Woodfibre LNG Air Quality Monitoring Station Report for September 2024

November 21, 2024

Prepared for:
Woodfibre LNG General Partner Inc.

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Stantec

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Executive Summary

This report provides a summary of the ambient air quality monitoring data for September 2024 that has been collected in fulfilment of the requirements established in the Floatel Air Quality Management and Monitoring Plan (Rev 6, July 5, 2024) (Woodfibre LNG, 2024). Table E.1 below presents the monthly averages, ranges, and maximum values for key air contaminants, along with additional information on any air quality exceedances and complaints received during this period. Please note that the September SO_2 and VOC passive sample data were unavailable at the time of reporting. This data provides an overview of air quality conditions and any regulatory compliance actions taken in September 2024.

Table E.1 September 2024 Air Quality Monitoring Station Summary

Air Contaminant	Units	Monthly Average	Monthly Range (Min - Max)
$PM_{2.5}$ (24-hour average)	µg/m³	12	8 - 20
PM_{10} (24-hour average)	µg/m³	19	11 - 35
TSP (24-hour average)	µg/m³	45	22 - 92
NO_2 (24-hour average)	ppb	6.2	3.3 - 10.0
NO_2 (1-hour average)	ppb	6.3	0.0 - 20.5
Number of Air Quality Exceedances Recorded		None	
Number of Complaints Received		None	

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Acronyms / Abbreviations

AGAT	AGAT Laboratories
AQMS	Air Quality Monitoring Station
AQO	British Columbia Air Quality Objective(s)
BC	British Columbia
BC ENV	British Columbia Ministry of Environment and Climate Change Strategy
CAAQS	Canadian Ambient Air Quality Standard(s)
CCME	Canadian Council of Ministers of the Environment
Floatel	The marine-based work camp, associated facilities and mooring infrastructure dedicated to house approximately 650 Workers during the Construction and Operations of the Project
NO_2	Nitrogen Dioxide
PM	Particulate Matter
$PM_{2.5}$	Fine Particulate Matter (less than 2.5 microns (µm) in aerodynamic diameter)
PM_{10}	Particulate Matter (less than 10 microns (µm) in aerodynamic diameter)
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide
TSP	Total Suspended Particulate
VOC	Volatile Organic Compounds
Woodfibre LNG	Woodfibre LNG General Partner Inc.

1 Introduction

Woodfibre LNG General Partner Inc. (Woodfibre LNG) is developing the Woodfibre Liquefied Natural Gas Project (the Project) at the former Woodfibre Pulp Mill site, approximately seven kilometres southwest of Skwxwú7mesh (Squamish), British Columbia (BC). To support onsite air quality monitoring, Stantec Consulting Ltd. ("Stantec") prepared the Floatel Air Quality Monitoring and Mitigation Plan (Rev 6, July 5, 2024) on behalf of Woodfibre LNG (Woodfibre LNG, 2024). Woodfibre LNG contracts AGAT Laboratories (AGAT) to provide an air quality monitoring station (AQMS) rental, including installation, operation and quarterly maintenance and calibration services. The AQMS continuously measures $PM_{2.5}$, PM_{10}, TSP, and NO_2 concentrations, along with passive sampling and analysis for SO_2 and VOCs. Stantec performs data processing, quality assurance, and quality control (QA/QC) of the air quality monitoring equipment, and the data presented in this monthly report is based on a Level 0 data validation as described by the British Columbia Field Sampling Manual – Part B (BC ENV, 2020).

This first monthly air quality report provides essential data on air quality and weather conditions monitored at the Woodfibre LNG Project site close to the Floatel. The monitoring and reporting supports regulatory compliance and helps protect the surrounding environment and Floatel residents. These reports will be vital for tracking air quality trends, addressing potential issues, and help the Project meet project-specific and regulatory requirements.

2 Key Components Assessed

Two key sets of measurements are reported: a) meteorological data, including ambient temperature, wind speed and direction, and total rainfall, and b) ambient concentrations of air contaminants, measured at both AQMS and the Aeroqual stations.

2.1 Meteorology

Meteorology data supporting the Woodfibre LNG AQMS are acquired from the nearby WLNG Meteorology Station. This meteorology data is essential for supporting the long-term ambient air quality monitoring collected at the site. The meteorology variables measured at the station are listed in Table 2.1. While the table includes all measured parameters, this report explicitly presents data for wind, temperature, and rainfall only, excluding pressure and relative humidity.

Table 2.1 Parameters Measured at the WLNG Meteorological Station

Parameter	Units
Wind Speed	m/s
Wind Direction	Degrees
Air Temperature	°C
Rainfall	mm
Barometric Pressure	hPa
Relative Humidity	%

2.2 Air Contaminants of Interest

The air contaminants being measured are described below according to the type of monitoring.

2.2.1 Continuous Sampling

- Particulate matter with aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$)
- Particulate matter with aerodynamic diameter less than or equal to 10 microns (PM_{10})
- Total suspended particulate (TSP)
- Nitrogen dioxide (NO_2)

2.2.2 Passive Sampling

- Sulfur dioxide (SO_2)
- Volatile organic compounds (VOCs)

2.3 Air Quality Criteria

The air contaminants monitored at the AQMS, along with their corresponding Canadian Ambient Air Quality Standards (CAAQS) (CCME, 2024) and British Columbia Air Quality Objectives (BCAQO) (BC ENV, 2021) regulatory criteria, are presented in Table 2.2 and Table 2.3, respectively.

Table 2.2 Summary of Current and 2025 Canadian Ambient Air Quality Standards for the Contaminants of Potential Concern (CCME, 2024)

Substance	Averaging Period	Concentration [a]			
		($\mu g/m^3$) [b,c]		(ppbv) [d]	
		2020	2025	2020	2025
Nitrogen Dioxide (NO_2)	1-hour [e]	113	79	60	42
	Annual [f]	32	23	17.0	12.0
Sulphur Dioxide (SO_2)	1-hour [g]	183	170	70	65
	Annual [h]	13	10.4	5.0	4.0
Fine Particulate Matter ($PM_{2.5}$)	24-hour [i]	27	— [j]	—	—
	Annual [k]	8.8	— [j]	—	—

Notes:

[a] Canadian Ambient Air Quality Standards (CCME, 2024) for 2020 and 2025.
[b] $\mu g/m^3$ is the mass of the substance in micrograms per cubic meter of air.
[c] Standard conditions of 25°C and 101.325 kPa are used to convert from $\mu g/m^3$ to ppbv.
[d] ppbv is the volume of the substance (parts) per billion volumes of air.
[e] The 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentration.
[f] The average over a single calendar year of all 1-hour average concentrations.
[g] The 3-year average of the annual 99th percentile of the daily maximum 1-hour average concentrations.
[h] The average over a single calendar year of all 1-hour average concentrations.
[i] The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations.
[j] Currently under review by the CCME
[k] The 3-year average of the annual average of the daily 24-hour average concentrations.

Table 2.3 British Columbia Ambient Air Quality Objectives (BC ENV, 2021)

Substance	Averaging Period	Air Quality Objective [a]	
		µg/m^3 [b,c]	ppbv [d]
Nitrogen Dioxide (NO_2)	1-hour [e]	113	60
	Annual [f]	32	17
Sulphur Dioxide (SO_2)	1-hour [g]	183	70
	Annual [h]	13	5
Fine Particulate Matter ($PM_{2.5}$)	24-hour [i]	25	—
	Annual [j]	8.0	—
Coarse Particulate Matter (PM_{10})	24-hour	50	—
Total Suspended Particulate (TSP)	24-hour	120	—
	Annual [k]	60	—

Notes:

[a] British Columbia Air Quality Objectives (BC ENV, 2021).
[b] µg/m^3 is the mass of the substance in micrograms per cubic meter of air.
[c] Standard conditions of 25°C and 101.325 kPa are used to convert from µg/m^3 to ppbv.
[d] ppbv is the volume of the substance (parts) per billion volumes of air.
[e] Achievement based on annual 98th percentile of daily 1-hour average maximum (D1HM), averaged over three consecutive years.
[f] Achievement based on annual average of 1-hour average concentrations over one year.
[g] Achievement based on annual 99th percentile of daily 1-hour average maximum (D1HM), averaged over three consecutive years.
[h] Achievement based on annual average of 1-hour concentrations over one year.
[i] Achievement based on annual 98th percentile of daily average, averaged over one year.
[j] Achievement based on annual average, averaged over one year.
[k] Based on geometric mean.

3 Instrument Summary

Woodfibre LNG contracts AGAT for the rental, operation and quarterly servicing of the AQMS. Installation and calibration were completed by AGAT during the first week of September 2024 (Appendix C), and the station is currently being operated by AGAT to measure the ambient concentrations of the air contaminants mentioned above. However, the Aeroqual AQS1 air sampler was rented from Pine Environmental and operated by Stantec between July and October 2024.

The passive sampling of SO_2 and VOCs uses AGAT's Passive Sampler system. WLNG personnel exchange the monthly samples and submit them to AGAT for laboratory analysis.

Table 3.1 Summary of Instrumentation used at the WLNG Air Quality Monitoring Station

Parameter	Instrumentation
$PM_{2.5}$, PM_{10}, and TSP	Met One Instruments BAM 1020 Beta Attenuation Mass Monitors
NO_2	Thermo Fisher Scientific – Model 42i (NO-NO_2-NO_x) Analyzer
$PM_{2.5}$, PM_{10}, and TSP, and NO_2	Aeroqual AQS1 Air Quality Monitor
SO_2 and total VOCs	AGAT's Passive Sampler system

3.1 Continuous Monitoring of PM and NO_2

Particulate matter ($PM_{2.5}$, PM_{10}, and TSP) was sampled following the Standard Operating Procedure for the Continuous Measurements of Ambient PM Using a Beta Attenuation Monitor (Reference No: SOP-05a) and the Standard Operating Procedure for the Continuous Measurement of Ambient NOx (Reference No: SOP-03) in Part B1 of the British Columbia Field Sampling Manual (BC ENV, 2020). NO_2 was sampled as part of the continuous ambient air quality monitoring program using the specified methodologies in these procedures.

3.2 Passive Monitoring of SO_2 and VOC

The SO_2 and VOC data were collected following the Standard Operating Procedure for the Passive/Diffusive Method of Air Sample Collection (Reference No: SOP-07) in Part B1 of the British Columbia Field Sampling Manual (BC ENV, 2020).

4 Ambient Air Quality Monitoring Results

The measured data presented for passive and continuous monitoring include; a) ambient air quality data collected at the AQMS and Aeroqual, and b) meteorology data acquired from the Woodfibre LNG Meteorology Station. The daily air quality and meteorological data are included in Appendix B, Table B.1 and Table B.2.

4.1 Continuous Monitoring of PM and NO_2

A summary of the hourly ambient air monitoring results for $PM_{2.5}$, PM_{10}, TSP, and NO_2 for September 2024 is presented in Figure A.1 to Figure A.5, along with the corresponding regulatory criteria and comparisons with Langdale (BC ENV, 2024a) and Squamish (BC ENV, 2024b) regional air quality monitoring stations. The hourly air quality objective threshold for NO_2 is based on the 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentration (CCME 2024; BC ENV 2021).

During September 2024, the hourly $PM_{2.5}$ concentrations ranged from 3 to 30 µg/m³, the hourly PM_{10} concentrations ranged from 5 to 76 µg/m³, the hourly TSP concentrations ranged from 11 to 307 µg/m³, and the hourly NO_2 concentrations ranged from 0 to 20.5 ppb. The hourly results for NO_2 monitoring during this period were well below the BC Air Quality Objective threshold value of 60 ppb.

Similarly, a summary of the daily (24-hour average) ambient air quality monitoring results for $PM_{2.5}$, PM_{10}, TSP, and NO_2 for September 2024 is presented Table E.1 and in Figure A.6 to Figure A.10, with corresponding regulatory criteria and comparisons with Langdale and Squamish regional air quality monitoring stations. The daily regulatory standards for PM_{10} and TSP monitoring are 50 µg/m³ and 120 µg/m³, respectively. The 24-hour BC Air Quality Objective threshold value for $PM_{2.5}$ is 25 µg/m³, based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations (CCME 2024; BC ENV, 2021).

During September 2024, daily average concentrations of $PM_{2.5}$ ranged from 8 to 20 µg/m³, daily average concentrations of PM_{10} ranged from 11 to 35 µg/m³, daily average concentrations of TSP ranged from 22 to 92 µg/m³, and daily average concentrations of NO_2 ranged from 3.3 to 10.0 ppb. A summary of the daily average $PM_{2.5}$, PM_{10}, TSP and NO_2 concentrations in September 2024 is presented in Appendix B, Table B.1.

The results for $PM_{2.5}$, PM_{10}, and TSP were all below the BC Air Quality Objective threshold values of 25 µg/m³, 50 µg/m³, and 120 µg/m³, respectively, and no air quality exceedances were recorded for any contaminant. Additionally, no complaints were received from the Floatel residents during September that required further investigation or mitigation actions. The weekly AQMS reports are presented in Appendix D.

4.2 Passive Monitoring of SO_2 and VOC

Passive samples for SO_2 and total VOCs were first installed on September 1; therefore, the samples were not swapped or submitted to AGAT for analysis during the September reporting period.SO_2 and VOC passive sampling results will be included in the next monthly report.

4.3 Meteorology

A summary of the meteorology conditions in September 2024 is presented in Appendix B, Table B.2. Daily average and maximum wind speeds are shown in Figure A.11. The highest hourly wind speed was recorded on September 29, 2024, at 13:00 (10.8 m/s), and the highest daily (24-hour) average wind speed occurred on the same date (2.2 m/s). Figure A.12 presents a wind rose illustrating wind direction and speed for September 2024 at the WLNG Meteorological Station. Additionally, Figure A.13 includes four wind roses capturing specific time intervals: between 3:00 and 8:00 hours, 9:00 and 12:00 hours, 13:00 and 19:00 hours, and 20:00 and 02:00 hours throughout September 2024.

Daily ambient temperature data is presented in Figure A.14. The maximum hourly temperature of 27.3°C was recorded on September 5, 2024, at noon, while the minimum hourly temperature of 5.7°C occurred on September 30, 2024, at 07:00. The monthly average temperature for September 2024 was 15.7°C

Daily and total monthly rainfall data, presented in Figure A.15 and Appendix B, Table B.2, show that the highest single-day rainfall of 27.2 mm occurred on September 25, 2024. The total rainfall for September 2024 was 91.8 mm.

5 Summary of Ambient Air Quality Monitoring Results

The ambient air quality monitoring results for September 2024 indicate that $PM_{2.5}$, PM_{10}, and TSP concentrations remained well below the BC Air Quality Objective threshold values, with no exceedances recorded. Nitrogen dioxide (NO_2) concentrations also stayed below the regulatory limits. The meteorology data, including wind speed, temperature, and rainfall, supported accurate interpretation of air quality trends. No complaints from the Floatel residents were received that required further investigation or mitigation plan during September 2024.

6 References

BC ENV. (2020). *The British Columbia Field Sampling Manual: Part B: Air and Air Emissions Testing.* Retrieved September 23, 2024, from Government of British Columbia: Ministry of Environment and Climate Change Strategy (BC ENV): Environmental Protection & Sustainability; Research, Monitoring and Reporting; Monitoring; B.C. Field Sampling Manual Web Site: https://www2.gov.bc.ca/assets/gov/environment/research-monitoring-and-reporting/monitoring/emre/manuals/field-sampling-manual/bc_field_sampling_manual_part_b.pdf

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Appendices

Appendix A Figures

Figure A.1 Hourly PM Concentrations Recorded at AQMS for September 2024

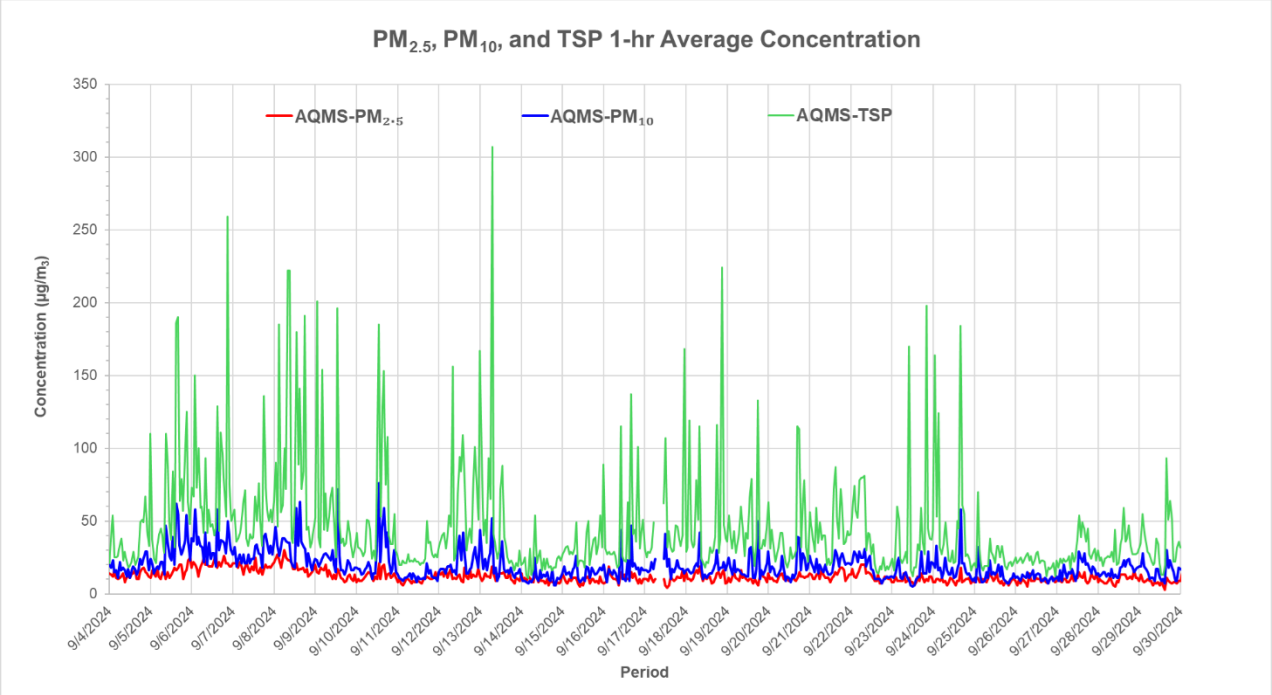


Figure A.2 Hourly $PM_{2.5}$ Concentrations Recorded at the AQMS, Aeroqual and at Langdale and Squamish Regional Air Quality Stations for September 2024

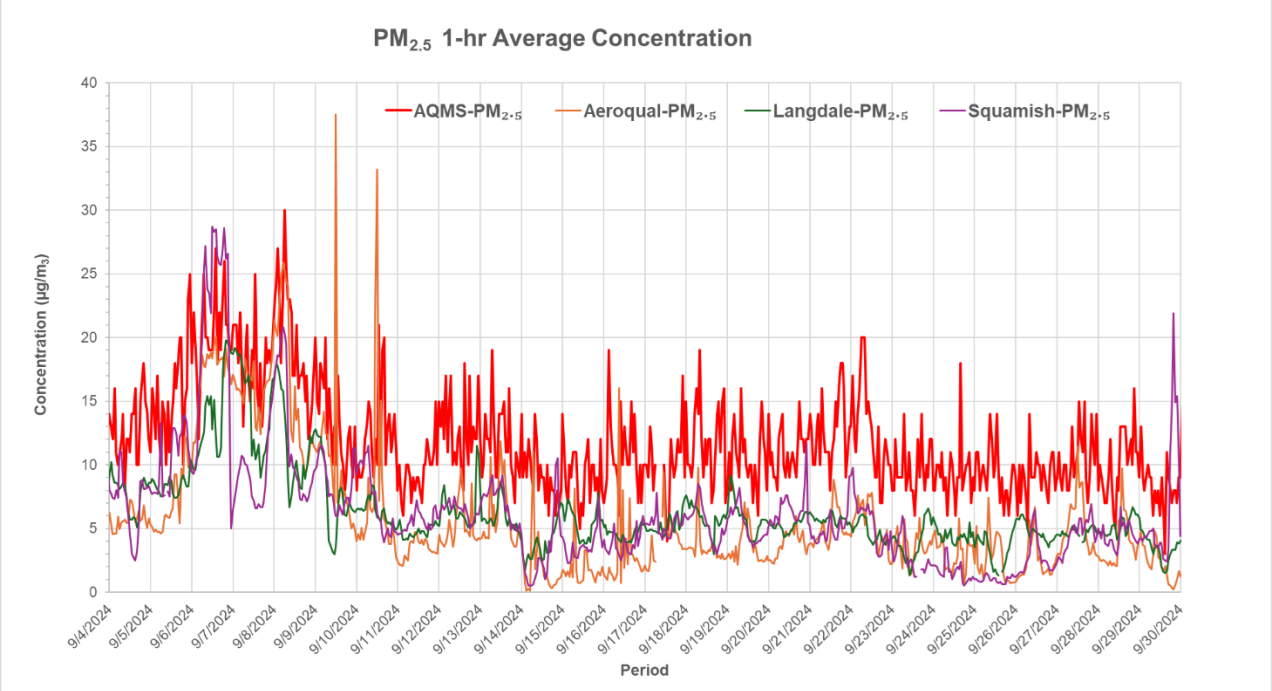


Figure A.3 Hourly PM_{10} Concentrations Recorded at the AQMS, Aeroqual and at Langdale Regional Air Quality Station for September 2024

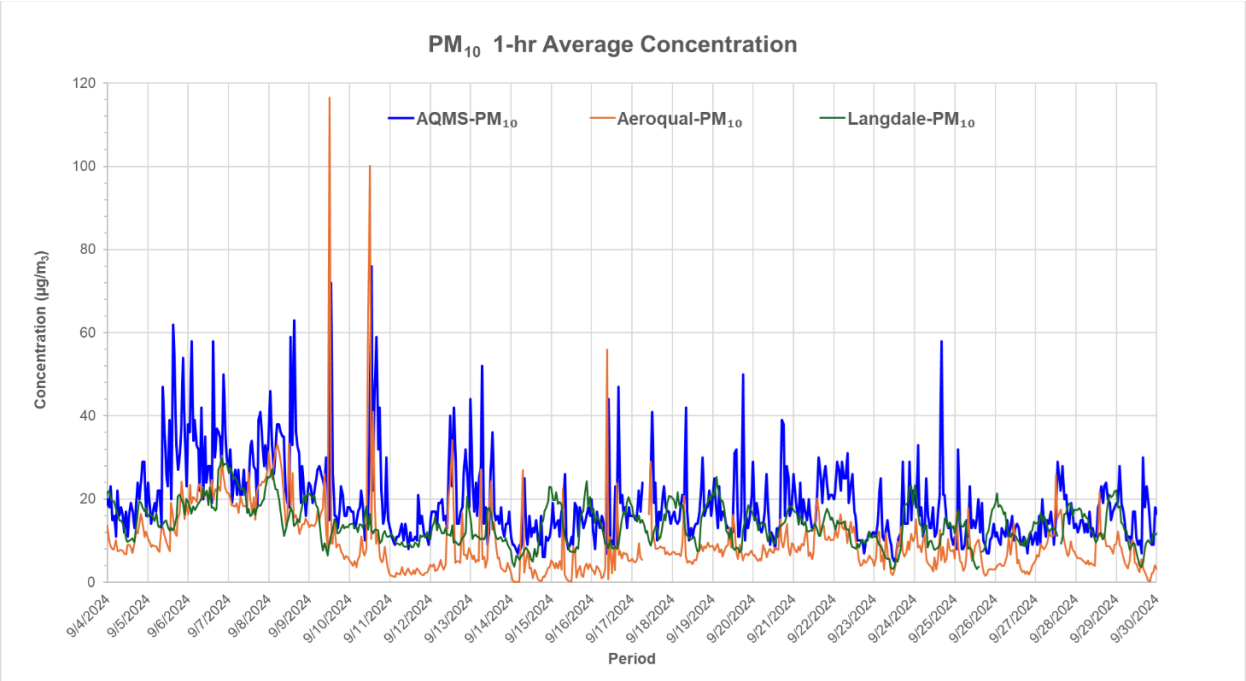


Figure A.4 Hourly TSP Concentrations Recorded at the AQMS and the Aeroqual for September 2024

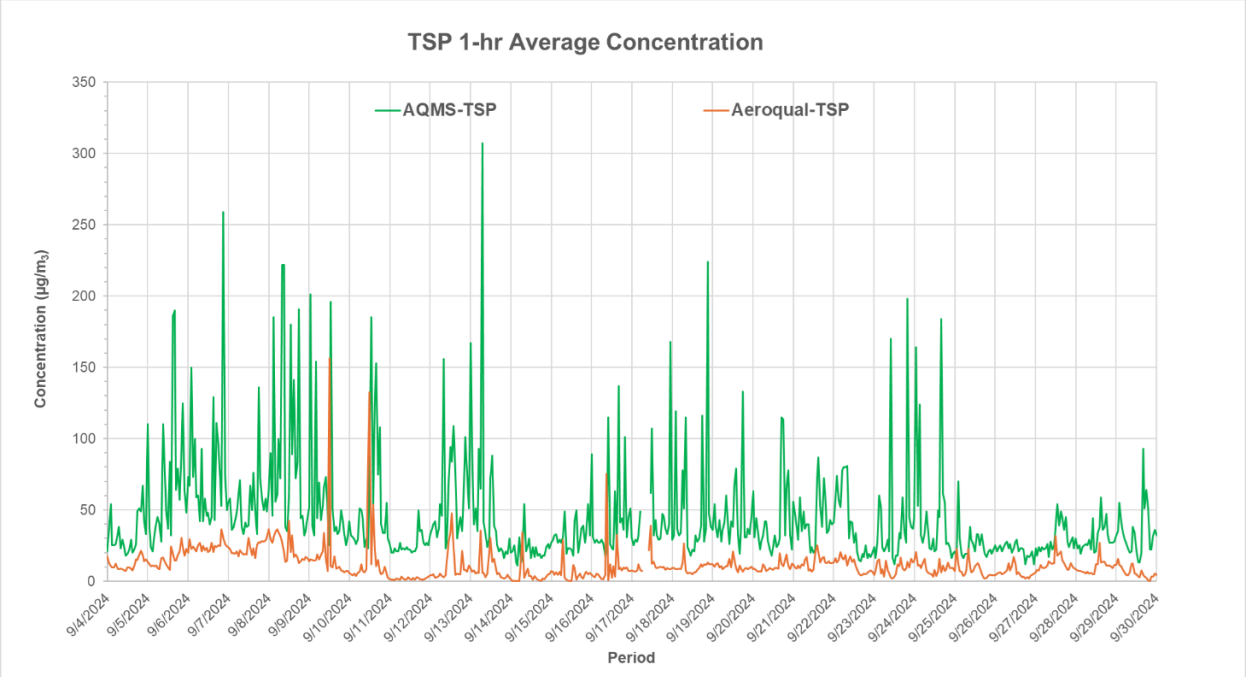


Figure A.5 Hourly NO_2 Concentrations Recorded Onsite at the AQMS, Aeroqual and at the Langdale and Squamish Regional Air Quality Stations for September 2024

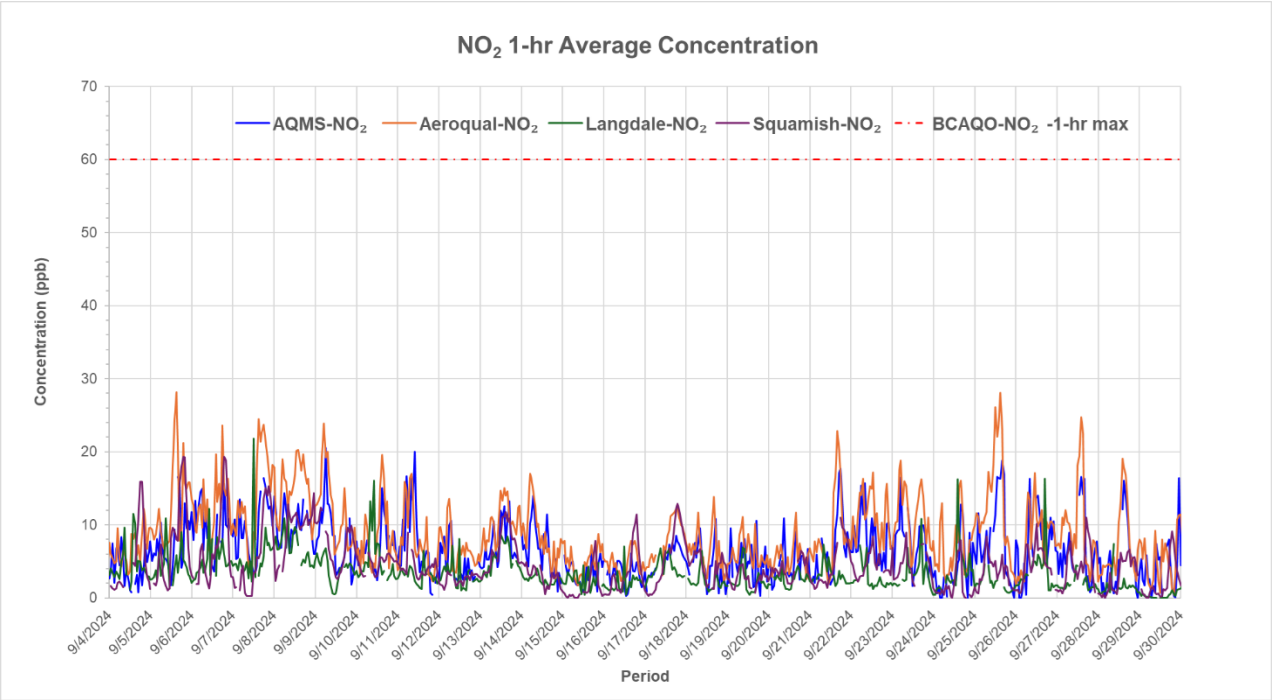


Figure A.6 24-Hour Average PM Concentrations Recorded at the AQMS for September 2024

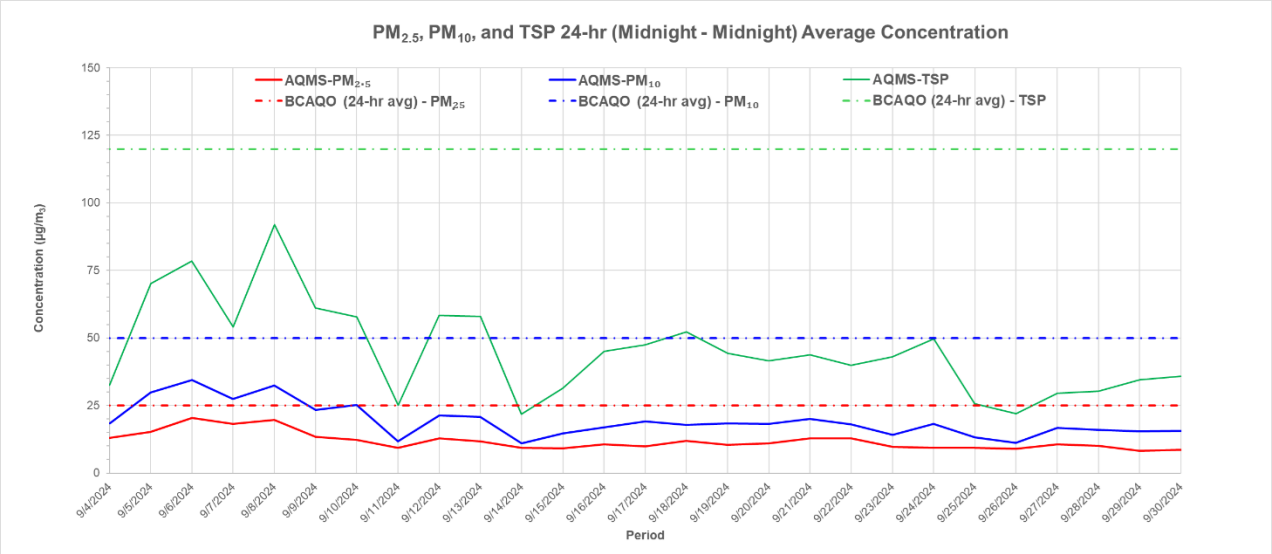


Figure A.7 24-Hour Average $PM_{2.5}$ Concentrations Recorded at the AQMS, Aeroqual and at the Langdale and Squamish Regional Air Quality Stations for September 2024

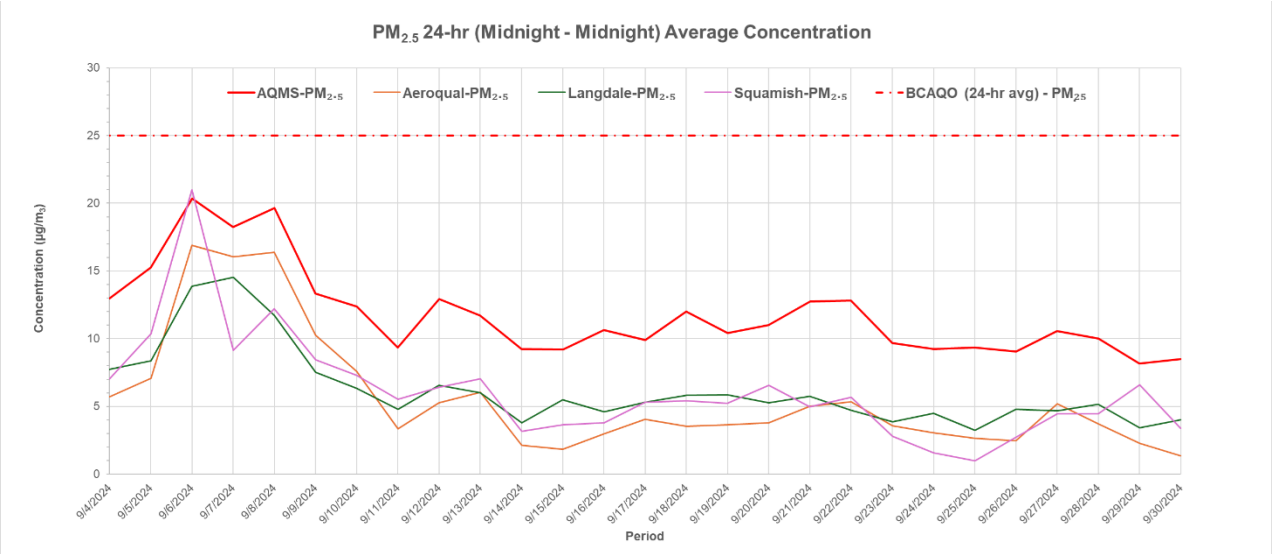


Figure A.8 24-Hour Average PM_{10} Concentrations Recorded at the AQMS, Aeroqual and at the Langdale Regional Air Quality Station for September 2024

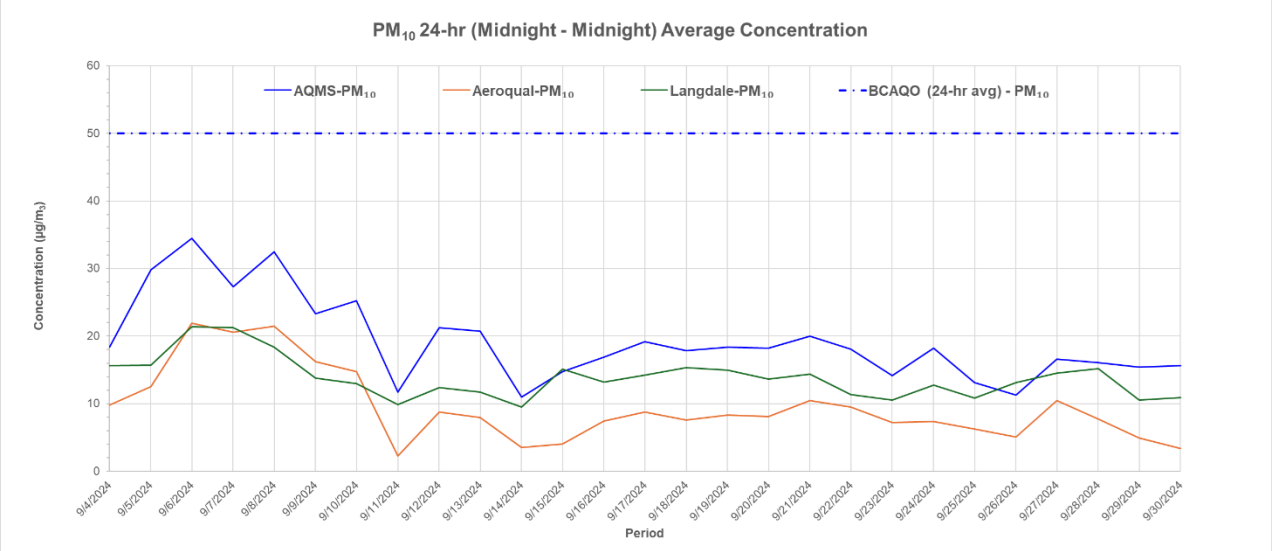


Figure A.9 24-Hour Average TSP Concentrations Recorded at the AQMS and Aeroqual for September 2024

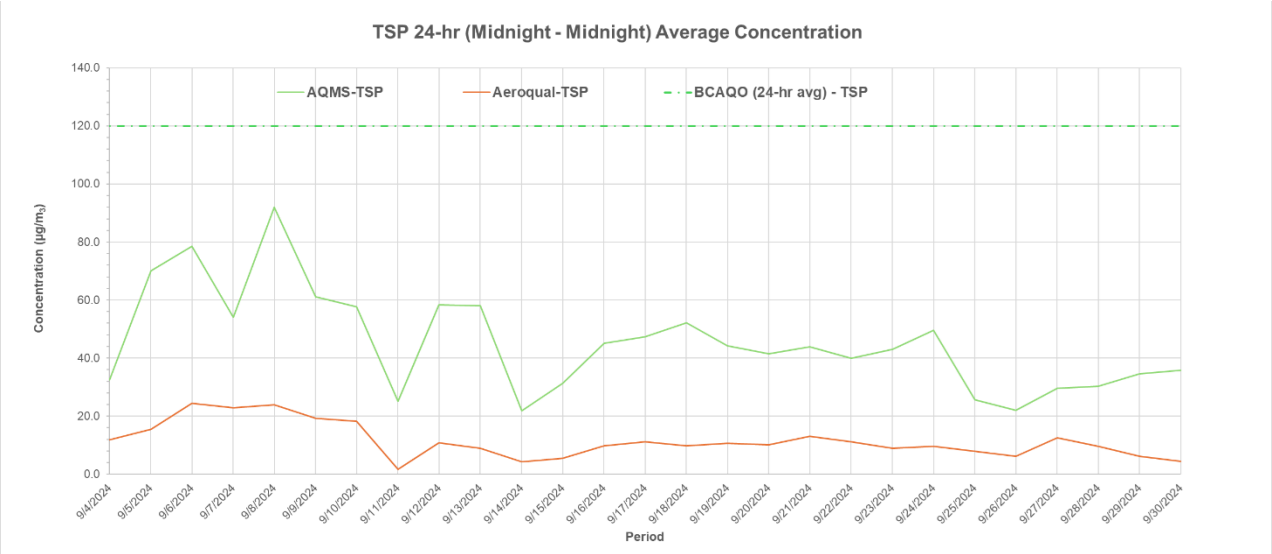


Figure A.10 24-Hour Average NO_2 Concentrations Recorded at the AQMS, Aeroqual and at the Langdale and Squamish Regional Air Quality Stations

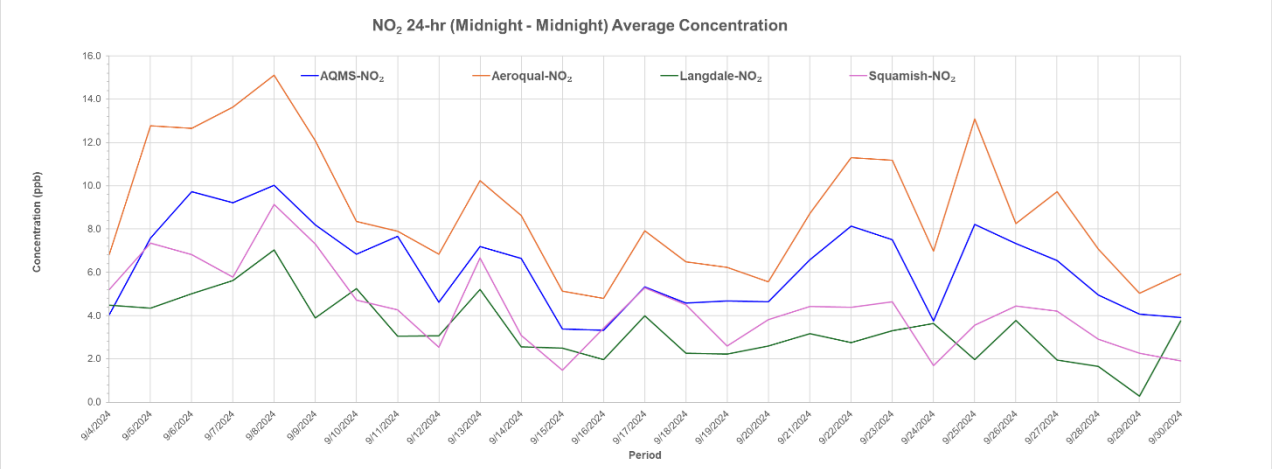


Figure A.11 Daily Average and Maximum Wind Speed Recorded at the Woodfibre LNG Meteorology Station for September 2024

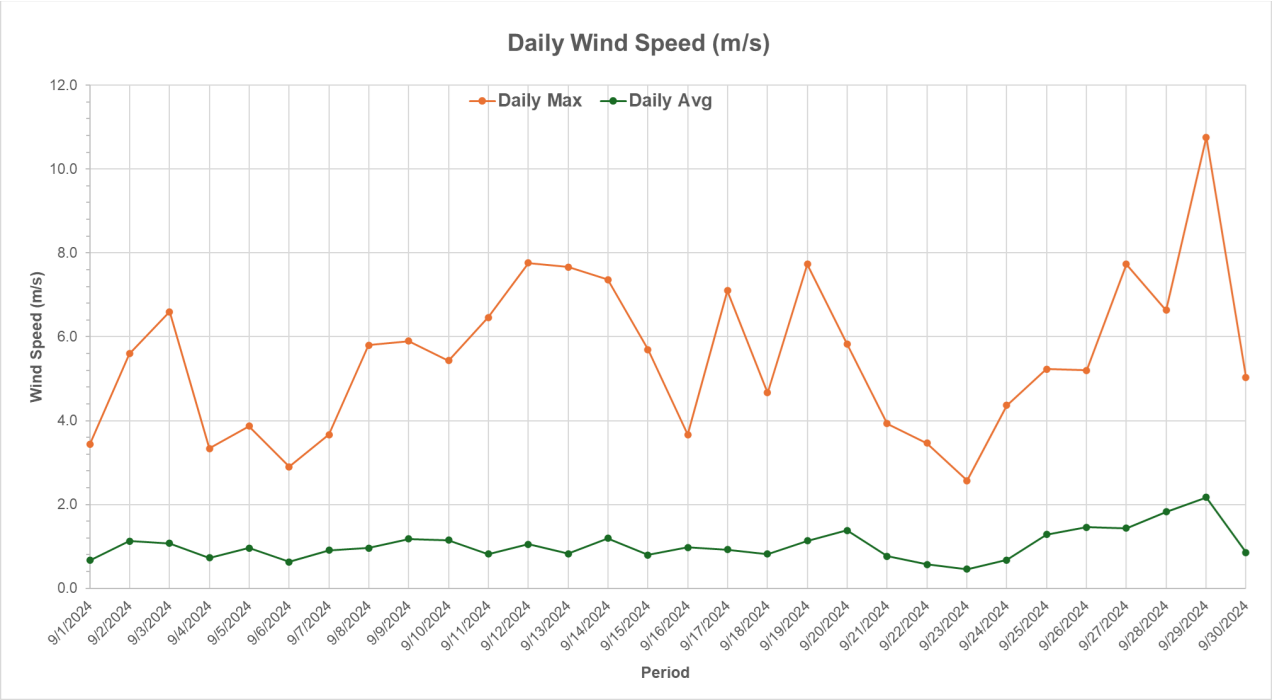


Figure A.12 Windrose for Woodfibre LNG Meteorology Station for September 2024

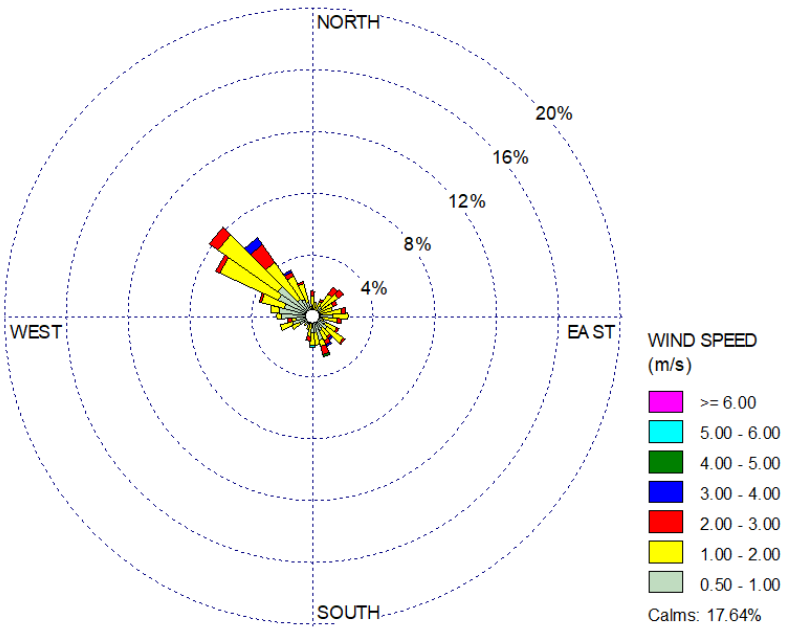


Figure A.13 Windrose for Woodfibre LNG Meteorology Station for Time Periods Hours 3 - 8, 9 - 12, 13 - 19, and 20 - 2 for September 2024

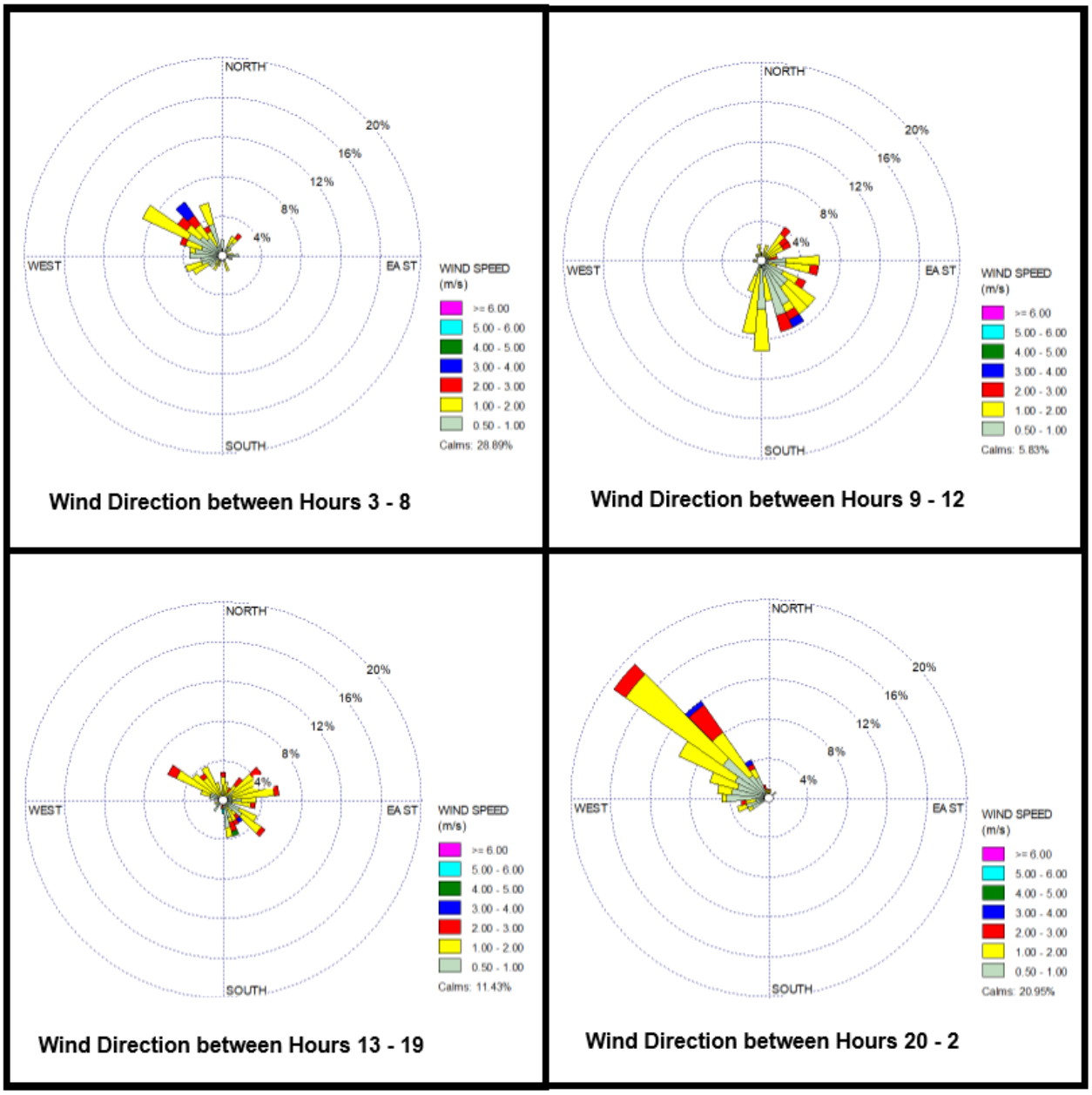


Figure A.14 Daily Average, Minimum, and Maximum Air Temperature Recorded at the Woodfibre LNG Meteorology Station for September 2024

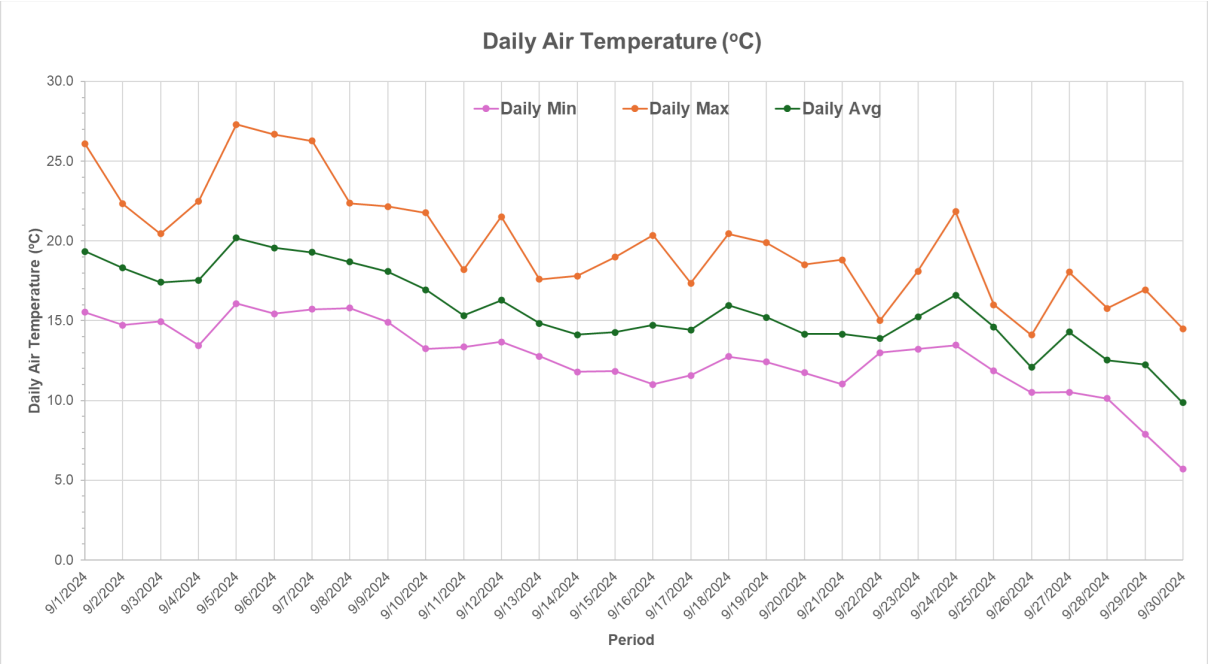
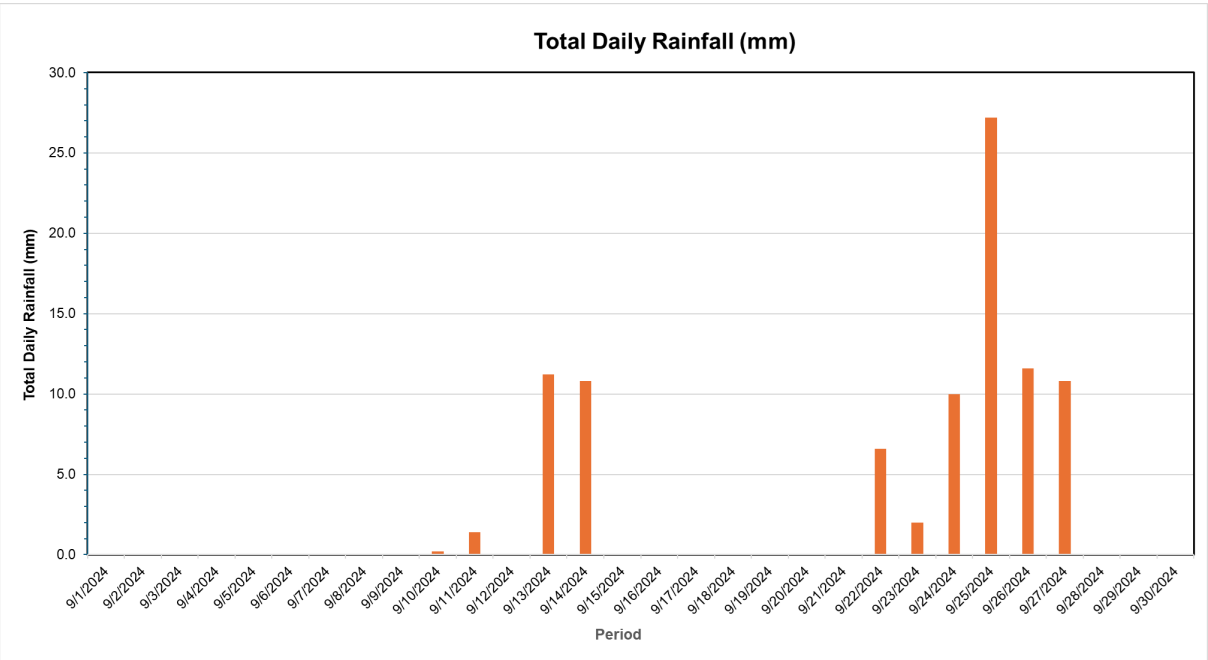


Figure A.15 Daily Rainfall Recorded at the Woodfibre LNG Meteorology Station for September 2024



Appendix B Data Tables

Table B.1 Daily $PM_{2.5}$, PM_{10}, TSP, and NO_2 Concentrations Recorded at the AQMS and the Aeroqual for September 2024

Date	AQMS (24-hr Average)				AQMS (1-hr Max)	Aeroqual (24-hr Average)				Aeroqual (1-hr Max)
	$PM_{2.5}$	PM_{10}	TSP	NO_2	NO_2	$PM_{2.5}$	PM_{10}	TSP	NO_2	NO_2
	µg/m³	µg/m³	µg/m³	ppb	ppb	µg/m³	µg/m³	µg/m³	ppb	ppb
9/1/2024	–	–	–	–	–	5	10	13	10.0	18.1
9/2/2024	–	–	–	–	–	7	12	14	11.6	19.3
9/3/2024	–	–	–	–	–	6	9	10	10.0	18.7
9/4/2024	13	18	33	4.1	8.3	6	10	12	6.8	12.2
9/5/2024	15	30	70	7.6	16.6	7	13	15	12.8	28.2
9/6/2024	20	35	78	9.7	15.6	17	22	24	12.7	23.6
9/7/2024	18	27	54	9.2	16.4	16	21	23	13.6	24.5
9/8/2024	20	32	92	10.0	14.3	16	21	24	15.1	20.3
9/9/2024	13	23	61	8.2	20.5	10	16	19	12.1	23.9
9/10/2024	12	25	58	6.8	15.0	8	15	18	8.4	19.6
9/11/2024	9	12	25	7.7	20.0	3	2	2	7.9	17.0
9/12/2024	13	21	58	4.6	10.6	5	9	11	6.8	13.6
9/13/2024	12	21	58	7.2	13.2	6	8	9	10.2	15.0
9/14/2024	9	11	22	6.6	14.0	2	4	4	8.6	17.0
9/15/2024	9	15	31	3.4	6.6	2	4	5	5.1	8.8
9/16/2024	11	17	45	3.3	6.1	3	7	10	4.8	7.8
9/17/2024	10	19	47	5.3	8.5	4	9	11	7.9	12.2
9/18/2024	12	18	52	4.6	10.8	4	8	10	6.5	13.8
9/19/2024	10	18	44	4.7	10.6	4	8	11	6.2	11.1
9/20/2024	11	18	42	4.6	10.9	4	8	10	5.6	11.7
9/21/2024	13	20	44	6.6	17.7	5	10	13	8.7	22.8
9/22/2024	13	18	40	8.1	15.7	5	10	11	11.3	17.2
9/23/2024	10	14	43	7.5	16.5	4	7	9	11.2	18.8
9/24/2024	9	18	50	3.7	12.8	3	7	10	7.0	16.1
9/25/2024	9	13	26	8.2	18.8	3	6	8	13.1	28.1
9/26/2024	9	11	22	7.3	16.3	2	5	6	8.3	17.1
9/27/2024	11	17	30	6.5	16.6	5	10	13	9.7	24.7

Date	AQMS (24-hr Average)				AQMS (1-hr Max)	Aeroqual (24-hr Average)				Aeroqual (1-hr Max)
	$PM_{2.5}$	PM_{10}	TSP	NO_2	NO_2	$PM_{2.5}$	PM_{10}	TSP	NO_2	NO_2
	µg/m³	µg/m³	µg/m³	ppb	ppb	µg/m³	µg/m³	µg/m³	ppb	ppb
9/28/2024	10	16	30	5.0	16.1	4	8	10	7.1	19.1
9/29/2024	8	15	35	4.1	16.4	2	5	6	5.0	11.3
9/30/2024	9	16	36	3.9	11.6	1	3	4	5.9	13.5

Table B.2 Daily Wind Speed, Air Temperature, and Rainfall Recorded at the Woodfibre LNG Meteorology Station for September 2024

Date	Daily Wind Speed (m/s)		Daily Air Temperature (°C)			Daily Total Rainfall (mm)
	Max	Avg	Min	Max	Avg	
9/1/2024	3.4	0.7	15.5	26.1	19.3	0.0
9/2/2024	5.6	1.1	14.7	22.3	18.3	0.0
9/3/2024	6.6	1.1	15.0	20.5	17.4	0.0
9/4/2024	3.3	0.7	13.5	22.5	17.5	0.0
9/5/2024	3.9	1.0	16.1	27.3	20.2	0.0
9/6/2024	2.9	0.6	15.4	26.7	19.6	0.0
9/7/2024	3.7	0.9	15.7	26.3	19.3	0.0
9/8/2024	5.8	1.0	15.8	22.4	18.7	0.0
9/9/2024	5.9	1.2	14.9	22.2	18.1	0.0
9/10/2024	5.4	1.2	13.2	21.8	16.9	0.2
9/11/2024	6.5	0.8	13.4	18.2	15.3	1.4
9/12/2024	7.8	1.0	13.7	21.5	16.3	0.0
9/13/2024	7.7	0.8	12.8	17.6	14.8	11.2
9/14/2024	7.4	1.2	11.8	17.8	14.1	10.8
9/15/2024	5.7	0.8	11.8	19.0	14.3	0.0
9/16/2024	3.7	1.0	11.0	20.4	14.7	0.0
9/17/2024	7.1	0.9	11.6	17.4	14.4	0.0
9/18/2024	4.7	0.8	12.8	20.5	16.0	0.0
9/19/2024	7.7	1.1	12.4	19.9	15.2	0.0
9/20/2024	5.8	1.4	11.8	18.5	14.2	0.0

Date	Daily Wind Speed (m/s)		Daily Air Temperature (°C)			Daily Total Rainfall (mm)
	Max	Avg	Min	Max	Avg	
9/21/2024	3.9	0.8	11.0	18.8	14.2	0.0
9/22/2024	3.5	0.6	13.0	15.0	13.9	6.6
9/23/2024	2.6	0.5	13.2	18.1	15.2	2.0
9/24/2024	4.4	0.7	13.5	21.9	16.6	10.0
9/25/2024	5.2	1.3	11.9	16.0	14.6	27.2
9/26/2024	5.2	1.5	10.5	14.1	12.1	11.6
9/27/2024	7.7	1.4	10.5	18.0	14.3	10.8
9/28/2024	6.6	1.8	10.1	15.8	12.5	0.0
9/29/2024	10.8	2.2	7.9	16.9	12.3	0.0
9/30/2024	5.0	0.9	5.7	14.5	9.9	0.0

Appendix C Station Calibration and Maintenance Record

AGAT Laboratories

$PM_{2.5}$ Audit

Date:	September 3, 2024
Client:	WLNG
Location:	Woodfibre, BC
Coordinates:	
Technician:	Brad Moyles
Method:	Beta Attenuation Mass Monitor
Make:	Met One
Model:	BAM 1020
Serial number:	A12387
Parameter:	PM2.5
Operating Range:	
Start Time:	
Finish Time:	

Diagnostics

Flow Rate:	16.74	L/min
Ambient Temperature:	18.98	°C
Barometric Pressure:	766.8	mmHg
Tape Pressure:	775	mmHg
Filter Relative Humidity:	39	%
Filter Temperature:	27.9	°C
Smart Inlet Heater Status	OK	
Measurement Cycle Time	60 Minutes	
Background Zero:	86%	
Range Offset:		

Audit Reference Instruments

Make/Model	Serial Number	Date Last Calibrated
TriCal	188	Jun-21

Flow Check and Flow Calibration

Sample Flow	Target	Actual (Reference Standard)	Error (%)
As Found Flow/Leak Check	<1.0	0.30	
Check 1	15.0	15.03	0.20%
Check 2	18.4	18.28	-0.66%
Check 3	16.7	16.72	0.12%

Ambient Temperature:	°C	**Ambient Pressure:**	mmHg
Ambient Temperature (Reference)	18.98	Ambient Pressure (Reference)	767
Ambient Temperature (Analyzer)	19	Ambient Pressure (Analyzer)	767
filter RH:	%	**Membrane ABS:**	
Ambient Humidity (Reference)	63	ABS Value (Factory Setting)	0.845
Ambient Humidity (Analyzer)	34	ABS Value (Analyzer)	0.845

Audit Criteria:

Leak Check:	**0.30**	**PASS**
Sample Flow:	**16.68**	**PASS**
Ambient Temperature:	**0.11%**	**PASS**
Ambient Pressure:	**-0.03%**	**PASS**
Ambient RH Error:	**-85.29%**	**FAIL**
Membrane ABS:	**0.00%**	**PASS**

Notes:

Audit Results: **PASS**

AGAT Laboratories

PM_{10} Audit

Date:	September 3, 2024
Client:	WLNG
Location:	Woodfibre, BC
Coordinates:	
Technician:	Brad Moyles
Method:	Beta Attenuation Mass Monitor
Make:	Met One
Model:	BAM 1020
Serial number:	W22222
Parameter:	PM10
Operating Range:	
Start Time:	
Finish Time:	

Diagnostics

Flow Rate:	16.7	L/min
Ambient Temperature:	20.75	°C
Barometric Pressure:	766.4	mmHg
Tape Pressure:	767	mmHg
Filter Relative Humidity:	39	%
Filter Temperature:	30.6	°C
Smart Inlet Heater Status:	OK	
Measurement Cycle Time:	60 Minutes	
Background Zero:	1%	
Range Offset:		

Audit Reference Instruments

Make/Model	Serial Number	Date Last Calibrated
TriCal	188	Jun-21

Flow Check and Flow Calibration

Sample Flow	Target	Actual (Reference Standard)	Error (%)
As Found Flow/Leak Check	<1.0	0.50	
Check 1	15.0	14.94	-0.40%
Check 2	18.4	18.45	0.27%
Check 3	16.7	16.65	-0.30%

Ambient Temperature:		**Ambient Pressure:**	**mmHg**
Ambient Temperature (Reference)	20.75	Ambient Pressure (Reference)	766
Ambient Temperature (Analyzer)	21	Ambient Pressure (Analyzer)	766
filter RH:	**%**	**Membrane ABS:**	
Ambient Humidity (Reference)	31	ABS Value (Factory Setting)	0.803
Ambient Humidity (Analyzer)	31	ABS Value (Analyzer)	0.803

Audit Criteria:

Leak Check:	**0.50**	**PASS**
Sample Flow:	**16.70**	**PASS**
Ambient Temperature:	**1.19%**	**PASS**
Ambient Pressure:	**0.05%**	**PASS**
Ambient RH Error:	**0.00%**	**PASS**
Membrane ABS:	**0.00%**	**PASS**

Notes:

Audit Results: **PASS**

AGAT Laboratories

PM_TSP_AUDIT

Date:	September 3, 2024
Client:	WLNG
Location:	Woodfibre, BC
Coordinates:	
Technician:	Brad Moyles
Method:	Beta Attenuation Mass Monitor
Make:	Met One
Model:	BAM 1020
Serial number:	A12385
Parameter:	PM2.5
Operating Range:	
Start Time:	
Finish Time:	

Diagnostics

Flow Rate:	16.69	L/min
Ambient Temperature:	18.85	°C
Barometric Pressure:	766.8	mmHg
Tape Pressure:	775	mmHg
Filter Relative Humidity:	18	%
Filter Temperature:	30	°C
Smart Inlet Heater Status	OK	
Measurement Cycle Time	60 Minutes	
Background Zero:	86%	
Range Offset:		

Audit Reference Instruments

Make/Model	Serial Number	Date Last Calibrated
TriCal	188	Jun-21

Flow Check and Flow Calibration

Sample Flow	Target	Actual (Reference Standard)	Error (%)
As Found Flow/Leak Check	<1.0	0.40	
Check 1	15.0	15.20	1.32%
Check 2	18.4	18.55	0.81%
Check 3	16.7	16.87	1.01%

Ambient Temperature:	°C	Ambient Pressure:	mmHg
Ambient Temperature (Reference)	18.85	Ambient Pressure (Reference)	767
Ambient Temperature (Analyzer)	18.75	Ambient Pressure (Analyzer)	766
filter RH:	%	Membrane ABS:	
Ambient Humidity (Reference)	64	ABS Value (Factory Setting)	0.841
Ambient Humidity (Analyzer)	63	ABS Value (Analyzer)	0.841

Audit Criteria:

Leak Check:	0.40	PASS
Sample Flow:	16.68	PASS
Ambient Temperature:	0.53%	PASS
Ambient Pressure:	0.10%	PASS
Ambient RH Error:	-1.59%	PASS
Membrane ABS:	0.00%	PASS

Notes:

Audit Results: PASS

Quality System Forms

AGAT Laboratories — NO-NO_2-NO_X Installation

Revision: 3.0
11/13/2024
Jgallwey

AMBIENT AIR ANALYZER CALIBRATION FORM

Instructions - Use this form to record calibration data and calculations. Choose the type of calibration using the drop down menu at the top of the sheet. Complete the site information and include equipment type and serial number (S/N). Fill in all relevant boxes and the acceptance criteria will determine if the calibration hasd passed or failed. If the calibration has failed make necessary correction and/or calibrate the instrument until the calibration passes.

Site Information

Company	Woodfibre LNG	Plant	LNG	Job #	
Location	Squamish, BC			Date	September 3, 2024
				Start Time	8:30
				End Time	
				Last Cal Date:	N/A
					November 30, 2024

Calibrator & Monitor Information

Calibrator Information		Analyzer Information	
Calibrator M/M	Sabio	Analyzer M/M	42i
Calibrator S/N	08500312R	Analyzer S/N	707120758
Zero Air S/N	Zero Air Cylinder	Detection Principle	Chemiluminescence
Verification Date	16-Apr-24		

Calibration Standard

Calibration Standard	Type	ID Number	Expiry Date	NOx Conc.	NO Conc.	ppm ± 2% @ 35ºC	Tank Pressure	
No,Nox	Cylinder	T37WMYH	18-Jul-23	48.5	48.46		2000	PSI

Analyzer Settings	Before Calibration	After Calibration
Concentration Range ppb	0-500 ppb	0-500 ppb
Background ppb	N/A	
Coefficient	N/A	
Sample Flow cc/min	N/A	
Span Value NOX / NO2	N/A	

Calibrator Flow Measurement (sccm)

Calibration Point	Average Cal Gas Flow	Total Flow	Average Dilution Air Flow
Zero	0.0	4999.0	4999.0
High (100%)	51.9	4998.0	4946.1
Middle (60%)	30.5	5000.0	4969.5
Low (30%)	15.4	5000.0	4984.6

Current Shelter Temp	23	ºC
Current Barometric Pressure	769	mm/hg

Calibration Data - NO_X

	Stability Start	15- Minute	12- Minute	9- Minute	6- Minute	3- Minute	Average	Calculated Stability |x| ppb
As Found Zero	8:45	3.1	3.2	4.1	3.8	3.6	3.6	0.4
As Found Span	9:00	507.0	508.9	507.2	507.6	506.2	507.4	0.9
After Zero Adjust	9:15	0.6	0.5	0.6	0.7	0.7	0.6	0.1
After Span Adjust - 1	9:30	498.8	499.9	500.2	502.6	503.2	500.9	1.7
After Span Adjust - 2	9:45	290.1	290.2	290.5	292.3	292.8	291.2	1.1
After Span Adjust - 3	10:00	141.6	141.2	141.5	141.8	141.9	141.6	0.2

Set point	Dilution Air Flow Rate @ STP (corrected)	Calibration Gas Flow @ STP (corrected)	Calculated Conc. (Cc)	Analyzer Response	Correction Factor (Cc/Ci)	Point Error %	Slope Error (%)	Converted Data Response
As Found Zero	1099	0.0	0.0	3.6	N/A	NA		3.6
As Found Span	1087	11.4	503.6	507.4	0.9926	0.7%		507.4
After Zero Adjust	1099	0.0	0.0	0.6	N/A	NA		0.6
After Span Adjust - 1	1087	11.4	503.6	500.9	1.0054	-0.5%	2.5%	500.9
After Span Adjust - 2	1093	6.7	295.9	291.2	1.0160	-1.6%	3.9%	291.2
After Span Adjust - 3	1096	3.4	149.4	141.6	1.0549	-5.5%	8.3%	141.6

Intercept	2.921545
Correlation Coefficient	0.999995
Slope	1.014040

Calibration Data - NO

	Stability Start	15- Minute	12- Minute	9- Minute	6- Minute	3- Minute	Average	Calculated Stability |x| ppb
As Found Zero	8:45	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0
As Found Span	9:00	497.0	497.0	496.0	496.0	496.0	496.4	0.5
After Zero Adjust	9:15	0.2	0.2	0.3	0.0	0.1	0.2	0.1
After Span Adjust - 1	9:30	503.0	503.0	503.0	503.0	503.0	503.0	0.0
After Span Adjust - 2	9:45	294.4	295.0	295.0	295.0	295.0	294.9	0.2
After Span Adjust - 3	10:00	144.0	144.0	144.3	145.0	145.0	144.5	0.5

Set point	Dilution Air Flow Rate @ STP (corrected)	Calibration Gas Flow @ STP (corrected)	Calculated Conc. (Cc)	Analyzer Response	Correction Factor (Cc/Ci)	Point Error %	Slope Error (%)	Converted Data Response
As Found Zero	1099	0.0	0.0	0.0	N/A	NA		0.0
As Found Span	1087	11.4	503.2	496.4	1.0137	-1.4%		496.4
After Zero Adjust	1099	0.0	0.0	0.2	N/A	NA		0.2
After Span Adjust - 1	1087	11.4	503.2	503.0	1.0004	0.0%	1.6%	503.0
After Span Adjust - 2	1093	6.7	295.6	294.9	1.0025	-0.2%	2.1%	294.9
After Span Adjust - 3	1096	3.4	149.3	144.5	1.0332	-3.3%	5.6%	144.5

Intercept	1.902176
Correlation Coefficient	0.999976
Slope	1.012239

Calibration Data - NO_2

	Stability Start	15- Minute	12- Minute	9- Minute	6- Minute	3- Minute	Average	Calculated Stability |x| ppb
15 min ref	10:15	-2.0	-1.0	-1.0	-1.0	-1.0	-1.2	0.4
400	10:30	447.0	447.0	448.0	449.0	449.0	448.0	0.9
300	10:45	241.0	241.0	240.0	240.0	240.0	240.4	0.5
150	11:00	126.0	126.0	126.0	125.0	125.0	125.6	0.5

Set point	Nox Response	NO Response	NO2 Calculated Conc.	NO2 Analyzer Conc.	Correction Factor (Cc/Ci)	Slope Error (%)	Converted Data Response
15 Min Reference	501.0	502.0	-1.0	-1.0	N/A	NA	-1.2
Adjusted GPT 400 O3	492.0	43.0	449.0	449.0	1.0000	2.0%	448.0
GPT 2 (200 cc O3)	494.0	254.0	240.0	240.0	1.0000	2.6%	240.4
GPT 3 (150 cc O3)	495.0	369.0	126.0	126.0	1.0000	3.6%	125.6
Zero	0.0	0.2	-0.2	-0.2	N/A	NA	1.2

Intercept	0.000000
Correlation Coefficient	0.999994
Slope	0.997545

Acceptance Criteria - From Part B1 Ambient Air Quality Monitoring BC Field Sampling Manual

1) Instrument is adjusted to give a correction factor (Ccalculated / Cindicated) as close to 1.0 as possible.

2) Each calibration point must be within ±10% of the expected criteria

3) As found calibration point must be within ±15% of the expected criteria

4) Analyzer must run within ±10% of the manufacturer's specifications

5) Slope must be ≥ 0.90 and ≤ 1.10

6) Intercept must be = 3% of full range of analyzer ± 30 ppb

7) Correlation coefficient must be = 0.9950

	NOx	NO	NO_2
As Found Span vs. Expected	0.7%	-1.4%	2.0%
	PASS	PASS	PASS
After Span Adjust - 1	2.5%	1.6%	2.0%
	PASS	PASS	PASS
After Span Adjust - 2	3.9%	2.1%	2.6%
	PASS	PASS	PASS
After Span Adjust - 3	8.3%	5.6%	3.6%
	PASS	PASS	PASS
Slope	1.014	1.012	0.998
	PASS	PASS	PASS
Intercept	2.92	1.90	0.00
	PASS	PASS	PASS
Correlation	1.000	1.000	1.000
	PASS	PASS	PASS

NOx	**According to BC MOE Guidelines this calibration has PASSED**
NO	**According to BC MOE Guidelines this calibration has PASSED**
NO2	**According to BC MOE Guidelines this calibration has PASSED**

Calibration Performed by: Brad Moyles

Comments: Routine Calibration

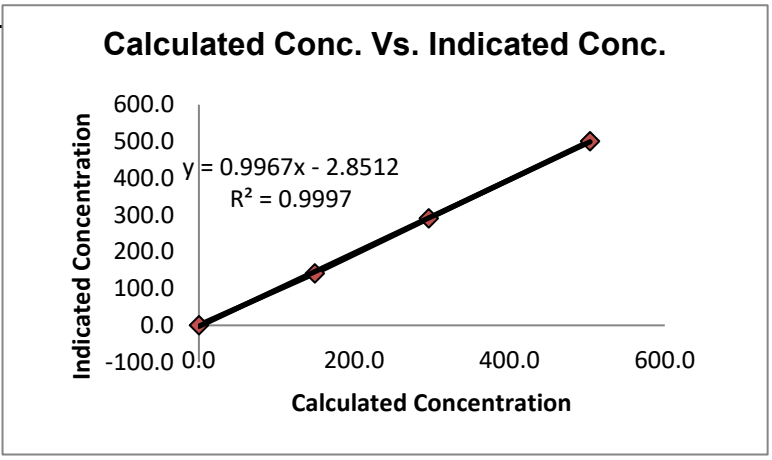
NOx - NO - NO2 Least Squares Calculations

Company: Woodfibre LNG
Date: 3-Sep-24
Analyzer: 42i
Units: ppb
Conc. Range: 0 - 500

Location: Squamish, BC
Job Number: 0.00E+00

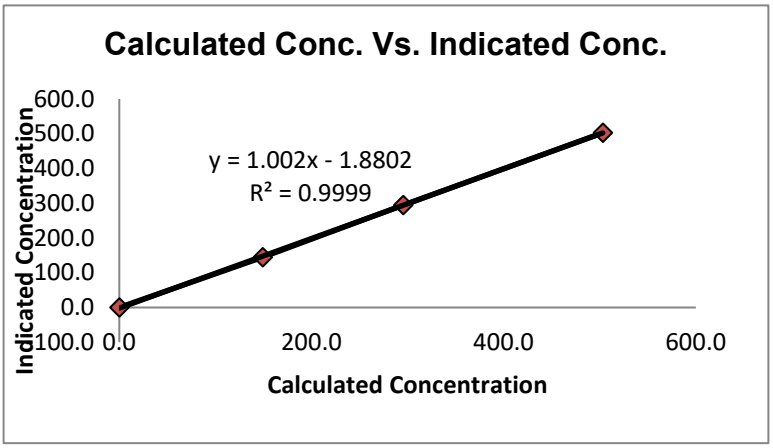
NOx	
Calculated Concentration	Converted Data Response
503.6	500.9
295.9	291.2
149.4	141.6
0.0	0.6

Slope	1.0140
Intercept	2.9215
Correlation	1.0000



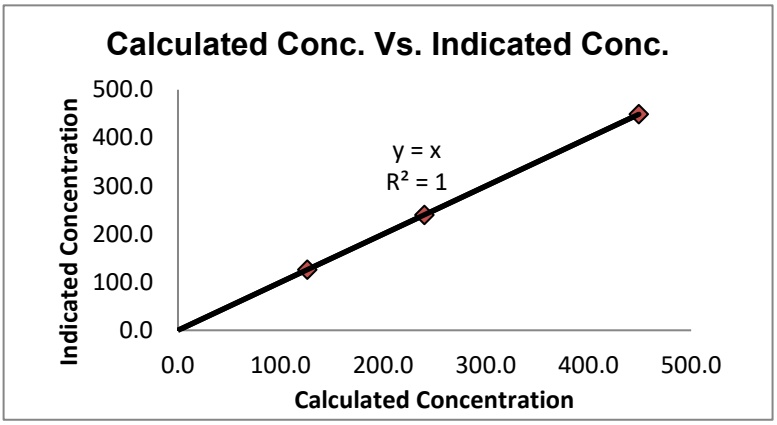
NO	
Calculated Concentration	Converted Data Response
503.2	503.0
295.6	294.9
149.3	144.5
0.0	0.2

Slope	1.0122
Intercept	1.9022
Correlation	1.0000



NO_2	
NO Decrease	NO_2 increase
449.0	449.0
240.0	240.0
126.0	126.0
-0.2	-0.2

Slope	0.9975
Intercept	0.0000
Correlation	1.0000



Appendix D Weekly AQMS Reports

WLNG AQMS - Weekly Reporting

Reporting Period

This AQMS Weekly report covers the period from September 2 to September 8, 2024.

Objective

This report aims to summarize air quality monitoring data for the week of September 2 - September 8, 2024. This report includes an analysis of pollutants such as $PM_{2.5}$, PM_{10}, TSP, and NO_2, highlighting any significant dust events, alerts from the Air Quality Monitoring System (AQMS), and changes to the monitoring network and mitigation measures. Additionally, the report aims to document the results of any investigations into alerts or equipment failures, detailing actions taken or plans for resolution to ensure compliance with environmental standards and support ongoing air quality management efforts.

Summary of Onsite Air Quality and Meteorological Data Collected

This section presents four summary tables summarizing the air quality and meteorological monitoring data. The presented data is based on Level 0 verification, indicating that it has undergone preliminary checks for completeness and accuracy.

Table 1: Summary of Daily Results for the Past 7 Days

Date	$PM_{2.5}$ (µg/m³)			PM_{10} (µg/m³)			TSP (µg/m³)			NO_2 (ppb)		
	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg
02-Sep to 03 Sep	-	-	-	-	-	-	-	-	-	-	-	-
04-Sep	8	18	13.0	11	29	18.3	18	67	32.6	0.8	8.3	4.1
05-Sep	10	25	15.3	13	62	29.8	21	190	70.1	1.7	16.6	7.6
06-Sep	12	27	20.3	19	58	34.5	40	259	78.5	3.6	15.6	9.7
07-Sep	13	25	18.3	18	41	27.3	33	136	54.1	3.5	16.4	9.2
08-Sep	12	30	19.7	16	63	32.5	32	222	92.0	6.0	14.3	10.0

Note: The British Columbia Air Quality Objectives (AQO) are:

- $PM_{2.5}$: 25 µg/m³ - Achievement based on annual 98th percentile of daily average, averaged over one year.
- PM_{10}: 50 µg/m³ - Achievement based on the daily (24-hr) average.
- TSP: 120 µg/m³ - Achievement based on the daily (24-hr) average.
- NO_2: 60 ppb - Achievement based on annual 98th percentile of daily 1-hour average maximum (D1HM), averaged over three consecutive years.

Bold Italic numbers indicates that the 24-hour average for PM or one or more 1-hour maximum values for NO_2 exceed the respective threshold values.

- The air quality monitoring instruments were installed, calibrated, and tested from September 2 to September 3. As a result, no valid data is available for this period, and valid monitoring data is recorded starting from September 4, 2024

Table 2: Weekly Averages Summary – $PM_{2.5}$, PM_{10}, TSP and NO_2

Pollutant	units	1-hr Min	1-hr Max	Weekly average	Trigger Limits (2/3 of the AQO)	Time Above Trigger Limit (Days)	Time Above AQO (Days)
$PM_{2.5}$	µg/m³	8	30	17.3	16.7 (24-hr avg)	3	0
PM_{10}	µg/m³	11	63	28.5	33.3 (24-hr avg)	1	0
TSP	µg/m³	18	259	65.5	80 (24-hr avg)	1	0
NO_2	ppb	0.8	16.6	8.1	40 (1-hr avg max)	0	0

Table 3: Summary of Meteorological Station Results

Date	Wind Speed (m/s)		Ambient Temperature (°C)			Total Rainfall (mm)
	Max	24-hr Avg	Min	Max	24-hr Avg	
02-Sep	5.6	1.1	14.7	22.3	18.3	0.0
03-Sep	6.6	1.1	14.9	20.5	17.4	0.0
04-Sep	3.3	0.7	13.5	22.5	17.5	0.0
05-Sep	3.9	0.9	16.1	27.3	20.2	0.0
06-Sep	2.9	0.6	15.4	26.7	19.6	0.0
07-Sep	3.7	0.9	15.7	26.3	19.3	0.0
08-Sep	5.7	0.9	15.8	22.4	18.7	0.0

Table 4: Passive SO_2 and VOC Sampling

Date	Sampled Swapped (Yes/No)	Chain of Custody (COC) Submitted (Yes/No)	Sample Submitted to AGAT Lab (Yes/No)	Lab Results Received (Yes/No)	Lab Results Summary or Comments
02-Sep to 08-Sep	No	No	No	No	No sample swap or lab analysis was performed during this period.

Note: This table mostly contains "No" entries because SO_2 and VOC passive samples are swapped on a monthly basis, and this reporting period may not coincide with the sampling schedule. Passive samples were installed on September 1, 2024.

On-Site Dust Observation Report and Work Activities Details

Dust Observation Report Summary:

No dust observation report was received for this period, as the template is still being prepared for the client to provide this information.

Work Activities Details:

Daily Construction Reports are not available to Stantec Consulting for this reporting period.

Summary of Daily Reports and Action Taken

Category	Details	Action Taken	Resolution Status / Anticipated Completion Date
AQ Exceedances Report	No AQ exceedances recorded for this period.	No Action required.	Not Applicable.
AQ Complaints	No AQ complaints received during this period.	No Action required.	Not Applicable.
Alerts from the AQMS	No alarms or instrument break-down was reported from AGAT during this period.	No Action required.	Not Applicable.
Changes to the Monitoring Network	No changes to the monitoring network during this period.	Not Applicable.	Not Applicable.
Changes to Mitigation Measures	No changes to mitigation measures during this period.	Not Applicable.	Not Applicable.

In summary, all instruments operated as intended, successfully collecting air quality data throughout the reporting period. No air quality exceedances of the British Columbia Air Quality Objectives were recorded, and no further investigation was required.

WLNG AQMS - Weekly Reporting

Reporting Period
This AQMS Weekly report covers the period from September 09 to September 15, 2024.

Objective
This report aims to summarize air quality monitoring data for the week of September 09 - September 15, 2024. This report includes an analysis of pollutants such as $PM_{2.5}$, PM_{10}, TSP, and NO_2, highlighting any significant dust events, alerts from the Air Quality Monitoring System (AQMS), and changes to the monitoring network and mitigation measures. Additionally, the report aims to document the results of any investigations into alerts or equipment failures, detailing actions taken or plans for resolution to ensure compliance with environmental standards and support ongoing air quality management efforts.

Summary of Onsite Air Quality and Meteorological Data Collected

This section presents four summary tables summarizing the air quality and meteorological monitoring data. The presented data is based on Level 0 verification, indicating that it has undergone preliminary checks for completeness and accuracy.

Table 1: Summary of Daily Results for the Past 7 Days

Date	$PM_{2.5}$ (µg/m³)			PM_{10} (µg/m³)			TSP (µg/m³)			NO_2 (ppb)		
	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg
09-Sep	8	20	13.3	13	72	23.3	25	201	61.2	1.8	20.5	8.2
10-Sep	8	21	12.4	10	76	25.2	23	185	57.8	2.4	15.0	6.8
11-Sep	6	15	9.3	8	21	11.8	20	50	25.2	0.4	20.0	7.7
12-Sep	8	18	12.9	13	42	21.3	23	156	58.4	2.2	10.6	4.6
13-Sep	7	19	11.7	9	52	20.7	16	307	58.0	4.0	13.2	7.2
14-Sep	6	14	9.3	6	25	11.0	11	54	21.8	0.9	14.0	6.6
15-Sep	5	14	9.2	8	26	14.8	18	54	31.4	0.8	6.6	3.4

Note: The British Columbia Air Quality Objectives (AQO) are:

- $PM_{2.5}$: 25 µg/m³ - Achievement based on annual 98th percentile of daily average, averaged over one year.
- PM_{10}: 50 µg/m³ - Achievement based on the daily (24-hr) average.
- TSP: 120 µg/m³ - Achievement based on the daily (24-hr) average.
- NO_2: 60 ppb - Achievement based on annual 98th percentile of daily 1-hour average maximum (D1HM), averaged over three consecutive years.

Bold Italic numbers indicates that the 24-hour average for PM or one or more 1-hour maximum values for NO_2 exceed the respective threshold values.

Table 2: Weekly Averages Summary – $PM_{2.5}$, PM_{10}, TSP and NO_2

Pollutant	units	1-hr Min	1-hr Max	Weekly average	Trigger Limits (2/3 of the AQO)	Time Above Trigger Limit (Days)	Time Above AQO (Days)
$PM_{2.5}$	µg/m³	5	21	11.2	16.7 (24-hr avg)	0	0
PM_{10}	µg/m³	6	76	18.3	33.3 (24-hr avg)	0	0
TSP	µg/m³	11	307	44.8	80 (24-hr avg)	0	0
NO_2	ppb	0.4	20.5	6.4	40 (1-hr avg max)	0	0

Table 3: Summary of Meteorological Station Results

Date	Wind Speed (m/s)		Ambient Temperature (°C)			Total Rainfall (mm)
	Max	24-hr Avg	Min	Max	24-hr Avg	
09-Sep	5.9	1.2	14.9	22.2	18.01	0.0
10-Sep	5.4	1.2	13.2	21.8	16.9	0.2
11-Sep	6.5	0.8	13.4	18.2	15.3	1.4
12-Sep	7.8	1.0	13.7	21.5	16.3	0.0
13-Sep	7.7	0.8	12.8	17.6	14.8	11.2
14-Sep	7.4	1.2	11.8	17.8	14.1	10.8
15-Sep	5.7	0.8	11.8	19	14.3	0.0

Table 4: Passive SO_2 and VOC Sampling

Date	Sampled Swapped (Yes/No)	Chain of Custody (COC) Submitted (Yes/No)	Sample Submitted to AGAT Lab (Yes/No)	Lab Results Received (Yes/No)	Lab Results Summary or Comments
09-Sep to 15-Sep	No	No	No	No	No sample swap or lab analysis was performed during this period.

Note: This table mostly contains "No" entries because SO_2 and VOC passive samples are swapped on a monthly basis, and this reporting period may not coincide with the sampling schedule. Passive samples were installed on September 1, 2024.

On-Site Dust Observation Report and Work Activities Details

Dust Observation Report Summary:

No dust observation report was received for this period, as the template is still being prepared for the client to provide this information.

Work Activities Details:

Daily Construction Reports are not available to Stantec Consulting for this reporting period.

Summary of Daily Reports and Action Taken

Category	Details	Action Taken	Resolution Status / Anticipated Completion Date
AQ Exceedances Report	No AQ exceedances recorded for this period.	No Action required.	Not Applicable.
AQ Complaints	No AQ complaints received during this period.	No Action required.	Not Applicable.
Alerts from the AQMS	No alarms or instrument break-down was reported from AGAT during this period.	No Action required.	Not Applicable.
Changes to the Monitoring Network	No changes to the monitoring network during this period.	Not Applicable.	Not Applicable.
Changes to Mitigation Measures	No changes to mitigation measures during this period.	Not Applicable.	Not Applicable.

In summary, all instruments operated as intended, successfully collecting air quality data throughout the reporting period. No air quality exceedances of the British Columbia Air Quality Objectives were recorded, and no further investigation was required.

WLNG AQMS - Weekly Reporting

Reporting Period

This AQMS Weekly report covers the period from September 16 to September 22, 2024.

Objective

This report aims to summarize air quality monitoring data for the week of September 16 - September 22, 2024. This report includes an analysis of pollutants such as $PM_{2.5}$, PM_{10}, TSP, and NO_2, highlighting any significant dust events, alerts from the Air Quality Monitoring System (AQMS), and changes to the monitoring network and mitigation measures. Additionally, the report aims to document the results of any investigations into alerts or equipment failures, detailing actions taken or plans for resolution to ensure compliance with environmental standards and support ongoing air quality management efforts.

Summary of Onsite Air Quality and Meteorological Data Collected

This section presents four summary tables summarizing the air quality and meteorological monitoring data. The presented data is based on Level 0 verification, indicating that it has undergone preliminary checks for completeness and accuracy.

Table 1: Summary of Daily Results for the Past 7 Days

Date	$PM_{2.5}$ (µg/m³)			PM_{10} (µg/m³)			TSP (µg/m³)			NO_2 (ppb)		
	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg
16-Sep	6	19	10.6	7	47	16.9	18	137	45.1	0.3	6.1	3.3
17-Sep	4	17	9.9	10	41	19.2	25	168	47.4	0.9	8.5	5.3
18-Sep	7	19	12.0	10	42	17.8	18	224	52.2	0.5	10.8	4.6
19-Sep	6	16	10.4	10	50	18.3	19	133	44.3	0.3	10.6	4.7
20-Sep	8	15	11.0	8	39	18.2	19	115	41.5	1.1	10.9	4.6
21-Sep	8	18	12.8	13	30	20.0	20	87	43.8	1.8	17.7	6.6
22-Sep	7	20	12.8	7	31	18.0	14	81	40.0	3.7	15.7	8.1

Note: The British Columbia Air Quality Objectives (AQO) are:

- $PM_{2.5}$: 25 µg/m³ - Achievement based on annual 98th percentile of daily average, averaged over one year.
- PM_{10}: 50 µg/m³ - Achievement based on the daily (24-hr) average.
- TSP: 120 µg/m³ - Achievement based on the daily (24-hr) average.
- NO_2: 60 ppb - Achievement based on annual 98th percentile of daily 1-hour average maximum (D1HM), averaged over three consecutive years.

Bold Italic numbers indicates that the 24-hour average for PM or one or more 1-hour maximum values for NO_2 exceed the respective threshold values.

Table 2: Weekly Averages Summary – $PM_{2.5}$, PM_{10}, TSP and NO_2

Pollutant	units	1-hr Min	1-hr Max	Weekly average	Trigger Limits (2/3 of the AQO)	Time Above Trigger Limit (Days)	Time Above AQO (Days)
$PM_{2.5}$	µg/m³	6	20	11.4	16.7 (24-hr avg)	0	0
PM_{10}	µg/m³	7	50	18.3	33.3 (24-hr avg)	0	0
TSP	µg/m³	14	224	44.9	80 (24-hr avg)	0	0
NO_2	ppb	0.3	17.7	5.3	40 (1-hr avg max)	0	0

Table 3: Summary of Meteorological Station Results

Date	Wind Speed (m/s)		Ambient Temperature (°C)			Total Rainfall (mm)
	Max	24-hr Avg	Min	Max	24-hr Avg	
16-Sep	3.7	1.0	11	20.4	14.7	0.0
17-Sep	7.1	0.9	11.6	17.4	14.4	0.0
18-Sep	4.7	0.8	12.8	20.5	15.9	0.0
19-Sep	7.7	1.1	12.4	19.9	15.2	0.0
20-Sep	5.8	1.4	11.8	18.5	14.2	0.0
21-Sep	3.9	0.8	11.0	18.8	14.2	0.0
22-Sep	3.5	0.6	13	15.0	13.9	6.6

Table 4: Passive SO_2 and VOC Sampling

Date	Sampled Swapped (Yes/No)	Chain of Custody (COC) Submitted (Yes/No)	Sample Submitted to AGAT Lab (Yes/No)	Lab Results Received (Yes/No)	Lab Results Summary or Comments
16-Sep to 22-Sep	No	No	No	No	No sample swap or lab analysis was performed during this period.

Note: This table mostly contains "No" entries because SO_2 and VOC passive samples are swapped on a monthly basis, and this reporting period may not coincide with the sampling schedule. Passive samples were installed on September 1, 2024.

On-Site Dust Observation Report and Work Activities Details

Dust Observation Report Summary:

No dust observation report was received for this period, as the template is still being prepared for the client to provide this information.

Work Activities Details:

Daily Construction Reports are not available to Stantec Consulting for this reporting period.

Summary of Daily Reports and Action Taken

Category	Details	Action Taken	Resolution Status / Anticipated Completion Date
AQ Exceedances Report	No AQ exceedances recorded for this period.	No Action required.	Not Applicable.
AQ Complaints	No AQ complaints received during this period.	No Action required.	Not Applicable.
Alerts from the AQMS	No alarms or instrument break-down was reported from AGAT during this period.	No Action required.	Not Applicable.
Changes to the Monitoring Network	No changes to the monitoring network during this period.	Not Applicable.	Not Applicable.
Changes to Mitigation Measures	No changes to mitigation measures during this period.	Not Applicable.	Not Applicable.

In summary, all instruments operated as intended, successfully collecting air quality data throughout the reporting period. No air quality exceedances of the British Columbia Air Quality Objectives were recorded, and no further investigation was required.

WLNG AQMS - Weekly Reporting

Reporting Period

This AQMS Weekly report covers the period from September 23 to September 29, 2024.

Objective

This report aims to summarize air quality monitoring data for the week of September 23 - September 29, 2024. This report includes an analysis of pollutants such as $PM_{2.5}$, PM_{10}, TSP, and NO_2, highlighting any significant dust events, alerts from the Air Quality Monitoring System (AQMS), and changes to the monitoring network and mitigation measures. Additionally, the report aims to document the results of any investigations into alerts or equipment failures, detailing actions taken or plans for resolution to ensure compliance with environmental standards and support ongoing air quality management efforts.

Summary of Onsite Air Quality and Meteorological Data Collected

This section presents four summary tables summarizing the air quality and meteorological monitoring data. The presented data is based on Level 0 verification, indicating that it has undergone preliminary checks for completeness and accuracy.

Table 1: Summary of Daily Results for the Past 7 Days

Date	$PM_{2.5}$ (µg/m³)			PM_{10} (µg/m³)			TSP (µg/m³)			NO_2 (ppb)		
	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg
23-Sep	6	14	9.7	5	29	14.2	12	198	43.1	1.6	16.5	7.5
24-Sep	6	18	9.3	9	58	18.3	16	184	49.6	0.0	12.8	3.7
25-Sep	6	14	9.3	7	32	13.1	16	70	25.6	0.0	18.8	8.2
26-Sep	5	14	9.0	7	16	11.3	12	29	22.0	0.0	16.3	7.3
27-Sep	7	15	10.6	9	29	16.6	17	54	29.6	0.8	16.6	6.5
28-Sep	5	16	10.0	11	24	16.0	19	59	30.3	0.0	16.1	5.0
29-Sep	3	13	8.2	7	30	15.4	13	93	34.5	0.0	16.4	4.1

Note: The British Columbia Air Quality Objectives (AQO) are:

- $PM_{2.5}$: 25 µg/m³ - Achievement based on annual 98th percentile of daily average, averaged over one year.
- PM_{10}: 50 µg/m³ - Achievement based on the daily (24-hr) average.
- TSP: 120 µg/m³ - Achievement based on the daily (24-hr) average.
- NO_2: 60 ppb - Achievement based on annual 98th percentile of daily 1-hour average maximum (D1HM), averaged over three consecutive years.

Bold Italic numbers indicates that the 24-hour average for PM or one or more 1-hour maximum values for NO_2 exceed the respective threshold values.

Table 2: Weekly Averages Summary – $PM_{2.5}$, PM_{10}, TSP and NO_2

Pollutant	units	1-hr Min	1-hr Max	Weekly average	Trigger Limits (2/3 of the AQO)	Time Above Trigger Limit (Days)	Time Above AQO (Days)
$PM_{2.5}$	µg/m³	3	18	9.4	16.7 (24-hr avg)	0	0
PM_{10}	µg/m³	5	58	15.0	33.3 (24-hr avg)	0	0
TSP	µg/m³	12	198	33.5	80 (24-hr avg)	0	0
NO_2	ppb	0	18.8	6.0	40 (1-hr avg max)	0	0

Table 3: Summary of Meteorological Station Results

Date	Wind Speed (m/s)		Ambient Temperature (°C)			Total Rainfall (mm)
	Max	24-hr Avg	Min	Max	24-hr Avg	
23-Sep	2.6	0.5	13.2	18.1	15.2	2.0
24-Sep	4.4	0.7	13.5	21.9	16.6	10.0
25-Sep	5.2	1.3	11.9	16.0	14.6	27.2
26-Sep	5.2	1.5	10.5	14.1	12.1	11.6
27-Sep	7.7	1.4	10.5	18.0	14.3	10.8
28-Sep	6.6	1.8	10.1	15.8	12.5	0.0
29-Sep	10.8	2.2	7.9	16.9	12.3	0.0

Table 4: Passive SO_2 and VOC Sampling

Date	Sampled Swapped (Yes/No)	Chain of Custody (COC) Submitted (Yes/No)	Sample Submitted to AGAT Lab (Yes/No)	Lab Results Received (Yes/No)	Lab Results Summary or Comments
23-Sep to 29-Sep	No	No	No	No	No sample swap or lab analysis was performed during this period.

Note: This table mostly contains "No" entries because SO_2 and VOC passive samples are swapped on a monthly basis, and this reporting period may not coincide with the sampling schedule. Passive samples were installed on September 1, 2024.

On-Site Dust Observation Report and Work Activities Details

Dust Observation Report Summary:

No dust observation report was received for this period, as the template is still being prepared for the client to provide this information.

Work Activities Details:

Daily Construction Reports are not available to Stantec Consulting for this reporting period.

Summary of Daily Reports and Action Taken

Category	Details	Action Taken	Resolution Status / Anticipated Completion Date
AQ Exceedances Report	No AQ exceedances recorded for this period.	No Action required.	Not Applicable.
AQ Complaints	No AQ complaints received during this period.	No Action required.	Not Applicable.
Alerts from the AQMS	No alarms or instrument break-down was reported from AGAT during this period.	No Action required.	Not Applicable.
Changes to the Monitoring Network	No changes to the monitoring network during this period.	Not Applicable.	Not Applicable.
Changes to Mitigation Measures	No changes to mitigation measures during this period.	Not Applicable.	Not Applicable.

In summary, all instruments operated as intended, successfully collecting air quality data throughout the reporting period. No air quality exceedances of the British Columbia Air Quality Objectives were recorded, and no further investigation was required.

WLNG AQMS - Weekly Reporting

Reporting Period

This AQMS Weekly report covers the period from September 30 to October 06, 2024.

Objective

This report aims to summarize air quality monitoring data for the week of September 30 - October 06, 2024. This report includes an analysis of pollutants such as $PM_{2.5}$, PM_{10}, TSP, and NO_2, highlighting any significant dust events, alerts from the Air Quality Monitoring System (AQMS), and changes to the monitoring network and mitigation measures. Additionally, the report aims to document the results of any investigations into alerts or equipment failures, detailing actions taken or plans for resolution to ensure compliance with environmental standards and support ongoing air quality management efforts.

Summary of Onsite Air Quality and Meteorological Data Collected

This section presents four summary tables summarizing the air quality and meteorological monitoring data. The presented data is based on Level 0 verification, indicating that it has undergone preliminary checks for completeness and accuracy.

Table 1: Summary of Daily Results for the Past 7 Days

Date	$PM_{2.5}$ (µg/m³)			PM_{10} (µg/m³)			TSP (µg/m³)			NO_2 (ppb)		
	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg	1-hr Min	1-hr Max	24-hr Avg
30-Sep	5	15	8.5	6	37	15.7	14	87	35.8	0.0	11.6	3.9
01-Oct	6	16	9.1	8	33	14.8	17	112	35.1	0.4	9.3	4.2
02-Oct	6	15	10.3	6	25	15.4	17	59	30.1	0.0	11.3	3.5
03- Oct	6	13	9.1	6	23	14.4	12	53	28.2	0.0	11.4	4.3
04- Oct	3	14	9.2	7	20	11.7	9	35	20.6	0.0	19.5	5.6
05- Oct	1	14	10.3	4	25	15.1	17	46	26.9	0.2	13.7	5.3
06- Oct	4	17	9.1	7	26	15.2	16	65	29.0	0.0	8.8	2.8

Note: The British Columbia Air Quality Objectives (AQO) are:

- $PM_{2.5}$: 25 µg/m³ - Achievement based on annual 98th percentile of daily average, averaged over one year.
- PM_{10}: 50 µg/m³ - Achievement based on the daily (24-hr) average.
- TSP: 120 µg/m³ - Achievement based on the daily (24-hr) average.
- NO_2: 60 ppb - Achievement based on annual 98th percentile of daily 1-hour average maximum (D1HM), averaged over three consecutive years.

Bold Italic numbers indicates that the 24-hour average for PM or one or more 1-hour maximum values for NO_2 exceed the respective threshold values.

Table 2: Weekly Averages Summary – $PM_{2.5}$, PM_{10}, TSP and NO_2

Pollutant	units	1-hr Min	1-hr Max	Weekly average	Trigger Limits (2/3 of the AQO)	Time Above Trigger Limit (Days)	Time Above AQO (Days)
$PM_{2.5}$	µg/m³	1	17	9.4	16.7 (24-hr avg)	0	0
PM_{10}	µg/m³	4	37	14.6	33.3 (24-hr avg)	0	0
TSP	µg/m³	9	112	29.4	80 (24-hr avg)	0	0
NO_2	ppb	0	19.5	4.2	40 (1-hr avg max)	0	0

Table 3: Summary of Meteorological Station Results

Date	Wind Speed (m/s)		Ambient Temperature (°C)			Total Rainfall (mm)
	Max	24-hr Avg	Min	Max	24-hr Avg	
30-Sep	5.0	0.9	5.7	14.5	9.9	0.0
01-Oct	4.8	1.0	9.5	14.1	11.0	2.6
02- Oct	6.2	1.7	8.3	15.2	11.5	0.0
03- Oct	9.8	1.1	6.5	15.5	10.8	0.0
04- Oct	8.6	1.4	9.1	14.0	10.8	37.4
05- Oct	3.6	0.6	8.9	14.9	11.1	0.2
06- Oct	5.9	1.1	10.9	17.3	13.0	0.2

Table 4: Passive SO_2 and VOC Sampling

Date	Sampled Swapped (Yes/No)	Chain of Custody (COC) Submitted (Yes/No)	Sample Submitted to AGAT Lab (Yes/No)	Lab Results Received (Yes/No)	Lab Results Summary or Comments
30-Sep to 06-Oct	No	No	No	No	No sample swap or lab analysis was performed during this period.

Note: This table mostly contains "No" entries because SO_2 and VOC passive samples are swapped on a monthly basis, and this reporting period may not coincide with the sampling schedule. Passive samples were installed on September 1, 2024.

On-Site Dust Observation Report and Work Activities Details

Dust Observation Report Summary:

No dust observation report was received for this period, as the template is still being prepared for the client to provide this information.

Work Activities Details:

Daily Construction Reports for September 30 and October 1 are not available to Stantec Consulting for this reporting period. According to the Daily Construction Reports, between October 2 and 6, construction activities included ongoing drilling and blasting in areas 1100 and 1200, rock breaking, and hauling and loading blast rock to Kode Crushing. Additional tasks involved stockpile management, site cleanup, and containment work by the environmental team.

Summary of Daily Reports and Action Taken

Category	Details	Action Taken	Resolution Status / Anticipated Completion Date
AQ Exceedances Report	No AQ exceedances recorded for this period.	No Action required.	Not Applicable.
AQ Complaints	No AQ complaints received during this period.	No Action required.	Not Applicable.
Alerts from the AQMS	No alarms or instrument break-down was reported from AGAT during this period.	No Action required.	Not Applicable.
Changes to the Monitoring Network	No changes to the monitoring network during this period.	Not Applicable.	Not Applicable.
Changes to Mitigation Measures	No changes to mitigation measures during this period.	Not Applicable.	Not Applicable.

In summary, all instruments operated as intended, successfully collecting air quality data throughout the reporting period. No air quality exceedances of the British Columbia Air Quality Objectives were recorded, and no further investigation was required.