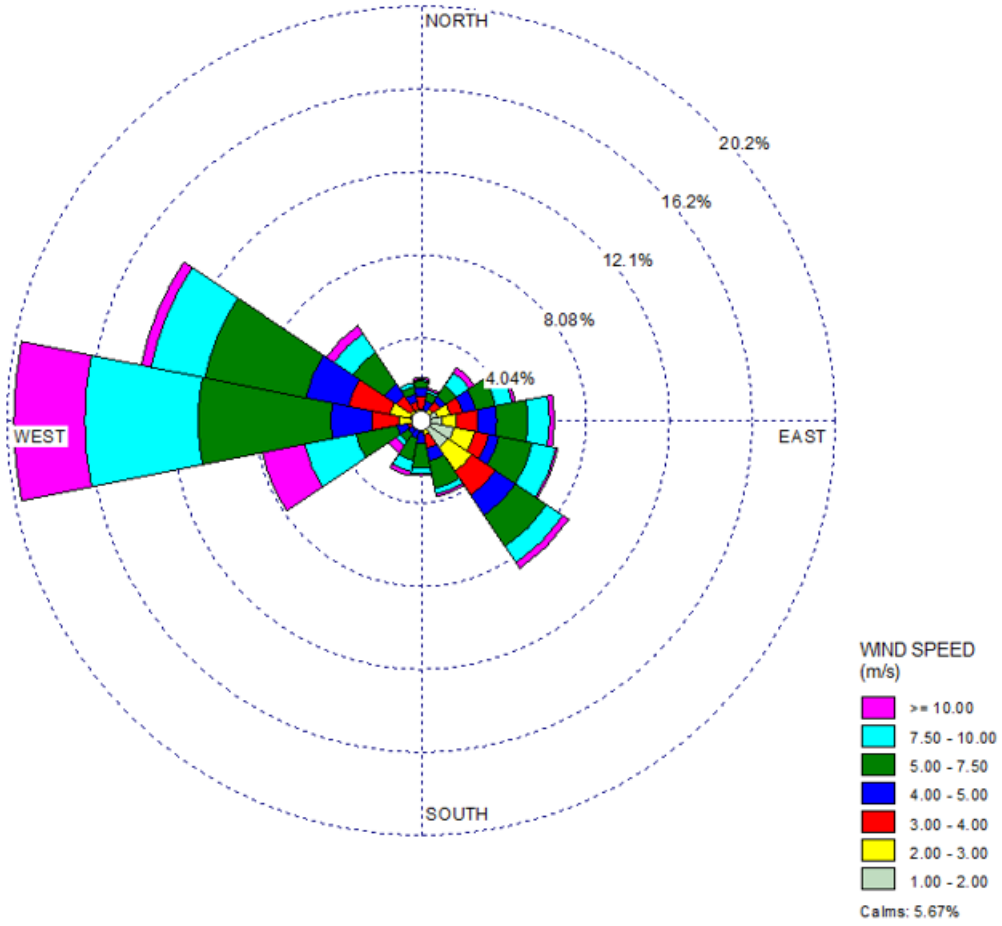
A wind rose showing the measured directionality and speed for the period January - September 2024 is presented in Figure 4.9. The length of the radial barbs gives the total percent frequency of winds from the indicated direction, while portions of the barbs of different widths indicate the frequency associated with each wind speed category.

Winds over the nine-month period occurred predominantly blowing from the west. Higher wind speeds occurred most frequently from the west.

Table 4.14 Summary of Meteorological Measurements (Jan – Sep 2024)

Date	Average Air Temperature	Minimum Daily Air Temperature	Maximum Daily Air Temperature	Absolute Minimum Temperature	Absolute Maximum Temperature	Average Wind Speed	Maximum Instantaneous Wind Speed	Time of Maximum Instantaneous Wind Speed	Total Precipitation	Total Rainfall	Total SWE	Average Relative Humidity	Average Solar Radiation	Total Bright Sunshine Hours	Station Pressure
(mm-yy)	(°C)	(°C)	(°C)	(°C)	(°C)	(m/s)	(m/s)	(mm/dd/yyyy)	(mm)	(mm)	(mm)	(%)	(W/m^2)	(hours)	(kpa)
Jan-24	-27.5	-30.9	-24.4	-38.9	-12.8	6.0	22.3	1/20/2024 19:14	17.5	0.0	17.5	74.3	2.8	0.0	101.6
Feb-24	-27.8	-32.2	-23.6	-39.0	-12.1	4.8	20.6	2/4/2024 2:52	22.5	0.0	22.5	74.7	31.6	67	100.9
Mar-24	-25.2	-29.8	-20.9	-36.6	-7.2	6.1	17.2	3/5/2024 5:35	13.3	0.0	13.3	73.2	110.6	259	101.6
Apr-24	-13.7	-18.4	-9.9	-25.3	-0.5	5.3	18.2	4/26/2024 22:54	6.1	0.0	6.1	79.4	200.2	358	101.3
May-24	-0.9	-5.3	3.0	-15.0	13.6	5.1	15.8	5/2/2024 15:27	11.7	6.7	5.0	80.4	264.0	435	101.3
Jun-24	5.6	1.9	8.9	-2.3	22.8	5.0	13.6	6/4/2024 14:52	12.8	12.8	0.0	73.8	252.4	421	101.0
Jul-24	11.0	7.3	15.4	3.2	30.5	6.2	18.1	7/29/2024 7:51	52.7	52.7	0.0	75.4	197.5	377	100.3
Aug-24	12.1	7.4	16.3	1.9	29.2	5.0	21.6	8/11/2024 2:57	7.9	7.9	0.0	71.9	157.4	332	100.7
Sep-24	5.2	3.0	7.5	-1.2	13.6	6.1	28.8	9/28/2024 18:10	38.7	38.0	0.7	86.9	64.2	155	100.0
Average	-6.8	-10.8	-3.1	-17.0	8.6	5.5	19.6		20.3	13.1	7.2	76.7	142.3	267.1	101.0
Maximum	12.1	7.4	16.3	3.2	30.5	6.2	28.8		52.7	52.7	22.5	86.9	264.0	435.0	101.6
Minimum	-27.8	-32.2	-24.4	-39.0	-12.8	4.8	13.6		6.1	0.0	0.0	71.9	2.8	0.0	100.0
Total									183.1	118.0	65.1				

Figure 4.9 Wind Rose for January to September 2024



5 Conclusions

This report presents the results of ambient air quality, dustfall, and meteorological monitoring conducted at the Doris and Madrid sites (the Sites) from January to September 2024 as outlined under the Air Quality Management Plan (AQMP; TMAC 2017, 2019). To calculate annual average concentrations for requisite parameters, data from October to December 2023 (already reported by Agnico Eagle) was also utilized and is included in this report.

The 2024 monitoring program included the following:

- Monthly dustfall sampling at six locations in the vicinity of the Doris site utilizing dustfall canisters for the period May - August 2024.
- Monthly dustfall sampling at nine locations in the vicinity of the Madrid site utilizing dustfall canisters for the same period and methodology as for the Doris site.
- Snow core sampling for dustfall at six locations in the vicinity of the Doris site utilizing snow cores over the period October 23, 2023, to April 30, 2024.
- Snow core sampling for dustfall at seven locations in the vicinity of the Madrid Site utilizing snow cores over the same period.
- TSP and $PM_{2.5}$ using continuous monitors at one location at the Doris site.
- Monitoring of NO_2 using a continuous monitor at one location at the Doris site.
- Meteorological monitoring for wind speed, wind direction, temperature, relative humidity, snowfall, rainfall, solar radiation, and barometric pressure at one location. The meteorological data were used in the interpretation of the air quality measurements.

The main results and findings of the report are presented below.

Snow Core Dustfall Sampling – Doris Site

- Dustfall levels estimated from the snow core sampling ranged from 0.9 mg/100-cm^2/30-days (at TIA-DF3) to 9.9 mg/100-cm^2/30-days (CDF4).
- The dustfall levels for all stations were below the AAAQO of 158 mg/100-cm^2/30-days for commercial and industrial areas.
- The dustfall rates from all Doris Site monitoring stations were less than the maximum predicted dustfall level at each location in the 2017 FEIS modelling.

Snow Core Dustfall Sampling – Madrid Site

- Dustfall levels estimated from the snow core sampling ranged from 0.6 mg/100-cm^2/30-days (at M-DF04) to 18.0 mg/100-cm^2/30-days (at M-DF09).
- All measured dustfall levels were less than the AAAQO of 158 mg/100-cm^2/30-days for commercial and industrial areas.

- The dustfall rates for all Madrid Site monitoring stations were less than their maximum predicted dustfall level at each location in the 2017 FEIS modelling.

Canister Dustfall Sampling – Doris Site

- Dustfall levels estimated from the canister sampling ranged from 1.5 mg/100-cm^2/30-days (CDF4) to 22.2 mg/100-cm^2/30-days (DFA1). All measured dustfall levels are less than the AAAQO of 158 mg/100-cm^2/30-days for commercial and industrial areas.
- The estimated monthly dustfall rates at the monitoring stations are less than the maximum predicted dustfall level of 53 mg/100-cm^2/30-days (at 250 m from the TIA) in the 2016 Amendment modelling.

Canister Dustfall Sampling – Madrid Site

- Dustfall levels estimated from the canister sampling ranged from 1.5 mg/100-cm^2/30-days (M-DF05) to 333 mg/100 cm^2/30 days (M-DF04). Other than M-DF04 in August, all measured dustfall levels are less than the AAAQO of 158 mg/100-cm^2/30-days for commercial and industrial areas. The elevated dustfall level is likely due to construction activities and material hauling at the Exploration Track and Naartok Pad, respectively, during August 2024. These activities were in close proximity to the M-DF04 monitoring station and therefore the measurement is not expected to be reflective of dustfall levels in the overall Madrid area.
- All dustfall measurements from May – August 2024 are less than the maximum predicted dustfall levels in the 2017 FEIS modelling at M-DF01, M-DF02, M-DF03 and M-DF05 monitoring stations. Dustfall levels greater than those predicted in the 2017 FEIS modelling were measured at stations M-DF04, M-DF06, M-DF07, and M-DF08, with the measurements at the latter three stations being within the expected range of variability for dispersion modelling predictions. The elevated dustfall level at M-DF04 is likely due to short-term construction activities in close proximity to the monitor.

Particulate Monitoring – Doris Site

- The maximum measured 24-hour average TSP concentration was 102 µg/m^3 which is 85% of the applicable 2011 GN air quality objective. The elevated TSP measurement is likely attributable to forest fires in the Northwest Territories during August 2024.
- The annual geometric mean of the measured TSP concentrations for the period October 2023 to September 2024 was 6.2 µg/m^3 which is 10% of the 2011 Government of Nunavut (GN) air quality objective. This concentration is below the maximum predicted annual average TSP concentration in the 2017 FEIS of 13.3 µg/m^3.
- The calculated 98th percentile of the measured 24-hour average $PM_{2.5}$ concentrations in the October 2023 to September 2024 period is 19.6 µg/m^3 which is below the CAAQS of 27 µg/m^3.
- The annual average of the measured $PM_{2.5}$ concentrations is 4.5 µg/m^3 which is less than the annual CAAQS of 8.8 µg/m^3.

- Assessment with respect to the $PM_{2.5}$ CAAQS is provided for informational purposes only, as an explicit comparison to the CAAQS requires a minimum of two years of valid data, which are unavailable at this time.
- The maximum measured 24-hour average TSP concentration is greater than the maximum predicted concentration in the 2017 FEIS but was likely influenced by forest fires.
- The measured 98th percentile of the 24-hour average $PM_{2.5}$ concentrations is greater than the maximum predicted 98th percentile $PM_{2.5}$ concentration in the 2017 FEIS but is within the expected range of variability for dispersion models and includes some measurements likely influenced by forest fires.

Dust Mitigation

- Dust suppression activities occurred on the Doris Camp roads, the tailings impoundment area road, the airstrip, the Roberts Bay Road, and the Windy Road during the summer months. Dust suppressants were applied on an as-needed basis between May and September 2024.

Nitrogen Dioxide Monitoring – Doris Site

- The calculated 98th percentile of the measured daily maximum 1-hour average NO_2 concentrations in the one-year period of October 2023 to September 2024 is 15 ppb which is below the CAAQS of 60 ppb.
- The maximum measured annual average NO_2 concentration is well below the corresponding GN air quality objective / CAAQS and FEIS predictions.
- With the completion of the Q1-Q3 2024 NO_2 monitoring, three valid years of measurements have been collected, which are sufficient to make comparisons to the NO_2 CAAQS. The available three years of data are not calendar years, therefore the comparisons to the NO_2 CAAQS are provided for informational purposes only. The NO_2 measurements over the three-year period are less than both the daily and annual CAAQS metrics.

6 References

Alberta Environment and Parks. 2019. Alberta Ambient Air Quality Objectives and Guidelines Summary. Alberta Environment and Parks. https://open.alberta.ca/dataset/0d2ad470-117e-410f-ba4f-aa352cb02d4d/resource/4ddd8097-6787-43f3-bb4a-908e20f5e8f1/download/aaqo-summary-jan2019.pdf (accessed November 2021).

BC MOE. 2020a. The British Columbia Field Sampling Manual Part B Air and Air Emissions Testing. British Columbia Ministry of the Environment: Victoria, BC.

BC MOE. 2020b. British Columbia Ambient Air Quality Objectives. BC Ministry of Environment. https://www2.gov.bc.ca/assets/gov/environment/air-land-water/air/reports-pub/prov_aqo_fact_sheet.pdf (accessed November 2021).

CCME. 2020. Air Quality Report. Canadian Council of Ministers of the Environment. https://ccme.ca/en/air-quality-report (accessed November 2021).

Environment and Climate Change Canada (ECCC) .2021. National Ambient Air Quality Objectives Pollution Surveillance Program (NAPS). https://data.ec.gc.ca/data/air/monitor/national-air-pollution-surveillance-naps-program (accessed November 2021).

Government of Nunavut (GN). 2011. Environmental Guideline for Ambient Air Quality. Environmental Protection Service. http://gov.nu.ca/sites/default/files/guideline_-_ambient_air_quality_2011.pdf (accessed November 2021).

Government of Nunavut (GN). 2023. Environmental Guideline for Ambient Air Quality. Environmental Protection Division. https://gov.nu.ca/sites/default/files/publications/2024-05/Ambient%20Air%20Quality%202023-03.pdf (accessed October 2024).

Nunami Stantec .2024. Q1-Q3 2023 Atmospheric Compliance Monitoring Program Report. March 2024. Prepared for Agnico Eagle Mines Limited.

Thermo Fisher Scientific Inc. Model 5014i Beta Instruction Manual. April 2014.

TMAC. 2016. Revisions to TMAC Resources Inc. Amendment Application No. 1 of Project Certificate No. 003 and Water License 2AM-DOH1323. Submitted June 2015 with approval received in 2016.

TMAC. 2017. Final Environmental Impact Statement Madrid-Boston Project. December 2017.

TMAC. 2019. Revisions to TMAC Resources Inc. Amendment Application No. 1 of Project Certificate No. 003 and Water License 2AM-DOH1323. Submitted April 2019 with approval received in 2019.

US EPA. 1999. Compendium Method IO-2.3 Sampling of Ambient Air for PM10 Concentration Using the Rupprecht and Patashnick (R&P) Low Volume Partisol Sampler. Center for Environmental Research Information – Office of Research and Development, Cincinnati, OH.

US EPA. 2009. Title 40: Protection of Environment Part 58 -Ambient Air Quality Surveillance, Subpart G - Federal Monitoring Appendix E – Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring, Research Triangle Park, NC.

Appendix A Continuous Monitor Calibration Records

CD Nova Thermo 5014i Calibration Inspection

Work Order Number N240202
Customer Name Agnico Eagle Hope Bay
Instrument Part Number 5014i TSP instrument
Instrument Serial Number CM19221001
Date March 23 2024

Description	As found	Standard	As found variance	Allowable variance	Adjusted to	Final variance
Ambient Air Temperature	21.4	23.3	1.90	+/- 0.2°C	23.3	0.00
Ambient Relative Humidity	16.7	13	3.70	+/- 3%	13	0.00
Flow Temperature	22	23.3	-1.30	+/- 0.2°C	23.3	0.00
Barometer Pressure	761.2	763.6	2.40	+/- 5 mmHg	763.6	0.00
Vacuum Pressure Span	37	70.8	91.35%	50-70 mmHg	70.8	Pass
Flow Pressure Span	18.8	33.3	77.13%	20-30 mmHg	33.3	Pass
Flow calibration	16.67	15.2	-8.82%	+/- 2%	15.2	0.00%
Mass Calibration	6733.5	6957.5			6957.5	

Auto Detector Calibration

Initial High Voltage	N/A	**Final High Voltage**	1450
Initial Beta Count	N/A	**Final Beta Count**	12074

Leak Test

Start Value VAC	96.8	mmHg		
Start Value FLOW	16.67	LPM		
Leak Check Adapter VAC	157	mmHg		
Leak Check Adapter FLOW	16.63	LPM		
Flow Variance	0.24%	LPM	+/-2.5%	Pass

Standards Used	Description	S/N	Calibration Date
Flow	Streamline Pro	220102	22-Jun-23
Temperature	Vaisala HM40	U0340443	7-Jun-23
Pressure	Streamline Pro	220102	22-Jun-23
Relative Humidity	Vaisala HM40	U0340443	7 June 2023
Manometer	Dwyer 475-3FM	C627071-00	Jan 19, 2024
Technical Data	Thermo Manual Waver number W1903 dated October 1, 2018		
	Thermo Fisher Procedure Number 106430-00 revision A		

Firmware updated to:
Calibration Complete By Dan Molloy, Service Manager, Western Region

Signature: _____

CD Nova Thermo 5014i Calibration Inspection

Work Order Number N240202
Customer Name Agnico Eagle Hope Bay
Instrument Part Number 5014i
Instrument Serial Number CM19221002
Date March 21 2024

Description	As found	Standard	As found variance	Allowable variance	Adjusted to	Final variance
Ambient Air Temperature	23	23	0.00	+/- 0.2°C	23	0.00
Ambient Relative Humidity	3.4	6.9	-3.50	+/- 3%	6.9	0.00
Flow Temperature	22.9	23	-0.10	+/- 0.2°C	23	0.00
Barometer Pressure	774.8	769.5	-5.30	+/- 5 mmHg	769.5	0.00
Vacuum Pressure Span	46.3	49	5.83%	50-70 mmHg	49	Pass
Flow Pressure Span	22.1	22.4	1.36%	20-30 mmHg	22.4	Pass
Flow calibration	16.67	16.64	-0.18%	+/- 2%	16.67	0.18%
Mass Calibration	6968	6962			6962	

Auto Detector Calibration

Initial High Voltage	1390	**Final High Voltage**	1370	
Initial Beta Count	9830	**Final Beta Count**	9189	

Leak Test

Start Value VAC	85.3	mmHg		
Start Value FLOW	16.64	LPM		
Leak Check Adapter VAC	140	mmHg		
Leak Check Adapter FLOW	16.5	LPM		
Flow Variance	0.85%	LPM	+/-2.5%	Pass

Standards Used	Description	S/N	Calibration Date
Flow	Streamline Pro	220102	22-Jun-23
Temperature	Vaisala HM40	U0340443	7-Jun-23
Pressure	Streamline Pro	220102	22-Jun-23
Relative Humidity	Vaisala HM40	U0340443	7 June 2023
Manometer	Omega 8205	9900599	28 April 2023
Technical Data	Thermo Manual Waver number W1903 dated October 1, 2018		
	Thermo Fisher Procedure Number 106430-00 revision A		

Firmware updated to:
Calibration Complete By Dan Molloy, Service Manager, Western Region

Signature: _____

CD Nova Thermo 5014i Calibration Inspection

Work Order Number N240202
Customer Name Agnico Eagle Hope Bay
Instrument Part Number 5014i PM2.5 instrument
Instrument Serial Number CM19221003
Date March 23 2024

Description	As found	Standard	As found variance	Allowable variance	Adjusted to	Final variance
Ambient Air Temperature	22.6	21.9	-0.70	+/- 0.2°C	21.9	0.00
Ambient Relative Humidity	22.1	22	0.10	+/- 3%	22.1	0.10
Flow Temperature	5	7.7	-2.70	+/- 0.2°C	7.7	0.00
Barometer Pressure	762.8	762.9	0.10	+/- 5 mmHg	762.8	0.10
Vacuum Pressure Span	49.8	51	2.41%	50-70 mmHg	51	Pass
Flow Pressure Span	22.9	23.4	2.18%	20-30 mmHg	23.4	Pass
Flow calibration	16.67	15.57	-6.60%	+/- 2%		-100.00%
Mass Calibration	7124	7071			7071	

Auto Detector Calibration

Initial High Voltage	1360	**Final High Voltage**	1410	
Initial Beta Count	11913	**Final Beta Count**	12731	

Leak Test

Start Value VAC	89.1	mmHg		
Start Value FLOW	16.7	LPM		
Leak Check Adapter VAC	129	mmHg		
Leak Check Adapter FLOW	15.18	LPM		
Flow Variance	10.01%	LPM	+/-2.5%	Pass

Standards Used	Description	S/N	Calibration Date
Flow	Streamline Pro	220102	22-Jun-23
Temperature	Vaisala HM40	U0340443	7-Jun-23
Pressure	Streamline Pro	220102	22-Jun-23
Relative Humidity	Vaisala HM40	U0340443	7 June 2023
Manometer	Dwyer 475-3FM	C627071-00	Jan 19, 2024
Technical Data	Thermo Manual Waver number W1903 dated October 1, 2018		
	Thermo Fisher Procedure Number 106430-00 revision A		

Firmware updated to:
Calibration Complete By Dan Molloy, Service Manager, Western Region

Signature: _____

CD Nova Thermo 5014i Calibration Inspection

Work Order Number	N240202
Customer Name	Agnico Eagle Hope Bay
Instrument Part Number	5014i
Instrument Serial Number	CM19221004
Date	March 21 2024

Description	As found	Standard	As found variance	Allowable variance	Adjusted to	Final variance
Ambient Air Temperature	24	21.9	-2.10	+/- 0.2°C	21.9	0.00
Ambient Relative Humidity	5.7	6.1	-0.40	+/- 3%	6.1	0.00
Flow Temperature	23.1	21.9	1.20	+/- 0.2°C	21.9	0.00
Barometer Pressure	764.3	769.5	5.20	+/- 5 mmHg	769.5	0.00
Vacuum Pressure Span	52	53	1.92%	50-70 mmHg	53	Pass
Flow Pressure Span	22.6	223	886.73%	20-30 mmHg	23	Pass
Flow calibration	16.67	16.46	-1.26%	+/- 2%	16.46	0.00%
Mass Calibration	7054	6988			6988	

Auto Detector Calibration

Initial High Voltage	1370		**Final High Voltage**	1400
Initial Beta Count	11319		**Final Beta Count**	12060

Leak Test

Start Value VAC	53.2	mmHg		
Start Value FLOW	16.67	LPM		
Leak Check Adapter VAC	142	mmHg		
Leak Check Adapter FLOW	16.49	LPM		
Flow Variance	1.09%	LPM	+/-2.5%	Pass

Standards Used	Description	S/N	Calibration Date
Flow	Streamline Pro	220102	22-Jun-23
Temperature	Vaisala HM40	U0340443	7-Jun-23
Pressure	Streamline Pro	220102	22-Jun-23
Relative Humidity	Vaisala HM40	U0340443	7 June 2023
Manometer	Omega 8205	9900599	28 April 2023
Technical Data	Thermo Manual Waver number W1903 dated October 1, 2018		
	Thermo Fisher Procedure Number 106430-00 revision A		

Firmware updated to:

Calibration Complete By Dan Molloy, Service Manager, Western Region

Signature: _____

AND ASSOCIATED COMPANIES

NO-NO2-NOX

Calibration form

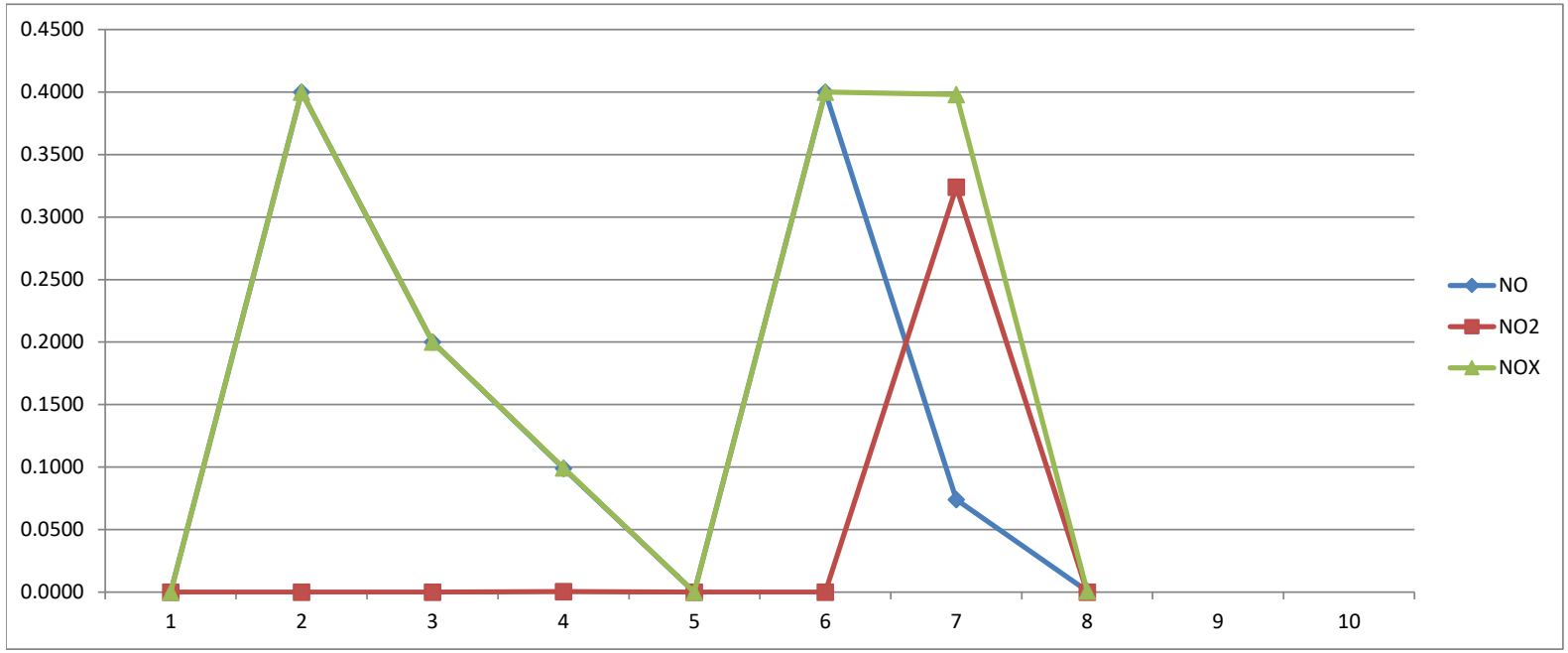
Instrument	42iQ-AAABN
Serial number	1191222768
Customer	Agnico Eagle
Work order	N240202
Date	24-Mar-24

Calibrator	Thermo 146iQ
Calibrator S/N	119122270
Test gas conc.	14.87
Test gas cert.	1505294

Test Point	NO	NO2	NOX	ppm
1	0.0000	0.0000	0.0000	ppm
2	0.4000	0.0000	0.4000	ppm
3	0.2000	0.0000	0.2000	ppm
4	0.0990	0.0004	0.0994	ppm
5	0.0000	0.0000	0.0000	ppm
GPT 1	0.4000	0.0000	0.4000	ppm
GPT 2	0.0740	0.3240	0.3980	ppm
GPT 3	0.0009	0.0000	0.0009	ppm
GPT 4				ppm
GPT 5				ppm

Convertor efficency 99.4%

Instrument Information	
Version	N/A
Firmware	1.6.15.34700
PMT voltage	-835
NO background	2.4
NOX background	2.6
NO coef	0.999
NO2 coef	0.994
NOX coef	0.996



Completed by: Dan Molloy