Appendix H-6

Air Quality Monitoring Report

AGNICO EAGLE

MELIADINE GOLD PROJECT

2019 Air Quality Monitoring Report

In Accordance with NIRB Project Certificate No. 006

Prepared by:
Agnico Eagle Mines Limited – Meliadine Division

APRIL 2020

EXECUTIVE SUMMARY

In accordance with NIRB Project Certificate No. 006, and as described in the Air Quality Monitoring Plan (Version 1, November 2015, and Version 2, April 2020), Agnico Eagle Mines Ltd. (Agnico Eagle) continued ambient air quality monitoring at the Meliadine site, near Rankin Inlet in 2019. Through this program, Agnico Eagle aims to measure ambient concentrations of airborne particulates, dustfall, and gaseous compounds (NO_2 and SO_2) using a combination of active and passive sampling methods.

In accordance with the Plan, monitoring in 2019 included analysis of dustfall at seven pre-determined sampling locations, as well as NO_2 and SO_2 at two locations, over one month averaging periods throughout the year. In addition, Agnico began sampling dustfall transects at three locations along the AWAR, and one location along the Rankin Inlet Bypass Road. Partisol units were in place for the year-round analysis of suspended particulates (TSP, $PM_{2.5}$, and PM_{10}), but sample collection only occurred for a three month period, because all four Partisol samplers had to be sent to the distributor for necessary repairs. At this time repairs are complete, and the units will be re-installed in 2020.

Dustfall results for year-round sampling locations onsite and along the AWAR (DF-1 – DF-7) are compared to Alberta's Ambient Air Quality Guidelines (June, 2016) for recreational and industrial areas, for context. In 2019, two of the 77 samples exceeded the recreational area guideline for total dustfall, and one additional sample exceeded the industrial area guideline. However in all cases, fixed dustfall (which is more representative of mine activity) was below the guideline. Generally, an increase in measured dustfall rates has occurred since mid-2017 when the construction period began, which would be anticipated. Despite increased site activity, exceedances of AB guidelines for recreational areas are still considered very infrequent, occurring in <4% of total dustfall samples in 2019, and 0% of fixed dustfall samples.

For all road transects (summer-only sampling), rates of dustfall declined below the AB regulatory guideline for recreational areas between 25 m and 100 m from the road during both sampling events. These results indicate that for both onsite and AWAR locations, best-management practices in place for dust mitigation are being effectively implemented to minimize emissions.

Concentrations of suspended particulates (TSP, $PM_{2.5}$, and PM_{10}) were assessed in two locations using Partisol air samplers between January and early April, 2019. All available results were below regulatory guidelines (Government of Nunavut Ambient Air Quality Standards/BC Ambient Air Quality Objectives) and were below maximum concentrations predicted in the FEIS.

Calculated annual average concentrations of NO_2 and SO_2 were well below the Government of Nunavut Ambient Air Quality Standards, and were below FEIS maximum predicted values. This was the third full year of monitoring for gaseous compounds, and no clear spatial or temporal trends were observed.

As described in the Air Quality Monitoring Plan, a permanent weather station was installed at the Meliadine site, and daily averages for wind speed, direction, temperature, solar radiation, and rainfall are provided.

Incinerator stack testing was performed in December, 2019. The measured concentrations of mercury were below the GN standard of 20 µg/Rm3 in all three tests. Measured concentrations of total dioxins and furans were also below the GN standard (80 pg TEQ / Rm³ @ 11 % v/v O2) in all three tests.

Agnico Eagle is required by Environment Canada's Greenhouse Gas Emissions Reporting Program (GHGRP) to track greenhouse gas emissions. Calculated emissions for the Meliadine site (including Rankin Inlet operations) will be reported to regulators by the June, 2020 deadline.

Since monitoring results in 2019 were within applicable air quality criteria and FEIS predictions, no additional adaptive management measures are planned. Strategies are in place to ensure increased collection of suspended particulate data in 2020.

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1 INTRODUCTION

1.1 BACKGROUND AND OBJECTIVES

In February 2015, Agnico Eagle Mines Ltd. (Agnico Eagle) was issued NIRB Project Certificate No. 006 for the Meliadine Gold Project, near Rankin Inlet, NU. In accordance with Conditions 1, 2, 3 and 27b of the Project Certificate, Agnico Eagle maintains the Meliadine Air Quality Monitoring Plan to describe the program for onsite ambient air quality monitoring.

The Air Quality Monitoring Plan has been recently updated (Version 2, April, 2020) and submitted as a component of the 2019 Annual Report. Some supplemental sampling under the revised plan was completed in 2019, and is reported here. The Plan revisions will be enacted in full, beginning in 2020.

The overall intention of the monitoring program is to confirm the effectiveness of mitigation measures assumed in the Project's environmental assessment by measuring key air quality parameters, and in doing so, determine if alternative mitigation strategies are required to further reduce emissions from the Project and their impacts.

In accordance with the NIRB Project Certificate and the Air Quality Monitoring Plan, air quality monitoring for the Meliadine site includes year-round analysis of suspended particulates, dustfall, NO_2 and SO_2. In addition, as meteorological data are a critical input to air dispersion models and emissions estimation, a real time meteorological station has been installed at the site and recorded meteorological data is reported.

A summary of the air quality monitoring program according to the most recent Air Quality Monitoring Plan (Version 2, April, 2020) is shown in Table 1. Monitoring according to the pre-construction objectives occurred from 2012 - 2016. In 2017, the project entered the construction phase, which continued in 2018. In 2019, the project entered the operations phase.

Table 1. Air quality monitoring objectives according to the Air Quality Monitoring Plan (Version 2; April, 2020). *New in Version 2.

Project Phase	Program Objective	Monitoring Equipment
Pre-construction	• To obtain baseline data in order to be able to compare with construction and operation phases	• Three dustfall jars (passive) onsite • Three dustfall jars along AWAR

Project Phase	Program Objective	Monitoring Equipment
Construction	• To verify compliance with applicable standards • To apply mitigation measures if necessary	• One continuous TSP/PM_{10} sampling unit (Partisol model 2025) • One passive NO_2 – SO_2 monitor (Maxxam equipment) • Four dustfall jars (passive) onsite • Three dustfall jars (passive) along AWAR
Operations	• To verify the predicted concentrations of TSP, PM_{10}, and $PM_{2.5}$ • To verify that the mitigation measures considered integral to the Project are being incorporated as planned, and are effective	• Two TSP sampling units (Partisol model 2025) (DF-5, DF-7) • Two PM_{coarse}/$PM_{2.5}$ sampling units (Partisol Model 2025-D) (DF-5, DF-7) • Two passive NO_2–SO_2 monitors (Maxxam equipment) (DF-5, DF-7) • Four dustfall jars (passive) onsite (DF-4, DF-5, DF-6, DF-7) • **Three dustfall (passive) monitoring transects along AWAR (km 4, 10, 23 – DF-1, DF-2, DF-3) and one along the Rankin Inlet By-Pass Road (DF-WT) – summer season* • **Background dustfall (passive) monitoring at a reference station – summer season*

1.2 2019 Monitoring Locations and Dates

Air quality monitoring sites are shown in Figure 1. According to the operations-phase monitoring objectives, air quality monitoring in 2019 included:

- Analysis of suspended particulates ($PM_{2.5}$, PM_{10}, TSP) at two onsite locations (DF-5, DF-7);
- Year-round dustfall sampling at three individual locations along the AWAR (DF-1, DF-2, DF-3) and four locations onsite (DF-4, DF-5, DF-6, DF-7);
- Summer-only dustfall sampling for complete transects at DF-1, DF-2, and DF-3 (samplers located at 25 m, 100 m, and 300 m on each side of the road);
- Summer-only dustfall sampling for a complete transect at DF-WT (samplers located at 60 m, 120 m, 300 m, and 1000 m on each side of the road); and
- Summer-only supplemental dustfall monitoring a far-field reference station.

Sampling for suspended particulates occurs at stations DF-5 and DF-7, and began at the end of 2018. Sampling at the South unit (DF-5) began on December 3, 2018 (TSP only), and sampling at the North unit (DF-7) began on December 21, 2018 ($PM_{2.5}$/PM_{10} only). The additional two units

were not operational when the supplier left site following installation (summer 2018). It was anticipated that both TSP and $PM_{2.5}$/PM_{10} units would be active at both locations in 2019. However, successful operation of the Partisol units at the Meliadine site has proven very challenging. Due to a combination of equipment failure and increased wear and tear on equipment due to sub-arctic weather conditions, and limited servicing and repairing possibilities on site, a limited dataset is available for 2019. Active sampling only occurred for total suspended particulates at DF-5 (South unit), from January to April, 2019. Active sampling for $PM_{2.5}$/PM_{10} occurred at DF-7 during March and April. To rectify these issues, Agnico has shipped all four Partisol units for servicing by the supplier who will also provide onsite re-installation, spare parts, and maintenance training to the Environment Department technicians as soon as possible (in 2020). Agnico is also investigating alternate sampling methods for suspended particulates that may facilitate data collection under harsh weather conditions. Discussions are ongoing with a number of consultants, suppliers, and other Northern operators to identify better equipment options.

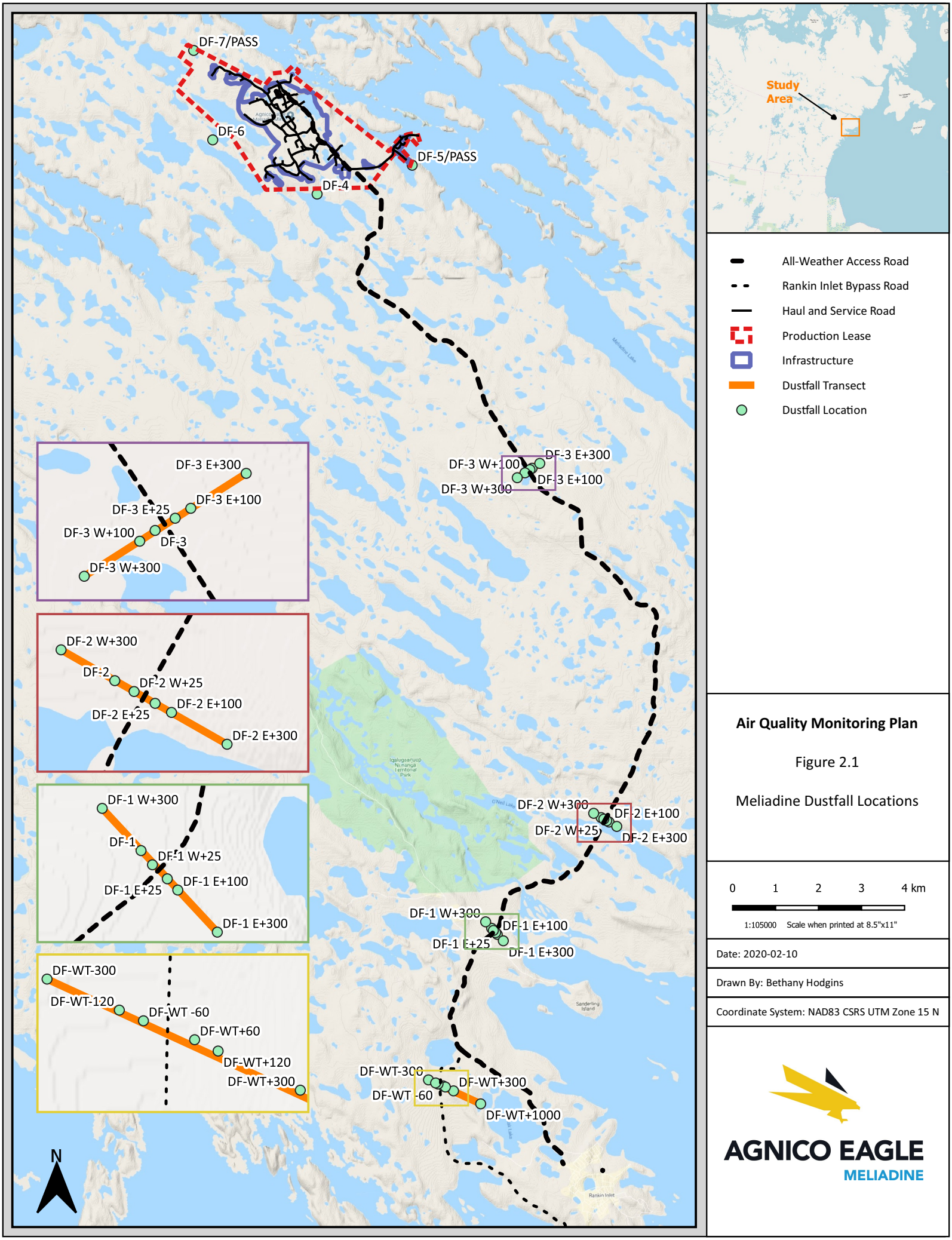
Dustfall monitoring was conducted over approximately 30 day periods for all year-round sampling stations (DF-1 – DF-7) from December 14, 2018 – December 17, 2019. Dustfall was also sampled for new AWAR and Bypass Road transects (located at DF-1, DF-2, DF-3, and DF-WT) from July 15 – September 18, 2019. As described in the updated Air Quality Monitoring Plan (Version 2, April, 2020), year-round sampling is proposed for onsite stations DF-4 – DF-7 only, beginning in 2020. Summer-season sampling will take place for new AWAR and Bypass Road transects, including the original year-round sites DF-1, DF-2, and DF-3.

Passive samplers for NO_2 and SO_2 were installed at two locations (DF-5 and DF-7). Passive monitoring of NO_2 and SO_2 was conducted over approximately 30 day periods from December 13, 2018 through December 17, 2019.

Details of the monitoring locations in 2019 are summarized in Table 2. As described in the Air Quality Monitoring Plan, sampling locations will be reviewed and may be adapted throughout the construction and/or operations phases of the Project, as necessary.

Table 2. Air quality monitoring locations and parameters monitored in 2019.

Monitoring Station	UTM (15V)	Parameters	General Location	Location Description
DF-WT	542890E 6967093N	Dustfall transect	Rankin Inlet By-Pass Road	1.3 km northwest of Nipissak Lake and ~500m southeast (downwind) of community quarry sites. Samples at 60, 120, and 300 m on each side of the road.
DF-1	544073E 6970759N	Dustfall transect	AWAR	AWAR km 4 South of Iqalugaarjuup Nunanga Park. Samples at 25, 100, and 300 m on each side of the road.
DF-2	546621E 6973334N	Dustfall transect	AWAR	AWAR km 10 East of Iqalugaarjuup Nunanga Park. Samples at 25, 100, and 300 m on each side of the road.
DF-3	544899E 6981387N	Dustfall transect	AWAR	AWAR km 23 North of Iqalugaarjuup Nunanga Park. Samples at 25, 100, and 300 m on each side of the road.
DF-4	540014E 6987836N	Dustfall	Onsite	Adjacent to freshwater pumphouse on Lake A8. Downwind of main mine site.
DF-5	542226E 6988507N	Dustfall NO_2, SO_2 TSP, PM_{10}, $PM_{2.5}$	Onsite	500 m south-east of the mine camp. Downwind of main mine site. Within Air Quality Impact Assessment Site Study Area.
DF-6	537586E 6989096N	Dustfall	Onsite	Adjacent to Lake B5, approx. 600 m southwest of main mine site (direction perpendicular to dominant wind).
DF-7	537143E 6991176N	Dustfall NO_2, SO_2 TSP, PM_{10}, $PM_{2.5}$	Onsite	Adjacent to emulsion plant, approx. 2 km northwest (upwind) of the camp complex. Within Air Quality Impact Assessment Local Study Area (just outside of Site Study Area).
DF-8	525656E 7001656N Or alternative	Dustfall	Reference	North end of Meliadine Lake near AEMP Reference Area 2 (MEL-04). UTM approximate. Reference stations may be rotated to establish a range of background dustfall values, which are expected to vary significantly depending on local site conditions.



Air Quality Monitoring Plan

Figure 2.1

Meliadine Dustfall Locations

Date: 2020-02-10

Drawn By: Bethany Hodgins

Coordinate System: NAD83 CSRS UTM Zone 15 N

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2 METHODS

2.1 SAMPLING METHODOLOGY

2.1.1 Suspended Particulates

Suspended particulates (TSP, PM_{10}, $PM_{2.5}$) are planned to be sampled over 24-h periods every six days using a Partisol Plus Model 2025i Sequential Air Sampler (TSP) and a Partisol Plus Model 2025-D Dichotomous Sequential Air Sampler ($PM_{2.5}$ and PM_{coarse}) at DF-5 and DF-7. Partisol samplers draw in a stream of ambient air at a controlled flow rate, and particulates are collected on a pre-weighed filter supplied by an accredited laboratory. The exposed filter is then shipped back to the laboratory and re-weighed to measure the total accumulated particulates.

Analysis of metals of relevance to the Project was also planned, as described in the 2018 Air Quality Monitoring Report. However, significant malfunction of the Partisol instruments and delays in parts availability began at the time that report was produced (March, 2019), and suspended particulates could not be sampled for the remainder of the year. In 2020, analysis of TSP filters for cadmium and iron will occur, as described in the Air Quality Monitoring Plan (Version 2; April, 2020).

2.1.2 Dustfall

Dustfall was collected in open vessels containing a purified liquid matrix (de-ionized water and isopropanol), supplied by a commercial analytical laboratory. Particles are deposited and retained in the liquid, which is then analyzed for total and fixed (non-combustible) dustfall by the supplying laboratory. While regulatory guidelines relate to total dustfall, the non-combustible fraction, or fixed dustfall, is considered more representative of mine-related activity because it excludes organic components (e.g. pollen, plants, animal particles). Historically, when results are above the detection limit, fixed dustfall has represented on average 73% of total dustfall.

Vessels were deployed according to laboratory specifications for sequential one-month periods at each location, retrieved, re-sealed, and shipped back to the laboratory. Canisters were placed on an approximate 2 m stand with an open bucket-style holder fitted with wires around the rim to deter birds (see Figure 2). Calculated dustfall rates were normalized to 30 days (mg/cm^2/30 days). Dustfall canisters were provided by and analyzed by Maxxam Analytics.

Figure 2. Dustfall sampling stand at the Meliadine site.

2.1.3 NO_2 and SO_2

Concentrations of NO_2 and SO_2 by volume (ppb) were analyzed over one-month periods using a passive sampling device provided by Maxxam Analytics and deployed by Agnico Eagle technicians according to laboratory-identified procedures. Following each sampling period, the sampling device was retrieved and shipped to the commercial laboratory for analysis.

2.2 Data Analysis

2.2.1 Suspended Particulates

2.2.1.1 Data Processing

Laboratory-reported results for mass of particulates were used to calculate associated concentrations of TSP, PM_{10} and $PM_{2.5}$ (µg/m^3) according to the Partisol operating manual, as follows.

TSP is calculated as:

$$TSP = M_{TSP}/V$$

Where: TSP = mass concentration of particulates (µg/m^3)

M_{TSP} = final mass of TSP filter – initial mass of filter (µg/filter)

V = volume of air drawn in during the sampling period (~24 m^3)

Since the dichotomous unit splits the intake air stream to determine $PM_{2.5}$ and PM_{coarse} ($PM_{10-2.5}$), the volume of air is different for each filter. Calculations are performed as follows.

$PM_{2.5}$ is calculated as:

$$PM_{2.5} = M_{2.5}/V_{2.5}$$

Where: $PM_{2.5}$ = mass concentration of particulates (µg/m^3)

$M_{2.5}$ = final mass of $PM_{2.5}$ filter – initial mass of filter (µg/filter)

$V_{2.5}$ = volume of air drawn through the $PM_{2.5}$ filter during the sampling period (~21.7 m^3)

And,

PM_{coarse} is calculated as:

$$PM_{coarse} = M_{coarse}/V_{total} – PM_{2.5}(V_{coarse}/V_{total})$$

Where: PM_{coarse} = mass concentration of particulates (µg/m^3)

M_{coarse} = final mass of PM_{coarse} filter – initial mass of filter (µg/filter)

V_{total} = total volume of air drawn into unit during sampling (~24m^3)

V_{coarse} = volume of air drawn through the PM_{coarse} filter during the sampling period (~2.4 m^3)

Concentration of PM_{10} is then calculated as PM_{coarse} + $PM_{2.5}$.

For comparison to Government of Nunavut Ambient Air Quality Guidelines (2011), concentrations of particulates need to be calculated using air volumes normalized to 25°C and 101.3kPA (standard temperature and pressure; STP). Standardized volumes were either recorded by the Partisol unit, or calculated from average temperature and pressure recorded by the Partisol unit during the sampling period, whenever possible. Estimates of suspended particulate concentrations using non-standardized volumes (when records are unavailable) are expected to

be slightly conservative (higher than actual), since air temperatures are almost always colder than 25°C. In addition, the air sampling unit is housed in an insulated container because winter temperatures inhibit operation. This is standard practice in northern climates. Since the unit's ambient temperature sensor is warmer than actual air temperature for much of the year, intake volumes are inflated compared to calculated volumes, resulting in conservative estimates of particulate concentrations.

In 2019, recorded standardized volumes were available for all sampling dates.

2.2.1.1 Regulatory Guidelines and FEIS Predictions

The TSP, PM_{10}, and $PM_{2.5}$ data from the monitoring locations were analyzed for increasing trends or measured concentrations above the FEIS predictions or regulatory guidelines.

Specifically, results of suspended particulate monitoring were compared primarily to available Government of Nunavut (GN) Environmental Guidelines for Ambient Air Quality (October, 2011). Where GN guidelines were not available (i.e. for PM_{10}) results were compared to the BC Air Quality Objective Guidelines (May, 2018). Regulatory guidelines for the measured parameters are provided in Table 3.

Results were additionally compared to FEIS predictions for maximum concentrations of suspended particulates, to ensure estimates were sufficiently conservative, and related impact assessment results continue to be representative (i.e. Air Quality Impact Assessment – FEIS Volume 5). Maximum FEIS air quality predictions for the site study area (SSA) and local study area (LSA) where the monitors DF-5 and DF-7 are located, respectively, are shown in Table 3. However, it should be noted that monitoring results include background contributions, whereas model predictions do not, so comparisons to these FEIS predictions are expected to be conservative. Comparisons to predicted peak concentrations (which include influence of meteorological anomalies) may be conducted if such a situation occurs.

Table 3. Government of Nunavut (GN) Environmental Guidelines for Ambient Air Quality (October, 2011), BC Ambient Air Quality Objectives (May, 2018) and FEIS predictions for suspended particulate matter at Meliadine along with the representative monitoring station (DF-5/DF-7).

Parameter	Averaging Time	Regulatory Guideline		FEIS Prediction* ($\mu g/m^3$)	
		Jurisdiction	Guideline ($\mu g/m^3$)	SSA (represented by DF-5)	LSA (represented by DF-7)
$PM_{2.5}$	24-h	GN	30	55.2	19.6
PM_{10}	24-h	BC	50	104.0	58.2
Total Suspended Particulate (TSP)	24-h	GN	120	213.7	122.3
	Annual	GN	60	16.8	17.0

2.2.2 Dustfall

No standards for dustfall are available for Nunavut or the Northwest Territories. Results of the dustfall analysis are therefore compared to the Alberta Ambient Air Quality Guideline for recreational areas for total dustfall (June, 2016) of 0.53 $mg/cm^2/30d$ and commercial/industrial guideline of 1.58 $mg/cm^2/30d$, to provide context. These guidelines are based on aesthetic or nuisance concerns, and are to be used for airshed planning and management, as a general performance indicator, and to assess local concerns.

Based on measurements for other mine-related roads in Nunavut (Meadowbank site), it is anticipated that guidelines for recreational areas may regularly be exceeded in close proximity to the AWAR or minesite, and that guidelines for industrial areas may occasionally be exceeded. However, exceedance of these guidelines does not necessarily indicate that impacts to ecological endpoints (e.g. vegetation or wildlife) are occurring. Impacts of dust deposition on the aquatic and terrestrial environments are assessed and compared with FEIS predictions through the AEMP (water and sediment quality monitoring) and TEMMP (soil and vegetation sampling through the ecological risk assessment program).

Dustfall rates were additionally analyzed for indications of spatial trends to look at differences between transect locations, upwind and downwind locations, and distance from the road. A temporal analysis will also check for consistently increasing trends in the measured dustfall rates year-over-year.

2.2.3 NO_2 and SO_2

The analysis of the NO_2 and SO_2 sampling results includes a comparison of results with the GN Environmental Guidelines for Ambient Air Quality (October, 2011). Concentrations measured on a monthly basis were averaged, and compared to the annual average guidelines for NO_2 (60 µg/m^3 or 32 ppb) and SO_2 (30 µg/m^3 or 11 ppb).

In order to determine the accuracy of assumptions and predictions made during the Project assessment phase, a comparison to NO_2 and SO_2 concentrations described in the FEIS (Golder, 2014) is also included. For the Site Study Area (SSA), where the sampling station DF-5 is located, the FEIS predicted a maximum annual average of 43.9 µg/m^3 (23.3 ppb @ 25°C) for NO_2, and 0.3 µg/m^3 (0.1 ppb @ 25°C) for SO_2. For the Local Study Area (LSA), where the sampling station DF-7 is located, the FEIS predicted a maximum annual average of 22.8 µg/m^3 (12.1 ppb @ 25°C) for NO_2, and 0.0 µg/m^3 (0.0 ppb @ 25°C) for SO_2. It should be noted that model predictions were for emissions produced by mine site activity, which do not include background values, which are included in monitoring results. The background values assumed in the FEIS (Table 5.2-6) of 0.1 µg/m^3 (0.05 ppb) for NO_2 and 0.5 µg/m^3 (0.2 ppb) for SO_2, are from the Fortune Minerals NICO project. Therefore, results of the monitoring program at Meliadine are compared to the sum of these assumed background values and the predicted concentrations from site activity, as summarized in Table 4.

Table 4. Summary of GN guidelines and FEIS predictions (plus assumed background concentrations) for annual average concentrations of NO_2 and SO_2.

Compound	GN Guideline (Annual Average)	FEIS Prediction + Background (Annual Average)	
		SSA (DF-5)	LSA (DF-7)
NO_2	32 ppb	23.3 + 0.05 ppb	12.1 +0.05 ppb
SO_2	11 ppb	0.1 +0.2 ppb	0.0 + 0.2 ppb

The measured ambient NO_2 and SO_2 concentrations were also analyzed for spatial and temporal trends.

2.3 QA/QC

According to the Air Quality Monitoring Plan, QA/QC procedures for the monitoring program included the following:

2.3.1 Suspended Particulates

- A travel blank (laboratory prepared samples that travel with the samples but are not exposed to the atmosphere) was used with one shipment (result = <3 mg, or non-detect);
- Samplers were sent for professional maintenance and calibration;
- An accredited laboratory was used for pre-sample preparation and determining sample weights;

- Samples and data were collected by appropriately trained personnel; and
- Qualified personnel interpreted the flow data and confirmed ambient particulate concentrations based on laboratory results.

2.3.2 Dustfall

- A travel blank (laboratory prepared samples that travel with the samples but are not exposed to the atmosphere) was sent with one shipment (result = < 0.001 mg/cm_2/30 d, or non-detect);
- An accredited laboratory was used for sample preparation and analysis; and
- Samples were collected by appropriately trained personnel.

2.3.3 Passive NO_2-SO_2

- An accredited laboratory was used for pre-sample preparation and analysis;
- Samples were collected by appropriately trained personnel; and
- Qualified personnel interpreted ambient NO_2-SO_2 concentrations based on laboratory results.

3 MONITORING RESULTS

3.1 SUSPENDED PARTICULATES

In 2019, suspended particulate sampling occurred every six days from January 2 to March 16 at DF-5. Only the TSP Partisol unit was functional at this location. At DF-7, sampling occurred every six days from March 7 to April 6, and only the $PM_{2.5}$/PM_{10} unit was functional. Available results are shown in Table 5.

All values are below the regulatory guideline or FEIS prediction for the 24-h averaging time. Since data was only available for a maximum two-month period, annual averages were not calculated.

Monitoring for suspended particulates began in December 2018. Historical reviews will be conducted once two years of data are available.

Table 5. Concentrations of suspended particulates measured in 2019 at the Meliadine site. See Table 3 for full list of regulatory guidelines and FEIS predictions.

Location	Parameter	Regulatory Guideline (µg/m³)	FEIS Prediction (µg/m³)	Sample Start Date & Time	Result (µg/m³)
DF-5	TSP	120	213.7	02-Jan-19	2.3
				08-Jan-19	1.1
				14-Jan-19	1.6
				20-Jan-19	2.5
				26-Jan-19	1.6
				01-Feb-19	2.8
				07-Feb-19	1.3
				13-Feb-19	6.4
				19-Feb-19	4.4
				26-Feb-19	3.7
				04-Mar-19	3.4
				10-Mar-19	5.6
				16-Mar-19	9.8
DF-7	$PM_{2.5}$	30	19.6	07-Mar-19	2.67
				13-Mar-19	1.12
				19-Mar-19	1.47
				25-Mar-19	1.95
				31-Mar-19	1.31
				06-Apr-19	1.92
	PM_{10}	50	58.2	07-Mar-19	4.92
				13-Mar-19	2.11
				19-Mar-19	4.88
				25-Mar-19	3.13
				31-Mar-19	3.75
				06-Apr-19	3.67

3.2 DUSTFALL

3.2.1 Year-Round Sampling Locations

Results of the 2019 dustfall sampling program (30-day normalized rates of dustfall) for year-round monitoring stations DF-1 – DF-7 are provided in Figures 3 - 9. Values below the detection limit (0.001 mg/cm^2/30d) are plotted as ½ the limit. Samples are plotted by the collection start date. To provide context, the Alberta Ambient Air Quality Guidelines for recreational/residential and industrial/commercial areas of 0.53 mg/cm^2/30 days and 1.58 mg/cm^2/30 days for total dustfall are indicated.

In total, two of the 77 samples collected in 2019 exceeded the recreational area guideline for total dustfall (one sample each at DF-2, DF-5), and one additional sample exceeded the industrial area guideline (DF-6). However, the result for fixed (non-combustible) dustfall in this sample was below the recreational area guideline, indicating that an unusually high proportion of organic material was present in the sample. Since fixed dustfall results are generally considered to be most representative of mine-related activity, and this appears to be an isolated incident, the event was not investigated further.

Historical results for total and fixed dustfall since 2012 are provided in Figures 10 and 11 for assessment of trends over time. Generally, an increase in measured dustfall rates has occurred since mid-2017 when the construction period began and site activity increased (as would be anticipated). However, exceedances of regulatory guidelines for recreational/residential areas are still considered very infrequent, occurring in <4% of total dustfall samples in 2019. While this guideline does not specifically apply to results of fixed dustfall analysis, only one fixed dustfall sample to date for the Meliadine site has exceeded the recreational area guideline. These results indicate that best management practices in place for dust mitigation are being implemented effectively to control emissions.

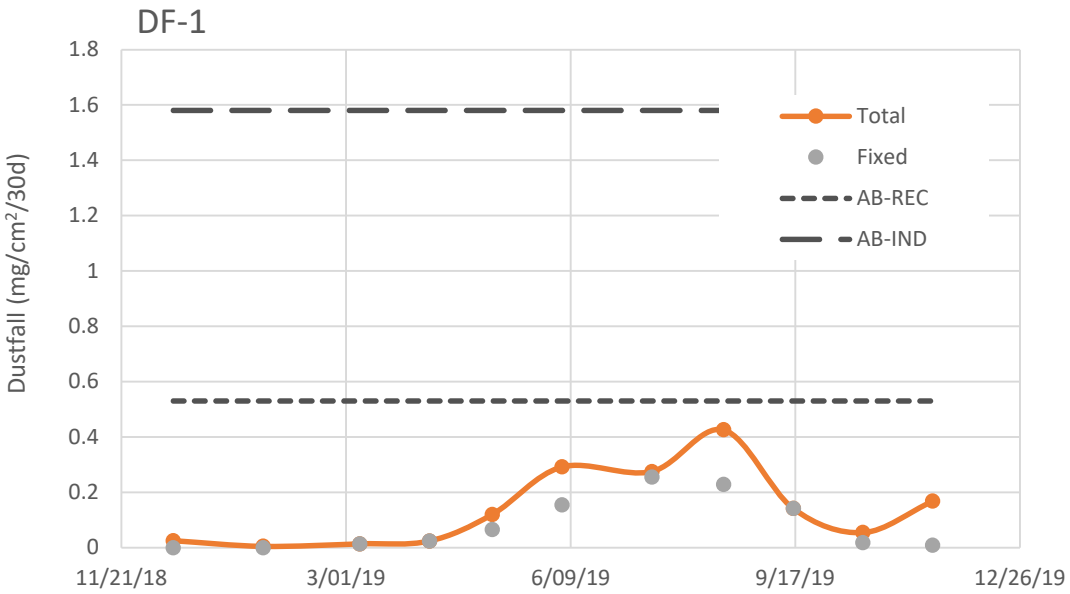

Figure 3. 30-day-normalized rates of total and fixed dustfall at sampling location DF-1 at the Meliadine site in 2019. Symbols represent start date of sample collection. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas.

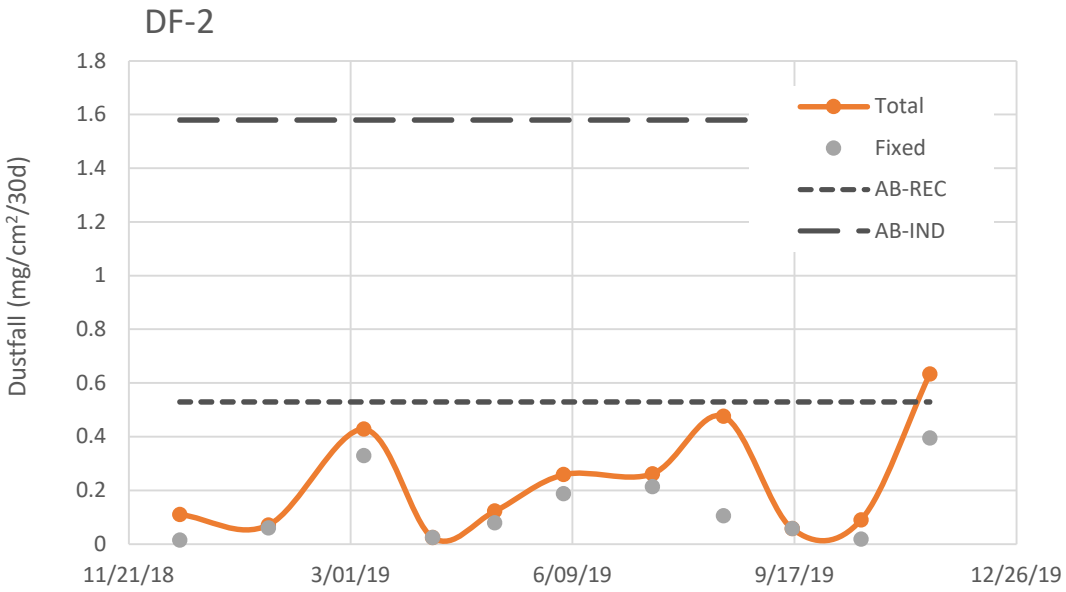

Figure 4. 30-day-normalized rates of total and fixed dustfall at sampling location DF-2 at the Meliadine site in 2019. Symbols represent start date of sample collection. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas.

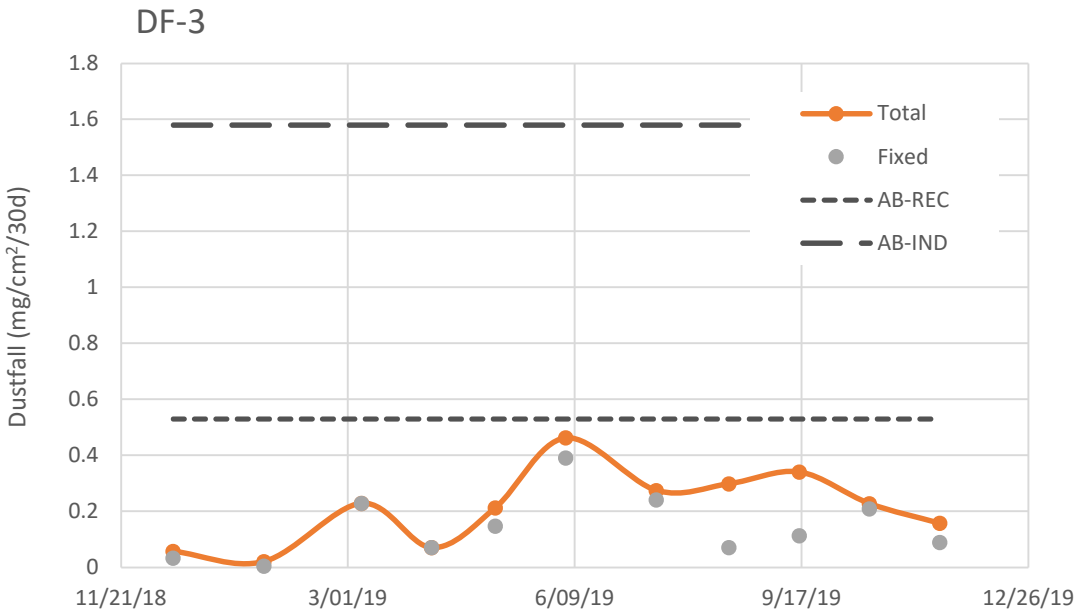

Figure 5. 30-day-normalized rates of total and fixed dustfall at sampling location DF-3 at the Meliadine site in 2019. Symbols represent start date of sample collection. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas.

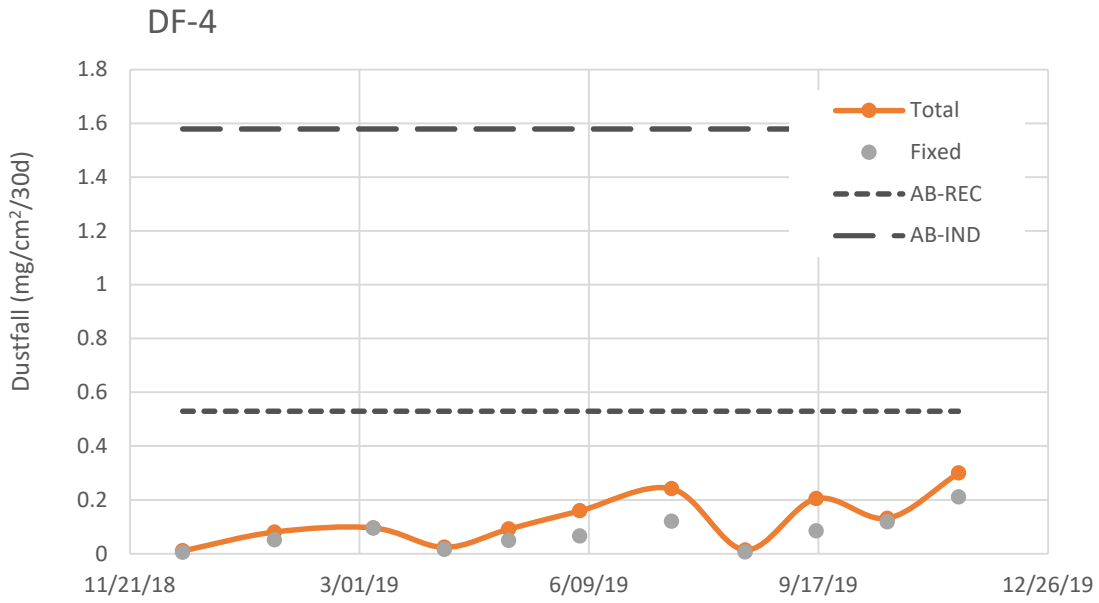

Figure 6. 30-day-normalized rates of total and fixed dustfall at sampling location DF-4 at the Meliadine site in 2019. Symbols represent start date of sample collection. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas.

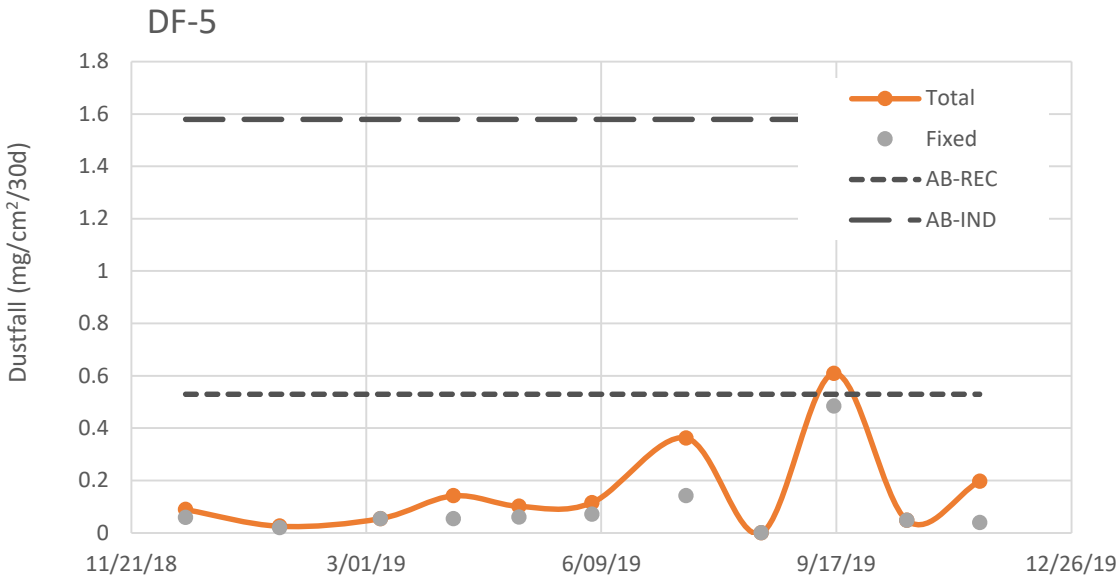

Figure 7. 30-day-normalized rates of total and fixed dustfall at sampling location DF-5 at the Meliadine site in 2019. Symbols represent start date of sample collection. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas.

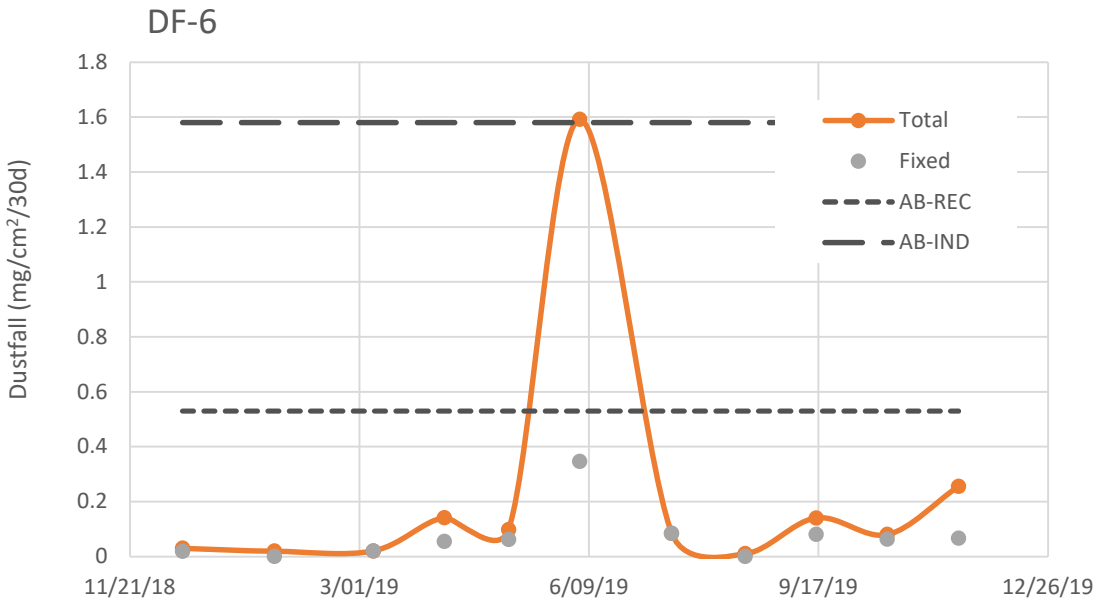

Figure 8. 30-day-normalized rates of total and fixed dustfall at sampling location DF-6 at the Meliadine site in 2019. Symbols represent start date of sample collection. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas.

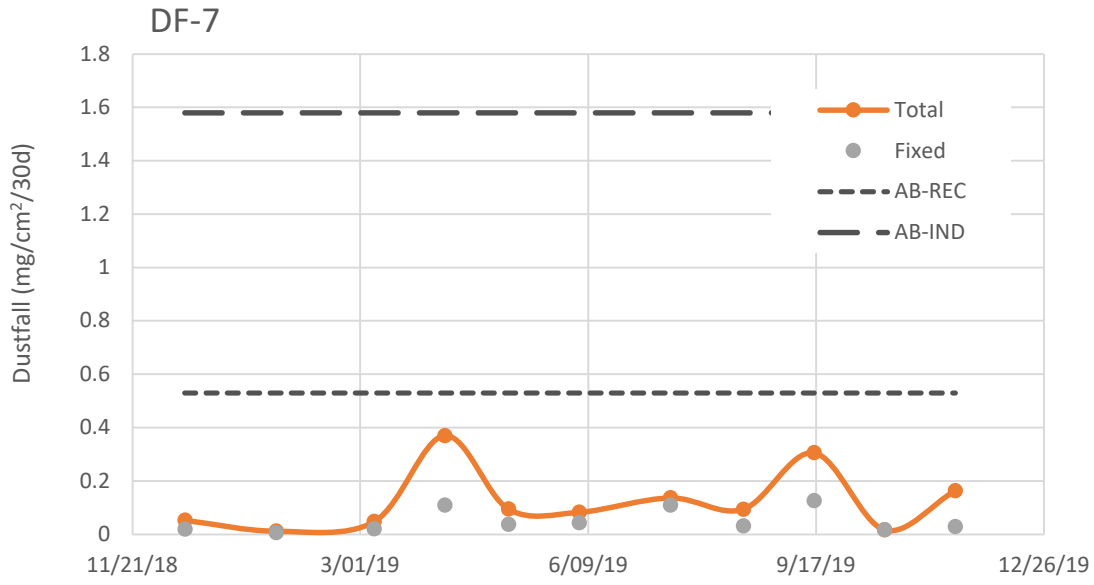

Figure 9. 30-day-normalized rates of total and fixed dustfall at sampling location DF-7 at the Meliadine site in 2019. Symbols represent start date of sample collection. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas.

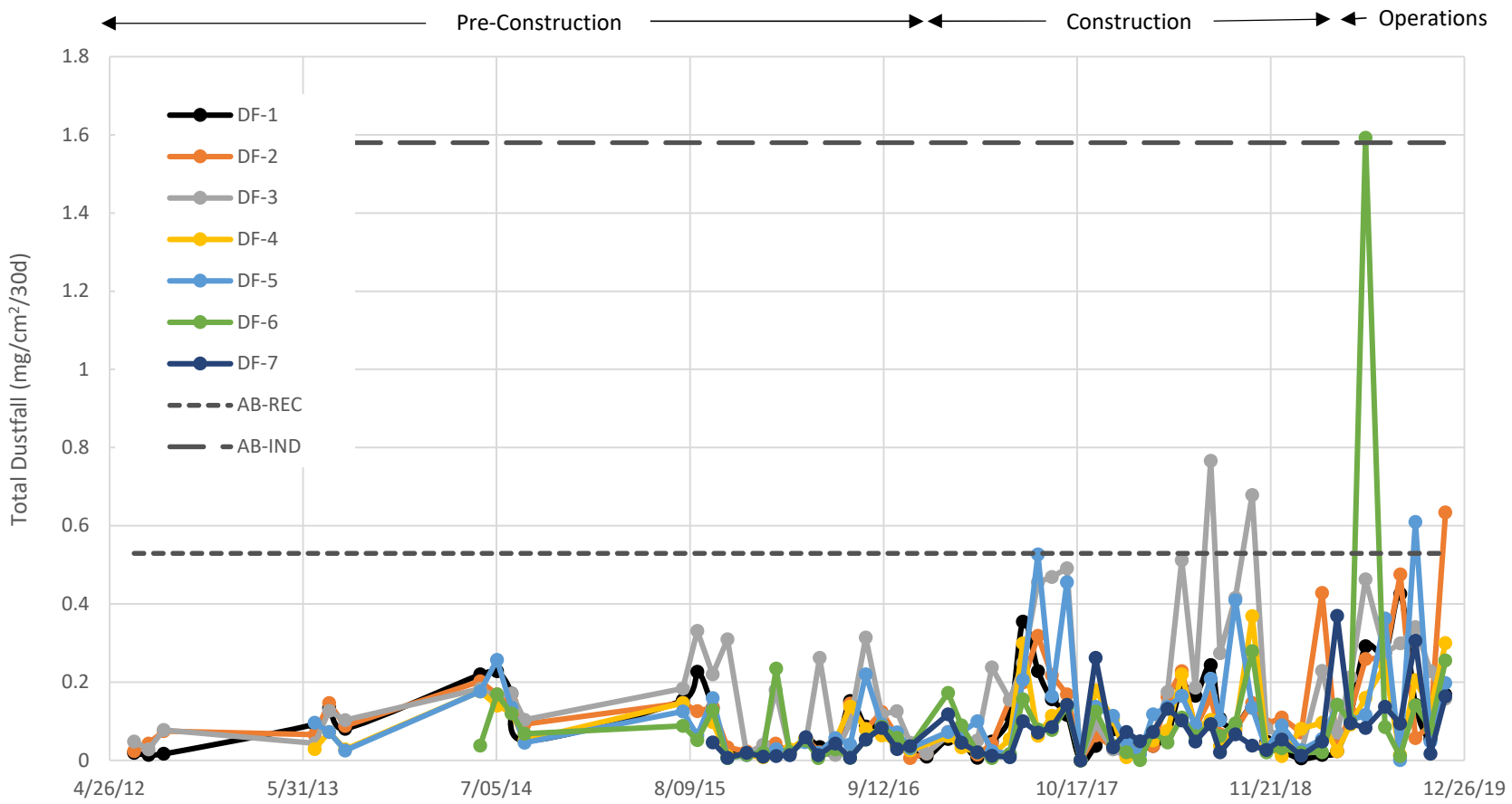

Figure 10. Historical 30-day-normalized rates of total dustfall at the Meliadine site. Symbols represent start date of sample collection. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas.

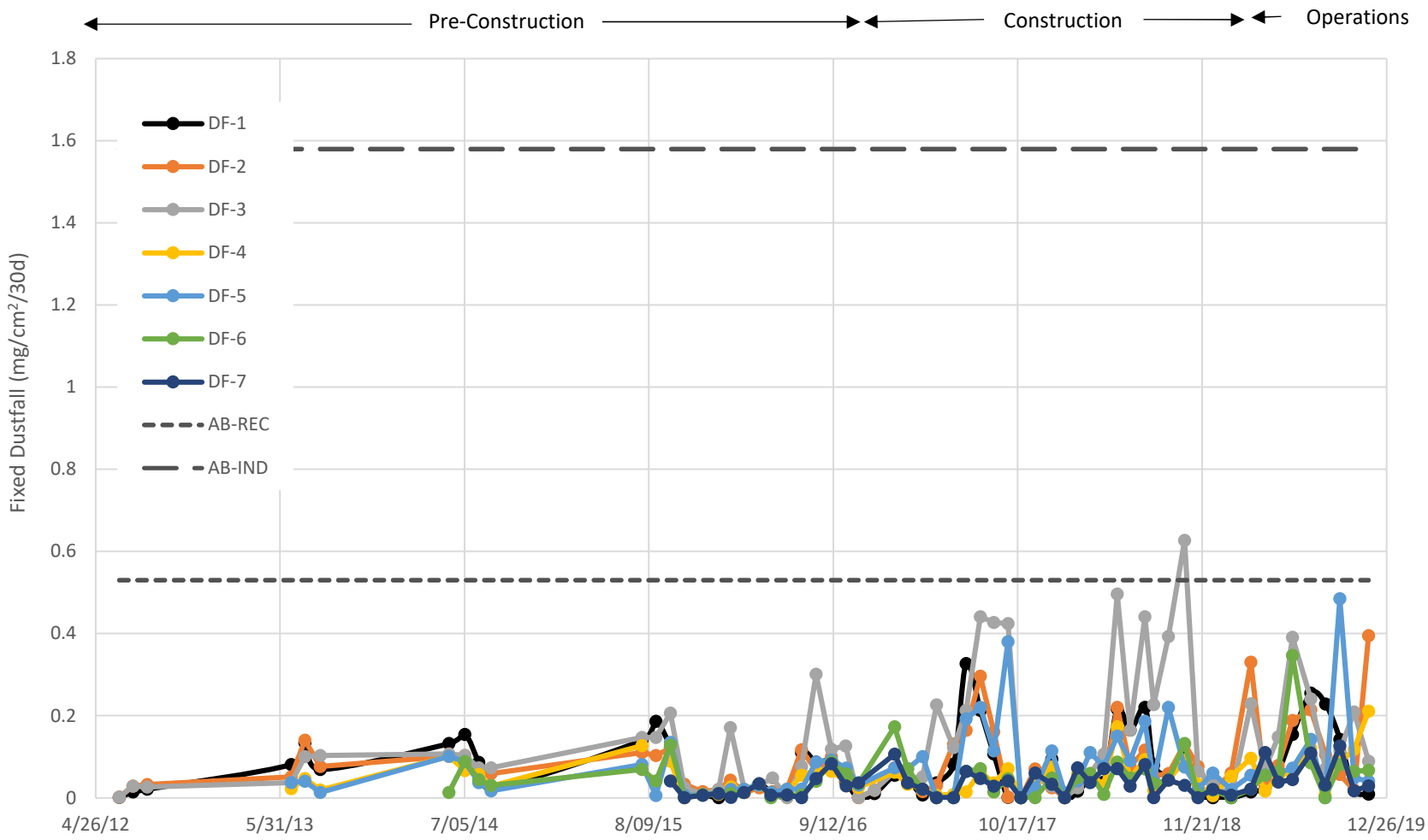

Figure 11. Historical 30-day-normalized rates of fixed dustfall at the Meliadine site. Symbols represent start date of sample collection. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas for total dustfall, for reference.

3.2.2 Dustfall Transects

Dustfall data collected through new transect sampling locations along the AWAR and Bypass Road at DF-1, DF-2, DF-3, and DF-WT are provided in Figures 12 - 15. These results indicate that in all cases, rates of dustfall decline below regulatory guidelines for recreational areas between 25 m and 100 m from the road. Results are similar to those observed along Agnico's Meadowbank AWAR, in locations where dust suppression is applied.

For DF-WT, background rates of dustfall measured in 2017 and 2018 (prior to construction of the By-Pass Road) were available for stations east of the roadway. There is no clear indication that dustfall rates in 2019 are substantially different from background in this area.

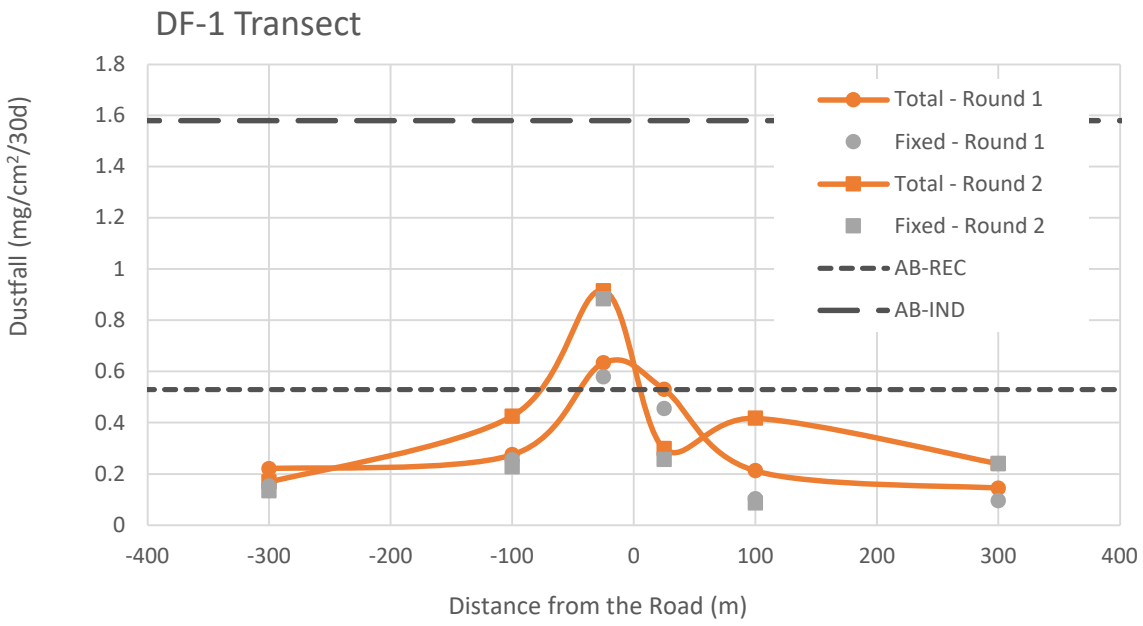

Figure 12. 30-day-normalized rates of total and fixed dustfall for transect DF-1 along the Meliadine AWAR in 2019. Negative values represent the west (upwind) side of the road. Symbols represent start date of sample collection (Round 1 = July 15, Round 2 = August 16). Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas.

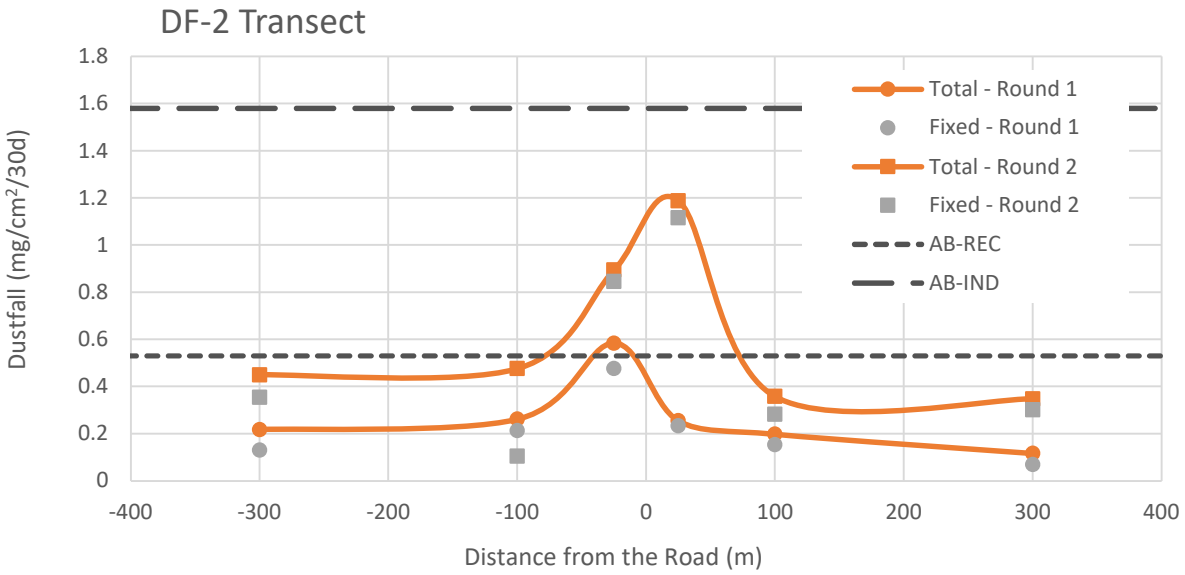

Figure 13. 30-day-normalized rates of total and fixed dustfall for transect DF-2 along the Meliadine AWAR in 2019. Negative values represent the west (upwind) side of the road. Symbols represent start date of sample collection (Round 1 = July 15, Round 2 = August 16). Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas.

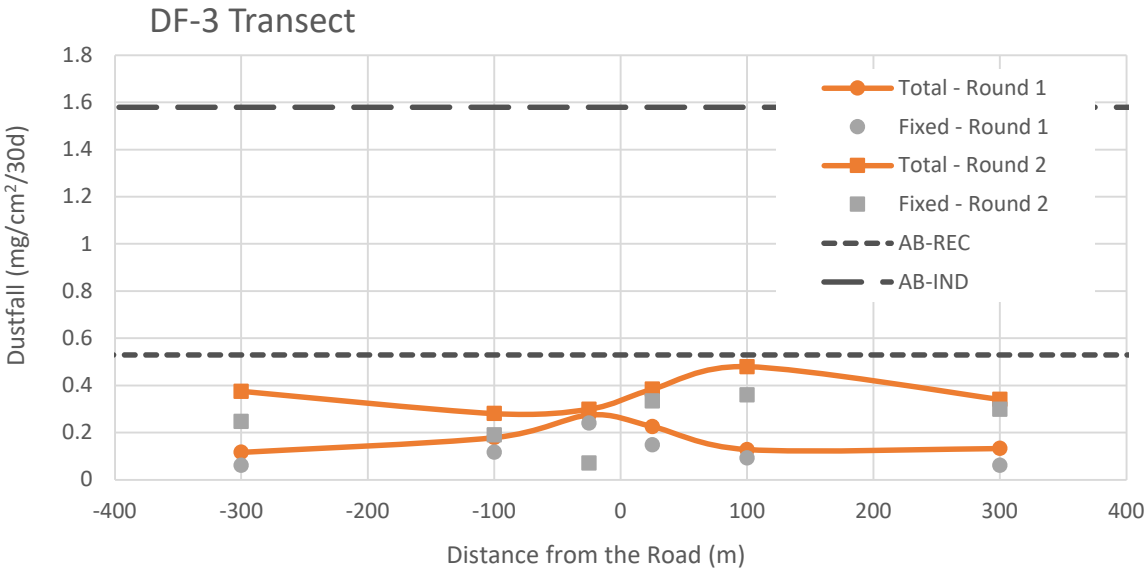

Figure 14. 30-day-normalized rates of total and fixed dustfall for transect DF-3 along the Meliadine AWAR in 2019. Negative values represent the west (upwind) side of the road. Symbols represent start date of sample collection (Round 1 = July 15, Round 2 = August 16). Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas.

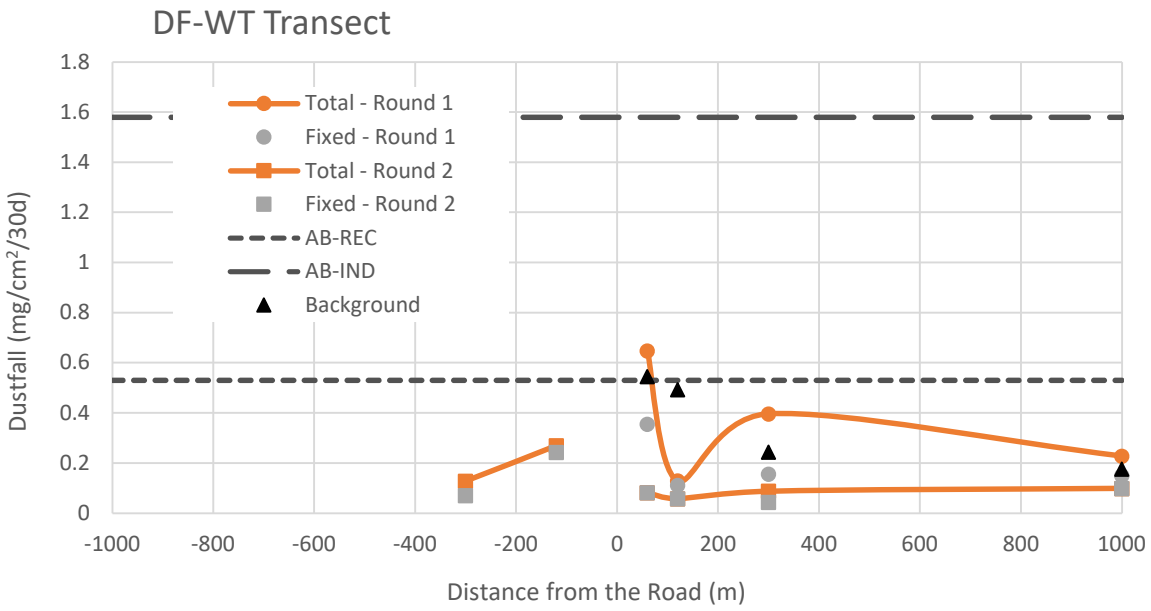

Figure 15. 30-day-normalized rates of total and fixed dustfall for transect DF-WT along the Meliadine By-pass Road in 2019. Negative values represent the west (upwind) side of the road. Symbols represent start date of sample collection (Round 1 = July 15, Round 2 = August 16). Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas. Background values are maximum recorded total dustfall rates observed in July and August, 2017 and 2018, pre-construction.

3.3 NO_2 AND SO_2

Monthly-average NO_2 trends in 2019 are provided in Figure 16. Samples are plotted by the collection start date. Concentrations of NO_2 vary between non-detect (<0.1) and 1.6 ppb.

Annual arithmetic mean concentrations were calculated for each station from the monthly average values. The annual mean concentrations of NO_2 were 0.46 and 0.29 ppb for DF-5 and DF-7, respectively (December 13, 2018 – December 17, 2019). These are both well below the Government of Nunavut Ambient Air Quality Standard of 32 ppb for the annual average. These values are also lower than maximum concentrations predicted in the FEIS, adjusted for assumed background concentrations (23.4 ppb and 12.2 ppb for DF-5 and DF-7, respectively).

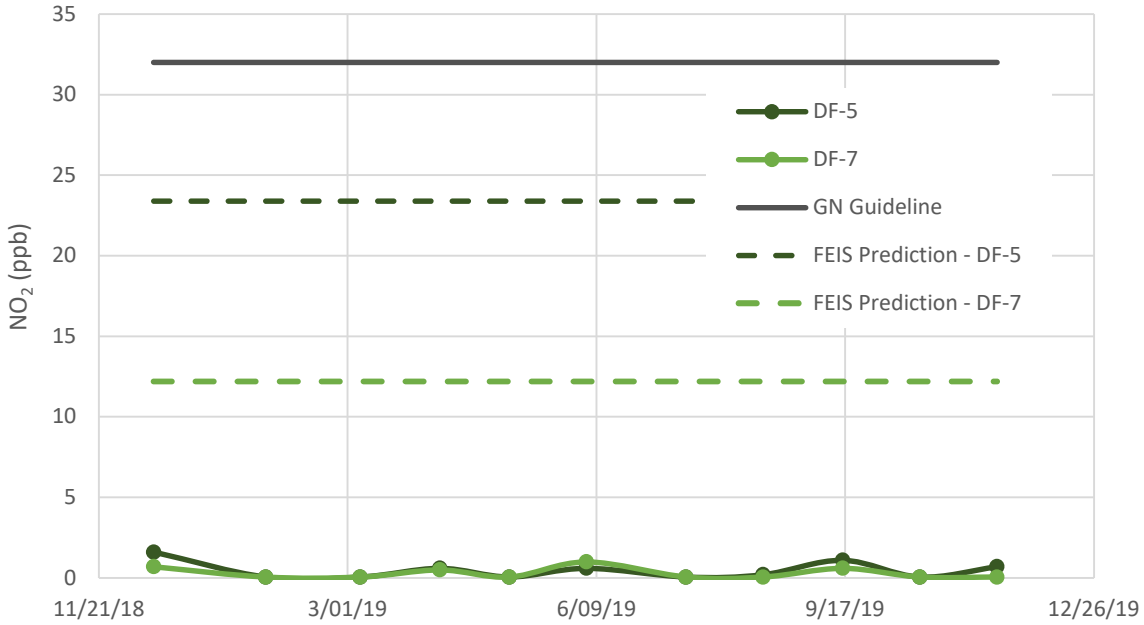

Figure 16. Monthly average concentration of NO_2 at DF-5 and DF-7. Symbols represent the collection start date. Dashed line indicates GN standard for the annual average.

Historical results (collected since 2017) are presented in Figure 17. No clear trends between sampling stations or over time are evident.

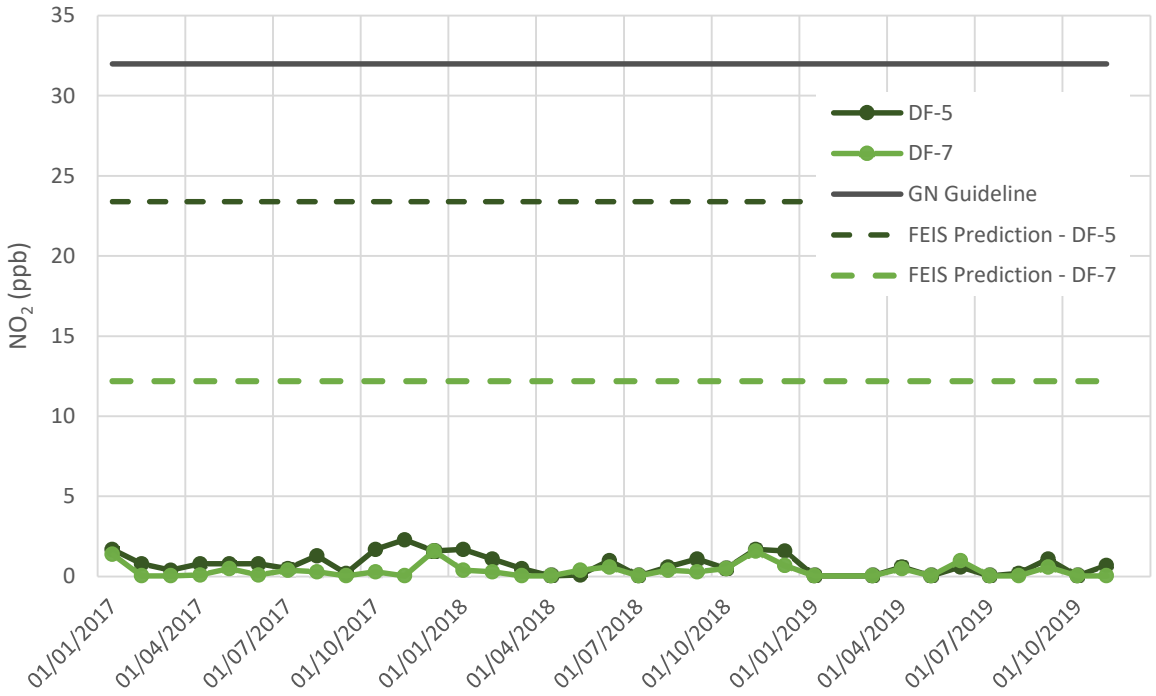

Figure 17. Historical measured monthly average concentration of NO_2 at DF-5 and DF-7. The GN guideline and FEIS predictions for the annual average are indicated, for reference.

Monthly-average SO_2 trends in 2019 are provided in Figure 18. Samples are referred to by the collection start date. Concentrations of SO_2 were non-detect (<0.1 ppb) in the majority of samples (16 of 22), with a maximum measured value of 0.2 ppb.

Annual arithmetic mean concentrations were calculated for each station from the monthly average values. A value of 0.05 ppb was used for samples below the detection limit (0.1 ppb). The annual mean concentrations of SO_2 were 0.09 and 0.07 ppb for DF-5 and DF-7, respectively (December 13, 2018 – December 17, 2019). These are both well below the Government of Nunavut Ambient Air Quality Standard of 11 ppb for the annual average, and FEIS maximum predicted values of 0.3 ppb and 0.2 ppb for DF-5 and DF-7, respectively.

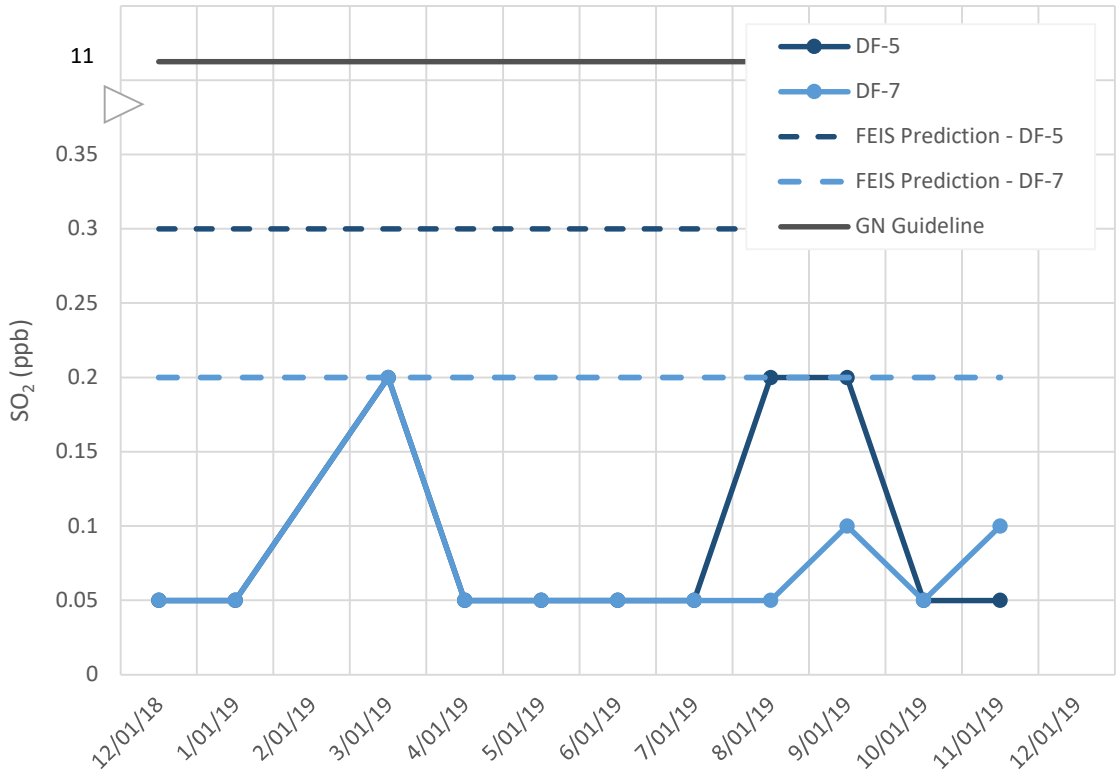

Figure 18. Monthly average concentration of SO_2 at DF-5 and DF-7. Symbols represent the collection start date. The GN guideline and FEIS predictions for the annual average are indicated, for reference.

Historical results (collected since 2017) are presented in Figure 19. No clear trends between sampling stations or over time are evident.

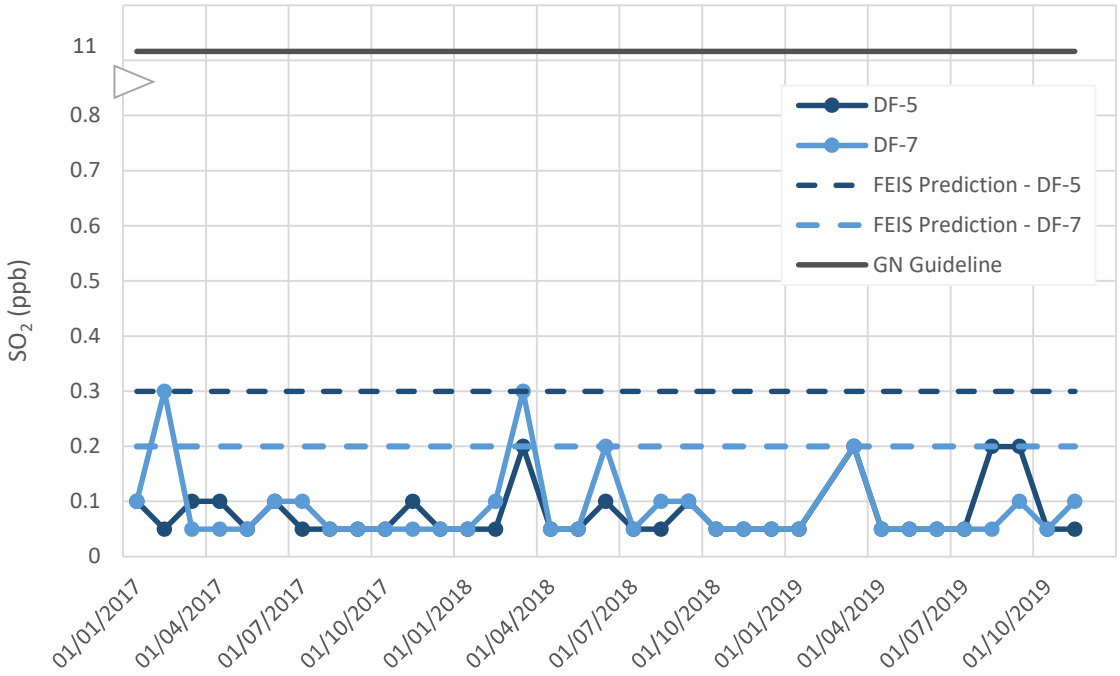

Figure 19. Historical measured monthly average concentration of SO_2 at DF-5 and DF-7. Dashed line indicates GN standard for the annual average, for reference.

4 METEOROLOGICAL MONITORING

As described in the Air Quality Monitoring Plan, a permanent weather station was installed at the Meliadine site, and daily averages for the following parameters in 2019 are provided in Appendix A:

- wind speed;
- wind direction;
- temperature;
- solar radiation;

5 INCINERATOR STACK TESTING

Incinerator stack testing was performed in December, 2019 to ensure standards provided in the GN's Environmental Guideline for the Burning and Incineration of Solid Waste (2012) are not

being exceeded. This report is provided under separate cover, as an appendix of the 2019 Annual Report to the NIRB. The measured concentrations of mercury were below the GN standard of 20 µg/Rm3 in all three tests. Measured concentrations of total dioxins and furans were also below the GN standard (80 pg TEQ / Rm³ @ 11 % v/v O2) in all three tests.

6 GREENHOUSE GAS EMISSIONS

Agnico Eagle is required by Environment Canada's Greenhouse Gas Emissions Reporting Program (GHGRP) to track greenhouse gas emissions based on annual fuel consumption, composition and the US EPA's AP-42 emission factors.

In the FEIS, total GHG emissions from the mine site were conservatively estimated to be not more than 304,000 tonnes/yr CO_2e. Estimated GHG emissions from the additional marine operations at Rankin Inlet were estimated at approximately 13,000 tonnes/yr CO_2e.

Calculated emissions for the Meliadine site (including Rankin Inlet operations) will be reported to regulators by the June, 2020 deadline.

7 MITIGATIVE AND ADAPTIVE STRATEGIES

7.1 MITIGATION

Fugitive dust abatement measures and pollution prevention strategies were identified in the FEIS for the operations phase as follows and are being implemented. Since monitoring results in 2019 were within applicable air quality criteria and FEIS predictions, no additional mitigative measures are planned.

- Best management practices to control fugitive particulate emissions from haul roads and material handling, and the AWAR (see Road Management Plan for details).
- Sources of particulate emissions at the processing facility are controlled through the use of baghouses.
- Enclosures are used to reduce fugitive emissions at the processing facility.
- Exhaust emissions from non-road vehicles are managed through purchasing equipment that meet Tier 3 emission standards.
    - New purchases are Tier 4
- Exhaust emissions from non-road vehicles are managed through regular and routine maintenance of vehicles.
- SO_2 emissions from non-road vehicles and stationary equipment will be reduced through the use of low sulphur diesel fuel (<15 ppm).
    - Actual fuel in use in ultra-low sulphur fuel (<8 ppm)

7.2 MONITORING

The following items were identified in the 2018 Air Quality Monitoring Report to improve the program, and Agnico's actions in 2019 are indicated.

- Maintenance and replacement parts will be obtained to ensure all Partisol units are operating, and minimal delays occur due to service requirements.
    - Ongoing. All units received professional servicing and calibration at the supplier, who will re-install the units onsite as soon as possible and provide training to Environment Department technicians.
- Procedures will be developed for the collection of sampled filters, and deployment of new filters to reduce the potential for gaps in the data.
    - Complete
- A schedule of annual calibration of each unit, with bi-annual or quarterly system audits will be implemented.
    - The schedule will be implanted once units are re-installed onsite and are operational (beginning 2020).

Planned supplementary actions in 2020 include:

- Continue to investigate alternate sampling equipment for suspended particulates to potentially replace Partisols, due to persistent, ongoing equipment malfunctions.
- Enact revisions to monitoring locations and analyses as described in the updated Air Quality Monitoring Plan (Version 2, April 2020), including:
    - Analysis of certain metals in suspended particulates;
    - Supplemental dustfall monitoring at reference stations;
    - Addition of dustfall transect monitoring locations at DF-1, DF-2, DF-3, and DF-WT (completed already in 2019);
    - Reduction in monitoring frequency for DF-1, DF-2, and DF-3 from year-round to summer-only.
- Target use of one travel blank per shipment, for each sample type.

Outside of these actions monitoring in 2020 will be conducted according to the Operations phase schedule, as described in the Air Quality Monitoring Plan (Version 2, April, 2020).

REFERENCES

Golder (Golder Associates), 2014. Final Environmental Impact Statement – Meliadine Gold Project, Nunavut. Volume 5.0 Atmospheric Environment and Impact Assessment. April, 2014.

APPENDIX A: DAILY AVERAGE WEATHER DATA

Appendix A Table 1: Daily average temperature, wind speed, wind direction, solar radiation, and rainfall as measured by the Meliadine onsite weather station.

Date	Temperature (°C)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Radiation (watts/m^2)
1/1/2019	-30.6	26.6	320.8	8.7
1/2/2019	-32.7	11.3	338.5	6.5
1/3/2019	-25.4	14.3	127.2	2.3
1/4/2019	-22.6	27.5	117.7	1.5
1/5/2019	-27.8	15.2	345.3	5.4
1/6/2019	-28.5	22.7	309.7	5.6
1/7/2019	-31.0	8.0	239.7	2.8
1/8/2019	-24.6	11.0	103.4	2.2
1/9/2019	-34.8	22.6	332.1	5.9
1/10/2019	-35.5	21.0	327.5	4.0
1/11/2019	-36.8	14.6	330.4	9.4
1/12/2019	-35.7	8.2	322.7	6.4
1/13/2019	-18.0	31.2	151.8	3.4
1/14/2019	-21.4	47.4	316.8	5.3
1/15/2019	-34.7	46.0	324.0	7.3
1/16/2019	-34.5	39.4	322.1	8.1
1/17/2019	-36.7	25.4	317.8	13.6
1/18/2019	-39.7	15.1	331.6	16.2
1/19/2019	-41.7	16.3	323.0	18.3
1/20/2019	-28.9	31.0	307.4	7.9
1/21/2019	-25.8	20.7	279.3	15.7
1/22/2019	-33.6	19.8	320.8	21.2
1/23/2019	-37.3	6.9	290.5	9.7
1/24/2019	-42.4	21.4	325.0	18.9
1/25/2019	-40.6	19.2	318.6	19.4
1/26/2019	-42.5	19.5	327.7	22.1
1/27/2019	-42.0	13.4	324.6	24.2
1/28/2019	-39.2	1.2	350.3	24.1
1/29/2019	-35.5	15.7	351.3	8.5
1/30/2019	-41.5	14.2	330.4	24.4
1/31/2019	-43.0	8.7	321.5	27.2
2/1/2019	-41.5	8.1	309.4	27.1
2/2/2019	-40.5	21.9	327.4	16.6
2/3/2019	-37.5	24.4	326.0	19.5
2/4/2019	-35.9	23.6	327.8	20.9
2/5/2019	-33.4	27.6	324.9	29.8

Date	Temperature (°C)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Radiation (watts/m^2)
2/6/2019	-31.9	16.4	326.5	41.2
2/7/2019	-32.4	14.8	321.1	39.8
2/8/2019	-32.4	22.6	323.4	46.5
2/9/2019	-32.3	33.0	318.8	36.4
2/10/2019	-32.9	17.0	317.1	46.6
2/11/2019	-26.5	6.2	204.0	22.6
2/12/2019	-21.3	13.5	261.8	30.9
2/13/2019	-34.0	18.2	318.2	60.6
2/14/2019	-32.3	3.8	270.3	53.5
2/15/2019	-24.3	11.1	143.7	33.0
2/16/2019	-24.2	10.9	57.5	30.8
2/17/2019	-33.7	20.6	323.4	65.0
2/18/2019	-36.1	29.7	327.5	55.8
2/19/2019	-36.2	25.7	321.9	66.0
2/20/2019	-36.7	14.1	319.1	71.7
2/21/2019	-35.2	19.0	322.5	71.6
2/22/2019	-33.7	14.8	313.8	73.0
2/23/2019	-32.4	2.4	278.2	53.0
2/24/2019	-30.9	23.8	333.5	58.6
2/25/2019	-37.8	24.6	324.6	77.8
2/26/2019	-38.5	16.1	331.8	81.4
2/27/2019	-36.5	1.0	286.8	83.1
2/28/2019	-30.2	0.0	0.0	81.8
3/1/2019	-32.1	0.0	0.0	99.4
3/2/2019	-30.9	0.0	0.0	64.2
3/3/2019	-26.2	21.6	327.0	68.9
3/4/2019	-22.6	21.7	347.5	72.8
3/5/2019	-26.4	13.6	346.2	73.6
3/6/2019	-28.9	16.1	329.0	86.9
3/7/2019	-25.5	19.4	333.4	87.6
3/8/2019	-27.9	7.1	339.3	115.6
3/9/2019	-33.1	4.1	311.9	118.4
3/10/2019	-33.9	6.7	320.3	119.7
3/11/2019	-31.5	6.5	180.8	119.8
3/12/2019	-20.0	34.1	140.8	62.3
3/13/2019	-17.4	14.4	84.6	110.1
3/14/2019	-21.0	5.3	51.8	117.6
3/15/2019	-20.1	8.6	15.1	81.5
3/16/2019	-26.5	19.3	335.3	119.6

Date	Temperature (°C)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Radiation (watts/m^2)
3/17/2019	-31.0	14.7	326.7	129.1
3/18/2019	-27.4	5.8	123.7	132.6
3/19/2019	-16.7	8.2	150.7	88.8
3/20/2019	-19.0	12.2	69.6	135.1
3/21/2019	-16.3	20.4	173.0	90.0
3/22/2019	-17.7	30.6	330.4	129.9
3/23/2019	-16.5	27.9	247.9	85.3
3/24/2019	-25.7	59.0	326.4	123.5
3/25/2019	-26.4	53.3	324.2	128.6
3/26/2019	-24.1	28.5	322.2	154.8
3/27/2019	-12.2	21.4	129.1	97.4
3/28/2019	-21.4	44.1	325.8	131.9
3/29/2019	-28.5	45.9	325.7	142.4
3/30/2019	-25.6	41.0	323.2	163.6
3/31/2019	-18.9	12.2	316.3	158.7
4/1/2019	-15.8	21.9	322.5	162.3
4/2/2019	-14.1	6.7	37.9	127.7
4/3/2019	-18.0	10.0	357.8	153.2
4/4/2019	-24.1	22.9	316.2	180.7
4/5/2019	-23.7	9.6	298.4	174.1
4/6/2019	-24.1	9.1	136.9	179.4
4/7/2019	-26.1	17.0	325.5	197.5
4/8/2019	-25.0	9.0	328.6	206.7
4/9/2019	-21.4	7.4	131.2	207.1
4/10/2019	-16.5	12.9	159.5	203.2
4/11/2019	-11.8	19.5	164.7	201.9
4/12/2019	-7.4	15.8	168.0	166.4
4/13/2019	-4.6	14.8	157.7	120.6
4/14/2019	-3.4	6.8	81.7	170.6
4/15/2019	-6.9	12.7	108.1	159.8
4/16/2019	-9.8	17.3	89.9	155.3
4/17/2019	-10.0	25.4	92.2	193.3
4/18/2019	-10.5	13.9	47.6	180.1
4/19/2019	-16.1	17.0	345.9	241.5
4/20/2019	-14.7	4.3	16.9	235.8
4/21/2019	-20.0	19.7	333.6	247.5
4/22/2019	-20.9	13.9	316.0	200.9
4/23/2019	-19.8	9.6	320.0	246.6
4/24/2019	-10.8	28.9	127.6	177.1

Date	Temperature (°C)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Radiation (watts/m^2)
4/25/2019	-6.3	28.9	77.9	153.5
4/26/2019	-19.0	33.2	326.2	264.5
4/27/2019	-21.3	7.3	330.8	268.3
4/28/2019	-20.2	7.7	156.3	254.7
4/29/2019	-17.8	14.3	308.2	226.3
4/30/2019	-19.2	13.3	297.2	273.0
5/1/2019	-15.4	29.3	127.7	260.8
5/2/2019	-8.5	28.2	130.3	287.1
5/3/2019	-7.8	23.5	129.0	290.4
5/4/2019	-6.2	11.9	75.3	290.3
5/5/2019	-10.7	19.7	347.8	298.0
5/6/2019	-12.9	19.4	350.7	258.0
5/7/2019	-12.5	17.5	334.7	288.4
5/8/2019	-5.0	26.4	341.5	224.7
5/9/2019	-2.3	9.9	346.2	225.8
5/10/2019	-4.2	11.0	154.9	241.5
5/11/2019	-6.0	4.3	336.8	260.0
5/12/2019	-4.1	18.3	353.0	279.9
5/13/2019	-4.3	36.4	304.3	230.4
5/14/2019	-4.8	17.4	181.3	265.1
5/15/2019	-2.6	24.2	74.0	151.7
5/16/2019	-0.5	23.1	59.3	261.5
5/17/2019	-1.2	20.2	52.9	315.4
5/18/2019	0.2	16.6	358.7	189.7
5/19/2019	-2.3	12.1	2.3	325.2
5/20/2019	-2.6	7.4	350.3	318.0
5/21/2019	-3.2	13.7	159.9	269.2
5/22/2019	-2.2	17.0	27.2	238.8
5/23/2019	-4.3	26.0	335.0	282.2
5/24/2019	-2.3	28.5	323.0	265.7
5/25/2019	-1.8	21.1	333.3	305.3
5/26/2019	-5.5	19.8	326.2	287.7
5/27/2019	-4.5	16.7	243.0	291.4
5/28/2019	0.0	9.8	104.0	125.8
5/29/2019	-0.5	18.5	4.5	205.9
5/30/2019	0.7	14.1	38.0	200.3
5/31/2019	0.0	6.7	133.7	57.5
6/1/2019	0.7	12.4	77.7	176.0
6/2/2019	1.8	11.4	67.7	284.8

Date	Temperature (°C)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Radiation (watts/m^2)
6/3/2019	0.1	12.2	116.9	190.7
6/4/2019	0.4	14.1	140.3	356.3
6/5/2019	-0.2	15.3	137.5	322.3
6/6/2019	2.4	16.0	107.1	321.6
6/7/2019	2.1	11.1	111.4	320.8
6/8/2019	2.3	12.2	131.7	164.5
6/9/2019	1.4	27.0	116.6	73.3
6/10/2019	1.9	24.8	179.4	134.8
6/11/2019	3.0	24.9	236.4	216.8
6/12/2019	2.9	16.5	305.3	186.6
6/13/2019	3.8	15.9	321.5	269.4
6/14/2019	5.7	8.5	335.4	191.0
6/15/2019	6.8	10.2	125.6	320.7
6/16/2019	4.8	11.4	163.9	348.4
6/17/2019	4.9	7.5	215.1	266.6
6/18/2019	8.9	9.9	209.5	339.8
6/19/2019	6.7	17.1	169.1	306.9
6/20/2019	8.6	9.0	115.7	243.6
6/21/2019	7.1	14.6	135.9	232.0
6/22/2019	8.3	13.3	346.6	285.6
6/23/2019	9.1	7.8	292.0	361.2
6/24/2019	7.0	12.8	192.9	324.3
6/25/2019	6.2	13.6	119.5	150.1
6/26/2019	8.1	13.5	101.3	177.7
6/27/2019	11.1	10.5	95.6	185.8
6/28/2019	14.0	9.0	58.5	287.0
6/29/2019	13.1	11.2	93.0	275.0
6/30/2019	11.1	11.2	158.2	234.2
7/1/2019	6.8	21.5	126.8	80.2
7/2/2019	5.1	18.1	126.9	72.3
7/3/2019	4.7	11.6	113.4	87.0
7/4/2019	7.0	18.7	102.3	74.0
7/5/2019	9.3	7.9	120.7	208.4
7/6/2019	12.5	9.6	299.3	286.9
7/7/2019	12.9	9.4	315.0	157.3
7/8/2019	11.0	14.8	162.6	297.2
7/9/2019	7.2	30.5	145.0	143.0
7/10/2019	5.7	13.7	146.6	68.5
7/11/2019	9.4	17.0	236.7	191.0

Date	Temperature (°C)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Radiation (watts/m^2)
7/12/2019	11.9	13.6	284.5	236.8
7/13/2019	12.9	11.3	214.0	187.7
7/14/2019	11.6	18.1	297.3	248.7
7/15/2019	12.8	9.4	284.2	234.4
7/16/2019	12.3	10.7	205.1	241.1
7/17/2019	13.1	13.6	268.3	254.9
7/18/2019	14.9	14.0	311.0	185.5
7/19/2019	12.0	16.9	329.1	282.7
7/20/2019	12.3	17.1	349.2	244.7
7/21/2019	13.3	16.3	354.6	244.2
7/22/2019	14.0	15.1	356.9	311.8
7/23/2019	15.3	10.6	285.9	236.9
7/24/2019	10.7	19.4	342.5	230.9
7/25/2019	10.6	14.7	329.9	269.7
7/26/2019	10.7	9.1	323.6	269.0
7/27/2019	10.2	9.3	6.4	246.6
7/28/2019	7.0	22.4	135.6	43.6
7/29/2019	6.6	20.9	164.5	72.0
7/30/2019	9.7	10.3	291.3	259.3
7/31/2019	10.6	17.1	161.9	281.9
8/1/2019	9.8	18.9	162.0	185.6
8/2/2019	12.7	8.2	299.1	186.0
8/3/2019	15.1	9.3	16.7	271.8
8/4/2019	9.3	22.5	156.4	125.2
8/5/2019	8.5	31.4	134.1	35.5
8/6/2019	8.7	31.2	124.9	128.8
8/7/2019	11.2	22.2	99.4	98.1
8/8/2019	12.6	20.9	71.2	246.6
8/9/2019	13.6	19.9	55.8	263.1
8/10/2019	11.4	11.6	55.7	125.7
8/11/2019	9.5	9.8	61.3	88.8
8/12/2019	8.9	17.8	29.2	62.3
8/13/2019	9.2	12.3	21.5	71.3
8/14/2019	8.7	4.9	143.4	51.8
8/15/2019	9.9	5.1	19.5	126.9
8/16/2019	10.8	5.2	188.8	94.4
8/17/2019	9.4	5.7	151.3	107.2
8/18/2019	6.7	9.0	158.4	203.4
8/19/2019	11.3	12.7	65.7	195.6

Date	Temperature (°C)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Radiation (watts/m^2)
8/20/2019	10.2	28.3	80.1	50.7
8/21/2019	10.9	19.7	79.0	239.6
8/22/2019	11.9	7.4	326.6	229.2
8/23/2019	9.2	23.4	182.1	234.3
8/24/2019	10.9	17.5	249.5	130.5
8/25/2019	10.4	12.4	172.0	133.4
8/26/2019	9.7	15.9	50.7	68.0
8/27/2019	9.9	8.5	353.4	101.9
8/28/2019	9.0	11.9	71.8	139.8
8/29/2019	7.9	21.7	55.9	23.2
8/30/2019	7.4	26.2	4.9	53.9
8/31/2019	4.2	39.7	335.0	97.9
9/1/2019	2.9	39.1	319.5	81.5
9/2/2019	2.5	35.6	334.9	56.7
9/3/2019	3.7	29.5	333.9	116.8
9/4/2019	4.5	19.4	329.0	86.2
9/5/2019	5.3	16.2	333.4	146.4
9/6/2019	5.7	8.1	284.5	96.3
9/7/2019	5.1	5.9	319.0	126.7
9/8/2019	4.6	10.4	327.3	125.1
9/9/2019	4.4	14.3	347.2	135.9
9/10/2019	6.0	10.3	322.3	172.5
9/11/2019	6.9	12.7	258.6	74.9
9/12/2019	7.3	14.0	315.5	77.9
9/13/2019	9.7	12.8	229.4	165.6
9/14/2019	10.5	5.4	238.6	153.2
9/15/2019	8.0	12.8	143.8	89.9
9/16/2019	7.6	24.5	154.8	54.1
9/17/2019	7.6	11.1	316.6	82.8
9/18/2019	5.6	15.2	147.8	13.2
9/19/2019	7.4	18.4	297.8	60.1
9/20/2019	4.8	24.4	323.2	78.3
9/21/2019	5.1	14.9	202.4	84.3
9/22/2019	6.1	20.3	83.7	10.5
9/23/2019	4.7	12.2	144.8	32.6
9/24/2019	6.3	19.4	183.8	19.4
9/25/2019	7.1	19.8	127.1	42.8
9/26/2019	6.2	13.8	109.3	27.0
9/27/2019	4.6	21.6	357.4	46.7

Date	Temperature (°C)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Radiation (watts/m^2)
9/28/2019	0.7	36.9	339.2	29.0
9/29/2019	-0.7	34.9	335.0	35.2
9/30/2019	-2.6	37.2	329.3	67.2
10/1/2019	-3.7	17.9	336.0	102.7
10/2/2019	0.4	7.8	239.2	92.4
10/3/2019	0.2	7.3	259.8	47.8
10/4/2019	-0.8	12.5	330.7	73.8
10/5/2019	2.3	13.9	205.3	47.8
10/6/2019	2.1	5.5	189.0	41.4
10/7/2019	-0.2	16.4	3.5	12.8
10/8/2019	-3.0	12.9	356.4	76.9
10/9/2019	2.3	30.2	144.0	16.0
10/10/2019	-0.4	31.1	216.9	61.9
10/11/2019	-1.8	33.9	295.1	45.7
10/12/2019	-1.5	14.0	293.9	33.6
10/13/2019	-1.6	8.1	220.8	78.2
10/14/2019	0.2	15.1	190.0	31.0
10/15/2019	-0.9	9.6	25.1	27.6
10/16/2019	-3.8	19.8	16.9	51.3
10/17/2019	-6.2	10.6	24.3	69.3
10/18/2019	-2.6	20.0	140.1	20.4
10/19/2019	0.4	39.6	160.3	22.3
10/20/2019	1.0	31.9	153.1	12.3
10/21/2019	0.5	11.2	179.2	13.0
10/22/2019	-1.9	17.0	247.1	35.5
10/23/2019	-7.2	8.2	321.2	40.0
10/24/2019	-8.0	23.0	350.5	47.9
10/25/2019	-8.7	17.7	322.7	28.1
10/26/2019	-4.6	10.1	152.7	20.7
10/27/2019	-4.8	11.7	49.4	24.8
10/28/2019	-3.8	20.5	38.4	11.4
10/29/2019	-1.5	35.5	52.6	20.3
10/30/2019	-1.6	18.5	47.4	21.4
10/31/2019	-6.4	5.1	199.0	29.2
11/1/2019	-6.4	10.8	239.7	16.2
11/2/2019	-8.0	8.6	292.7	16.0
11/3/2019	-13.7	4.4	346.9	14.9
11/4/2019	-9.4	8.0	90.5	13.1
11/5/2019	-16.1	16.8	354.4	12.1

Date	Temperature (°C)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Radiation (watts/m^2)
11/6/2019	-19.8	21.5	343.4	12.0
11/7/2019	-20.1	27.4	338.8	9.8
11/8/2019	-20.7	19.8	324.3	9.6
11/9/2019	-18.6	13.6	305.9	7.5
11/10/2019	-15.6	9.6	13.7	8.6
11/11/2019	-18.0	24.7	355.3	7.7
11/12/2019	-25.9	13.6	257.8	8.9
11/13/2019	-14.9	9.4	202.3	7.6
11/14/2019	-16.8	18.4	323.1	7.5
11/15/2019	-21.7	27.0	321.9	5.9
11/16/2019	-16.9	14.8	316.1	6.2
11/17/2019	-14.0	11.5	341.4	7.0
11/18/2019	-20.8	21.0	331.5	4.7
11/19/2019	-21.9	12.2	344.9	5.1
11/20/2019	-16.4	12.7	43.6	5.7
11/21/2019	-16.6	28.5	15.7	7.8
11/22/2019	-19.0	21.3	353.0	7.8
11/23/2019	-10.2	12.1	68.9	6.6
11/24/2019	-19.9	11.8	14.7	11.2
11/25/2019	-13.5	5.4	68.7	6.8
11/26/2019	-12.8	4.3	53.9	5.5
11/27/2019	-22.4	8.9	350.3	6.5
11/28/2019	-20.7	12.3	320.4	3.9
11/29/2019	-16.7	15.3	237.0	6.5
11/30/2019	-11.4	24.5	233.3	5.4
12/1/2019	-11.8	19.7	323.0	10.1
12/2/2019	-16.5	9.9	19.2	7.3
12/3/2019	-27.8	10.9	350.8	6.3
12/4/2019	-31.5	5.4	338.3	8.2
12/5/2019	-28.9	6.8	315.8	6.5
12/6/2019	-31.9	4.0	301.9	5.7
12/7/2019	-34.3	3.0	284.6	3.1
12/8/2019	-35.4	4.7	341.6	2.7
12/9/2019	-34.6	10.1	338.8	3.9
12/10/2019	-28.0	30.6	338.5	5.1
12/11/2019	-19.3	32.1	353.6	3.4
12/12/2019	-29.0	21.2	343.2	6.6
12/13/2019	-29.2	14.9	321.2	7.2
12/14/2019	-28.6	16.5	318.0	8.3

Date	Temperature (°C)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Radiation (watts/m^2)
12/15/2019	-25.6	9.4	259.5	7.0
12/16/2019	-31.3	9.5	357.1	7.3
12/17/2019	-33.5	12.2	359.3	7.1
12/18/2019	-33.6	9.7	352.1	6.8
12/19/2019	-27.3	6.6	182.4	2.4
12/20/2019	-34.7	9.4	348.6	9.5
12/21/2019	-20.4	28.1	162.2	3.0
12/22/2019	-17.9	12.1	343.6	5.2
12/23/2019	-18.2	6.4	155.8	2.7
12/24/2019	-20.7	11.4	314.3	3.5
12/25/2019	-23.4	9.1	153.9	2.9
12/26/2019	-10.4	6.0	209.4	1.9
12/27/2019	-11.3	15.7	109.8	1.7
12/28/2019	-9.6	17.2	120.5	2.5
12/29/2019	-14.4	11.7	158.1	5.0
12/30/2019	-13.1	21.8	220.5	1.8
12/31/2019	-26.3	17.2	15.3	7.6