

**WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
MONTHLY AMBIENT AIR QUALITY MONITORING REPORT
MAY 2023
REPORT HISTORY**

Original report release data: June 30, 2023

Revised report release date: August 30, 2023

Revision 1 – Submission of H₂S data and Revision of TRS data at Patricia McInnes.

The Patricia McInnes air monitoring station (AMS06) collected H₂S data from January 3, 2023, to June 12, 2023, but it was reported as TRS. On August 30, 2023, the data was resubmitted as H₂S to the Electronic Transfer System (ETS) and the TRS data was revised. The monthly report cover letter, station summary, network summary, and calibration report contained within have been revised to reflect the change.



**WOOD BUFFALO
ENVIRONMENTAL ASSOCIATION**

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Wood Buffalo Environmental Association

MAY 2023 MONTHLY REPORT

CONTINUOUS MONITORING

August 30, 2023

Revision 01

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association





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August 30, 2023

Director, Environmental Monitoring and Evaluation Branch
Alberta Environment and Protected Areas
11th Floor, Oxbridge Place
9820 106 Street
Edmonton, Alberta T5K 2J6

**RE: Monthly Ambient Air Quality Monitoring Report May 2023 – Revision 01
Wood Buffalo Environmental Association**

Enclosed is the May 2023 Ambient Air Quality Monitoring Report for the continuous ambient air quality monitoring stations of the Wood Buffalo Environmental Association (WBEA) regional air quality monitoring network.

The continuous ambient air quality monitoring network stations are:

AMS01 - Bertha Ganter - Fort McKay	AMS18 - Stony Mountain
AMS02 - Mildred Lake	AMS19 - Firebag
AMS03 - Lower Camp (Meteorology)	AMS20 - MacKay River
AMS04 - Buffalo Viewpoint	AMS21 - Conklin
AMS05 - Mannix	AMS22 - Janvier
AMS06 - Patricia McInnes	AMS23 - Fort Hills
AMS07 - Athabasca Valley	AMS25 - Waskōw ohci Pimâtisiwin
AMS08 - Fort Chipewyan	AMS26 - Christina Lake
AMS09 - Barge Landing	AMS27 - Jackfish 2/3
AMS11 - Lower Camp (Air Quality)	AMS29 - Surmont 2
AMS13 - Fort McKay South	AMS30 - Ells River
AMS14 - Anzac	AMS506 – Jackfish 1
AMS17 - Wapasu	AMS508 - Kirby North

The WBEA submits this report on behalf of its members and for some members to satisfy the requirements contained in their EPEA Approvals (as amended):



Industry Operators

Athabasca Oil Corporation
Canadian Natural

EPEA Approval No.

289664-00-00; 241311-00-00
149968-01-00; 153125-01-00;
20809-02-00; 224816-01-00; 228044-00-00;
237382-00-00

Cenovus Energy Inc.

48522-01-00

ChemTrade Logistics

404827-00-00

CNOOC International

137467-01-00; 236394-00-00

Connacher Oil and Gas Ltd.

240008-00-00

ConocoPhillips

48263-01-00

Fort Hills Energy Corporation

151469-01-00

Hammerstone Corporation

189942-00-00

Harvest Operations Corp.

246984-01-00

H.J. Baker Sulphur Canada ULC

426549-00-00

Husky Oil Operations Ltd.

206355-01-00

Imperial Oil Ltd.

00046586-00-00

Inter Pipeline Ltd.

73203-02-00

Keyera Energy Ltd.

187-03-00

MEG Energy Corp.

00216466-01-00

Parsons Creek Aggregates

231302-00

PetroChina Canada Ltd.

254465-00-00

Suncor Energy Inc.

094-02-00; 80105-01-00

Sunshine Oilsands Ltd.

305529-00-00

Surmont Energy

318401-00-00

Syncrude Canada Ltd.

026-02-00

Teck Resources Ltd.

00247548-00-00

Titan Tire Reclamation Corporation

364232-00-00

Government and Non-Government Organizations

Alberta Energy Regulator

Health Canada

Alberta Environment and Protected Areas

Keyano College

Alberta Health

Parks Canada

Alberta Health Services

Pembina Institute

Environment and Climate Change Canada

Regional Municipality of Wood Buffalo

Indigenous Communities

Athabasca Chipewyan First Nation

Fort McKay First Nation

Chard Métis Nation

Fort McMurray 468 First Nation

Chipewyan Prairie Dene First Nation

Fort McKay Métis

Christina River Dene Nation Council

Lakeland Métis

Conklin Resource Development Advisory
Council

McMurray Métis

Mikisew Cree First Nation

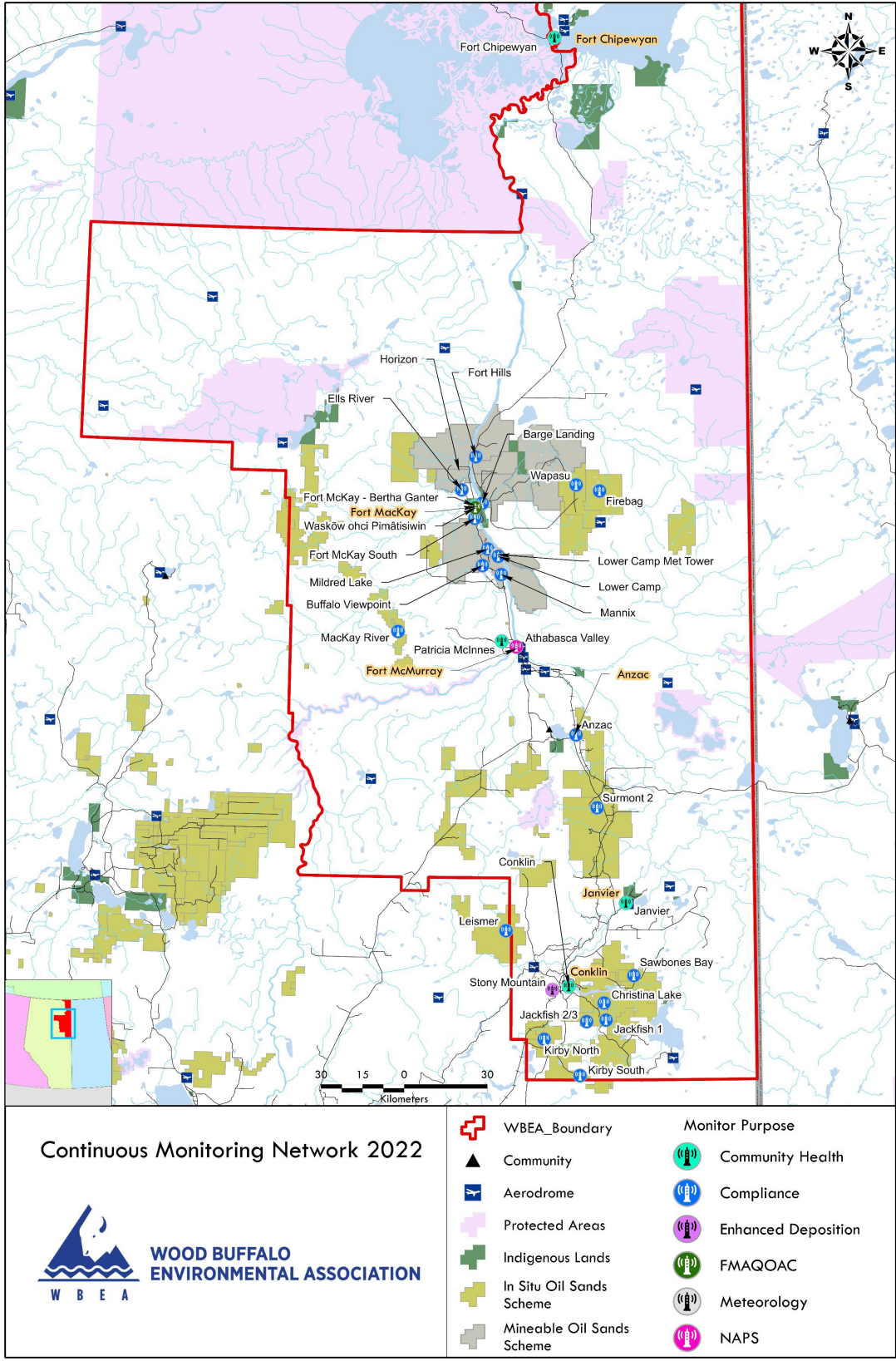


Figure 1: Map of WBEA Continuous Monitoring Network

The following operational notes are provided as per the Air Monitoring Directive requirements.

1.0 Concentrations in Excess of Alberta Ambient Air Quality Guidelines and Objectives

There were no ambient concentrations in excess of the Alberta Ambient Air Quality Objectives or Guidelines (AAAQO/AAAQG) as indicated in the Air Monitoring Directive Section RC 5-F for CO, NH₃, NO₂, O₃, and TRS.

There were fourteen ground-level concentrations in excess of the 1-hour H₂S objective reported to AEPA; following data validation and processing, one exceedance was found to be not an exceedance.

There were three ground-level concentrations in excess of the 24-hour H₂S objective reported to AEPA; following data validation and processing, one exceedance was found to be not an exceedance.

There were five ground-level concentrations in excess of the 1-hour SO₂ objective reported to AEPA; following data validation and processing, all these exceedances were confirmed.

There were seventeen hundred ambient ground-level concentrations in excess of the 1-hour PM_{2.5} guideline reported to AEPA; following data validation and processing, with one exceedance reported late and fifty-three exceedances being retracted, sixteen hundred and forty-eight were confirmed.

There were two hundred and twenty-one ambient ground-level concentrations in excess of the 24-hour PM_{2.5} objective reported to AEPA; following data validation and processing, with one exceedance reported late and twelve exceedances being retracted, two hundred and ten exceedances were confirmed.

There were two ground-level concentrations in excess of the 1-hour TSP objective reported to AEPA; following data validation and processing, these exceedances were confirmed.

A detailed summary of ambient concentrations in excess of the Alberta Ambient Air Quality Objectives (AAAQOs) and Ambient Air Quality Guidelines (AAAQGs), including site, parameter, date & time, reference number, exceedance period, reported and final concentration and status, are included in Appendix I of the report.

*status legend:

late	exceedance, raw values were not found to be in exceedance in real time, and/or were not reported, but final values were found to be an exceedance after data processing.
exc	exceedance, raw values reported in real time were confirmed to be in exceedance after data processing.
nae	not an exceedance, raw values reported in real time were found not in exceedance after data processing.
ret	retracted, reported exceedance was found to be not an exceedance after investigation of measurement system status and/or validation of raw data in conjunction with all associated measurement parameters.

2.0 Data Processing and Validation

Concentrations reported in near real-time are raw values. The final values are determined after processing data for reporting. For all parameters, except PM_{2.5}, the final 5-minute data values are determined by subtracting the daily zero responses, interpolated to the time of each raw 5-minute value, from the raw 5-minute data values. The PM_{2.5} analyzers do not have the capability of performing zero's, therefore, the raw

5-minute values are validated through a comparison with associated parameters at the same, or a nearby, AMS. The final 5-minute data values are then rounded to one decimal place greater than the reporting precision indicated in the Air Monitoring Directive (AMD). The final 1-hour data values are calculated from final 5-minute data values and then rounded to reporting precision. The final 24-hour data values are calculated from final 1-hour values.

After data processing and validation, NO₂ concentrations are re-calculated from baseline-corrected NO_x and NO concentrations. Specifically, the NO concentration is subtracted from the NO_x concentration to determine the NO₂ concentration.

2.1 Revisions to ETS Electronic Transfer System – Data and Monthly Reports

During routine data review, it was identified that the Total Hydrocarbon (THC) baseline points for Firebag Air Monitoring Stations (AMS) had inadvertently been left unaccepted for April 2023. On June 21, 2023, THC data for Firebag AMS for April 2023 was resubmitted to the Electronic Transfer System to include baseline corrections.

3.0 Operational Status

3.1 Continuous Monitoring

In May 2023, there were two instances that resulted in monitoring instruments operating less than 90% of the time.

1. The PM_{2.5} analyzer at Bertha Ganter – Fort McKay AMS operated less than 90% for March 2022, which is a contravention of the Air Monitoring Directive (AMD) (2016, as amended), Chapter 6, Clause DQ 4-C. This incident was reported to Alberta Environment and Protected Areas (AEPA) on June 29, 2023 (reference number 415635). Additional information will be included in the 7-day letter.
2. The wind speed and wind direction (WS/WD) sensor at the Firebag AMS operated less than 90% for the month of February 2023 through to the month of May 2023, which is a contravention of Clause DQ 4-C, of Chapter 6 of the Air Monitoring Directive (2016, as amended). This incident was reported to Alberta Environment and Protected Areas (AEPA) on May 10, 2023 (reference number 412838).

On May 2, during the daily system check the WBEA noted the WS/WD was not comparing well with nearby sites. A physical inspection of the WS/WD sensor tower by the WBEA found one set of bolts that secure the tower to the station were missing, resulting in the misalignment of the tower orientation. The WBEA rectified the issue by replacing the missing bolts and ensuring the tower was in proper alignment. The subsequent data review determined that data collected from February 25 to May 4, 2023, was invalid.

3.2 Intermittent Monitoring

The results for time-integrated sampling of precipitation, PAH, VOC, ECOC, PM_{2.5}, and PM₁₀ will be submitted in the 2023 Annual Report.

3.3 General Network Notes

The Ammonia (NH₃) analyzer currently operates on a 0 to 2500 ppb operating range with a detection level of 5 ppb in the WBEA network. In data processing, values less than five ppb have been considered below detection levels and are reported as zero.

Total hydrocarbon (THC), non-methane hydrocarbon (NMHC), and methane (CH₄) measurements are collected at some air monitoring stations in the WBEA network using the Thermo Environmental model 55i direct CH₄/NMHC analyzer. This analyzer uses a Gas Chromatography (GC) based system, which resets the baseline value at the start of every run. This may cause the ambient background to indicate a response below the expected 1.8 ppm background level. When all measurable criteria indicate valid data during the QAQC and validation process, the data is reported without any additional flags. However, a response below the expected 1.8 ppm triggers an investigation of the analyzer to determine if there is an issue.

Monitoring notes, including changes to monitoring locations, methods, or equipment, and any reporting or monitoring irregularities, for the continuous monitoring stations, are provided on a station-by-station basis. Notes of each interrupted event are provided in chronological order, and meteorological parameters are mentioned last.

Station 1, Bertha Ganter – Fort McKay

The NH₃ analyzer required additional time to stabilize to levels below ambient concentrations following the automated daily spans and routine monthly multipoint calibrations. Additional time is required for stabilization after exposure to high concentrations of NH₃ gas, and this is an inherent behavior in the NH₃ analyzer operations due to the properties of the NH₃ gas. Data for 1 to 5 hours following the daily spans have been reported as invalid for a total of 35 hours this month.

Unstable operation due to inconsistent response of the PM_{2.5} analyzer on May 13 through 15 and May 26 to June 1 resulted in 179 hours of invalid data.

Maintenance to replace the PM_{2.5} analyzer on May 15 resulted in 1 hour of downtime.

Cleaning of the sample manifold on May 23 interrupted the normal operations of all gaseous analyzers, except for the NH₃ analyzer, for 1 hour.

A flatline in the output signal of the O₃ analyzer from May 24 resulted in 1 hour of invalid data.

A flatline in the output signal of the NH₃ analyzer on May 25, 26, and 29 resulted in 13 hours of invalid data. Subsequent maintenance to either reboot the analyzer and/or reinitiate the QA check on May 5, 25 and 26 resulted in a further 9 hours of invalid data.

Maintenance to replace and subsequent stabilization of the NH₃ analyzer on May 29 and 30 resulted in 18 hours of downtime.

A flatline in the output signal of the wind sensor on May 2 and 12 resulted in 2 hours of invalid data.

Intermittent flatlines in the output signal of the temperature sensor at the 10-meter elevation throughout the month resulted in 11 hours of invalid data.

Station 2, Mildred Lake

Failure of the data system to record data on May 23 resulted in 1 hour of invalid data for all parameters.

Maintenance to replace the zero-air generator on May 30 interrupted the normal operations of THC/NMHC/CH₄ analyzer for 4 hours.

Station 3, Lower Camp – Meteorology

No operational issues to report.

Station 4, Buffalo Viewpoint

Maintenance to reset the logger and the modem on May 16 interrupted the normal operation of all parameters for 1 hour.

Maintenance to replace the moly converter and the charcoal canister on May 18 and 19 interrupted the normal operation of the NO₂ for 28 hours.

Unstable operations due to the inconsistent response output signal of the PM_{2.5} on May 23 resulted in 58 hours of invalid data. Subsequent maintenance to reinitiate the normal operations of the PM_{2.5} analyzer resulted in a further 1 hour of invalid data.

Station 5, Mannix

Maintenance to replace the support gas cylinder of the THC/NMHC/CH₄ analyzer on May 4 resulted in 2 hours of downtime.

Unstable operations due to excessive baseline noise in the output signal of the THC/NMHC/CH₄ analyzer on May 6, 7 and 18 resulted in 11 hours of invalid data.

Cleaning of the sample manifold on May 8 interrupted the normal operations of all gaseous analyzers for 2 hours.

Failure to record data from the THC/NMHC/CH₄ analyzer on May 18 resulted in 1 hour of downtime.

The relative humidity sensor operated out of range on May 17 and 25 resulting in 6 hours of downtime.

Station 6, Patricia McInnes

The NH₃ analyzer required additional time to stabilize to levels below ambient concentrations following the automated daily spans and routine monthly multipoint calibrations. NH₃ analyzers require additional time for stabilization after being exposed to high concentrations, this is due to the physical properties of the NH₃ gas. Data for 1 to 3 hours following each daily span has been reported as invalid for a total of 70 hours this month.

Maintenance to replace the calibration gas cylinder of the H₂S, NO₂, and NH₃ analyzers on May 8 resulted in 3 hours of downtime.

Maintenance to run a multipoint verification check for the H₂S analyzer on May 9 resulted in 7 hours of downtime.

Unstable operations due to excessive baseline noise in the output signal of the THC/NMHC/CH₄ analyzer on May 26 resulted in 13 hours of invalid data.

Maintenance to run a multipoint verification check for the THC/NMHC/CH₄ analyzer on May 26 resulted in 1 hour of downtime.

The TRS analyzer was not in service for 744 hours in May.

Station 7, Athabasca Valley

Maintenance to replace the support gas cylinder of the THC/NMHC/CH₄ analyzer on May 8 resulted in 2 hours of downtime.

Analyzer failure due to a non-responsive PM_{2.5} analyzer on May 22 and 23 resulted in 5 hours of invalid data.

Automated daily zero-response checks of the O₃ analyzer did not meet WBEA's QC acceptance criteria for the month of May. Therefore, the calibrator zeros from the April, May, and June multi-point calibrations were used to validate the analyzer baseline response.

Station 8, Fort Chipewyan

Maintenance to verify the daily QA check on May 11 interrupted the normal operations of the CO, CO₂, and NO₂ analyzers for 1 to 2 hours.

Station power failure on May 12 affected the normal operations of TRS analyzer for 1 hour.

Station power failure on May 20 affected the normal operations of CO and CO₂ analyzers for 44 to 45 hours.

Station power failure on May 20 and 27 affected the normal operations of NO₂, O₃, PM_{2.5}, and TRS analyzers for a total of 2 hours.

Station power failure on May 27 affected the normal operations of CO, CO₂, and SO₂ analyzers for a total of 1 hour.

Maintenance to verify the daily QA check on May 18 interrupted the normal operations of the CO₂ analyzer for 2 hours.

The relative humidity sensor operated out of range on May 25 and 26 resulting in 8 hours of downtime.

A flatline in the output signal of the wind sensor on May 10 resulted in 1 hour of invalid data.

The daily span check of all gaseous analyzers was outside the 10% AMD criteria throughout the month due to an interruption in the station calibrator configuration.

Station 9, Barge Landing

Cleaning of the sample manifold on May 23 interrupted the normal operations of the SO₂, THC/NMHC/CH₄, and TRS analyzers for 1 hour.

The relative humidity sensor operated out of range on May 25 resulting in 4 hours of downtime.

Station 11, Lower Camp

Maintenance to reset the logger and the modem on May 10 interrupted the normal operation of all parameters for 1 hour.

Station operator activities on May 12 interrupted the normal operations of all gaseous analyzers for 1 to 2 hours.

Cleaning of the sample manifold on May 16 interrupted the normal operations of the SO₂ and THC/NMHC/CH₄ for 1 hour.

Station 13, Fort McKay South

Maintenance to verify the daily QA check on May 28 interrupted the normal operations of the NO₂ analyzer for 1 hour.

Maintenance to replace the sample pump of the NO₂ analyzer on May 30 resulted in 19 hours of downtime.

Station 14, Anzac

Maintenance to replace the support gas cylinder of the THC/NMHC/CH₄ analyzer on May 11 resulted in 1 hour of downtime.

A flatline in the output signal of the wind sensor on May 9 resulted in 1 hour of invalid data.

Station 17, Wapasu

Cleaning of the sample manifold on May 23 interrupted the normal operations of the NO₂, O₃, SO₂, and THC analyzers for 1 hour.

Station 18, Stony Mountain

Unstable operations of the CO, CO₂, NO₂, and THC/NMHC/CH₄ analyzer due to station temperature fluctuation on May 4 and 5 resulted in 1 to 22 hours of invalid data.

Maintenance to reinitiate the daily QA check on May 11 interrupted the normal operations of the CO₂ analyzer for 1 hour.

Unstable operation of the THC/NMHC/CH₄ analyzer due to excessive baseline noise on May 12 resulted in 8 hours of invalid data.

Maintenance to adjust the THC/NMHC/CH₄ retention timing on May 13 resulted in 4 hours of downtime.

Maintenance to replace the support gas cylinder of the THC/NMHC/CH₄ analyzer on May 25 and 31 resulted in 4 hours of downtime.

Station 19, Firebag

Cleaning of the sample manifold on May 2 interrupted the normal operations of the NO₂, SO₂, and THC analyzers for 2 hours.

Maintenance to replace the support gas cylinder of the THC analyzer on May 24 resulted in 3 hours of downtime.

Analyzer failure due to a non-responsive output signal of the THC analyzer on May 25 and 26 resulted in 18 hours of invalid data.

Maintenance to reinitiate the THC analyzer on May 26 resulted in 1 hour of downtime.

Unstable operations due to the misaligned tower that affected the wind sensor readings throughout the month for 86 hours.

Maintenance to bring the tower down to replace the wind sensor resulted in 1 hour of downtime.

Station 20, MacKay River

Cleaning of the sample manifold on May 24 interrupted the normal operations of the NO₂, SO₂, and THC analyzers for 1 hour.

Maintenance to verify the daily QA check on May 25 interrupted the normal operations of the SO₂ and THC analyzers for 1 hour.

Maintenance to replace the H₂S analyzer on May 24 and 25 resulted in 22 hours of downtime.

Station 21, Conklin

Analyzer failure due to a non-responsive PM_{2.5} analyzer on May 23 resulted in 5 hours of invalid data. Subsequent maintenance to replace the PM_{2.5} analyzer on May 23 resulted in further 3 hours of invalid data.

Maintenance to complete field verification checks of the PM_{2.5} analyzer on May 24 resulted in 1 hour of invalid data.

Maintenance to replace the support gas cylinder of the THC/NMHC/CH₄ analyzer on May 24 resulted in 2 hours of downtime.

A flatline in the output signal of the wind sensor on May 10 and 30 resulted in 2 hours of invalid data.

Automated daily zero-response checks of the O₃ analyzer did not meet WBEA's QC acceptance criteria for May. Therefore, the calibrator zeros from the April, May, and June multi-point calibrations were used to validate the analyzer baseline response.

Station 22, Janvier

Maintenance of the zero-air generator on May 2 impacted the normal operations of the THC/NMHC/CH₄ analyzer, resulting in 2 hours of invalid data.

Maintenance to replace the NO₂ analyzer and a subsequent stabilization on May 2 and 3 resulted in 18 hours of invalid data.

A flatline in the output signal of the wind sensor on May 22 resulted in 1 hour of invalid data.

Station 23, Fort Hills

Station power failure on May 6 and 7 interrupted the normal operations of all air quality analyzers resulting in 4 to 10 hours of downtime.

Failure to record data from the THC/NMHC/CH₄ analyzer on May 6 and 7 resulted in 14 hours of downtime.

Failure to record data from the SO₂ analyzer on May 10 resulted in 1 hour of downtime.

Cleaning of the sample manifold on May 10 interrupted the normal operations of the NO₂ and TRS analyzers for 1 hour.

Station power failure on May 23 and 24 interrupted the normal operations of all parameters resulting in 1 to 3 hours of downtime.

Maintenance to reset the logger and the modem on May 29 interrupted the normal operation of all air quality analyzers for 1 hour.

Station 25, Waskōw ohci Pimâtisiwin

Cleaning of the sample manifold on May 17 interrupted the normal operations of the SO₂ analyzer for 1 hour.

Maintenance to verify the daily QA check on May 25 and 26 interrupted the normal operations of the H₂S analyzer for 11 hours.

Intermittent flatlines in the output signal of the wind sensor throughout the month resulted in 13 hours of invalid data.

Station 26, Christina Lake

Station operator activities on May 30 interrupted the normal operations of the H₂S analyzer for 1 hour.

Maintenance to verify the daily QA check on May 31 interrupted the normal operations of the SO₂ analyzer for 2 hours.

Cleaning of the sample manifold on May 31 interrupted the normal operations of the H₂S and SO₂ analyzers for 2 hours.

The daily span check for the SO₂ analyzer was outside the 10% AMD criteria on May 31 due to an interruption in the station calibrator configuration.

Station 27, Jackfish 2/3

Unstable operations due to excessive baseline drift in the output signal of the H₂S analyzer on May 2 resulted in 2 hours of invalid data.

Failure to record data of all parameters on May 22 resulted in 1 hour of invalid data.

Station 29, Surmont 2

Maintenance to conduct a multi-point verification check of the SO₂ and THC analyzer on May 9 resulted in 2 hours of downtime.

The relative humidity sensor operated out of range on May 31 resulting in 1 hour of downtime.

A flatline in the output signal of the wind sensor on May 10 and 11 resulted in 3 hours of invalid data.

The daily span check for the NO₂ analyzer was outside the 10% AMD criteria for multiple days throughout the month due to an interruption in the station calibrator configuration.

Station 30, Ells River

Maintenance to reset the logger and the modem on May 03 interrupted the normal operation of all parameters for 1 hour.

Maintenance to replace the support gas cylinder of the THC/NMHC/CH₄ analyzer on May 26 resulted in 1 hour of downtime.

Intermittent flatlines in the output signal of the temperature sensor throughout the month resulted in 5 hours of invalid data.

Station 506, Jackfish 1

No operational issues to report.

Station 508, Kirby North

A flatline in the output signal of the NO₂ analyzer from May 12 to 15 resulted in 18 hours of invalid data.

Maintenance to the NO₂ analyzer and subsequent stabilization on May 15 and 16 resulted in 19 hours of downtime.

Failure to record data of all parameters except the NO₂ analyzer on May 15 resulted in 1 hour of invalid data.

Field troubleshooting of the NO₂ analyzer on May 18 resulted in 4 hours of downtime.

Cleaning of the sample manifold on May 18 interrupted the normal operations of the H₂S analyzer for 2 hours.

If additional information is required, please contact the Wood Buffalo Environmental Association at (780) 799-4420.

Yours sincerely,

Wood Buffalo Environmental Association

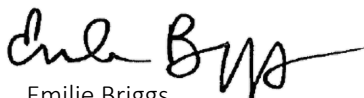
The representative of the Person Responsible for this monitoring program is Emilie Briggs, Operations Manager, WBEA.

Level one (L1) data review was completed by the Field Technicians responsible for each respective air monitoring station. Level two (L2) data validation, report preparation, and submission were completed by Asad Hidayat and Karina Fenwick of WBEA. The WBEA has retained the services of Whiteley Enterprises to conduct Level three (L3) review on its behalf. Contact information for WBEA staff is included below.

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T: (780) 215-6000
E: ahidayat@wbea.org

Karina Fenwick, Data Technician
Wood Buffalo Environmental Association
T: (780) 215-7499
E: kfenwick@wbea.org

I certify that I have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe, and the specified analysis, summarization, and reporting requirements.



Emilie Briggs
Operations Manager

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R01_2305

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
MONTHLY AIR MONITORING SUMMARY

May 2023

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Created: Aug 02 2023 11:00

APPROVAL NUMBERS	REPORT DATE						
	MONTH	YEAR					
289664-00-00	05	2023					
241311-00-00	CONTINUOUS AMBIENT MONITORING						
20809-02-00							
149968-01-00							
237382-00-00				ONE-HOUR AVERAGE		24-HOUR AVERAGE	
48522-01-00	PARAMETER	STN. NO.	% TIME OPERATIONAL	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION
240008-00-00	SO2(ppb)	1	100	66	0	8.4	0
48263-01-00	SO2(ppb)	2	100	56.3	0	9.6	0
224816-00-00	SO2(ppb)	4	100	43.7	0	6.5	0
151469-01-00	SO2(ppb)	5	100	67.9	0	17.0	0
189942-00-00	SO2(ppb)	6	100	11.4	0	1.7	0
206355-00-00	SO2(ppb)	7	100	9.6	0	1.6	0
46586-00-00	SO2(ppb)	8	100	6.7	0	1.1	0
73203-02-00	SO2(ppb)	9	100	59.8	0	7.8	0
216466-01-00	SO2(ppb)	11	99	238.7	5	35.8	0
137467-01-00	SO2(ppb)	13	100	51.3	0	6.8	0
236394-00-00	SO2(ppb)	14	100	5.8	0	1.4	0
254465-00-00	SO2(ppb)	17	100	15.2	0	2.8	0
094-03-00	SO2(ppb)	18	100	3.9	0	1.1	0
80105-01-00	SO2(ppb)	19	100	18.8	0	3.7	0
305529-00-00	SO2(ppb)	20	100	16.3	0	6.1	0
318401-00-00	SO2(ppb)	21	100	6.6	0	0.9	0
026-03-00	SO2(ppb)	22	100	4.7	0	1.4	0
364232-00-00	SO2(ppb)	23	99	28.5	0	6.6	0
228044-00-00	SO2(ppb)	25	100	61.3	0	8.0	0
247548-00-00	SO2(ppb)	26	100	27.3	0	7.3	0
231302-00-00	SO2(ppb)	27	100	8.8	0	1.1	0
153125-01-00	SO2(ppb)	29	100	12.1	0	1.7	0
	SO2(ppb)	30	100	19.7	0	4.9	0
	SO2(ppb)	506	100	37.9	0	4.7	0
	SO2(ppb)	508	100	9.6	0	1.5	0
	H2S(ppb)	1	100	2.9	0	0.8	0
	H2S(ppb)	2	100	7.5	0	1.3	0
	H2S(ppb)	4	100	2.7	0	0.5	0
	H2S(ppb)	5	100	5.6	0	1.7	0
	H2S(ppb)	6	99	1.1	0	0.3	0
	H2S(ppb)	11	100	29.3	13	4.0	2
	H2S(ppb)	17	100	1.0	0	0.3	0
	H2S(ppb)	19	100	4.9	0	0.4	0
	H2S(ppb)	20	97	3.8	0	0.8	0
	H2S(ppb)	25	99	2.7	0	0.8	0
	H2S(ppb)	26	100	2.7	0	0.7	0
	H2S(ppb)	27	100	1.0	0	0.4	0
	H2S(ppb)	29	100	0.9	0	0.3	0
	H2S(ppb)	506	100	8.6	0	0.8	0
	H2S(ppb)	508	100	0.8	0	0.3	0
	TRS(ppb)	1	100	3.8	0	1.4	0
	TRS(ppb)	6	NaN	--	0	--	0
	TRS(ppb)	7	100	1.1	0	0.5	0
	TRS(ppb)	8	100	1.1	0	0.5	0
	TRS(ppb)	9	100	3.3	0	0.9	0
	TRS(ppb)	13	100	4.2	0	1.5	0
	TRS(ppb)	14	100	2.4	0	0.8	0
	TRS(ppb)	18	100	1.0	0	0.5	0
	TRS(ppb)	21	100	1.6	0	0.9	0
	TRS(ppb)	22	100	1.1	0	0.5	0
	TRS(ppb)	23	99	1.6	0	0.8	0
	TRS(ppb)	30	100	2.6	0	1.2	0
	THC(ppm)	1	100	3.1	-	2.5	-
	THC(ppm)	2	99	4.0	-	2.4	-
	THC(ppm)	4	100	4.0	-	2.7	-
	THC(ppm)	5	97	4.6	-	2.4	-
	THC(ppm)	6	98	2.3	-	2.1	-
	THC(ppm)	7	100	2.5	-	2.2	-
	THC(ppm)	9	100	3.8	-	2.3	-
	THC(ppm)	11	99	4.5	-	2.4	-
	THC(ppm)	13	100	3.6	-	2.4	-
	THC(ppm)	14	100	2.4	-	2.1	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
MONTHLY AIR MONITORING SUMMARY

May 2023

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REPORT DATE							
MONTH	YEAR						
05	2023	CONTINUOUS AMBIENT MONITORING					
APPROVAL NUMBERS	PARAMETER	STN. NO.	% TIME OPERATIONAL	ONE-HOUR AVERAGE		24-HOUR AVERAGE	
				MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION
289664-00-00	THC(ppm)	17	100	2.7	0	2.4	-
241311-00-00	THC(ppm)	18	97	2.3	0	2.1	-
20809-02-00	THC(ppm)	19	97	2.7	0	2.5	-
149968-01-00	THC(ppm)	20	100	3.4	0	2.5	-
237382-00-00	THC(ppm)	21	100	2.7	0	2.2	-
48522-01-00	THC(ppm)	22	100	2.4	0	2.1	-
240008-00-00	THC(ppm)	23	97	7.4	0	2.7	-
48263-01-00	THC(ppm)	29	100	2.6	0	2.3	-
224816-00-00	THC(ppm)	30	100	3.8	0	2.3	-
151469-01-00	THC(ppm)	508	100	3.3	0	2.5	-
189942-00-00	O3(ppb)	1	100	68.3	0	39.3	-
206355-00-00	O3(ppb)	4	100	75.1	0	50.7	-
46586-00-00	O3(ppb)	6	100	74.3	0	54.6	-
73203-02-00	O3(ppb)	7	100	69.1	0	50.3	-
216466-01-00	O3(ppb)	8	100	69.6	0	49.6	-
137467-01-00	O3(ppb)	13	100	70.6	0	36.6	-
236394-00-00	O3(ppb)	14	100	66.1	0	53.7	-
254465-00-00	O3(ppb)	17	100	69.6	0	55.0	-
094-03-00	O3(ppb)	18	100	61.3	0	53.9	-
80105-01-00	O3(ppb)	21	100	65.2	0	50.3	-
305529-00-00	O3(ppb)	22	100	68.2	0	53.7	-
318401-00-00	NO2(ppb)	1	100	44.4	0	14.1	-
026-03-00	NO2(ppb)	4	96	28.8	0	10.1	-
364232-00-00	NO2(ppb)	6	100	22.9	0	5.5	-
228044-00-00	NO2(ppb)	7	100	21.8	0	8.8	-
247548-00-00	NO2(ppb)	8	100	11.4	0	3.4	-
231302-00-00	NO2(ppb)	9	100	42.4	0	14.5	-
153125-01-00	NO2(ppb)	13	97	44.4	0	13.4	-
	NO2(ppb)	14	100	10.6	0	3.7	-
	NO2(ppb)	17	100	18.7	0	4.5	-
	NO2(ppb)	18	97	15.2	0	4.1	-
	NO2(ppb)	19	100	15.5	0	5.2	-
	NO2(ppb)	20	100	27.2	0	6.6	-
	NO2(ppb)	21	100	16.0	0	4.7	-
	NO2(ppb)	22	98	10.6	0	3.4	-
	NO2(ppb)	23	99	46.1	0	19.9	-
	NO2(ppb)	26	100	18.7	0	5.5	-
	NO2(ppb)	27	100	19.5	0	5.2	-
	NO2(ppb)	29	100	11.9	0	3.4	-
	NO2(ppb)	30	100	36.8	0	12.6	-
	NO2(ppb)	506	100	23.1	0	4.5	-
	NO2(ppb)	508	94	18.2	0	4.6	-
	CO(ppm)	1	100	2.8	0	1.7	-
	CO(ppm)	7	100	2.9	0	1.4	-
	CO(ppm)	8	94	2.2	0	0.6	-
	CO(ppm)	18	97	3.3	0	1.4	-
	CO2(ppm)	1	100	496.5	-	450.0	-
	CO2(ppm)	8	93	441.6	-	433.5	-
	CO2(ppm)	18	100	465.8	-	446.6	-
	NH3(ppb)	1	90	28.2	0	15.7	-
	NH3(ppb)	6	90	35.7	0	18.1	-
	PM2.5(ug/m3)	1	76	556.6	81	356.3	11
	PM2.5(ug/m3)	4	92	222.0	78	74.7	14
	PM2.5(ug/m3)	6	100	598.8	94	326.4	15
	PM2.5(ug/m3)	7	99	616.2	107	331.7	17
	PM2.5(ug/m3)	8	100	808.3	112	248.7	12
	PM2.5(ug/m3)	9	100	491.1	99	314.0	15
	PM2.5(ug/m3)	13	100	584.8	134	368.4	20
	PM2.5(ug/m3)	14	100	601.6	118	278.3	13
	PM2.5(ug/m3)	17	100	478.5	112	255.6	12
	PM2.5(ug/m3)	18	100	758.5	114	274.9	10
	PM2.5(ug/m3)	21	99	727.6	115	320.0	13
	PM2.5(ug/m3)	22	100	672.0	143	260.9	12
	PM2.5(ug/m3)	23	98	504.5	115	328.8	19

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
MONTHLY AIR MONITORING SUMMARY

May 2023

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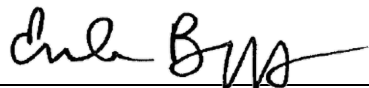
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REPORT DATE

MONTH	YEAR
05	2023

CONTINUOUS AMBIENT MONITORING

APPROVAL NUMBERS	PARAMETER	STN. NO.	% TIME OPERATIONAL	ONE-HOUR AVERAGE		24-HOUR AVERAGE	
				MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION
289664-00-00	PM2.5(ug/m3)	29	100	597.4	131	245.3	13
241311-00-00	PM2.5(ug/m3)	30	100	512	95	302.4	14
20809-02-00	WS(km/h)	1	100	-	-	-	-
149968-01-00	WS(km/h)	2	100	-	-	-	-
237382-00-00	WS(km/h)	4	100	-	-	-	-
48522-01-00	WS(km/h)	5	100	-	-	-	-
240008-00-00	WS(km/h)	6	100	-	-	-	-
48263-01-00	WS(km/h)	7	100	-	-	-	-
224816-00-00	WS(km/h)	8	100	-	-	-	-
151469-01-00	WS(km/h)	9	100	-	-	-	-
189942-00-00	WS(km/h)	11	100	-	-	-	-
206355-00-00	WS(km/h)	13	100	-	-	-	-
46586-00-00	WS(km/h)	14	100	-	-	-	-
73203-02-00	WS(km/h)	17	100	-	-	-	-
216466-01-00	WS(km/h)	18	100	-	-	-	-
137467-01-00	WS(km/h)	19	88	-	-	-	-
236394-00-00	WS(km/h)	20	100	-	-	-	-
254465-00-00	WS(km/h)	21	100	-	-	-	-
094-03-00	WS(km/h)	22	100	-	-	-	-
80105-01-00	WS(km/h)	23	100	-	-	-	-
318401-00-00	WS(km/h)	25	98	-	-	-	-
026-03-00	WS(km/h)	26	100	-	-	-	-
364232-00-00	WS(km/h)	27	100	-	-	-	-
228044-00-00	WS(km/h)	29	100	-	-	-	-
247548-00-00	WS(km/h)	30	99	-	-	-	-
231302-00-00	WS(km/h)	506	100	-	-	-	-
153125-01-00	WS(km/h)	508	100	-	-	-	-



SIGNATURE OF ASSOCIATION REPRESENTATIVE

FOR ALBERTA ENVIRONMENT USE ONLY



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS01 BERTHA GANTER - FORT MCKAY MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT MCKAY - BERTHA GANTER (AMS01)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2(ppb) Average	705	38	39	99.87	65.8	0	8.4	0
H2S(ppb) Average	705	38	39	99.87	2.9	0	0.8	0
TRS(ppb) Average	706	37	38	99.87	3.8	0	1.4	0
THC(ppm) Average	705	38	39	99.87	3.1	-	2.5	-
NMHC(ppm) Average	705	38	39	99.87	0.538	-	0.208	-
CH4(ppm) Average	705	38	39	99.87	2.7	-	2.3	-
O3 (ppb) Average	706	36	38	99.73	68.3	0	39.3	-
NO2 (ppb) Average	706	37	38	99.87	44.4	0	14.1	-
NO (ppb) Average	706	37	38	99.87	40.9	-	4.2	-
NOX (ppb) Average	706	37	38	99.87	63.7	-	17.8	-
NH3 (ppb) Average	612	57	132	89.92	28.2	0	15.7	-
PM2.5 (ug/m3) Average	561	3	183	75.81	556.6	81	356.3	11
CO(ppm) Average	708	35	36	99.87	2.8	0	1.7	0
CO2(ppm) Average	708	35	36	99.87	496.5	0	450	0
Temperature 2 m (C) Average	744	0	0	100	32.5	-	23.4	-
Temperature 10 m (C) Average	733	0	11	98.52	32.1	-	23.8	-
Relative Humidity (%) Average	744	0	0	100	96.7	-	76	-
Wind Speed 10 m (km/h) Average	742	0	2	99.73	29	-	20	-
Wind Direction 10 m (deg) Average	742	0	2	99.73	-	-	-	-
Precipitation (mm) Total	744	0	0	100	3.7	-	3.7	-
Leaf Wetness (% of range) Average	744	0	0	100	65.4	-	11.6	-
Global Solar Radiation (W/m2) Average	744	0	0	100	876.5	-	333.4	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BERTHA GANTER FORT MCKAY (AMS01)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	705	1.81	4.8	-	0	0	0.1	0.3	1.2	4.9	65.8
H2S (ppb) Average	705	0.25	0.3	-	0	0	0	0.1	0.3	0.6	2.9
TRS (ppb) Average	706	0.64	0.4	-	0.3	0.4	0.4	0.5	0.7	1.1	3.8
THC (ppm) Average	705	2.2	0.2	-	2	2	2.1	2.1	2.3	2.5	3.1
NMHC(ppm) Average	705	0.065	0.09	-	0	0	0	0	0.1	0.2	0.538
CH4(ppm) Average	705	2.14	0.1	-	2	2	2.1	2.1	2.2	2.3	2.7
O3 (ppb) Average	706	29.98	13.2	-	2	10.2	20.7	31.3	39.6	45.9	68.3
NO2 (ppb) Average	706	6.17	6.4	-	0	0.6	1.4	3.8	9.6	14.3	44.4
NO (ppb) Average	706	0.88	3	-	0	0	0	0	0.5	1.8	40.9
NOX (ppb) Average	706	7.05	8.1	-	0	0.6	1.5	4.1	10.5	16.1	63.7
NH3 (ppb) Average	612	0.9	3.8	-	0	0	0	0	0	0	28.2
PM2.5 (ug/m3) Average	561	52.71	81.6	-	2.1	7.7	12.3	26.5	47.5	122.2	556.6
CO(ppm) Average	708	0.42	0.3	-	0.2	0.2	0.3	0.3	0.5	0.7	2.8
CO2(ppm) Average	708	427.63	12.6	-	411.3	416.2	418.6	423.4	433.7	445.3	496.5
Temperature 2 m (C) Average	744	16.97	6.4	-	3.5	8.9	11.9	16.5	21.8	26	32.5
Temperature 10 m (C) Average	733	17.27	6	-	4.4	9.7	12.7	16.9	21.8	25.6	32.1
Relative Humidity (%) Average	744	48.47	20.6	-	16	22.4	31.4	45.6	64	78.2	96.7
Wind Speed 10 m (km/h) Average	742	8.7	6	-	0	2	4	8	12	16	29
Wind Direction 10 m (deg) Average	742	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	744	-	-	8.11	-	-	-	-	-	-	-
Leaf Wetness (% of range) Average	744	1.19	6.7	-	0	0	0	0	0	0	65.4
Global Solar Radiation (W/m2) Average	744	240.19	269.9	-	0	0	0.1	107.1	452.4	683.4	876.5

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BERTHA GANTER FORT MCKAY (AMS01)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL GASEOUS ANALYZERS (except NH3)	23 May 2023 15:00	23 May 2023 15:00	1	Maintenance - sample manifold cleaned
O3	24 May 2023 11:00	24 May 2023 11:00	1	Unstable Operation - flatline in analyzer output signal
PM2.5	13 May 2023 14:00	15 May 2023 10:00	45	Analyzer Failure - inconsistent response
PM2.5	15 May 2023 11:00	15 May 2023 11:00	1	Maintenance - analyzer replaced
PM2.5	26 May 2023 11:00	01 Jun 2023 00:00	134	Analyzer Failure - inconsistent response
NH3	05 May 2023 11:00	05 May 2023 12:00	2	Maintenance - verify daily QA response
NH3	25 May 2023 06:00	25 May 2023 10:00	5	Unstable Operation - flatline in analyzer output signal
NH3	25 May 2023 11:00	25 May 2023 11:00	1	Maintenance - analyzer rebooted
NH3	26 May 2023 06:00	26 May 2023 10:00	5	Unstable Operation - flatline in analyzer output signal
NH3	26 May 2023 11:00	26 May 2023 16:00	6	Maintenance - analyzer rebooted and QA check
NH3	29 May 2023 07:00	29 May 2023 09:00	3	Unstable Operation - flatline in analyzer output signal
NH3	29 May 2023 17:00	30 May 2023 10:00	18	Maintenance - analyzer replaced
NH3	01 May 2023 07:00	31 May 2023 07:00	35	Stabilization after daily QA check
Temperature 10 m	09 May 2023 04:00	09 May 2023 07:00	4	Flat line in sensor output signal
Temperature 10 m	10 May 2023 05:00	10 May 2023 06:00	2	Flat line in sensor output signal
Temperature 10 m	25 May 2023 03:00	25 May 2023 07:00	5	Flat line in sensor output signal
Wind Speed, Wind Direction	02 May 2023 23:00	02 May 2023 23:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	12 May 2023 07:00	12 May 2023 07:00	1	Flat line in sensor output signal

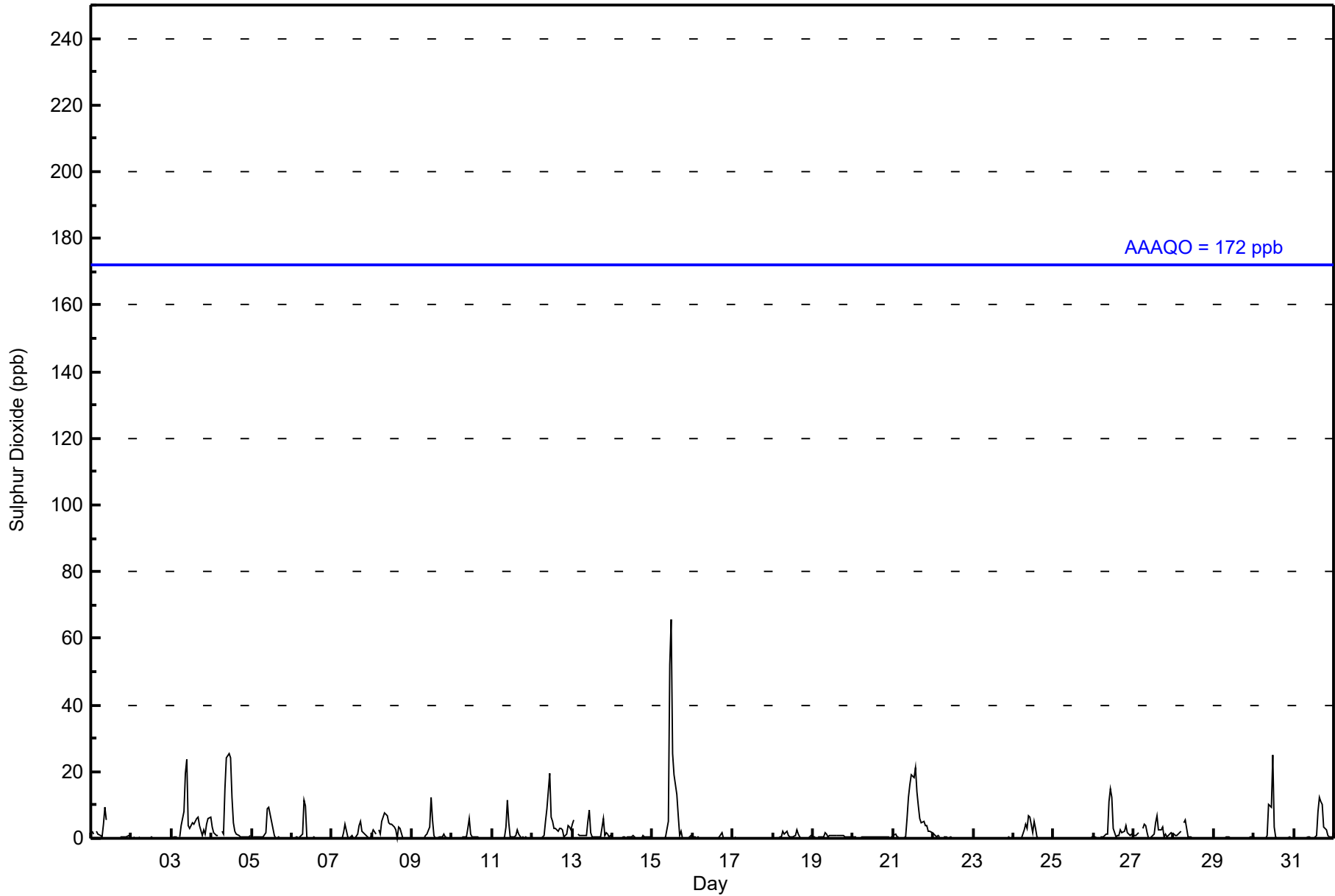


Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 65.8 ppb on May 15 12:00	Maximum Daily Average: 8.4 ppb on May 15		Hours of Data:	705
Minimum Value: 0.0 ppb on May 6 21:00	Minimum Daily Average: 0.1 ppb on May 25		Hours of Missing Data:	39
Maximum Diurnal Average: 6.3 ppb at hour 12	Minimum Diurnal Average: 0.4 ppb at hour 6		Hours of Calibration:	38
Monthly Average: 1.81 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.3 Q ₃ = 1.2 P ₉₀ = 4.9 P ₉₉ = 23.6		Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	2.0	1.2	Z	2.0	1.1	0.7	0.6	4.2	9.4	5.5	C	C	C	C	C	C	C	0.3	0.4	0.4	0.3	0.4	0.8	0.3	--	9.4	
2-May	0.2	0.2	0.4	Z	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.3	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.4
3-May	0.2	0.6	0.4	0.5	Z	0.5	3.7	8.1	19.4	23.7	3.8	3.0	4.8	4.0	4.9	6.0	6.3	3.7	0.9	2.6	1.4	4.3	5.8	6.2	5.0	23.7	
4-May	3.2	1.7	1.3	1.0	0.8	Z	1.9	1.1	14.8	24.3	25.3	24.3	12.2	4.8	1.9	1.2	0.8	0.6	0.5	0.5	0.6	0.6	0.6	0.7	5.4	25.3	
5-May	Z	0.6	0.6	0.6	0.4	0.4	0.4	0.6	1.6	8.9	9.2	7.2	5.2	0.9	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.2	1.7	9.2	
6-May	0.2	Z	0.2	0.2	0.2	0.2	1.1	11.6	9.7	0.5	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	11.6	
7-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	1.9	4.3	0.5	0.0	0.5	0.9	0.0	0.0	1.1	3.7	5.3	2.2	1.9	0.9	0.2	0.1	0.0	1.0	5.3	
8-May	1.5	2.7	1.1	Z	2.7	1.2	5.0	7.8	7.2	6.7	4.7	4.1	4.2	3.6	2.3	0.2	3.3	2.9	0.1	0.0	0.0	0.1	0.1	0.0	2.7	7.8	
9-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.2	0.7	1.1	3.4	12.5	5.5	0.7	0.1	0.1	0.2	0.5	0.5	1.3	0.6	0.2	0.1	0.1	1.2	12.5	
10-May	0.0	0.1	0.0	0.1	0.1	Z	0.3	0.2	0.3	3.1	6.0	1.2	0.4	0.3	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.6	6.0	
11-May	Z	0.1	0.1	0.0	0.0	0.0	0.1	0.3	3.2	11.5	4.5	0.3	0.3	0.6	0.8	2.4	1.3	0.1	0.3	0.0	0.6	0.1	0.0	0.0	1.2	11.5	
12-May	0.5	Z	0.2	0.1	0.0	0.1	0.5	0.9	5.1	8.7	19.7	6.2	5.2	3.1	2.8	2.0	2.8	2.8	2.3	0.5	1.4	4.0	3.4	2.5	3.3	19.7	
13-May	4.4	5.3	Z	1.4	1.0	0.8	0.7	0.8	1.0	5.1	8.6	1.6	0.4	0.5	0.3	0.2	0.2	0.3	5.8	0.7	1.6	1.2	0.5	0.6	1.9	8.6	
14-May	0.2	0.1	0.1	Z	0.1	0.2	0.3	0.2	0.2	0.4	0.5	0.6	0.8	0.3	0.2	0.1	0.2	0.1	1.0	0.5	0.3	0.2	0.2	0.2	0.3	1.0	
15-May	0.1	0.2	0.1	0.1	Z	0.0	0.0	0.1	0.3	4.9	52.2	65.8	25.6	19.1	13.3	6.7	1.0	2.3	0.2	0.2	0.2	0.1	0.4	0.7	8.4	65.8	
16-May	0.6	0.3	0.0	0.2	0.2	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.5	
17-May	Z	0.4	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.4	
18-May	0.0	Z	0.1	0.0	0.5	0.5	2.3	1.3	2.0	1.0	0.4	0.4	0.3	0.7	2.7	1.3	0.3	0.1	0.2	0.2	0.1	0.2	0.2	0.7	0.7	2.7	
19-May	0.3	0.2	Z	0.3	0.3	0.2	0.4	1.6	1.1	0.6	0.8	0.8	0.7	0.8	0.9	0.9	0.7	0.8	0.7	0.5	0.4	0.3	0.2	0.2	0.6	1.6	
20-May	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.4	0.3	0.4	
21-May	1.0	1.2	0.5	0.2	Z	0.2	0.1	0.4	5.9	12.1	16.0	19.2	18.0	21.2	13.9	9.7	6.1	4.8	5.0	3.9	3.7	2.3	2.1	1.7	6.5	21.2	
22-May	1.5	0.9	0.5	0.7	0.6	Z	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	1.5	
23-May	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	M	0.1	0.0	0.1	0.0	0.0	0.1	0.3	0.1	0.1	0.1	0.3	
24-May	1.0	Z	0.2	0.1	0.0	0.1	2.7	4.3	3.1	6.8	6.3	1.8	5.1	3.0	0.3	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.0	1.5	6.8	
25-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.1	0.5	0.1	0.5	
26-May	0.6	0.2	0.2	Z	0.3	0.6	0.5	1.3	1.2	10.9	14.8	12.4	2.9	0.5	0.8	1.0	2.6	1.9	2.1	3.8	1.6	1.2	1.0	1.2	2.8	14.8	
27-May	0.7	1.0	1.4	1.6	Z	2.8	4.4	3.9	1.7	0.1	0.1	0.9	1.1	4.6	6.8	2.6	2.5	3.6	0.6	1.1	0.2	0.6	1.7	1.5	2.0	6.8	
28-May	1.3	1.0	1.0	1.6	2.2	Z	4.8	5.6	0.5	0.4	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.9	5.6	
29-May	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.3	0.5	0.2	0.5	
30-May	0.3	Z	0.1	0.1	0.0	0.0	0.0	0.1	0.9	10.3	9.3	25.1	3.2	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	2.2	25.1	
31-May	0.2	0.0	Z	0.1	0.0	0.1	0.1	0.1	0.4	0.3	0.0	0.1	0.1	0.7	8.2	12.3	11.1	10.4	3.5	2.7	0.9	0.4	0.5	0.4	2.3	12.3	

0.8	0.7	0.4	0.4	0.4	0.4	1.0	1.9	3.1	4.8	6.2	6.3	3.3	2.4	2.1	1.6	1.5	1.4	0.9	0.7	0.5	0.6	0.6	0.6	0.6	Diurnal Average	
4.4	5.3	1.4	2.0	2.7	2.8	5.0	11.6	19.4	24.3	52.2	65.8	25.6	21.2	13.9	12.3	11.1	10.4	5.8	3.9	3.7	4.3	5.8	6.2	Diurnal Maximum		

Z - zerospan C - Calibration M - Maintenance
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	677	96.03	96.03
11 - 20	19	2.70	98.72
21 - 60	8	1.13	99.86
61 - 110	1	0.14	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	57	37	21	18	7	18	61	149	124	39	18	19	11	33	30	33	675
11 - 20	0	0	0	1	0	1	5	9	2	1	0	0	0	0	0	0	19
21 - 60	0	0	1	0	0	0	2	5	0	0	0	0	0	0	0	0	8
61 - 110	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	57	37	22	19	7	19	68	164	126	40	18	19	11	33	30	33	703

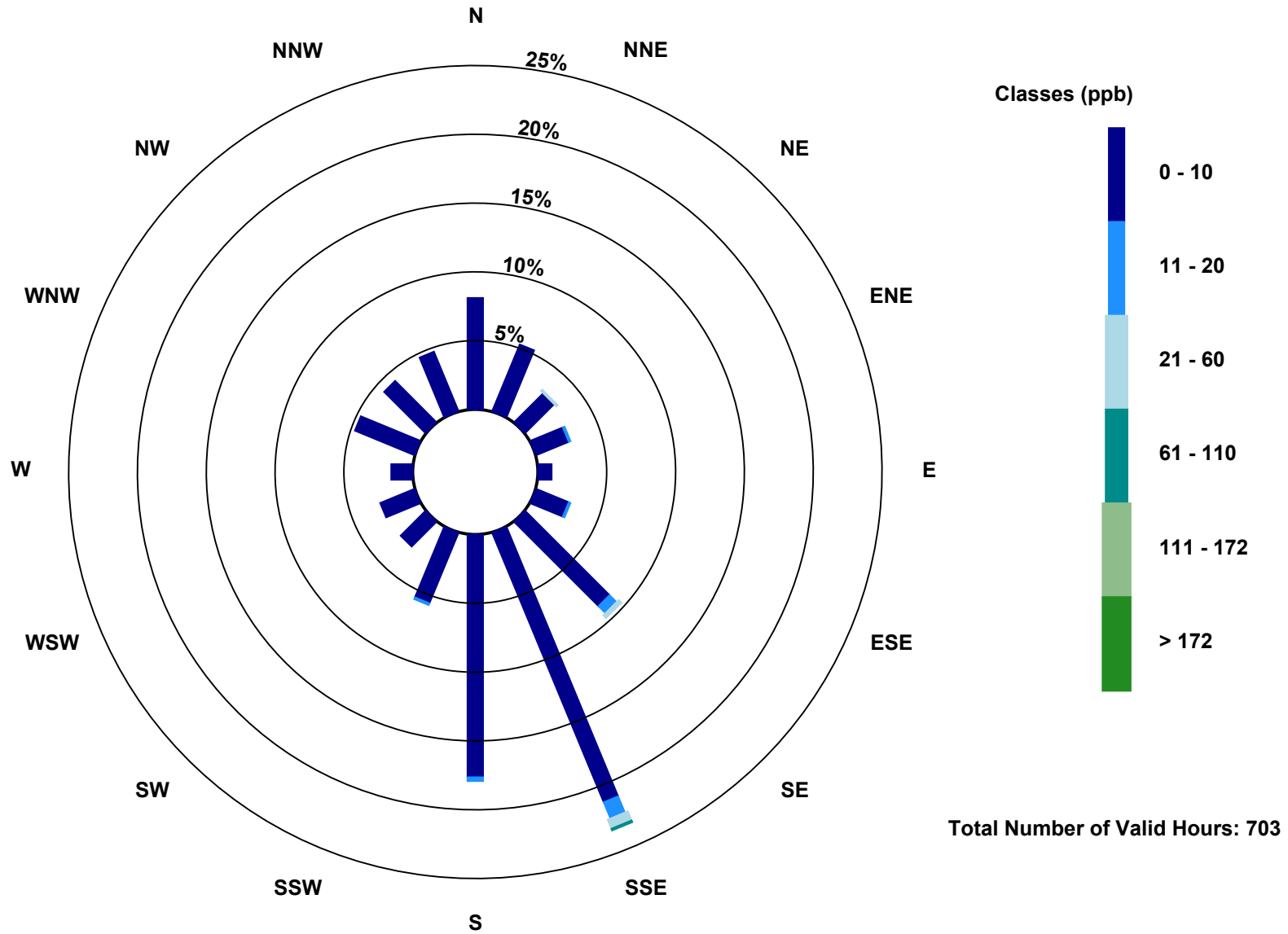
Total Number of Valid Hours: 703

Total Number of Hours: 744

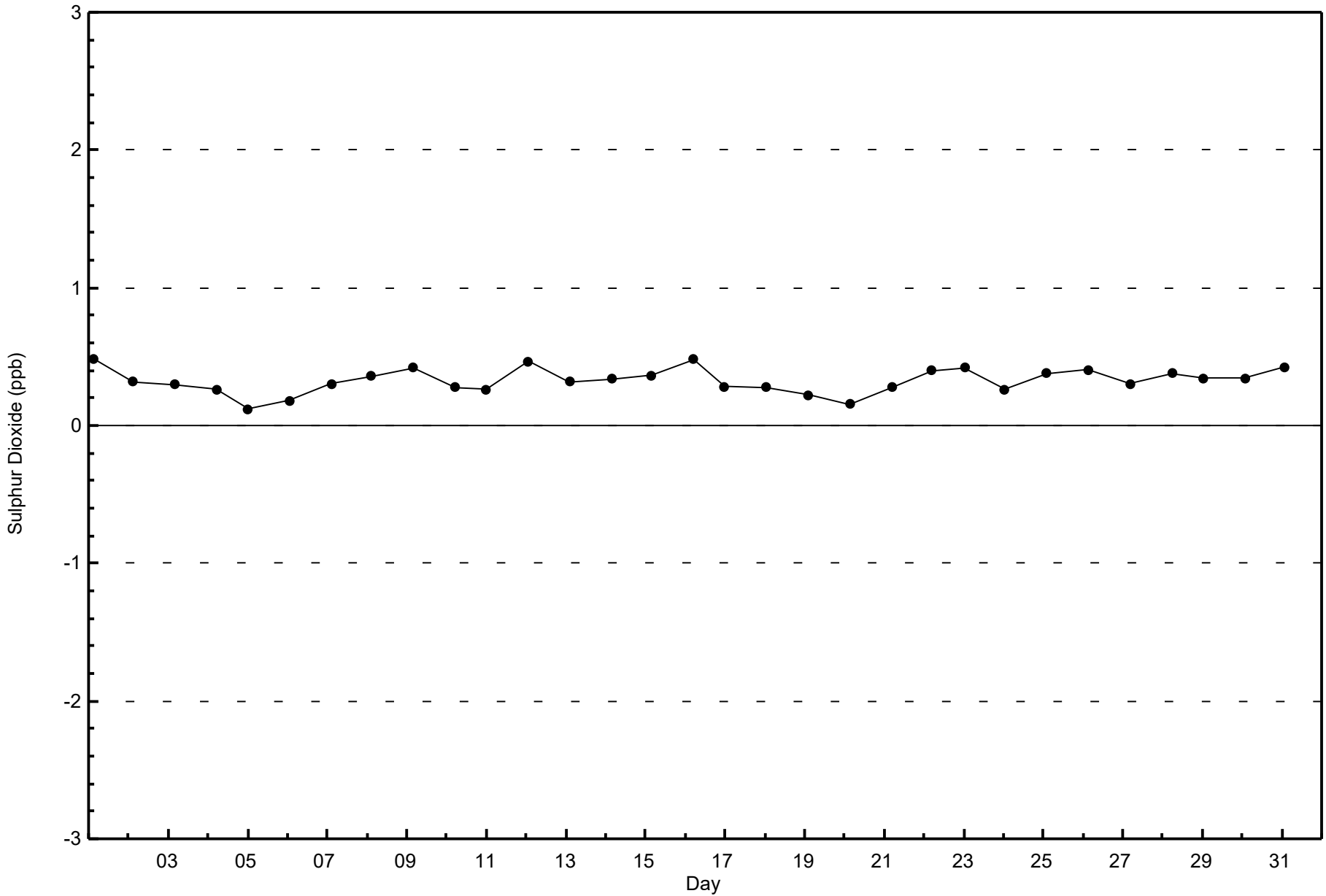


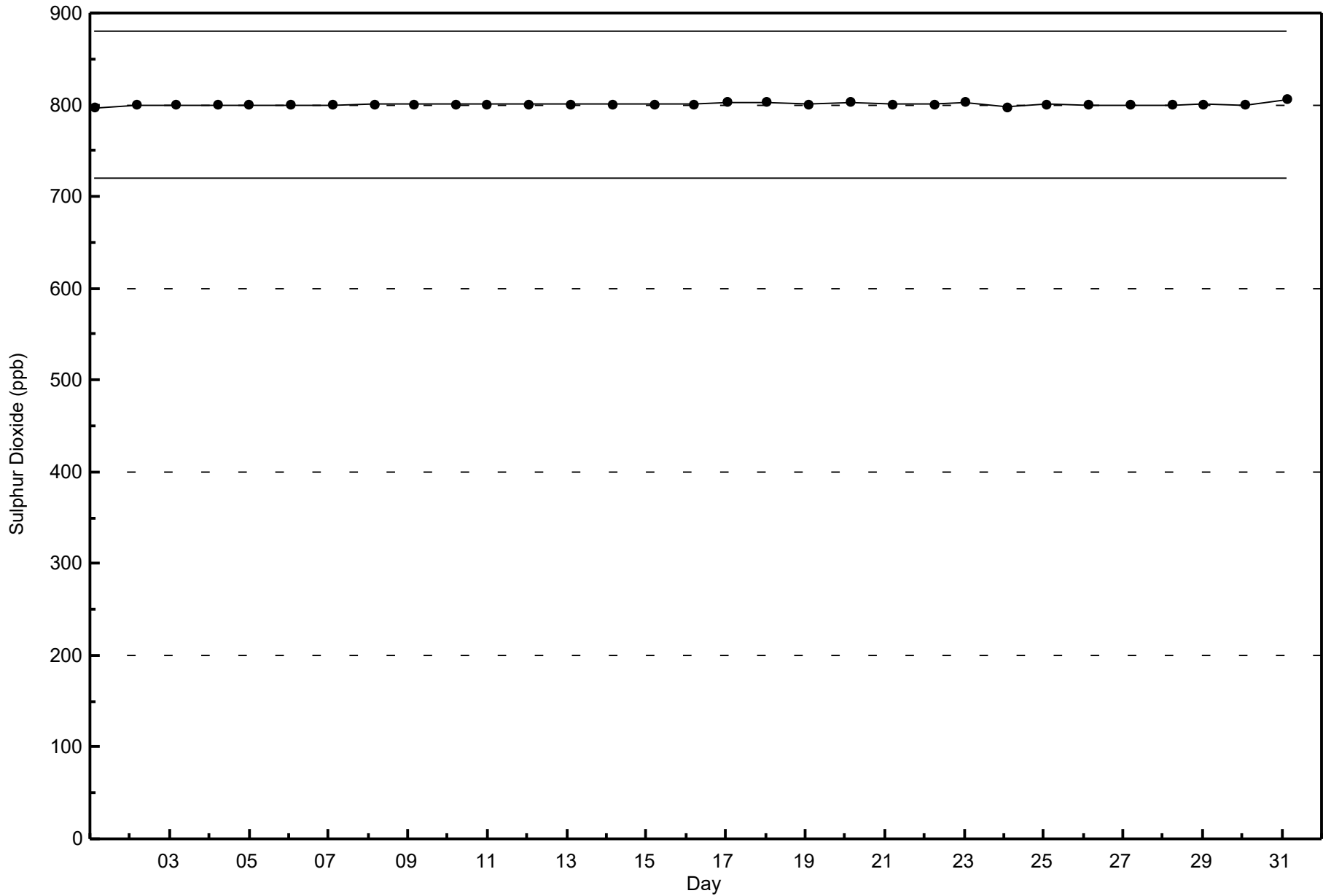
Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Fort McKay - Bertha Ganter



Total Number of Valid Hours: 703







Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 2.9 ppb on May 15 12:00	Maximum Daily Average: 0.8 ppb on May 21		Hours of Data:	705
Minimum Value: 0.0 ppb on May 2 13:00	Minimum Daily Average: 0.0 ppb on May 17		Hours of Missing Data:	39
Maximum Diurnal Average: 0.5 ppb at hour 8	Minimum Diurnal Average: 0.1 ppb at hour 17		Hours of Calibration:	38
Monthly Average: 0.25 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.3 P ₉₀ = 0.6 P ₉₉ = 1.4		Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.2	0.2	0.3	Z	0.4	0.2	0.1	0.4	0.5	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.2	0.1	0.2	0.5
2-May	0.1	0.1	0.2	0.1	Z	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2
3-May	0.1	0.3	0.6	0.6	0.8	Z	1.2	1.6	1.0	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.8	1.0	0.9	0.5	1.6
4-May	Z	0.6	0.5	0.3	0.3	0.5	0.8	0.6	0.5	0.8	0.6	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.8
5-May	0.2	Z	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.5	0.6	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6
6-May	0.0	0.1	Z	0.2	0.1	0.2	0.2	0.6	0.5	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.6
7-May	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.1	0.3
8-May	0.2	0.2	0.2	0.4	Z	0.2	0.4	0.7	0.4	0.2	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.6	0.5	0.2	0.7
9-May	0.5	0.5	0.5	0.5	0.4	Z	0.6	0.7	0.7	0.3	0.2	0.3	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.3	0.7
10-May	Z	0.2	0.2	0.2	0.3	0.4	0.5	0.7	0.6	0.5	0.4	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.7
11-May	0.1	Z	0.2	0.2	0.2	0.2	0.3	0.4	1.0	0.9	0.5	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	1.0
12-May	0.4	0.4	Z	0.5	0.6	0.7	0.8	0.6	0.7	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0	0.9	0.8	0.4	1.0
13-May	0.9	1.2	1.4	Z	1.1	1.4	1.2	0.9	1.0	1.4	0.9	0.4	0.2	0.1	0.1	0.0	0.1	0.2	0.3	0.5	0.4	0.5	0.1	0.1	0.6	1.4
14-May	0.1	0.1	0.1	0.2	Z	0.2	0.3	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.3
15-May	0.2	0.2	0.3	0.3	0.3	Z	0.3	0.4	0.7	1.4	2.2	2.9	1.7	1.0	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.6	2.9
16-May	Z	0.5	0.3	0.6	0.6	0.7	0.5	0.3	0.3	C	C	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.7
17-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18-May	0.0	0.1	Z	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
19-May	0.1	0.1	0.2	Z	0.2	0.2	0.2	0.6	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.5	0.3	0.0	0.0	0.0	0.2	0.6
20-May	0.0	0.1	0.0	0.0	Z	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2
21-May	0.9	1.1	1.1	1.0	1.1	Z	0.7	0.5	1.5	1.7	0.8	0.6	0.4	0.4	0.4	0.3	0.4	0.6	0.6	0.7	0.6	0.6	0.6	0.7	0.8	1.7
22-May	Z	0.7	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2	0.7
23-May	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	M	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
24-May	0.2	0.2	Z	0.1	0.1	0.1	0.3	0.5	0.6	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.6
25-May	0.1	0.1	0.1	Z	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.5	0.1	0.5
26-May	0.5	0.4	0.4	0.4	Z	0.9	0.5	0.7	0.5	0.5	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.3	0.2	0.3	0.5	0.3	0.9
27-May	0.4	0.6	0.9	0.8	0.9	Z	1.2	1.1	0.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.4	0.5	0.4	1.2
28-May	Z	0.3	0.4	0.3	0.7	0.9	1.5	1.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	1.5
29-May	0.2	Z	0.3	0.2	0.2	0.3	0.4	1.2	1.0	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.2	1.2	
30-May	0.7	0.3	Z	0.3	0.3	0.3	0.3	0.2	0.3	0.8	0.7	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.8
31-May	0.2	0.1	0.1	Z	0.2	0.2	0.2	0.4	0.6	0.2	0.1	0.0	0.0	0.1	0.4	0.4	0.2	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.6

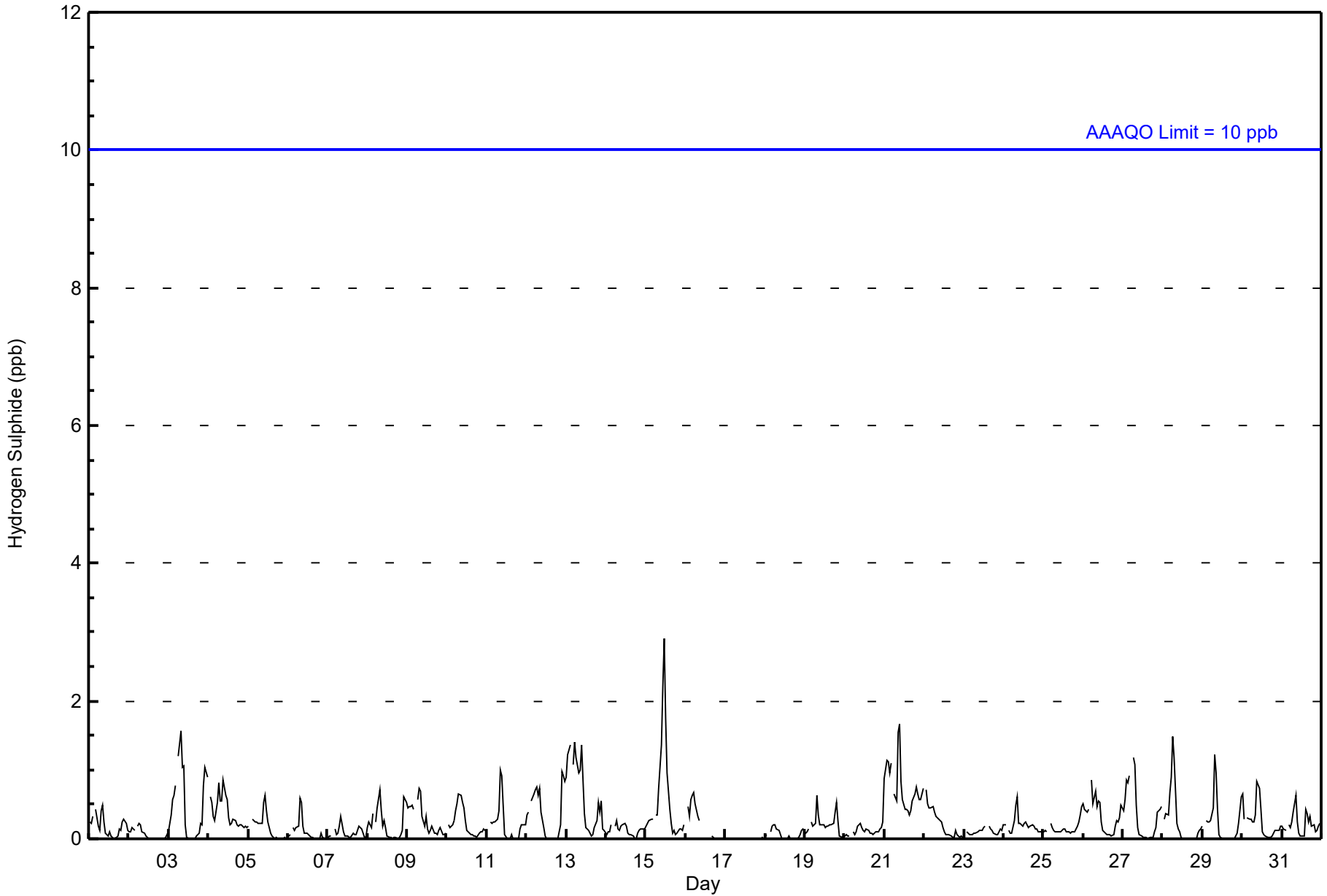
0.2	0.3	0.3	0.3	0.4	0.3	0.4	0.5	0.5	0.5	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	Diurnal Average
0.9	1.2	1.4	1.0	1.1	1.4	1.5	1.6	1.5	1.7	2.2	2.9	1.7	1.0	0.4	0.4	0.4	0.6	0.6	0.7	0.6	1.0	1.0	0.9	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb



Wood Buffalo Environmental Association
Hourly Averages

Hydrogen Sulphide (H₂S) - ppb
Fort McKay - Bertha Ganter - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	704	99.86	99.86
3 - 4	1	0.14	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	58	35	23	18	7	19	67	167	128	38	18	22	11	35	26	30	702
3 - 4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	58	35	23	18	7	19	67	168	128	38	18	22	11	35	26	30	703

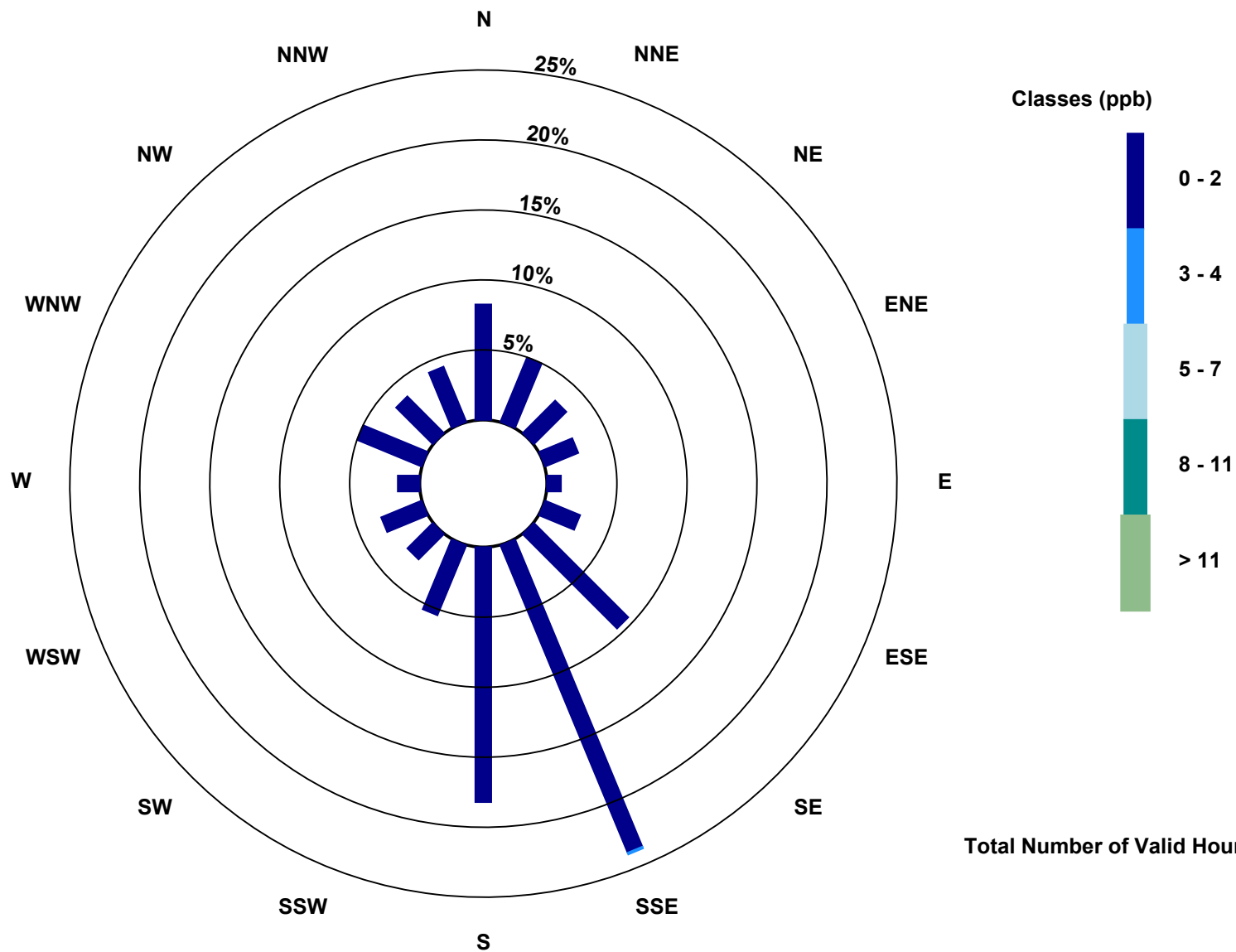
Total Number of Valid Hours: 703

Total Number of Hours: 744

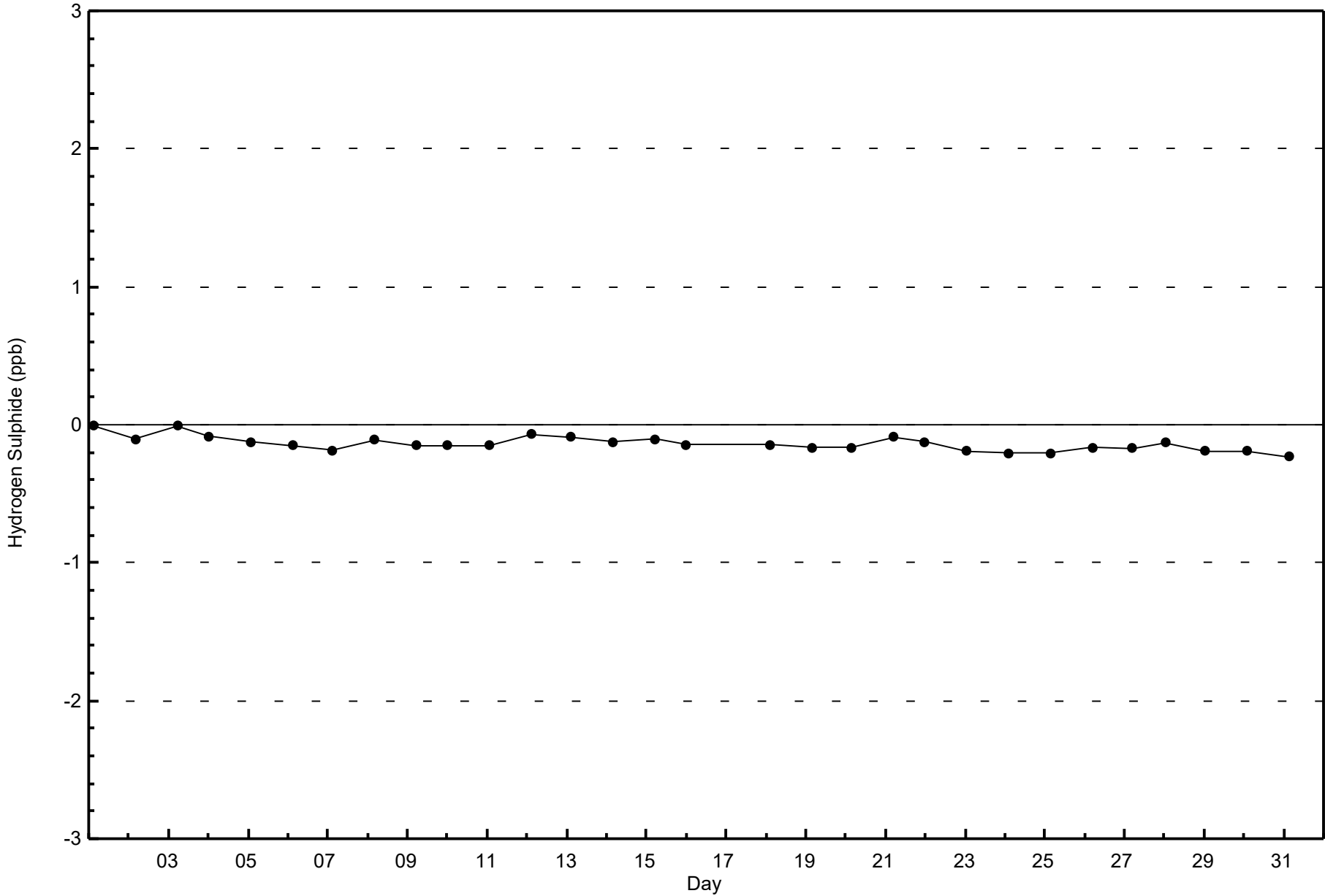


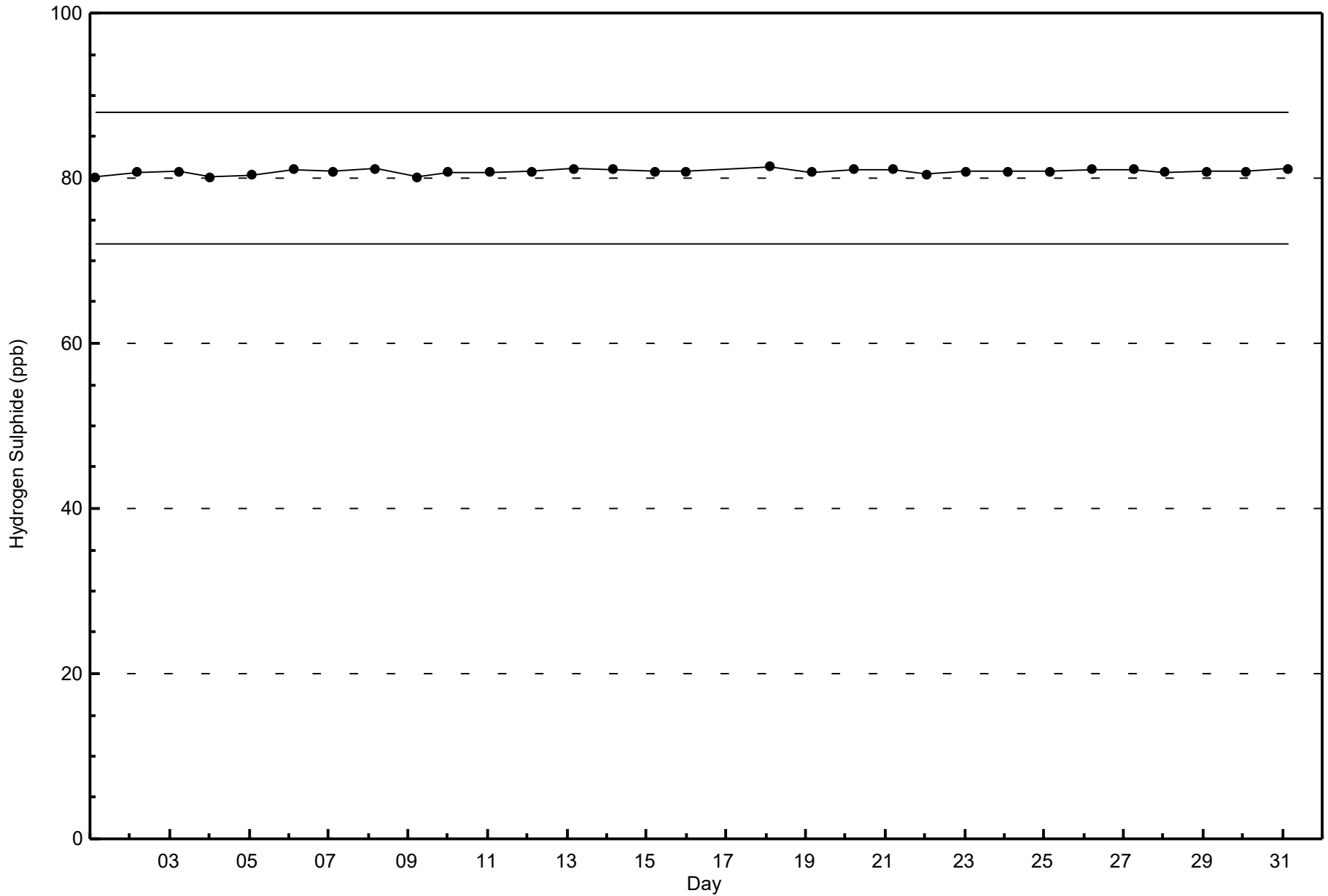
Wood Buffalo Environmental Association
Wind Rose May 2023

Hydrogen Sulphide (H₂S) - ppb
Fort McKay - Bertha Ganter



Total Number of Valid Hours: 703







Wood Buffalo Environmental Association

Summary of Hour Averages

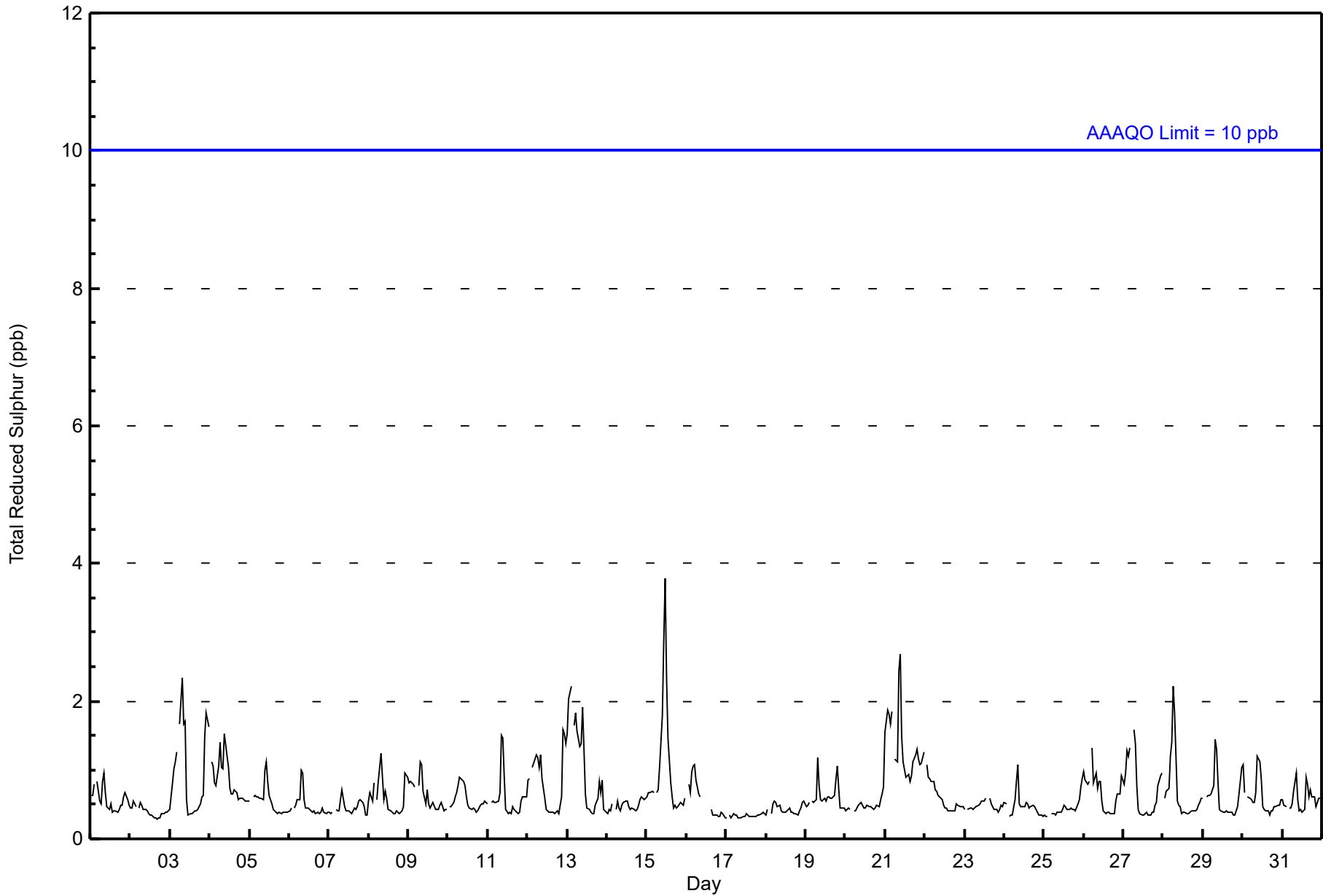
Total Reduced Sulphur (TRS) - ppb

Fort McKay - Bertha Ganter - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 3.8 ppb on May 15 12:00	Maximum Daily Average: 1.4 ppb on May 21		Hours of Data:	706
Minimum Value: 0.3 ppb on May 2 17:00	Minimum Daily Average: 0.3 ppb on May 17		Hours of Missing Data:	38
Maximum Diurnal Average: 0.9 ppb at hour 8	Minimum Diurnal Average: 0.4 ppb at hour 17		Hours of Calibration:	37
Monthly Average: 0.64 ppb	Percentiles: P ₁ = 0.3 P ₁₀ = 0.4 Q ₁ = 0.4 Median = 0.5 Q ₃ = 0.7 P ₉₀ = 1.1 P ₉₉ = 2.2		Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	0.6	0.6	0.8	Z	0.8	0.6	0.5	0.8	1.0	0.7	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.6	0.5	0.6	1.0																						
2-May	0.4	0.5	0.5	0.5	Z	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.5																						
3-May	0.4	0.8	1.0	1.1	1.3	Z	1.7	2.3	1.7	1.7	0.6	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.6	1.5	1.8	1.6	2.3																							
4-May	Z	1.1	1.1	0.8	0.8	1.0	1.4	1.0	1.0	1.5	1.2	1.0	0.7	0.7	0.6	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.6	1.5																							
5-May	0.6	Z	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.0	1.1	0.8	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1.1																							
6-May	0.4	0.5	Z	0.5	0.5	0.6	0.6	1.0	1.0	0.6	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1.0																							
7-May	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.6	0.7	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.5	0.5	0.4	0.4	0.7																							
8-May	0.6	0.7	0.5	0.8	Z	0.6	0.8	1.2	0.9	0.6	0.7	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	1.0	0.9	1.2																							
9-May	0.8	0.8	0.8	0.8	0.8	Z	0.8	1.1	1.1	0.7	0.5	0.7	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	1.1																							
10-May	Z	0.5	0.5	0.5	0.6	0.7	0.8	0.9	0.9	0.8	0.8	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.5	0.9																							
11-May	0.5	Z	0.5	0.5	0.5	0.5	0.5	0.7	1.5	1.5	0.9	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.6	1.5																							
12-May	0.9	0.9	Z	1.0	1.2	1.2	1.2	1.0	1.2	0.9	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.6	1.6	1.5	1.4	1.6																							
13-May	1.5	2.0	2.2	Z	1.7	1.8	1.6	1.4	1.4	1.9	1.3	0.7	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.8	0.7	0.8	0.4	0.4	2.2																							
14-May	0.4	0.4	0.4	0.5	Z	0.4	0.6	0.4	0.4	0.5	0.5	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.6																							
15-May	0.6	0.7	0.7	0.7	0.7	Z	0.7	0.7	1.0	1.8	2.9	3.8	2.3	1.5	0.8	0.6	0.4	0.5	0.4	0.5	0.5	0.5	0.5	0.6	3.8																							
16-May	Z	0.8	0.7	1.0	1.1	1.1	0.9	0.7	0.6	C	C	C	C	C	C	0.4	0.3	0.4	0.3	0.3	0.3	0.4	0.4	0.3	1.1																							
17-May	0.3	Z	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4																							
18-May	0.4	0.4	Z	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.5	0.5	0.5	0.5																							
19-May	0.5	0.5	0.5	Z	0.5	0.5	0.6	1.2	0.8	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.9	1.1	0.7	0.5	0.4	0.4	1.2																							
20-May	0.4	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7																							
21-May	1.5	1.9	1.8	1.7	1.8	Z	1.2	1.1	2.4	2.7	1.5	1.1	0.9	0.9	0.9	0.8	0.9	1.1	1.2	1.3	1.2	1.1	1.1	1.3	2.7																							
22-May	Z	1.1	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	1.1																							
23-May	0.4	Z	0.4	0.4	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	M	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.6																							
24-May	0.5	0.5	Z	0.3	0.3	0.3	0.6	0.8	1.1	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3	1.1																							
25-May	0.3	0.3	0.3	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.5	0.6	0.7	0.9	0.9																							
26-May	1.0	0.9	0.8	0.8	Z	1.3	0.8	1.0	0.7	0.8	0.8	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.6	0.7	0.6	0.9	1.3																							
27-May	0.8	0.9	1.3	1.2	1.3	Z	1.6	1.4	0.8	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.8	0.9	1.0	1.6																							
28-May	Z	0.6	0.7	0.7	1.2	1.4	2.2	1.8	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	2.2																							
29-May	0.6	Z	0.6	0.6	0.6	0.6	0.8	1.4	1.3	0.8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.5	0.7	1.0	1.4																							
30-May	1.1	0.7	Z	0.6	0.6	0.6	0.5	0.5	0.7	1.2	1.1	0.9	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	1.2																							
31-May	0.6	0.5	0.5	Z	0.5	0.5	0.5	0.7	0.9	0.6	0.4	0.4	0.4	0.4	0.9	0.8	0.6	0.7	0.6	0.6	0.5	0.5	0.6	0.6	0.9																							
																								0.6	0.7	0.7	0.7	0.8	0.7	0.8	0.9	0.9	0.9	0.7	0.6	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	Diurnal Average	
																								1.5	2.0	2.2	1.7	1.8	1.8	2.2	2.3	2.4	2.7	2.9	3.8	2.3	1.5	0.9	0.8	0.9	1.1	1.2	1.3	1.2	1.6	1.8	1.6	Diurnal Maximum

Z - zerospan C - Calibration M - Maintenance
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	703	99.58	99.58
3 - 4	3	0.42	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	58	35	23	18	7	19	67	165	128	38	18	22	11	35	27	30	701
3 - 4	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	58	35	23	18	7	19	67	168	128	38	18	22	11	35	27	30	704

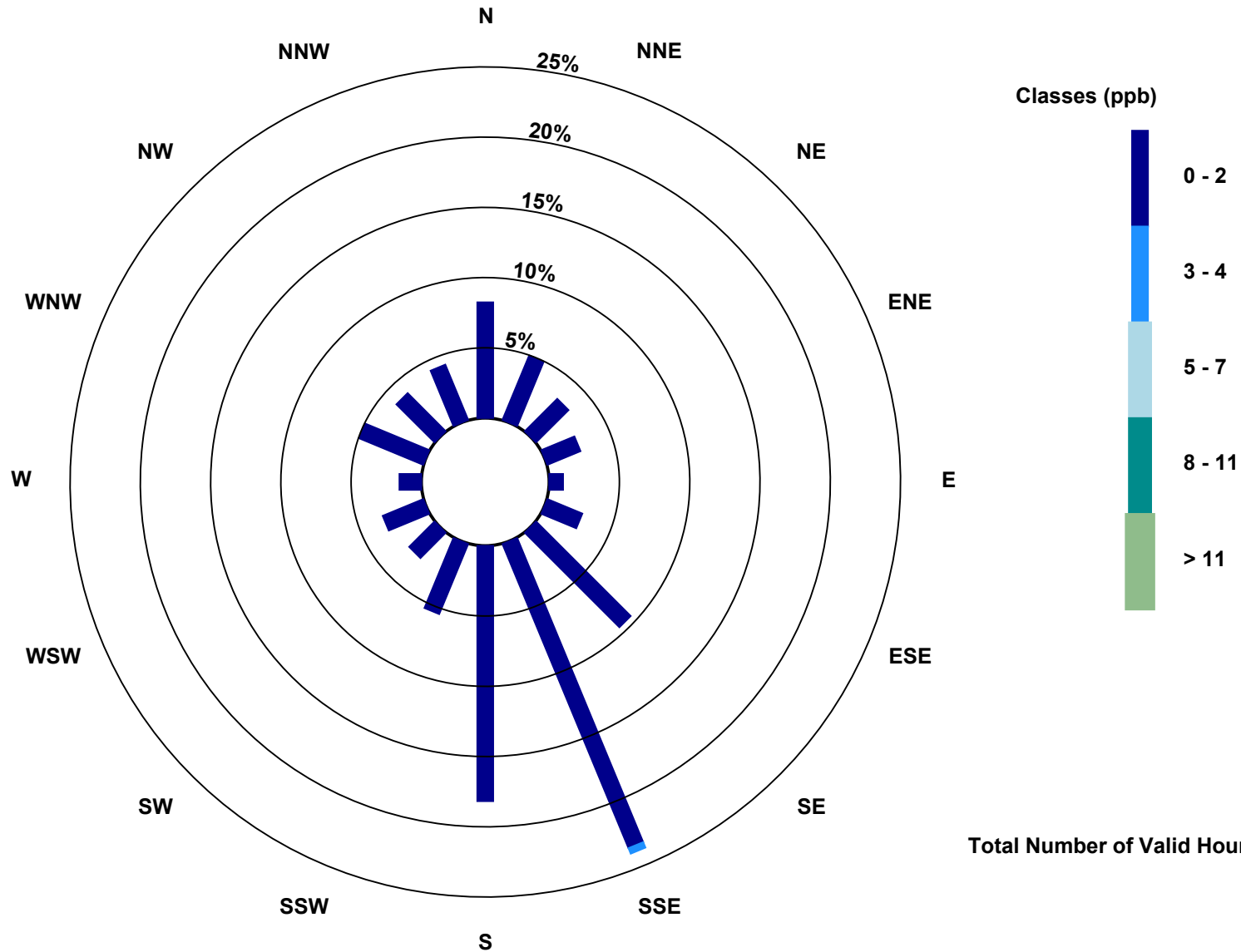
Total Number of Valid Hours: 704

Total Number of Hours: 744

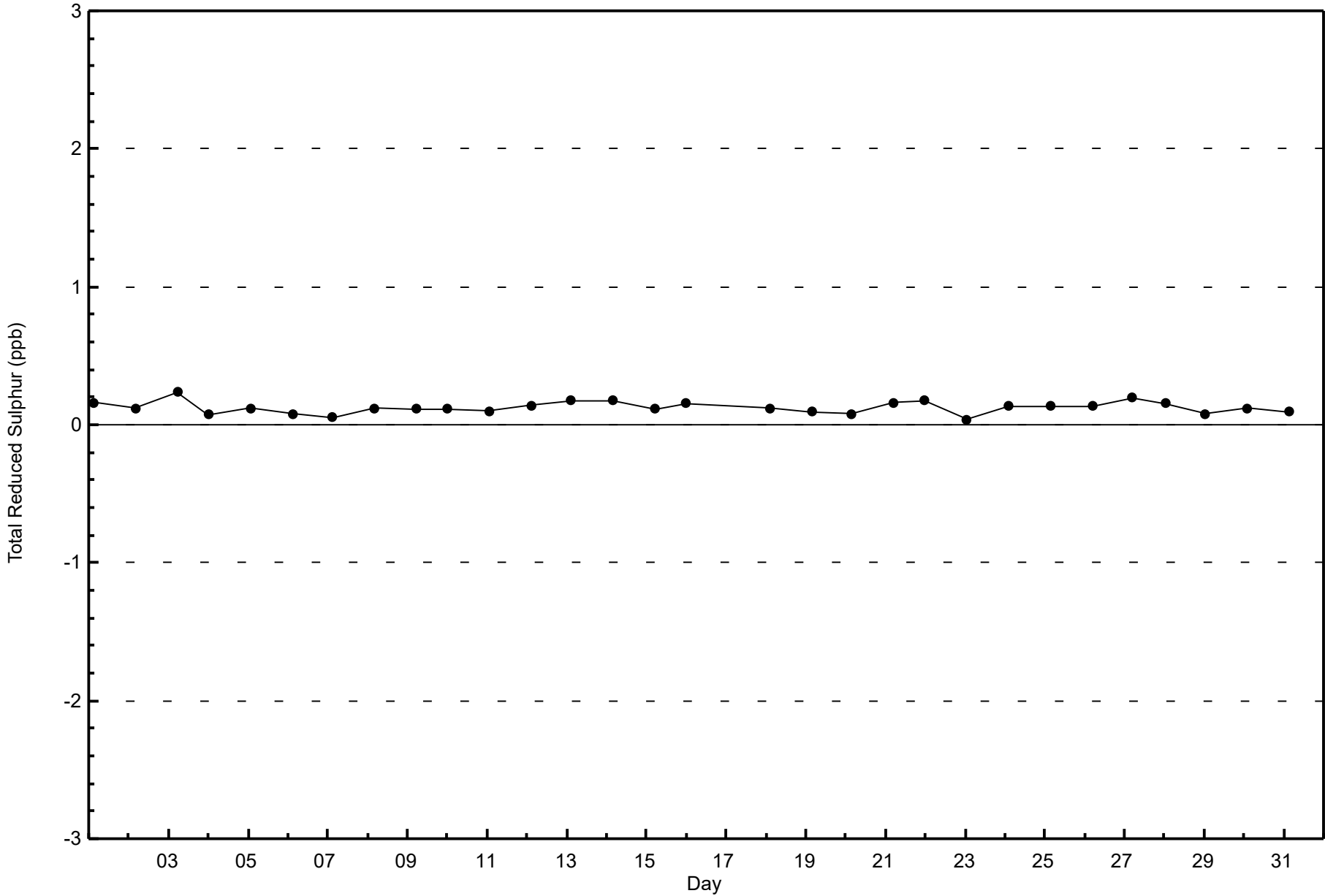


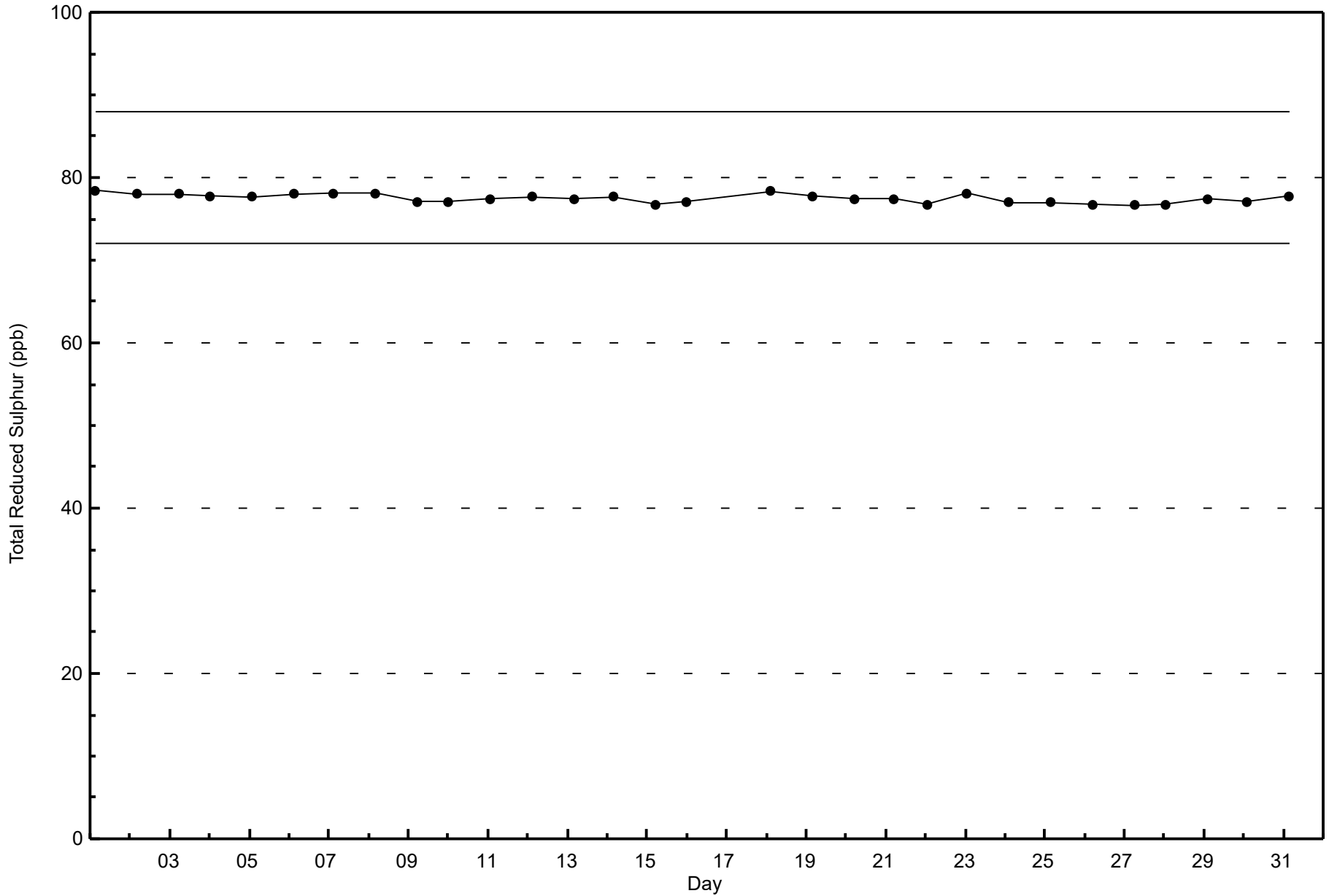
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Reduced Sulphur (TRS) - ppb
Fort McKay - Bertha Ganter



Total Number of Valid Hours: 704







Wood Buffalo Environmental Association
Summary of Hour Averages

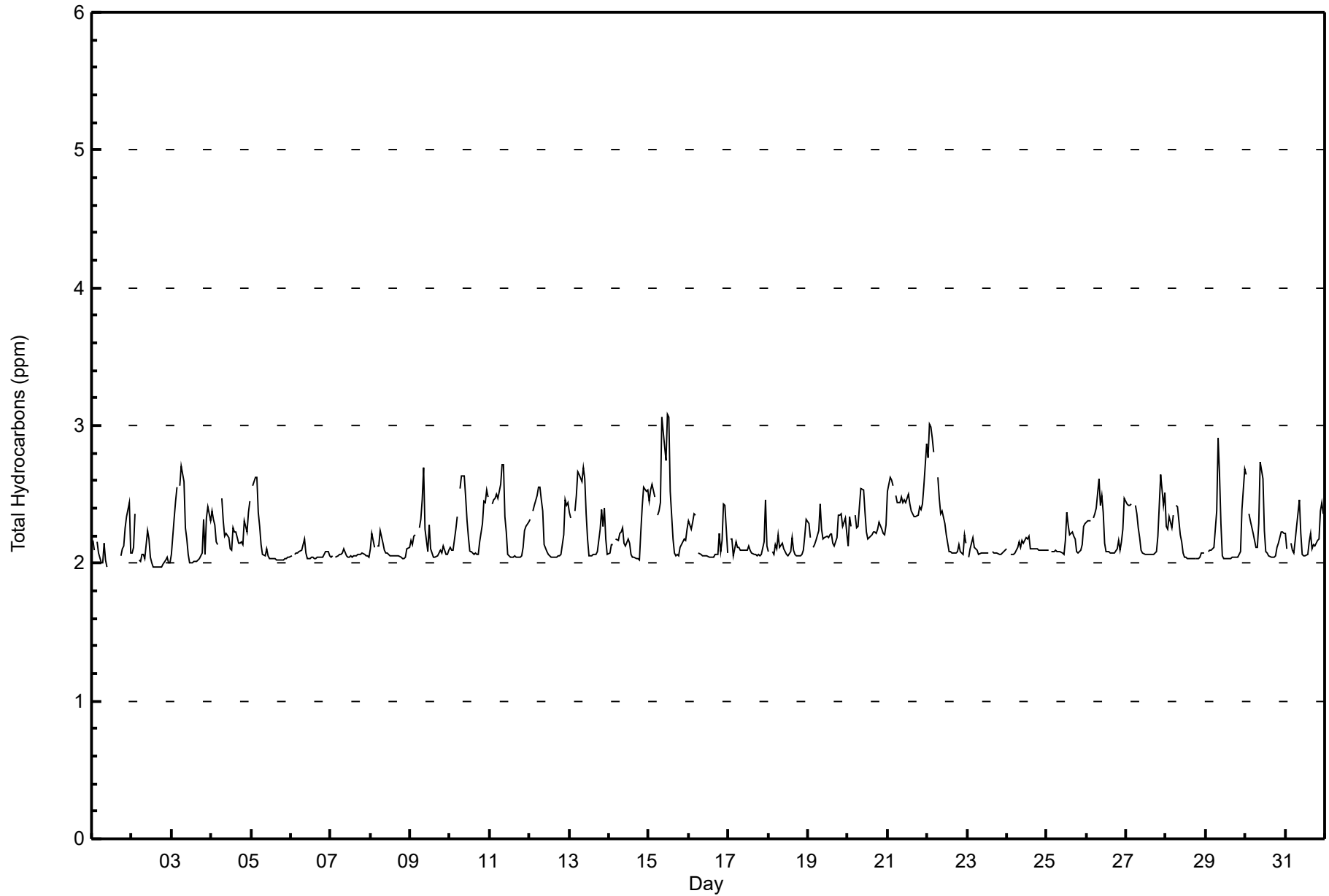
Total Hydrocarbons (THC) - ppm
Fort McKay - Bertha Ganter - May 2023

Maximum Value: 3.1 ppm on May 15 12:00		Maximum Daily Average: 2.5 ppm on May 21		Hours in Service: 744																																												
Minimum Value: 2.0 ppm on May 1 10:00		Minimum Daily Average: 2.0 ppm on May 2		Hours of Data: 705																																												
Maximum Diurnal Average: 2.3 ppm at hour 8		Minimum Diurnal Average: 2.1 ppm at hour 17		Hours of Missing Data: 39																																												
Monthly Average: 2.20 ppm		Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.1 Median = 2.1 Q ₃ = 2.3 P ₉₀ = 2.5 P ₉₉ = 2.9		Hours of Calibration: 38																																												
				Percent Operational Time: 99.9																																												
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	2.2	2.1	Z	2.2	2.1	2.0	2.0	2.1	2.0	2.0	C	C	C	C	C	C	2.1	2.1	2.1	2.3	2.3	2.4	2.1	--	2.4																							
2-May	2.1	2.1	2.4	Z	2.0	2.0	2.1	2.1	2.0	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.4																						
3-May	2.1	2.3	2.4	2.6	Z	2.6	2.7	2.6	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.1	2.3	2.4	2.3	2.2	2.7																						
4-May	2.4	2.3	2.3	2.2	2.1	Z	2.5	2.3	2.2	2.2	2.1	2.1	2.3	2.2	2.2	2.1	2.1	2.2	2.1	2.2	2.1	2.3	2.2	2.4	2.5	2.2	2.5																					
5-May	Z	2.6	2.6	2.6	2.4	2.3	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.6																						
6-May	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.2																						
7-May	2.0	2.1	Z	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1																						
8-May	2.1	2.2	2.1	Z	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2																						
9-May	2.2	2.1	2.2	2.2	Z	2.3	2.3	2.5	2.7	2.2	2.1	2.3	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.7																						
10-May	2.1	2.1	2.1	2.2	2.3	Z	2.5	2.6	2.6	2.5	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.5	2.4	2.5	2.5	2.3	2.6																						
11-May	Z	2.4	2.5	2.5	2.5	2.5	2.6	2.7	2.7	2.3	2.2	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.3	2.3	2.7																						
12-May	2.3	Z	2.4	2.4	2.5	2.5	2.6	2.5	2.4	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.5	2.4	2.4	2.3	2.6																						
13-May	2.4	2.3	Z	2.4	2.5	2.7	2.6	2.6	2.7	2.6	2.4	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4	2.3	2.4	2.2	2.1	2.3	2.7																						
14-May	2.1	2.1	2.1	Z	2.2	2.2	2.2	2.2	2.3	2.1	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.2	2.4	2.6	2.5	2.5	2.2	2.6																						
15-May	2.5	2.5	2.6	2.5	Z	2.4	2.4	2.4	3.1	2.9	2.7	3.1	3.1	2.5	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.4	3.1																						
16-May	2.3	2.3	2.3	2.4	2.3	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.2	2.4	2.4	2.1	2.2	2.4																						
17-May	Z	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.5	2.1	2.1	2.5																						
18-May	2.1	Z	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.1	2.3																						
19-May	2.3	2.2	Z	2.1	2.1	2.2	2.2	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.3	2.3	2.4	2.3	2.3	2.2	2.2	2.4																						
20-May	2.1	2.3	2.3	Z	2.3	2.3	2.3	2.4	2.5	2.5	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.3	2.3	2.5																						
21-May	2.5	2.6	2.6	2.6	Z	2.5	2.4	2.4	2.5	2.4	2.5	2.4	2.5	2.4	2.4	2.4	2.3	2.3	2.4	2.4	2.4	2.4	2.6	2.9	2.5	2.9																						
22-May	2.8	3.0	3.0	2.9	2.8	Z	2.6	2.5	2.4	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.4	3.0																						
23-May	Z	2.0	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	M	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2																						
24-May	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2																						
25-May	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.3	2.3	2.4																						
26-May	2.3	2.3	2.3	Z	2.3	2.4	2.4	2.6	2.4	2.5	2.4	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.5	2.3	2.6																						
27-May	2.4	2.4	2.4	2.4	Z	2.4	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4	2.6	2.4	2.5	2.3	2.6																						
28-May	2.3	2.2	2.3	2.3	2.4	Z	2.4	2.4	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.4																						
29-May	Z	2.1	2.1	2.1	2.1	2.1	2.4	2.9	2.6	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.4	2.7	2.2	2.9																						
30-May	2.6	Z	2.4	2.3	2.2	2.2	2.1	2.1	2.3	2.7	2.6	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.2	2.7																						
31-May	2.2	2.1	Z	2.1	2.1	2.1	2.2	2.3	2.5	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.2	2.2	2.4	2.4	2.4	2.2	2.5																						
																								2.3	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.3	Diurnal Average
																								2.8	3.0	3.0	2.9	2.8	2.7	2.7	2.9	3.1	2.9	2.7	3.1	3.1	2.5	2.4	2.4	2.3	2.3	2.4	2.4	2.5	2.6	2.6	2.9	Diurnal Maximum
Z - zerospan C - Calibration M - Maintenance																																																



Wood Buffalo Environmental Association
Hourly Averages

Total Hydrocarbons (THC) - ppm
Fort McKay - Bertha Ganter - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Fort McKay - Bertha Ganter - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	109	15.46	15.46
2.1 - 3.0	593	84.11	99.57
3.1 - 10.0	3	0.43	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	1	0	1	4	1	3	18	27	9	5	9	6	3	6	13	2	108
2.1 - 3.0	56	37	21	15	5	16	50	135	117	35	9	13	8	27	17	31	592
3.1 - 10.0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	3
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	57	37	22	19	7	19	68	164	126	40	18	19	11	33	30	33	703

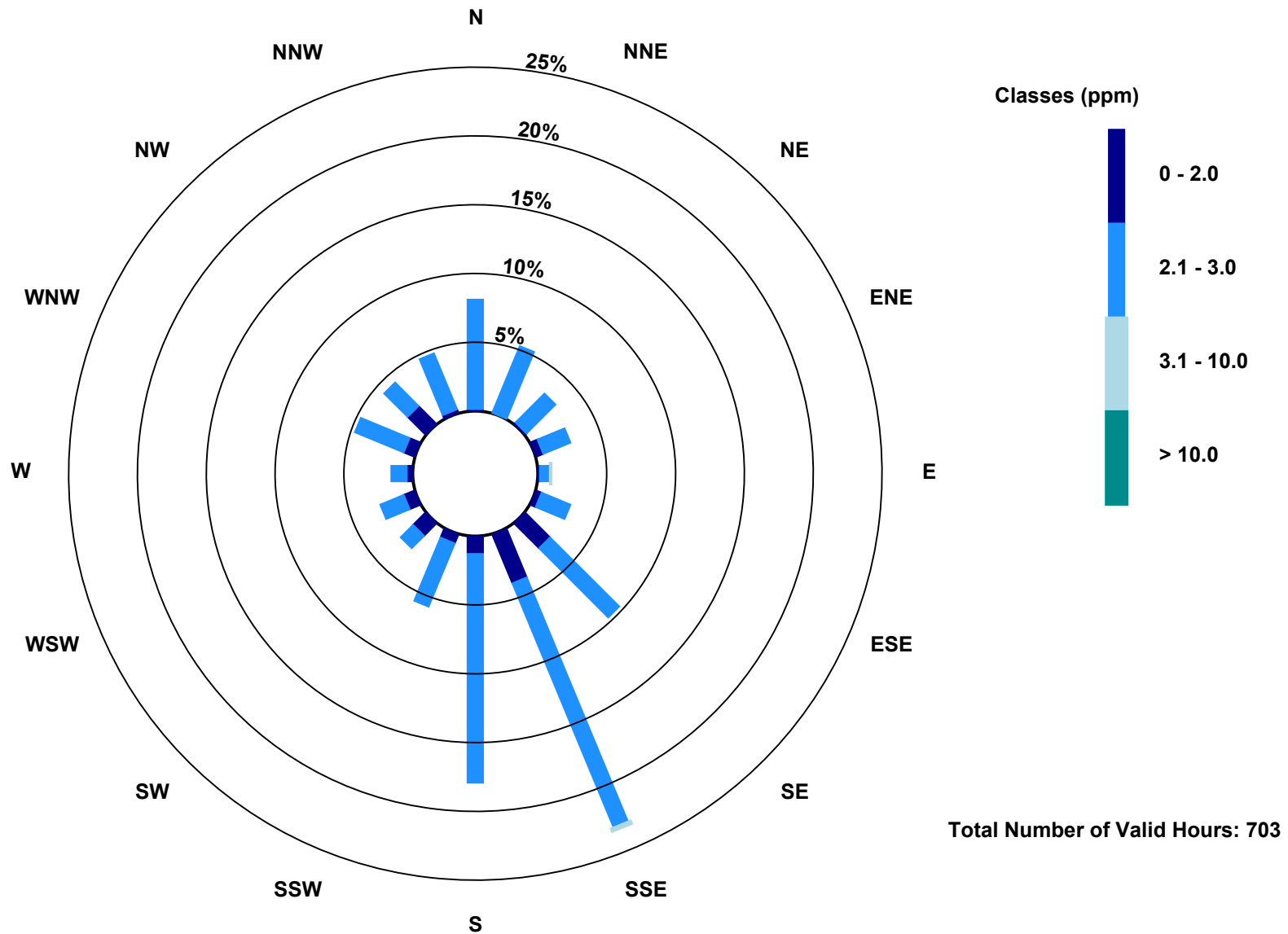
Total Number of Valid Hours: 703

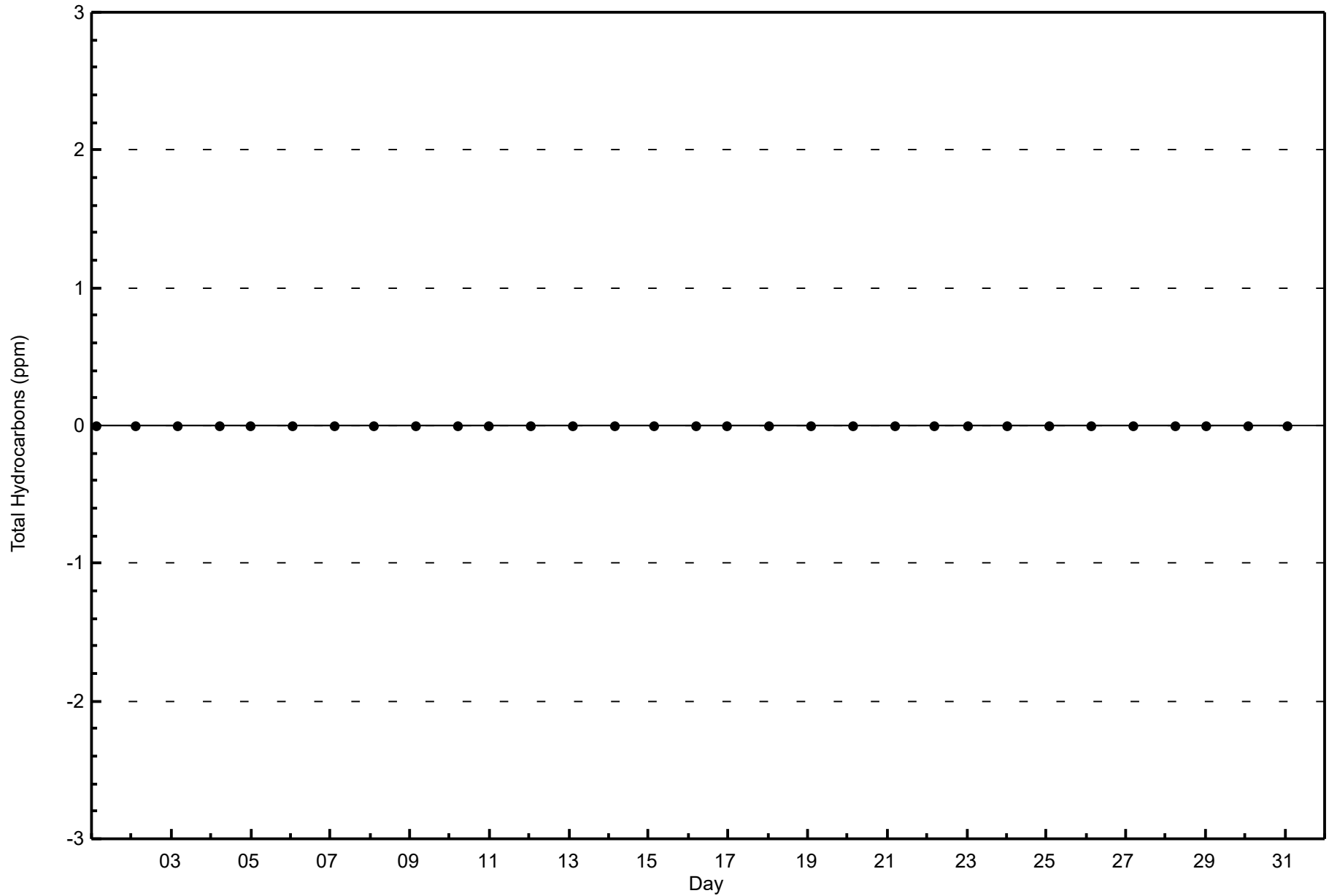
Total Number of Hours: 744

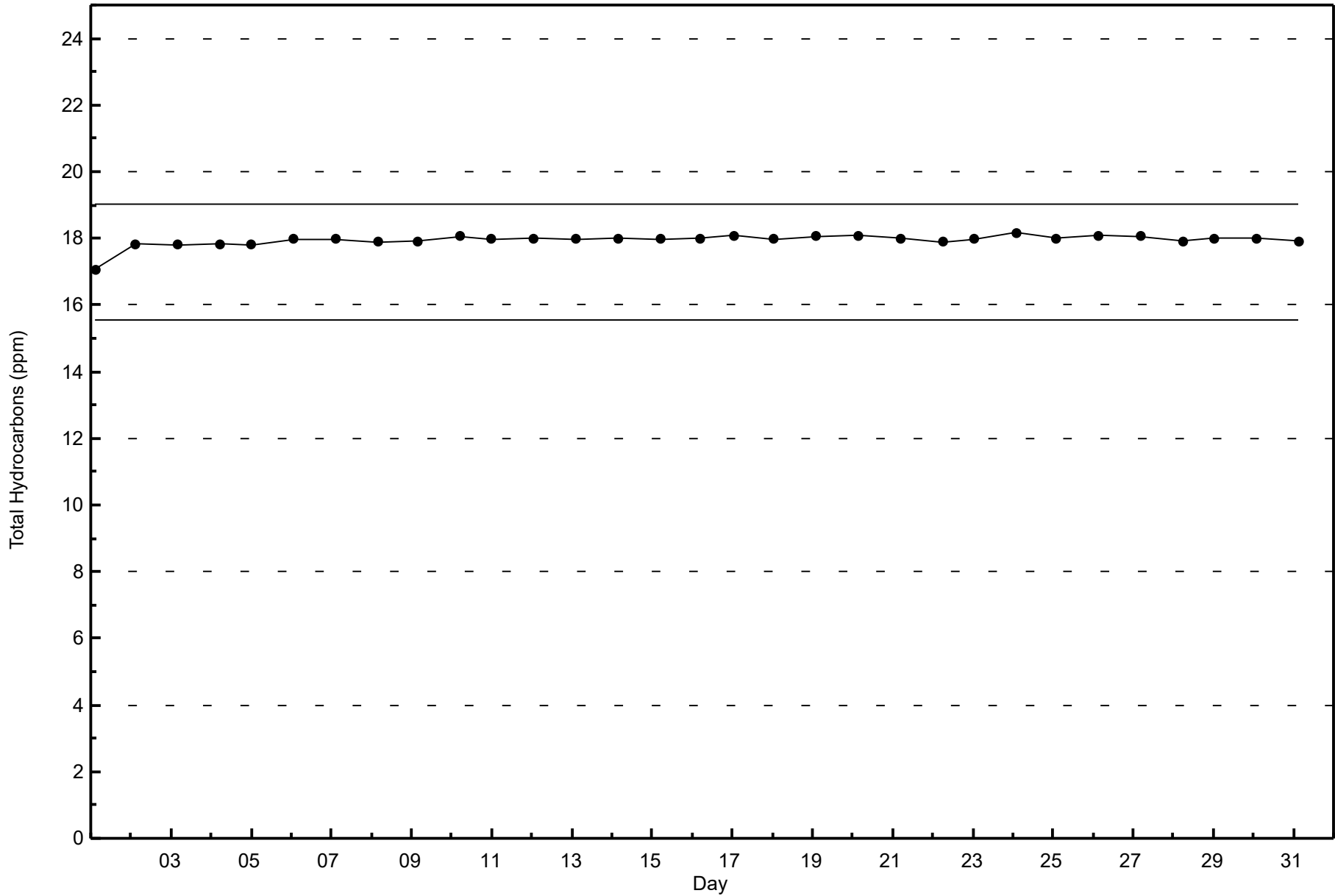


Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Fort McKay - Bertha Garter









Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

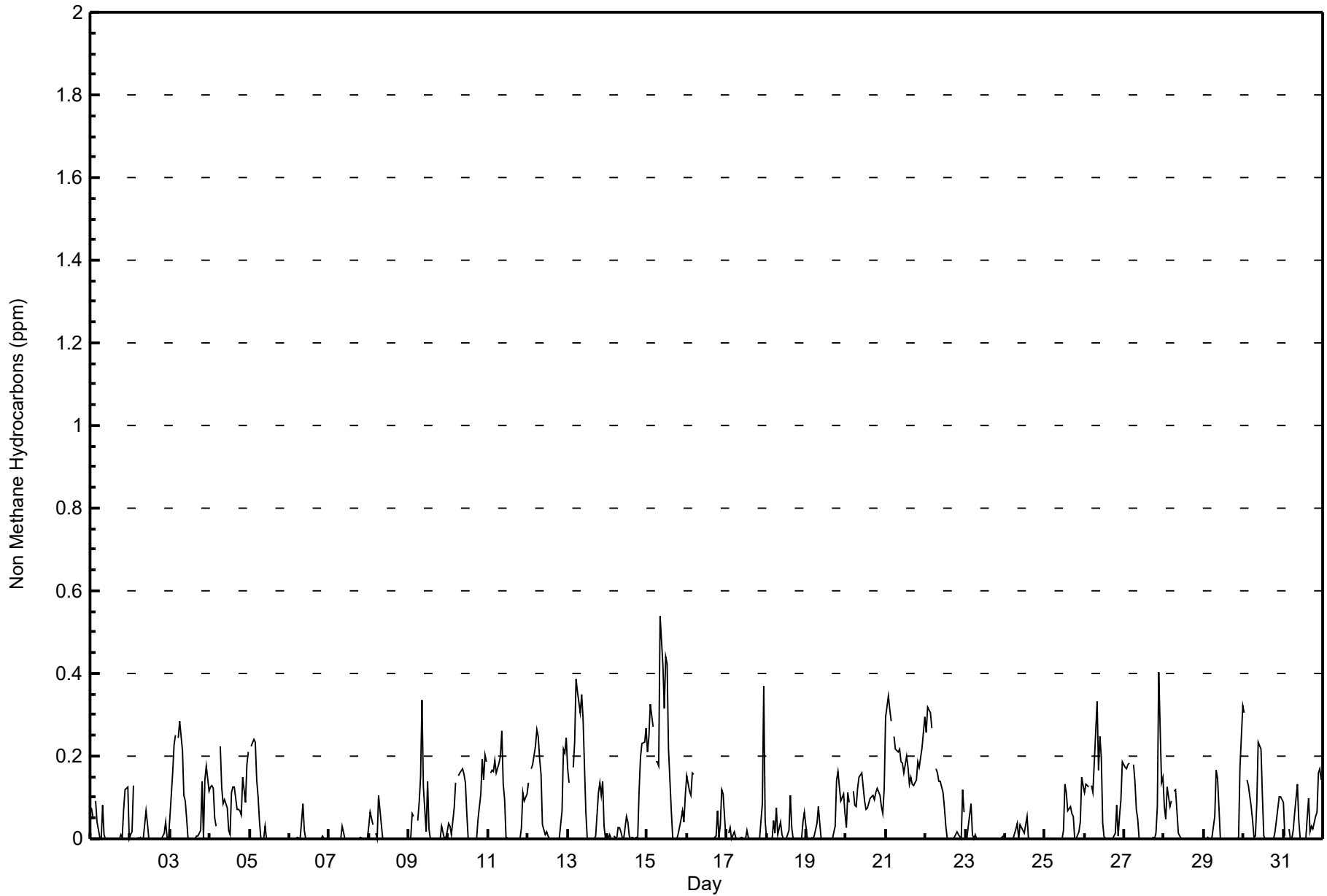
Fort McKay - Bertha Ganter - May 2023

Maximum Value: 0.538 ppm on May 15 09:00																			Maximum Daily Average: 0.208 ppm on May 21																			Hours in Service: 744	
Minimum Value: 0.000 ppm on May 1 07:00																			Minimum Daily Average: 0.001 ppm on May 7																			Hours of Data: 705	
Maximum Diurnal Average: 0.117 ppm at hour 3																			Minimum Diurnal Average: 0.013 ppm at hour 17																			Hours of Missing Data: 39	
Monthly Average: 0.065 ppm																			Percentiles: $P_1 = 0.0$ $P_{10} = 0.0$ $Q_1 = 0.0$ Median = 0.0 $Q_3 = 0.1$ $P_{90} = 0.2$ $P_{99} = 0.4$																			Hours of Calibration: 38	
																																						Percent Operational Time: 99.9	
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24															
1-May	0.075	0.054	Z	0.090	0.040	0.002	0.000	0.081	0.010	0.000	C	C	C	C	C	C	C	0.000	0.012	0.004	0.072	0.120	0.127	0.000	--	0.127													
2-May	0.012	0.018	0.128	Z	0.003	0.001	0.003	0.001	0.000	0.066	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014	0.040	0.004	0.001	0.014	0.128													
3-May	0.050	0.159	0.226	0.252	Z	0.243	0.285	0.213	0.104	0.090	0.049	0.002	0.000	0.000	0.001	0.000	0.008	0.005	0.019	0.138	0.003	0.143	0.176	0.115	0.099	0.285													
4-May	0.127	0.130	0.122	0.052	0.032	Z	0.222	0.125	0.086	0.094	0.074	0.021	0.010	0.112	0.124	0.126	0.072	0.070	0.069	0.057	0.148	0.089	0.179	0.211	0.102	0.222													
5-May	Z	0.224	0.239	0.234	0.143	0.101	0.040	0.000	0.000	0.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.044	0.239													
6-May	0.000	0.000	Z	0.000	0.000	0.000	0.040	0.000	0.040	0.085	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.007	0.085													
7-May	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.001	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.003	0.000	0.000	0.000	0.000	0.001	0.029													
8-May	0.032	0.064	0.033	Z	0.015	0.001	0.106	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.106													
9-May	0.000	0.003	0.062	0.055	Z	0.046	0.088	0.150	0.337	0.127	0.017	0.140	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.031	0.000	0.005	0.017	0.048	0.337													
10-May	0.037	0.030	0.010	0.074	0.136	Z	0.151	0.158	0.168	0.157	0.137	0.062	0.000	0.000	0.000	0.000	0.001	0.000	0.047	0.107	0.194	0.143	0.203	0.186	0.087	0.203													
11-May	Z	0.160	0.165	0.164	0.191	0.161	0.183	0.200	0.260	0.132	0.095	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026	0.111	0.090	0.109	0.089	0.260													
12-May	0.137	Z	0.168	0.181	0.225	0.265	0.247	0.194	0.155	0.034	0.009	0.016	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.068	0.217	0.206	0.243	0.103	0.265													
13-May	0.169	0.136	Z	0.174	0.234	0.387	0.356	0.306	0.350	0.291	0.175	0.064	0.000	0.000	0.000	0.000	0.000	0.008	0.112	0.136	0.106	0.138	0.031	0.000	0.138	0.387													
14-May	0.000	0.011	0.002	Z	0.006	0.001	0.026	0.026	0.018	0.003	0.001	0.053	0.039	0.005	0.001	0.003	0.000	0.005	0.000	0.115	0.198	0.231	0.235	0.268	0.054	0.268													
15-May	0.211	0.249	0.324	0.273	Z	0.186	0.186	0.176	0.538	0.420	0.316	0.442	0.423	0.216	0.068	0.002	0.000	0.000	0.000	0.015	0.048	0.068	0.040	0.107	0.187	0.538													
16-May	0.154	0.115	0.105	0.158	0.157	Z	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.069	0.002	0.033	0.120	0.107	0.001	0.045	0.158														
17-May	Z	0.015	0.028	0.000	0.018	0.004	0.001	0.000	0.000	0.002	0.000	0.000	0.020	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.085	0.369	0.044	0.026	0.369													
18-May	0.000	Z	0.000	0.000	0.046	0.014	0.075	0.012	0.040	0.011	0.000	0.000	0.000	0.020	0.105	0.026	0.000	0.000	0.000	0.000	0.000	0.040	0.063	0.020	0.105														
19-May	0.003	0.000	Z	0.002	0.001	0.007	0.036	0.077	0.038	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.030	0.142	0.164	0.125	0.091	0.107	0.062	0.038	0.164													
20-May	0.028	0.111	0.089	Z	0.117	0.083	0.077	0.124	0.149	0.160	0.127	0.092	0.071	0.073	0.099	0.101	0.104	0.097	0.113	0.122	0.104	0.076	0.062	0.121	0.100	0.160													
21-May	0.295	0.346	0.311	0.284	Z	0.249	0.216	0.211	0.217	0.187	0.182	0.158	0.199	0.172	0.134	0.150	0.131	0.129	0.144	0.185	0.173	0.196	0.220	0.296	0.208	0.346													
22-May	0.257	0.317	0.312	0.305	0.269	Z	0.171	0.159	0.138	0.138	0.110	0.074	0.030	0.000	0.000	0.000	0.000	0.003	0.010	0.016	0.009	0.000	0.117	0.065	0.109	0.317													
23-May	Z	0.000	0.029	0.084	0.012	0.000	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	M	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.007	0.007	0.084													
24-May	0.005	Z	0.000	0.000	0.000	0.000	0.023	0.037	0.000	0.034	0.028	0.012	0.033	0.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.055													
25-May	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.133	0.113	0.069	0.078	0.061	0.055	0.000	0.015	0.042	0.149	0.128	0.038	0.149														
26-May	0.112	0.132	0.126	Z	0.128	0.113	0.187	0.333	0.165	0.247	0.196	0.038	0.002	0.000	0.000	0.000	0.000	0.012	0.083	0.006	0.054	0.096	0.186	0.096	0.333														
27-May	0.174	0.170	0.180	0.185	Z	0.181	0.138	0.071	0.046	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.003	0.000	0.012	0.077	0.403	0.135	0.150	0.084	0.403													
28-May	0.079	0.048	0.126	0.078	0.092	Z	0.116	0.117	0.014	0.006	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.030	0.126													
29-May	Z	0.000	0.005	0.000	0.001	0.004	0.054	0.167	0.146	0.076	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.172	0.322	0.041	0.322													
30-May	0.305	Z	0.143	0.128	0.080	0.045	0.004	0.008	0.084	0.235	0.218	0.107	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.016	0.042	0.100	0.103	0.094	0.075	0.305													
31-May	0.087	0.007	Z	0.022	0.001	0.000	0.021	0.062	0.131	0.045	0.000	0.000	0.000	0.000	0.050	0.098	0.016	0.032	0.023	0.055	0.066	0.159	0.169	0.144	0.052	0.169													
																								Diurnal Average															
																								Diurnal Maximum															
Z - zerospan C - Calibration M - Maintenance																																							



Wood Buffalo Environmental Association
Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm
Fort McKay - Bertha Ganter - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	322	45.67	45.67
0.006 - 0.05	114	16.17	61.84
0.06 - 0.1	151	21.42	83.26
> 0.1	118	16.74	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	10	14	7	11	3	15	42	67	49	21	12	13	9	16	22	10	321
0.006 - 0.05	4	5	5	4	1	1	6	32	38	7	3	0	0	2	1	5	114
0.06 - 0.1	30	11	10	4	2	3	11	33	26	4	0	3	1	2	3	8	151
> 0.1	13	7	0	0	1	0	9	32	13	8	3	3	1	13	4	10	117
Totals	57	37	22	19	7	19	68	164	126	40	18	19	11	33	30	33	703

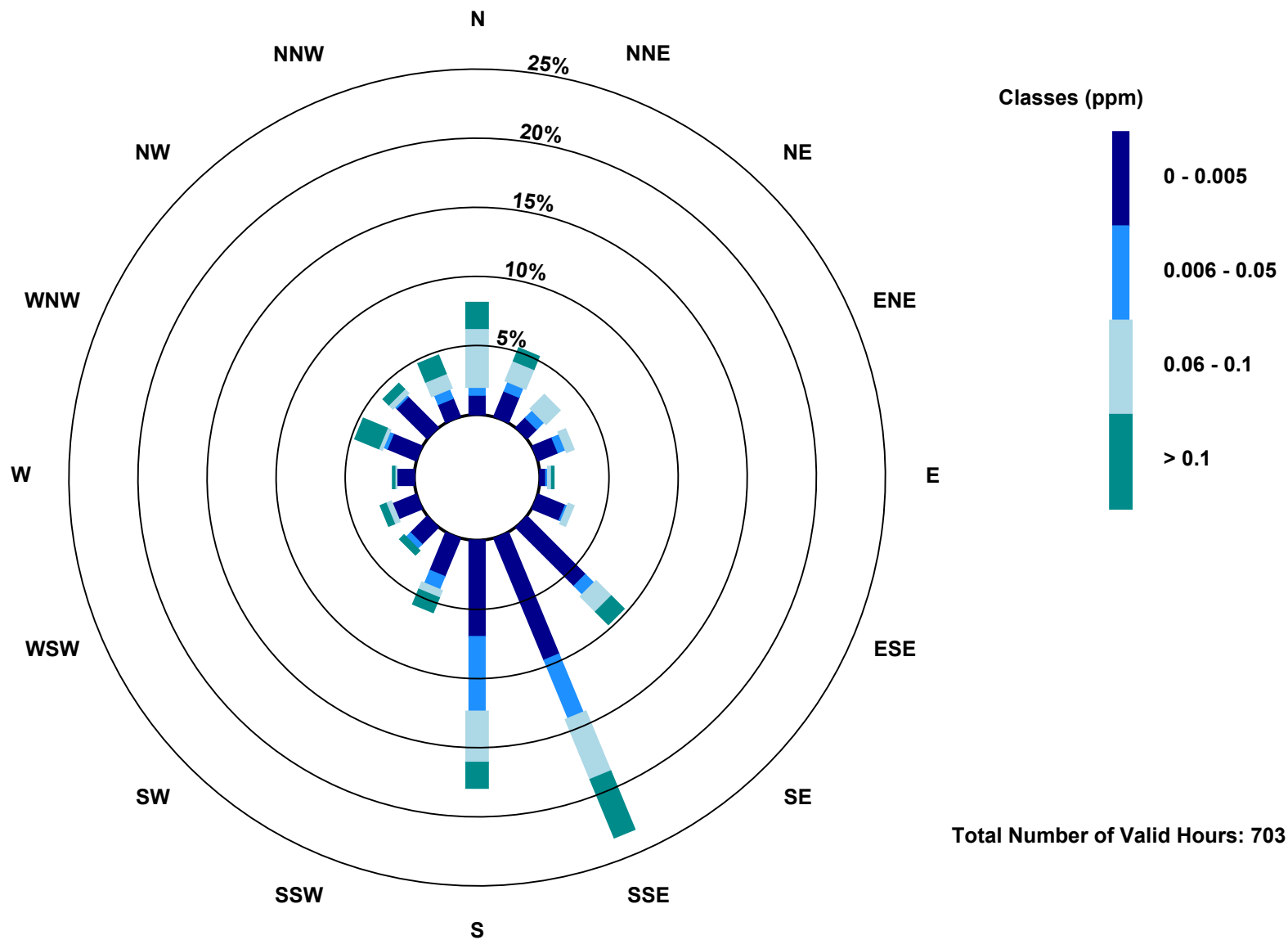
Total Number of Valid Hours: 703

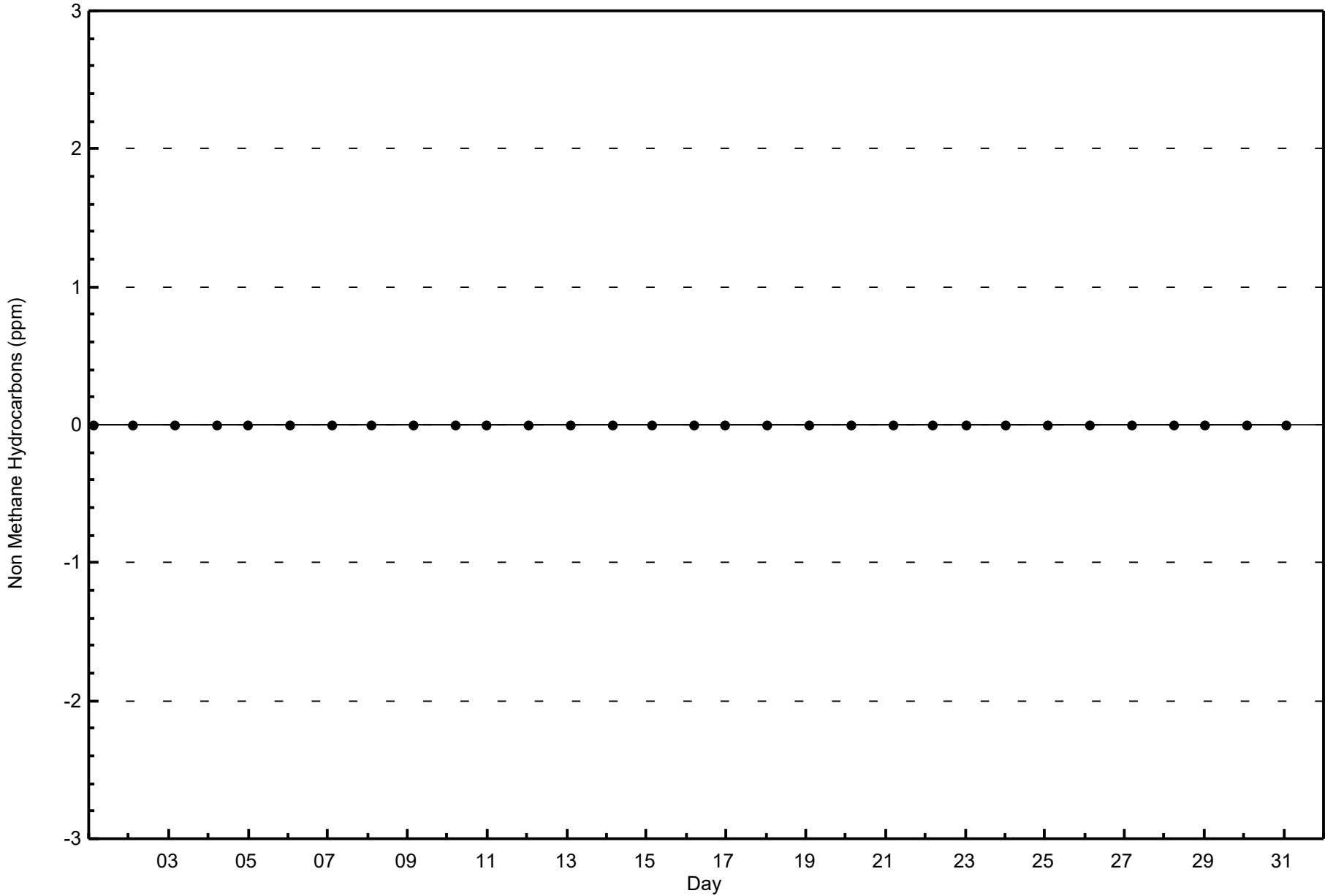
Total Number of Hours: 744

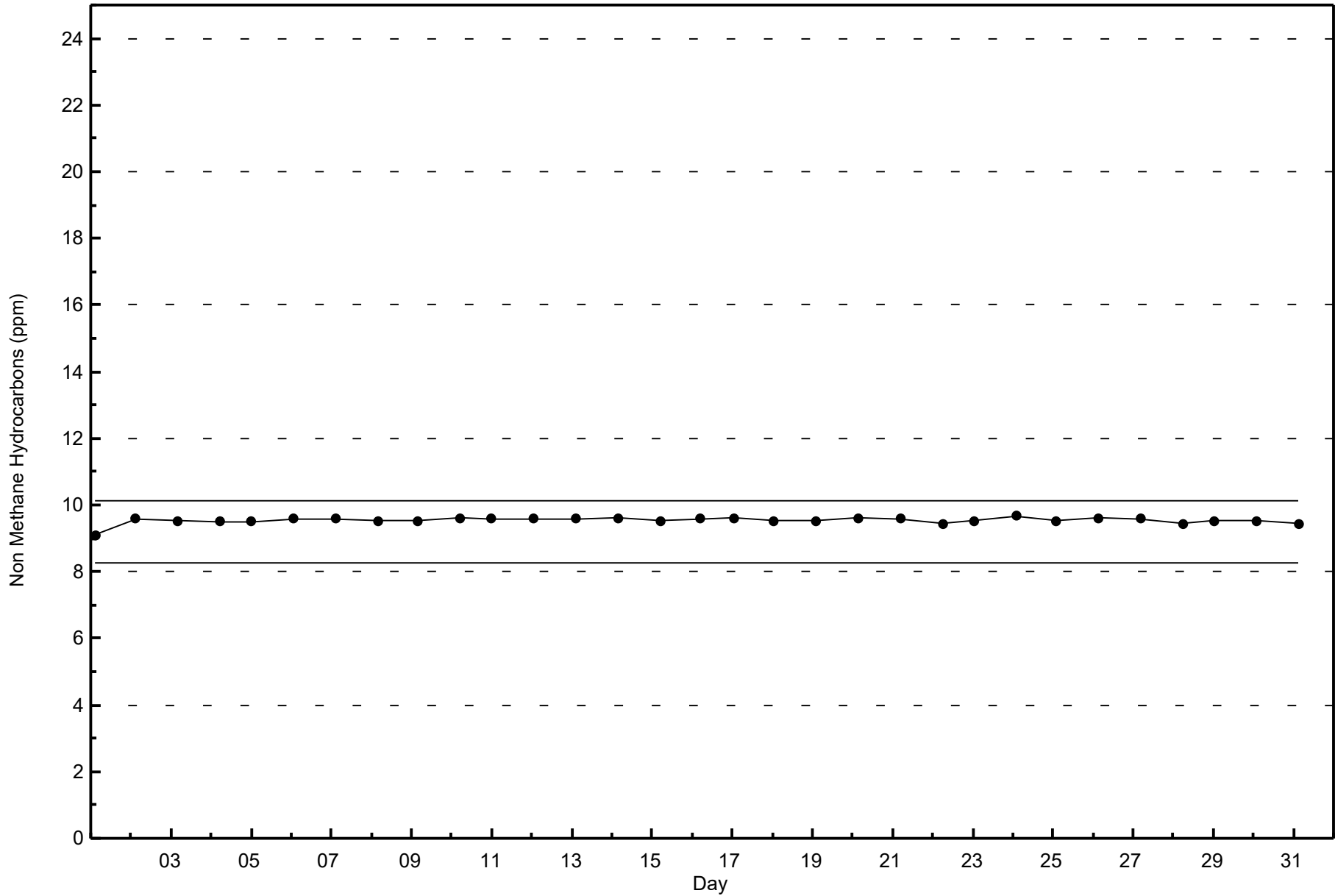


Wood Buffalo Environmental Association
Wind Rose May 2023

Non Methane Hydrocarbons (NMHC) - ppm
Fort McKay - Bertha Ganter









Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH₄) - ppm

Fort McKay - Bertha Ganter - May 2023

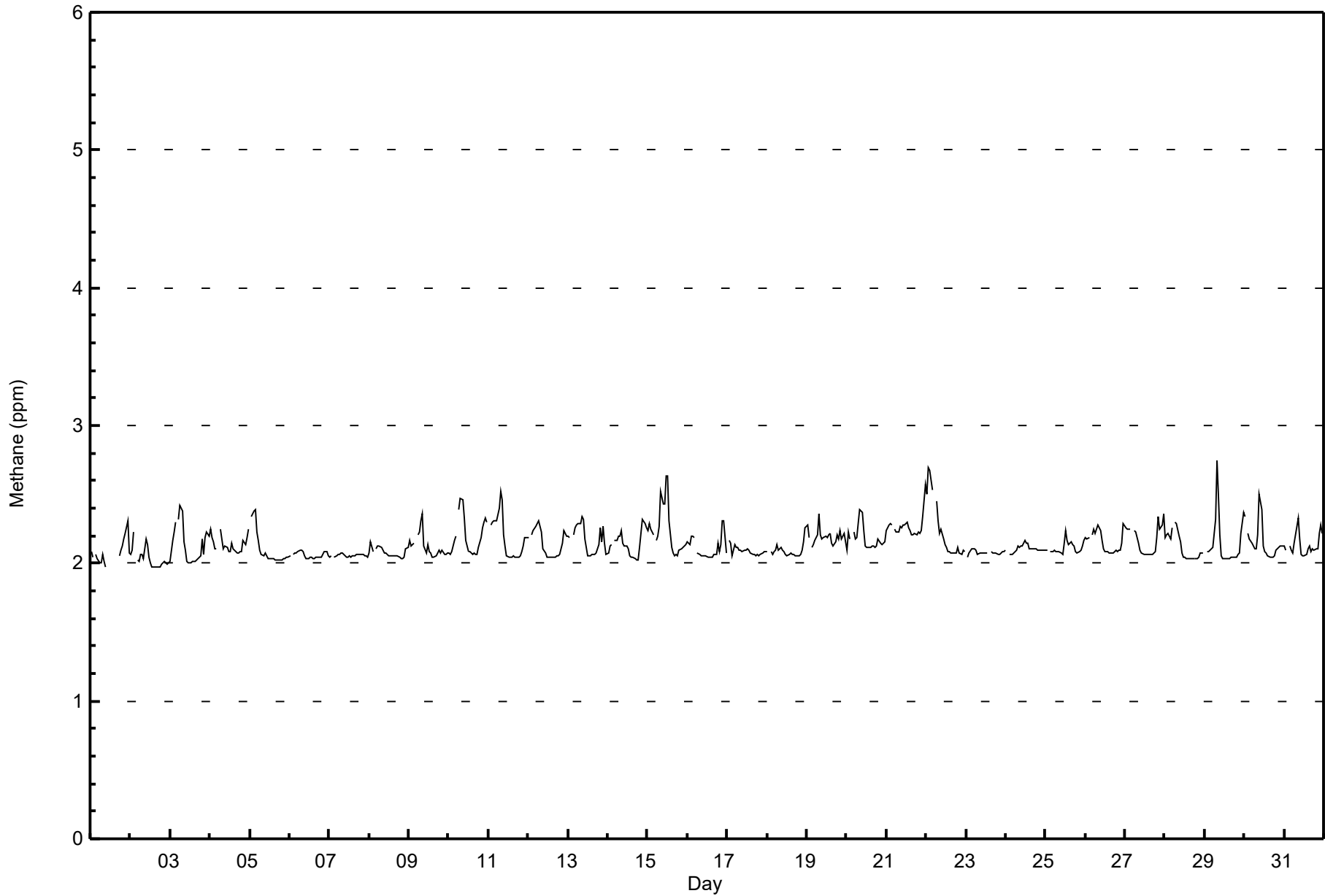
Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		744																			
Maximum Value: 2.7 ppm on May 29 08:00		Maximum Daily Average: 2.3 ppm on May 21		Minimum Value: 2.0 ppm on May 1 10:00		Minimum Daily Average: 2.0 ppm on May 2		Hours of Data: 705																			
Maximum Diurnal Average: 2.2 ppm at hour 8		Minimum Diurnal Average: 2.1 ppm at hour 17		Hours of Missing Data: 39		Hours of Calibration: 38		Percent Operational Time: 99.9																			
Monthly Average: 2.14 ppm		Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.1 Median = 2.1 Q ₃ = 2.2 P ₉₀ = 2.3 P ₉₉ = 2.5																									
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	2.1	2.0	Z	2.1	2.0	2.0	2.0	2.1	2.0	2.0	C	C	C	C	C	C	2.1	2.1	2.1	2.2	2.2	2.3	2.1	--	2.3		
2-May	2.1	2.1	2.2	Z	2.0	2.0	2.1	2.1	2.0	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	
3-May	2.0	2.2	2.2	2.3	Z	2.3	2.4	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.2	2.2	2.2	2.1	2.4	
4-May	2.3	2.2	2.2	2.1	2.1	Z	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.1	2.3	
5-May	Z	2.3	2.4	2.4	2.2	2.2	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4	
6-May	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1	
7-May	2.0	2.1	Z	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	
8-May	2.1	2.2	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	
9-May	2.2	2.1	2.1	2.1	Z	2.2	2.2	2.3	2.4	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	
10-May	2.1	2.1	2.1	2.2	2.2	Z	2.4	2.5	2.5	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.3	2.3	2.2	2.5	
11-May	Z	2.3	2.3	2.3	2.3	2.3	2.4	2.5	2.5	2.2	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.5	
12-May	2.2	Z	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.3	
13-May	2.2	2.2	Z	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.2	2.3	2.1	2.1	2.2	2.3	
14-May	2.1	2.1	2.1	Z	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.3	2.3	2.1	2.3	
15-May	2.2	2.3	2.3	2.2	Z	2.2	2.2	2.3	2.5	2.4	2.4	2.6	2.6	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.6	
16-May	2.2	2.1	2.2	2.2	2.2	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.3	2.3	2.1	2.1	2.3	
17-May	Z	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	
18-May	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	
19-May	2.3	2.2	Z	2.1	2.1	2.2	2.2	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	
20-May	2.1	2.2	2.2	Z	2.2	2.2	2.2	2.3	2.4	2.4	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.2	2.4	
21-May	2.2	2.3	2.3	2.3	Z	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.6	2.3	2.6	
22-May	2.5	2.7	2.7	2.6	2.5	Z	2.5	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.7	
23-May	Z	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	M	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	
24-May	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	
25-May	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	
26-May	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	
27-May	2.3	2.3	2.2	2.2	Z	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.2	2.3	2.4	2.2	2.4	
28-May	2.2	2.2	2.2	2.2	2.3	Z	2.3	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.3
29-May	Z	2.1	2.1	2.1	2.1	2.1	2.3	2.7	2.5	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.4	2.1	2.7	
30-May	2.3	Z	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.5	2.4	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.5	
31-May	2.1	2.1	Z	2.1	2.1	2.1	2.2	2.2	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.2	2.1	2.3	
																								Diurnal Average			
																								Diurnal Maximum			
																								2.2			
																								2.5			

Z - zerospan C - Calibration M - Maintenance



Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Fort McKay - Bertha Ganter - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Fort McKay - Bertha Ganter - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	115	16.31	16.31
2.1 - 3.0	590	83.69	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	1	0	2	4	1	3	18	30	11	5	9	6	3	6	13	2	114
2.1 - 3.0	56	37	20	15	6	16	50	134	115	35	9	13	8	27	17	31	589
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	57	37	22	19	7	19	68	164	126	40	18	19	11	33	30	33	703

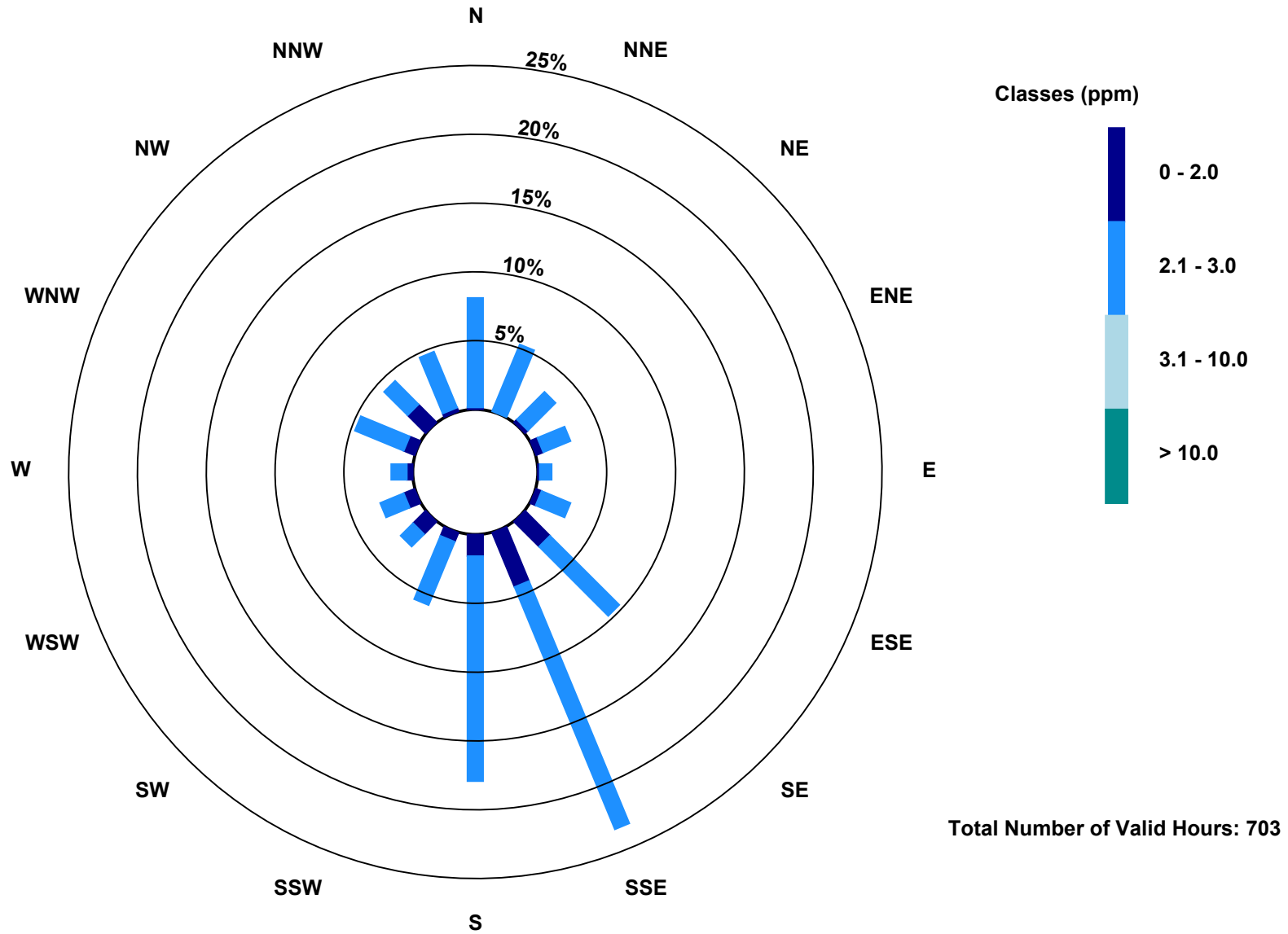
Total Number of Valid Hours: 703

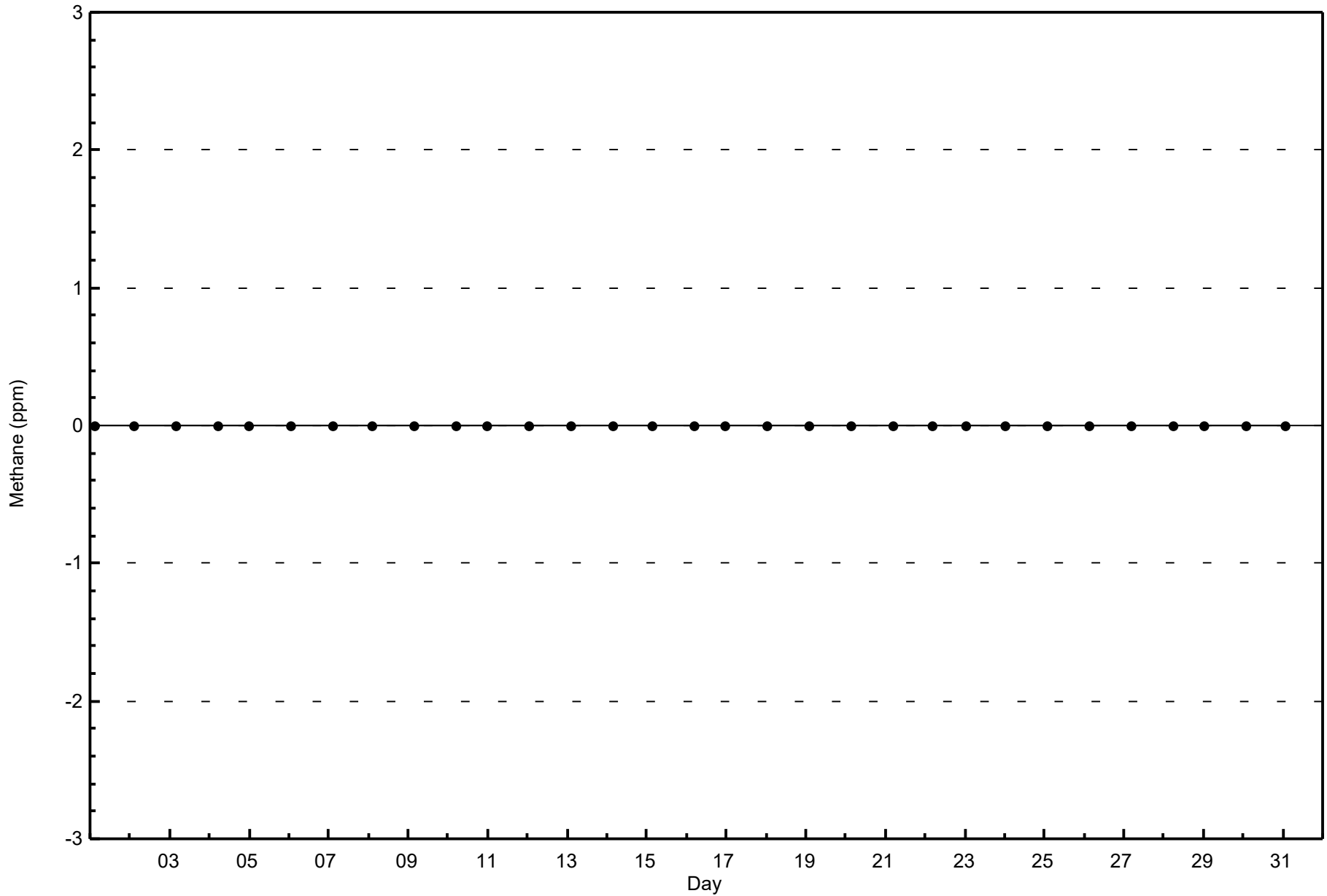
Total Number of Hours: 744

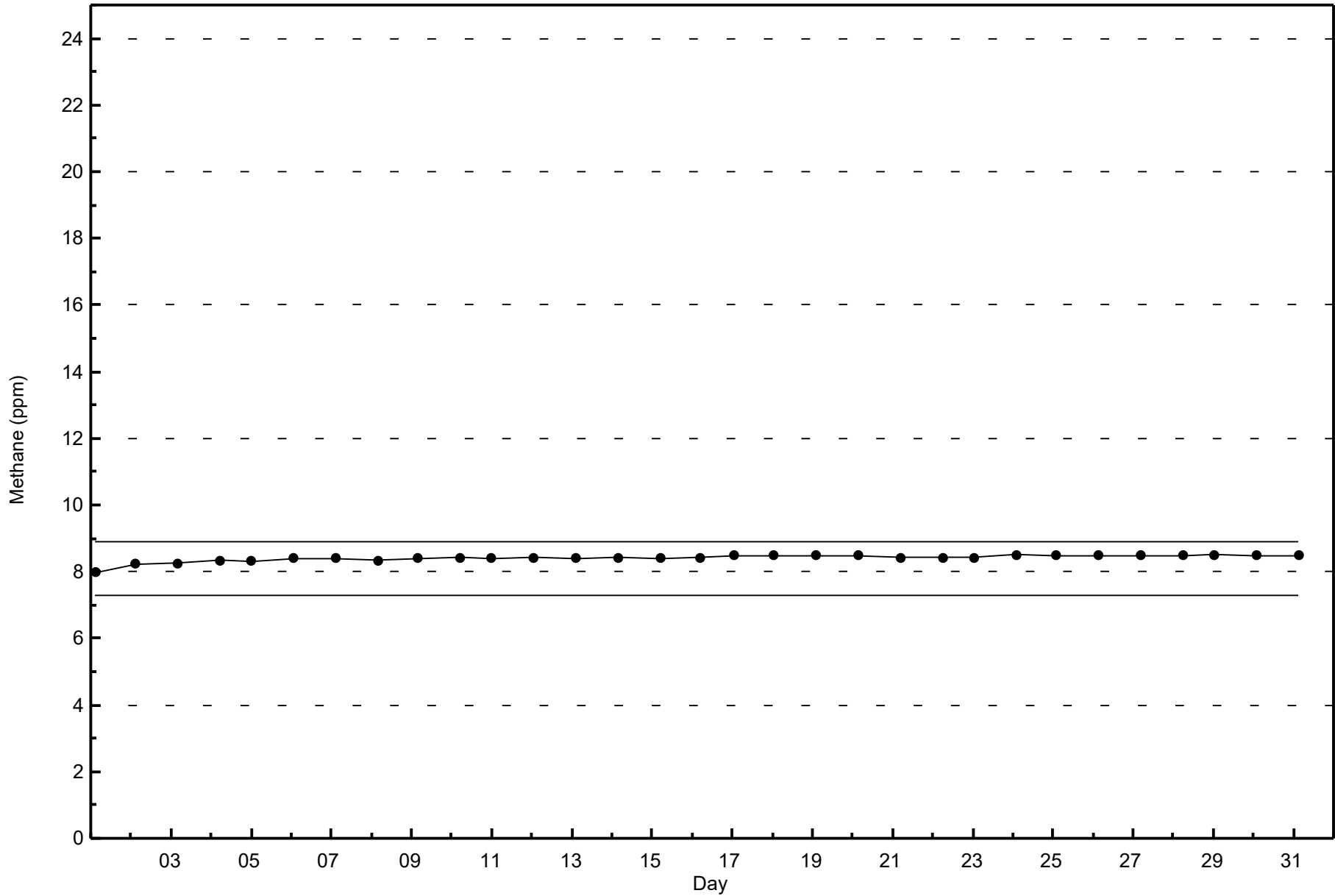


Wood Buffalo Environmental Association
Wind Rose May 2023

Methane (CH₄) - ppm
Fort McKay - Bertha Ganter







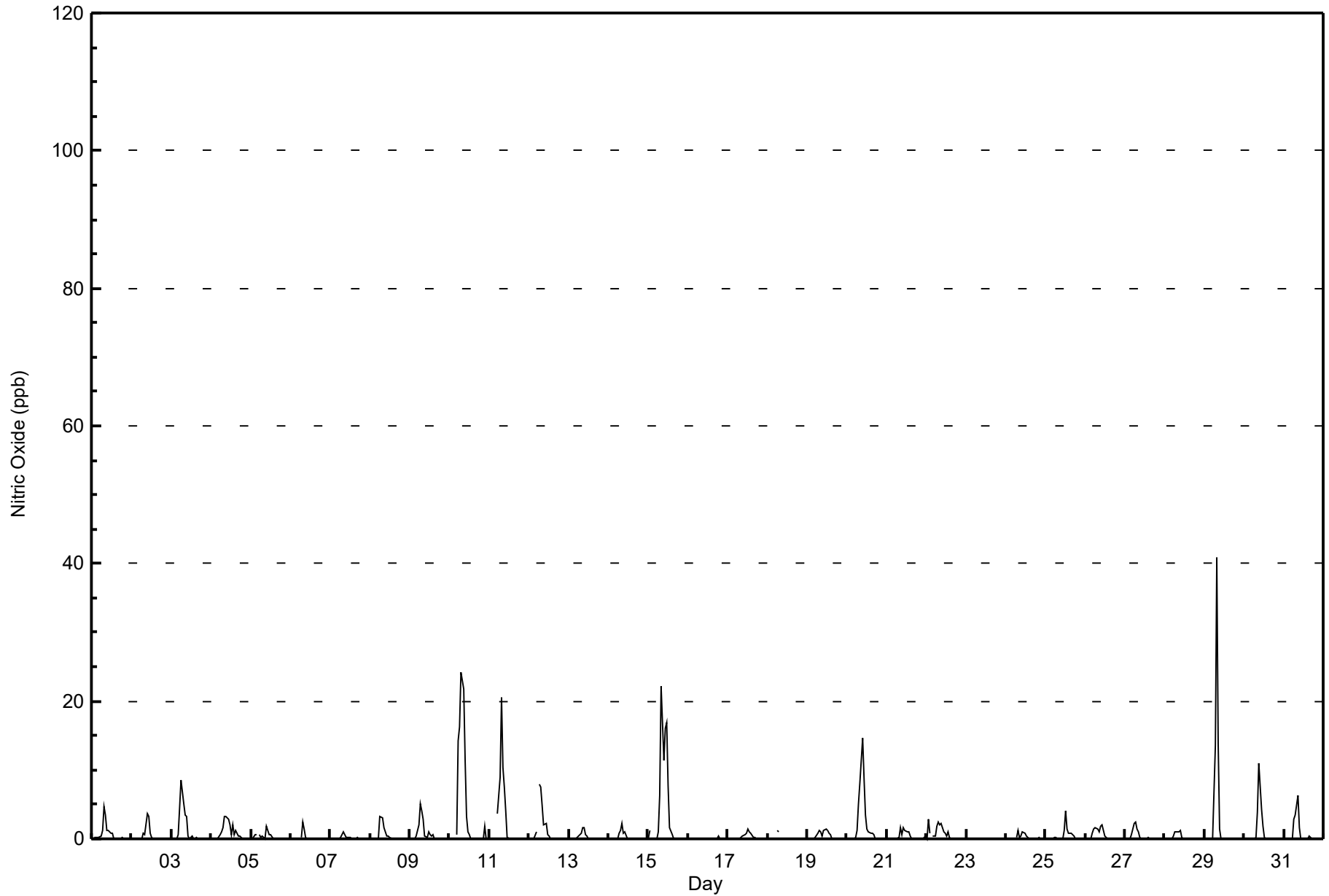


Maximum Value: 40.9 ppb on May 29 08:00		Maximum Daily Average: 4.2 ppb on May 10		Hours in Service: 744																													
Minimum Value: 0.0 ppb on May 1 21:00		Minimum Daily Average: 0.0 ppb on May 23		Hours of Data: 706																													
Maximum Diurnal Average: 4.6 ppb at hour 8		Minimum Diurnal Average: 0.0 ppb at hour 8		Hours of Missing Data: 38																													
Monthly Average: 0.88 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.5 P ₉₀ = 1.8 P ₉₉ = 16.1		Hours of Calibration: 37																													
				Percent Operational Time: 99.9																													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24									
1-May	Z	0.1	0.2	0.1	0.1	0.3	1.2	4.6	3.4	1.2	1.2	0.7	0.9	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.6	4.6							
2-May	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.7	0.7	3.7	3.2	0.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.7							
3-May	0.0	0.0	Z	0.1	0.6	4.4	8.5	5.0	3.5	3.3	0.3	0.1	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.2	8.5								
4-May	0.0	0.0	0.0	Z	0.0	0.6	0.9	1.7	3.2	3.2	2.9	2.1	0.7	1.9	0.6	1.3	0.4	0.4	0.2	0.0	0.0	0.0	0.0	0.9	3.2								
5-May	0.0	0.0	0.6	0.5	Z	0.6	0.3	0.3	0.1	1.8	1.3	0.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.8								
6-May	0.0	0.0	0.0	0.0	0.0	Z	0.3	2.4	1.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.4								
7-May	Z	0.0	0.0	0.0	0.0	0.1	0.3	0.7	1.0	0.3	0.2	0.1	0.3	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	1.0								
8-May	0.0	Z	0.0	0.0	0.0	0.0	3.2	3.1	1.6	1.0	0.4	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.2								
9-May	0.0	0.0	Z	0.0	0.5	1.9	5.1	4.1	2.9	0.5	0.3	1.1	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	5.1								
10-May	0.0	0.0	0.0	Z	0.6	14.2	16.3	24.2	21.9	11.5	3.2	1.0	0.7	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.8	0.0	4.2	24.2								
11-May	0.0	0.0	0.0	0.1	Z	3.6	9.0	20.5	10.4	7.5	4.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	20.5								
12-May	0.0	0.0	0.0	0.0	1.0	Z	7.8	7.6	4.8	2.0	2.3	0.7	0.5	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	7.8								
13-May	Z	0.0	0.0	0.0	0.0	0.3	0.5	0.8	1.7	1.6	0.7	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.7								
14-May	0.0	Z	0.0	0.0	0.0	0.0	0.8	1.3	2.2	0.9	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.2								
15-May	0.1	1.1	Z	0.0	0.0	0.0	1.1	6.4	22.2	11.5	16.1	16.9	7.6	1.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	22.2								
16-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3								
17-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.3	0.5	0.6	0.9	1.4	1.1	0.9	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.4								
18-May	0.0	0.0	0.0	0.0	0.0	Z	1.2	0.9	C	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	--	1.2							
19-May	Z	0.0	0.0	0.0	0.0	0.2	0.8	1.3	0.9	0.5	1.3	1.3	1.3	0.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.3								
20-May	0.0	Z	0.0	0.0	0.0	0.2	1.3	5.1	8.2	14.7	8.7	3.4	1.4	0.9	0.8	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	2.0	14.7								
21-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.2	1.6	0.7	1.6	1.3	1.0	1.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	1.6								
22-May	0.0	2.9	0.9	Z	0.5	0.3	1.7	2.4	2.0	2.3	1.0	0.8	0.4	1.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.9								
23-May	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1								
24-May	0.0	0.0	0.0	0.0	0.0	Z	0.2	1.1	0.2	0.4	1.0	0.9	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.2	1.1								
25-May	Z	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0	1.2	4.1	1.4	0.8	0.8	0.7	0.4	0.0	0.0	0.0	0.0	0.0	0.4	4.1								
26-May	0.0	Z	0.0	0.0	0.8	1.4	1.6	1.5	1.1	1.8	2.0	1.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.0								
27-May	0.0	0.0	Z	0.0	0.6	2.2	2.4	1.4	0.9	0.3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.4								
28-May	0.0	0.0	0.0	Z	0.0	0.3	0.9	1.0	1.0	1.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.2								
29-May	0.0	0.0	0.0	0.0	Z	0.0	13.6	40.9	13.8	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	40.9								
30-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.3	3.9	10.9	4.2	1.8	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	10.9								
31-May	Z	0.0	0.0	0.0	0.0	0.0	2.8	3.4	6.3	1.7	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	6.3								
		0.0	0.2	0.1	0.0	0.2	1.2	2.6	4.6	4.0	2.9	1.9	1.3	0.8	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	Diurnal Average								
		0.1	2.9	0.9	0.5	1.0	14.2	16.3	40.9	22.2	14.7	16.1	16.9	7.6	1.9	0.9	1.3	0.7	0.4	0.3	0.1	0.1	1.8	0.1	0.4	Diurnal Maximum							
Z - zerospan		C - Calibration			M - Maintenance																												



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Fort McKay - Bertha Ganter - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	702	99.43	99.43
21 - 40	3	0.42	99.86
41 - 80	1	0.14	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	57	37	22	19	5	18	66	164	124	39	17	18	12	38	33	31	700
21 - 40	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	3
11 - 80	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	57	37	22	19	6	18	67	166	124	39	17	18	12	38	33	31	704

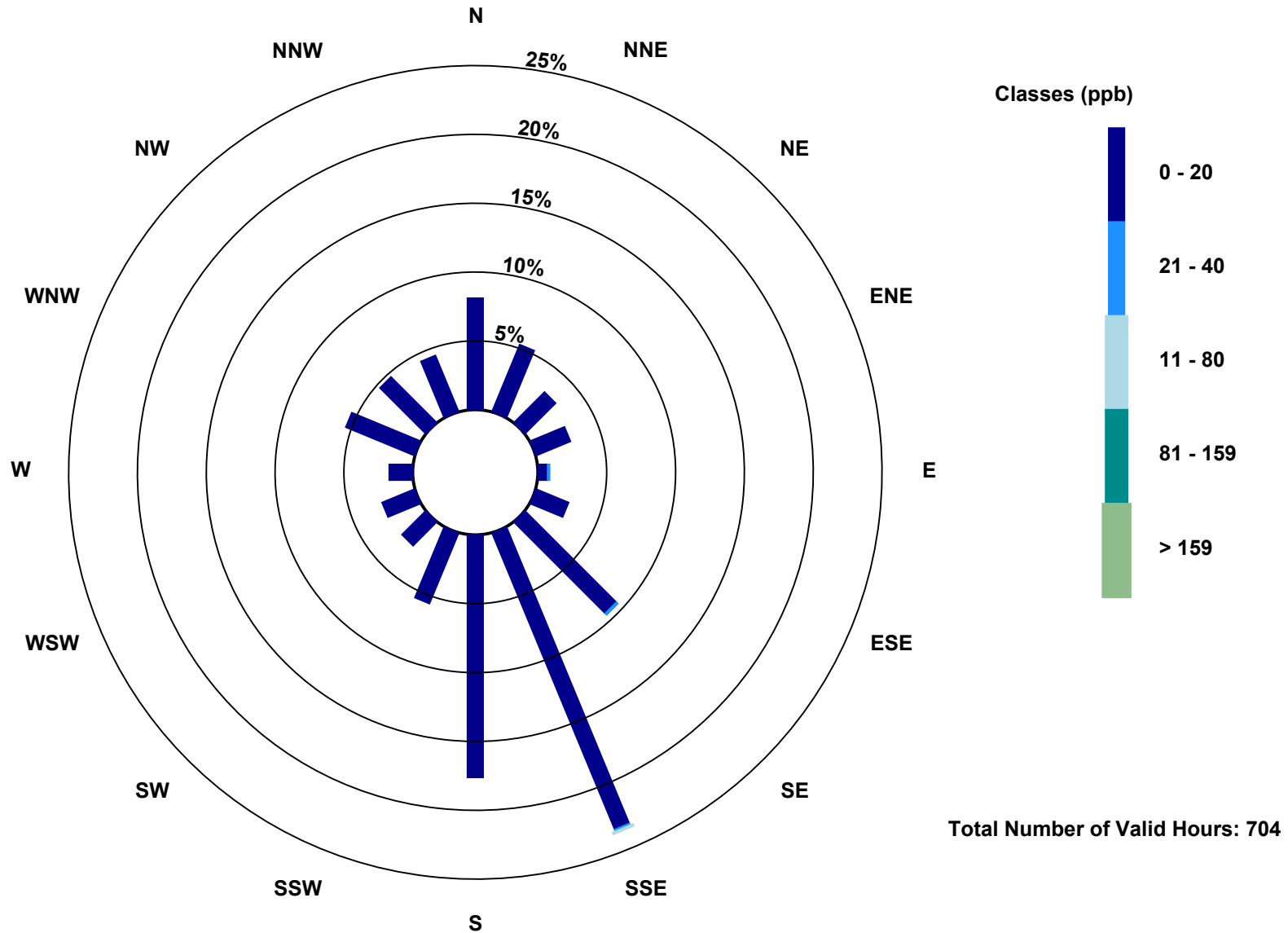
Total Number of Valid Hours: 704

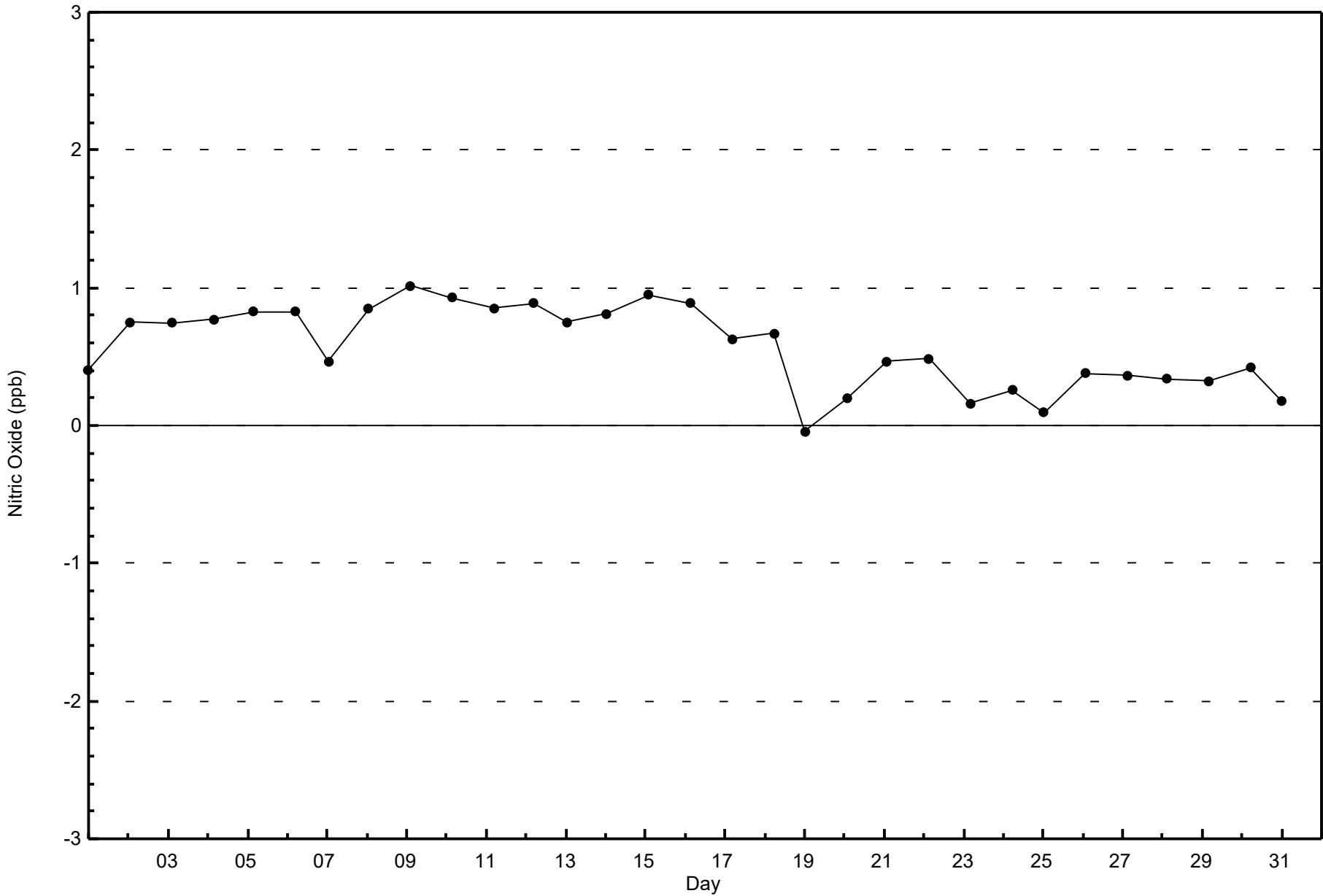
Total Number of Hours: 744

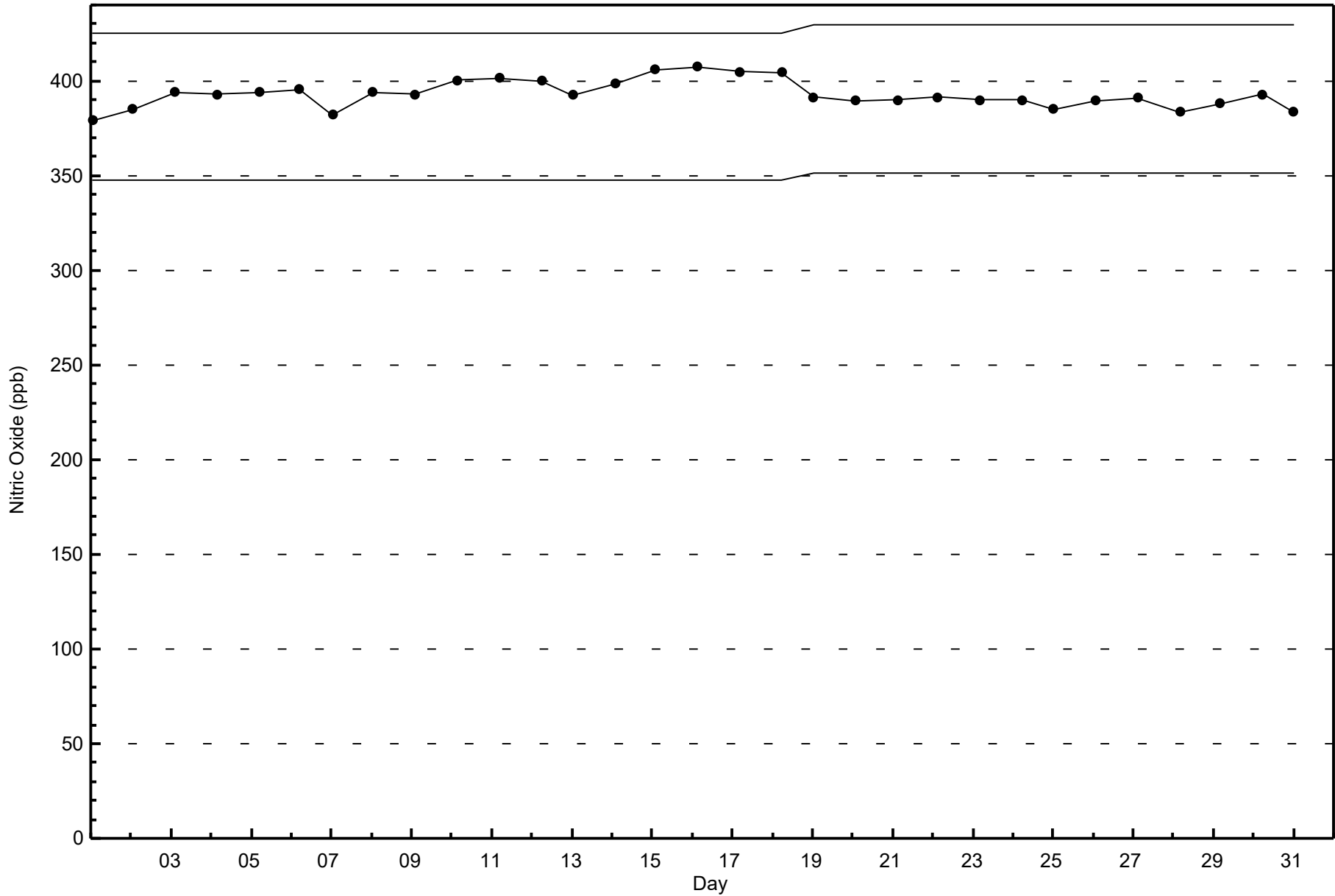


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Fort McKay - Bertha Ganter









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

Fort McKay - Bertha Ganter - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 744
Maximum Value: 44.4 ppb on May 15 12:00	Maximum Daily Average: 14.1 ppb on May 15
Minimum Value: 0.0 ppb on May 2 15:00	Hours of Data: 706
Maximum Diurnal Average: 9.9 ppb at hour 2	Hours of Missing Data: 38
Monthly Average: 6.17 ppb	Hours of Calibration: 37
Minimum Daily Average: 1.7 ppb on May 6	Percent Operational Time: 99.9
Minimum Diurnal Average: 2.0 ppb at hour 18	Percentiles: P ₁ = 0.0 P ₁₀ = 0.6 Q ₁ = 1.4 Median = 3.8 Q ₃ = 9.6 P ₉₀ = 14.3 P ₉₉ = 29.1

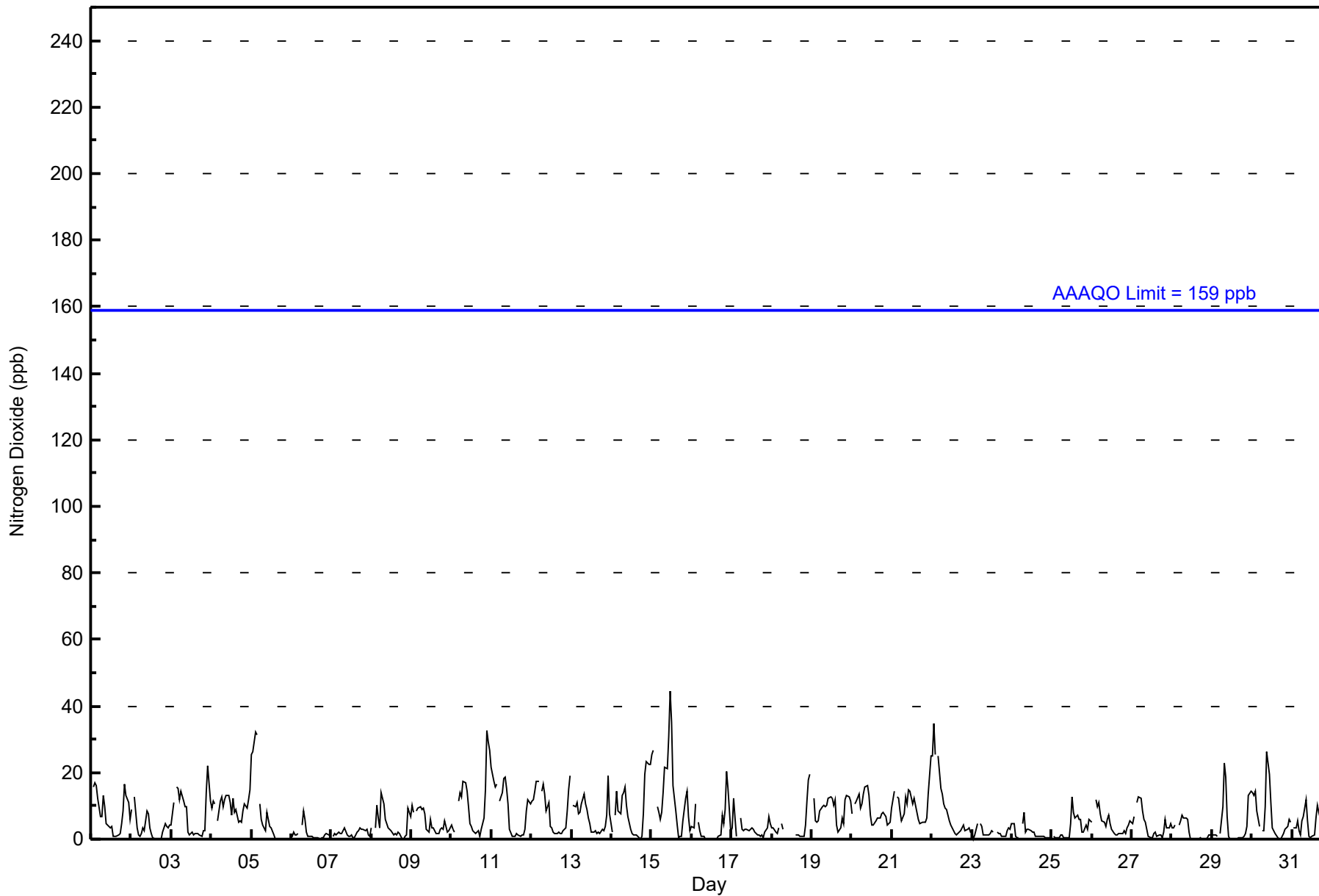
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	Z	15.6	17.0	16.3	12.3	6.6	6.7	13.3	9.9	4.7	4.1	3.2	4.0	0.9	0.8	1.0	1.2	1.5	4.5	8.4	16.4	13.2	10.9	6.0	7.8	17.0																						
2-May	9.1	Z	12.7	3.2	1.1	0.7	1.8	3.6	2.7	8.6	7.6	3.5	1.7	0.3	0.0	0.0	0.0	0.0	0.0	2.0	4.6	3.8	3.2	4.3	3.2	12.7																						
3-May	4.2	11.2	Z	15.8	15.4	11.9	14.3	11.4	9.7	9.7	2.2	1.3	2.1	1.3	1.5	1.9	1.9	1.2	0.8	2.4	2.5	14.1	22.1	11.6	7.4	22.1																						
4-May	9.4	11.6	10.8	Z	5.3	11.3	12.5	9.8	12.0	13.0	13.0	11.1	7.4	12.4	7.9	9.0	5.1	5.3	5.2	8.6	10.4	9.5	11.7	14.9	9.9	14.9																						
5-May	25.4	26.3	32.3	31.5	Z	10.5	6.1	4.4	2.5	7.9	6.1	3.9	3.4	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	32.3																						
6-May	1.0	2.3	1.3	1.2	1.6	Z	4.2	8.6	5.9	2.1	0.9	0.9	0.9	0.5	0.3	0.3	0.3	0.2	0.3	0.5	1.3	1.7	1.1	1.0	1.7	8.6																						
7-May	Z	0.8	1.8	1.1	2.2	1.6	1.8	2.6	3.5	1.2	0.9	0.9	1.3	0.6	0.6	2.0	2.6	3.6	2.9	3.1	2.7	2.9	1.3	0.7	1.9	3.6																						
8-May	3.3	Z	3.5	10.0	6.2	3.2	13.8	10.8	6.1	4.8	3.3	3.1	2.5	1.2	1.6	1.2	2.0	1.5	0.0	0.0	0.7	1.1	9.5	6.7	4.2	13.8																						
9-May	10.1	8.1	Z	8.5	9.2	9.7	9.0	9.3	7.6	2.9	2.3	6.0	3.6	3.5	2.4	1.5	1.5	2.8	3.5	2.8	5.4	2.1	2.6	3.6	5.1	10.1																						
10-May	4.1	2.9	2.3	Z	11.6	13.8	12.7	17.5	16.9	14.5	9.8	4.8	4.0	2.6	1.5	2.1	2.5	0.8	2.9	6.4	15.0	32.7	29.2	26.7	10.3	32.7																						
11-May	21.5	17.2	15.8	16.7	Z	11.6	14.1	18.4	18.6	15.3	10.5	2.8	0.9	0.8	0.8	1.9	1.3	0.8	1.1	1.3	3.0	8.5	12.0	10.4	8.9	21.5																						
12-May	11.6	11.7	14.5	17.3	17.3	Z	14.4	16.6	13.6	8.5	11.2	3.9	3.5	2.0	1.7	1.6	2.0	1.9	1.9	2.7	3.5	8.4	14.9	19.1	8.9	19.1																						
13-May	Z	10.2	9.8	11.1	7.7	7.9	10.8	13.4	10.7	9.0	6.5	4.5	2.2	2.3	2.5	1.8	2.2	1.8	3.0	2.4	3.8	7.2	19.0	7.6	6.8	19.0																						
14-May	2.0	Z	7.4	14.5	8.6	7.7	13.2	14.1	15.5	10.2	6.9	3.0	1.9	1.4	1.2	1.1	0.5	0.2	0.7	7.8	19.6	23.1	22.3	22.5	8.9	23.1																						
15-May	25.6	26.8	Z	9.6	8.2	5.9	8.1	14.0	21.7	21.3	31.0	44.4	35.2	16.3	8.6	4.1	0.6	0.8	0.7	5.6	12.2	14.4	6.8	2.7	14.1	44.4																						
16-May	3.8	3.3	10.4	Z	5.1	2.5	0.8	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.1	7.2	4.7	9.1	20.5	15.1	2.1	3.8	20.5																						
17-May	3.2	12.3	6.3	0.8	Z	6.3	3.1	2.6	2.8	3.1	2.6	2.9	3.4	2.8	2.1	1.3	1.4	1.0	1.1	0.6	2.3	3.2	6.9	4.6	3.3	12.3																						
18-May	3.2	3.3	2.0	1.6	3.4	Z	4.8	2.8	C	C	C	C	C	C	1.3	1.2	1.3	0.9	0.7	0.9	4.4	11.5	17.7	19.7	--	19.7																						
19-May	Z	12.1	5.7	5.0	5.7	8.5	9.8	10.2	9.6	10.2	12.3	12.8	12.1	10.2	12.0	4.4	2.1	3.6	6.5	4.6	12.0	13.0	12.6	11.4	9.0	13.0																						
20-May	7.8	Z	10.5	11.5	13.5	9.3	10.4	13.7	15.6	16.1	13.0	7.3	4.2	4.3	5.4	6.2	6.4	6.2	7.5	8.1	6.7	4.1	4.6	5.0	8.6	16.1																						
21-May	9.4	14.3	Z	12.5	12.1	8.6	5.3	7.6	12.9	10.5	14.8	14.2	10.8	12.4	10.3	8.1	5.9	4.8	5.1	4.9	5.0	6.4	13.4	24.8	10.2	24.8																						
22-May	25.0	34.9	25.6	Z	25.0	15.1	13.5	10.4	9.4	8.9	5.4	4.4	3.2	2.5	1.9	1.4	2.0	2.4	3.4	4.1	2.7	2.8	3.2	2.3	9.1	34.9																						
23-May	2.3	0.1	1.4	4.6	Z	4.6	3.8	1.2	1.2	1.4	1.5	2.7	2.3	M	2.1	1.7	1.7	1.7	1.0	0.8	0.9	2.5	3.6	2.9	2.1	4.6																						
24-May	4.8	4.6	1.0	0.6	0.5	Z	4.6	8.2	2.3	3.1	3.0	2.4	2.1	2.0	0.7	0.7	0.7	0.7	0.7	0.6	0.4	0.3	0.4	0.4	2.0	8.2																						
25-May	Z	0.7	0.4	0.3	0.4	1.3	1.2	0.6	0.5	0.6	0.4	4.7	12.5	8.2	6.2	7.1	6.1	6.1	2.3	2.1	4.1	3.1	6.1	5.6	3.5	12.5																						
26-May	5.2	Z	11.7	9.7	10.9	7.7	5.3	5.0	3.7	5.9	7.0	4.8	2.8	1.8	1.3	1.2	1.8	1.7	1.8	2.4	1.6	3.2	4.1	5.6	4.6	11.7																						
27-May	4.7	6.6	Z	11.1	12.5	12.1	8.6	5.8	4.9	2.9	0.9	0.6	0.5	1.5	2.1	0.9	1.1	1.4	0.6	2.2	6.1	3.6	3.5	4.8	4.3	12.5																						
28-May	3.6	3.2	4.3	Z	4.1	5.4	7.1	6.3	6.4	6.0	2.3	0.2	0.1	0.0	0.1	0.0	0.1	0.3	0.2	0.1	0.1	0.5	1.1	1.1	2.3	7.1																						
29-May	1.3	1.2	1.4	0.9	Z	1.6	9.6	22.8	18.8	6.7	0.7	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.8	1.6	3.8	13.3	14.3	4.3	22.8																						
30-May	13.9	13.2	14.6	8.6	4.0	Z	2.6	2.7	9.8	26.1	19.7	11.2	3.3	2.5	1.5	0.4	0.2	0.2	0.8	1.9	3.1	3.8	5.9	5.0	6.7	26.1																						
31-May	Z	3.6	3.6	5.6	2.6	1.4	5.5	6.9	11.7	5.4	1.0	0.5	0.9	1.4	6.5	10.3	8.0	6.5	4.7	4.4	4.4	15.3	17.1	9.5	5.9	17.1																						
																								8.6	9.9	8.8	8.8	7.9	7.2	7.7	8.9	8.9	8.0	6.7	5.5	4.4	3.3	2.8	2.4	2.0	2.0	2.3	3.1	5.3	7.8	9.5	8.3	Diurnal Average
																								25.6	34.9	32.3	31.5	25.0	15.1	14.4	22.8	21.7	26.1	31.0	44.4	35.2	16.3	12.0	10.3	8.0	6.5	7.5	8.6	19.6	32.7	29.2	26.7	Diurnal Maximum

Z - zerospan C - Calibration M - Maintenance
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Fort McKay - Bertha Ganter - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	679	96.18	96.18
21 - 40	26	3.68	99.86
41 - 80	1	0.14	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	51	34	22	19	5	18	66	161	123	39	17	18	11	35	30	28	677
21 - 40	6	3	0	0	1	0	1	4	1	0	0	0	1	3	3	3	26
11 - 80	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	57	37	22	19	6	18	67	166	124	39	17	18	12	38	33	31	704

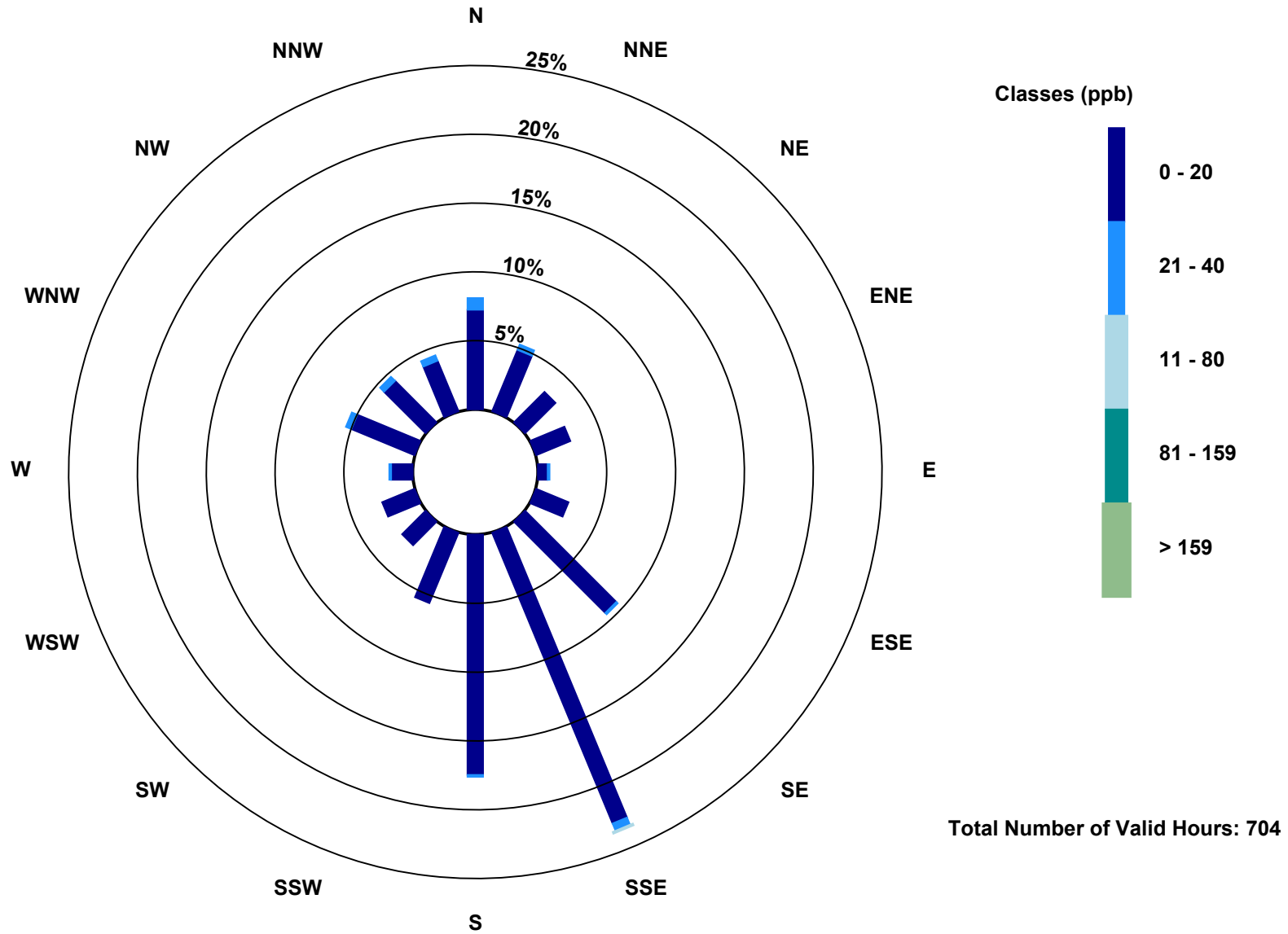
Total Number of Valid Hours: 704

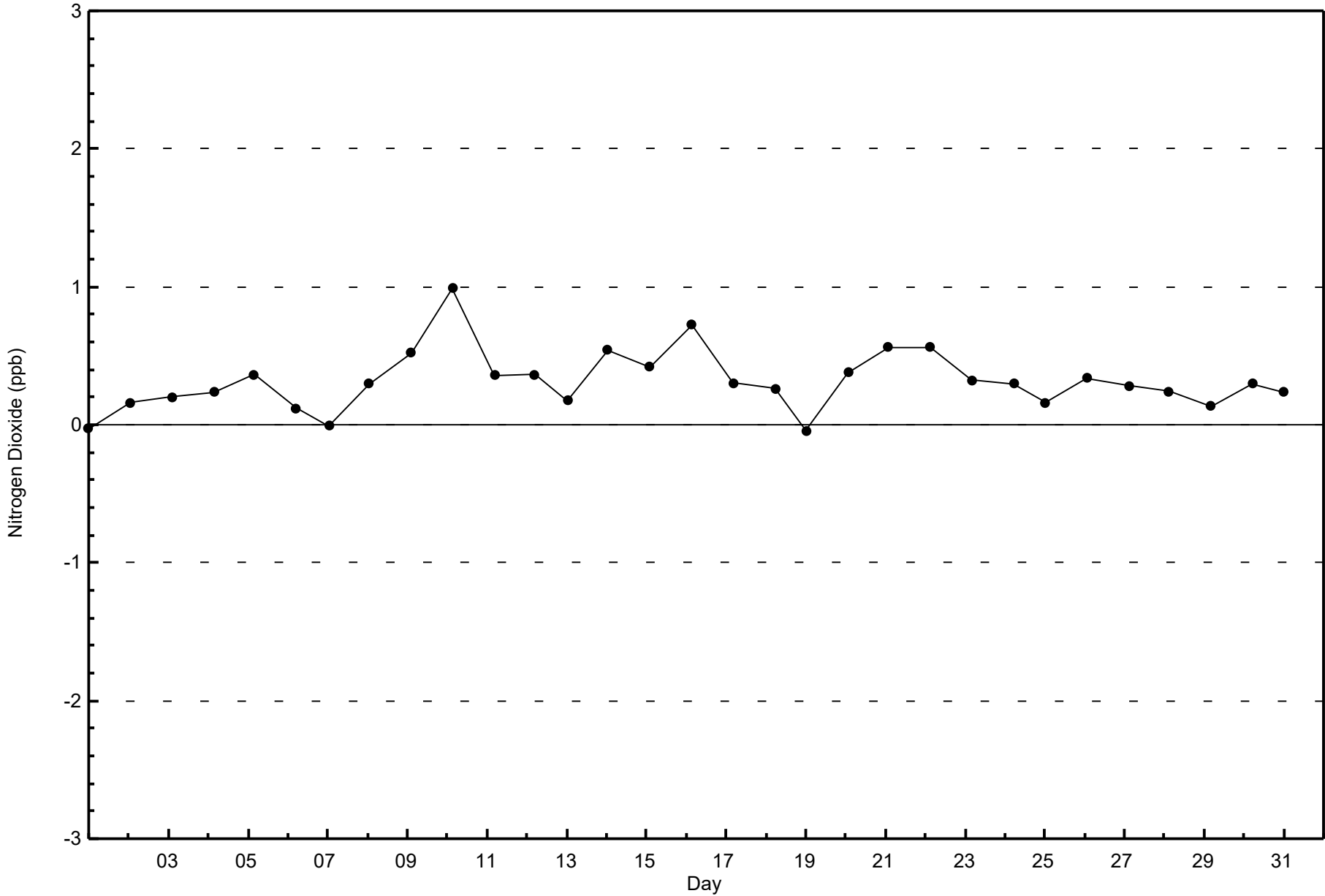
Total Number of Hours: 744

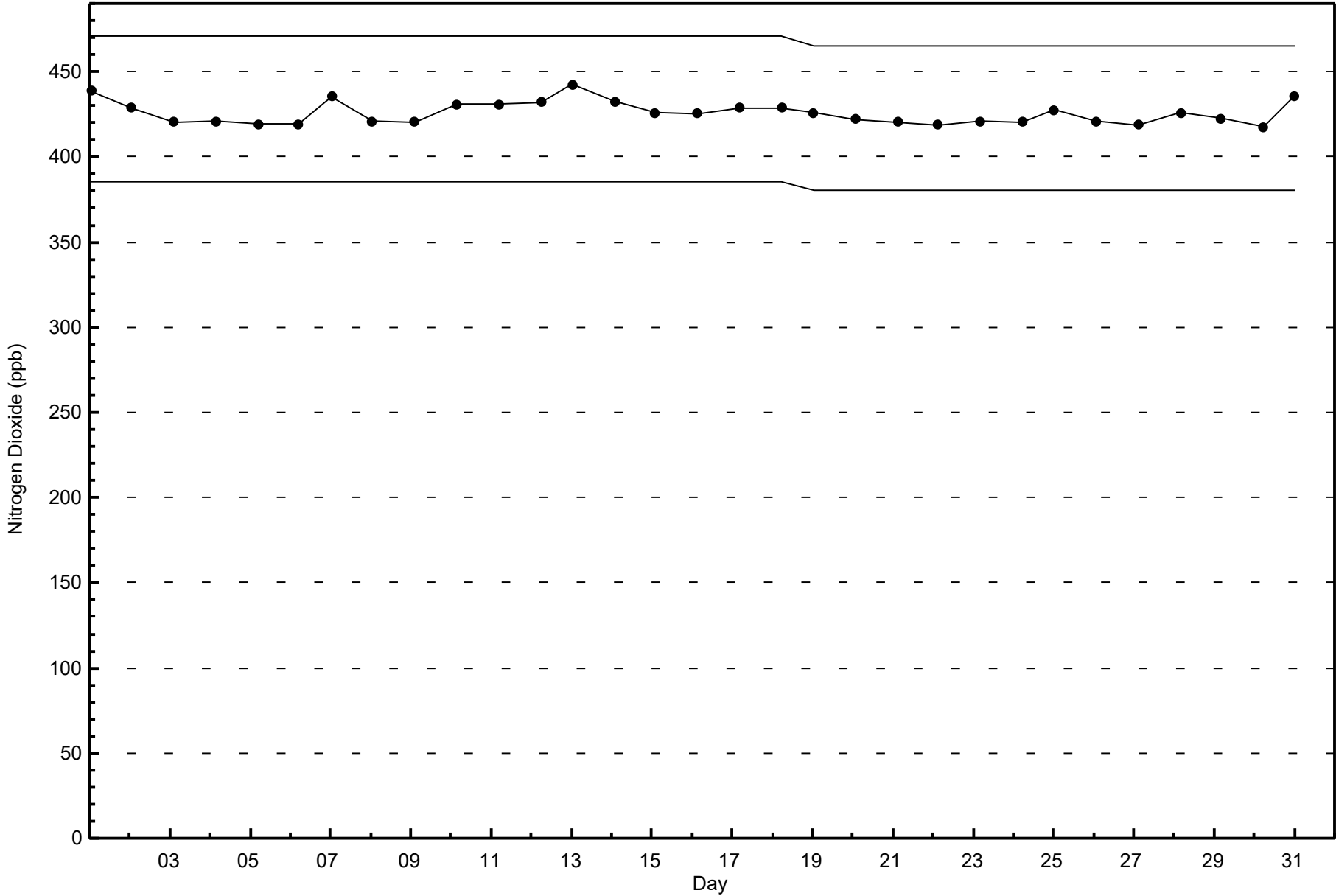


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Fort McKay - Bertha Ganter









Wood Buffalo Environmental Association
Summary of Hour Averages

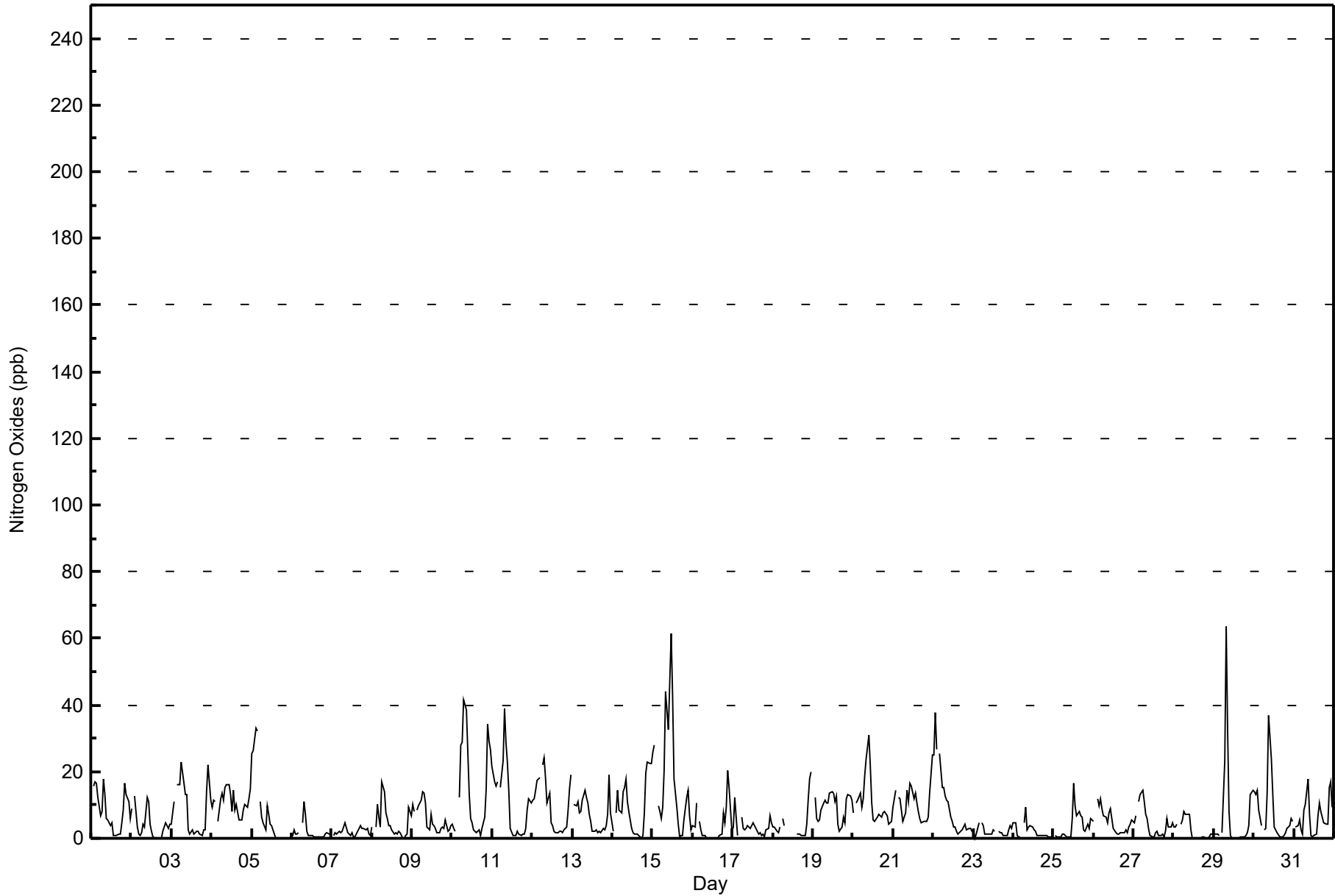
Nitrogen Oxides (NO_x) - ppb
Fort McKay - Bertha Ganter - May 2023

Maximum Value: 63.7 ppb on May 29 08:00		Maximum Daily Average: 17.8 ppb on May 15		Hours in Service: 744																							
Minimum Value: 0.0 ppb on May 2 15:00		Minimum Daily Average: 1.9 ppb on May 6		Hours of Data: 706																							
Maximum Diurnal Average: 13.5 ppb at hour 8		Minimum Diurnal Average: 2.0 ppb at hour 18		Hours of Missing Data: 38																							
Monthly Average: 7.05 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.6 Q ₁ = 1.5 Median = 4.1 Q ₃ = 10.5 P ₉₀ = 16.1 P ₉₉ = 38.7		Hours of Calibration: 37																							
				Percent Operational Time: 99.9																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	Z	15.7	17.2	16.4	12.4	6.9	7.9	17.9	13.3	5.9	5.3	3.9	4.9	0.9	0.8	1.0	1.2	1.5	4.6	8.5	16.4	13.2	10.9	6.0	8.4	17.9	
2-May	9.1	Z	12.7	3.2	1.1	0.7	1.9	4.3	3.4	12.3	10.8	4.4	1.9	0.3	0.0	0.0	0.0	0.0	0.0	2.0	4.6	3.8	3.2	4.3	3.7	12.7	
3-May	4.2	11.2	Z	15.9	16.0	16.3	22.8	16.4	13.2	13.0	2.5	1.4	2.4	1.4	1.6	2.0	2.0	1.2	0.8	2.4	2.5	14.1	22.1	11.6	8.6	22.8	
4-May	9.4	11.6	10.8	Z	5.3	11.9	13.4	11.5	15.2	16.2	15.9	13.2	8.1	14.3	8.5	10.3	5.5	5.7	5.4	8.6	10.4	9.5	11.7	14.9	10.8	16.2	
5-May	25.4	26.3	32.9	32.0	Z	11.1	6.4	4.7	2.6	9.7	7.4	4.4	4.0	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3	32.9	
6-May	1.0	2.3	1.3	1.2	1.6	Z	4.5	11.0	7.4	2.3	0.9	0.9	0.9	0.5	0.3	0.3	0.3	0.2	0.3	0.5	1.3	1.7	1.1	1.0	1.9	11.0	
7-May	Z	0.8	1.8	1.1	2.2	1.7	2.1	3.3	4.5	1.5	1.1	1.0	1.6	0.6	0.6	2.1	2.8	3.7	2.9	3.1	2.7	2.9	1.3	0.7	2.0	4.5	
8-May	3.3	Z	3.5	10.0	6.2	3.2	17.0	13.9	7.7	5.8	3.7	3.6	2.7	1.2	1.6	1.2	2.0	1.5	0.0	0.0	0.7	1.1	9.5	6.7	4.6	17.0	
9-May	10.1	8.1	Z	8.5	9.7	11.6	14.1	13.4	10.5	3.4	2.6	7.1	4.1	4.0	2.9	1.5	1.5	2.8	3.5	2.8	5.4	2.1	2.6	3.6	5.9	14.1	
10-May	4.1	2.9	2.3	Z	12.2	28.0	29.0	41.7	38.8	26.0	13.0	5.8	4.7	2.6	1.5	2.1	2.6	0.8	2.9	6.4	15.0	34.5	29.2	26.7	14.5	41.7	
11-May	21.5	17.2	15.8	16.8	Z	15.2	23.1	38.9	29.0	22.8	14.6	3.1	0.9	0.8	0.8	1.9	1.3	0.8	1.1	1.3	3.0	8.5	12.0	10.4	11.3	38.9	
12-May	11.6	11.7	14.5	17.3	18.3	Z	22.2	24.2	18.4	10.5	13.5	4.6	4.0	2.1	1.8	1.6	2.0	1.9	1.9	2.7	3.5	8.4	14.9	19.1	10.0	24.2	
13-May	Z	10.2	9.8	11.1	7.7	8.2	11.3	14.2	12.4	10.6	7.2	5.0	2.2	2.3	2.5	1.8	2.2	1.8	3.0	2.4	3.8	7.2	19.0	7.6	7.1	19.0	
14-May	2.0	Z	7.4	14.5	8.6	7.7	14.0	15.4	17.7	11.1	7.9	3.0	1.9	1.4	1.2	1.1	0.5	0.2	0.7	7.8	19.6	23.1	22.3	22.5	9.2	23.1	
15-May	25.7	27.9	Z	9.6	8.2	5.9	9.2	20.4	43.9	32.8	47.1	61.3	42.8	17.9	9.2	4.1	0.6	0.8	0.7	5.6	12.2	14.4	6.8	2.7	17.8	61.3	
16-May	3.8	3.3	10.4	Z	5.1	2.5	0.8	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.1	7.5	4.7	9.1	20.5	15.1	2.1	3.8	20.5	
17-May	3.2	12.3	6.3	0.8	Z	6.3	3.1	2.7	3.1	3.6	3.2	3.8	4.8	3.9	3.0	1.5	1.6	1.0	1.1	0.6	2.3	3.2	6.9	4.6	3.6	12.3	
18-May	3.2	3.3	2.0	1.6	3.4	Z	6.0	3.7	C	C	C	C	C	C	1.3	1.2	1.3	0.9	0.7	0.9	4.4	11.5	17.8	19.8	--	19.8	
19-May	Z	12.1	5.7	5.0	5.7	8.7	10.6	11.5	10.5	10.7	13.6	14.1	13.4	11.0	12.6	4.4	2.1	3.6	6.5	4.6	12.0	13.0	12.6	11.4	9.4	14.1	
20-May	7.8	Z	10.5	11.5	13.5	9.5	11.7	18.8	23.8	30.8	21.7	10.7	5.6	5.2	6.2	7.1	6.9	6.2	7.5	8.1	6.7	4.1	4.6	5.0	10.6	30.8	
21-May	9.4	14.3	Z	12.5	12.1	8.6	5.3	7.8	14.5	11.2	16.4	15.5	11.8	13.5	10.6	8.2	5.9	4.8	5.1	4.9	5.0	6.4	13.4	25.2	10.5	25.2	
22-May	25.0	37.8	26.5	Z	25.5	15.4	15.2	12.8	11.4	11.2	6.4	5.2	3.6	3.5	2.1	1.4	2.1	2.4	3.4	4.1	2.7	2.8	3.2	2.3	9.8	37.8	
23-May	2.3	0.1	1.4	4.6	Z	4.6	3.9	1.2	1.2	1.2	1.4	1.5	2.7	2.3	M	2.1	1.7	1.7	1.0	0.8	0.9	2.5	3.6	2.9	2.1	4.6	
24-May	4.8	4.6	1.0	0.6	0.5	Z	4.8	9.3	2.5	3.5	4.0	3.3	2.5	2.1	0.7	0.7	0.7	0.7	0.8	0.8	0.7	0.4	0.3	0.4	2.2	9.3	
25-May	Z	0.7	0.4	0.3	0.4	1.4	1.4	0.7	0.5	0.6	0.4	5.9	16.6	9.6	7.0	7.9	6.8	6.5	2.3	2.1	4.1	3.1	6.1	5.6	3.9	16.6	
26-May	5.2	Z	11.7	9.7	11.7	9.1	6.9	6.5	4.8	7.7	9.0	6.0	3.1	1.8	1.3	1.2	1.8	1.7	1.8	2.4	1.6	3.2	4.1	5.6	5.1	11.7	
27-May	4.7	6.6	Z	11.1	13.1	14.3	11.0	7.2	5.8	3.2	0.9	0.6	0.5	1.5	2.2	0.9	1.1	1.4	0.6	2.2	6.1	3.6	3.5	4.8	4.6	14.3	
28-May	3.6	3.2	4.3	Z	4.1	5.7	8.0	7.3	7.4	7.2	2.5	0.2	0.1	0.0	0.1	0.0	0.1	0.3	0.2	0.1	0.1	0.5	1.1	1.1	2.5	8.0	
29-May	1.3	1.2	1.4	0.9	Z	1.6	23.2	63.7	32.6	8.1	0.7	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.8	1.6	3.8	13.3	14.3	7.4	63.7	
30-May	13.9	13.2	14.6	8.6	4.0	Z	2.6	3.0	13.7	37.0	23.9	13.0	3.5	2.6	1.5	0.4	0.2	0.2	0.8	1.9	3.1	3.8	5.9	5.0	7.7	37.0	
31-May	Z	3.6	3.6	5.6	2.6	1.4	8.3	10.3	18.0	7.1	1.0	0.5	0.9	1.4	6.6	10.6	8.1	6.5	4.7	4.4	4.4	15.3	17.1	9.5	6.6	18.0	
		8.6	10.1	8.8	8.9	8.1	8.4	10.4	13.5	12.9	10.9	8.6	6.8	5.2	3.7	3.0	2.5	2.1	2.0	2.3	3.1	5.4	7.8	9.5	8.3	Diurnal Average	
		25.7	37.8	32.9	32.0	25.5	28.0	29.0	63.7	43.9	37.0	47.1	61.3	42.8	17.9	12.6	10.6	8.1	6.5	7.5	8.6	19.6	34.5	29.2	26.7	Diurnal Maximum	
Z - zerospan		C - Calibration					M - Maintenance																				



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Fort McKay - Bertha Ganter - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	661	93.63	93.63
21 - 40	39	5.52	99.15
41 - 80	6	0.85	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	49	33	21	19	5	17	61	159	121	36	17	18	11	35	30	28	660
21 - 40	8	4	1	0	0	1	6	2	3	3	0	0	1	3	3	3	38
11 - 80	0	0	0	0	1	0	0	5	0	0	0	0	0	0	0	0	6
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	57	37	22	19	6	18	67	166	124	39	17	18	12	38	33	31	704

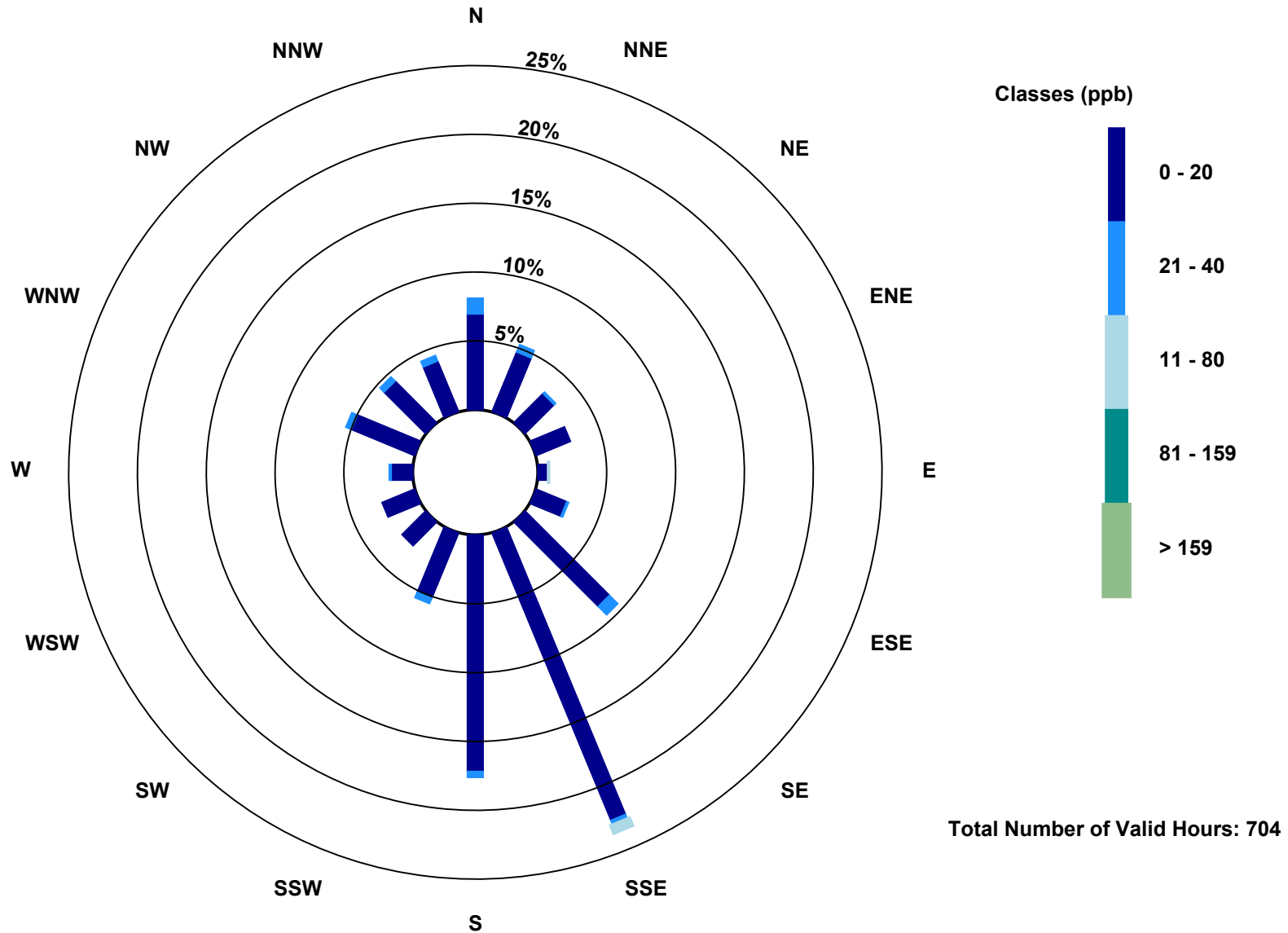
Total Number of Valid Hours: 704

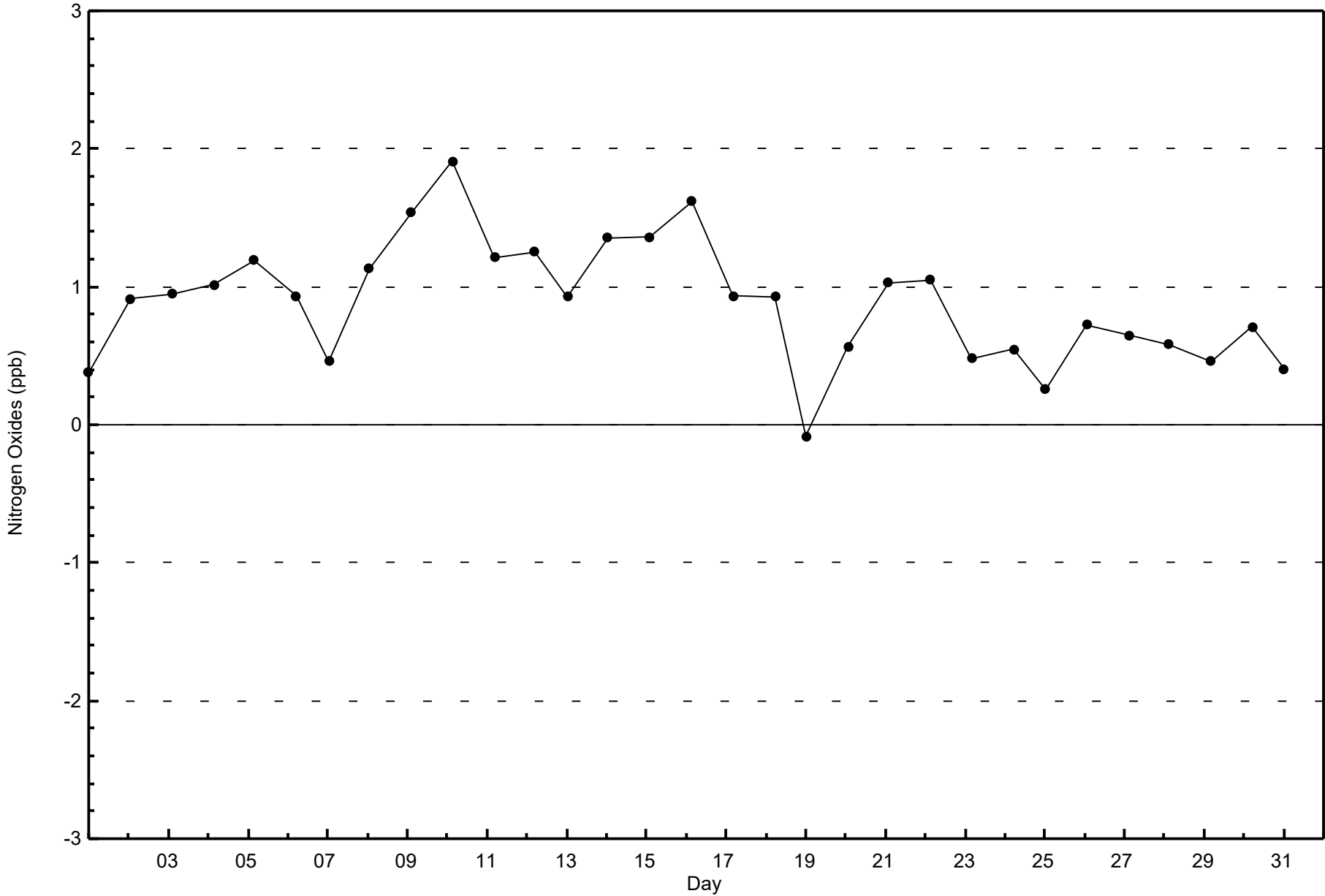
Total Number of Hours: 744

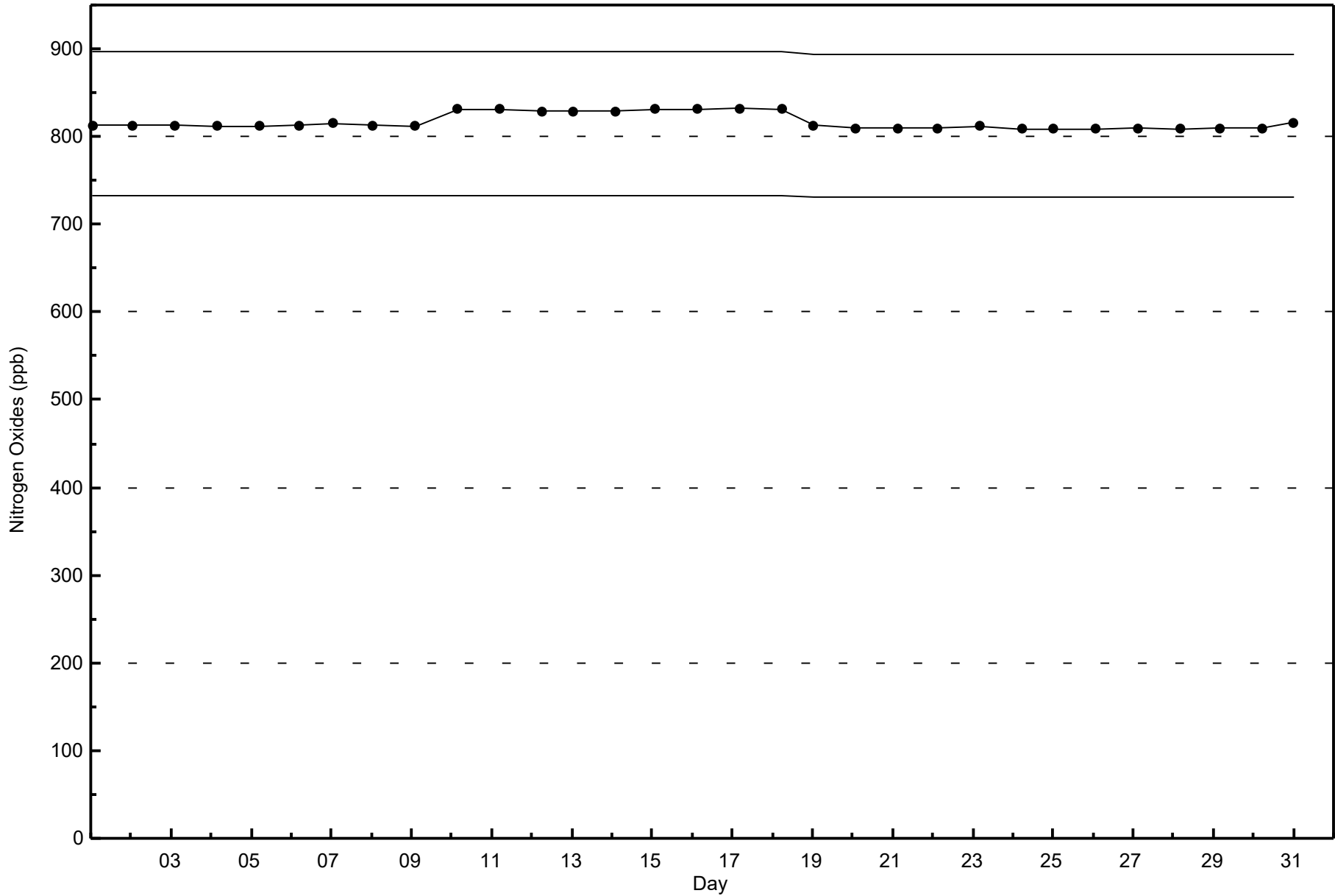


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Fort McKay - Bertha Ganter









Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Fort McKay - Bertha Ganter - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 68.3 ppb on May 31 17:00	Maximum Daily Average: 39.3 ppb on May 31		Hours of Data:	706
Minimum Value: 2.0 ppb on May 11 05:00	Minimum Daily Average: 16.0 ppb on May 24		Hours of Missing Data:	38
Maximum Diurnal Average: 41.9 ppb at hour 17	Minimum Diurnal Average: 16.6 ppb at hour 6		Hours of Calibration:	36
Monthly Average: 29.98 ppb	Percentiles: P ₁ = 3.8 P ₁₀ = 10.2 Q ₁ = 20.7 Median = 31.3 Q ₃ = 39.6 P ₉₀ = 45.9 P ₉₉ = 58.8		Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	17.0	21.4	17.6	15.1	Z	28.4	28.1	26.0	33.1	38.9	40.8	43.2	44.1	45.7	47.2	48.1	47.7	47.1	41.4	34.8	24.1	24.8	31.9	37.4	34.1	48.1
2-May	33.9	36.8	25.7	33.3	34.2	Z	25.8	23.9	30.8	30.6	33.3	39.7	42.1	43.6	44.2	44.4	44.3	44.8	44.5	40.1	35.2	30.2	28.2	22.9	35.3	44.8
3-May	Z	15.3	4.5	5.3	5.2	6.1	11.5	23.7	31.8	34.4	43.6	45.7	47.5	50.8	50.8	51.3	52.2	52.2	52.5	50.1	47.0	30.4	20.8	29.4	33.1	52.5
4-May	28.3	Z	21.6	29.5	31.6	22.3	20.6	24.1	32.2	C	C	C	C	C	56.7	44.4	43.7	41.7	36.9	34.2	30.1	30.1	27.4	25.0	32.3	56.7
5-May	15.0	10.9	Z	4.5	15.9	18.8	25.0	30.5	36.2	35.3	39.3	43.9	40.3	39.1	38.9	37.9	36.0	33.9	39.3	40.7	40.1	38.9	39.2	37.1	32.0	43.9
6-May	35.2	33.5	33.7	Z	31.3	29.1	29.7	28.9	32.6	36.0	36.9	36.9	36.9	36.5	39.0	39.8	40.1	42.1	42.4	40.4	36.7	36.4	36.2	35.2	35.9	42.4
7-May	34.8	33.7	33.1	33.2	Z	29.8	30.2	31.7	32.8	34.8	37.5	38.6	38.8	38.4	38.0	38.2	36.3	36.2	38.0	32.8	30.4	30.6	32.5	33.1	34.5	38.8
8-May	31.4	20.7	30.1	24.0	27.6	Z	23.5	28.4	34.9	38.6	42.3	43.3	43.6	44.4	43.5	43.6	44.1	45.8	42.1	42.1	38.0	36.3	23.2	19.6	35.3	45.8
9-May	Z	13.6	6.6	4.4	3.8	2.8	4.1	11.7	23.9	36.5	43.8	44.7	44.0	43.7	39.9	35.7	47.4	49.2	49.6	43.0	32.2	34.4	31.1	22.7	29.1	49.6
10-May	20.3	Z	15.0	14.0	6.0	2.4	3.3	4.3	6.3	15.2	30.5	41.8	49.6	49.9	49.2	50.9	43.1	39.7	35.9	31.4	21.3	4.8	6.9	4.4	23.8	50.9
11-May	6.0	6.0	Z	3.5	2.0	5.2	6.3	6.8	17.8	24.4	30.9	43.9	46.3	47.9	48.7	51.5	49.6	47.0	46.2	43.9	39.5	28.6	19.4	16.5	27.7	51.5
12-May	15.7	10.1	7.6	Z	4.3	3.8	6.0	13.1	22.7	38.0	37.7	43.1	45.1	46.8	46.5	47.3	48.0	49.0	48.0	43.8	39.2	30.1	21.9	17.7	29.8	49.0
13-May	20.1	24.3	24.1	15.3	Z	12.3	10.3	9.8	19.7	31.9	39.8	46.0	49.8	49.9	47.2	47.8	47.2	48.1	45.5	43.2	40.4	37.6	27.4	38.1	33.7	49.9
14-May	44.3	36.9	35.8	25.5	33.0	Z	24.0	26.2	25.1	32.3	36.6	45.6	46.8	42.3	41.0	39.7	39.4	35.7	35.3	39.5	22.4	13.8	12.6	8.6	32.3	46.8
15-May	Z	2.8	5.9	10.0	9.4	7.7	4.8	5.1	4.9	15.4	17.4	14.7	29.4	47.5	54.6	61.0	61.5	58.8	56.2	47.4	36.2	30.9	34.7	33.5	28.2	61.5
16-May	27.4	Z	21.8	28.7	29.6	32.7	34.8	34.9	35.4	35.6	35.4	37.3	38.5	39.6	39.4	39.9	37.8	37.4	30.5	32.0	26.9	12.9	17.8	30.6	32.0	39.9
17-May	28.8	18.3	Z	35.1	27.0	27.3	28.5	31.0	30.9	30.9	32.1	31.8	32.4	33.3	34.2	36.5	37.3	38.7	38.2	38.4	34.9	29.2	20.4	19.4	31.1	38.7
18-May	18.8	19.3	26.4	Z	26.6	23.7	26.2	27.3	27.2	29.6	34.5	39.0	43.6	45.4	45.4	46.4	47.1	47.2	46.7	45.7	40.3	27.8	16.6	16.1	33.3	47.2
19-May	20.7	26.0	31.0	31.3	Z	16.1	11.1	20.5	24.6	23.9	21.0	21.0	20.7	22.3	20.4	26.9	28.6	28.3	29.4	31.6	26.2	26.0	23.9	22.9	24.1	31.6
20-May	24.5	17.8	19.0	16.3	13.3	Z	14.5	10.5	8.7	8.7	12.5	20.3	26.0	28.5	30.5	31.6	31.5	30.8	24.8	20.7	20.8	20.9	25.8	27.0	21.1	31.6
21-May	Z	15.9	9.2	8.4	6.5	6.5	4.8	10.2	12.7	21.1	21.0	21.7	27.2	30.3	35.1	39.1	39.8	40.2	36.3	27.4	27.8	20.4	14.8	5.5	21.0	40.2
22-May	8.9	Z	5.5	3.7	7.2	13.5	11.4	13.3	13.7	14.7	19.8	22.6	24.4	26.4	26.1	27.6	29.3	32.1	32.6	34.7	36.4	38.9	38.7	38.5	22.6	38.9
23-May	35.9	37.9	Z	33.1	32.9	31.5	30.4	33.3	35.1	37.2	35.7	35.8	31.9	29.0	M	29.4	28.9	29.7	32.2	31.6	31.0	27.5	25.6	25.8	31.9	37.9
24-May	23.2	22.3	24.2	Z	26.8	24.9	22.2	18.1	21.7	19.5	UO	19.1	18.9	17.1	15.5	13.1	11.2	10.1	9.7	8.3	7.2	6.2	5.6	6.7	16.0	26.8
25-May	5.7	4.5	4.7	5.5	Z	5.8	8.6	12.5	19.4	23.0	27.0	29.7	28.5	32.4	33.8	36.3	36.9	36.1	35.7	32.4	25.3	22.8	17.5	14.3	21.7	36.9
26-May	11.7	7.6	6.0	4.9	6.3	Z	15.6	19.4	23.5	28.0	32.0	34.5	37.5	38.2	40.3	41.3	42.6	42.6	40.2	38.8	34.8	30.0	23.4	19.5	26.9	42.6
27-May	Z	18.1	16.5	14.3	11.6	12.8	17.8	26.2	33.2	40.7	44.0	44.8	45.4	44.7	43.5	43.7	43.7	44.0	45.8	42.8	37.5	35.1	35.9	33.1	33.7	45.8
28-May	34.3	Z	30.5	32.0	27.8	21.5	31.3	34.7	32.2	33.3	39.7	43.4	45.4	42.8	40.3	43.8	44.3	45.2	43.5	40.6	35.2	32.7	30.1	28.6	36.2	45.4
29-May	25.8	24.3	Z	19.9	19.1	16.8	11.8	4.7	17.2	35.2	37.9	40.7	39.1	39.9	44.0	48.6	48.4	50.2	49.0	48.3	41.4	33.5	21.7	20.2	32.1	50.2
30-May	15.0	10.9	6.9	Z	12.2	11.5	12.1	14.0	18.2	22.7	45.0	51.3	51.4	49.6	47.1	42.8	43.0	43.5	39.8	32.4	28.7	25.4	23.4	26.2	29.3	51.4
31-May	25.1	24.9	23.4	18.5	Z	19.0	16.9	19.5	21.7	34.4	43.2	47.6	52.8	58.2	64.8	63.6	68.3	65.5	61.7	54.5	41.4	27.5	25.0	27.2	39.3	68.3

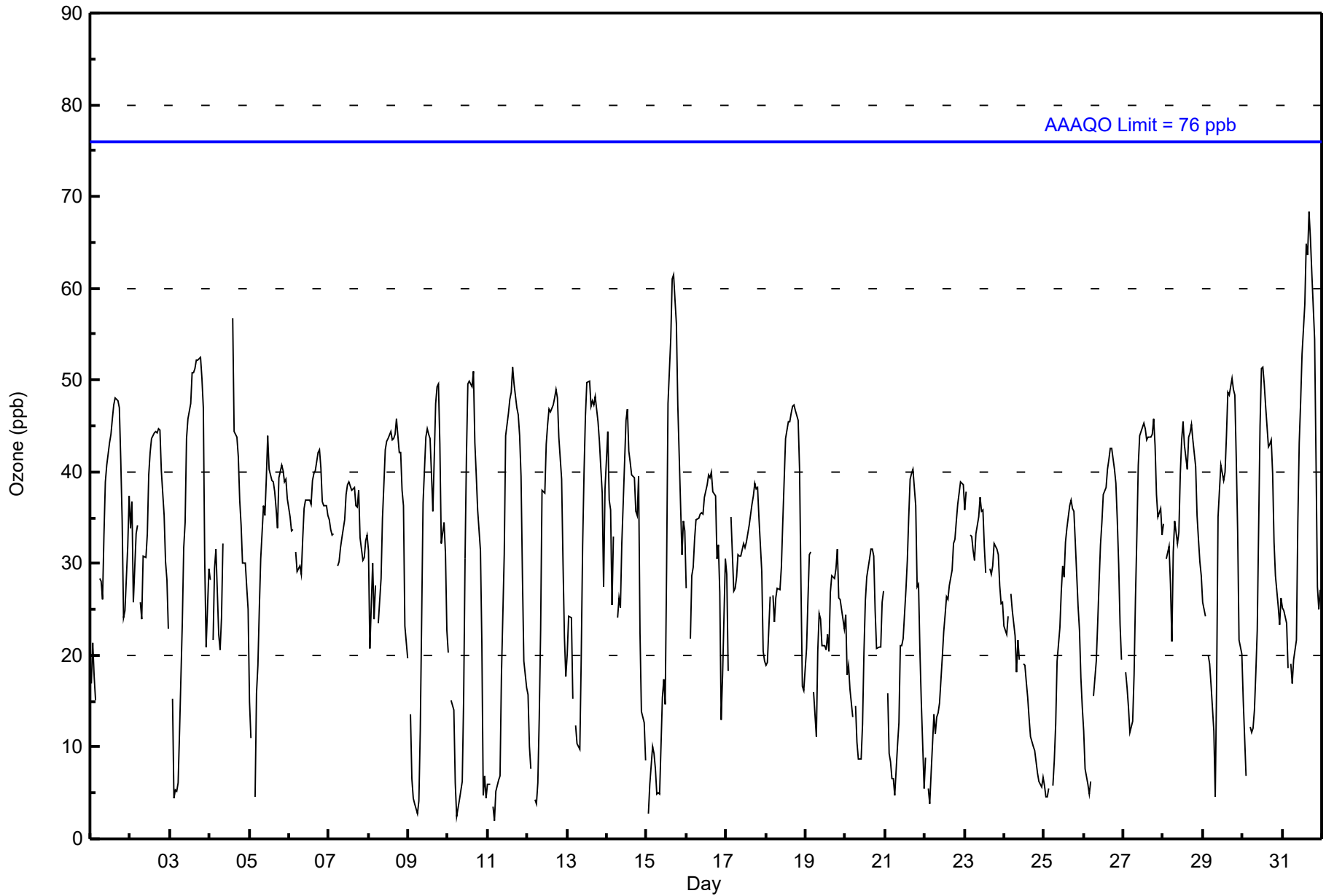
23.4	19.8	18.7	18.0	18.1	16.6	17.8	20.1	24.5	29.4	34.2	37.1	38.9	40.2	41.5	41.7	41.9	41.7	40.3	37.7	32.5	27.6	24.5	24.0	Diurnal Average	
44.3	37.9	35.8	35.1	34.2	32.7	34.8	34.9	36.2	40.7	45.0	51.3	52.8	58.2	64.8	63.6	68.3	65.5	61.7	54.5	47.0	38.9	39.2	38.5	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Fort McKay - Bertha Ganter - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Fort McKay - Bertha Ganter - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	174	24.65	24.65
21 - 50	508	71.95	96.60
51 - 82	24	3.40	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Ozone (O₃) - ppb
Fort McKay - Bertha Ganter - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	24	5	2	0	2	1	7	33	29	14	5	11	5	22	7	6	173
21 - 50	31	30	17	18	4	16	58	132	84	24	13	9	7	14	25	25	507
51 - 82	0	1	1	0	1	1	2	4	12	1	0	0	0	0	0	1	24
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	55	36	20	18	7	18	67	169	125	39	18	20	12	36	32	32	704

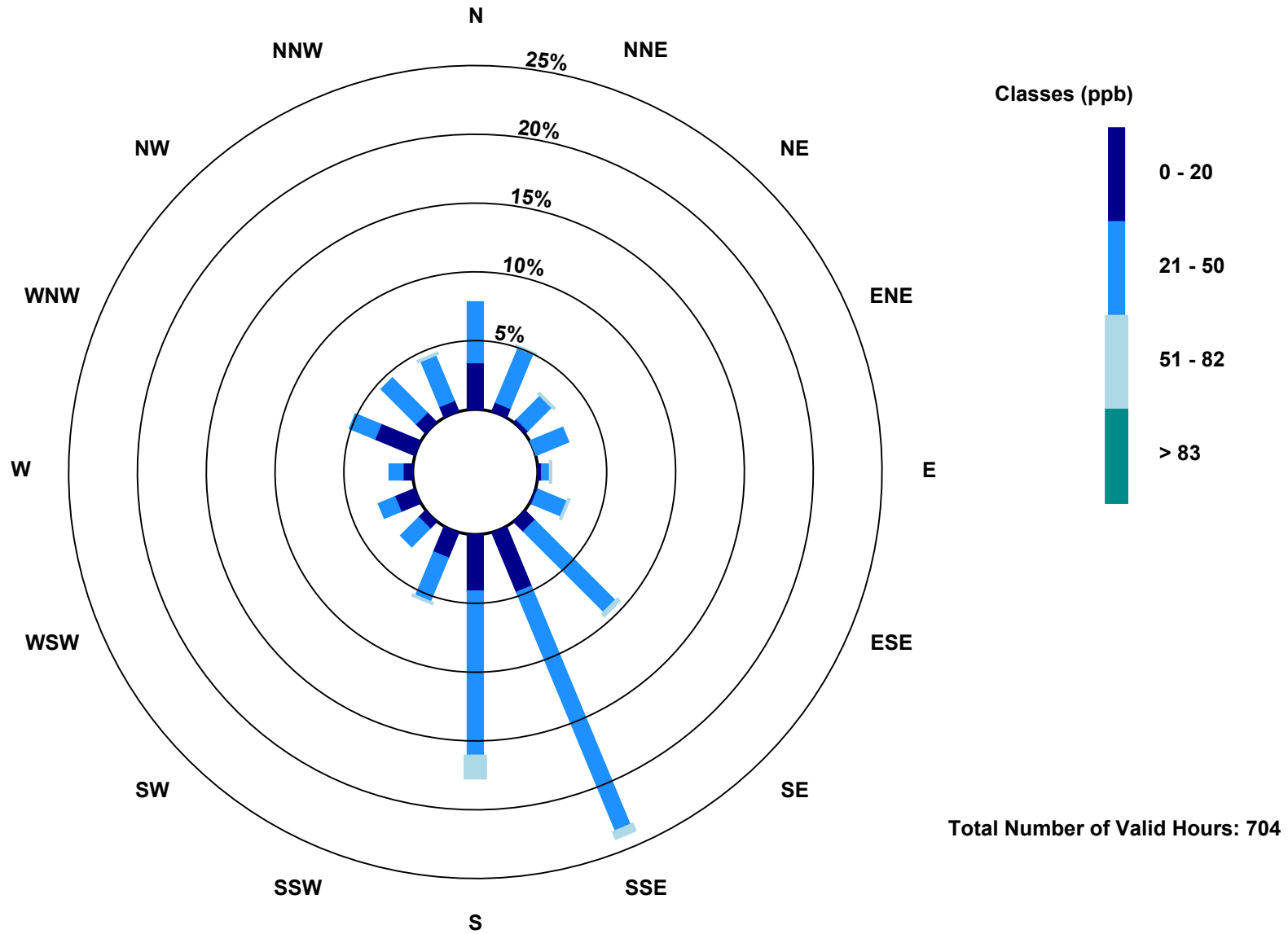
Total Number of Valid Hours: 704

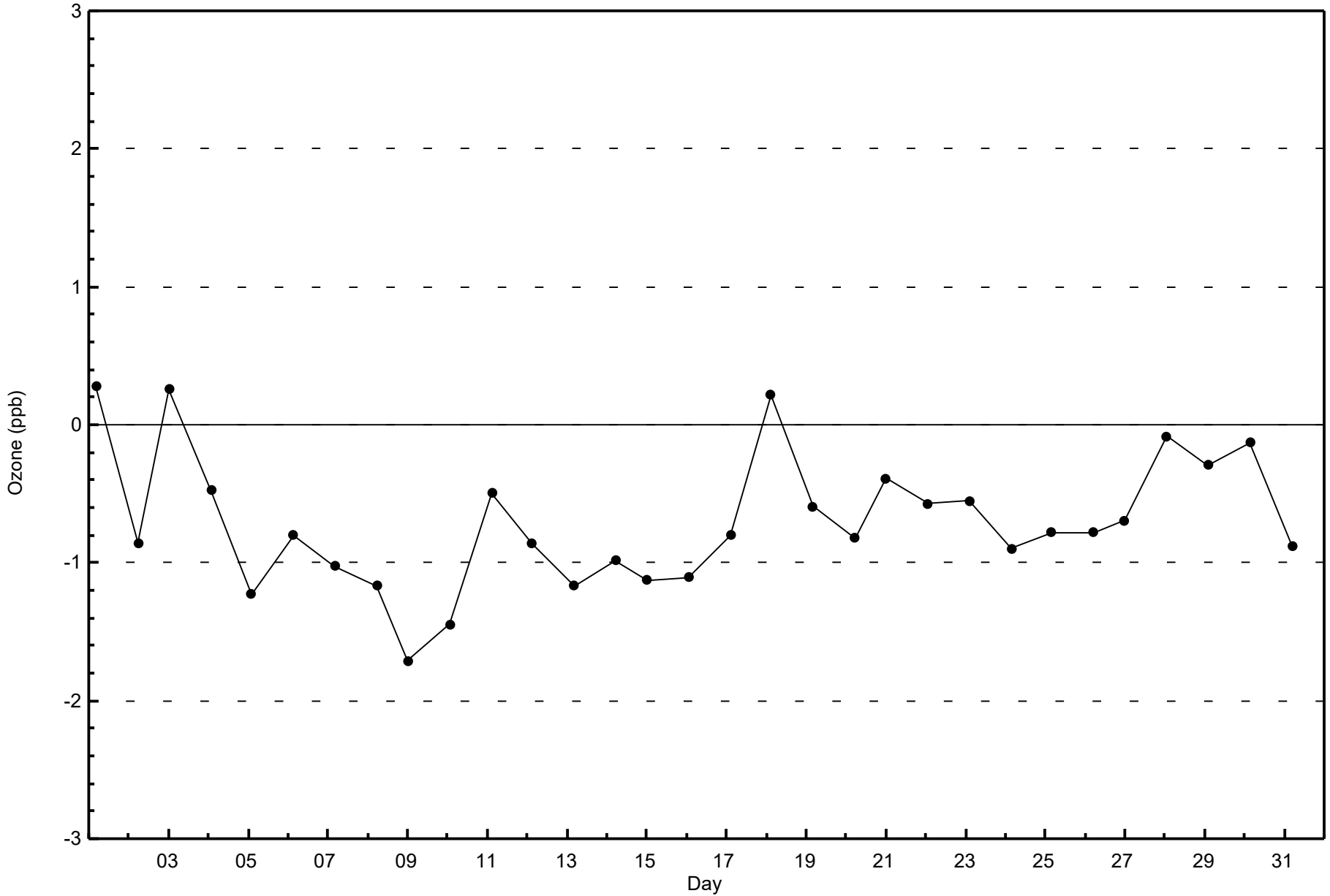
Total Number of Hours: 744

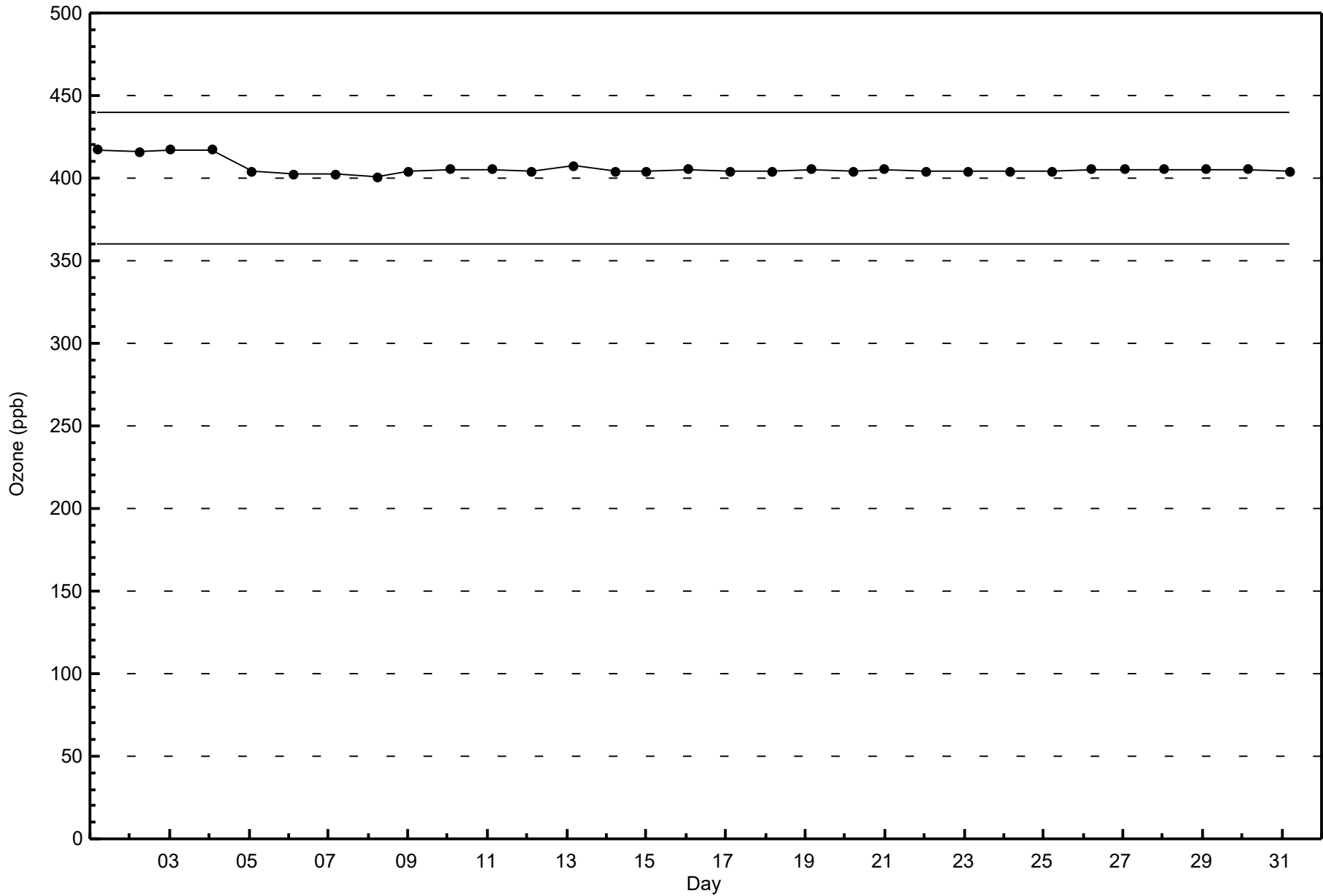


Wood Buffalo Environmental Association
Wind Rose May 2023

Ozone (O₃) - ppb
Fort McKay - Bertha Ganter





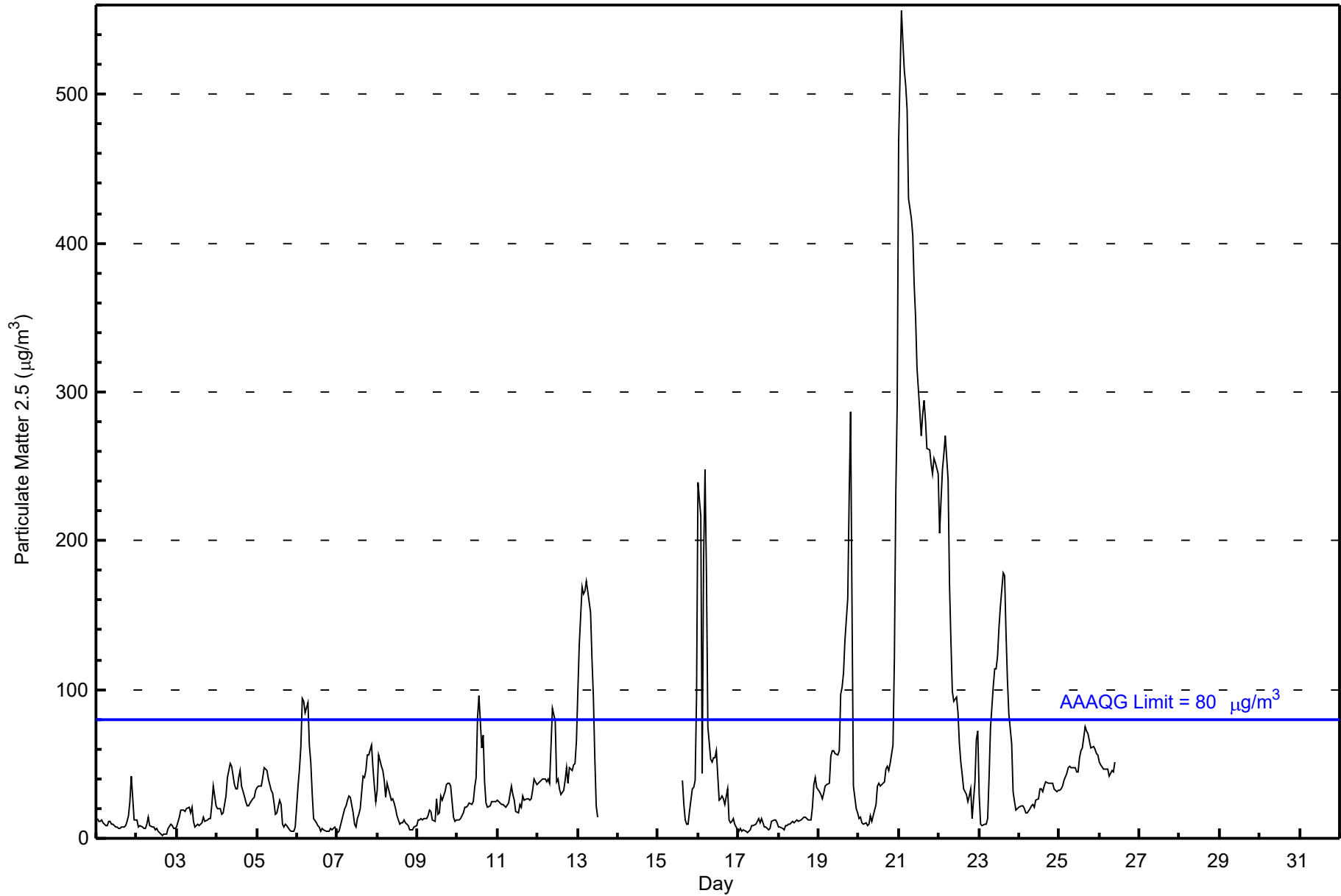




Wood Buffalo Environmental Association
Summary of Hour Averages

Particulate Matter 2.5 (PM_{2.5}) - µg/m³
Fort McKay - Bertha Ganter - May 2023

Number of Exceedences (AAAQO):		1-hr: 81		24-hr: 11		Hours in Service:		744																		
Maximum Value: 556.6 µg/m ³ on May 21 02:00		Maximum Daily Average: 356.3 µg/m ³ on May 21				Hours of Data:		561																		
Minimum Value: 2.1 µg/m ³ on May 2 16:00		Minimum Daily Average: 6.8 µg/m ³ on May 2				Hours of Missing Data:		183																		
Maximum Diurnal Average: 71.3 µg/m ³ at hour 5		Minimum Diurnal Average: 41.1 µg/m ³ at hour 22				Hours of Calibration:		3																		
Monthly Average: 52.71 µg/m ³		Percentiles: P ₁ = 4.2 P ₁₀ = 7.7 Q ₁ = 12.3 Median = 26.5 Q ₃ = 47.5 P ₉₀ = 122.2 P ₉₉ = 445.3				Percent Operational Time:		75.8																		
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	12.8	11.5	11.3	12.4	10.2	8.2	8.2	11.3	11.6	9.8	9.7	7.7	8.0	6.3	6.2	7.7	8.0	8.5	11.7	15.2	24.3	41.6	12.6	12.6	12.0	41.6
2-May	12.2	7.8	8.9	7.3	6.9	6.4	9.2	14.0	8.8	7.6	7.9	5.9	6.3	4.6	3.1	2.1	2.4	2.4	2.6	6.5	9.9	8.1	6.2	6.3	6.8	14.0
3-May	7.5	14.3	19.1	19.2	18.5	18.0	20.1	20.8	16.9	21.2	11.7	7.7	9.1	8.7	9.1	10.3	14.4	11.8	12.0	13.4	12.8	22.7	35.1	21.8	15.7	35.1
4-May	19.5	19.5	19.5	16.1	16.9	28.9	40.9	45.7	50.6	48.6	35.7	33.1	33.2	41.2	45.6	35.2	28.6	25.1	21.6	21.5	23.5	26.6	27.1	32.5	30.7	50.6
5-May	34.6	35.3	34.8	41.0	47.5	46.5	45.9	40.0	32.3	30.5	23.5	15.8	17.2	25.3	22.6	9.3	8.0	9.3	8.1	6.1	5.2	4.4	4.5	7.2	30.1	47.5
6-May	35.5	46.3	61.5	93.7	91.9	84.4	91.0	62.5	51.0	30.4	13.4	10.0	8.6	7.1	4.7	6.2	5.7	4.6	5.0	5.0	6.8	5.5	7.3	5.3	31.0	93.7
7-May	4.1	4.8	8.4	12.6	19.8	21.9	25.3	28.6	27.1	17.4	9.6	8.0	13.1	15.7	20.1	41.5	40.9	45.1	56.0	56.2	62.6	47.7	35.5	24.9	26.9	62.6
8-May	32.6	56.2	48.5	45.7	38.7	27.5	36.6	29.7	25.7	26.9	23.4	19.5	14.9	9.7	10.2	10.3	11.9	10.5	8.4	6.1	5.5	5.8	7.8	9.0	21.7	56.2
9-May	12.8	12.1	13.2	12.8	13.3	13.1	15.5	19.0	18.4	12.3	11.2	26.6	15.9	16.6	28.3	25.2	31.2	36.1	36.7	36.8	35.0	14.4	11.3	12.4	20.0	36.8
10-May	12.8	12.3	13.7	17.2	20.6	20.8	21.7	23.6	23.0	24.5	34.6	41.0	81.1	95.8	60.6	69.1	37.9	23.3	21.0	22.0	24.6	25.1	24.7	24.8	32.3	95.8
11-May	25.2	23.7	23.0	22.4	21.9	21.0	23.5	29.6	35.0	29.9	25.8	18.0	17.0	22.7	21.2	28.5	25.8	26.1	26.6	26.0	26.9	32.7	40.1	36.4	26.2	40.1
12-May	37.1	37.7	38.8	39.4	39.9	38.0	40.1	37.4	61.3	87.7	79.2	38.2	39.9	33.7	29.2	32.3	38.6	47.9	37.1	47.0	45.6	49.7	50.1	65.9	45.5	87.7
13-May	98.9	129.9	168.7	164.3	165.8	172.8	166.1	152.0	120.2	94.9	53.8	21.9	14.1	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	172.8
14-May	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
15-May	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	M	C	C	C	39.0	23.0	12.1	9.2	9.5	17.7	32.9	34.5	39.3	95.7	--	95.7
16-May	239.7	216.3	43.8	187.5	247.6	177.3	75.3	53.2	51.4	54.0	53.7	58.9	26.0	26.7	28.6	26.5	22.8	33.7	12.8	10.4	11.4	13.1	9.5	5.3	70.2	247.6
17-May	4.6	6.5	5.1	6.1	4.3	4.3	4.9	6.2	8.5	8.7	9.5	11.4	13.4	10.3	13.5	7.8	7.6	6.3	5.5	6.6	11.7	12.5	12.4	10.0	8.2	13.5
18-May	7.6	7.8	6.4	5.6	8.6	8.7	9.0	9.6	11.4	10.7	11.0	12.7	11.0	12.2	13.5	14.1	14.3	13.3	12.5	12.5	21.2	36.2	40.9	34.6	14.4	40.9
19-May	31.8	29.7	26.4	30.3	35.2	36.2	37.3	54.7	58.9	59.1	57.4	56.2	58.8	96.4	101.5	111.3	133.2	160.9	229.9	286.7	157.6	35.3	19.6	16.8	80.0	286.7
20-May	12.9	14.1	10.5	9.3	10.1	8.6	9.6	15.4	11.0	18.8	22.6	35.1	36.7	35.5	36.8	37.9	46.2	48.4	45.9	49.8	62.4	120.4	231.5	292.4	50.9	292.4
21-May	468.4	556.6	534.9	515.9	505.7	490.1	429.9	416.4	404.9	372.1	349.8	315.9	286.8	270.6	284.9	294.6	281.0	261.5	261.1	251.9	244.9	255.1	252.6	244.9	356.3	556.6
22-May	204.9	226.6	248.1	258.3	270.8	240.7	170.8	132.6	98.8	92.0	94.8	84.7	63.5	51.2	42.9	33.2	29.5	24.5	28.9	32.8	13.5	37.8	66.2	71.9	109.1	270.8
23-May	29.6	9.5	8.5	9.2	9.5	13.4	40.9	73.9	102.3	114.4	113.6	122.2	141.3	156.0	178.1	176.2	137.7	106.0	83.1	64.0	31.4	24.2	19.3	19.5	74.3	178.1
24-May	21.3	21.6	21.9	19.9	17.2	17.3	20.3	21.7	22.5	20.6	25.5	26.5	33.0	33.0	31.7	35.3	38.2	37.0	36.6	36.8	36.6	33.2	31.1	32.2	28.0	38.2
25-May	32.6	33.1	34.9	38.7	44.0	47.2	48.3	47.8	47.4	47.6	44.2	44.8	54.5	59.0	60.8	75.4	72.3	70.3	65.9	60.8	61.5	59.7	56.7	55.9	52.6	75.4
26-May	51.5	49.4	46.9	46.4	46.2	46.5	42.0	45.4	44.6	51.7	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	51.7
27-May	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
28-May	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
29-May	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
30-May	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
31-May	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
60.4 65.9 60.7 68.0 71.3 66.6 59.7 58.0 56.0 53.8 48.8 44.4 43.6 47.2 47.5 48.4 45.6 44.4 45.2 47.5 42.1 41.1 45.3 49.5																								Diurnal Average		
468.4 556.6 534.9 515.9 505.7 490.1 429.9 416.4 404.9 372.1 349.8 315.9 286.8 270.6 284.9 294.6 281.0 261.5 261.1 286.7 244.9 255.1 252.6 292.4																								Diurnal Maximum		
C - Calibration M - Maintenance AF - Analyzer Failure																										
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																										





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	24	4.28	4.28
6 - 15	161	28.70	32.98
16 - 25	87	15.51	48.48
26 - 80	208	37.08	85.56
> 81.0	81	14.44	100.00

Total Number of Valid Hours: 561

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Fort McKay - Bertha Ganter - May 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	2	3	0	0	0	1	10	0	0	0	0	0	0	1	6	1	24
6 - 15	21	5	9	8	1	1	10	37	42	8	2	3	2	5	2	4	160
16 - 25	5	9	1	0	0	1	14	30	10	4	1	2	0	6	2	2	87
26 - 80	14	16	13	9	3	5	15	50	30	10	5	8	3	10	9	7	207
> 81.0	10	4	0	1	0	8	7	23	6	2	1	0	1	2	3	13	81
Totals	52	37	23	18	4	16	56	140	88	24	9	13	6	24	22	27	559

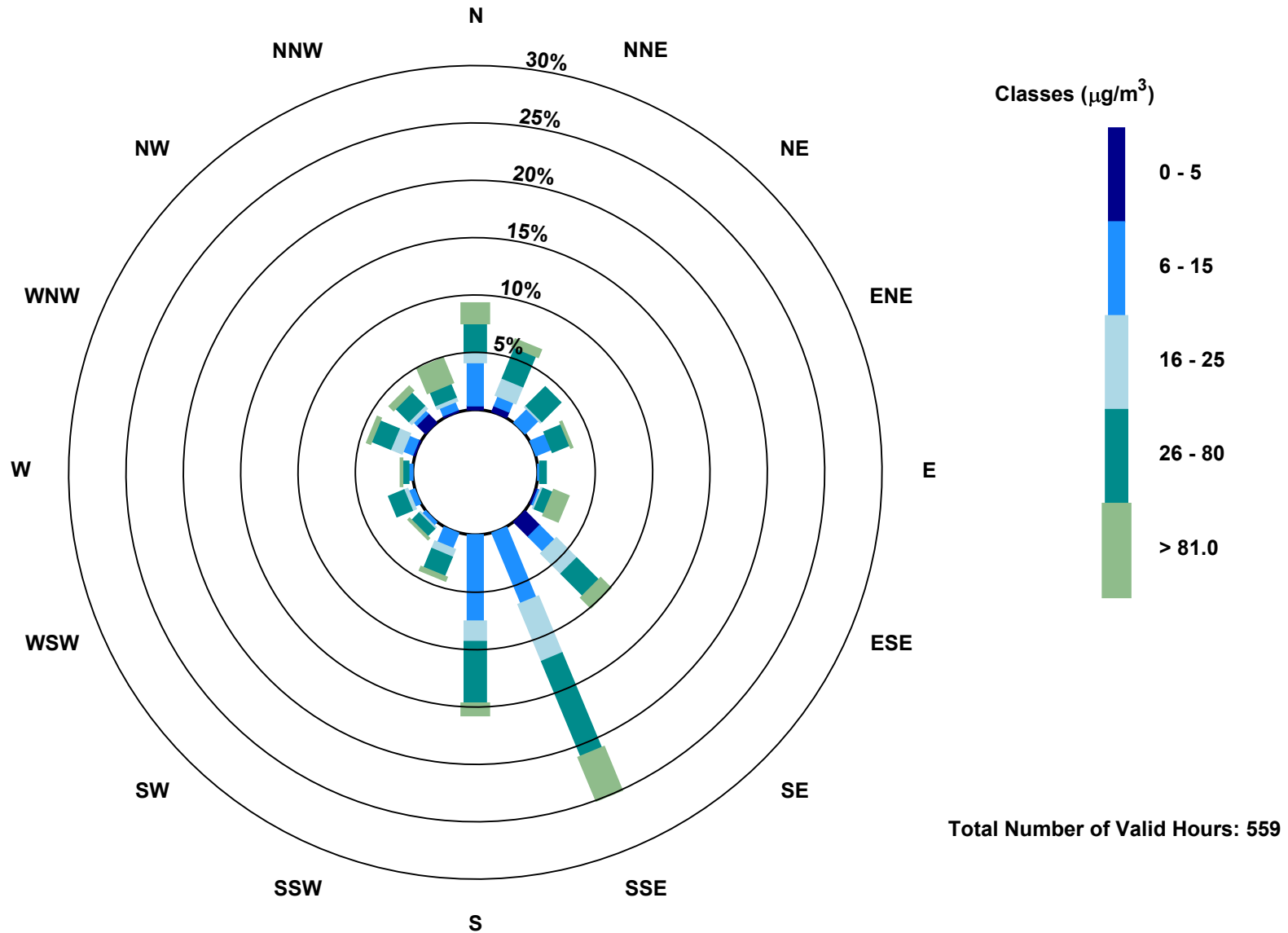
Total Number of Valid Hours: 559

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort McKay - Bertha Ganter





Wood Buffalo Environmental Association

Summary of Hour Averages

Carbon Monoxide (CO) - ppm

Fort McKay - Bertha Ganter - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 2.8 ppm on May 21 02:00	Maximum Daily Average: 1.7 ppm on May 21		Hours of Data:	708
Minimum Value: 0.2 ppm on May 28 16:00	Minimum Daily Average: 0.2 ppm on May 1		Hours of Missing Data:	36
Maximum Diurnal Average: 0.5 ppm at hour 2	Minimum Diurnal Average: 0.4 ppm at hour 15		Hours of Calibration:	35
Monthly Average: 0.42 ppm	Percentiles: P ₁ = 0.2 P ₁₀ = 0.2 Q ₁ = 0.3 Median = 0.3 Q ₃ = 0.5 P ₉₀ = 0.7 P ₉₉ = 1.9		Percent Operational Time:	99.9

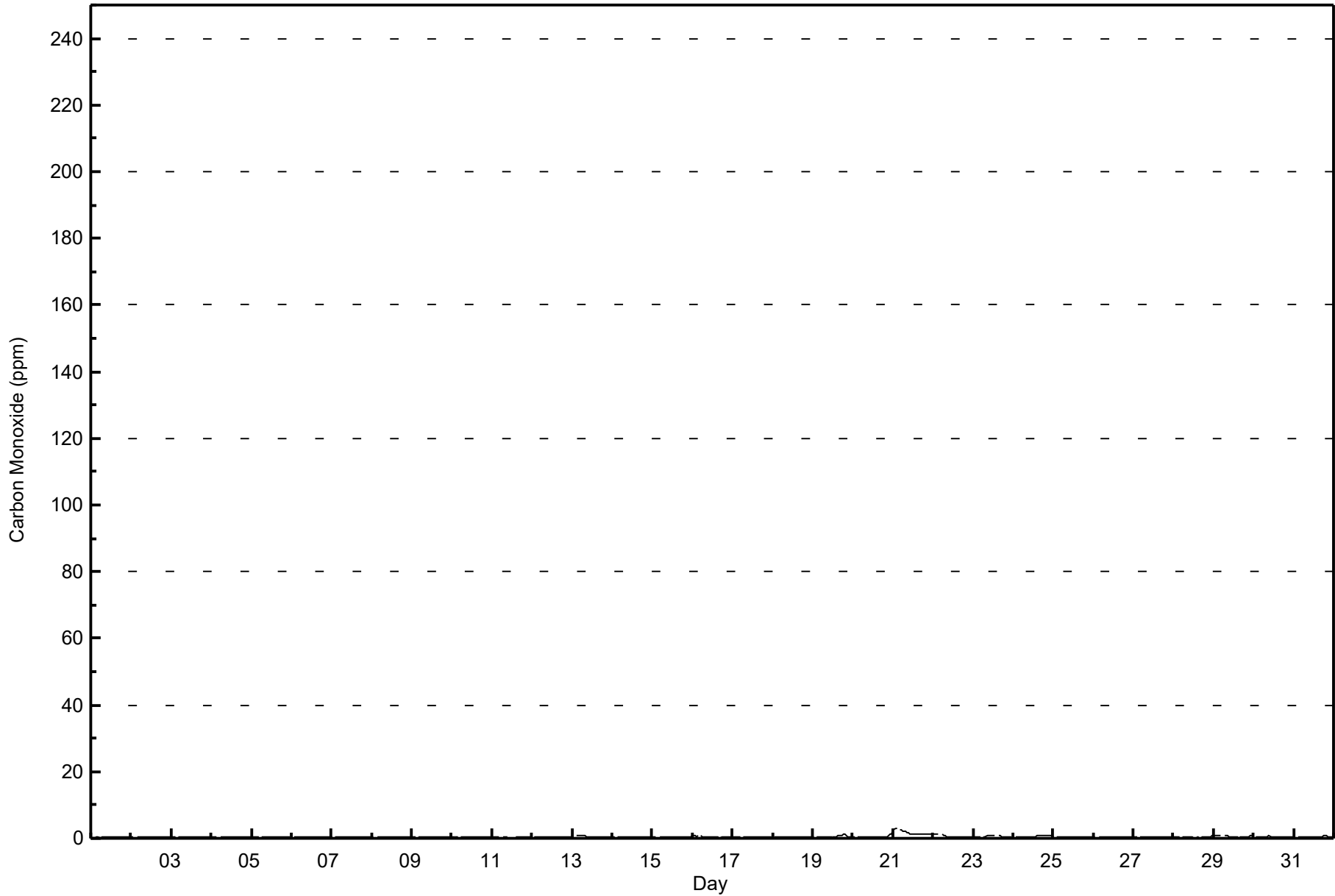
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24					
1-May	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.2	0.4			
2-May	0.3	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3		
3-May	0.3	0.3	0.3	Z	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		
4-May	0.3	0.3	0.3	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		
5-May	0.3	0.3	0.3	0.4	0.4	Z	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	
6-May	Z	0.4	0.4	0.5	0.6	0.6	0.6	0.5	0.5	0.4	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.6	
7-May	0.2	Z	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	
8-May	0.3	0.4	Z	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	
9-May	0.3	0.3	0.3	Z	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	
10-May	0.3	0.3	0.3	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	
11-May	0.3	0.3	0.3	0.3	0.3	Z	0.3	0.3	0.3	0.3	C	C	C	C	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
12-May	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.4	
13-May	0.5	Z	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.5	
14-May	0.3	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	
15-May	0.5	0.5	0.5	Z	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.6	0.4	0.4	0.6	0.6	
16-May	1.0	0.9	0.4	0.8	Z	0.8	0.5	0.4	0.3	0.3	0.4	0.4	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.4	0.4	1.0	1.0	
17-May	0.2	0.2	0.2	0.2	0.3	Z	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
18-May	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
19-May	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.6	0.6	0.7	0.8	1.1	1.3	0.7	0.3	0.2	0.2	0.5	0.5	1.3		
20-May	0.2	0.3	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.7	1.1	1.4	0.4	0.4	1.4	1.4	
21-May	2.4	2.8	2.8	Z	2.7	2.5	2.3	2.1	1.9	1.6	1.4	1.3	1.2	1.2	1.3	1.4	1.4	1.3	1.3	1.3	1.3	1.4	1.3	1.3	1.7	1.7	2.8	2.8	
22-May	1.1	1.2	1.3	1.5	Z	1.4	1.0	0.7	0.6	0.6	0.6	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.6	0.6	1.5	1.5	
23-May	0.3	0.2	0.2	0.2	0.3	Z	0.3	0.5	0.6	0.7	0.7	0.8	0.8	M	0.8	0.8	0.7	0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.5	0.5	0.8	0.8	
24-May	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.7	0.7	
25-May	0.6	Z	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6
26-May	0.5	0.5	Z	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.5	0.5	
27-May	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
28-May	0.4	0.4	0.4	0.4	Z	0.4	0.4	0.5	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.5	0.6	0.3	0.3	0.6	0.6	
29-May	0.7	0.7	0.7	0.7	0.7	Z	0.7	0.8	0.8	0.6	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.7	0.7	0.5	0.5	0.8	0.8	
30-May	Z	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.6	0.7	0.6	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.7	0.7	
31-May	0.5	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.6	0.5	0.6	0.7	0.7	0.5	0.4	0.5	0.5	0.4	0.4	0.7	0.7	
	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	Diurnal Average
	2.4	2.8	2.8	1.5	2.7	2.5	2.3	2.1	1.9	1.6	1.4	1.3	1.2	1.2	1.3	1.4	1.4	1.3	1.3	1.3	1.3	1.4	1.3	1.4	1.3	1.4	1.4	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 13 ppm



Wood Buffalo Environmental Association
Hourly Averages

Carbon Monoxide (CO) - ppm
Fort McKay - Bertha Ganter - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Carbon Monoxide (CO) - ppm
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.3	428	60.45	60.45
0.4 - 0.5	169	23.87	84.32
0.6 - 0.7	68	9.60	93.93
0.8 - 1.4	33	4.66	98.59
1.5 - 10	9	1.27	99.86
> 10	0	0.00	99.86

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Carbon Monoxide (CO) - ppm
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	41	30	17	12	2	10	44	89	76	30	14	13	5	13	18	12	426
0.4 - 0.5	7	3	5	6	4	1	13	52	41	5	2	2	3	8	9	8	169
0.6 - 0.7	4	2	0	0	1	6	6	6	10	5	1	7	4	11	2	3	68
0.8 - 1.4	4	1	0	0	0	2	4	10	0	0	1	0	0	1	1	9	33
1.5 - 10	1	0	0	0	0	0	0	5	0	0	0	0	0	0	1	2	9
> 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	57	36	22	18	7	19	67	162	127	40	18	22	12	33	31	34	705

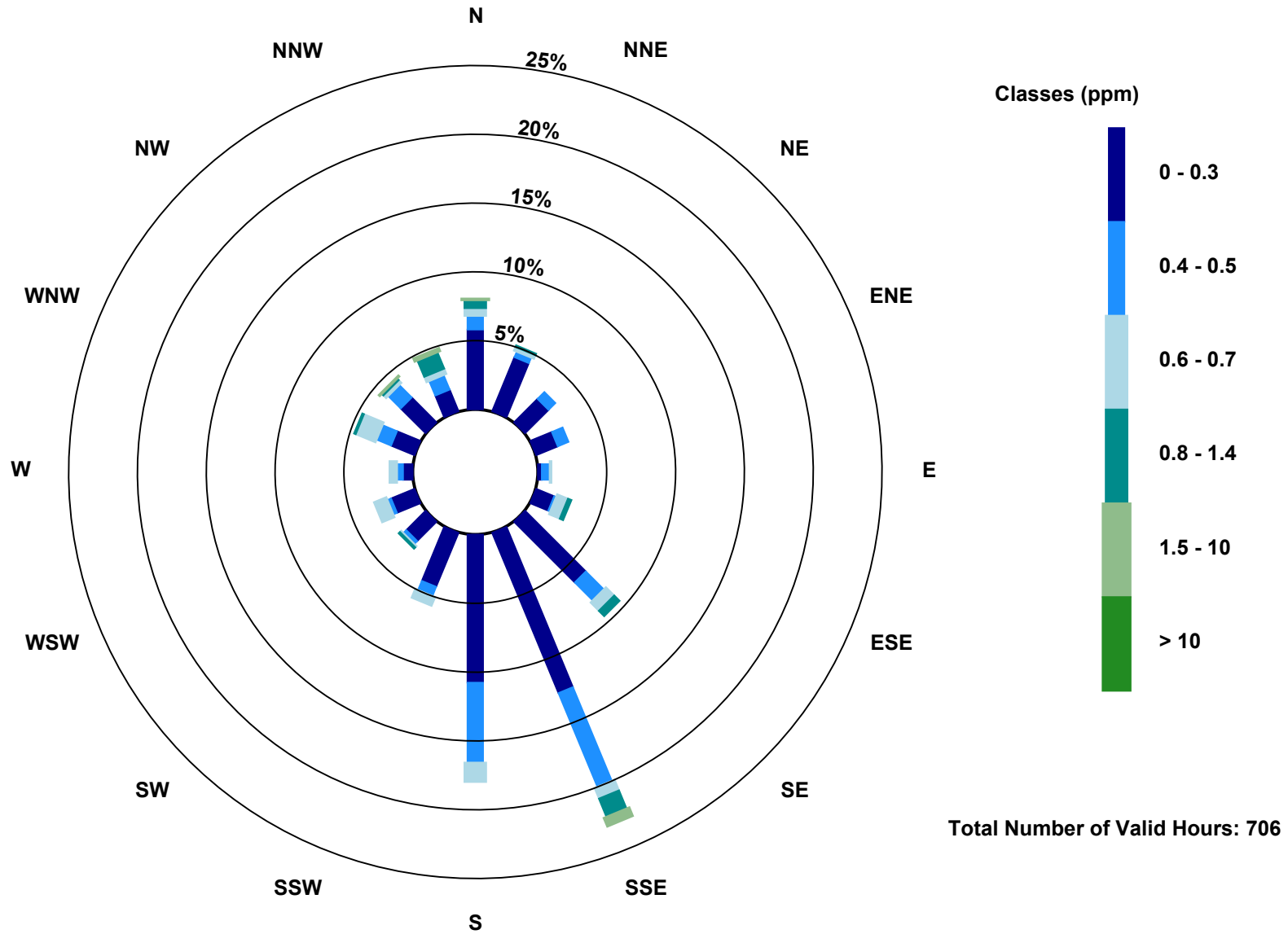
Total Number of Valid Hours: 706

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Carbon Monoxide (CO) - ppm
Fort McKay - Bertha Ganter



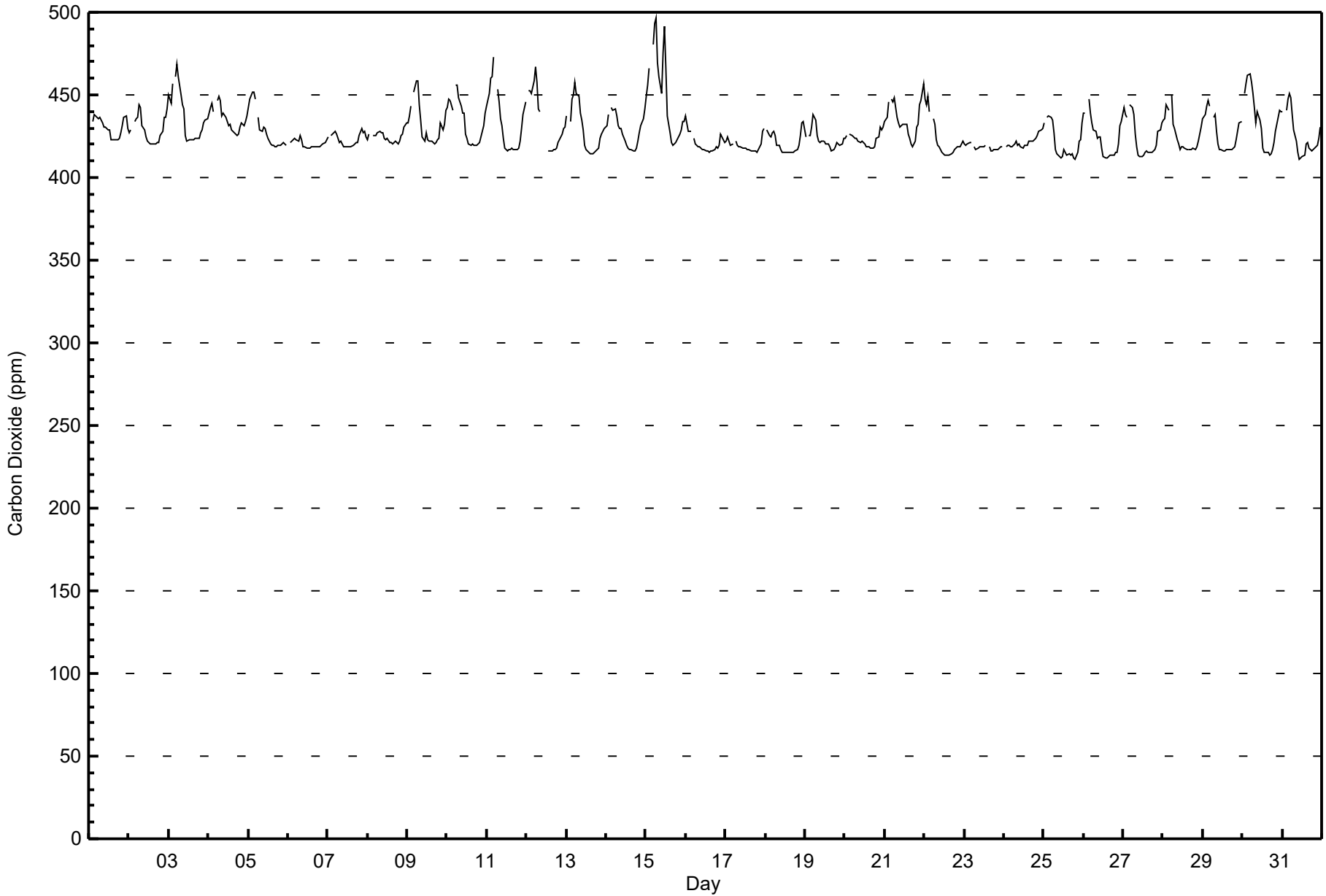


Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744				
Maximum Value: 496.5 ppm on May 15 07:00		Maximum Daily Average: 450.0 ppm on May 15																	Hours of Data:	708						
Minimum Value: 411.3 ppm on May 31 11:00		Minimum Daily Average: 418.5 ppm on May 23																	Hours of Missing Data:	36						
Maximum Diurnal Average: 443.0 ppm at hour 6		Minimum Diurnal Average: 418.1 ppm at hour 17																	Hours of Calibration:	35						
Monthly Average: 427.63 ppm		Percentiles: P ₁ = 412.5 P ₁₀ = 416.2 Q ₁ = 418.6 Median = 423.4 Q ₃ = 433.7 P ₉₀ = 445.3 P ₉₉ = 468.2																	Percent Operational Time:	99.9						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	429.5	Z	434.1	438.0	437.1	435.4	436.2	435.2	433.3	430.5	430.8	429.0	428.8	423.2	422.9	423.2	422.9	422.7	424.0	426.8	431.1	436.2	437.1	429.4	430.3	438.0
2-May	427.3	428.6	Z	434.0	435.7	436.1	443.7	442.7	431.3	428.5	424.8	422.3	421.4	420.6	420.6	420.8	420.7	420.9	421.4	425.2	428.0	436.4	436.6	441.8	429.1	443.7
3-May	450.1	445.2	456.6	Z	460.8	468.3	460.9	449.7	444.3	441.4	425.6	422.0	423.2	422.7	422.8	423.2	423.7	423.7	423.7	427.4	429.2	432.7	435.0	435.2	436.8	468.3
4-May	438.6	442.5	444.8	440.2	Z	446.8	449.2	446.3	437.4	439.1	436.5	434.3	431.4	432.5	428.8	427.6	426.7	425.6	426.2	430.2	432.9	431.7	433.6	436.9	435.6	449.2
5-May	442.0	447.4	451.6	451.3	447.1	Z	436.3	429.0	427.8	430.7	429.4	426.4	423.7	420.5	419.8	419.5	418.9	418.9	419.6	419.9	420.5	420.9	420.7	419.9	428.8	451.6
6-May	Z	421.1	421.8	423.1	423.4	423.2	422.4	425.2	423.3	418.8	418.4	418.2	418.2	418.1	418.6	418.8	418.7	418.8	418.7	418.8	419.4	420.1	421.2	423.0	420.5	425.2
7-May	424.5	Z	425.1	425.9	427.9	426.7	423.7	421.4	421.6	418.7	418.6	418.8	419.0	418.4	418.5	419.4	420.0	421.3	421.0	425.6	429.5	427.5	427.7	424.5	422.8	429.5
8-May	422.6	426.5	Z	425.8	425.6	425.6	427.5	428.2	427.5	427.1	423.9	423.1	423.4	421.4	421.1	420.5	421.4	421.7	420.5	421.9	425.4	426.5	430.2	433.2	424.8	433.2
9-May	433.1	436.9	443.4	Z	451.7	458.5	458.8	444.4	435.1	424.4	422.1	427.3	422.9	421.9	422.2	422.0	420.5	421.3	422.8	423.4	433.4	429.2	432.6	440.5	432.5	458.8
10-May	442.7	447.6	446.4	441.1	Z	455.9	455.8	448.5	443.5	439.3	438.8	426.0	423.4	420.8	419.2	420.2	419.8	419.4	419.7	421.5	424.7	428.4	431.5	439.2	433.6	455.9
11-May	443.4	450.7	460.0	460.9	472.6	Z	453.0	446.2	435.8	431.5	423.9	417.4	416.3	416.6	416.8	417.9	417.2	416.6	417.1	418.2	421.7	429.6	438.1	445.4	433.3	472.6
12-May	Z	452.9	452.3	451.0	458.2	466.9	457.4	441.7	439.9	Z	Z	Z	Z	416.4	416.1	415.9	416.6	416.6	417.8	421.3	424.3	426.7	429.2	430.7	434.3	466.9
13-May	437.2	Z	433.9	447.4	450.1	457.7	451.1	449.2	439.1	434.4	429.2	419.5	417.0	415.5	414.5	414.1	414.3	415.3	417.0	417.6	423.8	426.0	427.7	429.6	429.6	457.7
14-May	431.3	438.2	Z	442.2	440.9	441.8	437.7	431.7	430.0	429.4	425.9	422.4	419.7	417.4	416.7	416.6	416.3	416.4	417.7	422.4	427.4	431.0	435.8	441.1	428.3	442.2
15-May	448.9	455.7	466.5	Z	480.3	493.1	496.5	469.9	461.0	451.0	475.8	491.9	466.4	437.5	427.0	421.6	419.3	420.6	421.1	422.6	426.6	428.9	433.5	434.0	450.0	496.5
16-May	437.3	428.3	427.6	427.7	Z	423.9	420.0	418.4	418.5	418.0	417.3	417.0	416.2	416.1	415.6	416.0	416.5	417.1	418.3	417.4	419.5	426.0	424.5	420.9	420.8	437.3
17-May	421.9	424.5	422.1	419.6	420.2	Z	422.0	419.5	418.9	418.4	418.2	417.9	417.7	417.0	416.9	416.3	416.2	416.2	416.4	415.7	417.0	420.1	428.1	430.1	419.6	430.1
18-May	Z	428.9	425.1	424.9	427.1	428.2	425.1	419.2	419.4	416.9	415.2	415.1	415.5	415.4	415.2	415.4	415.4	415.5	415.8	416.6	419.1	425.1	432.7	434.1	420.9	434.1
19-May	424.7	Z	425.1	425.4	430.6	438.0	434.7	425.1	421.7	421.3	421.6	422.0	420.6	420.2	420.5	418.4	416.3	416.7	418.5	420.8	420.2	419.9	420.7	423.7	422.9	438.0
20-May	424.0	425.4	Z	425.9	425.7	424.2	423.4	423.3	422.2	421.6	422.2	421.6	420.2	418.9	419.0	418.1	418.0	417.8	419.0	423.5	425.0	430.9	429.2	430.9	423.0	430.9
21-May	434.1	436.7	445.5	Z	447.7	445.9	448.2	436.6	432.7	430.8	431.0	432.1	431.8	432.3	426.1	423.8	420.7	418.9	422.4	430.6	431.8	443.8	446.8	456.6	435.1	456.6
22-May	447.1	444.1	449.1	440.2	Z	435.6	432.3	423.0	419.2	418.2	415.4	414.5	413.6	413.8	413.6	413.1	414.5	415.5	416.9	417.5	418.3	419.0	420.6	421.7	423.3	449.1
23-May	420.8	419.2	420.0	421.2	420.8	Z	418.3	417.3	418.1	418.9	419.0	418.3	418.7	419.4	M	419.0	416.5	416.1	416.6	416.6	416.8	418.1	418.4	418.3	418.5	421.2
24-May	Z	418.6	419.1	419.3	418.6	419.0	420.6	421.9	419.5	420.7	418.5	418.0	419.1	419.7	419.7	422.2	422.4	422.4	422.9	423.7	425.7	427.7	428.6	429.7	421.6	429.7
25-May	432.9	Z	436.5	437.7	436.3	435.2	426.8	416.8	414.7	412.5	411.9	413.1	416.7	414.9	413.7	414.1	413.9	414.2	412.2	411.4	415.0	421.8	422.7	432.7	420.8	437.7
26-May	438.9	439.2	Z	447.8	438.8	433.3	428.4	427.6	423.4	424.7	424.7	417.5	412.7	412.7	413.7	415.0	416.2	415.3	415.1	415.4	415.7	416.8	419.7	427.7	429.1	432.9
27-May	442.5	438.3	436.7	Z	444.1	442.3	437.8	426.6	418.3	413.7	412.5	412.7	413.7	415.0	416.2	415.3	415.1	415.4	415.7	416.8	419.7	427.7	429.1	432.9	424.3	444.1
28-May	434.6	435.4	444.2	440.8	Z	449.7	432.2	429.7	423.1	419.9	417.2	418.4	418.7	417.7	416.9	417.0	416.8	416.6	417.7	417.2	418.6	422.3	426.3	430.6	425.3	449.7
29-May	435.3	438.1	443.5	446.7	442.8	Z	436.8	438.0	428.0	420.0	417.1	417.1	415.8	416.1	417.1	417.2	416.8	417.3	417.7	418.4	422.9	428.2	432.9	434.1	426.9	446.7
30-May	Z	450.6	457.1	461.8	463.0	457.8	451.0	442.2	432.9	439.8	434.9	429.3	417.6	415.3	415.6	414.9	413.9	414.2	416.7	421.4	428.2	436.1	440.4	439.5	434.5	463.0
31-May	439.7	Z	441.0	447.8	450.7	447.9	438.3	429.2	422.1	415.0	411.3	412.1	413.1	413.9	420.0	421.3	417.6	417.1	416.4	417.4	418.6	419.3	423.5	430.9	425.4	450.7
434.8 436.8 439.6 437.2 441.5 443.0 438.9 433.0 428.5 425.8 424.4 423.2 421.2 419.4 418.8 418.6 418.1 418.2 418.9 420.8 423.5 427.0 429.9 432.4																								Diurnal Average		
450.1 455.7 466.5 461.8 480.3 493.1 496.5 469.9 461.0 451.0 475.8 491.9 466.4 437.5 428.8 427.6 426.7 425.6 426.2 430.6 433.4 443.8 446.8 456.6																								Diurnal Maximum		
Z - zerospan		C - Calibration					M - Maintenance																			



Wood Buffalo Environmental Association
Hourly Averages

Carbon Dioxide (CO₂) - ppm
Fort McKay - Bertha Ganter - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Carbon Dioxide (CO₂) - ppm
Fort McKay - Bertha Ganter - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
400 - 420	253	35.73	35.73
420 - 440	352	49.72	85.45
440 - 460	86	12.15	97.60
460 - 480	14	1.98	99.58
480 - 500	3	0.42	100.00
> 500	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Carbon Dioxide (CO₂) - ppm
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
400 - 420	21	19	11	10	4	12	37	47	36	9	10	6	7	1	11	12	253
420 - 440	31	14	10	9	1	6	27	99	65	21	6	9	2	19	17	15	351
440 - 460	5	3	1	0	1	1	2	13	24	9	2	3	3	9	3	6	85
460 - 480	1	0	0	0	1	0	0	2	2	1	0	4	0	2	0	1	14
480 - 500	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	3
> 500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	58	36	22	19	7	19	66	162	127	40	18	22	12	33	31	34	706

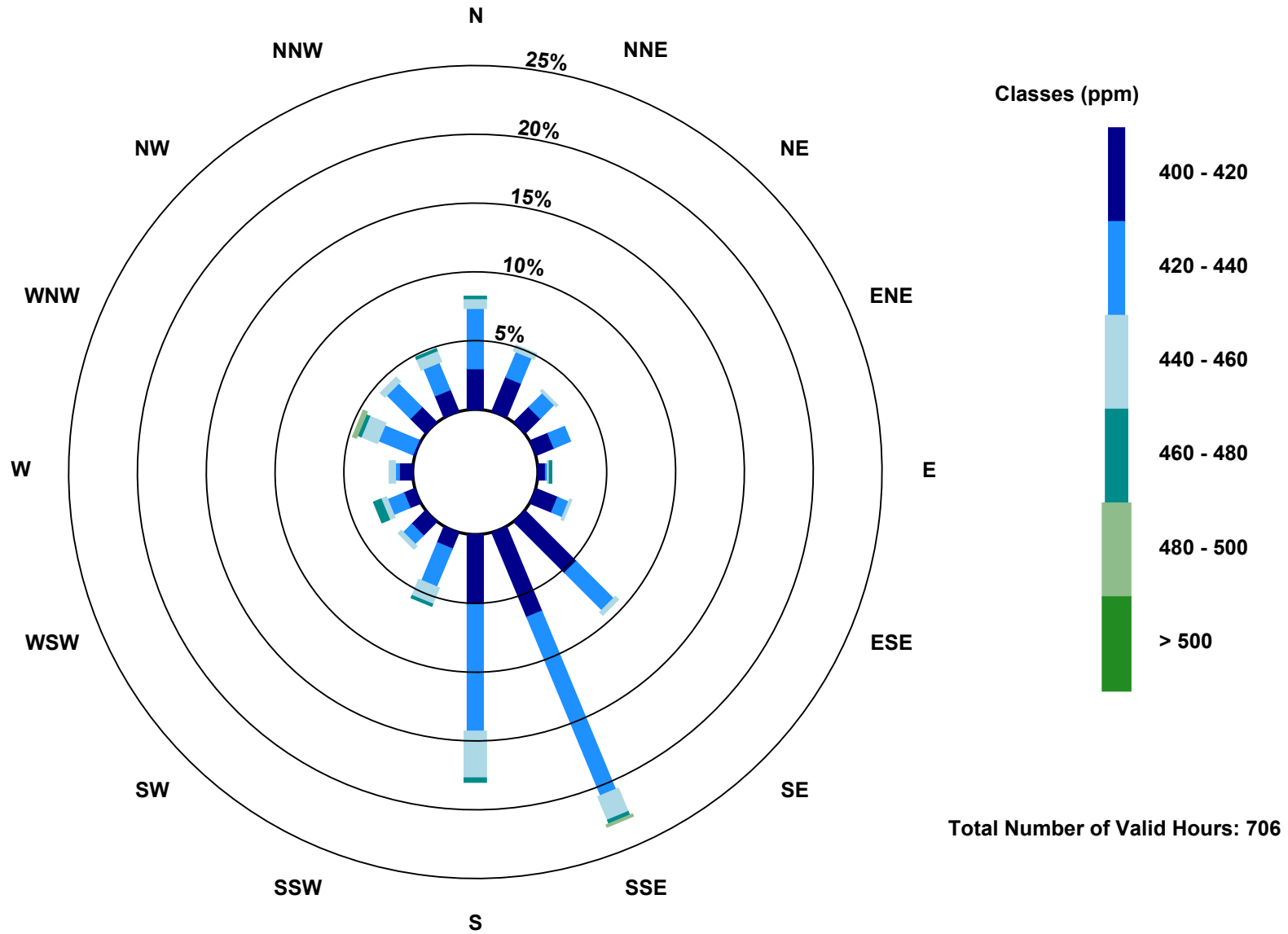
Total Number of Valid Hours: 706

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Carbon Dioxide (CO₂) - ppm
Fort McKay - Bertha Ganter





Number of Exceedences (AAAQO):	1-hr: 0	Hours in Service:	744
Maximum Value: 28.2 ppb on May 21 04:00	Maximum Daily Average: 15.7 ppb on May 21	Hours of Data:	612
Minimum Value: 0.0 ppb on May 1 01:00	Minimum Daily Average: 0.0 ppb on May 1	Hours of Missing Data:	132
Maximum Diurnal Average: 3.4 ppb at hour 6	Minimum Diurnal Average: 0.0 ppb at hour 3	Hours of Calibration:	57
Monthly Average: 0.90 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 18.0	Percent Operational Time:	89.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24						
1-May	0.0	0.0	0.0	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2-May	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
3-May	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
4-May	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
5-May	0.0	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	M	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
6-May	0.0	0.0	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
7-May	0.0	0.0	0.0	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
8-May	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
9-May	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
10-May	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
11-May	0.0	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
12-May	0.0	0.0	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
13-May	0.0	0.0	0.0	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
14-May	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
15-May	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
16-May	0.0	13.3	Z	RE	24.9	24.8	18.0	11.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	24.9	
17-May	0.0	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
18-May	0.0	0.0	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
19-May	0.0	0.0	0.0	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	16.8	
20-May	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.5	12.6	1.1	12.6
21-May	23.8	Z	RE	28.2	25.9	23.3	17.4	17.9	17.5	16.0	14.8	13.0	12.2	12.0	12.9	14.2	13.6	13.0	12.5	11.8	12.0	11.5	11.9	11.0	0.0	0.0	0.0	0.0	15.7	28.2
22-May	10.4	11.1	Z	RE	14.8	12.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	14.8
23-May	0.0	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	C	C	C	C	C	C	C	C	0.0	0.0	0.0	0.0	--	0.0	
24-May	0.0	0.0	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-May	0.0	0.0	0.0	0.0	0.0	UO	UO	UO	UO	UO	UO	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26-May	Z	RE	0.0	0.0	0.0	UO	UO	UO	UO	UO	UO	M	M	M	M	M	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0	
27-May	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28-May	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29-May	0.0	0.0	0.0	Z	RE	RE	UO	UO	UO	UO	C	C	C	C	C	C	C	C	M	M	M	M	M	M	M	M	M	M	--	0.0
30-May	M	M	M	M	M	M	M	M	M	M	M	C	C	C	C	C	C	C	C	C	C	C	C	RE	RE	RE	RE	--	--	
31-May	RE	0.0	0.0	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

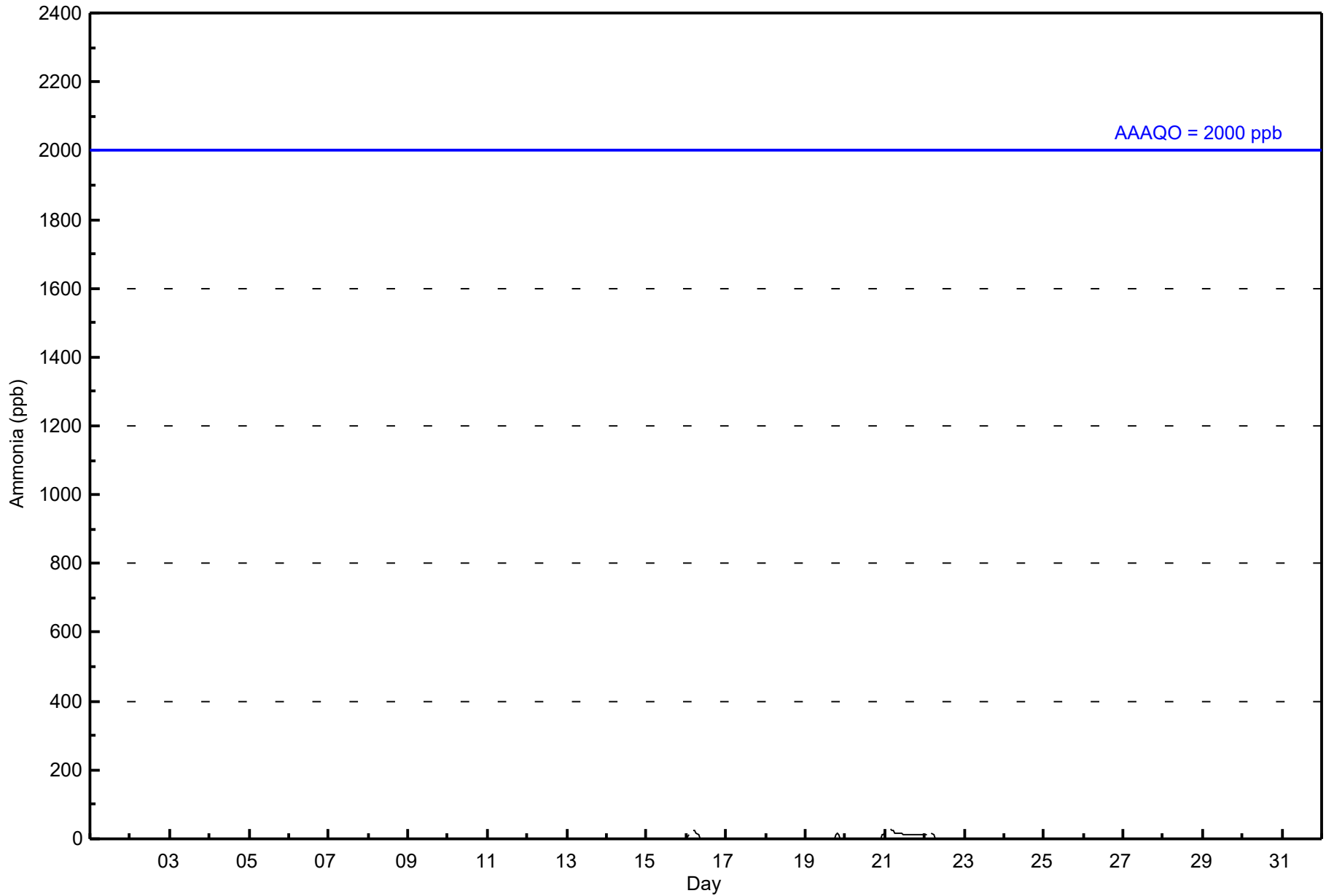
1.4	1.2	0.0	1.4	3.1	3.4	1.6	1.1	0.6	0.6	0.6	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.8	1.0	0.8	0.4	0.8	0.8	0.0	0.0	0.0	0.0	0.0	Diurnal Average
23.8	13.3	0.0	28.2	25.9	24.8	18.0	17.9	17.5	16.0	14.8	13.0	12.2	12.0	12.9	14.2	13.6	13.0	12.5	16.8	12.0	11.5	11.9	12.6	0.0	0.0	0.0	0.0	0.0	0.0	Diurnal Maximum

Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation RE - Recovery
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 2000 ppb



Wood Buffalo Environmental Association
Hourly Averages

Ammonia (NH₃) - ppb
Fort McKay - Bertha Ganter - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ammonia (NH₃) - ppb
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 5	576	94.12	94.12
6 - 10	1	0.16	94.28
11 - 15	23	3.76	98.04
16 - 20	6	0.98	99.02
21 - 25	4	0.65	99.67
> 26	2	0.33	100.00

Total Number of Valid Hours: 612

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Ammonia (NH₃) - ppb
Fort McKay - Bertha Ganter - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	47	36	21	17	6	12	47	141	116	36	7	11	10	31	20	16	574
6 - 10	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11 - 15	4	0	0	0	0	0	2	9	0	0	1	0	0	1	1	5	23
16 - 20	2	0	0	0	0	0	0	3	0	0	0	0	0	0	0	1	6
21 - 25	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	1	4
> 26	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
Totals	53	37	21	17	6	12	49	154	116	36	8	11	10	33	24	23	610

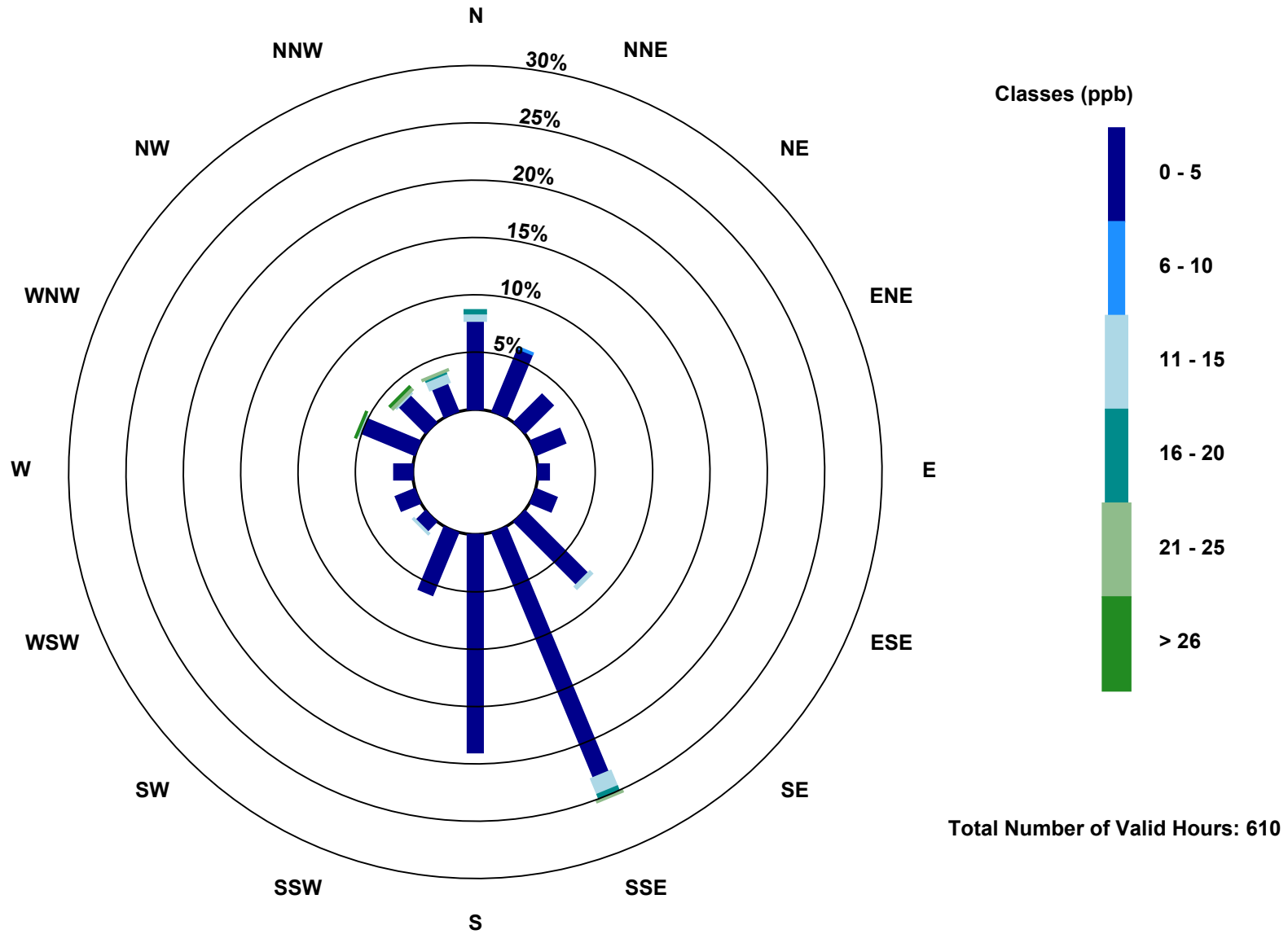
Total Number of Valid Hours: 610

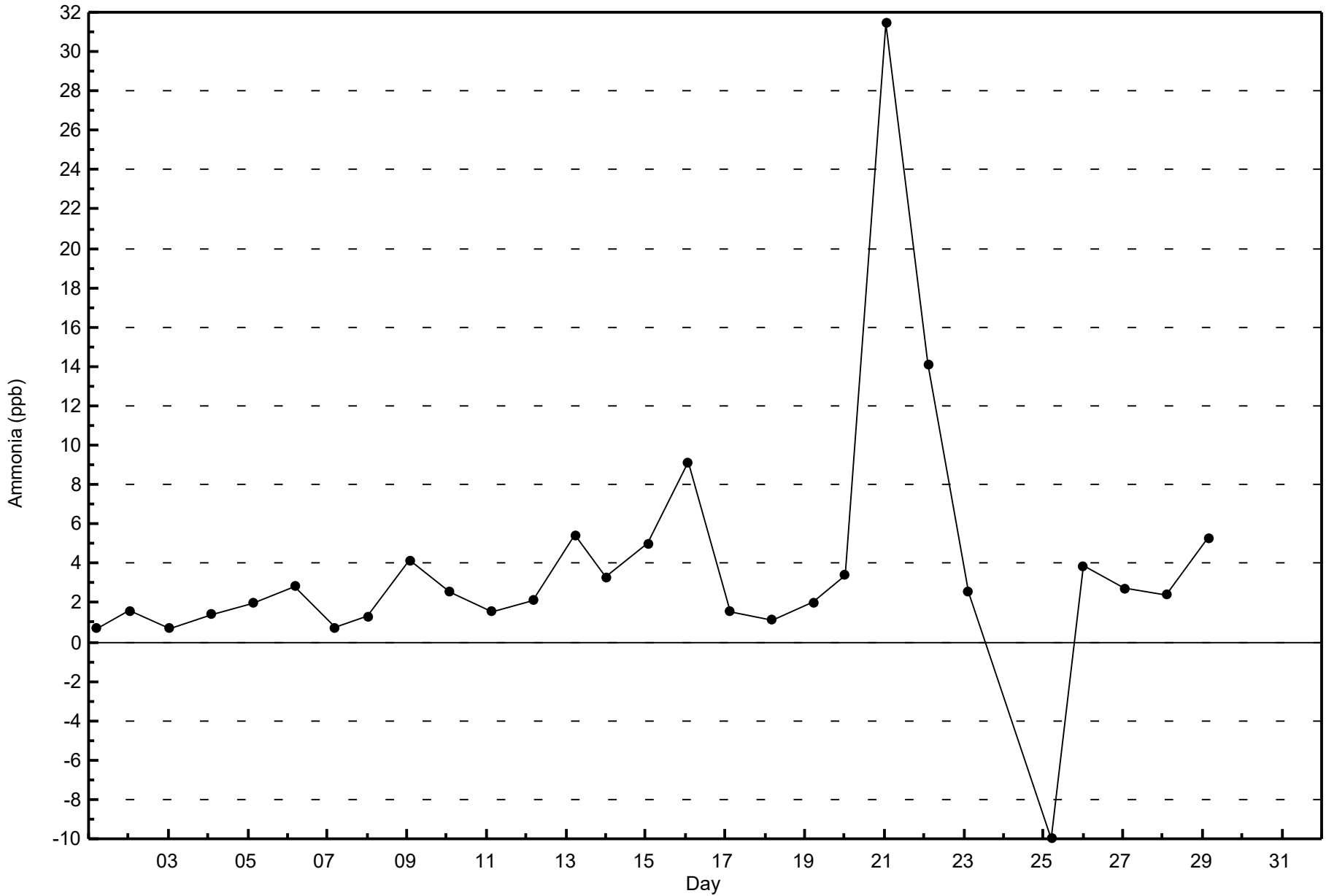
Total Number of Hours: 744

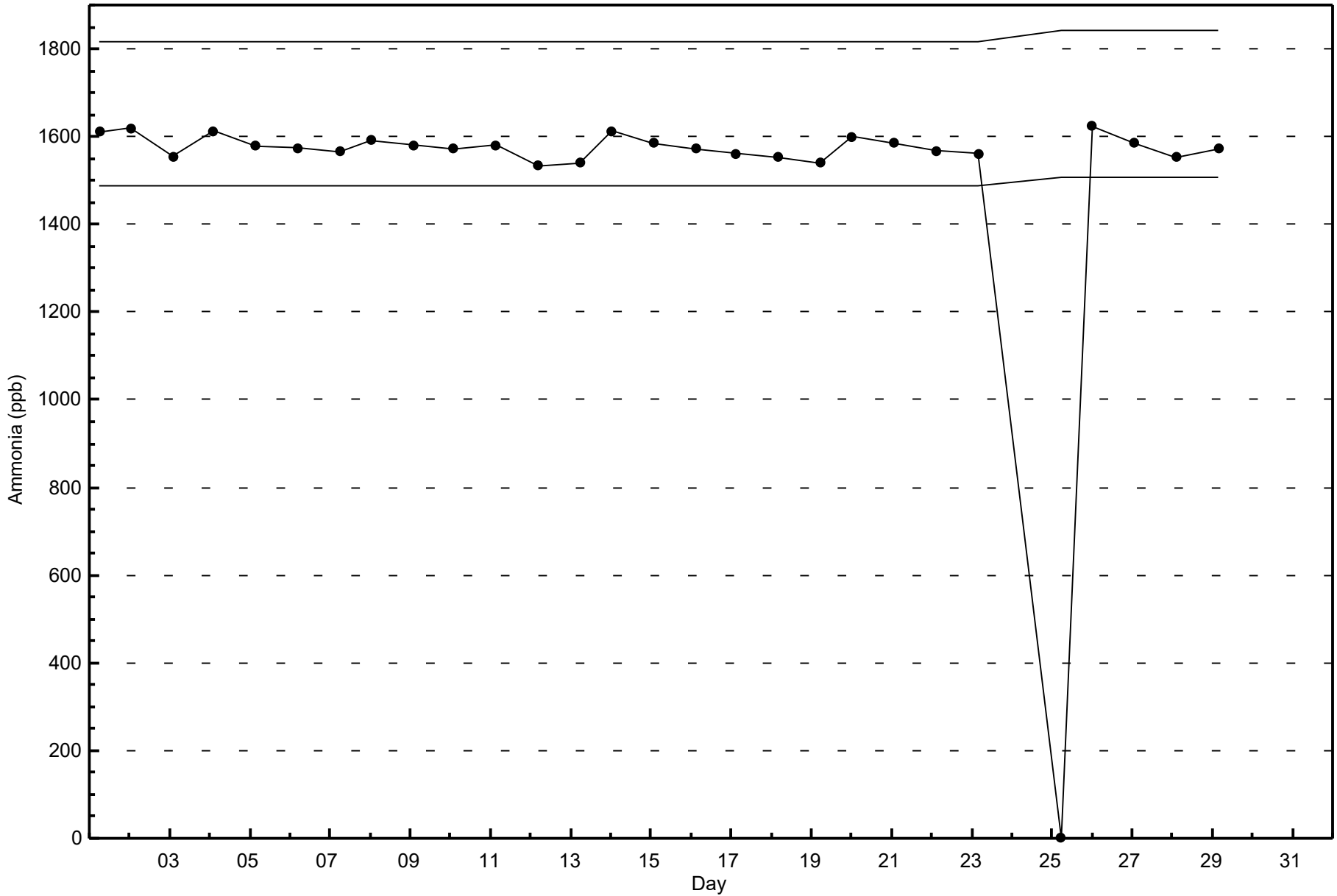


Wood Buffalo Environmental Association
Wind Rose May 2023

Ammonia (NH₃) - ppb
Fort McKay - Bertha Ganter









Wood Buffalo Environmental Association
Summary of Hour Averages

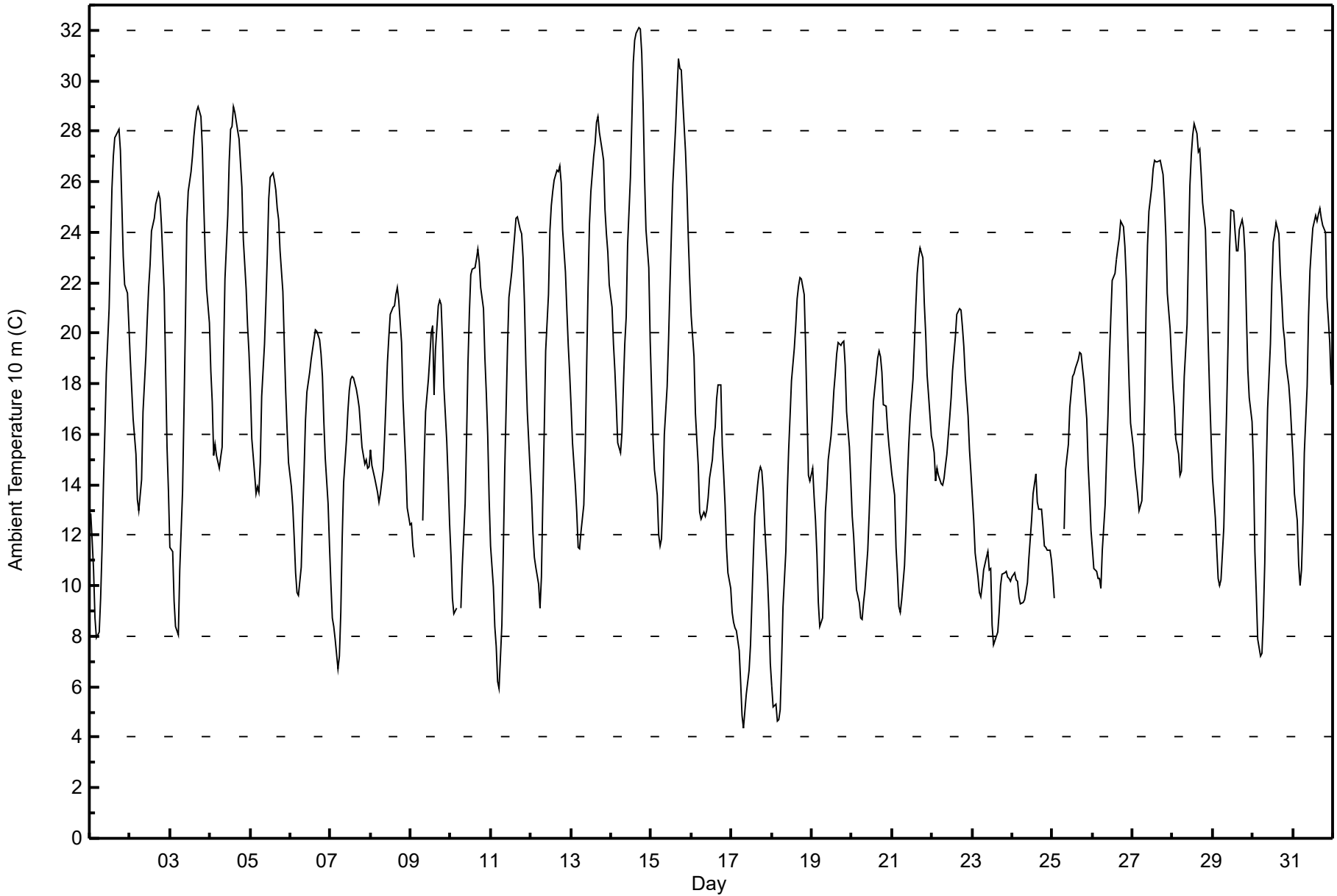
Ambient Temperature 10 m (AT 10m) - C
Fort McKay - Bertha Ganter - May 2023

Maximum Value: 32.1 C on May 14 17:00		Maximum Daily Average: 23.8 C on May 14		Hours in Service:	744																																											
Minimum Value: 4.4 C on May 17 08:00		Minimum Daily Average: 9.4 C on May 17		Hours of Data:	733																																											
Maximum Diurnal Average: 22.9 C at hour 17		Minimum Diurnal Average: 10.4 C at hour 6		Hours of Missing Data:	11																																											
Monthly Average: 17.27 C		Percentiles: P ₁ = 5.4 P ₁₀ = 9.7 Q ₁ = 12.7 Median = 16.9 Q ₃ = 21.8 P ₉₀ = 25.6 P ₉₉ = 30.4		Hours of Calibration:	0																																											
				Percent Operational Time:	98.5																																											
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	12.9	11.8	10.7	8.7	7.9	8.2	9.5	11.5	14.1	16.1	18.4	21.0	23.4	25.7	27.0	27.7	27.9	28.1	27.2	25.2	23.1	21.9	21.6	20.3	18.7	28.1																						
2-May	19.0	17.8	16.6	15.2	13.4	13.0	13.6	14.2	16.9	19.1	20.5	21.8	22.7	24.0	24.6	25.1	25.4	25.6	25.3	24.3	21.7	18.6	15.5	13.7	19.5	25.6																						
3-May	11.5	11.3	9.4	8.4	8.2	8.0	10.6	13.7	16.9	20.4	24.4	25.6	26.4	27.0	27.8	28.3	28.8	29.0	28.6	27.3	25.1	23.1	21.8	20.4	20.1	29.0																						
4-May	18.5	17.3	15.2	15.6	15.2	14.7	15.1	15.5	19.1	22.2	24.7	26.8	28.1	28.2	29.0	28.8	28.0	27.7	26.7	25.8	23.7	21.8	20.3	19.2	22.0	29.0																						
5-May	17.8	15.8	14.4	13.7	13.9	13.7	14.9	17.5	19.6	21.2	23.1	25.4	26.2	26.3	26.0	25.7	25.0	24.5	23.3	21.6	19.6	17.7	16.2	14.9	19.9	26.3																						
6-May	13.9	13.2	11.9	10.5	9.7	9.6	10.7	12.8	14.6	16.6	17.7	18.5	18.9	19.4	19.8	20.1	20.1	19.8	19.2	18.3	16.5	15.1	13.3	11.6	15.5	20.1																						
7-May	10.1	8.7	8.4	7.9	6.7	7.2	9.0	11.9	14.1	15.8	16.9	17.7	18.2	18.3	18.2	17.8	17.5	17.0	16.3	15.5	14.8	15.0	14.6	14.7	13.8	18.3																						
8-May	15.4	14.8	14.3	14.0	13.7	13.3	13.7	14.6	15.9	17.3	18.8	19.8	20.7	21.0	21.1	21.5	21.8	21.3	19.6	17.4	16.1	14.7	13.1	12.4	16.9	21.8																						
9-May	12.5	11.6	11.1	UO	UO	UO	UO	12.6	15.0	16.9	18.2	19.1	20.0	20.3	17.6	19.4	21.1	21.3	21.2	19.7	17.9	15.7	14.2	12.5	16.9	21.3																						
10-May	11.2	9.5	8.9	9.1	UO	UO	9.1	10.8	13.2	15.8	18.8	20.8	22.3	22.5	22.6	22.9	23.3	22.8	21.8	21.0	19.0	17.6	15.9	13.4	16.9	23.3																						
11-May	11.6	10.0	8.4	7.6	6.2	5.9	8.5	11.3	14.5	17.0	19.5	21.4	22.4	23.1	23.8	24.6	24.6	24.1	23.9	23.0	21.2	18.7	16.9	14.6	16.8	24.6																						
12-May	13.6	12.1	11.1	10.7	10.1	9.1	10.4	13.4	16.2	19.3	21.6	24.1	25.0	25.6	26.1	26.4	26.4	26.6	25.9	24.1	22.4	20.9	19.5	18.4	19.1	26.6																						
13-May	17.1	15.7	14.0	12.9	11.5	11.5	12.2	13.2	15.3	18.6	21.8	24.3	25.6	27.0	27.5	28.4	28.6	28.0	27.3	26.8	24.9	23.9	23.2	21.9	20.9	28.6																						
14-May	21.0	19.6	18.5	17.2	15.6	15.3	16.0	17.9	19.6	20.6	23.5	26.1	28.4	30.7	31.6	31.9	32.1	32.0	31.1	29.1	26.2	24.1	22.6	19.7	23.8	32.1																						
15-May	17.7	15.8	14.6	13.6	12.0	11.6	11.9	13.6	16.0	17.9	19.7	21.9	23.9	25.9	28.2	29.6	30.9	30.5	30.4	29.3	27.2	25.7	23.7	22.1	21.4	30.9																						
16-May	20.7	19.1	16.9	15.8	14.7	12.9	12.6	12.9	12.7	13.0	13.5	14.3	15.0	15.8	16.3	17.4	17.9	18.0	15.5	14.4	13.2	11.5	10.5	9.9	14.8	20.7																						
17-May	9.0	8.5	8.3	8.2	7.4	6.2	4.8	4.4	5.0	5.7	6.7	7.7	9.4	11.2	12.8	14.0	14.5	14.7	14.5	13.8	12.4	10.4	8.9	6.9	9.4	14.7																						
18-May	6.1	5.2	5.3	4.7	4.7	5.1	6.9	9.2	11.3	13.6	15.4	16.7	18.1	19.4	20.3	21.4	21.9	22.2	22.1	21.5	19.4	16.9	14.4	14.1	14.0	22.2																						
19-May	14.7	13.5	12.6	11.2	9.4	8.4	8.7	10.5	12.9	13.8	15.0	15.9	16.7	17.7	18.4	19.2	19.6	19.5	19.6	19.7	18.7	16.9	15.5	14.2	15.1	19.7																						
20-May	12.8	12.0	10.8	9.8	9.3	8.7	8.7	9.4	9.8	11.4	12.9	14.5	16.0	17.3	18.4	19.0	19.3	19.1	18.4	17.2	17.1	16.2	15.5	15.0	14.1	19.3																						
21-May	14.4	13.6	11.5	10.5	9.2	9.0	9.4	10.8	12.3	14.2	15.6	16.7	18.2	19.6	21.1	22.4	23.0	23.4	23.0	21.2	20.0	18.4	17.6	15.9	16.3	23.4																						
22-May	15.7	15.3	14.1	14.6	14.4	14.0	14.0	14.3	14.8	15.2	16.7	17.4	18.5	19.2	19.8	20.8	21.0	20.9	20.2	19.5	18.3	16.7	15.4	14.5	16.9	21.0																						
23-May	13.5	12.6	11.3	10.3	9.7	9.6	10.0	10.6	11.1	11.3	10.6	10.7	8.5	7.6	8.0	8.2	9.0	10.0	10.4	10.5	10.6	10.4	10.3	10.2	10.2	13.5																						
24-May	10.4	10.5	10.2	10.2	9.6	9.3	9.3	9.5	9.8	10.1	11.1	12.6	13.6	14.0	14.4	13.3	13.0	13.1	12.4	11.6	11.5	11.4	11.4	11.0	11.4	14.4																						
25-May	10.3	9.5	UO	UO	UO	UO	UO	12.2	14.6	15.6	17.1	17.7	18.3	18.4	18.7	19.0	19.2	19.2	18.7	18.1	16.6	14.7	13.6	12.2	16.0	19.2																						
26-May	11.5	10.7	10.5	10.3	10.3	9.9	11.4	13.2	15.0	16.7	18.9	20.6	22.1	22.4	22.9	23.4	23.8	24.4	24.2	23.4	22.1	19.9	17.9	16.4	17.6	24.4																						
27-May	15.5	14.7	14.1	13.7	13.0	13.3	15.0	17.4	21.0	23.5	24.8	25.8	26.5	26.8	26.8	26.8	26.9	26.6	26.3	25.3	23.8	21.6	20.2	18.9	21.2	26.9																						
28-May	17.9	17.1	15.9	15.2	14.3	14.5	16.5	18.3	20.4	23.3	25.9	27.1	27.9	28.3	27.9	27.2	27.3	26.3	25.2	24.1	21.9	19.6	17.6	15.9	21.5	28.3																						
29-May	14.3	12.7	11.5	10.3	10.0	10.3	12.3	14.7	16.9	19.6	23.2	24.9	24.8	24.0	23.2	23.3	24.1	24.5	24.2	23.2	20.7	18.6	17.4	16.5	18.5	24.9																						
30-May	14.8	11.4	9.7	7.9	7.2	7.3	8.8	10.9	14.4	17.0	19.6	21.9	23.6	23.9	24.4	24.0	22.4	21.4	20.2	19.8	18.8	17.9	17.2	16.1	16.7	24.4																						
31-May	15.1	13.6	12.6	10.9	10.0	10.7	12.5	15.3	17.9	20.7	22.5	23.4	24.1	24.7	24.5	24.7	25.0	24.5	24.3	24.0	21.4	20.5	19.6	17.9	19.2	25.0																						
																								14.2	13.1	12.1	11.3	10.6	10.4	11.2	12.8	14.9	16.8	18.6	20.1	21.1	21.8	22.2	22.6	22.9	22.8	22.2	21.1	19.5	17.9	16.6	15.3	Diurnal Average
																								21.0	19.6	18.5	17.2	15.6	15.3	16.5	18.3	21.0	23.5	25.9	27.1	28.4	30.7	31.6	31.9	32.1	32.0	31.1	29.3	27.2	25.7	23.7	22.1	Diurnal Maximum
UO - Unstable Operation																																																



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature 10 m (AT 10m) - C
Fort McKay - Bertha Ganter - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 10 m (AT 10m) - C
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	84	11.46	11.46
10 - 20	412	56.21	67.67
> 20	237	32.33	100.00

Total Number of Valid Hours: 733

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

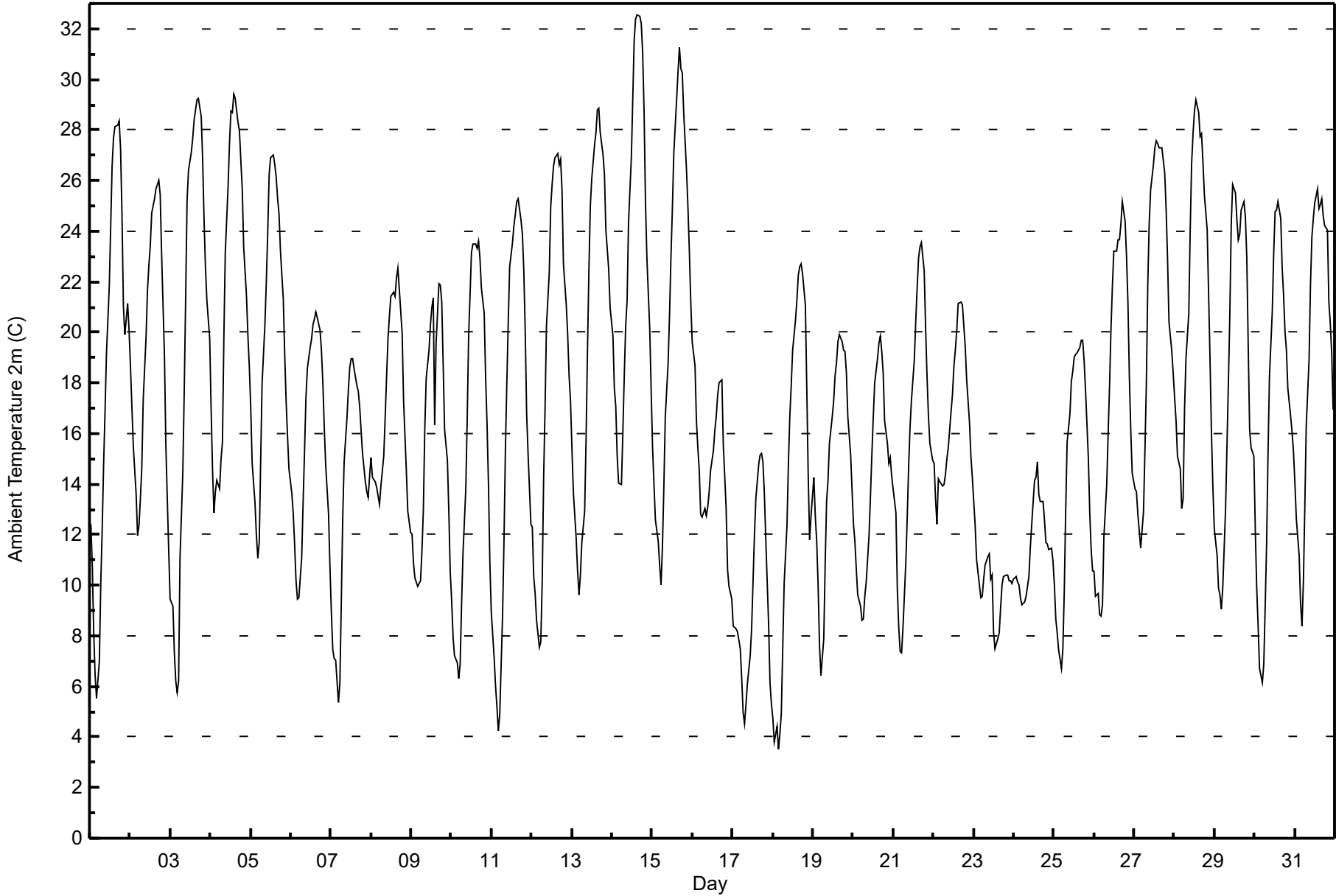
Ambient Temperature 2m (AT 2m) - C
Fort McKay - Bertha Ganter - May 2023

Maximum Value: 32.5 C on May 14 16:00		Maximum Daily Average: 23.4 C on May 14		Hours in Service: 744																							
Minimum Value: 3.5 C on May 18 04:00		Minimum Daily Average: 9.3 C on May 17		Hours of Data: 744																							
Maximum Diurnal Average: 23.3 C at hour 17		Minimum Diurnal Average: 9.2 C at hour 5		Hours of Missing Data: 0																							
Monthly Average: 16.97 C		Percentiles: P ₁ = 4.9 P ₁₀ = 8.9 Q ₁ = 11.9 Median = 16.5 Q ₃ = 21.8 P ₉₀ = 26.0 P ₉₉ = 30.4		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	12.4	10.8	8.2	6.5	5.5	7.0	10.1	12.2	14.8	16.9	19.1	21.8	24.1	26.6	27.7	28.2	28.2	28.4	27.2	24.6	21.1	19.9	21.2	20.1	18.4	28.4	
2-May	18.6	17.1	15.5	13.6	12.0	12.3	13.5	14.6	17.4	19.8	21.6	22.6	23.4	24.7	25.3	25.7	25.9	26.0	25.5	23.1	19.1	15.6	13.4	11.4	19.1	26.0	
3-May	9.5	9.2	7.3	6.2	5.8	6.2	11.1	14.5	17.7	21.3	25.2	26.4	27.1	27.7	28.4	28.8	29.2	29.2	28.5	26.8	24.4	22.5	21.3	19.7	19.8	29.2	
4-May	16.9	14.5	12.9	13.7	14.2	13.8	15.0	15.7	19.8	23.2	25.8	27.5	28.8	28.7	29.4	29.2	28.3	28.0	26.8	25.7	23.4	21.4	19.9	18.6	21.7	29.4	
5-May	17.0	14.8	13.2	11.9	11.1	11.7	14.9	18.0	20.3	22.0	23.9	26.2	26.9	27.0	26.6	26.1	25.3	24.7	23.2	21.3	19.1	17.3	15.9	14.6	19.7	27.0	
6-May	13.7	12.9	11.6	10.2	9.5	9.5	11.1	13.3	15.3	17.4	18.5	19.4	19.8	20.3	20.5	20.8	20.6	20.1	19.2	18.0	16.2	14.7	12.8	10.7	15.7	20.8	
7-May	8.9	7.4	7.1	7.1	5.4	6.1	9.4	12.6	14.9	16.6	17.7	18.6	19.0	19.0	18.6	17.9	17.7	17.1	16.1	15.2	14.1	13.7	13.5	14.3	13.7	19.0	
8-May	15.1	14.3	14.1	13.9	13.5	13.2	13.9	15.1	16.6	18.2	19.7	20.6	21.4	21.6	21.4	22.1	22.5	21.7	20.0	17.3	15.9	14.5	12.9	12.1	17.2	22.5	
9-May	12.0	10.9	10.3	10.1	10.0	10.2	11.3	13.0	16.1	18.2	19.3	20.3	21.0	21.3	16.3	19.6	21.9	21.9	21.2	18.8	16.2	14.9	12.9	10.5	15.8	21.9	
10-May	9.4	7.9	7.2	7.0	6.3	6.9	9.2	11.2	13.8	16.6	19.8	21.5	23.2	23.5	23.5	23.3	23.6	22.9	21.8	20.8	18.2	16.4	14.0	10.9	15.8	23.6	
11-May	8.9	7.2	6.0	5.2	4.3	4.9	8.8	11.8	15.4	18.0	20.4	22.6	23.5	24.2	24.7	25.2	25.3	24.5	23.9	22.4	20.0	16.8	15.2	12.4	16.3	25.3	
12-May	12.3	10.3	9.7	8.6	7.5	7.8	10.2	14.2	17.0	20.3	22.4	25.0	25.8	26.6	26.9	27.1	26.6	26.9	25.6	22.7	21.1	19.9	18.3	17.3	18.7	27.1	
13-May	15.4	13.7	11.9	10.6	9.6	10.4	11.7	12.9	15.8	19.3	22.4	25.0	26.1	27.4	27.9	28.8	28.9	27.9	27.0	26.2	24.1	23.3	22.5	21.0	20.4	28.9	
14-May	19.9	17.8	17.1	15.1	14.0	14.0	16.0	18.3	20.2	21.2	24.3	26.9	29.2	31.5	32.4	32.5	32.5	32.2	31.1	28.7	25.1	23.0	20.1	17.7	23.4	32.5	
15-May	15.4	14.0	12.6	11.7	10.8	10.0	11.6	13.9	16.7	18.8	20.7	23.0	24.9	27.1	29.2	30.3	31.2	30.4	30.2	28.7	26.4	25.0	23.2	21.2	21.1	31.2	
16-May	19.6	18.7	16.5	15.5	14.6	12.8	12.7	13.0	12.8	13.1	13.7	14.5	15.3	16.1	16.6	17.5	18.0	18.1	15.6	14.3	13.0	10.6	9.9	9.4	14.7	19.6	
17-May	8.4	8.3	8.3	8.2	7.5	6.3	5.0	4.5	5.3	6.1	7.2	8.3	10.1	12.0	13.4	14.8	15.2	15.2	14.9	13.7	11.8	8.5	6.1	5.3	9.3	15.2	
18-May	4.7	3.8	4.4	3.5	4.1	4.9	7.5	10.1	12.4	14.8	16.6	17.9	19.3	20.5	21.3	22.3	22.6	22.7	22.3	21.1	17.8	14.4	11.8	12.7	13.9	22.7	
19-May	14.3	12.8	11.8	10.0	7.6	6.4	7.9	10.9	13.3	14.2	15.6	16.7	17.3	18.3	18.8	19.6	19.9	19.6	19.3	19.2	18.4	16.7	15.2	13.7	14.9	19.9	
20-May	12.4	11.7	10.6	9.6	9.2	8.6	8.7	9.6	10.1	12.0	13.5	15.2	16.7	18.0	19.0	19.6	19.8	19.2	18.4	16.5	15.6	14.8	15.1	14.3	14.1	19.8	
21-May	13.8	12.8	9.8	8.4	7.4	7.3	8.3	10.9	12.7	14.7	16.3	17.4	18.9	20.4	21.8	22.9	23.4	23.5	22.4	20.2	18.3	16.7	15.6	14.9	15.8	23.5	
22-May	14.8	13.4	12.4	14.2	14.1	13.9	14.0	14.4	15.0	15.4	16.9	17.6	18.7	19.3	20.1	21.1	21.2	21.1	20.2	19.4	18.1	16.4	15.1	14.2	16.7	21.2	
23-May	13.3	12.4	11.0	10.0	9.5	9.6	10.2	10.8	11.2	11.3	10.2	10.4	8.2	7.5	7.9	8.1	9.1	10.0	10.4	10.4	10.4	10.2	10.2	10.1	10.1	13.3	
24-May	10.2	10.4	10.1	10.0	9.5	9.3	9.4	9.5	10.0	10.4	11.5	13.3	14.1	14.3	14.9	13.6	13.3	13.3	12.6	11.7	11.6	11.4	11.5	11.0	11.5	14.9	
25-May	10.0	8.7	8.1	7.4	6.7	7.5	9.8	13.0	15.7	16.8	18.0	18.5	19.0	19.2	19.2	19.4	19.7	19.7	18.9	17.7	15.0	12.9	11.4	10.6	14.3	19.7	
26-May	10.6	9.5	9.7	8.9	8.8	9.2	11.9	14.0	16.0	17.9	20.1	21.8	23.2	23.2	23.7	23.7	24.3	25.1	24.4	23.0	21.1	18.2	16.1	14.4	17.4	25.1	
27-May	13.8	13.7	12.8	12.1	11.5	12.9	15.3	18.0	21.8	24.3	25.6	26.7	27.3	27.6	27.5	27.3	27.3	26.8	26.3	24.9	22.9	20.4	19.2	18.3	21.0	27.6	
28-May	17.4	16.5	15.1	14.6	13.0	13.4	17.0	19.0	20.8	24.0	26.7	27.9	28.8	29.2	28.7	27.8	27.9	26.8	25.5	24.1	21.6	19.0	16.1	13.9	21.4	29.2	
29-May	12.2	11.2	9.9	9.6	9.0	9.9	13.0	15.6	18.0	20.7	24.3	25.8	25.5	24.5	23.7	23.9	24.9	25.2	24.6	22.9	19.5	16.1	15.5	15.1	18.4	25.8	
30-May	12.2	9.9	8.4	6.7	6.1	6.9	9.2	11.7	15.2	18.2	20.8	23.1	24.8	24.8	25.2	24.5	22.5	21.5	20.0	19.3	17.8	16.7	16.0	15.3	16.5	25.2	
31-May	14.0	12.6	11.2	9.3	8.4	10.1	13.1	16.3	18.9	21.9	23.8	24.5	25.1	25.6	24.9	25.1	25.3	24.6	24.2	24.0	21.2	20.3	19.2	17.0	19.2	25.6	
		13.1	11.9	10.8	10.0	9.2	9.5	11.3	13.3	15.5	17.5	19.4	20.9	21.8	22.5	22.8	23.1	23.3	23.0	22.2	20.7	18.7	16.8	15.5	14.3	Diurnal Average	
		19.9	18.7	17.1	15.5	14.6	14.0	17.0	19.0	21.8	24.3	26.7	27.9	29.2	31.5	32.4	32.5	32.5	32.2	31.1	28.7	26.4	25.0	23.2	21.2	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature 2m (AT 2m) - C
Fort McKay - Bertha Ganter - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 2m (AT 2m) - C
Fort McKay - Bertha Ganter - May 2023**

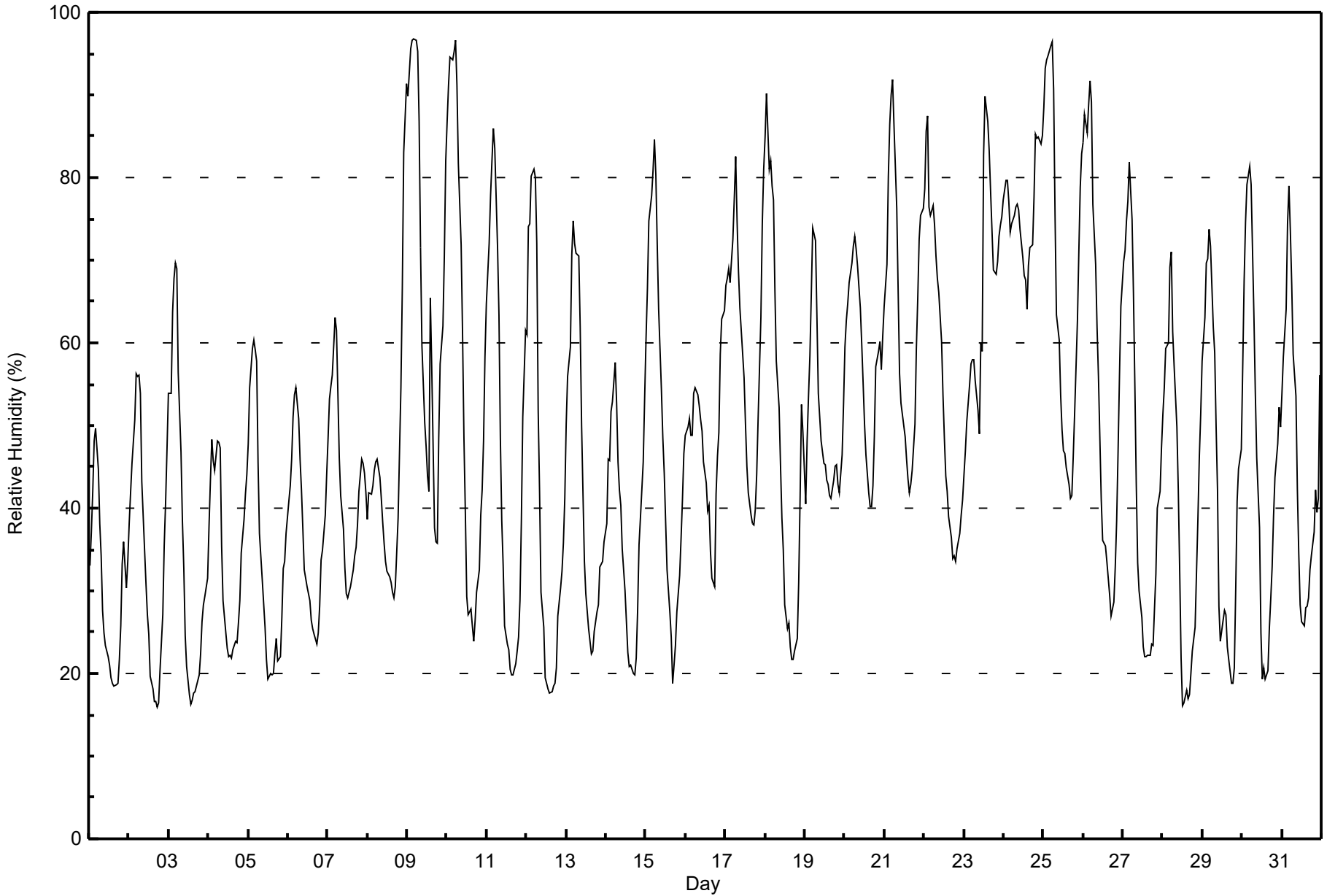
Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	114	15.32	15.32
10 - 20	386	51.88	67.20
> 20	244	32.80	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Maximum Value: 96.7 % on May 9 05:00 Maximum Daily Average: 76.0 % on May 24																						Hours in Service: 744 Hours of Data: 744																									
Minimum Value: 16.0 % on May 2 18:00 Minimum Daily Average: 30.0 % on May 1 Maximum Diurnal Average: 71.6 % at hour 6 Minimum Diurnal Average: 30.2 % at hour 17 Monthly Average: 48.47 % Percentiles: P ₁ = 16.9 P ₁₀ = 22.4 Q ₁ = 31.4 Median = 45.6 Q ₃ = 64.0 P ₉₀ = 78.2 P ₉₉ = 95.3																						Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0																									
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																							
1-May	33.0	37.1	42.1	48.2	49.7	44.7	38.1	34.2	27.6	24.9	23.4	22.0	21.0	19.4	18.8	18.4	18.6	18.9	21.6	25.8	33.3	35.9	30.3	33.6	30.0	49.7																					
2-May	38.1	41.9	45.4	50.7	56.3	55.9	56.2	53.8	43.1	34.9	30.8	27.2	24.8	19.7	18.1	16.6	16.6	16.0	16.5	20.3	27.1	35.4	40.7	47.1	34.7	56.3																					
3-May	54.0	53.9	63.8	67.8	69.6	69.0	56.4	46.7	38.5	32.7	24.6	20.8	17.4	16.3	16.8	17.6	17.8	18.5	19.9	22.3	26.3	28.3	29.3	31.5	35.8	69.6																					
4-May	37.8	43.3	48.3	45.8	44.6	48.2	48.0	47.3	35.3	28.8	24.9	23.0	22.2	21.8	22.8	23.9	23.8	26.1	28.8	34.6	38.6	41.7	44.1	34.4	48.3																						
5-May	47.8	54.5	59.4	60.4	59.1	57.7	45.6	37.0	31.3	28.5	25.6	21.7	19.4	20.0	19.8	20.0	22.3	24.2	21.5	22.1	26.7	32.7	33.6	36.9	34.5	60.4																					
6-May	40.9	42.7	45.9	50.9	53.7	54.7	50.8	45.9	42.2	37.4	32.6	30.5	29.6	28.8	26.4	25.4	24.7	23.6	24.9	28.2	33.7	34.9	39.1	44.1	37.1	54.7																					
7-May	48.5	53.3	54.8	56.0	63.1	61.5	54.0	46.2	41.5	37.5	32.7	29.7	29.2	29.9	30.5	32.5	34.3	35.2	37.9	42.0	45.9	45.4	44.3	41.9	42.8	63.1																					
8-May	38.7	41.9	41.8	42.8	44.6	45.6	45.9	43.7	41.1	38.3	35.8	33.6	32.4	31.8	31.0	29.8	29.1	30.4	38.9	46.8	54.6	66.6	83.1	91.3	44.1	91.3																					
9-May	89.8	92.7	95.6	96.6	96.7	96.6	95.2	86.7	71.6	59.6	50.3	47.4	43.8	42.0	65.4	57.1	37.6	36.0	35.8	48.5	57.4	62.1	70.6	82.1	67.4	96.7																					
10-May	86.8	91.2	94.6	94.2	95.3	96.6	91.2	81.6	71.8	61.2	48.4	39.4	29.4	27.0	27.9	25.8	23.9	26.4	29.8	32.6	39.2	42.2	48.1	58.4	56.8	96.6																					
11-May	64.8	72.1	77.8	82.0	85.9	83.5	71.5	63.4	48.4	38.4	33.0	25.8	23.6	23.0	20.6	19.8	19.8	21.3	22.8	24.4	28.9	38.5	51.0	61.5	45.9	85.9																					
12-May	61.0	74.1	74.5	80.3	81.1	79.9	72.0	51.8	41.8	29.8	25.7	19.6	18.9	18.1	17.6	17.9	18.4	18.9	20.6	26.9	30.4	32.3	35.8	41.2	41.2	81.1																					
13-May	50.2	55.9	59.5	70.6	74.7	72.0	70.8	70.6	61.9	50.0	41.8	33.6	29.7	25.5	23.9	22.4	22.7	25.1	27.4	28.3	32.9	33.1	33.6	35.9	43.8	74.7																					
14-May	38.1	45.9	45.8	51.7	52.9	57.6	52.7	45.5	42.2	40.4	35.1	30.0	26.3	22.5	20.9	21.0	20.0	19.8	21.8	27.6	35.5	38.8	45.6	53.2	37.1	57.6																					
15-May	60.6	66.7	74.7	77.8	80.8	84.7	80.3	71.8	64.1	54.2	48.5	44.2	38.3	32.6	27.5	24.4	18.8	21.0	23.3	27.5	31.9	36.3	41.0	46.6	49.1	84.7																					
16-May	48.7	49.9	50.9	48.9	48.8	53.9	54.5	53.7	52.4	50.7	49.3	45.6	43.0	39.7	40.3	34.8	31.5	30.5	41.7	46.3	49.2	58.6	63.0	64.0	47.9	64.0																					
17-May	67.0	67.9	69.0	67.3	72.5	77.5	82.6	74.7	68.6	64.3	58.7	55.7	50.1	45.1	41.9	39.2	38.2	37.9	39.8	44.0	50.7	63.0	74.5	81.1	59.6	82.6																					
18-May	84.9	90.1	81.0	82.0	79.0	77.3	66.4	57.8	52.3	45.3	38.9	35.0	28.4	25.4	26.2	23.3	21.8	21.6	22.7	24.3	31.1	41.4	52.6	49.2	48.2	90.1																					
19-May	40.6	48.1	53.5	58.5	66.0	73.9	72.3	63.2	53.9	51.0	48.2	45.4	45.2	43.4	42.9	41.5	41.2	43.4	45.1	45.3	43.0	41.8	46.4	52.5	50.3	73.9																					
20-May	59.5	62.7	64.7	67.4	69.6	71.7	72.8	71.3	69.4	64.2	59.8	55.2	50.2	46.4	41.9	40.2	40.2	42.7	48.7	57.0	58.9	60.2	56.9	60.9	58.0	72.8																					
21-May	64.4	69.5	80.2	86.4	90.1	91.9	86.4	76.3	66.2	56.4	52.8	51.3	48.7	45.9	43.5	41.9	42.9	44.5	50.2	59.4	65.4	72.6	75.4	76.3	64.1	91.9																					
22-May	78.6	85.7	87.5	76.4	75.5	76.6	74.2	70.5	67.8	66.1	60.1	53.8	48.5	43.8	42.1	39.0	36.5	33.8	34.2	33.6	35.1	37.0	39.2	41.0	55.7	87.5																					
23-May	44.0	46.9	50.5	54.9	57.5	57.9	58.0	55.4	51.9	49.0	60.0	59.1	82.7	89.8	86.8	83.2	78.4	73.5	68.8	68.3	69.8	72.9	74.3	75.3	65.4	89.8																					
24-May	77.3	79.6	79.7	77.1	73.4	74.5	75.4	76.5	76.7	76.1	73.8	70.3	68.1	67.7	64.0	69.4	71.5	71.8	77.7	85.3	84.7	84.9	84.1	85.2	76.0	85.3																					
25-May	88.4	93.3	94.3	94.8	95.9	96.4	90.7	75.6	63.3	60.3	53.7	49.4	46.9	46.6	44.9	42.9	41.1	41.5	46.3	51.5	62.7	71.0	78.8	82.9	67.2	96.4																					
26-May	84.3	87.7	85.4	88.8	91.7	89.2	76.8	69.5	61.9	56.0	48.5	41.1	36.1	35.4	33.6	31.5	29.5	27.0	28.7	32.9	38.5	46.7	56.0	64.4	55.9	91.7																					
27-May	69.8	71.1	74.7	77.2	81.9	74.9	65.9	54.7	42.8	33.4	30.1	26.7	23.3	22.0	22.0	22.2	22.2	23.6	23.3	27.7	32.1	39.9	42.1	47.3	43.8	81.9																					
28-May	51.3	54.6	59.4	60.0	69.1	71.1	61.4	57.3	49.8	42.2	32.4	21.8	16.0	16.4	18.0	17.0	17.5	20.1	22.6	25.7	32.3	38.6	46.1	51.3	39.7	71.1																					
29-May	57.7	63.1	69.7	70.2	73.7	71.7	61.9	58.9	49.9	42.2	28.1	23.8	26.4	27.6	27.1	23.2	21.7	18.9	18.8	20.7	30.2	40.9	44.8	47.2	42.4	73.7																					
30-May	57.2	67.4	74.6	79.2	81.3	79.2	71.2	63.2	53.9	46.0	37.6	25.0	19.4	20.7	19.3	20.4	25.4	28.9	32.9	38.9	43.7	47.8	52.2	49.8	47.3	81.3																					
31-May	53.9	58.3	64.1	74.4	79.0	73.6	67.0	58.7	53.6	42.4	34.6	28.3	26.2	25.7	28.0	28.1	29.2	32.5	34.2	37.1	42.2	39.5	41.2	56.2	46.2	79.0																					
																						58.6	63.3	66.5	69.0	71.4	71.6	66.7	60.1	52.8	46.5	41.3	36.6	34.3	32.9	32.6	31.3	30.2	30.7	33.0	37.1	42.2	47.0	51.4	55.9	Diurnal Average	
																						89.8	93.3	95.6	96.6	96.7	96.6	95.2	86.7	76.7	76.1	73.8	70.3	82.7	89.8	86.8	83.2	78.4	73.5	77.7	85.3	84.7	84.9	84.1	91.3	Diurnal Maximum	





Wood Buffalo Environmental Association

Summary of Hour Averages

Precipitation (PC) - mm

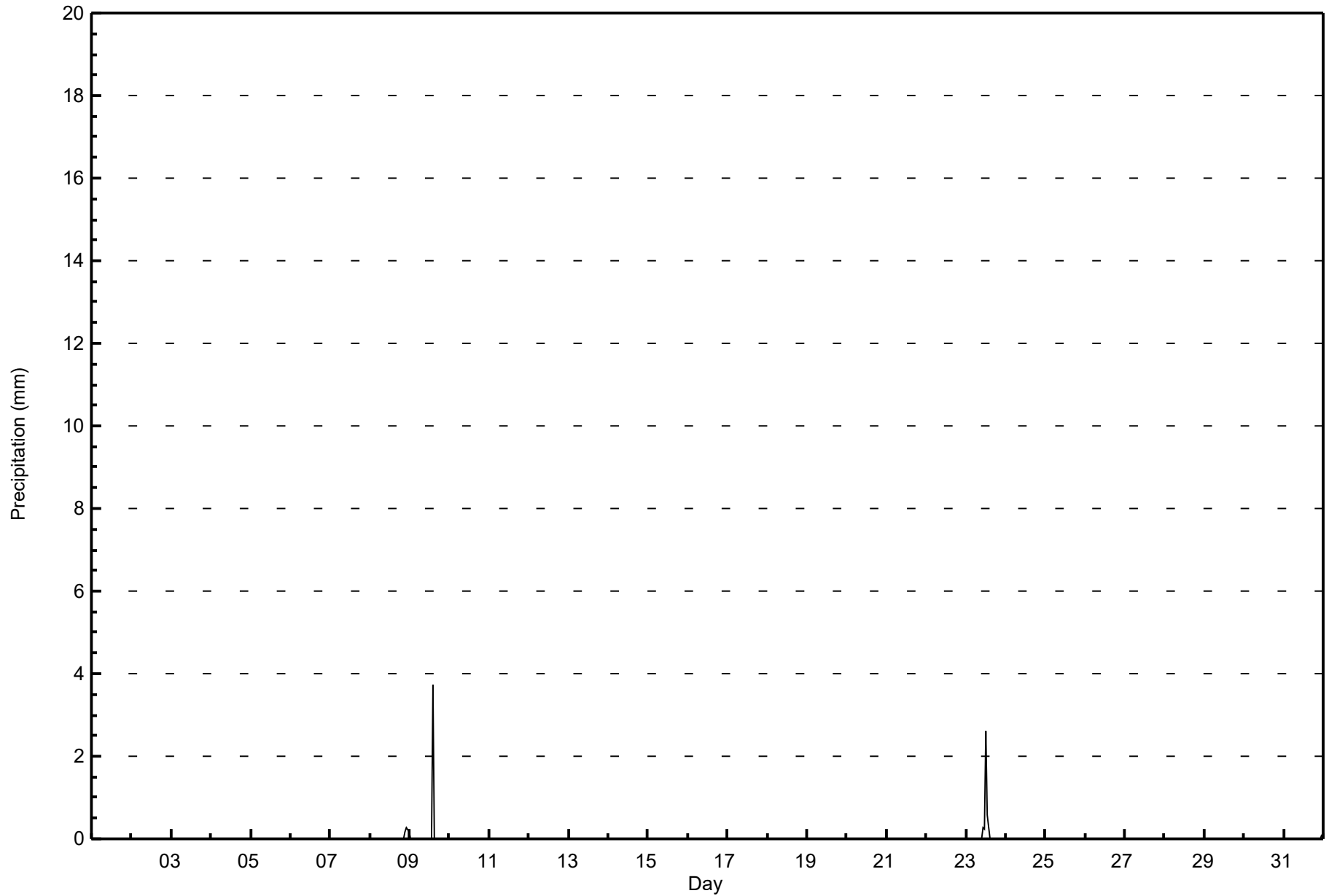
Fort McKay - Bertha Ganter - May 2023

Maximum Value: 3.7 mm on May 9 15:00		Maximum Daily Total: 3.7 mm on May 9		Hours in Service: 744																								
Minimum Value: 0.0 mm on May 1 01:00		Minimum Daily Total: 0.0 mm on May 1		Hours of Data: 744																								
Maximum Diurnal Total: 3.7 mm at hour 15		Minimum Diurnal Total: 0.0 mm at hour 1		Hours of Missing Data: 0																								
Monthly Total: 8.11 mm		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.1		Hours of Calibration: 0																								
				Percent Operational Time: 100.0																								
Day	Hourly Period Ending At (MST)																								Daily Total	Daily Maximum		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
1-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2	0.6	0.3	
9-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	2.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	2.6	0.6	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	Diurnal Average			
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	2.6	0.6	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2	Diurnal Maximum			



Wood Buffalo Environmental Association
Hourly Averages

Precipitation (PC) - mm
Fort McKay - Bertha Ganter - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Precipitation (PC) - mm
Fort McKay - Bertha Ganter - May 2023**

Concentration Ranges (mm)	Number of Hours	%	Cumulative %
0 - 0.3	741	99.60	99.60
0.4 - 0.5	0	0.00	99.60
0.6 - 0.7	1	0.13	99.73
0.8 - 1.4	0	0.00	99.73
1.5 - 10	2	0.27	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



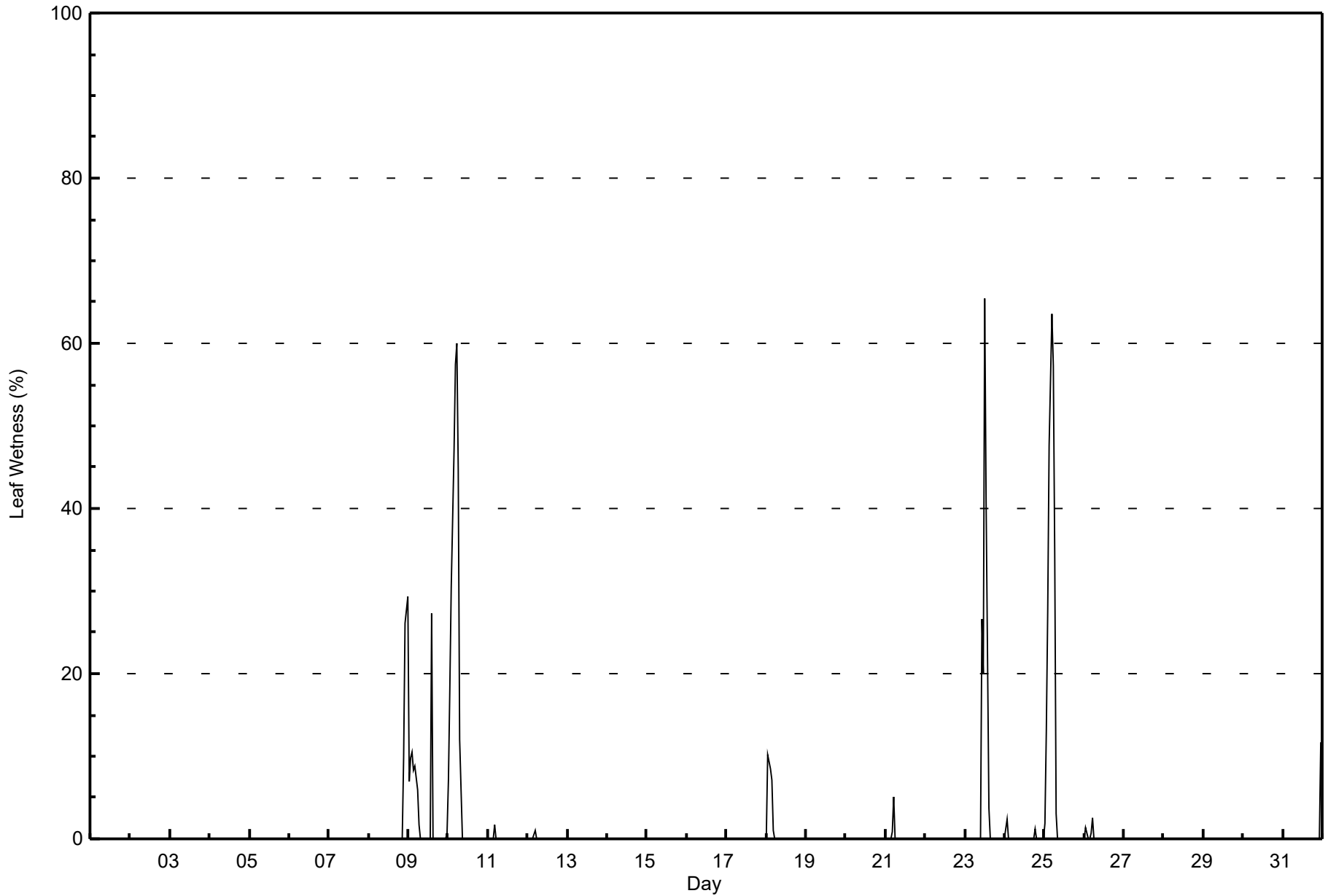
Wood Buffalo Environmental Association

Summary of Hour Averages

Leaf Wetness (LW) - %

Fort McKay - Bertha Ganter - May 2023

Maximum Value: 65.4 % on May 23 13:00		Maximum Daily Average: 11.6 % on May 10		Hours in Service: 744																													
Minimum Value: 0.0 % on May 1 01:00		Minimum Daily Average: 0.0 % on May 1		Hours of Data: 744																													
Maximum Diurnal Average: 4.4 % at hour 5		Minimum Diurnal Average: 0.0 % at hour 9		Hours of Missing Data: 0																													
Monthly Average: 1.19 %		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 43.0		Hours of Calibration: 0																													
				Percent Operational Time: 100.0																													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24									
1-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8	26.2	29.2	2.7	29.2	0.0	0.0	0.0	0.0	0.0
9-May	6.9	9.9	10.5	8.4	8.8	6.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	3.3	27.3
10-May	7.1	18.4	30.6	47.0	57.5	60.0	44.8	12.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.6	60.0
11-May	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.6
12-May	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
13-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18-May	0.0	10.1	8.5	7.2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	10.1	
19-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21-May	0.0	0.0	0.0	0.0	0.8	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	5.1	
22-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.5	20.0	65.4	40.7	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	65.4	
24-May	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.4	0.0	
25-May	1.9	13.0	27.6	47.6	63.5	57.3	34.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.4	63.5	0.0	
26-May	0.0	1.3	0.0	0.0	0.7	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.5	0.0	
27-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.7	0.5	11.7
		0.5	1.8	2.5	3.6	4.4	4.2	2.6	0.5	0.0	0.0	0.9	0.6	2.1	1.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	1.3	Diurnal Average							
		7.1	18.4	30.6	47.6	63.5	60.0	44.8	12.1	0.0	0.0	26.5	20.0	65.4	40.7	27.3	0.0	0.0	0.0	1.2	0.0	0.0	9.8	26.2	29.2	Diurnal Maximum							





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Leaf Wetness (LW) - %
Fort McKay - Bertha Ganter - May 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 0.3	697	93.68	93.68
0.4 - 0.5	0	0.00	93.68
0.6 - 0.7	2	0.27	93.95
0.8 - 1.4	5	0.67	94.62
1.5 - 10	17	2.28	96.91
> 10	23	3.09	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



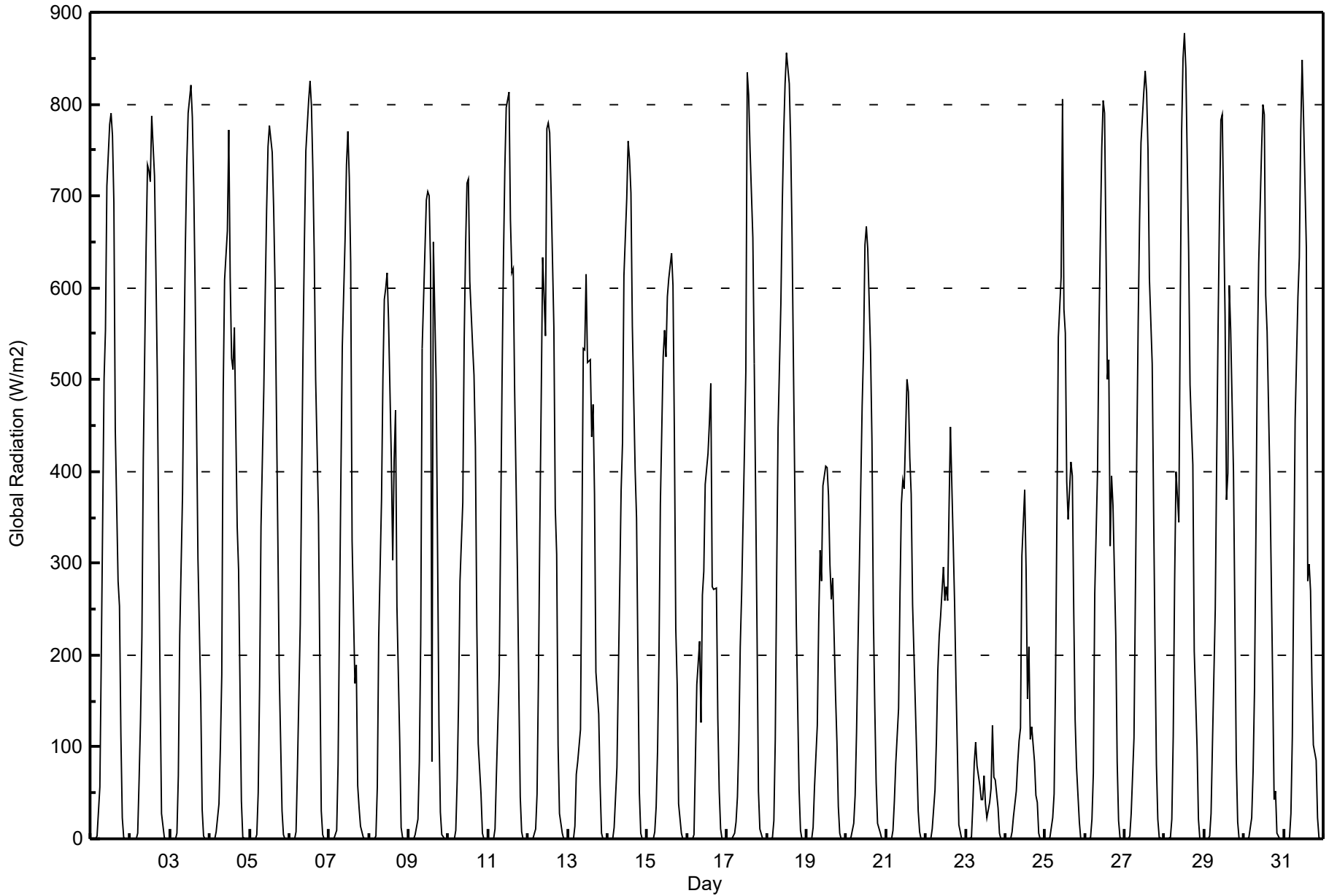
Wood Buffalo Environmental Association

Summary of Hour Averages

Global Radiation (GR) - W/m2

Fort McKay - Bertha Ganter - May 2023

Maximum Value: 876.5 W/m2 on May 28 13:00		Maximum Daily Average: 333.4 W/m2 on May 18		Hours in Service:	744																						
Minimum Value: 0.0 W/m2 on May 1 03:00		Minimum Daily Average: 40.3 W/m2 on May 23		Hours of Data:	744																						
Maximum Diurnal Average: 651.3 W/m2 at hour 13		Minimum Diurnal Average: 0.0 W/m2 at hour 23		Hours of Missing Data:	0																						
Monthly Average: 240.19 W/m2		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 107.1 Q ₃ = 452.4 P ₉₀ = 683.4 P ₉₉ = 824.2		Hours of Calibration:	0																						
				Percent Operational Time:	100.0																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.1	0.0	0.0	0.0	2.4	57.2	197.4	345.9	500.4	553.7	711.0	778.2	790.9	766.3	692.2	444.9	280.8	253.6	112.6	22.8	1.3	0.0	0.0	0.0	271.3	790.9	
2-May	0.0	0.0	0.0	0.0	5.5	64.3	128.7	219.3	414.4	643.4	733.0	728.1	716.1	787.8	721.2	617.1	503.5	328.1	164.0	27.7	1.4	0.0	0.0	0.0	283.5	787.8	
3-May	0.0	0.0	0.0	0.0	5.7	69.0	220.8	375.8	523.3	643.5	733.5	790.2	821.1	786.1	708.8	596.4	452.4	305.1	151.9	31.9	3.4	0.0	0.0	0.0	300.8	821.1	
4-May	0.0	0.0	0.0	0.0	7.6	38.2	99.7	177.8	483.1	609.0	662.6	772.3	611.6	522.6	510.6	556.0	340.7	293.3	168.4	41.0	1.9	0.0	0.0	0.0	245.7	772.3	
5-May	0.0	0.0	0.0	0.0	4.7	50.2	166.5	340.5	490.4	592.2	685.3	754.1	776.2	748.2	687.8	605.4	468.1	329.3	181.7	29.9	4.1	0.2	0.0	0.0	288.1	776.2	
6-May	0.1	0.2	0.2	0.2	8.1	76.8	233.4	391.7	536.0	652.7	748.7	803.5	825.4	797.4	729.0	634.4	499.8	351.7	189.4	30.1	4.6	0.1	0.1	0.2	313.1	825.4	
7-May	0.0	0.0	0.0	0.2	9.0	81.1	237.3	392.3	535.6	652.4	734.1	770.8	720.5	627.6	324.2	168.7	189.2	58.0	32.9	13.8	1.5	0.0	0.0	0.0	231.2	770.8	
8-May	0.0	0.0	0.0	0.0	3.6	56.2	219.3	369.7	501.7	587.8	599.7	616.9	565.6	413.9	303.4	412.3	466.3	253.1	104.6	12.5	1.7	0.0	0.0	0.0	228.7	616.9	
9-May	0.0	0.0	0.0	0.0	4.5	20.8	84.1	221.7	534.4	586.9	696.2	704.0	699.8	624.5	83.6	650.3	497.5	313.8	123.2	29.6	4.7	0.0	0.0	0.0	245.0	704.0	
10-May	0.0	0.0	0.0	0.0	9.6	63.8	150.4	280.9	365.9	543.0	645.4	714.1	717.9	607.1	536.8	504.4	427.2	233.9	103.6	49.3	5.9	0.0	0.0	0.0	248.3	717.9	
11-May	0.0	0.0	0.0	0.0	10.7	69.7	180.7	333.7	496.8	628.4	729.7	795.8	813.6	674.8	616.1	620.4	487.4	291.0	161.7	46.1	7.3	0.1	0.0	0.0	290.2	813.6	
12-May	0.0	0.0	0.0	0.0	11.2	49.5	175.5	340.1	485.2	633.2	547.4	773.6	779.9	768.3	705.7	557.4	360.6	309.8	101.9	26.8	6.1	0.1	0.0	0.1	276.4	779.9	
13-May	0.0	0.0	0.0	0.4	13.3	69.8	84.4	118.8	324.3	533.5	532.5	614.7	518.2	522.4	437.1	472.6	375.7	181.8	135.9	58.2	5.4	0.0	0.0	0.0	208.3	614.7	
14-May	0.0	0.0	0.0	0.3	12.4	77.7	175.3	276.5	380.5	431.3	613.0	697.8	759.2	740.3	702.9	558.5	401.5	348.9	194.6	50.0	6.7	0.0	0.0	0.0	267.8	759.2	
15-May	0.0	0.0	0.0	0.0	7.5	35.6	95.5	198.0	364.3	524.6	553.1	525.0	590.4	610.6	638.0	602.3	441.5	229.0	168.0	38.6	6.1	0.1	0.0	0.0	234.5	638.0	
16-May	0.0	0.0	0.0	0.0	4.6	84.9	167.2	214.5	125.9	264.7	290.9	385.9	419.1	452.5	496.0	275.1	271.1	273.7	130.7	52.3	10.9	0.0	0.0	0.0	163.3	496.0	
17-May	0.0	0.0	0.0	0.0	6.5	18.1	45.8	107.1	208.9	266.3	423.0	508.8	835.0	810.4	750.3	653.7	516.9	373.7	223.0	51.5	11.4	0.0	0.0	0.0	242.1	835.0	
18-May	0.0	0.1	0.2	1.1	19.7	108.3	287.5	447.6	582.9	691.1	767.2	822.2	855.3	822.6	757.9	655.0	511.9	372.2	234.4	53.8	9.4	0.0	0.0	0.0	333.4	855.3	
19-May	0.0	0.0	0.1	0.5	12.9	56.3	123.1	236.8	313.9	280.6	384.8	406.3	404.0	373.9	298.6	261.5	284.2	156.6	105.9	35.1	5.6	0.0	0.0	0.0	155.9	406.3	
20-May	0.0	0.0	0.0	2.2	17.1	46.5	116.0	207.2	294.2	471.5	533.1	646.6	667.1	642.7	531.5	433.2	245.9	145.4	61.4	16.7	6.3	0.0	0.0	0.0	211.9	667.1	
21-May	0.0	0.0	0.0	0.1	9.2	40.7	82.3	141.8	265.2	364.8	390.0	380.7	500.4	486.2	415.6	375.9	255.0	199.9	86.3	30.8	7.6	0.0	0.0	0.0	168.0	500.4	
22-May	0.0	0.0	0.0	0.2	10.2	53.0	107.1	183.1	221.5	243.2	296.0	259.0	274.0	259.9	357.8	448.2	322.3	255.2	166.8	93.2	15.9	0.3	0.0	0.0	148.6	448.2	
23-May	0.0	0.0	0.0	1.7	37.1	82.2	105.2	80.0	57.6	42.7	42.6	68.3	37.7	22.3	39.5	55.3	123.7	66.6	64.6	33.4	6.2	0.0	0.0	0.0	40.3	123.7	
24-May	0.0	0.0	0.0	0.5	7.4	23.7	51.5	82.1	106.5	120.8	308.1	379.6	292.3	152.6	209.7	108.7	122.5	84.3	48.0	39.6	6.7	0.0	0.0	0.0	89.3	379.6	
25-May	0.0	0.0	0.0	1.0	22.2	48.5	171.9	350.6	546.4	611.7	804.8	576.7	550.4	388.9	348.2	410.3	395.7	249.1	129.5	77.9	18.9	0.2	0.0	0.0	237.6	804.8	
26-May	0.0	0.0	0.0	1.3	21.8	72.1	266.5	401.4	551.6	657.1	751.8	803.4	790.8	499.6	521.8	319.2	395.6	362.6	221.9	84.1	20.6	1.3	0.0	0.0	281.0	803.4	
27-May	0.1	0.1	0.0	2.6	27.2	109.3	266.5	422.4	562.3	674.4	758.4	813.4	836.3	813.5	750.8	610.3	517.2	359.1	214.0	80.8	22.0	1.2	0.0	0.0	326.7	836.3	
28-May	0.0	0.0	0.0	1.9	21.2	111.7	280.2	399.7	344.3	573.7	769.8	849.7	876.5	838.9	640.7	495.0	448.2	407.7	203.8	101.2	21.0	0.6	0.0	0.0	307.7	876.5	
29-May	0.0	0.0	0.0	2.3	28.0	103.0	249.5	408.3	555.7	679.1	783.3	787.9	568.9	369.1	398.3	602.6	554.1	399.5	244.1	85.3	18.9	0.8	0.0	0.0	284.9	787.9	
30-May	0.0	0.0	0.0	2.1	22.2	73.4	162.2	329.5	518.0	627.7	747.8	799.7	789.1	592.3	552.1	390.5	280.1	167.4	43.5	51.1	5.5	0.1	0.0	0.0	256.4	799.7	
31-May	0.0	0.0	0.0	2.3	26.8	111.4	283.6	455.9	591.1	632.6	769.9	848.4	785.6	643.3	280.1	298.4	270.1	168.7	101.6	85.7	22.5	0.8	0.0	0.0	265.8	848.4	
		0.0	0.0	0.0	0.7	13.2	65.3	168.2	285.5	412.3	516.7	604.7	650.8	651.3	586.0	507.9	464.3	377.6	262.0	141.1	47.8	8.8	0.2	0.0	0.0	Diurnal Average	
		0.1	0.2	0.2	2.6	37.1	111.7	287.5	455.9	591.1	691.1	804.8	849.7	876.5	838.9	757.9	655.0	554.1	407.7	244.1	101.2	22.5	1.3	0.1	0.2	Diurnal Maximum	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Global Radiation (GR) - W/m2
Fort McKay - Bertha Ganter - May 2023

Concentration Ranges (W/m2)	Number of Hours	%	Cumulative %
0 - 20	271	36.42	36.42
21 - 100	91	12.23	48.66
101 - 300	119	15.99	64.65
301 - 600	147	19.76	84.41
601 - 900	116	15.59	100.00
> 900	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744

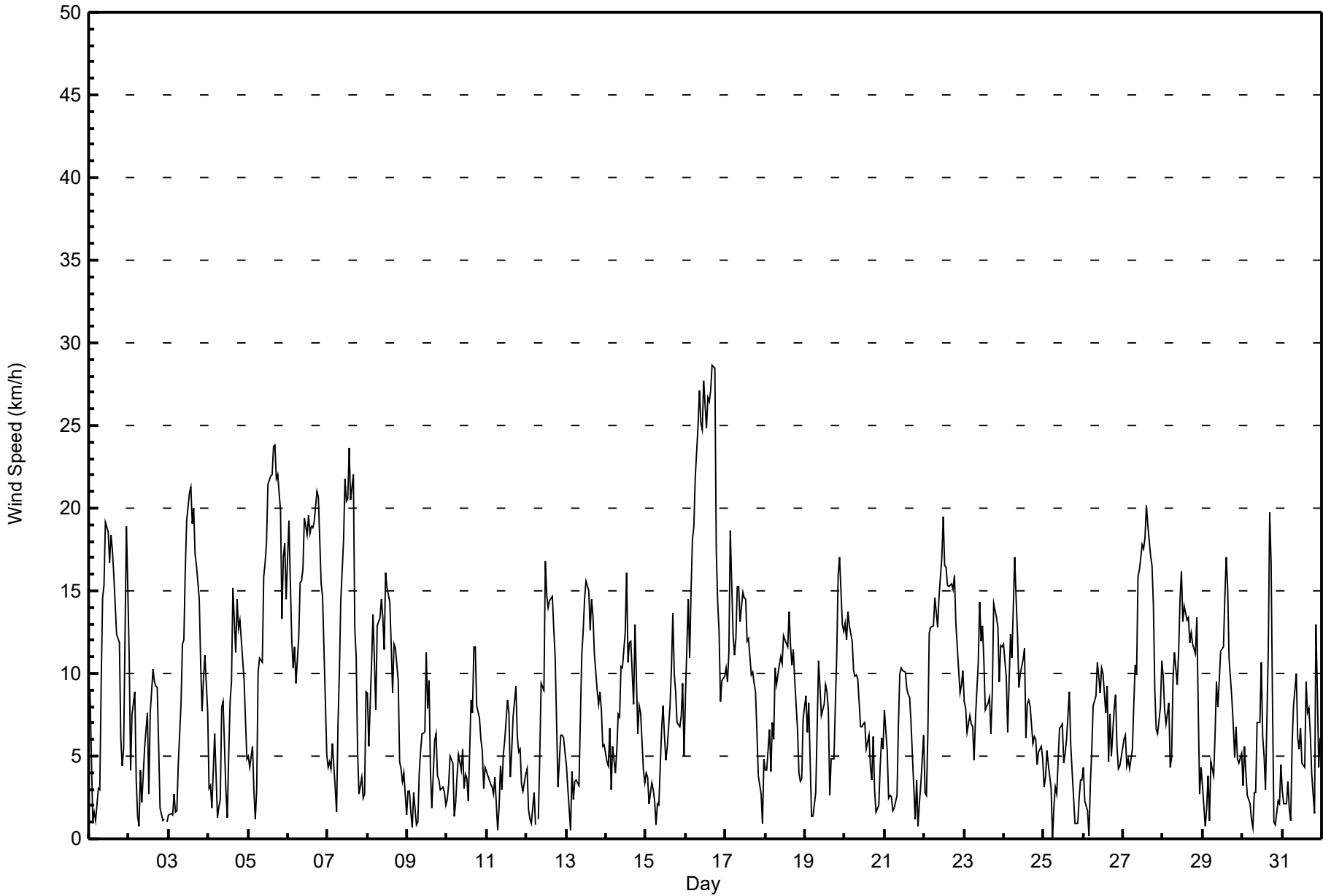


Maximum Speed: 29 km/h on May 16 17:00	Maximum Daily Speed Average: 19.1 km/h on May 16	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 25 06:00	Minimum Daily Speed Average: 0.8 km/h on May 19	Hours of Data: 742
Maximum Diurnal Speed Average: 7.1 km/h at hour 13	Minimum Diurnal Speed Average: 0.2 km/h at hour 5	Hours of Missing Data: 2
Monthly Average Velocity: 2.8 km/h 157.7 deg	Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 4 Median = 8 Q ₃ = 12 P ₉₀ = 16 P ₉₉ = 25	Percent Operational Time: 99.7

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SSE9	SSE5	WSW1	N2	NE1	SSE3	SSE3	SSE9	SSE15	SSE15	SSE19	SSE19	SSE17	S18	S17	S16	S12	SSW12	SSW12	SSW6	S4	WNW5	NNW19	N15	S7.0	SSE19
2-May	N11	NNW4	NW8	WNW9	WNW4	WNW1	NE1	SSE4	ENE2	ENE6	ESE7	E8	ENE3	NW8	NW10	NW9	NW9	WNW9	NW6	ENE2	SSE1	S1	UO	S1	NNW2.7	N11
3-May	S1	WNW1	SW1	SSW3	WSW2	SSW2	S4	SSE8	SSE12	SSE12	S16	S19	S21	SSE21	S19	S20	S17	S17	S14	S11	S8	SSE10	S11	SSE8	S10.5	SSE21
4-May	SE3	N3	NNW2	SSE4	S6	WSW1	S2	ESE2	SSE8	SSE8	SE3	NE1	ENE5	N8	NNE9	N15	NNE11	NNE14	NNE13	NNE13	NNE12	NNE10	NNE7	NNE5	NNE4.1	N15
5-May	N5	NNE4	NNE6	NNW3	E1	SE3	S10	SSE11	SSE11	SSE16	SSE17	SSE18	SSE21	SE22	SSE22	SSE24	SE24	SE22	SE22	SE20	SE20	SE13	SE17	SE18	SE15.3	SE21
6-May	SSE19	SSE15	SSE12	SE10	SSE12	SE9	SSE12	SSE16	SSE16	SSE16	SSE19	S18	SSE20	SE18	SE19	SE19	SE19	SE21	SE21	SE18	SE15	SE15	SE8	SE5	SSE15.3	SE21
7-May	ESE4	SE5	SSE4	SSE6	ESE3	SSE2	SE7	SSE10	SSE14	SSE18	SSE22	SSE20	SSE21	SE24	SSE21	SSE22	S13	SSE11	SSE5	NNE3	N4	ENE2	SE3	SSE9	SSE9.7	SE24
8-May	S9	S6	SSE11	SSE14	SSE11	SSE8	SSE13	SSE13	SSE14	SSE13	SSE11	SSE16	SSE15	SSE14	S12	SSW9	S12	S12	W10	WNW5	WSW4	SSW3	SW4	S1	S8.7	SSE16
9-May	SSW3	NW3	WSW2	S1	W3	SSW1	S1	SSE4	SSE5	SE6	SSE6	SE11	SSE8	SSE10	WNW4	NW2	SE6	SE6	ESE4	S4	SW3	SW3	S3	S2	SSE3.0	SE11
10-May	S2	S3	S5	S5	S1	SSW2	SSE4	SSE5	SE4	SE5	SSE3	NE4	ENE4	S2	W8	NNW8	N12	NNE12	NNE8	NNE7	N6	N5	NW3	WNW4	NNE1.0	NNE12
11-May	WNW4	WNW4	WNW3	WNW3	WSW3	WNW4	SSW0	N2	SE4	ESE3	ENE5	SSE6	SSE8	SSE8	SSE4	NE5	ESE7	ESE9	SE6	S5	S5	SSW3	S3	S4	SSE2.1	ESE9
12-May	S4	S2	SSE1	WSW1	SW3	S1	UO	SSW1	SE5	SSE9	SE9	SSE17	SSE15	SSE14	SSE14	SSE15	SSE13	SSE11	S7	S3	S6	S6	SSE6	SSE5	SSE7.2	SSE17
13-May	SSE5	SSE3	SSW0	SSE4	S2	S4	SSW4	S3	SSE7	SSE11	SSE13	S14	S16	S15	SSW13	S15	S13	S11	SSE9	SSE8	SSE9	S8	SSW6	SSW6	S7.9	S16
14-May	SSW5	SSW4	S7	S3	S6	S4	S5	S8	SSE7	SSE10	SSE10	SSE12	SSE16	S11	SSW12	SSW12	SW8	NNW13	N10	N6	N8	N8	NW4	W3	S3.6	SSE16
15-May	WNW4	NW4	WSW2	WNW3	NNW3	WNW2	WNW1	N2	E2	SE7	SSE8	SSE6	SSE5	S5	SSE8	SSE10	S14	S10	S9	S7	SSW7	SSW7	NW9	NNW5	S3.2	S14
16-May	NNW9	NNW14	NNW11	NNW15	NW18	NW19	NNW22	NW25	NNW27	NW25	NW25	NW28	NW25	NNW27	NW26	NW27	NNW29	NNW28	N17	N14	N13	N8	N10	NNW10	NNW19.1	NNW29
17-May	NW10	NNW9	N11	N19	N12	NNE11	NNE12	NNE15	N15	NNE13	N15	N15	NNE14	NNE12	NNE12	NE10	NE10	NE9	NNE9	ENE7	ENE4	N3	SSW1	SSE5	NNE9.5	N19
18-May	SSE4	SSE4	S7	S4	S7	S6	S10	S9	SSE10	S11	S11	SSE12	S12	SSE12	SSE14	SSE12	SSE10	SSE11	SSE10	S7	S4	S3	S4	SSW7	S8.3	SSE14
19-May	SSW9	SSE6	S8	SSW5	N1	SW1	SW3	S7	S11	S9	SSW7	SSW8	S9	S9	S8	W3	NNW5	NNW5	NNW8	N11	N16	N17	N13	N13	WSW0.8	N17
20-May	N13	N12	N14	N13	N12	N10	N10	N10	N10	NNE7	NE7	NE7	NE7	NE5	N6	NE4	N4	N6	N3	N2	SSE2	SE4	SSE6	SSE5	N5.9	N14
21-May	SSE8	SSE5	NNW2	WNW3	NW3	NNW2	N2	SSE3	SSE7	SSE10	SSE10	SSE10	SSE10	SSE9	SSE9	SSE9	SSE7	SE5	NNW1	NNW4	SW1	SE2	WNW3	N6	SSE3.3	SSE10
22-May	NNE3	NNW3	NNW6	N12	N13	N13	N15	NNE14	NNE13	N15	N17	NNE19	NNE16	NNE16	NNE15	NNE15	NNE15	NNE15	NNE16	NNE13	ENE12	ENE9	NE9	NE10	NNE12.1	NNE19
23-May	NE8	ENE8	NE6	NE7	NE7	NE5	E7	ESE11	ESE14	ESE12	ESE13	SE11	ESE8	ESE8	ESE9	ESE6	SE9	SE14	SE13	SE13	SE9	SE12	SE12	ESE7.9	ESE14	
24-May	SSE12	SE10	SE6	SE9	SE12	SE11	SSE17	SSE15	S12	S9	S10	SSE11	SSE12	SSW6	W8	W8	WSW8	WSW6	WSW6	WSW4	WSW5	WSW6	WSW5	WSW5	S5.8	SSE17
25-May	WNW3	WNW4	WNW5	NW4	NW3	WSW0	WSW2	SW3	S3	SE7	ENE7	ENE7	ENE5	ENE5	NE6	N9	NNE6	E4	NE3	ENE1	S1	SE2	SSE4	SSE4	NE1.3	N9
26-May	SE4	SSE2	SSE2	SSE0	S3	S5	SSE8	SSE9	SE11	SE10	SE9	SE10	SSE10	SE8	SE9	ESE5	SSE8	SE5	SSE8	SSE9	S6	SSE4	S4	S5	SSE6.2	SE11
27-May	S6	S6	SSW4	SSW5	S4	S5	SSE8	SSE11	S10	S16	S16	S18	S18	S18	SSE20	SSE19	S17	SSE16	S14	S9	S7	SSE6	S8	S11	S11.3	SSE20
28-May	S10	S8	S7	S8	S4	SSE5	SSE10	SSE11	S9	S11	SSW14	SSW16	SW13	SW14	WSW13	SW13	WSW12	W12	W12	WNW11	NW13	WNW8	W3	WNW4	SW7.2	SSW16
29-May	WNW3	WNW1	SSW2	WNW4	S1	S5	S4	SSE6	SE9	SSE8	WSW10	WSW11	SW12	SW15	SW17	SSW15	SW11	WSW9	SW7	WSW5	NW7	NNW5	NNW5	N5	SW4.9	SW17
30-May	WNW3	WNW6	W4	WSW3	WNW2	S1	NW1	SSE3	ESE3	SE7	SE7	SE11	SSE6	SSE5	W3	NW11	NW20	NW17	NNW8	ENE1	NW1	N2	S2	NW5	WNW1.8	NW20
31-May	WSW3	WNW2	WNW2	SSW3	SSW2	SSW1	SSE6	SE8	SE10	SE6	ESE5	E7	ESE5	SE4	S10	SSW8	S8	S6	S4	E2	NNW13	N9	NNW4	NW6	SSE1.9	NNW13

S1.6	S0.6	SW0.4	W0.5	SW0.2	SSE0.5	SSE2.3	SSE3.8	SSE5.2	SSE6.7	SSE6.3	SSE7.1	SSE7.1	SSE6.2	S5.1	S4.0	S3.3	SSE2.3	SE1.9	SE1.5	E0.7	ESE1.0	S0.5	S0.6		Diurnal Average
SSE19	SSE15	N14	N19	NW18	NW19	NNW22	NW25	NNW27	NW25	NW25	NW28	NW25	NNW27	NW26	NW27	NNW29	NNW28	SE22	SE20	N16	N17	NNW19	N15		Diurnal Maximum

UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed (WS) - km/h
Fort McKay - Bertha Ganter - May 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	266	35.85	35.85
6 - 11	268	36.12	71.97
12 - 19	174	23.45	95.42
20 - 28	33	4.45	99.87
29 - 38	1	0.13	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 742

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Fort McKay - Bertha Ganter - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	15	4	9	12	4	9	15	39	52	21	9	13	6	32	11	15	266
6 - 11	20	11	14	6	3	8	30	72	53	12	3	7	4	7	10	8	268
12 - 19	25	22	0	1	0	3	16	51	27	9	6	2	2	0	4	6	174
20 - 28	0	0	0	0	0	0	8	11	2	0	0	0	0	0	8	4	33
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	60	37	23	19	7	20	69	173	134	42	18	22	12	39	33	34	742

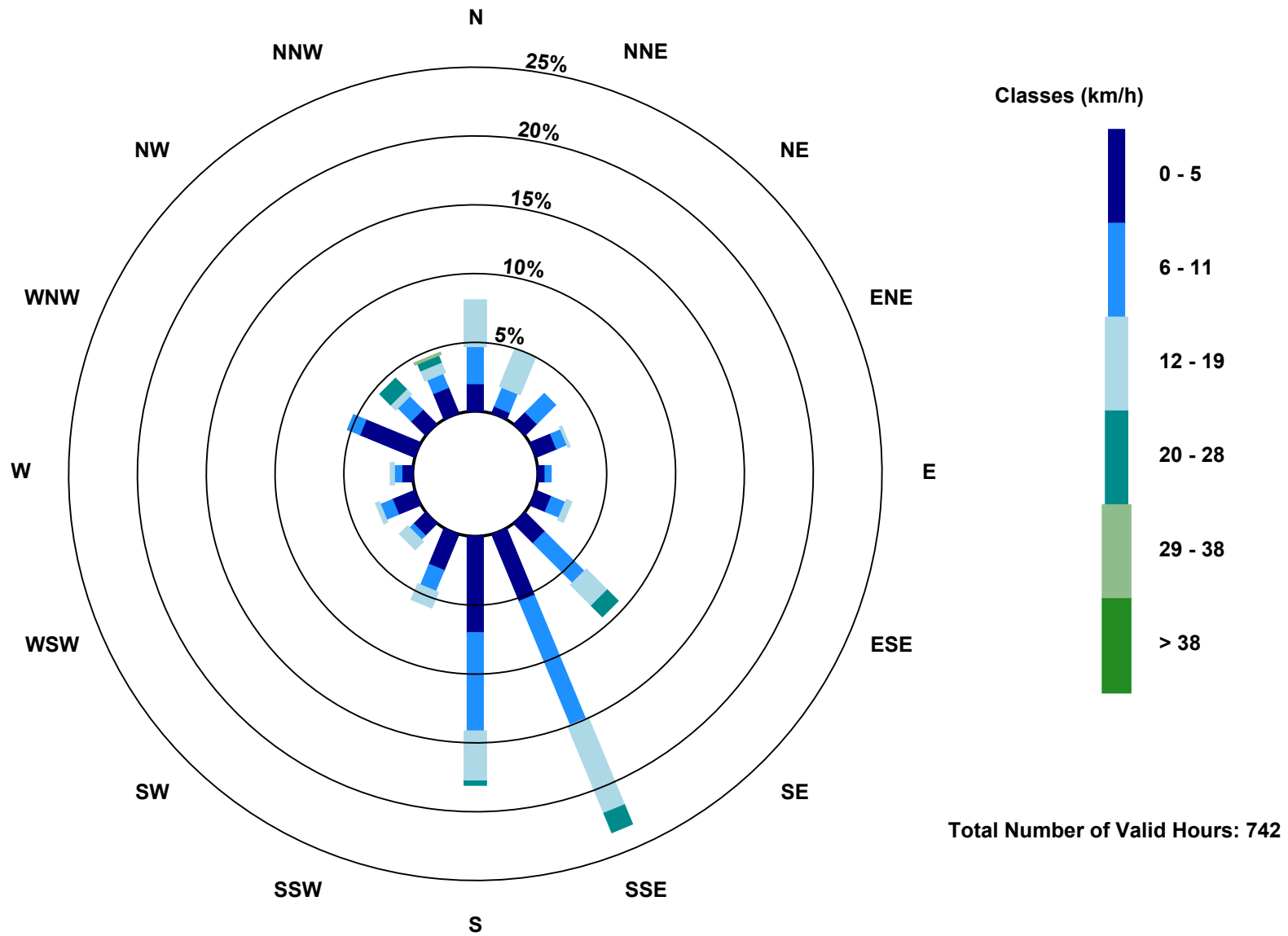
Total Number of Valid Hours: 742

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Fort McKay - Bertha Ganter





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Fort McKay - Bertha Ganter - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 9 km/h on May 16 18:00														Hours in Service: 744 Hours of Data: 742 Hours of Missing Data: 2 Hours of Calibration: 0 Percent Operational Time: 99.7												
Minimum Value: 1 km/h on May 18 22:00																										
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 2 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7																										
Day	Hourly Period Ending At (MST)																								Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	2	1	2	1	1	2	1	3	3	3	4	4	4	5	5	5	4	4	4	2	1	6	6	3	6	
2-May	2	4	3	2	2	2	1	1	2	2	2	3	4	5	5	5	5	4	3	1	1	2	UO	1	5	
3-May	1	2	2	1	2	1	2	2	2	3	5	6	5	6	5	5	5	4	4	3	1	2	2	2	6	
4-May	1	1	2	2	1	2	3	4	4	3	2	2	2	3	4	5	4	5	4	3	3	3	2	1	5	
5-May	2	2	1	2	1	1	3	2	3	4	3	5	5	6	5	6	6	5	5	5	3	3	5	4	3	6
6-May	4	3	3	2	2	2	3	3	3	3	4	6	5	5	5	5	5	5	5	5	3	3	3	2	6	
7-May	2	1	1	1	2	2	2	2	3	5	5	5	6	5	5	6	5	4	3	1	2	1	2	3	6	
8-May	3	2	3	3	3	2	3	3	3	2	3	4	5	4	4	3	4	3	5	4	2	2	2	2	5	
9-May	2	1	2	1	1	1	1	1	2	2	2	3	4	5	6	2	2	2	2	1	3	2	1	2	6	
10-May	2	1	2	1	1	1	2	2	1	2	2	2	2	4	3	4	4	4	3	2	1	3	1	1	4	
11-May	1	2	1	1	1	2	1	1	2	2	2	3	3	3	2	2	3	3	3	1	1	2	1	2	3	
12-May	2	2	1	1	2	1	UO	1	2	3	2	4	5	5	5	4	4	3	2	1	1	1	1	1	5	
13-May	1	1	1	1	1	1	1	1	2	2	3	4	4	5	4	4	4	3	2	1	2	2	2	2	5	
14-May	1	1	1	2	3	2	1	2	3	2	3	3	3	5	5	4	4	3	2	2	2	4	3	1	5	
15-May	1	1	1	2	2	2	1	1	1	3	2	3	2	2	4	3	4	4	3	1	1	2	5	2	5	
16-May	4	3	2	4	6	5	6	6	7	7	8	7	7	7	7	7	8	9	5	4	5	2	3	2	9	
17-May	2	3	3	6	5	4	5	5	5	4	5	5	4	5	5	4	4	4	3	3	1	1	1	2	6	
18-May	1	1	1	2	2	2	2	3	3	3	4	4	4	4	4	4	4	3	2	2	1	1	1	2	4	
19-May	3	2	2	1	1	1	1	2	4	3	2	3	3	2	2	1	2	1	2	2	4	4	3	2	4	
20-May	2	3	3	2	2	2	2	3	2	2	2	3	3	3	3	2	2	1	2	1	1	2	2	2	3	
21-May	2	2	1	1	2	1	1	1	2	2	2	2	2	2	2	2	2	1	1	3	2	2	1	2	3	
22-May	2	1	2	2	2	3	4	4	4	4	6	6	6	5	6	5	5	5	5	5	5	4	4	4	6	
23-May	4	4	3	3	3	3	2	3	3	4	4	4	3	3	4	2	2	3	4	3	3	2	3	3	4	
24-May	3	3	2	3	3	3	4	4	4	2	2	3	3	2	3	3	3	3	3	2	2	2	2	2	4	
25-May	1	1	1	2	1	1	1	2	2	2	3	3	2	2	3	3	3	2	1	1	2	1	1	1	3	
26-May	2	2	1	1	2	1	2	2	2	2	2	3	4	3	3	2	2	2	2	2	1	1	1	1	4	
27-May	1	1	1	1	1	1	2	2	3	6	5	6	5	5	5	4	5	4	4	2	1	1	1	2	6	
28-May	2	2	2	2	2	3	2	2	3	3	5	6	6	6	7	6	6	6	5	6	3	4	1	2	7	
29-May	1	1	1	2	1	2	2	1	3	3	5	5	6	7	8	7	5	4	3	2	3	2	2	2	8	
30-May	1	1	1	1	1	1	1	1	1	2	2	3	4	3	3	5	5	4	5	1	1	2	3	2	5	
31-May	2	1	2	1	2	2	2	2	2	3	3	2	2	3	3	2	2	2	1	1	5	3	3	2	5	
														Diurnal Maximum												
UO - Unstable Operation																										



Wood Buffalo Environmental Association
Summary of Hour Averages

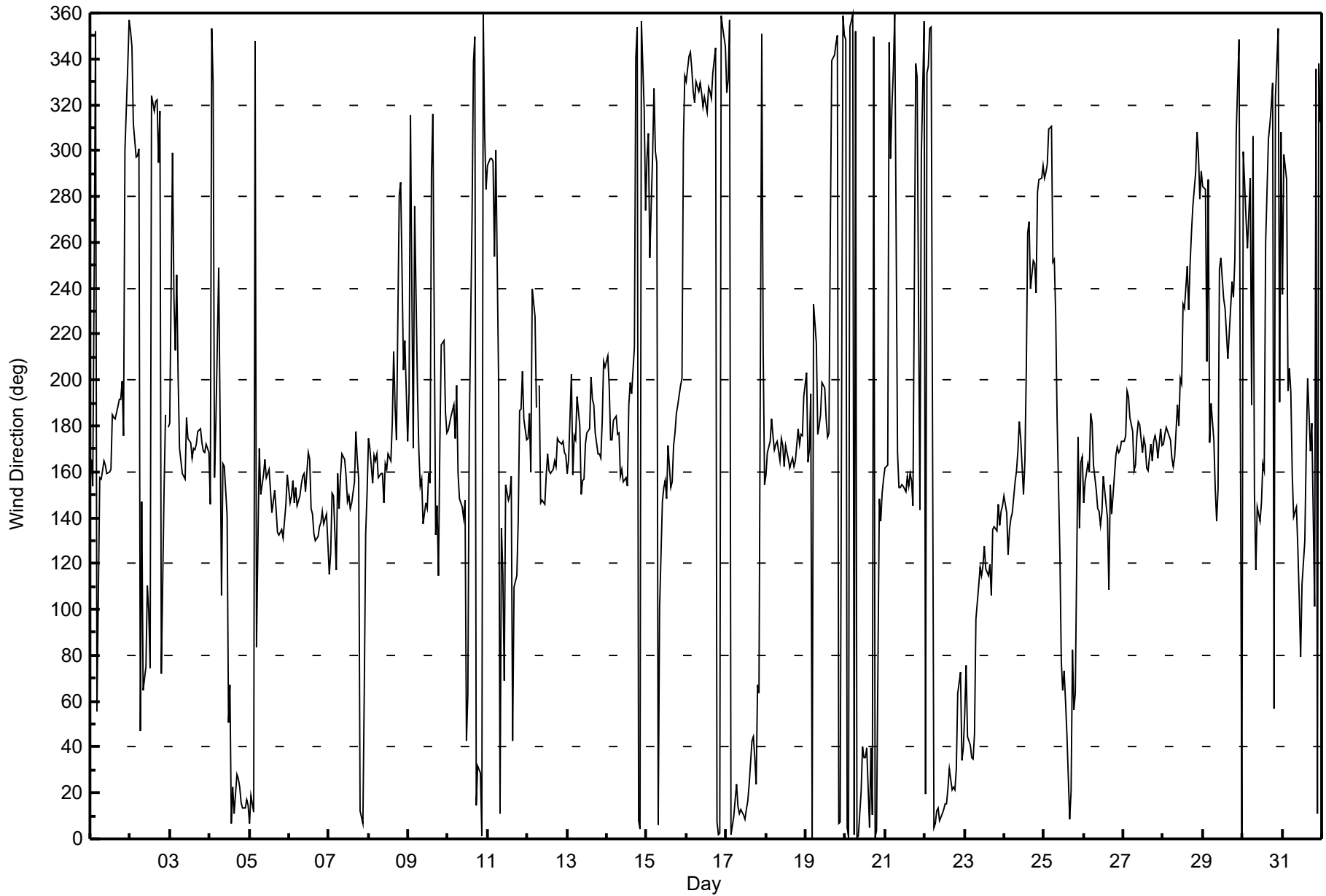
Wind Direction (WD) - deg
Fort McKay - Bertha Ganter - May 2023

Direction of Maximum Speed: 334 deg on May 16 17:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 332.9 deg on May 16	Hours of Data: 742
Direction of Minimum Speed: 251 deg on May 25 06:00	Hours of Missing Data: 2
Direction of Minimum Daily Speed Average: 0.8 deg on May 19	Percent Operational Time: 99.7
Monthly Average Direction: 157.7 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	165	154	245	352	56	158	157	160	165	163	159	160	161	185	184	183	189	192	192	199	176	300	337	357	176.0
2-May	352	345	312	297	298	301	47	147	65	75	110	99	74	324	317	321	322	295	318	72	153	185	UO	179	334.5
3-May	181	299	235	213	246	202	171	159	158	157	183	174	173	166	170	169	172	178	179	172	169	168	172	168	172.3
4-May	146	353	329	157	183	249	182	106	164	162	141	51	67	7	23	11	28	26	22	16	14	13	17	15	30.8
5-May	7	19	12	348	84	129	170	150	159	165	157	159	161	142	147	152	144	134	132	135	131	138	146	158	145.2
6-May	147	150	156	146	153	145	150	154	158	159	152	169	166	144	142	133	130	132	136	138	143	137	141	129	146.3
7-May	115	124	151	149	117	160	144	158	168	165	158	147	149	144	147	156	177	166	157	12	7	65	133	151	151.6
8-May	174	170	155	167	165	168	158	159	159	147	163	161	168	165	181	212	188	174	281	286	247	204	218	173	173.2
9-May	195	315	239	170	276	197	169	154	157	137	147	144	159	155	289	316	133	145	115	172	215	217	186	177	162.8
10-May	178	181	184	189	174	198	159	148	145	139	148	43	63	177	271	339	349	15	32	29	1	359	308	283	16.8
11-May	293	296	297	295	254	300	198	11	136	116	69	154	148	150	158	43	110	115	139	186	187	204	183	174	150.5
12-May	175	186	160	240	227	188	UO	198	146	148	146	159	168	160	159	161	165	162	175	173	172	173	168	167	163.8
13-May	160	165	203	158	176	174	193	180	150	156	157	172	177	179	201	191	189	177	168	168	166	182	208	206	176.7
14-May	210	197	174	174	183	184	176	177	158	161	155	157	154	189	199	194	214	340	354	8	5	356	318	274	182.4
15-May	297	308	253	298	327	300	295	6	100	147	153	156	148	171	153	156	172	177	186	189	198	201	304	333	185.2
16-May	330	341	343	335	326	321	330	326	330	325	319	323	317	328	326	323	334	345	7	2	2	359	354	345	332.9
17-May	325	331	357	2	10	17	24	14	11	13	10	9	13	16	24	43	45	36	24	67	63	351	213	154	14.9
18-May	159	168	173	183	176	170	172	174	164	174	171	163	171	166	162	164	166	162	165	179	172	177	176	193	169.5
19-May	203	164	170	194	0	233	216	176	180	185	199	196	183	175	177	266	339	342	346	350	7	7	359	351	239.0
20-May	349	5	0	354	359	2	352	1	1	21	40	35	35	39	5	40	11	350	1	3	148	138	150	157	11.0
21-May	162	163	347	297	319	335	360	168	153	153	155	154	152	158	154	159	156	145	338	332	233	143	298	356	156.6
22-May	20	334	337	353	354	5	7	12	14	8	11	13	15	15	22	30	22	22	21	30	63	73	34	39	17.8
23-May	54	76	44	41	36	35	46	96	111	118	115	119	127	118	115	120	106	135	136	134	146	137	143	145	112.4
24-May	150	142	124	135	140	142	156	160	169	182	174	150	165	204	264	240	252	251	238	282	288	288	288	293	179.8
25-May	288	291	294	309	310	251	253	228	183	124	78	65	73	60	46	8	21	82	56	63	175	136	164	166	50.9
26-May	146	156	164	160	186	181	163	152	144	143	137	142	158	146	140	108	154	142	159	167	171	168	170	173	153.1
27-May	174	176	195	193	183	178	160	163	176	182	181	169	175	171	162	161	172	165	173	176	172	166	179	172	171.8
28-May	172	177	179	176	174	166	162	167	189	180	201	199	233	231	250	231	250	264	276	290	308	299	279	291	222.3
29-May	285	283	208	288	173	190	174	153	139	152	248	253	236	231	220	209	220	243	236	253	308	329	348	1	229.0
30-May	300	286	270	258	288	189	306	151	117	144	139	146	163	160	260	305	311	319	329	57	324	353	191	308	285.3
31-May	237	298	287	195	205	195	159	140	144	127	105	79	111	130	170	201	185	169	181	101	336	11	338	313	153.0

174.6 169.2 227.2 278.8 233.5 160.7 152.6 149.3 150.8 151.1 153.7 152.9 160.7 162.7 173.0 171.8 172.7 148.9 142.5 128.9 100.2 117.0 189.1 172.4
 Diurnal Average

UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Fort McKay - Bertha Ganter - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0																			Hours in Service: 744						
Maximum Value: 101 deg on May 14 04:00																			Hours of Data: 742						
Minimum Value: 9 deg on May 13 21:00																			Hours of Missing Data: 2						
Percentiles: P ₁ = 11 P ₁₀ = 14 Q ₁ = 17 Median = 24 Q ₃ = 42 P ₉₀ = 62 P ₉₉ = 95																			Hours of Calibration: 0						
Percent Operational Time: 99.7																									
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	13	16	74	40	48	64	61	18	14	15	14	15	22	24	26	22	26	22	19	24	16	56	15	17	74
2-May	19	39	17	11	65	71	94	19	66	45	41	43	96	68	48	45	48	33	52	73	64	86	UO	65	96
3-May	65	53	97	41	59	49	55	14	13	15	26	23	19	16	21	19	18	18	16	11	12	11	11	11	97
4-May	52	45	48	32	12	85	96	81	26	32	84	97	57	30	29	19	23	21	21	16	17	16	16	18	97
5-May	40	29	14	51	73	42	14	14	21	15	15	17	18	20	17	16	16	15	15	13	12	12	12	15	73
6-May	12	13	13	12	13	14	14	13	16	17	18	22	17	22	16	20	18	19	14	12	12	12	17	19	22
7-May	20	20	20	14	28	82	16	17	17	17	16	17	21	16	15	15	22	21	38	31	25	45	52	14	82
8-May	27	19	21	16	17	13	14	14	14	15	20	17	20	21	26	40	29	20	49	63	55	59	53	86	86
9-May	62	20	82	81	33	78	75	25	48	34	32	21	63	51	88	78	47	27	38	16	76	58	44	73	88
10-May	55	28	14	10	69	24	24	24	26	20	71	60	83	88	46	47	25	21	28	25	17	23	37	14	88
11-May	20	25	27	23	40	42	97	43	29	87	53	57	28	38	72	56	50	22	30	15	17	55	57	34	97
12-May	28	68	58	52	47	59	UO	80	61	17	15	20	27	27	23	21	20	17	22	38	15	11	11	10	80
13-May	15	47	81	10	34	24	23	24	15	16	15	20	18	25	30	26	24	17	12	10	9	21	26	21	81
14-May	32	28	17	101	37	33	15	15	25	12	17	18	14	51	39	36	63	20	18	15	22	63	43	101	
15-May	21	23	47	48	41	88	83	41	64	32	19	32	38	28	36	18	20	21	22	15	18	19	38	32	88
16-May	16	14	14	12	13	15	18	16	16	19	19	18	20	20	21	17	16	21	18	17	18	14	15	16	21
17-May	11	16	17	19	22	22	30	21	22	27	25	27	25	35	37	44	42	37	29	41	35	31	80	16	80
18-May	16	15	14	20	17	17	17	28	27	30	33	29	31	33	28	28	26	20	17	16	12	22	14	30	33
19-May	32	24	16	25	81	68	34	15	20	23	36	31	25	21	22	75	35	24	23	13	18	17	15	13	81
20-May	13	16	15	14	14	15	15	20	19	33	37	41	43	54	49	50	48	17	26	62	58	31	17	15	62
21-May	12	17	42	24	22	25	29	32	17	15	16	15	17	17	17	17	15	14	80	49	98	69	46	17	98
22-May	33	20	22	14	13	16	16	20	22	18	20	20	23	22	28	29	26	26	24	30	46	40	40	37	46
23-May	41	32	42	40	42	36	41	29	22	18	19	19	18	20	23	18	27	19	15	15	14	14	13	16	42
24-May	15	15	20	14	13	15	14	16	18	20	23	19	23	43	48	47	54	57	44	54	34	32	28	28	57
25-May	35	18	23	34	41	77	77	56	85	33	48	42	60	46	41	29	47	38	29	43	90	36	21	20	90
26-May	42	61	59	87	68	13	18	15	14	19	17	24	39	39	22	50	20	26	18	11	10	16	14	17	87
27-May	10	15	16	16	15	18	16	15	29	25	23	23	28	22	18	16	20	16	16	14	13	13	13	12	29
28-May	12	14	15	16	28	55	14	18	26	22	35	31	50	47	55	49	50	47	44	38	14	16	27	32	55
29-May	50	89	60	49	92	30	37	20	18	35	52	54	52	45	39	38	49	52	56	51	25	40	28	32	92
30-May	23	13	16	42	43	56	100	61	58	20	28	22	78	71	84	40	14	16	58	50	86	50	71	35	100
31-May	66	49	52	28	61	88	39	16	14	75	62	46	68	79	20	27	24	18	21	51	24	19	45	32	88
Diurnal Maximum																									
UO - Unstable Operation																									



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS02 MILDRED LAKE MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILDRED LAKE (AMS02)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	708	35	36	99.87	56.3	0	9.6	0
H2S (ppb) Average	708	35	36	99.87	7.5	0	1.3	0
THC (ppm) Average	704	35	40	99.33	4	-	2.4	-
NMHC(ppm) Average	704	35	40	99.33	0.529	-	0.128	-
CH4(ppm) Average	704	35	40	99.33	3.7	-	2.2	-
Temperature (C) Average	743	0	1	99.87	31.4	-	23.3	-
Relative Humidity (%) Average	743	0	1	99.87	94.6	-	75.4	-
Wind Speed 10 m (km/h) Average	743	0	1	99.87	30	-	19	-
Wind Direction 10 m (deg) Average	743	0	1	99.87	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILDRED LAKE (AMS02)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	708	2.88	6.1	-	0	0.1	0.2	0.5	2.5	7.8	56.3
H2S (ppb) Average	708	0.49	0.8	-	0	0	0.1	0.2	0.6	1.2	7.5
THC (ppm) Average	704	2.09	0.3	-	1.9	1.9	1.9	2	2.1	2.4	4
NMHC(ppm) Average	704	0.045	0.069	-	0	0	0	0	0.1	0.1	0.529
CH4(ppm) Average	704	2.05	0.2	-	1.9	1.9	1.9	2	2.1	2.2	3.7
Temperature 2 m (C) Average	743	17.23	5.9	-	4.1	9.9	12.7	16.8	21.8	25.6	31.4
Relative Humidity (%) Average	743	47.26	18.8	-	15.8	23.5	32.1	44.7	60.7	74.7	94.6
Wind Speed 10 m (km/h) Average	743	10.2	5	-	0	4	6	9	14	18	30
Wind Direction 10 m (deg) Average	743	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILDRED LAKE (AMS02)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
All paramerters	23 May 2023 08:00	23 May 2023 08:00	1	DAS Failure - data not recorded
THC/NMHC/CH4	30 May 2023 11:00	30 May 2023 14:00	4	Maintenance - zero air generator replaced



Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO₂) - ppb

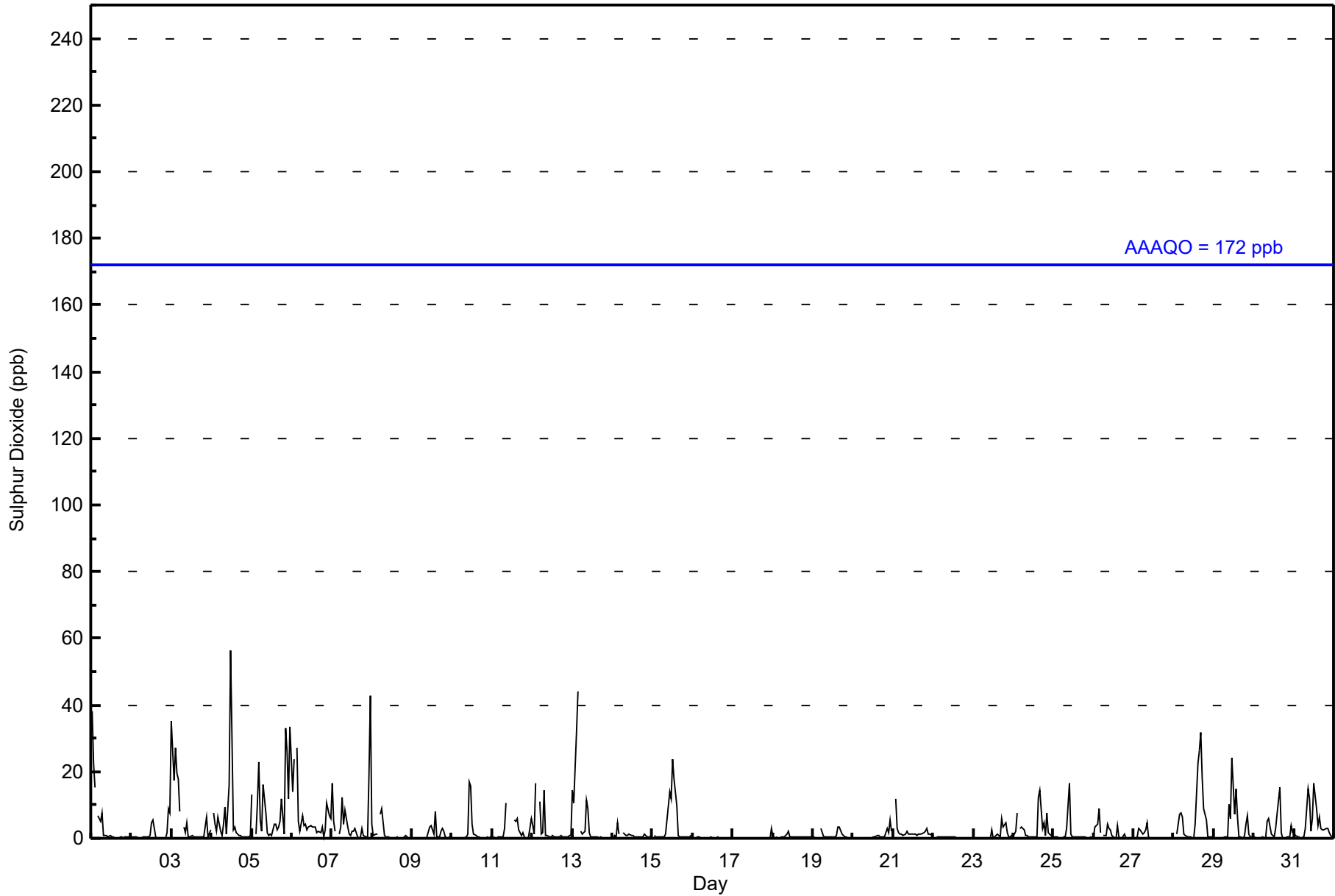
Mildred Lake - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		744																																								
Maximum Value: 56.3 ppb on May 4 12:00		Maximum Daily Average: 9.6 ppb on May 5		Minimum Value: 0.0 ppb on May 2 18:00		Minimum Daily Average: 0.2 ppb on May 16		Hours of Data: 708																																								
Maximum Diurnal Average: 5.6 ppb at hour 1		Minimum Diurnal Average: 1.0 ppb at hour 20		Hours of Missing Data: 36		Hours of Calibration: 35		Percent Operational Time: 99.9																																								
Monthly Average: 2.88 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.1 Q ₁ = 0.2 Median = 0.5 Q ₃ = 2.5 P ₉₀ = 7.8 P ₉₉ = 32.3																																														
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	38.2	22.4	15.1	Z	6.8	5.2	7.8	1.0	0.7	0.8	0.6	0.9	0.5	0.2	0.2	0.2	0.1	0.3	0.2	0.2	0.3	0.3	0.5	0.4	4.5	38.2																						
2-May	0.3	0.2	0.3	0.3	Z	0.1	0.2	0.3	0.5	0.3	0.4	0.7	4.8	5.7	0.4	0.1	0.0	0.0	0.0	0.0	0.1	1.6	8.9	7.5	1.4	8.9																						
3-May	35.2	17.2	27.3	19.5	17.6	8.2	Z	3.3	1.7	4.7	0.5	0.6	0.7	0.5	0.5	0.6	0.5	0.5	0.5	3.5	6.2	0.6	2.5	6.7	35.2																							
4-May	Z	7.6	4.1	2.3	6.1	2.1	0.9	4.1	9.5	1.1	16.0	56.3	30.0	2.5	3.5	1.6	1.0	0.7	0.5	0.5	0.6	0.5	0.4	0.8	6.6	56.3																						
5-May	13.0	Z	1.4	10.7	22.9	5.7	2.0	16.0	7.7	1.6	0.8	1.4	0.9	4.1	4.3	2.3	3.2	5.2	11.8	1.2	33.2	25.9	12.0	33.5	9.6	33.5																						
6-May	14.2	23.9	Z	27.2	5.2	2.0	6.8	4.0	4.2	2.6	3.4	4.0	3.5	3.5	3.4	1.9	2.3	1.6	3.5	0.6	2.7	10.7	6.6	5.9	6.3	27.2																						
7-May	16.5	5.3	1.9	Z	1.3	3.5	12.2	4.4	8.4	3.4	1.4	1.0	2.0	1.9	2.8	0.5	0.2	0.4	2.8	0.7	0.3	0.1	18.9	43.0	5.8	43.0																						
8-May	4.4	0.9	1.3	1.2	Z	7.4	9.0	0.7	0.5	0.4	0.3	0.2	0.1	0.1	0.1	0.3	0.2	0.1	0.2	0.3	0.8	0.4	0.1	0.1	1.3	9.0																						
9-May	Z	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	3.2	3.9	2.7	1.5	8.1	0.3	0.6	1.9	3.0	2.2	0.3	0.1	0.2	0.1	1.3	8.1																						
10-May	0.1	Z	0.1	0.0	0.0	0.0	0.0	0.1	0.5	1.2	17.0	15.5	4.1	1.2	0.7	0.3	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.3	1.8	17.0																						
11-May	0.2	0.2	Z	0.2	0.3	0.4	0.5	2.8	10.4	C	C	C	C	5.4	5.1	5.8	2.4	0.9	1.6	0.3	0.2	0.2	0.5	6.1	2.3	10.4																						
12-May	4.0	1.2	16.6	Z	10.9	1.2	1.9	14.2	1.0	0.7	0.3	0.3	0.7	0.4	0.2	0.2	0.4	0.7	0.4	0.4	0.4	0.6	1.0	0.9	2.5	16.6																						
13-May	14.3	10.7	32.3	43.9	Z	2.3	1.1	2.2	11.5	8.9	1.9	0.5	0.5	0.6	0.3	0.2	0.2	0.2	0.1	0.2	0.0	0.1	0.2	0.2	5.8	43.9																						
14-May	0.1	0.7	0.4	4.6	1.1	Z	1.5	1.1	0.8	1.0	1.1	0.9	0.7	0.5	0.5	0.4	0.3	0.4	0.4	1.3	0.7	0.5	0.4	0.5	0.9	4.6																						
15-May	Z	0.8	0.5	0.5	0.5	0.5	0.4	0.4	1.1	9.9	14.2	11.7	23.8	17.8	9.7	0.9	0.4	0.3	0.2	0.4	0.3	0.3	0.5	0.8	4.2	23.8																						
16-May	0.8	Z	0.4	0.3	0.3	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.2	0.8																						
17-May	0.0	0.1	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	3.0	0.2	3.0																						
18-May	0.3	0.2	0.2	Z	0.1	0.3	0.3	0.3	1.1	2.1	0.6	0.6	0.4	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	2.1																						
19-May	0.3	0.2	0.1	0.1	Z	3.2	0.5	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.7	3.2	3.4	1.4	0.8	0.5	0.4	0.1	0.0	0.1	0.8	3.4																						
20-May	0.1	0.1	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.4	0.8	0.8	0.3	0.2	0.3	0.4	2.8	1.8	5.6	2.2	0.7	5.6																						
21-May	Z	11.8	2.8	1.8	1.4	1.3	0.9	1.2	2.0	1.5	1.2	1.1	1.1	1.1	1.0	1.1	1.1	1.3	1.7	2.0	2.8	1.4	1.2	0.9	1.9	11.8																						
22-May	0.6	Z	0.5	0.5	0.5	0.3	0.2	0.2	0.3	0.4	0.4	0.3	0.4	0.2	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.3	0.6																						
23-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	DF	0.0	0.0	0.0	2.7	0.2	0.4	1.2	0.7	0.6	6.0	3.6	4.7	1.7	0.6	0.4	0.7	1.1	6.0																						
24-May	0.6	2.0	7.7	Z	2.9	3.4	2.4	0.9	0.6	0.5	0.5	0.6	0.5	0.4	0.5	12.2	14.6	2.9	4.6	0.9	7.7	1.7	0.7	0.5	3.0	14.6																						
25-May	0.3	0.2	0.3	0.2	Z	0.1	0.2	0.4	2.9	16.4	1.4	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.2	0.1	0.6	0.2	1.2	16.4																						
26-May	0.6	3.4	4.4	8.9	1.5	Z	0.7	0.7	4.1	2.8	2.4	0.7	0.3	0.1	4.0	0.3	0.1	0.1	1.2	0.0	0.0	0.1	0.1	0.0	1.6	8.9																						
27-May	Z	0.2	0.6	2.9	2.5	1.3	1.7	2.5	4.7	0.4	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.8	4.7																						
28-May	0.2	Z	1.4	7.1	7.8	6.2	1.3	0.7	0.6	0.5	0.3	0.1	0.2	4.1	22.5	26.2	31.6	18.1	8.9	5.4	0.4	0.3	0.3	0.2	6.3	31.6																						
29-May	0.2	0.2	Z	0.2	0.0	0.1	0.3	0.5	0.5	10.2	5.8	24.2	7.2	15.0	6.3	0.3	0.4	0.0	0.9	4.4	6.7	1.2	0.5	0.4	3.7	24.2																						
30-May	0.5	0.2	0.1	Z	0.3	0.2	0.1	0.6	5.0	5.8	1.1	0.9	0.4	3.1	7.2	15.2	1.7	0.1	0.2	0.2	0.3	0.4	3.7	1.6	2.1	15.2																						
31-May	1.5	0.7	0.4	0.3	Z	0.4	0.5	2.8	14.9	11.9	2.1	5.9	16.7	8.8	3.8	6.2	3.1	2.7	2.6	3.1	3.0	1.9	0.7	0.6	4.1	16.7																						
																								5.6	4.3	4.6	5.3	3.6	2.0	1.8	2.2	3.1	3.0	2.6	4.5	3.5	2.6	2.9	2.7	2.3	1.5	1.6	1.0	2.3	1.9	2.1	3.7	Diurnal Average
																								38.2	23.9	32.3	43.9	22.9	8.2	12.2	16.0	14.9	16.4	17.0	56.3	30.0	17.8	22.5	26.2	31.6	18.1	11.8	5.4	33.2	25.9	18.9	43.0	Diurnal Maximum
Z - zerospan C - Calibration DF - DAS Failure																																																
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb																																																



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Mildred Lake - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Mildred Lake - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	652	92.09	92.09
11 - 20	36	5.08	97.18
21 - 60	20	2.82	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Mildred Lake - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	55	36	19	10	20	39	108	98	92	49	22	14	12	19	36	23	652
11 - 20	0	0	0	0	0	7	13	6	3	0	0	6	1	0	0	0	36
21 - 60	0	0	0	0	0	2	12	1	1	0	0	4	0	0	0	0	20
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	55	36	19	10	20	48	133	105	96	49	22	24	13	19	36	23	708

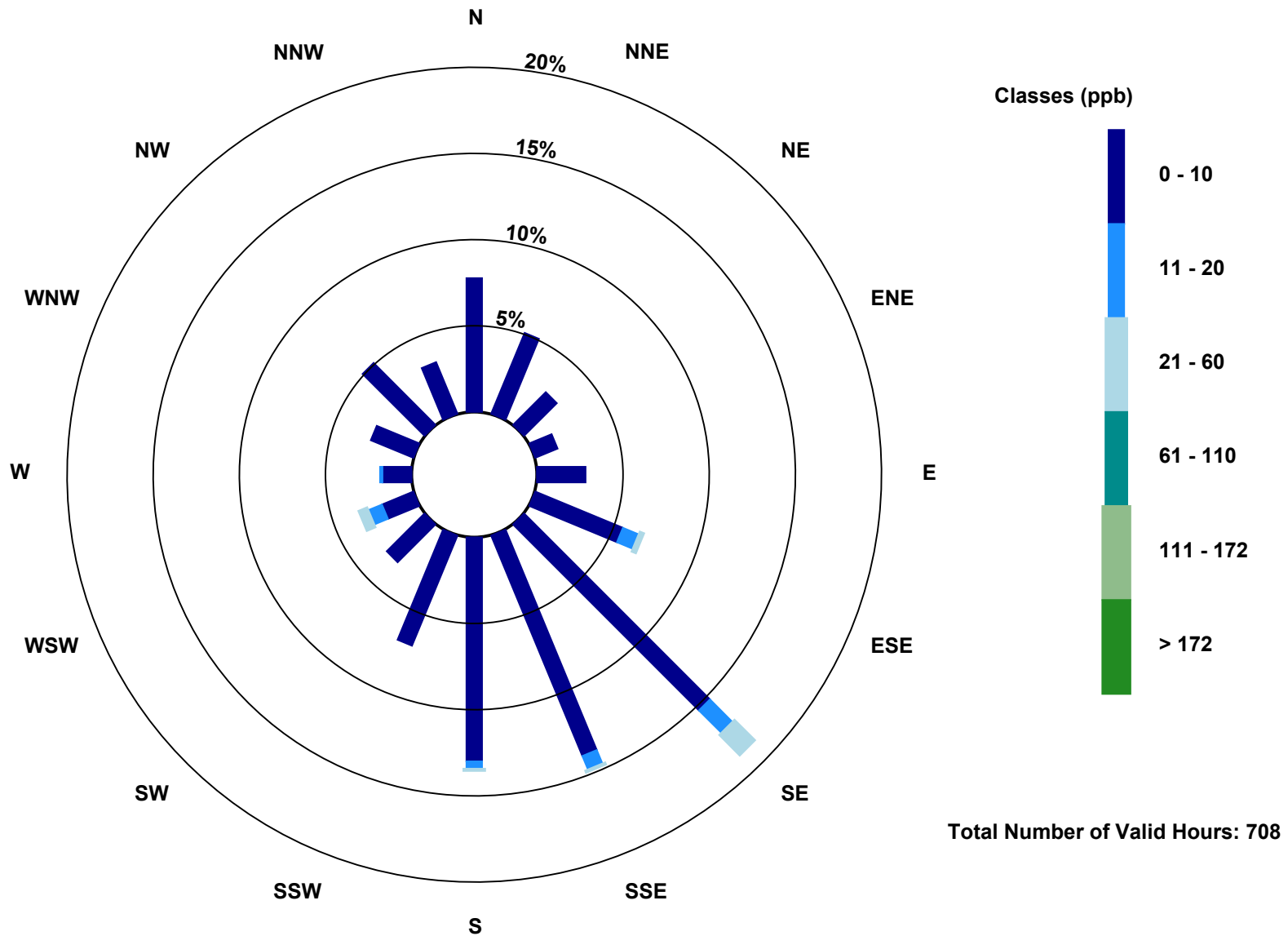
Total Number of Valid Hours: 708

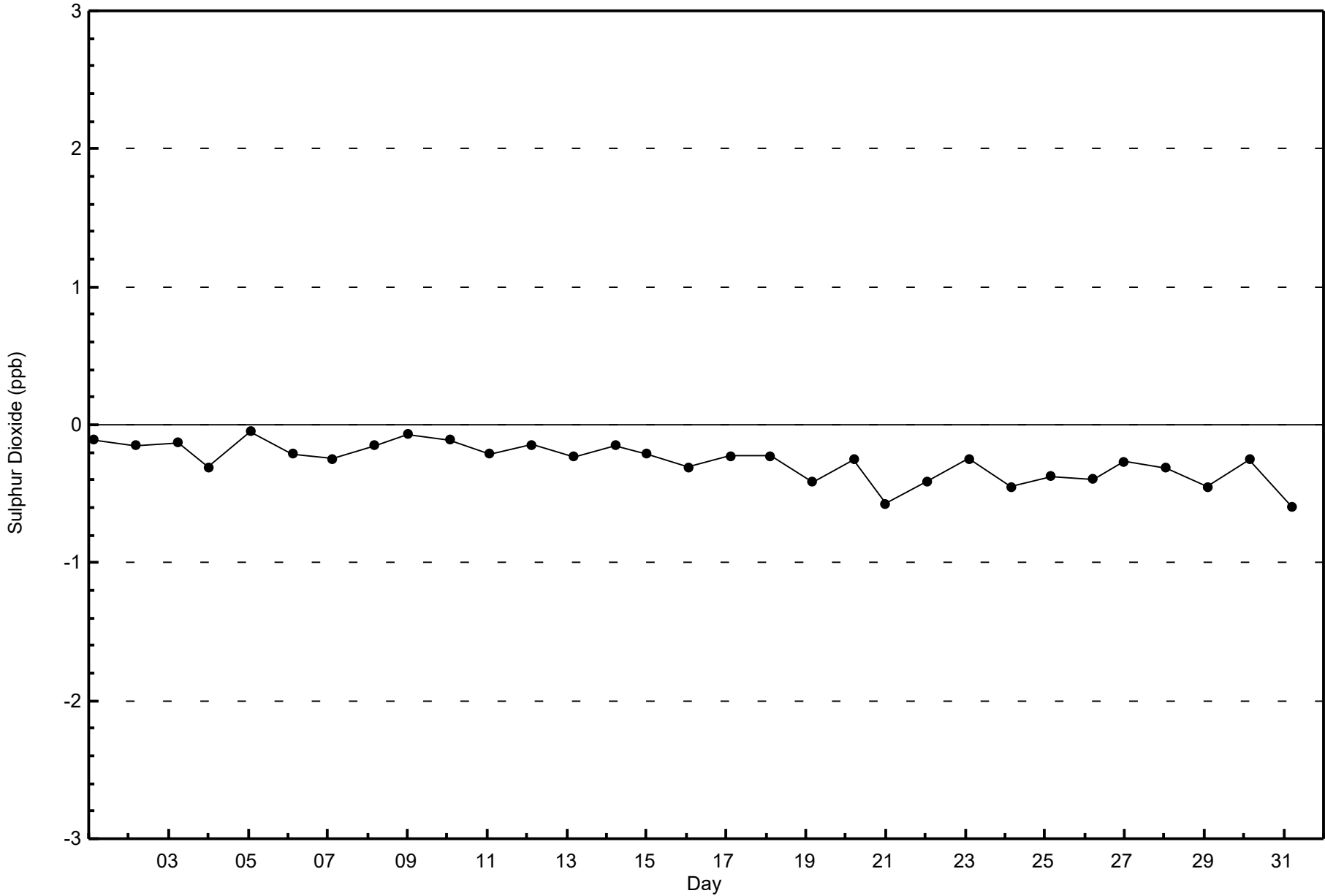
Total Number of Hours: 744

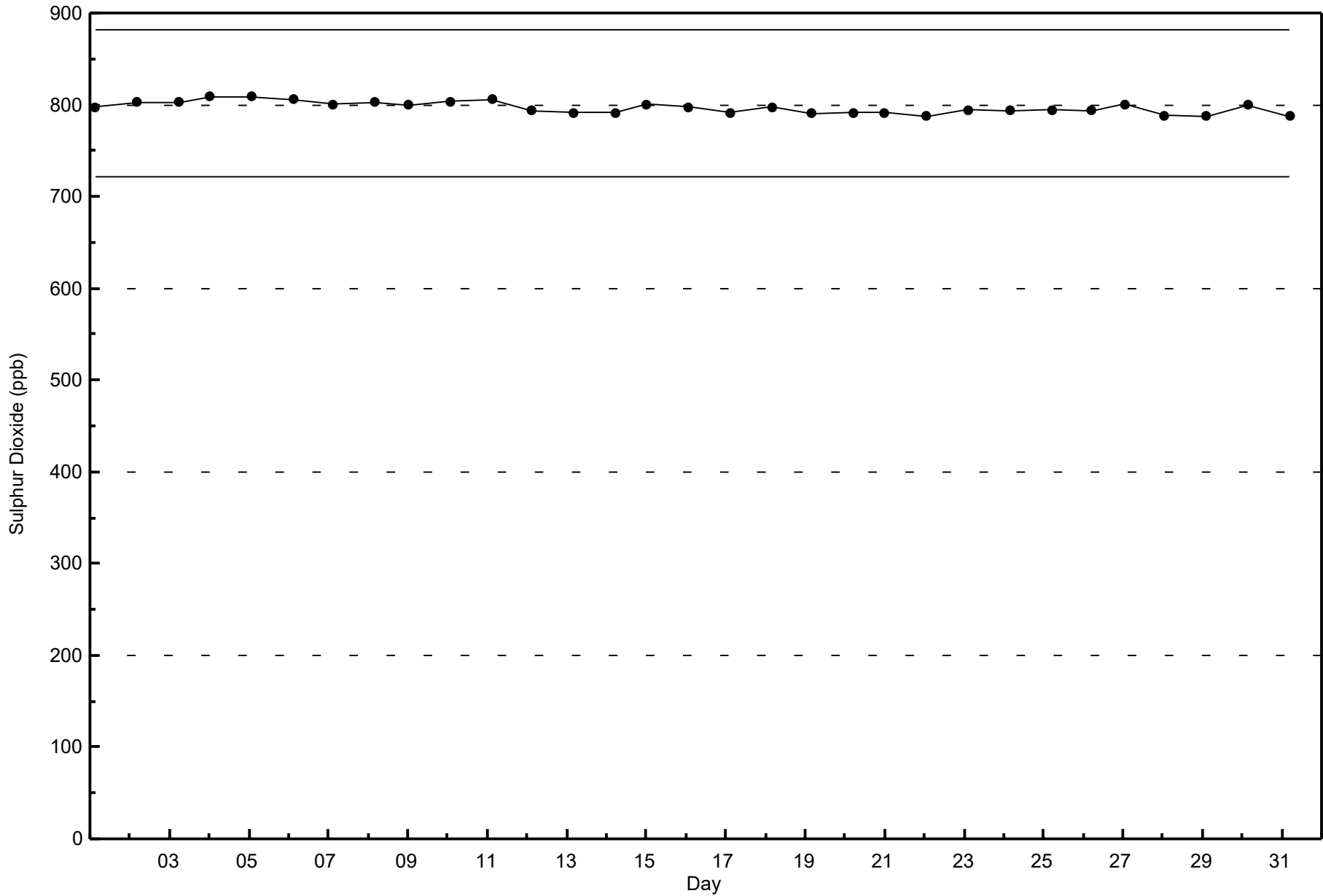


Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Mildred Lake

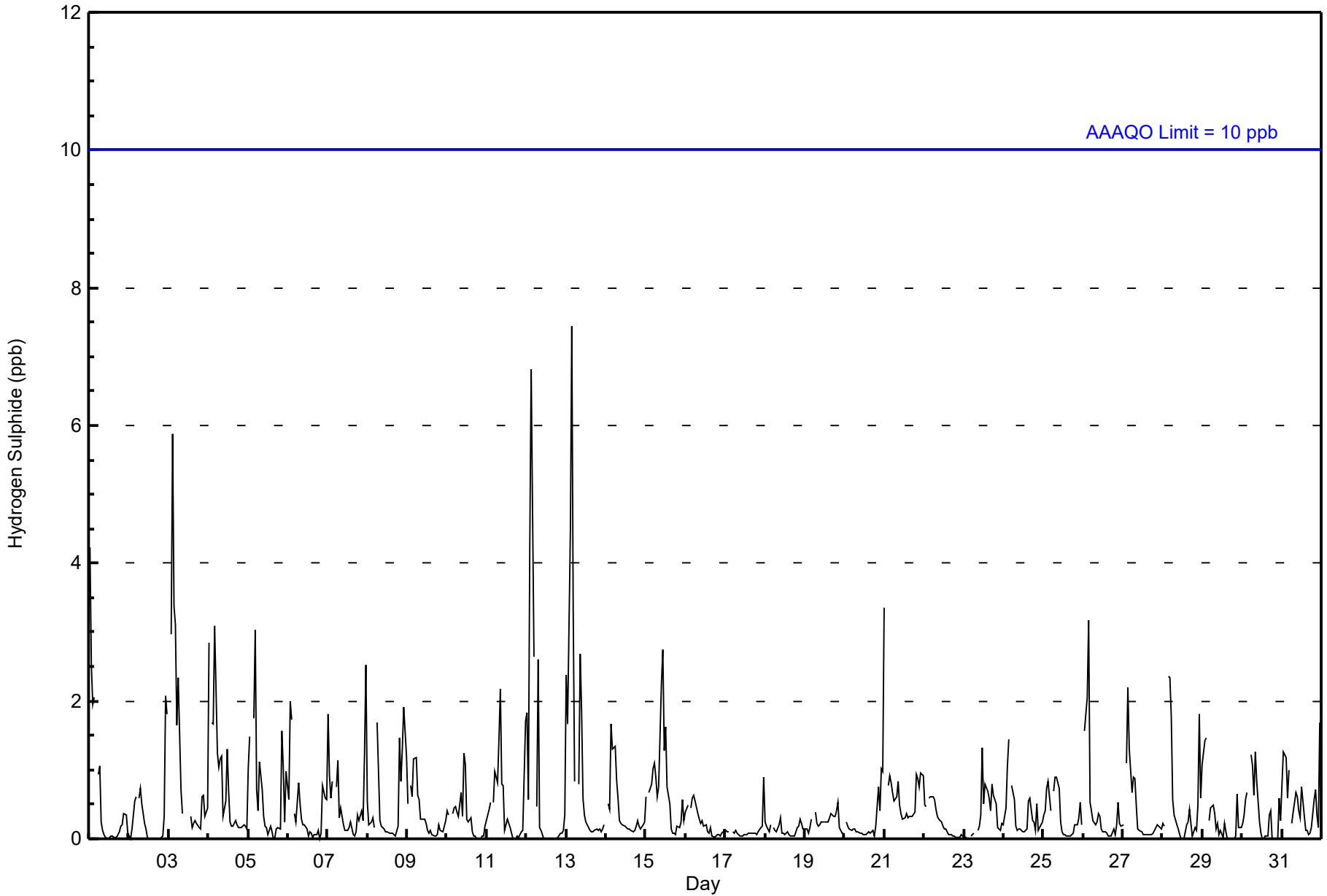








Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744				
Maximum Value: 7.5 ppb on May 13 04:00		Maximum Daily Average: 1.3 ppb on May 3																	Hours of Data:	708						
Minimum Value: 0.0 ppb on May 2 13:00		Minimum Daily Average: 0.1 ppb on May 17																	Hours of Missing Data:	36						
Maximum Diurnal Average: 1.6 ppb at hour 4		Minimum Diurnal Average: 0.1 ppb at hour 16																	Hours of Calibration:	35						
Monthly Average: 0.49 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.6 P ₉₀ = 1.2 P ₉₉ = 3.4																	Percent Operational Time:	99.9						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	4.2	2.5	2.0	2.0	Z	0.9	1.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.4	0.4	0.1	0.6	4.2	
2-May	0.0	0.0	0.1	0.6	0.6	Z	0.6	0.7	0.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.1	1.8	0.3	2.1	
3-May	Z	3.0	5.9	3.4	3.1	1.7	2.3	0.7	0.4	C	C	C	C	0.3	0.2	0.2	0.3	0.2	0.2	0.1	0.6	0.6	0.3	0.5	1.3	5.9
4-May	2.8	Z	1.7	1.7	3.1	1.2	1.0	1.2	1.2	0.3	0.6	1.3	0.7	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.8	3.1	
5-May	1.0	1.5	Z	1.7	3.0	0.7	0.4	1.1	0.7	0.3	0.2	0.2	0.1	0.2	0.1	0.0	0.0	0.1	0.2	0.1	1.6	1.0	0.2	1.0	0.7	3.0
6-May	0.6	2.0	1.7	Z	0.4	0.2	0.8	0.5	0.3	0.2	0.2	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.8	0.6	0.6	0.4	2.0
7-May	1.8	0.9	0.6	0.8	Z	0.8	1.1	0.3	0.4	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.0	0.1	0.3	0.3	0.4	0.3	1.2	2.5	0.6	2.5
8-May	0.6	0.2	0.2	0.3	0.2	Z	1.7	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.2	1.5	0.8	1.3	1.9	1.2	0.5	1.9
9-May	0.5	Z	0.8	0.6	1.2	1.2	0.6	0.6	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.1	0.2	0.3	0.3	1.2
10-May	0.4	0.4	Z	0.4	0.4	0.5	0.4	0.3	0.7	0.3	1.2	1.1	0.3	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	1.2
11-May	0.3	0.4	0.5	Z	0.5	1.0	0.8	1.4	2.2	0.8	0.8	0.1	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	1.7	0.5	2.2
12-May	1.8	0.6	4.2	6.8	2.7	Z	0.5	2.6	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.9	6.8	
13-May	2.4	1.7	4.5	7.5	3.3	0.8	Z	0.8	2.7	1.8	0.6	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.2	7.5	
14-May	Z	0.5	0.4	1.7	1.3	1.3	0.9	0.6	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.4	1.7
15-May	0.6	Z	0.7	0.8	1.0	1.1	0.9	0.6	0.8	2.3	2.7	1.3	1.6	0.8	0.5	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.6	0.3	0.8	2.7
16-May	0.4	0.5	Z	0.4	0.6	0.6	0.6	0.4	0.3	0.2	0.3	0.2	0.2	0.1	0.1	0.2	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.6
17-May	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.9	0.1	0.9
18-May	0.2	0.2	0.1	0.2	Z	0.2	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.2	0.2	0.1	0.3
19-May	0.2	0.1	0.1	0.2	0.3	Z	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.3	0.4	0.5	0.2	0.1	0.1	0.2	0.5
20-May	Z	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.2	0.8	0.4	1.0	1.0	0.2	1.0
21-May	3.4	Z	0.8	0.9	0.8	0.7	0.6	0.6	0.8	0.5	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.4	0.9	0.9	0.7	1.0	0.9	0.7	3.4
22-May	0.5	0.5	Z	0.6	0.6	0.6	0.6	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.6	
23-May	0.0	0.0	0.0	Z	0.1	0.1	0.1	DF	0.1	0.2	0.3	1.3	0.5	0.8	0.7	0.6	0.4	0.8	0.6	0.5	0.2	0.1	0.1	0.2	0.4	1.3
24-May	0.2	0.4	1.1	1.4	Z	0.8	0.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5	0.6	0.3	0.2	0.1	0.5	0.1	0.2	0.2	0.4	1.4
25-May	0.4	0.4	0.7	0.8	0.4	Z	0.7	0.9	0.9	0.7	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.5	0.2	0.4	0.9
26-May	Z	1.6	2.1	3.2	0.5	0.4	0.3	0.2	0.2	0.4	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.5	0.2	0.2	0.5	3.2
27-May	0.2	Z	1.1	2.2	1.3	0.7	0.9	0.9	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.4	2.2
28-May	0.2	0.2	Z	2.4	2.3	1.8	0.6	0.3	0.2	0.1	0.1	0.0	0.0	0.2	0.2	0.4	0.2	0.0	0.2	0.1	0.5	1.8	0.6	0.5	2.4	
29-May	1.1	1.4	1.5	Z	0.3	0.4	0.5	0.4	0.1	0.2	0.1	0.1	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.2	0.2	0.3	1.5	
30-May	0.2	0.3	0.6	0.7	Z	1.2	1.1	0.6	1.3	0.8	0.2	0.1	0.0	0.0	0.0	0.0	0.3	0.4	0.0	0.0	0.0	0.6	0.3	0.4	1.3	
31-May	0.8	1.3	1.2	0.6	1.0	Z	0.2	0.4	0.7	0.6	0.4	0.3	0.8	0.3	0.1	0.1	0.1	0.1	0.2	0.6	0.7	0.3	0.2	1.7	0.5	1.7
																								Diurnal Average		
																								Diurnal Maximum		
																								0.9 0.8 1.3 1.6 1.1 0.8 0.7 0.6 0.5 0.4 0.3 0.3 0.2 0.2 0.1 0.1 0.1 0.1 0.1 0.2 0.3 0.3 0.5 0.6		
																								4.2 3.0 5.9 7.5 3.3 1.8 2.3 2.6 2.7 2.3 2.7 1.3 1.6 0.8 0.7 0.6 0.6 0.8 0.6 1.5 1.6 1.3 2.1 2.5		
Z - zerospan C - Calibration DF - DAS Failure																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Mildred Lake - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	687	97.03	97.03
3 - 4	18	2.54	99.58
5 - 7	3	0.42	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Mildred Lake - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	51	37	19	10	21	45	117	107	89	50	21	26	14	18	37	25	687
3 - 4	0	0	0	0	0	2	11	5	0	0	0	0	0	0	0	0	18
5 - 7	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	3
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	51	37	19	10	21	47	130	113	89	50	21	26	14	18	37	25	708

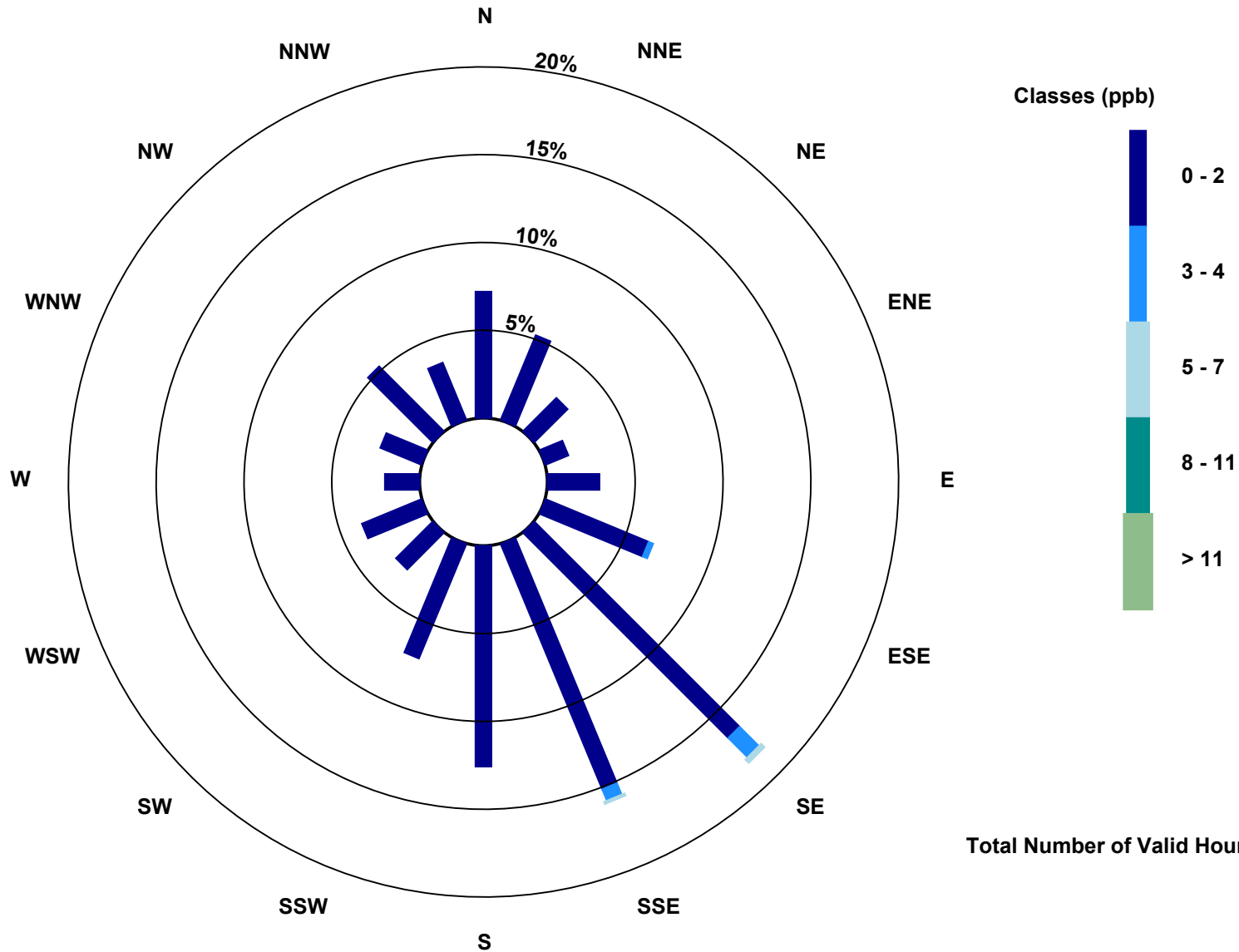
Total Number of Valid Hours: 708

Total Number of Hours: 744

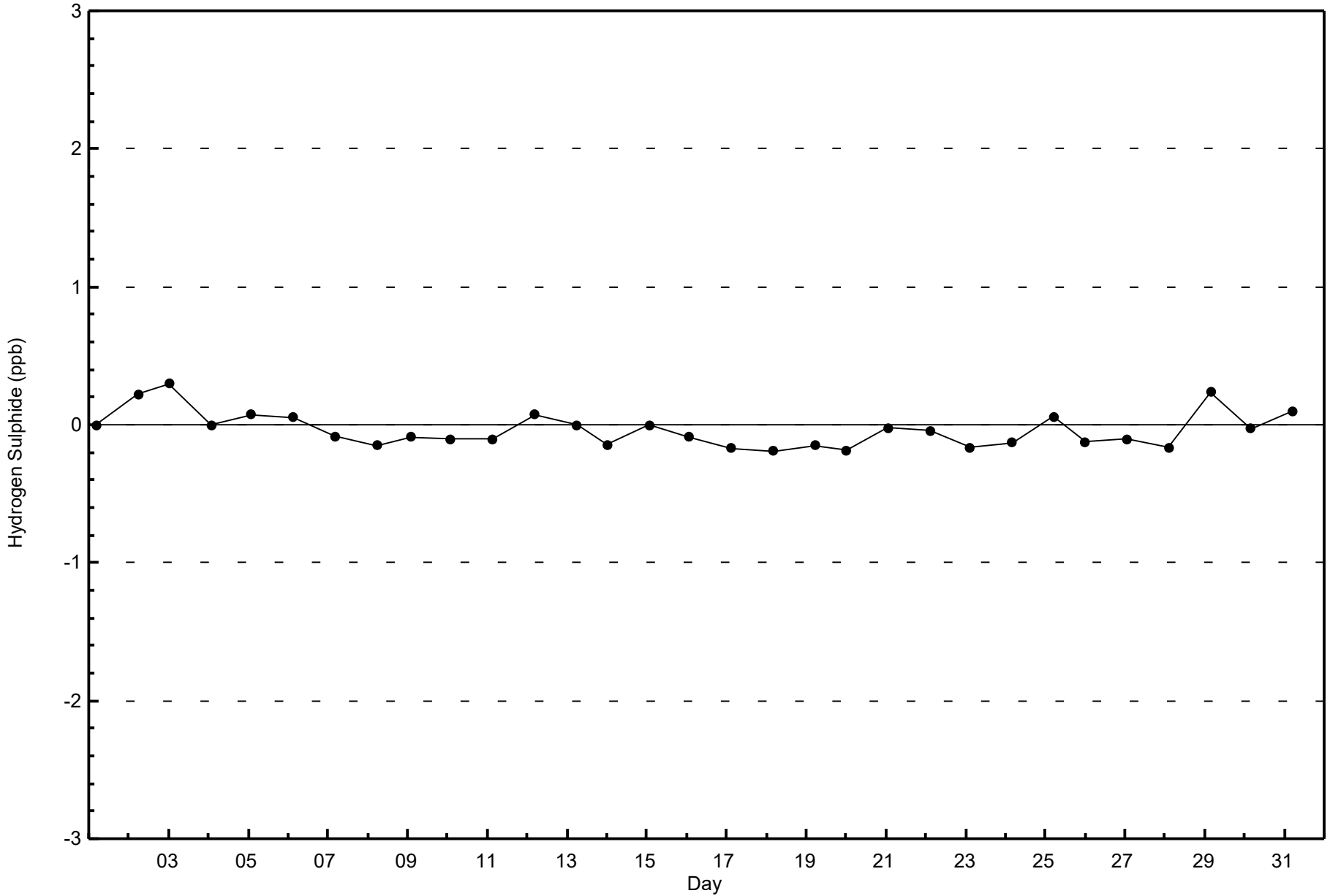


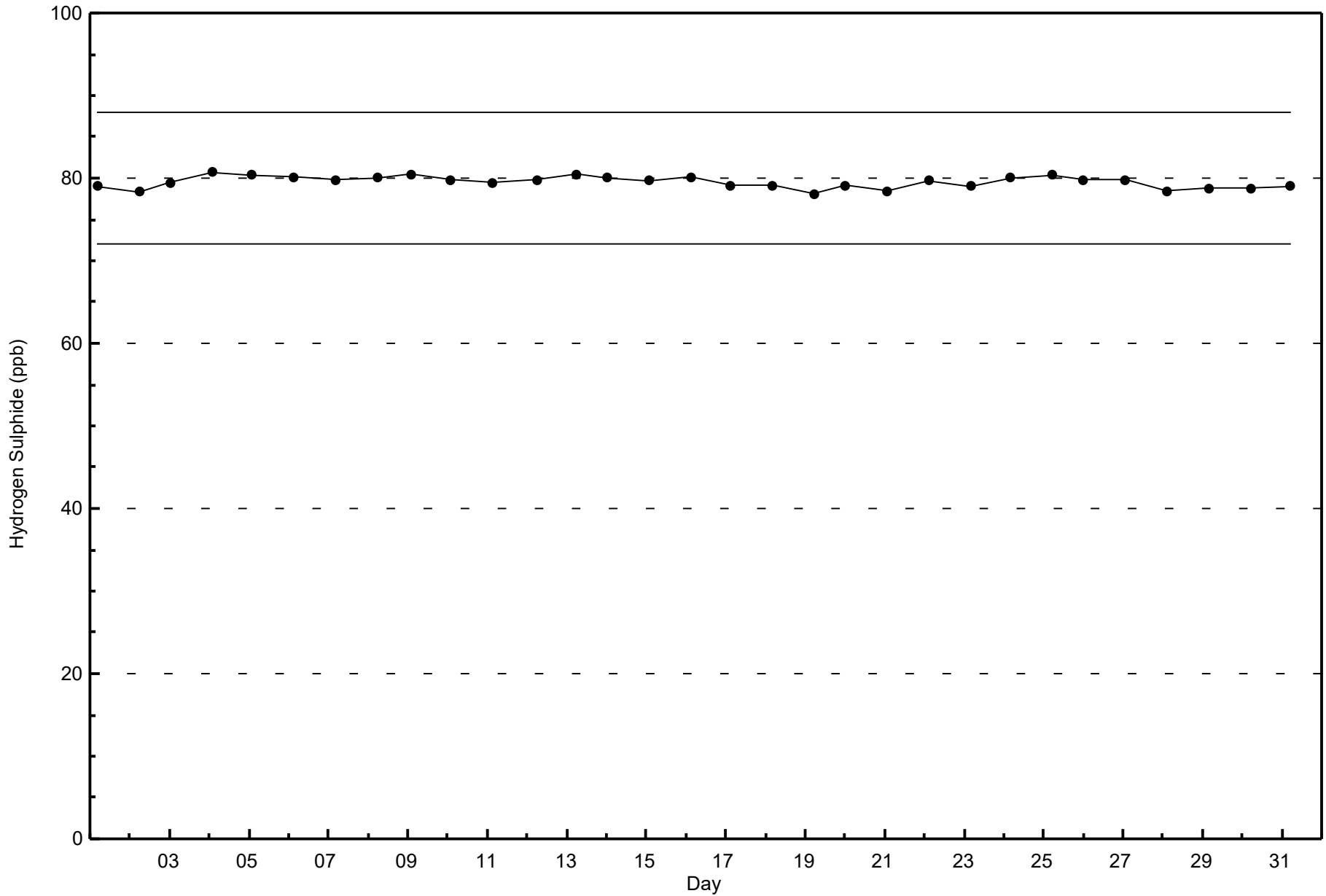
Wood Buffalo Environmental Association
Wind Rose May 2023

Hydrogen Sulphide (H₂S) - ppb
Mildred Lake



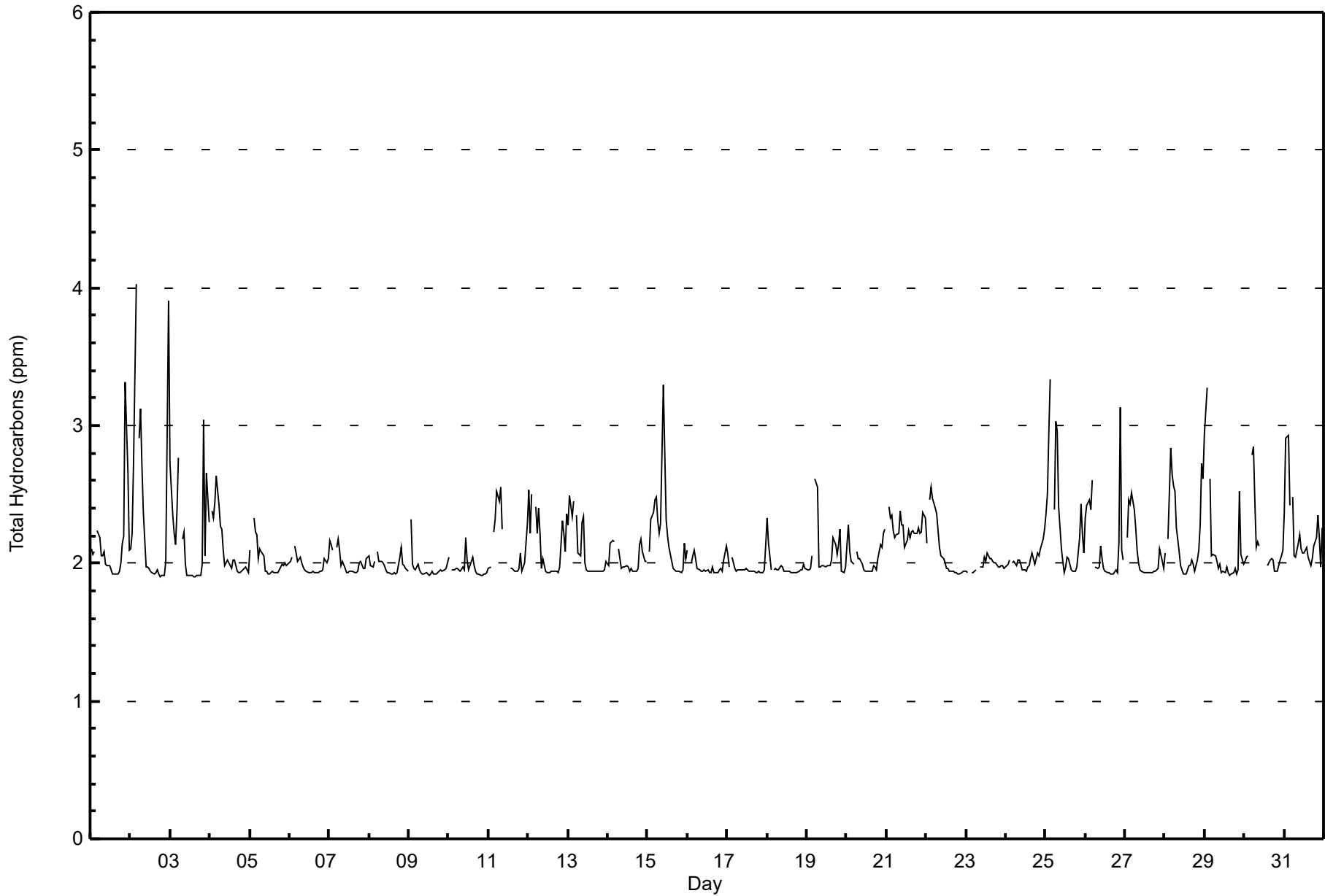
Total Number of Valid Hours: 708







Maximum Value: 4.0 ppm on May 2 04:00																				Maximum Daily Average: 2.4 ppm on May 2					Hours in Service: 744	
Minimum Value: 1.9 ppm on May 3 15:00																				Minimum Daily Average: 2.0 ppm on May 9					Hours of Data: 704	
Maximum Diurnal Average: 2.4 ppm at hour 4																				Minimum Diurnal Average: 2.0 ppm at hour 18					Hours of Missing Data: 40	
Monthly Average: 2.09 ppm																				Percentiles: P ₁ = 1.9 P ₁₀ = 1.9 Q ₁ = 1.9 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.4 P ₉₉ = 3.1					Hours of Calibration: 35	
																									Percent Operational Time: 99.3	
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	2.1	2.1	2.1	Z	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.2	3.3	2.7	2.1	2.1	3.3
2-May	2.1	2.2	2.7	4.0	Z	2.9	3.1	2.7	2.4	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0	3.0	3.9	2.4	4.0
3-May	2.7	2.4	2.2	2.1	2.4	2.8	Z	2.2	2.2	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	3.0	2.1	2.7	2.3	2.2	3.0	
4-May	Z	2.4	2.3	2.4	2.6	2.4	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	2.0	1.9	2.1	2.6	
5-May	2.1	Z	2.3	2.2	2.2	2.0	2.1	2.1	2.1	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3
6-May	2.0	2.0	Z	2.1	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1
7-May	2.2	2.1	2.1	Z	2.1	2.2	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2
8-May	2.1	2.0	2.0	2.0	Z	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.0	2.0	2.0	1.9	2.0	2.1
9-May	Z	2.3	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.3
10-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.2	2.0	1.9	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.2
11-May	2.0	2.0	Z	2.2	2.3	2.5	2.4	2.6	2.3	C	C	C	C	2.0	2.0	2.0	1.9	1.9	2.0	2.1	1.9	2.0	2.0	2.3	2.1	2.6
12-May	2.5	2.2	2.5	Z	2.4	2.2	2.4	2.2	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.3	2.2	2.1	2.4	2.1	2.5
13-May	2.3	2.5	2.3	2.4	Z	2.4	2.1	2.1	2.3	2.3	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.5
14-May	2.0	2.1	2.2	2.2	2.2	Z	2.1	2.0	2.0	2.0	2.0	2.0	1.9	2.0	1.9	1.9	1.9	1.9	2.0	2.1	2.2	2.1	2.0	2.0	2.0	2.2
15-May	Z	2.1	2.3	2.4	2.5	2.5	2.3	2.2	2.3	3.3	2.8	2.3	2.2	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.0	2.2	3.3
16-May	2.1	Z	2.0	2.1	2.1	2.0	2.0	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.1	2.0	2.1
17-May	2.1	2.0	Z	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.0	2.1
18-May	2.3	2.1	1.9	Z	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.3
19-May	2.0	2.0	2.0	2.1	Z	2.6	2.6	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.1	2.1	2.1	2.2	1.9	1.9	2.0	2.1	2.6
20-May	2.1	2.3	2.1	2.0	2.0	Z	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.1	2.1	2.2	2.3	2.0	2.3	2.3
21-May	Z	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.4	2.3	2.3	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.4	2.3	2.3	2.4
22-May	2.1	Z	2.5	2.5	2.5	2.4	2.4	2.2	2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.5
23-May	1.9	1.9	Z	1.9	1.9	1.9	2.0	DF	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
24-May	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.2	2.3	2.0	2.3	2.3
25-May	2.4	2.5	2.9	3.3	Z	2.4	3.0	3.0	2.4	2.1	2.0	1.9	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.2	2.4	2.2	2.1	2.3	3.3	
26-May	2.3	2.4	2.5	2.4	2.6	Z	2.0	2.0	2.0	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.1	3.1	2.1	2.0	2.1	3.1
27-May	Z	2.2	2.5	2.4	2.5	2.4	2.3	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.0	2.0	2.1	2.5	
28-May	2.1	Z	2.2	2.8	2.6	2.6	2.5	2.3	2.1	2.0	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.0	1.9	2.0	2.1	2.3	2.7	2.6	2.2	2.8
29-May	2.9	3.3	Z	2.6	2.1	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0	1.9	2.0	2.5	2.1	2.0	2.1	3.3
30-May	2.0	2.0	2.1	Z	2.8	2.8	2.4	2.1	2.2	2.1	M	M	M	M	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.1	2.1	2.1	2.8
31-May	2.4	2.9	2.9	2.4	Z	2.5	2.1	2.0	2.1	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.2	2.4	2.2	2.0	2.3	2.2	2.9
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration M - Maintenance DF - DAS Failure																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Mildred Lake - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	452	64.20	64.20
2.1 - 3.0	244	34.66	98.86
3.1 - 10.0	8	1.14	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 704

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Mildred Lake - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	32	32	17	9	15	30	58	60	78	44	16	16	7	5	25	8	452
2.1 - 3.0	23	4	2	1	5	18	73	43	16	4	6	7	4	14	9	15	244
3.1 - 10.0	0	0	0	0	0	0	2	0	2	0	0	0	2	0	2	0	8
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	55	36	19	10	20	48	133	103	96	48	22	23	13	19	36	23	704

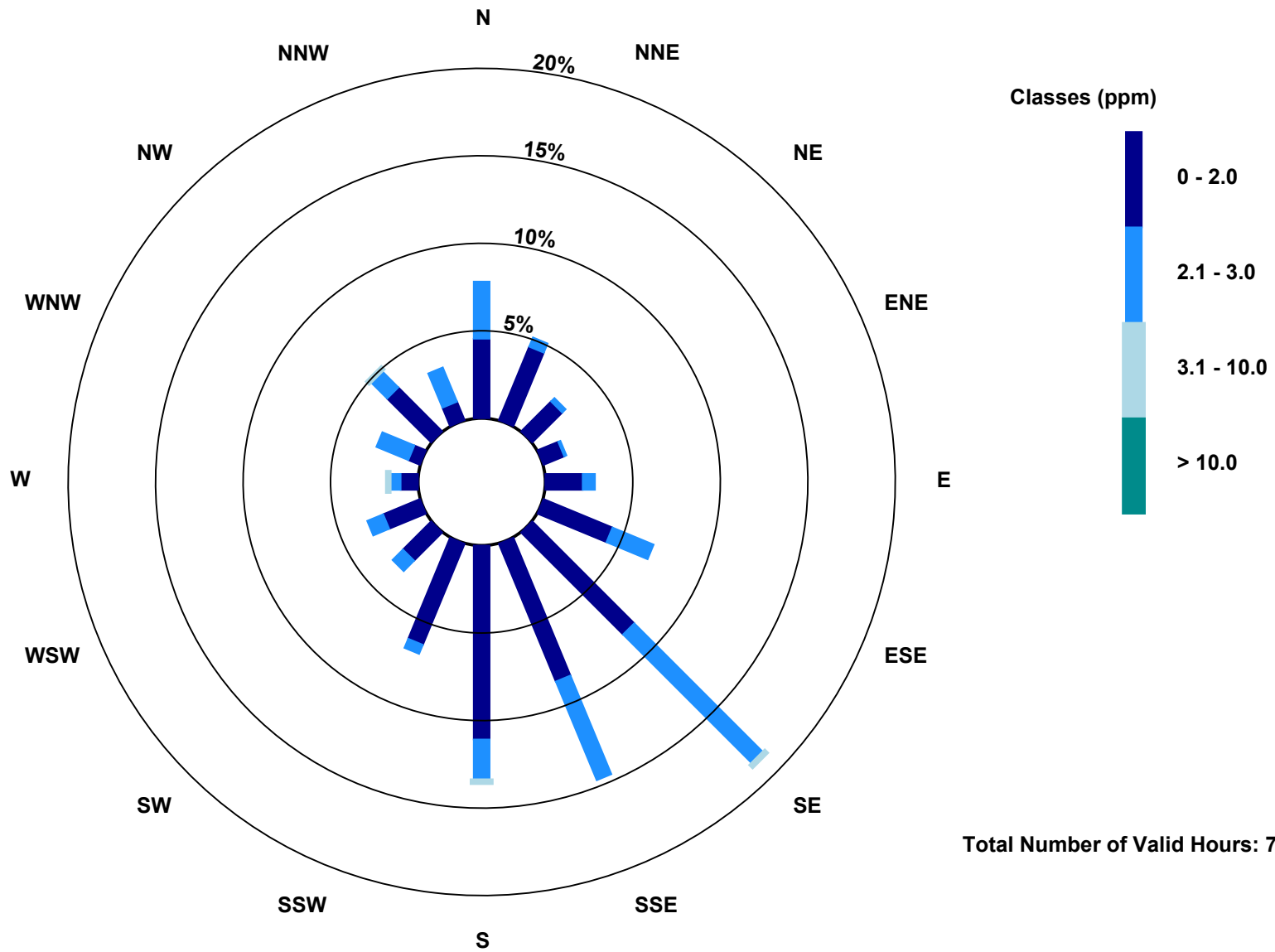
Total Number of Valid Hours: 704

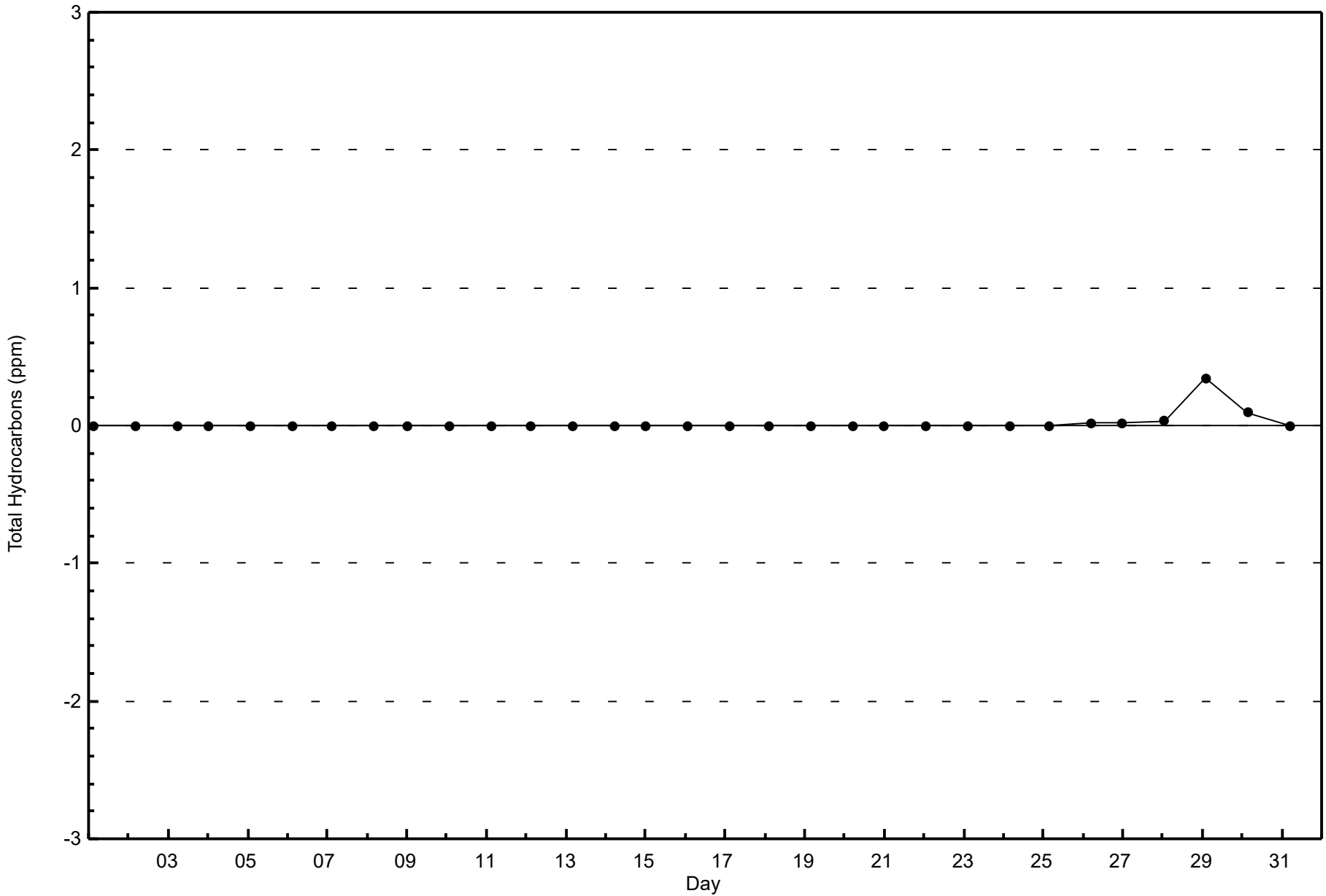
Total Number of Hours: 744

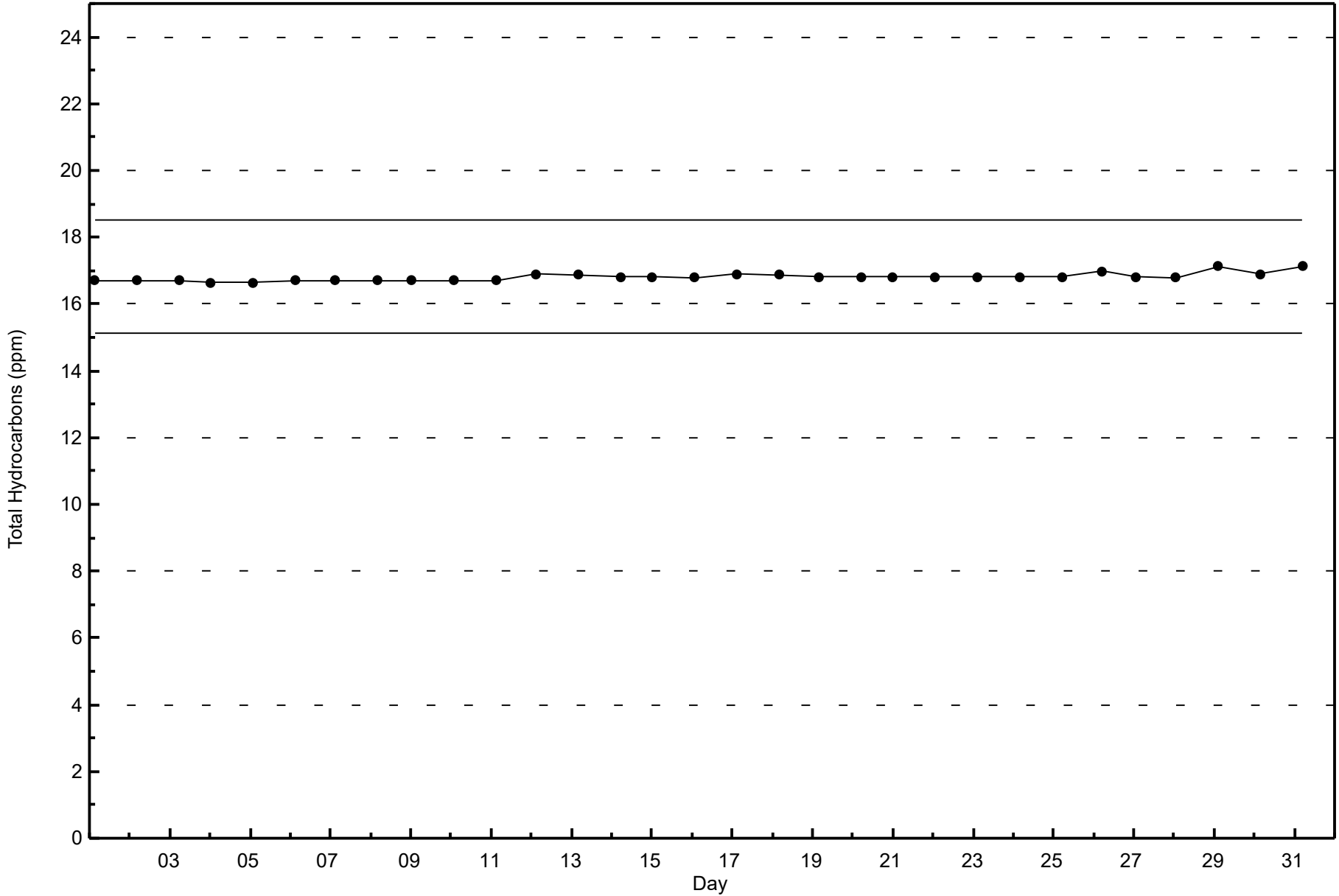


Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Mildred Lake

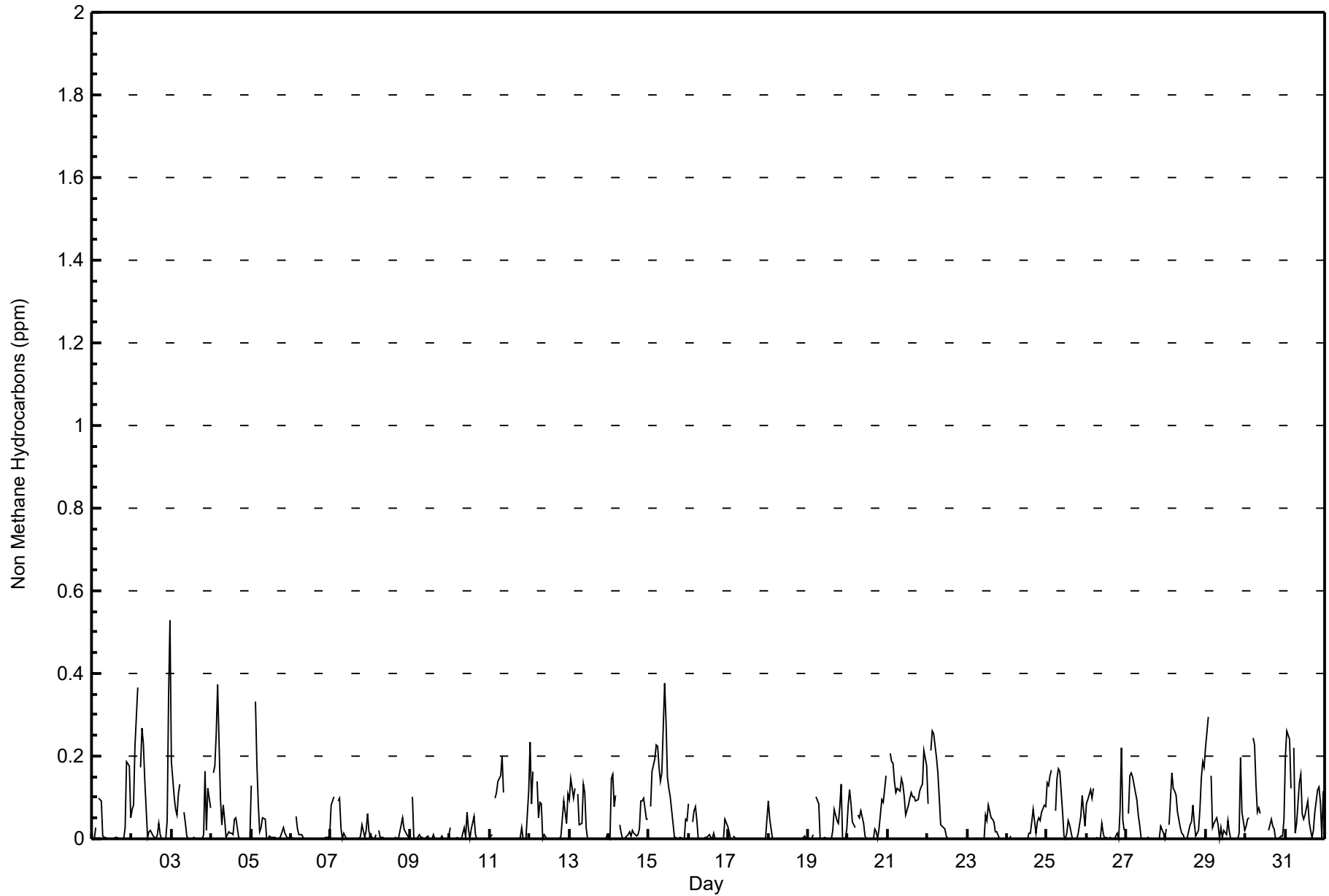








Maximum Value: 0.529 ppm on May 3 00:00		Maximum Daily Average: 0.128 ppm on May 21		Hours in Service: 744																						
Minimum Value: 0.000 ppm on May 1 01:00		Minimum Daily Average: 0.003 ppm on May 17		Hours of Data: 704																						
Maximum Diurnal Average: 0.114 ppm at hour 4		Minimum Diurnal Average: 0.009 ppm at hour 18		Hours of Missing Data: 40																						
Monthly Average: 0.045 ppm		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.1 P ₉₀ = 0.1 P ₉₉ = 0.3		Hours of Calibration: 35																						
				Percent Operational Time: 99.3																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.000	0.000	0.027	Z	0.099	0.092	0.007	0.002	0.004	0.000	0.001	0.001	0.001	0.000	0.003	0.002	0.000	0.000	0.000	0.001	0.028	0.188	0.175	0.051	0.030	0.188
2-May	0.070	0.080	0.224	0.367	Z	0.174	0.268	0.229	0.142	0.002	0.016	0.019	0.013	0.006	0.002	0.009	0.037	0.011	0.000	0.000	0.001	0.046	0.346	0.529	0.113	0.529
3-May	0.185	0.101	0.071	0.058	0.110	0.134	Z	0.063	0.039	0.005	0.000	0.001	0.002	0.002	0.000	0.001	0.000	0.000	0.000	0.011	0.162	0.019	0.123	0.073	0.050	0.185
4-May	Z	0.159	0.176	0.256	0.373	0.099	0.035	0.082	0.046	0.004	0.016	0.012	0.013	0.010	0.046	0.052	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060	0.373
5-May	0.127	Z	0.331	0.184	0.086	0.017	0.029	0.050	0.047	0.000	0.000	0.006	0.002	0.002	0.002	0.000	0.001	0.001	0.008	0.026	0.013	0.008	0.000	0.002	0.041	0.331
6-May	0.000	0.004	Z	0.054	0.022	0.009	0.010	0.003	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.002	0.010	0.005	0.005	0.054
7-May	0.081	0.090	0.101	Z	0.091	0.100	0.027	0.000	0.015	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.008	0.035	0.004	0.019	0.062	0.016	0.028	0.101
8-May	0.011	0.005	0.001	0.011	Z	0.020	0.003	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.034	0.050	0.025	0.016	0.012	0.000	0.008	0.050
9-May	Z	0.100	0.005	0.000	0.000	0.012	0.003	0.002	0.000	0.000	0.007	0.000	0.000	0.000	0.009	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.000	0.008	0.007	0.100
10-May	0.028	Z	0.000	0.001	0.004	0.000	0.000	0.000	0.027	0.003	0.065	0.025	0.000	0.023	0.054	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.011	0.065
11-May	0.003	0.010	Z	0.100	0.112	0.140	0.151	0.199	0.113	C	C	C	C	0.000	0.000	0.000	0.000	0.000	0.002	0.029	0.000	0.000	0.000	0.116	0.051	0.199
12-May	0.233	0.083	0.163	Z	0.138	0.049	0.087	0.086	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.093	0.065	0.037	0.110	0.051	0.233	
13-May	0.096	0.147	0.099	0.121	Z	0.107	0.033	0.037	0.131	0.111	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.040	0.147	
14-May	0.000	0.145	0.156	0.080	0.105	Z	0.036	0.012	0.000	0.002	0.002	0.010	0.017	0.006	0.021	0.013	0.008	0.009	0.024	0.093	0.090	0.098	0.048	0.047	0.044	0.156
15-May	Z	0.077	0.164	0.194	0.227	0.224	0.173	0.140	0.158	0.377	0.286	0.150	0.124	0.102	0.036	0.004	0.002	0.001	0.000	0.003	0.000	0.001	0.048	0.043	0.110	0.377
16-May	0.085	Z	0.040	0.067	0.078	0.044	0.001	0.000	0.000	0.001	0.004	0.004	0.009	0.002	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.030	0.019	0.085
17-May	0.018	0.000	Z	0.008	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.003	0.049	
18-May	0.091	0.047	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.006	0.000	0.007	0.091	
19-May	0.000	0.000	0.000	0.010	Z	0.103	0.086	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.021	0.072	0.044	0.037	0.078	0.132	0.000	0.000	0.023	0.026	0.132	
20-May	0.081	0.117	0.084	0.042	0.026	Z	0.059	0.049	0.068	0.038	0.007	0.000	0.000	0.000	0.000	0.000	0.023	0.017	0.000	0.025	0.096	0.089	0.120	0.151	0.048	0.151
21-May	Z	0.207	0.185	0.183	0.138	0.113	0.122	0.114	0.144	0.131	0.103	0.058	0.081	0.099	0.113	0.102	0.101	0.091	0.093	0.115	0.126	0.131	0.215	0.175	0.128	0.215
22-May	0.083	Z	0.213	0.261	0.255	0.196	0.160	0.099	0.035	0.029	0.025	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.059	0.261	
23-May	0.000	0.000	Z	0.000	0.000	0.000	0.000	DF	0.000	0.000	0.001	0.057	0.045	0.082	0.052	0.046	0.041	0.016	0.016	0.000	0.000	0.001	0.000	0.000	0.016	0.082
24-May	0.000	0.000	0.007	Z	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.012	0.014	0.040	0.070	0.014	0.042	0.050	0.042	0.066	0.081	0.079	0.081
25-May	0.137	0.129	0.153	0.165	Z	0.068	0.147	0.169	0.163	0.063	0.006	0.000	0.012	0.045	0.035	0.001	0.000	0.000	0.012	0.054	0.106	0.066	0.029	0.068	0.169	
26-May	0.086	0.095	0.118	0.098	0.123	Z	0.003	0.000	0.004	0.037	0.015	0.000	0.003	0.000	0.003	0.000	0.000	0.000	0.014	0.000	0.069	0.222	0.043	0.019	0.041	0.222
27-May	Z	0.063	0.153	0.158	0.149	0.111	0.096	0.056	0.033	0.002	0.000	0.001	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.031	0.014	0.000	0.038	0.158
28-May	0.023	Z	0.036	0.159	0.123	0.114	0.106	0.063	0.027	0.013	0.009	0.000	0.000	0.002	0.035	0.042	0.083	0.037	0.007	0.021	0.073	0.147	0.186	0.174	0.064	0.186
29-May	0.221	0.294	Z	0.152	0.026	0.037	0.050	0.034	0.000	0.028	0.004	0.019	0.012	0.044	0.018	0.000	0.000	0.000	0.000	0.000	0.014	0.195	0.065	0.021	0.054	0.294
30-May	0.031	0.047	0.052	Z	0.245	0.228	0.131	0.065	0.076	0.061	M	M	M	M	0.020	0.047	0.030	0.024	0.000	0.000	0.000	0.006	0.008	0.046	0.059	0.245
31-May	0.199	0.261	0.239	0.123	Z	0.220	0.015	0.038	0.135	0.156	0.062	0.048	0.058	0.093	0.041	0.022	0.003	0.021	0.065	0.120	0.126	0.087	0.003	0.114	0.098	0.261
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration M - Maintenance DF - DAS Failure																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Mildred Lake - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	323	45.88	45.88
0.006 - 0.05	181	25.71	71.59
0.06 - 0.1	137	19.46	91.05
> 0.1	63	8.95	100.00

Total Number of Valid Hours: 704

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Mildred Lake - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	17	28	13	9	10	14	44	54	70	32	9	3	0	1	13	6	323
0.006 - 0.05	16	4	5	0	5	16	33	17	13	16	7	13	9	7	13	7	181
0.06 - 0.1	14	1	1	1	5	14	41	27	5	0	3	4	1	9	3	8	137
> 0.1	8	3	0	0	0	4	15	5	8	0	3	3	3	2	7	2	63
Totals	55	36	19	10	20	48	133	103	96	48	22	23	13	19	36	23	704

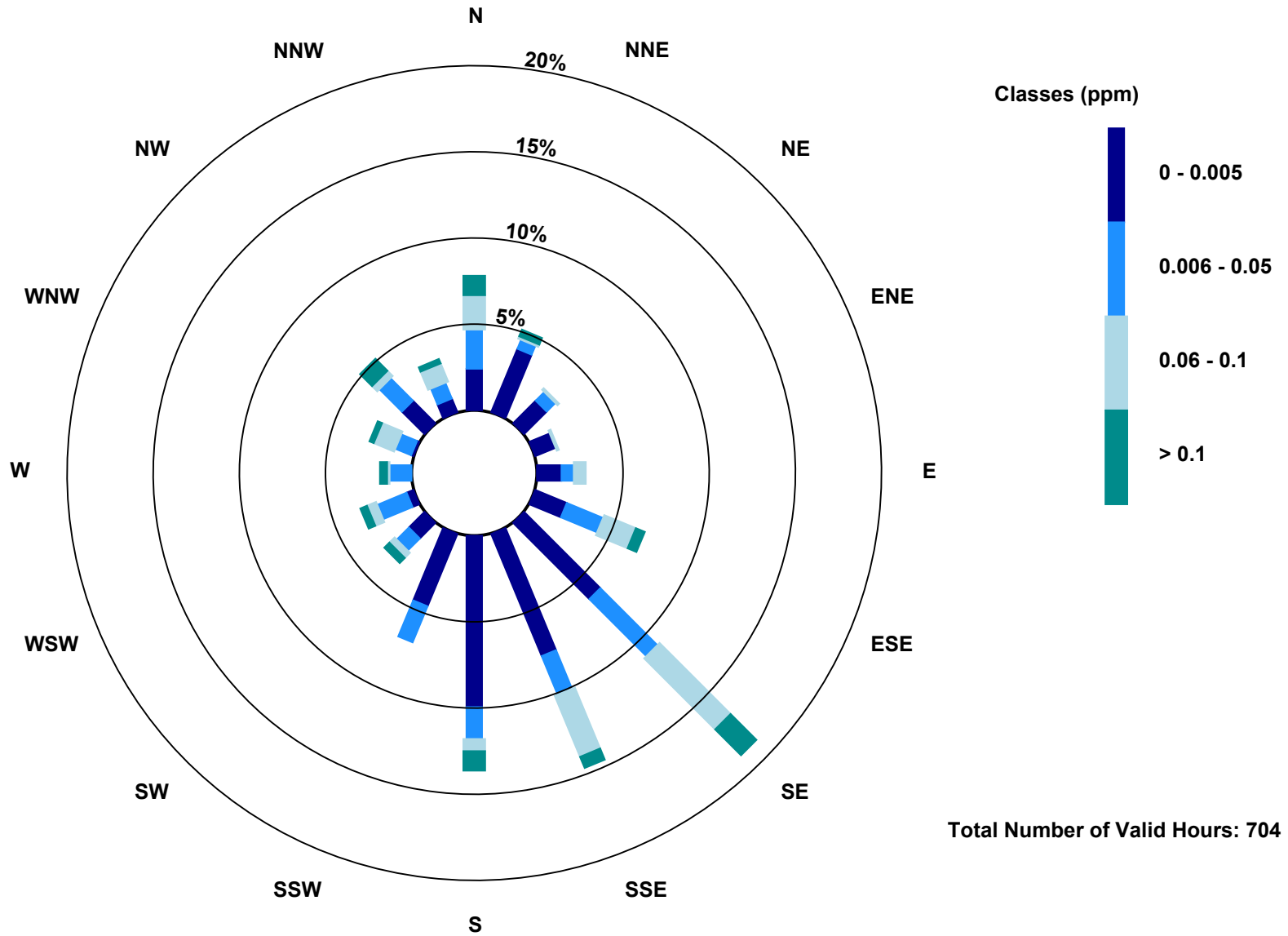
Total Number of Valid Hours: 704

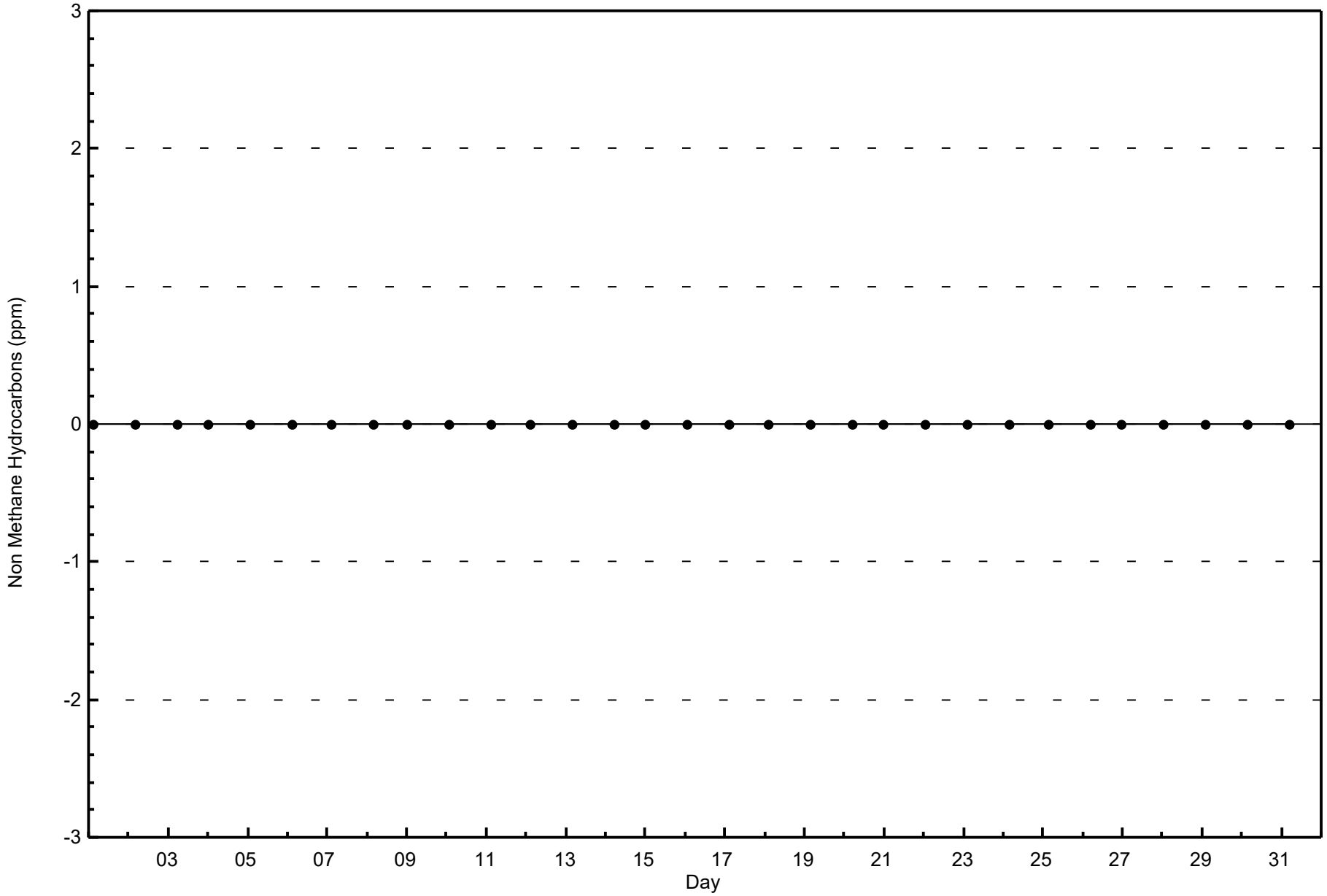
Total Number of Hours: 744

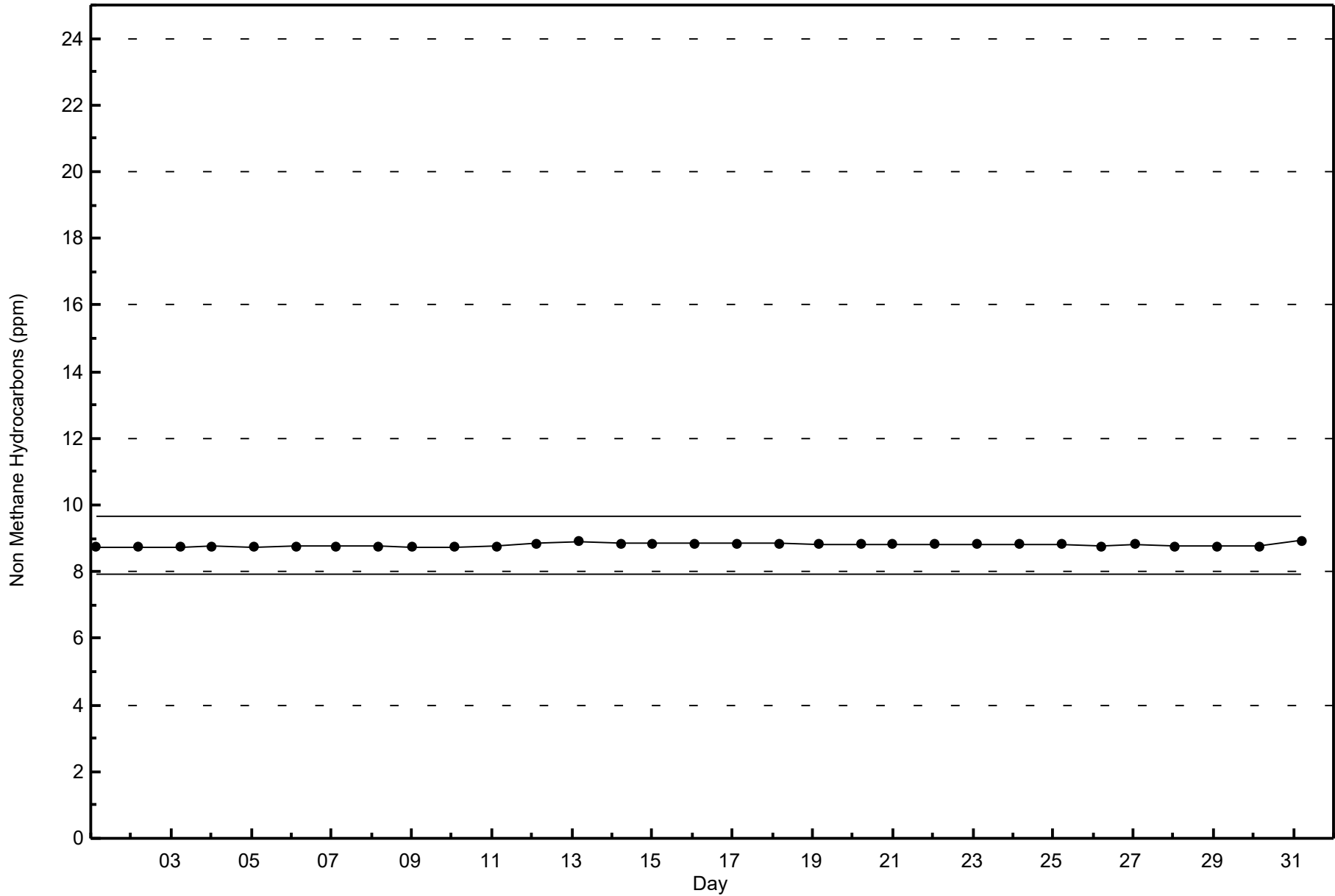


Wood Buffalo Environmental Association
Wind Rose May 2023

Non Methane Hydrocarbons (NMHC) - ppm
Mildred Lake









Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH₄) - ppm

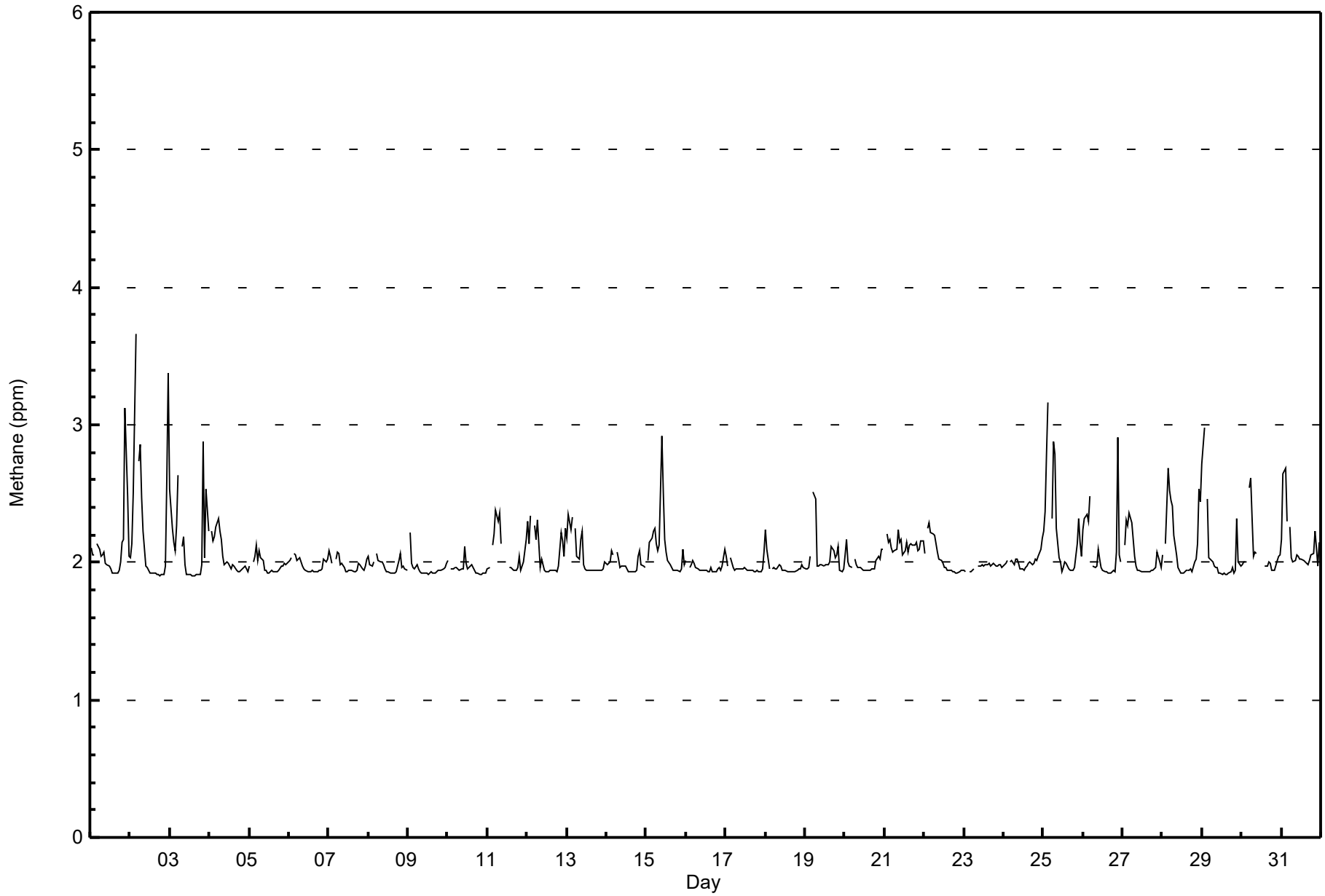
Mildred Lake - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service: 744														744						
Maximum Value: 3.7 ppm on May 2 04:00				Maximum Daily Average: 2.2 ppm on May 2		Hours of Data: 704														704						
Minimum Value: 1.9 ppm on May 3 15:00				Minimum Daily Average: 2.0 ppm on May 9		Hours of Missing Data: 40														40						
Maximum Diurnal Average: 2.2 ppm at hour 4				Minimum Diurnal Average: 2.0 ppm at hour 16		Hours of Calibration: 35														35						
Monthly Average: 2.05 ppm				Percentiles: P ₁ = 1.9 P ₁₀ = 1.9 Q ₁ = 1.9 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.2 P ₉₉ = 2.9		Percent Operational Time: 99.3														99.3						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	2.1	2.1	2.1	Z	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.2	3.1	2.5	2.0	2.1	3.1
2-May	2.0	2.1	2.5	3.7	Z	2.7	2.9	2.5	2.2	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.6	3.4	2.2	3.7
3-May	2.5	2.3	2.1	2.1	2.3	2.6	Z	2.1	2.2	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.9	2.0	2.5	2.2	2.1	2.9	
4-May	Z	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	1.9	2.0	2.3	
5-May	2.0	Z	2.0	2.0	2.1	2.0	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1	
6-May	2.0	2.0	Z	2.1	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.1	
7-May	2.1	2.0	2.0	Z	2.0	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	1.9	2.0	2.0	2.1	
8-May	2.0	2.0	2.0	2.0	Z	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.0	2.0	1.9	2.0	2.1	
9-May	Z	2.2	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.2	
10-May	2.0	Z	2.0	1.9	2.0	2.0	2.0	1.9	1.9	2.0	2.1	2.0	1.9	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	
11-May	2.0	2.0	Z	2.1	2.2	2.4	2.3	2.4	2.1	C	C	C	C	2.0	2.0	2.0	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.2	2.4	
12-May	2.3	2.1	2.3	Z	2.3	2.2	2.3	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.2	2.2	2.0	2.2	2.3	
13-May	2.2	2.3	2.2	2.3	Z	2.2	2.0	2.0	2.2	2.2	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.3	
14-May	2.0	2.0	2.0	2.1	2.1	Z	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.0	2.0	2.0	2.1	
15-May	Z	2.0	2.2	2.2	2.2	2.3	2.1	2.1	2.1	2.9	2.5	2.2	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.0	2.9	
16-May	2.0	Z	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.1	2.1	
17-May	2.0	2.0	Z	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	
18-May	2.2	2.1	1.9	Z	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.2	
19-May	2.0	2.0	2.0	2.0	Z	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1	2.1	1.9	1.9	2.0	2.5	
20-May	2.1	2.2	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.0	2.1	2.1	2.0	2.2	
21-May	Z	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.2	
22-May	2.1	Z	2.2	2.3	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.3	
23-May	1.9	1.9	Z	1.9	1.9	1.9	2.0	DF	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
24-May	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.0	2.2	
25-May	2.2	2.4	2.8	3.2	Z	2.3	2.9	2.8	2.2	2.0	2.0	1.9	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.1	2.3	2.1	2.0	3.2	
26-May	2.2	2.3	2.3	2.3	2.5	Z	2.0	2.0	2.0	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.9	2.1	2.0	2.1	2.9	
27-May	Z	2.1	2.3	2.3	2.4	2.3	2.2	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.0	2.0	2.0	2.4	
28-May	2.1	Z	2.1	2.7	2.5	2.4	2.4	2.2	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.0	2.1	2.5	2.4	2.7	
29-May	2.7	3.0	Z	2.5	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	2.3	2.0	2.0	3.0	
30-May	2.0	2.0	2.0	Z	2.5	2.6	2.3	2.0	2.1	2.1	M	M	M	M	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	2.1	2.6	
31-May	2.2	2.6	2.7	2.3	Z	2.3	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.0	2.1	2.7	
																								Diurnal Average		
																								Diurnal Maximum		
																								2.1 2.7		
																								2.7 3.4		
Z - zerospan C - Calibration M - Maintenance DF - DAS Failure																										



Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Mildred Lake - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Mildred Lake - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	509	72.30	72.30
2.1 - 3.0	191	27.13	99.43
3.1 - 10.0	4	0.57	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 704

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Mildred Lake - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	37	32	18	9	18	35	68	67	84	45	17	19	9	9	28	14	509
2.1 - 3.0	18	4	1	1	2	13	64	36	11	3	5	4	4	10	6	9	191
3.1 - 10.0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	4
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	55	36	19	10	20	48	133	103	96	48	22	23	13	19	36	23	704

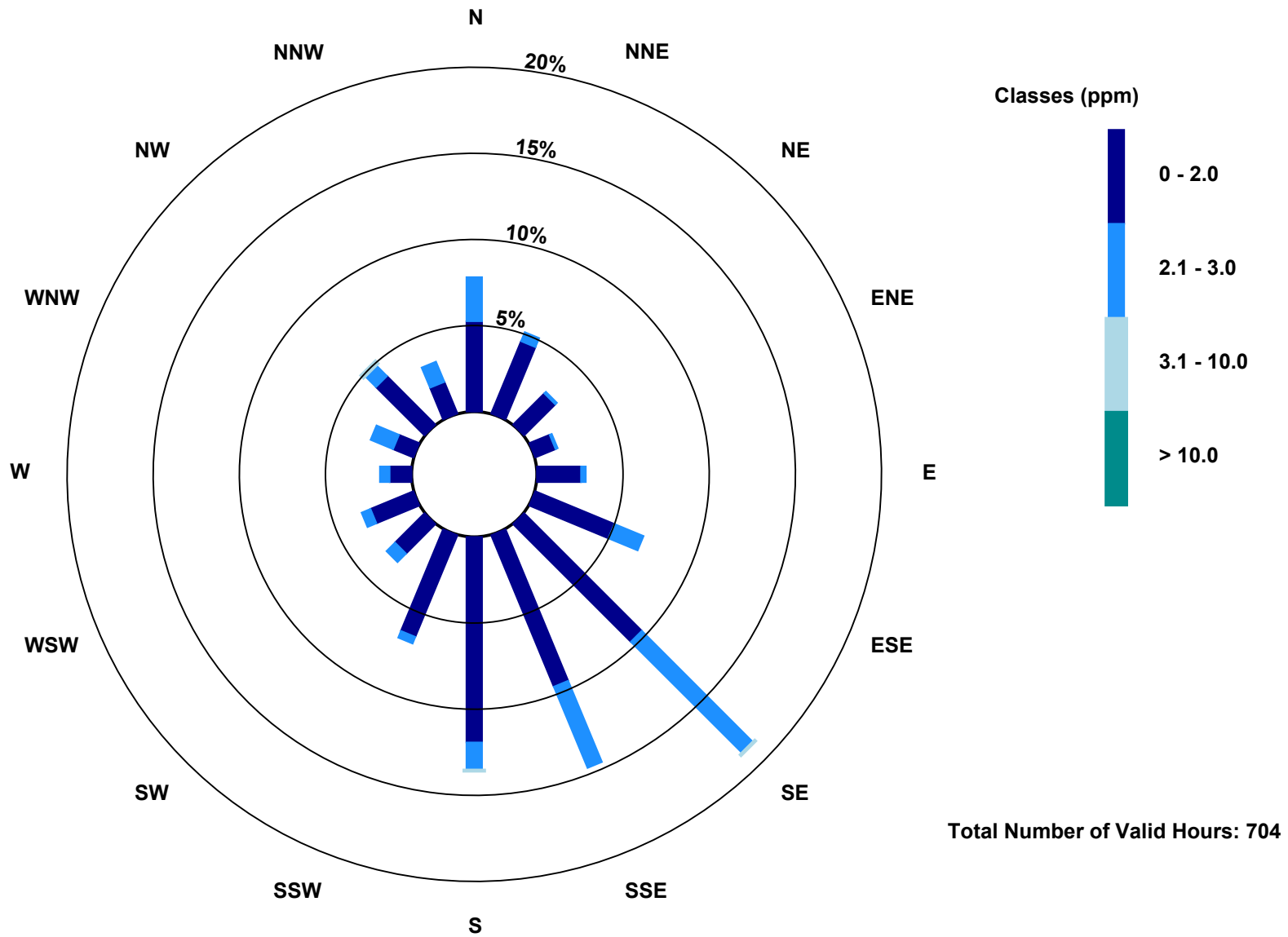
Total Number of Valid Hours: 704

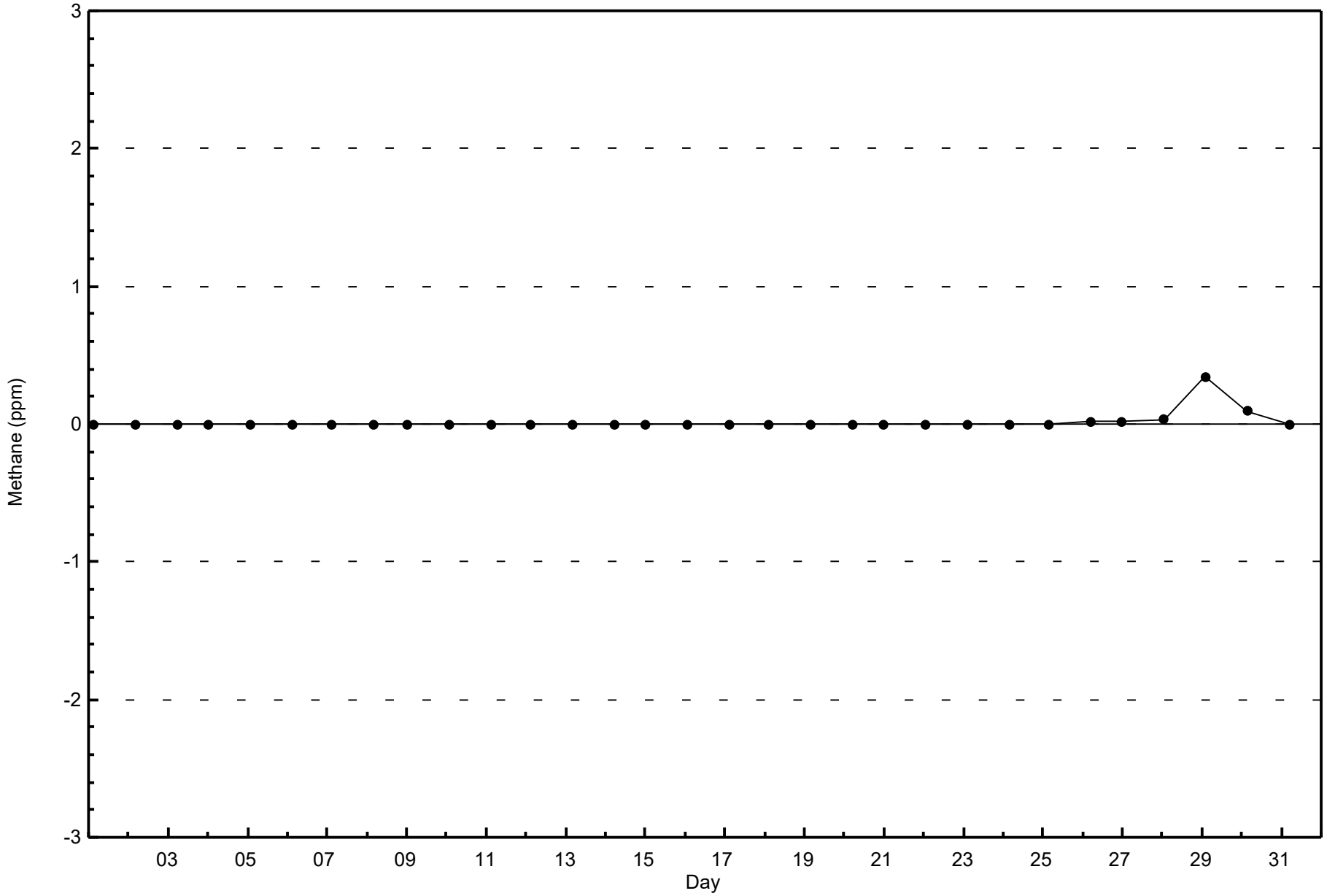
Total Number of Hours: 744

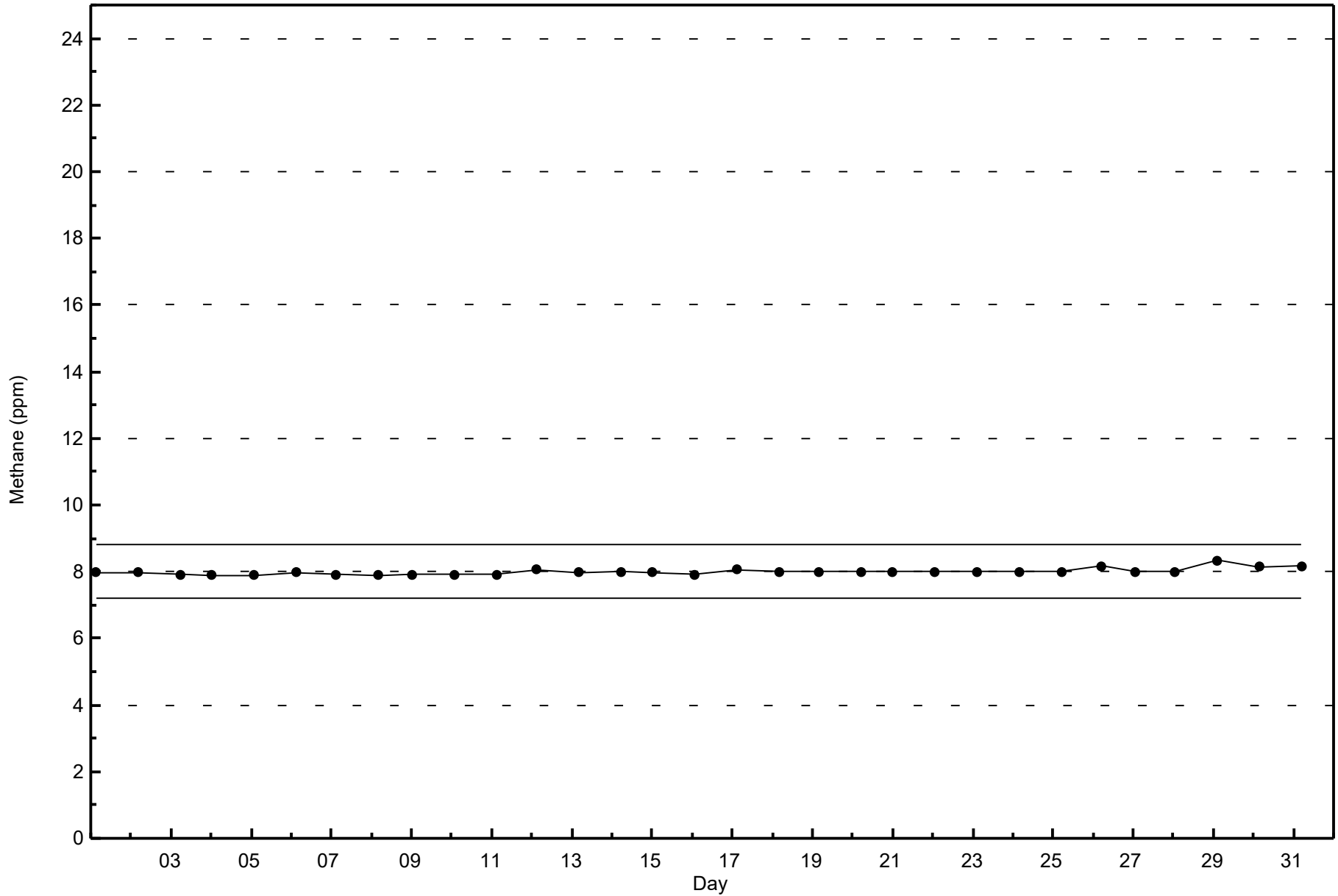


Wood Buffalo Environmental Association
Wind Rose May 2023

Methane (CH₄) - ppm
Mildred Lake





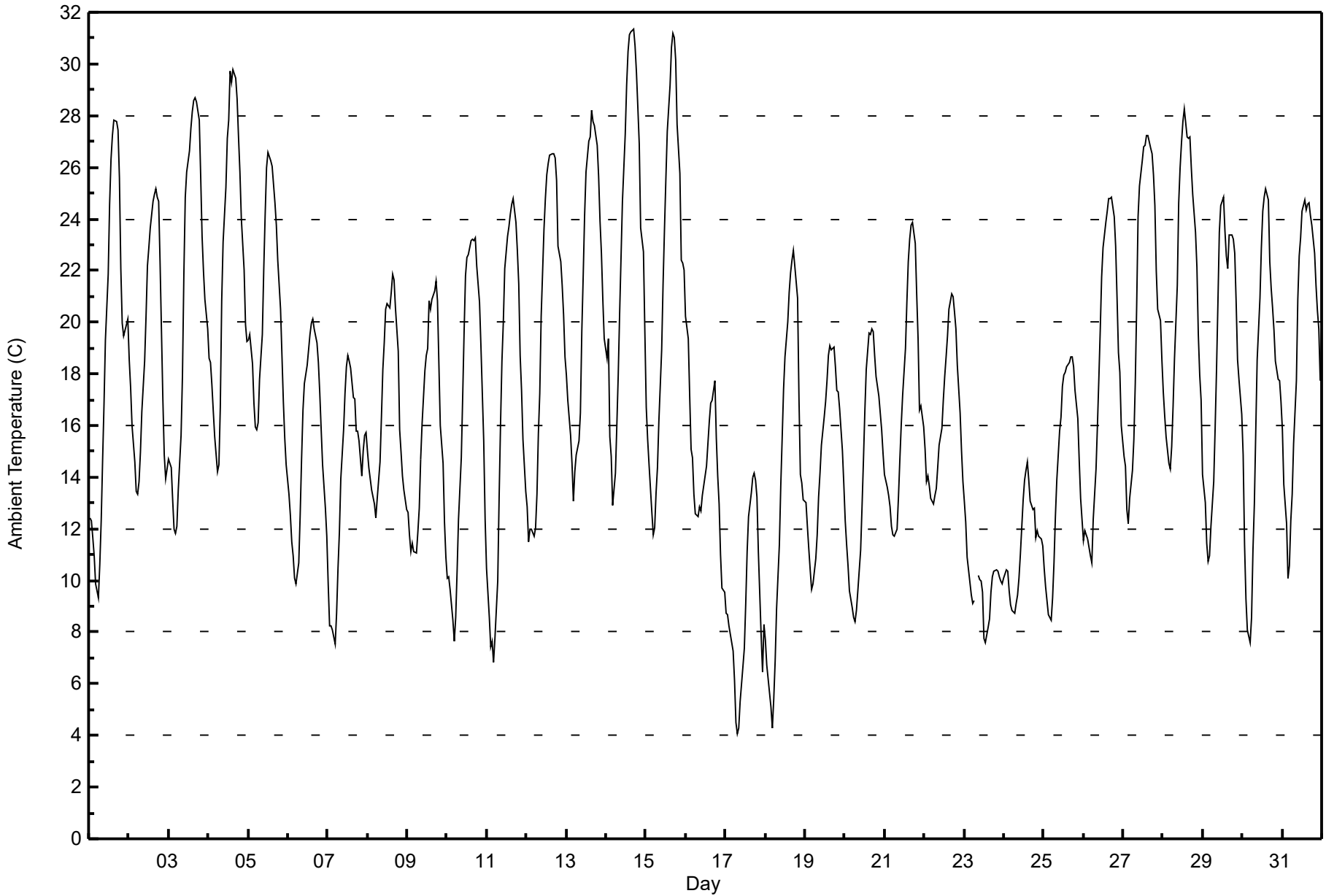




Wood Buffalo Environmental Association
Summary of Hour Averages

Ambient Temperature (AT) - C
Mildred Lake - May 2023

Maximum Value: 31.4 C on May 14 17:00		Maximum Daily Average: 23.3 C on May 14		Hours in Service: 744																						
Minimum Value: 4.1 C on May 17 08:00		Minimum Daily Average: 8.9 C on May 17		Hours of Data: 743																						
Maximum Diurnal Average: 22.8 C at hour 17		Minimum Diurnal Average: 10.9 C at hour 5		Hours of Missing Data: 1																						
Monthly Average: 17.23 C		Percentiles: P ₁ = 5.9 P ₁₀ = 9.9 Q ₁ = 12.7 Median = 16.8 Q ₃ = 21.8 P ₉₀ = 25.6 P ₉₉ = 30.4		Hours of Calibration: 0																						
				Percent Operational Time: 99.9																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	12.4	12.3	11.7	11.0	9.9	9.3	10.6	12.3	14.6	16.8	19.3	21.8	24.6	26.3	27.2	27.8	27.8	27.5	25.6	22.1	20.0	19.5	19.9	20.1	18.8	27.8
2-May	18.6	17.5	16.0	14.6	13.5	13.3	13.8	14.9	16.5	18.5	20.2	22.2	22.9	23.6	24.7	24.9	25.2	24.8	24.7	22.3	17.0	14.9	14.0	14.3	18.9	25.2
3-May	14.7	14.4	13.1	12.0	11.8	12.1	13.5	15.6	18.0	21.8	24.8	25.8	26.6	27.5	28.1	28.6	28.7	28.5	27.8	25.7	23.3	22.0	20.9	19.7	21.0	28.7
4-May	18.6	18.4	17.6	16.5	15.6	14.2	14.5	16.7	20.8	23.1	25.2	27.1	27.8	29.7	29.3	29.8	29.4	28.6	27.2	25.8	24.0	22.0	19.9	19.3	22.6	29.8
5-May	19.3	19.5	18.4	16.8	15.9	15.8	16.1	17.8	19.5	22.0	24.1	26.0	26.6	26.3	26.1	25.3	24.6	23.7	22.4	20.5	18.7	16.9	15.5	14.5	20.5	26.6
6-May	13.4	12.6	11.5	10.9	10.1	9.9	10.7	12.5	14.7	16.6	17.6	18.4	18.9	19.5	20.0	20.1	19.8	19.2	18.5	17.2	15.8	14.5	12.8	11.7	15.3	20.1
7-May	9.9	8.2	8.3	8.1	7.5	8.8	10.4	11.9	14.0	15.9	17.2	18.3	18.7	18.5	18.2	17.1	17.0	15.8	15.8	15.4	14.0	15.0	15.6	15.7	14.0	18.7
8-May	15.0	14.4	13.5	13.2	13.0	12.4	13.2	14.6	16.3	18.1	19.2	20.5	20.7	20.5	21.1	21.8	21.6	20.5	18.8	15.9	15.0	14.1	13.5	12.7	16.7	21.8
9-May	12.6	11.8	11.1	11.5	11.1	11.1	11.9	12.8	14.7	16.0	18.1	18.7	19.0	20.8	20.5	20.9	21.2	21.6	20.8	18.4	16.0	14.6	12.3	10.9	15.8	21.6
10-May	10.1	10.1	9.6	8.5	7.7	8.5	10.3	12.4	14.7	17.1	19.6	21.8	22.5	22.6	23.2	23.2	23.2	23.3	22.2	20.7	19.1	17.2	15.4	12.3	16.5	23.3
11-May	10.4	8.6	7.4	7.6	6.9	7.8	10.0	13.2	16.1	18.5	20.0	22.1	23.3	23.7	24.2	24.6	24.8	23.8	22.8	21.5	18.7	17.4	15.4	13.4	16.8	24.8
12-May	12.9	11.5	12.0	12.0	11.7	12.1	13.3	15.7	17.3	20.3	23.6	24.8	25.7	26.1	26.5	26.5	26.5	26.4	25.5	22.9	22.4	21.4	20.3	18.6	19.8	26.5
13-May	17.9	17.0	15.6	14.6	13.0	14.2	14.8	15.4	16.5	19.6	21.8	24.1	25.8	27.0	27.2	28.2	27.8	27.6	26.9	25.7	23.9	22.6	20.9	19.4	21.1	28.2
14-May	18.6	19.4	15.6	14.8	12.9	14.2	16.0	18.0	20.3	22.5	24.7	27.3	29.2	30.5	31.1	31.2	31.4	30.7	29.7	28.3	26.9	23.7	22.7	19.6	23.3	31.4
15-May	16.7	15.5	14.5	12.7	11.8	12.0	13.4	14.4	16.2	18.9	21.5	23.6	25.5	27.4	29.2	30.6	31.2	31.0	30.2	27.7	25.7	22.4	22.3	22.0	21.5	31.2
16-May	20.2	19.3	17.1	15.1	14.7	13.3	12.6	12.5	12.9	12.7	13.3	13.7	14.4	15.3	16.1	16.9	17.0	17.7	15.5	14.0	13.0	11.0	9.7	9.6	14.5	20.2
17-May	8.7	8.7	8.3	7.9	7.2	6.1	4.5	4.1	4.3	5.3	6.7	7.4	9.1	11.1	12.5	13.4	14.0	14.2	13.9	13.2	11.1	7.9	6.4	8.3	8.9	14.2
18-May	7.7	6.7	5.7	5.1	4.3	5.4	6.9	8.9	11.4	13.6	15.5	17.4	18.6	20.0	21.1	21.9	22.4	22.8	22.2	20.9	17.0	14.1	13.8	13.1	14.0	22.8
19-May	13.0	12.1	11.3	10.4	9.6	9.9	10.8	11.8	13.2	14.1	15.3	16.3	16.9	17.8	18.7	19.1	18.9	19.0	18.3	17.3	17.3	16.7	15.0	13.7	14.9	19.1
20-May	12.3	11.4	10.6	9.6	9.0	8.6	8.4	8.9	9.6	11.2	12.9	14.6	16.6	18.2	19.6	19.5	19.7	19.7	18.7	17.9	17.1	16.5	15.8	14.9	14.2	19.7
21-May	14.1	13.6	13.3	12.9	12.1	11.8	11.7	12.0	13.2	14.7	16.1	17.2	19.0	20.8	22.4	23.2	23.7	23.9	23.0	21.1	19.3	16.6	16.8	15.9	17.0	23.9
22-May	15.1	13.9	14.1	13.7	13.2	13.0	13.3	13.5	14.4	15.3	15.9	17.0	17.9	18.6	19.5	20.5	21.1	21.0	20.4	19.7	18.3	16.5	15.0	13.8	16.4	21.1
23-May	13.1	12.2	10.9	9.9	9.4	9.1	9.2	DF	10.2	10.1	10.0	9.6	7.7	7.6	8.2	8.5	9.5	10.1	10.3	10.4	10.4	10.2	10.0	9.9	9.9	13.1
24-May	10.1	10.4	10.3	9.6	9.1	8.8	8.8	9.1	9.5	10.1	11.0	13.1	13.9	14.3	14.6	13.9	13.1	12.7	12.8	11.6	11.9	11.7	11.6	11.3	11.4	14.6
25-May	10.5	9.7	9.2	8.7	8.5	9.3	10.7	12.5	13.9	15.8	16.3	17.5	18.0	18.1	18.3	18.5	18.6	18.6	18.3	17.4	16.3	14.6	13.2	12.4	14.4	18.6
26-May	11.6	11.9	11.6	11.3	11.0	10.7	12.4	14.3	16.0	17.8	19.7	21.7	22.9	23.9	24.3	24.8	24.8	24.8	24.1	23.0	20.9	18.8	18.1	16.0	18.2	24.8
27-May	14.8	14.4	12.8	12.2	13.2	14.3	15.5	17.6	20.6	24.1	25.3	26.2	26.8	26.9	27.2	27.2	26.8	26.5	25.7	24.5	22.0	20.5	20.1	18.6	21.0	27.2
28-May	17.3	16.4	15.5	14.5	14.3	15.2	16.8	18.6	21.4	24.6	26.0	26.9	27.8	28.3	27.2	27.1	27.2	26.0	25.0	23.5	22.1	19.6	17.9	17.0	21.5	28.3
29-May	14.1	13.0	11.4	10.7	11.0	12.1	13.8	15.9	18.2	20.8	23.5	24.5	24.8	23.5	22.6	22.1	23.4	23.4	23.2	22.7	20.8	18.6	17.8	16.4	18.7	24.8
30-May	14.9	11.4	9.3	8.1	7.6	8.6	11.2	12.9	15.8	18.5	21.0	22.9	24.3	24.8	25.2	24.7	22.3	21.3	20.6	19.7	18.5	17.8	17.7	16.9	17.3	25.2
31-May	15.8	13.7	12.2	10.1	10.6	12.3	13.3	15.3	17.8	20.9	22.6	23.3	24.3	24.7	24.3	24.6	24.6	24.1	23.8	22.7	21.5	20.5	19.7	17.7	19.2	24.7
14.0 13.2 12.2 11.4 10.9 11.1 12.0 13.5 15.2 17.3 19.0 20.4 21.3 22.1 22.5 22.8 22.8 22.5 21.8 20.3 18.7 17.1 16.1 15.2																								Diurnal Average		
20.2 19.5 18.4 16.8 15.9 15.8 16.8 18.6 21.4 24.6 26.0 27.3 29.2 30.5 31.1 31.2 31.4 31.0 30.2 28.3 26.9 23.7 22.7 22.0																								Diurnal Maximum		
DF - DAS Failure																										





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Mildred Lake - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	81	10.90	10.90
10 - 20	423	56.93	67.83
> 20	239	32.17	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

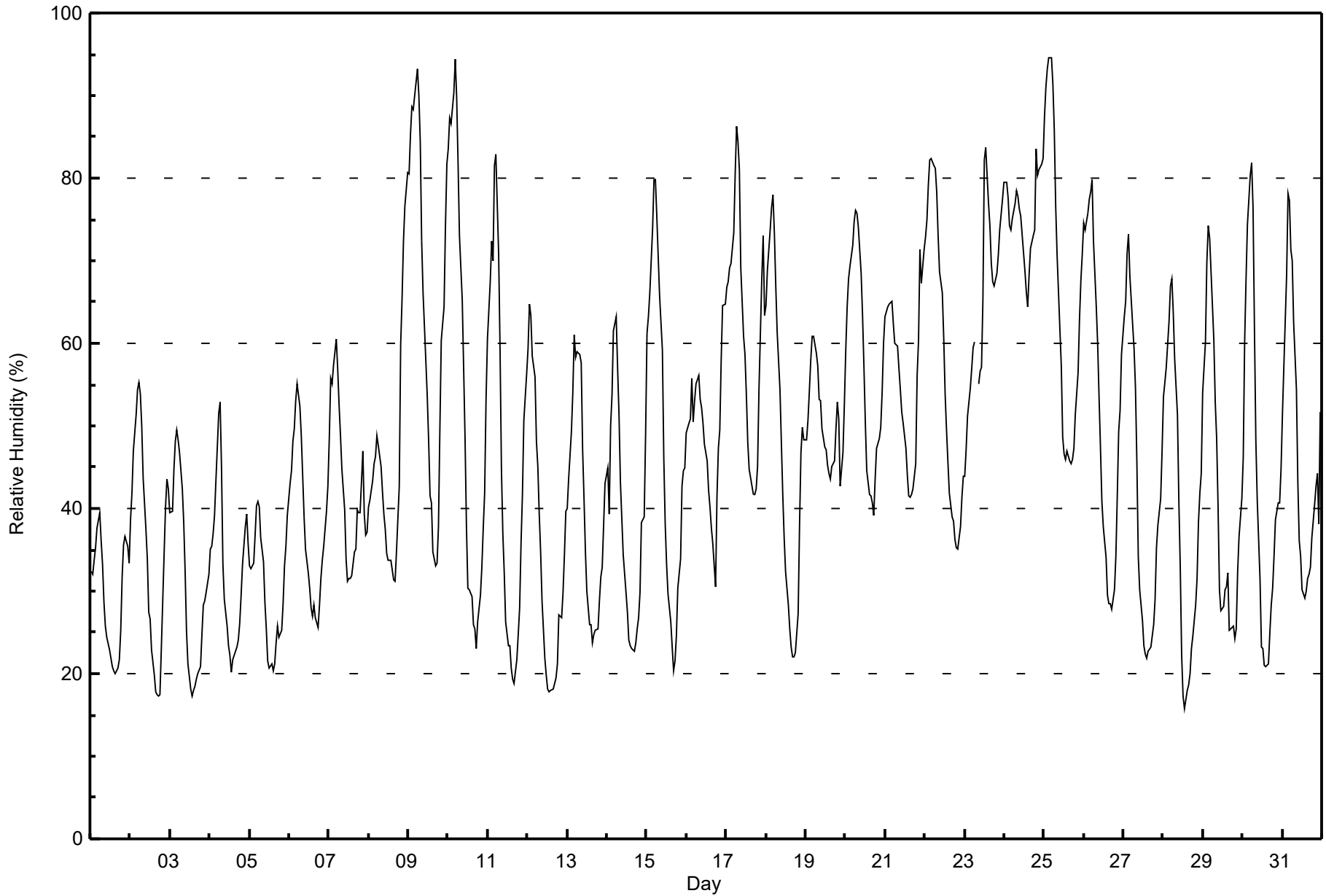
Relative Humidity (RH) - %
Mildred Lake - May 2023

Maximum Value: 94.6 % on May 25 05:00																						Maximum Daily Average: 75.4 % on May 24																						Hours in Service: 744			
Minimum Value: 15.8 % on May 28 14:00																						Minimum Daily Average: 29.4 % on May 1																						Hours of Data: 743			
Maximum Diurnal Average: 66.5 % at hour 5																						Minimum Diurnal Average: 31.2 % at hour 17																						Hours of Missing Data: 1			
Monthly Average: 47.26 %																						Percentiles: P ₁ = 17.9 P ₁₀ = 23.5 Q ₁ = 32.1 Median = 44.7 Q ₃ = 60.7 P ₉₀ = 74.7 P ₉₉ = 90.2																						Hours of Calibration: 0			
																																												Percent Operational Time: 99.9			
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																							
1-May	32.5	32.1	33.8	35.2	37.6	39.4	36.2	33.2	28.6	25.8	24.4	22.9	21.9	20.9	20.3	20.0	20.7	21.6	25.2	31.7	35.6	36.7	35.5	33.4	29.4	39.4																					
2-May	38.7	41.8	47.0	51.3	54.3	55.2	53.9	50.0	43.7	37.5	33.9	27.5	26.6	22.8	19.8	17.8	17.5	17.3	17.4	23.1	34.7	40.2	43.5	42.3	35.7	55.2																					
3-May	39.5	39.7	44.8	48.2	49.5	48.2	46.8	42.4	38.3	32.3	25.0	21.2	18.1	17.3	17.9	18.4	19.3	20.1	20.9	24.8	28.3	28.9	29.9	32.0	31.3	49.5																					
4-May	35.0	35.4	36.9	39.1	43.4	51.6	52.9	44.9	33.3	29.0	25.8	23.3	22.3	20.2	21.7	22.3	23.2	24.0	26.0	29.5	33.2	37.8	39.3	35.8	32.7	52.9																					
5-May	33.0	32.7	33.4	36.7	40.3	40.9	40.2	36.5	33.6	28.6	25.4	21.6	20.6	21.2	20.3	21.3	23.7	25.8	24.5	25.3	28.5	33.1	35.4	39.2	30.1	40.9																					
6-May	43.0	44.6	48.1	49.7	53.0	55.1	52.4	48.9	43.9	39.0	35.1	32.2	30.4	27.9	27.0	28.2	26.7	25.7	28.3	31.5	33.7	35.4	39.7	42.7	38.4	55.1																					
7-May	48.5	55.7	55.1	57.3	60.5	57.0	52.5	48.8	44.7	39.8	33.9	31.2	31.5	31.5	31.9	34.7	35.1	39.8	39.4	39.5	47.0	39.2	36.8	37.1	42.9	60.5																					
8-May	40.1	41.0	43.3	45.4	46.3	48.8	47.6	45.0	42.0	39.3	37.5	34.6	33.8	33.8	32.5	31.4	31.1	34.8	42.8	59.8	65.4	72.3	76.5	80.6	46.1	80.6																					
9-May	80.6	85.2	88.7	88.3	90.0	93.2	90.0	84.4	72.3	66.1	57.7	53.6	48.1	41.5	40.7	34.7	33.0	33.5	37.8	49.5	60.3	64.5	74.2	81.6	64.6	93.2																					
10-May	83.6	87.3	86.6	90.3	94.5	89.8	81.9	73.1	65.2	56.9	48.5	37.8	30.3	30.2	29.4	25.9	25.3	23.1	26.3	29.6	33.0	37.6	41.8	53.2	53.4	94.5																					
11-May	60.6	67.5	72.4	70.0	81.6	82.8	70.9	59.4	44.8	36.9	32.2	26.3	23.5	23.3	20.8	19.2	18.9	21.7	24.7	27.9	35.7	41.7	50.6	56.3	44.6	82.8																					
12-May	59.4	64.8	63.4	58.5	55.9	48.2	45.0	39.3	34.8	28.7	21.9	19.8	18.1	17.8	17.9	18.2	18.9	19.4	21.3	27.1	26.7	29.8	34.3	39.7	34.5	64.8																					
13-May	40.1	43.5	49.3	54.1	61.0	58.2	59.0	58.6	57.6	47.2	41.2	34.7	30.0	26.0	25.9	23.8	24.7	25.2	25.4	28.8	31.7	32.9	37.9	43.1	40.0	61.0																					
14-May	44.9	39.4	50.1	53.8	61.5	63.3	56.9	51.3	43.3	38.8	34.4	29.8	27.5	24.1	23.4	23.0	22.7	23.8	25.4	26.8	29.9	38.2	39.0	49.0	38.3	63.3																					
15-May	61.2	63.2	66.1	73.8	79.8	79.9	75.5	70.5	65.8	59.1	46.2	38.1	33.3	29.6	26.2	23.2	20.3	21.6	24.6	30.4	33.9	42.7	44.5	44.9	48.1	79.9																					
16-May	49.1	50.3	50.8	55.7	50.5	53.0	55.1	56.1	53.3	52.2	50.4	47.8	45.8	42.3	40.2	37.6	35.8	30.6	41.5	47.2	49.5	57.9	64.6	64.7	49.3	64.7																					
17-May	66.8	67.4	69.2	69.7	73.5	80.6	86.4	84.3	81.0	69.2	60.8	58.6	53.6	47.9	44.7	42.8	41.8	41.7	42.4	45.1	54.5	67.7	73.1	63.4	61.9	86.4																					
18-May	64.6	68.8	73.7	76.4	77.9	73.3	67.0	61.3	54.4	47.9	41.6	36.5	32.4	28.4	25.5	23.2	22.1	22.1	22.5	27.2	38.2	46.8	49.8	48.3	47.1	77.9																					
19-May	48.3	50.7	54.2	57.9	60.8	60.8	58.9	57.2	53.2	53.0	49.7	47.4	47.1	45.2	44.2	43.5	45.1	45.8	49.6	52.9	50.8	42.8	46.8	52.5	50.8	60.8																					
20-May	59.1	64.4	67.7	69.2	71.9	74.7	76.2	75.8	74.1	68.5	63.3	57.2	50.3	44.6	41.7	41.5	40.6	39.2	43.6	47.3	48.5	49.9	54.1	60.0	57.6	76.2																					
21-May	63.2	64.5	64.8	64.8	65.2	62.4	60.0	59.7	56.9	54.4	51.6	50.4	47.2	44.0	41.5	41.4	41.7	42.4	45.5	56.0	60.3	71.3	67.4	71.3	56.2	71.3																					
22-May	72.9	75.0	79.2	82.2	82.4	81.5	81.2	78.3	73.0	68.7	66.0	60.7	54.0	49.4	45.6	41.9	38.9	38.4	36.3	35.3	35.0	37.9	41.4	44.0	58.3	82.4																					
23-May	43.9	47.1	51.2	54.5	57.0	59.4	60.2	DF	55.1	56.6	57.1	65.2	82.2	83.7	77.0	74.2	69.6	67.5	66.9	68.5	70.6	73.8	75.5	77.4	65.0	83.7																					
24-May	79.4	79.4	77.6	74.3	73.7	75.0	77.0	78.5	77.8	76.3	75.4	71.0	68.8	66.2	64.4	68.2	71.5	73.1	73.7	83.5	80.3	81.0	81.7	82.4	75.4	83.5																					
25-May	87.5	91.0	93.2	94.6	94.6	91.3	85.7	76.5	70.7	61.6	57.3	48.6	46.6	45.9	46.9	45.7	45.4	45.9	47.3	51.4	56.4	62.9	67.6	70.9	66.1	94.6																					
26-May	74.5	73.7	75.8	77.4	78.4	79.8	72.4	64.3	59.8	53.3	47.3	40.9	37.7	34.0	29.5	28.4	28.4	27.8	30.1	34.3	41.5	49.3	51.9	58.6	52.1	79.8																					
27-May	63.2	65.1	70.8	73.2	68.1	62.2	59.3	54.6	45.7	34.2	30.2	26.4	23.5	22.3	21.9	22.7	23.2	24.6	25.9	29.0	35.2	38.0	41.2	47.0	42.0	73.2																					
28-May	53.6	55.2	57.2	62.7	66.9	67.8	63.7	58.2	51.3	40.9	32.9	22.2	17.3	15.8	18.0	18.7	20.0	23.1	24.6	28.4	31.5	38.3	41.8	44.3	39.8	67.8																					
29-May	54.1	60.2	69.8	74.3	72.7	68.6	60.3	52.9	48.4	40.4	30.2	27.7	28.2	30.1	30.5	32.2	25.2	25.6	25.8	24.2	25.4	32.3	36.6	41.2	42.4	74.3																					
30-May	46.2	60.1	67.8	74.4	80.3	81.8	76.4	61.9	48.3	41.1	31.4	23.2	23.0	21.1	20.8	21.2	25.0	28.3	30.4	34.2	38.6	40.8	40.7	44.7	44.2	81.8																					
31-May	51.4	57.2	68.3	78.2	77.3	71.4	70.0	62.5	54.4	43.3	36.1	34.2	30.2	29.2	30.0	31.5	32.0	32.9	36.4	40.5	42.8	44.2	38.2	51.7	47.7	78.2																					
																						55.4	58.2	61.6	64.2	66.5	66.3	63.6	59.0	53.2	47.3	42.1	37.8	35.6	33.5	32.2	31.5	31.2	31.8	33.9	38.4	42.5	46.6	49.4	52.7	Diurnal Average	
																						87.5	91.0	93.2	94.6	94.6	93.2	90.0	84.4	81.0	76.3	75.4	71.0	82.2	83.7	77.0	74.2	71.5	73.1	73.7	83.5	80.3	81.0	81.7	82.4	Diurnal Maximum	
DF - DAS Failure																																															



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Mildred Lake - May 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Mildred Lake - May 2023

Maximum Speed: 30 km/h on May 16 18:00	Maximum Daily Speed Average: 18.7 km/h on May 16	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 15 05:00	Minimum Daily Speed Average: 0.5 km/h on May 10	Hours of Data: 743
Maximum Diurnal Speed Average: 6.1 km/h at hour 13	Minimum Diurnal Speed Average: 1.8 km/h at hour 20	Hours of Missing Data: 1
Monthly Average Velocity: 3.6 km/h 148.5 deg	Percentiles: P ₁ = 1 P ₁₀ = 4 Q ₁ = 6 Median = 9 Q ₃ = 14 P ₉₀ = 18 P ₉₉ = 25	Percent Operational Time: 99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SE12	SE14	SE12	SE11	ESE10	SE9	SE11	SSE12	SE12	SSE15	SSE16	SSE18	SSE18	S18	S17	S16	SSW13	SSW11	SSW10	SSW7	SSE6	S4	NNW10	NNW16	SSE9.1	S18
2-May	NNW13	NNW11	NW6	NW7	NW9	NW8	W5	WSW2	WNW5	NNW5	WNW6	W5	WSW3	NW7	WNW8	NW11	NW12	NW11	NW10	NW2	ESE4	ESE6	SSE6	SE7	NW4.7	NNW13
3-May	SE10	SE9	SE6	ESE9	SE9	SE11	SSE9	SE11	SSE10	SSE9	S17	S19	S21	S20	SSE18	SSE17	S16	S17	S16	SSE11	SE9	SE9	SE12	SE8	SSE12.1	S21
4-May	ESE7	ESE10	SE6	SE8	SSE7	SSE3	SSW3	E3	SE11	SSE10	S8	S7	SE7	ESE7	N7	N15	N17	NNE16	N16	N13	NNE12	NNE9	NE6	ENE6	ENE3.8	N17
5-May	ESE7	SE9	SE10	SE9	SE11	SE13	SE14	ESE14	SE14	SE15	SSE14	SE19	SE20	ESE22	ESE21	ESE22	ESE20	ESE20	ESE18	ESE17	ESE16	SE17	SE21	SE23	SE15.8	SE23
6-May	SE21	SE21	ESE15	SE18	SE15	SE15	SE17	SE15	SE16	SE18	SE19	ESE20	SE19	SE18	SE18	SE19	ESE19	SE21	SE19	SE20	SE17	SE13	SE9	SE9	SE17.0	SE21
7-May	ESE6	E6	E7	E6	E8	ESE8	SE12	SE16	ESE14	SE18	SE19	SE19	ESE20	ESE20	SE19	SSE20	SSE14	SSE8	ESE5	NE5	NE6	E12	ESE15	SE19	SE11.6	ESE20
8-May	SSE16	SE16	SE17	SE15	SSE11	SE9	SE10	SE10	SSE12	SSE12	SSE13	SSE13	SSE14	SSE15	S10	S13	SSE13	SSE11	WNW6	WNW8	W7	WSW7	SSW6	SSE4	SSE9.1	SE17
9-May	SSE5	SSE3	SSW4	SSE3	N1	E3	S4	SSW4	S5	SSW5	S8	S10	SSW8	S7	NW5	NNW11	NNE9	N5	ENE5	E3	SSW8	SW6	S1	SSW2	S2.1	NNW11
10-May	ESE1	S5	S6	S6	S4	S5	S6	S5	S5	SSE6	S7	S4	NW6	NNW11	W11	NW8	NNW10	NE9	NNE11	NNE8	NNE7	NNE7	ENE5	N5	WNW0.5	WNW11
11-May	NNE3	N4	NNW4	N3	S4	NNW2	N2	SE2	SE6	SSE7	E5	SSE5	SSE7	SSE8	SSE8	SSE7	S5	E8	SE7	S8	S5	SW5	ESE1	ESE5	SE3.2	S8
12-May	S4	SSE5	SE5	SE7	SSE8	S8	SSE6	SE7	S8	SE9	S14	S15	SSE15	SSE14	SSE15	SSE15	SSE12	SSE11	S7	SSE6	SE11	SE13	SE12	ESE8	SSE9.5	SSE15
13-May	SE10	SSE8	SE7	SSE7	SSE6	S5	S4	SSE4	SSE5	SSE8	SSE8	S11	S13	SSW14	SSW14	SSW14	SSW12	S10	S10	SSE9	SSE9	S9	SSW9	SW5	S8.2	SSW14
14-May	SW5	SW5	S2	SW1	NE2	S6	SSW6	SSW6	SSW7	SSW8	SSW7	S9	SSW10	SSW13	SSW14	SSW14	SSW14	SW14	SW10	WNW9	N10	NNW10	NNE6	E2	SSW5.1	SSW14
15-May	WSW1	N4	N5	SW0	NNE0	NNE2	N3	SW2	S4	SE7	SE4	ESE6	ESE8	SE5	SSE14	SSW14	S13	S12	S8	S9	SSW8	W6	NW9	S3.2	SE14	
16-May	NW8	NNW14	N13	NNW9	NW18	NW23	NW24	NW29	NW27	NW27	NW26	NW27	NW26	NW26	NW24	NW23	NW23	NW30	N17	N15	N12	N9	N7	NNW10	NNW18.7	NW30
17-May	NNW9	NNW10	N12	N16	N13	N13	NNE13	NNE13	NNE13	NNE16	N18	N17	NNE15	NNE14	NE12	NE13	NE12	NE13	NE12	NNE7	NNE5	NNE5	E6	SE10	NNE10.4	N18
18-May	SSE12	SSE10	SSE8	SSE9	S9	S9	SSE11	SSE10	SE10	SSE8	SW7	SSW7	S10	S9	S9	S8	SSW8	SSW8	S8	S6	S4	S5	S8	SSW10	S8.1	SSE12
19-May	S10	S10	SSE11	SSE8	SE8	SE8	SSE8	S8	SSE8	SSE8	S7	S7	SSW7	SSW5	SSW6	WNW3	N4	N5	NNW7	NNW7	N12	N16	N13	NNW11	S1.6	N16
20-May	N10	N12	N13	N12	N12	N13	N11	N9	N8	N8	N7	NNE6	NNE5	NE3	WSW5	NE2	E7	ESE6	E4	SE8	SE10	SE12	SE13	SE13	NNE4.3	N13
21-May	SE11	SE12	SE16	SSE14	SE12	SE16	SE14	SE9	SE11	SSE11	SSE10	SSE9	SSE8	SSE9	SSE11	SE10	SSE9	SE8	SE6	ENE2	N5	E4	ESE5	N6	SE8.5	SE16
22-May	N7	NNE5	N12	N12	N12	N12	N13	N14	N15	N14	N17	N18	NNE16	NNE17	NNE18	NNE17	NNE19	NE17	ENE17	NE18	ENE19	NE14	NE12	NE12	NNE13.3	ENE19
23-May	ENE15	E13	ENE9	ENE11	E15	E16	E16	DF	E13	E12	ESE12	ESE17	ESE17	ESE13	ESE19	ESE18	ESE18	SE19	SE15	SE18	SSE17	SE18	SE18	SE18	ESE14.2	SE19
24-May	SE16	SE17	SE15	SE13	SE19	SE18	SE15	SE17	SE19	SSE11	S12	S10	S9	SSW8	SW13	WSW12	WSW13	WSW12	W12	WNW11	W10	W10	WNW10	WNW9	S7.1	SE19
25-May	W7	WNW7	NW7	NW6	NW5	WNW5	WNW3	WSW2	SW5	WSW2	N5	NNE9	NNE7	NNW5	NE6	ENE6	E7	ESE8	SE5	ESE4	SE10	SE7	SE6	SE7	NE0.8	SE10
26-May	ESE7	SSE8	SE6	SE10	SSE9	SSE8	SSE8	SSE7	SSE7	SE8	SSE6	S6	SSW8	SSW9	S8	S8	S8	S7	SSE7	SSE8	SSE8	SE8	SSE8	SE5	SSE7.0	SE10
27-May	SSE3	SE7	ESE5	ESE6	SE8	SE12	SE12	SE9	SE9	SSW14	S17	S17	S19	SSE20	S17	S15	S16	S14	S13	S9	SSE7	SSE9	SSE11	SSE10	SSE10.9	SSE20
28-May	SE9	SSE6	SE8	SE8	SE8	SE8	SE11	SSE11	SSE9	SSW12	SW16	SW18	SW20	SW20	WSW19	WSW17	WSW17	W17	W17	W13	WNW14	NW14	WNW9	WNW8	SW8.1	SW20
29-May	NW3	W3	WSW2	S3	S6	WNW1	SSW5	SSW5	SSW8	SSW3	WSW12	WSW16	SW17	WSW22	WSW23	SW19	SW16	SSW14	SSW11	WSW7	WSW6	NNW7	N9	NNE8	SW7.1	WSW23
30-May	NE6	NNE2	NW2	SSW2	S2	S2	S5	S6	SSE5	SE6	SSE5	SSE7	SSW4	WSW4	WSW6	WSW7	NW18	NW17	NNW10	NNW5	NNE4	NE3	NE5	WSW2	W1.4	NW18
31-May	W4	NW4	S4	SW3	W4	SSE3	S6	S6	SSE6	WSW2	WSW3	ESE6	SE5	SSE8	SSW7	SW9	S11	SSE8	SSE5	ESE4	SE6	NNW8	N9	NNW8	S2.3	SSE11

SE3.7 SE3.6 ESE3.4 SE3.7 SE3.7 SE3.7 SE4.4 SE4.2 SE5.0 SSE4.9 S5.0 SSE5.9 SSE6.1 S5.6 S5.0 S4.5 S3.5 SSE3.3 SSE2.3 SE1.8 ESE2.7 ESE2.4 ESE3.1 ESE2.7	Diurnal Average
SE21 SE21 SE17 SE18 SE19 NW23 NW24 NW29 NW27 NW27 NW26 NW27 NW26 NW26 NW24 NW23 NW23 NW30 SE19 SE20 ENE19 SE18 SE21 SE23	Diurnal Maximum

DF - DAS Failure
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

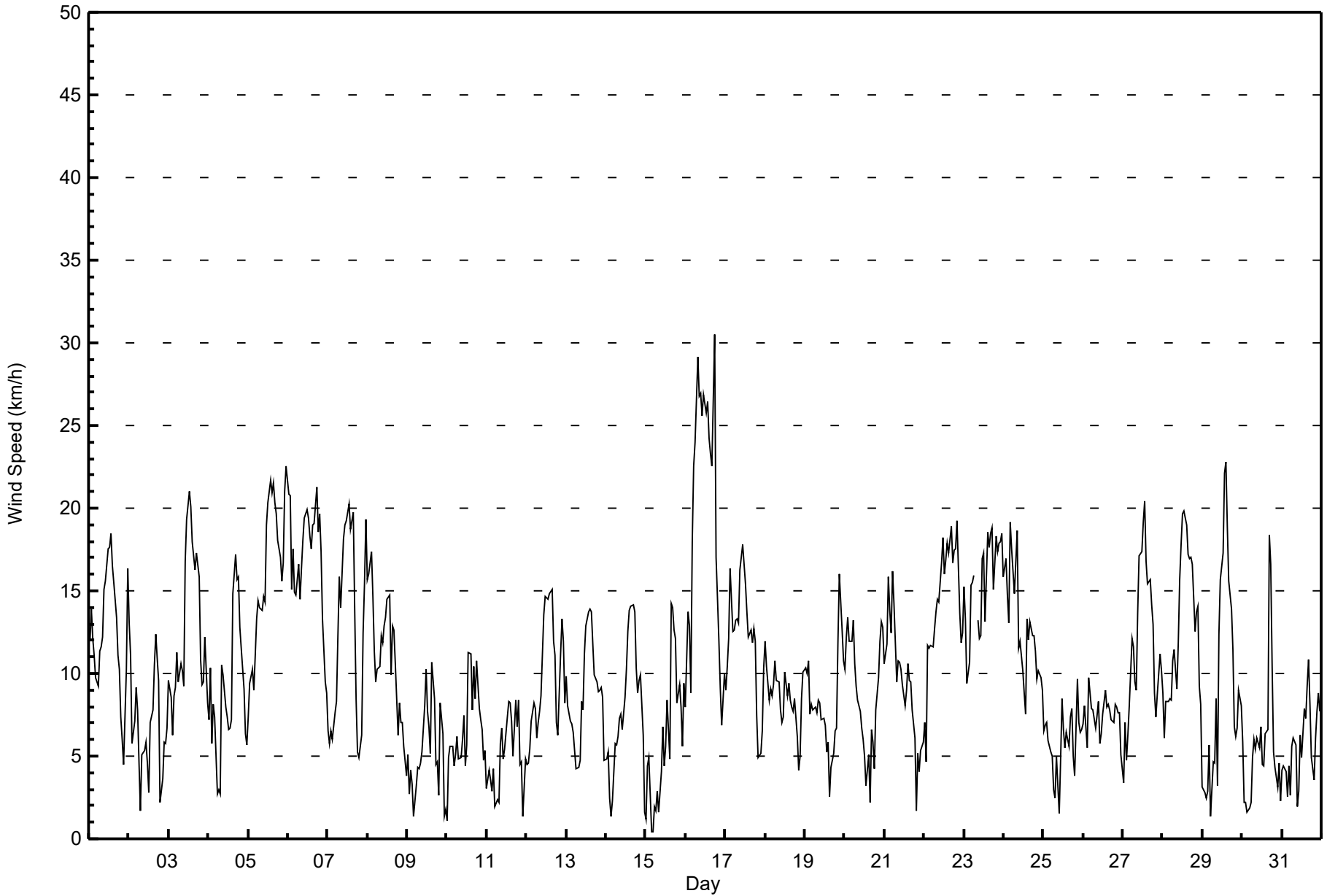
Wind Speed (WS) - km/h
Mildred Lake - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 10 km/h on May 29 14:00 Minimum Value: 1 km/h on May 29 03:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7																	Hours in Service: 744 Hours of Data: 743 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9									
Day	Hourly Period Ending At (MST)																								Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	3	3	3	2	2	2	3	2	3	3	3	4	5	5	4	5	4	4	3	2	1	2	5	4	5	
2-May	2	5	2	1	2	2	2	1	2	3	4	3	4	5	4	4	4	3	3	1	1	1	1	1	5	
3-May	3	3	2	2	2	2	2	3	2	4	5	5	5	5	5	5	4	5	3	2	2	2	2	2	5	
4-May	2	2	1	1	2	2	2	2	2	2	2	2	3	3	4	4	4	4	4	3	3	3	2	1	4	
5-May	3	2	2	2	3	4	3	4	3	3	3	5	5	6	5	5	5	5	5	5	5	5	6	7	7	
6-May	5	5	5	4	4	3	4	4	3	4	5	5	5	5	5	5	5	6	5	5	4	4	3	3	6	
7-May	1	1	2	2	2	2	4	4	4	4	5	5	6	5	5	5	4	7	2	1	2	3	5	6	7	
8-May	6	4	4	5	3	2	3	2	3	3	3	4	4	4	3	4	3	3	6	2	3	2	3	2	6	
9-May	1	1	1	2	2	1	2	1	2	2	3	3	3	3	7	6	4	3	2	2	2	2	2	1	7	
10-May	1	1	2	1	1	1	1	2	1	2	2	2	3	5	4	3	4	4	3	3	2	2	3	2	5	
11-May	2	1	3	3	1	2	1	1	2	2	3	3	3	3	3	3	3	3	2	2	1	2	2	2	3	
12-May	2	1	1	2	2	1	2	2	2	2	4	4	4	5	4	4	4	4	3	2	3	3	3	2	5	
13-May	3	3	2	1	1	1	1	1	2	2	2	3	3	4	4	4	4	3	2	2	2	2	2	2	4	
14-May	1	2	1	2	2	2	2	2	2	2	2	2	3	4	4	4	4	4	4	3	4	2	2	1	4	
15-May	2	2	1	2	1	1	2	2	2	2	2	2	2	2	3	4	5	4	4	2	2	1	4	2	5	
16-May	1	4	4	3	4	5	7	6	5	6	8	7	7	8	7	7	7	6	5	4	4	3	3	3	8	
17-May	3	3	4	4	5	4	4	4	4	5	5	4	5	4	4	4	4	4	4	2	1	1	1	3	5	
18-May	2	2	2	2	2	2	2	2	2	3	3	3	3	4	3	3	3	3	3	1	1	1	2	2	4	
19-May	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	3	2	1	1	2	4	5	3	3	5	
20-May	3	2	3	2	3	3	3	2	2	3	2	3	3	2	2	2	2	1	2	4	4	3	4	4	4	
21-May	3	3	3	2	2	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	3	1	1	2	3	
22-May	2	2	2	2	2	3	3	4	4	3	4	4	5	4	5	5	5	5	5	5	6	4	3	4	6	
23-May	5	6	3	3	4	3	3	DF	4	4	4	5	5	4	5	6	6	5	5	5	4	4	4	5	6	
24-May	4	4	5	4	5	5	4	4	4	2	3	3	3	4	4	4	4	4	4	4	3	3	3	3	5	
25-May	2	2	1	2	2	1	2	1	2	2	4	4	3	3	3	3	2	2	1	2	3	2	1	2	4	
26-May	2	3	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	2	2	2	1	2	2	1	3	
27-May	2	2	2	2	2	3	3	2	3	4	5	5	5	5	5	5	4	4	4	2	1	2	3	3	5	
28-May	2	2	1	2	2	2	2	2	2	4	5	6	7	7	6	7	6	6	6	4	4	3	2	2	7	
29-May	2	2	1	1	1	2	3	3	3	3	5	6	6	10	8	6	5	4	4	3	2	2	3	2	10	
30-May	2	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	7	4	3	2	2	2	2	3	7	
31-May	3	1	2	2	2	2	2	1	2	3	3	3	2	2	2	3	3	2	1	1	3	3	2	3	3	
																	Diurnal Maximum									
DF - DAS Failure																										



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Mildred Lake - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed (WS) - km/h
Mildred Lake - May 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	146	19.65	19.65
6 - 11	328	44.15	63.80
12 - 19	233	31.36	95.15
20 - 28	34	4.58	99.73
29 - 38	2	0.27	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Mildred Lake - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	12	10	6	3	7	9	6	15	25	11	9	11	5	5	6	6	146
6 - 11	13	13	4	5	8	17	65	72	48	26	4	5	5	13	14	16	328
12 - 19	32	14	9	3	7	16	61	27	23	13	7	8	4	1	5	3	233
20 - 28	0	0	0	0	0	8	7	2	2	0	2	2	0	0	11	0	34
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	57	37	19	11	22	50	139	116	98	50	22	26	14	19	38	25	743

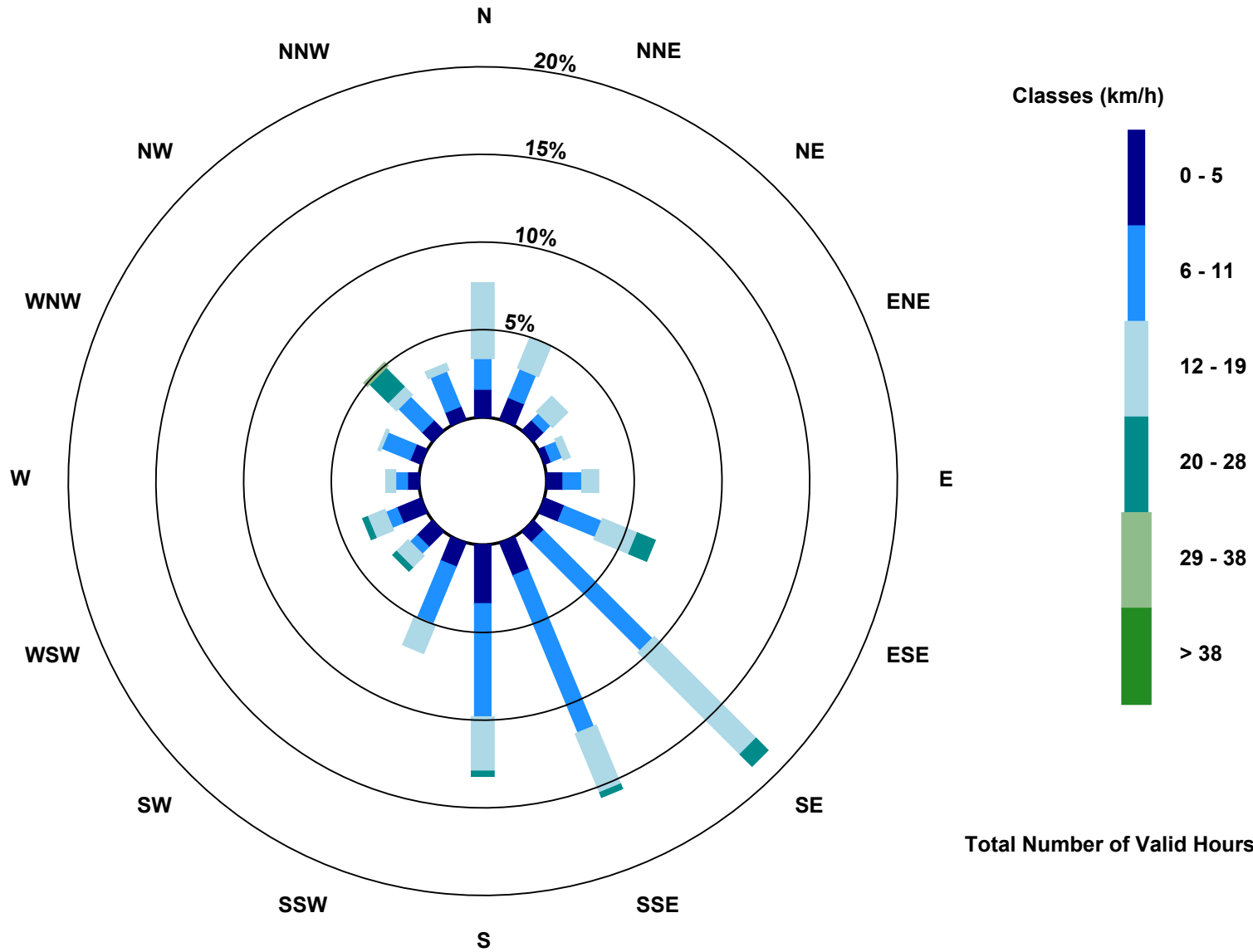
Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Mildred Lake



Total Number of Valid Hours: 743



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Mildred Lake - May 2023

Direction of Maximum Speed: 326 deg on May 16 18:00		Hours in Service:	744
Direction of Maximum Daily Speed Average: 326.6 deg on May 16		Hours of Data:	743
Direction of Minimum Speed: 26 deg on May 15 05:00		Hours of Missing Data:	1
Direction of Minimum Daily Speed Average: 0.5 deg on May 10		Percent Operational Time:	99.9
Monthly Average Direction: 148.5 deg			

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	131	134	134	132	123	128	142	151	145	148	153	148	164	189	184	188	193	207	212	201	150	177	332	346	160.6
2-May	344	347	314	304	313	322	269	241	295	332	303	264	255	323	285	308	314	308	317	319	118	116	152	146	311.9
3-May	142	128	131	122	146	146	147	143	152	153	188	174	173	177	168	168	176	176	171	154	141	138	141	128	159.3
4-May	119	110	125	133	147	161	207	89	146	158	177	177	137	113	10	1	5	12	10	9	25	17	43	66	63.5
5-May	120	126	125	125	141	146	145	122	133	138	151	144	135	115	112	114	123	123	117	118	123	126	133	126	127.6
6-May	140	138	121	135	136	137	133	138	146	144	124	114	130	139	133	136	120	137	139	141	136	133	130	128	133.8
7-May	107	83	80	97	95	113	134	142	122	138	143	141	123	117	135	156	167	159	109	44	56	101	122	131	127.2
8-May	147	142	139	145	153	130	130	141	154	161	151	157	161	166	186	186	161	149	292	300	262	246	210	149	160.0
9-May	150	166	204	160	357	101	173	195	179	192	185	189	194	169	305	332	19	352	57	84	209	224	177	200	189.2
10-May	120	180	173	184	173	177	175	182	172	155	179	174	312	290	278	304	330	34	24	19	13	24	76	359	303.0
11-May	14	350	345	11	178	331	358	142	143	149	84	152	164	157	152	164	170	100	125	169	178	217	123	115	144.0
12-May	182	147	135	133	163	174	167	146	175	145	175	170	148	151	147	149	162	159	184	166	146	144	138	123	154.6
13-May	132	148	141	150	158	180	191	162	154	151	168	182	185	196	199	201	200	178	177	165	166	183	195	224	176.9
14-May	219	226	179	223	43	187	212	196	198	193	202	170	197	205	210	206	213	218	224	289	352	347	30	80	213.7
15-May	254	1	355	230	26	33	12	4	231	172	166	134	103	110	127	160	192	190	187	187	182	198	263	326	176.0
16-May	324	336	357	340	325	323	321	320	325	322	316	314	312	317	319	312	321	326	9	354	1	356	349	338	326.6
17-May	335	328	349	353	5	11	33	18	14	12	0	356	15	23	34	41	42	48	47	33	16	30	90	140	18.3
18-May	149	162	157	162	170	171	158	152	137	161	220	197	174	185	188	188	194	192	188	181	175	190	189	195	174.7
19-May	191	175	168	151	135	140	156	177	167	166	180	184	195	202	192	284	2	349	337	341	357	5	355	347	170.2
20-May	350	358	0	356	1	359	1	0	352	358	354	13	19	51	248	53	86	102	99	128	134	136	137	134	31.7
21-May	126	135	146	148	144	146	146	140	146	155	153	157	149	156	155	145	148	141	135	57	355	91	112	8	141.8
22-May	11	12	355	354	0	2	4	6	10	4	1	1	12	18	17	22	30	48	57	49	64	52	41	41	22.2
23-May	72	79	64	69	81	83	85	DF	97	98	105	118	112	111	117	112	112	124	124	136	147	144	144	139	110.9
24-May	143	140	131	135	142	137	132	143	146	159	180	174	174	210	235	253	244	239	279	283	273	280	287	294	182.2
25-May	281	293	311	312	323	303	303	242	234	249	351	15	17	344	43	67	99	122	127	119	146	144	128	140	38.0
26-May	121	150	128	145	150	163	163	154	152	133	166	184	199	199	190	179	185	189	162	159	149	145	151	143	161.2
27-May	147	135	122	118	133	140	132	124	135	195	184	175	176	155	170	184	183	185	185	178	166	154	165	165	164.6
28-May	144	149	145	146	142	139	143	148	168	208	220	219	223	229	247	250	246	266	264	280	298	306	298	297	228.7
29-May	307	268	237	180	175	291	202	192	196	205	237	245	230	242	241	230	220	207	209	240	255	338	6	32	233.1
30-May	40	20	322	202	188	173	179	190	147	145	162	157	204	241	255	250	306	311	328	344	20	53	56	241	276.2
31-May	265	315	177	228	270	165	171	170	156	255	255	109	146	163	196	224	169	152	153	104	124	340	349	330	182.5

126.4 125.0 117.7 125.2 128.7 129.6 137.8 142.4 144.6 152.2 173.0 165.2 164.5 171.4 184.0 183.4 177.8 165.0 148.7 131.4 122.4 117.1 119.8 111.5
 Diurnal Average

DF - DAS Failure
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

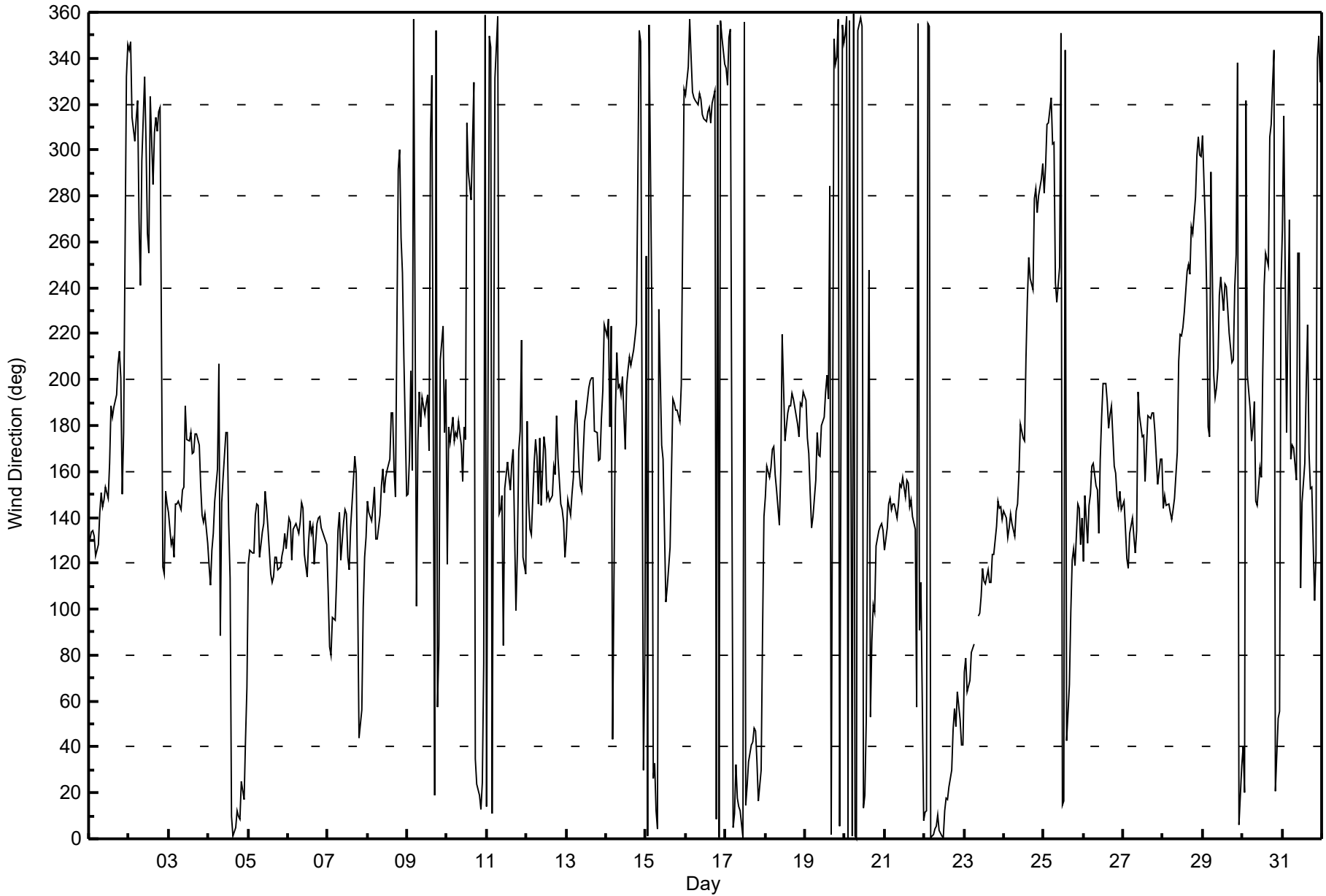
Wind Direction (WD) - deg
Mildred Lake - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 95 deg on May 14 04:00 Minimum Value: 9 deg on May 3 06:00 Percentiles: P ₁ = 10 P ₁₀ = 14 Q ₁ = 17 Median = 21 Q ₃ = 31 P ₉₀ = 52 P ₉₉ = 86																		Hours in Service: 744 Hours of Data: 743 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9							
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	16	16	15	15	15	14	16	16	16	16	16	15	26	20	21	21	20	21	23	21	10	37	36	16	37
2-May	15	18	38	11	12	10	41	85	43	66	73	71	86	59	57	37	23	25	19	48	32	20	14	12	86
3-May	12	19	19	17	14	9	14	17	16	35	21	21	20	20	19	21	19	14	12	14	13	12	20	35	
4-May	11	14	14	12	28	80	51	66	19	20	23	29	39	60	55	24	21	20	21	19	19	17	16	23	80
5-May	21	15	16	19	14	11	13	21	21	19	20	19	20	21	19	18	20	21	19	18	19	18	17	19	21
6-May	15	16	20	17	16	15	17	17	16	18	25	20	27	23	25	21	21	18	17	15	16	19	18	19	27
7-May	12	15	17	22	18	18	20	17	22	19	18	21	23	22	20	18	17	44	33	16	18	16	19	20	44
8-May	17	13	15	17	17	18	20	20	18	20	22	22	23	17	32	28	20	19	71	29	28	37	35	59	71
9-May	17	45	24	25	67	47	32	32	36	32	34	23	27	47	83	40	37	63	41	45	23	28	90	85	90
10-May	78	19	13	12	16	16	16	27	34	29	24	68	65	42	27	59	30	54	24	19	16	22	60	23	78
11-May	49	38	32	65	34	78	57	73	35	48	65	62	55	43	40	65	68	23	20	17	13	48	87	26	87
12-May	40	28	15	16	19	14	17	40	26	25	22	24	25	22	23	20	25	31	21	21	14	14	15	18	40
13-May	23	17	14	13	10	20	22	20	20	14	24	17	20	22	22	21	21	18	15	13	14	12	13	31	31
14-May	32	28	46	95	65	25	23	19	23	23	31	29	30	25	23	22	23	23	23	21	23	16	30	66	95
15-May	77	29	18	78	87	36	70	36	77	47	31	50	56	36	73	26	23	21	17	15	14	12	56	15	87
16-May	10	16	17	16	10	13	13	12	13	13	18	16	17	19	18	18	13	12	23	18	19	18	20	13	23
17-May	18	18	17	18	23	21	22	21	22	25	23	25	28	36	37	30	29	24	21	22	14	20	21	17	37
18-May	12	16	14	18	14	17	17	17	21	42	41	47	32	43	37	37	35	30	24	15	13	14	13	14	47
19-May	15	14	14	17	14	15	17	15	19	22	29	30	26	36	23	63	35	23	9	11	19	20	16	13	63
20-May	12	14	16	15	17	17	18	20	21	31	36	50	66	82	47	90	25	23	23	24	20	16	16	18	90
21-May	18	16	11	12	12	12	12	16	15	18	18	21	27	20	18	20	13	17	18	58	50	35	12	40	58
22-May	25	34	14	13	16	16	17	19	20	18	18	19	22	21	22	23	22	24	20	20	17	18	20	19	34
23-May	21	31	22	16	14	12	14	DF	15	19	21	21	20	20	18	19	20	20	20	17	15	14	13	16	31
24-May	15	15	19	19	14	16	19	15	14	18	16	23	24	46	24	28	26	28	23	23	25	21	21	18	46
25-May	20	16	13	21	15	17	71	62	36	88	67	48	59	69	44	45	27	24	25	17	14	18	16	17	88
26-May	17	18	18	12	12	16	18	23	26	27	50	42	41	34	49	43	33	30	29	14	9	11	11	15	50
27-May	56	14	29	18	17	14	16	18	41	22	21	22	21	18	23	25	22	20	17	12	13	13	14	17	56
28-May	13	22	18	12	15	13	12	13	26	26	25	27	26	28	27	28	26	27	28	21	22	15	15	15	28
29-May	36	37	46	35	15	83	65	40	32	89	35	28	29	27	23	24	26	22	27	31	28	36	19	19	89
30-May	20	57	48	60	53	55	19	29	35	40	44	51	68	73	54	46	22	17	15	33	32	65	52	85	85
31-May	43	49	52	35	37	54	30	25	58	88	84	52	60	32	29	27	23	15	29	32	42	26	28	47	88
78 57 52 95 87 83 71 85 77 89 84 71 86 82 83 90 68 63 71 58 50 65 90 85																								Diurnal Maximum	
DF - DAS Failure																									



Wood Buffalo Environmental Association
Hourly Averages

Wind Direction (WD) - deg
Mildred Lake - May 2023





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS03 LOWER CAMP METEOROLOGY MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP MET TOWER (AMS03)
MAY 2023

MONTHLY SUMMARY for
AMD SECTION III.B.1(c)

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
Temperature 20 m (C) Average	744	0	0	100	31.5	-	23.6	-
Temperature 45 m (C) Average	744	0	0	100	31.3	-	24.1	-
Temperature 100 m (C) Average	744	0	0	100	30.7	-	24.3	-
Temperature 163 m (C) Average	744	0	0	100	30.1	-	24.2	-
Relative Humidity 20 m (%) Average	744	0	0	100	96.2	-	72.1	-
Relative Humidity 45 m (%) Average	744	0	0	100	93.6	-	73.5	-
Relative Humidity 100 m (%) Average	744	0	0	100	88.8	-	72.8	-
Relative Humidity 163 m (%) Average	744	0	0	100	90.7	-	77.1	-
Wind Speed 20 m (km/h) Average	744	0	0	100	28	-	18.0	-
Wind Speed 45 m (km/h) Average	744	0	0	100	37	-	27.0	-
Wind Speed 100 m (km/h) Average	744	0	0	100	45	-	33.0	-
Wind Speed 163 m (km/h) Average	744	0	0	100	54	-	36.0	-
Wind Direction 20 m (deg) Average	744	0	0	100	-	-	-	-
Wind Direction 45 m (deg) Average	744	0	0	100	-	-	-	-
Wind Direction 100 m (deg) Average	744	0	0	100	-	-	-	-
Wind Direction 163 m (deg) Average	744	0	0	100	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	744	0	0	100	0.5	-	-0.1	-
Vertical Wind Speed 45 m (km/h) Average	744	0	0	100	1.3	-	0.7	-
Vertical Wind Speed 100 m (km/h) Average	744	0	0	100	3.1	-	0.6	-
Vertical Wind Speed 163 m (km/h) Average	744	0	0	100	4.4	-	0.7	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP MET TOWER (AMS03)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
Temperature 20 m (C) Average	744	17.64	5.7	-	4.7	10.6	13.2	17.2	22.1	25.5	31.5
Temperature 45 m (C) Average	744	17.65	5.7	-	4.2	10.6	13.2	17.2	22	25.4	31.3
Temperature 100 m (C) Average	744	17.5	5.6	-	3.6	10.4	13.2	17.1	21.8	25.2	30.7
Temperature 163 m (C) Average	744	17.25	5.5	-	2.9	10.1	13.1	17.1	21.5	24.7	30.1
Relative Humidity 20 m (%) Average	744	46.01	19.3	-	14.8	21.7	30.5	42.9	60.4	74.6	96.2
Relative Humidity 45 m (%) Average	744	45.54	19.1	-	14.5	21.6	29.7	42.9	58.7	73.5	93.6
Relative Humidity 100 m (%) Average	744	42.76	17.8	-	13.9	20.8	28.3	40.4	55.2	70.5	88.8
Relative Humidity 163 m (%) Average	744	43.88	17.8	-	15.2	22.4	29.9	41	55.6	71.5	90.7
Wind Speed 20 m (km/h) Average	744	10.7	7	-	0	3	6	10	16	20	28
Wind Speed 45 m (km/h) Average	744	15.1	8	-	0	4	8	14	21	27	37
Wind Speed 100 m (km/h) Average	744	18.9	10	-	1	6	10	18	26	33	45
Wind Speed 163 m (km/h) Average	744	21.2	11	-	1	6	12	21	30	36	54
Wind Direction 20 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-
Wind Direction 45 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-
Wind Direction 100 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-
Wind Direction 163 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	744	-0.48	0.4	-	-2	-1.1	-0.7	-0.4	-0.1	0	0.5
Vertical Wind Speed 45 m (km/h) Average	744	0.09	0.4	-	-1.5	-0.4	-0.2	0.1	0.4	0.6	1.3
Vertical Wind Speed 100 m (km/h) Average	744	0.16	0.6	-	-1.7	-0.5	-0.1	0.1	0.5	0.9	3.1
Vertical Wind Speed 163 m (km/h) Average	744	0.35	0.7	-	-1.6	-0.5	-0.1	0.2	0.7	1.3	4.4

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP MET TOWER (AMS03)
MAY 2023

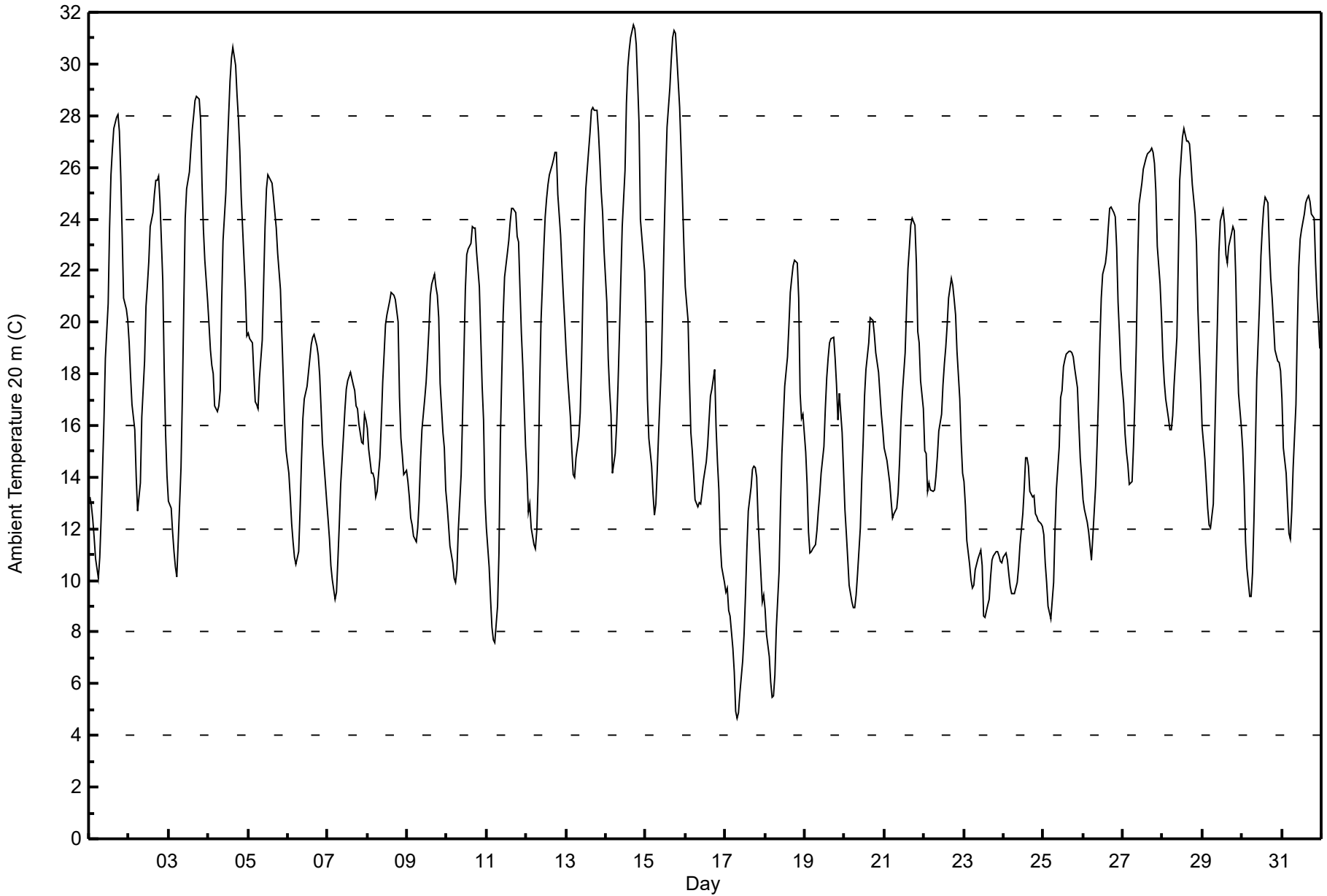
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
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No operational issues to report



Maximum Value: 31.5 C on May 14 17:00 Maximum Daily Average: 23.6 C on May 14																						Hours in Service: 744 Hours of Data: 744				
Minimum Value: 4.7 C on May 17 08:00 Minimum Daily Average: 9.6 C on May 17 Maximum Diurnal Average: 22.9 C at hour 17 Minimum Diurnal Average: 11.5 C at hour 6 Monthly Average: 17.64 C Percentiles: P ₁ = 6.4 P ₁₀ = 10.6 Q ₁ = 13.2 Median = 17.2 Q ₃ = 22.1 P ₉₀ = 25.5 P ₉₉ = 30.6																						Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	13.3	12.9	12.3	11.6	10.8	10.1	10.9	12.4	14.3	16.2	18.6	20.7	23.7	25.7	26.7	27.5	27.9	28.0	27.4	25.6	23.4	20.9	20.5	20.1	19.2	28.0
2-May	19.2	17.9	16.8	15.8	14.1	12.7	13.2	13.8	16.3	18.5	20.6	21.4	22.3	23.7	24.2	24.9	25.5	25.5	25.6	24.7	21.6	18.2	15.6	14.1	19.4	25.6
3-May	13.1	12.8	11.9	11.1	10.5	10.2	11.5	14.4	17.2	20.7	24.0	25.1	25.8	26.7	27.5	28.0	28.6	28.7	28.6	27.8	25.4	23.6	22.4	20.8	20.7	28.7
4-May	19.9	18.9	18.3	18.0	16.8	16.6	16.8	17.4	20.7	23.2	25.0	26.6	28.0	29.3	30.2	30.6	30.0	28.8	27.9	26.7	24.8	22.4	21.2	19.5	23.2	30.6
5-May	19.6	19.4	19.2	18.0	16.9	16.8	16.6	17.8	19.3	21.5	23.7	25.2	25.7	25.5	25.4	24.8	24.2	23.6	22.7	21.3	19.5	17.8	16.1	15.0	20.7	25.7
6-May	14.2	13.2	12.2	11.5	10.9	10.6	11.1	12.7	14.7	16.3	17.1	17.5	18.1	18.6	19.2	19.4	19.5	19.1	18.7	18.0	16.7	15.3	13.8	13.0	15.5	19.5
7-May	12.4	11.6	10.6	10.0	9.3	9.6	10.8	12.2	13.7	15.6	16.6	17.4	17.7	17.9	18.0	17.6	17.3	16.8	16.6	16.0	15.3	15.3	16.4	16.2	14.6	18.0
8-May	15.9	15.1	14.1	14.1	13.9	13.3	13.4	14.8	16.1	17.7	18.8	19.9	20.3	20.8	21.2	21.1	21.0	20.9	20.0	17.1	15.5	14.9	14.1	14.3	17.0	21.2
9-May	13.8	13.2	12.4	12.1	11.7	11.5	12.0	13.1	14.6	15.8	17.0	17.7	18.6	19.7	21.0	21.5	21.9	21.4	21.0	20.2	17.6	15.7	15.1	13.5	16.4	21.9
10-May	12.9	12.1	11.3	10.7	10.1	9.9	10.4	12.0	14.1	16.4	18.8	21.2	22.6	22.9	23.1	23.7	23.7	23.6	22.7	21.4	19.4	17.5	16.2	13.2	17.1	23.7
11-May	12.0	10.5	9.3	8.2	7.7	7.6	9.0	11.1	15.5	18.0	20.3	21.8	22.7	23.1	23.9	24.4	24.4	24.2	23.3	23.1	21.3	19.6	18.3	15.2	17.3	24.4
12-May	14.2	12.6	13.0	12.0	11.4	11.2	11.9	13.8	17.3	20.0	22.8	24.1	24.8	25.3	25.7	26.1	26.3	26.6	26.6	25.0	23.4	22.1	21.0	20.0	19.9	26.6
13-May	18.8	17.9	16.3	15.1	14.1	14.0	14.8	15.6	16.5	18.5	21.3	23.6	25.2	26.6	27.4	28.2	28.3	28.2	28.2	27.4	26.3	25.1	24.2	22.8	21.9	28.3
14-May	20.8	18.6	17.4	16.4	14.2	14.9	16.0	17.6	19.5	21.6	23.7	25.9	28.5	29.9	30.5	31.0	31.5	31.4	30.8	29.3	27.7	24.0	22.6	21.9	23.6	31.5
15-May	20.0	17.0	15.5	14.4	13.3	12.5	12.9	14.3	15.7	18.4	21.0	23.5	25.7	27.5	29.1	30.2	31.0	31.3	31.2	30.2	28.3	26.7	24.8	23.0	22.4	31.3
16-May	21.4	20.1	17.7	15.7	15.0	14.1	13.1	12.8	13.0	13.0	13.4	13.9	14.6	15.2	16.2	17.2	17.4	18.2	15.9	14.6	13.5	11.4	10.5	9.9	14.9	21.4
17-May	9.6	9.7	8.9	8.6	7.4	6.5	4.9	4.7	4.9	5.6	6.9	7.9	9.4	11.2	12.7	13.6	14.3	14.4	14.4	14.0	12.4	10.2	9.1	9.4	9.6	14.4
18-May	8.9	7.9	7.1	6.0	5.5	5.5	6.4	8.1	10.4	12.8	14.9	16.2	17.5	18.7	19.9	21.1	21.7	22.2	22.4	22.3	20.9	17.2	16.3	16.4	14.4	22.4
19-May	14.9	13.7	11.9	11.1	11.1	11.2	11.4	11.9	12.7	13.3	14.2	15.2	16.6	17.9	18.6	19.2	19.4	19.4	18.6	17.6	16.2	17.3	15.7	14.2	15.1	19.4
20-May	12.8	11.8	10.8	9.8	9.2	8.9	9.0	9.4	10.3	12.1	13.9	15.3	17.1	18.2	19.2	20.2	20.1	20.1	19.5	18.8	18.1	17.2	16.4	15.8	14.7	20.2
21-May	15.2	14.6	14.2	13.8	13.1	12.4	12.6	12.8	13.4	14.6	16.2	17.2	18.8	20.5	22.1	22.9	23.8	24.0	23.7	22.3	19.6	19.2	17.7	16.6	17.6	24.0
22-May	15.0	14.9	13.5	13.8	13.5	13.5	13.5	14.1	14.8	15.8	16.5	17.6	18.4	19.1	19.9	21.0	21.7	21.4	20.9	20.3	18.9	17.0	15.4	14.2	16.9	21.7
23-May	13.8	12.9	11.6	10.6	10.0	9.7	9.8	10.4	10.8	11.0	11.2	10.6	8.6	8.6	9.1	9.3	10.2	10.8	10.9	11.1	11.1	11.0	10.7	10.7	10.6	13.8
24-May	10.9	11.1	10.8	10.2	9.8	9.5	9.5	9.7	10.0	10.5	11.4	12.6	13.5	14.8	14.7	14.4	13.5	13.2	13.3	12.6	12.5	12.3	12.2	12.1	11.9	14.8
25-May	11.8	10.7	9.9	9.0	8.5	9.2	9.9	12.0	13.6	15.2	17.1	17.3	18.3	18.6	18.8	18.9	18.9	18.8	18.7	18.2	17.5	16.0	14.8	14.0	14.8	18.9
26-May	13.1	12.7	12.3	11.9	11.4	10.8	11.7	13.6	15.2	17.0	19.2	20.9	21.8	22.3	22.8	23.7	24.4	24.5	24.2	24.1	22.9	20.8	19.5	18.2	18.3	24.5
27-May	16.8	15.7	15.0	14.5	13.7	13.8	15.2	16.9	19.1	22.3	24.6	25.4	25.9	26.2	26.3	26.5	26.6	26.7	26.6	26.2	25.1	22.9	21.5	20.3	21.4	26.7
28-May	18.7	17.7	17.0	16.3	15.8	15.9	16.4	17.6	19.4	22.3	25.5	26.4	27.1	27.5	27.0	27.0	26.9	26.2	25.3	24.2	23.0	20.5	18.9	17.6	21.7	27.5
29-May	16.0	14.7	13.8	12.8	12.2	12.0	13.0	15.4	17.9	20.1	22.7	23.9	24.4	23.8	22.6	22.3	22.9	23.4	23.7	23.6	21.8	19.1	17.2	16.0	19.0	24.4
30-May	15.1	13.7	11.5	10.5	9.4	9.4	10.3	12.3	14.9	17.8	20.7	22.5	23.7	24.5	24.9	24.6	22.9	21.7	20.9	20.0	18.9	18.5	18.4	18.1	17.7	24.9
31-May	17.1	15.2	14.1	13.0	11.8	11.6	12.7	14.4	16.8	19.7	22.1	23.2	23.6	24.2	24.6	24.8	24.9	24.7	24.2	24.0	22.3	21.0	20.1	19.0	19.5	24.9
15.2 14.2 13.2 12.5 11.7 11.5 12.0 13.2 14.9 16.8 18.7 19.9 20.9 21.8 22.3 22.8 22.9 22.8 22.4 21.5 20.0 18.4 17.3 16.3																								Diurnal Average		
21.4 20.1 19.2 18.0 16.9 16.8 16.8 17.8 20.7 23.2 25.5 26.6 28.5 29.9 30.5 31.0 31.5 31.4 31.2 30.2 28.3 26.7 24.8 23.0																								Diurnal Maximum		





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 20 m (AT20m) - C
Lower Camp Met Tower - May 2023**

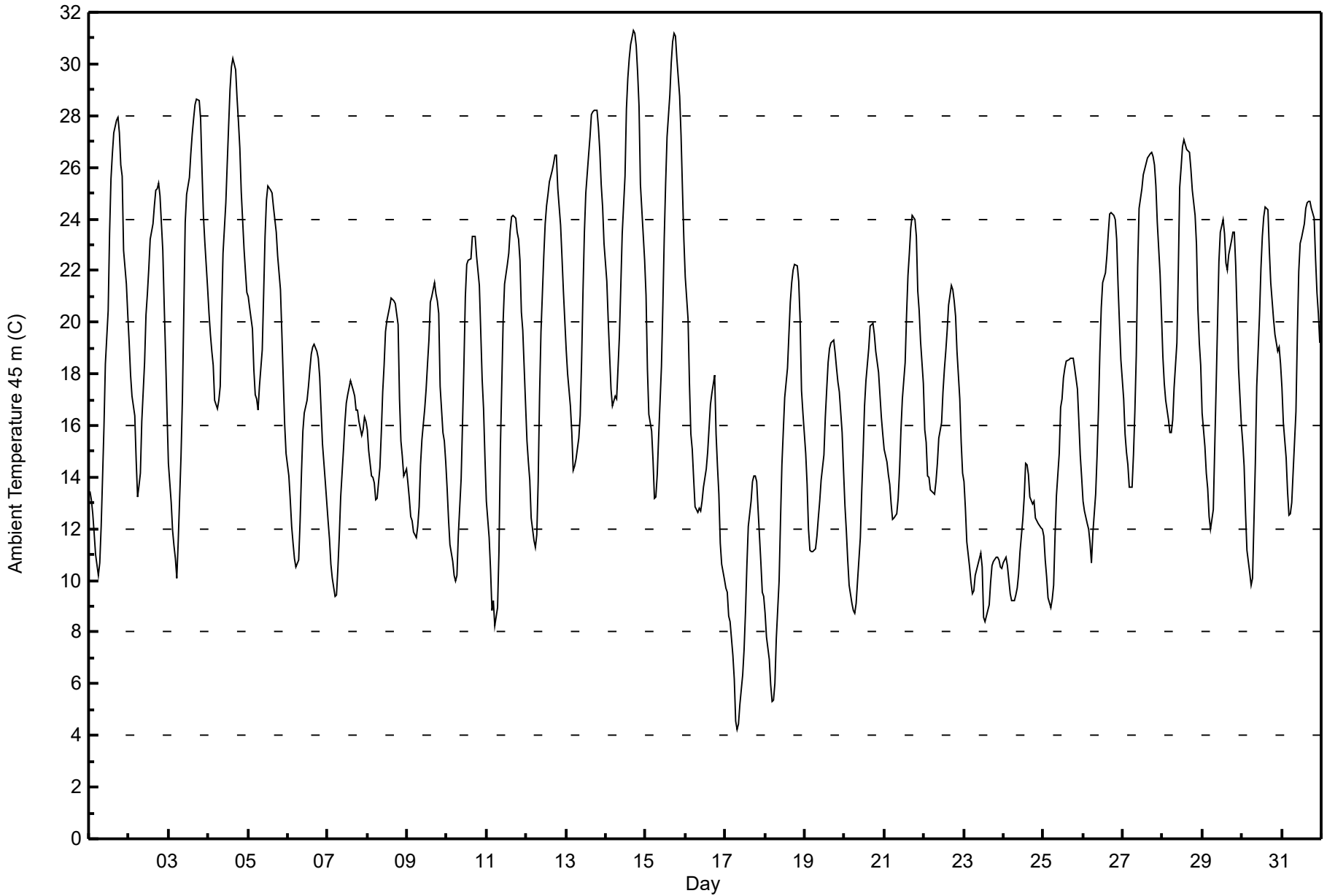
Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	55	7.39	7.39
10 - 20	436	58.60	65.99
> 20	253	34.01	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Maximum Value: 31.3 C on May 14 17:00		Maximum Daily Average: 24.1 C on May 14		Hours in Service: 744																							
Minimum Value: 4.2 C on May 17 08:00		Minimum Daily Average: 9.3 C on May 17		Hours of Data: 744																							
Maximum Diurnal Average: 22.7 C at hour 17		Minimum Diurnal Average: 11.6 C at hour 6		Hours of Missing Data: 0																							
Monthly Average: 17.65 C		Percentiles: P ₁ = 6.1 P ₁₀ = 10.6 Q ₁ = 13.2 Median = 17.2 Q ₃ = 22.0 P ₉₀ = 25.4 P ₉₉ = 30.2		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	13.4	13.1	12.6	11.8	11.0	10.2	10.7	12.1	14.0	15.9	18.4	20.5	23.4	25.6	26.5	27.3	27.8	27.9	27.3	26.1	25.6	22.8	21.5	20.3	19.4	27.9	
2-May	19.2	18.0	17.2	16.4	14.6	13.2	13.7	14.1	16.2	18.4	20.3	21.1	22.1	23.2	23.8	24.5	25.1	25.1	25.4	24.9	22.8	20.7	18.7	16.5	19.8	25.4	
3-May	14.5	13.0	11.9	11.3	10.8	10.1	11.5	14.8	17.0	20.4	23.9	24.9	25.6	26.5	27.3	27.9	28.4	28.6	28.6	27.9	25.9	24.1	23.1	21.3	20.8	28.6	
4-May	20.4	19.6	18.8	18.3	17.0	16.6	16.9	17.5	20.3	22.7	24.6	26.1	27.6	29.0	29.9	30.2	29.8	28.7	27.8	26.8	25.0	22.8	22.0	21.1	23.3	30.2	
5-May	21.0	20.6	19.7	18.2	17.2	17.0	16.6	17.5	18.9	21.1	23.3	24.8	25.3	25.1	25.0	24.5	24.0	23.5	22.6	21.2	19.6	17.8	16.0	14.9	20.6	25.3	
6-May	14.1	13.1	12.1	11.4	10.9	10.5	10.8	12.3	14.2	15.8	16.5	17.0	17.5	18.1	18.7	19.0	19.2	18.9	18.6	17.9	16.6	15.3	13.9	13.1	15.2	19.2	
7-May	12.3	11.6	10.7	10.1	9.4	9.5	10.5	11.7	13.2	15.1	16.1	16.9	17.2	17.5	17.8	17.4	17.1	16.6	16.6	16.2	15.6	15.8	16.3	16.2	14.5	17.8	
8-May	15.8	15.0	14.0	14.0	13.8	13.1	13.2	14.4	15.7	17.3	18.3	19.6	20.1	20.6	20.9	20.9	20.8	20.7	19.9	17.0	15.4	14.8	14.1	14.3	16.8	20.9	
9-May	13.8	13.2	12.5	12.3	11.9	11.7	12.1	12.8	14.5	15.5	16.7	17.4	18.4	19.3	20.8	21.0	21.6	21.1	20.8	20.3	17.5	15.7	15.4	14.6	16.3	21.6	
10-May	13.6	12.4	11.4	10.8	10.2	10.0	10.2	11.7	13.9	16.1	18.4	21.0	22.2	22.4	22.5	23.3	23.3	23.3	22.5	21.4	19.6	17.8	16.7	14.7	17.1	23.3	
11-May	13.1	11.7	10.4	8.8	9.2	8.3	9.0	11.1	15.1	17.6	20.1	21.5	22.2	22.7	23.5	24.1	24.1	24.0	23.5	23.2	22.4	20.4	19.7	16.8	17.6	24.1	
12-May	15.4	14.6	13.9	12.4	11.5	11.3	11.8	13.8	17.2	19.7	22.6	23.8	24.5	25.0	25.5	25.8	26.2	26.5	26.5	25.2	23.8	22.5	21.2	20.1	20.0	26.5	
13-May	19.0	18.0	16.8	15.7	14.3	14.4	14.7	15.5	16.4	18.5	21.2	23.5	25.0	26.5	27.2	28.0	28.2	28.2	28.2	27.5	26.7	25.3	24.5	23.0	21.9	28.2	
14-May	21.6	20.1	18.7	17.4	16.7	17.1	17.0	18.2	19.5	21.4	23.4	25.6	28.2	29.5	30.2	30.8	31.3	31.2	30.7	29.7	28.4	25.3	23.4	22.4	24.1	31.3	
15-May	21.0	18.1	16.4	15.8	14.7	13.2	13.2	14.1	15.6	18.3	20.6	23.3	25.4	27.2	28.8	30.0	30.9	31.2	31.1	30.2	28.7	27.2	25.2	23.2	22.6	31.2	
16-May	21.8	20.1	17.6	15.7	15.1	13.9	12.9	12.6	12.8	12.7	13.1	13.6	14.3	15.0	15.9	16.8	17.2	17.9	15.7	14.5	13.4	11.4	10.7	10.1	14.8	21.8	
17-May	9.7	9.6	8.6	8.4	7.1	6.2	4.6	4.2	4.4	5.2	6.3	7.3	8.8	10.5	12.1	13.0	13.8	14.0	14.1	13.8	12.7	10.7	9.5	9.4	9.3	14.1	
18-May	8.7	7.8	6.9	6.0	5.3	5.4	6.0	7.7	10.0	12.3	14.5	15.8	17.1	18.2	19.5	20.8	21.5	22.0	22.2	22.2	21.6	20.1	17.4	16.5	14.4	22.2	
19-May	14.9	13.7	12.0	11.2	11.1	11.1	11.3	11.7	12.4	13.1	13.9	14.8	16.3	17.4	18.4	19.0	19.2	19.3	18.8	18.2	17.7	17.3	15.7	14.3	15.1	19.3	
20-May	12.9	11.9	10.8	9.8	9.1	8.8	8.8	9.1	10.0	11.7	13.4	15.0	16.8	17.7	19.0	19.8	19.9	20.0	19.5	18.9	18.0	17.2	16.3	15.7	14.6	20.0	
21-May	15.1	14.6	14.1	13.7	13.0	12.4	12.4	12.6	13.2	14.3	15.9	17.0	18.5	20.3	21.8	22.7	23.7	24.2	24.0	23.3	21.2	20.4	19.2	17.6	17.7	24.2	
22-May	15.9	15.4	14.0	14.0	13.5	13.4	13.3	13.8	14.5	15.5	16.1	17.3	18.2	18.9	19.7	20.7	21.4	21.3	20.8	20.2	18.9	17.0	15.4	14.2	16.8	21.4	
23-May	13.8	12.8	11.5	10.5	9.9	9.5	9.6	10.2	10.6	10.8	11.0	10.5	8.6	8.4	8.9	9.1	9.9	10.6	10.7	10.9	10.9	10.8	10.5	10.5	10.4	13.8	
24-May	10.7	10.9	10.6	10.0	9.5	9.2	9.2	9.5	9.7	10.3	11.1	12.4	13.3	14.5	14.5	14.1	13.2	13.0	13.1	12.4	12.3	12.2	12.1	12.0	11.7	14.5	
25-May	11.7	10.8	10.1	9.3	9.0	9.3	9.8	11.7	13.3	14.9	16.7	17.0	17.9	18.2	18.5	18.6	18.6	18.6	18.6	18.2	17.4	16.2	14.9	14.0	14.7	18.6	
26-May	13.0	12.7	12.2	12.0	11.4	10.7	11.8	13.3	14.8	16.6	18.8	20.6	21.5	21.9	22.6	23.4	24.2	24.3	24.1	24.0	23.2	21.4	20.0	18.6	18.2	24.3	
27-May	17.1	15.7	14.9	14.5	13.6	13.6	14.9	16.5	18.7	22.1	24.4	25.2	25.7	25.9	26.2	26.4	26.5	26.6	26.4	26.1	25.3	23.9	21.9	20.3	21.3	26.6	
28-May	18.6	17.6	17.0	16.2	15.7	15.7	16.2	17.5	19.2	22.0	25.2	26.0	26.8	27.1	26.7	26.6	26.6	25.9	25.1	24.2	23.0	20.5	19.2	18.3	21.5	27.1	
29-May	16.5	15.2	14.1	13.5	12.5	12.0	12.8	15.1	17.5	19.9	22.3	23.5	24.0	23.4	22.3	22.0	22.6	23.2	23.5	23.5	22.2	20.2	18.2	16.1	19.0	24.0	
30-May	15.3	14.4	12.6	11.2	10.3	9.8	10.1	12.2	14.5	17.5	20.3	22.1	23.3	24.1	24.4	24.3	22.8	21.5	20.8	20.1	19.5	18.9	19.0	18.4	17.8	24.4	
31-May	17.4	16.1	14.8	13.4	12.5	12.6	13.0	14.2	16.5	19.6	22.0	23.1	23.3	23.8	24.4	24.6	24.7	24.7	24.4	24.0	22.4	21.2	20.4	19.2	19.7	24.7	
		15.5	14.6	13.5	12.7	12.0	11.6	11.9	13.0	14.6	16.5	18.4	19.6	20.6	21.4	22.0	22.5	22.7	22.7	22.3	21.6	20.4	19.0	17.8	16.7	Diurnal Average	
		21.8	20.6	19.7	18.3	17.2	17.1	17.0	18.2	20.3	22.7	25.2	26.1	28.2	29.5	30.2	30.8	31.3	31.2	31.1	30.2	28.7	27.2	25.2	23.2	Diurnal Maximum	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 45 m (AT45m) - C
Lower Camp Met Tower - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	55	7.39	7.39
10 - 20	429	57.66	65.05
> 20	260	34.95	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744

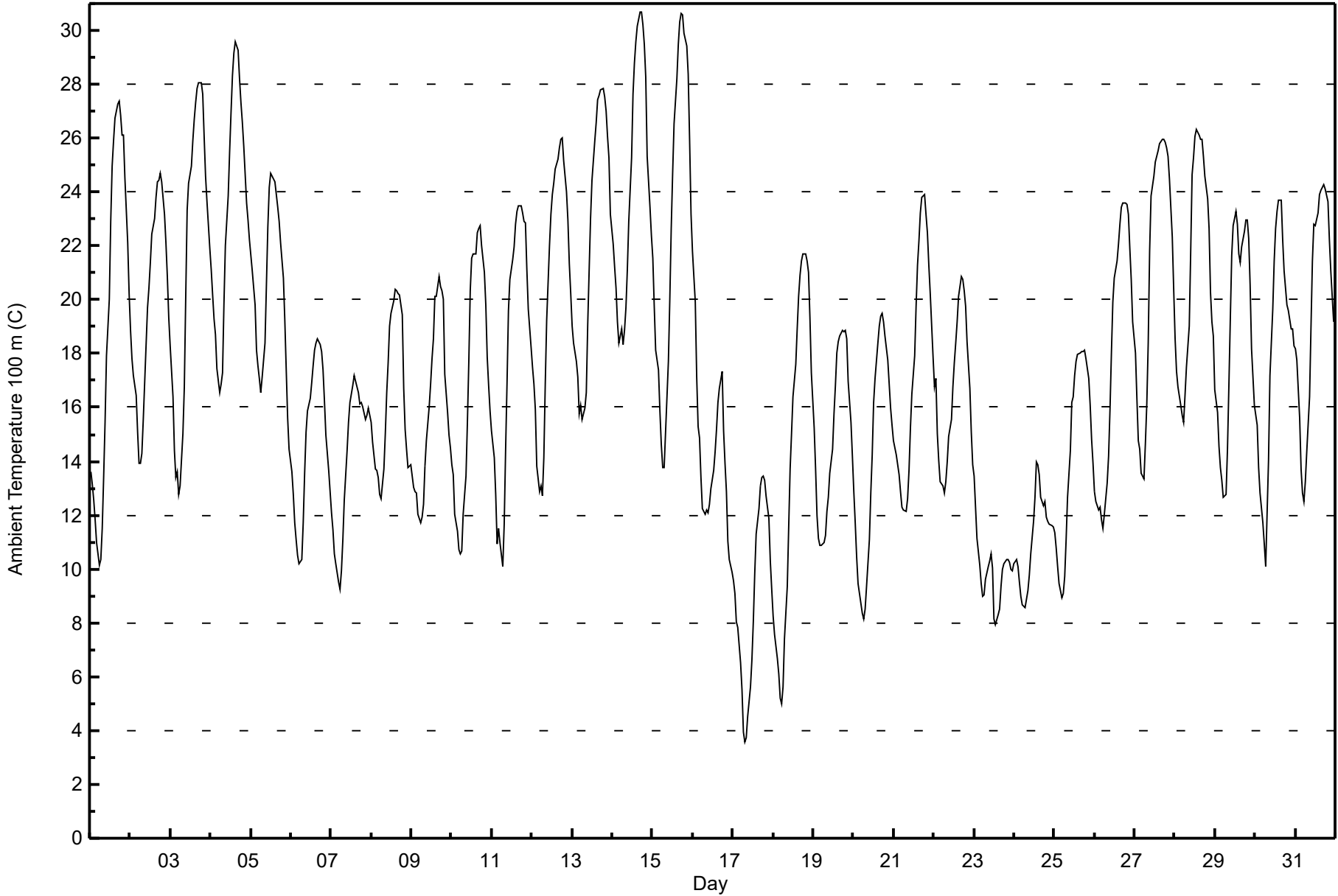


Maximum Value: 30.7 C on May 14 18:00		Maximum Daily Average: 24.3 C on May 14		Hours in Service: 744																							
Minimum Value: 3.6 C on May 17 08:00		Minimum Daily Average: 8.9 C on May 17		Hours of Data: 744																							
Maximum Diurnal Average: 22.1 C at hour 18		Minimum Diurnal Average: 11.9 C at hour 7		Hours of Missing Data: 0																							
Monthly Average: 17.50 C		Percentiles: P ₁ = 5.6 P ₁₀ = 10.4 Q ₁ = 13.2 Median = 17.1 Q ₃ = 21.8 P ₉₀ = 25.2 P ₉₉ = 29.8		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	13.6	13.1	12.6	11.8	11.0	10.2	10.4	11.5	13.4	15.5	17.9	20.0	22.9	24.9	25.9	26.7	27.2	27.4	26.8	26.1	26.1	24.5	22.1	20.2	19.2	27.4	
2-May	18.9	17.8	17.2	16.5	15.1	13.9	13.9	14.3	15.6	18.4	19.7	20.4	21.4	22.4	23.0	23.8	24.4	24.4	24.7	24.4	23.2	22.1	20.8	19.3	19.8	24.7	
3-May	18.3	16.4	14.4	13.4	13.6	12.8	13.1	15.0	16.8	20.1	23.3	24.3	25.0	25.9	26.7	27.3	27.8	28.1	28.1	27.7	26.1	24.6	23.7	21.9	21.4	28.1	
4-May	21.1	20.2	19.3	18.7	17.5	16.6	16.9	17.3	19.9	22.0	23.9	25.5	26.9	28.3	29.2	29.6	29.3	28.2	27.3	26.6	25.7	23.6	22.9	22.2	23.3	29.6	
5-May	21.7	21.1	19.8	18.1	17.6	17.1	16.6	17.1	18.4	20.6	22.7	24.2	24.7	24.5	24.4	23.9	23.4	22.9	22.1	20.8	19.2	17.4	15.6	14.5	20.3	24.7	
6-May	13.6	12.7	11.7	11.1	10.5	10.2	10.3	11.7	13.5	15.1	15.9	16.4	16.9	17.6	18.1	18.4	18.5	18.3	18.1	17.4	16.2	15.0	13.7	12.9	14.7	18.5	
7-May	12.1	11.4	10.5	10.2	9.5	9.2	9.9	11.1	12.5	14.4	15.4	16.2	16.5	16.8	17.2	16.8	16.6	16.2	16.2	16.0	15.6	15.7	16.0	15.7	14.1	17.2	
8-May	15.5	14.7	13.7	13.7	13.4	12.7	12.6	13.7	15.0	16.6	17.7	19.0	19.5	20.0	20.4	20.3	20.2	20.2	19.4	16.7	15.2	14.4	13.8	13.9	16.4	20.4	
9-May	13.4	13.1	12.9	12.8	12.0	11.7	11.9	12.4	13.8	14.8	16.0	16.8	17.8	18.5	20.1	20.1	20.9	20.5	20.3	20.0	17.2	15.8	15.0	14.5	15.9	20.9	
10-May	13.9	13.5	12.0	11.4	10.7	10.6	10.6	12.0	13.4	15.5	17.7	20.4	21.6	21.7	21.7	22.5	22.7	22.7	22.0	21.0	19.8	17.9	16.8	15.9	17.0	22.7	
11-May	15.1	14.1	12.7	10.9	11.5	11.0	10.1	11.7	14.4	16.9	19.6	20.8	21.5	22.0	22.8	23.3	23.5	23.5	23.2	22.9	22.9	21.1	19.6	18.2	18.1	23.5	
12-May	17.5	16.9	15.9	13.8	12.9	13.1	12.7	14.1	16.9	19.2	22.0	23.2	23.9	24.3	24.9	25.2	25.7	26.0	26.0	25.2	24.0	22.9	21.3	20.2	20.3	26.0	
13-May	19.0	18.4	17.7	17.1	15.8	16.1	15.6	16.0	16.6	19.1	21.1	23.0	24.5	25.9	26.6	27.4	27.6	27.8	27.8	27.5	27.0	26.0	25.2	23.2	22.2	27.8	
14-May	22.1	21.2	20.5	19.2	18.4	18.9	18.3	18.9	19.7	21.1	22.9	25.3	27.7	28.8	29.6	30.2	30.7	30.7	30.2	29.5	28.3	25.3	23.4	22.4	24.3	30.7	
15-May	21.5	19.8	18.1	17.4	15.9	14.6	13.8	13.7	15.1	17.7	20.0	22.7	24.7	26.5	28.2	29.5	30.3	30.6	30.6	29.9	29.4	28.4	25.9	23.2	22.8	30.6	
16-May	21.8	19.9	17.1	15.3	14.9	13.4	12.2	12.0	12.2	12.1	12.4	13.0	13.7	14.4	15.2	16.2	16.7	17.4	15.1	13.9	12.9	11.0	10.4	9.9	14.3	21.8	
17-May	9.6	9.1	8.1	7.8	6.5	5.5	3.9	3.6	3.8	4.5	5.6	6.6	8.1	9.8	11.3	12.3	13.1	13.4	13.4	13.3	12.7	11.9	10.3	9.3	8.9	13.4	
18-May	8.3	7.6	6.7	6.1	5.2	5.0	5.6	7.4	9.4	11.6	13.7	15.0	16.4	17.6	18.9	20.1	20.9	21.4	21.7	21.7	21.4	21.0	19.4	17.3	14.1	21.7	
19-May	15.2	13.7	12.0	11.2	10.9	10.9	11.0	11.3	12.1	12.7	13.6	14.4	15.8	16.8	18.0	18.4	18.7	18.8	18.8	18.9	18.6	17.0	15.4	14.2	14.9	18.9	
20-May	12.9	11.7	10.5	9.4	8.7	8.4	8.1	8.5	9.4	11.1	12.8	14.3	16.2	17.1	18.4	19.0	19.4	19.5	19.2	18.7	17.7	16.9	16.0	15.3	14.1	19.5	
21-May	14.8	14.3	13.9	13.5	12.9	12.3	12.2	12.1	12.6	13.7	15.2	16.5	17.9	19.8	21.3	22.2	23.2	23.8	23.9	23.2	22.5	21.3	20.3	17.9	17.5	23.9	
22-May	16.8	17.1	15.0	14.1	13.3	13.1	12.8	13.3	14.0	14.9	15.5	16.8	17.6	18.4	19.2	20.1	20.9	20.7	20.3	19.8	18.4	16.7	15.1	13.9	16.6	20.9	
23-May	13.4	12.3	11.1	10.2	9.4	9.0	9.0	9.6	10.1	10.3	10.5	10.0	8.2	7.9	8.3	8.5	9.3	10.0	10.2	10.3	10.4	10.2	10.0	9.9	9.9	13.4	
24-May	10.2	10.4	10.1	9.5	9.0	8.6	8.6	8.9	9.2	9.8	10.6	11.8	12.7	14.0	13.9	13.5	12.7	12.4	12.5	11.9	11.8	11.7	11.6	11.5	11.1	14.0	
25-May	11.4	10.8	10.1	9.4	8.9	9.1	9.7	11.1	12.7	14.4	16.2	16.4	17.2	17.7	18.0	18.0	18.1	18.1	18.1	17.8	17.1	16.1	14.8	13.9	14.4	18.1	
26-May	12.9	12.5	12.2	12.3	11.8	11.5	12.0	13.2	14.2	15.9	18.0	19.9	20.8	21.5	22.1	22.8	23.4	23.6	23.6	23.5	23.2	21.9	20.7	19.2	18.0	23.6	
27-May	18.0	16.4	14.8	14.5	13.6	13.4	14.6	16.1	18.4	21.8	23.8	24.6	25.1	25.4	25.6	25.8	25.9	26.0	25.8	25.6	25.3	24.5	22.3	20.4	21.2	26.0	
28-May	18.6	17.3	16.7	16.1	15.7	15.4	16.4	17.5	19.0	21.8	24.7	25.3	26.1	26.3	26.1	26.0	26.0	25.3	24.6	23.8	22.6	20.3	19.2	18.6	21.2	26.3	
29-May	16.6	15.8	14.5	13.8	13.3	12.7	12.8	14.4	16.8	19.3	21.7	22.7	23.3	22.8	21.7	21.4	21.9	22.5	22.9	23.0	22.3	20.6	18.2	16.1	18.8	23.3	
30-May	15.7	15.3	13.7	12.8	11.7	10.9	10.1	12.1	14.0	17.2	19.6	21.4	22.7	23.3	23.7	23.7	22.2	21.1	20.4	19.8	19.6	18.9	18.9	18.3	17.8	23.7	
31-May	18.2	17.7	15.6	13.7	12.8	12.5	13.2	14.3	16.4	19.0	21.5	22.8	22.7	23.2	23.9	24.1	24.2	24.3	24.1	23.7	22.2	21.1	20.1	19.2	19.6	24.3	
		15.9	15.0	13.9	13.1	12.4	11.9	11.9	12.8	14.2	16.0	17.8	19.0	20.0	20.8	21.4	21.8	22.1	22.1	21.9	21.3	20.5	19.2	18.0	16.9	Diurnal Average	
		22.1	21.2	20.5	19.2	18.4	18.9	18.3	18.9	19.9	22.0	24.7	25.5	27.7	28.8	29.6	30.2	30.7	30.7	30.6	29.9	29.4	28.4	25.9	23.2	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature 100 m (AT100m) - C
Lower Camp Met Tower - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 100 m (AT100m) - C
Lower Camp Met Tower - May 2023**

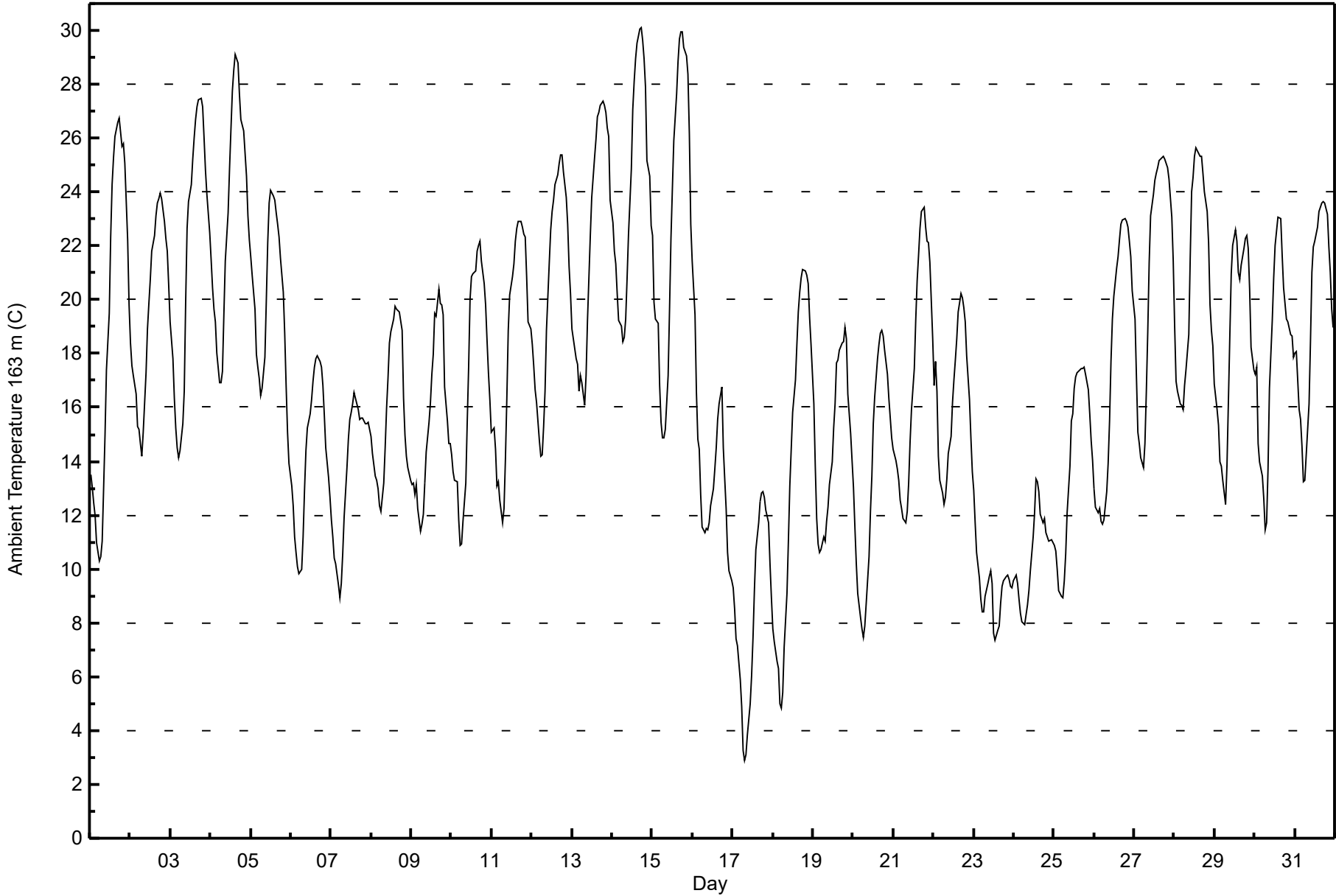
Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	57	7.66	7.66
10 - 20	434	58.33	65.99
> 20	253	34.01	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Maximum Value: 30.1 C on May 14 18:00		Maximum Daily Average: 24.2 C on May 14		Hours in Service: 744																						
Minimum Value: 2.9 C on May 17 08:00		Minimum Daily Average: 8.3 C on May 17		Hours of Data: 744																						
Maximum Diurnal Average: 21.5 C at hour 18		Minimum Diurnal Average: 12.0 C at hour 7		Hours of Missing Data: 0																						
Monthly Average: 17.25 C		Percentiles: P ₁ = 5.2 P ₁₀ = 10.1 Q ₁ = 13.1 Median = 17.1 Q ₃ = 21.5 P ₉₀ = 24.7 P ₉₉ = 29.3		Hours of Calibration: 0																						
				Percent Operational Time: 100.0																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	13.5	13.0	12.4	12.0	11.0	10.3	10.5	11.0	13.0	15.0	17.4	19.5	22.3	24.3	25.3	26.1	26.6	26.7	26.2	25.7	25.8	25.1	22.2	19.8	18.9	26.7
2-May	18.4	17.6	17.2	16.5	15.3	15.2	14.6	14.2	15.1	17.3	18.9	19.9	20.7	21.8	22.4	23.1	23.6	23.8	24.0	23.7	22.9	22.3	21.8	20.5	19.6	24.0
3-May	19.2	17.8	16.4	15.2	14.5	14.1	14.4	15.4	16.6	19.9	22.7	23.6	24.3	25.2	26.0	26.7	27.2	27.4	27.5	27.2	26.0	24.8	23.9	22.5	21.6	27.5
4-May	21.5	20.4	19.6	19.2	18.0	16.9	16.9	17.3	19.5	21.4	23.2	24.9	26.3	27.7	28.5	29.1	28.8	27.6	26.7	26.5	26.3	24.6	23.1	22.2	23.2	29.1
5-May	21.6	20.9	19.6	18.0	17.5	17.1	16.5	16.7	17.9	20.0	22.1	23.6	24.0	23.8	23.7	23.2	22.8	22.3	21.5	20.3	18.8	16.8	15.1	13.9	19.9	24.0
6-May	13.1	12.3	11.2	10.6	10.1	9.8	10.0	11.2	12.9	14.4	15.2	15.8	16.3	17.0	17.5	17.8	17.9	17.7	17.5	16.8	15.7	14.5	13.4	12.6	14.2	17.9
7-May	11.8	11.2	10.4	10.2	9.4	9.0	9.5	10.6	11.9	13.8	14.8	15.5	15.8	16.1	16.5	16.1	15.9	15.6	15.6	15.4	15.4	15.5	15.2		13.6	16.5
8-May	14.9	14.3	13.4	13.3	13.0	12.3	12.1	13.2	14.5	16.0	17.1	18.4	18.8	19.3	19.7	19.7	19.6	19.6	18.9	16.3	15.0	14.2	13.8	13.3	15.9	19.7
9-May	13.1	13.2	12.8	13.1	12.2	11.4	11.7	12.0	13.2	14.4	15.4	16.2	17.2	18.0	19.5	19.4	20.4	19.9	19.8	19.4	16.7	15.5	14.6	14.7	15.6	20.4
10-May	14.3	13.6	13.3	13.3	11.8	10.9	10.9	11.8	13.2	15.4	17.5	20.0	20.9	21.0	21.1	21.8	22.0	22.2	21.4	20.6	19.8	18.5	17.3	16.3	17.0	22.2
11-May	15.1	15.3	14.5	13.1	13.2	12.5	11.7	12.3	14.1	16.4	18.8	20.2	20.9	21.4	22.2	22.7	22.9	22.9	22.7	22.4	22.3	20.9	19.2	18.9	18.2	22.9
12-May	18.3	17.5	16.7	16.2	14.8	14.2	14.2	15.3	16.6	18.8	21.4	22.6	23.3	23.7	24.3	24.6	25.1	25.4	25.4	24.8	23.8	22.8	21.2	20.2	20.5	25.4
13-May	18.9	18.6	17.8	17.6	16.6	17.2	16.9	16.1	17.2	19.2	20.8	22.4	23.8	25.3	26.0	26.8	26.9	27.2	27.4	27.2	26.9	26.4	26.0	23.7	22.2	27.4
14-May	22.9	21.8	21.3	20.2	19.2	19.0	18.5	18.6	19.3	20.8	22.4	24.9	27.1	28.1	29.0	29.5	30.1	30.1	29.6	29.0	27.9	25.2	24.6	22.8	24.2	30.1
15-May	22.4	19.9	19.3	19.1	16.8	15.5	14.9	14.9	15.2	17.2	19.6	22.3	24.1	25.9	27.6	28.8	29.7	30.0	29.9	29.4	29.0	28.4	26.1	22.8	22.9	30.0
16-May	21.4	19.5	16.5	14.8	14.4	12.8	11.6	11.4	11.5	11.5	11.7	12.3	13.0	13.7	14.5	15.5	16.1	16.7	14.5	13.3	12.3	10.6	9.9	9.6	13.7	21.4
17-May	9.3	8.5	7.4	7.2	5.9	4.9	3.3	2.9	3.1	3.8	5.0	6.0	7.5	9.2	10.7	11.7	12.5	12.8	12.9	12.7	12.2	11.7	10.2	8.9	8.3	12.9
18-May	7.8	7.3	6.6	6.3	5.0	4.8	5.4	7.1	9.1	11.1	13.1	14.4	15.8	17.0	18.4	19.5	20.3	20.8	21.1	21.1	20.9	20.6	19.4	18.3	13.8	21.1
19-May	16.1	13.8	11.9	10.9	10.6	10.7	11.2	11.0	11.8	12.3	13.1	14.0	15.2	16.2	17.7	17.8	18.1	18.4	18.4	19.0	18.6	16.5	15.0	14.0	14.7	19.0
20-May	13.0	11.6	10.2	9.1	8.2	7.8	7.5	7.9	8.7	10.5	12.1	13.5	15.4	16.4	17.8	18.4	18.8	18.9	18.7	18.1	17.2	16.3	15.6	14.9	13.6	18.9
21-May	14.4	14.0	13.7	13.3	12.6	12.2	11.9	11.7	12.1	13.2	14.7	15.9	17.4	19.3	20.7	21.7	22.7	23.3	23.4	22.7	22.2	22.1	21.4	18.5	17.3	23.4
22-May	16.8	17.7	16.6	14.2	13.3	12.8	12.4	12.6	13.3	14.3	14.9	16.2	17.0	17.8	18.6	19.5	20.2	20.1	19.7	19.2	17.9	16.3	14.9	13.6	16.2	20.2
23-May	12.9	11.7	10.6	9.7	8.9	8.4	8.4	9.0	9.4	9.7	9.9	9.5	7.6	7.4	7.7	7.9	8.7	9.3	9.5	9.7	9.8	9.6	9.3	9.3	9.3	12.9
24-May	9.6	9.7	9.4	8.9	8.4	8.1	8.0	8.3	8.7	9.2	9.9	11.2	12.1	13.3	13.2	12.9	12.0	11.7	11.9	11.4	11.2	11.1	11.1	11.0	10.5	13.3
25-May	10.9	10.6	10.0	9.2	9.0	9.0	9.6	10.5	12.1	13.8	15.5	15.8	16.7	17.1	17.3	17.4	17.4	17.5	17.5	17.3	16.6	15.8	14.8	14.0	14.0	17.5
26-May	13.0	12.3	12.1	12.2	11.8	11.6	11.8	12.9	13.9	15.5	17.7	19.3	20.1	21.2	21.6	22.2	22.8	23.0	23.0	22.9	22.7	22.2	21.6	20.3	17.8	23.0
27-May	19.3	17.1	15.1	14.7	14.1	13.7	14.7	16.6	18.8	21.4	23.1	23.9	24.4	24.7	24.9	25.2	25.3	25.3	25.2	25.1	24.9	24.5	23.1	21.4	21.1	25.3
28-May	19.0	17.0	16.6	16.1	16.1	15.9	16.8	17.4	18.7	21.5	24.0	24.5	25.3	25.6	25.4	25.3	25.4	24.7	24.0	23.3	22.1	19.8	18.9	18.3	20.9	25.6
29-May	16.8	15.9	15.4	14.0	13.8	13.3	12.4	13.9	16.2	18.6	21.0	22.0	22.6	22.2	21.0	20.8	21.3	21.9	22.3	22.4	21.9	20.4	18.2	17.4	18.6	22.6
30-May	17.3	17.5	14.7	14.0	13.5	12.6	11.5	11.7	13.7	16.7	19.2	20.8	22.0	22.5	23.1	23.0	21.6	20.4	19.9	19.3	19.2	18.7	18.7	17.8	17.9	23.1
31-May	18.0	18.1	15.9	15.5	14.5	13.2	13.3	14.3	16.1	18.5	21.0	22.0	22.2	22.7	23.3	23.4	23.6	23.6	23.6	23.2	22.0	21.0	19.6	19.0	19.5	23.6
16.0 15.2 14.1 13.5 12.7 12.2 12.0 12.6 13.8 15.5 17.2 18.4 19.4 20.2 20.8 21.2 21.5 21.5 21.3 20.8 20.1 19.1 18.0 17.0																								Diurnal Average		
22.9 21.8 21.3 20.2 19.2 19.0 18.5 18.6 19.5 21.5 24.0 24.9 27.1 28.1 29.0 29.5 30.1 30.1 29.9 29.4 29.0 28.4 26.1 23.7																								Diurnal Maximum		





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 163 m (AT163m) - C
Lower Camp Met Tower - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	74	9.95	9.95
10 - 20	434	58.33	68.28
> 20	236	31.72	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

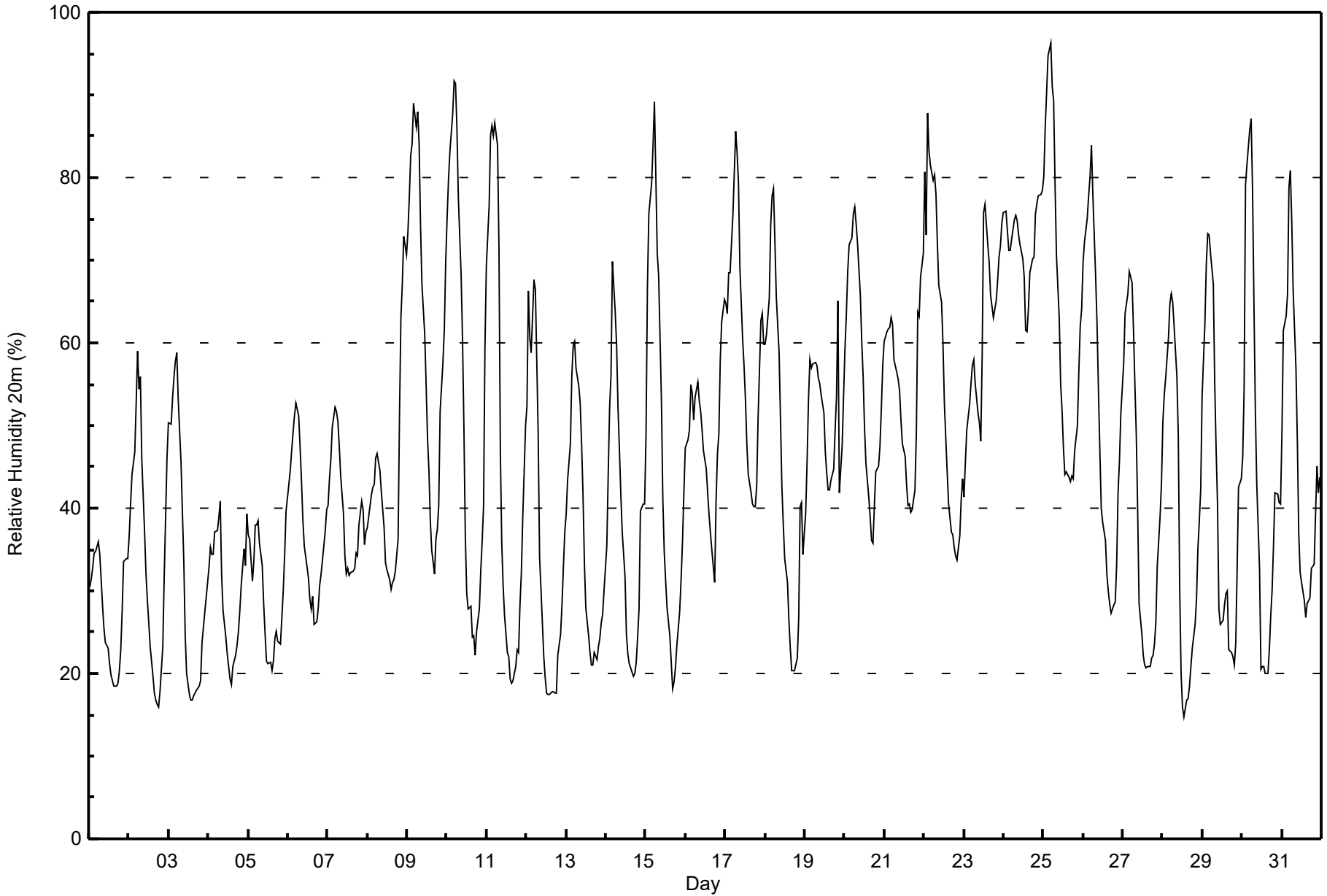
Relative Humidity 20m (RH20m) - %
Lower Camp Met Tower - May 2023

Maximum Value: 96.2 % on May 25 05:00																						Hours in Service: 744				
Maximum Daily Average: 72.1 % on May 24																						Hours of Data: 744				
Minimum Value: 14.8 % on May 28 14:00																						Hours of Missing Data: 0				
Minimum Daily Average: 27.3 % on May 1																						Hours of Calibration: 0				
Maximum Diurnal Average: 67.2 % at hour 6																						Percent Operational Time: 100.0				
Monthly Average: 46.01 %																										
Percentiles: P ₁ = 16.8 P ₁₀ = 21.7 Q ₁ = 30.5 Median = 42.9 Q ₃ = 60.4 P ₉₀ = 74.6 P ₉₉ = 89.1																										
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	30.5	31.5	32.9	34.6	34.8	36.0	34.4	31.4	28.2	25.5	23.7	23.1	21.3	19.8	19.1	18.4	18.5	18.7	20.3	22.9	27.6	33.5	33.9	33.9	27.3	36.0
2-May	36.7	40.6	44.1	46.7	52.8	59.0	54.3	55.8	46.0	37.1	32.0	28.9	26.1	23.2	19.6	17.7	16.7	16.2	15.9	17.8	23.3	31.7	38.8	46.2	34.5	59.0
3-May	50.3	50.2	53.4	56.0	57.8	58.9	53.2	45.6	39.6	33.6	24.5	20.0	17.4	16.8	16.8	17.3	17.6	18.0	18.4	19.2	23.8	25.6	27.4	31.0	33.0	58.9
4-May	32.8	35.2	34.4	34.3	37.0	37.3	38.8	40.9	31.8	27.6	24.5	22.4	20.8	19.3	18.7	20.8	22.2	23.4	25.0	27.6	30.7	35.1	33.1	39.3	29.7	40.9
5-May	36.7	36.3	31.1	33.5	38.0	38.0	38.5	35.8	33.1	28.5	24.9	21.5	21.2	21.4	20.4	21.6	24.2	25.1	23.9	23.5	26.8	30.0	34.4	39.6	29.5	39.6
6-May	42.8	44.5	46.9	49.2	51.2	52.8	51.2	47.5	43.5	38.7	35.5	32.9	31.5	29.0	27.9	29.3	25.9	26.3	27.9	30.7	32.0	33.6	37.3	39.8	37.8	52.8
7-May	40.3	43.6	45.9	49.8	52.3	51.7	50.5	47.5	43.9	39.4	34.2	32.0	32.7	31.9	32.1	32.3	32.8	34.5	34.3	37.9	40.9	39.8	35.6	37.1	39.7	52.3
8-May	37.6	39.0	41.7	42.5	42.9	46.2	46.5	44.7	42.1	39.8	37.6	33.5	32.5	31.3	30.1	31.0	31.3	32.3	36.3	51.3	63.1	67.1	72.8	70.6	43.5	72.8
9-May	73.3	77.6	82.7	84.1	89.0	86.1	87.9	84.1	74.3	67.2	61.1	55.0	48.5	44.6	38.5	34.8	32.1	36.3	37.5	40.3	51.8	57.7	61.7	69.8	61.5	89.0
10-May	75.2	79.9	83.3	87.7	91.8	91.3	86.0	77.6	68.1	60.3	49.5	36.4	29.7	27.8	28.1	24.4	24.5	22.2	25.1	27.7	32.4	36.0	40.2	59.4	52.7	91.8
11-May	69.3	76.7	85.1	86.2	85.1	86.6	83.8	71.6	46.8	35.7	30.5	26.9	22.5	22.1	19.4	18.8	19.1	20.8	22.8	22.6	28.3	32.2	39.0	50.0	45.9	86.6
12-May	52.4	66.2	60.6	58.7	67.6	66.4	57.9	49.1	34.1	30.1	22.1	19.6	17.6	17.4	17.4	17.7	17.8	17.6	17.7	22.2	24.7	28.2	32.9	37.1	35.5	67.6
13-May	39.3	43.4	47.9	55.9	59.6	60.1	56.9	54.7	52.7	47.7	41.6	33.4	27.9	24.6	22.6	21.0	21.0	22.6	21.7	23.1	24.3	26.2	27.1	30.0	36.9	60.1
14-May	35.4	44.0	52.2	56.0	69.8	63.7	59.6	52.0	47.1	41.6	37.1	31.7	24.7	22.3	21.2	20.6	19.7	20.1	21.3	24.3	27.8	39.6	40.6	40.5	38.0	69.8
15-May	49.1	66.8	75.7	79.4	83.9	89.1	80.1	70.8	68.1	53.1	41.0	34.8	31.2	27.9	24.6	21.3	18.2	19.0	20.6	23.3	27.5	31.1	35.7	41.8	46.4	89.1
16-May	47.3	48.3	49.5	55.0	53.9	50.7	53.4	55.3	53.0	51.8	49.5	47.0	44.7	41.9	39.2	37.0	34.9	30.9	40.8	46.6	48.9	58.0	62.5	65.2	48.5	65.2
17-May	64.8	63.6	68.4	68.4	75.4	80.5	85.5	83.1	79.3	69.2	60.3	57.1	53.1	47.6	44.0	41.9	40.5	40.1	40.2	42.7	50.9	62.8	63.6	59.9	60.1	85.5
18-May	59.9	61.0	65.4	74.2	77.8	78.7	72.4	65.5	58.8	50.7	42.6	37.9	34.0	31.0	26.5	23.1	20.4	20.3	20.3	21.8	26.5	40.2	40.7	34.3	45.2	78.7
19-May	39.4	45.8	53.2	58.0	56.9	57.4	57.6	57.3	55.7	55.1	53.7	51.5	46.8	44.3	42.2	42.1	43.5	44.7	49.5	53.6	65.1	41.9	47.5	53.4	50.7	65.1
20-May	59.1	63.4	68.6	71.9	72.7	75.7	76.4	74.4	72.1	65.7	60.2	56.0	49.6	45.4	41.4	38.9	36.1	35.8	40.1	44.5	45.1	47.4	52.1	57.2	56.2	76.4
21-May	60.1	61.4	61.8	61.8	63.1	62.2	57.9	56.5	55.7	54.2	50.6	47.8	46.3	42.9	40.4	40.5	39.5	39.8	42.2	49.1	63.7	63.3	67.9	70.8	54.1	70.8
22-May	80.6	73.0	87.8	83.2	81.6	79.7	80.4	78.0	72.0	66.9	64.9	59.9	52.7	48.6	44.5	40.5	37.1	36.7	35.2	34.3	33.8	36.6	41.1	43.5	58.0	87.8
23-May	41.3	45.6	49.4	52.5	55.1	57.4	58.0	55.2	51.6	50.3	48.1	58.7	75.7	76.8	71.8	69.7	65.8	64.4	63.1	65.1	67.4	70.3	71.7	74.4	60.8	76.8
24-May	75.8	76.0	73.5	71.2	71.1	72.5	75.0	75.5	74.7	73.1	71.8	70.2	68.0	61.6	61.4	64.0	68.5	70.1	70.3	75.7	76.7	77.8	78.0	78.4	72.1	78.4
25-May	80.2	86.1	90.4	94.7	96.2	91.0	89.3	79.3	70.7	63.1	55.0	51.9	47.3	44.0	44.4	43.7	43.2	43.9	43.5	47.0	49.9	56.7	62.1	64.0	64.1	96.2
26-May	69.7	72.2	75.0	77.7	80.1	83.9	77.9	68.0	62.2	54.3	46.9	40.1	38.3	36.0	32.1	30.0	28.4	27.3	28.2	28.6	33.2	41.9	45.8	51.6	51.2	83.9
27-May	57.5	63.6	64.7	66.0	68.6	67.3	61.7	55.1	48.9	39.6	28.5	24.8	22.2	21.0	20.7	20.9	20.9	21.8	22.2	23.6	26.3	33.0	38.9	43.1	40.0	68.6
28-May	50.5	53.7	55.8	60.7	64.7	65.9	64.9	62.1	55.9	48.7	30.4	20.0	15.9	14.8	16.7	16.9	18.5	20.9	23.0	25.9	29.0	35.2	38.4	42.1	38.8	65.9
29-May	53.5	62.3	69.5	73.2	73.1	70.9	67.2	55.3	47.1	40.5	27.8	26.0	26.5	28.3	29.7	29.9	22.8	22.5	22.0	21.0	23.6	32.6	42.6	43.5	42.1	73.2
30-May	46.3	54.4	79.2	81.4	85.8	87.2	78.6	64.9	52.1	43.1	32.6	20.4	20.8	20.8	20.1	20.0	22.8	26.9	30.2	35.7	41.9	41.7	40.7	40.6	45.3	87.2
31-May	49.2	61.5	63.1	65.9	78.7	80.9	74.7	66.4	57.0	48.1	36.9	32.3	31.1	28.8	26.7	28.5	28.7	29.2	32.8	33.1	39.4	45.0	41.8	43.7	46.8	80.9
	52.8	57.0	61.1	63.6	66.7	67.2	64.9	60.0	53.7	47.8	41.3	37.2	34.8	32.7	30.9	30.2	29.5	30.0	31.4	34.3	38.9	43.0	46.0	49.4		Diurnal Average
	80.6	86.1	90.4	94.7	96.2	91.3	89.3	84.1	79.3	73.1	71.8	70.2	75.7	76.8	71.8	69.7	68.5	70.1	70.3	75.7	76.7	77.8	78.0	78.4		Diurnal Maximum



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity 20m (RH20m) - %
Lower Camp Met Tower - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity 20m (RH20m) - %
Lower Camp Met Tower - May 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	42	5.65	5.65
20 - 40	282	37.90	43.55
40 - 60	229	30.78	74.33
60 - 80	151	20.30	94.62
80 - 100	40	5.38	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

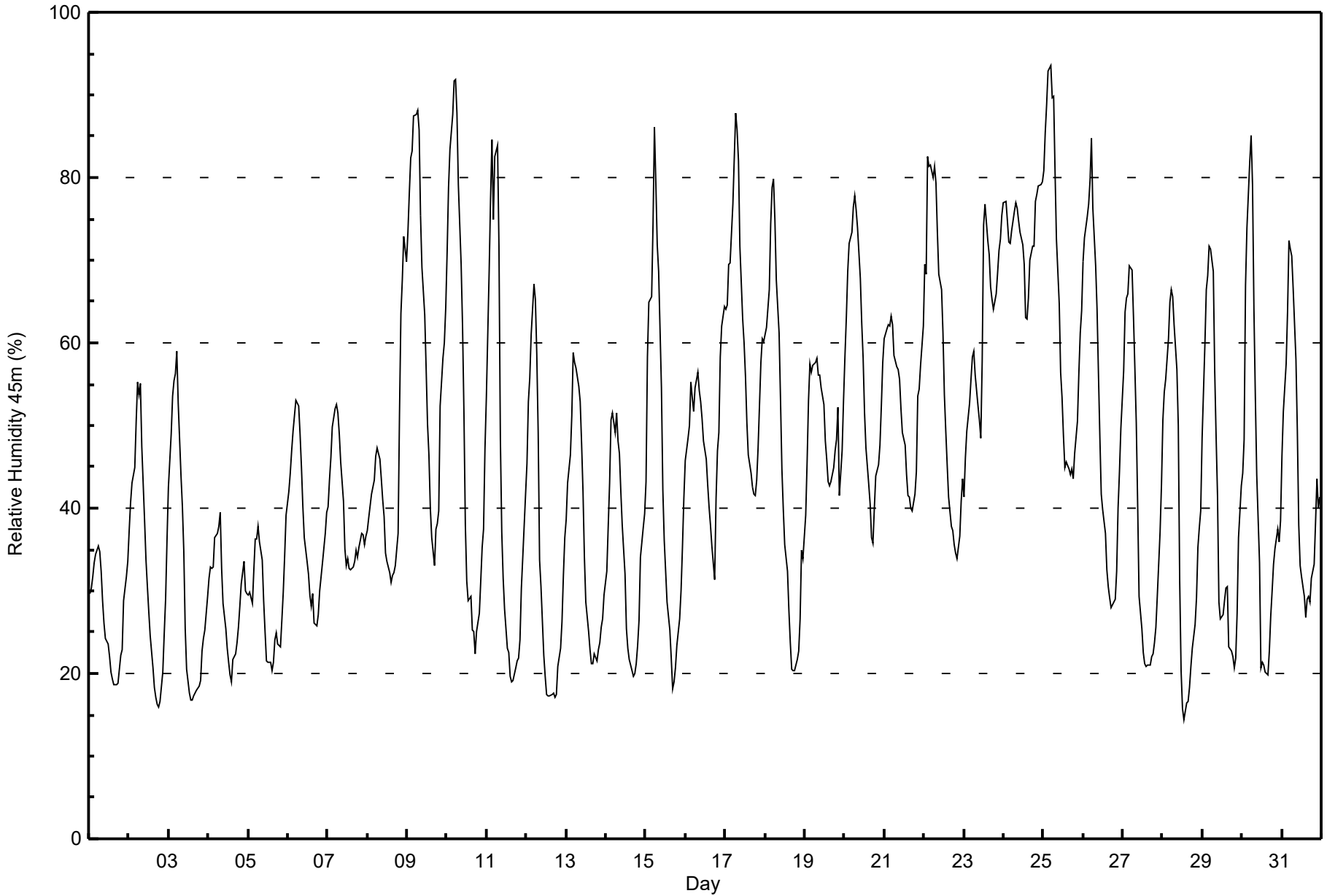
Relative Humidity 45m (RH45m) - %
Lower Camp Met Tower - May 2023

Maximum Value: 93.6 % on May 25 05:00																								Hours in Service: 744		
Maximum Daily Average: 73.5 % on May 24																								Hours of Data: 744		
Minimum Value: 14.5 % on May 28 14:00																								Hours of Missing Data: 0		
Minimum Daily Average: 26.8 % on May 1																								Hours of Calibration: 0		
Maximum Diurnal Average: 66.3 % at hour 6																								Percent Operational Time: 100.0		
Monthly Average: 45.54 %																										
Percentiles: P ₁ = 16.8 P ₁₀ = 21.6 Q ₁ = 29.7 Median = 42.9 Q ₃ = 58.7 P ₉₀ = 73.5 P ₉₉ = 88.0																										
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	29.7	30.4	31.6	33.5	34.4	35.4	34.8	32.4	28.8	26.1	24.3	23.6	22.0	20.1	19.4	18.6	18.6	18.9	20.4	22.1	22.8	28.8	31.7	33.5	26.8	35.4
2-May	37.3	40.7	43.0	44.9	50.5	55.3	53.7	55.1	47.5	38.5	33.8	30.5	27.5	24.6	20.6	18.3	17.0	16.3	15.9	16.6	20.2	24.8	29.0	36.0	33.2	55.3
3-May	42.5	49.0	53.6	55.4	56.4	58.9	52.8	43.8	40.1	34.7	25.4	20.5	17.6	16.9	16.8	17.3	17.6	18.0	18.4	19.1	22.6	24.2	25.3	29.3	32.3	58.9
4-May	31.5	32.8	32.7	32.9	36.5	37.0	37.7	39.5	32.7	28.5	25.4	23.1	21.4	19.8	19.0	21.6	22.4	23.8	25.6	28.1	30.9	33.6	29.9	29.6	29.0	39.5
5-May	29.5	29.9	28.4	32.5	36.3	36.2	37.9	35.9	33.8	28.8	25.1	21.4	21.3	21.4	20.4	21.4	24.1	24.9	23.6	23.2	26.4	29.8	34.3	39.1	28.6	39.1
6-May	42.1	44.2	47.0	49.4	51.2	53.0	52.3	48.9	44.9	40.2	36.4	33.5	32.0	29.5	28.2	29.6	26.2	25.7	27.2	30.0	31.7	33.3	36.9	39.5	38.0	53.0
7-May	40.2	43.5	46.0	49.8	52.0	52.5	51.4	48.9	45.6	40.9	35.1	33.1	33.8	32.6	32.5	32.8	33.5	34.8	34.1	35.2	37.0	36.9	35.6	36.6	39.8	52.5
8-May	37.2	38.8	41.7	42.6	43.3	46.2	47.4	45.9	43.5	41.1	39.0	34.6	33.6	32.3	31.0	31.8	32.1	33.1	36.9	51.5	63.6	67.6	73.0	69.9	44.1	73.0
9-May	73.4	78.1	82.3	83.3	87.5	87.7	88.1	85.8	75.5	69.2	63.3	57.0	50.2	46.5	40.0	36.4	33.0	37.4	38.2	39.6	52.3	58.1	60.1	64.2	62.0	88.1
10-May	71.0	78.8	83.3	87.6	91.7	91.9	87.7	79.2	69.6	62.0	51.5	38.0	31.1	28.9	29.3	25.3	25.1	22.3	25.1	27.2	31.3	35.2	37.5	47.0	52.4	91.9
11-May	53.4	68.6	77.5	84.5	74.9	82.6	83.9	71.7	48.5	37.1	31.5	27.8	23.1	22.6	19.6	19.0	19.2	20.6	21.5	21.9	24.1	30.4	34.1	41.7	43.3	84.5
12-May	45.5	52.9	55.8	61.1	67.2	65.2	58.7	49.1	33.8	30.5	22.3	19.7	17.5	17.3	17.4	17.5	17.2	17.4	20.9	23.1	26.3	31.9	36.4	34.2	67.2	
13-May	38.7	43.0	46.4	51.2	58.8	57.7	56.9	54.7	52.9	47.8	42.0	34.1	28.7	25.1	23.0	21.2	21.2	22.4	21.5	22.8	23.7	25.7	26.7	29.4	36.5	58.8
14-May	32.4	37.8	43.0	50.7	51.5	49.2	51.6	48.1	46.5	42.1	38.0	32.1	25.4	23.1	21.6	21.0	19.7	20.0	21.3	23.4	26.4	34.1	37.7	39.3	34.8	51.6
15-May	43.1	58.3	64.9	65.6	74.3	86.1	79.3	71.9	68.6	54.5	42.2	36.0	32.4	28.7	25.3	21.9	18.2	19.0	20.7	23.4	26.7	30.0	35.2	41.2	44.5	86.1
16-May	45.7	48.5	50.0	55.2	53.4	51.8	54.6	56.4	54.2	52.9	50.9	48.1	45.8	42.9	40.2	37.9	35.4	31.3	41.1	46.9	49.2	58.3	62.0	64.5	49.1	64.5
17-May	64.2	64.5	69.4	69.7	76.8	82.4	87.8	85.7	82.0	71.7	62.8	59.9	55.9	50.3	46.5	44.2	42.5	41.7	41.5	43.4	47.2	57.6	60.5	60.2	61.2	87.8
18-May	61.0	61.8	66.5	74.3	78.8	79.8	74.8	67.6	61.2	53.2	44.7	39.9	35.6	32.4	27.6	23.7	20.6	20.4	20.3	21.8	22.8	26.6	35.0	33.9	45.2	79.8
19-May	39.2	45.6	53.1	57.4	56.5	57.2	57.6	58.2	56.2	56.1	54.6	52.5	48.1	45.9	43.3	42.7	43.2	44.9	46.9	48.4	52.2	41.5	47.0	53.0	50.0	58.2
20-May	58.3	63.0	68.7	72.1	73.3	76.5	77.8	76.0	74.0	67.8	62.3	58.1	51.5	47.3	42.8	40.5	36.4	35.8	40.0	43.9	45.2	47.7	52.4	57.6	57.0	77.8
21-May	60.4	61.7	62.2	62.0	63.2	62.3	58.4	57.1	56.7	55.5	52.0	49.1	47.6	44.0	41.6	41.4	40.1	39.6	41.7	44.5	53.5	54.4	57.3	62.0	52.8	63.2
22-May	69.5	68.3	82.5	81.4	81.5	80.1	81.4	79.3	73.4	68.3	66.4	61.1	53.8	49.3	45.3	41.3	37.8	37.3	35.6	34.6	33.9	36.5	40.9	43.6	57.6	82.5
23-May	41.4	46.0	49.4	52.8	55.7	58.3	59.0	56.1	52.3	50.7	48.4	57.7	74.2	76.7	72.4	70.6	66.8	65.3	64.0	66.0	68.4	71.3	72.6	75.5	61.3	76.7
24-May	76.9	77.2	74.7	72.2	72.1	73.5	75.9	77.0	76.2	74.7	73.4	71.8	69.6	63.1	62.9	65.5	70.0	71.7	71.8	77.1	78.0	79.0	79.2	79.4	73.5	79.4
25-May	80.9	85.5	88.8	92.8	93.6	89.7	89.8	80.8	72.5	64.8	56.4	53.4	48.9	44.8	45.6	44.8	44.1	44.7	43.6	46.5	50.4	56.3	61.3	64.0	64.3	93.6
26-May	69.9	72.7	75.2	76.8	79.7	84.7	76.2	69.3	64.1	56.3	48.7	41.8	39.8	36.9	32.6	30.5	29.2	28.0	28.6	28.9	32.3	40.0	44.4	49.6	51.5	84.7
27-May	56.6	63.7	65.5	65.9	69.3	68.7	63.3	56.9	50.3	40.3	29.3	25.3	22.6	21.2	20.9	21.1	21.0	22.0	22.4	23.8	25.5	29.3	37.1	42.9	40.2	69.3
28-May	50.6	54.0	55.6	60.5	64.9	66.5	65.6	62.1	56.8	49.9	31.3	20.3	15.8	14.5	16.4	16.6	18.3	20.9	23.0	25.9	29.1	35.2	37.7	39.6	38.8	66.5
29-May	48.5	59.8	66.4	68.2	71.7	71.4	68.7	56.7	48.7	41.5	28.7	26.7	27.1	28.8	30.3	30.4	23.2	22.7	22.0	20.6	21.8	27.3	36.4	42.7	41.3	71.7
30-May	44.3	48.4	67.0	73.9	81.9	85.1	79.1	64.1	53.6	44.1	33.4	20.8	21.3	21.0	20.2	19.9	22.6	26.9	30.0	33.3	35.1	37.5	35.9	38.5	43.2	85.1
31-May	46.3	51.7	57.5	63.8	72.3	71.3	70.5	66.6	58.0	49.4	38.0	33.1	31.7	29.3	26.8	29.0	29.3	28.7	31.5	33.2	38.4	43.6	40.0	41.4	45.1	72.3
	50.4	54.8	59.0	62.1	64.9	66.3	65.0	60.7	54.9	49.0	42.5	38.2	35.7	33.5	31.6	30.8	29.9	30.2	31.3	33.7	37.0	40.7	43.8	47.1	Diurnal Average	
	80.9	85.5	88.8	92.8	93.6	91.9	89.8	85.8	82.0	74.7	73.4	71.8	74.2	76.7	72.4	70.6	70.0	71.7	71.8	77.1	78.0	79.0	79.2	79.4	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity 45m (RH45m) - %
Lower Camp Met Tower - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity 45m (RH45m) - %
Lower Camp Met Tower - May 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	40	5.38	5.38
20 - 40	295	39.65	45.03
40 - 60	228	30.65	75.67
60 - 80	146	19.62	95.30
80 - 100	35	4.70	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

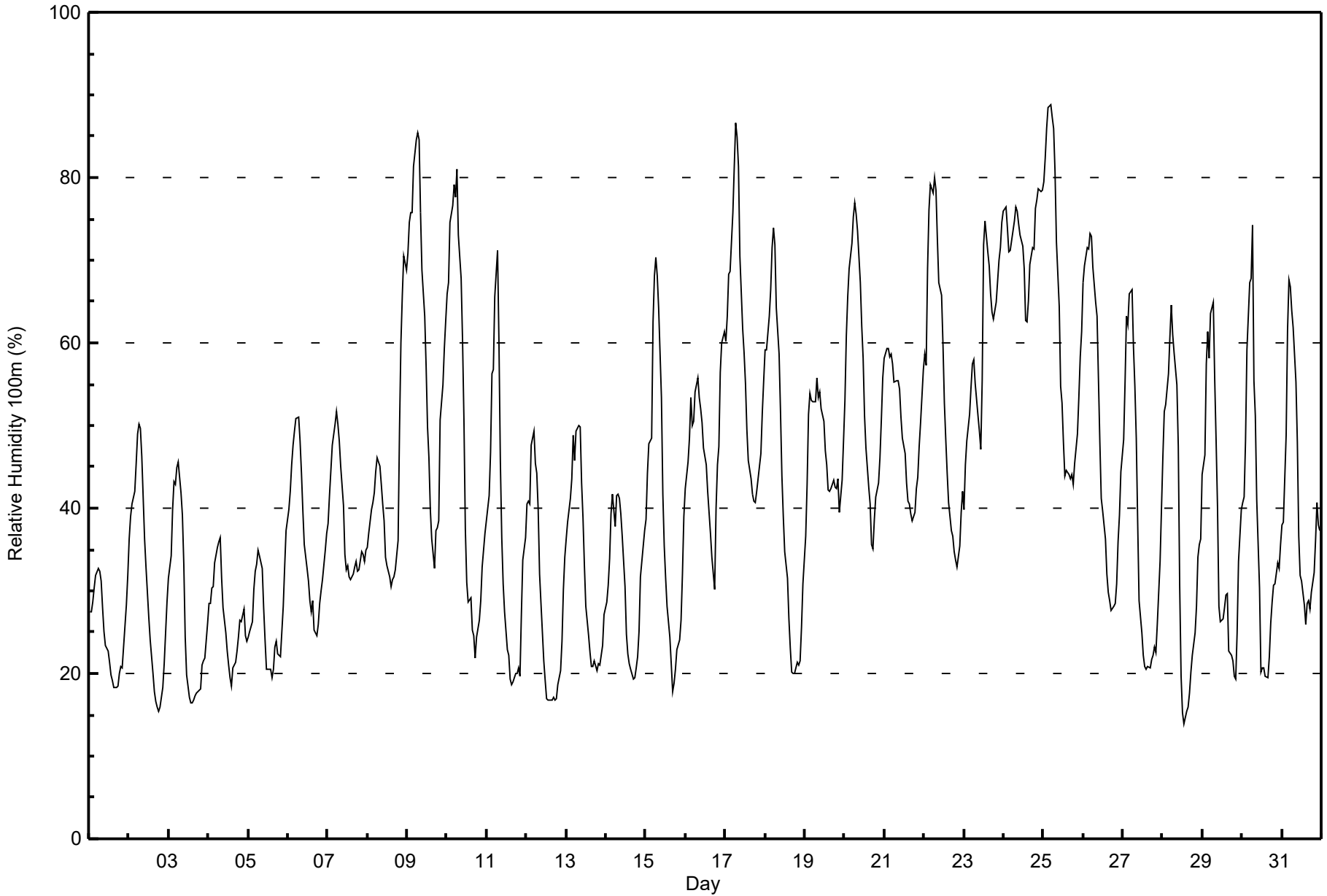
Relative Humidity 100m (RH100m) - %
Lower Camp Met Tower - May 2023

Maximum Value: 88.8 % on May 25 05:00 Maximum Daily Average: 72.8 % on May 24																						Hours in Service: 744 Hours of Data: 744																										
Minimum Value: 13.9 % on May 28 14:00 Minimum Daily Average: 25.1 % on May 1																						Hours of Missing Data: 0 Hours of Calibration: 0																										
Maximum Diurnal Average: 60.6 % at hour 7 Minimum Diurnal Average: 29.3 % at hour 17																						Percent Operational Time: 100.0																										
Monthly Average: 42.76 % Percentiles: P₁ = 16.4 P₁₀ = 20.8 Q₁ = 28.3 Median = 40.4 Q₃ = 55.2 P₉₀ = 70.5 P₉₉ = 84.7																																																
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	27.4	27.5	28.7	30.4	31.8	32.7	32.4	31.2	28.0	25.1	23.3	22.7	21.3	19.8	19.1	18.4	18.4	18.6	20.0	20.8	20.7	23.1	28.3	31.8	25.1	32.7																						
2-May	36.3	38.9	40.5	42.0	45.4	49.1	50.2	49.7	46.3	36.2	32.9	29.8	26.7	24.1	19.9	17.8	16.7	15.9	15.4	15.9	18.2	21.1	24.9	28.7	30.9	50.2																						
3-May	31.4	34.2	39.9	43.2	42.9	44.9	45.6	41.8	39.1	33.2	24.4	19.9	17.1	16.4	16.4	16.8	17.3	17.6	17.9	18.2	21.0	21.5	21.9	26.1	27.9	45.6																						
4-May	28.5	28.5	30.3	30.6	33.3	35.2	35.9	36.5	31.6	27.9	25.0	22.7	21.0	19.5	18.4	20.7	21.4	22.7	24.4	26.4	26.2	27.8	24.6	23.9	26.8	36.5																						
5-May	24.5	25.0	26.2	30.2	32.3	33.2	34.9	34.2	32.8	28.0	24.1	20.5	20.5	20.5	19.5	20.5	23.2	23.8	22.3	22.0	25.0	28.2	32.9	37.3	26.7	37.3																						
6-May	39.8	42.0	45.2	47.7	49.4	50.9	50.9	48.1	44.3	39.7	35.6	32.7	31.2	28.7	27.5	28.8	25.2	24.6	26.0	28.4	30.1	31.3	34.9	36.9	36.7	50.9																						
7-May	38.2	41.6	44.6	47.6	50.2	51.7	50.2	48.1	45.1	40.3	34.4	32.5	33.1	31.7	31.3	32.0	32.9	33.6	32.4	32.6	34.7	34.3	33.6	34.8	38.4	51.7																						
8-May	35.2	36.9	39.8	40.7	41.9	44.3	46.1	45.1	42.9	40.5	38.5	34.1	33.1	31.8	30.5	31.4	31.6	32.5	36.2	49.4	60.0	65.7	70.6	68.8	42.8	70.6																						
9-May	70.8	74.6	75.8	75.8	81.4	84.5	85.4	84.6	75.8	68.8	63.1	57.1	49.8	46.1	39.9	36.3	32.6	37.2	37.6	38.5	50.7	55.0	59.3	62.7	60.1	85.4																						
10-May	65.9	67.3	74.6	76.7	79.1	77.6	81.0	73.0	67.8	60.4	50.7	37.5	31.0	28.6	29.1	25.2	24.6	21.8	24.4	26.4	28.7	32.9	35.0	37.0	48.2	81.0																						
11-May	38.5	41.5	46.8	56.3	56.8	65.5	71.2	59.9	45.7	36.4	30.9	27.5	22.8	22.2	19.3	18.7	18.9	20.0	20.0	20.6	19.7	27.1	33.8	36.4	35.7	71.2																						
12-May	40.5	40.9	40.6	47.6	49.3	45.5	44.2	39.8	32.0	28.5	21.5	19.2	16.9	16.9	16.8	16.8	17.1	16.7	16.9	18.6	20.4	23.9	30.2	34.0	29.0	49.3																						
13-May	36.2	38.4	41.3	43.6	48.9	45.8	49.3	49.9	49.9	43.1	38.7	33.1	28.2	24.5	22.6	20.8	20.8	21.6	20.3	21.1	21.1	22.3	23.3	27.1	33.0	49.9																						
14-May	28.6	30.7	33.9	39.4	41.7	37.7	41.5	41.6	41.1	39.3	36.5	30.5	24.8	22.4	21.3	20.5	19.3	19.4	20.6	22.0	25.0	31.8	35.4	37.3	30.9	41.7																						
15-May	38.7	44.2	47.8	48.4	62.6	68.2	70.3	68.1	64.3	53.4	41.7	35.4	31.6	28.1	24.5	21.2	17.8	18.8	20.6	22.9	24.0	26.5	32.1	39.0	39.6	70.3																						
16-May	42.3	45.6	48.4	53.3	50.0	50.5	54.1	55.7	53.3	52.1	50.3	47.3	45.2	42.1	39.5	37.0	34.1	30.1	40.0	45.3	47.4	56.4	60.0	61.4	47.6	61.4																						
17-May	60.2	63.2	68.3	68.6	75.8	81.3	86.7	84.8	81.3	70.5	61.6	58.9	55.0	49.6	45.8	43.6	41.7	40.8	40.8	42.1	43.6	46.7	51.4	55.5	59.1	86.7																						
18-May	59.1	59.1	63.3	66.5	71.6	74.0	71.8	64.2	58.7	51.7	43.9	39.0	34.8	31.5	26.6	23.1	20.3	20.0	20.0	21.4	21.0	21.5	25.6	30.8	42.5	74.0																						
19-May	36.6	42.8	51.4	53.9	53.0	52.9	52.9	55.8	53.3	54.1	52.0	50.5	47.0	45.2	42.3	42.0	42.3	43.4	42.6	42.4	43.6	39.5	43.4	48.1	47.1	55.8																						
20-May	53.0	60.9	65.6	69.1	72.1	75.3	77.0	75.5	73.6	67.3	62.1	58.1	51.1	47.2	42.6	40.5	35.5	35.1	38.6	41.4	43.1	46.0	50.7	55.7	55.7	77.0																						
21-May	58.2	59.4	59.4	58.4	58.7	57.5	55.2	55.4	55.4	54.4	51.0	48.5	46.7	43.1	40.9	40.6	39.3	38.4	39.4	42.3	43.8	47.4	50.4	56.7	50.0	59.4																						
22-May	58.7	57.2	69.0	76.1	79.1	78.2	79.9	78.4	72.5	67.3	65.7	59.9	52.7	48.3	44.2	40.6	37.2	36.6	34.8	33.7	32.9	35.5	39.4	42.0	55.0	79.9																						
23-May	39.8	45.3	48.1	51.4	54.6	57.4	58.0	55.0	51.2	49.3	47.1	55.5	71.8	74.8	71.0	69.3	65.9	63.8	62.9	64.9	67.5	70.0	71.5	74.5	60.0	74.8																						
24-May	76.0	76.4	73.9	71.0	71.1	72.4	74.7	76.5	75.9	74.4	73.1	71.6	69.0	62.7	62.5	65.1	69.5	71.5	71.3	76.3	77.2	78.6	78.4	78.4	72.8	78.6																						
25-May	79.5	82.4	85.9	88.4	88.8	87.4	85.9	80.7	72.3	64.3	54.8	52.7	48.0	44.0	44.7	44.1	43.5	44.0	42.9	45.4	49.0	53.3	58.3	61.4	62.6	88.8																						
26-May	67.3	69.4	71.5	71.3	73.2	72.8	69.2	64.9	63.1	55.6	47.9	41.1	39.6	36.3	32.0	29.9	28.8	27.7	28.1	28.5	30.8	36.0	39.1	44.4	48.7	73.2																						
27-May	48.3	55.2	63.2	62.3	66.0	66.5	59.4	54.7	48.5	38.3	28.9	25.0	22.2	20.9	20.6	20.8	20.8	21.8	22.2	23.1	22.5	25.9	33.6	40.0	37.9	66.5																						
28-May	46.2	51.7	52.5	56.3	60.7	64.6	61.0	58.9	54.9	47.4	30.5	19.7	15.3	13.9	15.4	16.0	17.6	20.2	22.1	25.0	28.2	34.1	35.7	36.3	36.8	64.6																						
29-May	44.0	46.5	57.4	61.3	58.1	63.5	64.9	55.5	48.1	40.1	28.2	26.3	26.7	28.0	29.4	29.7	22.7	22.3	21.6	19.7	19.4	24.9	33.6	39.7	38.0	64.9																						
30-May	40.7	41.4	48.2	59.2	67.3	67.8	74.2	55.4	51.1	41.0	30.4	20.1	20.7	20.7	19.7	19.5	22.0	26.1	28.6	30.6	30.9	33.3	32.8	35.5	38.2	74.2																						
31-May	38.0	38.3	48.8	61.5	67.6	66.8	63.9	61.8	55.3	48.0	36.6	31.8	31.2	28.3	25.9	28.5	28.8	27.7	29.8	32.2	36.1	40.7	38.0	37.2	41.8	67.6																						
																								46.1	48.6	52.6	55.8	58.5	59.9	60.6	57.6	53.4	47.6	41.5	37.5	35.0	32.8	30.9	30.2	29.3	29.5	30.3	32.2	34.3	37.5	40.7	43.9	Diurnal Average
																								79.5	82.4	85.9	88.4	88.8	87.4	86.7	84.8	81.3	74.4	73.1	71.6	71.8	74.8	71.0	69.3	69.5	71.5	71.3	76.3	77.2	78.6	78.4	78.4	Diurnal Maximum



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity 100m (RH100m) - %
Lower Camp Met Tower - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity 100m (RH100m) - %
Lower Camp Met Tower - May 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	53	7.12	7.12
20 - 40	316	42.47	49.60
40 - 60	231	31.05	80.65
60 - 80	128	17.20	97.85
80 - 100	16	2.15	100.00

Total Number of Valid Hours: 744

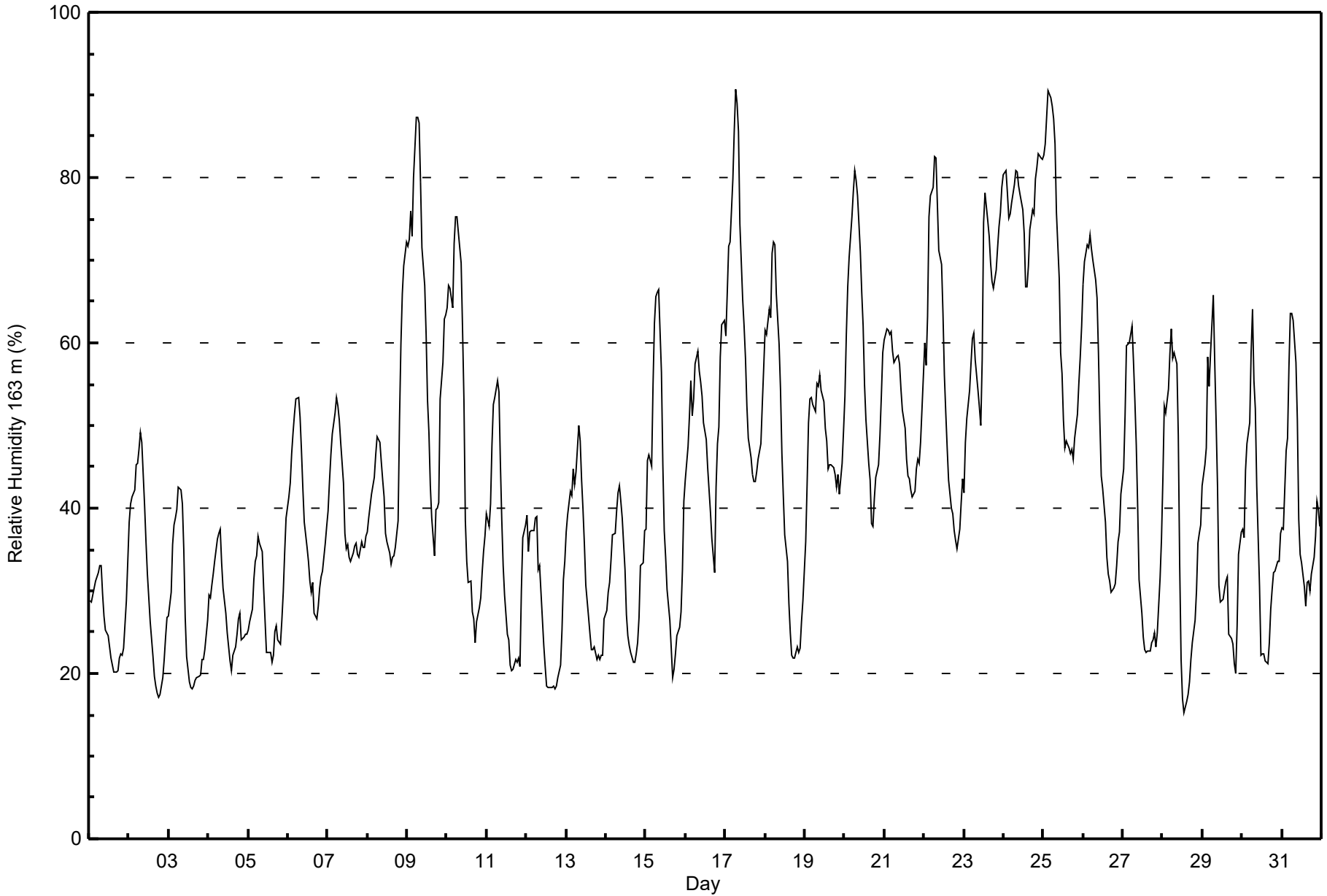
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity 163 m (RH163m) - %
Lower Camp Met Tower - May 2023

Maximum Value: 90.7 % on May 17 07:00 Maximum Daily Average: 77.1 % on May 24																						Hours in Service: 744 Hours of Data: 744																											
Minimum Value: 15.2 % on May 28 14:00 Minimum Daily Average: 26.3 % on May 1																						Hours of Missing Data: 0 Hours of Calibration: 0																											
Maximum Diurnal Average: 59.9 % at hour 7 Minimum Diurnal Average: 31.5 % at hour 17																						Percent Operational Time: 100.0																											
Monthly Average: 43.88 % Percentiles: P₁ = 18.2 P₁₀ = 22.4 Q₁ = 29.9 Median = 41.0 Q₃ = 55.6 P₉₀ = 71.5 P₉₉ = 87.2																																																	
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	28.8	28.6	29.5	30.3	31.1	32.3	33.1	33.1	29.7	26.9	25.2	24.5	23.2	21.8	21.0	20.2	20.2	20.4	21.8	22.4	22.2	23.1	28.8	33.6	26.3	33.6																							
2-May	38.3	40.5	41.4	42.1	45.3	45.5	47.2	49.1	47.9	40.4	35.9	32.0	29.1	26.3	22.0	19.7	18.5	17.6	17.0	17.5	19.5	21.6	24.4	26.8	31.9	49.1																							
3-May	26.9	29.8	35.5	38.0	38.8	39.9	42.5	42.2	40.5	34.9	26.8	22.0	19.0	18.2	18.2	18.5	19.1	19.4	19.7	19.9	21.7	21.7	22.9	26.4	27.6	42.5																							
4-May	29.4	29.1	30.7	32.1	33.6	36.2	37.0	37.5	33.5	30.3	27.3	24.9	23.1	21.5	20.3	22.3	23.2	24.7	26.6	27.2	24.0	24.4	24.7	24.7	27.9	37.5																							
5-May	25.2	26.2	27.8	31.4	33.6	34.3	36.6	35.7	34.8	30.4	26.4	22.5	22.5	22.5	21.3	22.3	25.1	25.8	24.1	23.6	26.4	29.8	34.6	38.9	28.4	38.9																							
6-May	41.3	43.0	46.7	49.1	51.4	53.1	53.5	50.9	47.0	42.4	38.2	35.2	33.6	31.1	29.8	31.0	27.3	26.6	28.1	30.3	31.6	32.5	35.8	37.8	38.6	53.5																							
7-May	39.6	43.2	46.4	49.0	51.4	53.3	52.4	50.7	48.0	43.1	37.0	35.1	35.6	34.1	33.6	34.6	35.4	35.8	34.5	34.1	35.9	35.3	35.3	36.6	40.4	53.3																							
8-May	37.1	38.8	41.6	42.8	43.7	46.5	48.6	48.0	45.6	43.3	41.3	36.9	35.9	34.5	33.1	34.1	34.2	35.3	38.5	50.7	59.8	66.0	69.3	72.2	44.9	72.2																							
9-May	71.8	72.5	75.9	72.8	80.0	87.3	87.3	86.5	79.5	71.5	66.9	61.0	53.1	49.1	42.7	38.9	34.3	39.8	40.0	40.7	53.3	57.6	62.8	63.3	62.0	87.3																							
10-May	64.3	67.0	66.7	64.3	72.0	75.2	75.3	73.4	69.7	61.7	53.0	38.6	33.6	31.0	31.2	27.5	26.6	23.7	26.2	27.9	29.2	32.3	34.8	36.6	47.6	75.3																							
11-May	39.3	37.8	40.5	47.6	52.5	53.4	55.4	54.0	45.7	38.6	33.1	29.5	24.7	24.1	21.1	20.3	20.5	21.6	21.3	21.8	20.8	30.0	36.4	38.0	34.5	55.4																							
12-May	39.2	34.8	37.1	37.3	37.3	38.8	39.0	32.6	33.0	29.8	23.3	20.9	18.5	18.4	18.2	18.3	18.5	18.2	18.4	19.5	21.1	25.3	31.3	33.5	27.6	39.2																							
13-May	37.2	39.2	42.0	41.6	44.7	42.9	44.4	50.0	48.2	43.4	39.8	35.6	30.7	26.8	24.8	22.9	22.9	23.2	21.6	22.3	21.7	22.2	22.3	26.7	33.2	50.0																							
14-May	27.6	29.9	31.1	33.7	36.8	37.0	39.6	41.8	42.7	40.9	38.7	32.5	27.1	24.5	23.4	22.5	21.3	21.3	22.4	23.8	26.8	33.0	33.5	37.3	31.2	42.7																							
15-May	37.5	45.7	46.4	45.1	54.9	62.4	65.5	66.1	66.4	56.5	45.3	37.3	34.1	30.2	26.5	23.1	19.5	20.5	22.4	24.5	25.6	27.4	32.6	40.8	39.9	66.4																							
16-May	43.5	47.5	51.1	55.4	51.3	53.3	57.4	58.9	56.5	55.2	53.6	50.3	48.2	44.8	42.2	39.5	36.3	32.2	42.6	47.8	49.9	58.3	62.3	62.8	50.0	62.8																							
17-May	60.9	66.1	71.7	72.2	79.9	85.7	90.7	88.9	85.6	74.5	65.3	62.0	58.1	52.4	48.4	46.1	44.1	43.2	43.2	44.5	45.9	47.8	52.6	56.9	61.9	90.7																							
18-May	61.5	61.0	64.0	63.1	70.9	72.2	71.9	66.0	59.8	54.4	46.6	41.5	36.9	33.5	28.5	24.9	22.1	21.9	21.8	23.2	22.5	23.0	26.3	28.9	43.6	72.2																							
19-May	35.9	42.9	50.4	53.2	53.3	52.5	51.7	55.0	54.7	56.2	54.2	52.9	49.6	48.2	44.7	45.2	45.2	44.9	44.0	42.6	44.0	41.6	45.4	49.3	48.2	56.2																							
20-May	53.5	61.1	66.7	70.4	75.2	78.2	80.8	79.7	77.7	71.1	66.1	62.0	54.8	50.6	45.5	43.4	38.2	37.7	41.1	43.7	45.2	48.8	53.5	58.8	58.5	80.8																							
21-May	60.4	61.7	61.6	61.1	61.3	59.0	57.6	58.3	58.5	57.5	54.3	51.8	49.6	45.9	43.9	43.5	42.3	41.3	42.0	44.7	46.0	45.4	47.9	56.0	52.2	61.7																							
22-May	59.9	57.3	63.2	75.3	77.8	78.8	82.6	82.4	76.7	71.2	69.4	63.5	56.1	51.6	47.2	43.5	40.0	39.3	37.3	36.1	35.0	37.5	40.7	43.5	56.9	82.6																							
23-May	41.8	48.0	50.8	54.2	57.5	60.5	61.2	58.0	54.2	52.2	50.1	57.9	74.6	78.1	74.7	72.9	69.7	67.5	66.7	68.8	71.5	74.0	75.8	78.9	63.3	78.9																							
24-May	80.4	80.8	78.2	75.1	75.5	76.9	79.2	80.9	80.7	78.9	77.9	76.1	73.3	66.8	66.8	69.3	73.8	76.0	75.6	79.9	81.2	82.9	82.3	82.3	77.1	82.9																							
25-May	82.8	84.0	87.3	90.6	89.6	88.7	87.1	84.1	75.8	67.9	58.9	56.3	50.7	47.3	48.1	47.3	46.6	47.2	46.0	48.4	51.4	55.1	58.4	62.0	65.1	90.6																							
26-May	67.1	69.8	71.8	71.6	73.0	71.3	70.0	67.5	65.4	58.8	50.4	43.9	42.4	38.3	34.1	32.0	31.2	29.9	30.3	30.9	33.0	35.9	37.0	41.6	49.9	73.0																							
27-May	44.8	51.1	59.6	59.7	60.0	62.0	57.7	53.0	47.7	40.1	31.4	27.3	24.3	22.9	22.5	22.7	22.7	23.8	24.2	24.9	23.3	25.0	31.5	36.3	37.4	62.0																							
28-May	43.6	52.5	51.6	54.4	58.6	61.8	58.2	58.8	57.5	48.9	33.0	21.7	16.9	15.2	16.5	17.4	19.0	21.7	23.7	26.5	30.0	35.8	36.9	38.0	37.4	61.8																							
29-May	42.7	45.3	47.2	58.3	54.8	58.7	65.8	57.8	50.6	42.7	30.7	28.6	29.0	30.2	31.3	31.8	24.8	24.3	23.6	21.2	20.0	25.8	34.4	37.2	38.2	65.8																							
30-May	37.5	36.5	44.6	47.7	50.3	58.9	64.1	55.5	52.1	42.6	30.5	22.2	22.3	22.4	21.5	21.2	23.7	27.8	30.2	32.3	32.4	33.6	33.6	37.0	36.7	64.1																							
31-May	37.6	37.5	46.9	48.5	57.1	63.6	63.6	62.7	57.7	50.8	38.6	34.4	33.4	30.5	28.2	30.9	31.2	30.0	32.1	34.1	36.6	40.8	39.8	37.8	41.9	63.6																							
																								46.4	48.7	51.8	53.8	56.6	58.7	59.9	58.7	55.6	50.2	44.2	40.0	37.6	35.3	33.3	32.5	31.5	31.7	32.5	34.1	35.7	38.5	41.6	44.5	Diurnal Average	
																								82.8	84.0	87.3	90.6	89.6	88.7	90.7	88.9	85.6	78.9	77.9	76.1	74.6	78.1	74.7	72.9	73.8	76.0	75.6	79.9	81.2	82.9	82.3	82.3		Diurnal Maximum





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity 163 m (RH163m) - %
Lower Camp Met Tower - May 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	29	3.90	3.90
20 - 40	333	44.76	48.66
40 - 60	238	31.99	80.65
60 - 80	117	15.73	96.37
80 - 100	27	3.63	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 20 m (WS20m) - km/h

Lower Camp Met Tower - May 2023

Maximum Speed: 28 km/h on May 3 13:00		Maximum Daily Speed Average: 18.1 km/h on May 6		Hours in Service: 744																						
Minimum Speed Value: 0 km/h on May 17 22:00		Minimum Daily Speed Average: 1.3 km/h on May 30		Hours of Data: 744																						
Maximum Diurnal Speed Average: 8.2 km/h at hour 13		Minimum Diurnal Speed Average: 3.6 km/h at hour 20		Hours of Missing Data: 0																						
Monthly Average Velocity: 4.9 km/h 147.8 deg		Percentiles: P ₁ = 1 P ₁₀ = 3 Q ₁ = 6 Median = 10 Q ₃ = 16 P ₉₀ = 20 P ₉₉ = 26		Percent Operational Time: 100.0																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	ESE11	SE11	SE9	SE7	ESE9	ESE7	SE11	SE10	SE13	SE17	SE17	SE20	SSE22	S23	S25	SSW22	S22	S22	SSW19	SSW10	SSE9	SE8	NW8	NNW13	SSE10.9	S25
2-May	NNW12	NNW9	WNW5	NW3	WNW1	NW2	NNW2	ESE1	WNW1	NNE6	NNW6	SSW5	S6	NE5	W6	WNW7	NW8	NW9	NNW6	WNW1	S2	SE2	SE2	SE1	NW2.6	NNW12
3-May	SE6	ESE6	ESE6	ESE4	SE7	SE10	SE10	SE14	SE13	SE14	S24	S28	S28	S25	S24	SSE23	SSE26	SSE25	S23	SSE18	SE13	SE17	SE20	SE13	SSE15.6	S28
4-May	SE6	SE7	SE6	SE11	ESE5	ESE3	SSW1	E1	SE8	SE11	SE8	SSE7	SSE10	SSE10	SE5	NNW14	N17	N17	N15	NNE13	NNE10	NNW4	N4	NE2	ENE3.4	N17
5-May	E3	E6	ESE10	ESE12	SE12	SE14	SE13	SE17	SE15	SE18	SE17	SE23	SE21	SE22	SE21	SE22	SE23	SE23	SE22	SE18	SE17	SE20	SE17	SE21	SE16.7	SE23
6-May	SE23	SE19	SE17	SE15	SE15	SE14	ESE14	SE15	SE16	SE18	SE21	SE22	SE22	SE22	SE21	SE22	SE20	SE24	SE22	SE22	SE18	SE14	ESE10	SE10	SE18.1	SE24
7-May	ESE10	ESE9	ESE8	ESE9	E10	ESE11	ESE16	SE15	ESE16	SE17	SE20	SE20	SE20	SE20	SE19	SSE26	S19	S11	ESE6	NNE3	N5	ESE3	SE16	SE22	SE12.6	SSE26
8-May	SE18	SE17	SE19	SSE19	SSE19	SE13	SE15	SE11	SE12	SE14	SE14	SSE19	SSE22	SSE19	S17	S20	SSE16	S12	S4	NW8	W7	W3	SSE2	SSE6	SSE11.7	SSE22
9-May	SSE6	SE2	WSW4	SE1	N2	ESE2	ESE3	SE2	SE2	ESE5	SE8	SSW12	S11	SE8	SSW3	NNW11	NNW9	N4	NE3	S2	SW7	SSW4	S3	WSW2	S1.8	SSW12
10-May	SE5	SE8	SE6	SE4	SE5	SE7	ESE6	SE6	SE5	SE6	SE6	SE3	W5	NNW13	NNW11	NW7	NNW10	N10	NNE11	NNE9	NNE6	NNW3	E1	N6	NE1.6	NNW13
11-May	NW1	NW3	NNW3	NNW2	SE3	NNW4	N3	NE1	E3	SE5	SE1	S4	SE9	SE10	SE8	S6	SSE8	ESE8	SE9	S12	S6	SE2	SE5	ESE4	SE3.2	S12
12-May	NE1	SE4	ESE5	E3	ESE4	SE6	SE5	SSE4	S7	SE9	S16	SSE17	SSE18	SSE16	SSE18	SSE18	SSE18	SSE15	SSE16	SSE12	SSE12	SE12	SE13	SE13	SSE10.5	SSE18
13-May	SE8	SE7	SE10	SE12	SE8	SE12	SE11	SE12	SE12	SE10	SE5	S13	S19	S20	SSW21	S22	SSW20	SSE15	S15	SSE16	SSE18	SSE18	S15	S3	SSE12.3	S22
14-May	ESE6	E1	SE8	ESE2	NNW3	SE8	SE6	SE11	SE7	SE5	SE7	SSE9	SSW10	WSW12	SW13	SW18	WSW20	WSW21	SW17	WNW8	NNW6	N6	N1	ESE1	SSW4.4	WSW21
15-May	E2	NW2	NNW3	NW1	NW1	NNW1	NNE2	NNW2	NNW1	SE4	SE8	ESE5	SE6	ESE6	SSE10	SSE22	S19	S18	SSW18	SSW16	S17	S18	S7	NW7	S5.9	SSE22
16-May	NW5	NNW12	N14	NNW8	NW11	NW18	NW17	NW17	NW21	NW21	NW20	NW22	NW20	NW20	NW22	NW17	NW17	NNW20	N17	N15	N12	NNW6	NNW7	NNW5	NNW14.8	NW22
17-May	NNW8	NNW9	NNW12	NNW17	N12	NNE11	NNE12	NNE14	N13	N15	N19	N14	N14	NNE12	N11	NNE10	NNE11	NNE11	NNE10	NNE8	NNE4	S0	ESE2	SSE11	N9.6	N19
18-May	SSE17	SSE17	SSE14	SE9	SE8	SE8	ESE9	SE11	SE9	SE9	SSE8	SE10	SSE11	SE13	S12	S9	S12	S12	S10	S12	S10	SE3	S9	SSW22	SSE10.2	SSW22
19-May	S17	SSE8	E6	E6	SE9	SE12	SE14	SE11	SE14	SE12	SE13	SE10	SSW3	N3	NE3	NNE3	N4	NW4	NNW3	NNW3	N8	N16	N11	N10	ESE3.3	S17
20-May	NNW6	NNW7	N10	NNW6	NNW6	NNW7	NNW8	N7	NNW6	NNW7	NNW5	NNW4	W2	W6	W1	SSE3	ESE7	ESE7	ESE5	SE9	SE11	SE10	SE15	SE15	NE1.8	SE15
21-May	SE13	SE13	SE10	SE12	SE8	SE7	SE10	SE11	SE12	SE8	SE9	SSE11	SE9	SSE10	SSE12	SE11	SSE12	SE8	SE6	N4	N4	SE2	ESE3	N5	SE7.5	SE13
22-May	N7	NNW2	NNW6	NNW5	NNW6	NNW7	NNW11	N11	N14	N14	N15	N17	NNE17	NNE17	N17	NNE17	NE15	NE14	NE13	NE12	ENE11	NE10	NE10	NNE8	NNE10.4	NNE17
23-May	E7	E13	ENE10	ENE11	ENE10	E9	E9	E9	ESE13	ESE14	ESE17	SE21	ESE19	ESE16	SE19	SE18	ESE18	SE21	SE19	SE20	SE18	SE18	SE19	SE18	ESE14.3	SE21
24-May	SE16	SE14	SE15	SE14	SE25	SE21	SE20	SSE25	SSE25	SSE18	S11	S10	SSE7	SW10	WSW17	W16	W15	WSW15	W12	W11	WSW12	W9	NNW9	NNW8	S8.2	SE25
25-May	W8	NNW4	NNW2	SE1	E1	NNW3	NE1	SSE3	WSW6	SSW2	N7	NNE4	SE6	N6	N4	NNE3	ENE4	SE6	SE5	SE6	SSE14	SE11	SE9	SE12	SE1.8	SSE14
26-May	SE8	SE5	SSE9	SSE12	SE7	SE6	SE11	SE9	SE8	SE8	SE6	SE4	SE6	ENE6	E4	ESE6	E3	ESE5	SSE11	SSE14	SSE13	SE11	SE11	SE10	SE7.5	SSE14
27-May	SE7	SE4	ESE6	SE8	ESE8	E5	ESE4	ESE7	ESE11	SSE15	S24	S24	SSE28	S25	S25	S22	S21	SSW20	S19	S14	S13	SSE15	SSE20	SSE18	SSE13.9	SSE28
28-May	SE10	ESE6	SE12	SE13	SE16	SE15	SE17	SE16	SE13	SE9	SW20	WSW23	WSW26	WSW28	WSW21	WSW22	WSW22	W20	WSW22	W13	WNW11	NW15	NW9	NNW7	SW8.6	WSW28
29-May	NW2	WSW4	SSW2	SE6	ESE7	ESE5	ESE4	S2	SW4	S4	WSW19	WSW18	WSW19	WSW25	WSW27	WSW25	SW23	SW18	SW17	SW15	SW11	NW6	NNW5	NNW4	WSW9.1	WSW27
30-May	NNW2	NNW3	NNW3	NW1	SE1	NNE1	ESE3	SE4	ESE6	SE7	ESE6	ESE5	ENE3	N2	NE2	NW6	NW15	NW14	NNW8	NNW5	NNW3	ESE2	NNE2	WSW6	N1.3	NW15
31-May	NNW5	NNW1	S4	WSW4	NW2	SE3	SE7	SE8	SE6	ESE4	NE4	ENE2	SSE9	SE9	SSE6	SSW12	SSE15	SSE10	SE6	SE4	SE11	NNW3	NNW4	NW7	SSE3.5	SSE15
SE4.3 ESE4.0 ESE4.4 ESE4.7 ESE4.9 ESE4.9 ESE5.7 SE6.1 SE6.1 SE6.8 SSE6.0 SSE7.2 SSE8.2 S6.3 S6.3 S6.4 S5.9 S5.1 S4.7 SSE3.6 SSE4.4 SE3.9 SE4.0 SE3.7																								Diurnal Average		
SE23 SE19 SE19 SSE19 SE25 SE21 SE20 SSE25 SSE25 NW21 S24 S28 S28 WSW28 WSW27 SSE26 SSE26 SSE25 S23 SE22 SE18 SE20 SSE20 SSW22																								Diurnal Maximum		

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

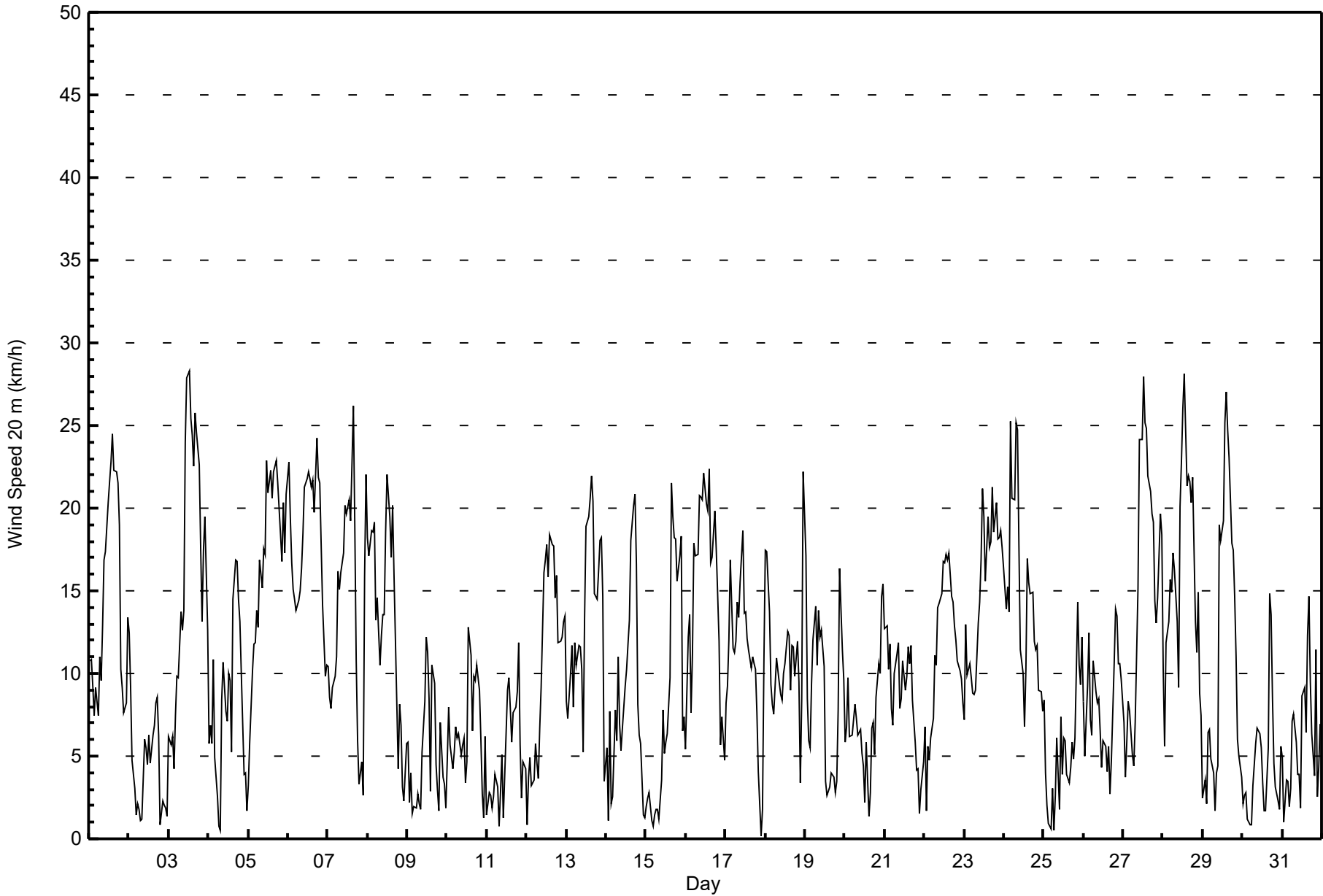
Wind Speed 20 m (WS20m) - km/h
Lower Camp Met Tower - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 10 km/h on May 29 15:00 Minimum Value: 1 km/h on May 30 05:00 Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 2 Median = 3 Q ₃ = 5 P ₉₀ = 6 P ₉₉ = 8																	Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0								
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	3	3	3	2	3	3	4	3	3	4	4	4	5	5	5	5	4	4	4	4	2	3	4	5	5
2-May	5	4	2	1	1	1	1	1	2	2	3	3	4	4	4	4	5	5	4	1	1	2	1	1	5
3-May	3	3	3	2	3	4	3	3	4	5	6	7	7	6	6	6	5	5	4	3	3	3	3	7	
4-May	2	3	3	3	3	2	2	2	4	3	3	2	4	3	2	4	5	5	6	5	4	2	2	1	6
5-May	2	3	5	5	4	4	4	5	6	5	5	7	7	7	7	7	7	7	7	7	6	7	6	6	7
6-May	7	7	5	5	4	5	5	5	5	6	6	6	6	7	7	7	7	7	7	7	5	5	4	4	7
7-May	4	5	4	4	4	3	5	6	5	7	6	7	8	7	7	6	5	6	3	1	1	4	6	6	8
8-May	6	6	6	5	5	4	5	4	4	4	5	6	4	5	4	4	4	3	4	4	3	2	2	2	6
9-May	4	2	3	2	1	1	1	1	2	2	3	3	4	4	3	5	5	2	2	5	3	2	2	2	5
10-May	3	2	1	2	1	2	2	3	2	2	2	2	3	6	5	3	4	4	5	3	2	2	1	3	6
11-May	1	1	1	1	1	2	2	2	2	2	2	2	3	3	5	4	4	3	3	3	4	2	4	2	5
12-May	2	2	2	2	2	3	2	2	2	3	5	6	6	6	7	7	6	4	3	3	2	3	4	4	7
13-May	4	2	2	2	4	4	3	3	3	4	3	4	4	4	4	5	5	3	3	2	2	2	3	4	5
14-May	2	2	2	3	2	3	3	3	3	3	4	3	4	3	4	5	5	5	5	4	3	2	2	2	5
15-May	3	2	2	2	2	1	1	1	1	2	3	2	2	3	6	5	5	4	4	3	2	2	5	3	6
16-May	3	4	4	3	6	7	7	7	9	8	8	8	8	7	9	8	7	8	7	5	6	3	3	2	9
17-May	3	4	5	7	5	5	6	6	6	6	7	6	6	6	5	5	5	5	5	4	2	1	2	5	7
18-May	4	4	4	3	3	3	3	3	3	3	4	4	4	5	6	4	5	5	3	3	2	2	8	4	8
19-May	4	4	2	2	3	3	3	3	3	4	3	3	2	2	1	1	2	1	1	1	3	6	3	3	6
20-May	2	3	3	3	3	3	3	3	3	3	2	2	2	3	2	2	3	3	2	4	4	4	5	5	5
21-May	4	5	5	4	3	4	4	3	4	2	3	2	3	3	3	3	3	2	3	2	4	2	2	2	5
22-May	4	2	2	2	3	3	4	4	5	4	5	5	6	6	7	7	7	7	6	6	5	4	4	4	7
23-May	4	5	4	5	5	5	4	4	5	6	6	7	7	6	7	7	7	8	7	7	6	6	6	6	8
24-May	6	4	5	5	6	7	8	5	5	4	3	3	4	5	6	5	5	4	4	4	3	3	3	3	8
25-May	3	1	2	1	1	1	1	1	3	2	3	2	3	3	3	2	2	3	2	4	3	4	3	4	4
26-May	3	3	3	3	3	3	3	3	3	2	2	3	4	3	3	3	2	2	3	2	3	2	2	3	4
27-May	3	3	3	2	3	3	3	3	4	6	5	6	7	6	6	6	5	5	4	3	2	3	3	3	7
28-May	6	3	3	3	4	4	4	4	3	5	6	6	9	8	7	8	7	7	8	6	5	5	3	3	9
29-May	2	2	1	2	2	2	2	2	3	4	6	7	7	9	10	7	6	4	4	3	2	3	3	1	10
30-May	2	2	2	1	1	1	1	1	3	2	3	3	2	3	3	3	8	6	3	2	2	3	2	3	8
31-May	3	1	2	2	1	2	2	2	2	2	2	2	4	3	4	4	3	4	2	2	4	3	3	4	4
Diurnal Maximum																									



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed 20 m (WS20m) - km/h
Lower Camp Met Tower - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h
Lower Camp Met Tower - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	181	24.33	24.33
6 - 11	259	34.81	59.14
12 - 19	212	28.49	87.63
20 - 28	92	12.37	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 45 m (WS45m) - km/h

Lower Camp Met Tower - May 2023

Maximum Speed: 37 km/h on May 29 15:00 Minimum Speed Value: 0 km/h on May 25 05:00 Maximum Diurnal Speed Average: 9.2 km/h at hour 13 Monthly Average Velocity: 6.5 km/h 138.6 deg		Maximum Daily Speed Average: 26.7 km/h on May 5 Minimum Daily Speed Average: 2.1 km/h on May 25 Minimum Diurnal Speed Average: 4.2 km/h at hour 20 Percentiles: $P_1 = 1$ $P_{10} = 4$ $Q_1 = 8$ Median = 14 $Q_3 = 21$ $P_{90} = 27$ $P_{99} = 33$		Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Percent Operational Time: 100.0																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	ESE20	ESE19	ESE17	ESE14	ESE16	ESE15	SE18	SE14	SE17	SE20	SE22	SE25	SSE25	S24	S26	SSW24	S23	SSW23	SSW21	SSW15	S15	SE12	NW14	NNW22	SSE13.6	S26
2-May	NNW21	NNW16	NW8	NW7	NNW5	NNW7	WNW3	SW2	WNW2	NNE6	NNW6	SSW5	SSW6	NNE5	W7	WNW9	NW10	NW13	NNW9	NNW2	ESE5	SE10	SE10	SE10	NNW3.5	NNW21
3-May	SE15	SE12	SE12	SE9	SE11	SE16	SE14	SE19	SE16	SE18	S25	S30	S31	S27	S26	SSE25	S28	SSE27	S25	SSE22	SE18	SE22	SSE23	SE18	SSE19.4	S31
4-May	SE12	ESE16	ESE13	SE20	ESE12	ESE6	SE3	E3	SE12	SE14	SE9	SE8	SE11	SE11	SE6	NNW19	N26	NNE26	N22	NE21	NE17	NNE7	NE6	E9	ENE7.2	NNE26
5-May	ESE11	ESE15	ESE20	ESE22	SE24	SE26	SE22	SE27	SE23	SE25	SE25	SE33	SE30	SE31	SE31	SE33	SE33	SE34	SE33	SE28	SE26	SE32	SE27	SE31	SE26.7	SE34
6-May	SE34	SE30	SE25	SE22	SE22	SE21	ESE22	SE22	SE23	SE26	SE29	SE30	SE31	SE28	SE28	SE29	SE28	SE34	SE32	SE33	SE27	SE23	SE17	SE17	SE26.3	SE34
7-May	ESE17	ESE15	ESE14	ESE17	ESE18	ESE17	ESE23	SE22	ESE23	SE24	SE28	SE28	SE29	SE30	SE29	SSE31	SSE21	SSE13	ESE11	NE6	NNE5	ESE8	SE21	SE32	SE19.0	SE32
8-May	SE29	SE27	SE30	SE26	SSE23	SE22	SE23	SE17	SE16	SE17	SE17	SSE21	SSE24	SSE21	S19	S21	SSE18	S13	S4	NW13	WSW11	WSW6	S4	SSE8	SSE15.1	SE30
9-May	SSE8	SE4	SW6	S3	NNW3	SSE1	SE3	ESE3	ESE2	ESE6	SE10	SSW13	S12	SE10	WSW2	NNW14	NNW12	N6	ENE6	SSE1	SW10	SW7	S5	SW5	S2.2	NNW14
10-May	SSE4	SE12	SE9	SE7	SE8	SE10	SE8	ESE7	ESE5	ESE6	ESE7	SE4	WNW6	WNW16	WNW15	NW8	NNW13	NNE15	NNE18	NNE14	NNE12	NNE4	E3	N9	NE2.7	NNE18
11-May	N3	NW4	NW5	NNW3	SSE4	NNW5	NNW4	NE2	E4	SE6	SE1	SSE4	SE11	SE11	SE10	SSE6	SE9	ESE12	SE14	S15	S12	SSW6	SE6	SE9	SE4.3	S15
12-May	SE4	SE9	SE11	SE7	SE6	SE8	SE6	SE4	S8	SE13	S18	SSE19	SSE21	SE19	SSE21	SE21	SSE21	SSE17	SSE18	SSE16	SE16	SE19	SE21	SE22	SE14.1	SE22
13-May	SE16	SE11	SE15	SE18	SE15	SE18	SE15	SE16	SE16	SE13	SE9	S14	S20	S21	SSW22	S23	SSW22	S16	S17	SSE20	SSE24	S22	SSW19	SSW7	SSE15.3	SSE24
14-May	SSE6	ESE6	SE14	SE8	ENE3	SE12	SE10	SE12	SE8	SE7	SE8	SSE12	SSW11	WSW15	SW15	SW21	WSW24	WSW26	SW21	WNW14	NNW10	NNW11	N4	ESE2	SSW5.4	WSW26
15-May	ESE6	NNW6	NNW5	NNW1	NW2	NNW4	N2	NNW1	NNW1	ESE4	SE9	ESE5	SE7	ESE9	SE13	SSE24	S21	S20	SSW20	SSW19	S23	S24	SSW9	NNW15	S6.3	S24
16-May	NNW12	NNW21	N20	NNW13	NW19	NW27	NW26	NW26	NW32	NW31	NW30	NW33	NW29	NW28	NW33	NW25	NW26	NNW30	N27	N22	N19	NNW10	NNW13	NNW9	NNW22.5	NW33
17-May	NNW15	NNW14	N18	NNW25	NNE18	NNE18	NNE20	NNE22	N20	NNE23	N27	N20	N20	NNE18	NNE16	NNE15	NNE15	NNE16	NNE17	NNE12	NNE10	ENE4	ESE6	SE15	NNE15.0	N27
18-May	SSE21	SSE21	SSE17	SE13	SE11	SE12	SE13	SE14	SE10	ESE11	SSE10	SE12	SSE13	SE15	SSE14	S10	S12	S13	S11	S13	SSW14	S15	SSW15	SSW28	SSE12.7	SSW28
19-May	S22	SSE11	ESE9	ESE10	SE13	SE15	SE17	SE14	SE18	SE18	SE18	SE15	SSW4	N3	NE2	N3	N6	NW5	NNW9	NNW10	N16	N26	N19	N16	ESE4.0	N26
20-May	NNW12	NNW13	N16	N11	NNW11	NNW12	N12	N10	NNW8	NNW9	NNW7	NNW5	WNW3	W7	WNW2	SE4	ESE10	ESE12	ESE10	SE16	SE18	ESE17	SE24	SE25	NE3.6	SE25
21-May	SE22	SE22	SE19	SE20	SE14	SE14	SE16	SE16	SE16	SE11	SE11	SSE12	SE12	SSE12	SSE13	SE14	SSE14	SE12	SE11	ENE3	NNW8	SE5	SE9	NNE4	SE11.8	SE22
22-May	N11	NNE2	NNW11	NNW10	NNW12	NNW12	N16	N16	N21	N21	N21	N24	NNE26	NNE26	NNE26	NNE27	NE25	NE26	NE23	NE22	ENE19	NE19	NE17	NE14	NNE17.0	NNE27
23-May	E12	E20	E17	E18	E17	E15	E14	E15	ESE21	ESE22	ESE25	ESE32	ESE29	ESE23	ESE29	ESE26	ESE28	SE31	SE28	SE30	SE25	SE26	SE28	SE27	ESE22.1	ESE32
24-May	SE25	SE21	SE23	SE21	SE33	SE33	SE34	SSE29	SSE28	SSE20	S12	S11	SSE8	SW13	WSW21	W22	W21	WSW21	W17	W17	WSW17	W14	WNW14	WNW13	S10.2	SE34
25-May	W14	NW7	NW4	W1	NNW0	NW5	NNE1	SSE3	W7	SW1	N9	NNE5	ESE6	N8	N5	NE5	ENE7	ESE8	SE7	SE9	SSE18	SE16	SE14	SE17	ESE2.1	SSE18
26-May	SE14	SE8	SE13	SE16	SE12	SE11	SE14	SE11	ESE11	SE10	ESE7	ESE5	SE7	ENE7	ENE4	ESE6	E3	ESE6	SSE12	SSE16	SSE18	SE15	SE14	SE16	SE10.0	SSE18
27-May	SE15	SE11	ESE9	ESE12	ESE12	ESE9	ESE9	ESE11	ESE16	SSE18	S26	S26	SSE30	S27	S27	S23	S22	SSW21	S21	S16	S17	SSE21	SSE24	SSE23	SSE17.0	SSE30
28-May	SE16	ESE10	SE15	SE18	SE20	SE21	SE22	SE21	SE17	SE12	SW23	WSW28	WSW30	WSW34	WSW30	WSW29	WSW29	W29	WSW30	W20	WNW18	NW23	NW15	WNW15	SW11.1	WSW34
29-May	WNW5	WSW5	SW5	SSE6	SE8	ESE7	SE4	SW2	WSW6	S5	WSW22	WSW23	WSW26	WSW36	WSW37	WSW32	SW27	SW21	SW20	SW18	SW15	NW10	NNW9	NNW5	WSW12.0	WSW37
30-May	NNE3	NNE4	NNW5	NW2	SSE1	S1	SE5	SE4	ESE7	SE8	ESE7	ESE7	ENE4	NNW3	ENE1	WNW8	NW21	NW21	NNW14	NNW9	N6	E4	NE4	W8	NNW2.3	NW21
31-May	WNW10	NNW5	SSE5	WSW5	W5	SSW2	SE7	ESE8	ESE7	ESE3	NE4	NE2	SE10	SE11	SSE8	SSW14	SSE16	SSE12	SE10	SE5	SE15	NNW5	NW7	NW11	SSE3.3	SSE16
SE7.2 ESE7.0 ESE7.3 ESE7.7 ESE7.6 ESE7.7 ESE8.7 ESE8.3 ESE7.9 ESE8.6 SE7.1 SSE8.3 SSE9.2 SSE6.9 S7.0 S6.8 S5.9 SSE5.3 SSE5.1 SSE4.2 SSE5.7 SE6.0 SE5.8 SE5.8																								Diurnal Average		
SE34 SE30 SE30 SE26 SE33 SE33 SE34 SSE29 NW32 NW31 NW30 SE33 SE31 WSW36 WSW37 SE33 SE33 SE34 SE33 SE33 SE27 SE32 SE28 SE32																								Diurnal Maximum		

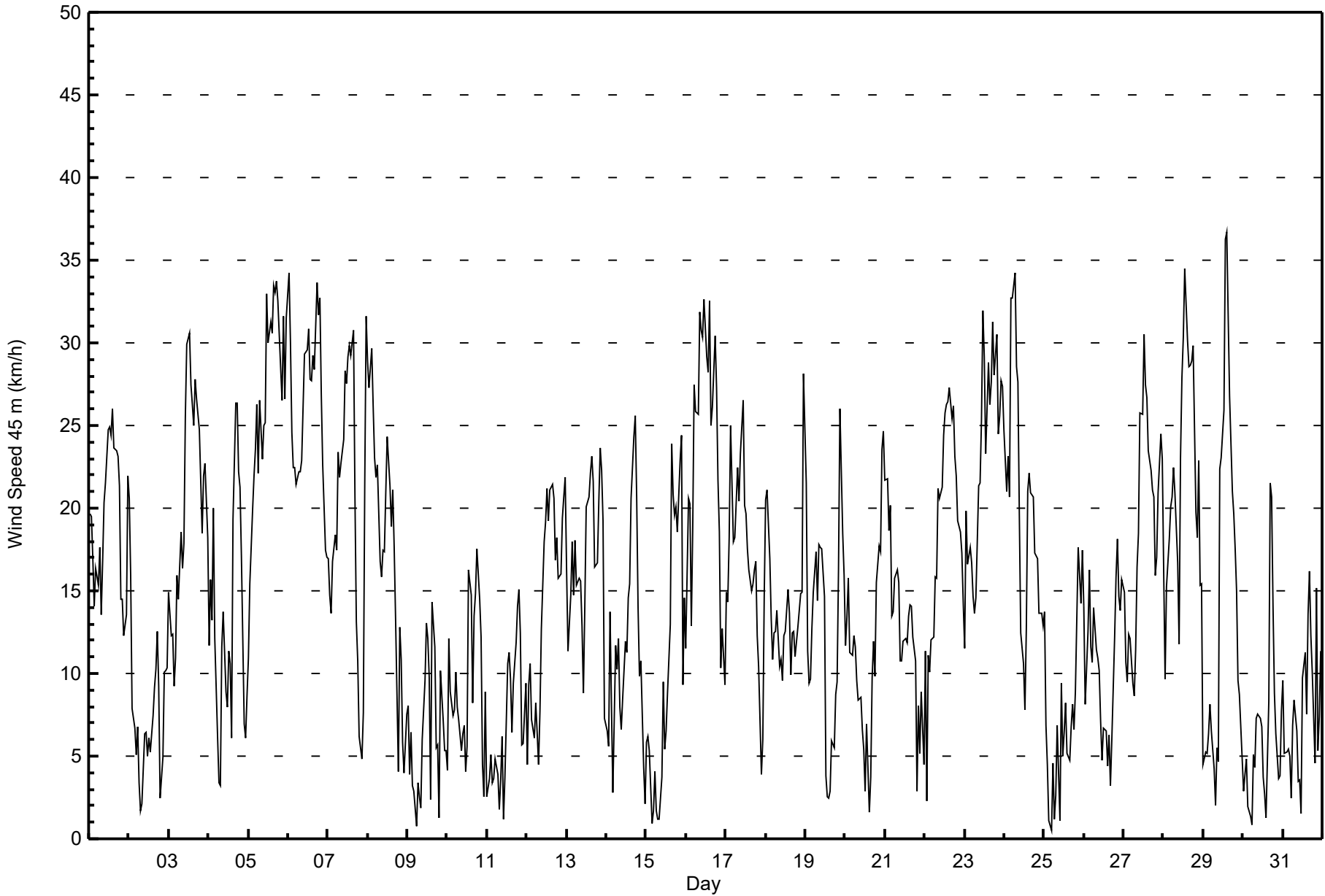
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed 45 m (WS45m) - km/h
Lower Camp Met Tower - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0														Hours in Service: 744											
Maximum Value: 10 km/h on May 29 14:00														Hours of Data: 744											
Minimum Value: 0 km/h on May 30 05:00														Hours of Missing Data: 0											
Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 3 Median = 4 Q ₃ = 5 P ₉₀ = 6 P ₉₉ = 8														Hours of Calibration: 0											
														Percent Operational Time: 100.0											
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	3	3	3	2	2	3	4	4	3	3	4	4	5	5	5	5	4	5	4	4	2	3	6	5	6
2-May	5	5	2	2	1	2	2	1	2	2	3	3	4	5	5	5	6	5	4	2	2	2	1	1	6
3-May	3	4	4	3	3	3	3	2	4	5	6	7	7	6	6	5	5	6	5	3	3	3	3	3	7
4-May	2	4	3	3	4	3	2	2	4	4	3	2	3	3	5	4	6	5	5	5	4	2	3	3	6
5-May	4	4	4	4	3	3	3	5	5	5	5	6	7	7	7	6	7	6	7	6	5	7	6	5	7
6-May	5	7	4	4	4	5	4	5	4	6	6	5	5	6	7	7	7	6	6	7	5	5	3	5	7
7-May	4	6	5	4	3	3	4	6	5	7	6	7	8	7	8	8	5	6	4	1	2	7	7	4	8
8-May	7	6	5	5	5	5	6	5	4	4	5	5	4	4	4	5	4	3	5	4	3	2	3	2	7
9-May	5	2	3	2	2	2	1	1	2	2	3	3	4	5	4	5	6	2	3	5	3	2	2	2	6
10-May	3	2	2	2	2	2	2	3	2	2	2	2	4	7	6	4	4	4	5	3	2	3	2	4	7
11-May	2	1	2	1	2	3	2	2	2	2	2	2	4	3	5	4	4	5	4	4	4	2	3	2	5
12-May	3	3	3	3	2	2	2	2	2	4	5	5	6	6	6	7	6	4	3	3	3	4	4	4	7
13-May	4	2	3	2	4	3	2	2	2	3	4	4	4	4	4	5	5	3	3	2	2	3	3	5	5
14-May	2	2	2	4	3	3	2	2	3	2	5	3	5	4	5	5	5	4	5	4	5	3	3	2	5
15-May	3	2	3	2	2	2	2	1	1	2	3	2	2	4	6	5	5	4	5	3	3	3	5	3	6
16-May	4	4	4	3	7	7	8	7	8	8	8	8	8	8	9	9	7	8	7	5	8	4	4	4	9
17-May	4	5	6	7	6	5	6	6	6	7	6	6	6	6	6	6	5	5	4	4	2	3	3	5	7
18-May	4	5	5	3	3	3	3	3	2	3	4	4	4	5	5	4	5	5	3	3	2	2	9	4	9
19-May	5	4	2	3	3	3	2	3	3	3	3	3	3	2	1	2	1	2	2	2	4	6	3	3	6
20-May	2	3	3	3	3	3	4	3	3	3	2	3	2	3	2	3	3	2	3	5	4	4	6	5	6
21-May	5	4	5	5	5	4	4	3	4	3	3	2	3	3	3	2	2	2	4	2	5	2	1	3	5
22-May	4	3	2	3	3	3	4	4	5	4	5	5	6	7	7	7	7	7	6	6	7	4	4	4	7
23-May	5	6	4	4	5	5	5	5	6	6	6	7	6	6	7	7	7	8	7	7	6	6	6	6	8
24-May	6	4	5	5	6	8	5	5	5	3	3	3	5	4	5	5	4	4	5	3	3	4	3	3	8
25-May	3	2	2	1	1	2	1	1	3	2	3	3	3	3	3	2	2	3	2	4	4	3	3	4	4
26-May	3	4	4	3	3	3	2	3	2	2	2	2	4	3	3	4	2	3	2	3	3	2	2	3	4
27-May	4	5	3	2	2	3	4	3	4	5	5	6	7	6	6	6	6	5	3	3	2	2	4	3	7
28-May	6	3	3	3	3	3	2	3	3	5	6	6	9	7	7	7	7	7	7	6	6	5	3	3	9
29-May	3	2	2	2	2	3	2	2	3	5	6	6	6	10	9	6	5	4	3	3	1	2	4	2	10
30-May	2	2	2	2	0	1	1	1	3	2	3	3	2	2	3	3	10	6	4	3	3	3	2	5	10
31-May	3	3	4	1	1	1	3	2	2	2	2	2	4	2	5	3	3	3	3	3	4	4	4	4	5
														Diurnal Maximum											





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed 45 m (WS45m) - km/h
Lower Camp Met Tower - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	111	14.92	14.92
6 - 11	170	22.85	37.77
12 - 19	225	30.24	68.01
20 - 28	183	24.60	92.61
29 - 38	55	7.39	100.00
> 38	0	0.00	100.00

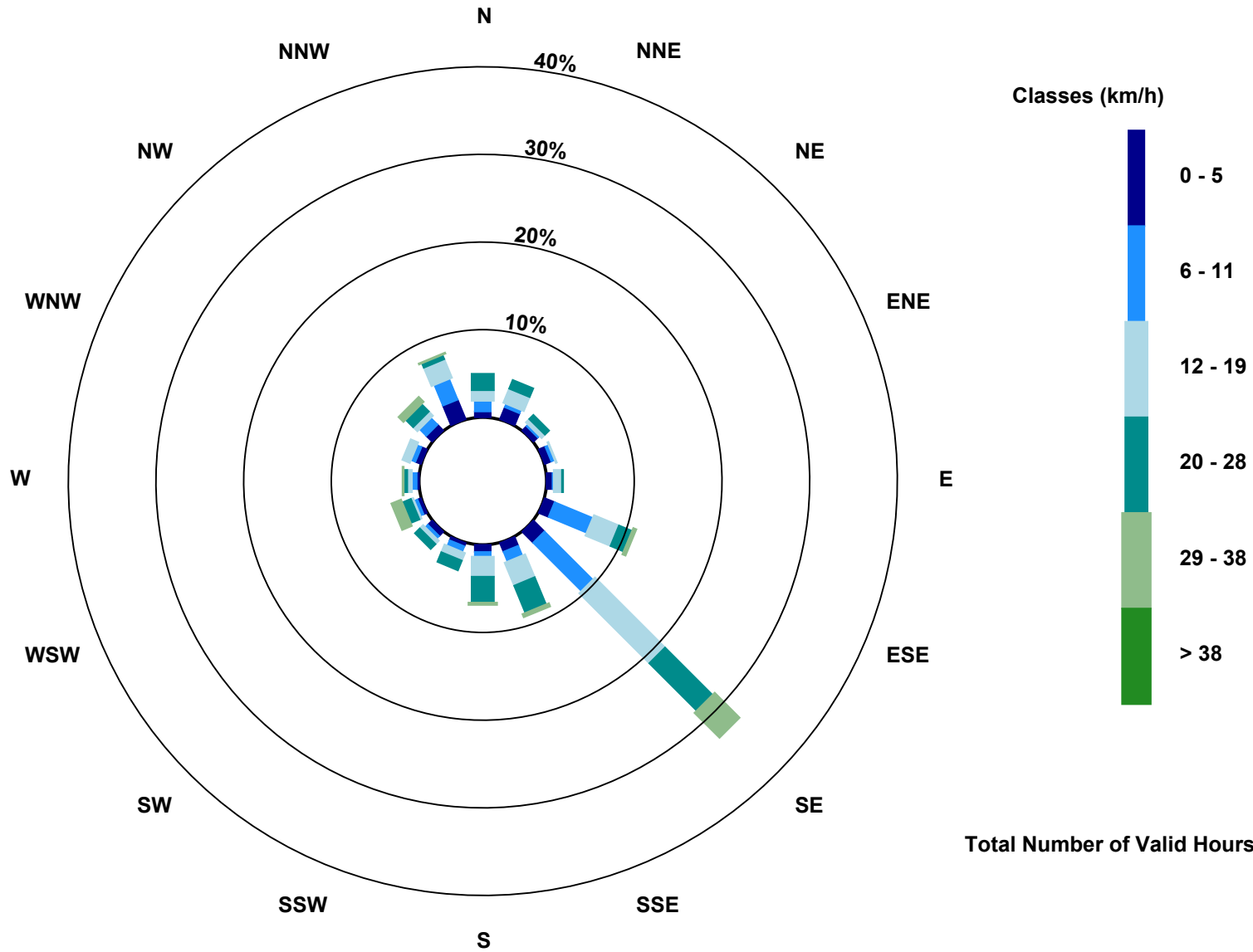
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed 45 m (WS45m) - km/h
Lower Camp Met Tower





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 100 m (WS100m) - km/h

Lower Camp Met Tower - May 2023

Maximum Speed: 45 km/h on May 19 00:00	Maximum Daily Speed Average: 33.2 km/h on May 5	Hours in Service: 744
Minimum Speed Value: 1 km/h on May 9 05:00	Minimum Daily Speed Average: 1.5 km/h on May 25	Hours of Data: 744
Maximum Diurnal Speed Average: 10.2 km/h at hour 7	Minimum Diurnal Speed Average: 5.6 km/h at hour 20	Hours of Missing Data: 0
Monthly Average Velocity: 8.1 km/h 144.5 deg	Percentiles: $P_1 = 2$ $P_{10} = 6$ $Q_1 = 10$ Median = 18 $Q_3 = 26$ $P_{90} = 33$ $P_{99} = 40$	Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SE29	SE27	SE25	SE22	SE24	SE25	SE25	SE18	SE19	SE21	SSE22	SE26	SSE27	S27	S28	SSW26	S26	SSW26	SSW25	SW20	S20	SSE21	NW17	NNW31	SSE17.3	NNW31
2-May	NNW30	NNW25	NNW13	NW14	NW11	NW8	WSW6	WSW5	W4	N7	NNW7	SSW4	SSW6	NNE4	WNW8	WNW11	NW12	NW14	NNW11	NNW4	ESE12	SE16	SSE14	SSE16	NNW4.6	NNW30
3-May	SSE20	SE24	SE23	SE20	SSE20	SSE21	SSE21	SE18	SE15	SSE18	S28	S32	S33	S30	S29	SSE27	S30	S30	S29	SSE29	SSE26	SSE30	SSE32	SE25	SSE24.7	S33
4-May	SE23	SE26	SE22	SE28	SE22	SE12	SE8	SE10	SE15	SE15	SE10	SE7	SE11	SE11	ESE7	NNW20	N28	NNE29	NNE26	NE29	NE25	ENE14	E12	ESE20	E11.1	NNE29
5-May	SE23	SE27	SE27	SE30	SE33	SE34	SE30	SE32	SE27	SE28	SE29	SE37	SE34	SE35	SE35	SE38	SE38	SE38	SE38	SE36	SE35	SE40	SE36	SE38	SE33.2	SE40
6-May	SE41	SE38	SE31	SE29	SE29	SE29	SE27	SE26	SE25	SE30	SE32	SE32	SE33	SE30	SE30	SE32	SE33	SE37	SE35	SE39	SE34	SE32	SE26	SE25	SE31.5	SE41
7-May	SE24	SE23	SE22	SE25	SE25	SE24	SE29	SE25	ESE26	SE28	SE32	SE31	SE34	SE35	SE35	SSE35	SSE23	SSE16	ESE15	E9	E6	SE16	SE28	SE37	SE24.5	SE37
8-May	SE37	SE35	SE36	SE33	SSE28	SE29	SE30	SE23	SE18	SE21	SE20	SSE23	SSE26	SSE24	S21	S22	SSE19	S15	S4	NW17	WSW16	WSW11	SW9	SSE9	SSE18.1	SE37
9-May	SSE10	SSE6	SSW10	SSW8	E1	SE1	SSE5	SSE2	SE2	SE6	SSE10	SSW13	S13	SE9	W4	NNW16	NNW12	N6	NE6	SE2	SW15	SW15	SSW6	WSW7	SSW3.5	NNW16
10-May	SW4	S6	S7	S7	S8	S8	S7	SSE5	SE5	SE7	SE7	ESE4	NW6	NW17	WNW16	NW9	NNW15	NNE17	NNE21	NNE21	NE24	NE12	E7	NE6	NNE2.9	NE24
11-May	NE4	NE3	N5	N7	S5	ENE2	NW5	ENE2	ESE6	ESE7	ENE1	SE4	SE10	SE12	SE10	SSE7	SE10	ESE14	SE18	S19	S18	SW16	S6	SE14	SE5.6	S19
12-May	SSE11	SE12	SE16	SE17	SE14	SSE14	SE15	SE11	SSE9	SE15	S20	SSE21	SSE23	SE22	SSE24	SE24	SSE23	SSE18	SSE21	SSE24	SE25	SE31	SE28	SE28	SSE19.2	SE31
13-May	SE24	SE21	SE22	SSE20	SE19	SSE21	SSE18	SSE12	SE15	SSE12	SSE12	S16	SSW21	SSW22	SSW24	SSW25	SSW24	S18	S23	S27	S32	SSW33	SSW34	SSW19	S19.6	SSW34
14-May	SSW17	SSW8	SSE11	SE13	ESE5	S10	S8	S9	S6	SE7	SE9	SSE13	SSW12	WSW17	SW17	SW22	SW26	SW27	SW24	WNW17	NNW12	N15	NNE11	E5	SW7.8	SW27
15-May	SE13	NNW7	N7	SE3	W2	NNW2	ESE4	SE6	SSE2	ESE5	ESE10	ESE6	ESE7	ESE11	SE15	SE526	S23	S21	SSW23	SSW25	SSW32	SSW37	SSW19	NNW24	S8.4	SSW37
16-May	NNW20	NNW30	N25	NNW18	NNW26	NW35	NW33	NW33	NW42	NW39	NW39	NW41	NW36	NW35	NW40	NW32	NW35	NNW39	N32	N28	N25	N16	NNW18	NNW16	NNW29.3	NW42
17-May	NNW24	N19	N23	N31	NNE22	NNE22	NNE25	NNE27	N24	NNE27	N30	N24	N23	NNE21	NNE20	NNE18	NNE18	NNE19	NNE18	NNE14	NE17	ENE14	ESE18	SE23	NNE18.4	NNW31
18-May	SE25	SSE29	SSE24	SSE22	SSE13	SSE15	SE15	SE14	SE11	SE12	SSE10	SSE14	SSE14	SSE16	SSE15	S11	S14	S14	S12	S14	SSW18	SSW21	SSW32	SSW45	SSE16.3	SSW45
19-May	SSW36	S20	SE10	SE15	SSE16	SSE18	SSE20	SSE15	SSE16	SE18	SE17	SE15	SSW5	NNW3	NNE1	NNW2	N6	NNW7	NNW14	NNW17	N26	NNE33	N26	N25	ESE3.2	SSW36
20-May	N19	N19	N23	N18	N16	N18	N15	N11	N10	NNW9	NNW7	NNW6	NW3	WNW7	WNW1	SE4	ESE12	ESE15	ESE15	SE23	SE25	SE25	SE32	SE34	ENE5.4	SE34
21-May	SE31	SE29	SE28	SE29	SE24	SE24	SE24	SE21	SE19	SE14	SE13	SSE13	SE12	SSE13	SSE15	SE15	SSE15	SE15	SE16	SE7	NNE6	ESE10	SE16	ESE8	SE16.7	SE31
22-May	NNE13	NE10	N18	N16	N18	N16	N20	N20	N24	N23	N25	N29	NNE30	NNE30	NNE31	NNE31	NE29	NE31	NE28	NE28	ENE24	ENE24	NE25	NE20	NNE21.5	NNE31
23-May	E15	E24	E20	E22	E21	E19	E17	ESE19	ESE26	ESE27	ESE30	ESE38	ESE35	ESE30	SE36	SE33	ESE33	SE40	SE35	SE37	SE30	SE32	SE34	SE34	ESE27.6	SE40
24-May	SE32	SE27	SE29	SE26	SE35	SE40	SE43	SSE33	SSE30	SSW21	S13	S11	SSE9	SW14	WSW23	W26	WSW25	WSW23	W21	W22	WSW21	W17	WNW19	WNW18	S12.2	SE43
25-May	WNW18	WNW14	WNW9	WNW6	NW7	WNW8	WSW4	SW3	W7	WNW1	N10	NNE6	E6	N9	N6	NE6	ENE7	ESE10	ESE7	SE12	SSE23	SSE21	SSE19	SSE22	SSE1.5	SSE23
26-May	SE18	SE13	SE17	SE19	SE17	SSE18	SSE15	SE9	SE11	ESE11	SE7	ESE4	SE7	NE5	ENE4	ESE6	E3	SE7	SSE13	SSE17	SSE22	SSE24	SSE24	SSE24	SSE12.4	SSE24
27-May	SSE24	SSE20	SE12	SE14	SE14	SE14	SE17	SE15	SE18	SSE21	S28	S28	SSE33	S30	S29	S25	S24	SSW23	S22	SSW19	S23	S30	S35	S34	SSE21.6	S35
28-May	SSE25	SE13	SSE16	SE21	SSE21	SE19	SSE18	SSE18	SE15	SE12	SW26	WSW31	SW34	WSW39	WSW36	WSW33	WSW34	W35	WSW35	W25	WNW24	NW31	NW23	WNW24	SW14.8	WSW39
29-May	WNW10	NW7	W7	SSW7	S8	S2	SSW2	WSW4	SW7	SSW6	WSW25	WSW27	WSW29	WSW42	WSW43	WSW36	SW28	SW23	SW21	SW20	WSW18	NW12	N12	NE9	WSW14.3	WSW43
30-May	ENE10	ENE9	NW3	W4	SW4	SE6	S7	SSW6	SE8	SSE7	SE8	SE6	NE3	N2	SE2	WNW9	NW27	NW27	NNW20	NNW13	NNE12	ENE8	ENE9	WSW8	NNW2.6	NW27
31-May	W17	NW8	SSE6	W7	W10	WSW3	SSW6	SE7	SSE5	SE2	NNE3	NNE2	SE10	SE12	SSE9	SSW15	SSE17	SSE15	SE14	SE7	SE18	NNW7	NNW8	NW17	S3.3	SE18

SE10.2	SE9.7	ESE9.6	SE10.1	SE9.6	SE9.6	SE10.2	SE8.8	SE8.2	SE8.9	SSE7.6	SSE8.8	SSE9.8	SSE7.7	S7.9	S7.7	S6.4	SSE5.9	SSE6.1	SSE5.6	SSE7.9	SSE8.9	SE9.0	SE8.3	Diurnal Average	
SE41	SE38	SE36	SE33	SE35	SE40	SE43	NW33	NW42	NNW39	NW39	NW41	NW36	WSW42	WSW43	SE38	SE38	SE40	SE38	SE39	SE35	SE40	SE36	SSW45	Diurnal Maximum	

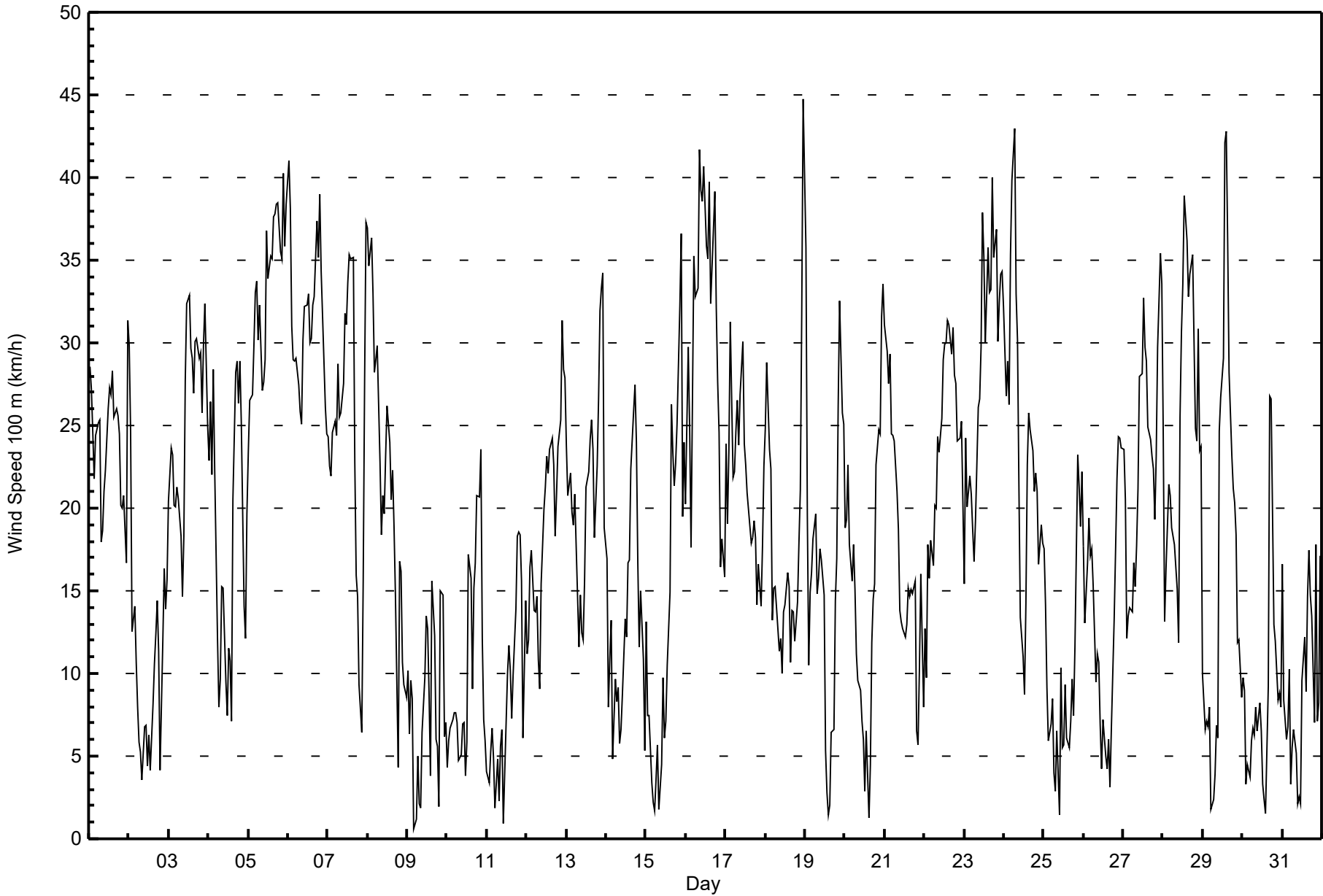
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed 100 m (WS100m) - km/h
Lower Camp Met Tower - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 12 km/h on May 30 17:00 Minimum Value: 1 km/h on May 15 05:00 Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 2 Median = 4 Q ₃ = 5 P ₉₀ = 6 P ₉₉ = 8																		Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0							
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	3	2	2	2	2	3	4	4	3	3	4	4	5	5	6	6	4	5	4	3	2	4	8	4	8
2-May	4	6	4	2	3	3	2	2	2	2	3	3	4	5	5	5	6	5	5	2	3	2	2	2	6
3-May	3	3	2	2	3	2	2	2	2	4	5	7	6	6	6	6	5	6	5	4	4	4	4	3	7
4-May	2	3	3	2	4	4	3	3	3	3	2	3	3	2	3	2	4	5	5	6	5	5	4	2	6
5-May	3	3	3	3	2	2	3	4	4	3	4	4	6	5	4	5	6	5	6	6	5	7	5	5	7
6-May	5	6	4	4	4	4	3	4	3	4	4	4	4	5	5	6	5	4	5	5	4	4	3	4	6
7-May	4	6	5	4	3	3	3	4	4	4	4	6	5	5	8	8	5	5	4	2	2	8	6	4	8
8-May	5	5	3	6	5	5	5	4	3	3	4	5	4	5	4	4	5	3	6	4	4	3	5	3	6
9-May	5	2	2	3	2	2	2	1	2	2	4	3	4	4	4	5	5	2	3	6	3	3	2	2	6
10-May	2	1	1	1	1	1	1	2	2	1	2	2	4	7	5	4	4	4	5	3	2	6	4	2	7
11-May	2	2	2	3	2	1	1	2	3	2	2	2	3	3	5	4	4	5	3	4	1	3	2	4	5
12-May	4	4	2	2	4	3	3	3	3	3	4	6	6	6	6	6	6	4	3	5	3	4	3	4	6
13-May	2	3	2	2	2	2	2	2	1	2	4	3	4	4	4	5	5	3	3	3	2	1	2	6	6
14-May	3	3	1	2	3	4	2	2	3	3	5	3	4	4	5	4	4	4	4	4	4	4	5	3	5
15-May	5	4	4	2	1	1	2	1	1	2	1	2	2	4	5	5	5	4	5	3	2	1	8	3	8
16-May	6	4	3	3	8	7	8	7	7	7	6	9	8	7	9	10	8	8	6	5	8	6	5	5	10
17-May	5	5	5	6	6	5	6	6	5	5	5	5	6	6	5	5	5	5	4	3	2	3	4	5	6
18-May	4	5	4	5	3	2	3	2	2	3	4	4	5	4	5	4	5	5	3	3	2	2	7	3	7
19-May	6	7	2	3	3	3	3	2	2	2	2	3	3	2	1	2	2	2	2	4	4	6	3	3	7
20-May	3	2	3	3	3	3	3	2	3	2	2	2	2	3	2	4	2	2	2	4	2	3	5	3	5
21-May	4	2	3	3	3	3	3	3	3	3	2	2	2	3	3	2	2	2	3	4	3	4	2	6	6
22-May	6	4	3	2	2	3	3	3	4	3	4	5	7	6	6	7	6	7	6	6	6	5	4	5	7
23-May	5	7	5	5	5	5	5	5	5	6	6	6	5	6	6	6	7	7	6	6	6	5	4	4	7
24-May	5	4	4	4	4	3	4	5	4	5	3	3	3	6	3	4	3	3	4	4	2	3	4	3	6
25-May	4	3	3	2	2	2	1	1	3	2	3	3	4	3	3	2	2	3	2	5	4	5	5	5	5
26-May	2	3	2	2	1	2	3	2	1	2	3	2	4	3	3	3	2	3	2	3	2	4	3	4	4
27-May	3	4	2	2	2	3	3	3	3	5	5	7	7	6	6	6	5	5	3	3	1	3	4	3	7
28-May	4	5	4	3	2	2	2	3	2	5	6	5	8	6	6	6	6	7	6	6	6	5	4	5	8
29-May	3	2	1	2	2	2	2	2	3	5	6	6	5	10	8	5	5	4	4	3	2	4	4	4	10
30-May	4	4	1	1	1	2	1	2	3	2	3	4	3	2	3	3	12	5	3	2	3	5	4	7	12
31-May	4	5	4	2	3	2	1	2	2	1	2	2	4	2	5	3	3	3	3	3	3	5	5	4	5
Diurnal Maximum																									





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed 100 m (WS100m) - km/h
Lower Camp Met Tower - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	62	8.33	8.33
6 - 11	143	19.22	27.55
12 - 19	187	25.13	52.69
20 - 28	205	27.55	80.24
29 - 38	131	17.61	97.85
> 38	16	2.15	100.00

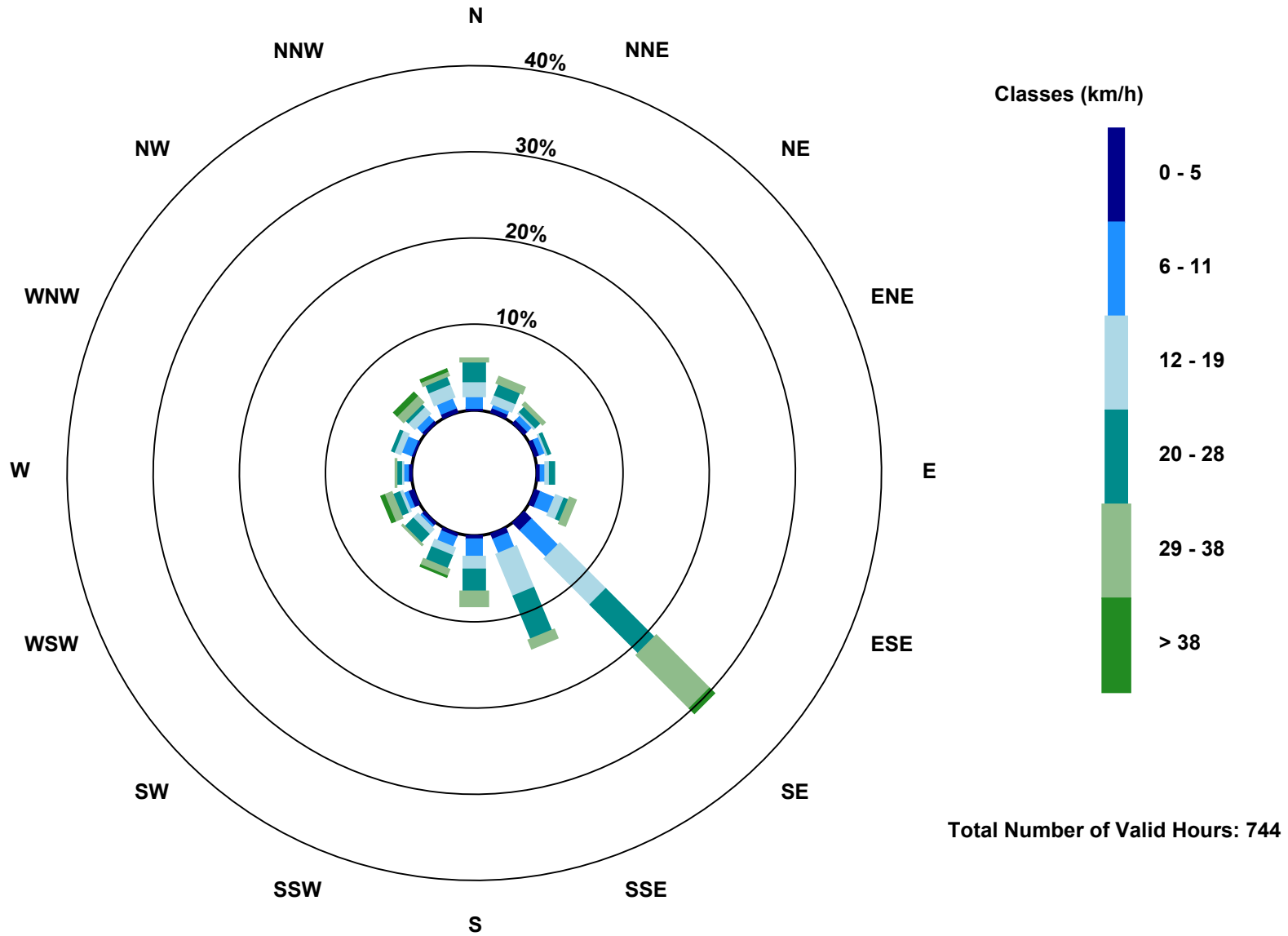
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed 100 m (WS100m) - km/h
Lower Camp Met Tower





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 163 m (WS163m) - km/h

Lower Camp Met Tower - May 2023

Maximum Speed: 54 km/h on May 19 00:00	Maximum Daily Speed Average: 36.4 km/h on May 5	Hours in Service: 744
Minimum Speed Value: 1 km/h on May 19 15:00	Minimum Daily Speed Average: 0.8 km/h on May 25	Hours of Data: 744
Maximum Diurnal Speed Average: 11.9 km/h at hour 1	Minimum Diurnal Speed Average: 6.3 km/h at hour 18	Hours of Missing Data: 0
Monthly Average Velocity: 8.8 km/h 151.7 deg	Percentiles: $P_1 = 2$ $P_{10} = 6$ $Q_1 = 12$ Median = 21 $Q_3 = 30$ $P_{90} = 36$ $P_{99} = 45$	Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SE32	SE31	SE27	SE26	SE30	SE29	SE26	SE20	SE18	SSE21	SSE23	SSE26	SSE28	S28	S29	SSW27	S27	SSW26	SSW26	SW23	S21	S25	NW18	N36	SSE18.9	N36
2-May	N35	N32	NNW20	NW22	NW19	NNW20	NNW11	WNW4	WNW4	NNW7	NNW6	SSW4	SSW5	NE3	WNW9	WNW11	NW13	NW15	NNW12	N5	ESE13	SE19	SSE17	SSE17	NNW6.7	N35
3-May	SSE28	SSE27	SSE23	SSE24	SSE28	SSE28	SSE23	SSE17	SSE14	S19	S28	S34	S33	S31	S30	SSE28	S31	S32	S31	S32	SSE30	SSE37	SSE41	SSE32	SSE27.9	SSE41
4-May	SSE25	SE31	SE27	SE28	SE27	SE18	SSE12	SE15	SE18	SE15	SE10	ESE8	SE10	SE11	ESE7	N19	NNE28	NNE31	NNE30	NE31	ENE22	ENE18	E15	SE25	ESE13.1	NNE31
5-May	SE30	SE31	SE29	SE34	SE36	SE36	SE33	SE35	SE29	SE27	SE29	SE37	SE35	SE37	SE38	SE40	SE40	SE41	SE41	SE40	SE42	SE47	SE43	SE45	SE36.4	SE47
6-May	SE46	SE44	SE38	SE36	SE33	SE32	SE30	SE27	SE26	SE32	SE33	SE33	SE33	SE31	SE31	SE34	SE34	SE38	SE36	SE41	SE39	SE37	SE32	SE30	SE34.4	SE46
7-May	SE31	SE31	SE30	SE31	SE31	SE31	SE33	SE27	SE28	SE29	SE33	SE31	SE35	SE38	SE38	SSE36	S24	SSE18	SE17	ESE14	ESE14	SE26	SE34	SE43	SE28.7	SE43
8-May	SE41	SE38	SE39	SSE36	SSE31	SE33	SE32	SE24	SE19	SE22	SE20	SSE24	SSE27	SSE25	S21	S22	SSE19	S15	SSE6	NW18	W17WSW17	SW17	S9	SSE19.4	SE41	
9-May	SSE9	SSE6	SSW8	SSW8	SSE3	SSE6	SSE9	S5	S3	SSE5	SSE10	SSW14	S12	SE8	W4	NW16	N11	N6	NE5	SE3	SW17WSW17	WSW8WNW10		SSW4.0	SW17	
10-May	NW6	S5	SSW9	SSW11	SSW13	SW11	SSW11	SSW7	S6	S6	SSE7	ESE2	NW6	NW17	WNW15	NW9	NNW16	NNE17	NNE24	NNE27	NE32	ENE25	E12	E10	NNE3.2	NE32
11-May	ESE6	SE10	ESE4	SE5	SSE12	SE8	S6	SSE7	SSE8	SE7	E1	SE4	SE9	SE11	SE10	SSE7	SE9	ESE13	SE20	S20	S20	SW21	SSW7	SSE13	SSE8.3	SW21
12-May	SSE17	SSE18	SSE17	SSE20	SE21	SSE18	SSE19	SE21	SSE12	SSE16	S21	SSE22	SSE24	SSE22	SSE25	SE25	SSE22	SSE20	SSE21	SSE28	SE30	SE36	SSE33	SSE35	SSE22.3	SE36
13-May	SE25	SSE23	SSE23	S22	SSE20	S16	S14	S10	S17	S15	S15	SSW16	SSW21	SSW22	SSW24	SSW26	SSW25	S21	S27	S31	SSW38	SSW43	SW47	SW32	S22.4	SW47
14-May	SW29	SW20	SSW13	SSW8	WNW4	SSW16	SSW16	SSW7	S6	SSE8	S14	SSW13	WSW18	SW18	SW24	WSW27	SW28	SW27	W18	N12	NNE21	NE23	E11		SW9.8	SW29
15-May	ESE21	NW2	NE6	E7	S3	NNW4	E2	SSE4	SSE5	SE6	SE9	SE6	ESE8	ESE12	SE17	SSE27	S25	S23	SSW24	SSW29	SSW33	SSW41	SW25	NNW28	S9.4	SSW41
16-May	N27	N33	N27	N21	NNW33	NNW39	NW35	NNW38	NNW46	NNW43	NW40	NW44	NW39	NW39	NNW43	NW36	NW39	NNW43	NNE35	N30	N29	N25	N23	N23	NNW32.9	NNW46
17-May	N31	N22	N26	N34	NNE25	NNE25	NE29	NNE29	NNE24	NNE28	N30	NNE24	N23	NNE21	NNE21	NNE19	NNE19	NNE20	NE18	NE16	NE18	E14	SE22	SE26	NNE19.6	N34
18-May	SSE26	SSE32	SSE30	SSE32	S18	S16	SSE14	SSE13	SSE11	SE11	SSE9	SSE13	SSE14	SSE16	S16	S11	S14	S14	SSW13	SSW15	SSW19	SSW23	SSW36	SW54	S18.2	SW54
19-May	SSW50	SSW29	S13	SSE17	S19	S21	S18	S13	SSE14	SSE15	SSE15	SSE14	SSW7	WNW2	NW1	WNW3	N7	NNW8	N15	N26	N36	NNE40	NNE31	NNE34	SSE1.7	SSW50
20-May	NNE29	N26	N31	NNE25	N19	N22	N17	N11	N10	N9	N7	NNW6	NW3	WNW6	WNW1	SE6	ESE13	ESE16	ESE19	SE25	SE28	SE28	SE35	SE35	ENE7.4	SE35
21-May	SE36	SE32	SE29	SE30	SE27	SE28	SE26	SSE22	SE19	SE14	SSE13	S13	SSE11	SSE14	SSE15	SSE14	SSE15	SE16	SSE17	SE9	NE2	SE13	SE20	SE12	SE18.3	SE36
22-May	NE8	NE13	NNE21	NNE23	NNE26	NNE23	N25	N22	N25	N23	N26	N29	NNE32	NNE32	NNE34	NNE33	NE31	NE33	NE31	NE30	ENE28	ENE28	ENE28	ENE25	NNE24.2	NNE34
23-May	E18	E26	E19	E22	E23	E21	E20	ESE22	ESE29	ESE30	ESE33	SE41	ESE40	SE34	SE40	SE38	SE36	SE43	SE38	SE39	SE32	SE34	SE36	SE37	ESE30.2	SE43
24-May	SE36	SE31	SE32	SE29	SE38	SE42	SE44	SSE34	SSE30	SSE21	S14	S11	S10	SW16	WSW24	W27	W27	WSW25	W23	W25	WSW24	W19	WNW23	WNW23	S13.0	SE44
25-May	WNW21	WNW21	NW17	WNW12	NNW15	NW13	WNW7	WSW4	W6	WNW2	N10	NE6	ENE5	N9	N6	NE6	ENE7	ESE10	ESE8	SE13	SSE25	SSE25	SSE26	SSE30	SSW0.8	SSE30
26-May	SSE25	SSE18	SSE17	SSE20	SSE20	SSE24	S16	S9	SE10	SE11	SSE6	SE5	SSE7	NNE3	E3	ESE5	ESE3	SE7	SSE13	S18	SSE21	SSE31	SSE35	S35	SSE14.3	S35
27-May	S32	S27	SSE18	SSE20	SSE22	SSE23	SSE19	S15	SSE17	S22	S29	S29	S34	S30	S30	S26	S25	SSW24	SSW23	SSW21	SSW25	S28	S41	S38	S25.2	S41
28-May	S33	SSE16	S18	S24	S22	S19	S17	SSE16	SSE13	S11	SW27	WSW33	WSW36	WSW41	WSW39	WSW35	WSW36	W38	W38	W29	WNW28	NW37	NW29	NW27	WSW19.2	WSW41
29-May	NW18	NW12	WNW9	WSW9	SSW12	WSW7	WSW6	SW6	SW9	SW9	WSW26	WSW28	WSW31	WSW45	WSW47	WSW39	WSW29	WSW24	SW23	SW22	WSW22	NW14	NNE20	NE26	WSW15.4	WSW47
30-May	ENE23	ENE18	ENE3	W3	SSE1	SE3	S8	SSW8	SE10	S8	SSE9	SSE6	NE3	NE1	SSE4	WNW9	NW29	NW29	NNW22	NNW14	NNE15	NE13	ENE13	W5	N3.2	NW29
31-May	W15	NW9	SSE6	WSW3	WNW7	W4	SSW5	S5	SSW6	SW2	N2	NNE2	SE9	SE13	SSE10	SSW15	S18	SSE16	SE14	SE10	SSE20	NNE5	N11	NNW19	S3.4	SSE20

SSE11.9 SE11.2 SE10.5 SE10.9 SE10.4 SE9.9 SSE10.1 SE8.8 SE8.3 SE8.4 SSE7.9 SSE9.0 SSE9.8 S8.1 S8.5 S8.0 S6.7 SSE6.3 SSE6.7 SSE6.5 SSE9.1 SSE10.2 SSE10.8 SSE10.0	Diurnal Average
SSW50 SE44 SE39 SE36 SE38 SE42 SE44 NNW38 NNW46 NNW43 NW40 NW44 ESE40 WSW45 WSW47 SE40 SE40 NNW43 SE41 SE41 SE42 SE47 SW47 SW54	Diurnal Maximum

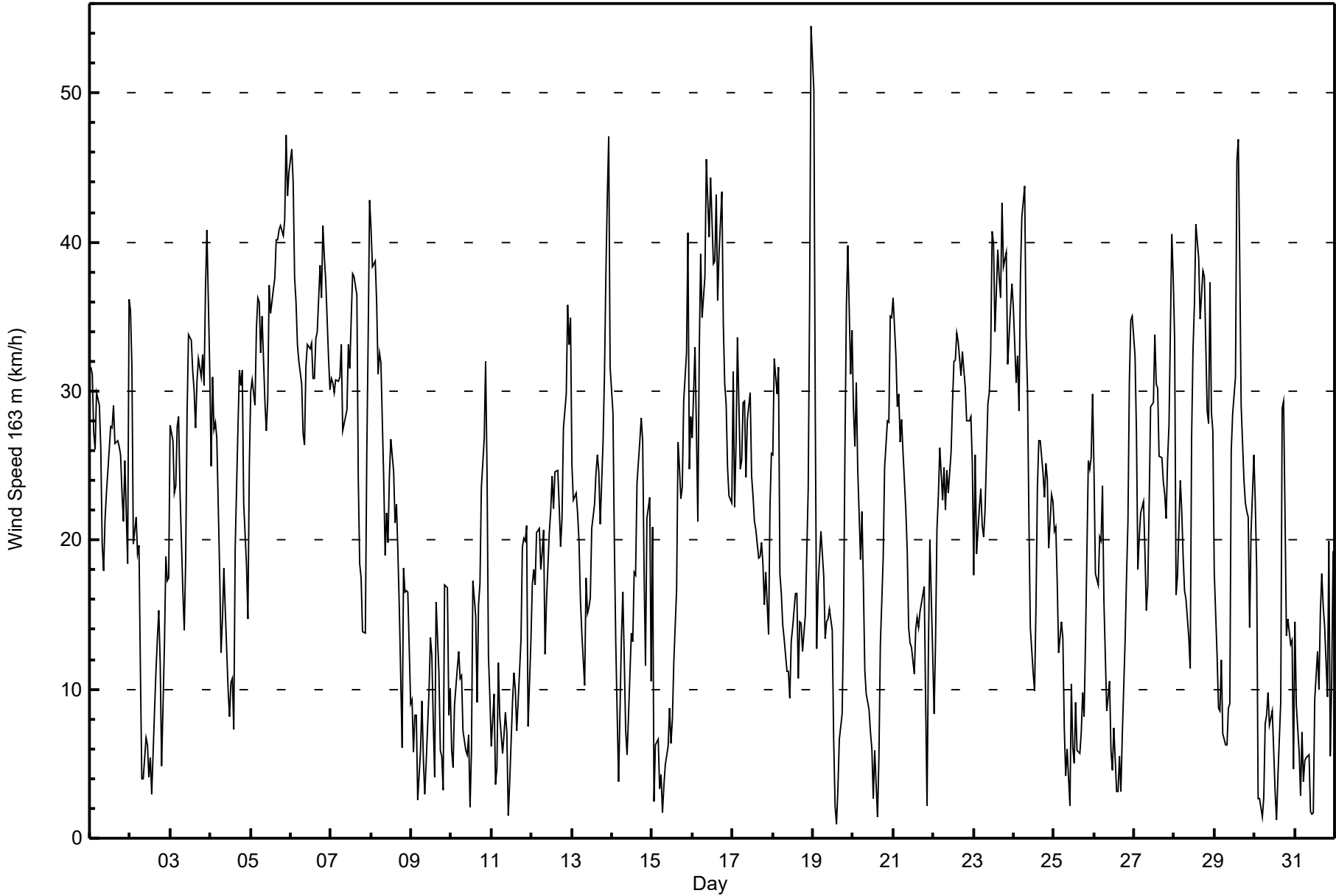
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed 163 m (WS163m) - km/h
Lower Camp Met Tower - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 13 km/h on May 30 17:00														Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0											
Minimum Value: 1 km/h on May 10 06:00																									
Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 3 Median = 4 Q ₃ = 5 P ₉₀ = 6 P ₉₉ = 9																									
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	3	3	2	2	2	2	3	3	3	4	4	4	6	5	5	5	4	4	4	3	3	2	9	4	9
2-May	4	5	5	2	3	4	2	1	2	2	3	3	4	4	5	5	6	5	5	2	4	4	2	3	6
3-May	3	3	2	2	3	2	2	4	3	6	5	7	6	6	6	6	5	5	5	3	4	5	3	6	7
4-May	3	2	2	2	3	3	3	3	3	3	2	3	3	3	4	4	5	4	5	5	4	5	5	2	5
5-May	3	4	2	3	3	2	3	4	3	3	4	5	5	4	5	4	5	4	6	6	4	6	5	5	6
6-May	5	6	3	4	4	4	4	3	3	4	4	4	3	4	5	5	5	4	4	4	3	4	4	4	6
7-May	3	5	4	4	3	3	3	4	3	4	4	5	5	4	8	8	5	5	4	3	3	7	6	4	8
8-May	6	5	4	7	5	5	5	3	3	3	4	5	4	4	4	4	4	3	5	3	2	4	6	3	7
9-May	3	1	1	2	1	2	2	1	2	2	4	3	3	4	5	6	5	2	2	6	2	3	2	2	6
10-May	4	1	1	1	1	1	1	2	1	2	2	2	4	7	5	4	4	4	6	4	1	6	4	5	7
11-May	3	2	2	1	4	3	3	3	2	2	2	3	3	2	5	4	4	6	2	3	1	2	2	5	6
12-May	4	3	2	4	4	3	4	5	3	3	5	5	6	7	6	6	6	5	3	5	3	4	4	5	7
13-May	4	2	3	3	2	2	1	2	1	3	4	3	4	4	4	4	5	4	2	2	2	2	4	5	5
14-May	2	5	2	4	4	6	3	3	3	2	4	3	4	4	4	4	4	4	4	4	5	5	8	4	8
15-May	7	2	2	2	3	1	1	2	3	1	1	2	2	4	5	5	5	4	6	3	2	2	9	4	9
16-May	7	4	4	3	9	7	7	7	5	6	6	7	7	7	8	11	7	8	6	5	8	7	7	5	11
17-May	4	6	5	6	5	5	5	5	5	5	4	4	5	6	5	5	6	4	4	3	2	2	2	4	6
18-May	3	4	2	4	3	3	3	2	2	3	4	4	5	4	5	5	5	4	3	3	2	3	9	3	9
19-May	7	9	3	3	4	3	3	2	2	2	2	3	3	2	1	2	2	1	2	7	3	6	3	2	9
20-May	4	4	4	4	3	3	3	2	2	2	2	3	3	3	2	4	2	2	3	4	2	2	4	4	4
21-May	3	2	3	2	3	3	3	4	3	3	2	3	2	4	3	2	2	2	3	4	2	4	2	5	5
22-May	7	2	6	4	3	3	3	3	4	3	4	5	7	7	7	7	6	6	6	6	7	5	3	4	7
23-May	7	9	6	7	7	7	6	7	5	6	6	5	5	6	6	6	6	6	6	5	6	5	4	5	9
24-May	4	3	3	4	3	3	5	4	4	5	3	3	3	6	2	3	2	3	3	3	2	3	4	3	6
25-May	4	2	3	2	3	1	3	1	2	2	3	3	3	3	3	2	2	3	2	6	3	4	5	4	6
26-May	5	4	2	2	2	2	4	2	1	1	2	3	4	3	3	3	2	3	3	2	1	3	1	2	5
27-May	1	3	3	3	3	3	3	3	3	6	5	6	7	6	6	6	5	5	4	3	1	2	3	3	7
28-May	3	5	5	3	3	2	3	3	2	5	6	4	7	6	6	6	6	6	5	5	6	4	4	3	7
29-May	3	3	1	2	2	2	2	2	4	5	6	5	5	11	8	5	5	4	4	3	2	5	8	4	11
30-May	4	4	2	1	1	1	3	2	2	2	4	3	2	2	4	3	13	5	3	3	3	6	5	6	13
31-May	3	3	4	1	3	3	2	1	2	2	2	2	4	2	5	4	3	3	3	3	3	5	6	4	6
														Diurnal Maximum											





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed 163 m (WS163m) - km/h
Lower Camp Met Tower - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	56	7.53	7.53
6 - 11	119	15.99	23.52
12 - 19	159	21.37	44.89
20 - 28	197	26.48	71.37
29 - 38	167	22.45	93.82
> 38	46	6.18	100.00

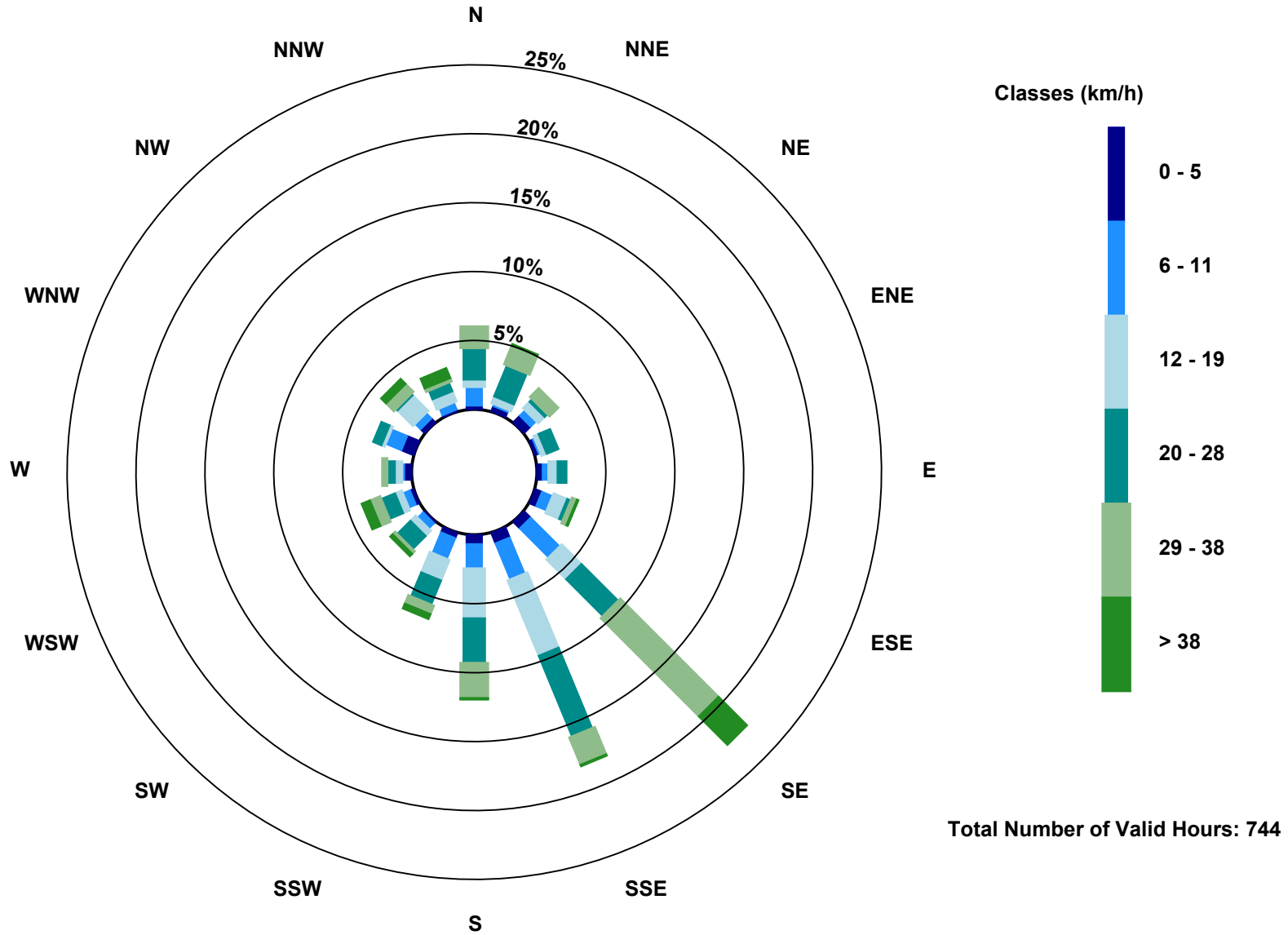
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed 163 m (WS163m) - km/h
Lower Camp Met Tower





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction 20 m (WD20m) - deg
Lower Camp Met Tower - May 2023

Direction of Maximum Speed: 172 deg on May 3 13:00 Direction of Maximum Daily Speed Average: 131.6 deg on May 6	Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0
Direction of Minimum Speed: 191 deg on May 17 22:00 Direction of Minimum Daily Speed Average: 1.3 deg on May 30	Percent Operational Time: 100.0
Monthly Average Direction: 147.8 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	120	127	130	130	119	123	131	132	142	144	143	141	158	190	184	195	188	190	206	208	157	128	325	342	162.5
2-May	341	338	293	322	282	315	334	110	287	24	347	212	189	37	277	283	320	314	333	293	173	146	133	126	318.8
3-May	125	123	115	118	138	132	135	136	136	139	185	171	172	174	170	166	168	168	171	165	142	140	140	136	157.6
4-May	129	125	125	127	121	112	206	83	137	134	138	148	148	153	131	346	2	9	6	30	30	345	1	35	73.3
5-May	85	92	112	117	124	130	124	131	128	140	138	136	134	132	127	132	130	130	132	127	128	132	133	139	129.9
6-May	136	124	126	127	125	127	115	125	132	127	134	138	137	140	137	136	131	139	137	135	126	125	123	128	131.6
7-May	123	109	102	106	99	110	121	128	123	128	133	131	127	128	131	162	169	172	115	21	356	112	144	140	131.1
8-May	135	132	130	147	157	133	130	134	138	142	141	165	160	159	172	187	164	176	183	318	259	270	165	158	154.2
9-May	152	126	238	137	349	110	120	130	137	120	146	198	173	134	213	337	337	3	53	181	221	208	184	237	170.9
10-May	139	126	127	133	137	129	121	125	132	128	124	141	274	302	295	318	340	9	28	20	28	330	97	354	51.1
11-May	315	319	337	339	134	330	350	54	80	128	136	174	142	143	132	170	150	114	138	183	181	133	124	116	142.1
12-May	54	132	122	96	120	141	133	152	180	131	173	159	154	147	153	149	156	159	166	161	148	146	141	137	150.8
13-May	146	142	126	136	134	141	141	141	143	135	127	183	191	189	199	191	196	166	171	161	159	167	189	191	167.1
14-May	112	97	138	119	333	136	131	130	129	135	140	151	211	245	231	233	239	240	236	293	333	352	2	122	208.8
15-May	94	326	335	309	306	336	30	342	342	141	130	122	132	121	147	158	171	181	202	196	183	182	191	326	172.9
16-May	315	333	352	342	325	324	323	324	324	326	320	322	314	317	324	318	321	337	4	351	355	334	327	341	328.9
17-May	330	343	346	345	10	21	30	15	8	9	355	5	359	16	10	17	18	23	26	23	23	191	110	149	9.3
18-May	155	157	154	139	137	127	122	133	131	125	157	146	156	146	169	174	177	180	189	188	183	146	184	197	160.1
19-May	187	150	84	87	133	142	144	144	140	136	135	134	192	358	34	21	351	313	330	336	350	10	354	349	115.2
20-May	341	340	350	345	335	338	347	351	341	344	339	343	277	266	276	149	123	102	105	131	129	124	125	137	47.4
21-May	132	132	132	137	145	128	141	143	144	137	146	164	133	152	150	143	151	139	124	2	355	141	113	355	138.4
22-May	350	337	347	338	337	339	348	356	0	353	350	354	14	15	11	19	38	46	41	45	68	51	35	33	14.5
23-May	87	89	75	75	76	87	83	94	106	109	113	124	119	120	125	125	122	135	126	133	144	144	139	137	118.2
24-May	136	127	128	132	144	135	136	157	159	158	178	185	159	223	240	264	260	252	268	272	256	276	303	303	182.4
25-May	277	333	330	137	100	341	46	149	256	196	9	33	129	2	4	33	72	132	134	136	160	140	139	144	125.8
26-May	143	146	155	147	137	129	135	136	130	131	126	127	145	59	81	109	88	114	158	168	159	131	128	131	136.6
27-May	132	127	109	127	116	97	110	111	120	155	176	180	168	170	175	173	186	198	190	186	174	151	155	156	165.0
28-May	144	103	137	136	141	140	140	141	139	134	220	242	238	245	255	248	252	265	255	276	294	313	311	301	224.9
29-May	308	241	196	128	122	116	122	190	234	174	243	251	251	255	252	246	236	235	224	231	234	312	344	327	240.3
30-May	337	347	344	311	135	21	120	124	121	133	119	116	58	358	55	307	307	317	332	338	340	114	21	257	349.1
31-May	287	337	183	241	325	127	131	135	126	122	48	61	153	139	168	210	166	153	143	135	140	341	301	324	155.4

134.8 116.7 115.1 119.8 123.5 117.6 118.4 126.4 129.9 127.4 151.3 161.0 163.3 170.3 178.9 185.7 182.4 175.4 170.7 164.7 154.5 138.1 138.5 141.8
 Diurnal Average

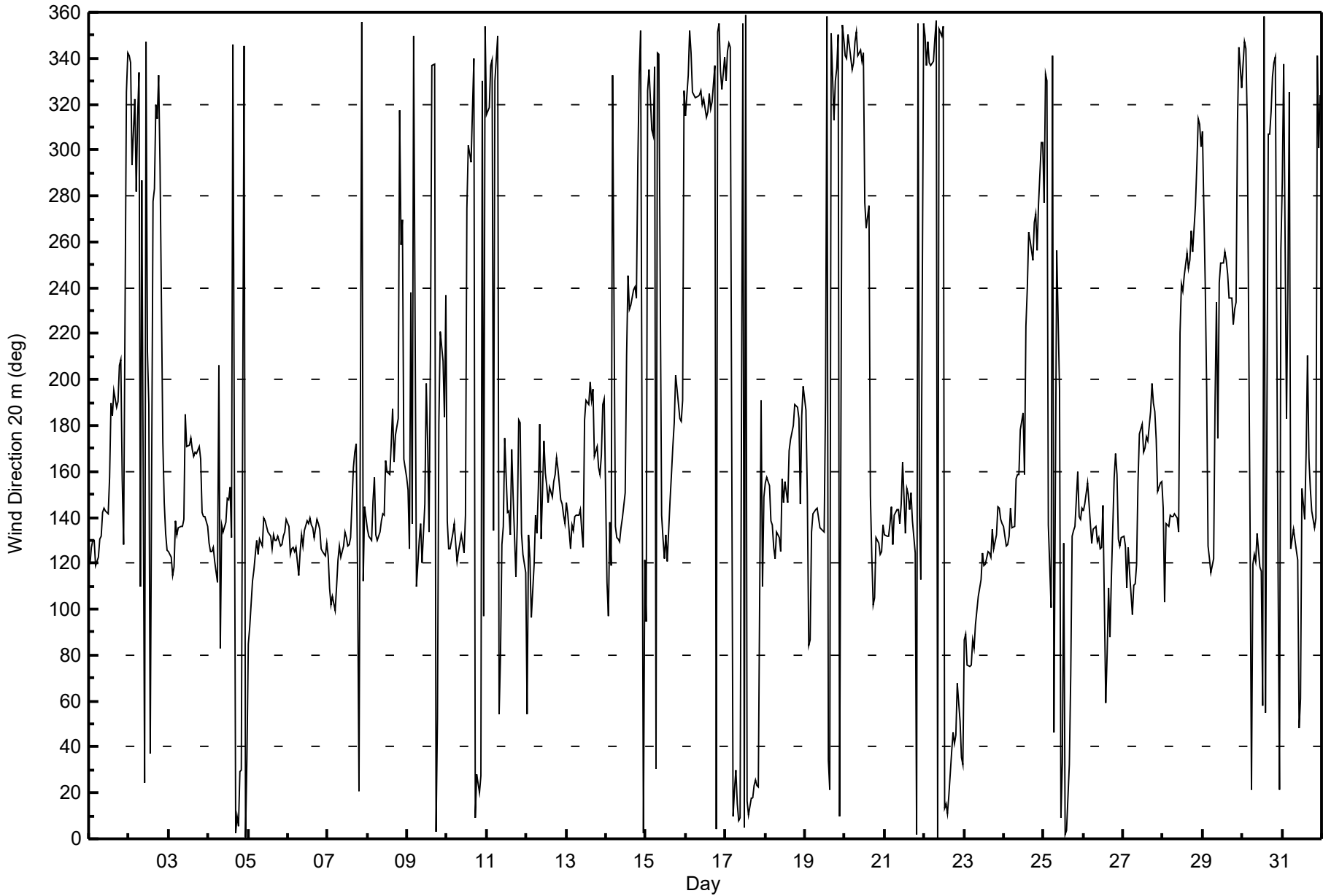
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction 20 m (WD20m) - deg
Lower Camp Met Tower - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0																			Hours in Service: 744																								
Maximum Value: 101 deg on May 4 08:00																			Hours of Data: 744																								
Minimum Value: 5 deg on May 15 21:00																			Hours of Missing Data: 0																								
Percentiles: P ₁ = 6 P ₁₀ = 13 Q ₁ = 17 Median = 21 Q ₃ = 34 P ₉₀ = 61 P ₉₉ = 91																			Hours of Calibration: 0																								
																			Percent Operational Time: 100.0																								
Day	Hourly Period Ending At (MST)																								Daily Maximum																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																			
1-May	16	16	16	16	14	20	18	20	14	11	12	12	17	16	17	14	13	11	17	14	22	28	31	14	31																		
2-May	16	19	39	28	66	49	42	64	92	20	56	66	42	65	63	58	41	29	24	80	41	56	52	57	92																		
3-May	19	30	38	46	23	20	16	11	15	22	14	14	14	17	13	16	12	10	8	6	12	7	6	9	46																		
4-May	17	26	28	15	48	70	96	101	18	17	27	21	20	19	65	16	17	19	18	23	18	55	28	76	101																		
5-May	57	49	26	20	19	15	18	16	20	16	17	17	19	17	19	16	17	17	16	18	16	17	18	15	57																		
6-May	14	16	15	15	16	17	18	18	18	18	19	15	15	15	19	19	20	15	15	16	16	16	20	21	21																		
7-May	18	29	28	21	20	16	16	18	18	19	17	20	19	19	19	16	12	35	33	25	25	85	15	13	85																		
8-May	16	17	16	20	14	18	19	23	19	17	20	18	14	13	18	14	18	15	67	34	28	56	53	24	67																		
9-May	29	78	43	81	46	46	59	57	64	22	35	20	23	26	73	27	29	35	36	96	27	47	55	84	96																		
10-May	46	11	13	20	10	13	15	20	24	22	22	55	70	34	31	46	30	29	24	17	21	54	67	17	70																		
11-May	61	54	43	43	61	26	39	83	54	35	82	66	23	18	38	51	46	35	22	17	39	59	74	30	83																		
12-May	79	26	21	42	78	44	31	57	34	20	23	23	24	24	19	20	15	14	11	17	9	15	13	15	79																		
13-May	30	19	11	10	27	16	12	11	11	19	42	18	11	17	12	13	13	14	10	6	5	8	9	69	69																		
14-May	28	84	11	79	74	14	20	11	15	25	27	36	25	22	18	15	13	13	29	36	16	78	79	79	84																		
15-May	71	58	52	86	86	76	48	30	91	39	20	23	25	30	41	12	17	18	14	10	5	6	73	19	91																		
16-May	21	19	19	19	16	18	18	20	20	19	19	19	21	20	23	23	19	20	21	19	21	34	18	22	34																		
17-May	20	24	21	19	26	24	31	29	23	22	22	32	30	33	38	36	31	32	29	25	28	99	60	16	99																		
18-May	9	11	11	15	14	28	22	15	18	25	43	32	32	25	33	34	23	25	24	10	5	35	54	8	54																		
19-May	15	39	20	25	20	10	9	18	14	16	15	21	65	58	27	41	17	22	32	18	12	19	15	16	65																		
20-May	20	20	19	26	26	24	22	24	25	24	33	47	83	42	95	83	25	22	33	22	19	21	20	18	95																		
21-May	19	20	26	20	28	37	21	17	17	19	21	18	20	22	16	18	14	15	43	22	74	71	35	54	74																		
22-May	42	86	17	21	24	22	17	21	19	18	18	18	22	21	21	24	29	31	30	31	31	27	23	26	86																		
23-May	27	23	22	27	33	33	30	32	23	20	18	18	18	20	18	21	21	18	20	17	21	18	17	19	33																		
24-May	18	19	18	19	11	18	20	11	10	10	18	21	30	40	18	20	20	18	22	22	18	22	21	23	40																		
25-May	20	26	50	86	80	36	93	39	39	87	24	49	52	33	48	40	38	33	25	25	11	18	15	19	93																		
26-May	22	41	23	10	21	24	14	16	20	19	22	62	49	38	72	36	62	31	19	8	19	8	7	18	72																		
27-May	25	84	38	16	19	40	53	27	21	24	15	18	14	15	17	15	16	15	11	9	6	14	12	11	84																		
28-May	34	45	13	12	10	13	12	12	14	31	33	17	18	14	17	19	17	21	22	23	29	16	13	20	45																		
29-May	52	17	33	18	15	27	23	74	61	68	18	22	19	19	18	15	15	17	14	12	8	39	31	26	74																		
30-May	73	54	61	64	82	67	22	20	25	19	23	47	66	91	83	59	24	20	21	23	57	79	70	39	91																		
31-May	50	84	52	28	65	63	11	13	19	38	43	82	25	18	40	25	18	14	18	38	14	73	59	39	84																		
																			79	86	61	86	86	76	96	101	92	87	82	82	83	91	95	83	62	35	67	96	74	99	78	84	
Diurnal Maximum																																											





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction 45 m (WD45m) - deg
Lower Camp Met Tower - May 2023

Direction of Maximum Speed: 251 deg on May 29 15:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 127.7 deg on May 5	Hours of Data: 744
Direction of Minimum Speed: 334 deg on May 25 05:00	Hours of Missing Data: 0
Direction of Minimum Daily Speed Average: 2.1 deg on May 25	Percent Operational Time: 100.0
Monthly Average Direction: 138.6 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	118	122	121	121	120	119	124	126	135	140	141	138	156	189	185	195	188	192	207	213	171	132	320	342	155.3
2-May	343	342	307	324	334	343	285	233	286	15	344	212	192	29	278	285	318	314	330	347	116	127	126	132	329.3
3-May	133	131	130	129	132	130	128	138	134	137	185	170	170	173	169	165	169	168	171	163	139	142	147	131	154.4
4-May	124	120	114	124	118	112	144	101	130	129	130	137	140	145	125	345	4	12	10	35	35	24	42	99	75.7
5-May	117	116	116	123	127	130	125	129	125	134	133	133	129	128	125	129	127	127	129	125	126	129	131	135	127.7
6-May	134	126	125	126	125	125	117	125	128	125	131	134	134	135	133	132	126	135	134	132	126	126	125	127	129.1
7-May	123	114	112	112	109	117	123	126	122	124	129	128	125	125	128	158	167	162	116	52	29	121	137	136	127.7
8-May	132	130	128	141	151	128	126	128	132	133	135	162	158	158	171	187	162	175	184	312	255	258	186	152	148.9
9-May	156	134	235	170	348	153	142	123	123	119	146	200	169	128	242	335	340	6	60	162	225	216	183	231	178.9
10-May	163	133	134	140	140	136	126	120	122	118	120	126	292	301	293	315	338	15	28	23	33	21	101	354	48.9
11-May	5	324	325	330	149	332	340	54	96	127	124	165	137	137	128	161	142	106	131	182	189	193	142	128	142.1
12-May	132	129	135	133	136	141	133	139	175	134	172	157	149	141	147	143	153	157	166	150	138	132	133	133	145.3
13-May	131	140	132	134	133	139	135	138	138	132	132	184	191	190	200	191	196	169	177	167	165	176	196	201	164.9
14-May	154	117	128	127	66	142	133	137	126	127	132	148	210	245	231	232	237	238	233	288	336	341	7	110	202.1
15-May	116	339	337	339	310	343	11	333	332	122	127	114	124	118	142	157	170	181	202	199	189	189	211	331	174.7
16-May	328	335	357	345	325	323	322	324	323	324	319	321	314	315	323	316	321	337	7	356	360	348	332	344	330.0
17-May	336	344	351	347	15	24	33	17	10	12	357	7	1	18	14	23	21	25	30	24	31	57	119	137	13.8
18-May	148	156	150	139	137	129	124	130	124	122	148	143	153	144	166	174	179	179	189	189	192	182	194	200	160.0
19-May	191	160	103	111	136	141	141	136	136	133	133	132	196	352	35	10	358	318	332	332	350	11	358	353	103.5
20-May	346	341	352	350	341	346	352	352	344	344	337	334	288	273	292	140	121	105	106	127	126	123	125	130	53.8
21-May	127	127	126	131	129	124	133	135	137	131	138	162	131	150	148	141	150	136	127	69	347	133	125	25	132.4
22-May	359	17	340	341	343	344	353	1	4	357	352	357	16	17	13	23	42	49	46	49	69	55	40	40	19.3
23-May	86	92	80	79	83	86	87	98	105	109	113	123	117	117	122	122	120	129	125	129	137	136	133	133	115.4
24-May	132	126	125	129	138	131	132	151	155	154	178	182	157	224	240	262	260	252	267	272	254	275	301	301	179.2
25-May	277	312	325	262	334	314	30	160	261	231	3	31	115	4	5	35	68	120	126	129	159	143	138	141	121.3
26-May	131	135	141	139	138	133	138	130	123	124	122	119	138	61	77	105	91	118	158	167	161	141	136	135	135.0
27-May	134	131	118	122	116	107	120	116	119	153	176	179	168	170	173	172	185	198	190	188	177	164	161	160	162.1
28-May	143	110	136	134	135	135	137	137	134	132	221	240	237	245	253	247	250	264	256	274	293	312	305	299	226.8
29-May	296	253	235	154	133	120	129	224	238	183	242	251	249	254	251	245	235	235	223	230	235	312	341	345	242.4
30-May	22	21	332	325	158	188	129	141	121	129	121	121	57	346	57	301	305	315	330	335	8	81	49	261	342.5
31-May	288	344	165	241	271	200	133	121	117	116	36	34	141	132	159	210	164	151	132	133	138	337	318	323	156.3

128.5 114.8 113.3 118.9 119.5 116.2 117.1 121.1 121.8 120.8 143.9 154.8 156.6 165.1 175.1 182.7 176.9 164.4 155.1 151.9 147.5 136.3 134.9 133.2
 Diurnal Average

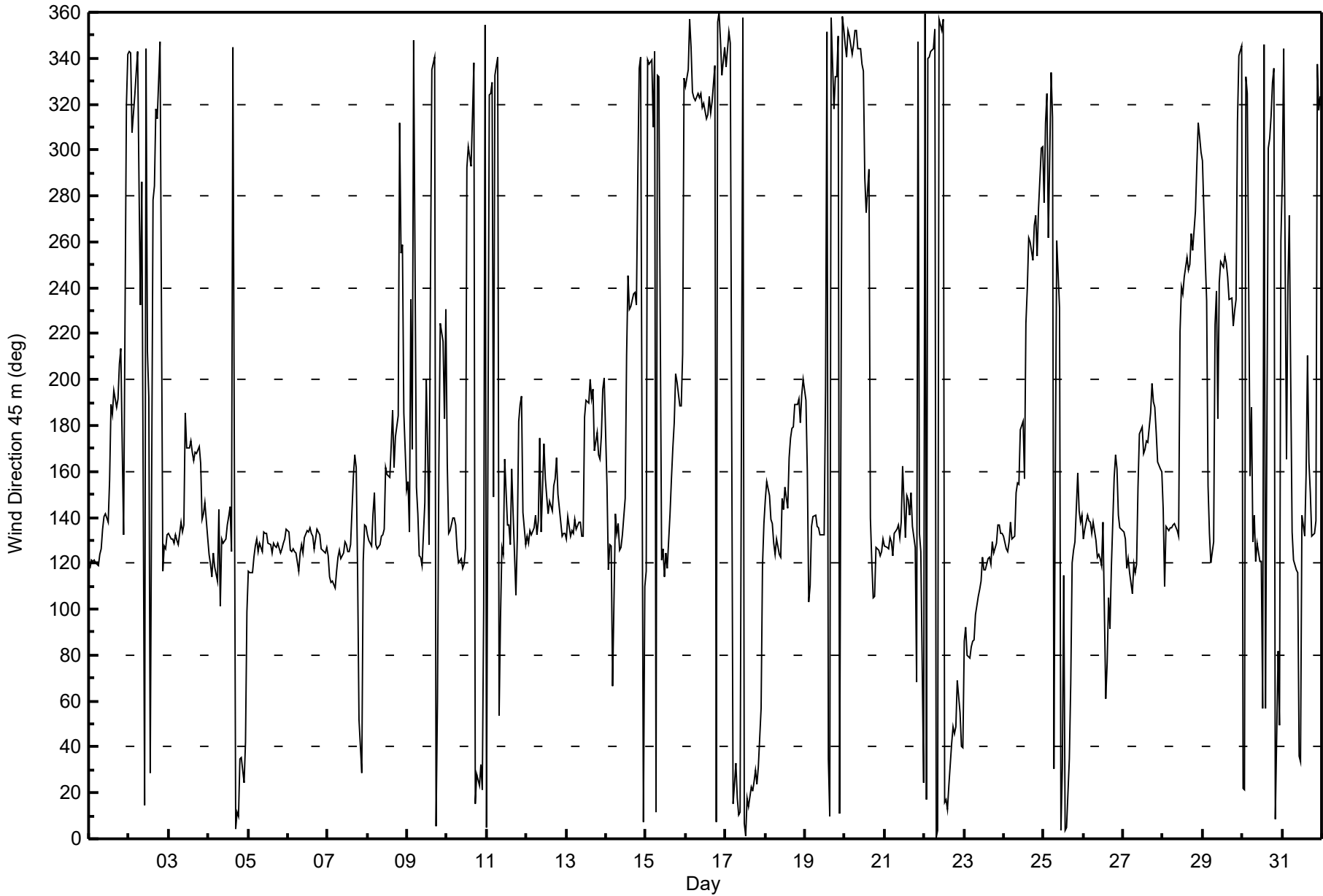
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction 45 m (WD45m) - deg
Lower Camp Met Tower - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0										Hours in Service: 744															
Maximum Value: 97 deg on May 9 06:00										Hours of Data: 744															
Minimum Value: 4 deg on May 18 21:00										Hours of Missing Data: 0															
Percentiles: P ₁ = 5 P ₁₀ = 8 Q ₁ = 10 Median = 14 Q ₃ = 24 P ₉₀ = 49 P ₉₉ = 86										Hours of Calibration: 0															
										Percent Operational Time: 100.0															
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	8	7	7	7	7	10	9	14	9	8	11	9	16	17	15	14	13	11	16	9	16	15	30	9	30
2-May	10	12	31	13	16	9	45	53	77	19	48	51	45	66	65	42	37	22	18	51	22	7	6	7	77
3-May	5	10	16	19	11	9	8	6	9	19	12	13	14	16	13	16	11	10	8	6	13	8	7	7	19
4-May	10	10	10	6	14	43	53	64	12	11	19	16	16	19	64	12	11	10	12	17	11	37	37	10	64
5-May	15	13	9	8	7	5	9	8	11	9	10	11	13	11	12	9	10	10	10	10	8	9	10	7	15
6-May	6	9	8	8	9	10	9	10	10	11	11	9	9	11	14	13	13	9	8	9	9	9	10	11	14
7-May	10	15	15	11	8	9	8	11	11	13	10	14	12	12	11	15	12	32	21	17	24	53	11	6	53
8-May	8	8	7	16	13	9	11	15	13	13	17	16	13	13	17	14	17	15	71	28	18	40	41	20	71
9-May	20	41	28	55	26	97	59	50	57	17	31	18	24	27	88	21	23	34	22	65	15	30	23	29	97
10-May	63	5	7	10	7	8	10	13	18	16	15	49	73	28	22	39	27	23	12	10	10	78	49	27	78
11-May	68	33	17	15	29	55	32	74	50	27	82	68	18	14	33	49	41	29	13	17	7	31	47	16	82
12-May	63	9	6	29	25	19	20	53	33	13	19	21	23	21	19	19	14	15	10	20	8	9	9	9	63
13-May	15	11	7	5	11	7	6	5	5	12	28	16	10	15	11	13	12	12	9	5	5	7	8	33	33
14-May	27	42	4	24	67	10	11	10	14	17	20	35	33	22	19	17	11	9	10	26	36	11	57	78	78
15-May	57	17	14	80	89	19	88	85	78	37	13	17	20	23	37	12	16	17	12	8	4	5	63	10	89
16-May	9	13	12	13	9	12	13	13	12	13	13	14	15	14	18	15	13	15	12	11	13	24	11	17	24
17-May	13	13	13	14	19	14	16	16	16	14	14	24	21	24	30	28	24	21	16	14	7	58	23	13	58
18-May	11	9	12	12	10	17	13	9	12	17	39	29	27	21	32	36	22	25	23	10	4	5	23	7	39
19-May	13	31	11	18	14	8	8	14	8	8	9	13	64	62	31	61	11	14	8	9	10	10	9	9	64
20-May	11	10	11	14	12	14	15	15	18	15	25	40	73	30	93	67	18	11	19	10	10	11	10	11	93
21-May	10	9	12	10	15	16	12	11	13	14	16	15	13	21	14	14	12	10	18	51	50	25	8	52	52
22-May	22	77	8	12	10	14	10	12	11	11	12	11	14	13	13	14	17	16	15	14	12	13	12	14	77
23-May	18	13	9	11	13	17	17	16	12	12	11	11	10	13	11	12	13	12	12	11	17	13	10	11	18
24-May	12	12	10	11	5	9	10	11	10	9	17	21	28	38	14	10	13	12	14	16	10	15	13	13	38
25-May	13	25	20	73	86	25	68	40	34	96	20	49	48	24	37	33	26	26	22	21	10	14	12	17	96
26-May	12	22	11	7	11	12	10	10	12	12	16	52	50	47	71	34	54	24	16	6	14	9	8	11	71
27-May	11	32	18	8	9	16	28	15	10	24	15	18	13	15	16	14	15	15	11	8	5	9	9	9	32
28-May	18	31	10	7	6	6	6	6	8	19	32	15	15	10	11	13	12	16	18	15	23	10	7	10	32
29-May	36	13	18	24	13	19	25	77	54	69	13	17	13	13	12	10	12	14	12	10	5	41	24	22	77
30-May	74	49	27	65	37	59	15	23	20	14	20	36	64	82	85	54	20	13	12	16	30	68	55	47	85
31-May	40	47	57	15	36	36	19	9	13	43	44	88	29	10	37	24	17	15	13	29	10	74	52	28	88
	74	77	57	80	89	97	88	85	78	96	82	88	73	82	93	67	54	34	71	65	50	78	63	78	
Diurnal Maximum																									





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction 100 m (WD100m) - deg
Lower Camp Met Tower - May 2023

Direction of Maximum Speed: 207 deg on May 19 00:00																				Hours in Service: 744					
Direction of Maximum Daily Speed Average: 130.7 deg on May 5																				Hours of Data: 744					
Direction of Minimum Speed: 88 deg on May 9 05:00										Direction of Minimum Daily Speed Average: 1.5 deg on May 25										Hours of Missing Data: 0					
Monthly Average Direction: 144.5 deg																				Percent Operational Time: 100.0					
Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	134	130	129	129	129	128	128	131	138	145	147	142	160	188	187	195	188	193	207	218	181	166	315	346	158.8
2-May	348	347	336	321	320	324	256	239	272	360	339	209	192	22	282	288	317	313	330	347	104	133	148	149	326.8
3-May	147	137	136	133	148	150	147	146	140	150	186	171	171	172	169	166	170	169	174	166	148	151	154	144	158.1
4-May	137	130	129	132	131	124	145	131	130	129	130	126	132	139	119	346	7	17	16	41	50	57	82	115	92.1
5-May	130	129	125	130	136	135	133	130	128	136	135	136	130	129	126	129	129	128	129	126	129	131	133	135	130.7
6-May	136	132	129	133	133	134	127	129	129	126	131	135	135	136	134	132	127	136	135	135	131	132	133	133	132.3
7-May	130	125	126	128	126	129	126	128	123	127	130	129	126	127	131	158	167	154	122	91	91	125	134	136	131.0
8-May	136	135	134	143	151	134	132	131	134	133	134	161	159	159	172	186	162	175	169	307	257	250	217	158	151.8
9-May	159	150	209	201	88	144	162	165	138	129	156	200	171	131	275	328	343	3	56	135	223	224	199	253	195.2
10-May	233	175	172	173	172	187	174	162	126	125	124	119	316	304	293	313	338	17	28	27	38	50	98	38	28.5
11-May	51	40	357	5	169	71	312	66	122	122	66	140	136	136	134	155	135	104	131	180	189	219	171	138	144.4
12-May	161	146	138	134	144	152	138	134	166	145	172	160	149	143	150	144	154	160	167	148	139	138	142	145	148.1
13-May	136	141	141	147	146	156	151	150	143	158	157	187	192	192	200	193	197	177	184	179	181	196	206	205	174.9
14-May	204	203	164	141	122	183	187	186	174	136	140	157	211	241	230	230	235	235	231	282	339	358	31	96	214.2
15-May	124	345	1	126	259	345	122	143	164	110	122	105	113	117	145	158	172	182	202	201	197	199	219	338	176.9
16-May	337	340	1	347	327	324	322	326	324	326	318	320	314	317	324	317	323	337	8	357	3	0	345	346	332.2
17-May	342	349	355	349	13	20	32	17	11	12	358	8	2	17	14	22	20	23	32	27	40	63	121	138	16.9
18-May	146	153	152	154	160	147	136	142	134	131	155	147	151	149	165	175	183	180	190	191	198	196	201	207	168.1
19-May	201	183	137	139	151	152	152	149	147	143	144	144	199	329	14	335	2	330	338	346	1	14	5	1	116.5
20-May	359	350	358	358	353	355	355	355	349	348	341	337	318	282	292	133	120	108	112	132	131	130	130	135	62.0
21-May	134	132	130	135	135	133	139	141	136	134	138	165	135	155	151	146	155	141	140	127	23	111	124	103	136.1
22-May	25	50	349	351	356	356	358	3	2	359	355	0	16	18	15	25	43	49	47	50	69	60	48	52	23.4
23-May	87	97	88	88	90	92	93	102	106	111	114	123	119	121	124	124	122	130	126	131	138	137	135	135	117.9
24-May	134	129	128	131	135	133	134	149	154	152	182	179	164	225	238	261	258	250	266	269	253	271	297	298	179.9
25-May	282	287	302	290	325	296	258	219	263	288	358	30	93	5	5	38	65	117	121	132	159	150	149	148	156.5
26-May	141	136	138	141	143	156	156	145	125	122	125	117	142	56	75	113	96	127	160	168	165	161	163	160	146.4
27-May	160	150	126	131	128	128	139	131	130	163	177	178	167	170	173	173	185	198	191	192	188	173	170	171	166.9
28-May	156	133	148	146	147	142	150	148	146	146	221	238	235	243	251	245	249	263	256	273	292	310	304	299	232.5
29-May	297	304	263	209	186	182	192	241	232	206	242	249	246	252	248	242	233	234	224	231	245	314	7	38	245.8
30-May	58	68	319	270	221	131	171	193	126	149	136	139	53	356	144	300	306	315	331	336	20	60	60	258	344.4
31-May	275	312	163	262	267	243	194	138	149	124	22	12	135	128	159	208	166	152	132	129	145	343	347	325	177.3
139.3	125.5	121.9	129.4	132.5	130.5	132.3	130.4	126.6	126.4	148.4	156.0	156.4	166.3	176.0	183.5	177.8	164.0	154.4	153.2	148.7	146.3	145.1	142.4		
Diurnal Average																									
All monthly, daily, and diurnal averages have been calculated using vector methods																									



Wood Buffalo Environmental Association

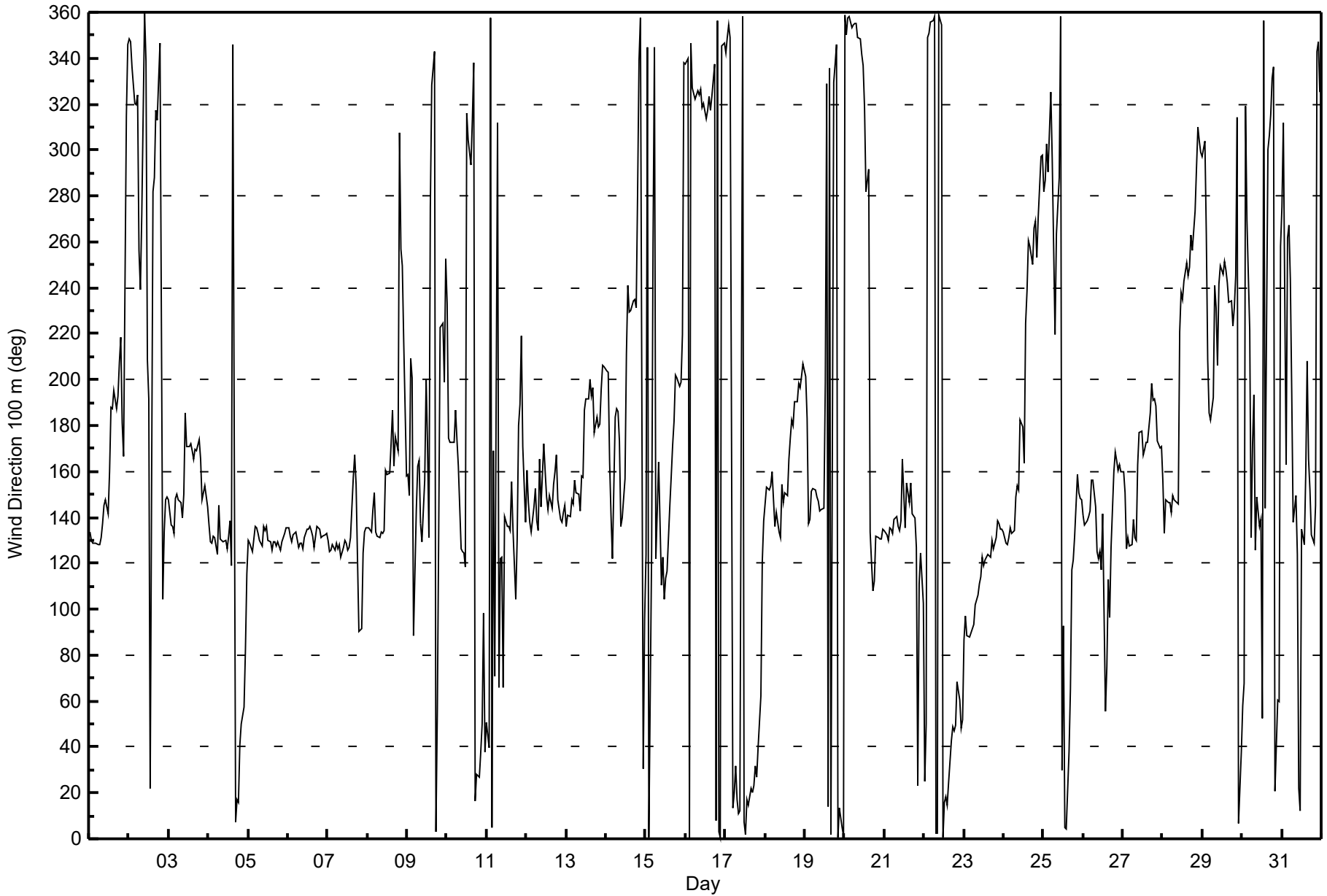
Summary of Hour Standard Deviations

Wind Direction 100 m (WD100m) - deg

Lower Camp Met Tower - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 103 deg on May 20 15:00			Hours of Data:	744
Minimum Value: 1 deg on May 15 21:00			Hours of Missing Data:	0
			Hours of Calibration:	0
			Percent Operational Time:	100.0
Percentiles: P ₁ = 3 P ₁₀ = 5 Q ₁ = 7 Median = 11 Q ₃ = 19 P ₉₀ = 37 P ₉₉ = 80				

Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	5	3	3	3	3	4	4	8	9	11	11	10	15	16	14	14	12	11	14	6	8	11	56	8	56
2-May	6	9	19	8	8	10	20	20	53	16	38	71	45	73	64	35	27	18	14	40	8	10	8	6	73
3-May	4	5	5	5	9	7	5	7	11	22	10	12	13	15	12	14	11	10	7	4	10	7	4	10	22
4-May	5	3	4	2	5	17	23	21	8	8	13	13	16	19	62	12	8	8	9	13	10	15	17	7	62
5-May	6	5	5	5	3	3	4	5	6	7	7	9	11	7	8	6	7	8	7	7	5	6	6	5	11
6-May	4	6	6	6	6	6	6	7	6	8	8	6	7	9	11	11	9	7	6	6	5	5	4	6	11
7-May	6	9	9	6	5	6	5	6	7	9	8	10	9	8	7	14	10	30	17	7	16	15	8	4	30
8-May	4	6	5	10	10	5	6	6	10	7	15	15	11	11	15	13	16	13	75	24	11	25	20	19	75
9-May	16	27	10	27	83	88	15	39	62	13	29	15	20	39	69	18	19	35	17	55	8	18	18	17	88
10-May	36	16	12	9	10	10	15	28	18	15	11	49	55	24	18	38	24	20	9	7	5	36	55	42	55
11-May	38	41	25	12	24	54	13	54	28	22	96	52	16	11	30	48	35	24	6	18	2	13	44	13	96
12-May	13	9	7	4	16	13	8	25	27	12	16	20	21	20	17	17	13	14	8	16	5	5	7	7	27
13-May	5	5	5	6	5	6	5	8	5	14	26	11	9	13	10	12	11	10	6	4	4	6	3	8	26
14-May	7	24	11	8	68	22	12	12	29	17	21	29	31	17	18	14	10	8	8	26	37	14	34	48	68
15-May	21	20	42	22	46	52	31	10	63	30	8	11	14	18	34	10	16	14	12	5	1	2	53	6	63
16-May	6	10	8	9	7	10	9	10	7	9	10	12	11	12	15	12	10	11	9	7	9	11	9	8	15
17-May	9	10	8	9	13	10	10	10	11	9	10	17	16	17	21	20	18	15	13	11	6	16	8	7	21
18-May	8	7	6	8	8	12	11	11	11	15	35	24	24	20	29	37	22	25	21	9	3	4	10	2	37
19-May	6	17	12	12	12	8	6	11	9	8	8	15	55	62	60	95	12	15	4	6	8	7	6	5	95
20-May	7	6	6	7	9	8	9	12	13	13	19	28	72	28	103	68	12	9	13	4	5	5	5	5	103
21-May	5	3	3	3	4	4	6	5	10	8	13	13	12	16	11	12	9	10	9	53	49	12	5	27	53
22-May	20	31	5	7	6	8	6	7	7	7	7	8	10	10	8	10	13	11	10	10	9	9	7	11	31
23-May	14	10	7	8	9	11	12	11	8	9	8	8	8	9	8	8	8	7	7	6	13	8	5	6	14
24-May	6	8	6	6	3	4	4	9	7	10	17	20	26	35	11	7	10	7	13	12	6	11	10	9	35
25-May	9	9	15	14	12	11	33	39	28	82	11	44	52	21	28	29	24	20	20	18	8	10	10	9	82
26-May	8	8	4	5	5	6	8	14	8	8	19	36	40	51	59	32	57	21	15	4	6	6	6	7	59
27-May	6	11	12	13	11	13	11	10	10	20	13	17	14	13	14	14	13	15	9	7	2	9	6	7	20
28-May	10	22	12	9	9	6	7	9	10	21	29	12	12	8	7	11	9	14	17	13	23	6	4	4	29
29-May	10	11	9	24	12	80	70	60	37	60	11	13	10	11	9	8	10	11	11	9	8	38	32	19	80
30-May	19	31	27	25	41	11	22	24	18	19	19	37	55	80	99	51	18	10	8	9	10	52	39	68	99
31-May	19	32	70	13	14	33	24	20	21	55	60	71	28	8	36	22	15	14	6	17	10	72	65	23	72
Diurnal Maximum																									





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 163 m (WD163m) - deg

Lower Camp Met Tower - May 2023

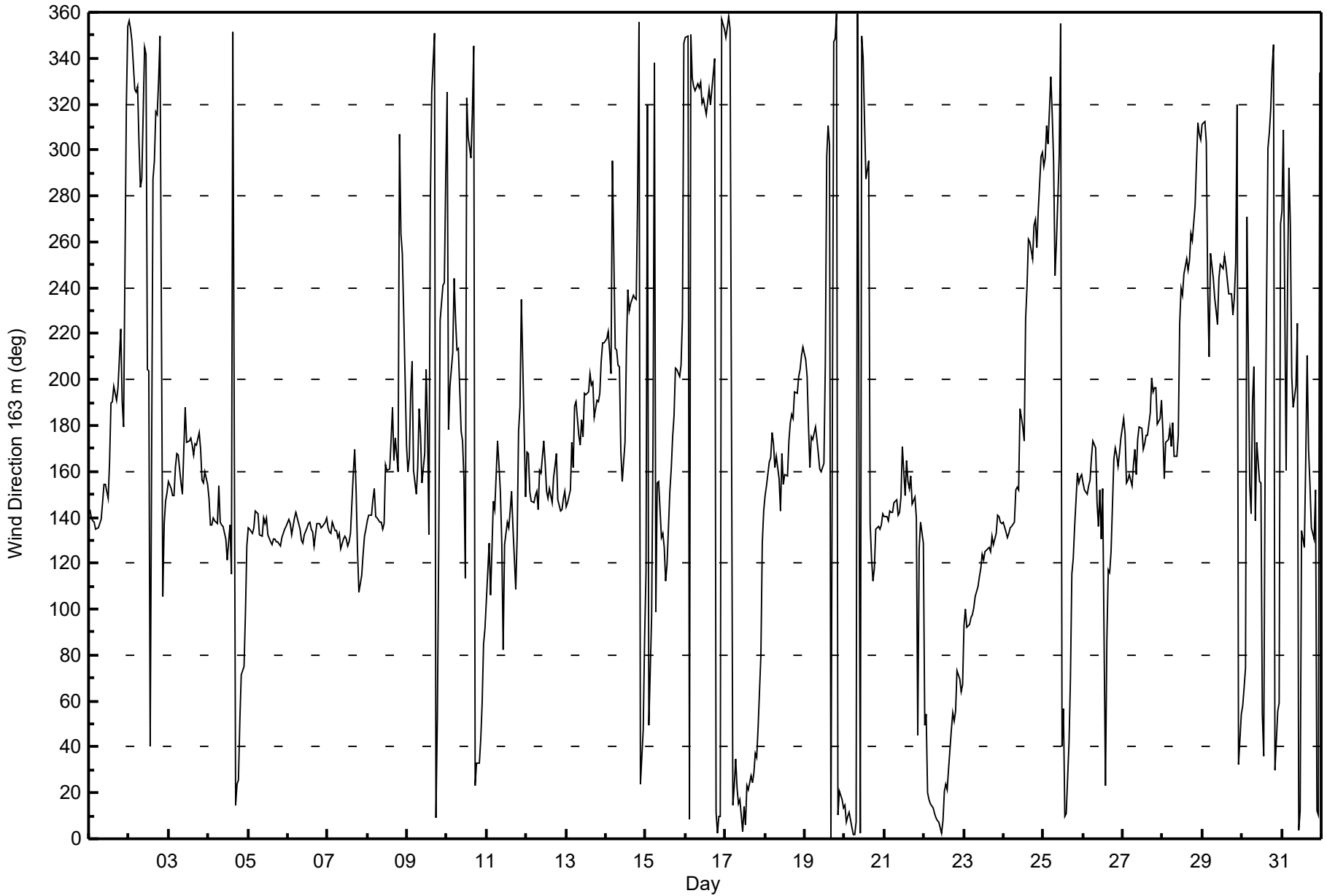
Direction of Maximum Speed: 214 deg on May 19 00:00																					Hours in Service: 744				
Direction of Maximum Daily Speed Average: 133.9 deg on May 5																					Hours of Data: 744				
Direction of Minimum Speed: 311 deg on May 19 15:00										Direction of Minimum Daily Speed Average: 0.8 deg on May 25											Hours of Missing Data: 0				
Monthly Average Direction: 151.7 deg																					Percent Operational Time: 100.0				
Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	143	140	139	138	135	136	138	139	146	154	154	148	164	190	190	197	191	197	210	222	191	179	320	354	164.8
2-May	356	353	347	326	325	328	303	283	287	345	342	205	204	40	287	295	317	316	330	349	105	137	147	151	335.1
3-May	155	153	150	150	162	168	167	155	150	170	188	173	173	174	172	167	172	171	177	170	156	155	160	155	164.9
4-May	148	136	137	140	139	137	154	138	137	136	131	121	129	136	115	351	15	24	26	51	72	75	98	127	104.1
5-May	136	135	133	135	143	142	142	132	132	140	137	140	132	130	128	130	131	129	129	127	131	133	135	136	133.9
6-May	139	138	132	136	140	142	137	135	130	129	132	135	137	138	135	134	127	138	137	137	135	136	138	140	135.8
7-May	136	133	133	138	134	134	131	133	126	130	132	131	127	129	133	159	170	152	126	107	115	124	132	135	134.0
8-May	138	141	141	148	153	140	140	138	138	135	138	163	160	161	174	188	165	175	160	307	264	255	229	171	157.0
9-May	160	166	194	208	161	150	162	187	177	155	168	204	179	132	277	325	351	9	53	128	226	241	243	288	205.3
10-May	325	178	197	212	244	226	213	213	178	173	157	113	323	306	296	316	345	23	33	33	43	59	85	91	17.2
11-May	104	129	106	127	147	143	173	163	152	129	82	128	138	136	143	151	135	109	132	178	188	235	207	149	153.0
12-May	168	168	151	147	146	150	151	143	161	159	173	164	151	148	152	146	157	163	168	148	143	143	149	152	153.1
13-May	145	147	152	173	161	188	190	176	172	183	175	194	194	195	203	197	199	184	191	190	194	208	216	216	188.7
14-May	218	221	212	203	295	213	213	206	205	169	156	173	213	239	230	233	237	235	235	279	355	24	47	88	225.3
15-May	117	320	49	97	174	338	99	155	156	131	133	127	112	120	151	161	175	184	205	204	201	206	227	346	178.4
16-May	349	349	9	350	331	328	326	329	327	329	321	322	316	321	327	320	326	340	12	3	10	10	357	353	337.1
17-May	349	353	358	353	15	23	35	22	15	17	3	14	6	23	21	27	24	29	37	35	48	80	128	143	22.1
18-May	150	154	164	166	177	172	162	167	157	143	168	154	158	158	174	181	185	183	194	194	201	205	210	214	178.5
19-May	209	202	180	162	175	174	179	174	168	161	160	163	207	297	311	302	0	347	349	359	11	21	17	13	155.1
20-May	14	8	10	12	5	2	2	7	360	3	350	340	313	288	295	138	122	112	118	135	136	135	136	141	64.7
21-May	140	140	138	143	142	142	146	148	141	142	149	171	150	165	155	152	158	146	149	140	45	126	138	129	144.3
22-May	49	54	20	17	15	13	11	9	8	7	2	8	21	24	22	30	47	55	51	56	73	70	64	67	33.1
23-May	93	100	92	93	96	98	100	106	110	114	118	124	122	125	126	127	125	132	128	133	141	141	138	137	121.0
24-May	138	133	131	133	136	136	138	152	153	152	187	180	173	226	240	261	260	253	267	270	257	273	297	299	184.5
25-May	293	297	311	302	332	316	294	246	260	298	355	40	57	10	11	42	70	116	122	136	159	155	158	159	210.1
26-May	155	152	150	153	156	166	173	171	146	136	152	131	153	23	86	117	116	125	165	170	167	163	168	174	158.8
27-May	183	176	155	156	158	154	163	170	159	174	180	179	169	172	175	175	186	201	195	197	196	180	183	191	177.5
28-May	177	157	173	174	179	171	181	166	166	176	224	240	237	246	252	248	252	264	260	276	294	312	307	305	239.5
29-May	311	313	303	240	210	255	244	236	230	224	244	250	248	254	250	244	237	237	229	236	252	320	32	54	252.9
30-May	58	66	75	271	155	141	190	205	139	173	155	155	54	36	166	301	307	318	335	346	30	56	59	268	9.3
31-May	274	309	161	241	292	267	202	188	197	225	4	12	134	127	165	210	169	155	135	130	152	12	11	334	176.3
146.3	137.4	131.6	141.4	143.3	144.7	148.4	144.7	140.3	139.3	157.2	160.9	159.9	169.3	178.6	185.8	179.7	164.6	154.3	152.9	150.5	147.9	149.3	146.4		
Diurnal Average																									
All monthly, daily, and diurnal averages have been calculated using vector methods																									



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction 163 m (WD163m) - deg
Lower Camp Met Tower - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 89 deg on May 31 10:00																	Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0								
Minimum Value: 1 deg on May 19 00:00																									
Percentiles: P ₁ = 2 P ₁₀ = 4 Q ₁ = 6 Median = 10 Q ₃ = 16 P ₉₀ = 32 P ₉₉ = 80																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	5	4	4	5	3	3	6	7	12	12	10	11	16	14	13	13	11	10	14	7	5	7	52	6	52
2-May	4	7	14	5	5	7	14	38	34	24	34	67	60	85	65	32	20	14	12	40	11	11	4	6	85
3-May	5	5	4	4	10	5	5	8	15	25	10	11	12	14	10	13	11	8	7	3	7	4	4	7	25
4-May	6	3	3	3	2	8	15	10	8	9	11	13	17	16	58	12	8	8	14	9	9	11	5	5	58
5-May	4	3	4	4	4	4	4	5	5	9	9	9	10	7	6	4	5	7	7	7	3	4	5	4	10
6-May	4	5	4	5	6	6	6	7	6	6	8	6	6	8	10	9	8	6	5	5	4	4	4	6	10
7-May	5	7	6	5	4	4	4	7	6	8	8	10	8	6	6	13	9	26	14	7	11	8	8	4	26
8-May	5	5	5	8	7	6	7	7	11	9	15	14	9	9	14	13	14	10	77	22	12	16	9	17	77
9-May	10	17	11	13	34	23	10	13	35	20	28	14	18	36	72	16	21	33	19	44	8	11	14	20	72
10-May	40	16	6	11	5	4	7	10	19	15	13	64	44	24	18	33	22	19	8	4	2	13	15	21	64
11-May	33	12	39	16	8	13	37	20	13	31	85	57	17	11	27	52	37	21	4	21	3	14	40	13	85
12-May	12	6	8	5	4	7	8	13	21	12	13	19	19	20	16	16	16	13	7	13	5	5	7	6	21
13-May	7	5	8	10	9	11	7	8	5	10	18	10	9	12	9	11	10	8	4	2	4	4	2	3	18
14-May	3	7	11	53	86	17	7	11	21	23	22	24	26	17	17	12	8	8	7	25	44	11	14	23	86
15-May	13	75	32	12	51	32	56	40	16	22	9	18	12	16	31	10	16	13	11	3	2	1	51	5	75
16-May	5	9	6	11	6	9	8	8	5	7	9	11	10	12	13	11	9	10	8	7	9	8	10	6	13
17-May	7	9	8	7	11	9	8	8	10	9	9	14	13	18	19	17	16	13	12	10	7	18	7	6	19
18-May	6	4	4	3	7	9	13	12	13	19	39	24	23	19	26	33	23	21	21	8	3	4	6	1	39
19-May	4	9	12	11	11	7	7	9	10	10	9	17	39	67	75	65	12	6	4	5	8	6	5	4	75
20-May	4	6	5	6	9	6	8	10	12	16	18	22	78	29	89	54	10	7	12	4	4	5	4	5	89
21-May	4	4	4	3	4	4	5	5	9	9	14	12	14	12	11	11	8	10	10	32	67	7	5	12	67
22-May	49	10	4	6	5	5	6	7	6	8	8	9	9	9	7	10	12	9	9	10	6	6	5	7	49
23-May	13	10	8	7	8	10	10	9	7	8	7	7	7	8	7	7	8	6	6	5	12	7	5	5	13
24-May	5	6	5	6	4	4	5	7	5	9	17	19	23	32	9	5	8	5	10	10	4	9	8	5	32
25-May	6	5	10	9	6	6	16	31	18	74	12	34	57	20	30	29	19	17	16	16	6	7	6	4	74
26-May	7	10	8	8	6	5	7	14	15	9	20	31	32	73	73	28	51	19	13	3	3	3	2	8	73
27-May	4	9	10	9	6	8	10	13	11	14	12	16	14	13	14	13	13	14	10	6	2	9	4	7	16
28-May	9	14	12	10	9	7	9	12	13	26	24	10	11	7	7	10	8	13	15	12	22	5	4	4	26
29-May	6	6	6	20	11	21	30	28	23	38	10	12	8	10	7	6	10	10	10	10	9	42	28	5	42
30-May	6	7	61	47	66	21	13	15	18	11	21	44	55	87	87	48	17	9	8	15	8	41	27	80	87
31-May	15	26	58	28	17	45	23	15	14	89	79	64	29	7	35	18	15	13	8	14	9	74	58	22	89
																	Diurnal Maximum								
																	49 75 61 53 86 45 56 40 35 89 85 67 78 87 89 65 51 33 77 44 67 74 58 80								





Maximum Value: 0.5 km/h on May 2 14:00 Maximum Daily Average: -0.1 km/h on May 10																						Hours in Service: 744 Hours of Data: 744				
Minimum Value: -2.0 km/h on May 3 13:00 Minimum Daily Average: -1.0 km/h on May 6 Maximum Diurnal Average: -0.2 km/h at hour 2 Minimum Diurnal Average: -0.8 km/h at hour 17 Monthly Average: -0.48 km/h Percentiles: $P_1 = -1.6$ $P_{10} = -1.1$ $Q_1 = -0.7$ Median = -0.4 $Q_3 = -0.1$ $P_{90} = 0.0$ $P_{99} = 0.2$																						Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	-0.6	-0.4	-0.4	-0.3	-0.4	-0.3	-0.4	-0.3	-0.6	-1.2	-1.1	-1.5	-1.5	-1.5	-1.5	-1.4	-1.4	-1.4	-1.2	-0.6	-0.1	0.1	-0.2	-0.1	-0.8	0.1
2-May	0.1	-0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	-0.4	-0.1	-0.4	-0.7	0.5	-0.4	-0.2	-0.3	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.5
3-May	0.0	-0.1	-0.1	-0.1	-0.5	-0.5	-0.5	-0.9	-0.8	-0.8	-1.6	-2.0	-2.0	-1.6	-1.5	-1.3	-1.6	-1.5	-1.2	-0.6	-0.8	-1.0	-0.6	-1.0	0.0	0.0
4-May	0.1	-0.2	0.0	-0.5	-0.2	-0.2	-0.1	0.0	0.0	-0.5	-0.4	-0.2	-0.5	-0.8	-0.3	-0.3	0.1	0.2	0.0	0.1	0.2	0.0	-0.1	0.0	-0.1	0.2
5-May	0.1	0.0	-0.3	-0.5	-0.4	-0.4	-0.4	-0.7	-0.6	-0.9	-0.7	-1.2	-1.1	-1.2	-0.8	-0.9	-1.2	-1.4	-1.1	-0.8	-0.8	-0.9	-0.9	-1.1	-0.8	0.1
6-May	-0.9	-0.9	-0.8	-0.8	-0.6	-0.6	-0.8	-0.7	-0.8	-0.8	-1.2	-1.2	-1.4	-1.5	-1.4	-1.3	-1.0	-1.6	-1.4	-1.1	-1.1	-0.7	-0.4	-0.4	-1.0	-0.4
7-May	-0.4	-0.4	-0.4	-0.6	-0.5	-0.5	-0.9	-0.5	-0.9	-0.9	-1.1	-1.1	-0.7	-0.7	-0.8	-1.4	-1.3	-0.5	-0.3	0.1	-0.1	-0.1	-0.8	-1.3	-0.7	0.1
8-May	-0.7	-0.7	-0.9	-1.0	-1.1	-0.5	-0.7	-0.2	-0.5	-0.6	-0.6	-1.3	-1.5	-1.1	-1.0	-1.4	-1.1	-0.7	-0.5	-0.1	-0.3	-0.1	0.0	-0.2	-0.7	0.0
9-May	-0.3	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0	-0.3	-0.5	-0.4	-0.2	-0.2	-0.3	-0.4	-0.1	0.0	-0.1	-0.1	-0.2	-0.1	0.0	-0.2	0.0
10-May	0.1	0.1	0.0	0.1	0.0	0.0	-0.2	-0.1	-0.1	0.1	-0.2	0.3	-0.2	-0.7	-0.4	0.0	-0.5	-0.3	-0.3	-0.1	-0.1	0.1	0.1	0.1	-0.1	0.3
11-May	0.0	-0.1	0.0	0.0	0.0	-0.1	-0.1	-0.2	-0.1	-0.3	0.1	0.0	-0.5	-0.5	-0.3	-0.3	-0.6	-0.2	-0.5	-0.7	-0.1	0.0	0.1	0.0	-0.2	0.1
12-May	0.0	0.0	-0.1	0.0	-0.1	-0.3	-0.4	-0.4	-0.4	-0.3	-0.6	-0.9	-1.1	-1.1	-1.2	-0.9	-1.0	-0.8	-0.9	-0.7	-0.8	-0.4	-0.7	-0.7	-0.6	0.0
13-May	-0.5	-0.4	-0.3	-0.6	-0.7	-0.5	-0.6	-0.7	-0.8	-0.6	-0.2	-0.7	-1.3	-0.9	-1.1	-1.3	-1.1	-0.5	-0.7	-0.8	-0.7	-0.9	-0.7	0.0	-0.7	0.0
14-May	0.2	0.1	0.1	0.0	0.0	0.0	0.1	-0.3	-0.5	-0.2	-0.2	-0.3	-0.8	-0.7	-0.8	-0.8	-1.0	-1.0	-0.6	-0.4	-0.2	0.0	0.0	0.0	-0.3	0.2
15-May	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.3	-0.2	-0.2	-0.3	-0.2	-0.7	-1.2	-1.1	-1.0	-0.9	-1.0	-1.1	-1.0	-0.5	-0.2	-0.4	0.3
16-May	-0.2	-0.3	-0.6	-0.2	-0.3	-0.5	-0.4	-0.6	-0.4	-0.5	-0.5	-0.6	-0.8	-1.0	-0.5	-0.4	-0.5	-0.5	-0.4	-0.6	-0.4	0.0	-0.3	-0.1	-0.4	0.0
17-May	-0.3	-0.2	-0.3	-0.5	-0.6	-0.4	-0.5	-0.4	-0.3	-0.6	-0.8	-0.5	-0.4	-0.6	-0.3	-0.3	-0.7	-0.5	-0.4	-0.4	-0.1	0.0	0.0	-0.4	-0.4	0.0
18-May	-0.9	-0.3	-0.6	-0.6	-0.5	-0.5	-0.7	-0.8	-0.3	-0.4	-0.4	-0.5	-0.4	-0.6	-0.9	-0.4	-0.9	-0.7	-0.6	-0.7	0.0	0.0	-0.2	-0.9	-0.5	0.0
19-May	-0.8	-0.1	-0.6	-0.3	-0.6	-0.7	-1.0	-0.6	-1.0	-0.6	-0.6	-0.3	0.0	0.1	-0.1	0.0	-0.2	-0.2	0.0	-0.1	-0.1	-0.4	-0.3	-0.4	-0.4	0.1
20-May	-0.2	-0.1	-0.3	-0.2	-0.2	-0.3	-0.2	-0.3	-0.3	-0.3	-0.1	0.2	0.4	-0.4	-0.2	0.1	-0.4	-0.4	-0.2	-0.5	-0.5	-0.5	-0.8	-0.4	-0.3	0.4
21-May	-0.5	-0.7	-0.3	-0.3	-0.3	-0.3	-0.4	-0.5	-0.6	-0.5	-0.4	-0.6	-0.1	-0.7	-0.6	-0.5	-0.6	-0.5	-0.4	0.1	0.1	0.1	0.1	0.0	-0.3	0.1
22-May	-0.2	0.0	-0.1	-0.2	-0.1	-0.3	-0.6	-0.4	-0.7	-0.8	-0.7	-1.0	-0.5	-0.7	-0.4	-0.5	-0.6	-0.6	-0.5	-0.6	-0.4	-0.5	-0.2	-0.3	-0.5	0.0
23-May	-0.4	-0.8	-0.7	-0.6	-0.5	-0.3	-0.5	-0.6	-0.6	-0.9	-1.1	-1.0	-1.1	-0.8	-1.2	-0.9	-0.6	-0.9	-0.8	-1.0	-1.1	-0.7	-0.8	-0.6	-0.8	-0.3
24-May	-0.8	-0.7	-0.7	-0.7	-1.5	-0.8	-0.3	-1.2	-1.3	-0.7	-0.6	-0.6	-0.3	-0.8	-0.9	-0.8	-0.8	-0.8	-0.6	-0.5	-0.5	-0.5	-0.4	-0.3	-0.7	-0.3
25-May	-0.3	-0.1	-0.1	0.0	0.0	-0.1	-0.1	0.1	-0.2	0.0	-0.1	-0.4	-0.1	-0.4	-0.2	-0.2	-0.3	-0.2	-0.2	-0.2	-0.4	-0.4	-0.5	-0.7	-0.2	0.1
26-May	-0.6	-0.3	-0.7	-0.8	-0.3	-0.1	-0.9	-0.5	-0.2	-0.2	0.2	-0.1	-0.1	-0.2	-0.4	-0.3	-0.2	-0.3	-0.4	-0.7	-0.5	-0.2	-0.2	-0.2	-0.3	0.2
27-May	-0.1	0.0	-0.5	-0.6	-0.6	-0.4	-0.3	-0.6	-0.7	-0.7	-1.2	-1.3	-1.5	-1.7	-1.4	-1.1	-1.2	-1.0	-1.2	-0.9	-0.6	-0.2	-0.7	-0.3	-0.8	0.0
28-May	-0.4	-0.3	-0.5	-0.6	-1.0	-1.0	-1.2	-1.4	-0.9	-0.5	-1.1	-1.3	-1.2	-1.8	-1.1	-1.0	-1.4	-1.1	-1.2	-0.9	-0.5	-0.9	-0.3	-0.3	-0.9	-0.3
29-May	-0.1	-0.2	0.0	0.2	-0.1	-0.1	-0.2	0.0	-0.1	-0.4	-1.1	-1.0	-1.0	-1.1	-1.3	-1.3	-1.3	-0.9	-0.7	-0.6	-0.3	-0.3	-0.2	-0.1	-0.5	0.2
30-May	0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.4	0.3	-0.1	-0.1	0.1	0.3	-0.3	-0.7	-0.7	-0.2	-0.1	0.0	-0.1	-0.1	-0.3	-0.1	0.3
31-May	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.5	0.1	-0.2	0.0	-0.2	-0.7	-0.6	-0.2	-0.5	-0.7	-0.4	-0.3	-0.1	-0.7	0.0	-0.3	-0.3	-0.3	0.1
																								Diurnal Average		
																								Diurnal Maximum		



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Vertical Wind Speed 20 m (VW20m) - km/h
Lower Camp Met Tower - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0																				Hours in Service: 744					
Maximum Value: 4.9 km/h on May 24 07:00																				Hours of Data: 744					
Minimum Value: 0.1 km/h on May 30 06:00																				Hours of Missing Data: 0					
Percentiles: P ₁ = 0.2 P ₁₀ = 0.6 Q ₁ = 1.2 Median = 1.8 Q ₃ = 2.6 P ₉₀ = 3.5 P ₉₉ = 4.4																				Hours of Calibration: 0					
																				Percent Operational Time: 100.0					
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	2.0	1.9	1.6	1.3	1.5	1.7	2.3	2.2	2.2	2.2	2.5	2.7	2.6	2.5	2.6	2.4	2.2	1.9	1.7	0.8	0.7	0.8	1.5	2.3	2.7
2-May	2.3	1.8	0.8	0.4	0.3	0.3	0.3	0.5	1.2	1.6	2.1	1.9	1.8	2.0	2.1	2.1	2.1	2.0	1.4	0.4	0.5	0.4	0.4	0.4	2.3
3-May	1.0	1.4	1.7	1.2	1.1	2.1	1.8	2.1	2.2	2.5	2.5	2.9	2.9	2.8	2.5	2.5	2.4	2.3	1.8	1.3	1.3	1.4	1.5	1.2	2.9
4-May	0.9	1.5	1.2	2.0	1.4	0.9	0.5	1.0	2.0	2.2	2.0	1.8	1.8	1.8	2.0	2.4	3.2	3.2	3.0	2.5	1.8	0.9	0.6	0.5	3.2
5-May	0.9	1.4	2.2	2.4	2.4	2.8	2.6	3.6	3.1	3.1	3.3	4.1	3.9	4.1	4.3	4.5	4.2	4.2	4.0	3.7	3.3	4.0	3.5	3.8	4.5
6-May	3.8	3.6	3.0	2.7	2.8	2.7	2.9	3.0	3.1	3.7	3.8	3.6	3.7	3.2	3.5	3.6	3.8	3.5	3.7	3.9	3.3	2.9	2.1	2.1	3.9
7-May	2.1	2.0	1.8	2.1	2.0	2.1	3.0	3.1	3.3	3.4	3.7	3.8	4.2	4.2	4.0	3.3	1.9	1.8	1.5	0.6	0.7	1.6	2.5	3.4	4.2
8-May	3.5	3.5	3.7	3.1	2.0	2.8	3.2	2.7	2.5	2.6	2.7	2.3	2.3	2.3	2.1	2.2	2.0	1.3	1.7	1.7	1.5	1.0	0.7	0.6	3.7
9-May	0.8	0.5	0.6	0.6	0.3	0.3	0.4	0.9	1.0	1.7	1.9	2.0	1.9	2.3	2.0	2.5	2.0	1.3	1.0	0.8	1.1	0.9	0.6	0.2	2.5
10-May	0.4	0.8	0.6	0.6	0.6	0.9	1.1	1.4	1.5	1.8	1.8	1.7	2.0	2.9	2.6	2.0	2.1	2.3	2.4	1.7	1.3	0.7	0.5	0.8	2.9
11-May	0.3	0.3	0.2	0.2	0.3	0.5	0.7	0.9	1.2	1.7	1.5	1.9	2.1	1.9	2.1	1.8	2.0	2.0	1.6	0.9	0.6	0.6	0.5	0.5	2.1
12-May	0.3	0.4	0.6	0.7	0.8	1.1	1.1	1.2	1.1	2.1	2.4	2.5	2.8	2.8	2.6	2.9	2.1	1.7	1.5	1.3	1.1	2.0	2.1	2.4	2.9
13-May	2.0	1.1	1.1	1.5	1.7	2.1	1.6	1.7	1.5	1.6	1.5	1.7	1.9	2.1	2.2	2.2	2.2	1.5	1.2	1.2	1.1	1.2	1.6	1.0	2.2
14-May	0.9	0.5	0.8	0.7	0.5	0.8	0.8	1.5	1.3	1.4	1.9	2.1	1.8	2.3	2.1	2.3	2.4	2.5	2.0	1.5	1.4	0.8	0.7	0.5	2.5
15-May	0.8	0.5	0.3	0.2	0.2	0.2	0.2	0.5	1.0	1.4	1.8	1.5	1.6	1.8	2.3	2.3	2.2	2.0	1.8	1.5	1.0	1.1	1.4	1.5	2.3
16-May	1.0	2.5	2.6	1.6	2.4	3.8	3.6	3.6	4.4	4.1	4.1	4.4	3.9	3.9	4.5	3.5	3.6	4.1	3.8	3.0	2.6	1.5	1.3	1.0	4.5
17-May	1.7	2.0	2.6	3.4	2.8	2.7	3.3	3.5	3.2	3.5	3.8	3.3	3.1	3.1	2.9	3.0	2.7	2.7	2.6	1.8	0.9	0.5	0.6	1.8	3.8
18-May	1.9	2.0	1.6	1.7	1.4	2.0	2.0	2.1	2.1	2.3	2.2	2.3	2.3	2.4	2.4	2.1	1.7	1.6	1.5	1.0	0.5	0.6	1.4	2.4	2.4
19-May	2.1	1.4	1.1	1.4	1.7	1.6	1.9	2.2	2.5	2.5	2.5	2.3	1.6	1.3	1.1	0.9	0.7	0.6	0.5	0.4	1.2	3.4	2.2	1.6	3.4
20-May	1.1	1.4	1.9	1.5	1.3	1.6	1.7	1.5	1.5	1.7	1.6	1.8	1.7	1.8	1.7	1.4	1.5	1.6	1.3	1.9	2.2	2.3	3.0	3.4	3.4
21-May	2.8	2.9	2.7	2.7	2.0	2.0	2.3	2.2	2.2	1.7	1.8	1.4	2.1	1.7	1.8	2.0	1.5	1.2	1.1	0.7	0.8	0.4	0.4	0.6	2.9
22-May	1.0	0.4	0.9	1.0	1.4	1.5	2.0	2.1	3.0	2.8	2.9	3.1	3.7	3.9	4.0	4.0	4.0	3.8	3.5	3.4	3.0	2.6	2.5	2.0	4.0
23-May	2.0	2.9	2.4	2.8	2.7	2.7	2.5	2.4	3.2	3.3	3.4	4.1	3.8	3.4	4.0	3.9	4.0	4.5	4.0	4.1	3.3	3.4	3.7	3.8	4.5
24-May	3.4	2.8	3.2	2.9	3.8	4.4	4.9	2.8	2.3	1.8	1.5	1.6	1.6	2.1	2.3	2.9	2.8	2.5	2.4	2.4	2.1	1.9	1.9	1.6	4.9
25-May	1.5	0.8	0.5	0.4	0.2	0.5	0.6	1.2	1.8	1.6	1.9	1.5	2.1	1.5	1.3	1.1	1.3	1.3	0.6	1.0	1.5	1.4	1.3	1.9	2.1
26-May	1.7	1.3	1.4	1.3	1.2	1.4	1.8	1.9	2.0	2.1	2.0	1.9	1.8	1.5	1.3	1.5	1.3	1.4	1.3	1.1	1.0	0.9	0.8	1.5	2.1
27-May	1.7	1.6	1.4	1.3	1.5	1.5	1.7	1.8	2.4	2.6	2.5	2.7	2.9	2.6	2.6	2.6	2.2	2.1	1.7	1.2	0.7	1.4	1.7	2.0	2.9
28-May	2.1	1.7	1.5	2.0	2.0	2.6	2.8	2.7	2.3	2.1	2.8	3.4	3.5	3.7	3.7	3.5	3.5	3.7	3.5	2.7	2.5	2.7	1.4	1.2	3.7
29-May	0.4	0.4	0.4	0.8	0.7	0.9	0.9	1.3	1.8	1.7	2.8	3.0	3.2	4.5	4.4	3.5	2.7	2.2	1.9	1.5	0.7	0.9	0.9	0.6	4.5
30-May	0.7	0.6	0.4	0.2	0.2	0.1	0.7	1.1	1.7	1.9	2.0	2.0	1.9	1.6	1.8	1.7	3.0	2.7	1.9	0.8	0.5	0.9	0.8	1.0	3.0
31-May	1.2	0.4	0.6	0.4	0.4	0.4	1.1	1.3	1.5	1.6	1.8	1.8	1.7	1.9	1.4	1.7	1.7	1.1	0.8	0.5	1.5	0.9	0.9	1.2	1.9
Diurnal Maximum																									
3.8 3.6 3.7 3.4 3.8 4.4 4.9 3.6 4.4 4.1 4.1 4.4 4.2 4.5 4.5 4.5 4.2 4.5 4.0 4.1 3.3 4.0 3.7 3.8																									



Maximum Value: 1.3 km/h on May 10 12:00 Maximum Daily Average: 0.7 km/h on May 5																						Hours in Service: 744 Hours of Data: 744				
Minimum Value: -1.5 km/h on May 16 14:00 Minimum Daily Average: -0.8 km/h on May 16 Maximum Diurnal Average: 0.3 km/h at hour 1 Minimum Diurnal Average: -0.1 km/h at hour 17 Monthly Average: 0.09 km/h Percentiles: $P_1 = -1.1$ $P_{10} = -0.4$ $Q_1 = -0.2$ Median = 0.1 $Q_3 = 0.4$ $P_{90} = 0.6$ $P_{99} = 0.9$																						Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.5	0.7	0.7	0.5	0.5	0.6	0.5	0.4	0.6	0.1	0.2	0.4	-0.1	-0.3	0.0	-0.1	-0.2	-0.1	-0.2	0.2	0.5	1.1	-0.2	-0.5	0.3	1.1
2-May	-0.2	-0.3	-0.3	-0.1	-0.1	0.0	-0.1	0.0	0.3	-0.2	-0.2	0.1	-0.1	0.7	-0.2	-0.1	-0.3	-0.4	-0.1	0.1	0.3	0.6	0.3	0.4	0.0	0.7
3-May	0.9	0.7	0.4	0.2	-0.2	0.0	0.0	0.5	0.3	0.4	-0.1	-0.5	-0.8	0.0	0.1	0.2	-0.3	-0.2	-0.5	-0.4	0.3	0.5	0.8	0.3	0.1	0.9
4-May	0.6	0.8	0.5	0.7	0.4	0.1	0.1	0.1	0.5	0.4	0.3	0.4	0.0	-0.2	0.3	-0.6	-0.2	0.0	0.1	-0.2	0.2	0.3	-0.1	0.4	0.2	0.8
5-May	0.4	0.7	0.8	0.9	1.2	0.8	0.6	0.6	0.4	0.6	0.6	0.7	0.6	0.6	0.7	0.7	0.6	0.8	0.9	0.6	0.3	0.7	0.4	0.7	0.7	1.2
6-May	0.8	0.4	0.3	0.2	0.5	0.6	0.4	0.2	0.4	0.5	0.5	0.5	0.5	0.2	0.4	0.6	0.8	0.7	0.8	0.8	0.3	0.4	0.4	0.5	0.5	0.8
7-May	0.3	0.1	0.0	0.3	0.2	0.0	0.2	0.5	0.3	0.5	0.4	0.3	0.8	0.4	0.7	0.1	-0.2	0.4	0.1	0.0	-0.2	0.2	0.8	0.8	0.3	0.8
8-May	0.8	0.6	0.8	0.8	0.4	0.7	0.7	0.8	0.7	0.7	0.4	-0.4	-0.3	0.3	0.0	-0.1	-0.2	0.0	-0.2	-0.4	0.1	0.1	0.3	0.3	0.3	0.8
9-May	0.1	0.3	0.1	0.3	-0.1	0.0	0.1	0.0	0.1	0.4	0.2	0.4	0.5	0.4	0.1	-0.6	-0.6	-0.1	-0.1	0.0	0.6	0.3	0.1	0.1	0.1	0.6
10-May	0.3	0.7	0.5	0.5	0.6	0.7	0.3	0.2	0.2	0.4	0.2	1.3	0.0	-0.8	-0.4	0.2	-0.5	-0.3	-0.1	0.0	0.0	0.2	0.2	0.2	0.2	1.3
11-May	0.1	0.0	0.0	0.0	0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.5	0.4	-0.1	0.1	0.4	0.2	-0.1	0.3	0.3	0.1	0.7	0.2	0.5	0.5	0.2	0.7
12-May	0.3	0.5	0.3	0.2	0.3	0.2	0.0	-0.1	0.1	0.2	0.4	0.0	0.2	0.1	0.3	0.2	0.2	0.1	-0.2	0.4	0.1	0.5	0.4	0.5	0.2	0.5
13-May	0.4	-0.1	0.1	0.2	0.2	1.1	0.4	0.3	0.1	0.0	0.3	0.5	-0.3	0.7	0.1	0.3	0.3	0.4	0.1	-0.3	-0.2	0.0	0.6	0.3	0.2	1.1
14-May	0.4	0.4	1.1	0.3	0.1	0.8	0.9	0.6	-0.1	0.1	0.3	0.4	-0.1	-0.1	0.1	0.2	-0.1	0.1	0.2	-0.6	-0.3	-0.2	0.0	0.1	0.2	1.1
15-May	0.2	-0.1	0.0	0.1	0.0	0.0	0.1	-0.1	0.0	0.7	0.3	0.2	0.2	0.1	0.1	0.0	0.2	0.2	0.5	0.1	0.2	0.4	0.0	-0.2	0.1	0.7
16-May	-0.3	-0.7	-0.6	-0.3	-0.8	-1.2	-1.0	-1.1	-1.3	-1.2	-1.1	-1.3	-1.0	-1.5	-1.4	-1.2	-1.1	-0.9	-0.8	-0.6	-0.4	0.0	-0.4	-0.2	-0.8	0.0
17-May	-0.5	-0.3	-0.2	-0.7	-0.4	-0.3	-0.6	-0.7	-0.3	-0.6	-1.0	-0.6	-0.5	-0.7	0.0	-0.3	-0.3	-0.5	-0.6	-0.2	0.0	0.3	0.3	0.7	-0.3	0.7
18-May	0.6	0.9	0.3	0.4	0.3	0.0	-0.4	-0.3	0.4	0.2	0.2	0.0	0.3	0.1	0.0	0.2	-0.3	0.0	0.2	0.1	0.9	0.4	0.5	0.3	0.2	0.9
19-May	0.4	0.5	-0.7	-0.3	-0.1	0.2	0.2	0.2	0.1	0.1	0.0	0.2	0.4	0.3	-0.3	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.5	-0.3	-0.2	0.0	0.5
20-May	-0.1	-0.2	-0.3	-0.2	-0.1	-0.3	-0.2	-0.3	-0.3	-0.5	-0.3	0.5	0.8	-0.5	-0.4	0.3	0.2	0.0	0.2	0.5	0.4	0.3	0.3	0.8	0.0	0.8
21-May	0.5	0.6	0.6	0.6	0.6	0.5	0.4	0.3	0.1	0.1	0.1	0.0	0.2	-0.1	0.1	0.1	0.3	0.3	0.1	0.1	0.0	0.2	0.4	0.0	0.3	0.6
22-May	-0.3	-0.1	-0.2	-0.2	-0.2	-0.3	-0.4	-0.2	-0.7	-0.6	-0.7	-0.8	-0.6	-0.7	-0.4	-0.5	-0.6	-0.8	-0.7	-0.7	-0.4	-0.5	-0.4	-0.4	-0.5	-0.1
23-May	-0.2	-0.5	-0.6	-0.4	-0.4	-0.3	-0.4	-0.2	-0.1	0.2	-0.1	0.2	0.2	0.4	0.3	0.3	0.1	0.8	0.2	0.4	0.4	0.8	0.8	0.6	0.1	0.8
24-May	0.5	0.2	0.2	0.4	0.7	0.8	1.2	0.8	0.3	0.4	0.1	0.1	0.1	-0.2	0.0	-0.4	-0.3	-0.2	-0.5	-0.3	0.0	-0.5	-0.5	-0.5	0.1	1.2
25-May	-0.3	-0.3	-0.2	0.0	0.1	-0.2	0.0	0.3	0.2	0.0	-0.4	-0.3	0.5	-0.3	-0.3	-0.3	-0.2	0.2	0.3	0.2	0.6	0.4	0.4	0.4	0.0	0.6
26-May	0.2	0.1	0.2	0.4	0.5	0.5	0.0	-0.1	0.2	0.4	0.6	0.3	0.2	-0.5	-0.1	-0.3	0.2	0.0	0.1	-0.1	0.3	0.8	0.4	0.7	0.2	0.8
27-May	0.6	0.3	-0.4	-0.3	-0.4	-0.2	0.2	0.0	-0.1	0.2	0.2	0.3	0.0	-0.1	0.0	0.3	0.2	0.4	-0.2	0.0	-0.1	0.7	0.4	0.9	0.1	0.9
28-May	0.7	-0.3	0.3	0.2	0.2	0.2	0.2	0.0	-0.3	0.2	0.2	-0.1	0.1	-0.3	-0.3	0.1	-0.3	-0.8	-0.5	-0.7	-0.6	-1.2	-0.8	-0.4	-0.2	0.7
29-May	0.0	0.0	0.0	0.4	0.3	0.2	0.0	0.2	0.1	0.0	-0.1	-0.3	-0.4	-0.4	-0.2	-0.2	-0.1	0.0	0.5	0.2	0.2	-0.3	-0.2	-0.1	0.0	0.5
30-May	0.1	-0.2	-0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.7	0.2	0.0	0.3	0.5	-0.4	-0.9	-0.8	-0.5	-0.3	-0.1	0.1	-0.1	0.0	0.0	0.7
31-May	0.1	0.0	0.3	0.0	-0.1	0.0	0.2	-0.1	0.3	0.3	0.2	0.0	-0.1	0.1	0.2	0.6	0.1	0.3	0.2	0.1	0.1	0.1	-0.1	-0.5	0.1	0.6
																								Diurnal Average		
																								Diurnal Maximum		



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Vertical Wind Speed 45 m (VW45m) - km/h
Lower Camp Met Tower - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0																				Hours in Service: 744					
Maximum Value: 4.7 km/h on May 16 09:00																				Hours of Data: 744					
Minimum Value: 0.2 km/h on May 30 05:00																				Hours of Missing Data: 0					
Percentiles: P ₁ = 0.3 P ₁₀ = 0.7 Q ₁ = 1.2 Median = 1.8 Q ₃ = 2.6 P ₉₀ = 3.2 P ₉₉ = 4.1																				Hours of Calibration: 0					
																				Percent Operational Time: 100.0					
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	1.7	1.6	1.4	1.2	1.3	1.6	2.0	2.0	1.8	1.9	2.1	2.3	3.0	3.3	3.4	2.9	2.7	2.3	1.8	0.7	0.5	1.0	1.7	2.1	3.4
2-May	2.4	1.7	0.9	0.6	0.4	0.4	0.5	0.3	1.3	1.5	2.2	2.2	2.0	2.5	2.5	2.4	2.0	1.6	0.5	0.5	0.5	0.5	0.4	2.5	
3-May	0.8	1.3	1.8	1.3	1.1	1.6	1.5	1.1	1.4	2.1	3.2	3.6	3.5	3.6	3.4	3.2	3.1	2.9	2.1	1.7	1.4	1.7	1.8	1.2	3.6
4-May	1.2	1.6	1.2	1.6	1.5	1.1	0.7	1.0	1.6	1.9	2.1	1.9	1.7	1.8	2.0	2.1	2.4	2.8	2.8	2.4	1.8	1.2	0.8	0.8	2.8
5-May	1.3	1.6	1.6	1.9	1.9	1.7	1.9	2.6	2.5	2.4	2.7	3.2	3.1	3.2	3.6	3.3	3.3	3.2	3.3	3.1	2.8	3.7	3.3	2.8	3.7
6-May	2.8	2.8	2.4	2.3	2.4	2.5	2.3	2.5	2.4	3.1	2.8	2.6	2.6	2.6	2.8	2.8	3.3	2.6	2.5	3.0	2.7	2.6	1.8	2.0	3.3
7-May	1.9	1.8	1.8	1.8	1.6	1.8	2.3	2.6	2.7	2.8	2.8	3.2	3.6	3.3	3.1	3.4	2.3	2.1	1.3	0.7	0.7	1.8	2.2	2.5	3.6
8-May	2.7	2.8	2.8	2.6	2.2	2.2	2.8	2.7	2.3	2.4	2.6	2.6	3.0	2.8	2.7	2.9	2.5	1.6	1.8	1.6	1.5	1.3	0.9	0.8	3.0
9-May	0.9	0.6	0.6	0.8	0.4	0.2	0.4	0.8	1.2	1.6	2.2	2.6	2.3	2.2	2.3	2.8	1.9	1.2	0.9	0.7	1.2	1.1	0.8	0.3	2.8
10-May	0.6	0.8	0.6	0.7	0.7	0.9	0.9	1.2	1.4	1.6	1.7	1.9	2.3	2.9	2.6	2.4	2.2	1.8	2.3	1.6	1.3	1.0	0.9	0.6	2.9
11-May	0.4	0.4	0.2	0.2	0.4	0.5	0.7	0.8	1.0	1.8	1.7	2.1	2.0	1.8	2.2	2.1	2.1	2.0	1.1	1.0	0.8	1.0	0.8	0.5	2.2
12-May	0.5	0.6	0.6	0.9	0.9	1.2	1.3	1.2	1.2	1.9	2.8	2.9	3.1	3.0	3.1	2.8	2.5	2.0	1.8	1.5	1.5	2.2	1.9	2.1	3.1
13-May	2.0	1.2	1.3	1.0	1.7	1.3	1.3	1.1	1.2	1.0	1.7	2.3	2.5	2.8	2.8	3.0	2.7	1.9	1.5	1.3	1.3	1.5	2.0	1.4	3.0
14-May	1.2	1.0	0.7	0.9	0.7	0.8	0.8	1.1	1.1	1.4	1.7	2.0	2.2	2.4	2.4	2.6	2.2	2.2	1.9	1.4	1.5	0.9	1.1	0.8	2.6
15-May	0.9	0.5	0.3	0.2	0.3	0.3	0.2	0.5	0.9	1.4	1.5	1.3	1.5	1.7	2.4	2.9	2.9	2.5	2.3	1.9	0.9	1.1	1.5	1.5	2.9
16-May	1.3	2.3	2.1	1.5	2.4	3.8	3.7	3.9	4.7	4.4	4.3	4.6	4.3	4.1	4.4	4.0	3.8	4.1	3.5	2.7	2.5	1.7	1.5	1.2	4.7
17-May	1.8	2.0	2.6	3.4	2.6	2.6	3.0	3.2	3.0	3.2	3.1	3.1	3.0	3.2	3.1	2.9	2.7	2.6	2.3	1.5	0.7	0.7	0.9	2.0	3.4
18-May	2.2	2.4	1.7	1.9	1.2	2.0	1.9	1.7	2.0	2.3	2.6	2.5	2.8	2.6	2.8	2.6	2.2	2.0	1.8	1.4	0.7	0.7	1.8	2.9	2.9
19-May	2.5	1.7	0.9	1.7	1.7	1.3	1.4	2.2	2.1	2.1	2.1	2.0	1.7	1.3	0.9	0.8	0.5	0.7	0.5	0.4	1.2	2.9	2.0	1.6	2.9
20-May	1.1	1.4	1.7	1.5	1.5	1.7	1.9	1.4	1.5	1.6	1.8	2.0	2.1	2.2	2.0	1.6	1.3	1.1	1.4	1.6	2.0	2.0	2.4	3.0	3.0
21-May	2.6	2.5	2.4	2.5	2.4	2.2	2.3	2.2	1.9	1.7	1.7	1.5	1.9	1.7	1.9	1.8	1.5	1.0	1.1	0.9	0.6	0.5	0.5	0.7	2.6
22-May	0.7	0.5	0.6	1.0	1.4	1.3	1.7	2.2	2.5	2.5	2.4	2.7	3.2	3.3	3.5	3.6	3.5	3.4	3.3	3.2	2.9	2.4	2.3	2.1	3.6
23-May	2.2	2.8	1.9	2.3	2.7	2.6	2.2	2.5	2.8	2.9	3.0	3.6	3.1	3.1	3.4	3.5	3.6	4.0	3.7	3.7	3.1	3.3	3.2	3.3	4.0
24-May	3.2	2.6	2.7	2.7	2.3	3.4	4.2	3.0	2.4	2.0	1.9	2.0	1.8	2.1	2.1	2.6	2.6	2.3	2.4	2.5	1.9	1.8	2.0	1.7	4.2
25-May	1.3	1.0	0.8	0.4	0.4	0.4	0.5	1.2	2.0	1.5	1.9	1.5	2.2	1.4	1.6	1.1	1.4	1.2	0.6	1.1	1.8	1.3	1.4	1.8	2.2
26-May	1.7	1.6	1.3	1.1	1.3	1.4	1.4	1.5	1.6	1.8	1.9	2.1	2.1	1.4	1.2	1.5	1.5	1.6	1.5	1.2	0.9	1.3	1.3	1.6	2.1
27-May	1.6	1.8	1.2	1.2	1.3	1.5	1.8	1.7	1.7	2.9	3.4	3.5	3.6	3.4	3.6	3.3	2.9	2.7	2.2	1.5	0.8	1.3	2.0	2.1	3.6
28-May	2.4	2.0	1.5	1.6	1.7	1.9	1.8	1.7	1.7	2.0	3.1	3.3	3.7	3.5	3.3	3.2	3.2	3.7	3.4	2.5	2.6	2.6	1.2	1.1	3.7
29-May	0.6	0.6	0.7	0.8	0.8	0.7	0.9	1.4	2.0	1.8	2.8	3.2	2.9	3.9	4.0	3.1	2.8	2.1	2.3	1.4	0.5	1.0	1.3	0.8	4.0
30-May	1.0	0.8	0.4	0.3	0.2	0.3	0.7	0.9	1.6	1.8	2.1	2.1	2.3	1.8	1.9	2.0	3.1	2.9	1.8	0.6	0.5	1.0	1.0	1.1	3.1
31-May	1.2	0.4	0.7	0.4	0.5	0.3	0.8	0.9	1.3	1.6	1.9	2.0	1.5	1.6	1.6	2.2	2.0	1.2	0.8	0.7	1.4	1.0	1.0	1.2	2.2
Diurnal Maximum																									
3.2 2.8 2.8 3.4 2.7 3.8 4.2 3.9 4.7 4.4 4.3 4.6 4.3 4.1 4.4 4.0 3.8 4.1 3.7 3.7 3.1 3.7 3.3 3.3																									



Maximum Value: 3.1 km/h on May 24 08:00 Maximum Daily Average: 0.6 km/h on May 21																						Hours in Service: 744 Hours of Data: 744				
Minimum Value: -1.7 km/h on May 3 13:00 Minimum Daily Average: -0.7 km/h on May 16 Maximum Diurnal Average: 0.5 km/h at hour 1 Minimum Diurnal Average: -0.1 km/h at hour 17 Monthly Average: 0.16 km/h Percentiles: $P_1 = -1.3$ $P_{10} = -0.5$ $Q_1 = -0.1$ Median = 0.1 $Q_3 = 0.5$ $P_{90} = 0.9$ $P_{99} = 1.6$																						Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	1.0	0.8	0.7	0.3	0.4	1.0	0.7	0.6	0.6	0.0	0.2	0.3	-0.7	-0.6	-0.6	-1.2	-0.8	-0.8	-0.7	-0.4	-0.2	0.0	-0.1	0.2	0.0	1.0
2-May	0.3	0.1	0.2	-0.2	-0.1	0.0	-0.1	-0.2	0.4	0.0	0.9	0.4	0.0	0.9	-0.4	-0.5	0.0	-0.5	0.3	0.2	0.6	0.5	0.6	0.4	0.2	0.9
3-May	0.9	1.6	1.7	0.1	-0.7	0.6	1.0	0.1	0.1	0.6	-1.0	-1.0	-1.7	-0.4	-0.5	0.1	-0.7	-0.6	-1.3	-1.2	0.3	0.4	0.6	0.6	0.0	1.7
4-May	0.9	1.0	0.5	0.3	0.8	0.2	0.0	0.1	0.3	0.2	0.2	0.1	-0.1	-0.4	0.4	-0.2	0.6	1.6	1.3	1.0	1.2	1.3	0.4	0.8	0.5	1.6
5-May	0.3	0.7	0.7	1.2	1.3	0.2	0.2	-0.7	0.3	0.6	0.7	0.1	0.6	0.4	0.8	0.1	-0.1	0.1	0.4	0.5	0.1	0.6	0.4	0.2	0.4	1.3
6-May	-0.7	-0.3	-0.1	0.0	0.4	0.9	0.0	-0.1	-0.1	0.2	0.1	-0.3	-0.4	-0.2	0.0	0.1	0.6	0.2	0.1	0.2	-0.1	0.1	0.4	0.6	0.1	0.9
7-May	0.2	0.2	0.0	0.7	0.0	-0.5	-0.3	0.0	0.1	0.5	-0.2	-0.2	0.6	-0.1	0.3	-0.3	0.0	0.4	0.4	0.4	-0.1	0.5	0.7	-0.2	0.1	0.7
8-May	0.2	0.1	0.5	1.1	0.6	0.9	1.2	1.5	0.7	1.1	0.5	-0.9	-1.1	-0.1	-0.3	-0.6	-0.5	-0.1	0.1	-0.7	0.6	0.3	0.3	0.1	0.2	1.5
9-May	0.0	0.5	-0.2	0.2	0.1	0.0	0.1	0.2	0.1	0.3	0.3	0.5	1.3	0.1	0.3	-0.3	-0.4	0.6	0.1	0.2	0.7	0.8	-0.1	-0.2	0.2	1.3
10-May	-0.1	0.0	-0.1	-0.1	-0.1	-0.3	-0.1	0.1	0.2	0.0	-0.1	1.3	0.6	-0.4	0.1	-0.1	0.2	0.1	1.2	1.0	0.9	0.7	0.2	0.4	0.2	1.3
11-May	0.2	0.4	0.3	0.2	-0.1	0.2	-0.1	0.2	0.3	-0.5	1.0	0.2	-0.5	-0.3	0.6	0.5	0.2	0.6	0.2	-0.2	0.0	0.2	0.2	0.4	0.2	1.0
12-May	0.0	0.4	0.3	0.6	0.8	0.9	-0.1	0.4	-0.1	0.2	0.1	0.0	0.4	0.3	0.4	0.0	-0.1	0.0	-0.7	0.8	0.5	0.9	1.1	1.6	0.4	1.6
13-May	1.6	-0.4	-0.5	-0.1	0.8	1.5	1.0	0.0	-0.3	-0.8	0.8	-0.1	-1.1	0.4	-0.3	0.0	0.0	0.1	-0.5	-0.8	-0.8	-0.1	0.7	0.4	0.1	1.6
14-May	-0.3	0.0	0.1	0.4	0.4	-0.1	0.0	0.1	0.2	0.0	0.3	0.4	0.5	-0.3	0.2	0.0	-0.4	0.0	-0.3	-0.8	-0.2	0.0	0.1	0.3	0.0	0.5
15-May	0.2	0.1	0.1	0.2	0.0	0.1	0.2	0.2	0.0	0.8	0.0	0.3	0.4	0.4	0.4	-0.2	-0.2	-0.1	0.2	-0.6	-0.2	0.1	0.4	-0.1	0.1	0.8
16-May	0.0	-0.4	0.0	0.0	-0.6	-1.0	-1.0	-0.8	-1.7	-1.1	-1.6	-1.7	-1.3	-1.0	-1.6	-1.3	-1.2	-0.8	0.3	0.1	0.4	0.7	-0.1	0.0	-0.7	0.7
17-May	-0.2	0.5	0.7	0.3	0.4	0.5	0.6	0.3	1.1	0.3	-0.3	0.2	0.3	0.6	0.8	0.4	1.3	0.8	0.0	0.6	0.4	1.1	0.8	1.4	0.5	1.4
18-May	1.6	1.7	0.5	1.0	0.2	0.8	-0.5	-0.6	-0.1	0.1	0.8	0.0	0.3	-0.1	0.6	0.6	-0.7	0.0	0.0	0.0	0.3	0.3	0.7	-0.1	0.3	1.7
19-May	0.8	0.8	-0.6	-0.1	-0.5	0.0	0.4	1.0	0.1	0.1	-0.1	0.2	0.8	0.7	-0.3	-0.4	-0.2	-0.1	0.1	0.0	0.2	0.6	0.4	0.4	0.2	1.0
20-May	0.3	0.1	0.1	0.3	0.3	0.3	0.3	-0.3	-0.1	-0.3	-0.3	1.5	1.2	-0.2	-0.2	0.5	0.2	0.2	0.8	0.7	0.4	0.3	-0.2	1.6	0.3	1.6
21-May	1.2	0.9	1.0	0.9	2.0	1.4	0.7	0.7	0.1	0.2	0.7	-0.1	0.1	-0.1	-0.3	0.1	0.5	0.7	0.8	0.2	0.2	0.5	0.5	0.5	0.6	2.0
22-May	0.1	0.2	-0.1	-0.1	0.2	0.3	0.0	0.1	0.1	-0.1	0.0	0.6	0.8	0.9	0.8	0.4	0.5	0.2	0.1	0.4	0.4	0.2	0.1	0.3	0.3	0.9
23-May	0.3	-0.1	0.0	0.2	0.4	0.3	0.3	0.5	0.7	0.8	0.1	0.4	0.1	0.8	1.0	0.5	0.9	1.1	0.2	-0.1	0.9	1.2	0.6	0.3	0.5	1.2
24-May	0.5	0.1	0.3	0.6	0.2	0.0	1.4	3.1	1.2	0.9	0.3	0.2	0.1	-0.3	-0.6	-0.6	-0.7	-0.4	-0.5	-0.8	-0.3	-0.3	-0.4	-0.4	0.2	3.1
25-May	-0.2	0.0	-0.5	-0.1	-0.1	-0.3	-0.1	0.0	0.1	-0.1	-0.8	-0.3	0.9	-0.2	-0.1	-0.2	0.0	0.2	0.3	0.3	1.3	0.5	0.9	1.6	0.1	1.6
26-May	0.8	0.4	0.2	0.0	0.8	1.1	0.4	0.2	0.2	0.1	0.3	0.0	0.4	-0.8	-0.1	-0.2	0.5	0.1	0.0	-0.3	0.2	0.7	1.2	1.1	0.3	1.2
27-May	1.6	2.0	-0.5	-0.5	-0.7	0.5	1.8	0.7	0.1	0.6	0.0	-0.1	0.2	-0.4	-0.6	0.5	0.1	0.0	-0.6	-0.5	-0.3	0.4	0.2	0.9	0.2	2.0
28-May	2.5	0.0	-0.2	-0.3	-0.3	-0.2	-0.2	0.2	-0.3	0.7	-0.3	-0.1	-0.1	-0.8	-1.0	-0.2	-0.7	-0.9	-1.2	-0.6	-0.7	-1.5	-1.0	-0.5	-0.3	2.5
29-May	0.1	-0.2	-0.2	-0.1	-0.5	0.1	0.1	0.4	0.1	-0.1	-0.8	-1.0	-1.0	-1.2	-1.0	-0.8	-0.6	-0.5	0.1	-0.5	-0.3	0.0	0.1	0.2	-0.3	0.4
30-May	-0.1	0.2	0.2	0.0	0.0	0.1	0.1	-0.2	0.1	0.0	0.2	0.1	-0.1	0.8	1.2	-0.2	-1.3	-1.0	-0.5	-0.3	0.3	0.2	0.3	0.1	0.0	1.2
31-May	0.3	-0.1	0.5	-0.1	-0.3	0.0	-0.1	-0.1	-0.1	0.4	-0.1	0.3	-0.3	-0.1	0.4	0.7	-0.3	0.3	0.2	0.1	-0.2	0.1	0.3	-0.7	0.0	0.7
																								Diurnal Average		
																								Diurnal Maximum		



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0																				Hours in Service: 744						
Maximum Value: 4.9 km/h on May 27 13:00																				Hours of Data: 744						
Minimum Value: 0.2 km/h on May 19 19:00																				Hours of Missing Data: 0						
Percentiles: P ₁ = 0.3 P ₁₀ = 0.7 Q ₁ = 1.2 Median = 1.8 Q ₃ = 2.7 P ₉₀ = 3.4 P ₉₉ = 4.2																				Hours of Calibration: 0						
																				Percent Operational Time: 100.0						
Day	Hourly Period Ending At (MST)																								Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	1.6	1.3	1.1	1.0	1.1	1.5	1.7	2.0	2.1	2.7	2.9	2.9	4.0	4.3	4.1	3.5	3.2	2.7	2.0	0.7	0.3	1.0	2.1	1.8	4.3	
2-May	1.8	1.2	1.1	1.0	0.7	0.3	0.6	0.4	1.2	1.3	2.5	2.6	3.0	2.3	2.8	3.2	2.7	2.1	1.8	0.6	0.6	0.7	0.7	0.6	3.2	
3-May	1.1	1.0	1.2	1.2	1.6	1.4	1.1	1.4	1.4	2.6	3.9	4.4	4.2	4.3	4.2	4.2	3.8	3.3	2.0	1.3	1.7	2.4	2.2	1.6	4.4	
4-May	1.4	1.2	1.0	0.9	1.4	1.2	1.1	1.2	1.6	1.8	1.9	1.5	1.8	2.2	2.2	2.4	2.5	3.1	3.1	2.3	1.7	1.7	0.8	0.8	3.1	
5-May	1.3	1.5	1.3	1.4	1.4	1.2	1.5	2.0	2.2	2.5	2.9	3.4	3.9	3.4	3.6	3.3	3.2	3.0	2.9	3.1	2.5	3.3	3.2	2.7	3.9	
6-May	2.6	2.4	2.3	2.5	2.4	2.3	2.2	2.4	2.7	3.0	3.1	3.0	3.0	3.1	3.2	3.1	3.5	2.8	2.3	2.6	2.3	2.0	1.4	2.0	3.5	
7-May	2.0	2.0	2.2	1.8	1.4	1.9	1.9	2.5	2.7	3.2	3.0	3.6	3.5	3.3	3.0	3.8	2.7	2.6	1.3	0.6	0.9	2.4	2.7	2.4	3.8	
8-May	2.3	2.5	2.3	2.7	2.6	1.7	2.4	2.3	2.3	2.4	3.1	3.3	3.6	3.7	3.5	3.2	3.1	2.1	2.2	1.6	1.3	1.7	0.9	1.2	3.7	
9-May	1.1	1.0	0.5	0.8	0.4	0.3	0.6	0.8	1.3	1.1	2.3	3.3	2.9	2.3	2.8	2.7	2.1	1.7	1.0	1.1	1.0	1.0	1.1	0.6	3.3	
10-May	0.4	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.9	0.8	0.9	0.9	2.3	3.0	3.2	3.3	3.2	2.6	2.1	2.7	1.6	1.0	1.4	1.6	0.8	3.3
11-May	0.7	0.5	0.4	0.5	0.6	0.4	0.4	0.6	1.0	1.3	1.8	2.3	1.9	1.9	2.4	2.7	2.5	2.3	1.3	1.1	0.4	1.0	1.1	0.7	2.7	
12-May	0.9	1.0	0.8	1.1	1.1	1.3	1.3	1.5	1.5	2.1	3.6	3.7	3.9	3.7	3.9	3.2	3.2	2.7	1.8	1.7	1.6	1.9	2.3	2.4	3.9	
13-May	1.7	1.6	1.7	1.4	1.2	1.1	0.8	0.8	0.8	1.0	2.1	2.5	2.9	3.5	3.2	3.5	3.2	2.3	1.6	1.0	0.8	1.0	1.3	1.9	3.5	
14-May	1.5	1.3	0.9	1.1	1.0	0.8	0.9	1.2	1.1	1.1	1.6	2.4	3.0	2.8	3.1	3.1	2.7	2.5	1.9	1.6	2.1	1.3	1.7	1.1	3.1	
15-May	1.3	0.7	0.4	0.2	0.2	0.2	0.3	0.5	0.6	1.2	1.0	0.8	1.3	2.1	2.9	3.7	3.7	3.0	2.9	1.5	0.5	0.5	1.7	1.2	3.7	
16-May	1.6	1.7	1.9	1.5	2.2	3.3	3.1	3.8	3.7	3.7	3.8	4.1	4.2	4.1	4.2	3.6	3.4	4.1	3.3	2.6	2.5	1.9	1.8	1.4	4.2	
17-May	1.7	2.0	2.5	3.1	2.5	2.8	3.3	3.4	3.2	3.6	3.0	3.5	3.3	3.8	3.7	3.5	3.4	3.2	2.5	1.8	0.5	0.7	1.2	2.0	3.8	
18-May	2.2	2.0	1.7	2.1	1.2	1.5	1.8	1.6	1.3	2.1	2.9	3.2	3.4	3.2	3.4	2.9	2.6	2.8	2.5	1.7	0.5	0.5	1.1	1.3	3.4	
19-May	1.6	1.6	1.2	2.1	1.9	1.5	1.3	1.7	1.7	1.7	1.5	1.8	1.9	1.5	0.6	1.0	0.4	0.6	0.2	0.5	1.3	3.0	1.6	1.3	3.0	
20-May	0.9	1.3	1.5	1.3	1.5	1.7	2.0	1.4	1.4	1.7	1.9	2.2	2.2	2.5	2.1	1.7	1.4	1.0	1.5	1.2	1.6	1.6	1.7	2.1	2.5	
21-May	2.0	1.4	1.4	1.4	1.6	1.5	1.8	1.5	1.9	1.5	1.8	2.0	1.6	2.1	2.3	1.8	1.8	1.2	1.5	1.1	0.7	0.9	0.5	0.8	2.3	
22-May	0.8	0.6	0.5	0.9	1.1	1.0	1.3	2.0	2.1	1.9	2.3	2.5	3.5	3.6	3.6	3.8	3.9	3.7	3.7	3.3	3.0	2.7	2.3	2.3	3.9	
23-May	2.6	3.1	2.0	2.3	2.6	2.8	2.8	2.9	2.9	3.2	3.4	3.7	3.4	3.3	3.5	3.4	3.9	3.5	3.4	3.1	3.2	2.9	2.7	2.8	3.9	
24-May	2.8	2.3	2.5	2.3	1.9	2.2	2.6	3.4	2.8	2.3	2.1	2.7	1.9	2.3	2.0	2.1	2.1	1.9	2.3	2.3	1.4	2.1	2.1	1.7	3.4	
25-May	1.1	1.2	1.1	0.7	0.7	0.5	0.5	0.8	1.9	1.9	1.6	1.5	2.8	1.7	1.7	1.4	1.7	1.6	0.8	1.3	1.9	1.7	1.7	1.8	2.8	
26-May	1.8	1.6	1.3	1.2	1.3	1.2	1.2	1.1	1.1	1.0	1.3	2.4	2.7	1.7	1.1	2.0	1.7	1.9	2.0	1.1	0.7	1.5	1.3	1.8	2.7	
27-May	1.6	1.7	1.7	1.9	1.6	2.0	2.0	1.7	1.4	3.2	4.0	4.3	4.9	4.2	4.0	4.4	3.7	3.2	2.5	1.3	0.3	0.8	1.5	1.6	4.9	
28-May	2.2	2.4	1.7	2.1	1.6	1.4	1.4	1.6	1.8	2.4	3.6	3.5	4.3	3.4	2.7	3.1	2.6	3.4	2.6	2.6	2.4	2.2	1.0	0.8	4.3	
29-May	0.8	0.6	0.6	0.8	0.8	0.6	1.0	1.5	2.0	2.2	3.4	3.1	3.0	3.2	3.5	2.9	3.1	2.4	2.3	1.6	0.6	1.2	1.9	1.3	3.5	
30-May	1.9	1.2	0.6	0.4	0.2	0.3	0.7	0.8	1.3	1.2	1.7	2.2	2.4	2.3	2.3	2.5	2.7	2.4	1.3	0.5	0.5	1.4	1.4	1.1	2.7	
31-May	1.0	0.4	1.0	0.5	0.9	0.4	0.5	0.4	0.7	1.4	1.9	2.1	1.6	1.3	2.0	2.8	2.6	1.4	0.9	1.0	1.8	1.2	1.4	1.6	2.8	
Diurnal Maximum																										
2.8 3.1 2.5 3.1 2.6 3.3 3.3 3.8 3.7 3.7 4.0 4.4 4.9 4.3 4.2 4.4 3.9 4.1 3.7 3.3 3.2 3.3 3.2 2.8																										



Maximum Value: 4.4 km/h on May 24 08:00		Maximum Daily Average: 0.7 km/h on May 24		Hours in Service: 744																							
Minimum Value: -1.6 km/h on May 3 13:00		Minimum Daily Average: -0.2 km/h on May 6		Hours of Data: 744																							
Maximum Diurnal Average: 0.9 km/h at hour 1		Minimum Diurnal Average: 0.1 km/h at hour 11		Hours of Missing Data: 0																							
Monthly Average: 0.35 km/h		Percentiles: $P_1 = -1.1$ $P_{10} = -0.5$ $Q_1 = -0.1$ Median = 0.2 $Q_3 = 0.7$ $P_{90} = 1.3$ $P_{99} = 2.4$		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	1.5	1.3	1.0	0.5	0.8	1.5	1.0	0.5	0.8	0.6	0.0	0.6	-0.8	0.5	0.2	-0.5	-0.2	-0.1	0.1	0.5	0.2	0.4	0.7	0.7	0.5	1.5	
2-May	0.6	0.6	0.7	0.4	0.4	0.5	0.1	0.1	0.4	-0.3	0.9	0.7	0.0	0.8	-0.3	0.0	0.7	0.1	1.0	0.4	0.3	0.3	0.5	0.5	0.4	1.0	
3-May	0.9	1.8	1.7	0.7	-1.1	0.4	1.3	0.2	0.1	0.9	-0.8	-0.6	-1.6	0.1	-0.2	0.4	-0.1	-0.3	-0.7	-0.7	1.0	0.9	0.7	1.1	0.3	1.8	
4-May	1.4	1.5	0.7	0.5	0.9	0.3	0.2	0.1	0.2	0.0	-0.4	-0.4	-0.4	-1.0	0.6	0.1	0.5	1.4	1.6	0.1	0.2	0.9	0.3	0.2	0.4	1.6	
5-May	0.2	0.5	0.8	1.7	1.2	0.4	0.3	-0.9	0.1	1.2	1.1	0.2	0.0	-0.3	0.1	-0.6	-0.6	-0.2	0.2	0.5	0.3	0.6	0.7	0.4	0.3	1.7	
6-May	-1.2	-0.3	-0.6	-0.1	0.4	1.3	0.2	-0.7	-0.9	-0.5	-0.4	-0.9	-1.0	-0.8	-0.5	-0.6	0.0	-0.1	-0.3	0.0	0.0	0.3	0.7	0.9	-0.2	1.3	
7-May	0.3	0.0	-0.3	0.8	-0.2	-1.0	-1.1	-0.5	-0.6	-0.3	-0.8	-1.0	0.3	-1.0	0.2	-0.2	0.7	0.7	0.2	0.3	-0.1	0.4	0.8	-0.7	-0.1	0.8	
8-May	0.2	0.4	0.8	1.8	1.0	1.6	2.4	2.0	0.7	1.0	0.6	-0.8	-1.3	-0.4	0.1	-0.4	-0.4	0.0	0.8	-0.2	1.5	1.8	1.3	0.3	0.6	2.4	
9-May	0.1	0.5	-0.1	0.2	0.2	0.0	0.1	0.1	0.3	0.1	-0.1	1.0	2.3	-0.6	0.3	0.2	-0.4	0.6	-0.1	0.2	1.8	1.8	0.1	-0.1	0.4	2.3	
10-May	0.2	0.1	0.0	0.0	0.2	0.2	0.0	0.2	0.1	-0.1	-0.3	0.2	0.8	0.7	0.8	-0.1	1.0	-0.2	1.0	0.9	0.3	0.5	-0.1	0.1	0.3	1.0	
11-May	0.1	0.2	0.2	0.2	0.0	0.1	0.0	0.1	0.5	-0.9	0.6	-0.3	-1.2	-0.8	0.5	1.0	0.1	0.5	0.0	0.4	0.0	1.4	0.5	0.4	0.1	1.4	
12-May	0.0	0.0	0.4	0.8	1.3	1.6	0.4	1.4	-0.1	0.2	0.5	0.1	0.6	0.4	0.4	0.2	0.5	0.2	-0.5	1.2	1.1	1.2	2.0	2.4	0.7	2.4	
13-May	1.6	-0.4	-0.7	-0.7	1.3	0.9	0.6	0.1	-0.8	-1.1	1.2	0.6	-0.5	1.2	0.6	0.7	0.3	-0.1	-0.3	-0.6	-0.5	0.5	2.4	1.4	0.3	2.4	
14-May	0.8	0.3	0.2	0.1	0.2	0.2	0.2	0.6	0.1	0.2	0.1	0.6	1.6	0.4	1.4	1.0	0.8	1.4	0.7	-0.2	0.6	0.5	-0.2	0.3	0.5	1.6	
15-May	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.6	-0.3	0.0	0.1	0.1	0.2	-0.3	-0.3	0.3	0.5	-0.3	-0.2	0.1	1.2	0.9	0.2	1.2	
16-May	1.0	0.7	0.2	0.3	0.4	0.3	0.3	0.5	-0.4	0.2	-0.1	-0.5	0.2	0.2	0.0	-0.2	-0.1	0.7	0.6	0.3	0.9	1.5	0.3	0.5	0.3	1.5	
17-May	0.7	1.1	1.1	0.9	1.0	1.0	0.3	0.5	1.0	0.2	-0.1	0.4	0.7	0.3	1.1	0.2	1.4	0.8	-0.2	0.4	0.1	0.5	0.5	1.7	0.7	1.7	
18-May	2.4	2.4	1.2	1.6	0.2	1.0	-0.5	-0.8	-0.2	-0.3	1.0	-0.2	0.3	-0.4	1.2	0.9	-0.7	-0.1	0.0	0.2	0.2	0.5	1.6	1.7	0.6	2.4	
19-May	2.6	2.2	0.0	-0.1	-0.7	-0.5	0.0	1.1	-0.1	-0.3	-0.3	0.2	1.7	0.9	-0.4	-0.5	-0.2	0.1	0.5	0.4	0.8	1.0	1.1	0.9	0.4	2.6	
20-May	1.3	0.3	0.5	0.7	0.5	0.4	0.2	0.0	0.1	-0.3	0.0	1.5	1.0	0.1	0.0	0.3	-0.3	-0.4	0.5	0.5	0.5	0.0	-0.2	2.2	0.4	2.2	
21-May	2.0	1.4	1.4	0.8	1.8	1.0	0.2	0.3	-0.1	0.2	0.6	-0.2	0.0	-0.2	-1.0	-0.2	0.5	0.9	1.2	0.1	0.0	0.1	0.6	0.7	0.5	2.0	
22-May	0.2	-0.1	1.0	0.4	0.9	0.7	0.2	0.4	0.2	0.2	0.3	1.0	1.4	1.1	0.8	0.2	-0.1	-1.0	-0.6	-0.3	-0.2	-0.5	-1.2	-0.6	0.2	1.4	
23-May	0.2	-0.6	-0.2	-0.2	0.1	0.3	0.2	0.3	0.5	-0.2	-0.6	0.0	-1.1	0.5	1.2	0.0	0.5	1.2	-0.4	-0.6	1.2	1.0	0.3	0.1	0.2	1.2	
24-May	0.1	-0.4	0.1	0.4	-0.1	-0.1	1.9	4.4	1.5	1.4	0.6	0.1	0.2	0.6	0.3	0.7	0.4	1.1	0.7	0.5	1.0	0.6	0.6	0.4	0.7	4.4	
25-May	0.7	0.9	0.0	0.3	0.4	0.2	0.2	0.4	0.4	-0.7	-1.3	-0.6	1.1	-0.1	0.1	-0.2	-0.4	-0.1	0.1	0.6	2.0	1.0	1.8	1.8	0.4	2.0	
26-May	1.4	0.6	0.1	-0.1	0.8	1.4	0.7	-0.1	0.1	-0.3	0.0	-0.7	0.4	-1.4	-0.1	-1.2	0.6	-0.4	-0.1	-0.4	0.5	1.3	2.1	2.2	0.3	2.2	
27-May	2.2	2.8	-0.4	-0.7	-0.6	1.2	2.2	1.1	0.0	0.8	0.1	0.1	0.4	-0.3	-0.8	0.7	0.4	0.4	-0.3	-0.3	-0.2	0.5	0.8	2.2	0.5	2.8	
28-May	4.1	0.2	-0.6	-0.8	-0.3	-0.8	-0.4	0.1	-0.6	0.8	1.0	1.6	1.6	1.0	1.0	1.3	1.0	0.7	0.6	0.9	0.8	-0.3	-0.2	0.5	0.5	4.1	
29-May	1.0	0.0	0.0	0.4	0.0	0.3	0.1	1.1	0.4	0.5	0.1	0.2	0.3	0.9	1.2	1.1	0.4	0.2	0.7	0.4	0.4	0.5	0.5	-0.3	0.4	1.2	
30-May	-1.0	-0.4	0.1	0.1	0.1	0.1	0.0	-0.3	0.1	-0.3	-0.3	-0.2	-0.6	1.1	1.7	0.1	-0.6	0.0	0.3	0.1	0.4	0.3	0.3	0.5	0.1	1.7	
31-May	0.9	0.4	0.5	0.0	0.1	0.2	0.1	0.0	-0.2	0.3	-0.5	0.0	-1.0	-0.6	1.0	1.3	-0.4	0.0	0.2	0.1	-0.2	0.4	0.6	-0.2	0.1	1.3	
		0.9	0.6	0.3	0.4	0.4	0.5	0.4	0.4	0.1	0.1	0.1	0.1	0.2	0.1	0.4	0.2	0.2	0.3	0.3	0.2	0.5	0.6	0.7	0.7	Diurnal Average	
		4.1	2.8	1.7	1.8	1.8	1.6	2.4	4.4	1.5	1.4	1.2	1.6	2.3	1.2	1.7	1.3	1.4	1.4	1.6	1.2	2.0	1.8	2.4	2.4	Diurnal Maximum	



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0																				Hours in Service: 744					
Maximum Value: 5.9 km/h on May 27 13:00																				Hours of Data: 744					
Minimum Value: 0.2 km/h on May 30 05:00																				Hours of Missing Data: 0					
Percentiles: P ₁ = 0.3 P ₁₀ = 0.7 Q ₁ = 1.2 Median = 1.9 Q ₃ = 2.9 P ₉₀ = 3.7 P ₉₉ = 4.7																				Hours of Calibration: 0					
																				Percent Operational Time: 100.0					
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	2.2	1.8	1.6	1.6	1.3	1.4	2.1	2.0	2.4	2.9	3.4	3.3	4.3	4.9	4.4	3.8	3.2	2.6	2.0	0.7	0.5	0.8	2.7	1.8	4.9
2-May	1.5	1.0	0.8	1.0	0.7	0.5	0.5	0.4	1.2	1.7	2.8	3.1	3.6	2.9	3.2	4.3	3.1	2.4	2.0	0.7	0.5	1.0	0.9	0.8	4.3
3-May	1.4	1.4	1.1	1.3	1.8	1.5	1.1	1.6	1.5	3.5	4.4	5.0	4.3	4.9	4.6	4.8	4.1	3.2	2.0	1.1	2.0	2.1	1.5	1.7	5.0
4-May	1.8	1.3	1.4	1.4	1.4	1.3	1.4	1.2	1.8	1.8	2.0	1.4	2.0	2.5	2.7	2.6	2.7	2.8	2.9	2.1	1.7	1.5	0.8	1.0	2.9
5-May	1.4	1.5	1.2	1.3	1.8	1.6	2.1	1.7	2.2	2.8	3.1	4.3	4.4	3.4	3.5	3.2	3.3	2.9	3.0	2.7	2.1	2.9	2.9	2.7	4.4
6-May	2.8	2.6	2.2	2.6	2.8	3.0	2.6	2.8	2.7	3.0	3.6	3.7	3.6	3.6	3.7	3.7	4.0	3.2	2.5	2.8	1.9	1.6	1.6	2.5	4.0
7-May	2.2	2.4	2.3	2.3	1.8	1.8	1.7	2.8	2.5	3.5	3.4	4.2	3.7	3.3	3.2	4.0	2.9	3.0	1.4	0.8	1.4	2.7	2.9	2.4	4.2
8-May	2.5	3.0	2.9	3.2	2.7	1.9	2.4	2.2	2.4	2.6	3.5	3.7	3.8	4.1	4.0	3.6	3.6	2.3	2.5	2.0	1.1	1.7	0.9	1.5	4.1
9-May	1.3	0.9	0.5	0.7	0.5	0.6	0.8	0.7	1.0	1.1	2.7	3.9	3.5	2.3	3.3	2.6	2.5	2.2	1.1	1.3	1.3	0.9	0.8	0.7	3.9
10-May	0.4	0.6	0.5	0.7	0.4	0.4	0.5	0.6	0.6	0.7	0.7	1.9	4.1	3.9	3.4	4.0	3.1	2.4	2.6	1.2	0.4	1.0	1.9	0.8	4.1
11-May	0.9	0.6	0.3	0.4	1.1	0.8	0.5	0.9	1.2	1.3	1.8	2.5	2.2	2.2	3.2	3.0	3.4	2.7	1.3	1.5	0.3	0.8	1.4	0.9	3.4
12-May	1.3	0.9	1.0	1.0	1.3	1.4	1.1	1.7	1.9	2.2	4.3	4.6	4.7	4.5	4.7	3.6	3.5	3.1	1.9	1.8	1.9	2.9	3.1	2.9	4.7
13-May	2.0	1.9	2.1	1.6	1.4	0.9	0.8	0.6	0.8	1.1	2.3	2.6	3.3	4.4	3.3	3.9	3.1	2.4	1.0	0.5	0.5	1.1	0.8	1.6	4.4
14-May	0.9	1.5	0.7	0.9	1.3	1.1	1.2	1.5	1.6	1.2	1.8	3.0	3.8	3.3	4.1	3.9	3.4	2.7	1.7	2.3	2.4	1.7	1.8	1.2	4.1
15-May	1.2	0.7	0.4	0.4	0.3	0.3	0.2	0.3	0.5	0.9	0.9	1.0	1.5	2.4	3.5	4.2	4.2	3.5	3.0	1.1	0.4	0.4	2.1	1.0	4.2
16-May	1.6	1.7	1.8	1.6	2.0	2.9	3.5	3.6	3.4	3.5	3.6	4.1	4.4	4.2	4.2	3.6	3.2	3.9	3.6	2.7	2.5	2.0	2.3	1.5	4.4
17-May	1.3	2.2	2.4	2.9	2.4	2.5	2.8	3.3	3.6	3.8	3.5	4.1	4.0	4.5	4.7	4.0	4.0	3.7	2.9	1.5	0.5	0.5	1.1	2.0	4.7
18-May	2.2	1.7	0.9	1.2	1.3	1.6	1.8	1.7	1.5	2.3	3.4	3.9	4.0	3.6	4.1	3.5	3.3	3.2	2.6	1.8	0.5	0.5	1.0	0.6	4.1
19-May	0.9	1.6	1.7	2.0	1.9	1.2	1.0	1.4	1.6	1.5	1.5	2.2	2.4	1.6	0.7	1.3	0.5	0.6	0.3	0.7	1.7	3.1	1.7	1.4	3.1
20-May	1.1	1.5	1.5	1.4	1.8	1.7	1.8	1.3	1.4	1.3	2.2	2.6	2.6	2.6	2.5	1.9	1.6	0.9	1.2	1.3	1.6	1.6	1.8	2.6	2.6
21-May	2.1	1.8	1.8	1.8	2.1	1.9	2.2	1.7	1.8	1.7	2.2	2.1	1.8	2.6	2.6	2.2	1.9	1.5	1.6	1.4	1.1	0.5	0.8	0.7	2.6
22-May	0.7	0.5	0.7	1.4	1.4	1.4	1.6	2.2	2.2	2.2	2.4	2.7	3.8	3.7	3.6	4.1	3.9	3.2	3.3	3.1	2.5	2.2	1.8	2.1	4.1
23-May	2.7	2.9	2.0	1.9	2.2	2.4	2.6	2.8	2.8	3.3	3.4	3.8	3.7	3.5	3.6	3.3	4.1	3.3	2.8	3.2	3.6	3.8	3.3	2.9	4.1
24-May	3.2	2.2	2.3	2.4	2.0	2.2	3.1	3.8	2.8	2.4	2.2	3.0	2.3	2.5	2.1	1.9	1.8	1.9	2.2	1.6	1.2	2.2	2.0	1.6	3.8
25-May	1.0	1.0	1.1	0.9	0.7	0.6	0.8	0.9	1.7	1.9	1.7	2.1	3.3	2.0	2.2	1.9	1.8	1.8	0.8	1.4	1.5	1.8	1.6	1.7	3.3
26-May	1.9	2.0	1.7	1.4	1.5	1.2	1.1	1.2	1.1	1.0	1.2	2.8	3.2	2.0	1.5	2.2	2.0	2.3	2.3	1.0	0.6	0.9	0.6	0.9	3.2
27-May	0.9	1.4	2.4	2.2	1.6	2.4	2.1	2.2	1.8	3.7	4.5	4.6	5.9	5.0	4.4	5.2	4.3	3.7	2.8	1.1	0.3	0.8	0.7	0.8	5.9
28-May	1.6	2.9	1.7	2.1	1.3	1.2	1.1	1.7	1.9	2.9	4.1	3.7	4.5	3.5	2.7	3.2	2.7	3.1	2.6	2.3	2.3	1.7	0.7	0.6	4.5
29-May	0.9	0.7	0.3	0.7	0.9	0.4	1.0	1.9	2.4	2.7	3.7	3.4	3.1	3.3	3.1	3.1	3.5	2.8	2.5	1.6	0.9	1.6	2.2	1.1	3.7
30-May	1.7	1.3	0.7	0.5	0.2	0.4	0.7	0.9	1.6	1.2	2.2	2.6	3.2	2.8	2.7	3.0	2.6	2.5	1.0	0.4	0.5	1.4	2.0	1.5	3.2
31-May	1.1	0.4	0.8	0.5	0.6	0.6	0.5	0.3	0.7	1.8	1.9	2.0	1.6	1.5	2.7	3.7	3.0	1.4	1.1	1.1	1.9	1.5	1.7	2.7	3.7
Diurnal Maximum																									
3.2 3.0 2.9 3.2 2.8 3.0 3.5 3.8 3.6 3.8 4.5 5.0 5.9 5.0 4.7 5.2 4.3 3.9 3.6 3.2 3.6 3.8 3.3 2.9																									



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS04 BUFFALO VIEWPOINT MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BUFFALO VIEWPOINT (AMS04)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	708	35	36	99.87	43.7	0	6.5	0
H2S (ppb) Average	707	37	37	100	2.7	0	0.5	0
THC (ppm) Average	708	35	36	99.87	4	-	2.7	-
NMHC(ppm) Average	708	35	36	99.87	1.156	-	0.344	-
CH4(ppm) Average	708	35	36	99.87	3.3	-	2.4	-
O3(ppb) Average	709	34	35	99.87	75.1	0	50.7	-
NO2(ppb) Average	680	35	64	96.1	28.8	0	10.1	-
NO(ppb) Average	680	35	64	96.1	25.8	-	5.5	-
NOX(ppb) Average	680	35	64	96.1	47.6	-	15.5	-
PM2.5(ug/m3) Average	683	1	61	91.94	222	78	74.7	14
Temperature (C) Average	743	0	1	99.87	31.4	-	23.8	-
Relative Humidity (%) Average	743	0	1	99.87	94	-	74.3	-
Wind Speed 10 m (km/h) Average	743	0	1	99.87	26	-	19	-
Wind Direction 10 m (deg) Average	743	0	1	99.87	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BUFFALO VIEWPOINT (AMS04)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	708	1.29	4.3	-	0	0	0.1	0.2	0.5	1.8	43.7
H2S (ppb) Average	707	0.23	0.3	-	0	0	0.1	0.1	0.3	0.5	2.7
THC (ppm) Average	708	2.16	0.2	-	2	2	2	2.1	2.2	2.4	4
NMHC(ppm) Average	708	0.072	0.126	-	0	0	0	0	0.1	0.2	1.156
CH4(ppm) Average	708	2.09	0.1	-	2	2	2	2.1	2.1	2.2	3.3
O3(ppb) Average	709	37.85	12.1	-	1.8	22.3	30.9	38.1	46.2	52	75.1
NO2(ppb) Average	680	2.99	4.1	-	0	0	0.5	1.4	3.9	7.4	28.8
NO(ppb) Average	680	0.45	2	-	0	0	0	0	0.3	0.7	25.8
NOX(ppb) Average	680	3.44	5.4	-	0	0	0.6	1.7	4.1	8.1	47.6
PM2.5(ug/m3) Average	683	33.53	35.4	-	4	7.1	10.9	21.1	38.5	82	222
Temperature 2 m (C) Average	743	17.11	6.1	-	2.4	9.5	12.4	16.7	21.8	25.8	31.4
Relative Humidity (%) Average	743	46.95	19.4	-	14.9	22.5	30.7	44.4	61.2	75.8	94
Wind Speed 10 m (km/h) Average	743	9.3	5	-	1	4	6	8	12	17	26
Wind Direction 10 m (deg) Average	743	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BUFFALO VIEWPOINT (AMS04)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL PARAMETERS	16 May 2023 09:00	16 May 2023 09:00	1	Maintenance - station logger/modem reset
NO2	18 May 2023 07:00	19 May 2023 10:00	28	Maintenance - replace coverter and zero-air generator
PM2.5	21 May 2023 01:00	23 May 2023 10:00	58	Unstable Operation - inconsistent response
PM2.5	23 May 2023 11:00	23 May 2023 11:00	1	Maintenance - clean instrument and flow checks



Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO₂) - ppb

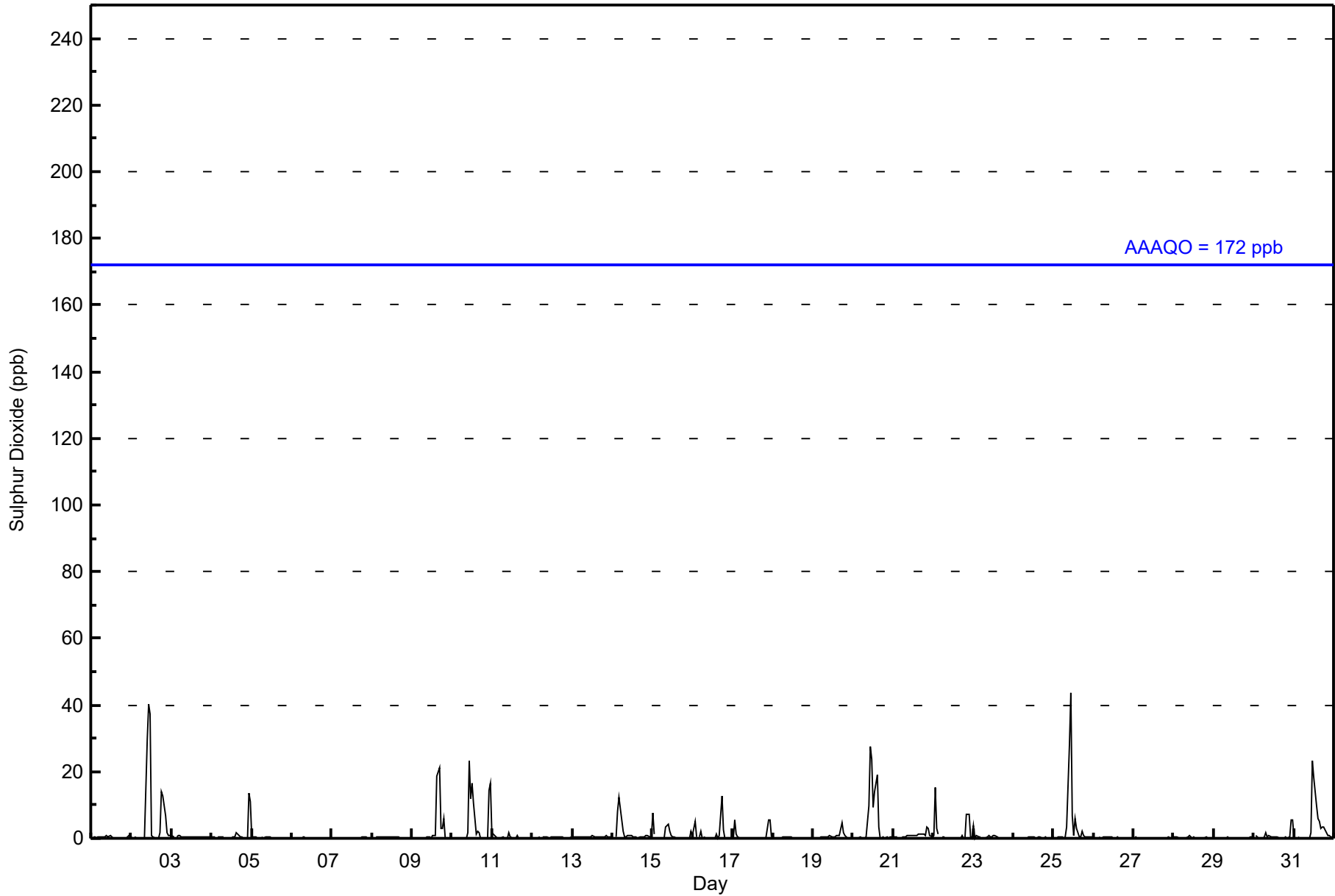
Buffalo Viewpoint - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 43.7 ppb on May 25 11:00	Maximum Daily Average: 6.5 ppb on May 2		Hours of Data:	708
Minimum Value: 0.0 ppb on May 2 06:00	Minimum Daily Average: 0.0 ppb on May 6		Hours of Missing Data:	36
Maximum Diurnal Average: 4.9 ppb at hour 11	Minimum Diurnal Average: 0.3 ppb at hour 7		Hours of Calibration:	35
Monthly Average: 1.29 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.5 P ₉₀ = 1.8 P ₉₉ = 23.4		Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	Z	0.3	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.7	0.6	0.7	0.4	0.1	0.1	0.1	0.1	0.0	0.2	0.1	0.1	0.1	1.0	1.2	0.4	1.2	
2-May	0.2	Z	0.3	0.1	0.1	0.0	0.1	0.1	0.1	29.5	40.3	37.5	0.7	0.3	0.2	0.2	0.2	1.9	13.9	12.9	6.6	1.6	1.0	0.9	6.5	40.3	
3-May	0.7	0.6	Z	0.5	0.8	0.9	0.6	0.5	0.6	0.4	0.4	0.4	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.2	0.3	0.4	0.5	0.9	
4-May	0.4	0.5	0.5	Z	0.4	0.3	0.4	0.5	0.6	C	C	C	C	0.4	0.2	0.3	1.6	0.7	0.3	0.2	0.1	0.1	0.1	13.8	11.0	1.7	13.8
5-May	0.5	0.3	0.3	0.2	0.2	Z	0.2	0.2	0.5	0.6	0.6	0.4	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	
6-May	0.0	0.0	0.0	0.0	0.0	Z	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.3	
7-May	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.2	0.2	0.1	0.3	
8-May	0.2	Z	0.3	0.3	0.3	0.3	0.5	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.3	0.2	0.2	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.3	0.6
9-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.9	0.7	0.7	18.5	21.0	2.9	3.0	5.8	0.2	0.2	0.1	0.1	2.4	21.0	
10-May	0.1	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	1.8	23.2	11.9	16.6	10.5	1.3	2.1	1.7	0.1	0.0	0.0	0.0	0.1	14.2	16.7	4.4	23.2	
11-May	1.8	0.8	0.2	0.1	Z	0.0	0.2	0.2	0.1	0.0	1.6	0.4	0.0	0.2	0.2	0.8	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.3	1.8	
12-May	0.1	0.1	0.1	0.1	0.2	Z	0.2	0.4	0.6	0.4	0.2	0.2	0.2	0.4	0.4	0.5	0.5	0.5	0.2	0.1	0.1	0.2	0.2	0.4	0.3	0.6	
13-May	Z	0.5	0.6	0.4	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.7	0.6	0.3	0.2	0.2	0.3	0.2	0.3	0.7	0.3	0.2	0.2	0.3	0.7	
14-May	0.2	Z	0.2	7.9	12.3	5.6	2.1	0.5	0.6	0.8	0.8	0.7	0.5	0.4	0.4	0.2	0.3	0.3	0.5	0.4	0.7	0.7	0.2	0.3	1.6	12.3	
15-May	7.7	1.1	Z	0.1	0.0	0.0	0.1	0.2	0.3	4.2	2.1	0.7	0.5	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	1.0	7.7	
16-May	0.8	4.9	0.5	Z	0.2	2.1	0.0	0.3	M	0.0	0.2	0.0	0.0	0.1	1.3	0.0	0.7	12.7	2.7	0.0	0.0	0.0	0.0	0.0	1.2	12.7	
17-May	0.0	5.5	1.4	0.3	0.1	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	5.4	5.6	0.3	0.8	5.6	
18-May	Z	0.2	0.1	0.1	0.1	0.1	0.3	0.4	0.4	0.3	0.3	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.4	
19-May	0.1	Z	0.2	0.2	0.1	0.2	0.3	0.3	0.3	0.5	0.7	0.6	0.6	0.6	0.6	1.1	0.9	4.7	1.8	0.8	0.4	0.2	0.1	0.1	0.7	4.7	
20-May	0.1	0.1	Z	0.2	0.2	0.2	0.1	0.2	0.4	9.6	27.4	23.7	9.2	14.1	19.0	3.5	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.4	4.8	27.4
21-May	0.4	0.4	0.3	Z	0.2	0.2	0.2	0.4	0.7	0.7	0.8	0.8	0.8	0.9	0.9	1.2	1.3	1.3	1.2	1.1	3.4	3.1	1.0	0.6	1.0	3.4	
22-May	0.7	15.4	3.0	1.2	Z	0.4	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	7.1	7.0	0.3	0.2	1.6	15.4	
23-May	3.8	0.0	0.7	0.3	0.3	Z	0.1	0.2	0.3	0.7	0.6	0.6	0.6	0.7	0.5	0.2	0.2	0.1	0.1	0.2	0.0	0.1	0.0	0.1	0.5	3.8	
24-May	Z	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.4	
25-May	0.2	Z	0.2	0.3	0.4	0.3	0.2	0.4	3.6	27.9	43.7	6.6	0.9	6.1	2.8	0.6	0.6	2.3	0.8	0.5	0.6	0.6	0.5	0.3	4.4	43.7	
26-May	0.2	0.2	Z	0.2	0.2	0.2	0.4	0.4	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	
27-May	0.1	0.2	0.2	Z	0.0	0.0	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.2	0.4	0.1	0.4	
28-May	0.3	0.5	0.4	0.2	Z	0.1	0.2	0.1	0.2	0.8	0.4	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.2	0.8	
29-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.2	0.0	0.0	0.0	0.2	0.1	0.0	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.5	0.4	0.1	0.5	
30-May	Z	0.9	0.5	0.1	0.1	0.1	0.4	1.6	0.5	0.7	0.5	0.4	0.4	0.4	0.2	0.2	0.0	0.0	0.1	0.6	0.1	0.6	5.4	5.3	0.8	5.4	
31-May	0.5	Z	0.4	0.2	0.1	0.1	0.1	0.0	0.0	0.0	1.7	23.4	18.4	9.8	6.1	5.0	2.8	3.6	3.3	1.9	1.0	0.8	0.5	0.5	3.5	23.4	

0.8	1.3	0.4	0.5	0.6	0.5	0.3	0.3	0.5	2.7	4.9	3.7	1.7	1.6	1.2	1.2	1.1	1.1	1.0	0.8	0.7	0.7	1.5	1.4	Diurnal Average	
7.7	15.4	3.0	7.9	12.3	5.6	2.1	1.6	3.6	29.5	43.7	37.5	18.4	14.1	19.0	18.5	21.0	12.7	13.9	12.9	7.1	7.0	14.2	16.7	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Buffalo Viewpoint - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	682	96.33	96.33
11 - 20	16	2.26	98.59
21 - 60	10	1.41	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Buffalo Viewpoint - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	44	25	20	6	13	43	108	149	66	58	32	24	20	25	27	22	682
11 - 20	4	1	3	1	1	0	0	2	0	0	0	0	0	0	1	3	16
21 - 60	1	1	0	0	0	1	0	0	0	0	0	0	0	1	5	1	10
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	49	27	23	7	14	44	108	151	66	58	32	24	20	26	33	26	708

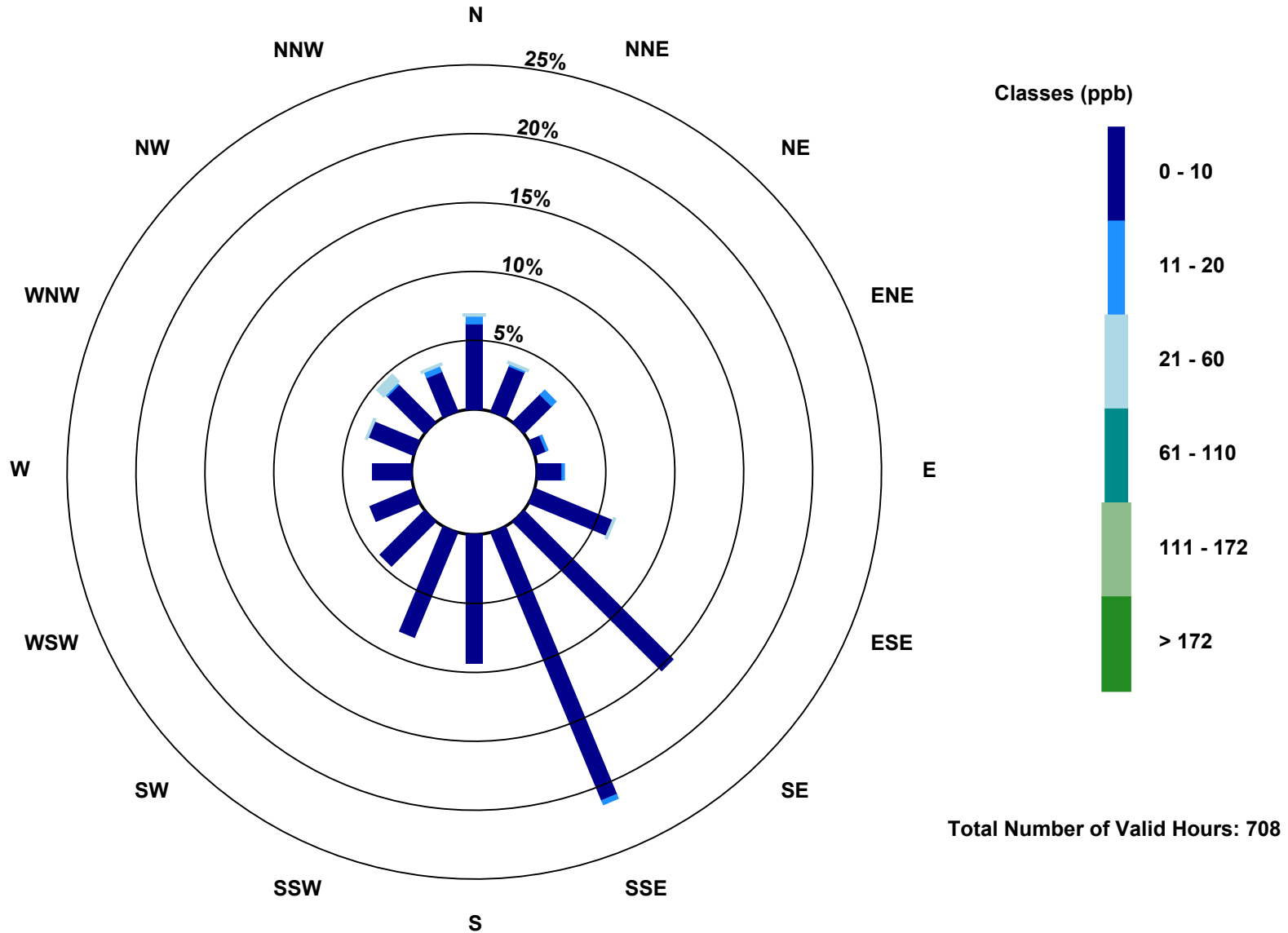
Total Number of Valid Hours: 708

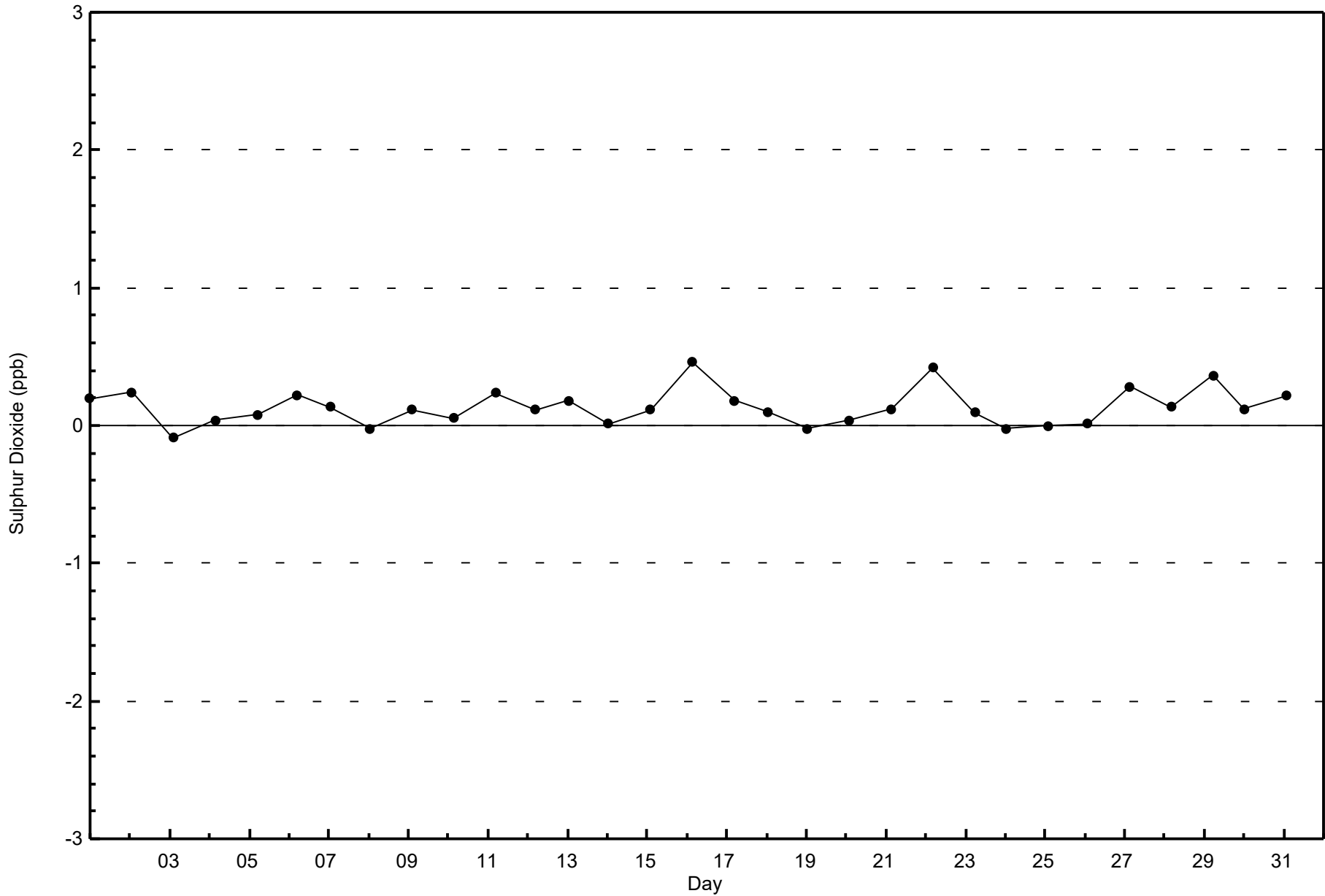
Total Number of Hours: 744

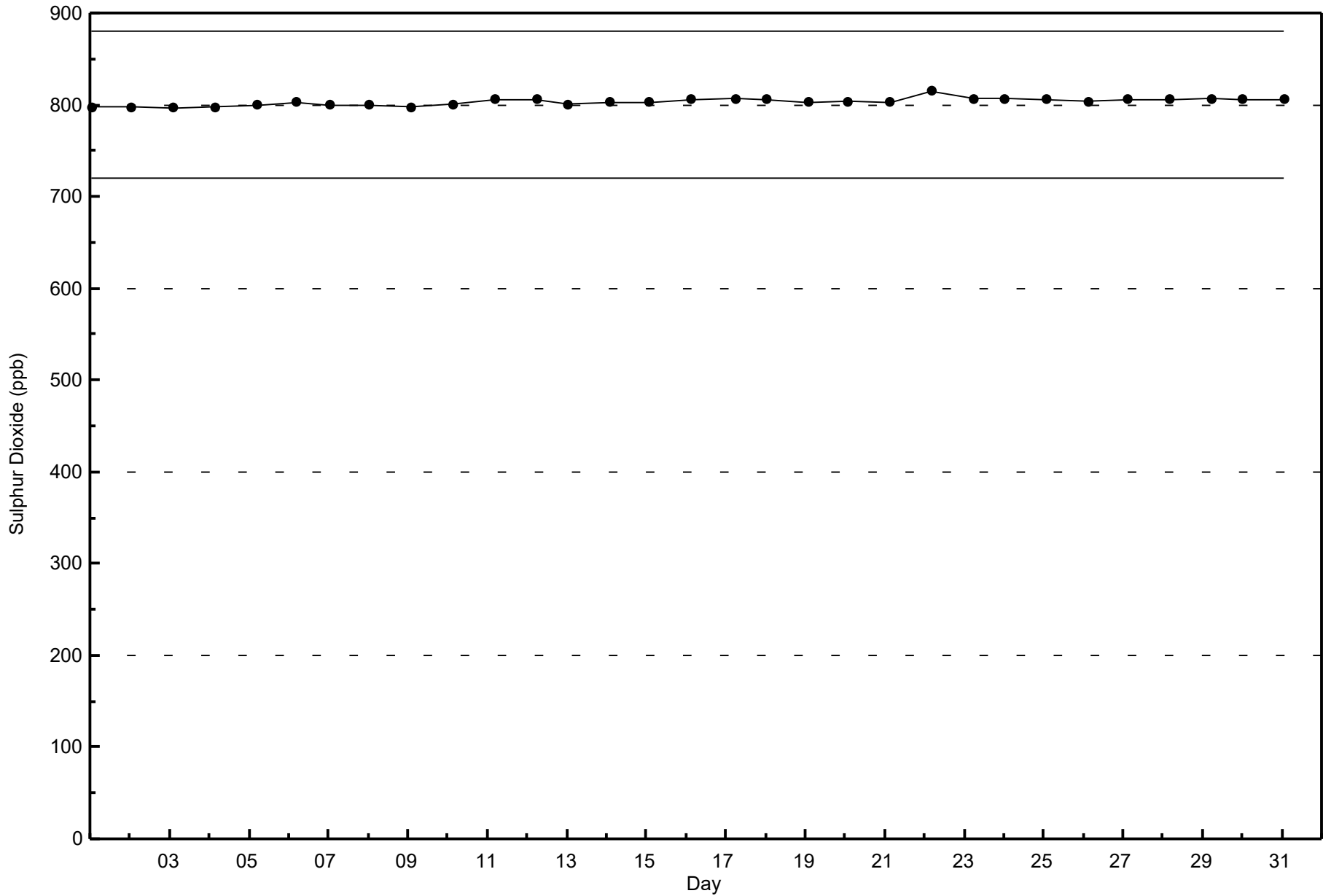


Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Buffalo Viewpoint







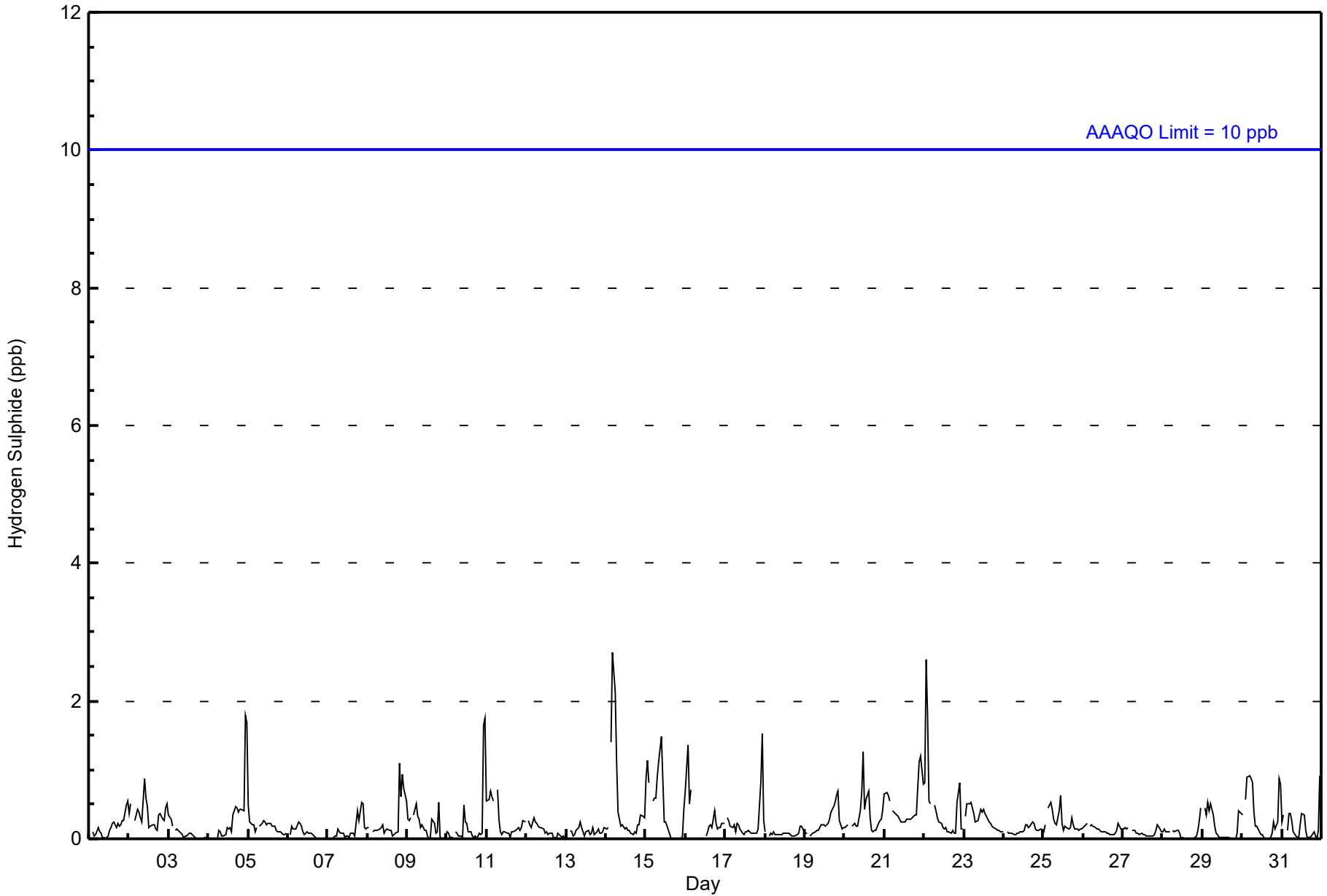


Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744				
Maximum Value: 2.7 ppb on May 14 05:00		Maximum Daily Average: 0.5 ppb on May 21																	Hours of Data:	707						
Minimum Value: 0.0 ppb on May 1 09:00		Minimum Daily Average: 0.1 ppb on May 3																	Hours of Missing Data:	37						
Maximum Diurnal Average: 0.4 ppb at hour 2		Minimum Diurnal Average: 0.1 ppb at hour 17																	Hours of Calibration:	37						
Monthly Average: 0.23 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.1 Q ₃ = 0.3 P ₉₀ = 0.5 P ₉₉ = 1.6																	Percent Operational Time:	100.0						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.0	Z	0.1	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.5	0.5	0.2	0.5	
2-May	0.4	0.5	Z	0.3	0.3	0.4	0.4	0.3	0.2	0.9	0.6	0.5	0.2	0.2	0.2	0.2	0.1	0.1	0.4	0.4	0.3	0.3	0.4	0.5	0.3	0.9
3-May	0.3	0.3	0.2	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	
4-May	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.2	0.1	0.3	0.5	0.4	0.4	0.4	1.8	1.7	0.3	1.8	
5-May	0.5	0.2	0.2	0.2	0.1	0.2	Z	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5	
6-May	Z	0.1	0.2	0.1	0.1	0.1	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	
7-May	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.4	0.3	0.5	0.5	0.2	0.1	0.1	0.5
8-May	0.2	0.2	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	1.1	0.6	0.9	0.7	0.6	0.3	1.1
9-May	0.3	0.3	0.3	Z	0.3	0.5	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.3	0.2	0.1	0.1	0.5	0.0	0.0	0.0	0.2	0.5	
10-May	0.1	0.1	0.0	0.0	Z	0.1	0.1	0.1	0.0	0.0	0.5	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	1.6	1.7	0.2	1.7
11-May	0.5	0.6	0.7	0.6	0.5	Z	0.7	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.3	0.2	0.3	0.7
12-May	Z	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.3	
13-May	0.1	Z	0.1	0.1	0.0	0.1	0.1	0.2	0.3	0.2	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	
14-May	0.1	0.2	Z	1.4	2.7	2.1	1.1	0.4	0.3	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.5	2.7
15-May	0.9	1.1	0.8	Z	0.5	0.6	0.6	0.9	1.1	1.5	0.8	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	1.5	
16-May	0.7	1.4	0.5	0.7	Z	1.3	C	C	C	C	C	C	0.0	0.1	0.2	0.2	0.2	0.4	0.2	0.1	0.2	0.2	0.2	0.2	--	1.4
17-May	Z	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8	1.5	0.3	0.2	1.5
18-May	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.1	0.2
19-May	0.1	0.1	Z	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.3	0.1	0.2	0.2	0.7
20-May	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.4	0.7	1.3	0.4	0.6	0.7	0.3	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.3	1.3
21-May	0.6	0.7	0.6	0.6	Z	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.8	1.1	1.2	0.8	0.5	1.2
22-May	0.8	2.6	1.8	0.5	0.5	Z	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.8	0.1	0.1	0.5	2.6
23-May	Z	0.3	0.5	0.5	0.5	0.4	0.4	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.5
24-May	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2
25-May	0.1	0.2	Z	0.5	0.5	0.4	0.3	0.2	0.2	0.4	0.6	0.2	0.1	0.2	0.2	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.6
26-May	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2
27-May	0.1	0.2	0.1	0.2	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.2
28-May	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.1	0.5
29-May	Z	0.4	0.4	0.5	0.4	0.5	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.2	0.5
30-May	0.3	Z	0.6	0.9	0.9	0.9	0.8	0.4	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.9	0.8	0.3	0.9
31-May	0.2	0.3	Z	0.1	0.4	0.4	0.3	0.1	0.0	0.0	0.0	0.2	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.9	0.2	0.9
																								Diurnal Average		
																								Diurnal Maximum		
0.3 0.4 0.3 0.3 0.4 0.4 0.3 0.2 0.2 0.2 0.2 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.3 0.4 0.4																										
0.9 2.6 1.8 1.4 2.7 2.1 1.1 0.9 1.1 1.5 0.8 1.3 0.4 0.6 0.7 0.3 0.5 0.5 0.5 1.1 0.8 1.1 1.8 1.7																										
Z - zerospan C - Calibration																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb																										



Wood Buffalo Environmental Association
Hourly Averages

Hydrogen Sulphide (H₂S) - ppb
Buffalo Viewpoint - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	705	99.72	99.72
3 - 4	2	0.28	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	49	26	23	6	13	46	110	150	67	58	32	24	21	25	28	27	705
3 - 4	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	49	26	24	7	13	46	110	150	67	58	32	24	21	25	28	27	707

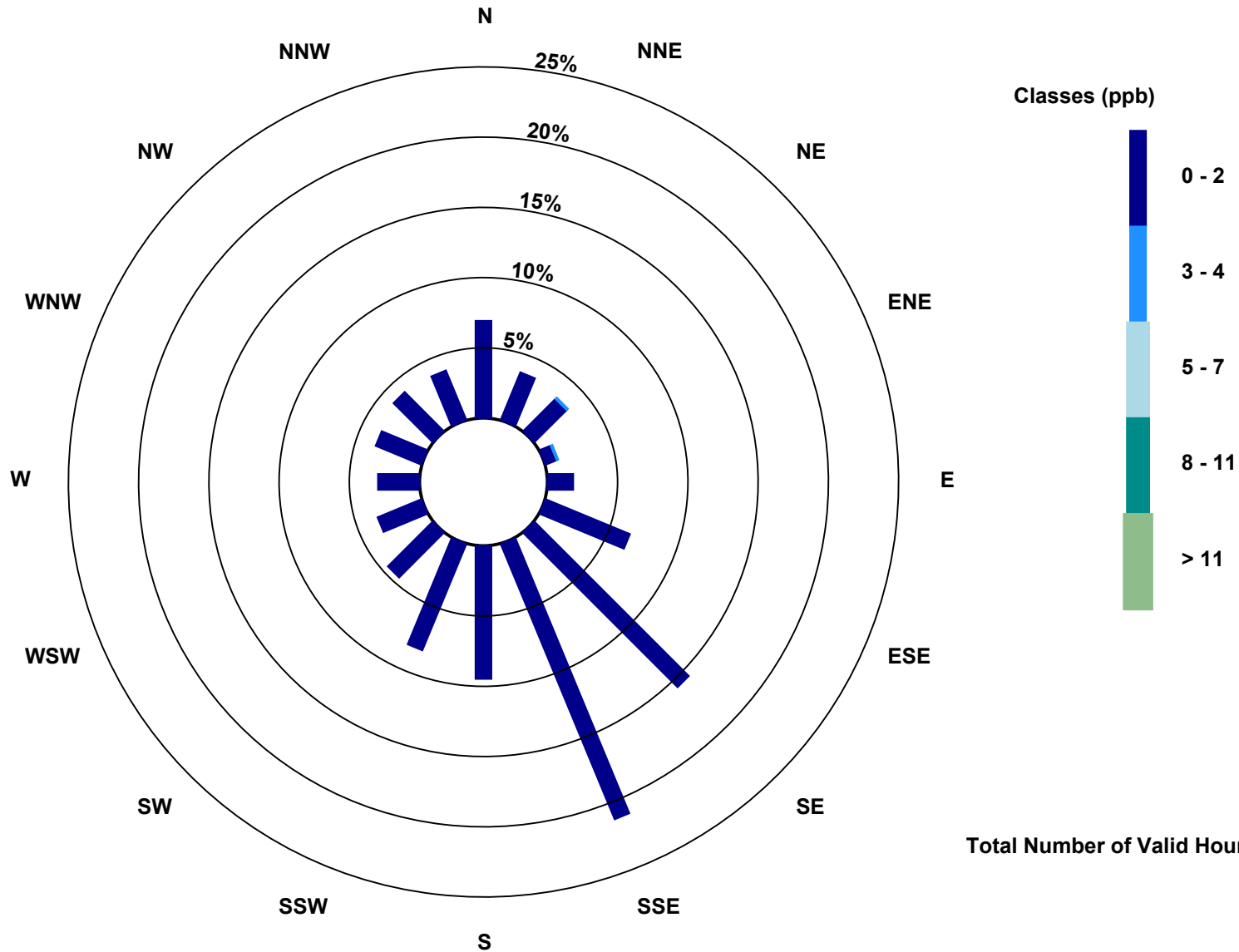
Total Number of Valid Hours: 707

Total Number of Hours: 744

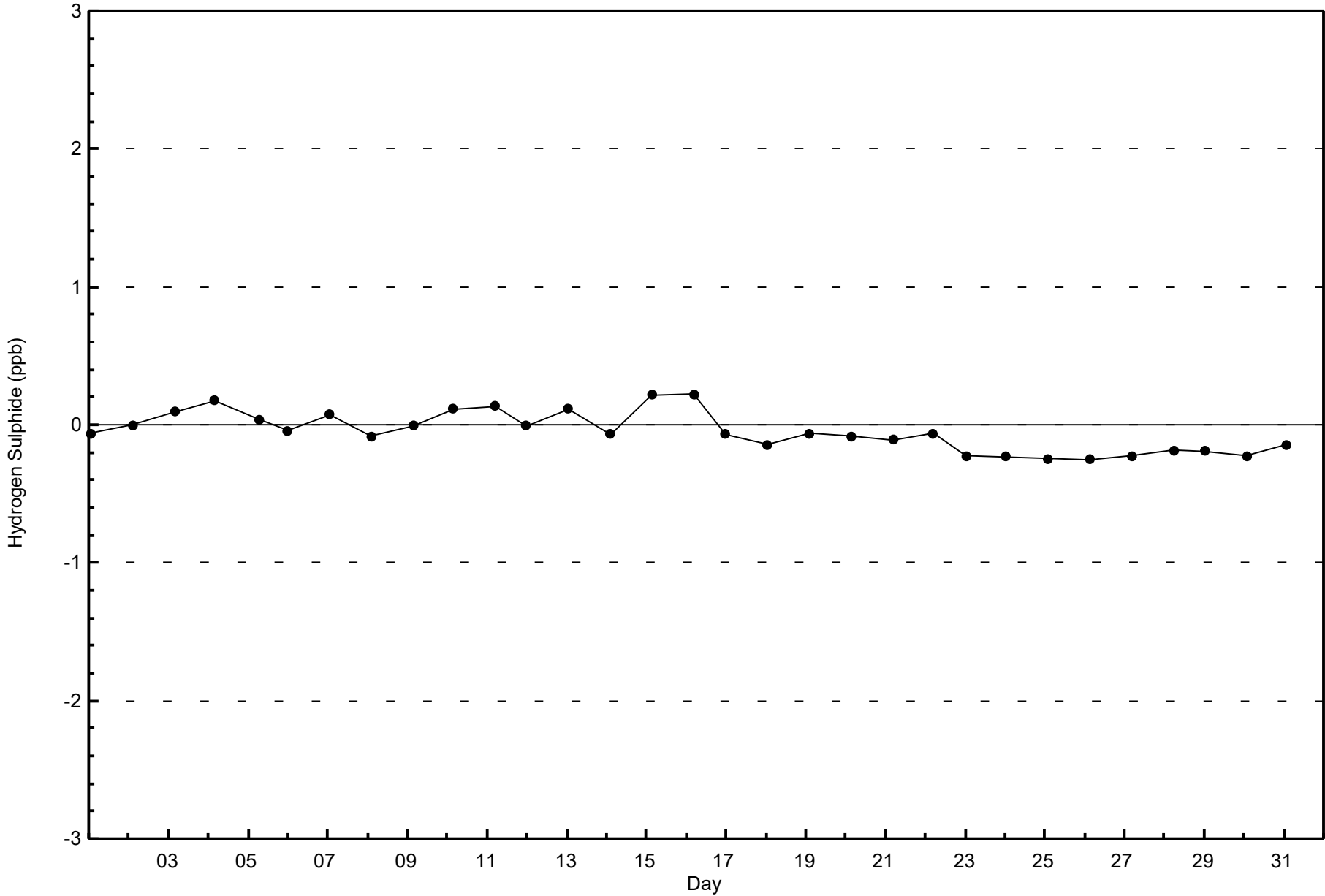


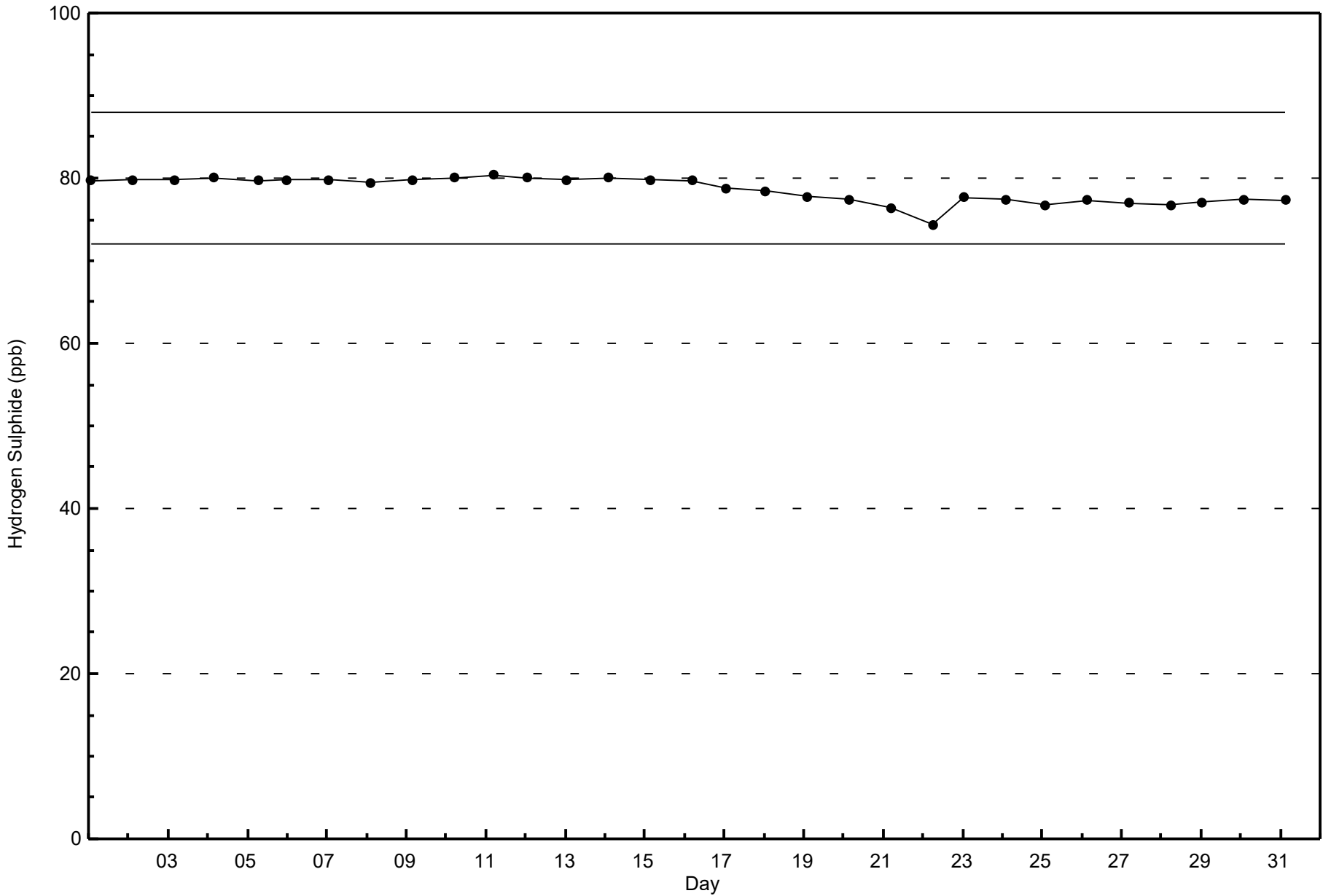
Wood Buffalo Environmental Association
Wind Rose May 2023

Hydrogen Sulphide (H₂S) - ppb
Buffalo Viewpoint



Total Number of Valid Hours: 707







Wood Buffalo Environmental Association
Summary of Hour Averages

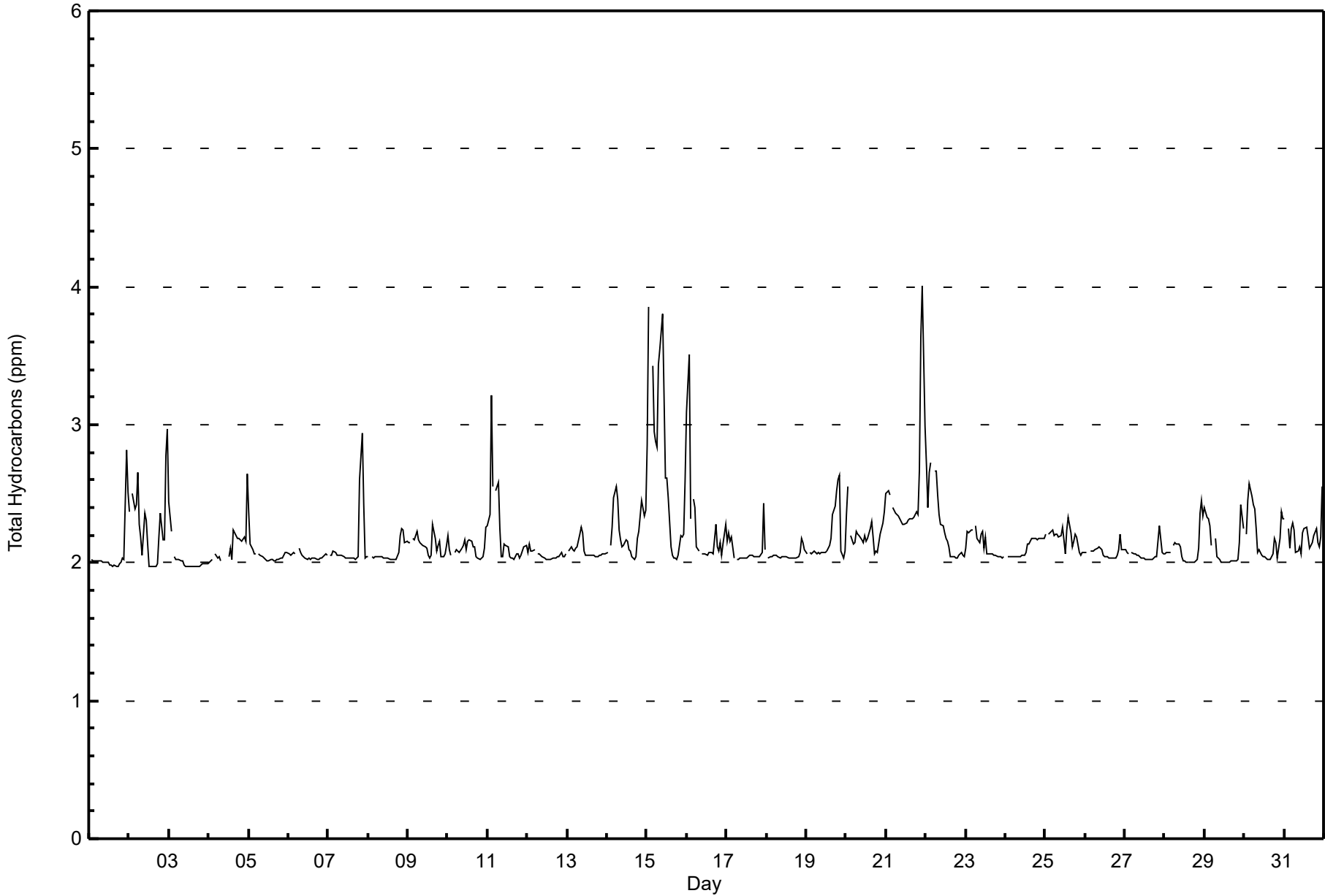
Total Hydrocarbons (THC) - ppm
Buffalo Viewpoint - May 2023

Maximum Value: 4.0 ppm on May 21 23:00																				Maximum Daily Average: 2.7 ppm on May 15					Hours in Service: 744																							
Minimum Value: 2.0 ppm on May 2 14:00																				Minimum Daily Average: 2.0 ppm on May 3					Hours of Data: 708																							
Maximum Diurnal Average: 2.3 ppm at hour 2																				Minimum Diurnal Average: 2.1 ppm at hour 17					Hours of Missing Data: 36																							
Monthly Average: 2.16 ppm																				Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.1 Q ₃ = 2.2 P ₉₀ = 2.4 P ₉₉ = 3.4					Hours of Calibration: 35																							
																									Percent Operational Time: 99.9																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.8	2.5	2.1	2.8																						
2-May	2.4	Z	2.5	2.4	2.4	2.7	2.3	2.2	2.1	2.4	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.2	2.4	2.2	2.2	2.8	3.0	2.3	3.0																							
3-May	2.4	2.2	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.4																						
4-May	2.0	2.0	2.0	Z	2.1	2.0	2.0	2.0	2.0	C	C	C	C	2.0	2.1	2.0	2.2	2.2	2.2	2.2	2.2	2.2	2.6	2.1	2.6																							
5-May	2.4	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.4																						
6-May	2.1	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1	2.1																						
7-May	Z	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.6	2.9	2.4	2.0	2.0	2.1	2.9																						
8-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.1	2.2	2.1	2.2																						
9-May	2.1	2.1	Z	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.3	2.2	2.1	2.1	2.2	2.0	2.0	2.1	2.1	2.1	2.3																						
10-May	2.2	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.1	2.3	2.3																						
11-May	2.3	2.4	3.2	2.6	Z	2.5	2.6	2.3	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	3.2																						
12-May	2.1	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.1																						
13-May	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.3																						
14-May	2.1	Z	2.1	2.3	2.5	2.6	2.5	2.2	2.2	2.1	2.1	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.2	2.2	2.3	2.5	2.3	2.4	2.2	2.6																						
15-May	2.9	3.9	Z	3.4	3.0	2.9	2.8	3.4	3.5	3.8	3.2	2.6	2.6	2.5	2.1	2.1	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.6	2.7	3.9																						
16-May	3.1	3.5	2.3	Z	2.5	2.4	2.1	2.1	M	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.1	2.1	2.1	2.1	2.1	2.3	2.3	3.5																						
17-May	2.2	2.2	2.2	2.2	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.4	2.1	2.1	2.4																						
18-May	Z	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.1	2.2																						
19-May	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.4	2.5	2.6	2.6	2.1	2.0	2.1	2.2	2.6																						
20-May	2.4	2.6	Z	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.3	2.2	2.1	2.1	2.1	2.2	2.2	2.3	2.4	2.2	2.6																						
21-May	2.5	2.5	2.5	Z	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.7	3.6	4.0	3.0	4.0																							
22-May	2.7	2.4	2.7	2.7	Z	2.7	2.7	2.5	2.4	2.3	2.3	2.2	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.3	2.7																						
23-May	2.1	2.2	2.2	2.2	2.2	Z	2.3	2.2	2.1	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3																						
24-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2																						
25-May	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.1	2.2	2.3	2.2	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.3																						
26-May	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.1	2.2																						
27-May	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.3	2.1	2.1	2.1	2.3																						
28-May	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4	2.5	2.3	2.1	2.5																						
29-May	2.4	2.3	2.3	2.3	2.1	Z	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4	2.2	2.1	2.4																						
30-May	Z	2.2	2.5	2.6	2.5	2.4	2.4	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.2	2.4	2.3	2.2	2.6																						
31-May	2.3	Z	2.3	2.1	2.2	2.3	2.2	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.2	2.5	2.2	2.5																						
2.3																								2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.3	Diurnal Average	
3.1																								3.9	3.2	3.4	3.0	2.9	2.8	3.4	3.5	3.8	3.2	2.6	2.6	2.5	2.3	2.3	2.3	2.4	2.5	2.6	2.9	3.6	4.0	3.0	Diurnal Maximum	
Z - zerospan C - Calibration M - Maintenance																																																



Wood Buffalo Environmental Association
Hourly Averages

Total Hydrocarbons (THC) - ppm
Buffalo Viewpoint - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	251	35.45	35.45
2.1 - 3.0	446	62.99	98.45
3.1 - 10.0	11	1.55	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	6	11	10	1	0	17	44	62	26	28	17	13	3	6	3	4	251
2.1 - 3.0	43	16	13	6	13	27	63	88	40	28	14	10	17	19	28	21	446
3.1 - 10.0	0	0	0	0	1	0	1	1	0	2	1	1	0	1	2	1	11
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	49	27	23	7	14	44	108	151	66	58	32	24	20	26	33	26	708

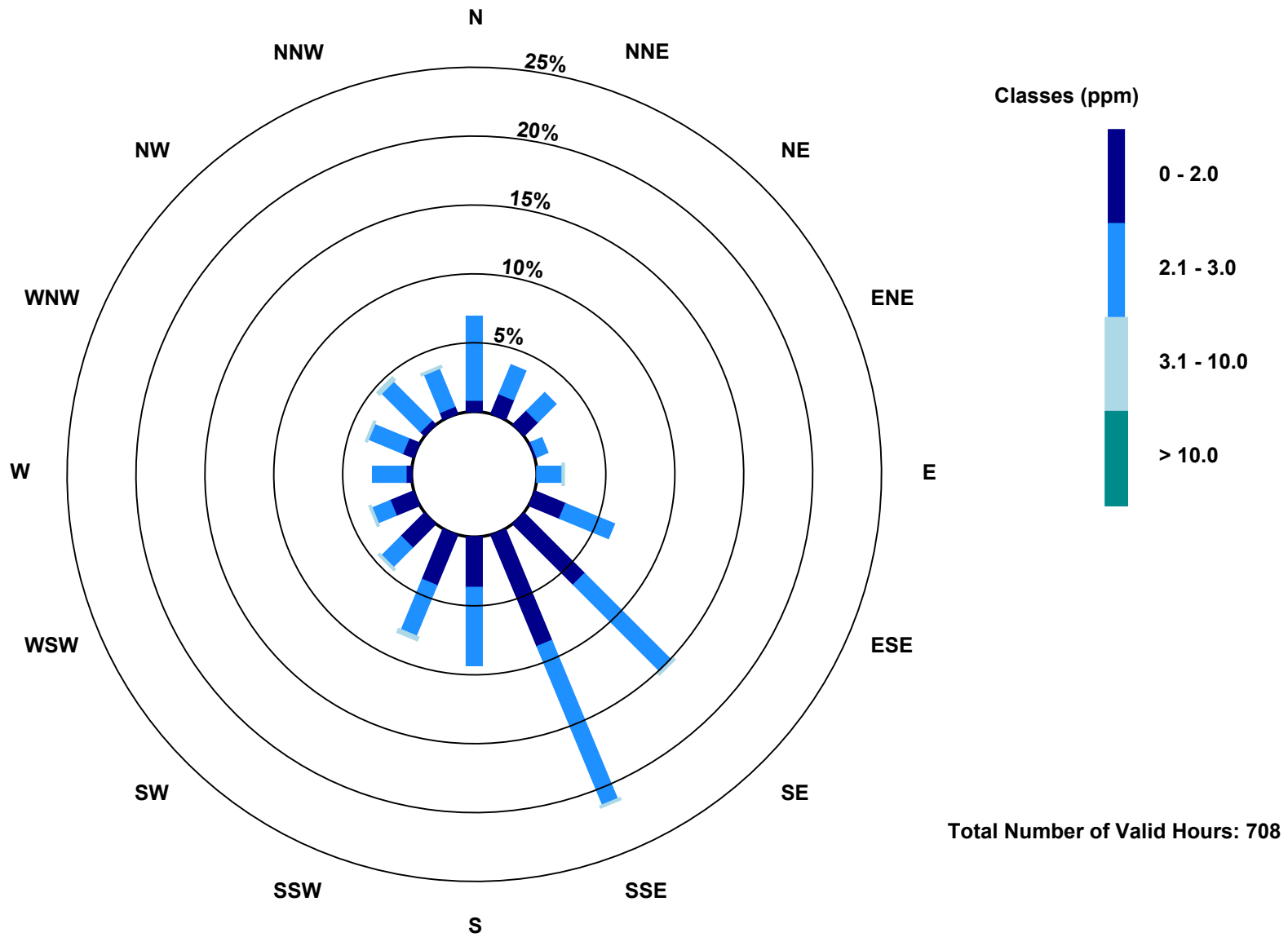
Total Number of Valid Hours: 708

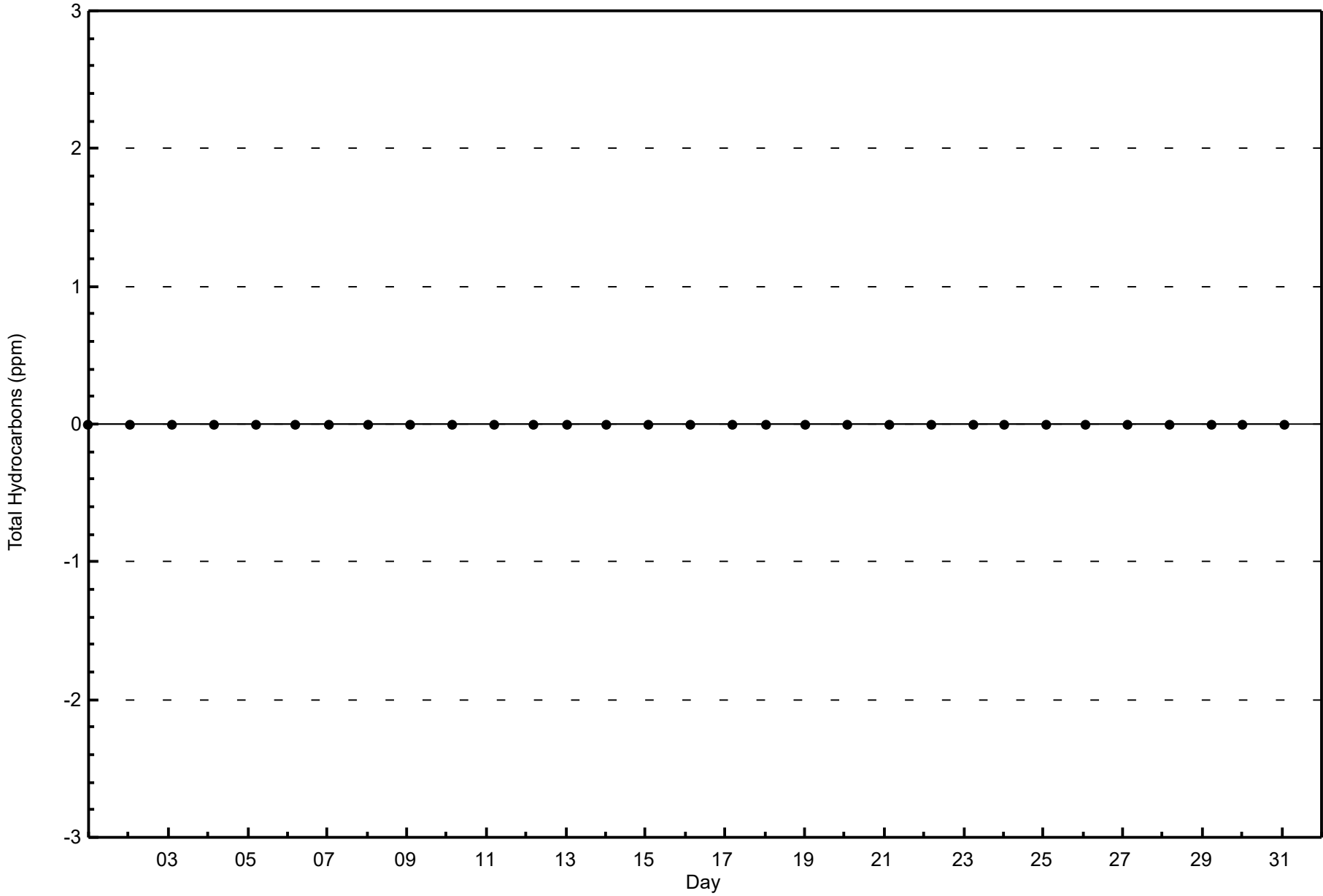
Total Number of Hours: 744

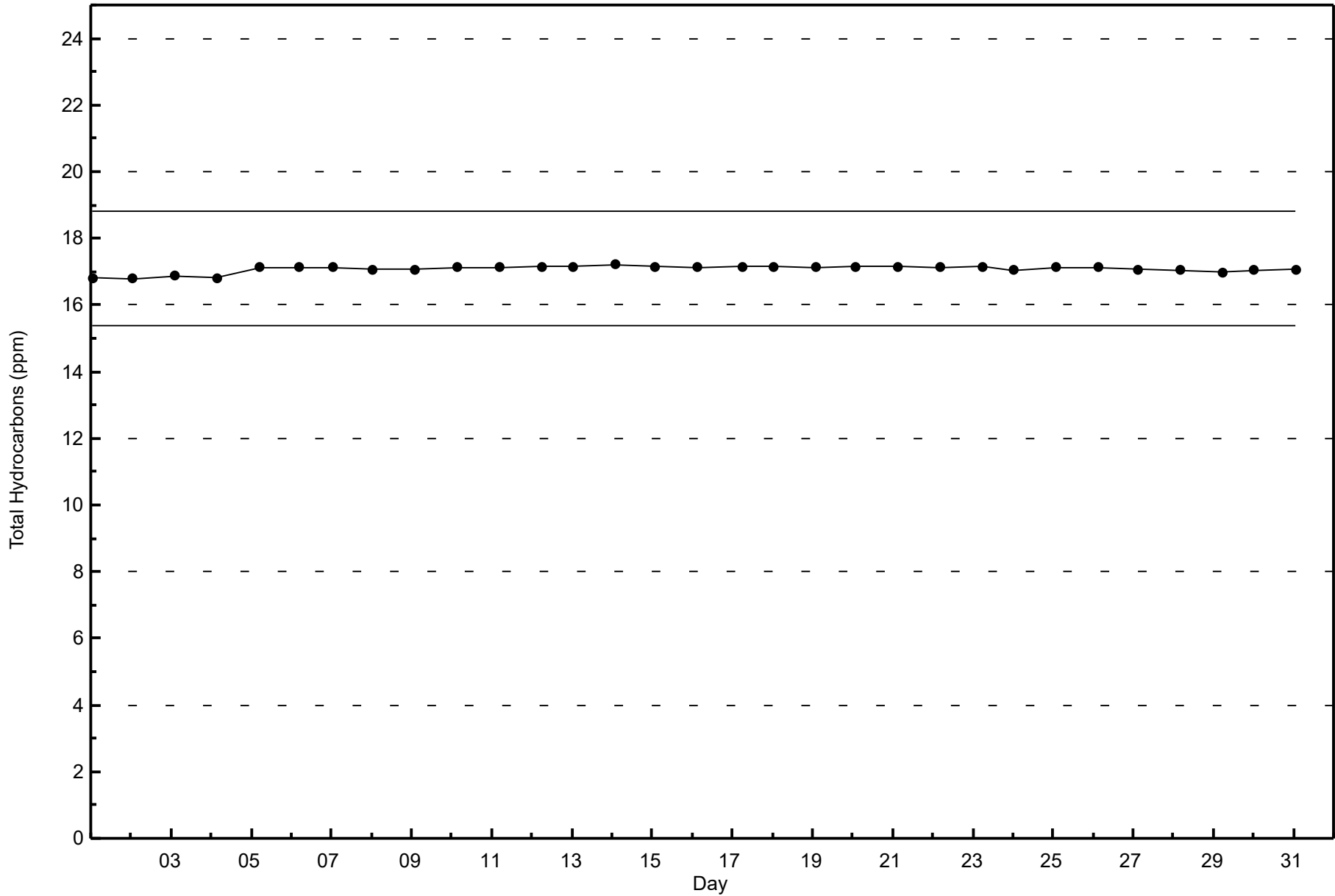


Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Buffalo Viewpoint





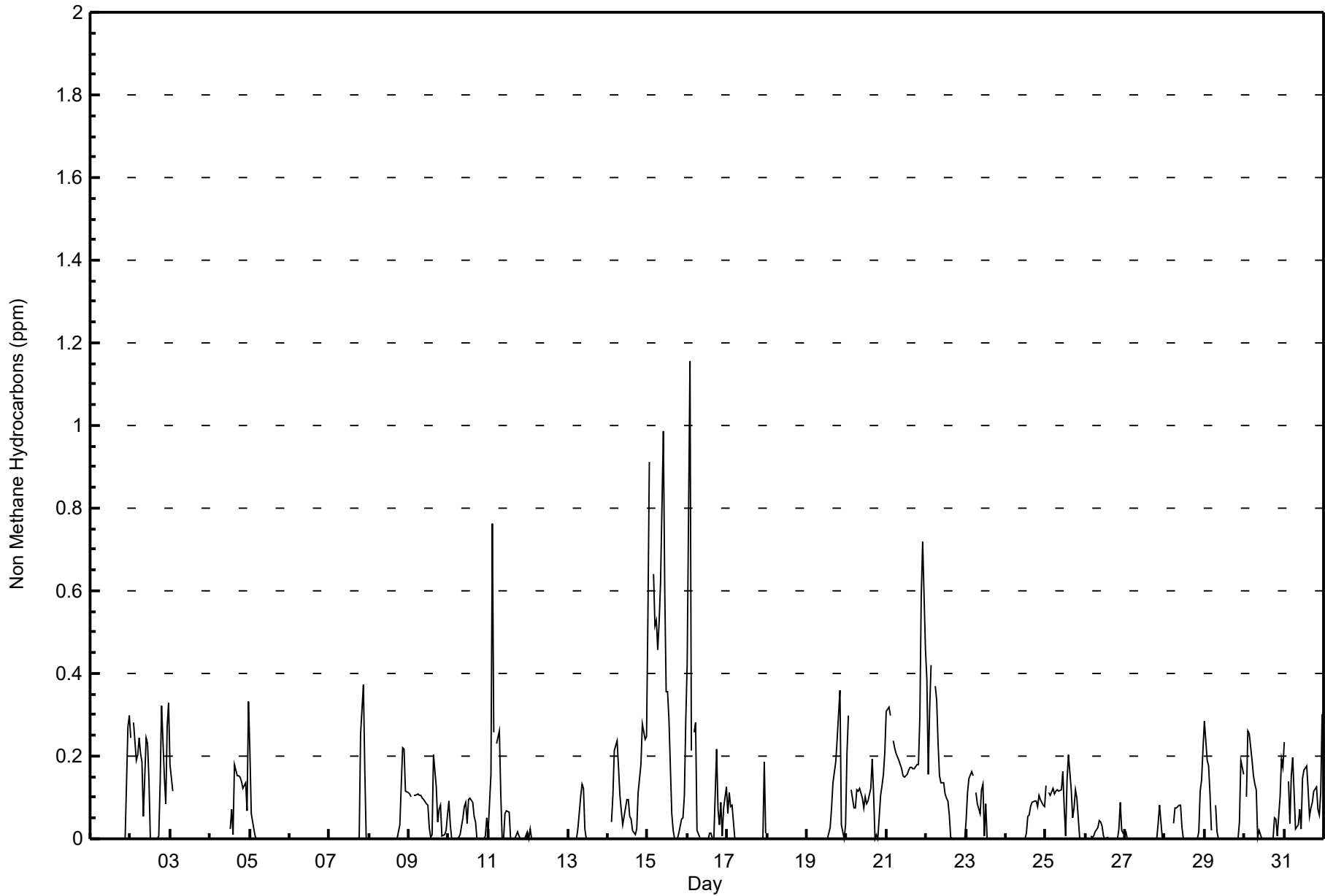




Summary of Hour Averages

Buffalo Viewpoint - May 2023

Maximum Value: 1.156 ppm on May 16 02:00																				Maximum Daily Average: 0.344 ppm on May 15					Hours in Service: 744		
Minimum Value: 0.000 ppm on May 1 02:00																				Minimum Daily Average: 0.000 ppm on May 6					Hours of Data: 708		
Maximum Diurnal Average: 0.154 ppm at hour 2																				Minimum Diurnal Average: 0.031 ppm at hour 17					Hours of Missing Data: 36		
Monthly Average: 0.072 ppm																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.1 P ₉₀ = 0.2 P ₉₉ = 0.6					Hours of Calibration: 35		
																									Percent Operational Time: 99.9		
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.271	0.298	0.025	0.298	
2-May	0.244	Z	0.282	0.190	0.203	0.243	0.208	0.187	0.054	0.245	0.231	0.142	0.001	0.000	0.000	0.000	0.000	0.008	0.135	0.321	0.151	0.086	0.271	0.330	0.154	0.330	
3-May	0.180	0.116	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.180	
4-May	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	C	C	C	C	0.024	0.071	0.009	0.179	0.151	0.153	0.149	0.139	0.121	0.135	0.067	0.331	0.080	0.331
5-May	0.214	0.060	0.022	0.002	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.214	
6-May	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
7-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.253	0.374	0.167	0.000	0.000	0.035	0.374
8-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.034	0.129	0.220	0.217	0.115	0.111	0.036	0.220
9-May	0.109	0.103	Z	0.105	0.104	0.108	0.104	0.105	0.099	0.095	0.086	0.080	0.026	0.002	0.009	0.203	0.127	0.040	0.070	0.081	0.008	0.010	0.021	0.056	0.076	0.203	
10-May	0.090	0.034	0.000	Z	0.000	0.000	0.002	0.009	0.051	0.078	0.088	0.036	0.094	0.097	0.090	0.053	0.041	0.000	0.000	0.000	0.000	0.000	0.008	0.051	0.036	0.097	
11-May	0.018	0.156	0.764	0.259	Z	0.230	0.263	0.110	0.000	0.000	0.061	0.069	0.066	0.001	0.000	0.000	0.000	0.018	0.007	0.000	0.000	0.000	0.002	0.016	0.089	0.764	
12-May	0.000	0.025	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.025	
13-May	Z	0.000	0.000	0.000	0.000	0.000	0.022	0.101	0.132	0.122	0.024	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.132	
14-May	0.000	Z	0.039	0.103	0.215	0.239	0.174	0.106	0.069	0.035	0.056	0.097	0.096	0.053	0.047	0.021	0.011	0.024	0.113	0.145	0.181	0.278	0.240	0.247	0.112	0.278	
15-May	0.547	0.913	Z	0.640	0.516	0.530	0.458	0.527	0.619	0.986	0.599	0.356	0.355	0.287	0.062	0.021	0.000	0.001	0.000	0.014	0.047	0.052	0.106	0.287	0.344	0.986	
16-May	0.423	1.156	0.215	Z	0.259	0.282	0.021	0.004	M	0.000	0.000	0.000	0.000	0.014	0.014	0.000	0.000	0.217	0.072	0.035	0.089	0.005	0.074	0.126	0.137	1.156	
17-May	0.060	0.112	0.078	0.080	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.188	0.015	0.023	0.188		
18-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.001	
19-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.026	0.074	0.135	0.187	0.242	0.301	0.361	0.035	0.000	0.035	0.061	0.361	
20-May	0.205	0.298	Z	0.118	0.073	0.076	0.119	0.115	0.121	0.099	0.075	0.103	0.084	0.093	0.122	0.193	0.109	0.000	0.011	0.000	0.106	0.130	0.156	0.211	0.114	0.298	
21-May	0.307	0.317	0.297	Z	0.238	0.221	0.205	0.190	0.181	0.169	0.153	0.149	0.155	0.166	0.171	0.173	0.170	0.168	0.181	0.179	0.294	0.589	0.717	0.458	0.254	0.717	
22-May	0.385	0.157	0.315	0.419	Z	0.370	0.335	0.231	0.152	0.135	0.135	0.109	0.098	0.093	0.059	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.130	0.419	
23-May	0.045	0.111	0.145	0.162	0.151	Z	0.113	0.085	0.062	0.119	0.132	0.006	0.085	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.053	0.162	
24-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.013	0.053	0.057	0.077	0.088	0.090	0.090	0.079	0.106	0.096	0.080	0.078	0.040	0.106	
25-May	0.130	Z	0.113	0.107	0.123	0.108	0.116	0.120	0.115	0.120	0.161	0.076	0.005	0.144	0.204	0.120	0.049	0.074	0.119	0.097	0.005	0.000	0.000	0.000	0.092	0.204	
26-May	0.000	0.001	Z	0.008	0.003	0.007	0.016	0.028	0.043	0.040	0.032	0.007	0.000	0.003	0.001	0.001	0.000	0.000	0.000	0.000	0.024	0.087	0.022	0.012	0.015	0.087	
27-May	0.016	0.001	0.001	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.036	0.083	0.000	0.000	0.006	0.083	
28-May	0.000	0.000	0.000	0.000	Z	0.037	0.073	0.076	0.081	0.081	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016	0.115	0.141	0.218	0.038	0.218	
29-May	0.284	0.190	0.177	0.109	0.021	Z	0.081	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.041	0.189	0.154	0.055	0.284	
30-May	Z	0.103	0.262	0.254	0.190	0.153	0.132	0.118	0.003	0.020	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.048	0.006	0.101	0.192	0.174	0.079	0.262
31-May	0.234	Z	0.140	0.038	0.153	0.196	0.111	0.023	0.033	0.070	0.022	0.145	0.166	0.178	0.119	0.054	0.075	0.088	0.117	0.127	0.072	0.056	0.113	0.303	0.114	0.303	
																								Diurnal Average			
																								Diurnal Maximum			
Z - zerospan C - Calibration M - Maintenance																											





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	363	51.27	51.27
0.006 - 0.05	81	11.44	62.71
0.06 - 0.1	143	20.20	82.91
> 0.1	121	17.09	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	6	12	13	4	0	25	76	99	42	39	12	13	3	6	8	5	363
0.006 - 0.05	6	3	1	1	2	4	6	14	13	4	10	2	2	4	6	3	81
0.06 - 0.1	24	7	5	0	7	10	16	15	7	11	5	2	11	8	8	7	143
> 0.1	13	5	4	2	5	5	10	23	4	4	5	7	4	8	11	11	121
Totals	49	27	23	7	14	44	108	151	66	58	32	24	20	26	33	26	708

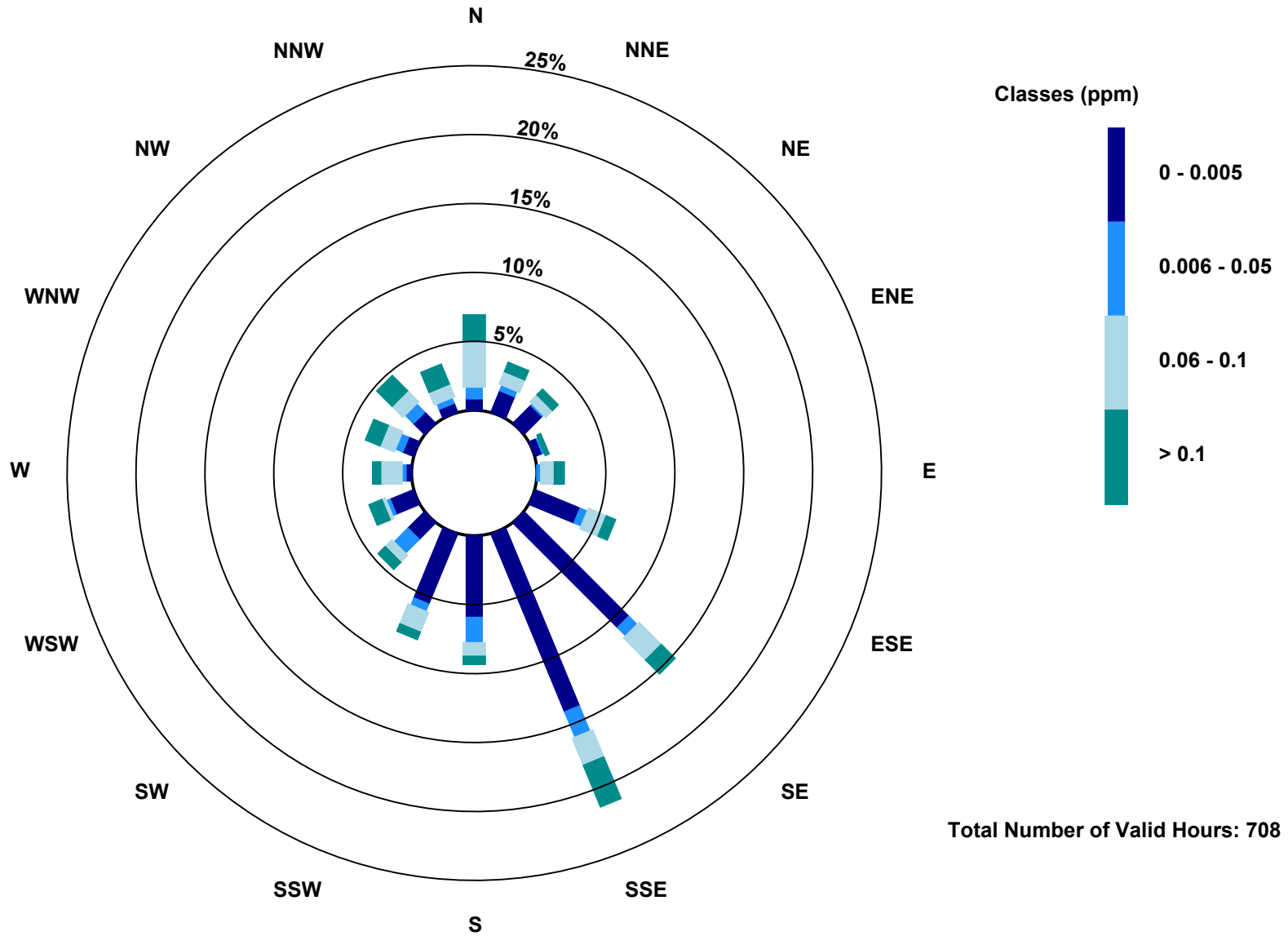
Total Number of Valid Hours: 708

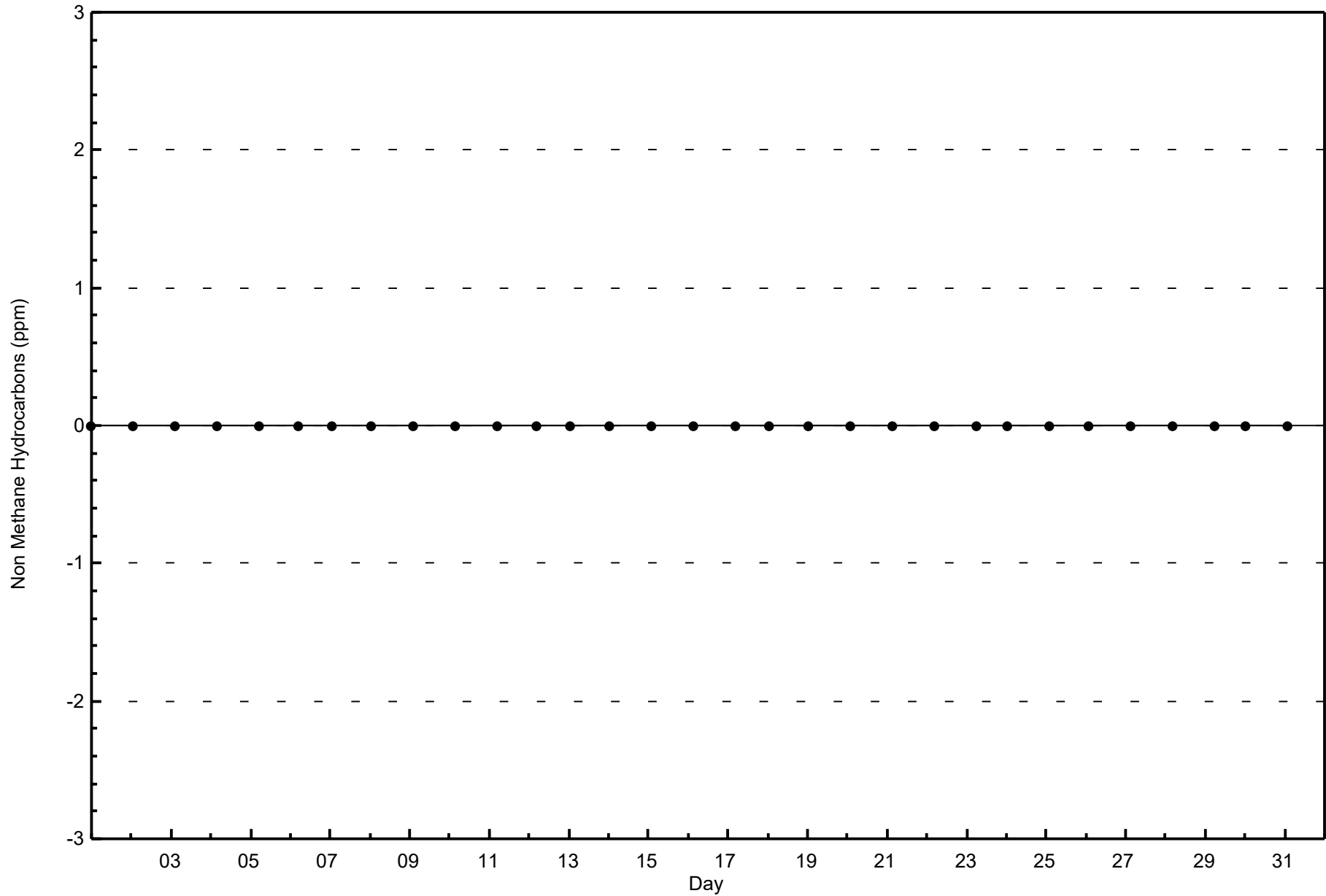
Total Number of Hours: 744

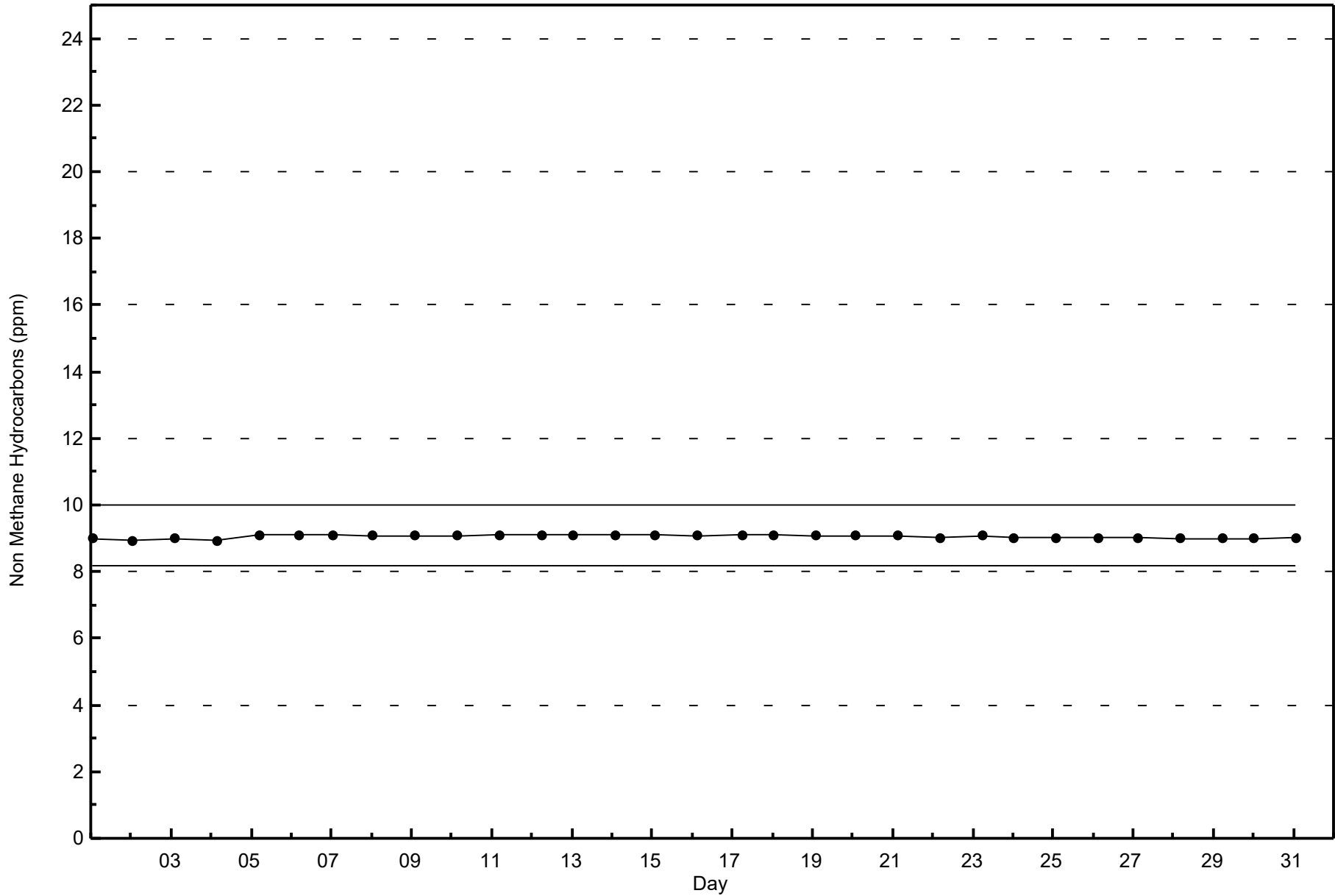


Wood Buffalo Environmental Association
Wind Rose May 2023

Non Methane Hydrocarbons (NMHC) - ppm
Buffalo Viewpoint







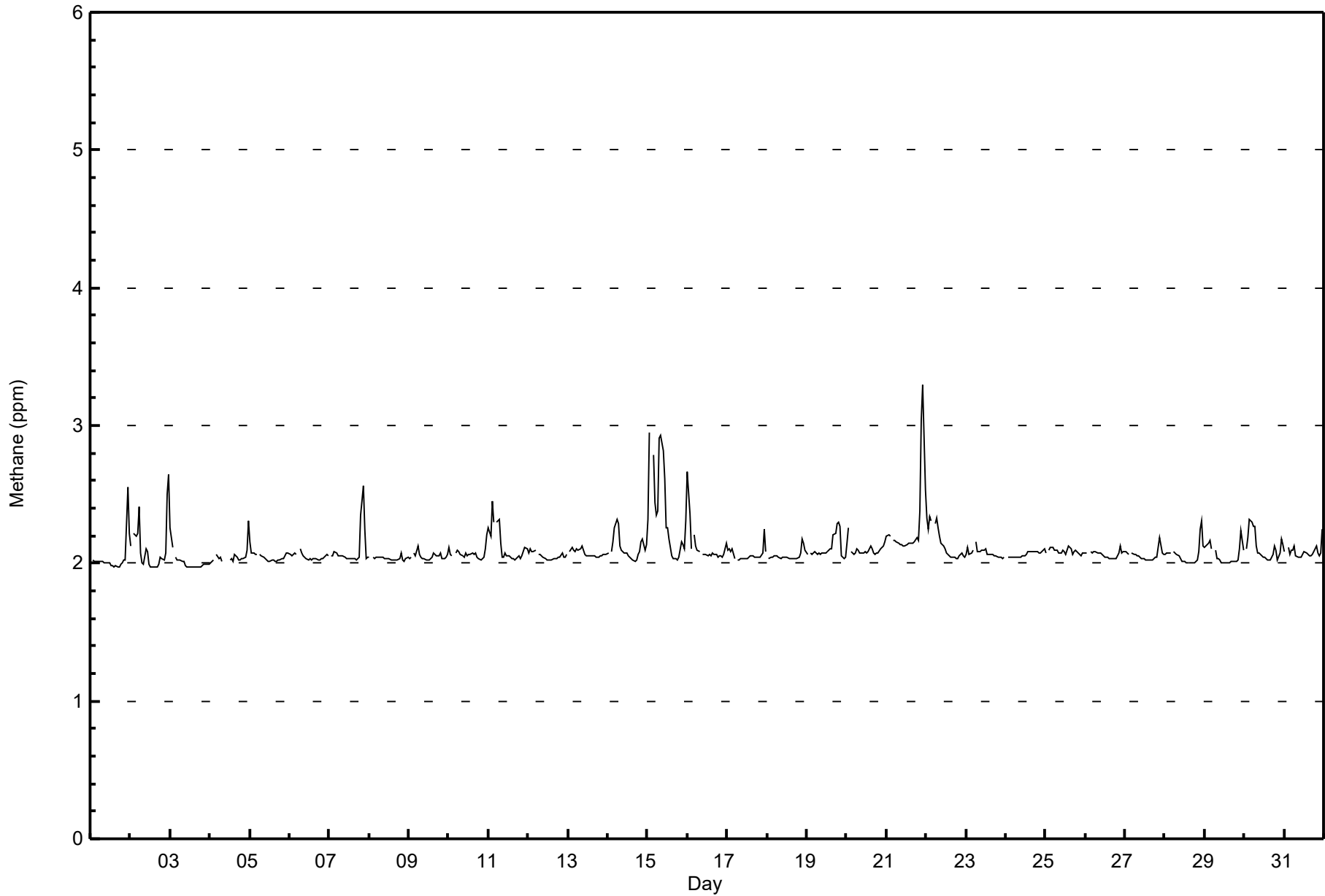


Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 3.3 ppm on May 21 23:00	Maximum Daily Average: 2.4 ppm on May 15		Hours of Data:	708
Minimum Value: 2.0 ppm on May 2 14:00	Minimum Daily Average: 2.0 ppm on May 3		Hours of Missing Data:	36
Maximum Diurnal Average: 2.2 ppm at hour 23	Minimum Diurnal Average: 2.0 ppm at hour 16		Hours of Calibration:	35
Monthly Average: 2.09 ppm	Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.1 Q ₃ = 2.1 P ₉₀ = 2.2 P ₉₉ = 2.7		Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.2	2.0	2.5
2-May	2.1	Z	2.2	2.2	2.2	2.4	2.1	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.5	2.6	2.1	2.6
3-May	2.3	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3
4-May	2.0	2.0	2.0	Z	2.1	2.0	2.0	2.0	2.0	C	C	C	C	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.0	2.3	
5-May	2.2	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.2
6-May	2.1	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1	2.1
7-May	Z	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.4	2.6	2.2	2.0	2.0	2.1	2.6
8-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.1
9-May	2.0	2.0	Z	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1
10-May	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.2
11-May	2.3	2.2	2.4	2.3	Z	2.3	2.3	2.1	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.4
12-May	2.1	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.1
13-May	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1
14-May	2.1	Z	2.1	2.2	2.3	2.3	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.3
15-May	2.3	2.9	Z	2.8	2.4	2.4	2.4	2.9	2.9	2.8	2.6	2.3	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.2	2.1	2.1	2.3	2.4	2.9
16-May	2.7	2.4	2.1	Z	2.2	2.1	2.1	2.1	M	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.7
17-May	2.1	2.1	2.1	2.1	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.2
18-May	Z	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.1	2.2
19-May	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.1	2.0	2.0	2.1	2.3
20-May	2.1	2.3	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3
21-May	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.4	3.0	3.3	2.5	2.3	3.3
22-May	2.3	2.2	2.3	2.3	Z	2.3	2.3	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.3
23-May	2.1	2.1	2.1	2.1	2.1	Z	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2
24-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
25-May	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
26-May	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1
27-May	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.1	2.2
28-May	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.1	2.1	2.3
29-May	2.1	2.1	2.1	2.2	2.1	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.2
30-May	Z	2.1	2.2	2.3	2.3	2.3	2.3	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.2	2.1	2.1	2.3
31-May	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2

2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	Diurnal Average
2.7	2.9	2.4	2.8	2.4	2.4	2.4	2.4	2.9	2.9	2.8	2.6	2.3	2.3	2.2	2.1	2.1	2.2	2.2	2.3	2.4	2.6	3.0	3.3	2.6	2.6	2.6	Diurnal Maximum

Z - zerospan C - Calibration M - Maintenance





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Methane (CH₄) - ppm
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	292	41.24	41.24
2.1 - 3.0	415	58.62	99.86
3.1 - 10.0	1	0.14	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	10	15	12	1	0	19	46	67	30	32	23	15	4	9	4	5	292
2.1 - 3.0	39	12	11	6	14	25	62	83	36	26	9	9	16	17	29	21	415
3.1 - 10.0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	49	27	23	7	14	44	108	151	66	58	32	24	20	26	33	26	708

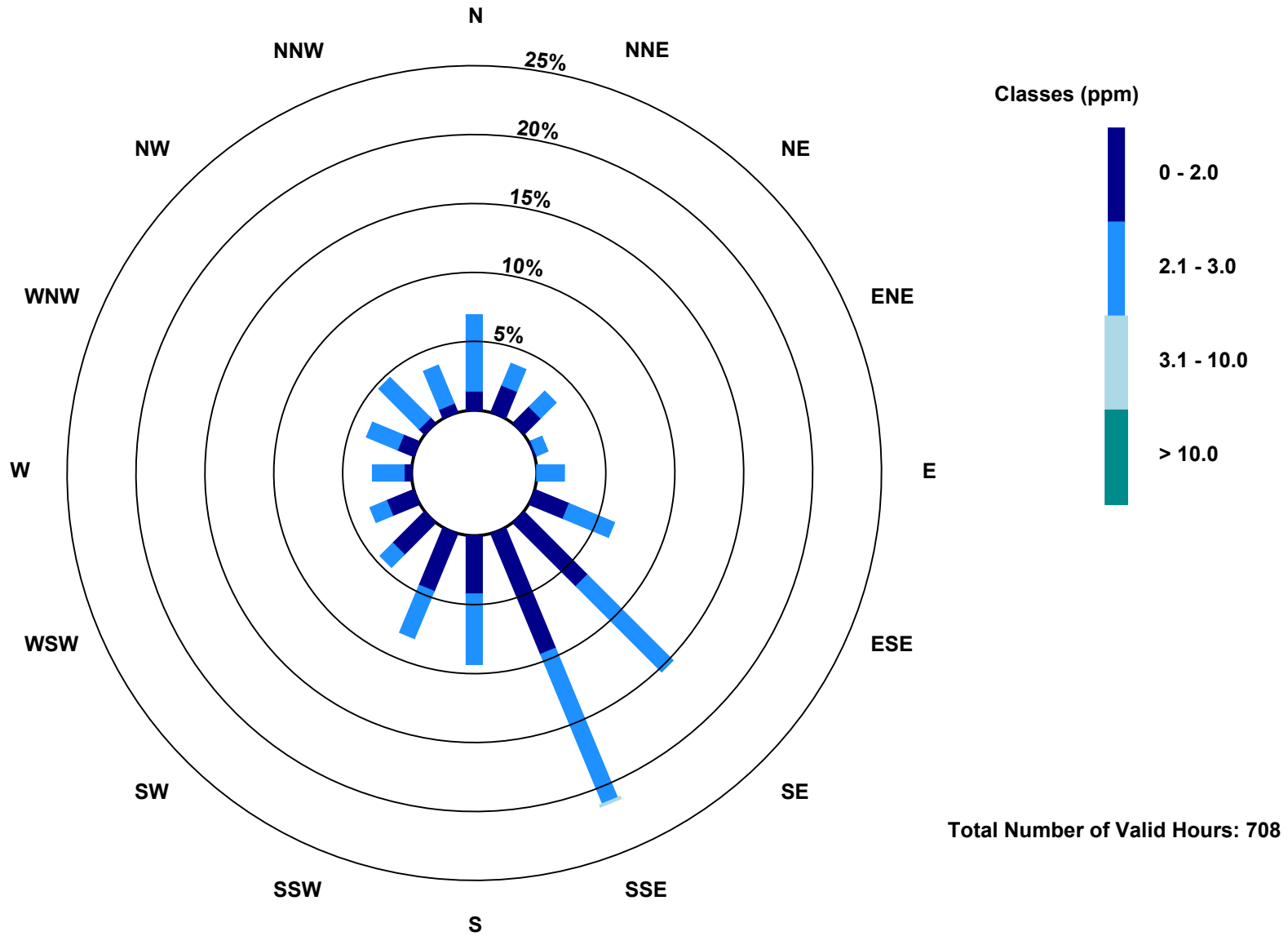
Total Number of Valid Hours: 708

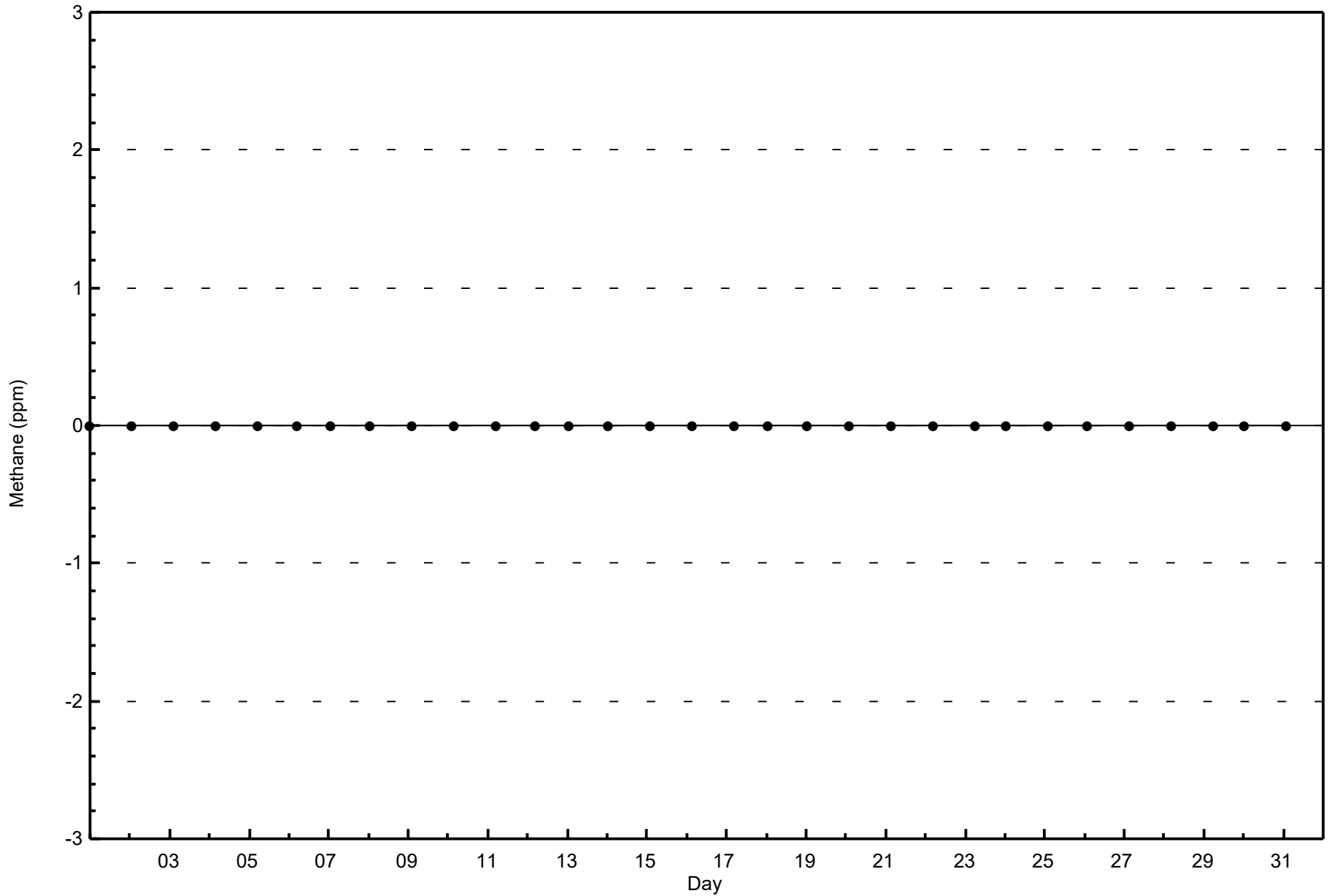
Total Number of Hours: 744

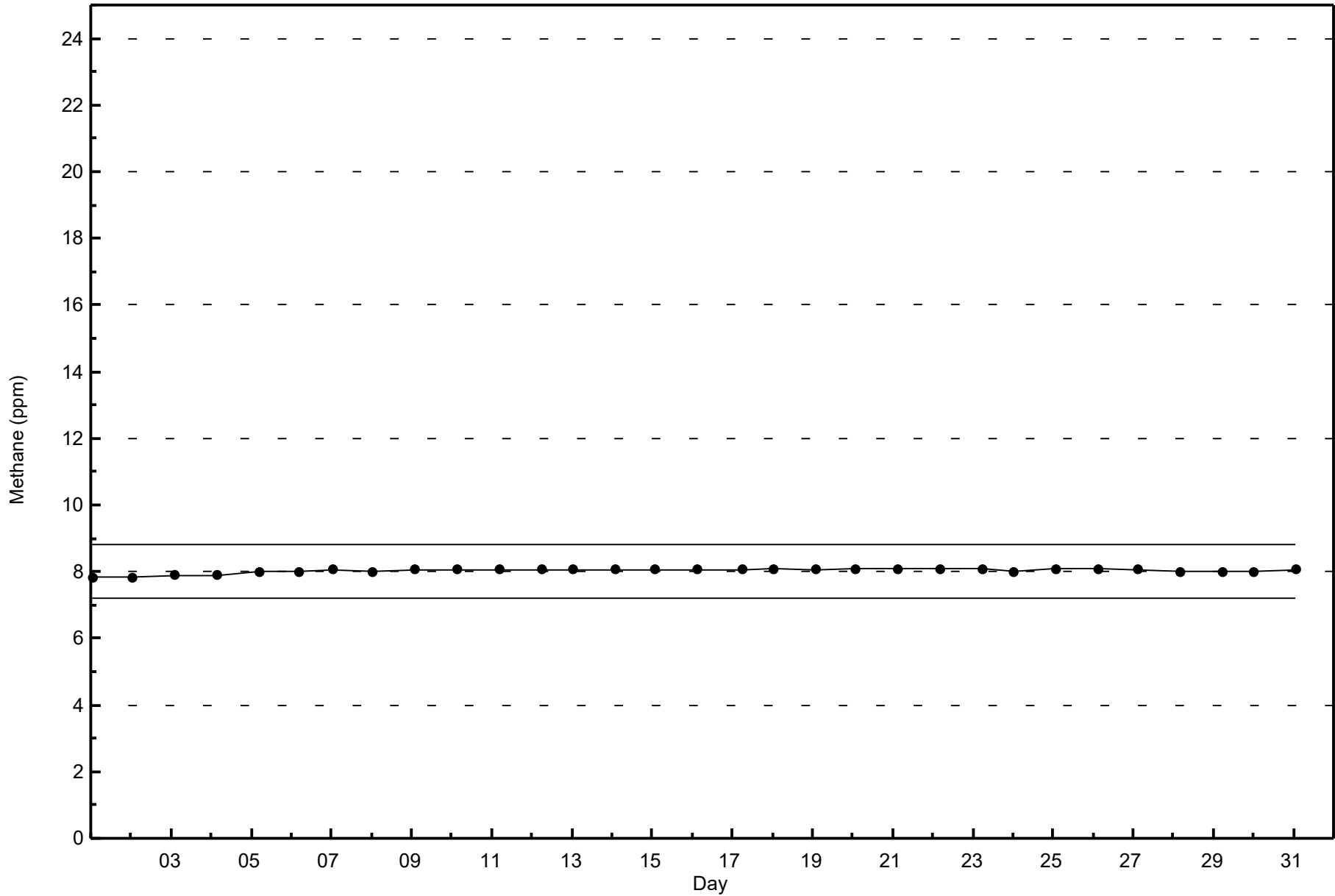


Wood Buffalo Environmental Association
Wind Rose May 2023

Methane (CH₄) - ppm
Buffalo Viewpoint







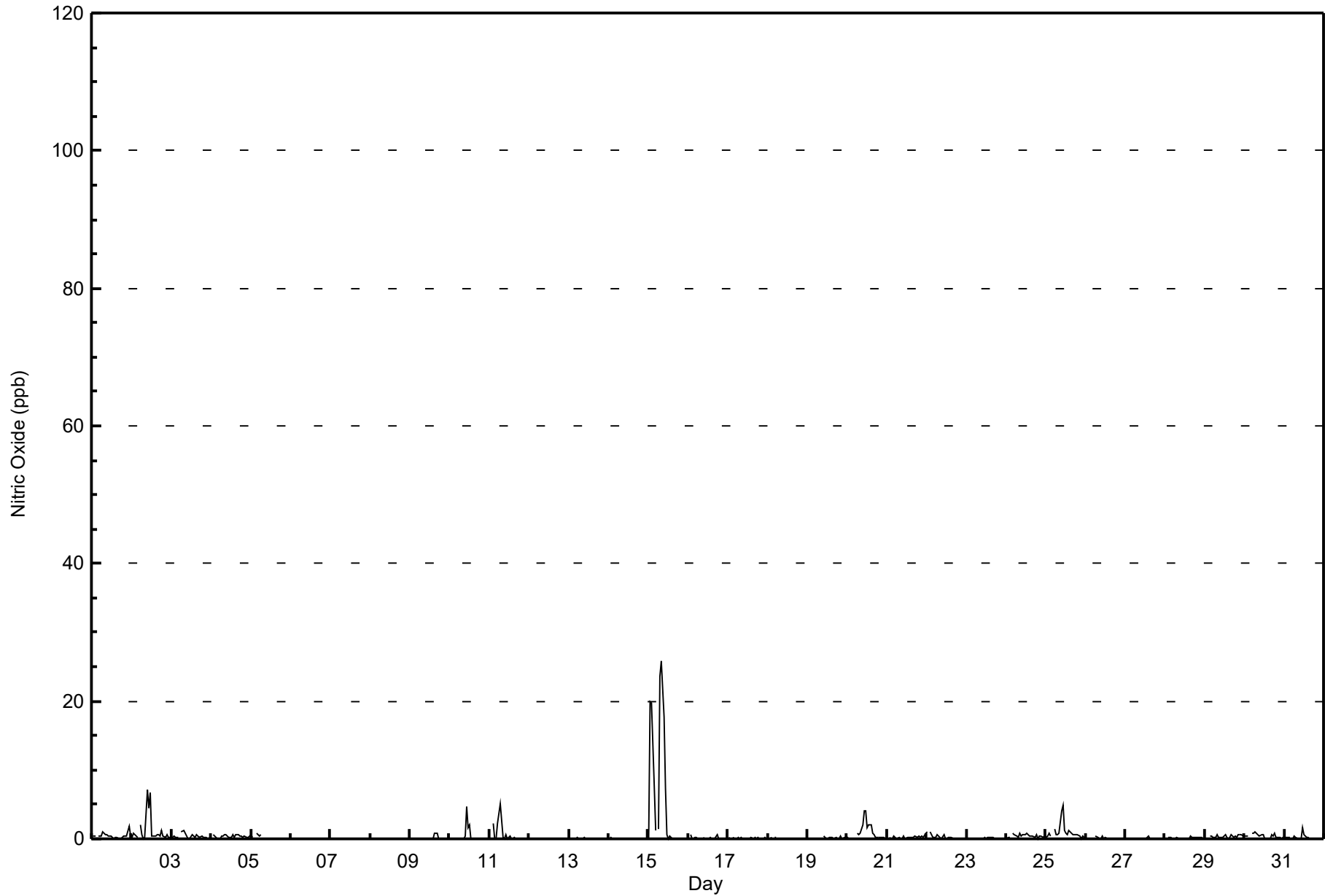


Maximum Value: 25.8 ppb on May 15 09:00																				Maximum Daily Average: 5.5 ppb on May 15					Hours in Service:	744	
Minimum Value: 0.0 ppb on May 1 17:00																				Minimum Daily Average: 0.0 ppb on May 6					Hours of Data:	680	
Maximum Diurnal Average: 1.2 ppb at hour 10																				Minimum Diurnal Average: 0.1 ppb at hour 20					Hours of Missing Data:	64	
Monthly Average: 0.45 ppb																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.3 P ₉₀ = 0.7 P ₉₉ = 7.2					Hours of Calibration:	35	
																									Percent Operational Time:	96.1	
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.3	0.5	0.3	Z	0.5	0.4	1.0	0.9	0.5	0.6	0.3	0.4	0.2	0.1	0.3	0.2	0.0	0.1	0.2	0.4	0.4	0.4	1.8	0.4	0.4	1.8	
2-May	0.2	0.8	0.5	0.1	Z	2.0	0.6	0.1	0.2	7.1	4.4	6.8	0.5	0.5	0.4	0.5	0.5	0.4	1.1	0.5	0.3	0.5	0.1	0.3	1.2	7.1	
3-May	0.0	0.3	0.2	0.3	0.2	Z	1.0	1.3	0.9	0.4	0.1	0.0	0.5	0.3	0.2	0.6	0.4	0.3	0.4	0.1	0.1	0.3	0.0	0.3	0.4	1.3	
4-May	Z	0.5	0.3	0.3	0.1	0.1	0.5	0.5	0.6	0.6	0.2	0.2	0.3	0.6	0.1	0.5	0.6	0.4	0.5	0.2	0.3	0.3	0.1	0.4	0.4	0.6	
5-May	0.5	0.2	Z	0.9	0.6	0.4	0.6	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9	
6-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
8-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
9-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.9	
10-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	4.6	1.6	1.9	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	4.6	
11-May	0.0	Z	2.2	0.0	0.0	2.3	5.0	2.7	0.2	0.0	0.6	0.1	0.5	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	5.0	
12-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
13-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	
14-May	0.0	0.1	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	
15-May	0.0	19.9	19.8	7.6	1.2	Z	1.4	23.6	25.8	17.7	7.4	0.7	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	25.8	
16-May	Z	0.5	0.0	0.0	0.2	0.1	0.0	0.0	M	0.2	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	
17-May	0.0	0.2	Z	0.2	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.3	0.0	0.1	0.1	0.0	0.0	0.2	0.0	0.1	0.3	
18-May	0.0	0.0	0.3	Z	0.3	0.2	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0.3
19-May	M	M	M	M	M	M	M	M	M	M	0.4	0.0	0.0	0.2	0.2	0.1	0.0	0.2	0.0	0.0	0.4	0.1	0.2	0.0	--	0.4	
20-May	0.1	0.0	0.0	0.0	0.0	Z	0.7	0.6	0.8	2.1	4.1	4.1	1.6	1.9	2.0	0.9	0.6	0.2	0.2	0.1	0.2	0.2	0.2	0.0	0.9	4.1	
21-May	Z	0.3	0.0	0.1	0.3	0.2	0.0	0.1	0.0	0.0	0.3	0.1	0.2	0.2	0.2	0.1	0.2	0.5	0.3	0.3	0.2	0.4	0.3	0.9	0.2	0.9	
22-May	1.0	Z	1.0	0.7	0.3	0.2	0.7	0.3	0.2	0.1	0.5	0.0	0.0	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0	
23-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	
24-May	0.0	0.2	0.3	Z	0.9	0.5	0.5	0.2	0.8	0.3	0.6	0.7	0.7	0.6	0.5	0.3	0.4	0.3	0.6	0.1	0.3	0.3	0.2	0.6	0.4	0.9	
25-May	0.2	0.4	0.9	0.4	Z	1.3	0.7	0.7	0.8	4.2	4.8	1.2	0.8	0.7	1.3	0.9	0.6	0.6	0.6	0.7	0.5	0.0	0.4	0.2	1.0	4.8	
26-May	0.2	0.0	0.1	0.0	0.0	Z	0.4	0.3	0.0	0.1	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	
27-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	
28-May	0.0	Z	0.3	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.0	0.1	0.4	
29-May	0.0	0.0	Z	0.3	0.4	0.2	0.3	0.5	0.3	0.2	0.3	0.3	0.5	0.3	0.0	0.2	0.6	0.2	0.4	0.2	0.5	0.7	0.7	0.3	0.3	0.7	
30-May	0.5	0.5	0.3	Z	0.8	0.8	1.1	0.8	0.6	0.3	0.5	0.6	0.0	0.1	0.0	0.0	0.5	0.5	0.7	0.3	0.1	0.2	0.0	0.2	0.4	1.1	
31-May	0.0	0.2	0.1	0.2	Z	0.0	0.4	0.2	0.0	0.0	0.0	1.6	0.6	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.6	
																								Diurnal Average			
																								Diurnal Maximum			
Z - zerospan C - Calibration M - Maintenance																											



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Buffalo Viewpoint - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	678	99.71	99.71
21 - 40	2	0.29	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 680

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	50	27	23	6	14	44	108	142	57	52	28	23	19	26	30	29	678
21 - 40	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	50	27	23	6	14	44	108	142	57	52	29	24	19	26	30	29	680

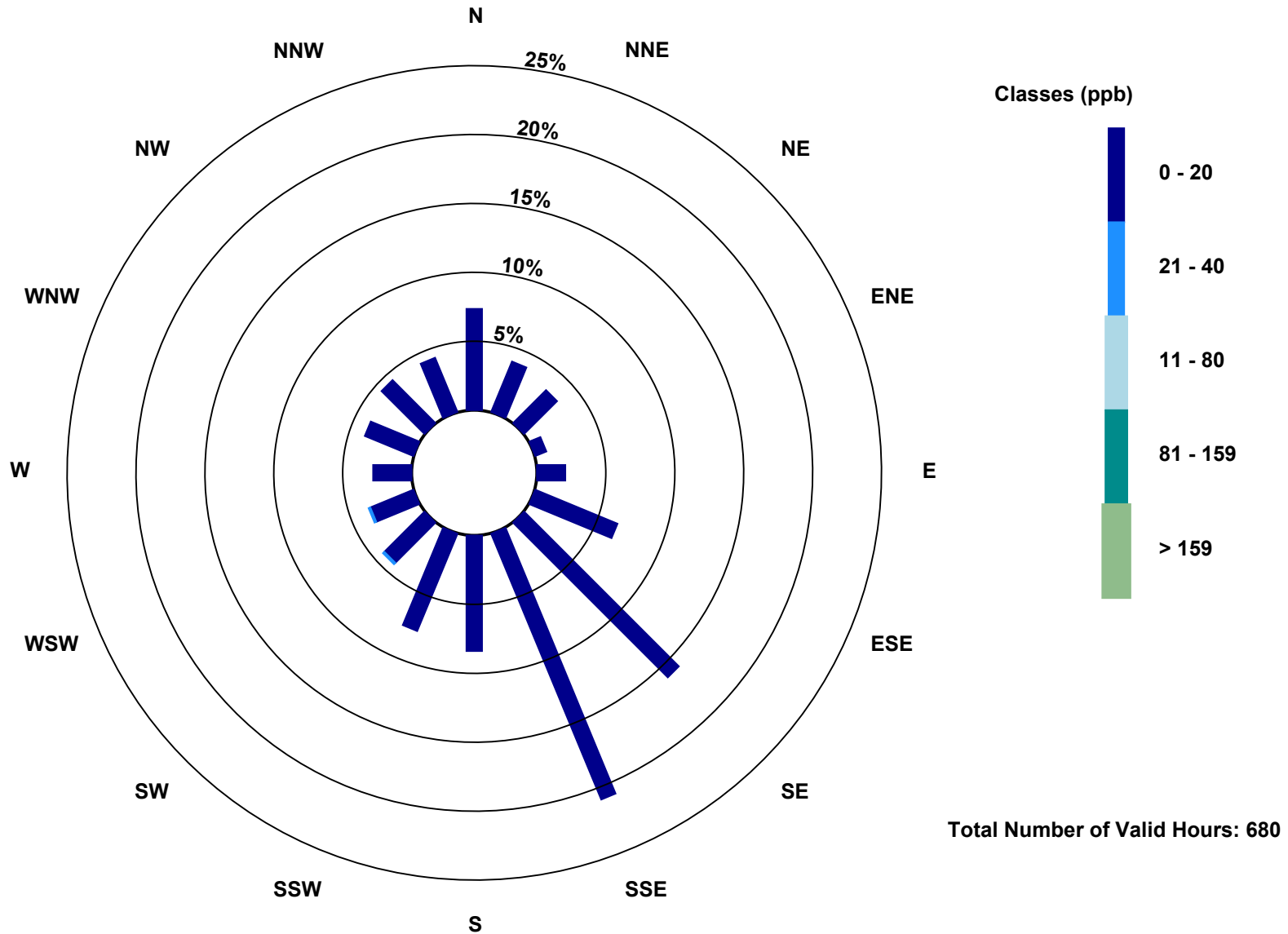
Total Number of Valid Hours: 680

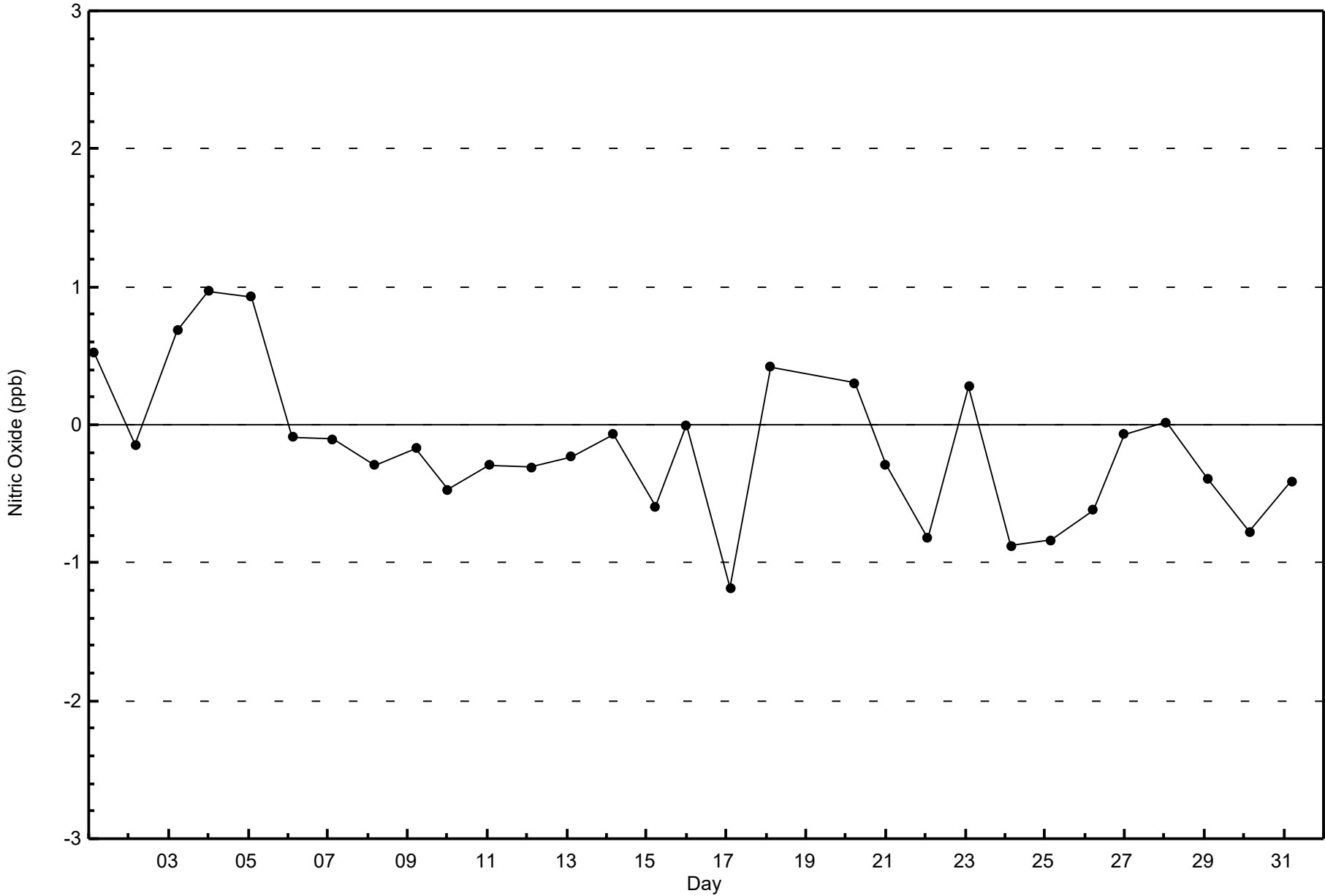
Total Number of Hours: 744

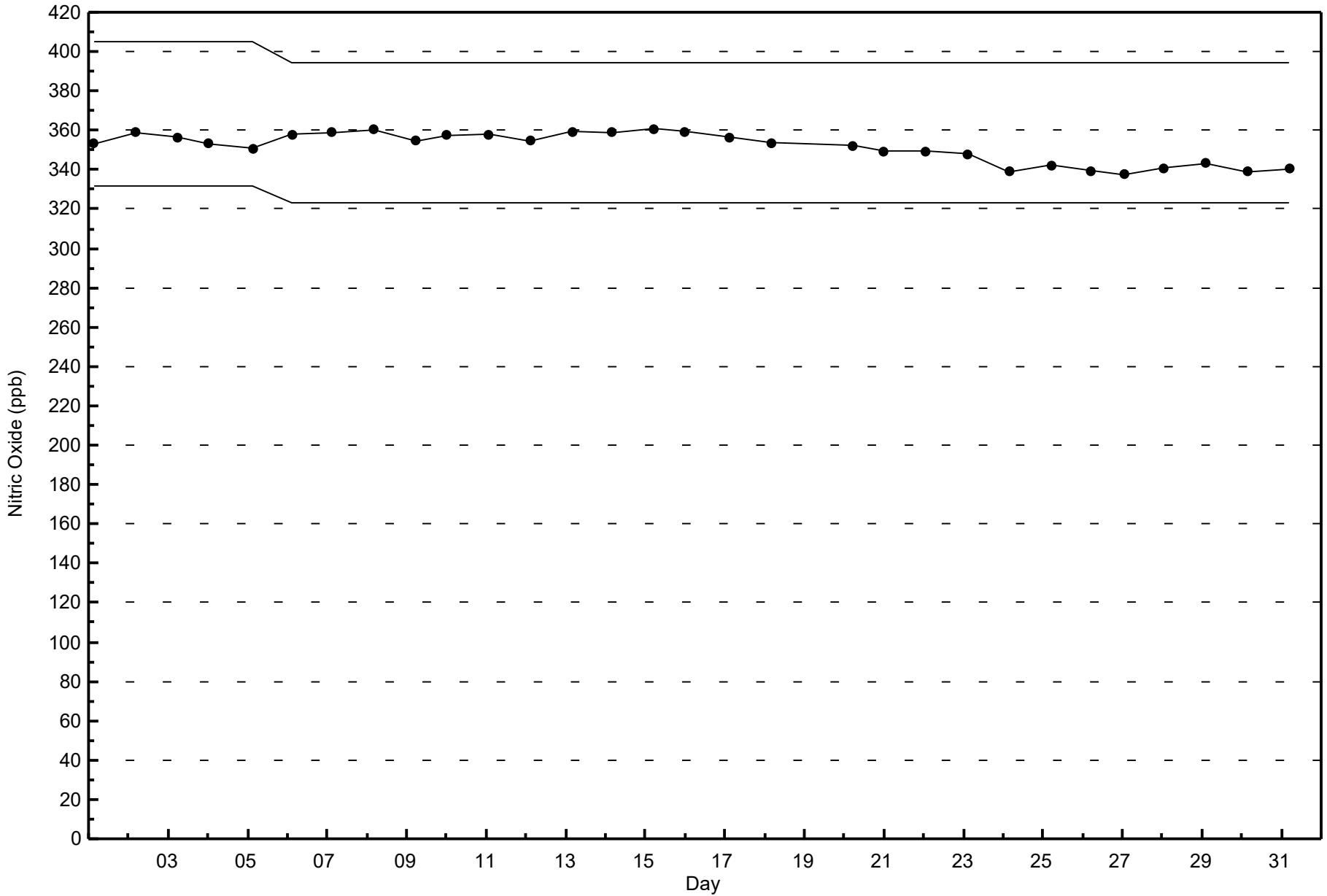


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Buffalo Viewpoint









Wood Buffalo Environmental Association
Summary of Hour Averages

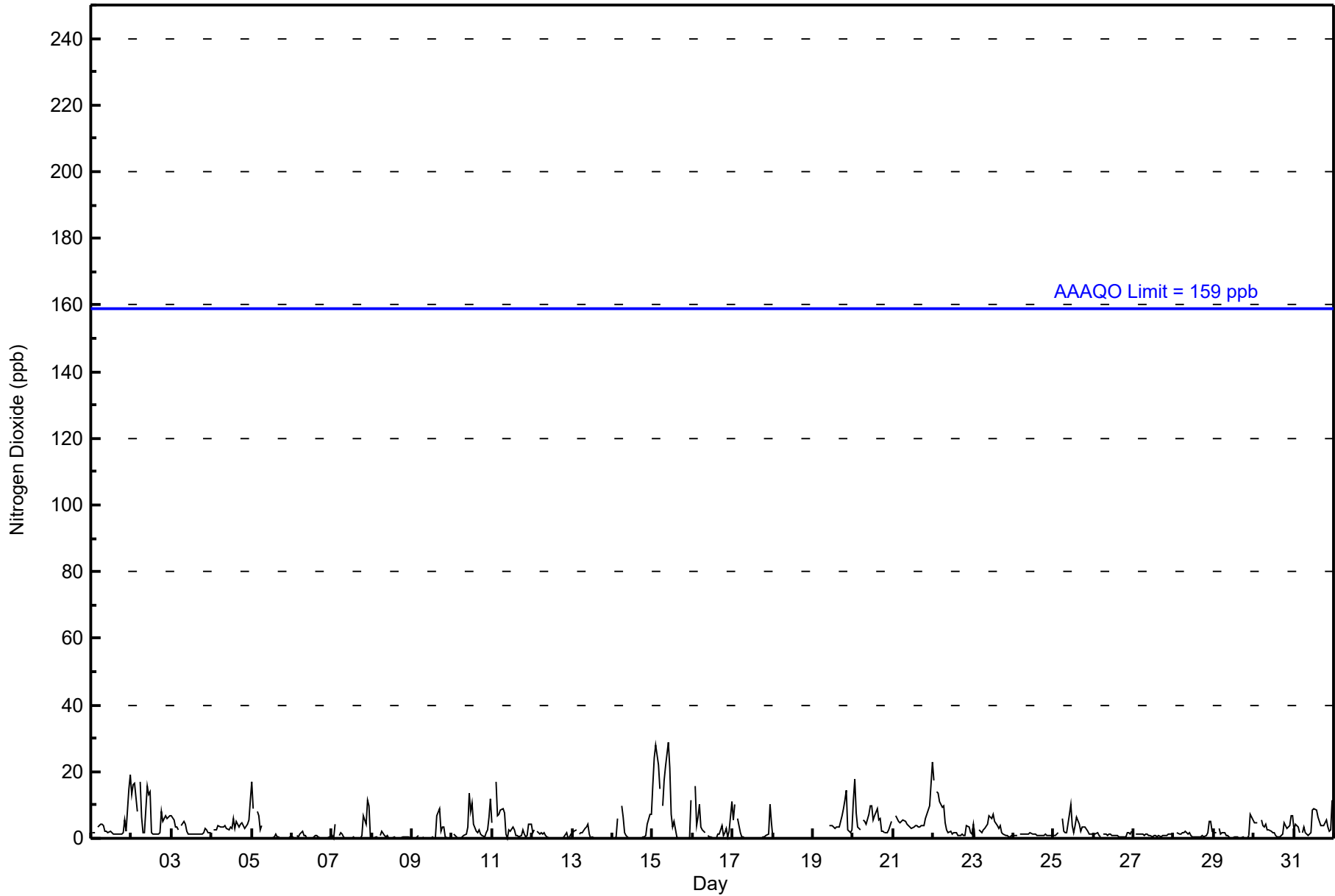
Nitrogen Dioxide (NO₂) - ppb
Buffalo Viewpoint - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0																						Hours in Service: 744																											
Maximum Value: 28.8 ppb on May 15 10:00																						Hours of Data: 680																											
Minimum Value: 0.0 ppb on May 5 13:00																						Hours of Missing Data: 64																											
Maximum Diurnal Average: 5.2 ppb at hour 24																						Hours of Calibration: 35																											
Monthly Average: 2.99 ppb																						Percent Operational Time: 96.1																											
Minimum Daily Average: 0.4 ppb on May 8																																																	
Minimum Diurnal Average: 1.5 ppb at hour 18																																																	
Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.5 Median = 1.4 Q ₃ = 3.9 P ₉₀ = 7.4 P ₉₉ = 19.5																																																	
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	1.5	1.6	1.9	Z	3.2	4.3	4.2	3.8	2.0	2.0	1.9	2.0	1.5	1.2	1.3	1.3	1.3	1.3	1.2	1.7	5.3	2.2	14.8	19.0	3.5	19.0																							
2-May	13.2	15.9	16.7	7.9	Z	16.9	6.2	1.5	1.6	15.7	13.0	13.9	1.7	1.4	1.4	1.3	1.3	1.8	8.2	5.2	6.7	6.0	6.5	6.7	7.4	16.9																							
3-May	6.6	5.5	3.5	3.6	2.5	Z	3.7	5.2	4.1	2.1	1.2	1.2	1.4	1.3	1.2	1.2	1.4	1.3	1.4	1.7	3.0	2.7	1.7	1.9	2.6	6.6																							
4-May	Z	2.5	2.6	2.7	3.9	3.2	3.2	3.4	3.8	2.9	2.5	3.3	3.1	5.8	3.0	4.9	3.5	4.3	4.8	4.0	3.0	4.4	5.7	11.3	4.0	11.3																							
5-May	17.0	9.0	Z	8.1	6.6	2.6	4.0	C	C	C	C	C	0.0	0.6	1.2	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.8	17.0																							
6-May	0.5	0.1	Z	1.0	0.6	1.3	2.1	1.0	0.7	0.2	0.0	0.0	0.0	0.3	0.8	0.7	0.3	0.0	0.0	0.0	0.0	0.1	0.5	0.2	0.5	2.1																							
7-May	0.9	0.0	4.2	Z	0.8	1.8	1.1	0.4	0.2	0.0	0.0	0.0	0.0	0.4	0.0	0.1	0.0	0.0	0.9	6.7	4.2	11.3	9.8	0.6	1.9	11.3																							
8-May	0.4	0.2	0.3	0.3	Z	0.8	2.0	0.9	0.5	0.8	0.0	0.2	0.2	0.3	0.1	0.0	0.0	0.0	0.3	0.4	0.3	0.3	0.3	0.1	0.4	2.0																							
9-May	0.0	0.1	0.2	0.6	0.7	Z	0.6	0.2	0.2	0.0	0.0	0.0	0.4	0.0	0.0	6.6	8.8	2.0	3.2	3.6	0.3	0.2	0.1	0.5	1.2	8.8																							
10-May	Z	1.4	0.8	0.2	0.0	0.2	0.6	0.9	1.3	3.6	13.6	8.1	10.4	4.1	2.2	1.8	2.7	1.4	0.7	0.5	1.5	2.5	6.2	11.8	3.3	13.6																							
11-May	4.7	Z	16.8	6.9	7.1	8.4	9.0	7.7	1.4	0.1	2.7	2.0	3.4	2.4	0.7	0.9	0.6	0.8	2.5	1.3	0.6	0.8	4.3	4.1	3.9	16.8																							
12-May	1.7	2.4	Z	2.1	1.4	1.9	1.3	1.6	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.7	0.0	0.3	1.1	0.8	2.4																							
13-May	1.3	2.2	2.5	Z	1.1	1.8	1.9	3.0	3.5	4.1	1.1	0.2	0.5	0.1	0.0	0.0	0.1	0.2	0.0	0.1	0.2	0.1	0.0	0.0	1.0	4.1																							
14-May	0.0	0.1	0.4	5.8	Z	9.7	6.2	1.7	0.8	0.5	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.8	4.3	7.1	7.4	2.0	9.7																								
15-May	16.0	24.0	27.8	22.2	14.7	Z	9.6	17.3	21.5	28.8	21.2	7.4	3.4	5.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.6	10.1	28.8																							
16-May	Z	15.7	4.0	6.2	10.0	3.5	2.4	1.6	M	0.7	0.5	0.3	0.0	0.0	0.1	1.1	1.3	3.9	0.9	1.9	3.1	0.4	2.0	11.1	3.2	15.7																							
17-May	5.5	10.2	Z	6.0	1.9	0.6	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.8	1.2	10.0	4.8	1.8	10.2																							
18-May	0.0	0.0	0.0	Z	0.0	0.0	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	--	0.0																						
19-May	M	M	M	M	M	M	M	M	M	M	4.0	3.7	3.4	3.0	3.2	3.2	3.5	6.9	9.0	11.5	14.3	2.6	1.7	2.4	--	14.3																							
20-May	11.4	17.7	7.6	3.5	2.5	Z	5.5	5.0	4.4	7.0	9.7	9.6	5.6	6.8	8.7	5.5	5.9	2.1	2.0	1.5	1.9	2.7	3.7	5.0	5.9	17.7																							
21-May	Z	6.9	6.1	5.1	4.8	4.9	5.5	5.2	4.3	3.8	3.3	3.0	3.4	3.7	3.8	3.5	3.5	3.8	3.8	5.9	7.1	8.3	9.8	22.9	5.8	22.9																							
22-May	17.2	Z	14.0	13.4	11.2	9.4	9.6	4.6	2.6	1.9	2.2	1.3	1.6	1.7	1.7	1.0	0.9	1.2	1.0	0.9	3.8	3.6	1.6	1.1	4.7	17.2																							
23-May	4.2	0.4	Z	2.5	2.1	1.9	2.7	3.1	4.3	6.8	6.3	5.8	7.4	5.0	3.9	2.9	3.9	1.9	1.1	0.8	0.7	0.5	0.4	0.7	3.0	7.4																							
24-May	0.7	1.0	0.9	Z	1.4	1.1	1.3	1.1	1.1	1.4	1.8	1.2	1.3	1.3	1.0	1.0	0.9	1.0	1.0	1.1	1.0	0.8	0.9	0.9	1.1	1.8																							
25-May	0.9	0.7	1.1	1.8	Z	5.9	2.1	1.7	1.6	7.4	10.2	3.7	1.6	4.0	6.5	4.4	2.3	3.2	3.5	3.4	2.1	1.4	1.2	1.2	3.1	10.2																							
26-May	1.1	1.1	1.5	1.0	0.6	Z	1.3	1.2	1.0	1.4	1.3	0.8	0.8	0.7	0.8	0.5	0.3	0.6	0.5	0.6	1.8	1.6	1.3	2.3	1.0	2.3																							
27-May	Z	1.4	1.4	1.1	1.2	1.1	1.0	1.1	1.2	0.8	0.8	0.6	0.7	0.7	0.6	0.8	0.6	0.9	0.8	1.0	1.0	1.4	1.3	1.2	1.0	1.4																							
28-May	1.1	Z	1.7	1.4	1.2	1.8	1.8	2.0	1.4	1.5	1.0	0.6	0.6	0.4	0.4	0.4	0.5	0.8	0.6	0.9	1.5	4.9	4.9	2.0	1.5	4.9																							
29-May	1.7	1.5	Z	2.9	1.4	1.9	1.6	0.7	0.7	0.5	0.2	0.2	0.3	0.3	0.3	0.0	0.0	0.3	0.2	0.2	0.0	0.9	7.4	5.3	1.2	7.4																							
30-May	4.6	4.8	4.8	Z	5.5	3.9	3.3	4.1	2.5	2.5	2.0	1.7	1.5	0.9	0.5	0.5	0.7	1.1	4.7	3.8	2.9	3.9	6.9	6.6	3.2	6.9																							
31-May	2.5	4.2	3.2	1.6	Z	1.7	3.2	1.8	0.7	1.1	1.6	8.6	8.9	8.6	6.4	4.9	4.0	3.9	4.0	5.6	3.4	2.1	2.6	11.4	4.2	11.4																							
																								4.6	4.8	5.2	4.5	3.5	3.6	3.4	2.9	2.5	3.5	3.5	2.7	2.1	2.0	1.7	1.6	1.6	1.5	1.9	2.2	2.4	2.4	3.8	5.2	Diurnal Average	
																								17.2	24.0	27.8	22.2	14.7	16.9	9.6	17.3	21.5	28.8	21.2	13.9	10.4	8.6	8.7	6.6	8.8	6.9	9.0	11.5	14.3	11.3	14.8	22.9	Diurnal Maximum	
Z - zerospan C - Calibration M - Maintenance																																																	
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																																																	



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Buffalo Viewpoint - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	673	98.97	98.97
21 - 40	7	1.03	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 680

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	50	27	23	6	13	43	108	142	57	50	28	24	19	25	30	28	673
21 - 40	0	0	0	0	1	1	0	0	0	2	1	0	0	1	0	1	7
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	50	27	23	6	14	44	108	142	57	52	29	24	19	26	30	29	680

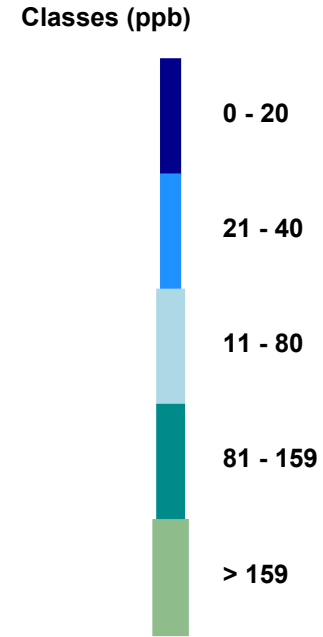
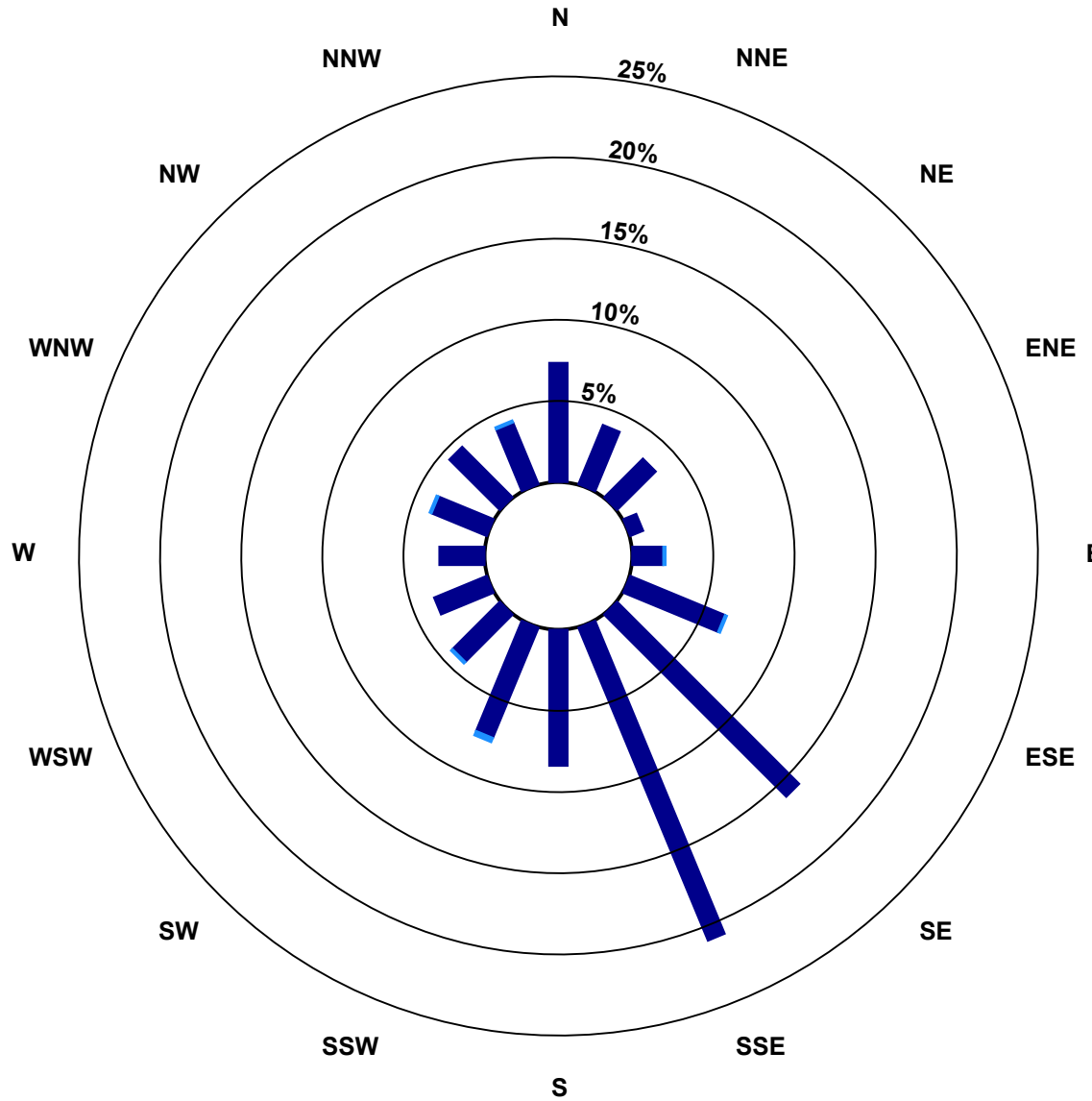
Total Number of Valid Hours: 680

Total Number of Hours: 744

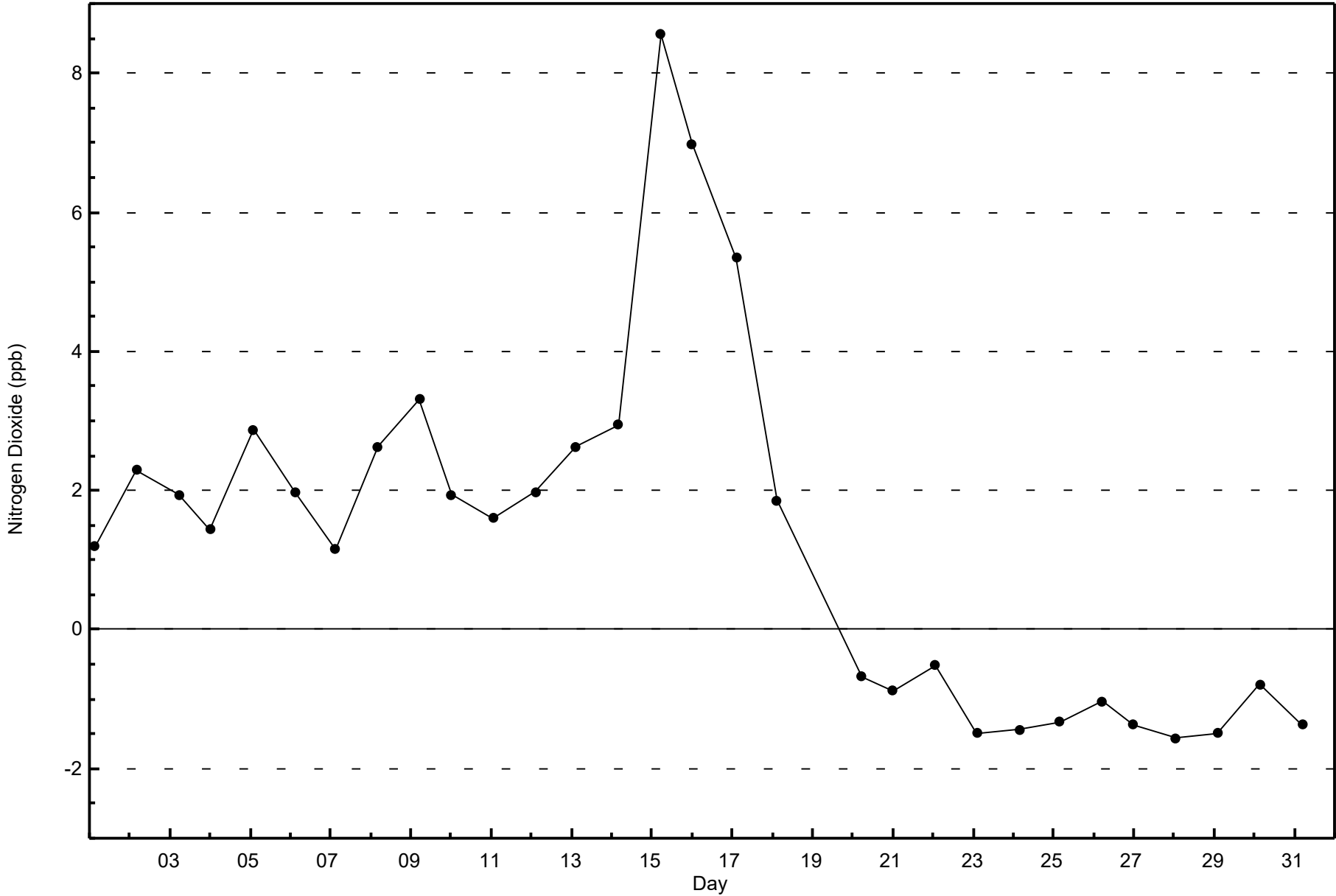


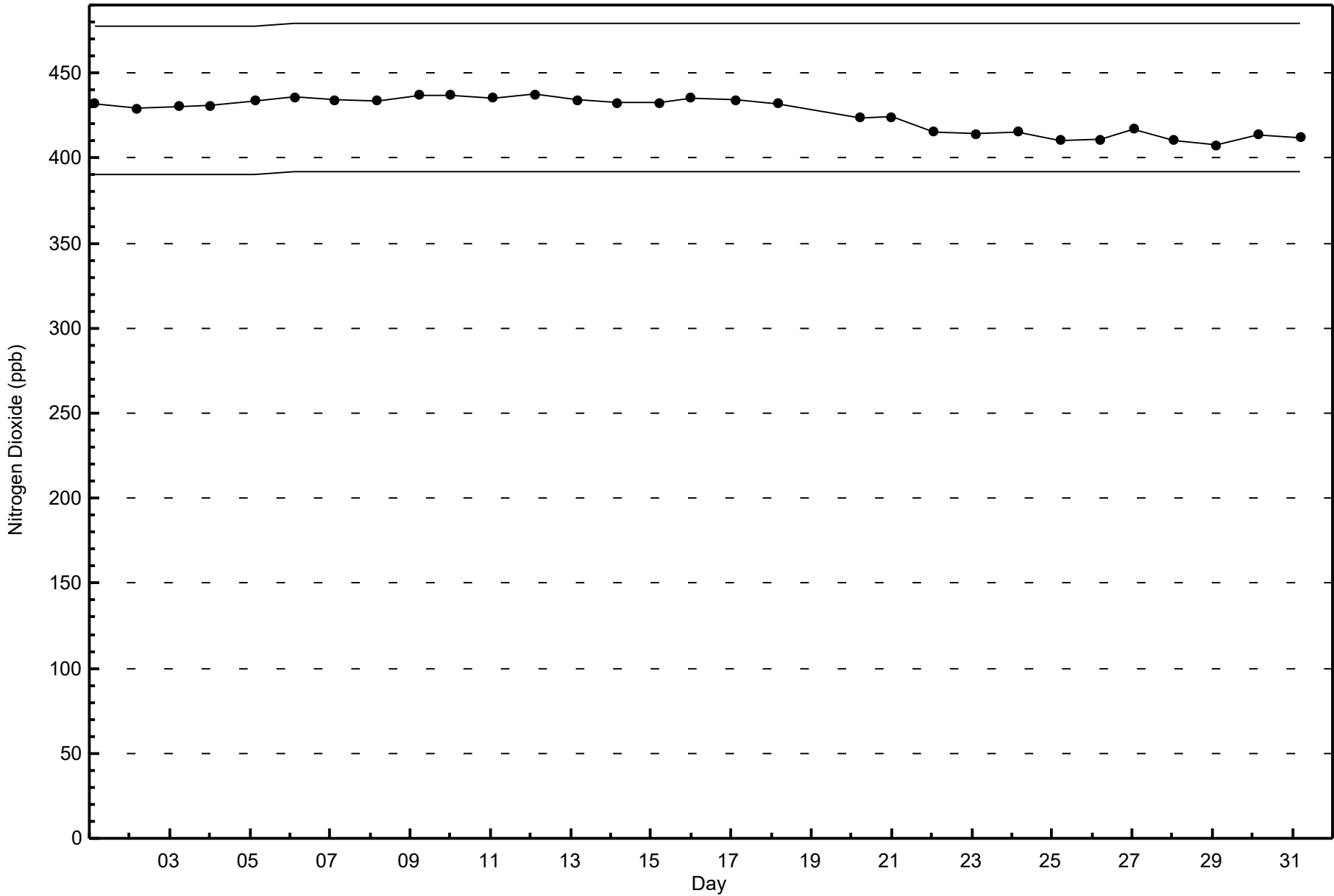
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Buffalo Viewpoint



Total Number of Valid Hours: 680







Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_x) - ppb

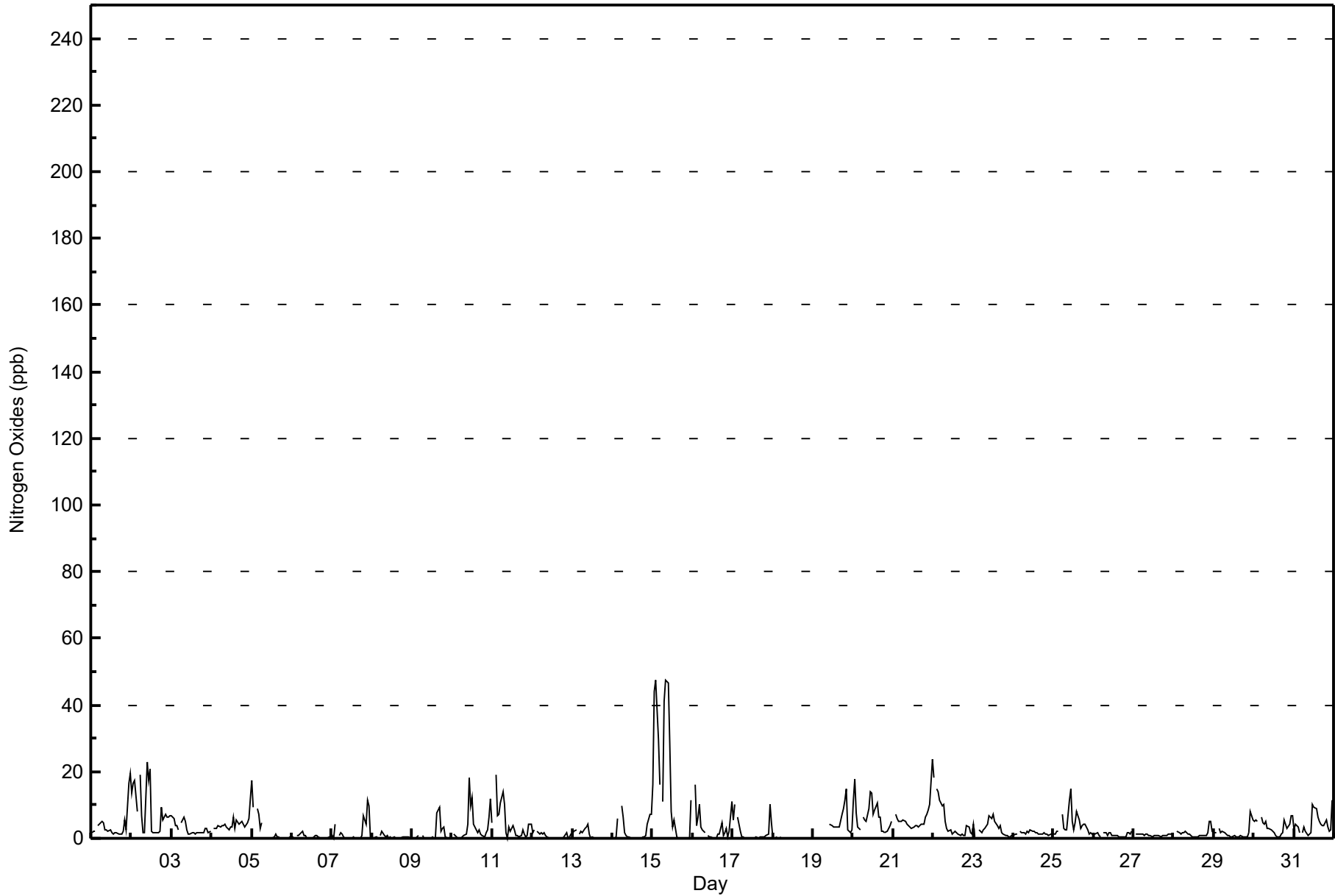
Buffalo Viewpoint - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service: 744																																											
Maximum Value: 47.6 ppb on May 15 03:00		Maximum Daily Average: 15.5 ppb on May 15		Hours of Data: 680																																													
Minimum Value: 0.0 ppb on May 5 13:00		Minimum Daily Average: 0.4 ppb on May 8		Hours of Missing Data: 64																																													
Maximum Diurnal Average: 6.3 ppb at hour 3		Minimum Diurnal Average: 1.7 ppb at hour 18		Hours of Calibration: 35																																													
Monthly Average: 3.44 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.6 Median = 1.7 Q ₃ = 4.1 P ₉₀ = 8.1 P ₉₉ = 24.8		Percent Operational Time: 96.1																																													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	1.8	2.1	2.2	Z	3.7	4.7	5.2	4.7	2.5	2.6	2.2	2.4	1.7	1.3	1.6	1.5	1.3	1.4	1.4	2.1	5.7	2.6	16.6	19.4	3.9	19.4																							
2-May	13.4	16.7	17.2	8.0	Z	18.9	6.8	1.6	1.8	22.8	17.4	20.7	2.2	1.9	1.8	1.8	1.8	2.2	9.3	5.7	7.0	6.5	6.6	7.0	8.7	22.8																							
3-May	6.6	5.8	3.7	3.9	2.7	Z	4.7	6.5	5.0	2.5	1.3	1.2	1.9	1.6	1.4	1.8	1.8	1.6	1.8	1.8	3.1	3.0	1.7	2.2	2.9	6.6																							
4-May	Z	3.0	2.9	3.0	4.0	3.3	3.7	3.9	4.4	3.5	2.7	3.5	3.4	6.4	3.1	5.4	4.1	4.7	5.3	4.2	3.3	4.7	5.8	11.7	4.3	11.7																							
5-May	17.5	9.2	Z	9.0	7.2	3.0	4.6	C	C	C	C	C	0.0	0.6	1.2	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.0	17.5																							
6-May	0.5	0.1	Z	1.0	0.6	1.3	2.1	1.0	0.7	0.2	0.0	0.0	0.0	0.3	0.8	0.7	0.3	0.0	0.0	0.0	0.0	0.1	0.5	0.2	0.5	2.1																							
7-May	0.9	0.0	4.2	Z	0.8	1.8	1.1	0.4	0.2	0.0	0.0	0.0	0.0	0.4	0.0	0.1	0.0	0.0	0.9	6.7	4.2	11.3	9.8	0.6	1.9	11.3																							
8-May	0.4	0.2	0.3	0.3	Z	0.8	2.0	0.9	0.5	0.8	0.0	0.2	0.2	0.3	0.1	0.0	0.0	0.0	0.3	0.4	0.3	0.3	0.3	0.1	0.4	2.0																							
9-May	0.0	0.1	0.2	0.6	0.7	Z	0.6	0.2	0.2	0.0	0.0	0.0	0.4	0.0	0.0	7.5	9.5	2.0	3.2	3.6	0.3	0.2	0.1	0.5	1.3	9.5																							
10-May	Z	1.4	0.8	0.2	0.0	0.2	0.6	0.9	1.3	4.1	18.2	9.7	12.3	4.1	2.3	1.8	2.7	1.4	0.7	0.5	1.5	2.5	6.2	11.8	3.7	18.2																							
11-May	4.7	Z	19.0	6.9	7.1	10.7	14.0	10.4	1.6	0.1	3.3	2.1	3.9	2.4	0.8	1.0	0.6	0.8	2.5	1.3	0.6	0.8	4.3	4.1	4.5	19.0																							
12-May	1.7	2.4	Z	2.1	1.4	1.9	1.3	1.6	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.7	0.0	0.3	1.1	0.8	0.8	2.4																							
13-May	1.3	2.2	2.5	Z	1.1	2.0	1.9	3.0	3.5	4.2	1.1	0.2	0.5	0.1	0.0	0.0	0.1	0.2	0.0	0.1	0.2	0.1	0.0	0.0	1.1	4.2																							
14-May	0.0	0.2	0.4	5.8	Z	9.7	6.2	1.7	0.8	0.5	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.8	4.4	7.1	7.4	2.0	9.7																								
15-May	16.0	43.9	47.6	29.8	15.9	Z	11.0	40.9	47.3	46.5	28.6	8.1	3.4	5.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.6	15.5	47.6																							
16-May	Z	16.2	4.0	6.2	10.2	3.6	2.4	1.6	M	0.9	0.5	0.4	0.0	0.1	0.1	1.2	1.3	4.6	0.9	1.9	3.1	0.4	2.0	11.1	3.3	16.2																							
17-May	5.5	10.4	Z	6.2	2.0	0.6	0.4	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.3	0.2	0.4	0.6	0.8	1.2	10.2	4.8	1.9	10.4																							
18-May	0.0	0.0	0.3	Z	0.3	0.2	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	--	0.3																						
19-May	M	M	M	M	M	M	M	M	M	M	4.4	3.7	3.4	3.2	3.4	3.3	3.5	7.1	9.0	11.5	14.7	2.7	1.9	2.4	--	14.7																							
20-May	11.5	17.7	7.6	3.5	2.5	Z	6.2	5.6	5.2	9.1	13.8	13.7	7.2	8.7	10.7	6.4	6.5	2.3	2.2	1.6	2.1	2.9	3.9	5.0	6.8	17.7																							
21-May	Z	7.2	6.1	5.2	5.1	5.1	5.5	5.3	4.3	3.8	3.6	3.1	3.6	3.9	4.0	3.6	3.7	4.3	4.1	6.2	7.3	8.7	10.1	23.8	6.0	23.8																							
22-May	18.2	Z	15.0	14.1	11.5	9.6	10.3	4.9	2.8	2.0	2.7	1.3	1.6	1.9	1.8	1.2	0.9	1.2	1.0	0.9	3.8	3.6	1.6	1.1	4.9	18.2																							
23-May	4.2	0.4	Z	2.5	2.1	1.9	2.7	3.1	4.3	6.8	6.3	5.9	7.4	5.2	4.0	3.1	4.0	1.9	1.1	0.8	0.7	0.5	0.4	0.8	3.0	7.4																							
24-May	0.7	1.2	1.2	Z	2.3	1.6	1.8	1.3	1.9	1.7	2.4	1.9	2.0	1.9	1.5	1.3	1.3	1.3	1.6	1.2	1.3	1.1	1.1	1.5	1.5	2.4																							
25-May	1.1	1.1	2.0	2.2	Z	7.2	2.8	2.4	2.4	11.6	15.0	4.9	2.4	4.7	7.8	5.3	2.9	3.8	4.1	4.1	2.6	1.4	1.6	1.4	4.1	15.0																							
26-May	1.3	1.1	1.6	1.0	0.6	Z	1.7	1.5	1.0	1.5	1.6	0.8	0.9	0.7	0.8	0.5	0.3	0.6	0.5	0.6	1.8	1.6	1.3	2.3	1.1	2.3																							
27-May	Z	1.4	1.4	1.1	1.2	1.1	1.0	1.1	1.2	0.8	0.8	0.6	0.7	0.9	1.0	0.8	0.6	0.9	0.8	1.0	1.0	1.4	1.3	1.2	1.0	1.4																							
28-May	1.1	Z	2.0	1.6	1.2	1.8	1.8	2.1	1.4	1.5	1.0	0.6	0.6	0.4	0.4	0.8	0.7	1.0	0.8	1.0	1.6	5.1	5.1	2.0	1.5	5.1																							
29-May	1.7	1.5	Z	3.2	1.8	2.1	1.9	1.2	1.0	0.7	0.5	0.5	0.8	0.6	0.3	0.2	0.6	0.5	0.6	0.4	0.5	1.6	8.1	5.6	1.6	8.1																							
30-May	5.1	5.3	5.1	Z	6.3	4.7	4.4	4.9	3.1	2.8	2.5	2.3	1.5	1.0	0.5	0.5	1.2	1.6	5.4	4.1	3.0	4.1	6.9	6.8	3.6	6.9																							
31-May	2.5	4.4	3.3	1.8	Z	1.7	3.6	2.0	0.7	1.1	1.6	10.2	9.5	8.8	6.5	5.0	4.0	3.9	4.0	5.6	3.4	2.1	2.6	11.4	4.3	11.4																							
																								4.7	5.7	6.3	5.0	3.7	4.0	3.9	4.1	3.7	4.7	4.5	3.4	2.4	2.2	1.9	1.8	1.8	1.7	2.1	2.3	2.5	2.5	3.9	5.3	Diurnal Average	
																								18.2	43.9	47.6	29.8	15.9	18.9	14.0	40.9	47.3	46.5	28.6	20.7	12.3	8.8	10.7	7.5	9.5	7.1	9.3	11.5	14.7	11.3	16.6	23.8	Diurnal Maximum	
Z - zerospan																								C - Calibration				M - Maintenance																					



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Buffalo Viewpoint - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	670	98.53	98.53
21 - 40	5	0.74	99.26
41 - 80	5	0.74	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 680

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	50	27	23	6	13	43	108	142	57	50	28	23	19	25	28	28	670
21 - 40	0	0	0	0	1	1	0	0	0	1	0	0	0	0	2	0	5
11 - 80	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	1	5
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	50	27	23	6	14	44	108	142	57	52	29	24	19	26	30	29	680

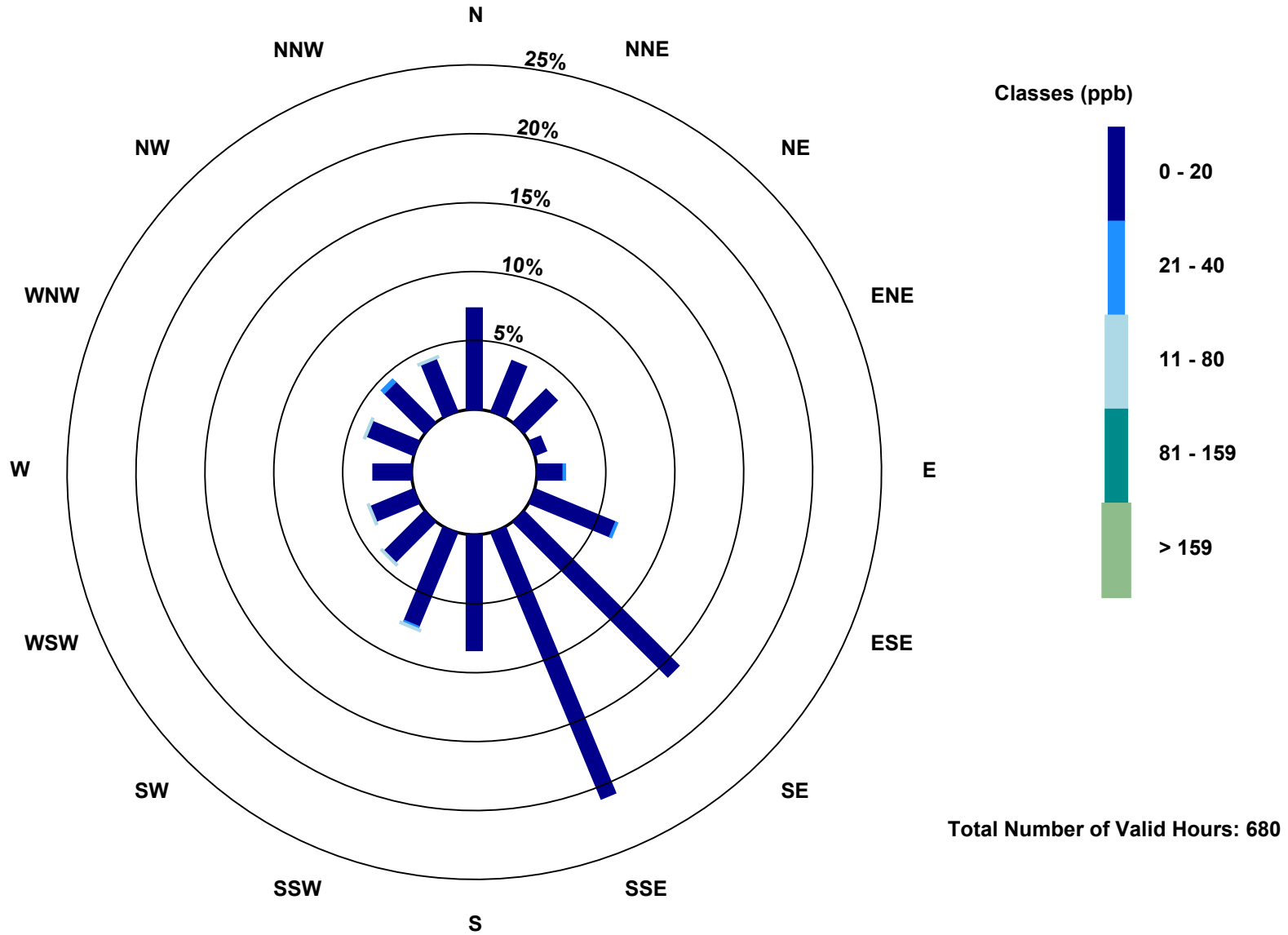
Total Number of Valid Hours: 680

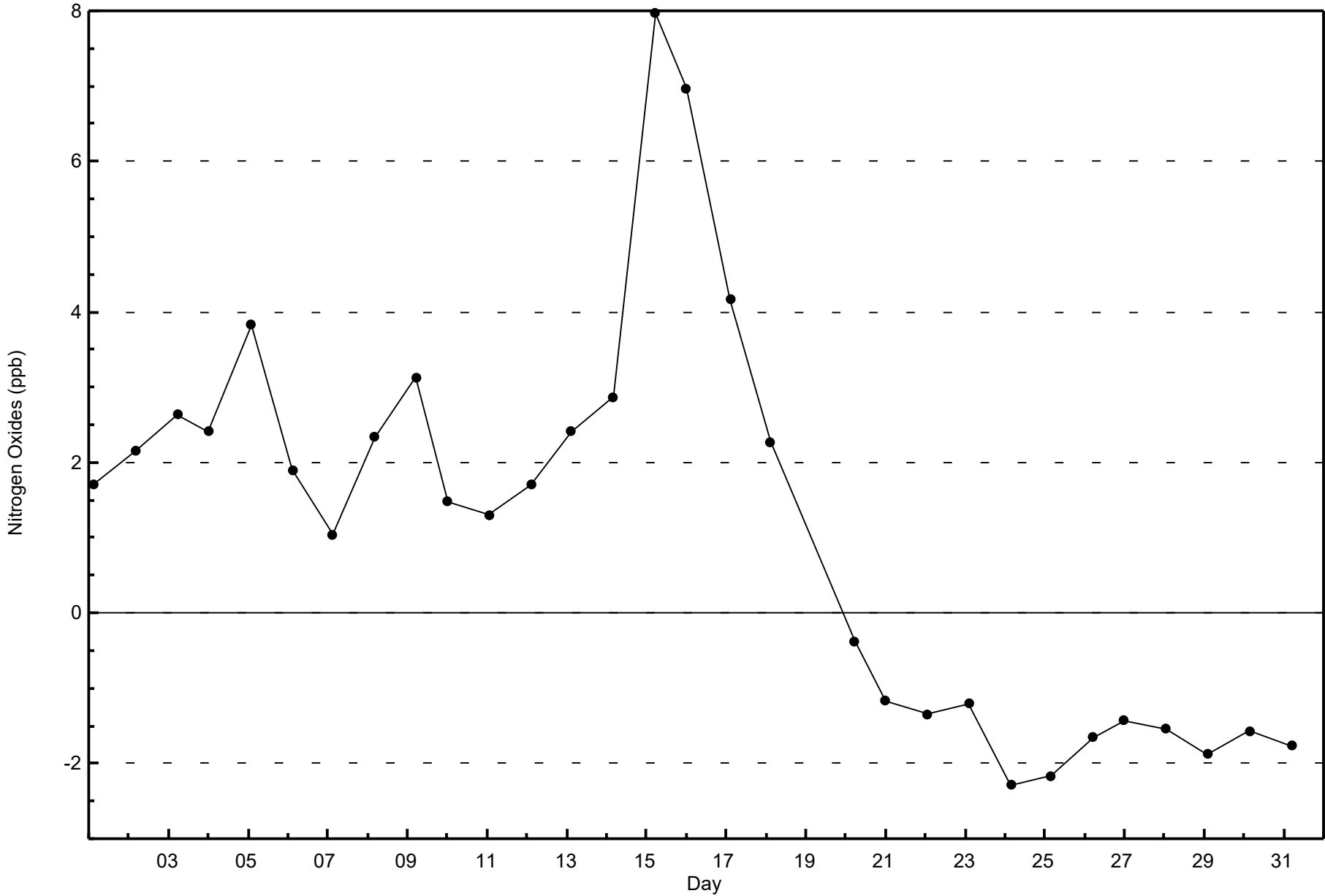
Total Number of Hours: 744

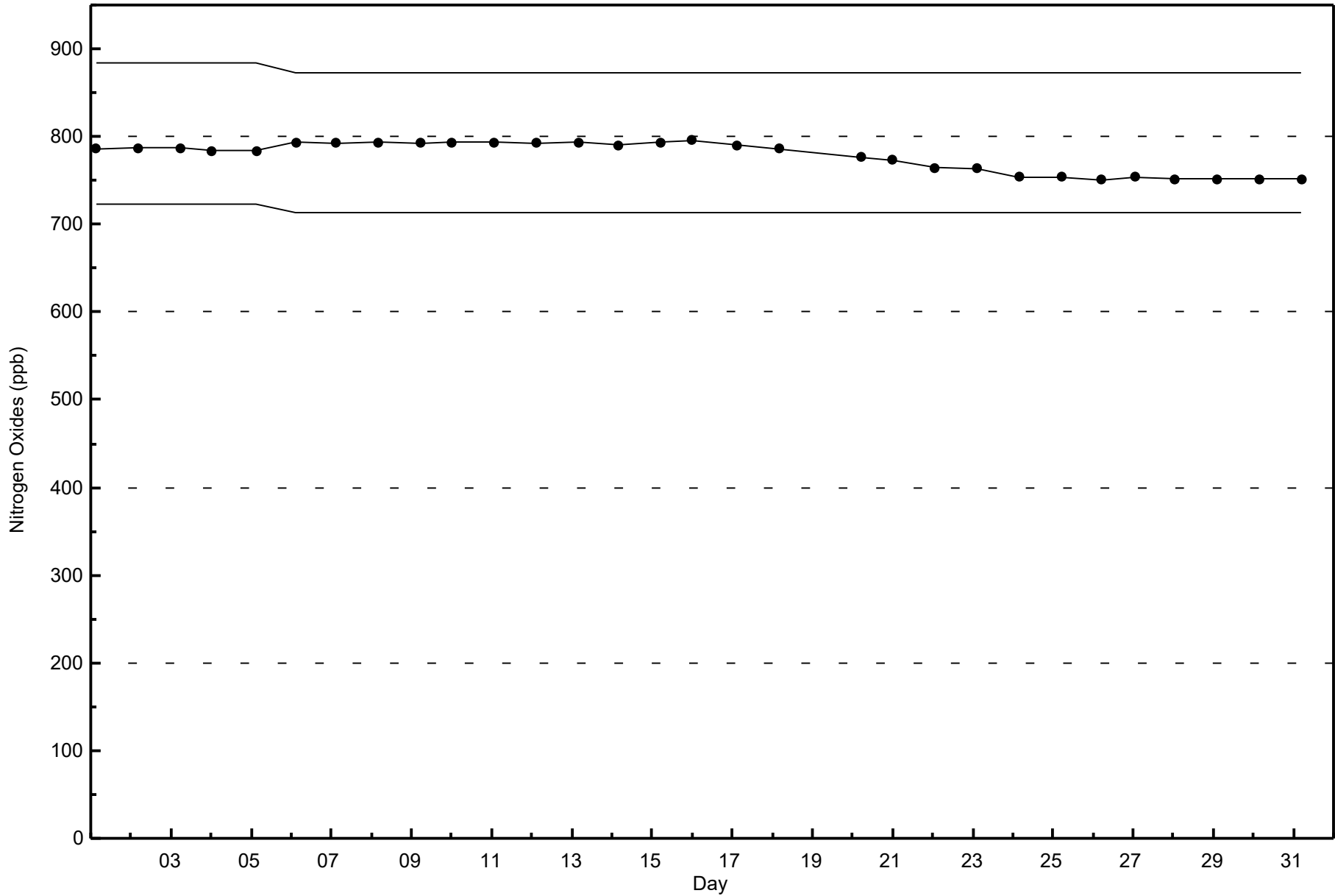


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Buffalo Viewpoint









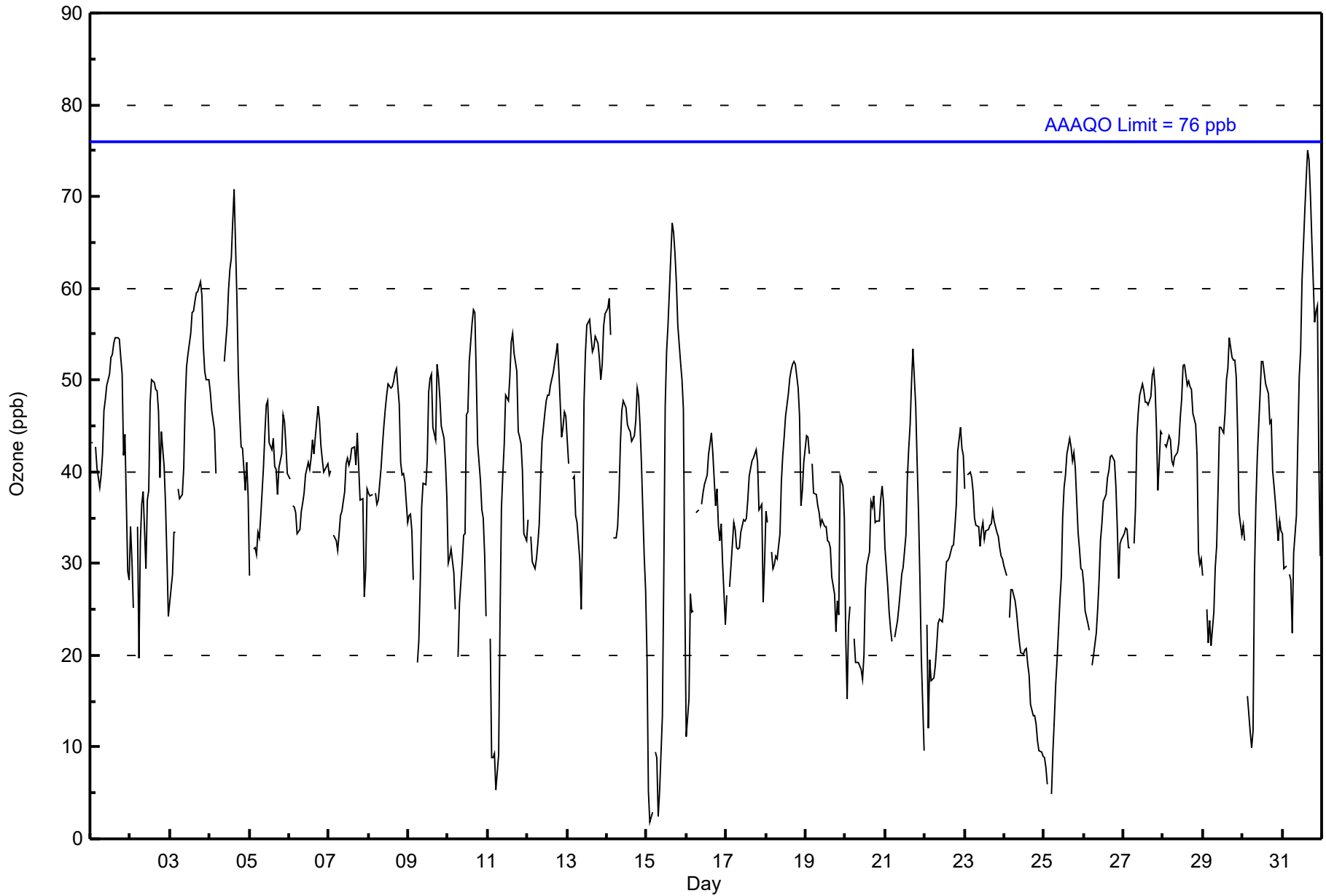
Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Buffalo Viewpoint - May 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service:																	744																											
Maximum Value: 75.1 ppb on May 31 16:00		Maximum Daily Average: 50.7 ppb on May 4																	Hours of Data:	709																												
Minimum Value: 1.8 ppb on May 15 03:00		Minimum Daily Average: 19.3 ppb on May 24																	Hours of Missing Data:	35																												
Maximum Diurnal Average: 47.4 ppb at hour 16		Minimum Diurnal Average: 26.8 ppb at hour 6																	Hours of Calibration:	34																												
Monthly Average: 37.85 ppb		Percentiles: P ₁ = 6.1 P ₁₀ = 22.3 Q ₁ = 30.9 Median = 38.1 Q ₃ = 46.2 P ₉₀ = 52.0 P ₉₉ = 67.0																	Percent Operational Time:	99.9																												
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	43.1	43.2	Z	42.7	40.4	38.3	39.7	42.0	46.6	48.0	49.4	50.7	52.5	52.8	54.0	54.6	54.6	54.4	52.4	50.7	41.8	44.1	29.2	28.1	45.8	54.6																						
2-May	34.0	30.4	25.2	Z	34.1	19.6	32.4	36.4	37.9	29.5	37.0	37.9	47.6	50.0	49.7	48.9	48.8	46.5	39.4	44.4	40.6	36.4	30.7	24.3	37.5	50.0																						
3-May	25.8	28.9	33.4	33.3	Z	38.1	37.1	37.5	40.4	47.2	51.5	52.8	55.1	57.4	57.5	58.5	59.6	59.6	60.7	59.2	53.7	50.9	50.1	50.0	47.7	60.7																						
4-May	48.7	46.6	45.6	44.5	39.8	Z	C	C	C	52.0	56.0	59.8	62.1	63.3	67.2	70.7	58.8	50.8	46.2	42.7	42.5	38.0	41.1	37.3	50.7	70.7																						
5-May	28.7	Z	31.5	31.7	31.0	Z	33.5	32.8	35.0	40.6	44.2	47.3	43.2	42.4	43.6	40.6	40.3	37.5	40.4	41.9	46.2	45.5	42.9	39.8	39.5	47.7																						
6-May	39.1	Z	36.3	36.2	35.5	33.3	33.6	35.7	36.6	37.6	39.6	41.0	40.2	41.4	43.5	41.9	43.8	47.1	45.7	42.9	41.3	40.0	40.6	40.9	39.7	47.1																						
7-May	39.7	40.1	Z	33.1	32.5	31.4	33.2	35.3	35.7	37.9	40.9	41.5	40.8	41.4	42.6	42.7	40.7	44.3	40.6	36.9	37.1	26.4	29.3	38.1	37.5	44.3																						
8-May	37.8	37.4	37.5	Z	37.6	36.5	36.9	40.4	42.9	45.0	46.8	48.4	49.5	49.1	49.3	49.9	50.8	51.2	47.3	41.0	39.7	39.8	38.8	34.5	43.0	51.2																						
9-May	35.3	35.4	33.5	28.2	Z	19.2	21.7	27.8	36.1	38.7	38.6	41.4	48.6	50.2	50.6	44.8	43.5	51.8	50.4	48.1	44.9	43.7	41.0	37.3	39.6	51.8																						
10-May	30.0	30.6	31.6	29.0	25.1	Z	19.8	25.6	30.2	33.1	33.3	46.2	46.5	52.0	56.1	57.7	57.3	50.6	43.0	39.0	35.9	35.0	31.0	24.3	37.5	57.7																						
11-May	Z	21.9	8.8	8.8	9.3	5.3	9.2	23.9	36.0	39.8	42.9	48.3	47.7	50.3	54.1	55.0	53.0	50.9	44.5	43.8	43.0	40.0	33.2	32.5	34.9	55.0																						
12-May	34.7	Z	32.9	30.3	29.4	30.5	32.2	34.3	39.2	43.2	46.4	47.7	48.3	48.4	49.4	50.9	51.9	52.8	54.0	51.2	43.8	44.8	46.5	46.1	43.0	54.0																						
13-May	43.5	40.9	Z	39.2	39.5	35.3	34.5	30.4	25.1	33.4	47.6	52.9	56.0	56.6	54.8	53.1	53.5	54.7	54.0	52.4	50.1	51.7	55.9	57.2	46.6	57.2																						
14-May	57.8	58.9	54.9	Z	32.8	32.7	34.1	37.6	43.2	46.6	47.7	47.0	45.1	44.6	44.4	43.4	44.0	45.6	49.1	48.1	45.1	41.0	30.8	27.2	43.6	58.9																						
15-May	19.8	5.2	1.8	2.9	Z	9.5	8.9	2.5	5.2	13.4	28.8	47.1	53.0	56.0	63.5	67.1	66.0	63.8	60.6	55.9	51.9	50.1	46.8	26.7	35.1	67.1																						
16-May	11.2	15.3	26.6	24.7	24.9	Z	35.5	35.8	M	36.4	37.6	38.6	39.6	41.9	43.1	44.2	42.0	36.3	38.1	34.2	32.5	34.3	30.0	23.3	33.0	44.2																						
17-May	26.5	Z	27.5	29.8	34.5	33.8	31.8	31.5	31.7	33.4	34.7	34.6	35.0	37.0	39.4	41.1	41.4	42.0	42.4	41.0	35.8	36.5	25.7	30.0	34.7	42.4																						
18-May	35.8	34.4	Z	31.2	29.5	29.9	30.8	30.5	33.2	38.8	41.8	43.8	46.1	48.6	50.2	51.1	51.7	52.0	51.7	49.1	46.1	36.3	37.9	41.1	40.9	52.0																						
19-May	43.9	43.8	41.9	Z	40.9	37.8	37.6	36.3	35.5	34.2	34.8	34.0	34.0	32.4	32.3	31.7	28.5	26.7	22.6	25.9	24.4	39.6	38.5	34.9	34.4	43.9																						
20-May	21.8	15.3	23.3	25.4	Z	21.8	19.2	19.2	19.2	18.5	17.3	20.0	27.1	29.8	31.2	36.8	36.1	37.4	34.5	34.6	34.6	37.0	38.5	36.5	27.6	38.5																						
21-May	31.7	27.5	24.7	23.0	21.4	Z	22.0	23.8	25.4	27.0	28.8	29.6	33.1	39.1	42.6	45.1	49.8	53.4	47.1	41.1	35.5	28.2	19.7	9.6	31.7	53.4																						
22-May	Z	23.3	12.1	19.6	17.3	17.6	18.9	21.0	23.5	23.9	23.7	25.2	28.1	30.1	30.3	30.6	31.9	32.0	34.0	36.5	42.3	44.8	42.6	41.8	28.3	44.8																						
23-May	38.2	Z	39.7	39.9	39.4	37.8	34.9	34.2	34.0	31.9	33.7	34.5	32.6	33.6	33.7	34.1	34.3	35.8	34.6	33.4	32.9	31.7	30.9	30.6	34.6	39.9																						
24-May	29.7	28.7	Z	24.1	27.1	27.2	25.9	24.8	23.1	21.5	20.2	20.2	20.5	20.8	19.1	17.8	14.7	13.4	13.4	12.5	10.7	9.7	9.5	9.1	19.3	29.7																						
25-May	8.9	7.8	6.0	Z	4.9	9.4	13.0	16.8	19.5	25.9	28.6	35.1	38.2	39.7	42.0	43.6	42.8	41.1	42.1	40.4	33.4	31.5	29.4	29.3	27.4	43.6																						
26-May	27.8	24.9	23.4	22.8	Z	18.9	20.0	22.4	25.0	28.2	32.5	34.4	36.8	37.5	39.3	40.1	41.6	41.9	41.2	38.4	34.0	28.4	32.2	32.7	31.5	41.9																						
27-May	33.2	33.8	33.7	31.7	31.7	Z	32.1	36.0	44.0	46.5	48.3	49.6	48.8	47.5	47.6	47.3	48.2	50.5	51.1	49.3	44.7	38.0	44.4	44.1	42.7	51.1																						
28-May	Z	43.0	42.6	43.9	43.5	41.2	40.7	41.6	42.2	43.1	45.9	47.9	51.5	51.7	49.4	49.9	49.2	49.0	46.4	45.1	41.8	31.2	29.8	30.5	43.5	51.7																						
29-May	28.7	Z	25.0	21.3	23.8	21.0	24.8	29.7	31.9	38.0	44.9	44.8	44.2	46.4	50.1	51.2	54.7	52.5	52.1	52.1	50.3	44.2	35.5	33.1	39.1	54.7																						
30-May	34.1	32.5	Z	15.5	11.6	10.0	11.8	28.6	36.2	41.4	48.4	52.1	52.0	50.8	49.5	48.6	45.3	45.5	40.1	38.4	36.6	32.5	34.7	33.5	36.1	52.1																						
31-May	33.3	29.4	29.7	Z	28.9	28.2	22.5	31.1	35.2	43.4	50.3	53.2	60.9	68.5	72.1	75.1	73.9	70.1	65.3	56.3	57.5	58.0	41.3	30.9	48.5	75.1																						
																								32.9	31.2	29.2	28.5	29.5	26.8	27.6	30.3	32.9	36.2	39.5	42.2	44.0	45.5	46.8	47.4	46.9	46.5	44.7	42.8	40.3	38.4	35.8	33.4	Diurnal Average
																								57.8	58.9	54.9	44.5	43.5	41.2	40.7	42.0	46.6	52.0	56.0	59.8	62.1	68.5	72.1	75.1	73.9	70.1	65.3	59.2	57.5	58.0	55.9	57.2	Diurnal Maximum
Z - zerospan C - Calibration M - Maintenance																																																
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb																																																





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ozone (O₃) - ppb
Buffalo Viewpoint - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	59	8.32	8.32
21 - 50	550	77.57	85.90
51 - 82	100	14.10	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Ozone (O₃) - ppb
Buffalo Viewpoint - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	11	1	0	0	0	1	2	5	5	4	3	3	10	7	5	2	59
21 - 50	37	21	24	7	12	36	99	133	44	26	22	17	10	15	24	23	550
51 - 82	3	2	0	0	2	9	8	11	18	30	6	2	0	3	3	3	100
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	51	24	24	7	14	46	109	149	67	60	31	22	20	25	32	28	709

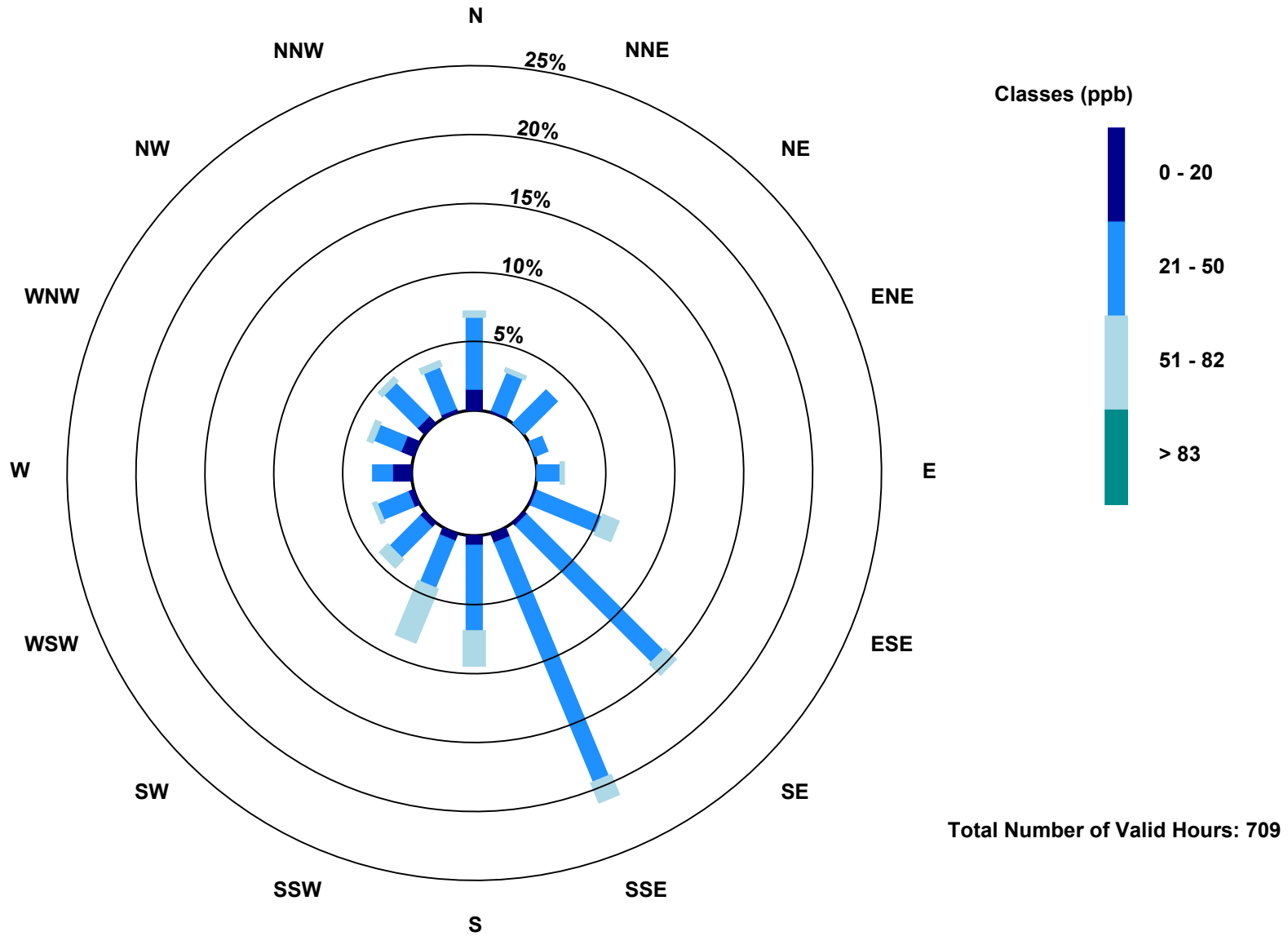
Total Number of Valid Hours: 709

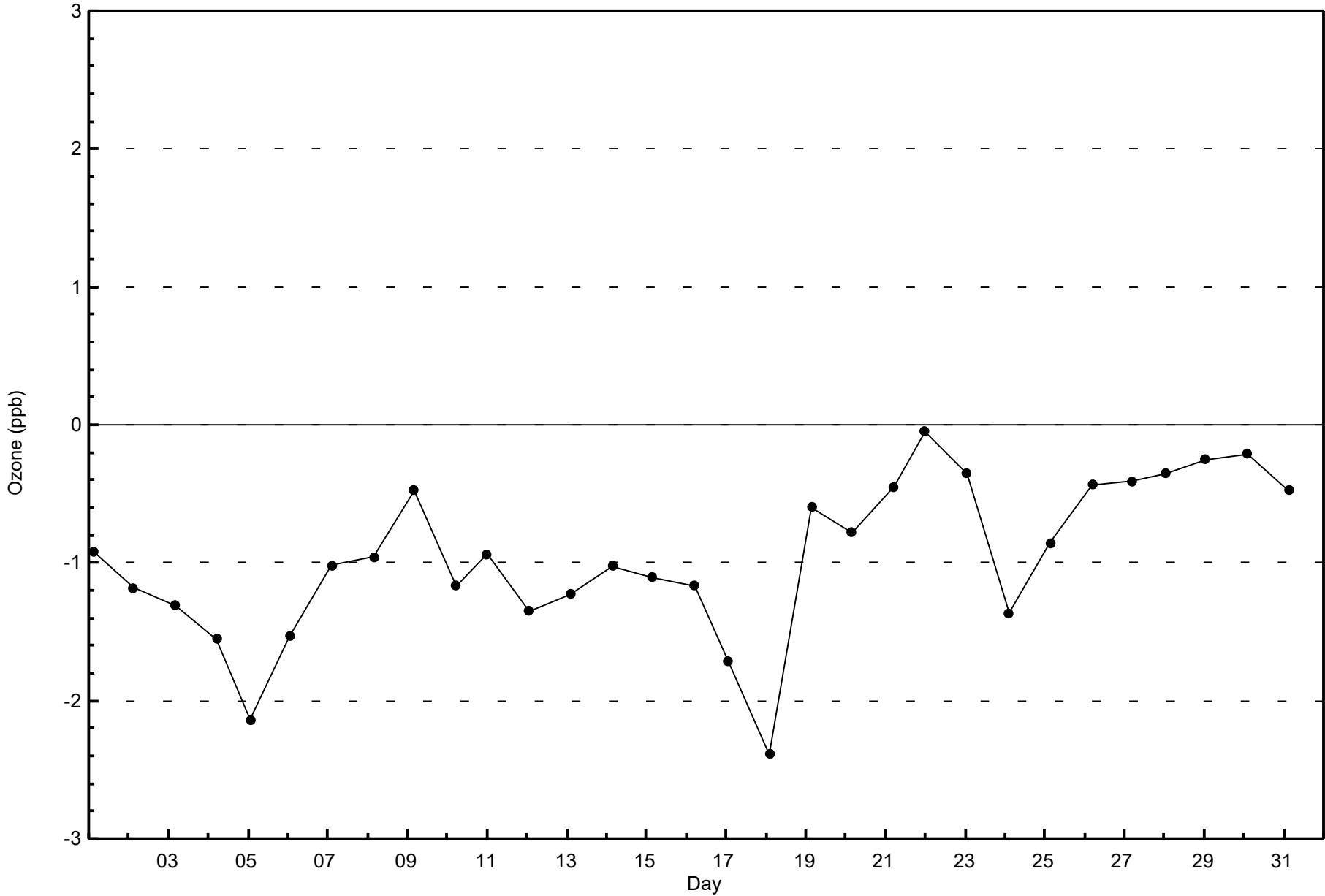
Total Number of Hours: 744

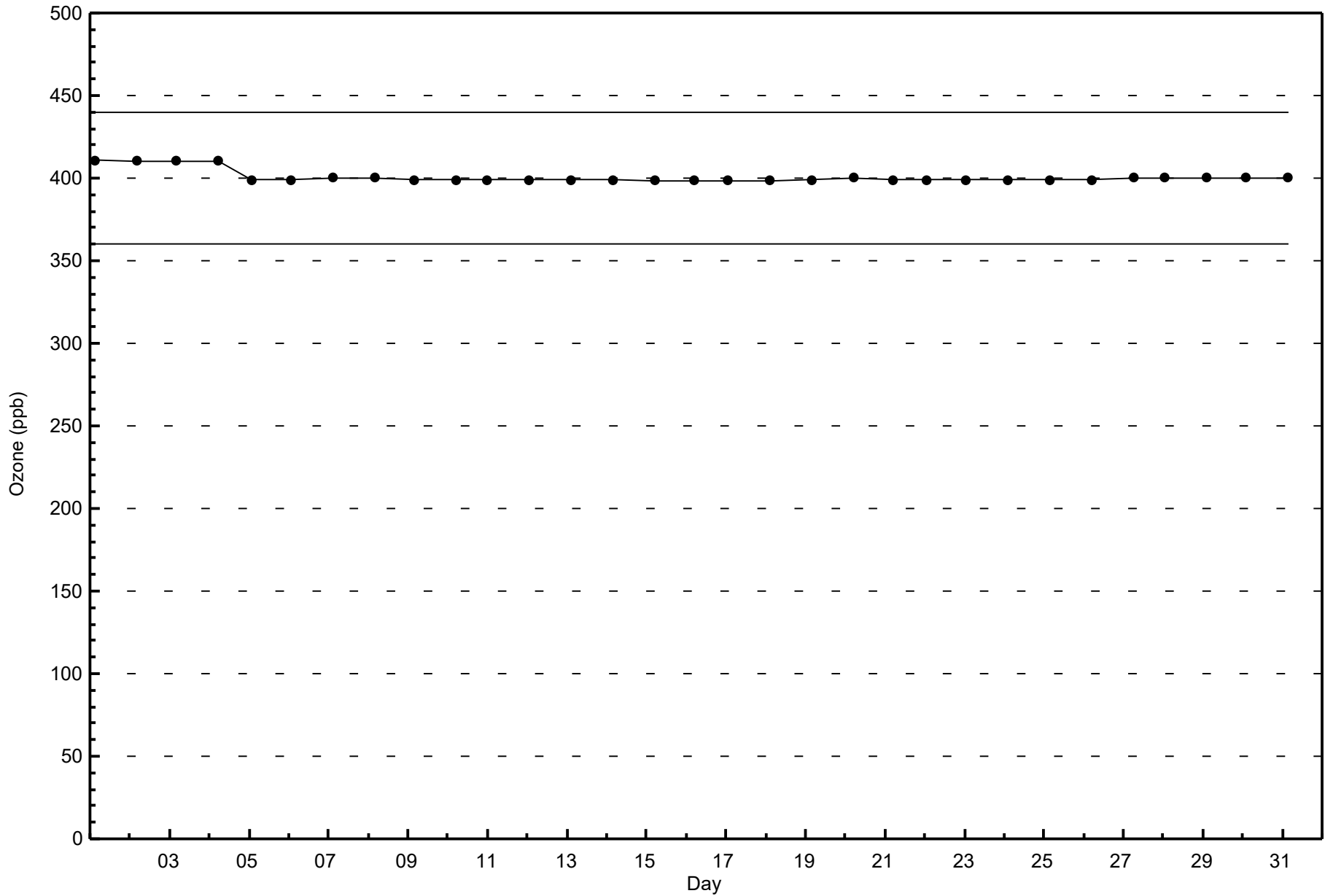


Wood Buffalo Environmental Association
Wind Rose May 2023

Ozone (O₃) - ppb
Buffalo Viewpoint









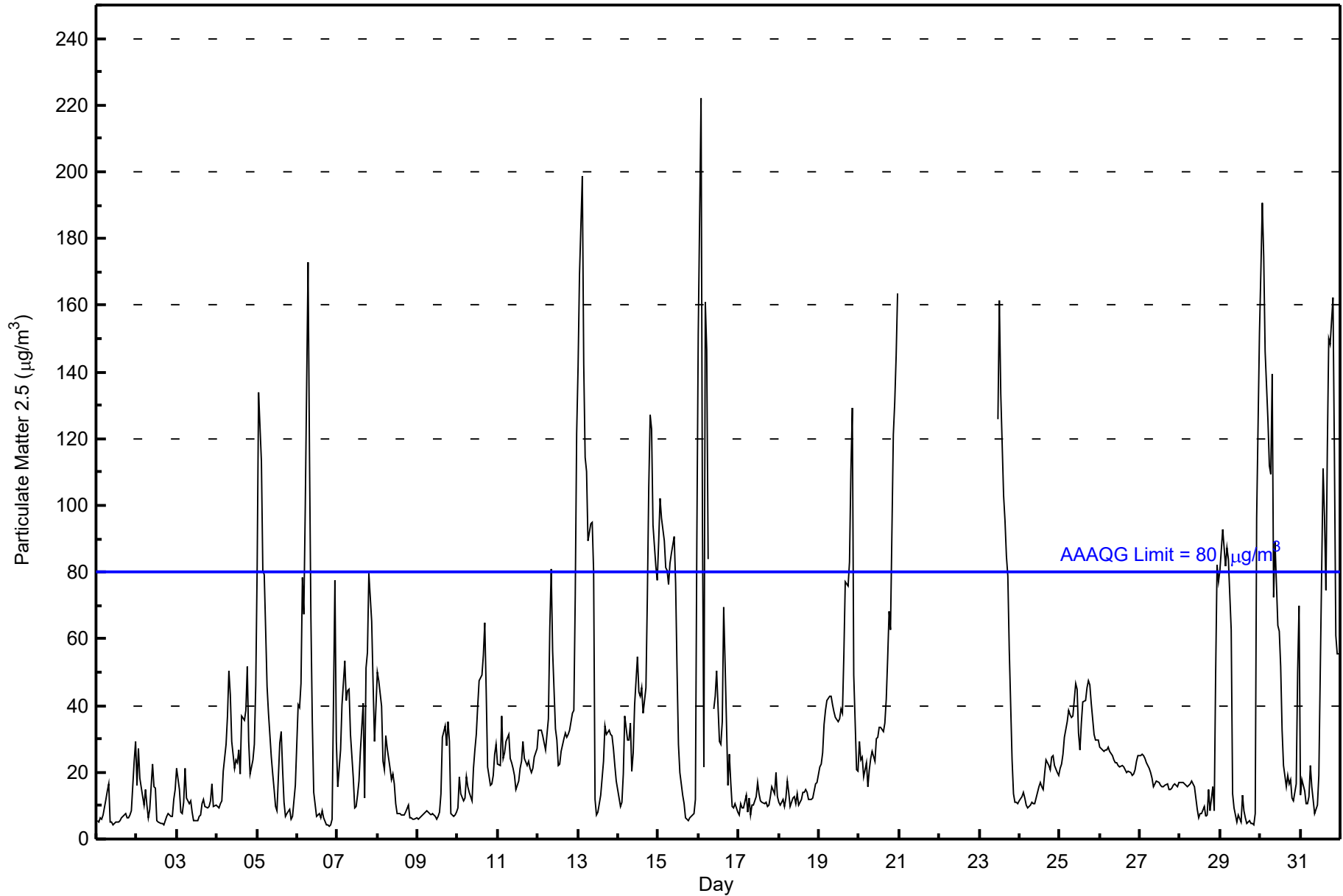
Summary of Hour Averages

Buffalo Viewpoint - May 2023

Number of Exceedences (AAAQO):	1-hr: 78	24-hr: 14	Hours in Service:	744
Maximum Value: 222.0 µg/m ³ on May 16 02:00	Maximum Daily Average: 74.7 µg/m ³ on May 30		Hours of Data:	683
Minimum Value: 4.0 µg/m ³ on May 6 20:00	Minimum Daily Average: 8.8 µg/m ³ on May 1		Hours of Missing Data:	61
Maximum Diurnal Average: 48.3 µg/m ³ at hour 2	Minimum Diurnal Average: 22.7 µg/m ³ at hour 11		Hours of Calibration:	1
Monthly Average: 33.53 µg/m ³	Percentiles: P ₁ = 4.5 P ₁₀ = 7.1 Q ₁ = 10.9 Median = 21.1 Q ₃ = 38.5 P ₉₀ = 82.0 P ₉₉ = 164.5		Percent Operational Time:	91.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	5.3	5.3	6.4	6.0	7.3	11.8	14.3	16.4	5.3	4.9	4.4	5.2	5.2	5.0	5.6	6.4	7.1	7.8	6.5	6.3	7.2	8.6	23.3	29.1	8.8	29.1	
2-May	16.1	26.9	18.1	12.8	10.1	14.8	10.3	6.4	8.7	22.3	15.9	15.5	5.6	5.1	4.7	4.6	4.3	5.4	6.8	7.6	6.9	6.9	12.0	14.9	10.9	26.9	
3-May	21.3	14.7	8.1	7.6	11.2	21.2	12.5	10.6	11.3	7.9	5.7	5.4	5.6	6.6	7.1	10.5	11.9	9.5	9.5	9.9	11.6	16.6	9.9	10.4	10.7	21.3	
4-May	9.9	9.3	10.5	11.5	20.4	28.3	37.0	50.4	43.2	29.2	21.0	23.9	22.8	26.8	19.5	36.7	35.5	38.5	51.8	29.2	19.4	23.7	28.4	46.1	28.0	51.8	
5-May	81.6	133.7	113.3	80.4	79.1	62.8	45.9	37.7	24.7	19.3	15.0	9.7	8.3	28.9	32.2	20.8	11.1	6.8	7.6	9.0	5.8	6.9	11.5	16.2	36.2	133.7	
6-May	40.1	39.2	46.8	78.5	67.5	98.6	172.8	115.9	66.5	35.2	14.0	7.0	7.2	7.5	6.5	8.4	6.2	4.4	4.1	4.0	4.2	5.7	77.5	29.4	39.5	172.8	
7-May	15.8	21.1	26.5	40.3	53.5	41.6	44.7	45.0	31.3	18.2	9.5	9.6	13.3	17.2	26.2	40.6	12.4	51.1	56.1	79.5	65.1	46.7	29.1	39.6	34.7	79.5	
8-May	49.9	47.4	39.7	23.3	20.9	30.9	27.0	21.2	18.0	19.6	16.5	10.7	7.8	7.5	7.0	7.2	7.2	8.0	10.1	6.4	6.5	5.7	6.0	6.4	17.1	49.9	
9-May	6.1	6.5	6.8	7.3	7.8	8.5	8.2	7.8	7.0	7.5	6.9	6.1	6.8	8.0	13.5	30.5	34.1	28.0	35.2	29.3	7.7	6.8	7.3	8.0	12.6	35.2	
10-May	9.5	18.6	13.7	11.4	12.1	18.6	15.8	14.1	11.3	21.3	26.6	31.5	40.0	47.5	49.1	55.3	64.6	44.3	21.8	16.3	16.5	18.9	25.4	28.2	26.4	64.6	
11-May	22.5	22.0	37.0	24.3	25.8	29.2	31.4	24.2	22.9	21.1	19.0	14.9	17.6	21.1	23.5	29.3	24.2	22.0	23.4	21.3	19.9	21.3	24.4	27.3	23.7	37.0	
12-May	32.8	32.6	32.8	31.0	26.6	31.3	36.1	63.2	80.8	56.5	33.1	29.6	22.0	22.3	26.2	30.1	31.8	30.4	31.3	32.7	37.7	38.5	73.0	121.7	41.0	121.7	
13-May	141.6	168.9	198.5	142.4	114.4	110.2	89.5	94.4	95.1	80.3	11.9	7.3	8.1	13.1	18.2	23.5	33.9	31.5	32.8	31.6	30.9	27.1	21.9	17.3	64.3	198.5	
14-May	12.4	9.7	10.9	19.7	36.7	29.9	29.8	34.6	20.5	26.0	40.3	54.5	44.2	42.7	45.5	37.6	45.3	72.3	105.7	127.2	123.1	93.9	81.8	77.5	50.9	127.2	
15-May	89.0	102.2	96.3	89.3	81.5	80.6	76.1	82.6	85.6	90.8	76.5	51.1	28.3	20.1	13.2	10.7	6.4	6.0	5.5	6.3	7.1	7.8	11.9	88.9	50.6	102.2	
16-May	151.2	222.0	93.6	21.6	160.8	146.5	83.8	C	M	39.0	42.6	50.3	29.2	28.2	35.3	69.4	52.4	16.0	25.6	16.9	9.8	9.2	10.8	8.0	60.1	222.0	
17-May	7.4	10.5	9.1	9.5	13.1	8.1	12.3	7.1	10.0	10.2	12.8	17.1	13.7	11.4	10.9	10.6	11.0	9.8	10.1	12.5	15.6	13.4	19.8	12.8	11.6	19.8	
18-May	11.0	10.4	11.9	9.8	12.3	17.3	14.1	9.7	12.3	12.6	10.6	13.5	10.2	11.9	13.9	13.9	14.6	13.9	11.8	11.8	12.5	14.3	16.7	16.9	12.8	17.3	
19-May	21.6	22.4	25.8	34.3	38.5	41.6	42.7	42.6	40.4	38.0	36.2	35.3	35.9	38.9	37.6	54.9	77.0	75.7	83.0	110.6	129.1	49.2	20.9	20.3	48.0	129.1	
20-May	29.3	23.7	24.7	18.7	23.1	15.5	20.9	24.2	26.3	23.1	30.2	30.6	33.6	33.3	32.3	34.9	42.1	54.0	68.4	62.9	121.0	131.0	144.8	163.5	50.5	163.5	
21-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	--
22-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	--
23-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	125.9	161.5	133.4	102.8	95.2	84.8	78.7	56.9	23.6	13.5	10.9	10.9	10.8	--	161.5	
24-May	11.6	12.7	14.0	12.2	10.1	9.2	10.2	10.8	10.6	10.7	12.4	15.5	16.8	15.7	14.9	19.5	23.7	21.9	20.8	24.7	24.9	22.1	19.9	19.0	16.0	24.9	
25-May	21.2	22.6	25.6	30.6	35.3	38.6	37.5	36.3	36.7	46.6	44.9	31.7	26.5	34.6	41.0	41.5	45.5	47.4	46.3	40.7	31.5	29.7	29.5	29.5	35.5	47.4	
26-May	27.5	27.1	26.4	26.7	26.6	27.6	26.1	24.8	23.5	22.8	23.0	22.2	21.7	22.2	21.5	20.7	19.8	20.5	19.9	19.1	19.7	20.9	23.3	24.8	23.3	27.6	
27-May	25.0	25.3	24.9	24.3	23.0	21.2	20.1	18.4	15.8	16.4	17.4	17.0	16.0	15.7	15.6	16.0	16.4	14.6	14.9	15.1	16.1	16.6	15.5	16.8	18.3	25.3	
28-May	17.1	16.8	16.9	15.9	15.5	16.3	16.5	17.2	15.9	12.5	9.0	6.4	7.5	7.7	9.6	6.6	7.0	14.9	8.7	15.8	8.6	49.5	82.0	77.2	19.6	82.0	
29-May	80.4	92.7	87.4	81.8	87.1	84.1	62.8	13.6	9.2	7.2	5.3	7.1	5.2	13.2	8.3	6.2	4.8	5.3	4.8	4.5	4.1	7.6	96.3	151.6	38.8	151.6	
30-May	170.3	190.7	174.7	146.4	125.6	112.1	109.5	139.3	72.6	89.0	64.1	62.1	51.7	32.6	22.0	15.7	18.9	16.5	18.0	12.3	11.5	16.5	50.2	70.1	74.7	190.7	
31-May	13.1	17.9	14.2	10.4	10.8	12.9	21.9	15.7	7.8	8.8	10.0	19.2	49.9	111.2	96.8	74.6	116.8	150.1	148.1	162.4	115.7	61.2	55.4	55.5	56.7	162.4	
40.7 48.3 43.4 36.7 41.3 41.8 40.4 36.4 30.1 28.5 22.7 25.4 24.9 27.2 26.2 28.7 30.0 31.2 32.6 32.7 31.1 27.1 35.8 42.7																								Diurnal Average			
170.3 222.0 198.5 146.4 160.8 146.5 172.8 139.3 95.1 90.8 76.5 125.9 161.5 133.4 102.8 95.2 116.8 150.1 148.1 162.4 129.1 131.0 144.8 163.5																								Diurnal Maximum			

C - Calibration M - Maintenance UO - Unstable Operation
 Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m³ 24-hr 29 µg/m³





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Buffalo Viewpoint - May 2023**

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	25	3.66	3.66
6 - 15	222	32.50	36.16
16 - 25	159	23.28	59.44
26 - 80	202	29.58	89.02
> 81.0	75	10.98	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Buffalo Viewpoint - May 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0	0	0	0	0	0	4	5	3	1	5	2	0	2	1	2	25
6 - 15	11	8	4	2	1	9	31	47	29	31	15	13	6	6	5	4	222
16 - 25	12	5	5	0	1	10	30	35	16	13	2	4	10	6	7	3	159
26 - 80	14	8	7	2	4	16	35	43	14	11	6	2	3	9	15	13	202
> 81.0	4	2	1	0	0	8	12	14	6	4	4	3	2	4	4	7	75
Totals	41	23	17	4	6	43	112	144	68	60	32	24	21	27	32	29	683

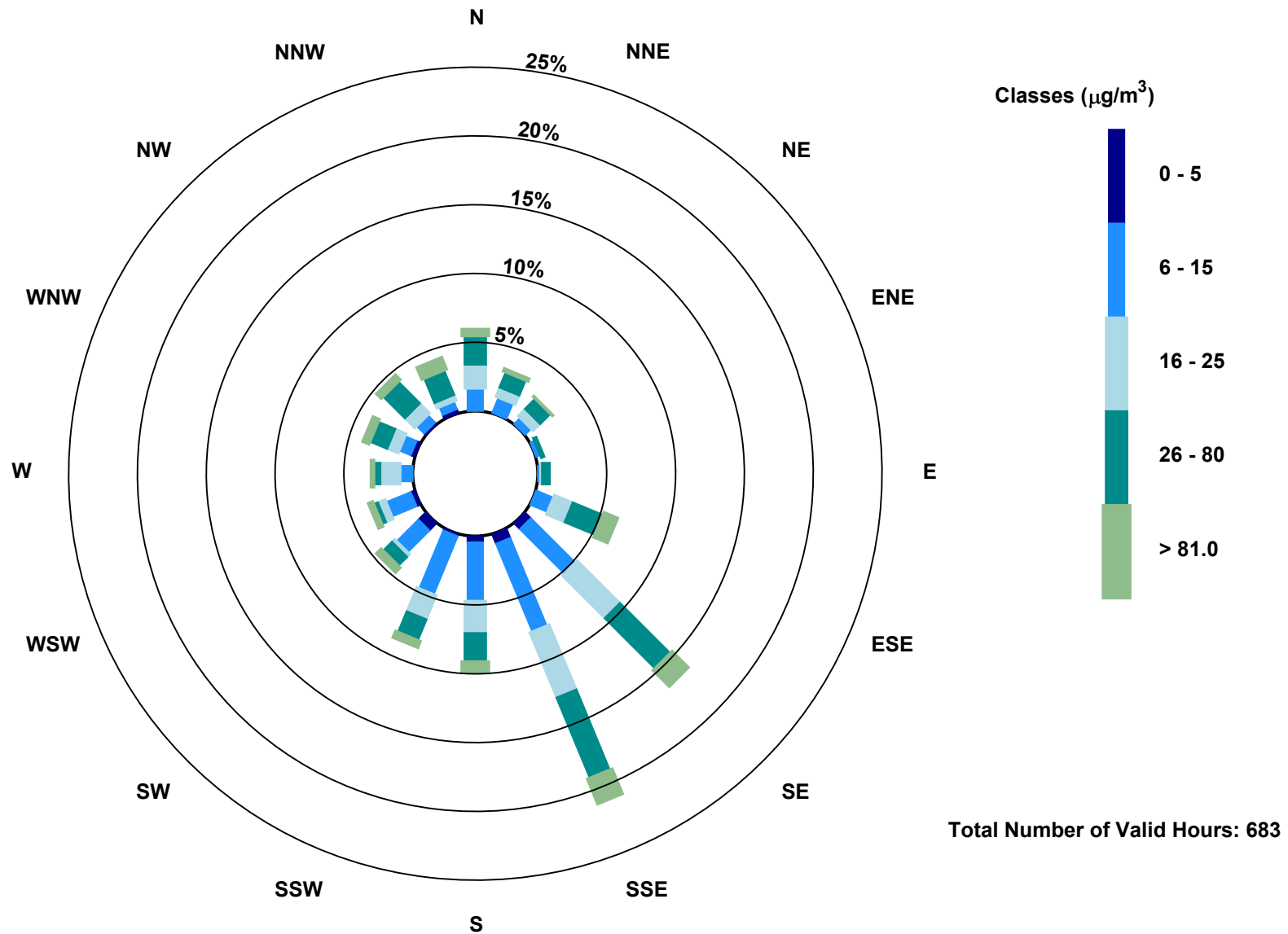
Total Number of Valid Hours: 683

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Buffalo Viewpoint





Wood Buffalo Environmental Association
Summary of Hour Averages

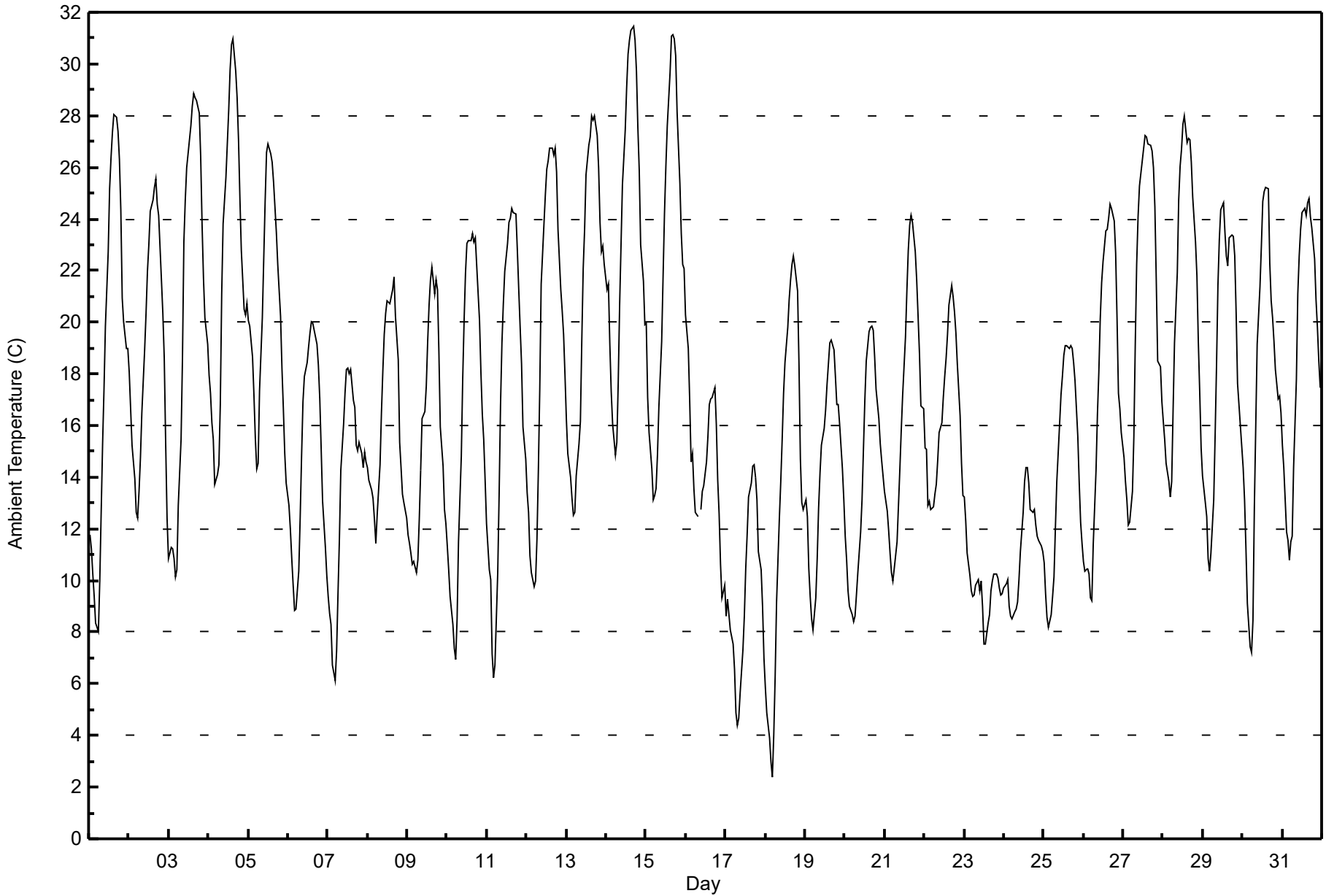
Ambient Temperature (AT) - C
Buffalo Viewpoint - May 2023

Maximum Value: 31.4 C on May 14 17:00		Maximum Daily Average: 23.8 C on May 14		Hours in Service: 744																							
Minimum Value: 2.4 C on May 18 05:00		Minimum Daily Average: 9.5 C on May 17		Hours of Data: 743																							
Maximum Diurnal Average: 22.9 C at hour 16		Minimum Diurnal Average: 10.3 C at hour 6		Hours of Missing Data: 1																							
Monthly Average: 17.11 C		Percentiles: P ₁ = 5.2 P ₁₀ = 9.5 Q ₁ = 12.4 Median = 16.7 Q ₃ = 21.8 P ₉₀ = 25.8 P ₉₉ = 30.8		Hours of Calibration: 0																							
				Percent Operational Time: 99.9																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	11.8	11.2	10.2	9.4	8.4	8.0	10.0	12.7	15.3	17.4	19.8	22.7	25.1	26.3	27.3	28.0	27.9	27.4	26.3	24.3	20.9	20.0	19.0	19.0	18.7	28.0	
2-May	18.1	16.6	15.3	13.9	12.7	12.4	13.5	14.8	16.5	18.9	20.3	22.0	23.0	24.3	24.7	25.2	25.5	24.6	24.1	22.9	20.3	18.6	15.3	12.4	19.0	25.5	
3-May	10.9	11.3	11.2	10.8	10.2	10.4	12.9	15.5	18.6	23.1	24.8	26.0	27.1	27.6	28.4	28.9	28.7	28.6	28.1	26.4	23.8	21.7	20.2	19.1	20.6	28.9	
4-May	18.0	17.3	16.1	15.5	13.7	14.1	14.5	16.8	21.1	23.8	25.6	26.9	28.2	29.8	30.7	31.0	29.7	28.7	27.1	24.8	22.8	20.5	20.3	20.7	22.4	31.0	
5-May	20.1	19.9	18.7	17.2	15.5	14.3	14.6	17.4	20.2	22.5	24.7	26.6	26.9	26.5	26.2	25.4	24.5	23.5	22.2	20.2	18.2	16.6	14.9	13.8	20.4	26.9	
6-May	12.9	12.0	10.9	9.8	8.9	8.9	10.3	12.4	14.8	16.9	17.9	18.4	19.0	19.6	20.0	19.7	19.1	18.3	17.0	15.1	13.1	11.3	10.2	14.9	20.0		
7-May	9.4	8.7	8.3	6.8	6.1	7.3	9.5	11.6	14.3	16.0	17.2	18.1	18.2	18.0	18.1	17.0	16.7	15.2	15.0	15.4	14.9	14.4	15.0	14.6	13.6	18.2	
8-May	14.4	13.9	13.5	13.2	12.4	11.4	12.6	14.5	16.5	18.1	19.5	20.3	20.8	20.7	21.0	21.3	21.7	20.3	18.5	15.3	14.4	13.3	13.0	12.4	16.4	21.7	
9-May	11.8	11.5	11.1	10.7	10.8	10.3	10.8	12.4	14.3	16.2	16.5	17.5	19.2	20.7	21.6	22.1	21.1	21.6	21.2	18.9	16.0	14.4	12.7	12.2	15.7	22.1	
10-May	11.3	10.4	9.4	8.3	7.4	6.9	8.5	11.5	14.8	17.8	20.1	21.9	23.1	23.2	23.2	23.4	23.1	23.3	22.2	20.0	18.1	16.4	15.5	13.9	16.4	23.4	
11-May	12.2	10.4	10.0	7.2	6.3	6.7	10.3	13.4	16.8	19.2	20.7	22.0	23.0	23.8	24.0	24.4	24.3	24.2	22.8	21.2	19.8	18.4	15.9	14.7	17.2	24.4	
12-May	13.4	12.6	11.0	10.3	9.8	10.0	11.6	14.3	17.4	21.5	23.8	25.0	25.9	26.2	26.7	26.7	26.5	26.8	25.8	23.6	21.2	20.4	19.5	17.9	19.5	26.8	
13-May	16.2	14.9	14.0	13.2	12.5	12.6	14.1	15.3	16.1	19.3	22.1	23.6	25.7	26.8	27.2	28.0	27.8	28.0	27.2	26.0	23.9	22.7	23.0	22.3	20.9	28.0	
14-May	21.2	21.5	19.2	17.3	16.0	14.9	15.4	17.7	20.7	23.0	25.3	27.4	29.1	30.4	30.9	31.3	31.4	30.9	29.7	27.5	25.9	23.0	21.6	19.9	23.8	31.4	
15-May	20.0	17.1	15.7	14.3	13.1	13.3	13.6	14.9	16.7	19.3	21.8	24.2	26.1	27.6	29.7	31.1	31.1	31.0	30.3	28.2	25.4	23.4	22.3	22.1	22.2	31.1	
16-May	20.3	19.0	16.9	14.6	14.9	13.6	12.7	12.5	M	12.7	13.5	13.7	14.6	15.6	16.8	17.0	17.1	17.4	16.0	13.9	12.6	10.6	9.3	9.8	14.6	20.3	
17-May	8.6	9.3	8.7	8.1	7.5	6.6	4.9	4.4	4.7	5.6	7.3	8.6	10.5	11.8	13.2	13.8	14.4	14.5	14.0	13.1	11.1	10.4	9.0	7.0	9.5	14.5	
18-May	5.9	4.9	3.9	3.0	2.4	4.0	6.3	9.2	12.4	13.8	15.5	17.3	18.4	19.8	20.9	21.7	22.2	22.6	22.2	21.2	18.4	14.7	13.0	12.7	13.6	22.6	
19-May	13.1	12.5	10.5	9.4	8.5	8.1	9.4	10.9	12.8	14.2	15.2	15.9	16.6	17.6	18.4	19.2	19.3	18.9	17.9	16.8	16.8	16.1	14.3	13.1	14.4	19.3	
20-May	11.7	10.8	9.6	9.0	8.7	8.4	8.6	9.4	10.3	11.9	13.1	15.1	17.0	18.5	19.6	19.8	19.8	19.7	18.6	17.4	16.3	15.3	14.7	14.1	14.1	19.8	
21-May	13.4	12.7	12.0	11.1	10.3	10.0	10.5	11.5	12.9	14.3	15.9	17.2	19.4	21.2	22.8	23.8	24.2	23.9	22.7	21.7	20.3	18.8	16.8	16.6	16.8	24.2	
22-May	15.1	15.1	12.9	13.1	12.8	12.9	13.3	13.7	14.7	15.7	16.1	17.1	17.9	18.6	19.5	20.7	21.4	21.0	20.4	19.6	18.4	16.4	14.5	13.3	16.4	21.4	
23-May	13.2	12.3	11.1	10.2	9.6	9.4	9.4	9.8	10.1	9.6	10.0	9.0	7.5	7.5	8.3	8.7	9.6	10.0	10.2	10.3	10.1	9.7	9.5	9.5	9.8	13.2	
24-May	9.7	9.9	10.0	9.0	8.6	8.5	8.8	8.9	9.2	10.0	11.1	12.6	13.8	14.4	14.4	13.8	12.7	12.8	12.1	11.7	11.5	11.3	11.1	11.2	14.4	14.4	
25-May	10.7	9.5	8.6	8.2	8.7	9.4	10.1	12.0	13.8	16.1	17.2	17.9	18.7	19.1	19.1	19.0	19.1	19.0	18.4	17.7	15.6	13.8	12.3	11.4	14.4	19.1	
26-May	10.7	10.3	10.5	10.2	9.3	9.2	11.4	14.3	16.4	18.1	20.1	21.6	22.3	23.6	23.6	24.0	24.6	24.4	23.9	22.7	20.1	17.2	16.7	15.7	17.5	24.6	
27-May	14.7	13.8	13.1	12.2	12.3	13.5	15.6	19.2	22.3	24.1	25.3	26.2	26.8	27.2	27.2	26.9	26.8	26.6	26.0	24.5	21.6	18.5	18.3	16.9	20.8	27.2	
28-May	16.2	15.4	14.5	13.8	13.2	13.8	16.6	19.2	21.9	24.7	26.1	26.7	27.6	28.0	27.0	27.1	27.1	26.2	24.8	23.1	21.8	19.2	17.3	15.2	21.1	28.0	
29-May	14.0	13.0	12.5	10.8	10.3	11.1	13.1	15.6	18.4	21.4	23.2	24.3	24.6	23.5	22.6	22.2	23.3	23.4	23.3	22.6	20.3	17.7	16.8	15.2	18.5	24.6	
30-May	14.4	13.1	11.2	9.1	7.4	7.2	8.5	12.8	16.0	19.1	21.4	22.9	24.7	25.0	25.2	25.2	22.3	20.8	20.2	19.2	18.2	17.0	17.1	16.5	17.3	25.2	
31-May	15.3	14.4	11.9	11.6	10.8	11.5	11.7	14.4	17.8	21.1	22.6	23.6	24.2	24.4	24.1	24.6	24.8	24.1	23.6	22.4	20.9	19.8	18.5	17.5	19.0	24.8	
		13.8	13.1	12.0	11.0	10.3	10.3	11.4	13.3	15.6	17.6	19.1	20.4	21.5	22.2	22.7	22.9	22.9	22.5	21.7	20.3	18.5	16.9	15.8	14.9	Diurnal Average	
		21.2	21.5	19.2	17.3	16.0	14.9	16.6	19.2	22.3	24.7	26.1	27.4	29.1	30.4	30.9	31.3	31.4	31.0	30.3	28.2	25.9	23.4	23.0	22.3	Diurnal Maximum	
M - Maintenance																											



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Buffalo Viewpoint - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Buffalo Viewpoint - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	91	12.25	12.25
10 - 20	407	54.78	67.03
> 20	245	32.97	100.00

Total Number of Valid Hours: 743

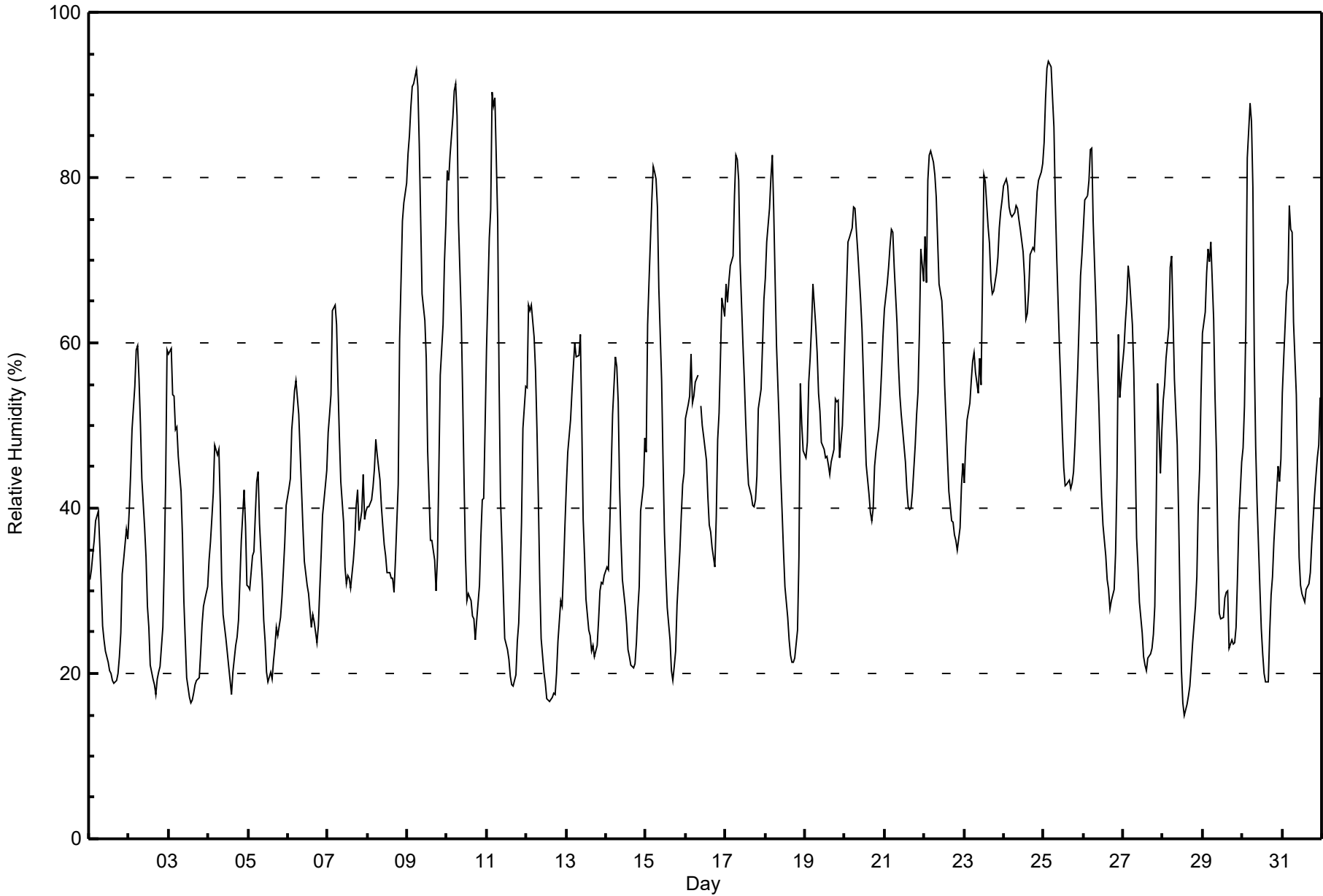
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Buffalo Viewpoint - May 2023

Maximum Value: 94.0 % on May 25 04:00 Maximum Daily Average: 74.3 % on May 24																						Hours in Service: 744 Hours of Data: 743																										
Minimum Value: 14.9 % on May 28 14:00 Minimum Daily Average: 28.2 % on May 1																						Hours of Missing Data: 1 Hours of Calibration: 0																										
Maximum Diurnal Average: 68.2 % at hour 6 Minimum Diurnal Average: 30.4 % at hour 17																						Percent Operational Time: 99.9																										
Monthly Average: 46.95 % Percentiles: P ₁ = 17.0 P ₁₀ = 22.5 Q ₁ = 30.7 Median = 44.4 Q ₃ = 61.2 P ₉₀ = 75.8 P ₉₉ = 90.7																																																
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	31.3	32.6	34.3	36.1	38.4	39.6	35.4	30.8	25.8	24.0	22.8	21.3	20.4	20.0	19.2	18.8	19.2	20.0	22.0	24.9	32.1	33.7	37.5	36.3	28.2	39.6																						
2-May	39.6	44.0	49.6	54.8	59.2	59.6	55.6	50.1	43.5	37.6	34.1	28.2	25.6	21.0	19.4	18.7	17.5	19.3	20.1	20.8	25.6	33.0	43.3	59.1	36.6	59.6																						
3-May	58.6	59.3	53.8	53.5	49.5	49.8	46.3	42.0	36.6	28.7	24.0	19.5	17.1	16.4	16.8	17.5	18.6	19.2	19.5	22.5	26.0	28.1	28.9	30.5	32.6	59.3																						
4-May	33.8	35.9	38.8	41.8	47.7	46.5	47.2	40.6	31.4	27.1	24.2	22.6	20.9	19.2	17.4	20.2	23.4	24.4	26.4	31.3	36.1	42.2	37.9	30.8	32.0	47.7																						
5-May	30.5	30.2	34.3	34.7	39.1	43.2	44.4	38.2	31.1	26.5	23.9	20.1	19.0	20.2	19.3	21.5	23.3	25.5	24.5	26.9	29.1	32.3	35.7	40.3	29.7	44.4																						
6-May	42.4	43.6	49.4	51.7	54.3	55.4	51.3	46.8	42.1	37.7	33.6	30.7	29.7	27.6	25.5	27.2	26.2	23.7	25.8	30.2	34.3	39.1	42.7	44.5	38.1	55.4																						
7-May	49.1	51.3	53.8	63.8	64.6	62.2	54.9	48.7	43.2	38.3	32.9	30.9	31.8	31.6	30.4	33.8	36.1	40.3	42.2	37.3	39.7	44.0	38.7	39.6	43.3	64.6																						
8-May	40.1	40.2	41.1	42.5	44.7	48.4	46.5	43.4	40.1	37.9	35.6	34.3	32.2	32.2	31.5	31.5	29.8	33.8	42.9	60.6	67.4	74.8	77.0	79.4	45.3	79.4																						
9-May	82.9	85.1	88.5	91.1	91.4	93.0	90.9	84.1	75.1	66.0	62.6	58.1	46.9	41.5	36.0	36.1	33.7	30.0	34.0	44.6	56.2	62.3	69.8	74.3	63.9	93.0																						
10-May	80.8	79.7	82.7	87.3	90.5	91.4	87.5	74.7	63.0	53.6	43.3	34.2	28.8	29.6	28.9	27.0	26.5	24.1	26.4	30.7	36.6	41.0	41.2	49.9	52.5	91.4																						
11-May	59.1	72.6	76.1	90.3	88.7	89.7	74.7	55.2	41.1	35.8	29.8	24.2	22.8	21.7	19.7	18.7	18.5	19.8	24.0	26.2	31.5	38.2	49.6	54.7	45.1	90.3																						
12-May	54.6	64.6	63.9	64.6	60.6	56.6	49.7	41.2	31.3	24.3	20.2	18.8	16.9	16.8	16.6	17.1	17.6	17.5	19.9	23.9	28.8	28.1	32.7	37.9	34.3	64.6																						
13-May	42.7	46.7	50.7	54.1	57.1	60.0	58.3	58.5	61.1	50.3	38.7	34.0	29.0	25.2	24.6	22.6	23.4	22.1	23.4	26.5	29.9	30.9	30.9	31.9	38.9	61.1																						
14-May	32.9	32.6	38.0	44.6	51.4	58.3	57.1	52.8	42.5	36.1	31.3	28.1	25.9	22.8	22.0	21.1	20.6	21.1	23.7	27.6	30.4	39.6	42.7	48.4	35.5	58.3																						
15-May	46.8	62.2	67.5	77.3	81.4	80.7	79.9	76.4	66.6	55.4	45.8	37.1	32.1	28.0	24.2	20.4	19.1	20.9	22.7	28.3	34.7	39.0	43.0	44.3	47.2	81.4																						
16-May	50.8	52.5	53.5	58.6	52.7	53.5	55.3	56.2	M	52.4	50.0	48.6	45.7	41.4	37.9	37.1	35.2	33.0	39.0	48.3	51.6	58.3	65.5	63.3	49.6	65.5																						
17-May	67.2	65.0	67.5	69.4	70.5	77.8	82.7	82.3	79.6	69.8	60.1	55.5	50.5	46.1	42.8	41.6	40.3	40.2	41.1	44.0	52.1	54.4	59.7	65.2	59.4	82.7																						
18-May	67.9	72.2	76.3	80.0	82.7	76.2	67.7	59.6	49.9	44.1	39.5	34.8	30.5	26.9	24.1	22.3	21.3	21.4	21.8	25.3	34.1	55.0	50.2	47.0	47.1	82.7																						
19-May	46.1	48.0	55.2	58.1	62.0	67.1	62.1	58.8	54.0	51.8	48.0	47.1	46.1	46.3	45.3	44.0	45.6	47.1	53.2	52.9	53.1	46.0	50.0	55.4	51.8	67.1																						
20-May	61.1	66.6	72.2	72.8	73.9	76.4	76.2	73.5	71.1	65.3	61.7	56.1	50.3	45.3	41.7	39.5	38.5	40.0	45.1	47.0	49.9	52.9	56.7	60.8	58.1	76.4																						
21-May	64.1	67.1	69.1	71.7	73.8	73.4	69.1	62.4	57.4	53.8	51.3	49.5	45.6	42.4	40.1	39.8	40.0	41.9	47.7	51.3	54.1	61.3	71.4	67.5	56.9	73.8																						
22-May	72.8	67.3	79.6	82.7	83.2	81.9	80.4	77.7	72.3	67.2	65.1	61.2	54.9	50.5	46.1	42.0	38.5	38.4	36.8	36.1	34.9	37.6	42.7	45.5	58.1	83.2																						
23-May	43.0	47.4	50.6	52.8	55.4	57.8	58.8	56.4	53.9	58.1	54.9	67.1	80.3	79.5	74.1	72.0	67.6	66.0	66.3	68.5	70.4	74.0	75.9	77.3	63.7	80.3																						
24-May	79.0	79.8	79.0	76.4	75.7	75.3	75.8	76.7	76.2	75.0	73.8	71.0	68.0	62.9	63.5	66.2	70.7	71.5	71.2	74.9	78.3	79.6	80.7	81.7	74.3	81.7																						
25-May	84.3	89.6	93.2	94.0	93.3	89.6	86.1	76.9	70.3	59.1	54.5	49.2	44.9	42.7	42.8	43.4	42.4	43.0	44.4	47.7	57.0	62.6	68.1	70.6	64.6	94.0																						
26-May	73.9	77.2	77.8	79.7	83.3	83.5	74.7	64.4	58.0	52.9	46.7	41.4	37.9	34.2	31.4	30.2	27.9	28.8	30.2	34.7	43.7	61.0	53.5	55.6	53.4	83.5																						
27-May	59.3	62.5	65.0	69.3	67.7	62.3	56.5	46.7	36.5	32.8	28.6	24.8	22.1	21.0	20.3	21.9	22.4	23.1	24.7	28.1	40.0	55.0	44.2	49.3	41.0	69.3																						
28-May	53.0	54.9	58.1	61.9	69.2	70.5	63.2	55.5	47.6	38.9	28.8	20.3	16.4	14.9	16.3	17.3	18.5	21.0	23.8	28.1	31.6	40.4	44.8	53.8	39.5	70.5																						
29-May	61.2	63.7	68.5	71.3	69.9	72.3	63.0	53.4	46.6	35.7	27.3	26.7	26.7	29.2	29.9	30.0	23.0	24.0	23.5	23.8	25.6	31.5	38.4	45.6	42.1	72.3																						
30-May	47.2	52.4	62.5	82.4	89.0	86.9	78.7	58.5	47.5	40.6	30.3	25.4	22.4	20.0	18.9	19.0	24.8	29.6	31.7	35.9	39.0	45.0	43.2	46.0	44.9	89.0																						
31-May	53.9	58.1	66.0	67.4	76.5	73.7	73.4	62.6	53.8	43.4	34.0	30.7	29.6	28.7	30.1	30.5	30.8	32.1	35.8	41.5	44.0	46.1	47.6	53.3	47.7	76.5																						
																								55.2	58.2	61.8	65.7	67.7	68.2	64.6	58.2	51.6	45.8	40.6	37.1	34.5	32.4	30.9	30.6	30.4	31.1	33.4	37.1	41.9	47.3	49.8	52.9	Diurnal Average
																								84.3	89.6	93.2	94.0	93.3	93.0	90.9	84.1	79.6	75.0	73.8	71.0	80.3	79.5	74.1	72.0	70.7	71.5	71.2	74.9	78.3	79.6	80.7	81.7	Diurnal Maximum
M - Maintenance																																																





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Buffalo Viewpoint - May 2023

Maximum Speed: 26 km/h on May 16 18:00	Maximum Daily Speed Average: 18.4 km/h on May 16	Hours in Service: 744
Minimum Speed Value: 1 km/h on May 26 16:00	Minimum Daily Speed Average: 0.5 km/h on May 19	Hours of Data: 743
Maximum Diurnal Speed Average: 3.8 km/h at hour 9	Minimum Diurnal Speed Average: 1.3 km/h at hour 24	Hours of Missing Data: 1
Monthly Average Velocity: 2.4 km/h 155.5 deg	Percentiles: P ₁ = 2 P ₁₀ = 4 Q ₁ = 6 Median = 8 Q ₃ = 12 P ₉₀ = 17 P ₉₉ = 24	Percent Operational Time: 99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SSE9	SSE8	SSE7	SSE6	SSE7	SSE5	SSE7	S6	SSE10	SSE12	S14	SSE13	S15	SSW16	SSW15	SSW15	SSW13	SSW13	SW12	SSW6	SE7	S6	NW10	NNW17	S7.7	NNW17
2-May	NNW17	NNW14	NW9	WNW10	NW10	NW8	WSW5	WSW5	WNW8	NW6	WNW7	NW5	NNW6	WNW7	WNW7	NNW8	NW6	NNW7	NNW7	SSE1	SE4	SE7	SSE7	SSE6	NW4.7	NNW17
3-May	SSE6	SE8	SE7	SE7	SSE7	SSE6	SE7	SE7	SE6	SSW13	SSW17	S17	S16	S17	S16	S14	SSW18	S15	S12	SSE9	SSE9	SSE8	SSE9	SSE9	S10.1	SSW18
4-May	SSE8	SE7	SW2	S5	S6	SSE4	S4	SE5	SE8	SE9	ESE8	ESE6	SE8	ESE8	SE9	N13	N20	NNE20	NNE19	NNE14	NE13	NE12	NE11	E6	ENE4.9	NNE20
5-May	SE8	SE10	ESE9	SE11	SE11	SSE5	SE8	ESE12	SE11	SSE12	SSE12	SE15	SSE16	ESE21	ESE21	ESE22	ESE21	SE19	SE17	SE17	SE14	SE17	SE14	SE15	SE13.8	ESE22
6-May	SE17	SE14	SE11	SE10	SE8	SE8	SE11	SE11	SE11	ESE15	ESE18	ESE18	ESE19	ESE18	ESE17	ESE18	SE17	SE17	SE16	SE14	SE11	SE7	SE4	SE4	SE12.9	ESE19
7-May	SE4	SSE3	SE4	S5	SSE6	SSE8	SE11	SE12	ESE13	SE16	SE15	SE16	ESE19	ESE19	SE16	SSE14	S11	SE6	ESE3	ENE6	ESE5	SE7	SE12	SE12	SE9.5	ESE19
8-May	SSE8	SSE9	SE9	SSE8	SSE9	SSE9	SSE11	SSE10	SSE10	SSE9	SSE9	SSE10	SSE13	SSE10	SSW11	S12	SSE10	SE8	WNW6	WNW9	SW4	WSW9	S4	SE4	SSE7.2	SSE13
9-May	SSE5	S4	SSW5	SSE5	S2	SE5	SSE4	SSE4	SSW5	SW5	SSW8	SSW9	S7	ENE3	NW5	NNW11	NW4	N2	NE4	S3	SSW7	SW6	SSE4	SW4	SSW2.5	NNW11
10-May	SE5	SSE6	SE8	SSE7	SSE8	SSE7	SSE6	S4	S4	SE6	ESE5	NNE3	N8	NW11	WNW10	WNW7	NNW6	NNE6	NNE11	NNE11	NE9	NE7	NE2	N3	ENE1.3	NNE11
11-May	NNE4	W2	NW3	SSW3	SSE5	SSW1	SE1	SSE4	SE6	SSE5	ESE7	ESE9	SE7	SE7	ESE7	ESE5	ESE8	ESE6	ESE8	SSE5	S4	SSW5	SE7	SE5	SE4.0	ESE9
12-May	SSE6	SSE6	S5	SSE5	SE6	SE5	SSE6	SSE6	SSE8	SSE9	SSE12	SSE11	SE11	SE12	SSE12	S11	SSE9	S8	SSW7	SSE5	SE8	SSE8	SSE9	SSE7	SSE7.8	SSE12
13-May	S6	SSE7	SSE8	SSE7	SSE5	S5	SSE4	SE2	SSE6	S6	SSW10	SSW11	SSW13	SSW14	SSW13	SSW11	S10	S7	SSE7	SSE7	S7	SSW11	SSW10	S7.5	SSW14	
14-May	SSW10	SSW9	E2	NNE4	NE7	S3	SSE5	SSE4	SSW4	SSW4	SSW6	SSW9	SSW10	SW11	SW12	SW14	SW14	SW11	W5	NW7	NNW8	NNE3	WNW3	SW4.9	SW14	
15-May	WNW1	WNW6	NNW4	SSW3	WSW2	WNW1	W2	WSW3	SW3	SSW3	E4	ESE4	E7	ESE8	SE6	S11	SSW13	SSW12	SSW12	SSW8	S6	S6	W4	NNW12	SSW2.9	SSW13
16-May	NW10	NNW14	N15	NNW10	NNW16	NW21	NW21	NW22	M	NNW25	NW25	NW25	NW23	NW24	NW24	NW23	NNW24	NNW26	N23	N18	N16	NNE12	N12	N16	NNW18.4	NNW26
17-May	N13	NNW15	N16	N20	N19	N15	NNE17	NNE17	NNE17	N18	N18	N18	N15	NNE13	NNE13	NE11	NE13	NE13	NE12	NNE10	NNE7	ENE7	SE5	SSE7	NNE12.1	N20
18-May	SSE8	SSE8	SSE9	SSE8	S6	SSE7	SSE8	SSE7	SSE6	SW7	SSW7	SSW7	SSW8	S8	S9	SSW9	S8	SSW8	SSW8	S5	S5	SSE5	S8	S8	S6.9	S9
19-May	SSW10	S8	SSE7	SE8	SE7	SE7	SSE4	SSE6	S6	S6	S6	SSW6	WSW4	NW3	N4	NNW3	NNW4	NNE4	NNW5	NNW7	N16	N18	N14	N13	N0.5	N18
20-May	NNE10	N10	N11	N11	N15	N11	N9	N10	N8	N7	NNE5	N5	N5	N7	N5	ESE6	ESE7	ESE7	SE4	SE6	SE6	SE7	SSE8	SE9	NNE4.1	N15
21-May	SSE10	SSE9	SSE8	SSE7	SSE6	SSE6	SSE6	SSE6	SSE8	S9	SSE8	SSE8	SSE7	SSE9	SSE8	SSE7	SE7	SE7	SE5	SE4	NE6	SE5	SSE4	ESE3	SSE6.4	SSE10
22-May	NNE7	ENE9	N9	N8	N10	N10	N13	N13	N15	N14	N18	N20	N18	NNE18	NNE20	NNE18	NE19	NE18	NE18	NE18	ENE20	ENE16	NE13	NE12	NNE13.4	ENE20
23-May	E11	E14	E15	E16	E16	E13	E13	E15	E16	ESE14	ESE15	ESE16	ESE16	ESE14	ESE15	ESE16	ESE18	SE16	SE14	SE12	SSE11	SSE11	SE12	SE12	ESE13.4	ESE18
24-May	SE11	SE9	SE10	SE10	SE11	SSE15	ESE14	SSE12	SSE12	S10	S7	S6	S7	SSW11	SW13	W16	W16	W14	W13	W12	W11	W10	WNW9	W9	SSW6.3	W16
25-May	W9	WNW7	WNW8	WNW8	NW7	NW8	WNW5	W4	W5	NW3	NNW3	NNW5	NE7	NNW6	NE6	NE7	ENE7	E6	ESE4	SE4	SSE6	SSE6	SSE6	SSE6	NW1.3	W9
26-May	SSE7	SSE5	SSE7	SSE7	SSE6	S4	SSE6	SSE5	SSE5	S5	S4	SW3	SSE5	WSW3	SE1	WNW1	SW5	SE6	SE7	SE6	SE5	SE5	SSE6	SSE6	SSE4.5	SSE7
27-May	SSE6	SE8	SE8	SE7	SE7	SE9	SE9	SSE9	S12	SSW14	SSW15	SSW15	S15	S15	SSE14	S14	SSW13	S13	SSW10	S6	SSE4	SSE5	SSE7	SSE7	S9.3	S15
28-May	SSE7	SSE8	SE8	SSE8	SE7	SE5	SSE6	S7	SSW7	SW11	WSW17	SW19	SW20	WSW22	WSW22	WSW19	W20	W21	WSW17	W13	WNW13	NW14	WNW8	WNW7	WSW9.1	WSW22
29-May	WNW7	WSW4	SW5	SSE6	S6	SSE3	SW4	SW6	SW6	WSW10	WSW18	WSW18	WSW19	WSW26	WSW22	WSW19	SW15	SW13	SW12	SW8	SW9	W6	N5	N5	WSW9.1	WSW26
30-May	NE5	NNE2	W4	SW3	S4	S4	SSE5	SSW4	S2	SSE1	ESE4	SSW4	NNW8	WNW6	WNW9	WNW8	NW17	NW17	NW10	NNW7	NNE5	E2	NE2	WSW6	WNW2.7	NW17
31-May	NW6	W3	S6	SW7	W4	SW4	SSE6	S5	SW3	WNW5	W8	NW5	SSE2	SE7	SSW7	SSW9	S7	SSE6	SE4	SE4	SE6	NNW2	N7	NW10	SW2.3	NW10

SE2.5 SE2.6 SE2.3 SE2.8 SE2.4 SE2.3 SE3.3 SE3.1 SSE3.8 S3.1 S3.4 S3.4 SSE3.6 S3.0 S3.4 SSW3.3 SSW2.7 S2.3 SSE1.4 ESE1.6 ESE2.3 ESE2.2 SE2.2 SE1.3	Diurnal Average
NNW17 NNW15 N16 N20 N19 NW21 NW21 NW22 NNE17 NNW25 NW25 NW25 NW23 WSW26 NW24 NW23 NNW24 NNW26 N23 N18 ENE20 N18 SE14 NNW17	Diurnal Maximum

M - Maintenance
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

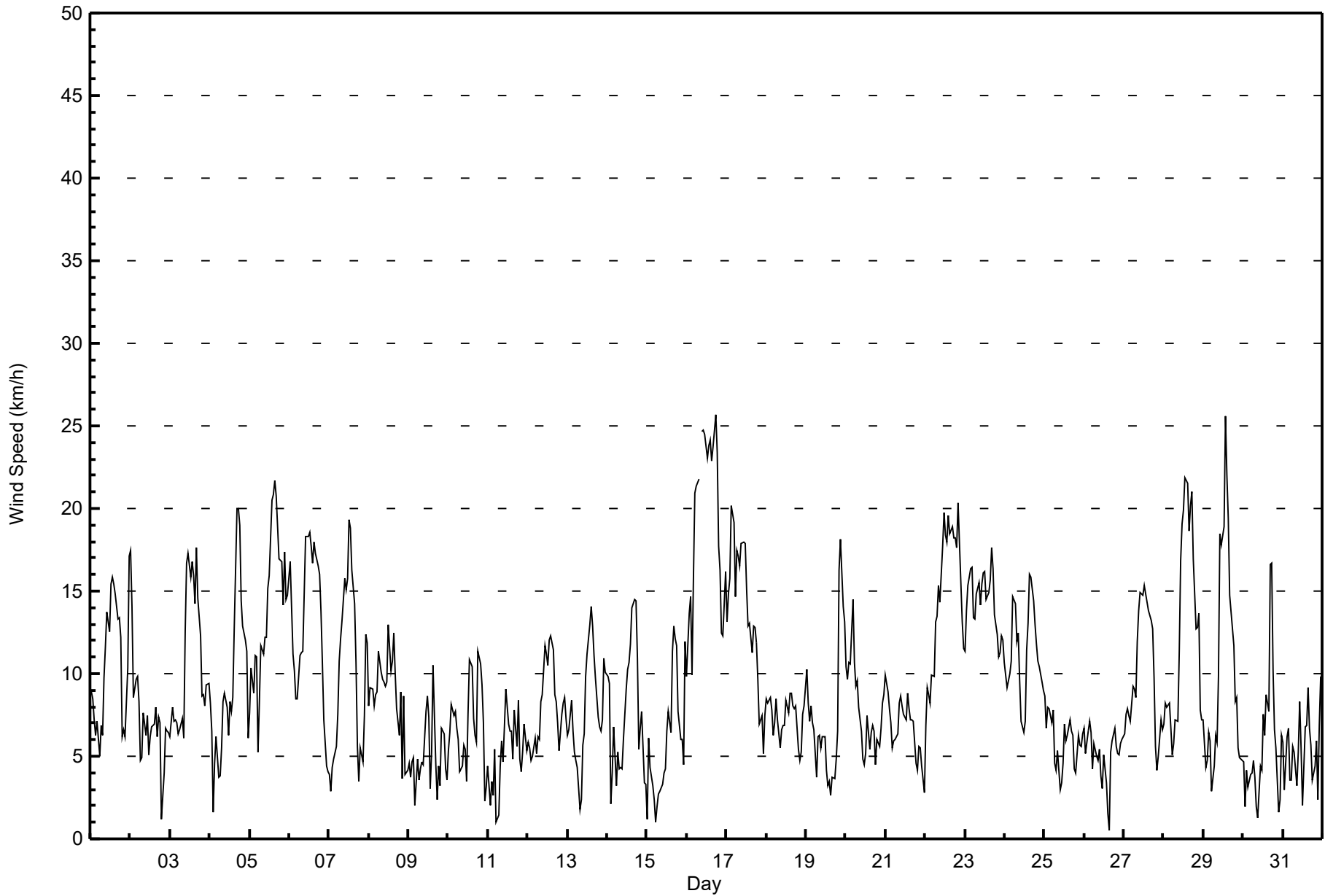
Wind Speed (WS) - km/h
Buffalo Viewpoint - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 9 km/h on May 29 14:00														Hours in Service: 744 Hours of Data: 743 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9											
Minimum Value: 1 km/h on May 18 21:00																									
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	2	2	2	2	2	2	2	3	3	4	4	5	6	5	5	4	4	3	3	2	1	2	5	5	6
2-May	4	5	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	2	2	1	1	1	1	5
3-May	1	2	2	2	2	1	2	2	2	5	5	6	6	6	5	5	5	5	4	3	2	2	2	2	6
4-May	3	3	1	1	1	3	2	2	2	3	3	3	3	3	3	5	5	5	5	3	2	2	2	2	5
5-May	3	3	3	3	3	2	3	3	4	4	4	6	6	6	6	6	6	6	5	5	4	5	5	5	6
6-May	5	4	3	3	2	3	3	3	4	5	5	5	5	5	5	5	6	5	5	4	3	2	1	1	6
7-May	1	1	1	1	2	2	3	4	4	5	5	6	6	5	6	5	3	5	1	1	3	3	4	4	6
8-May	4	4	3	3	3	3	4	4	3	3	3	4	5	4	3	4	4	3	5	4	2	3	2	1	5
9-May	1	1	1	1	1	2	1	1	2	2	2	2	3	3	3	4	1	2	2	3	2	2	1	1	4
10-May	2	2	1	1	1	1	1	1	1	2	2	2	3	5	3	3	3	2	3	3	2	1	2	2	5
11-May	1	1	2	1	1	2	1	2	2	2	3	3	3	3	4	2	3	2	3	1	1	1	2	1	4
12-May	2	1	1	1	2	1	2	2	3	3	4	5	5	5	5	5	3	3	3	2	2	2	2	2	5
13-May	2	2	2	2	1	1	1	1	2	2	2	3	3	4	4	4	3	3	2	2	2	2	2	2	4
14-May	2	4	2	3	2	2	1	1	1	1	2	3	3	4	4	4	5	5	3	2	2	2	1	2	5
15-May	2	1	2	2	2	1	1	1	1	2	2	2	3	3	4	4	4	4	4	2	1	1	6	4	6
16-May	2	4	4	2	4	5	6	6	M	7	7	7	7	7	7	7	6	7	7	5	4	3	3	4	7
17-May	3	4	4	5	7	4	5	5	4	5	5	5	5	4	4	4	4	4	3	3	1	2	1	2	7
18-May	2	2	2	2	2	2	3	2	3	2	3	3	3	3	3	4	3	3	2	2	1	1	1	2	4
19-May	3	3	2	2	2	2	2	1	2	2	2	2	2	1	2	2	1	1	1	3	4	5	3	3	5
20-May	3	4	3	2	3	3	2	3	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	3	4
21-May	3	3	3	2	2	2	2	2	3	3	3	3	3	3	3	2	2	2	1	1	2	1	1	1	3
22-May	2	3	2	2	2	2	3	3	4	4	5	5	5	5	6	5	5	6	5	5	5	4	3	3	6
23-May	5	4	4	4	4	3	4	4	5	4	5	6	5	5	6	5	6	6	4	4	4	4	4	4	6
24-May	3	3	3	3	4	5	4	4	4	3	2	2	2	4	4	4	4	4	3	3	3	2	3	2	5
25-May	2	1	1	2	2	2	3	2	2	2	2	3	3	2	2	2	2	2	2	2	2	1	1	2	3
26-May	2	2	2	2	2	1	2	2	2	2	2	3	3	2	3	2	2	2	2	1	1	1	2	2	3
27-May	2	2	2	2	2	3	2	3	4	5	4	5	5	5	6	5	4	4	3	1	1	1	2	2	6
28-May	2	2	2	2	2	2	2	2	2	4	6	6	6	8	7	6	6	6	5	3	3	4	3	1	8
29-May	1	1	1	1	2	1	2	2	2	4	6	6	5	9	8	6	5	4	4	2	1	2	2	1	9
30-May	2	2	1	1	1	1	1	1	2	2	2	3	3	3	3	2	6	5	3	2	2	2	2	3	6
31-May	2	2	1	2	2	1	2	1	2	2	2	2	2	2	2	3	3	2	1	2	2	2	2	3	3
														Diurnal Maximum											
M - Maintenance																									



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Buffalo Viewpoint - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Buffalo Viewpoint - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	172	23.15	23.15
6 - 11	359	48.32	71.47
12 - 19	182	24.50	95.96
20 - 28	30	4.04	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Buffalo Viewpoint - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	8	8	4	1	3	9	24	34	22	12	11	7	9	6	7	7	172
6 - 11	15	7	9	4	4	14	66	112	32	30	10	5	5	20	14	12	359
12 - 19	25	10	11	1	8	19	27	14	15	18	10	8	5	1	3	7	182
20 - 28	4	2	0	1	0	4	0	0	0	0	1	4	2	0	9	3	30
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	52	27	24	7	15	46	117	160	69	60	32	24	21	27	33	29	743

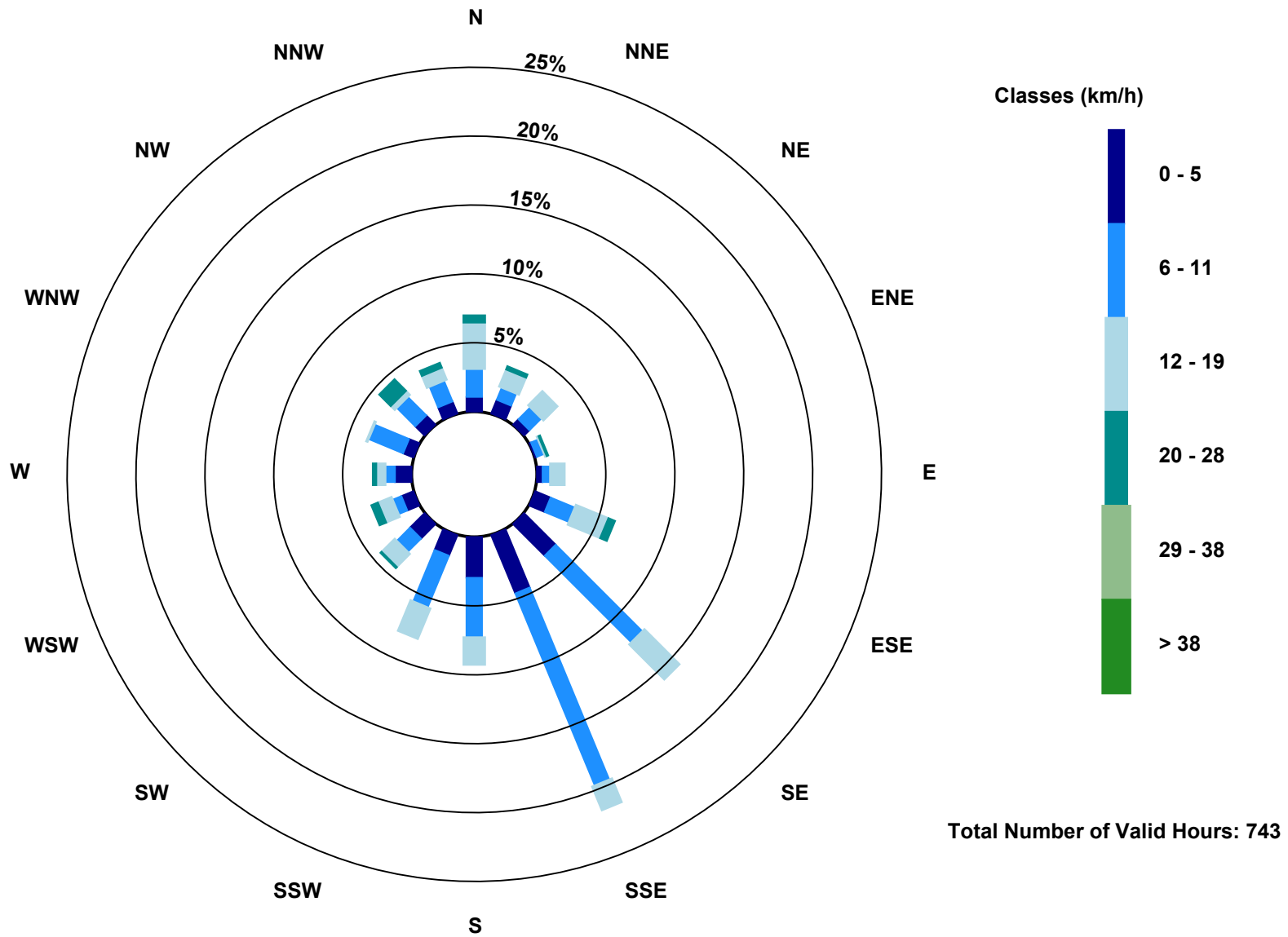
Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Buffalo Viewpoint





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Buffalo Viewpoint - May 2023

Direction of Maximum Speed: 335 deg on May 16 18:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 332.5 deg on May 16	Hours of Data: 743
Direction of Minimum Speed: 284 deg on May 26 16:00	Hours of Missing Data: 1
Direction of Minimum Daily Speed Average: 0.5 deg on May 19	Percent Operational Time: 99.9
Monthly Average Direction: 155.5 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	152	150	154	155	153	153	151	169	160	162	174	148	183	196	196	199	195	203	220	199	138	169	305	340	180.7
2-May	346	347	313	303	307	308	244	257	297	305	286	310	343	299	299	332	314	332	341	148	146	138	155	147	313.4
3-May	154	135	141	134	163	155	146	130	126	195	198	180	176	183	180	185	192	190	175	162	153	155	154	153	170.4
4-May	150	146	223	173	182	162	174	128	139	127	109	103	128	119	140	2	3	16	21	20	45	39	55	83	68.7
5-May	134	132	122	131	137	151	142	117	133	158	147	140	150	115	111	115	119	128	127	126	128	129	135	136	129.5
6-May	137	139	130	139	142	146	141	139	128	118	118	118	113	106	111	116	126	132	133	131	132	136	144	142	127.0
7-May	135	160	145	173	152	157	143	140	113	125	128	132	115	118	133	165	177	146	105	76	112	124	132	136	133.4
8-May	164	152	143	166	159	148	148	149	155	158	151	159	156	164	196	182	163	141	284	283	229	251	185	143	167.3
9-May	154	186	213	156	176	134	159	168	192	218	197	205	183	68	314	343	314	9	35	183	210	216	166	214	195.5
10-May	143	159	142	157	154	158	156	178	188	143	117	23	9	311	301	283	331	16	25	25	34	49	46	350	60.9
11-May	30	271	310	193	168	210	134	155	128	163	108	102	125	138	122	102	107	122	112	155	169	199	139	137	131.8
12-May	154	154	172	160	136	141	154	163	165	163	164	164	142	146	147	169	160	178	196	148	140	152	158	165	157.9
13-May	173	166	149	160	160	175	168	130	138	164	179	199	194	201	206	201	196	190	183	163	161	181	200	207	184.4
14-May	197	207	80	31	38	174	153	163	198	212	212	194	210	230	224	229	231	230	227	261	307	342	21	291	223.0
15-May	290	302	336	212	249	283	280	241	231	207	99	113	88	104	165	186	198	200	197	192	183	178	280	331	198.4
16-May	316	328	357	345	327	326	324	323	M	327	318	314	313	322	317	319	327	335	3	3	4	12	1	349	332.5
17-May	351	332	356	354	360	11	29	15	14	3	358	358	7	27	27	35	41	37	38	32	21	69	124	156	14.4
18-May	152	162	158	162	169	158	158	166	156	222	212	200	202	180	186	208	184	198	194	179	172	165	178	186	179.7
19-May	196	181	154	144	144	134	150	152	172	191	187	200	255	319	6	328	332	15	335	341	355	4	357	359	11.2
20-May	15	1	356	2	7	358	360	1	5	357	13	351	352	6	356	107	113	120	134	133	139	142	148	146	28.2
21-May	149	153	149	155	159	159	160	157	155	169	157	166	156	156	154	152	142	133	132	131	55	128	162	111	149.6
22-May	31	57	359	8	7	4	4	5	5	359	358	360	7	13	18	21	34	55	49	50	73	63	51	53	25.9
23-May	81	88	79	81	84	88	93	99	99	106	111	118	114	119	118	120	127	125	131	150	149	142	136	110.5	
24-May	142	138	134	131	141	147	149	158	153	169	187	178	182	244	232	264	261	259	267	269	259	269	283	277	207.6
25-May	265	286	297	303	314	305	292	264	277	317	339	328	35	341	42	52	68	84	123	141	152	153	161	155	323.4
26-May	152	157	159	157	165	174	168	168	153	181	171	222	157	251	135	284	215	129	129	137	140	145	158	161	160.9
27-May	162	145	137	137	137	136	146	167	190	202	196	194	188	182	167	188	195	187	196	177	156	148	160	157	174.7
28-May	153	148	144	147	138	141	150	169	199	217	237	235	232	242	252	240	261	262	255	269	287	313	298	285	238.7
29-May	291	253	233	154	174	161	226	236	227	247	254	252	249	254	249	237	231	228	227	229	226	279	353	9	242.6
30-May	42	29	280	236	174	179	165	192	182	166	120	209	343	295	294	298	310	310	322	347	28	88	53	244	302.7
31-May	305	260	179	231	271	229	161	179	218	286	279	321	163	133	200	204	180	150	144	124	145	331	358	308	217.3

142.5 145.7 127.9 137.9 130.7 138.1 140.2 145.4 146.5 174.5 178.1 177.3 164.2 179.4 188.9 196.7 192.9 172.7 149.3 121.0 115.2 121.6 131.0 144.3
 Diurnal Average

M - Maintenance
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

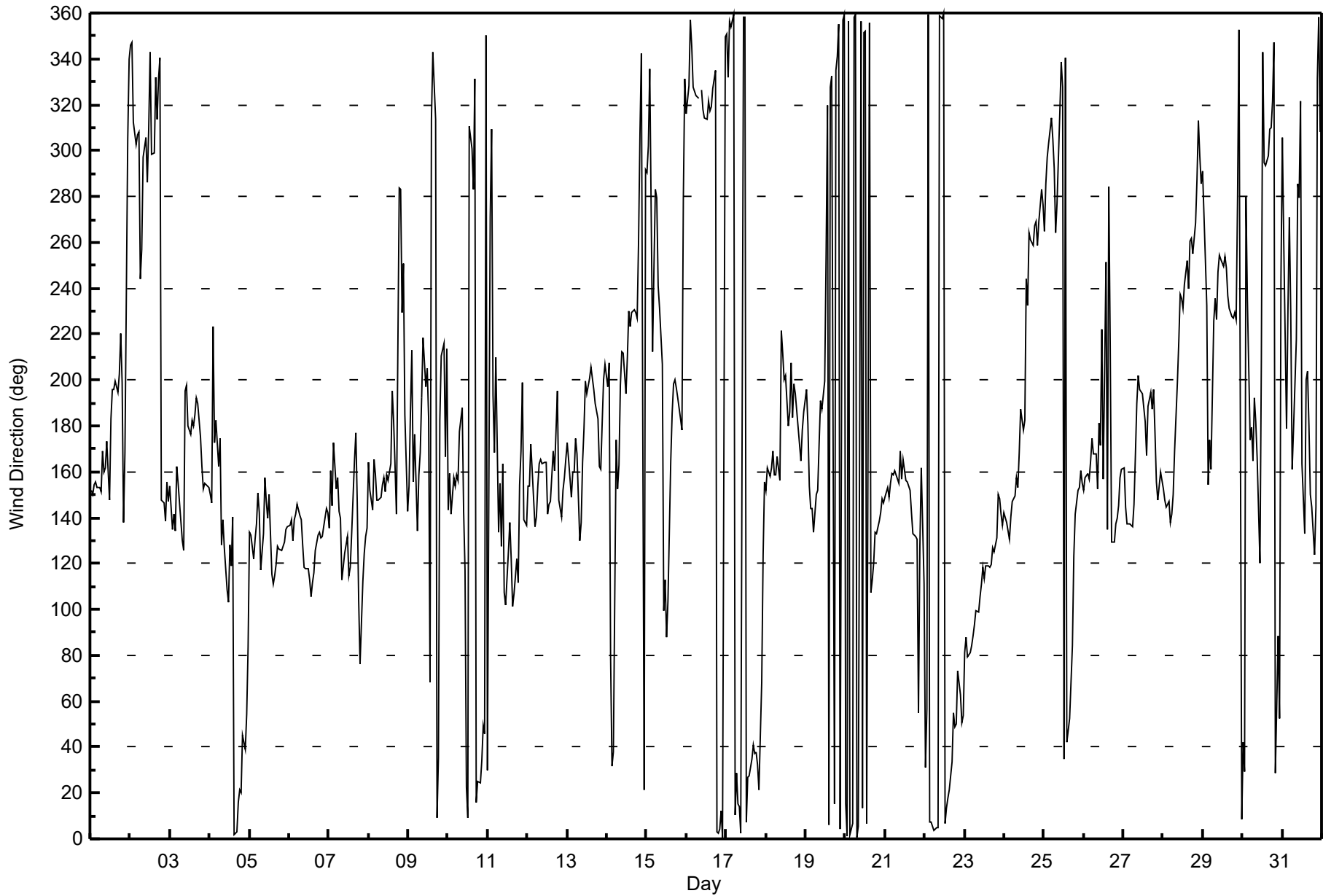
Wind Direction (WD) - deg
Buffalo Viewpoint - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 105 deg on May 30 10:00 Minimum Value: 8 deg on May 10 04:00 Percentiles: P ₁ = 12 P ₁₀ = 18 Q ₁ = 22 Median = 27 Q ₃ = 35 P ₉₀ = 53 P ₉₉ = 86																			Hours in Service: 744 Hours of Data: 743 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9						
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	25	28	28	27	30	30	29	38	32	33	29	37	33	26	26	24	23	19	18	36	19	30	31	21	38
2-May	19	18	21	14	15	18	33	30	24	35	30	56	64	60	46	43	45	27	17	87	40	11	15	11	87
3-May	19	19	26	23	19	18	21	23	27	36	23	32	33	30	31	30	24	24	27	29	24	24	26	26	36
4-May	29	35	59	21	26	72	66	41	30	28	33	46	40	47	40	51	22	22	20	20	17	14	13	21	72
5-May	27	28	23	26	26	28	27	22	31	32	36	35	34	24	23	22	23	26	26	25	26	26	29	26	36
6-May	27	31	25	27	27	28	29	31	29	23	24	24	23	22	24	25	26	30	28	26	25	27	27	20	31
7-May	14	43	18	24	31	29	27	28	22	29	33	32	24	23	32	33	28	52	40	12	49	25	26	28	52
8-May	32	30	29	29	30	26	28	31	35	35	37	42	36	36	32	31	36	27	73	40	47	28	43	22	73
9-May	23	42	24	18	63	40	34	31	48	53	25	26	44	87	65	29	31	75	43	60	29	20	32	39	87
10-May	31	16	9	8	10	12	17	28	40	39	42	72	33	43	23	36	41	44	26	18	17	25	78	45	78
11-May	23	72	31	54	16	95	71	38	38	55	43	35	56	52	71	71	31	38	25	22	29	38	25	27	95
12-May	28	19	24	25	35	29	28	34	32	34	36	40	44	42	43	37	39	32	33	31	27	28	27	26	44
13-May	24	22	18	22	18	17	19	55	47	31	32	21	25	21	21	23	24	26	26	27	26	23	17	15	55
14-May	15	53	63	83	39	63	21	28	34	41	31	27	24	30	27	24	22	20	19	50	39	31	57	55	83
15-May	93	17	39	57	63	84	41	33	46	67	48	65	39	36	65	36	27	26	24	22	18	16	75	19	93
16-May	16	21	21	20	18	19	21	20	M	20	23	22	23	22	23	22	18	20	27	23	21	18	19	20	27
17-May	18	20	22	23	23	21	23	22	21	25	25	23	29	31	31	32	27	25	21	22	16	21	32	28	32
18-May	26	27	27	27	25	27	25	32	54	39	41	49	41	54	45	39	37	36	25	23	21	21	17	18	54
19-May	19	26	26	24	23	18	51	23	27	29	32	32	33	58	59	66	25	30	16	21	19	20	19	18	66
20-May	17	19	18	19	17	22	22	22	24	27	49	61	56	32	43	37	30	27	28	28	30	29	28	29	61
21-May	29	31	31	30	29	29	27	30	31	30	32	35	39	34	37	37	31	28	26	21	29	16	20	64	64
22-May	17	19	14	16	16	18	20	21	23	23	23	22	23	23	23	24	23	23	20	19	14	16	18	18	24
23-May	28	21	13	13	13	17	19	19	20	23	23	27	25	27	28	27	25	29	27	28	32	30	30	30	32
24-May	31	29	31	28	30	30	30	31	31	30	29	41	33	28	22	19	16	16	18	18	14	16	20	19	41
25-May	13	13	17	21	17	20	46	43	37	79	78	66	58	42	47	30	33	39	30	27	30	26	28	29	79
26-May	28	31	27	27	30	33	28	41	55	52	71	83	63	85	90	100	52	56	27	24	25	24	30	32	100
27-May	31	27	23	25	26	27	28	33	28	27	27	31	29	33	34	31	29	27	22	23	23	27	28	25	34
28-May	29	22	23	23	21	33	31	32	31	28	23	24	24	23	19	23	20	22	22	17	27	19	25	12	33
29-May	11	26	18	15	22	41	37	27	34	31	21	22	20	20	20	22	23	20	20	17	13	53	37	21	53
30-May	30	79	20	24	39	16	25	33	80	105	77	68	46	64	33	28	22	20	19	26	24	74	90	49	105
31-May	19	64	33	20	56	50	39	36	59	68	29	59	84	42	36	27	38	32	24	37	32	67	46	24	84
																			93 79 63 83 63 95 71 55 80 105 78 83 84 87 90 100 52 75 73 87 49 74 90 64						
Diurnal Maximum																									
M - Maintenance																									



Wood Buffalo Environmental Association
Hourly Averages

Wind Direction (WD) - deg
Buffalo Viewpoint - May 2023





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS05
MANNIX
MAY 2023**

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS05)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	707	35	37	99.73	67.9	0	17	0
H2S (ppb) Average	706	36	38	99.73	6	0	1.7	0
THC (ppm) Average	690	35	54	97.45	4.6	-	2.4	-
NMHC(ppm) Average	690	35	54	97.45	0.987	-	0.219	-
CH4(ppm) Average	690	35	54	97.45	3.9	-	2.3	-
Temperature 2 m (C) Average	744	0	0	100	32.5	-	23.7	-
Temperature 20 m (C) Average	744	0	0	100	31	-	24	-
Temperature 45 m (C) Average	744	0	0	100	30.5	-	24.2	-
Temperature 75 m (C) Average	744	0	0	100	30.1	-	24.2	-
Temperature 90 m (C) Average	744	0	0	100	29.9	-	24.2	-
Relative Humidity 2 m (%) Average	744	0	0	100	98	-	73	-
Relative Humidity 20 m (%) Average	744	0	0	100	100	-	74	-
Relative Humidity 45 m (%) Average	744	0	0	100	92	-	74	-
Relative Humidity 75 m (%) Average	744	0	0	100	93	-	76	-
Relative Humidity 90 m (%) Average	738	0	6	99.19	93	-	77	-
Wind Speed 20 m (km/h) Average	744	0	0	100	32	-	22	-
Wind Speed 45 m (km/h) Average	744	0	0	100	40	-	31	-
Wind Speed 75 m (km/h) Average	744	0	0	100	42	-	35	-
Wind Speed 90 m (km/h) Average	744	0	0	100	44	-	36	-
Wind Direction 20 m (deg) Average	744	0	0	100	-	-	-	-
Wind Direction 45 m (deg) Average	744	0	0	100	-	-	-	-
Wind Direction 75 m (deg) Average	744	0	0	100	-	-	-	-
Wind Direction 90 m (deg) Average	744	0	0	100	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	744	0	0	100	1.5	-	1.2	-
Vertical Wind Speed 45 m (km/h) Average	744	0	0	100	2.1	-	1.1	-
Vertical Wind Speed 75 m (km/h) Average	744	0	0	100	1.9	-	0.6	-
Vertical Wind Speed 90 m (km/h) Average	744	0	0	100	1.9	-	1.1	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS05)

MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	707	2.32	7.8	-	0	0.1	0.1	0.3	0.7	4.3	67.9
H2S (ppb) Average	706	0.38	0.6	-	0	0	0.1	0.2	0.4	0.9	5.6
THC (ppm) Average	690	2.11	0.2	-	1.9	2	2	2	2.1	2.3	4.6
NMHC(ppm) Average	690	0.059	0.116	-	0	0	0	0	0.1	0.2	0.987
CH4(ppm) Average	690	2.05	0.1	-	1.9	2	2	2	2	2.1	3.9
Temperature 2 m (C) Average	744	17.1	6.2	-	1.5	9.5	12.2	16.7	21.6	26.2	32.5
Temperature 20 m (C) Average	744	17.24	5.7	-	3.5	9.9	12.8	16.8	21.7	25	31
Temperature 45 m (C) Average	744	17.16	5.6	-	3.3	9.9	12.8	16.8	21.5	24.7	30.5
Temperature 75 m (C) Average	744	17.1	5.5	-	2.9	9.9	12.9	16.7	21.4	24.5	30.1
Temperature 90 m (C) Average	744	17.02	5.5	-	2.8	9.8	12.9	16.7	21.3	24.4	29.9
Relative Humidity 2 m (%) Average	744	47.4	20	-	15	22	31	45	62	76	98
Relative Humidity 20 m (%) Average	744	44.1	19	-	13	21	29	42	57	72	100
Relative Humidity 45 m (%) Average	744	43.5	18	-	14	21	29	41	56	72	92
Relative Humidity 75 m (%) Average	744	43.5	18	-	14	22	29	40	55	71	93
Relative Humidity 90 m (%) Average	738	43.3	18	-	15	22	29	41	55	70	93
Wind Speed 20 m (km/h) Average	744	12.3	6	-	0	5	8	11	17	21	32
Wind Speed 45 m (km/h) Average	744	17.2	8	-	0	6	11	17	23	27	40
Wind Speed 75 m (km/h) Average	744	18.7	9	-	0	7	12	19	25	30	42
Wind Speed 90 m (km/h) Average	744	19.6	9	-	0	7	12	20	26	31	44
Wind Direction 20 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-
Wind Direction 45 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-
Wind Direction 75 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-
Wind Direction 90 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	744	0.36	0.5	-	-1.4	-0.3	0.1	0.4	0.7	0.9	1.5
Vertical Wind Speed 45 m (km/h) Average	744	0.29	0.5	-	-1.2	-0.5	-0.1	0.3	0.7	0.9	2.1
Vertical Wind Speed 75 m (km/h) Average	744	0.22	0.4	-	-0.8	-0.3	0	0.2	0.5	0.8	1.9
Vertical Wind Speed 90 m (km/h) Average	744	0.11	0.6	-	-1.4	-0.5	-0.2	0.1	0.4	0.9	1.9

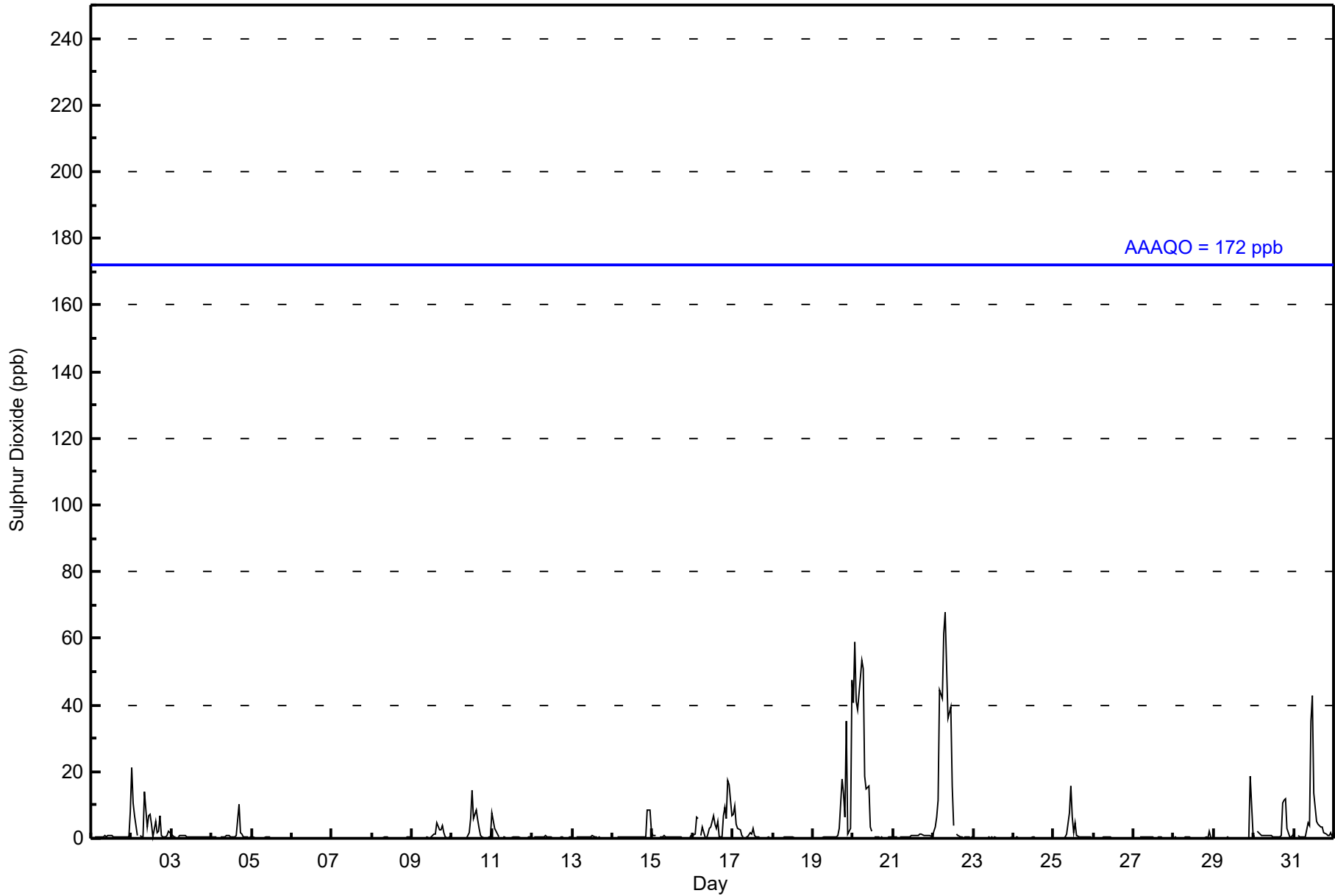
WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS05)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	08 May 2023 13:00	08 May 2023 14:00	2	Maintenance - sample manifold cleaned
THC/NMHC/CH4	04 May 2023 10:00	04 May 2023 11:00	2	Maintenance - replaced support gas cylinder
THC/NMHC/CH4	06 May 2023 05:00	06 May 2023 07:00	3	Unstable Operation - excessive baseline drift
THC/NMHC/CH4	07 May 2023 03:00	07 May 2023 08:00	6	Unstable Operation - excessive baseline drift
THC/NMHC/CH4	18 May 2023 05:00	18 May 2023 06:00	2	Unstable Operation - excessive baseline drift
THC/NMHC/CH4	18 May 2023 11:00	18 May 2023 11:00	1	DAS Failure - data not recorded
Relative Humidity at 90m	17 May 2023 07:00	17 May 2023 08:00	2	Sensor operated out of range
Relative Humidity at 90m	25 May 2023 04:00	25 May 2023 07:00	4	Sensor operated out of range



Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service: 744														744							
Maximum Value: 67.9 ppb on May 22 08:00				Maximum Daily Average: 17.0 ppb on May 22		Hours of Data: 707														707							
Minimum Value: 0.0 ppb on May 5 18:00				Minimum Daily Average: 0.0 ppb on May 7		Hours of Missing Data: 37														37							
Maximum Diurnal Average: 4.0 ppb at hour 7				Minimum Diurnal Average: 0.9 ppb at hour 16		Hours of Calibration: 35														35							
Monthly Average: 2.32 ppb				Percentiles: P ₁ = 0.0 P ₁₀ = 0.1 Q ₁ = 0.1 Median = 0.3 Q ₃ = 0.7 P ₉₀ = 4.3 P ₉₉ = 47.3		Percent Operational Time: 99.7														99.7							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.3	Z	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.6	0.8	0.8	0.7	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.5	8.1	0.8	8.1	
2-May	21.1	10.5	6.9	1.0	Z	0.7	0.5	0.5	13.9	3.3	6.9	7.3	4.4	0.5	5.2	1.9	2.0	6.9	0.8	0.3	0.3	1.1	1.9	1.8	4.3	21.1	
3-May	1.1	0.6	0.5	Z	0.5	0.7	0.8	1.0	0.6	0.5	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.3	0.3	0.5	1.1	
4-May	0.4	0.4	0.4	0.4	Z	0.3	0.3	0.4	0.6	0.7	0.7	0.6	0.6	0.5	0.4	0.7	10.1	1.7	1.1	0.5	0.5	0.3	0.2	0.3	0.9	10.1	
5-May	0.3	0.3	0.2	0.1	0.1	Z	0.1	0.2	0.4	0.4	0.4	0.3	C	C	C	C	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	
6-May	Z	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
7-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	
8-May	0.1	0.1	Z	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.2	0.2	M	M	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.3	0.3	0.2	0.3	
9-May	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.1	0.2	0.3	0.2	0.3	1.0	1.1	1.3	4.6	2.7	2.6	4.0	1.9	0.3	0.2	0.2	0.1	1.0	4.6	
10-May	0.1	0.1	0.0	0.0	Z	0.2	0.1	0.2	0.2	0.8	1.9	5.8	14.5	6.1	8.3	5.3	3.2	0.7	0.3	0.1	0.1	0.2	0.6	0.3	2.1	14.5	
11-May	7.7	2.9	2.1	1.3	0.6	Z	0.6	0.3	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.8	7.7	
12-May	Z	0.3	0.3	0.2	0.2	0.2	0.3	0.5	0.6	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.4	0.3	0.6	
13-May	0.5	Z	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.7	0.6	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.4	0.7	
14-May	0.1	0.2	Z	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.4	0.3	0.3	0.5	8.5	8.3	2.2	1.1	8.5	
15-May	0.8	0.7	0.6	Z	0.5	0.4	0.5	0.7	0.6	0.6	0.6	0.3	0.4	0.3	0.4	0.4	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.7	0.4	0.8	
16-May	0.7	1.2	6.4	5.8	Z	0.8	3.4	0.3	0.2	1.3	3.0	3.4	6.7	4.1	3.1	4.9	0.5	0.6	6.7	9.4	5.9	17.4	16.0	7.0	4.7	17.4	
17-May	7.4	9.8	4.4	2.9	2.6	0.7	0.3	Z	0.3	0.3	1.7	1.3	3.0	0.8	0.3	0.5	0.2	0.2	0.1	0.1	0.2	0.3	0.2	0.1	1.6	9.8	
18-May	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	
19-May	0.0	Z	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.6	3.1	17.9	13.7	6.2	35.1	1.2	2.8	47.4	5.8	47.4	
20-May	40.5	58.7	41.3	38.4	48.3	53.4	50.8	18.8	14.7	15.8	3.2	2.0	Z	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.5	16.9	58.7	
21-May	0.5	0.5	0.4	Z	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.8	0.8	0.9	0.9	1.0	1.2	1.1	0.9	0.7	0.7	0.9	0.7	0.5	0.7	1.2	
22-May	2.1	3.3	6.3	11.4	44.5	42.1	61.7	67.9	51.8	35.8	39.2	15.6	3.8	Z	1.1	0.6	0.5	0.3	0.2	0.2	0.5	0.6	0.2	0.3	17.0	67.9	
23-May	0.1	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	
24-May	Z	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.3	
25-May	0.1	Z	0.1	0.0	0.1	0.2	0.2	0.2	1.3	7.5	15.6	6.5	1.5	4.8	0.7	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	1.8	15.6	
26-May	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	
27-May	0.2	0.2	0.2	Z	0.2	0.4	0.5	0.5	0.6	0.5	0.3	0.3	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.2	0.6	
28-May	0.1	0.2	0.2	0.1	Z	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.9	0.2	0.1	0.2	1.9
29-May	0.1	0.0	0.0	0.0	0.1	Z	0.2	0.2	0.3	0.2	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	18.7	1.2	0.9	18.7	
30-May	0.6	Z	2.2	1.6	0.7	0.9	0.9	0.7	0.7	0.8	0.7	0.4	0.4	0.4	0.2	0.3	1.1	10.5	11.6	12.0	2.8	0.4	0.5	0.7	2.2	12.0	
31-May	1.8	Z	0.7	0.4	0.3	0.3	0.3	0.4	4.7	3.8	35.2	42.7	13.6	4.9	4.2	4.0	3.3	3.4	1.8	1.2	0.8	0.7	1.5	0.6	5.7	42.7	
																								Diurnal Average			
																								Diurnal Maximum			
3.2 3.8 2.7 2.5 3.9 3.9 4.0 3.2 3.1 2.5 3.7 3.0 2.0 1.0 1.0 0.9 1.0 1.6 1.4 1.1 1.6 1.2 1.8 2.4																								Diurnal Average			
40.5 58.7 41.3 38.4 48.3 53.4 61.7 67.9 51.8 35.8 39.2 42.7 14.5 6.1 8.3 5.3 10.1 17.9 13.7 12.0 35.1 17.4 18.7 47.4																								Diurnal Maximum			
Z - zerospan C - Calibration M - Maintenance																											
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb																											





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Mannix - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	670	94.77	94.77
11 - 20	18	2.55	97.31
21 - 60	17	2.40	99.72
61 - 110	2	0.28	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Mannix - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	16	24	17	19	18	21	183	147	56	34	19	34	25	15	30	12	670
11 - 20	7	3	0	1	0	1	0	0	0	0	0	0	0	2	1	3	18
21 - 60	14	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	17
61 - 110	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	39	27	17	20	20	22	183	147	56	34	19	34	25	17	31	16	707

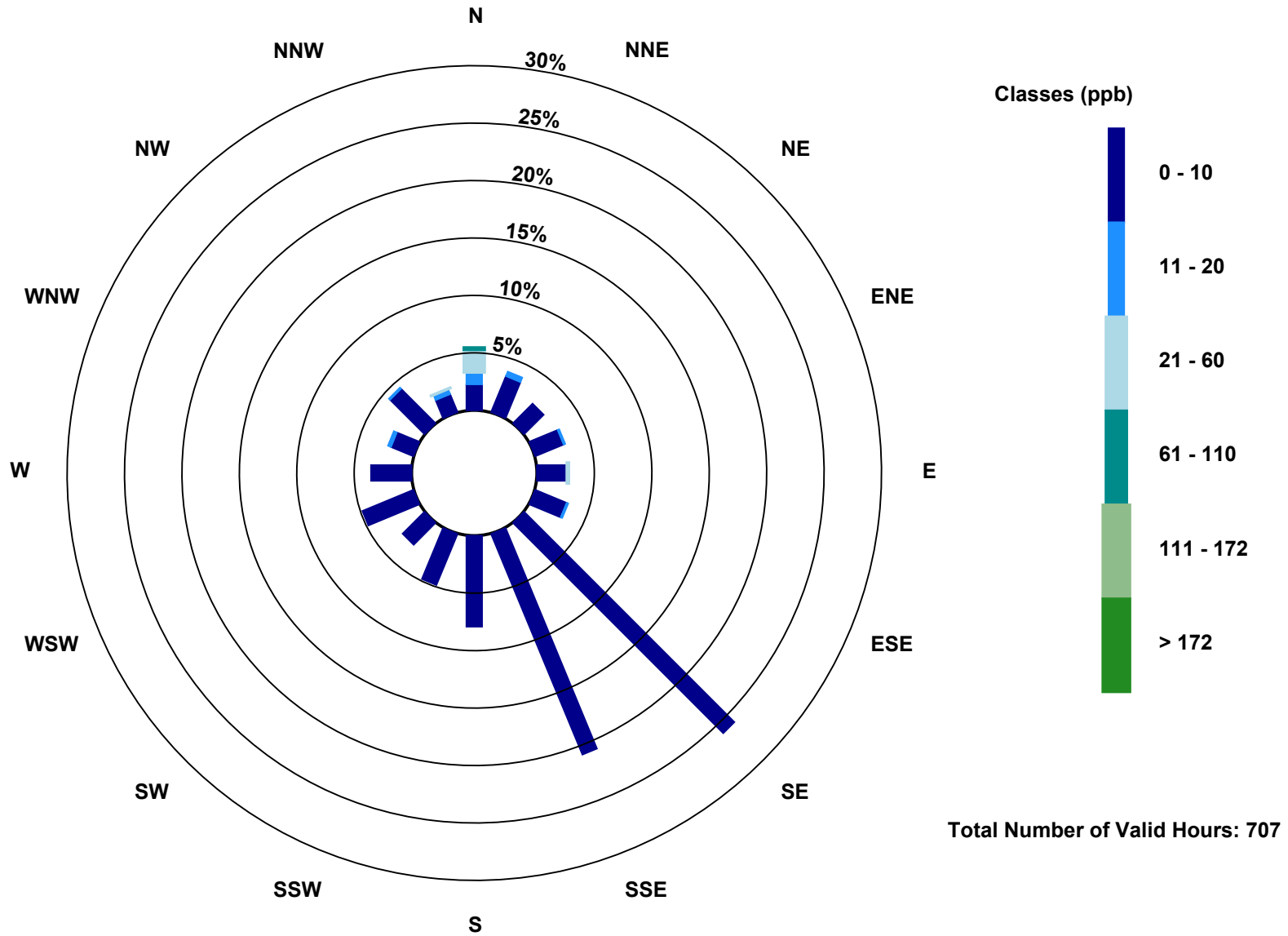
Total Number of Valid Hours: 707

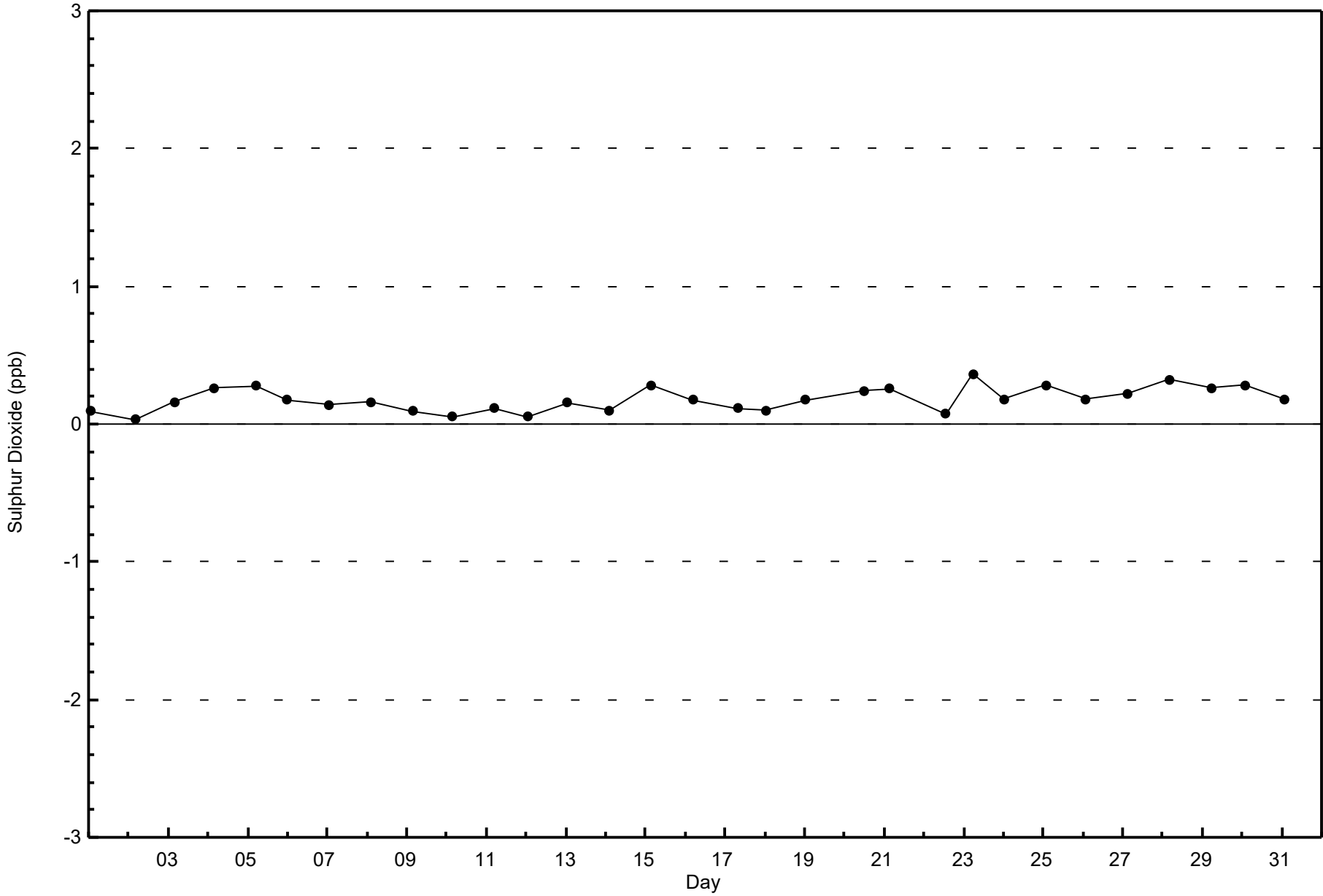
Total Number of Hours: 744

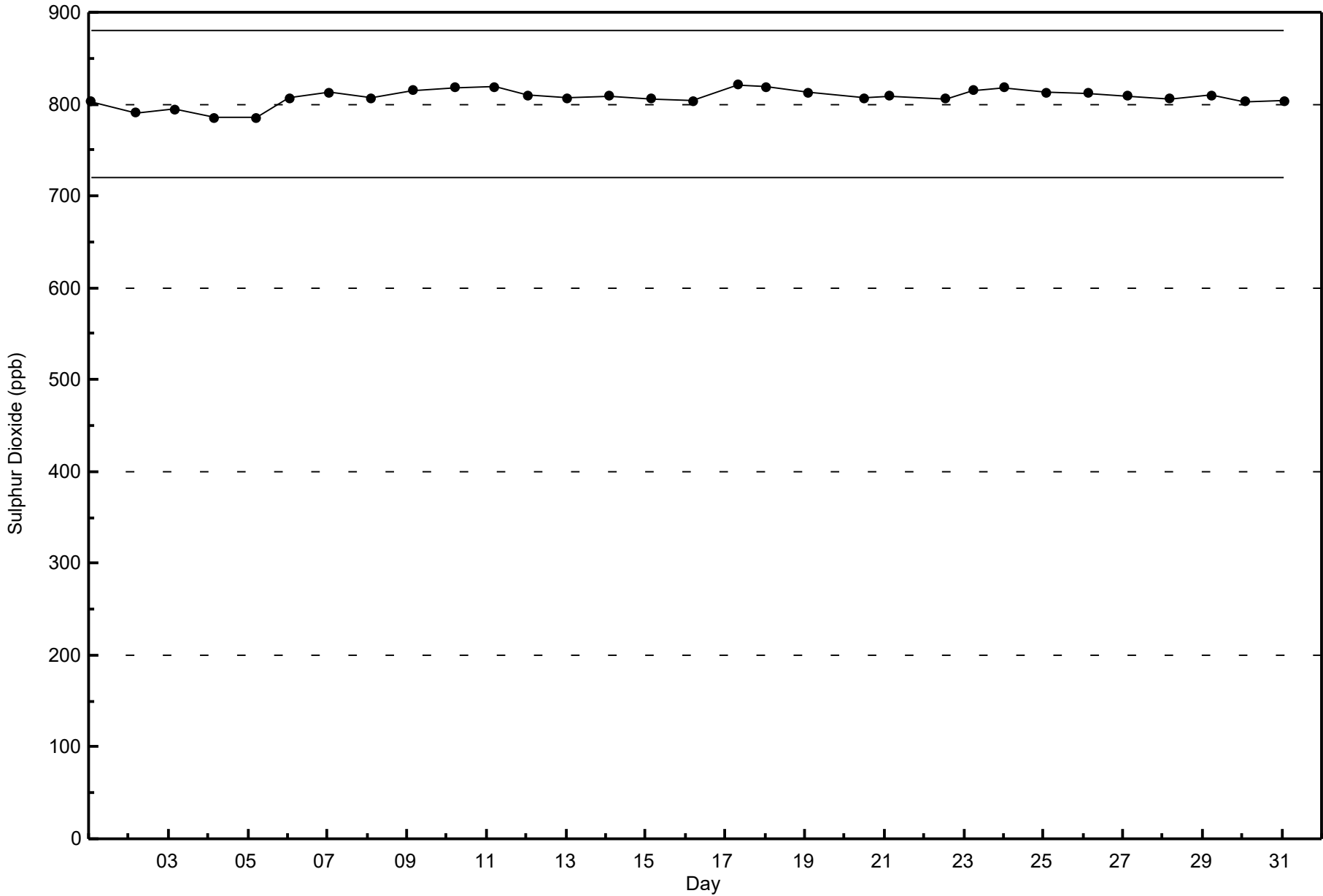


Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Mannix









Wood Buffalo Environmental Association

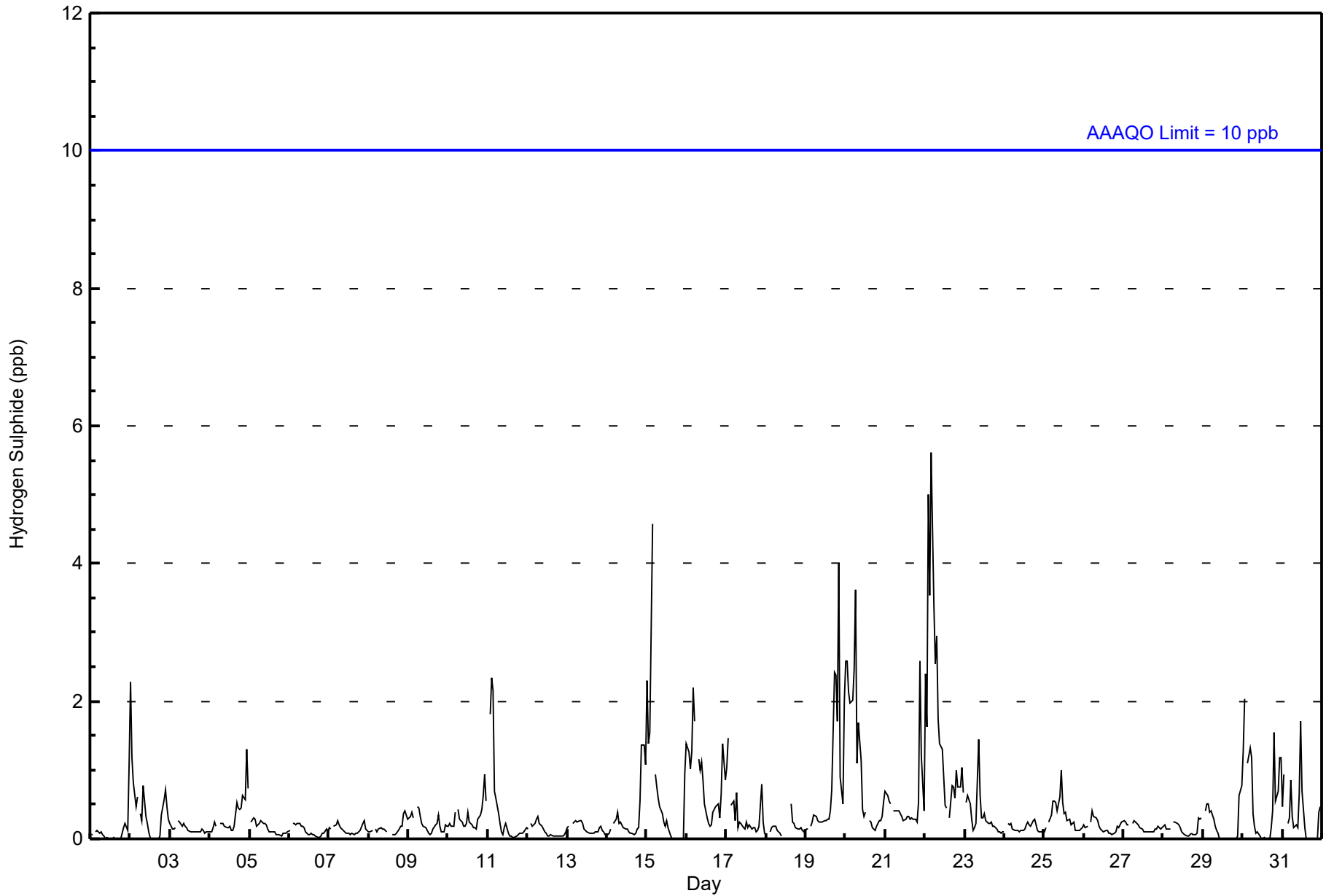
Summary of Hour Averages

Hydrogen Sulphide (H₂S) - ppb

Mannix - May 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 744																	Hours of Data: 706					
Maximum Value: 5.6 ppb on May 22 05:00		Maximum Daily Average: 1.7 ppb on May 22		Hours of Missing Data: 38																	Hours of Calibration: 36					
Minimum Value: 0.0 ppb on May 1 12:00		Minimum Daily Average: 0.1 ppb on May 1		Hours of Calibration: 36																	Percent Operational Time: 99.7					
Maximum Diurnal Average: 0.8 ppb at hour 3		Minimum Diurnal Average: 0.1 ppb at hour 15		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.4 P ₉₀ = 0.9 P ₉₉ = 2.9																						
Monthly Average: 0.38 ppb																										
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	1.1	0.1	1.1
2-May	2.3	1.2	0.8	0.5	0.6	Z	0.4	0.3	0.8	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.7	0.5	0.3	0.4	2.3
3-May	0.2	0.1	0.1	0.2	Z	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
4-May	0.1	0.1	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.5	0.5	0.4	0.4	0.6	0.6	1.3	0.7	0.3	1.3
5-May	Z	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.3
6-May	0.1	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2
7-May	0.2	0.1	Z	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.3
8-May	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	M	M	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.4	0.3	0.2	0.4
9-May	0.3	0.3	0.4	0.3	Z	0.5	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.2	0.1	0.1	0.2	0.2	0.2	0.5
10-May	0.2	0.2	0.2	0.2	0.4	Z	0.4	0.3	0.2	0.2	0.2	0.2	0.4	0.2	0.2	0.2	0.2	0.1	0.3	0.3	0.4	0.6	0.9	0.6	0.3	0.9
11-May	Z	1.8	2.3	2.1	0.7	0.6	0.4	0.2	0.1	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.4	2.3
12-May	0.1	Z	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3
13-May	0.2	0.2	Z	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.3
14-May	0.1	0.1	0.1	Z	0.2	0.3	0.4	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.6	1.4	1.4	1.1	0.3	1.4
15-May	2.3	1.4	1.5	4.6	Z	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.6	4.6
16-May	1.4	1.3	1.0	1.3	2.2	1.7	Z	1.2	1.0	1.1	0.9	0.5	0.3	0.2	0.2	0.2	0.4	0.5	0.5	0.5	0.3	0.7	1.4	0.9	0.8	2.2
17-May	1.0	1.5	Z	0.5	0.5	0.3	0.7	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.8	0.2	0.1	0.3	1.5
18-May	0.1	Z	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.0	C	C	C	C	C	0.5	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.5
19-May	0.1	0.1	Z	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.7	2.4	2.4	1.7	4.0	0.9	0.5	2.0	0.8	4.0
20-May	2.6	2.6	2.1	2.0	2.0	2.5	3.6	1.1	1.7	1.1	0.4	0.3	0.4	Z	0.3	0.2	0.2	0.1	0.1	0.2	0.3	0.3	0.3	0.5	1.1	3.6
21-May	0.7	0.6	0.5	0.5	Z	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	2.6	1.2	0.4	0.5	2.6
22-May	2.4	1.6	5.0	3.5	5.6	3.4	2.5	2.9	1.8	1.4	1.3	0.9	0.5	0.4	Z	0.3	0.8	0.8	0.6	1.0	0.8	0.8	1.0	0.7	1.7	5.6
23-May	Z	0.5	0.6	0.5	0.3	0.1	0.2	0.2	1.4	0.6	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.3	1.4
24-May	0.1	Z	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.3
25-May	0.1	0.2	Z	0.2	0.4	0.5	0.5	0.5	0.4	0.6	1.0	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.3	1.0
26-May	0.2	0.2	0.2	Z	0.3	0.4	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.4
27-May	0.3	0.2	0.2	0.2	Z	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3
28-May	0.2	0.2	0.1	0.1	0.1	Z	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.2	0.3
29-May	Z	0.4	0.5	0.5	0.4	0.4	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.8	0.2	0.8
30-May	1.3	2.0	Z	1.1	1.3	1.2	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	1.5	0.5	0.7	1.2	1.2	0.6	2.0
31-May	0.5	0.9	Z	0.2	0.3	0.9	0.3	0.2	0.2	0.2	0.7	1.7	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.3	1.7
																								Diurnal Average		
																								Diurnal Maximum		
																								0.6 2.6		
																								0.7 2.6		
																								0.8 5.0		
																								0.7 4.6		
																								0.7 5.6		
																								0.6 3.4		
																								0.5 3.6		
																								0.4 2.9		
																								0.4 1.8		
																								0.3 1.4		
																								0.3 1.3		
																								0.2 1.7		
																								0.2 0.7		
																								0.1 1.3		
																								0.1 0.4		
																								0.1 0.3		
																								0.1 0.5		
																								0.2 0.8		
																								0.2 2.4		
																								0.2 2.4		
																								0.3 1.7		
																								0.4 4.0		
																								0.4 2.6		
																								0.4 1.4		
																								0.4 2.0		

Z - zerospan C - Calibration M - Maintenance
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Mannix - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	694	98.30	98.30
3 - 4	9	1.27	99.58
5 - 7	3	0.42	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Mannix - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	28	28	18	20	20	24	184	140	59	34	18	35	23	18	29	16	694
3 - 4	8	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	9
5 - 7	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	38	28	18	20	20	25	184	140	60	34	18	35	23	18	29	16	706

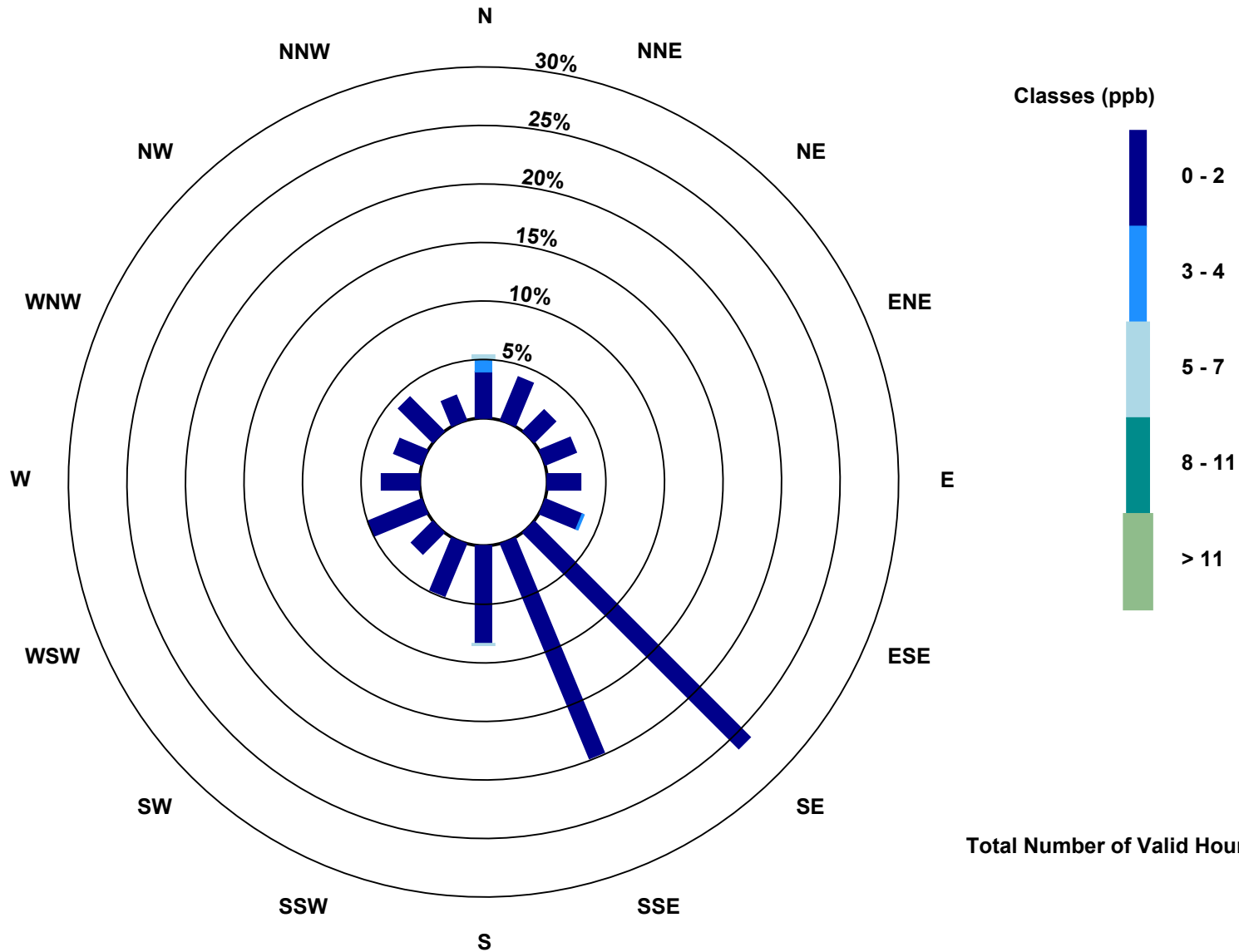
Total Number of Valid Hours: 706

Total Number of Hours: 744

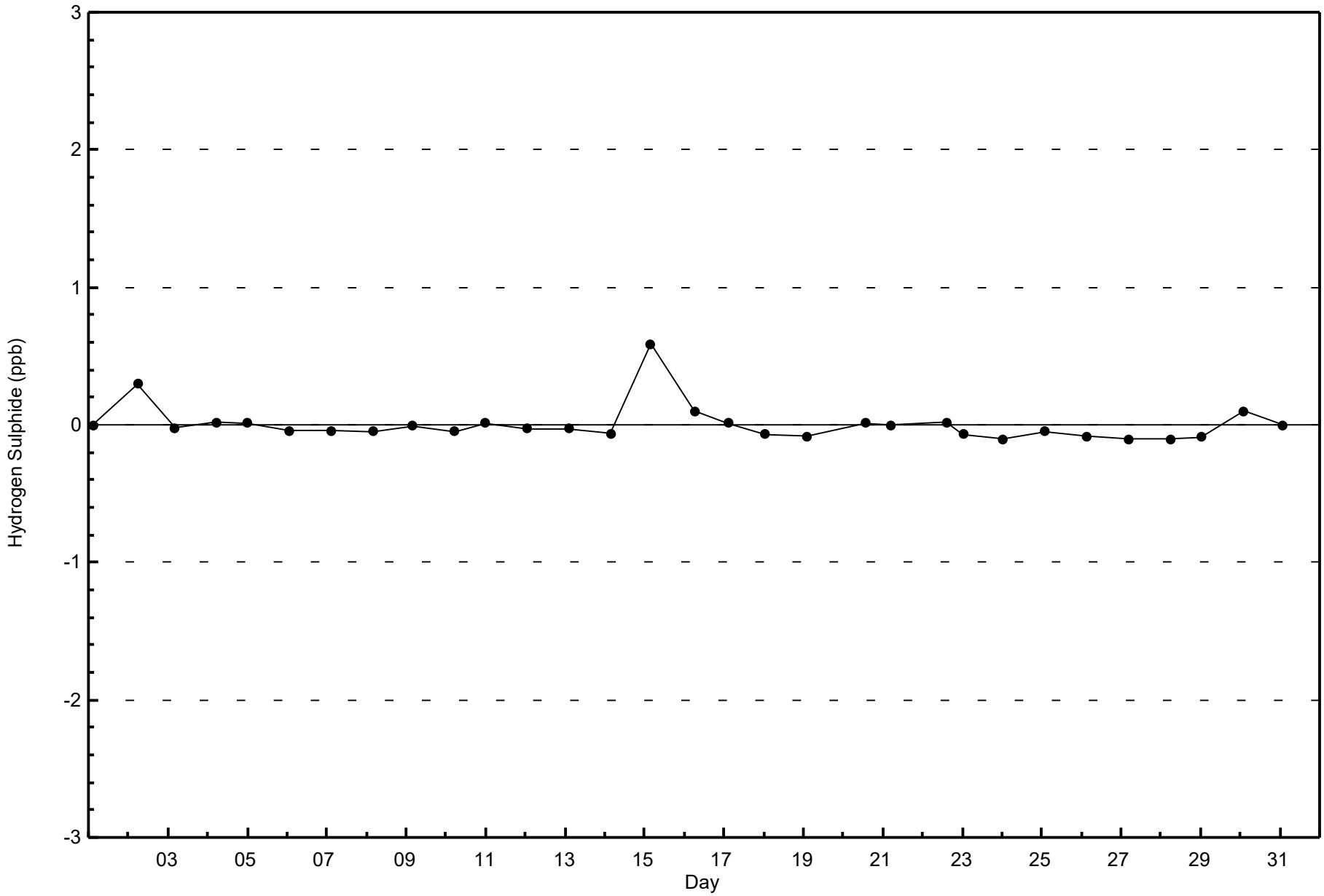


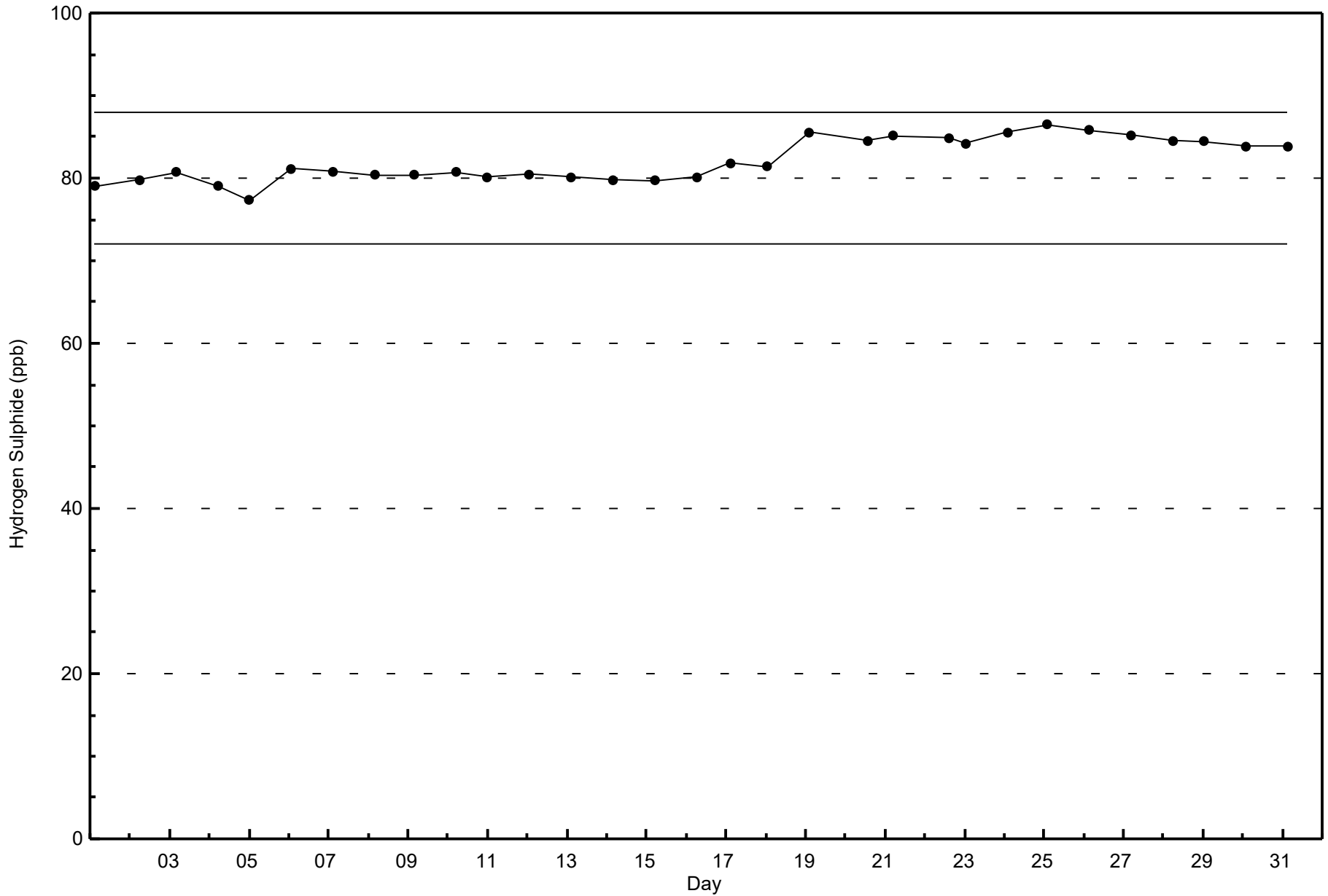
Wood Buffalo Environmental Association
Wind Rose May 2023

Hydrogen Sulphide (H₂S) - ppb
Mannix



Total Number of Valid Hours: 706







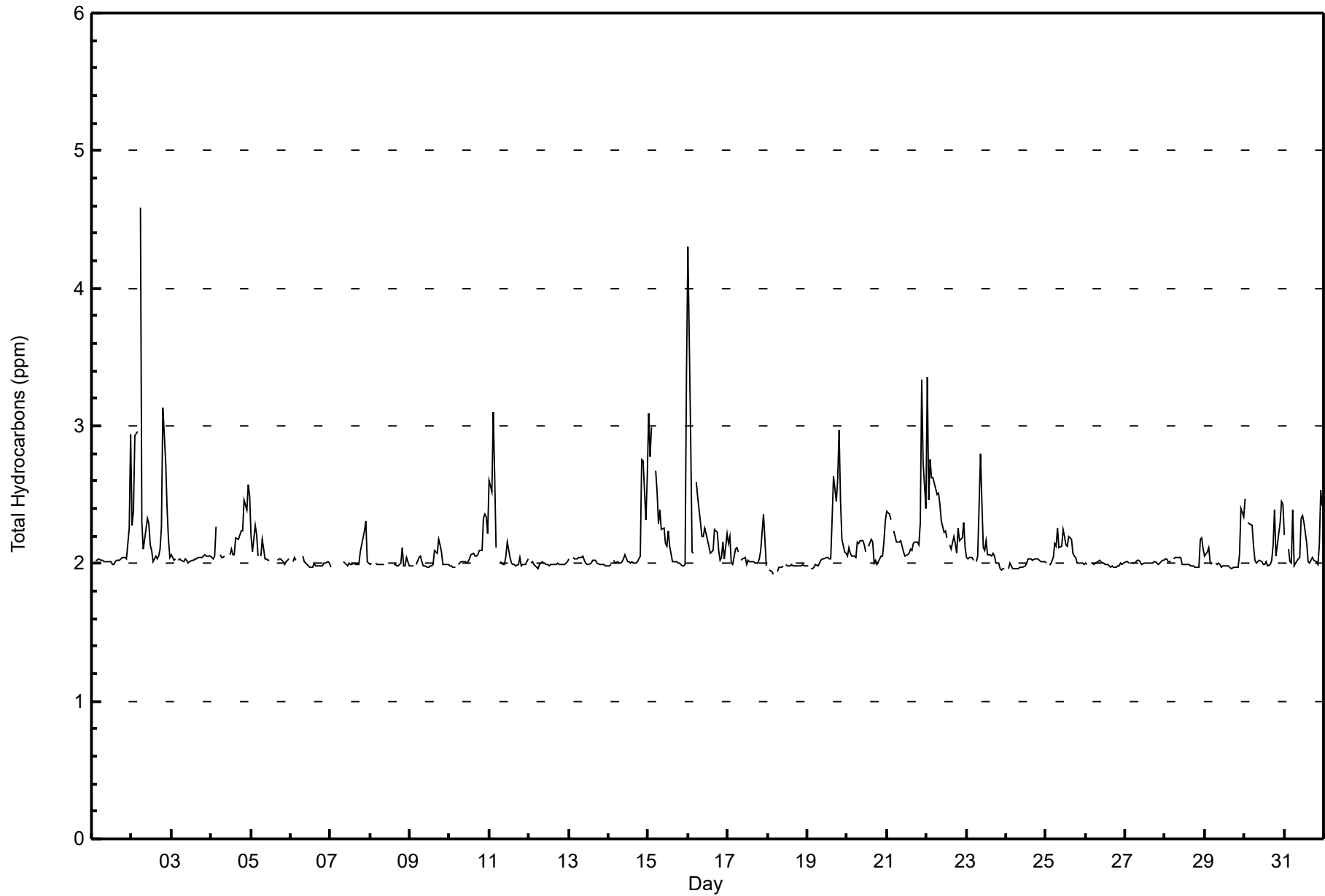
Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Mannix - May 2023

Maximum Value: 4.6 ppm on May 2 06:00		Maximum Daily Average: 2.4 ppm on May 2		Hours in Service: 744																											
Minimum Value: 1.9 ppm on May 18 04:00		Minimum Daily Average: 2.0 ppm on May 18		Hours of Data: 690																											
Maximum Diurnal Average: 2.3 ppm at hour 1		Minimum Diurnal Average: 2.0 ppm at hour 14		Hours of Missing Data: 54																											
Monthly Average: 2.11 ppm		Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.3 P ₉₉ = 3.1		Hours of Calibration: 35																											
				Percent Operational Time: 97.5																											
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24							
1-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.9	2.1	2.9						
2-May	2.3	2.4	2.9	3.0	Z	4.6	2.3	2.1	2.2	2.3	2.3	2.1	2.1	2.0	2.1	2.0	2.1	2.1	2.3	3.1	2.7	2.4	2.2	2.0	2.4	4.6					
3-May	2.1	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.1					
4-May	2.0	2.0	2.1	Z	Z	2.1	2.0	2.0	2.1	M	M	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.5	2.4	2.6	2.5	2.2	2.6					
5-May	2.2	2.1	2.3	2.2	2.1	Z	2.1	2.2	2.0	2.0	2.0	2.0	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3						
6-May	Z	2.0	2.0	2.0	UO	UO	UO	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1					
7-May	2.0	Z	UO	UO	UO	UO	UO	UO	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.3	2.0	2.0	-	2.3					
8-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	M	M	M	M	M	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.1					
9-May	2.0	2.0	2.0	Z	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.2					
10-May	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.4	2.3	2.2	2.1	2.4					
11-May	2.6	2.5	3.1	2.6	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	3.1					
12-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0					
13-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1					
14-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.8	2.7	2.3	2.6	2.1	2.8					
15-May	3.1	2.8	3.0	Z	2.7	2.5	2.3	2.4	2.2	2.3	2.1	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.4	2.3	3.4						
16-May	4.3	2.9	2.1	2.1	Z	2.6	2.5	2.3	2.2	2.2	2.3	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.0	2.0	2.2	2.0	2.2	4.3						
17-May	2.1	2.2	2.0	2.0	2.1	2.1	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4	2.2	2.0	2.1	2.4						
18-May	Z	1.9	1.9	1.9	UO	UO	1.9	2.0	2.0	2.0	DF	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0					
19-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.6	2.4	2.6	3.0	2.5	2.2	2.1	2.1	2.2	3.0						
20-May	2.1	2.1	2.1	2.1	2.1	2.0	2.2	2.1	2.2	2.2	2.1	2.1	Z	2.1	2.2	2.2	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.3	2.1	2.3					
21-May	2.4	2.4	2.3	Z	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.3	3.3	2.7	2.4	2.3	3.3					
22-May	3.4	2.5	2.8	2.6	2.6	2.5	2.5	2.5	2.4	2.3	2.2	2.2	2.2	Z	2.1	2.1	2.2	2.1	2.1	2.3	2.2	2.2	2.3	2.1	2.4	3.4					
23-May	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.1	2.8	2.4	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.8					
24-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0					
25-May	2.0	Z	2.0	2.0	2.0	2.1	2.1	2.3	2.1	2.1	2.3	2.2	2.1	2.1	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.3					
26-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0					
27-May	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0					
28-May	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.1	2.0	2.2					
29-May	2.1	2.1	2.1	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4	2.3	2.0	2.4					
30-May	2.5	Z	2.3	2.3	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4	2.1	2.1	2.3	2.4	2.4	2.2	2.5					
31-May	2.2	Z	2.1	2.0	2.0	2.4	2.0	2.0	2.0	2.0	2.3	2.3	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.5	2.4	2.1	2.5					
																								Diurnal Average							
																								Diurnal Maximum							
Z - zerospan																								C - Calibration		M - Maintenance		DF - DAS Failure		UO - Unstable Operation	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Mannix - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	432	62.61	62.61
2.1 - 3.0	250	36.23	98.84
3.1 - 10.0	8	1.16	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 690

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Mannix - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	5	10	2	3	11	4	127	124	53	30	17	25	11	5	2	3	432
2.1 - 3.0	34	17	15	17	9	16	44	18	3	4	2	9	13	12	26	11	250
3.1 - 10.0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	3	2	8
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	39	27	17	20	20	21	172	142	56	34	19	34	25	17	31	16	690

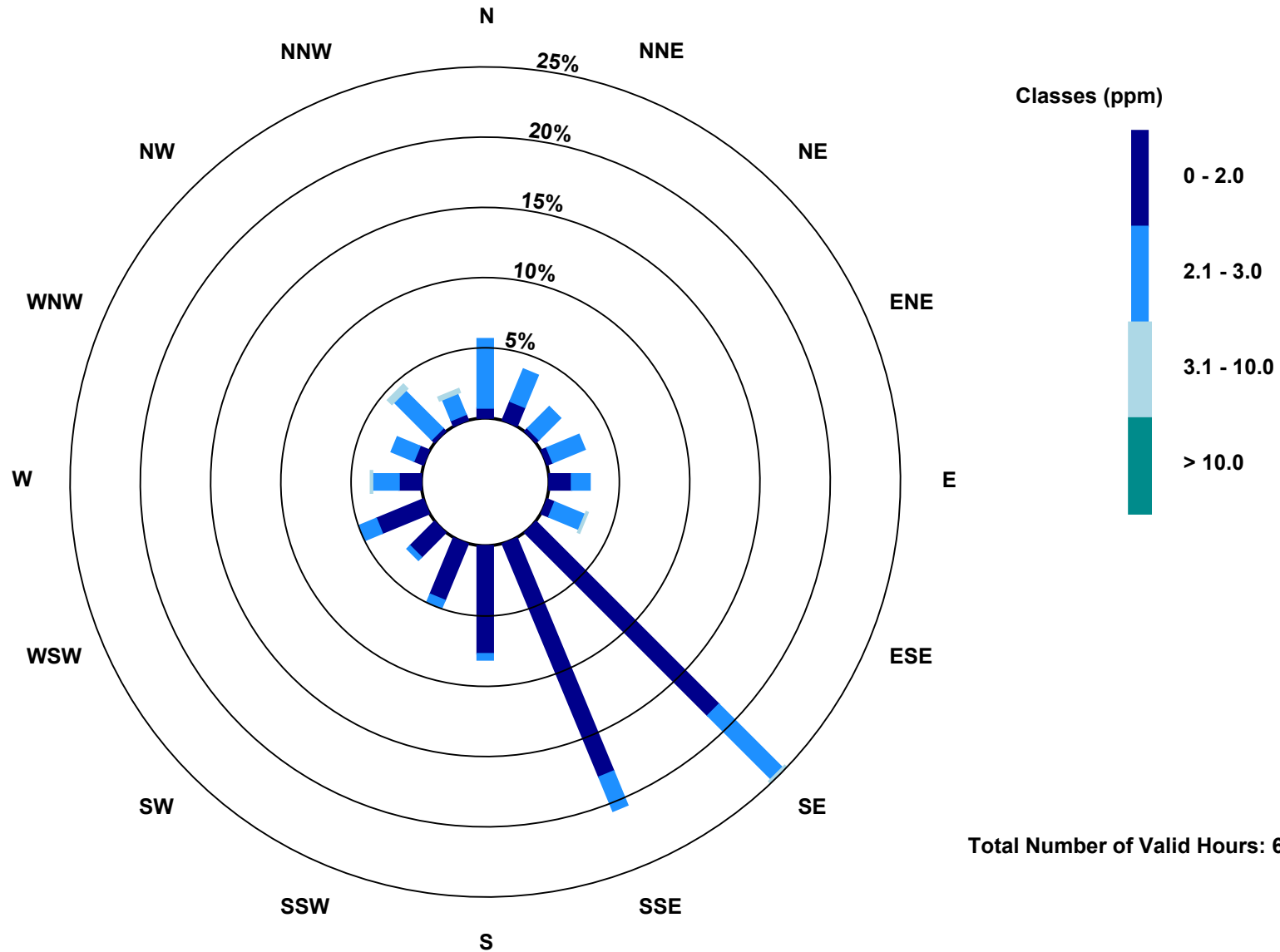
Total Number of Valid Hours: 690

Total Number of Hours: 744

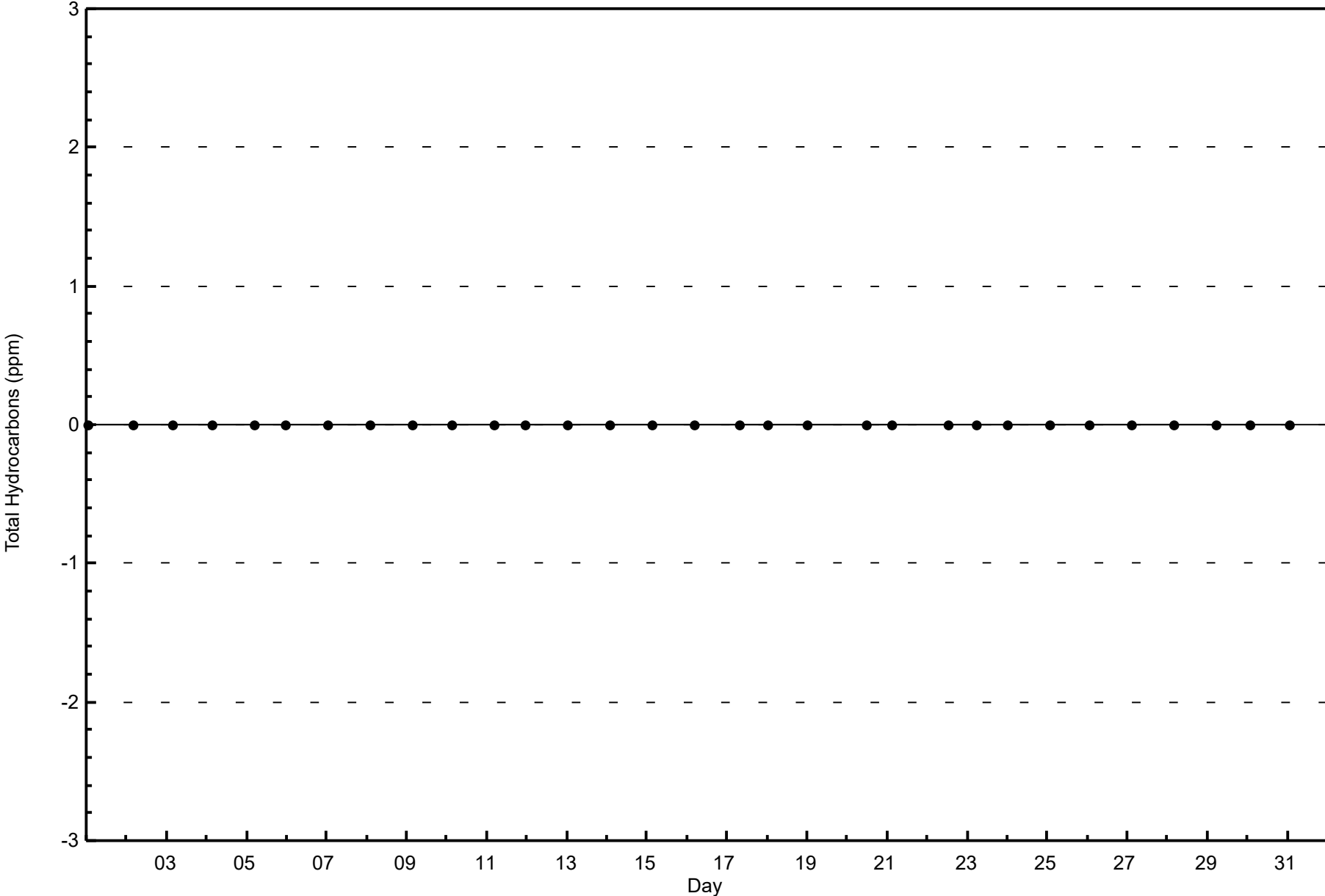


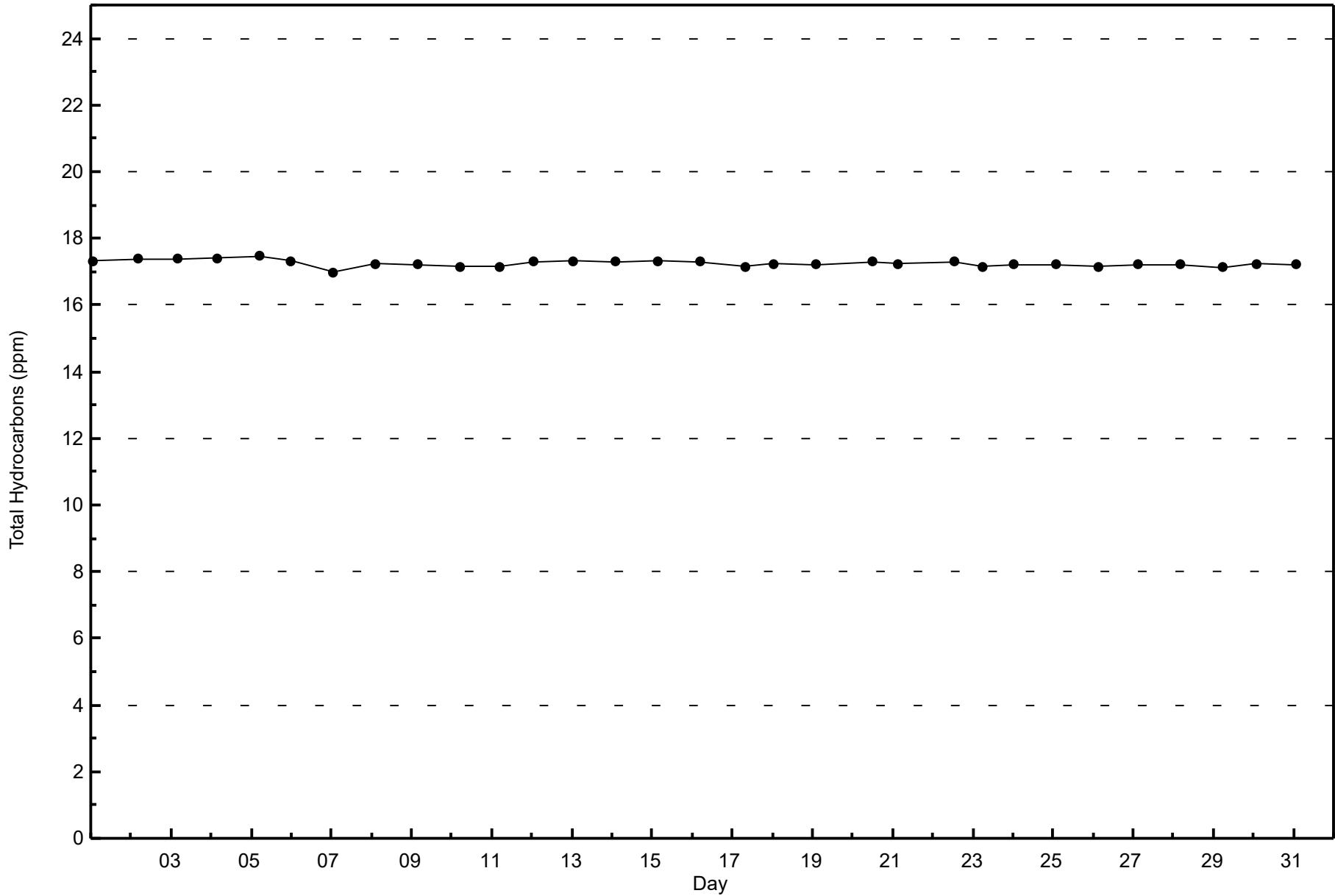
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Mannix



Total Number of Valid Hours: 690



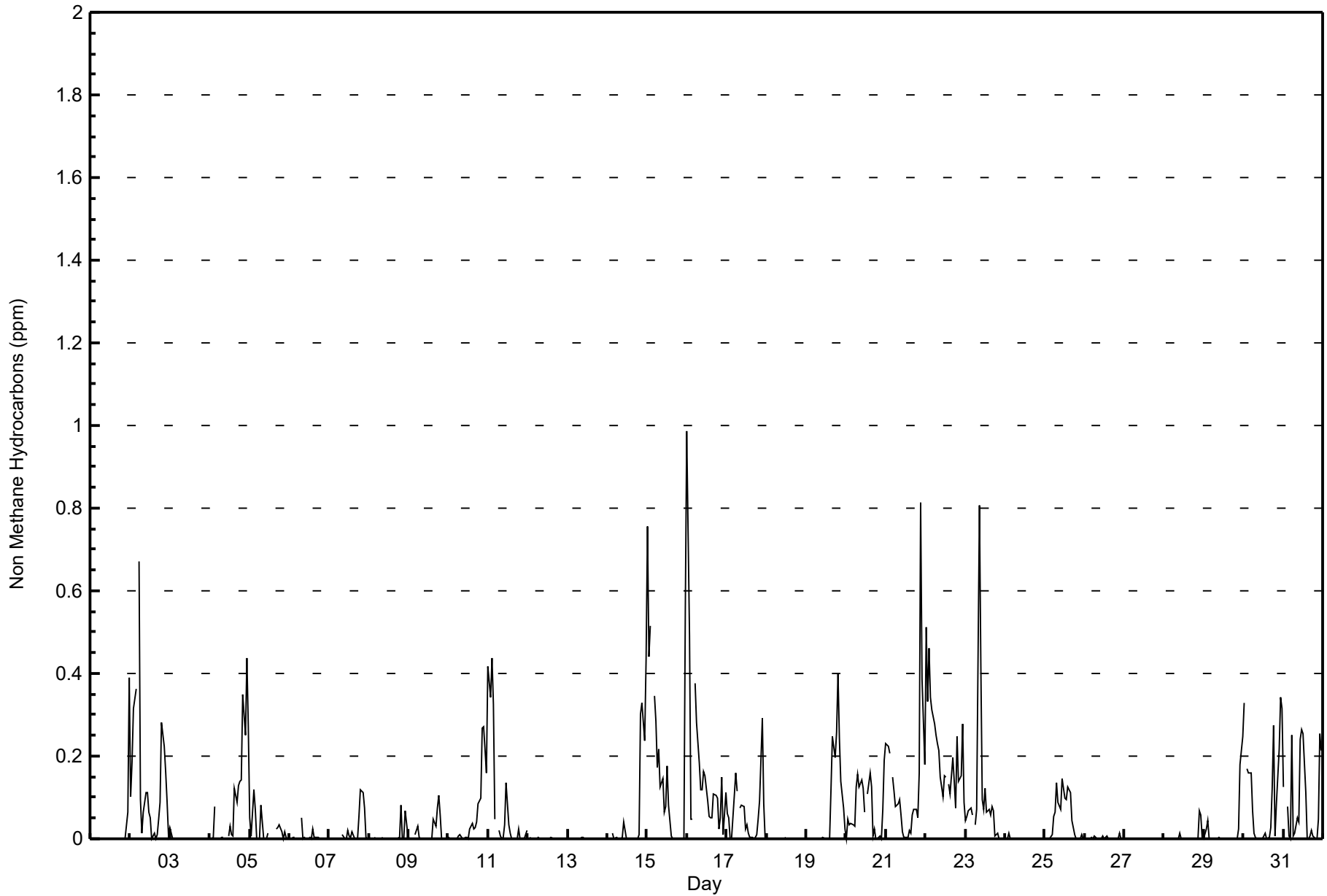




Summary of Hour Averages

Mannix - May 2023

Maximum Value: 0.987 ppm on May 16 01:00																			Maximum Daily Average: 0.219 ppm on May 22						Hours in Service: 744	
Minimum Value: 0.000 ppm on May 1 01:00																			Minimum Daily Average: 0.000 ppm on May 27						Hours of Data: 690	
Maximum Diurnal Average: 0.135 ppm at hour 1																			Minimum Diurnal Average: 0.022 ppm at hour 14						Hours of Missing Data: 54	
Monthly Average: 0.059 ppm																			Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.1 P ₉₀ = 0.2 P ₉₉ = 0.5						Hours of Calibration: 35	
																									Percent Operational Time: 97.5	
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.065	0.389	0.020	0.389	
2-May	0.102	0.187	0.315	0.362	Z	0.671	0.094	0.015	0.065	0.110	0.111	0.064	0.051	0.000	0.014	0.000	0.012	0.048	0.088	0.283	0.222	0.164	0.090	0.010	0.134	0.671
3-May	0.026	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.026
4-May	0.000	0.000	0.005	0.079	Z	0.001	0.000	0.003	0.003	M	M	0.006	0.030	0.010	0.007	0.123	0.089	0.129	0.138	0.142	0.350	0.252	0.438	0.272	0.099	0.438
5-May	0.050	0.008	0.118	0.070	0.000	Z	0.000	0.080	0.001	0.000	0.000	0.012	C	C	C	C	0.023	0.028	0.033	0.017	0.001	0.016	0.003	0.000	0.024	0.118
6-May	Z	0.000	0.002	0.002	UO	UO	UO	0.051	0.000	0.003	0.000	0.002	0.003	0.001	0.024	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.051
7-May	0.000	Z	UO	UO	UO	UO	UO	UO	0.010	0.000	0.000	0.020	0.008	0.004	0.015	0.000	0.000	0.000	0.056	0.118	0.113	0.075	0.002	0.000	--	0.118
8-May	0.000	0.002	Z	0.002	0.000	0.001	0.000	0.000	0.004	M	M	M	M	M	0.000	0.000	0.000	0.000	0.005	0.081	0.000	0.000	0.067	0.008	0.009	0.081
9-May	0.000	0.000	0.000	Z	0.010	0.031	0.005	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.048	0.032	0.076	0.106	0.057	0.001	0.000	0.000	0.000	0.016	0.106
10-May	0.003	0.000	0.000	0.001	Z	0.000	0.005	0.011	0.001	0.000	0.003	0.003	0.000	0.024	0.038	0.024	0.028	0.041	0.085	0.098	0.266	0.272	0.217	0.158	0.056	0.272
11-May	0.417	0.342	0.437	0.327	0.046	Z	0.020	0.006	0.000	0.002	0.035	0.135	0.034	0.014	0.000	0.000	0.000	0.000	0.024	0.000	0.000	0.000	0.000	0.022	0.081	0.437
12-May	Z	0.004	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
13-May	0.000	Z	0.002	0.000	0.000	0.000	0.000	0.000	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
14-May	0.000	0.000	Z	0.013	0.001	0.002	0.000	0.001	0.001	0.004	0.039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.302	0.328	0.239	0.435	0.060	0.435	
15-May	0.756	0.441	0.514	Z	0.344	0.286	0.172	0.217	0.125	0.147	0.065	0.078	0.176	0.083	0.008	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.552	0.172	0.756
16-May	0.987	0.491	0.048	0.046	Z	0.376	0.282	0.184	0.120	0.118	0.164	0.153	0.091	0.055	0.049	0.052	0.109	0.105	0.098	0.025	0.052	0.149	0.012	0.113	0.169	0.987
17-May	0.062	0.052	0.000	0.000	0.106	0.161	0.116	Z	0.075	0.081	0.077	0.022	0.033	0.015	0.003	0.003	0.000	0.004	0.009	0.047	0.093	0.292	0.086	0.000	0.058	0.292
18-May	Z	0.000	0.000	0.000	UO	UO	0.000	0.000	0.000	0.000	DF	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002
19-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.001	0.000	0.000	0.118	0.249	0.195	0.256	0.401	0.243	0.139	0.076	0.025	0.074	0.401
20-May	0.001	0.047	0.033	0.037	0.036	0.030	0.125	0.156	0.125	0.142	0.122	0.065	Z	0.109	0.161	0.126	0.005	0.023	0.000	0.000	0.007	0.000	0.073	0.189	0.070	0.189
21-May	0.230	0.223	0.205	Z	0.148	0.115	0.078	0.085	0.094	0.057	0.018	0.002	0.004	0.004	0.020	0.013	0.059	0.073	0.070	0.052	0.160	0.814	0.385	0.181	0.134	0.814
22-May	0.511	0.333	0.460	0.341	0.311	0.280	0.252	0.232	0.212	0.150	0.102	0.153	0.148	Z	0.133	0.107	0.195	0.139	0.074	0.248	0.137	0.152	0.279	0.087	0.219	0.511
23-May	0.043	0.055	0.069	0.076	0.059	Z	0.034	0.070	0.807	0.419	0.095	0.072	0.121	0.066	0.072	0.057	0.076	0.067	0.008	0.013	0.000	0.000	0.000	0.001	0.099	0.807
24-May	Z	0.000	0.014	0.001	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.014
25-May	0.000	Z	0.000	0.000	0.011	0.056	0.065	0.136	0.087	0.073	0.146	0.122	0.097	0.094	0.126	0.113	0.045	0.027	0.010	0.000	0.000	0.000	0.009	0.000	0.053	0.146
26-May	0.000	0.000	Z	0.000	0.002	0.000	0.007	0.001	0.000	0.000	0.000	0.006	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.012	0.000	0.000	0.002	0.012
27-May	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
28-May	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.013	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.066	0.058	0.003	0.006	0.066
29-May	0.000	0.024	0.043	0.000	0.000	Z	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.025	0.180	0.248	0.023	0.248
30-May	0.328	Z	0.169	0.161	0.159	0.066	0.013	0.003	0.001	0.000	0.000	0.000	0.006	0.014	0.000	0.003	0.027	0.122	0.273	0.008	0.084	0.216	0.342	0.316	0.101	0.342
31-May	0.124	Z	0.079	0.007	0.001	0.252	0.006	0.015	0.051	0.042	0.240	0.264	0.256	0.111	0.000	0.002	0.006	0.020	0.007	0.002	0.000	0.046	0.255	0.212	0.087	0.264
																			0.135 0.092 0.093 0.061 0.054 0.097 0.044 0.044 0.058 0.047 0.044 0.039 0.038 0.022 0.022 0.026 0.031 0.036 0.043 0.052 0.066 0.097 0.093 0.104						Diurnal Average	
																			0.987 0.491 0.514 0.362 0.344 0.671 0.282 0.232 0.807 0.419 0.240 0.264 0.256 0.111 0.161 0.126 0.249 0.195 0.273 0.401 0.350 0.814 0.438 0.552						Diurnal Maximum	
Z - zerospan			C - Calibration				M - Maintenance				DF - DAS Failure				UO - Unstable Operation											





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Mannix - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	385	55.80	55.80
0.006 - 0.05	104	15.07	70.87
0.06 - 0.1	112	16.23	87.10
> 0.1	89	12.90	100.00

Total Number of Valid Hours: 690

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Mannix - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	1	4	1	0	3	2	115	119	50	30	16	24	12	3	2	3	385
0.006 - 0.05	12	4	2	4	6	4	29	17	2	0	2	3	4	5	9	1	104
0.06 - 0.1	14	13	5	9	8	8	20	5	1	2	1	3	6	5	7	5	112
> 0.1	12	6	9	7	3	7	8	1	3	2	0	4	3	4	13	7	89
Totals	39	27	17	20	20	21	172	142	56	34	19	34	25	17	31	16	690

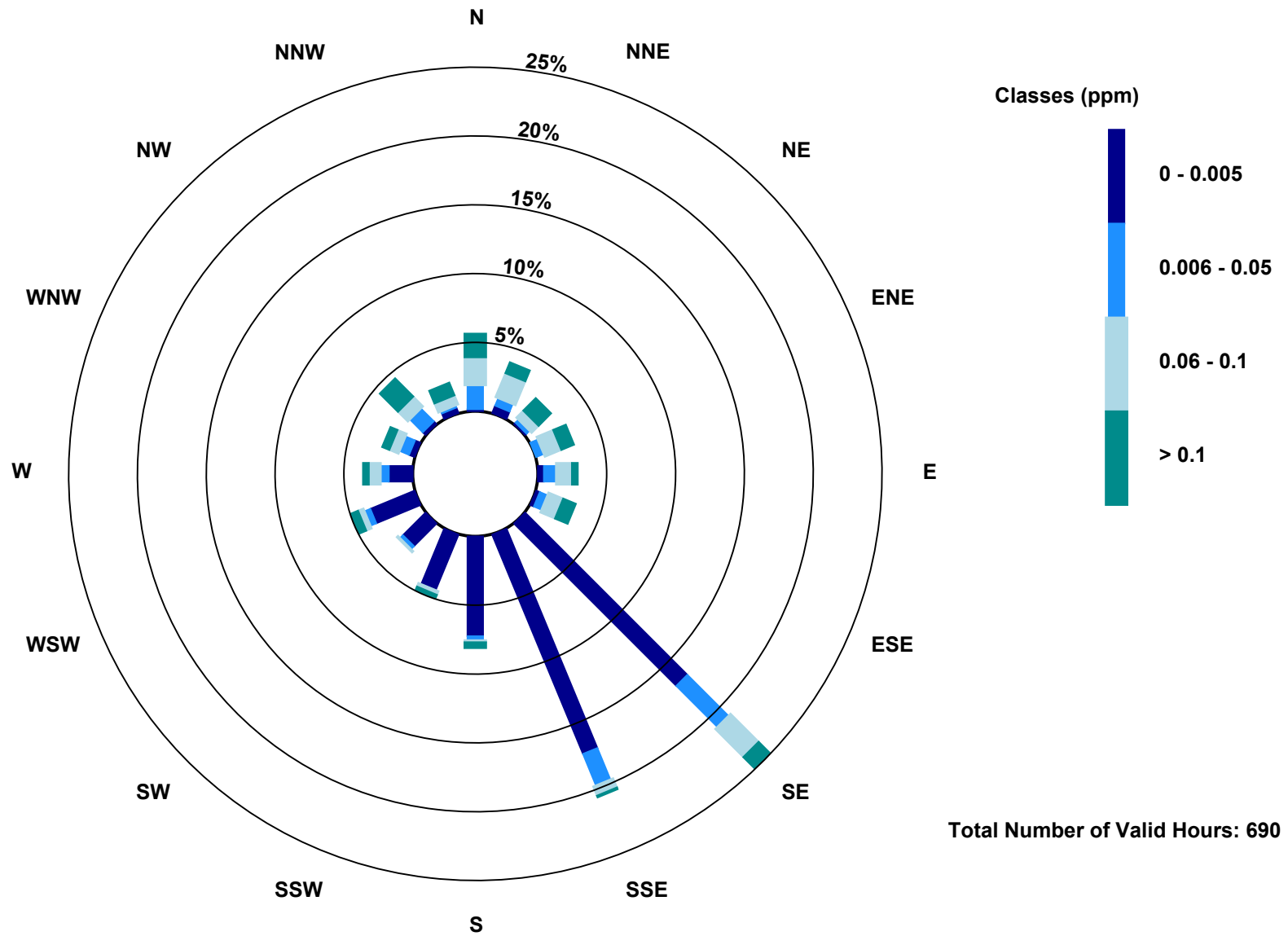
Total Number of Valid Hours: 690

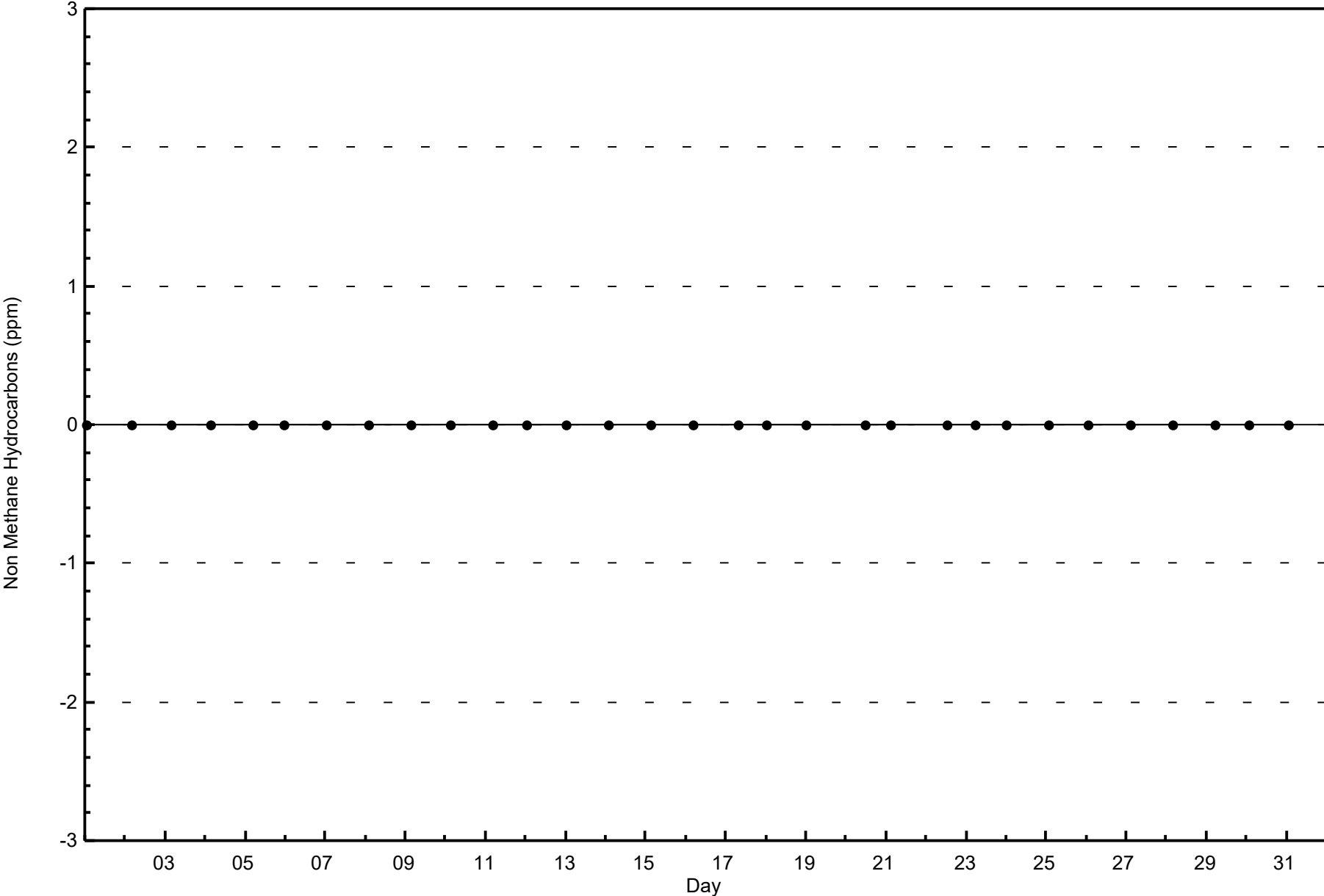
Total Number of Hours: 744

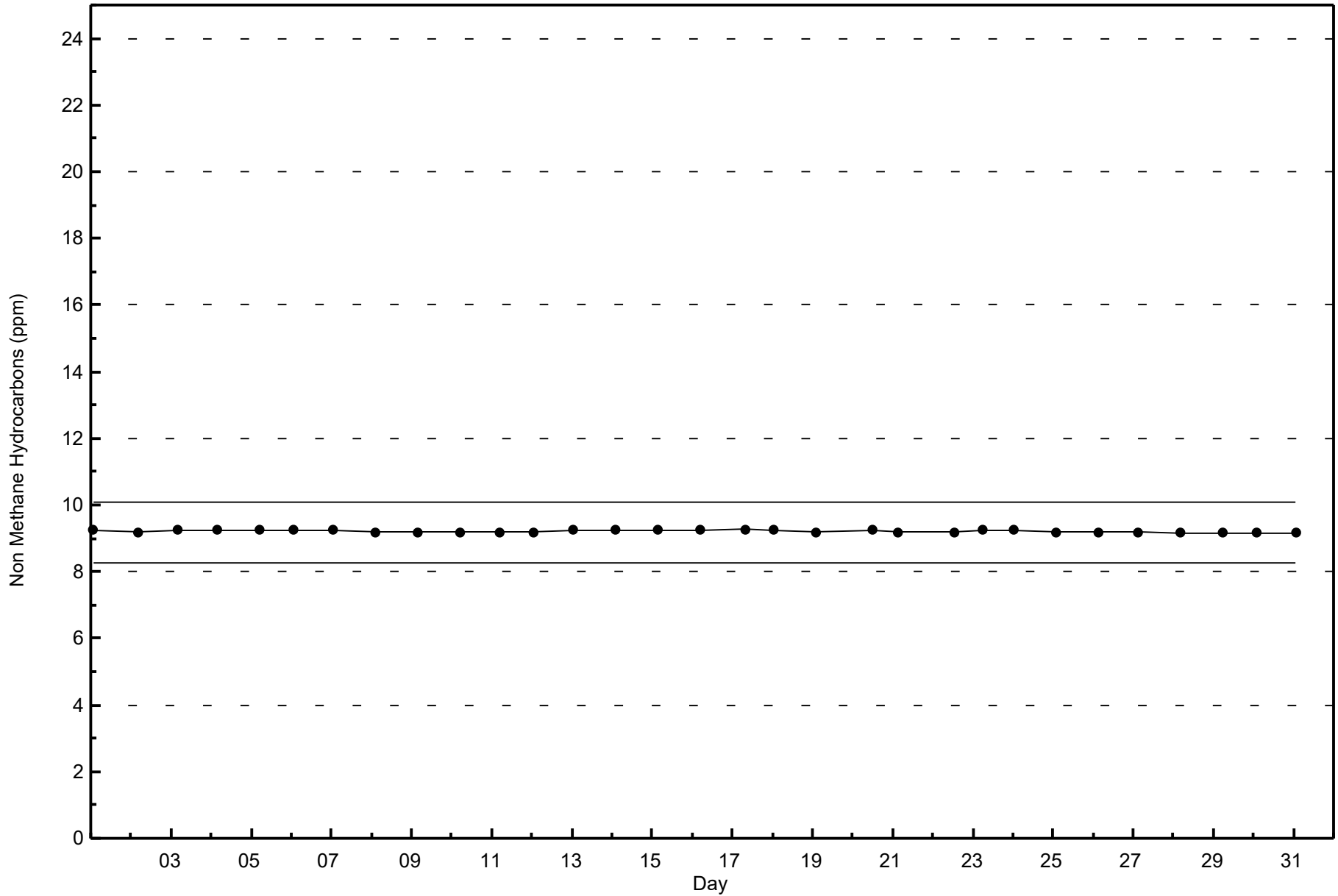


Wood Buffalo Environmental Association
Wind Rose May 2023

Non Methane Hydrocarbons (NMHC) - ppm
Mannix









Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH₄) - ppm

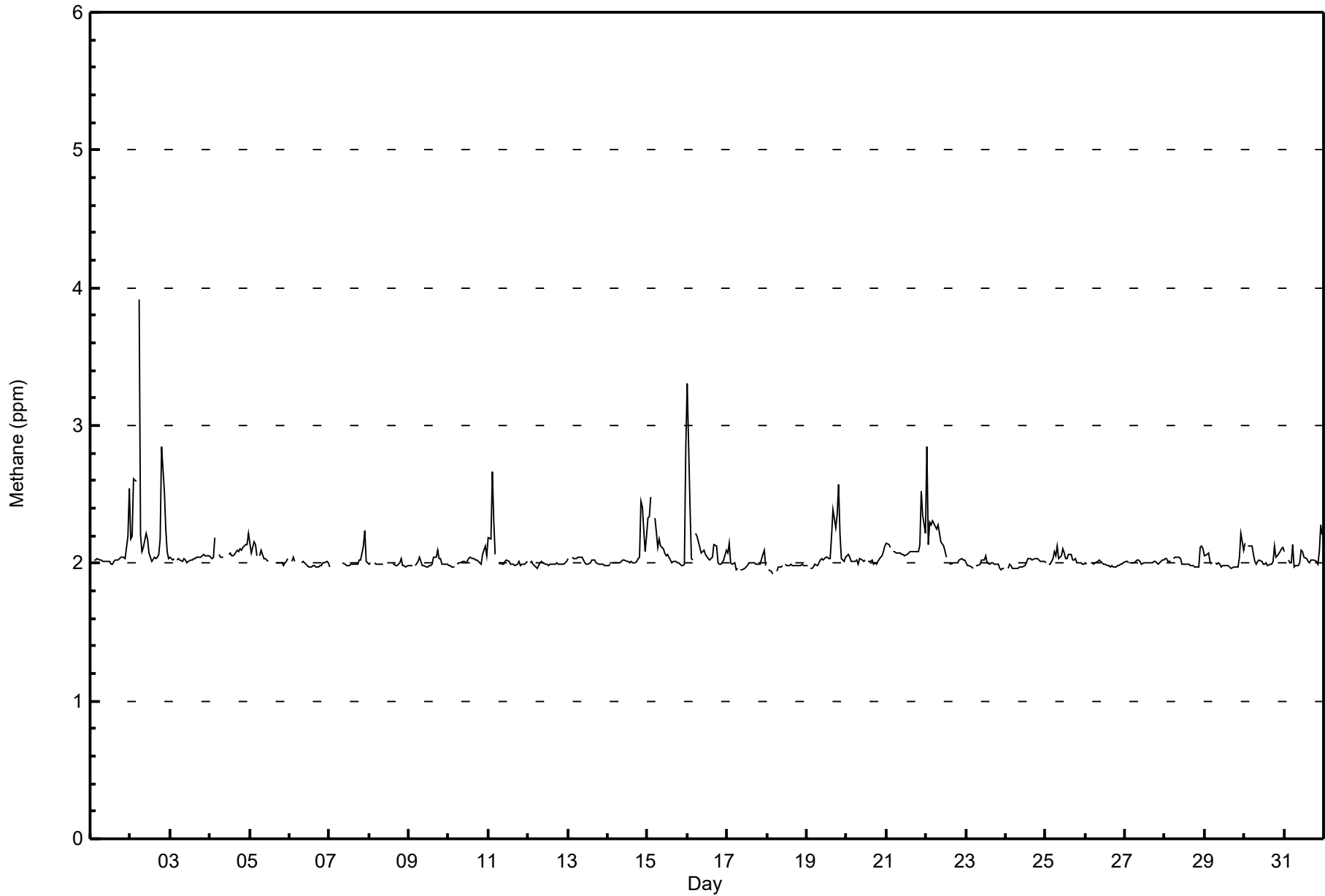
Mannix - May 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744																											
Maximum Value: 3.9 ppm on May 2 06:00		Maximum Daily Average: 2.3 ppm on May 2																	Hours of Data:	690																													
Minimum Value: 1.9 ppm on May 18 04:00		Minimum Daily Average: 2.0 ppm on May 18																	Hours of Missing Data:	54																													
Maximum Diurnal Average: 2.1 ppm at hour 1		Minimum Diurnal Average: 2.0 ppm at hour 14																	Hours of Calibration:	35																													
Monthly Average: 2.05 ppm		Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.0 P ₉₀ = 2.1 P ₉₉ = 2.6																	Percent Operational Time:	97.5																													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.5	2.1	2.5																								
2-May	2.2	2.2	2.6	2.6	Z	3.9	2.2	2.1	2.1	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.8	2.5	2.2	2.1	2.0	2.3	3.9																							
3-May	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.1																							
4-May	2.0	2.0	2.0	2.2	Z	2.1	2.0	2.0	2.0	M	M	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2																							
5-May	2.2	2.1	2.2	2.1	2.1	Z	2.1	2.1	2.0	2.0	2.0	2.0	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2																							
6-May	Z	2.0	2.0	2.0	UO	UO	UO	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																							
7-May	2.0	Z	UO	UO	UO	UO	UO	UO	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.0	2.0	--	2.2																							
8-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	M	M	M	M	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																							
9-May	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
10-May	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.1																							
11-May	2.2	2.2	2.7	2.3	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.7																							
12-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																							
13-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																							
14-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.4	2.1	2.2	2.1	2.5																							
15-May	2.3	2.3	2.5	Z	2.3	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.8	2.1	2.8																							
16-May	3.3	2.4	2.0	2.0	Z	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	3.3																							
17-May	2.1	2.1	2.0	2.0	2.0	2.0	2.0	Z	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.1																							
18-May	Z	1.9	1.9	1.9	UO	UO	1.9	2.0	2.0	2.0	DF	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																							
19-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.4	2.3	2.4	2.6	2.2	2.0	2.0	2.0	2.1	2.6																								
20-May	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1																							
21-May	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.5	2.4	2.2	2.1	2.5																							
22-May	2.9	2.1	2.3	2.3	2.3	2.3	2.2	2.3	2.2	2.2	2.1	2.1	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.9																							
23-May	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																							
24-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																							
25-May	2.0	Z	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
26-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																							
27-May	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																							
28-May	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1																							
29-May	2.1	2.1	2.1	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.1	2.0	2.2																							
30-May	2.1	Z	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.0	2.1																							
31-May	2.1	Z	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.2	2.0	2.3																							
																								2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	Diurnal Average		
																								3.3	2.4	2.7	2.6	2.3	3.9	2.2	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.4	2.3	2.4	2.8	2.5	2.5	2.4	2.8	Diurnal Maximum	
Z - zerospan																								C - Calibration				M - Maintenance				DF - DAS Failure				UO - Unstable Operation													



Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Mannix - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Methane (CH₄) - ppm
Mannix - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	520	75.36	75.36
2.1 - 3.0	168	24.35	99.71
3.1 - 10.0	2	0.29	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 690

Total Number of Hours: 744



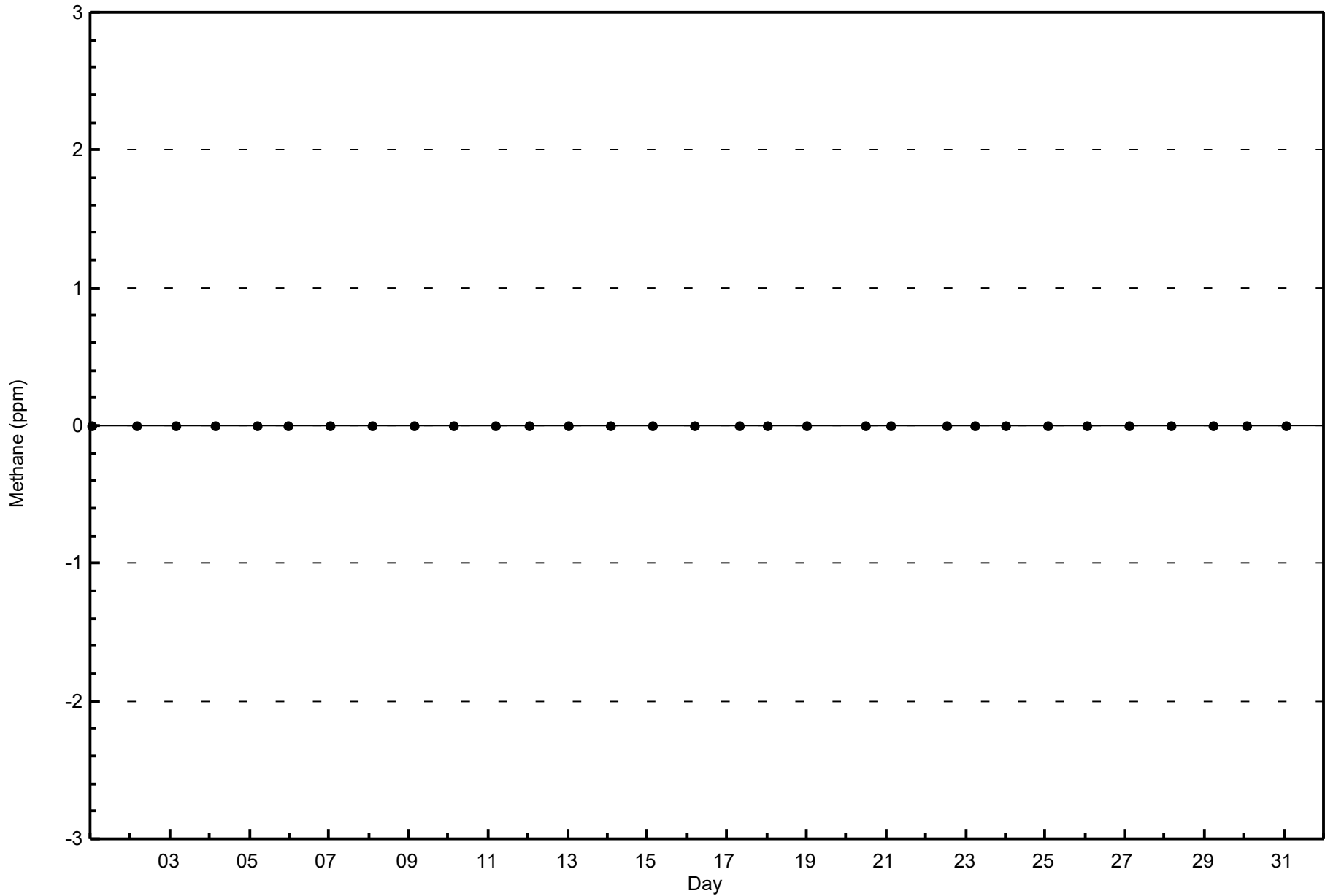
**Wood Buffalo Environmental Association
Frequency Distribution**

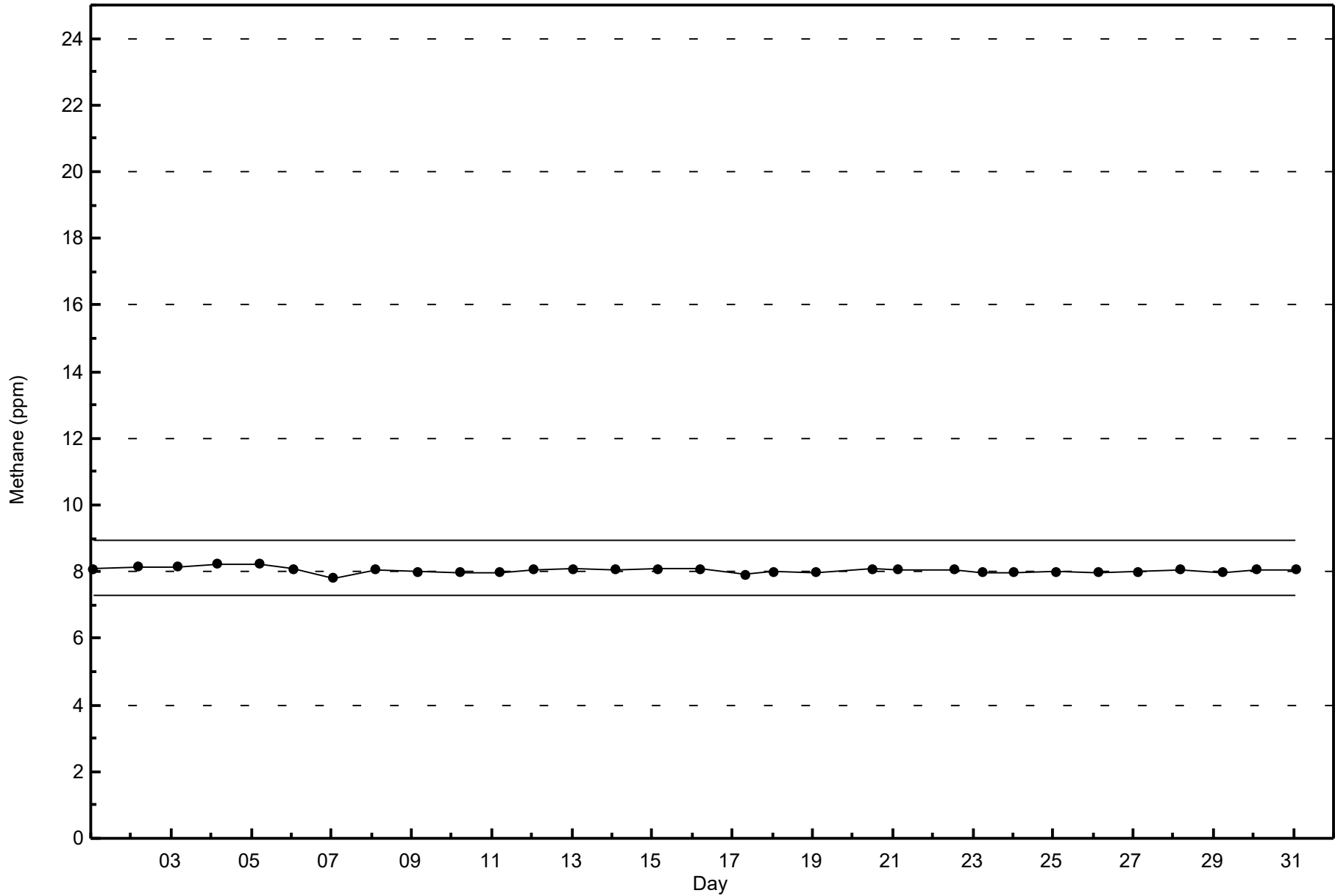
**Methane (CH₄) - ppm
Mannix - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	19	22	8	11	17	13	139	126	53	31	18	26	15	7	12	3	520
2.1 - 3.0	20	5	9	9	3	8	33	16	3	3	1	8	10	10	17	13	168
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	39	27	17	20	20	21	172	142	56	34	19	34	25	17	31	16	690

Total Number of Valid Hours: 690

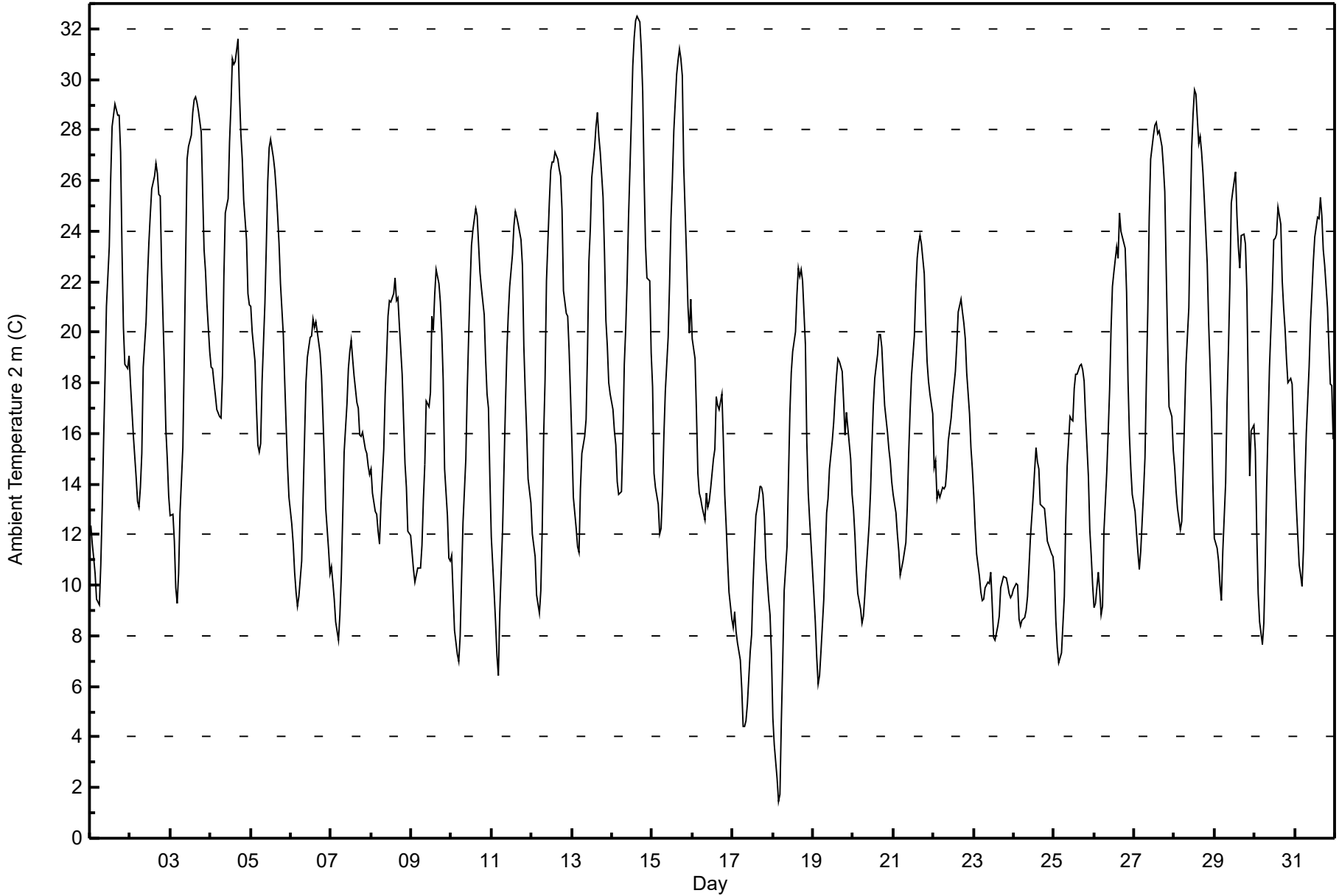
Total Number of Hours: 744







Maximum Value: 32.5 C on May 14 16:00		Maximum Daily Average: 23.7 C on May 4		Hours in Service: 744																																												
Minimum Value: 1.5 C on May 18 04:00		Minimum Daily Average: 9.1 C on May 17		Hours of Data: 744																																												
Maximum Diurnal Average: 23.3 C at hour 16		Minimum Diurnal Average: 10.0 C at hour 5		Hours of Missing Data: 0																																												
Monthly Average: 17.10 C		Percentiles: P ₁ = 4.7 P ₁₀ = 9.5 Q ₁ = 12.2 Median = 16.7 Q ₃ = 21.6 P ₉₀ = 26.2 P ₉₉ = 30.8		Hours of Calibration: 0																																												
				Percent Operational Time: 100.0																																												
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	12.4	11.6	11.1	10.5	9.4	9.2	10.8	13.0	15.7	18.2	21.0	23.4	26.1	28.2	28.6	29.0	28.6	28.6	27.1	23.3	20.2	18.7	18.6	19.1	19.3	29.0																						
2-May	18.0	17.0	15.9	14.2	13.3	13.1	13.9	15.2	18.6	20.4	22.1	23.6	24.7	25.7	26.2	26.7	26.3	25.5	25.4	22.5	18.5	16.1	15.0	13.5	19.6	26.7																						
3-May	12.8	12.8	11.7	9.9	9.3	10.5	12.9	15.5	19.0	23.0	26.8	27.4	27.8	28.7	29.2	29.3	29.1	28.7	27.9	25.6	23.3	22.4	21.2	19.3	21.0	29.3																						
4-May	18.6	18.6	18.0	17.5	16.9	16.7	18.3	22.2	24.7	25.3	27.5	29.0	30.8	30.6	30.7	31.6	29.5	27.8	26.8	25.2	23.7	21.5	21.1	23.7	31.6	27.6																						
5-May	21.0	20.0	18.8	17.0	15.5	15.3	15.6	18.1	21.1	23.4	26.0	27.3	27.6	26.9	26.4	25.6	24.6	23.5	22.0	19.9	18.1	16.3	14.7	13.5	20.8	27.6																						
6-May	12.4	11.6	10.5	9.7	9.2	9.6	10.9	13.5	15.8	18.0	19.0	19.8	19.9	20.5	20.2	20.4	20.0	19.2	18.3	16.7	15.0	13.0	11.4	10.5	15.2	20.5																						
7-May	10.7	10.1	9.5	8.6	7.8	8.9	10.4	12.8	15.3	17.2	18.6	19.2	19.7	18.9	18.3	17.2	17.0	15.9	15.9	16.1	15.4	15.2	14.7	14.4	14.5	19.7																						
8-May	14.6	13.7	12.9	12.8	12.1	11.7	13.2	15.4	17.5	19.0	20.6	21.3	21.2	21.5	22.1	21.3	21.4	20.3	18.3	16.5	14.8	13.9	12.1	12.0	16.7	22.1																						
9-May	11.3	10.6	10.1	10.4	10.7	10.7	11.6	13.4	14.7	17.3	17.1	17.6	20.6	20.1	21.5	22.5	21.9	21.2	20.0	18.1	14.6	12.8	11.1	11.0	15.5	22.5																						
10-May	11.2	9.7	8.2	7.2	7.0	8.0	10.3	12.5	15.0	17.8	19.9	21.8	23.4	24.0	24.9	24.6	23.5	22.4	21.8	20.7	18.9	17.6	17.0	14.2	16.7	24.9																						
11-May	11.9	9.7	8.6	7.2	6.4	8.9	12.2	14.6	17.1	19.2	20.7	21.8	23.1	24.2	24.8	24.5	24.3	23.7	22.7	19.5	17.6	16.1	14.2	13.2	16.9	24.8																						
12-May	12.0	11.6	11.2	9.6	8.9	9.8	12.2	15.9	18.1	22.0	25.1	26.4	26.7	26.7	27.2	26.9	26.5	26.2	24.8	21.6	20.7	20.6	19.3	17.5	19.5	27.2																						
13-May	15.6	13.5	12.3	11.5	11.3	13.8	15.2	15.9	16.5	19.2	22.8	24.1	26.1	27.3	28.1	28.7	27.7	27.1	25.3	23.1	20.5	19.5	18.0	17.6	20.0	28.7																						
14-May	17.0	16.1	15.6	14.1	13.6	13.7	15.7	18.8	20.1	22.1	24.5	28.4	30.5	31.7	32.3	32.5	32.3	31.2	29.5	26.1	23.4	22.2	22.0	19.2	23.0	32.5																						
15-May	17.8	14.4	13.9	13.2	12.0	12.3	13.8	15.9	17.7	19.8	21.9	24.5	26.1	28.0	30.2	30.7	31.2	30.8	30.2	26.5	23.0	21.0	19.9	21.3	21.5	31.2																						
16-May	19.8	19.0	16.9	14.4	13.7	13.4	13.1	12.6	13.6	13.1	13.3	13.8	15.0	15.4	17.4	17.1	16.9	17.5	15.7	13.6	12.3	11.0	9.7	8.7	14.5	19.8																						
17-May	8.3	9.0	8.2	7.7	7.0	5.9	4.4	4.4	4.6	5.3	7.4	8.0	10.0	11.4	12.8	13.4	14.0	13.9	13.6	12.7	11.1	9.4	8.9	7.2	9.1	14.0																						
18-May	4.8	3.7	2.3	1.5	1.7	4.7	7.0	9.8	11.5	14.2	16.8	18.4	19.2	20.0	21.5	22.5	22.2	22.5	22.0	19.5	15.7	13.7	12.6	11.6	13.3	22.5																						
19-May	9.6	8.6	7.1	6.1	6.4	7.4	9.5	11.2	12.8	13.4	14.6	15.7	16.4	17.5	18.3	18.9	18.8	18.4	17.3	16.0	16.9	16.2	15.0	13.6	13.6	18.9																						
20-May	13.0	12.0	10.6	9.7	9.1	8.5	8.8	9.6	10.6	12.4	13.6	15.5	17.1	18.2	19.2	19.9	19.9	19.4	18.2	17.1	16.1	15.4	14.9	14.1	14.3	19.9																						
21-May	13.6	12.9	12.0	11.4	10.4	10.7	11.0	11.7	13.1	15.2	16.9	18.3	19.8	21.6	22.9	23.5	23.8	23.5	22.3	20.4	18.8	18.0	17.5	16.8	16.9	23.8																						
22-May	14.7	14.9	13.4	13.7	13.5	13.9	13.8	13.9	14.6	15.7	16.6	17.4	17.9	18.5	19.5	20.8	21.3	20.8	20.4	19.7	18.4	16.8	15.4	14.6	16.7	21.3																						
23-May	13.5	12.3	11.2	10.4	9.7	9.4	9.5	9.9	10.1	10.1	10.5	9.3	7.9	7.9	8.4	8.8	9.9	10.1	10.4	10.3	10.0	9.7	9.5	9.6	9.9	13.5																						
24-May	9.8	10.1	10.0	8.7	8.4	8.6	8.8	9.0	9.6	10.7	11.8	13.5	14.6	15.5	14.9	14.6	13.2	13.1	13.0	12.4	11.8	11.6	11.2	11.1	11.5	15.5																						
25-May	10.5	8.6	7.5	6.9	7.3	8.4	9.6	12.6	14.7	16.6	16.5	16.5	17.8	18.4	18.4	18.7	18.8	18.5	18.0	16.7	14.3	12.2	11.2	10.0	13.7	18.8																						
26-May	9.1	9.3	10.5	9.8	8.8	9.2	12.2	14.5	16.1	17.7	20.1	21.8	22.4	23.4	22.9	24.7	24.0	23.8	23.3	21.6	18.1	15.9	14.6	13.6	17.0	24.7																						
27-May	12.9	12.1	11.3	10.7	11.4	13.7	15.1	18.1	20.9	24.6	26.9	27.8	28.2	28.3	27.9	28.0	27.4	26.6	25.6	22.5	19.6	17.1	16.7	15.3	20.3	28.3																						
28-May	14.6	13.7	13.0	12.2	12.5	14.5	16.6	18.7	21.0	24.4	27.3	28.7	29.6	29.4	27.5	27.8	27.1	26.3	25.2	22.7	20.4	18.7	16.8	14.0	20.9	29.6																						
29-May	11.8	11.5	11.0	10.0	9.4	11.4	14.0	17.2	19.4	21.9	25.1	25.6	26.4	24.6	23.4	22.5	23.8	23.9	23.5	21.7	17.9	14.3	16.1	16.4	18.4	26.4																						
30-May	15.3	12.1	9.7	8.6	7.7	8.5	10.8	13.9	16.3	18.6	21.6	23.6	23.7	23.9	25.0	24.3	22.0	21.0	20.1	18.9	18.0	18.2	18.0	16.1	17.3	25.0																						
31-May	14.4	13.1	10.8	10.4	10.0	11.4	14.0	16.0	18.6	20.4	21.6	22.8	23.7	24.6	24.5	25.3	24.6	23.2	22.7	20.9	19.4	17.9	17.9	15.8	18.5	25.3																						
																								13.3	12.4	11.4	10.5	10.0	10.7	12.0	13.9	15.9	17.9	19.7	21.0	22.0	22.6	23.1	23.3	23.0	22.5	21.6	19.7	17.7	16.3	15.4	14.4	Diurnal Average
																								21.0	20.0	18.8	17.5	16.9	16.7	16.6	18.8	22.2	24.7	27.3	28.7	30.5	31.7	32.3	32.5	32.3	31.2	30.2	26.8	25.2	23.7	22.0	21.3	Diurnal Maximum





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 2 m (AT2m) - C
Mannix - May 2023**

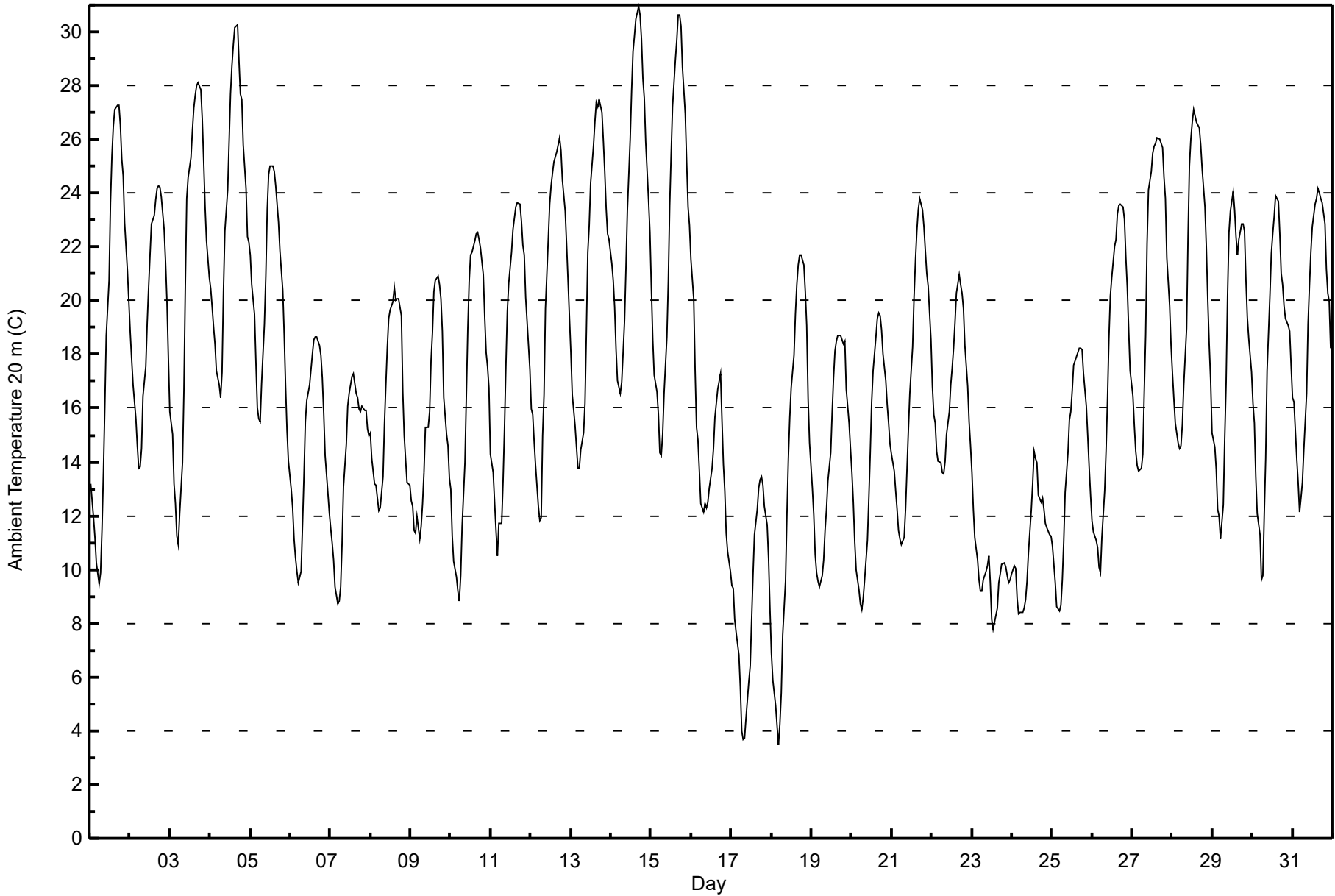
Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	98	13.17	13.17
10 - 20	410	55.11	68.28
> 20	236	31.72	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Maximum Value: 31.0 C on May 14 17:00		Maximum Daily Average: 24.0 C on May 14		Hours in Service: 744																							
Minimum Value: 3.5 C on May 18 05:00		Minimum Daily Average: 8.9 C on May 17		Hours of Data: 744																							
Maximum Diurnal Average: 22.2 C at hour 17		Minimum Diurnal Average: 11.3 C at hour 6		Hours of Missing Data: 0																							
Monthly Average: 17.24 C		Percentiles: P ₁ = 5.2 P ₁₀ = 9.9 Q ₁ = 12.8 Median = 16.8 Q ₃ = 21.7 P ₉₀ = 25.0 P ₉₉ = 30.0		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	13.2	12.6	11.9	11.2	10.2	9.4	9.9	11.5	13.6	16.1	18.7	20.8	23.6	25.4	26.5	27.1	27.3	27.2	26.6	25.3	24.7	22.9	21.1	20.0	19.0	27.3	
2-May	18.8	17.8	16.9	15.6	14.6	13.8	13.8	14.5	16.4	17.6	19.2	20.5	21.7	22.9	23.2	23.8	24.2	24.3	24.2	23.8	22.7	21.4	20.0	17.9	19.6	24.3	
3-May	15.9	15.0	13.2	12.4	11.2	10.9	12.1	14.0	16.7	20.5	23.8	24.6	25.3	26.3	27.2	27.6	28.0	28.1	27.8	26.7	25.2	23.5	22.2	20.8	20.8	28.1	
4-May	20.4	19.8	19.0	18.4	17.4	16.9	16.4	17.3	20.3	22.6	24.1	25.9	27.7	28.7	29.5	30.1	30.2	28.9	27.7	27.5	25.8	24.2	22.4	22.2	23.5	30.2	
5-May	21.7	20.6	19.5	17.7	16.0	15.6	15.5	16.9	19.1	20.9	23.4	24.7	25.0	25.0	24.8	24.3	23.6	22.9	21.9	20.4	18.8	16.8	15.2	14.0	20.2	25.0	
6-May	13.0	12.3	11.2	10.4	9.9	9.5	9.9	11.7	13.5	15.5	16.3	16.8	17.4	18.0	18.5	18.6	18.7	18.3	18.0	17.1	15.8	14.2	12.8	12.1	14.6	18.7	
7-May	11.5	11.0	10.3	9.4	8.7	8.8	9.4	11.0	13.1	14.7	16.1	16.6	16.9	17.2	17.3	16.5	16.4	16.0	15.9	16.1	15.9	15.9	15.2	15.0	13.9	17.3	
8-May	15.1	14.1	13.2	13.2	12.6	12.2	12.3	13.5	15.4	16.9	18.2	19.3	19.6	20.0	20.5	20.0	20.1	20.1	19.4	16.6	15.0	14.1	13.3	13.1	16.2	20.5	
9-May	12.5	12.3	11.4	11.3	12.0	11.1	11.6	12.5	13.6	15.3	15.3	15.9	17.8	18.8	20.3	20.7	20.9	20.6	20.1	18.9	16.4	15.0	14.6	13.4	15.5	20.9	
10-May	13.0	11.2	10.3	9.7	9.2	8.8	9.8	11.6	14.0	16.5	18.9	20.7	21.7	21.8	22.2	22.5	22.5	22.3	21.9	21.0	19.4	18.1	17.5	16.8	16.7	22.5	
11-May	14.3	13.6	12.5	11.5	10.5	11.7	11.7	13.3	15.3	17.5	19.6	20.6	21.8	22.7	23.1	23.5	23.6	23.6	23.0	22.1	21.7	20.1	19.3	17.5	18.1	23.6	
12-May	15.9	15.8	14.7	13.9	12.4	11.8	11.9	15.0	16.5	19.7	22.3	23.6	24.3	24.7	25.2	25.5	25.8	26.1	25.6	24.5	23.3	22.1	20.8	19.4	20.0	26.1	
13-May	18.1	16.5	15.3	14.5	13.8	13.8	14.4	15.1	16.2	18.9	21.8	22.8	24.4	25.7	26.6	27.3	27.2	27.5	27.0	26.0	24.8	23.4	22.5	22.3	21.1	27.5	
14-May	21.4	20.8	19.8	18.2	17.0	16.6	17.0	18.1	19.2	21.2	23.3	26.0	27.8	29.3	29.9	30.5	31.0	30.6	29.8	28.3	27.6	25.9	23.8	22.6	24.0	31.0	
15-May	20.5	18.5	17.2	16.6	15.8	14.3	14.3	15.0	16.5	18.7	20.7	23.5	25.4	27.2	29.0	29.7	30.6	30.6	30.2	28.7	27.0	25.2	23.5	22.8	22.6	30.6	
16-May	21.5	20.0	17.4	15.3	14.8	13.6	12.4	12.1	12.5	12.3	12.5	13.0	13.8	14.5	15.7	16.2	16.7	17.3	15.6	13.9	12.9	11.4	10.7	9.9	14.4	21.5	
17-May	9.4	9.3	8.1	7.7	6.8	5.6	4.0	3.7	3.7	4.5	5.8	6.4	8.1	9.8	11.3	12.3	13.0	13.4	13.4	13.2	12.4	11.7	10.4	8.5	8.9	13.4	
18-May	6.9	5.9	4.9	4.2	3.5	4.2	5.4	7.6	9.6	12.0	14.1	15.6	16.8	18.0	19.5	20.6	21.3	21.7	21.7	21.3	20.4	19.1	16.4	14.7	13.6	21.7	
19-May	13.0	12.1	10.6	9.9	9.5	9.4	9.8	10.4	11.4	12.2	13.3	14.3	15.8	17.1	18.2	18.5	18.7	18.7	18.5	18.4	18.5	16.7	15.4	14.5	14.4	18.7	
20-May	13.6	12.5	11.1	10.0	9.2	8.7	8.5	8.9	9.6	11.1	12.7	14.3	16.2	17.4	18.6	19.3	19.6	19.5	18.9	18.0	17.0	16.2	15.5	14.7	14.2	19.6	
21-May	14.3	13.6	12.9	12.2	11.4	11.1	11.0	11.2	12.2	13.7	15.2	16.6	18.3	20.1	21.5	22.6	23.4	23.8	23.4	22.8	21.9	21.0	20.6	18.5	17.2	23.8	
22-May	16.8	15.8	15.4	14.4	14.0	14.0	13.6	13.5	14.0	15.0	15.9	16.9	17.5	18.2	19.2	20.3	21.0	20.6	20.3	19.7	18.4	16.8	15.5	14.6	16.7	21.0	
23-May	13.6	12.3	11.2	10.4	9.6	9.2	9.2	9.6	9.9	10.1	10.5	9.5	8.1	7.8	8.3	8.6	9.5	9.8	10.2	10.2	10.1	9.8	9.5	9.6	9.9	13.6	
24-May	9.8	10.2	10.0	8.9	8.4	8.4	8.4	8.6	8.9	9.6	10.6	12.2	13.2	14.4	14.1	14.0	12.8	12.5	12.7	12.3	11.7	11.5	11.3	11.2	11.1	14.4	
25-May	10.9	10.2	9.5	8.6	8.4	8.7	9.6	11.0	12.9	14.3	15.5	15.8	16.6	17.6	17.8	18.1	18.2	18.3	18.2	17.3	16.1	15.0	13.8	12.8	14.0	18.3	
26-May	11.8	11.4	11.1	10.8	10.1	9.9	11.2	13.0	14.4	16.3	18.6	20.2	20.8	22.0	22.3	23.2	23.5	23.6	23.5	23.0	21.6	20.5	18.9	17.4	17.5	23.6	
27-May	16.4	15.3	14.4	13.9	13.7	13.7	14.3	16.6	18.7	22.1	24.1	24.8	25.5	25.8	25.8	26.1	26.0	25.9	25.7	24.6	23.8	21.6	19.8	18.3	20.7	26.1	
28-May	17.3	16.3	15.5	14.7	14.5	14.6	15.4	16.9	19.0	22.3	25.0	26.0	26.7	27.1	26.7	26.5	26.4	25.8	24.9	23.5	21.9	20.0	18.4	17.1	20.9	27.1	
29-May	15.1	14.6	13.7	12.2	12.0	11.1	12.4	14.9	17.0	20.2	22.6	23.3	24.1	23.4	22.4	21.7	22.3	22.8	22.9	22.6	20.8	19.4	18.6	17.3	18.6	24.1	
30-May	16.2	15.5	13.4	12.1	11.3	9.6	9.7	12.1	14.1	17.4	20.2	21.7	22.5	23.1	23.9	23.7	22.5	21.0	20.6	19.8	19.3	19.0	18.9	17.6	17.7	23.9	
31-May	16.4	16.2	14.2	13.2	12.1	12.7	13.3	14.4	16.5	19.1	20.5	21.8	22.7	23.6	23.8	24.2	24.0	23.8	23.7	22.9	21.2	20.3	20.0	18.2	19.1	24.2	
		15.1	14.3	13.2	12.3	11.6	11.3	11.5	12.8	14.3	16.3	18.0	19.2	20.2	21.1	21.7	22.0	22.2	22.1	21.7	20.8	19.7	18.5	17.3	16.3	Diurnal Average	
		21.7	20.8	19.8	18.4	17.4	16.9	17.0	18.1	20.3	22.6	25.0	26.0	27.8	29.3	29.9	30.5	31.0	30.6	30.2	28.7	27.6	25.9	23.8	22.8	Diurnal Maximum	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 20 m (AT20m) - C
Mannix - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	79	10.62	10.62
10 - 20	418	56.18	66.80
> 20	247	33.20	100.00

Total Number of Valid Hours: 744

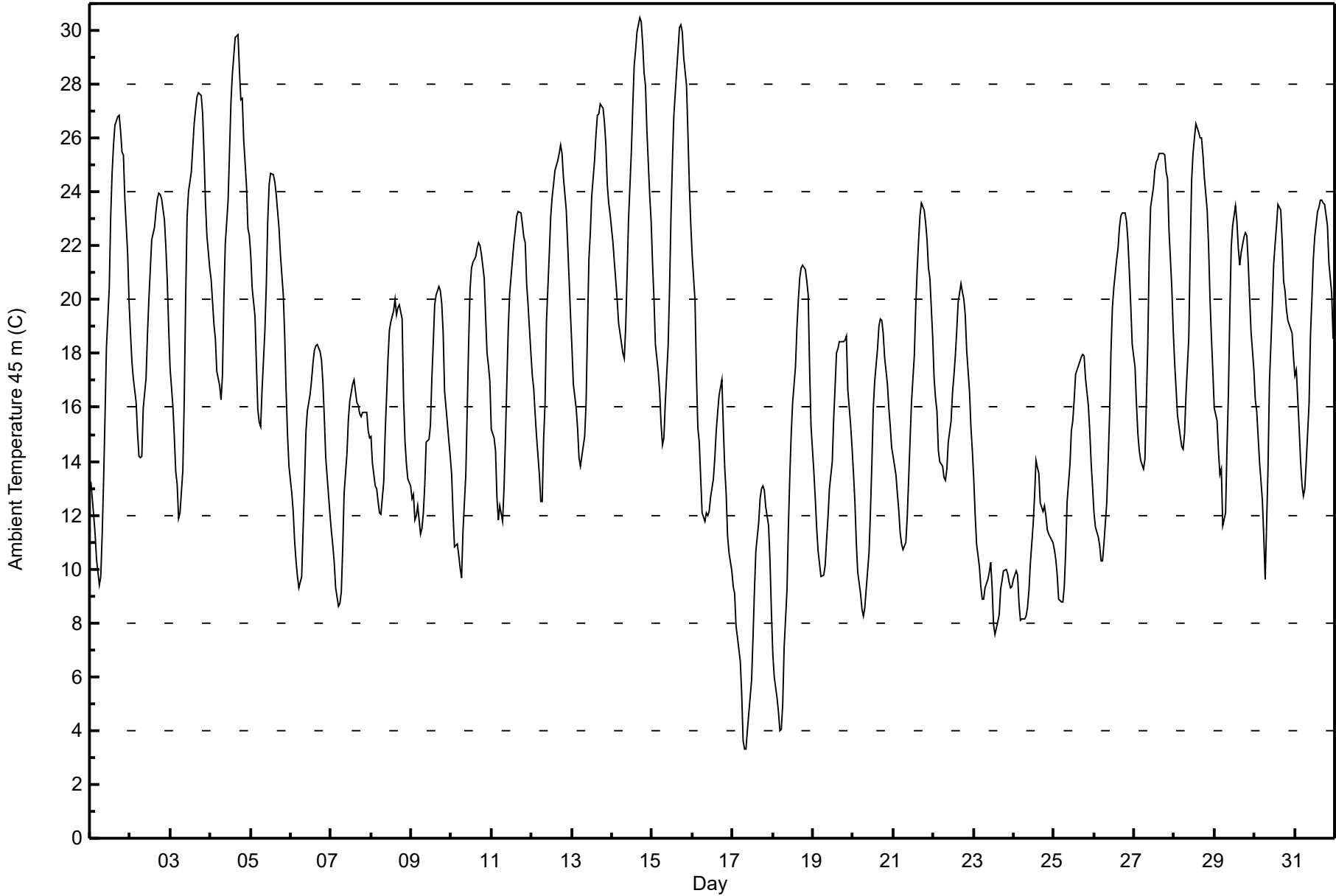
Total Number of Hours: 744



Summary of Hour Averages

Mannix - May 2023

Maximum Value: 30.5 C on May 14 17:00		Maximum Daily Average: 24.2 C on May 14		Hours in Service: 744																							
Minimum Value: 3.3 C on May 17 08:00		Minimum Daily Average: 8.5 C on May 17		Hours of Data: 744																							
Maximum Diurnal Average: 21.8 C at hour 17		Minimum Diurnal Average: 11.4 C at hour 7		Hours of Missing Data: 0																							
Monthly Average: 17.16 C		Percentiles: P ₁ = 5.1 P ₁₀ = 9.9 Q ₁ = 12.8 Median = 16.8 Q ₃ = 21.5 P ₉₀ = 24.7 P ₉₉ = 29.7		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	13.3	12.6	12.0	11.3	10.3	9.4	9.7	11.3	13.3	15.7	18.2	20.4	23.1	24.7	25.8	26.5	26.8	26.8	26.3	25.5	25.4	23.8	21.7	19.9	18.9	26.8	
2-May	18.7	17.7	17.1	16.2	15.0	14.2	14.2	14.2	16.0	17.1	18.7	20.0	21.1	22.2	22.7	23.3	23.7	24.0	23.9	23.7	23.0	22.0	20.7	18.9	19.5	24.0	
3-May	17.4	16.0	14.9	13.6	13.1	11.9	12.1	13.7	16.3	20.1	23.1	24.0	24.7	25.6	26.5	27.1	27.5	27.7	27.6	26.9	25.4	23.6	22.4	21.2	20.9	27.7	
4-May	20.8	19.9	19.1	18.5	17.3	16.8	16.3	17.2	20.0	22.1	23.7	25.5	27.3	28.4	29.1	29.8	29.9	28.5	27.4	27.5	26.0	24.2	22.6	22.4	23.3	29.9	
5-May	21.6	20.5	19.4	17.6	15.9	15.4	15.3	16.7	18.9	20.5	22.9	24.3	24.7	24.6	24.4	23.9	23.3	22.6	21.6	20.2	18.6	16.6	15.0	13.8	19.9	24.7	
6-May	12.8	12.1	11.0	10.3	9.7	9.3	9.7	11.5	13.2	15.1	15.9	16.5	17.0	17.7	18.1	18.3	18.3	18.1	17.7	16.9	15.6	14.1	12.7	12.0	14.3	18.3	
7-May	11.4	10.9	10.3	9.3	8.6	8.7	9.1	10.8	12.8	14.3	15.6	16.2	16.6	16.8	17.0	16.2	16.1	15.8	15.6	15.8	15.8	15.8	15.1	14.9	13.7	17.0	
8-May	14.9	13.9	13.1	13.0	12.5	12.1	12.0	13.2	15.0	16.4	17.8	18.8	19.2	19.6	20.0	19.5	19.7	19.8	19.3	16.4	14.8	13.9	13.4	13.1	15.9	20.0	
9-May	12.6	12.8	11.8	12.0	12.3	11.3	11.5	12.1	13.2	14.7	14.8	15.3	17.1	18.4	19.8	20.2	20.5	20.3	19.8	18.8	16.6	15.4	14.8	14.2	15.4	20.5	
10-May	13.5	12.0	10.8	11.0	10.5	10.1	9.7	11.4	13.5	15.9	18.4	20.4	21.2	21.4	21.6	21.9	22.1	22.0	21.7	20.8	19.4	18.0	17.5	17.0	16.7	22.1	
11-May	15.2	14.9	14.4	12.7	11.8	12.3	11.8	13.0	14.8	16.9	18.9	20.2	21.5	22.1	22.6	23.1	23.3	23.2	22.8	22.3	22.1	20.6	19.8	18.0	18.3	23.3	
12-May	17.2	16.7	15.8	14.9	13.5	12.5	12.5	14.8	16.2	19.2	21.7	23.1	23.8	24.3	24.8	25.1	25.4	25.7	25.4	24.5	23.4	22.1	20.8	19.4	20.1	25.7	
13-May	18.2	16.9	16.0	15.3	14.1	13.8	14.2	14.9	16.1	18.9	21.5	22.5	23.9	25.2	26.1	26.9	26.9	27.3	27.1	26.6	25.7	24.3	23.6	23.2	21.2	27.3	
14-May	22.1	21.4	20.7	20.0	19.1	18.4	18.0	17.8	19.0	20.9	22.9	25.5	27.2	28.7	29.3	29.9	30.5	30.3	29.5	28.4	28.0	26.3	23.9	22.9	24.2	30.5	
15-May	21.3	20.0	18.3	17.4	16.6	15.4	14.6	14.9	16.2	18.3	20.4	23.1	25.0	26.8	28.5	29.3	30.1	30.2	29.9	29.0	27.9	26.2	24.2	22.8	22.8	30.2	
16-May	21.6	19.9	17.2	15.2	14.7	13.4	12.1	11.8	12.1	12.0	12.1	12.7	13.4	14.1	15.1	15.8	16.4	17.0	15.3	13.8	12.8	11.2	10.6	9.9	14.2	21.6	
17-May	9.4	9.1	7.9	7.5	6.5	5.3	3.6	3.3	3.3	4.0	5.3	5.9	7.5	9.2	10.7	11.7	12.6	13.0	13.1	12.9	12.3	11.6	10.3	8.4	8.5	13.1	
18-May	6.8	6.0	5.2	4.7	4.0	4.0	5.0	7.1	9.2	11.5	13.4	15.0	16.2	17.5	18.9	19.9	20.8	21.2	21.3	21.1	20.7	20.2	17.5	15.3	13.4	21.3	
19-May	13.6	12.6	11.5	10.7	10.2	9.7	9.8	10.1	11.1	11.9	13.0	14.0	15.5	16.8	18.0	18.2	18.5	18.5	18.4	18.5	18.6	16.6	15.4	14.5	14.4	18.6	
20-May	13.5	12.5	11.0	9.9	9.1	8.5	8.3	8.6	9.2	10.6	12.2	13.9	16.0	17.0	18.2	19.0	19.3	19.2	18.8	17.9	16.9	16.0	15.3	14.5	14.0	19.3	
21-May	14.2	13.5	12.8	12.2	11.4	10.9	10.7	11.0	11.9	13.4	14.8	16.2	17.9	19.7	21.1	22.2	23.1	23.6	23.3	22.8	22.2	21.2	20.8	18.6	17.1	23.6	
22-May	17.1	16.4	15.9	14.4	14.0	13.8	13.4	13.3	13.7	14.7	15.5	16.5	17.2	17.9	18.9	19.9	20.6	20.3	20.0	19.5	18.1	16.6	15.3	14.4	16.6	20.6	
23-May	13.4	12.0	11.0	10.1	9.4	8.9	8.9	9.3	9.6	9.9	10.3	9.3	7.9	7.6	8.1	8.3	9.2	9.6	9.9	10.0	9.8	9.5	9.3	9.4	9.6	13.4	
24-May	9.6	9.9	9.8	8.7	8.1	8.1	8.1	8.3	8.6	9.2	10.2	11.6	12.7	14.0	13.8	13.6	12.5	12.2	12.2	12.4	12.0	11.5	11.3	11.1	11.0	10.8	14.0
25-May	10.7	10.4	9.8	8.9	8.8	8.8	9.4	10.7	12.5	13.8	15.2	15.5	16.3	17.2	17.4	17.7	17.9	17.9	17.9	17.1	16.1	15.1	13.9	13.0	13.8	17.9	
26-May	12.1	11.6	11.2	10.9	10.3	10.3	10.9	12.5	14.0	15.7	18.1	19.7	20.4	21.5	21.9	22.7	23.1	23.2	23.2	22.9	22.2	21.0	19.8	18.3	17.4	23.2	
27-May	17.5	16.1	15.0	14.4	14.0	13.7	14.1	16.2	18.3	21.5	23.5	24.2	24.8	25.1	25.2	25.4	25.5	25.4	25.4	24.7	24.5	22.6	20.4	18.9	20.7	25.5	
28-May	17.7	16.7	15.7	14.9	14.6	14.4	15.0	16.5	18.6	21.8	24.5	25.4	26.0	26.5	26.2	26.0	26.0	25.4	24.6	23.3	22.0	20.0	18.6	17.3	20.7	26.5	
29-May	16.0	15.5	14.4	13.5	13.7	11.6	12.1	14.5	16.5	19.5	22.0	22.7	23.5	22.9	21.9	21.3	21.8	22.4	22.5	22.4	21.4	20.1	18.8	17.4	18.7	23.5	
30-May	16.3	15.9	14.9	14.0	12.6	11.2	9.6	11.7	13.7	16.9	19.7	21.3	22.1	22.8	23.5	23.3	22.2	20.7	20.4	19.7	19.2	18.9	18.8	17.8	17.8	23.5	
31-May	17.2	17.4	15.3	14.1	13.1	12.7	13.0	14.0	16.1	18.7	20.0	21.5	22.3	23.3	23.4	23.7	23.7	23.6	23.5	22.8	21.4	20.8	20.2	18.6	19.2	23.7	
		15.4	14.6	13.6	12.8	12.1	11.5	11.4	12.5	14.0	15.8	17.6	18.8	19.8	20.6	21.2	21.6	21.8	21.8	21.5	20.8	19.9	18.7	17.6	16.5	Diurnal Average	
		22.1	21.4	20.7	20.0	19.1	18.4	18.0	17.8	20.0	22.1	24.5	25.5	27.3	28.7	29.3	29.9	30.5	30.3	29.9	29.0	28.0	26.3	24.2	23.2	Diurnal Maximum	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 45 m (AT45m) - C
Mannix - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	77	10.35	10.35
10 - 20	425	57.12	67.47
> 20	242	32.53	100.00

Total Number of Valid Hours: 744

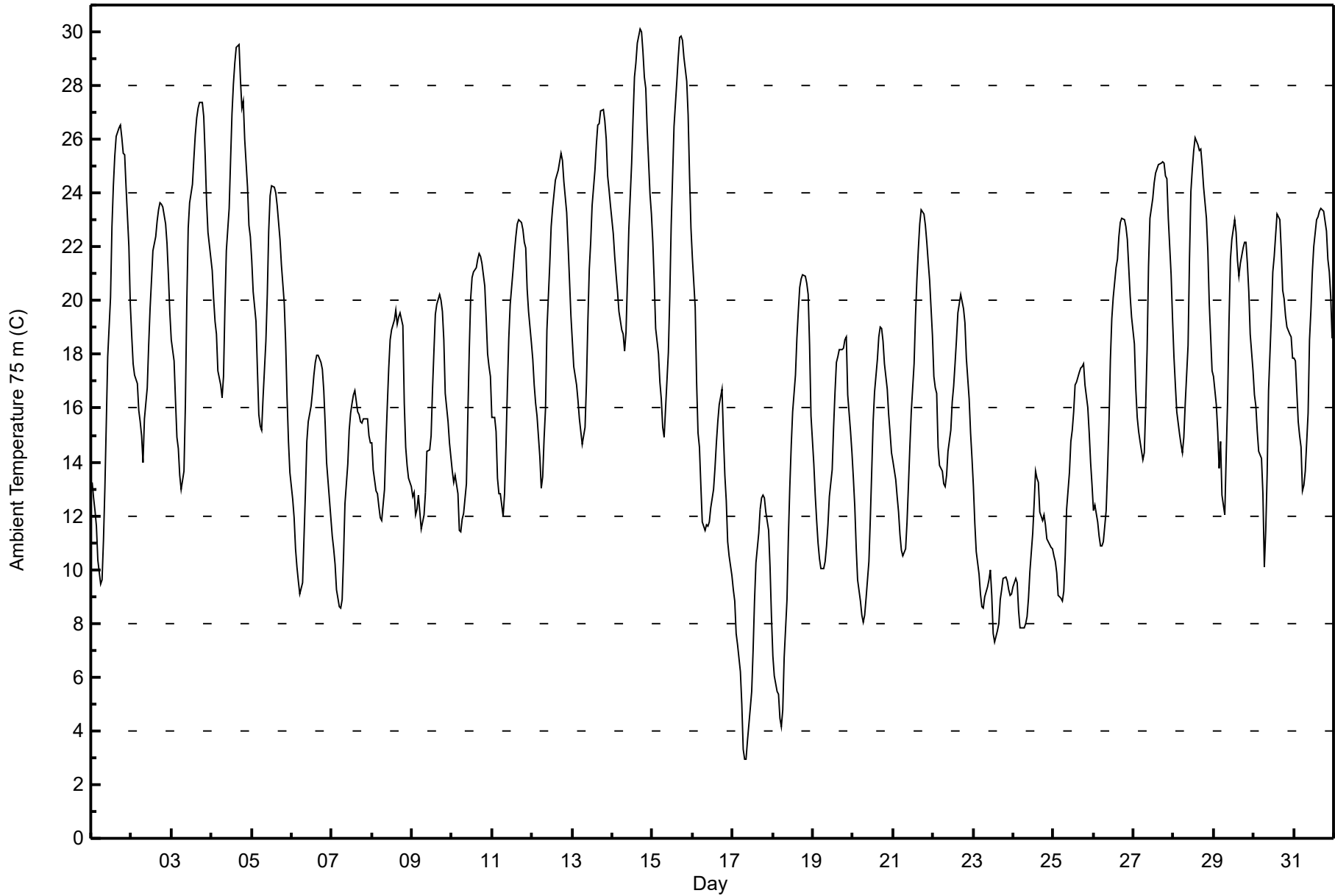
Total Number of Hours: 744



Summary of Hour Averages

Mannix - May 2023

Maximum Value: 30.1 C on May 14 17:00		Maximum Daily Average: 24.2 C on May 14		Hours in Service: 744																							
Minimum Value: 2.9 C on May 17 08:00		Minimum Daily Average: 8.2 C on May 17		Hours of Data: 744																							
Maximum Diurnal Average: 21.5 C at hour 17		Minimum Diurnal Average: 11.6 C at hour 7		Hours of Missing Data: 0																							
Monthly Average: 17.10 C		Percentiles: P ₁ = 4.9 P ₁₀ = 9.9 Q ₁ = 12.9 Median = 16.7 Q ₃ = 21.4 P ₉₀ = 24.5 P ₉₉ = 29.4		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	13.3	12.7	12.2	11.6	10.4	9.4	9.6	11.1	13.0	15.4	17.9	20.1	22.8	24.3	25.4	26.1	26.5	26.5	26.0	25.5	25.4	24.2	22.0	19.9	18.8	26.5	
2-May	18.7	17.7	17.2	16.9	15.9	15.5	15.0	14.0	15.6	16.7	18.4	19.7	20.8	21.9	22.4	23.0	23.4	23.6	23.6	23.5	22.9	22.1	20.9	19.5	19.5	23.6	
3-May	18.5	17.7	16.3	14.9	14.5	13.5	13.0	13.7	16.1	19.9	22.7	23.6	24.4	25.3	26.2	26.8	27.2	27.4	27.4	26.8	25.5	23.7	22.5	21.6	21.2	27.4	
4-May	21.1	20.1	19.2	18.7	17.4	16.8	16.4	17.2	19.7	21.8	23.5	25.2	27.0	28.1	28.8	29.4	29.5	28.2	27.1	27.4	26.0	24.2	22.8	22.4	23.3	29.5	
5-May	21.5	20.3	19.2	17.4	15.8	15.4	15.2	16.4	18.5	20.3	22.6	23.9	24.3	24.2	24.0	23.5	22.9	22.3	21.3	19.9	18.4	16.4	14.7	13.6	19.7	24.3	
6-May	12.6	11.9	10.8	10.1	9.5	9.1	9.5	11.2	12.9	14.8	15.5	16.1	16.6	17.3	17.7	18.0	18.0	17.7	17.4	16.6	15.4	14.0	12.6	11.9	14.0	18.0	
7-May	11.3	10.8	10.2	9.2	8.6	8.6	8.9	10.5	12.5	13.9	15.2	15.8	16.2	16.5	16.7	15.9	15.8	15.5	15.4	15.6	15.6	15.6	15.0	14.7	13.5	16.7	
8-May	14.7	13.7	12.9	12.8	12.3	11.9	11.8	13.0	14.7	16.1	17.5	18.5	18.9	19.3	19.7	19.1	19.4	19.5	19.1	16.2	14.5	13.9	13.4	13.1	15.7	19.7	
9-May	12.7	12.9	12.0	12.3	12.8	11.5	11.8	12.0	12.9	14.4	14.5	14.9	16.7	18.1	19.5	19.8	20.2	20.0	19.6	18.6	16.5	15.5	14.7	14.2	15.3	20.2	
10-May	13.7	13.2	13.5	12.8	11.5	11.4	11.9	12.1	13.2	15.7	18.1	20.1	20.9	21.1	21.2	21.6	21.8	21.6	21.4	20.6	19.4	18.0	17.5	17.2	17.1	21.8	
11-May	15.6	15.7	15.2	13.4	12.8	12.8	12.0	12.8	14.6	16.7	18.6	19.8	21.1	21.8	22.4	22.9	23.0	22.9	22.7	22.2	22.0	20.5	19.6	18.4	18.3	23.0	
12-May	17.8	16.8	16.2	15.7	14.2	13.0	13.5	14.9	16.0	18.9	21.3	22.8	23.4	24.0	24.5	24.9	25.2	25.5	25.2	24.4	23.3	22.1	20.7	19.5	20.2	25.5	
13-May	18.5	17.6	16.9	16.3	15.6	15.1	14.7	15.3	16.9	19.2	21.2	22.1	23.5	24.8	25.8	26.5	26.6	27.1	27.1	26.7	26.0	24.7	24.1	23.5	21.5	27.1	
14-May	22.5	21.7	20.9	20.4	19.6	18.9	18.7	18.1	18.8	20.7	22.7	25.1	26.8	28.3	28.8	29.6	30.1	30.0	29.3	28.3	27.9	26.4	24.0	23.2	24.2	30.1	
15-May	22.2	20.7	18.9	18.0	17.0	16.4	15.3	14.9	16.0	18.1	20.2	22.8	24.7	26.5	28.2	29.0	29.8	29.9	29.7	29.0	28.2	26.9	24.7	22.7	22.9	29.9	
16-May	21.6	19.8	17.0	15.1	14.6	13.1	11.8	11.4	11.7	11.6	11.8	12.3	13.0	13.8	14.7	15.5	16.1	16.7	15.0	13.5	12.6	11.0	10.5	9.8	13.9	21.6	
17-May	9.2	8.8	7.6	7.2	6.2	5.0	3.3	2.9	2.9	3.6	4.8	5.4	7.0	8.8	10.3	11.3	12.2	12.6	12.8	12.6	12.1	11.5	10.1	8.3	8.2	12.8	
18-May	6.8	6.1	5.5	5.4	4.5	4.2	4.8	6.7	8.9	11.2	13.1	14.6	15.9	17.2	18.6	19.6	20.5	20.8	21.0	20.9	20.6	20.2	18.4	15.7	13.4	21.0	
19-May	13.9	12.8	11.8	11.0	10.4	10.0	10.1	10.3	10.9	11.7	12.7	13.7	15.3	16.6	17.7	17.9	18.2	18.2	18.2	18.6	18.6	16.5	15.1	14.3	14.4	18.6	
20-May	13.4	12.4	10.8	9.6	8.8	8.3	8.1	8.3	9.0	10.3	11.9	13.6	15.5	16.6	17.8	18.7	19.0	18.9	18.5	17.7	16.7	15.8	15.1	14.3	13.7	19.0	
21-May	14.0	13.4	12.7	12.1	11.3	10.7	10.5	10.8	11.8	13.1	14.5	15.9	17.7	19.4	20.8	21.9	22.9	23.4	23.2	22.8	22.2	21.4	20.8	18.7	16.9	23.4	
22-May	17.2	16.8	16.5	14.5	13.9	13.7	13.2	13.1	13.5	14.4	15.2	16.2	16.8	17.6	18.5	19.6	20.2	20.0	19.7	19.2	17.9	16.4	15.1	14.1	16.4	20.2	
23-May	13.1	11.7	10.7	9.8	9.1	8.6	8.6	9.0	9.3	9.6	10.0	9.0	7.6	7.3	7.7	8.0	8.9	9.3	9.7	9.7	9.6	9.2	9.0	9.1	9.3	13.1	
24-May	9.4	9.7	9.5	8.4	7.8	7.8	7.8	8.0	8.2	8.9	9.9	11.3	12.5	13.7	13.4	13.2	12.1	11.8	12.0	11.7	11.2	11.0	10.8	10.8	10.5	13.7	
25-May	10.5	10.3	9.9	9.1	9.0	8.8	9.2	10.5	12.2	13.6	14.8	15.2	15.9	16.9	17.0	17.3	17.5	17.6	17.6	16.8	16.0	15.1	14.0	13.1	13.7	17.6	
26-May	12.2	12.4	11.8	11.3	10.9	10.9	11.0	12.2	13.7	15.5	17.8	19.3	20.1	21.2	21.6	22.4	22.9	23.0	23.0	22.8	22.3	21.2	20.2	19.4	17.5	23.0	
27-May	18.4	16.7	15.6	15.1	14.8	14.1	14.3	16.1	18.2	21.3	23.1	23.8	24.4	24.7	24.9	25.0	25.1	25.2	25.1	24.6	24.5	23.1	21.0	19.4	20.8	25.2	
28-May	17.9	16.9	15.9	15.0	14.7	14.4	14.9	16.2	18.3	21.5	24.0	24.9	25.6	26.1	25.8	25.6	25.6	25.0	24.2	23.1	21.9	19.9	18.7	17.4	20.6	26.1	
29-May	17.2	16.1	15.1	13.8	14.7	12.8	12.0	14.3	16.3	19.2	21.5	22.3	23.0	22.5	21.5	20.9	21.4	22.0	22.2	22.2	21.4	20.3	18.8	17.4	18.7	23.0	
30-May	16.5	16.1	15.1	14.4	14.1	12.8	10.1	11.5	13.6	16.7	19.4	21.1	21.7	22.4	23.2	23.0	21.9	20.4	20.1	19.4	19.0	18.8	18.6	17.9	17.8	23.2	
31-May	17.9	17.8	15.5	15.0	14.5	12.9	13.1	13.7	15.8	18.5	19.7	21.0	22.0	23.0	23.1	23.4	23.4	23.4	23.3	22.6	21.6	21.0	20.2	18.6	19.2	23.4	
		15.6	14.9	14.0	13.1	12.5	11.9	11.6	12.3	13.7	15.6	17.2	18.4	19.4	20.3	20.9	21.3	21.5	21.5	21.2	20.6	19.8	18.7	17.6	16.6	Diurnal Average	
		22.5	21.7	20.9	20.4	19.6	18.9	18.7	18.1	19.7	21.8	24.0	25.2	27.0	28.3	28.8	29.6	30.1	30.0	29.7	29.0	28.2	26.9	24.7	23.5	Diurnal Maximum	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 75 m (AT75m) - C
Mannix - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	77	10.35	10.35
10 - 20	432	58.06	68.41
> 20	235	31.59	100.00

Total Number of Valid Hours: 744

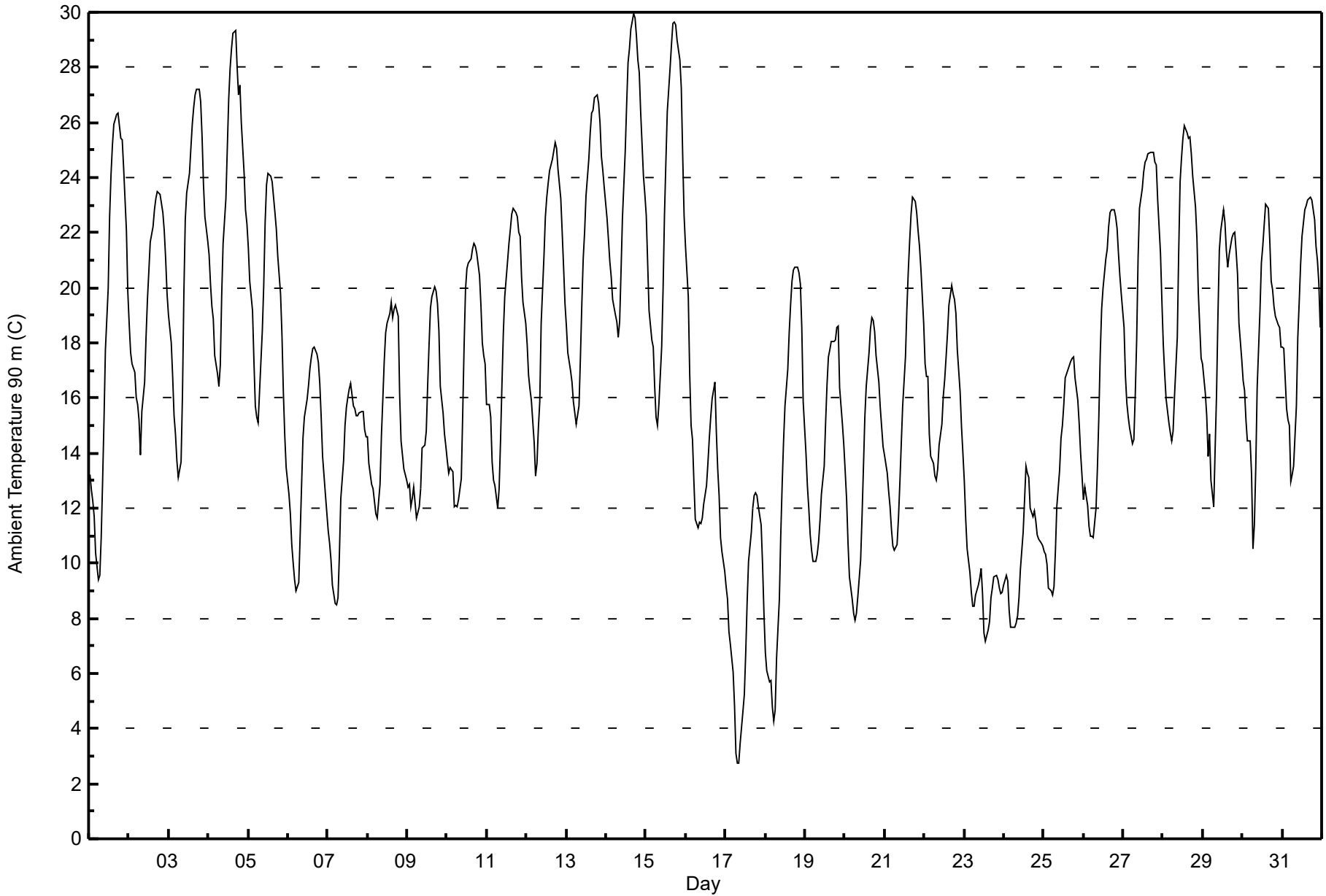
Total Number of Hours: 744



Summary of Hour Averages

Mannix - May 2023

Maximum Value: 29.9 C on May 14 17:00		Maximum Daily Average: 24.2 C on May 14		Hours in Service: 744																							
Minimum Value: 2.8 C on May 17 08:00		Minimum Daily Average: 8.0 C on May 17		Hours of Data: 744																							
Maximum Diurnal Average: 21.4 C at hour 17		Minimum Diurnal Average: 11.6 C at hour 7		Hours of Missing Data: 0																							
Monthly Average: 17.02 C		Percentiles: P ₁ = 4.8 P ₁₀ = 9.8 Q ₁ = 12.9 Median = 16.7 Q ₃ = 21.3 P ₉₀ = 24.4 P ₉₉ = 29.2		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	13.2	12.6	12.2	11.7	10.4	9.4	9.6	10.9	13.0	15.2	17.7	20.0	22.6	24.1	25.2	25.9	26.3	26.4	25.9	25.4	25.4	24.3	22.1	19.8	18.7	26.4	
2-May	18.7	17.7	17.2	16.9	16.0	15.8	15.2	13.9	15.5	16.6	18.2	19.6	20.6	21.7	22.2	22.8	23.2	23.5	23.5	23.4	22.7	22.1	21.0	19.8	19.5	23.5	
3-May	19.0	18.0	16.8	15.3	14.7	13.7	13.1	13.7	16.1	19.8	22.5	23.5	24.1	25.1	26.0	26.6	27.0	27.2	27.2	26.8	25.5	23.7	22.6	21.7	21.2	27.2	
4-May	21.2	20.1	19.3	18.8	17.5	16.9	16.4	17.2	19.7	21.6	23.2	25.1	26.8	28.0	28.7	29.2	29.4	28.0	27.0	27.4	26.0	24.1	22.8	22.3	23.2	29.4	
5-May	21.4	20.2	19.1	17.4	15.7	15.3	15.1	16.2	18.4	20.1	22.4	23.8	24.2	24.0	23.8	23.3	22.7	22.1	21.2	19.8	18.3	16.2	14.6	13.5	19.5	24.2	
6-May	12.5	11.8	10.7	10.0	9.4	9.0	9.3	11.0	12.8	14.6	15.3	16.0	16.5	17.1	17.5	17.8	17.8	17.6	17.3	16.5	15.3	13.9	12.5	11.8	13.9	17.8	
7-May	11.2	10.7	10.1	9.2	8.6	8.5	8.7	10.3	12.4	13.7	15.0	15.7	16.0	16.3	16.5	15.7	15.6	15.4	15.3	15.5	15.5	15.5	14.9	14.6	13.4	16.5	
8-May	14.6	13.6	12.9	12.7	12.3	11.8	11.6	12.9	14.7	16.0	17.3	18.4	18.7	19.1	19.5	18.9	19.2	19.4	18.9	16.1	14.4	13.9	13.4	13.0	15.6	19.5	
9-May	12.8	12.8	12.0	12.3	12.8	11.6	11.9	12.0	12.7	14.2	14.3	14.8	16.5	17.9	19.3	19.7	20.0	19.9	19.4	18.5	16.4	15.5	14.7	14.2	15.3	20.0	
10-May	13.7	13.3	13.5	13.3	12.0	12.1	12.0	12.3	13.0	15.4	17.9	19.9	20.7	20.9	21.1	21.4	21.6	21.5	21.2	20.5	19.3	18.0	17.5	17.2	17.1	21.6	
11-May	15.8	15.8	15.3	13.7	13.0	12.8	12.0	12.7	14.5	16.5	18.3	19.7	21.0	21.6	22.1	22.7	22.9	22.8	22.6	22.0	21.9	20.4	19.5	18.7	18.3	22.9	
12-May	17.9	16.8	16.3	15.9	14.4	13.2	13.6	14.9	15.9	18.7	21.1	22.6	23.3	23.8	24.3	24.7	25.0	25.3	25.1	24.3	23.2	22.0	20.7	19.4	20.1	25.3	
13-May	18.6	17.7	17.0	16.6	15.8	15.4	15.1	15.7	17.4	19.4	21.0	22.0	23.3	24.7	25.6	26.4	26.4	26.9	27.0	26.7	26.0	24.8	24.2	23.6	21.6	27.0	
14-May	22.5	21.7	21.0	20.4	19.6	19.0	18.7	18.2	18.8	20.6	22.5	24.9	26.6	28.2	28.7	29.4	29.9	29.8	29.2	28.3	27.8	26.4	24.1	23.4	24.2	29.9	
15-May	22.6	20.9	19.2	18.1	17.8	16.4	15.3	15.0	15.8	17.8	19.9	22.6	24.6	26.4	28.0	28.8	29.6	29.7	29.5	29.0	28.3	27.2	24.8	22.6	22.9	29.7	
16-May	21.5	19.7	16.9	15.0	14.5	13.0	11.6	11.3	11.5	11.5	11.6	12.1	12.8	13.6	14.6	15.3	16.0	16.6	14.8	13.4	12.5	10.9	10.4	9.7	13.8	21.5	
17-May	9.1	8.7	7.5	7.1	6.1	4.8	3.1	2.8	2.8	3.5	4.6	5.2	6.8	8.6	10.1	11.1	12.0	12.4	12.6	12.5	12.0	11.4	10.0	8.2	8.0	12.6	
18-May	6.8	6.1	5.7	5.7	4.8	4.3	4.7	6.6	8.7	11.0	12.9	14.4	15.7	17.0	18.4	19.4	20.3	20.6	20.8	20.8	20.5	20.2	18.6	15.8	13.3	20.8	
19-May	14.0	12.8	12.0	11.1	10.5	10.1	10.0	10.3	10.8	11.5	12.5	13.5	15.1	16.5	17.5	17.8	18.0	18.0	18.1	18.6	18.6	16.4	15.0	14.3	14.3	18.6	
20-May	13.3	12.3	10.7	9.5	8.7	8.2	8.0	8.2	8.8	10.1	11.7	13.5	15.3	16.4	17.7	18.5	18.9	18.8	18.4	17.6	16.6	15.7	14.9	14.2	13.6	18.9	
21-May	13.9	13.3	12.6	12.1	11.2	10.6	10.5	10.7	11.7	12.9	14.3	15.7	17.5	19.2	20.6	21.7	22.7	23.3	23.1	22.7	22.1	21.5	20.7	18.7	16.8	23.3	
22-May	17.2	16.8	16.8	14.7	13.9	13.6	13.2	13.0	13.4	14.3	15.1	16.1	16.7	17.5	18.4	19.4	20.1	19.8	19.6	19.1	17.7	16.2	15.0	14.0	16.3	20.1	
23-May	13.0	11.6	10.5	9.7	8.9	8.5	8.4	8.9	9.2	9.5	9.8	8.9	7.5	7.1	7.6	7.9	8.7	9.1	9.5	9.6	9.4	9.1	8.9	9.0	9.2	13.0	
24-May	9.2	9.5	9.4	8.3	7.7	7.7	7.7	7.8	8.1	8.8	9.8	11.2	12.3	13.5	13.2	13.1	12.0	11.7	11.9	11.5	11.0	10.9	10.7	10.6	10.3	13.5	
25-May	10.4	10.3	9.9	9.1	9.0	8.9	9.1	10.4	12.1	13.4	14.5	15.0	15.8	16.7	16.9	17.2	17.3	17.4	17.5	16.7	15.9	15.1	14.0	13.2	13.6	17.5	
26-May	12.3	12.7	12.1	11.3	11.0	11.0	11.0	12.0	13.5	15.3	17.6	19.2	20.0	21.0	21.4	22.2	22.7	22.8	22.8	22.6	22.2	21.3	20.5	19.8	17.4	22.8	
27-May	18.6	16.8	15.8	15.3	14.9	14.3	14.5	16.1	18.1	21.0	22.9	23.6	24.2	24.5	24.7	24.9	24.9	24.9	24.9	24.5	24.5	23.2	21.2	19.5	20.7	24.9	
28-May	18.0	16.9	16.0	15.1	14.8	14.4	14.8	16.1	18.2	21.3	23.9	24.7	25.4	25.9	25.7	25.4	25.5	24.8	24.1	23.0	21.8	19.8	18.6	17.4	20.5	25.9	
29-May	17.2	16.1	15.3	13.9	14.7	13.0	12.0	14.1	16.1	19.0	21.4	22.1	22.8	22.4	21.3	20.7	21.2	21.8	22.0	22.0	21.3	20.5	18.7	17.4	18.6	22.8	
30-May	16.6	16.3	15.2	14.5	14.4	13.2	10.5	11.4	13.5	16.4	19.2	20.9	21.5	22.3	23.1	22.9	21.7	20.3	19.9	19.3	19.0	18.7	18.6	17.8	17.8	23.1	
31-May	17.8	17.8	15.6	15.2	15.0	12.9	13.2	13.5	15.7	18.2	19.5	20.8	21.8	22.8	23.0	23.2	23.2	23.3	23.2	22.5	21.5	21.0	20.2	18.6	19.2	23.3	
		15.6	14.9	14.0	13.2	12.6	11.9	11.6	12.3	13.6	15.4	17.0	18.2	19.3	20.1	20.7	21.1	21.4	21.3	21.1	20.5	19.8	18.7	17.6	16.6	Diurnal Average	
		22.6	21.7	21.0	20.4	19.6	19.0	18.7	18.2	19.7	21.6	23.9	25.1	26.8	28.2	28.7	29.4	29.9	29.8	29.5	29.0	28.3	27.2	24.8	23.6	Diurnal Maximum	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 90 m (AT90m) - C
Mannix - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	78	10.48	10.48
10 - 20	437	58.74	69.22
> 20	229	30.78	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



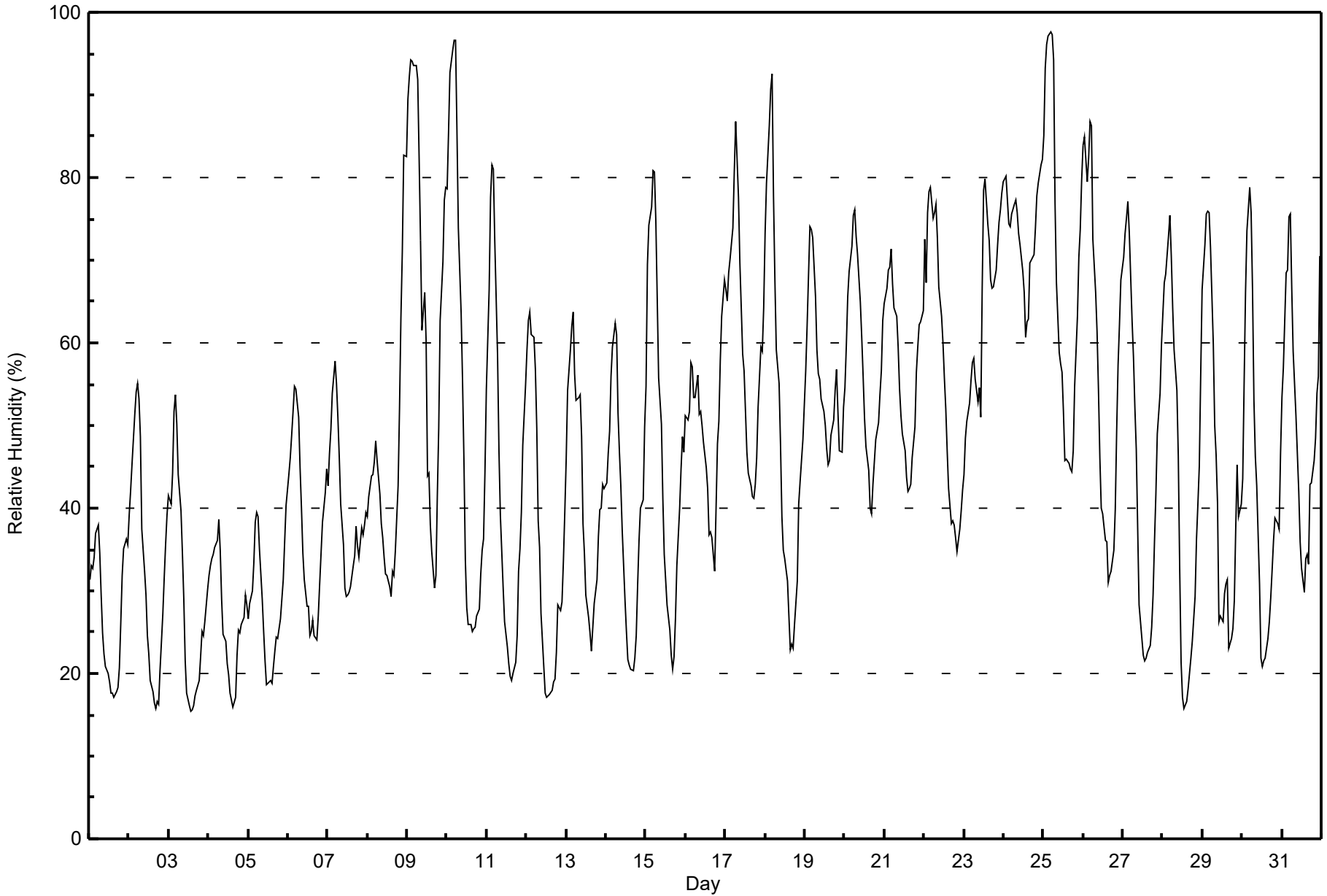
Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity (RH) - %

Mannix - May 2023

Maximum Value: 98 % on May 25 05:00																		Maximum Daily Average: 73.4 % on May 24																		Hours in Service: 744													
Minimum Value: 15 % on May 3 14:00																		Minimum Daily Average: 27.0 % on May 4																		Hours of Data: 744													
Maximum Diurnal Average: 68.5 % at hour 5																		Minimum Diurnal Average: 30.7 % at hour 17																		Hours of Missing Data: 0													
Monthly Average: 47.4 %																		Percentiles: P ₁ = 16 P ₁₀ = 22 Q ₁ = 31 Median = 45 Q ₃ = 62 P ₉₀ = 76 P ₉₉ = 94																		Hours of Calibration: 0													
																																				Percent Operational Time: 100.0													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	31	33	33	34	37	38	35	30	25	22	21	20	19	18	18	17	18	18	21	26	32	35	36	36	27.1	38																							
2-May	39	42	45	51	54	55	53	49	38	32	29	25	22	19	18	17	16	17	16	20	27	32	36	39	33.0	55																							
3-May	41	40	44	52	54	50	44	40	35	29	21	18	16	15	16	16	17	18	19	22	25	25	26	30	29.8	54																							
4-May	32	33	34	34	35	36	39	35	29	25	24	21	20	18	17	16	17	22	25	25	26	27	30	28	27.0	39																							
5-May	27	28	30	33	38	39	39	35	29	25	21	19	19	19	19	21	23	24	24	27	29	31	36	40	28.2	40																							
6-May	44	46	49	52	55	54	51	45	40	35	31	28	28	25	25	26	25	24	27	31	35	38	42	45	37.5	55																							
7-May	43	47	49	54	58	55	51	46	41	36	30	29	29	30	30	33	34	38	35	34	38	37	38	39	39.8	58																							
8-May	39	41	44	44	46	48	46	42	38	36	34	32	32	31	29	32	32	35	43	52	63	71	83	82	44.8	83																							
9-May	89	92	94	94	94	94	92	82	72	61	66	60	44	44	38	35	30	32	42	50	63	70	77	79	66.4	94																							
10-May	79	85	93	95	97	97	86	74	64	55	46	34	28	26	26	25	25	26	27	28	32	35	36	44	52.6	97																							
11-May	54	66	78	82	81	72	59	47	39	35	30	26	23	21	20	19	20	21	24	32	35	39	48	55	42.8	82																							
12-May	59	63	64	61	61	57	50	39	35	27	21	18	17	17	17	18	19	19	23	28	28	29	34	39	35.1	64																							
13-May	46	54	59	62	64	56	53	53	54	49	38	35	30	27	25	23	26	28	31	37	40	40	43	42	42.2	64																							
14-May	43	47	49	56	59	62	61	52	47	43	37	29	25	22	21	21	20	22	25	31	36	40	41	50	39.1	62																							
15-May	55	70	74	77	81	81	75	65	56	50	41	34	31	28	25	22	21	22	27	33	40	45	49	47	47.8	81																							
16-May	51	51	52	58	57	53	53	56	51	52	50	48	45	42	37	37	37	32	40	48	51	58	63	68	49.5	68																							
17-May	66	65	68	70	74	81	87	82	78	70	59	57	52	47	44	43	41	41	43	46	52	59	59	64	60.3	87																							
18-May	73	79	86	91	93	78	68	59	55	48	39	35	34	31	27	23	24	23	26	31	40	43	46	48	50.0	93																							
19-May	57	62	68	74	74	73	66	59	56	56	53	52	50	47	45	46	49	51	54	57	52	47	47	52	56.0	74																							
20-May	55	60	66	69	72	76	76	73	71	65	61	56	51	47	45	40	39	43	46	48	50	54	57	63	57.5	76																							
21-May	65	67	69	69	71	67	64	63	60	54	51	49	47	44	42	42	43	46	50	56	60	62	63	64	57.0	71																							
22-May	73	67	76	78	79	75	76	77	73	67	63	60	56	52	47	42	38	39	38	36	35	37	40	42	56.9	79																							
23-May	44	48	51	53	55	58	58	56	53	55	51	67	78	80	74	72	68	67	67	69	72	75	76	78	63.5	80																							
24-May	80	80	77	74	74	76	77	77	76	73	72	69	66	61	63	63	70	70	71	74	78	79	81	82	73.4	82																							
25-May	85	93	96	97	98	97	94	77	67	59	57	56	52	46	46	45	45	44	47	55	63	70	74	80	68.5	98																							
26-May	84	85	79	82	87	86	73	66	61	54	46	40	39	36	36	31	32	32	35	40	49	57	62	68	56.7	87																							
27-May	70	73	75	77	73	63	58	52	47	38	28	24	22	21	22	23	23	26	30	36	42	49	54	60	45.3	77																							
28-May	63	67	68	73	75	70	64	59	54	46	33	21	17	16	17	18	20	22	24	29	36	41	45	56	43.2	75																							
29-May	66	72	76	76	76	71	60	50	46	41	26	27	26	30	31	31	23	24	25	29	37	45	39	41	44.6	76																							
30-May	43	55	66	74	79	76	67	53	46	43	31	22	21	21	22	24	26	29	33	36	39	38	37	47	42.8	79																							
31-May	53	57	69	69	75	76	67	59	51	47	42	36	33	30	34	34	33	43	43	46	49	54	56	71	51.0	76																							
																								56.5	60.3	63.9	66.6	68.5	66.8	62.5	56.5	51.2	46.0	40.5	36.9	34.6	32.6	31.4	30.9	30.7	32.2	34.8	39.1	43.6	47.2	50.1	54.2	Diurnal Average	
																								89	93	96	97	98	97	94	82	78	73	72	69	78	80	74	72	70	70	71	74	78	79	83	82	Diurnal Maximum	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Mannix - May 2023

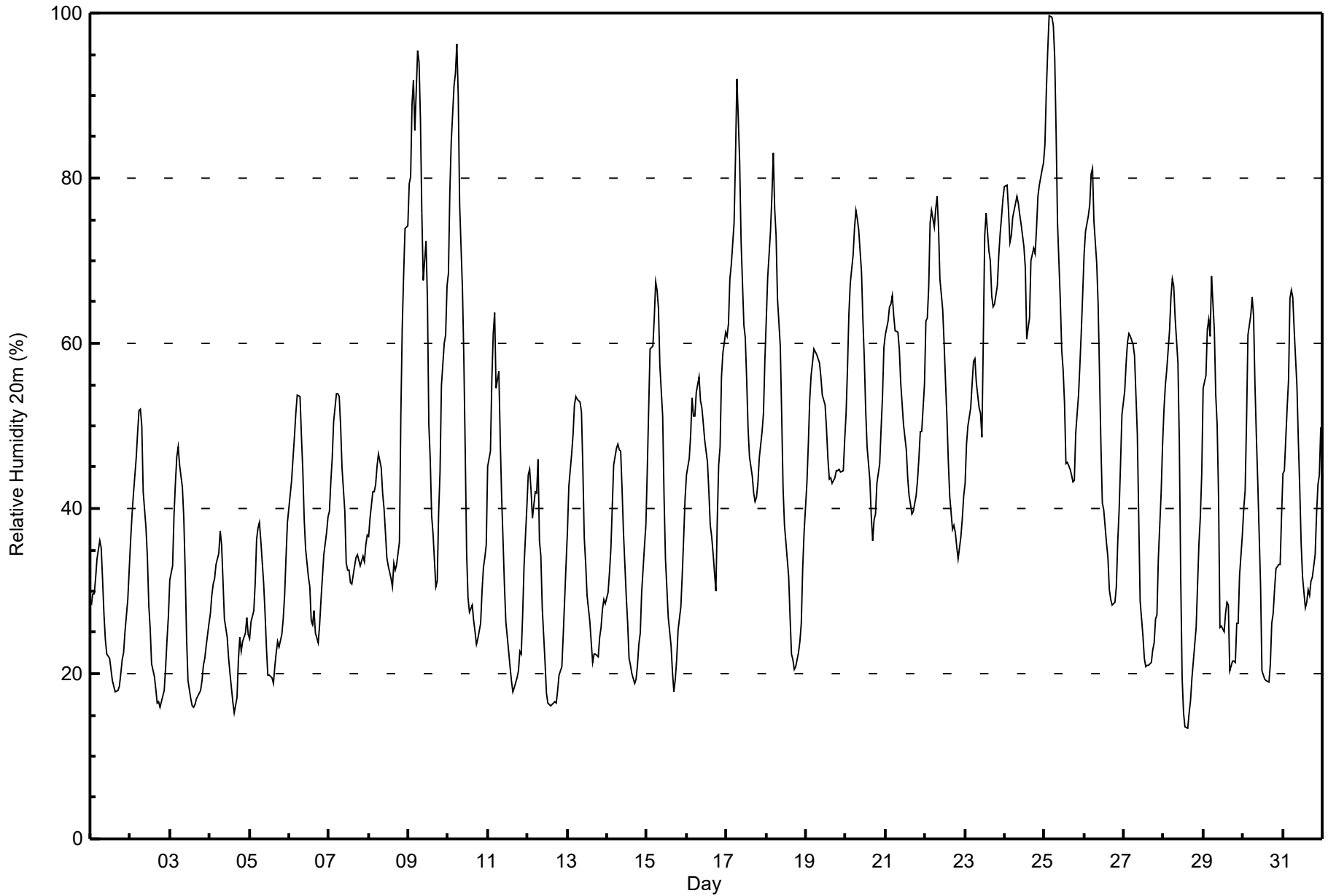
Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	44	5.91	5.91
20 - 40	265	35.62	41.53
40 - 60	237	31.85	73.39
60 - 80	157	21.10	94.49
80 - 100	41	5.51	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Maximum Value: 100 % on May 25 04:00											Maximum Daily Average: 73.7 % on May 24											Hours in Service: 744																											
Minimum Value: 13 % on May 28 15:00											Minimum Daily Average: 25.6 % on May 1											Hours of Data: 744																											
Maximum Diurnal Average: 62.5 % at hour 6											Minimum Diurnal Average: 29.2 % at hour 17											Hours of Missing Data: 0																											
Monthly Average: 44.1 %											Percentiles: P ₁ = 16 P ₁₀ = 21 Q ₁ = 29 Median = 42 Q ₃ = 57 P ₉₀ = 72 P ₉₉ = 94											Hours of Calibration: 0																											
																						Percent Operational Time: 100.0																											
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	28	30	30	31	34	36	35	31	27	24	22	22	20	19	18	18	18	18	20	22	22	25	29	32	25.6	36																							
2-May	36	39	42	46	49	52	52	50	42	38	34	28	25	21	20	18	16	17	16	17	18	21	24	27	31.2	52																							
3-May	31	33	39	43	46	47	45	43	39	32	24	19	17	16	16	17	17	18	19	21	22	23	26	28.0	47																								
4-May	27	30	31	32	33	35	37	36	31	27	24	22	20	18	17	15	17	22	24	23	24	25	27	25	25.9	37																							
5-May	24	26	28	31	36	38	38	36	31	27	23	20	20	19	19	21	23	24	23	25	27	29	34	38	27.5	38																							
6-May	42	43	46	49	52	54	54	49	45	39	35	32	31	26	26	28	25	24	26	29	32	34	37	39	37.2	54																							
7-May	40	43	46	51	54	54	53	50	45	40	33	32	33	31	31	33	34	34	34	33	34	34	36	37	39.3	54																							
8-May	37	39	42	42	43	45	47	45	42	40	37	34	33	32	30	33	33	33	36	51	62	68	74	74	43.8	74																							
9-May	79	80	89	92	86	95	94	87	76	68	72	65	50	46	39	37	30	31	40	44	55	60	61	67	64.4	95																							
10-May	69	78	84	91	93	96	90	77	67	58	47	35	29	27	28	26	25	24	24	26	30	33	34	36	51.1	96																							
11-May	45	47	56	61	64	55	57	48	41	36	31	26	23	21	19	18	18	19	20	23	22	27	33	40	35.4	64																							
12-May	44	45	42	39	42	42	46	36	34	28	21	18	16	16	16	16	17	16	18	20	21	25	29	33	28.4	46																							
13-May	37	43	47	49	52	53	53	53	52	45	37	33	29	26	24	21	22	22	22	24	26	28	29	28	35.7	53																							
14-May	30	32	35	40	45	47	48	47	47	42	37	29	26	22	21	20	19	19	21	24	25	30	35	38	32.5	48																							
15-May	45	52	59	60	63	67	66	64	57	51	41	34	30	27	23	20	18	19	22	25	28	32	37	41	41.0	67																							
16-May	44	46	49	53	51	51	54	56	53	52	50	48	46	42	38	37	35	30	39	45	47	56	59	61	47.6	61																							
17-May	61	62	68	70	75	82	92	87	82	72	62	61	56	50	46	44	42	41	41	43	46	49	52	58	60.1	92																							
18-May	63	68	73	78	83	76	73	66	60	51	42	38	36	32	27	22	22	21	21	22	24	26	33	37	45.5	83																							
19-May	43	48	53	56	58	59	59	58	58	56	54	52	50	46	44	44	43	44	45	45	45	44	45	48	49.8	59																							
20-May	52	57	64	67	71	74	76	75	74	69	63	58	52	47	43	39	36	39	39	43	45	50	54	60	56.1	76																							
21-May	61	63	64	65	66	63	62	61	59	55	53	50	47	44	42	41	39	40	42	43	46	49	49	55	52.5	66																							
22-May	63	63	67	75	76	74	76	78	74	68	64	60	55	51	46	41	38	38	37	35	34	37	39	41	55.4	78																							
23-May	43	48	50	52	55	58	58	55	52	51	49	60	73	76	71	70	66	64	65	67	71	73	75	78	61.7	78																							
24-May	79	79	76	72	73	75	77	78	77	76	74	72	69	61	62	63	70	71	71	74	78	79	81	82	73.7	82																							
25-May	84	91	95	100	99	98	95	85	75	65	59	57	53	45	46	45	44	43	43	49	54	58	61	66	67.1	100																							
26-May	71	74	75	77	80	81	75	70	65	56	48	41	40	36	34	30	29	28	29	30	36	40	45	51	51.7	81																							
27-May	54	58	60	61	61	60	59	54	49	39	29	25	22	21	21	21	21	23	24	27	27	34	42	48	39.1	61																							
28-May	52	55	57	61	66	68	67	63	58	48	31	19	15	14	13	15	17	19	22	26	31	36	39	44	39.0	68																							
29-May	55	56	62	63	61	68	62	54	50	42	26	26	25	27	29	28	20	21	22	21	26	26	32	37	39.0	68																							
30-May	40	42	51	61	63	66	63	55	49	43	31	20	20	19	19	19	21	26	27	30	33	33	33	39	37.7	66																							
31-May	44	44	52	56	65	66	66	62	55	48	42	36	32	28	29	30	29	31	32	34	39	43	44	50	44.1	66																							
																								49.1	52.0	55.9	58.8	61.1	62.5	62.2	58.3	53.7	48.0	41.8	37.8	35.2	32.5	30.9	30.0	29.2	29.7	31.0	33.6	36.4	39.5	42.7	46.4	Diurnal Average	
																								84	91	95	100	99	98	95	87	82	76	74	72	73	76	71	70	70	71	71	74	78	79	81	82	Diurnal Maximum	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity 20m (RH20m) - %
Mannix - May 2023

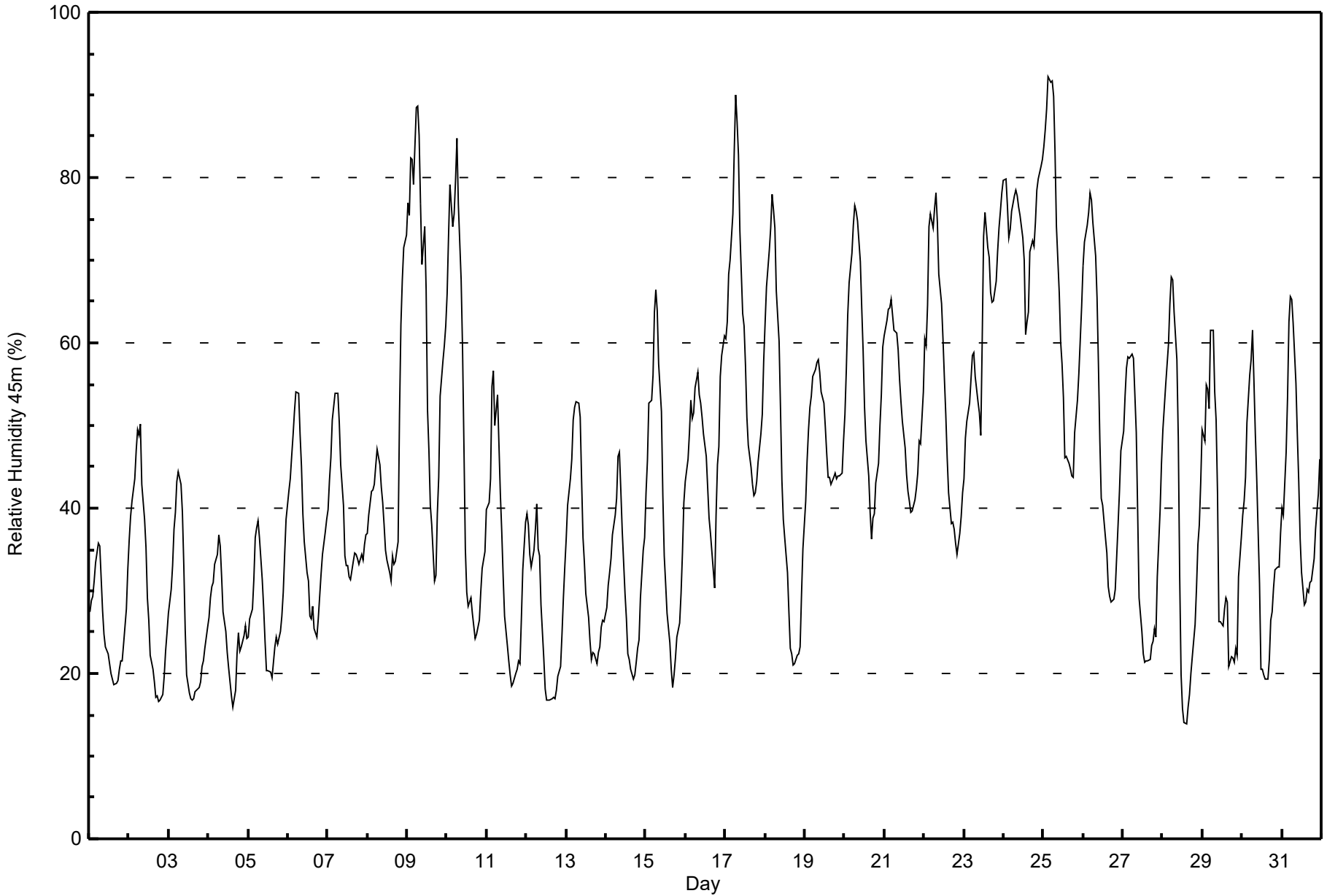
Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	59	7.93	7.93
20 - 40	292	39.25	47.18
40 - 60	231	31.05	78.23
60 - 80	133	17.88	96.10
80 - 100	29	3.90	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Maximum Value: 92 % on May 25 04:00																	Maximum Daily Average: 74.4 % on May 24																	Hours in Service: 744	
Minimum Value: 14 % on May 28 15:00																	Minimum Daily Average: 25.6 % on May 1																	Hours of Data: 744	
Maximum Diurnal Average: 61.0 % at hour 7																	Minimum Diurnal Average: 29.7 % at hour 17																	Hours of Missing Data: 0	
Monthly Average: 43.5 %																	Percentiles: P ₁ = 17 P ₁₀ = 21 Q ₁ = 29 Median = 41 Q ₃ = 56 P ₉₀ = 72 P ₉₉ = 88																	Hours of Calibration: 0	
																																		Percent Operational Time: 100.0	
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24											
1-May	28	29	29	31	33	36	35	32	28	25	23	22	21	20	19	19	19	19	20	21	22	24	28	32	25.6	36									
2-May	36	39	41	44	47	49	49	50	43	39	35	29	26	22	21	19	17	17	17	17	17	20	23	25	30.9	50									
3-May	27	30	33	37	40	43	44	43	39	33	25	20	18	17	17	17	18	18	18	19	21	22	23	26	27.0	44									
4-May	27	29	31	31	33	34	37	35	32	28	25	22	21	19	17	16	18	22	25	23	23	25	26	24	25.9	37									
5-May	24	27	28	31	36	38	38	36	31	28	24	20	20	20	20	21	23	24	24	25	27	30	34	39	27.9	39									
6-May	42	44	46	49	52	54	54	49	45	39	36	32	31	27	27	28	25	24	27	29	32	34	37	39	37.6	54									
7-May	40	43	46	51	54	54	54	50	45	40	34	33	33	32	31	34	34	34	34	33	34	34	36	37	39.6	54									
8-May	37	39	42	42	43	45	47	45	43	41	38	35	34	32	31	34	33	34	36	51	62	68	72	73	44.0	73									
9-May	77	75	82	82	79	88	89	85	77	69	74	66	52	47	40	38	31	32	39	44	53	58	60	62	62.5	89									
10-May	66	73	79	74	76	80	85	77	68	59	47	35	30	28	29	27	26	24	25	26	30	33	34	35	48.5	85									
11-May	40	41	44	55	57	50	54	48	42	37	32	27	23	21	20	19	19	20	20	22	21	27	33	38	33.6	57									
12-May	39	38	34	33	35	37	41	35	34	28	22	18	17	17	17	17	17	18	20	21	25	29	33	26.7	41										
13-May	36	40	44	46	51	52	53	53	51	43	36	33	30	27	24	22	23	22	21	23	23	26	26	26	34.6	53									
14-May	28	31	32	34	37	39	41	46	47	42	37	30	27	22	22	20	19	20	21	23	24	29	35	37	31.0	47									
15-May	42	46	53	53	56	64	66	64	57	52	41	34	31	27	24	21	18	20	22	24	26	30	34	41	39.4	66									
16-May	43	46	49	53	51	51	55	56	54	53	51	49	46	42	39	37	35	30	39	45	48	56	58	61	47.8	61									
17-May	60	63	68	70	76	83	90	87	83	74	64	62	57	51	48	45	43	42	42	43	46	49	51	58	60.6	90									
18-May	62	67	71	74	78	76	74	66	60	52	43	39	36	32	27	23	22	21	21	22	22	23	30	35	45.0	78									
19-May	41	46	50	52	54	56	57	58	58	57	54	53	50	47	44	44	43	44	44	44	44	44	44	48	48.8	58									
20-May	51	57	63	67	71	74	77	76	75	70	64	59	52	48	44	39	36	39	39	43	45	50	54	60	56.4	77									
21-May	61	63	64	64	65	63	62	61	59	56	53	51	47	44	42	41	39	40	41	42	44	48	48	54	52.2	65									
22-May	60	60	65	74	76	74	76	78	75	68	65	60	56	51	46	42	38	38	38	36	34	37	39	42	55.3	78									
23-May	43	48	51	53	56	59	59	56	53	52	49	60	73	76	71	70	66	65	65	67	71	74	76	78	62.1	78									
24-May	80	80	77	73	74	76	78	79	78	76	75	73	70	61	62	64	71	72	72	75	78	80	81	82	74.4	82									
25-May	84	86	88	92	91	92	90	83	74	66	60	58	53	46	46	45	45	44	44	49	53	56	60	64	65.5	92									
26-May	69	72	74	76	78	77	75	70	65	57	48	41	40	36	35	30	29	29	29	30	34	38	42	47	51.0	78									
27-May	49	54	57	58	58	59	58	54	49	39	29	25	22	21	22	21	22	23	24	25	24	32	40	45	38.0	59									
28-May	50	52	55	60	65	68	68	64	58	48	32	20	16	14	14	16	17	20	22	26	30	36	38	43	38.8	68									
29-May	50	48	55	54	52	62	62	54	51	42	26	26	26	28	29	29	21	22	22	21	23	22	32	36	37.2	62									
30-May	39	41	44	50	56	58	61	55	49	44	31	21	20	20	19	19	22	27	28	30	33	33	37	37	36.2	61									
31-May	40	39	47	53	63	66	65	62	55	49	43	36	32	28	29	30	30	31	31	34	37	40	42	46	42.9	66									
																	47.5 49.8 52.9 55.4 57.7 59.9 61.0 58.3 54.1 48.6 42.5 38.4 35.9 33.1 31.4 30.6 29.7 30.1 31.2 33.4 35.7 38.7 41.8 45.2																	Diurnal Average	
																	84 86 88 92 91 92 90 87 83 76 75 73 73 76 71 70 71 72 72 75 78 80 81 82																	Diurnal Maximum	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity 45m (RH45m) - %
Mannix - May 2023

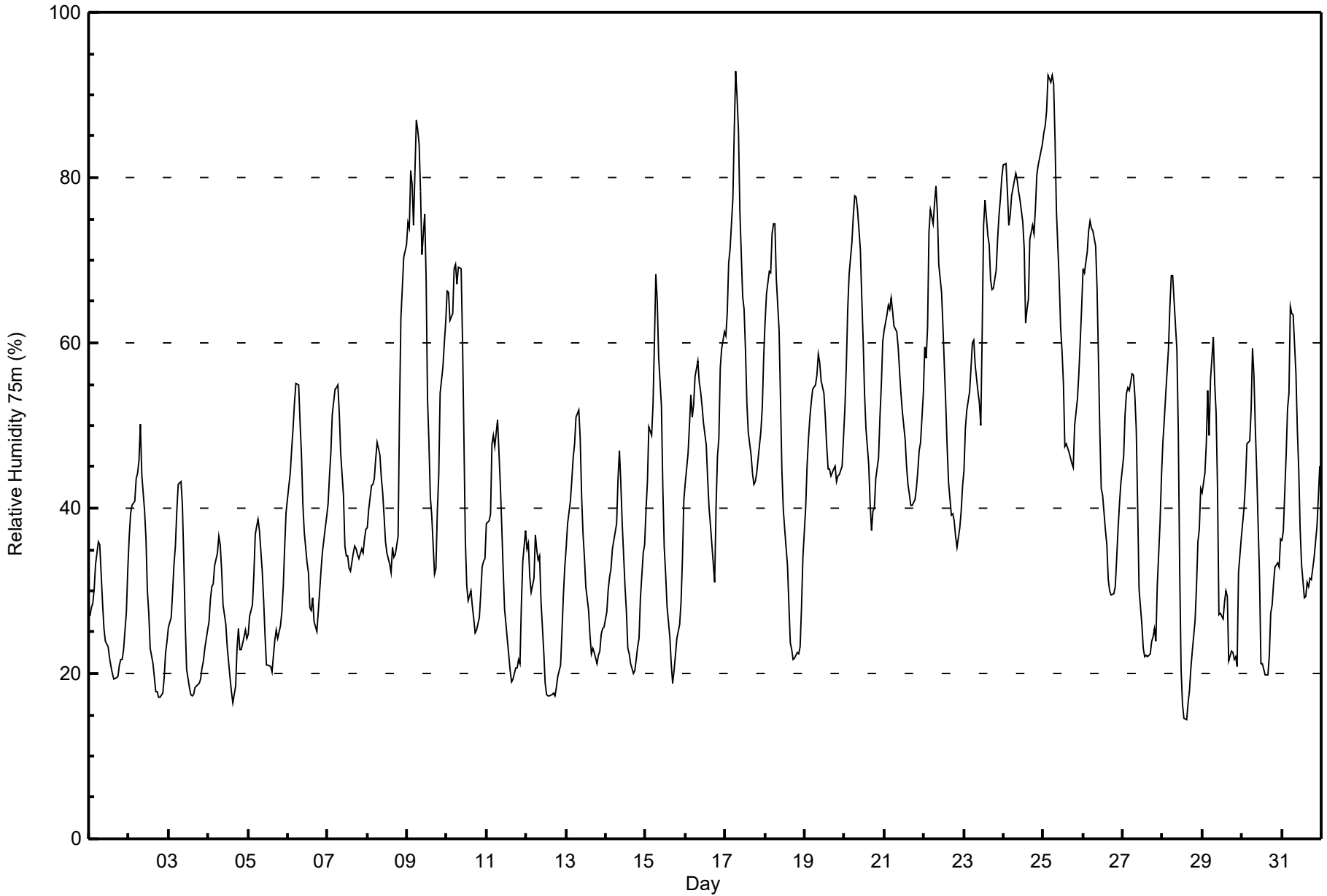
Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	50	6.72	6.72
20 - 40	313	42.07	48.79
40 - 60	232	31.18	79.97
60 - 80	129	17.34	97.31
80 - 100	20	2.69	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Maximum Value: 93 % on May 17 07:00																			Maximum Daily Average: 76.1 % on May 24																			Hours in Service: 744						
Minimum Value: 14 % on May 28 15:00																			Minimum Daily Average: 25.8 % on May 1																			Hours of Data: 744						
Maximum Diurnal Average: 60.0 % at hour 7																			Minimum Diurnal Average: 30.5 % at hour 17																			Hours of Missing Data: 0						
Monthly Average: 43.5 %																			Percentiles: P ₁ = 17 P ₁₀ = 22 Q ₁ = 29 Median = 40 Q ₃ = 55 P ₉₀ = 71 P ₉₉ = 87																			Hours of Calibration: 0						
																																						Percent Operational Time: 100.0						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																				
1-May	27	28	28	30	33	36	36	32	28	25	24	23	22	21	20	19	19	20	21	22	22	23	28	33	25.8	36																		
2-May	36	39	40	41	44	44	46	50	44	40	36	30	27	23	21	20	18	18	17	17	18	19	23	24	30.6	50																		
3-May	26	27	30	33	35	40	43	43	40	34	26	21	18	18	17	18	18	19	19	21	22	23	25	25	26.4	43																		
4-May	26	29	30	31	33	35	37	36	33	28	26	23	21	20	18	17	18	23	26	23	23	24	25	24	26.2	37																		
5-May	25	27	28	32	37	38	39	37	32	29	25	21	21	21	20	22	24	25	24	26	27	30	35	39	28.6	39																		
6-May	43	44	47	50	53	55	55	50	46	41	37	33	32	28	28	29	26	25	27	30	33	35	38	39	38.5	55																		
7-May	40	44	47	51	54	55	55	52	47	42	35	34	34	33	32	35	35	35	34	34	35	35	36	37	40.5	55																		
8-May	38	40	43	43	44	46	48	47	44	42	39	36	35	33	32	35	34	34	37	52	63	67	70	72	44.6	72																		
9-May	74	74	81	79	74	87	86	84	78	71	76	68	53	48	41	39	32	33	40	44	54	57	60	63	62.3	87																		
10-May	66	66	63	64	69	69	67	69	69	60	48	36	31	29	30	28	27	25	25	27	30	33	34	34	45.8	69																		
11-May	38	38	39	48	49	47	51	47	43	38	33	28	24	22	20	19	19	21	21	22	21	28	34	37	32.8	51																		
12-May	35	36	32	30	32	37	35	34	34	29	22	19	17	17	17	17	18	17	18	20	21	25	29	33	26.0	37																		
13-May	35	38	41	43	46	48	51	52	49	42	37	34	31	28	25	22	23	23	21	22	23	25	25	26	33.7	52																		
14-May	27	30	32	33	35	37	38	44	47	43	38	31	27	23	22	21	20	20	22	23	24	29	35	36	30.7	47																		
15-May	40	43	50	49	53	60	68	65	58	52	42	35	32	28	24	21	19	20	22	24	26	29	34	41	39.0	68																		
16-May	43	47	50	54	51	53	56	58	55	54	52	50	48	44	40	38	36	31	40	46	49	57	59	61	48.8	61																		
17-May	61	64	70	71	77	86	93	90	86	76	66	64	59	53	49	46	44	43	43	44	46	49	52	58	62.1	93																		
18-May	62	66	69	68	73	74	74	68	62	53	45	40	37	33	28	24	23	22	22	23	22	23	28	34	44.7	74																		
19-May	40	45	48	51	53	54	55	56	59	58	55	54	51	47	45	45	44	45	45	43	44	44	45	49	49.0	59																		
20-May	52	57	64	68	72	75	78	78	76	71	66	60	54	50	45	40	37	40	40	44	46	51	55	60	57.5	78																		
21-May	62	63	65	64	65	64	62	61	60	57	54	52	48	45	43	42	40	40	41	42	44	47	48	54	52.6	65																		
22-May	59	58	62	73	76	74	77	79	76	69	66	62	57	53	47	43	39	39	38	37	35	38	40	43	55.9	79																		
23-May	45	50	52	54	57	60	60	57	54	53	50	61	74	77	73	72	68	66	67	69	73	75	78	80	63.5	80																		
24-May	81	82	78	74	75	78	80	81	80	78	77	75	71	62	64	65	73	74	73	76	80	82	83	84	76.1	84																		
25-May	85	86	88	92	92	92	91	85	76	67	62	59	55	47	48	47	46	45	45	50	53	56	60	64	66.4	92																		
26-May	69	68	71	73	75	74	74	72	67	58	49	42	41	37	36	31	30	29	30	31	34	37	40	43	50.5	75																		
27-May	46	51	54	55	54	56	56	54	50	40	30	26	23	22	22	22	22	24	24	25	24	31	38	44	37.3	56																		
28-May	48	51	54	59	64	68	68	65	59	49	33	21	16	15	14	16	18	21	23	26	30	36	38	42	38.9	68																		
29-May	42	44	48	54	49	56	61	55	52	43	27	27	27	29	30	29	22	23	23	22	22	21	32	36	36.3	61																		
30-May	38	40	43	48	48	52	59	56	50	44	32	21	21	21	20	20	22	27	28	31	33	33	33	36	35.7	59																		
31-May	36	37	46	52	54	64	64	63	56	49	45	38	33	29	29	31	31	32	31	34	36	38	41	45	42.3	64																		
																			46.7	48.8	51.4	53.8	55.7	58.5	60.0	58.6	55.1	49.5	43.6	39.5	36.9	34.0	32.4	31.4	30.5	30.9	31.9	33.8	35.8	38.7	41.9	45.1	Diurnal Average	
																			85	86	88	92	92	92	93	90	86	78	77	75	74	77	73	72	73	74	73	76	80	82	83	84	Diurnal Maximum	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity 75m (RH75m) - %
Mannix - May 2023

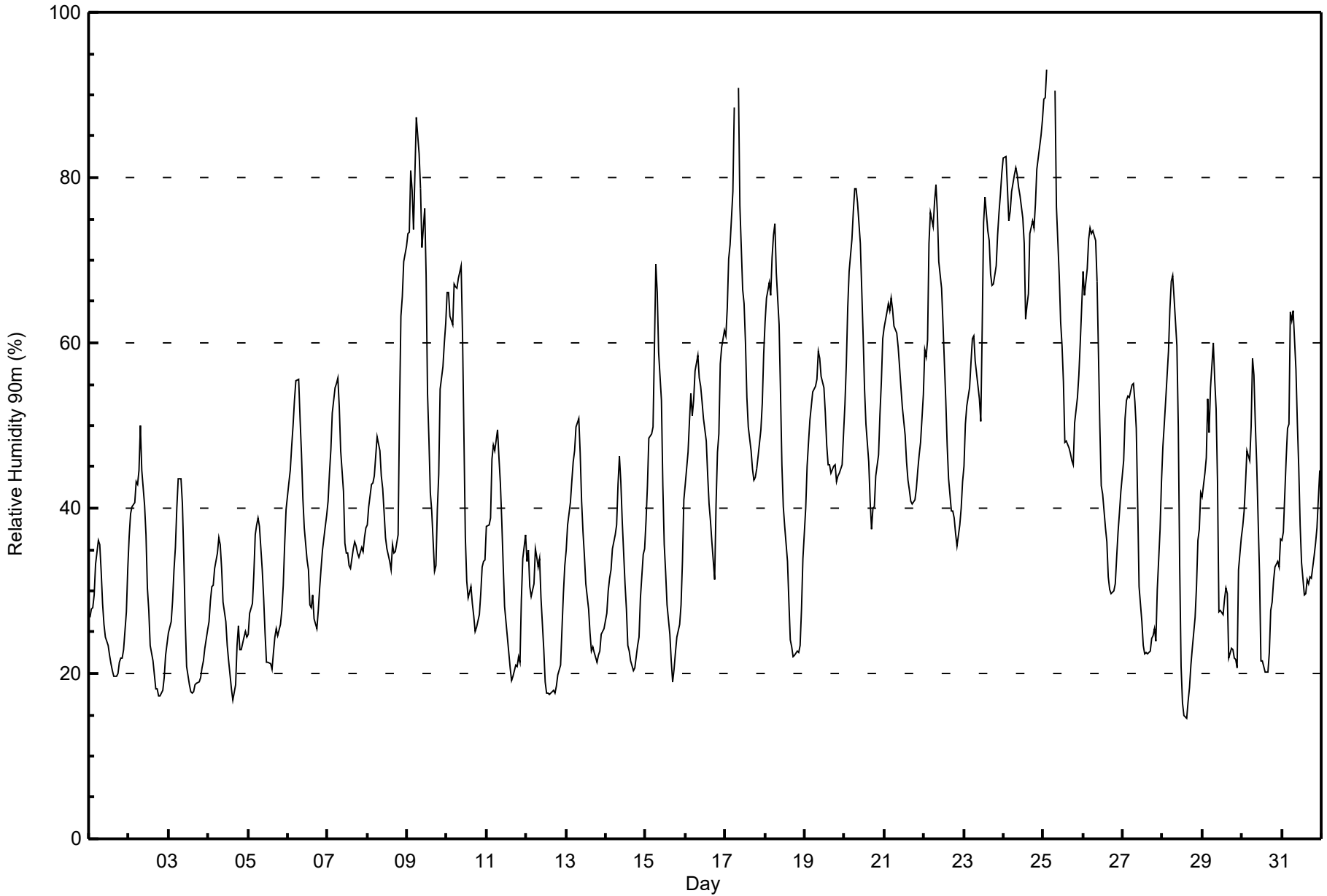
Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	42	5.65	5.65
20 - 40	320	43.01	48.66
40 - 60	232	31.18	79.84
60 - 80	127	17.07	96.91
80 - 100	23	3.09	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Maximum Value: 93 % on May 25 03:00 Maximum Daily Average: 76.9 % on May 24																		Hours in Service: 744								
Minimum Value: 15 % on May 28 15:00 Minimum Daily Average: 25.8 % on May 12																		Hours of Data: 738								
Maximum Diurnal Average: 57.9 % at hour 8 Minimum Diurnal Average: 30.9 % at hour 17																		Hours of Missing Data: 6								
Monthly Average: 43.3 % Percentiles: P ₁ = 18 P ₁₀ = 22 Q ₁ = 29 Median = 41 Q ₃ = 55 P ₉₀ = 70 P ₉₉ = 86																		Hours of Calibration: 0								
																		Percent Operational Time: 99.2								
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	27	28	28	29	33	36	36	32	28	26	24	23	22	21	20	20	20	20	21	22	22	23	28	33	25.9	36
2-May	37	39	40	41	43	43	45	50	45	40	37	30	28	23	22	20	18	18	17	17	18	20	22	24	30.7	50
3-May	25	26	29	33	35	40	44	44	41	34	26	21	19	18	18	18	19	19	19	19	21	22	23	25	26.5	44
4-May	26	29	30	31	33	35	37	36	33	29	26	23	22	20	18	17	19	23	26	23	23	24	25	24	26.3	37
5-May	25	27	28	32	37	38	39	38	33	29	25	21	21	21	21	23	24	25	25	26	28	31	36	40	28.8	40
6-May	43	45	47	50	53	55	56	51	47	41	38	34	33	28	28	29	27	25	28	30	33	35	38	39	38.8	56
7-May	41	44	47	52	55	55	56	52	47	42	36	35	35	33	33	35	36	35	35	34	35	35	36	38	40.8	56
8-May	38	40	43	43	44	46	49	47	44	42	39	36	35	34	33	36	35	35	37	52	63	66	70	72	44.9	72
9-May	73	73	81	78	74	87	85	83	79	72	76	68	54	48	42	40	32	33	40	44	54	57	60	62	62.4	87
10-May	66	66	63	62	67	67	67	68	69	61	49	36	31	29	30	28	27	25	26	27	30	33	34	34	45.6	69
11-May	38	38	39	46	48	47	50	46	43	38	33	28	24	22	21	19	20	21	21	22	21	29	34	37	32.7	50
12-May	34	35	31	29	31	35	34	33	34	29	23	19	18	18	18	18	18	19	20	21	25	30	33	25.8	35	
13-May	35	38	41	43	46	47	50	51	47	41	37	34	31	28	25	23	23	23	21	22	23	25	25	25	33.4	51
14-May	27	30	32	33	35	37	38	43	46	43	38	31	28	23	23	21	20	21	22	23	24	29	34	35	30.7	46
15-May	38	43	49	49	50	60	69	66	59	53	43	36	32	28	25	21	19	21	22	24	26	28	34	41	39.0	69
16-May	43	47	50	54	51	53	57	58	56	55	53	51	48	44	40	38	36	31	41	47	49	57	60	62	49.2	62
17-May	61	64	70	72	78	89	OR	OR	91	77	66	65	60	53	50	47	45	43	44	45	46	50	53	59	60.3	91
18-May	63	65	67	66	70	73	74	69	62	54	45	40	38	33	29	24	23	22	22	23	23	23	28	34	44.6	74
19-May	40	45	48	51	52	54	55	56	59	58	56	55	52	48	45	45	44	45	45	43	44	44	45	49	49.1	59
20-May	52	58	64	69	73	76	79	79	77	72	66	61	54	50	46	41	38	40	40	44	46	51	55	60	58.0	79
21-May	62	64	65	64	65	64	62	61	60	57	54	52	49	46	43	42	41	41	41	42	45	46	48	54	52.8	65
22-May	59	58	60	72	76	74	77	79	76	70	67	62	58	53	48	44	40	40	39	37	36	38	40	43	56.0	79
23-May	45	50	52	55	58	61	61	58	55	53	50	62	75	78	73	72	68	67	67	69	73	76	78	81	64.0	81
24-May	82	82	79	75	76	78	80	81	80	79	78	75	72	63	65	66	73	75	74	77	81	82	85	87	76.9	87
25-May	90	90	93	OR	OR	OR	OR	91	77	68	62	60	55	48	48	47	47	46	45	50	53	56	60	64	62.5	93
26-May	69	66	69	73	74	73	74	72	67	59	50	43	42	38	36	32	30	30	30	31	34	37	39	42	50.3	74
27-May	46	51	53	54	53	55	55	53	50	41	30	26	23	22	23	22	23	24	25	25	24	30	37	43	37.0	55
28-May	47	50	53	59	64	68	68	65	60	50	33	21	17	15	15	17	18	21	23	27	31	36	37	42	39.0	68
29-May	41	44	46	53	49	55	60	56	52	43	28	28	27	29	30	30	22	23	23	22	22	21	32	36	36.3	60
30-May	38	40	43	47	46	50	58	56	50	45	32	21	21	21	20	20	23	28	29	31	33	34	33	36	35.6	58
31-May	36	37	46	50	50	64	63	64	57	50	45	38	33	29	30	31	31	32	32	34	36	38	41	45	42.1	64
																								Diurnal Average		
																								Diurnal Maximum		
																								46.7 48.8 51.2 52.1 53.9 57.1 57.7 57.9 55.5 50.1 44.1 39.9 37.3 34.4 32.7 31.8 30.9 31.2 32.1 34.0 36.0 38.7 41.9 45.1		
																								90 90 93 78 78 89 85 91 91 79 78 75 75 78 73 72 73 75 74 77 81 82 85 87		
OR - Out of Range																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity 90m (RH90m) - %
Mannix - May 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	39	5.28	5.28
20 - 40	317	42.95	48.24
40 - 60	239	32.38	80.62
60 - 80	123	16.67	97.29
80 - 100	20	2.71	100.00

Total Number of Valid Hours: 738

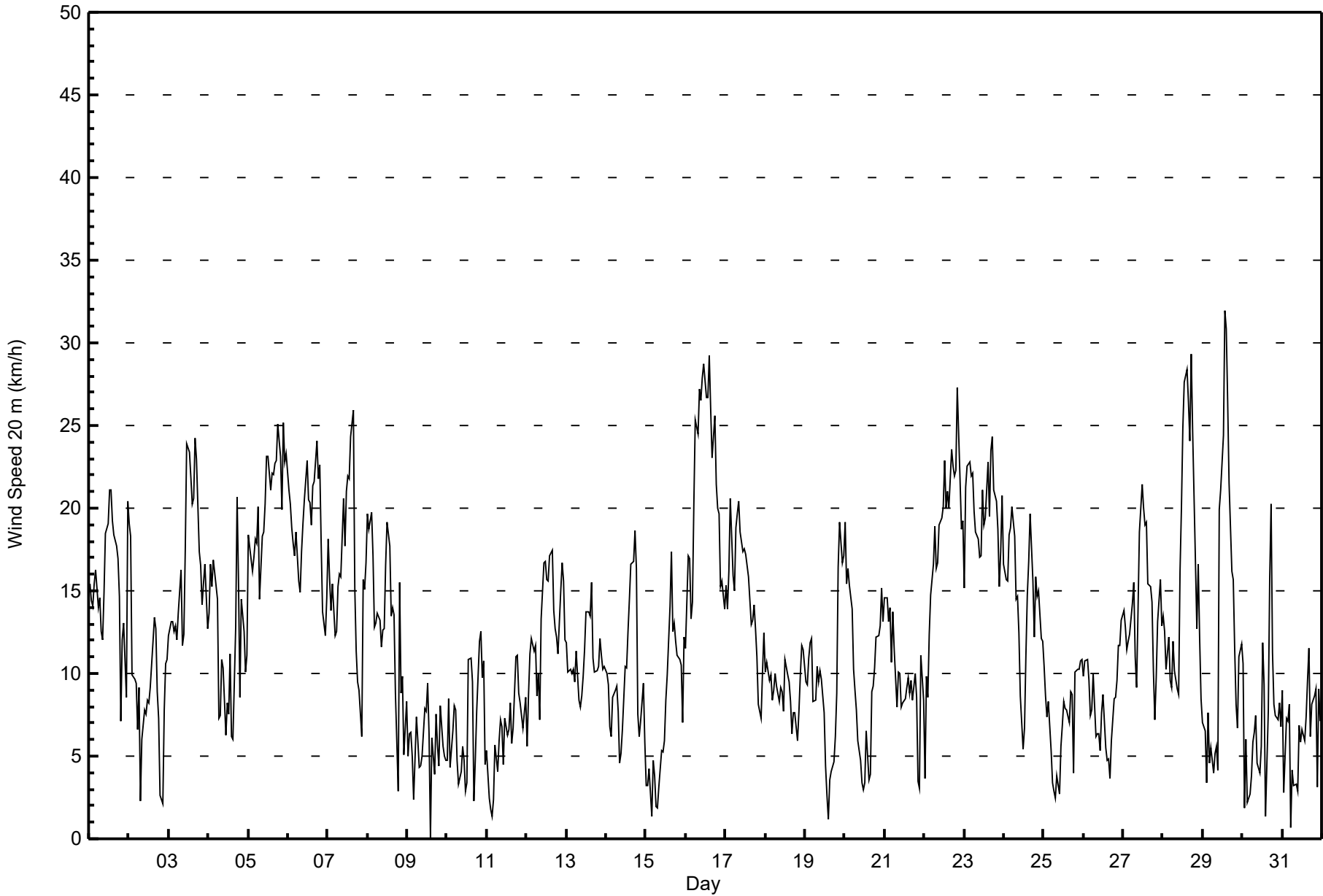
Total Number of Hours: 744



Maximum Speed: 32 km/h on May 29 14:00 Minimum Speed Value: 0 km/h on May 9 15:00 Maximum Diurnal Speed Average: 6.9 km/h at hour 13 Monthly Average Velocity: 5.1 km/h 147.3 deg		Maximum Daily Speed Average: 20.4 km/h on May 5 Minimum Daily Speed Average: 1.1 km/h on May 30 Minimum Diurnal Speed Average: 3.6 km/h at hour 20 Percentiles: $P_1 = 2$ $P_{10} = 5$ $Q_1 = 8$ Median = 11 $Q_3 = 17$ $P_{90} = 21$ $P_{99} = 27$		Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Percent Operational Time: 100.0																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SE15	SE14	SE14	SE15	SE16	SE14	SE15	SE13	SE12	SE15	SSE18	SSE19	SSE21	SSW21	S19	S18	S18	SSW17	SSW15	SW7	SSE12	SSE13	W9	NNW20	SSE11.8	SSE21
2-May	NNW19	NNW18	NW10	WNW10	WNW9	NW7	W9	WSW2	WNW6	NW8	NW8	W8	NW8	WNW9	NW12	NW13	NW13	WNW9	NNW7	W3	S2	SE8	SSE11	SSE11	NW6.1	NNW19
3-May	SSE12	SE13	SE13	SE13	SSE13	SSE12	SE14	SE16	SE12	SSE12	SSW17	S24	S23	S22	S20	SSE21	S24	S23	S17	SSE17	SSE14	SE15	SSE17	SE13	SSE16.0	S24
4-May	SE14	SE17	SE15	SE17	SE16	SE14	SSE7	SE7	SE11	SE10	ESE6	SE8	ESE8	SE11	ESE6	NE6	N13	NNE21	N16	ENE9	NE15	NE13	NE10	ESE11	ESE7.6	NNE21
5-May	SE18	SE18	SE16	SE17	SE18	SE18	SE20	SE14	SE18	SE19	SSE20	SE23	SE23	ESE21	ESE22	ESE22	SE23	SE23	SE25	SE23	SE20	SE25	SE23	SE23	SE20.4	SE25
6-May	SE21	SE20	SE19	SE18	SE17	SE19	SE16	SE15	SE17	SE19	SE21	SE23	SE20	SE20	ESE19	SE21	SE22	SE24	SE22	SE23	SE18	SE14	SE12	SE15	SE18.8	SE24
7-May	SE18	SE16	SE14	SE15	SE12	SE13	SE15	SE16	SE16	SE21	SE18	SE21	SE22	SE22	SE24	SSE26	SSE15	SSE11	ESE10	E9	ESE6	SE16	SSE15	SE17	SE15.7	SSE26
8-May	SE20	SE19	SE20	SE17	SSE13	SE13	SE14	SE13	SE12	SE13	SE13	SSE17	SSE19	SSE18	S13	S14	SSE14	SSE9	SSW3	W16	WSW9	WSW10	S5	SSE8	SSE10.8	SE20
9-May	SSE5	SSE6	WSW6	W5	SE2	S7	SSE6	S4	S4	SSW5	S8	S8	SSE9	SE6	SW0	NW6	NW4	NNW8	NNE6	SSW4	SSW8	SW6	S5	WSW5	SSW3.1	SSE9
10-May	SSE5	SSE8	S4	S7	SSE8	SSE8	SSE5	SE3	SE4	SE6	SE5	E3	NNW3	NW11	NNW11	W10	NE2	E5	NE8	NNE12	NNE13	NE10	ENE11	ENE4	E1.8	NNE13
11-May	N5	WSW2	NNW2	S1	SSE2	SSE6	SSE4	SE6	SE7	SE7	E5	ENE7	ESE6	SE7	SSE8	SE6	SE7	E11	SE11	S9	S8	S7	S7	SE9	SE4.8	SE11
12-May	S6	SSE9	SSE11	SE12	SSE11	SSE12	SSE9	SSE10	S7	SSE13	SSE17	SSE17	SSE16	SE16	SE17	SSE17	SSE14	SSE13	SSE12	SE11	SE15	SE17	SE16	SE12	SSE12.7	SSE17
13-May	SE12	SE10	SE10	SE10	SE10	SSE10	SSE11	SE8	SE8	S9	S10	SSW11	SSW14	S14	SSW13	SSW16	SSW11	S10	S10	SSE10	SSE12	S11	SSW10	SSW10	S10.1	SSW16
14-May	SSW10	SSW9	S7	SSE6	SSE9	SSE9	SSE9	SSE8	SE5	ESE5	SE7	S10	SSW10	SW13	SW15	SW17	WSW17	SW19	SW16	WSW8	WNW6	NW7	NNE9	NNE6	SSW6.3	SW19
15-May	SE3	WSW3	N4	S1	W5	SSW4	S2	SSW2	SSE3	SE5	SE5	ESE6	E8	E10	SE14	SSE17	S13	S13	SSW12	SSW11	S11	S10	SSW7	NW12	S4.9	SE17
16-May	NW12	NNW17	N17	N13	NNW14	NW20	NW25	NW24	NW27	NW26	NW28	NW29	NW27	NW27	NW29	NW26	NW23	NW26	N21	N20	N20	NNE15	N16	NNW14	NNW20.2	NW29
17-May	NNW15	NNW14	NNW16	NNW21	N16	NNE15	NE19	NNE20	NNE20	NNE19	N17	NNE18	NNE17	NE17	NNE16	NE13	NNE13	NNE14	NNE13	NNE11	NNE8	ENE7	SE10	SE12	NNE12.9	NNW21
18-May	SSE10	SSE11	SSE10	SSE10	SSE8	SSE9	SSE10	SSE9	SE8	SE9	SSE9	SSE8	SSE11	SSE10	SSE9	SSW8	S6	SSW8	S8	SSW6	S8	S10	SSW12	SSW11	SSE8.5	SSW12
19-May	S9	S9	SSE11	SSE12	SSE12	SSE8	SSE8	SSE10	SE9	SE10	SE10	SSE8	SE4	SE3	E1	N4	NW4	N5	NNW6	NNW9	N16	N19	N17	N17	ESE2.1	N19
20-May	N19	N15	N16	N15	N14	N10	N9	NNE8	N6	N5	NNE3	NNE3	ENE3	ENE7	ESE4	E4	SE9	SE9	SE10	SE12	SE12	SE13	SE15	SE13	ENE4.3	N19
21-May	SE15	SE15	SE13	SE14	SE11	SE14	SE11	SE8	SSE10	SSE10	SSE8	SSE8	SSE9	SSE9	SSE10	SSE9	SE10	SSE8	SE10	SE9	ESE4	ESE3	SE11	SE8	SE9.7	SE15
22-May	NNW4	NE10	N9	N12	N15	N17	N19	N16	N17	N19	N19	NNE20	NNE23	NNE20	NNE21	NNE20	NE24	NE23	NE22	ENE22	ENE27	ENE22	NE19	ENE19	NNE16.4	ENE27
23-May	E15	E21	E23	E23	E22	E22	E20	ESE19	ESE18	ESE17	ESE17	ESE21	ESE19	SE19	SE23	SE19	SE23	SE24	SE21	SE20	SSE19	SE15	SE17	SE21	ESE18.9	SE24
24-May	SE17	SE16	SE16	SE18	SE19	SE20	SE18	SE14	SSE15	SSE12	S9	SSE5	SSE7	SW11	WSW15	WSW17	W20	WSW16	WSW12	W16	W15	W15	W12	W12	SSW7.3	SE20
25-May	W10	WNW9	WNW7	WSW8	WNW5	WSW3	WSW3	WSW2	W4	W3	ENE6	ENE7	E8	NE8	ENE8	ENE7	ENE9	E9	ENE4	SSE10	SSE10	SE10	SSE11	SSE11	SE1.6	SSE11
26-May	SSE10	SSE11	SSE11	SSE10	SSE7	SSE8	SSE10	SSE6	SE6	SE6	SE5	SE8	ESE9	SE6	NNE5	NW5	SE4	SSE6	SSE8	SSE9	SSE10	SSE12	SSE12	SSE13	SSE7.2	SSE13
27-May	SSE14	SSE13	SSE11	SSE12	SSE12	SSE14	SSE16	SSE11	SE9	SSE14	S19	S21	SSE20	SSE19	SSE19	S15	S15	S14	SSW10	S7	S10	SSE13	SSE16	SSE13	SSE13.8	S21
28-May	SSE13	SSE13	SSE10	SSE12	SSE10	SSE9	SSE12	SE10	SE9	SE9	SW16	SW20	SW25	SW28	WSW28	WSW26	WSW24	WSW29	WSW25	W17	W13	WNW17	WNW12	W8	SW11.5	WSW29
29-May	W7	WNW6	W3	S8	S5	SSE5	SW4	WSW5	SSE6	SSE4	WSW20	WSW21	WSW24	WSW32	WSW31	SW26	WSW22	WSW16	SW16	SW12	SSW8	W7	N11	NE12	WSW10.2	WSW32
30-May	NE11	NE2	W6	NW2	SSE3	SSW4	S6	SSE6	SE7	SE5	SE4	SE6	ENE12	ENE9	SSW1	WNW8	WNW16	WNW20	NW11	N8	N7	ENE7	NE8	WSW7	N1.1	WNW20
31-May	WNW9	WSW3	SW7	W7	W8	WNW1	SW4	SSE3	WSW3	E3	E7	E6	ESE7	SE6	SSW7	S10	SSE12	SSE6	SSE8	SSE9	SSE9	SW3	WNW9	WSW7	S3.2	SSE12
SE5.1 SE5.6 SE5.2 SE5.9 SE5.7 SE6.4 SE6.0 SE5.6 SE5.4 SE6.1 SSE5.5 SSE6.6 SSE6.9 SSE5.8 S5.4 S5.5 S4.8 S4.0 SSE3.8 SSE3.6 SE4.5 SE4.8 SE4.7 SE4.6																								Diurnal Average		
SE21 E21 E23 E23 E22 E22 NW25 NW24 NW27 NW26 NW28 NW29 NW27 WSW32 WSW31 WSW26 S24 WSW29 SE25 SE23 ENE27 SE25 SE23 SE23																								Diurnal Maximum		
All monthly, daily, and diurnal averages have been calculated using vector methods																										



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0														Hours in Service: 744											
Maximum Value: 10 km/h on May 29 16:00														Hours of Data: 744											
Minimum Value: 1 km/h on May 15 08:00														Hours of Missing Data: 0											
Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 3 Median = 4 Q ₃ = 5 P ₉₀ = 7 P ₉₉ = 9														Hours of Calibration: 0											
														Percent Operational Time: 100.0											
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	4	3	3	3	4	4	4	3	4	5	6	6	6	8	8	7	6	6	5	2	2	1	5	5	8
2-May	5	6	2	2	2	3	2	2	3	3	3	4	4	5	5	5	5	3	3	1	2	3	1	1	6
3-May	2	3	3	3	2	3	4	4	3	4	7	8	8	7	8	8	7	6	5	3	3	4	3	3	8
4-May	3	4	4	4	4	5	3	3	4	4	3	4	4	4	3	4	4	5	5	4	5	4	2	5	5
5-May	5	5	5	5	5	5	5	5	6	5	6	7	7	7	8	7	7	8	8	7	6	7	7	7	8
6-May	5	6	6	5	6	5	5	5	5	7	7	7	7	7	6	7	7	7	6	7	5	4	4	5	7
7-May	5	5	4	4	4	5	5	5	5	6	7	7	7	7	7	7	4	4	3	2	3	5	4	5	7
8-May	6	5	6	6	4	4	5	4	4	4	5	6	5	6	6	6	5	3	5	4	3	3	1	3	6
9-May	1	1	2	2	1	2	2	2	3	3	3	3	4	3	3	4	3	3	2	4	2	2	2	3	4
10-May	2	3	2	1	1	2	2	2	2	2	2	2	3	6	6	4	4	3	5	4	3	3	3	3	6
11-May	2	2	2	1	3	4	2	3	3	3	3	3	4	5	4	4	4	4	4	2	2	1	1	3	5
12-May	1	2	1	2	2	2	3	4	4	5	6	7	7	6	6	6	5	4	4	3	5	5	5	4	7
13-May	3	3	2	3	3	3	4	2	2	4	4	5	5	5	6	6	5	4	3	2	2	2	2	2	6
14-May	2	2	3	3	3	3	3	3	2	2	2	5	5	5	6	6	6	6	5	3	3	4	3	2	6
15-May	2	3	1	2	2	2	1	1	1	2	2	3	3	3	7	6	6	6	4	3	2	3	4	4	7
16-May	4	6	5	5	6	7	8	8	8	9	9	9	8	9	9	8	8	9	7	7	7	6	7	5	9
17-May	5	5	6	7	6	6	6	6	6	6	6	6	6	6	5	5	5	4	4	3	2	2	5	4	7
18-May	3	3	2	2	2	3	4	4	3	4	4	4	5	5	5	5	4	4	4	2	1	2	3	3	5
19-May	2	2	2	2	3	3	3	3	4	3	3	3	2	2	1	2	2	2	2	3	6	6	5	6	6
20-May	6	6	6	5	5	5	3	3	2	2	2	2	3	3	3	2	3	4	3	4	4	4	4	4	6
21-May	4	4	4	4	4	4	5	3	3	3	3	3	4	4	4	4	3	3	3	2	3	2	3	4	5
22-May	3	2	2	4	4	5	7	5	5	5	6	6	6	6	6	6	7	7	6	6	6	6	5	6	7
23-May	5	5	4	5	5	6	5	5	5	6	7	8	7	7	8	7	9	8	7	7	6	6	6	7	9
24-May	6	5	6	6	6	7	6	5	5	5	3	3	4	5	5	5	5	5	3	3	3	3	3	3	7
25-May	2	2	2	1	2	2	1	1	2	2	3	4	3	3	3	3	3	3	2	3	3	2	3	3	4
26-May	3	3	3	3	2	2	3	3	3	3	3	4	5	4	3	3	3	3	3	2	2	2	2	3	5
27-May	3	3	2	3	3	4	4	4	3	6	8	8	8	8	7	7	6	6	5	2	2	2	3	3	8
28-May	3	3	3	3	3	3	4	4	4	5	7	8	9	8	8	8	7	8	7	5	4	5	4	2	9
29-May	1	2	1	1	2	2	2	2	3	4	7	7	8	9	10	10	7	5	5	4	2	2	5	3	10
30-May	3	3	1	2	1	1	3	3	3	2	3	4	3	4	4	5	8	7	5	3	3	3	3	3	8
31-May	2	3	2	2	2	1	3	2	2	2	3	3	4	3	3	5	4	2	2	3	2	2	5	4	5
														Diurnal Maximum											





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed 20 m (WS20m) - km/h
Mannix - May 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	94	12.63	12.63
6 - 11	282	37.90	50.54
12 - 19	260	34.95	85.48
20 - 28	103	13.84	99.33
29 - 38	5	0.67	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Wind Speed 20 m (WS20m) - km/h
Mannix - May 2023

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	5	3	2	3	6	4	14	11	10	7	4	10	6	2	4	3	94
6 - 11	7	6	8	12	8	10	51	84	31	17	4	7	11	13	9	4	282
12 - 19	24	12	5	3	1	7	93	56	12	9	8	6	8	3	5	8	260
20 - 28	3	8	3	3	6	4	36	5	7	1	3	9	1	1	11	2	103
29 - 38	0	0	0	0	0	0	0	0	0	0	0	3	0	0	2	0	5
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	39	29	18	21	21	25	194	156	60	34	19	35	26	19	31	17	744

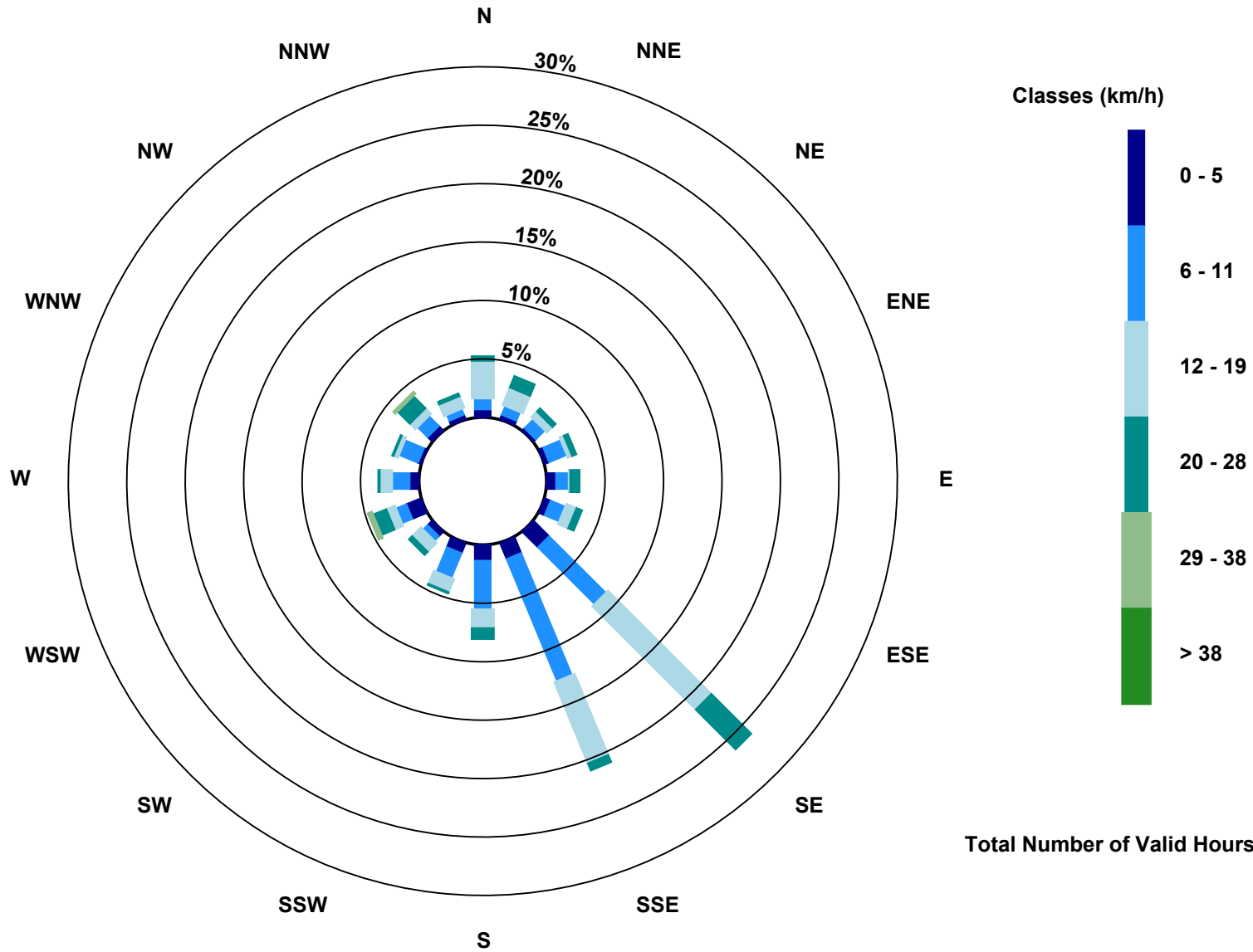
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed 20 m (WS20m) - km/h
Mannix





Maximum Speed: 40 km/h on May 16 15:00	Maximum Daily Speed Average: 29.1 km/h on May 16	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 9 15:00	Minimum Daily Speed Average: 1.6 km/h on May 25	Hours of Data: 744
Maximum Diurnal Speed Average: 9.2 km/h at hour 6	Minimum Diurnal Speed Average: 5.3 km/h at hour 20	Hours of Missing Data: 0
Monthly Average Velocity: 6.9 km/h 144.3 deg	Percentiles: $P_1 = 2$ $P_{10} = 6$ $Q_1 = 11$ Median = 17 $Q_3 = 23$ $P_{90} = 27$ $P_{99} = 37$	Percent Operational Time: 100.0

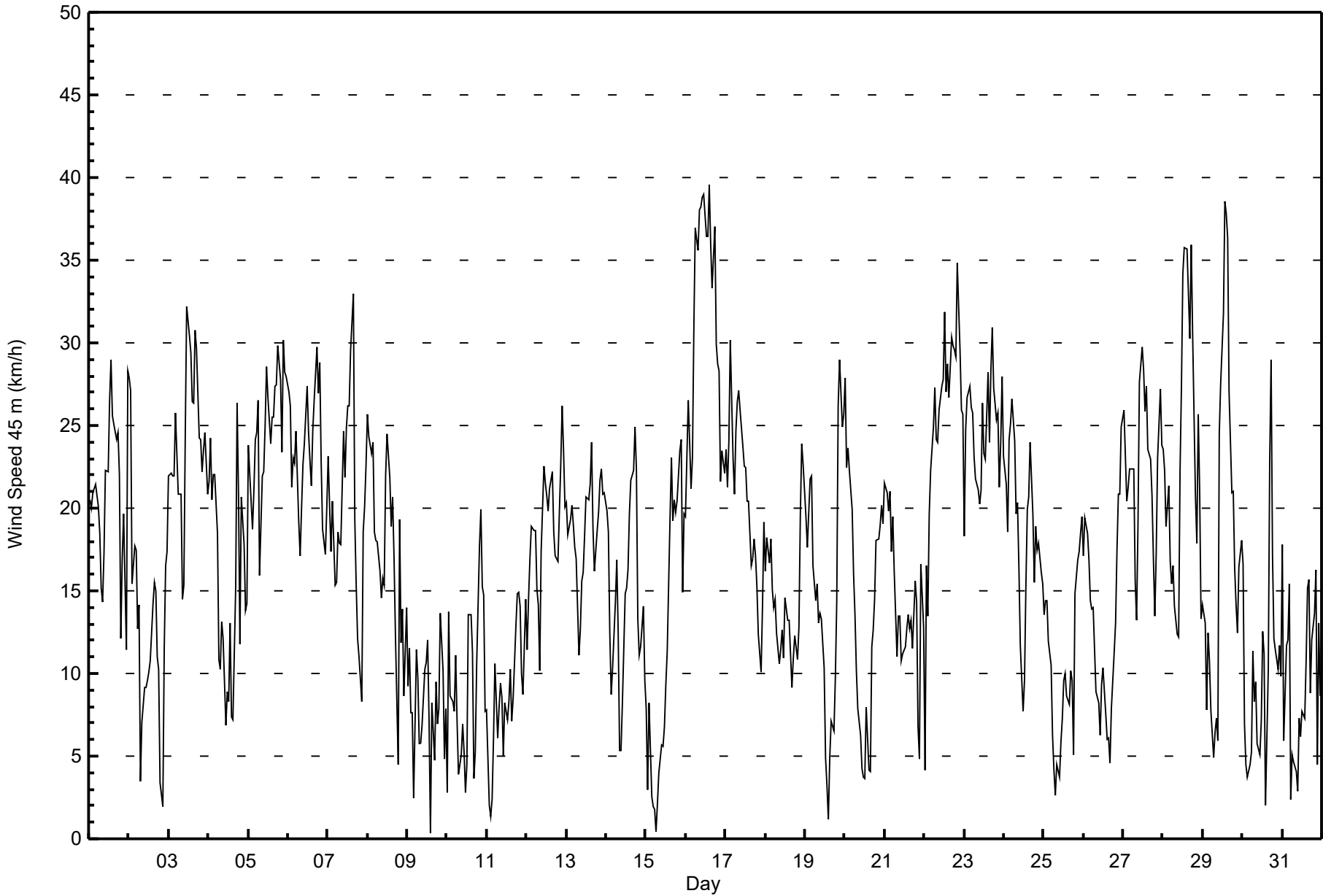
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SE21	SE20	SE21	SE21	SE21	SE20	SE18	SE15	SE14	SE17	SSE22	SE22	SSE27	S29	S26	S25	S24	SSW25	SSW22	SW12	S17	SSE20	WSW11	NNW28	SSE15.7	S29
2-May	NNW28	NNW27	NW15	WNW18	WNW17	NW13	W14	WSW3	WNW7	NW9	NW9	W10	NW10	W11	WNW14	WNW16	WNW15	WNW11	NNW10	WNW3	SSE2	SE12	SE17	SE17	NW8.3	NNW28
3-May	SSE22	SE22	SE22	SE22	SE26	SSE23	SE21	SE21	SE14	SSE15	S24	SSE32	SSE30	S29	SSE26	SSE26	SSE31	SSE30	SSE24	SSE24	SE22	SE23	SSE25	SE21	SSE23.4	SSE32
4-May	SE22	SE24	SE21	SE22	SE22	SE19	SSE11	SE10	SE13	SE12	ESE7	ESE9	ESE8	SE13	ESE7	NE7	N15	N26	N21	ENE12	NE21	NE18	NE14	ESE14	E10.2	N36
5-May	SE24	SE22	ESE19	SE21	SE24	SE25	SE27	ESE16	SE22	SE22	SE25	SE29	SE27	ESE24	ESE26	ESE26	ESE27	ESE27	SE30	SE28	SE23	SE30	SE28	SE28	SE24.8	SE30
6-May	SE27	SE26	ESE21	SE23	SE23	SE25	SE19	SE17	SE20	SE23	SE24	SE27	ESE25	ESE23	ESE21	SE25	SE27	SE30	SE27	SE29	SE23	SE19	SE17	SE20	SE23.2	SE30
7-May	SE23	SE20	SE17	SE20	SE15	ESE16	SE19	SE18	SE18	SE25	SE22	SE25	SE26	SE26	SE30	SSE33	SSE19	SSE15	ESE12	E11	ESE8	SE19	SE20	SE23	SE19.5	SSE33
8-May	SE26	SE24	SE23	SE24	SE19	SE18	SE18	SE16	SE15	SE16	SE15	SSE22	SSE24	SSE22	S19	S21	SSE17	SSE12	SSW5	W19	WSW12	WSW14	SSW9	SSE14	SSE14.3	SE26
9-May	SSE9	SSE12	SW8	WSW8	SE2	SSE11	SSE10	S6	S6	S7	S10	S11	SSE12	ESE7	SW0	NW8	NW5	NNW10	NNE7	SSW8	SSW14	SW10	SSW5	WSW8	S4.7	SSW14
10-May	S3	SSE14	S9	S8	S8	S11	SSE7	SE4	SE5	SE7	SE5	E3	NNW4	NW14	WNW14	W11	NNE4	E5	NE11	NNE18	NNE20	NE15	ENE15	ENE8	ENE2.0	NNE20
11-May	NNE8	S2	N1	ESE2	SE6	SE11	SE6	SE8	SE9	SE9	E5	ENE8	ESE7	SE8	SE10	SE7	SE8	E13	SE15	S15	S14	SSW10	S9	SE15	SE6.8	S15
12-May	S11	SSE14	SE17	SE19	SE19	SE19	SE15	SE14	SSE10	SSE17	SSE23	SSE22	SE21	SE20	SE21	SE22	SE19	SSE17	SSE17	SE17	SE23	SE26	SE23	SE20	SE18.3	SE26
13-May	SE20	SE18	SE19	SE20	SE19	SSE18	SSE17	SE11	SE13	S16	S16	SSW18	S21	S21	SSW21	S24	S19	S16	S19	SSE20	SSE22	S22	SSW21	SSW21	S17.6	S24
14-May	SSW20	SSW19	SSW12	S9	SSE10	SSE14	S17	SSE12	SE5	ESE5	SE8	S15	S15	SW16	SW20	SW22	SW22	SW25	SW22	WSW13	WNW11	NNW12	NNE14	NNE10	SSW9.8	SW25
15-May	ESE8	SW3	NNE8	ESE3	WSW2	SW2	SSE0	S2	SSE4	SE6	SE6	ESE7	E9	E11	SE19	SSE23	S19	S20	SSW20	SSW20	S23	S24	SSW15	NW20	SSE7.5	S24
16-May	NW20	NNW27	N24	N21	NW23	NW31	NW37	NW36	NW38	NW38	NW39	WNW39	WNW36	NW36	NW40	WNW36	NW33	NW37	N30	N29	N28	N22	NNW23	NNW22	NW29.1	NW40
17-May	NNW24	NNW21	NNW24	NNW30	N23	NNE21	NNE25	N26	N27	NNE26	N24	N23	NNE22	NNE20	NNE20	NNE16	NNE17	NNE18	NNE17	NNE15	NNE12	ENE10	ESE14	SE19	NNE17.6	NNW30
18-May	SE16	SSE18	SSE17	SSE18	SSE15	SSE14	SSE14	SSE12	SE11	SE11	SSE13	SSE11	SE15	SE13	SSE13	SSW11	S9	SSW11	S12	SSW11	SSW13	S20	SSW24	SSW23	SSE13.4	SSW24
19-May	S19	S18	S20	SSE22	SSE22	SSE17	SSE14	SE15	SE13	SE14	SE13	SE10	SE5	SE3	E1	NNW5	NW7	NNW7	NNW10	NNW14	N26	N29	N25	N26	SE3.0	N29
20-May	N28	N22	N24	N22	N20	N16	N14	NNE10	N8	N6	N4	N4	ENE4	ENE8	ESE4	E4	SE12	SE13	SE14	SE18	SE18	SE19	SE20	SE19	NE6.3	N28
21-May	SE22	SE21	SE20	SE21	SE17	SE19	SE16	SE11	SE13	SSE13	SSE11	SSE11	SE12	SSE13	SSE14	SSE13	SE13	SE12	SE16	SE14	ESE7	E5	SE17	SE13	SE14.0	SE22
22-May	N4	NE17	N13	N20	N22	N25	N27	N24	N24	N26	N27	N28	N32	NNE27	NNE29	NNE27	NE30	NE30	NE30	NE29	ENE35	ENE29	NE26	ENE26	NNE23.2	ENE35
23-May	E18	E25	E27	E27	E26	E26	E23	E22	ESE21	ESE20	ESE21	ESE26	ESE23	ESE23	ESE28	ESE24	ESE28	SE31	SE27	SE25	SE26	SE21	SE24	SE28	ESE23.4	SE31
24-May	SE23	SE21	ESE19	SE24	SE25	SE27	SE24	SE20	SE20	SE16	SSE12	ESE8	SSE10	SW15	SW20	WSW21	W24	WSW20	WSW15	W19	W17	W18	W16	W15	S9.5	SE27
25-May	W14	W14	WNW14	W12	WNW10	WNW6	W4	WSW3	WSW5	W4	ENE6	ENE7	E10	NE10	ENE9	ENE8	ENE10	ENE10	ENE5	SE15	SE17	SE17	SSE18	SSE19	SE1.6	SSE19
26-May	SSE17	SSE19	SE18	SE17	SSE14	SSE14	SSE14	SSE9	SE9	SE8	SE6	ESE9	ESE10	SE8	NNE6	NW6	SE5	SE8	SSE11	SSE13	SSE17	SSE21	SSE21	SSE25	SE11.7	SSE25
27-May	SSE26	SSE23	SSE20	SSE21	SSE22	SSE22	SSE22	SSE16	SSE13	SSE19	S28	SSE30	SSE28	SSE26	SSE27	S24	S23	SSE21	SSW17	S13	S17	SSE23	SSE27	SSE24	SSE21.8	SSE30
28-May	SSE24	SSE22	SSE19	SSE21	SSE17	SE15	SE17	SE14	SE12	SE12	SW22	SW27	SW34	SW36	WSW36	WSW33	WSW30	WSW36	WSW31	W21	W18	WNW26	WNW21	W13	SW15.7	WSW36
29-May	W14	WNW13	W8	S12	SSW11	SSE8	SW5	WSW6	SSE7	S6	WSW24	SW28	SW32	WSW39	WSW38	SW36	SW27	WSW21	SW21	SW16	SW14	WSW12	N16	NE18	WSW13.9	WSW39
30-May	NE17	ENE7	SW5	NNW4	ESE4	S5	S11	SSE8	SE9	SE6	SE5	SE7	ENE13	ENE11	WSW2	WNW10	WNW23	WNW29	NW17	N12	N11	ENE10	NE12	SW10	N1.9	WNW29
31-May	WNW18	WNW6	SSW12	WSW12	W15	WNW2	SW5	S5	WSW4	E3	E7	E6	ESE8	SE7	S11	S15	SSE16	SSE9	SE12	SSE14	SSE16	S4	WNW13	WSW9	SSW4.3	WNW18

SE7.5 SE8.2 SE7.5 SE8.3 SE8.2 SE9.2 SE8.2 SE6.9 SE6.6 SE7.3 SSE6.8 SSE8.4 SSE8.5 SSE7.2 S7.1 S7.5 S6.3 SSE5.3 SSE5.3 SSE5.3 SE6.6 SE7.2 SE6.8 SE7.1	Diurnal Average
NNW28 NNW27 E27 NNW30 E26 NW31 NW37 NW36 NW38 NW38 NW39	Diurnal Maximum

All monthly, daily, and diurnal averages have been calculated using vector methods



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 10 km/h on May 30 17:00																	Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0								
Minimum Value: 1 km/h on May 10 05:00																									
Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 3 Median = 4 Q ₃ = 5 P ₉₀ = 7 P ₉₉ = 8																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	3	3	3	3	3	3	4	3	3	5	5	5	6	7	7	7	5	5	4	3	3	1	6	5	7
2-May	4	6	3	2	2	4	2	2	2	2	3	4	4	5	5	5	5	4	3	2	2	5	1	1	6
3-May	3	3	2	2	2	3	3	4	3	5	7	7	7	6	7	7	6	5	4	3	3	3	3	2	7
4-May	3	3	4	4	4	5	3	4	3	3	3	4	4	4	3	4	5	5	5	4	5	4	2	6	6
5-May	5	5	5	6	5	5	5	5	5	5	6	7	8	7	7	7	8	8	8	7	6	7	7	7	8
6-May	5	7	5	5	6	5	5	4	4	7	7	7	7	7	6	7	6	7	7	7	5	5	4	5	7
7-May	5	6	5	3	5	5	6	5	5	6	7	7	7	8	8	6	4	4	3	2	4	6	4	5	8
8-May	6	5	5	6	3	4	5	3	3	4	5	5	5	5	5	6	5	3	6	4	3	3	2	3	6
9-May	2	1	3	3	2	2	2	2	2	3	2	3	3	3	3	5	3	3	3	7	3	4	1	2	7
10-May	3	3	2	2	1	2	2	2	2	2	2	2	3	7	5	4	5	3	7	4	3	4	4	4	7
11-May	2	1	2	1	5	5	3	3	3	3	3	3	4	5	5	5	4	4	4	1	2	2	2	4	5
12-May	1	2	2	2	3	2	3	3	4	4	6	7	7	6	6	6	5	4	3	3	6	5	5	3	7
13-May	3	1	2	2	2	3	3	2	2	4	3	4	4	4	5	5	4	4	2	1	2	2	2	2	5
14-May	2	2	4	3	2	5	2	4	2	1	2	4	4	5	5	5	5	5	5	4	4	5	4	2	5
15-May	2	4	2	2	1	1	1	1	1	2	2	2	3	3	6	6	5	6	4	2	2	2	5	4	6
16-May	4	5	5	4	6	6	6	6	7	7	8	8	6	8	8	8	7	8	7	7	6	5	7	4	8
17-May	5	5	5	6	6	5	6	6	5	6	5	5	5	6	5	6	5	4	3	3	2	2	6	4	6
18-May	3	2	2	2	3	2	3	3	3	4	5	4	5	5	5	5	5	3	4	2	1	3	2	2	5
19-May	2	3	2	2	1	4	2	2	3	2	2	2	2	2	1	3	2	2	2	5	5	5	5	5	5
20-May	5	5	5	5	5	5	3	3	2	2	2	2	3	3	3	3	3	4	3	3	3	4	4	4	5
21-May	4	4	4	4	4	4	5	2	2	2	2	3	3	3	4	3	3	2	2	1	4	3	3	4	5
22-May	5	3	3	4	4	5	7	5	4	4	5	5	5	6	5	6	7	7	6	6	6	6	6	6	7
23-May	7	5	5	4	5	6	6	5	5	6	7	8	7	8	9	7	10	9	7	7	6	5	5	6	10
24-May	5	4	6	5	6	6	5	4	4	4	3	3	4	5	5	4	4	5	3	3	3	3	2	2	6
25-May	2	2	2	1	3	3	1	1	2	3	3	4	3	3	3	3	3	3	3	3	2	2	2	3	4
26-May	3	2	2	2	2	1	2	2	2	2	3	4	5	4	3	3	3	3	3	3	1	2	2	2	5
27-May	2	2	2	3	3	3	3	3	3	5	7	6	6	7	6	5	5	5	5	3	2	2	2	3	7
28-May	2	3	2	2	3	2	3	3	3	5	7	7	8	7	7	8	7	7	7	5	3	4	3	1	8
29-May	2	2	2	3	3	3	2	2	2	5	7	7	7	8	9	9	6	4	5	4	1	3	5	4	9
30-May	3	5	2	1	1	2	3	3	2	2	4	5	3	5	5	5	10	6	4	3	3	4	3	3	10
31-May	4	5	3	2	2	3	2	2	2	2	4	3	4	4	3	4	3	2	2	4	2	3	4	6	6
Diurnal Maximum																									





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed 45 m (WS45m) - km/h
Mannix - May 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	59	7.93	7.93
6 - 11	143	19.22	27.15
12 - 19	234	31.45	58.60
20 - 28	256	34.41	93.01
29 - 38	48	6.45	99.46
> 38	4	0.54	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Wind Speed 45 m (WS45m) - km/h
Mannix - May 2023

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	4	1	0	2	7	5	9	3	6	2	6	6	2	2	1	3	59
6 - 11	3	6	3	13	6	13	29	18	16	7	3	5	3	8	6	4	143
12 - 19	6	8	7	3	2	7	79	53	20	8	5	6	14	10	4	2	234
20 - 28	27	10	2	1	7	19	91	40	17	10	11	4	2	3	3	9	256
29 - 38	4	1	4	2	0	0	7	6	2	0	4	6	0	3	8	1	48
> 38	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	4
Totals	44	26	16	21	22	44	215	120	61	27	29	28	21	27	24	19	744

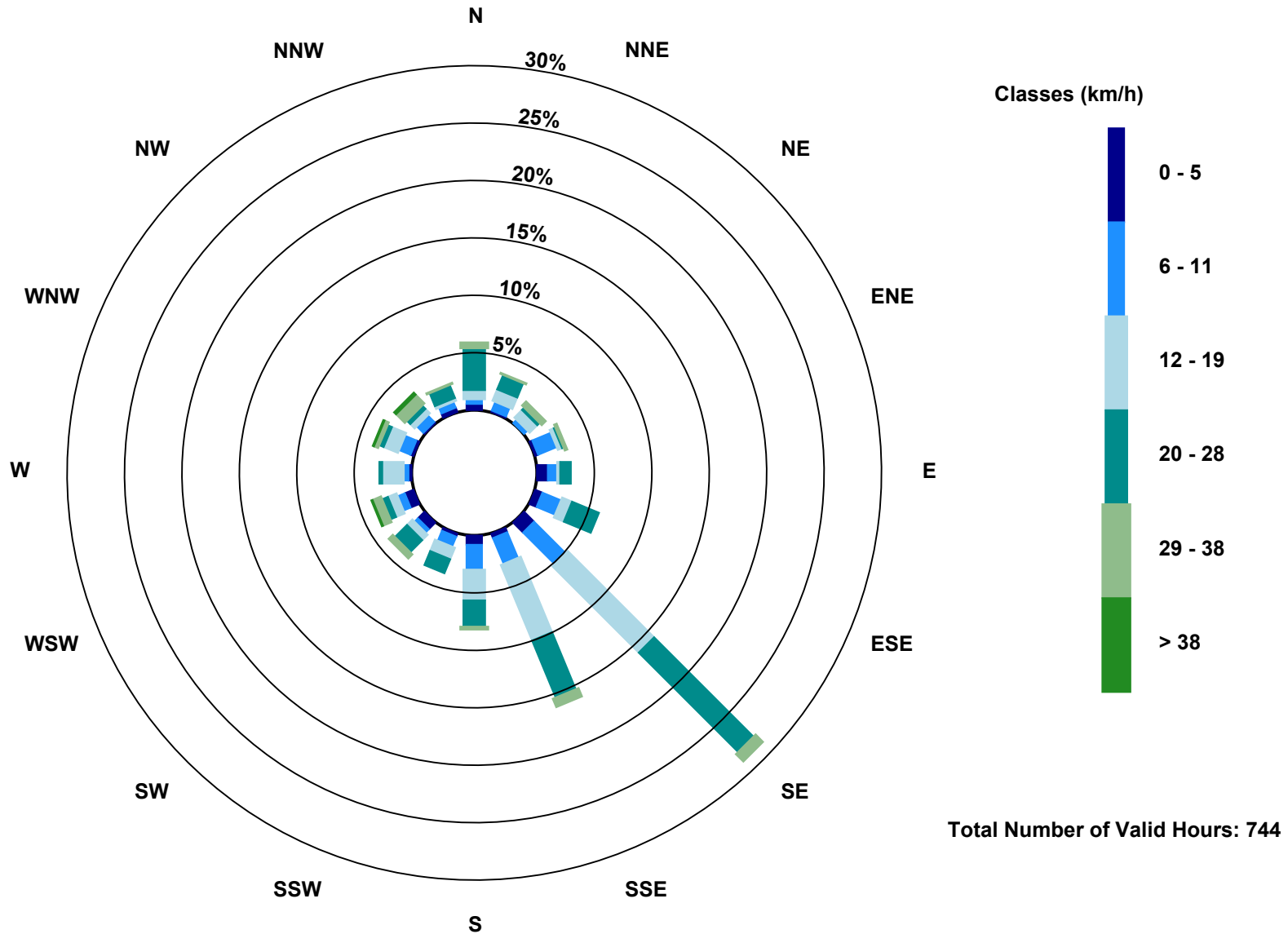
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed 45 m (WS45m) - km/h
Mannix





Maximum Speed: 42 km/h on May 16 15:00	Maximum Daily Speed Average: 32.5 km/h on May 16	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 9 15:00	Minimum Daily Speed Average: 1.7 km/h on May 25	Hours of Data: 744
Maximum Diurnal Speed Average: 9.2 km/h at hour 6	Minimum Diurnal Speed Average: 5.4 km/h at hour 18	Hours of Missing Data: 0
Monthly Average Velocity: 7.2 km/h 150.8 deg	Percentiles: $P_1 = 2$ $P_{10} = 7$ $Q_1 = 12$ Median = 19 $Q_3 = 25$ $P_{90} = 30$ $P_{99} = 41$	Percent Operational Time: 100.0

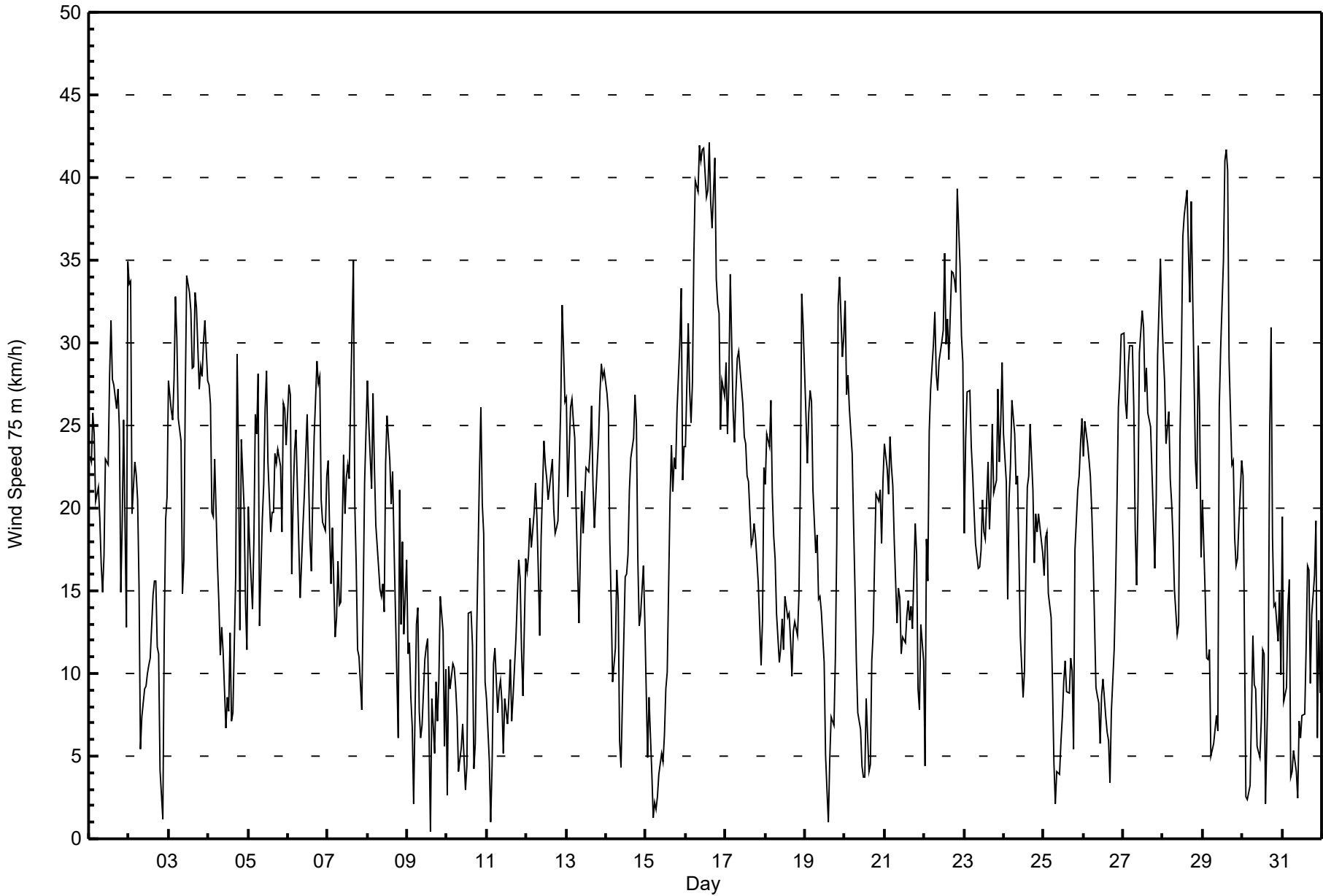
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SE23	SE23	SE26	SE25	SE20	SE21	SE19	SE17	SE15	SE17	SSE23	SE23	SSE28	S31	S28	S27	S26	SSW27	SSW25	SW15	S19	SSE25	W13	NNW35	SSE17.3	NNW35
2-May	NNW34	NNW34	NNW20	NW23	NW22	NW21	WNW15	W5	NW7	NW9	NW9	WNW10	NW10	WNW11	NW15	WNW16	NW16	WNW12	NNW11	NW4	SSE1	SE12	SE19	SSE21	NW9.6	NNW34
3-May	SSE28	SSE26	SSE25	SSE28	SSE33	SSE30	SSE25	SE24	SSE15	SSE17	S27	SSE34	SSE33	S32	S29	SSE29	S33	SSE32	S27	SSE29	SSE28	SSE30	SSE31	SE28	SSE27.5	SSE34
4-May	SE27	SE26	SE20	SE20	SE23	SE17	SSE14	SE11	SE13	SE11	SE7	SE9	ESE8	SE12	ESE7	NE8	N16	NNE29	NNE23	ENE13	NE24	NE20	ENE14	ESE11	E10.6	NNE29
5-May	SE20	SE18	ESE14	SE18	SE26	SE25	SE28	ESE13	SE19	SE21	SE26	SE28	SE23	ESE19	ESE20	ESE20	SE23	SE23	SE24	SE23	SE19	SE26	SE26	SE24	SE21.7	SE28
6-May	SE27	SE27	SE16	SE21	SE23	SE25	SE18	SE15	SE17	SE19	SE21	SE26	SE22	SE18	ESE16	SE21	SE24	SE29	SE28	SE28	SE20	SE19	SE19	SE22	SE21.6	SE29
7-May	SE23	SE19	SE15	SE19	SE12	SE13	SE17	SE14	SE14	SE23	SE20	SE22	SE23	SE22	SE26	SSE35	SSE20	SSE17	ESE11	E11	ESE8	SE14	SE22	SE25	SE18.1	SSE35
8-May	SE28	SE25	SE21	SE27	SSE23	SE19	SE18	SE15	SE15	SE15	SE14	SSE23	SSE26	SSE23	S20	S22	SSE18	SSE14	SSW6	WNW21	WSW13	WSW18	SSW12	SSE17	SSE15.1	SE28
9-May	SSE11	SE12	S9	WSW7	S2	SE13	SSE14	SSE8	S6	S7	S11	S12	S12	ESE6	NW0	NW8	NW5	NNW10	NNE7	SSW10	SSW15	WSW13	SW6	W10	S5.2	SSW15
10-May	W3	S10	SSW9	SW11	SW10	SSW9	S7	S4	S5	SSE7	SE5	E3	NNW4	NW14	WNW14	W12	N4	E6	NE12	NNE22	NNE26	NE20	ENE18	E9	NE1.7	NNE26
11-May	NE8	S5	S1	SE5	SE11	SE11	SE8	SE9	SSE10	SE8	E5	ENE8	ESE7	SE9	SSE11	SE7	SE9	E12	SE15	S17	S16	SW11	SSW9	SE17	SE7.6	SE17
12-May	S16	SSE17	SE19	SE18	SE20	SE22	SE19	SE16	SSE12	SSE18	SSE24	SSE23	SSE22	SE21	SE21	SE23	SSE20	SSE18	SSE19	SE19	SE26	SE32	SE30	SE26	SSE20.6	SE32
13-May	SE27	SE21	SE26	SSE27	SSE25	SSE24	SSE20	SSE13	SSE17	S21	S18	SSW21	S22	S22	SSW24	S26	S21	S19	S23	S24	S27	S29	SSW28	SSW28	S21.8	S29
14-May	SSW27	SSW26	SSW18	SSW14	SSW9	S12	SSW16	S14	SSE6	SE4	SE8	S16	S16	SW17	SW21	SW23	SW24	SW27	SW25	WSW17	WNW13	NNW14	NNE16	NE13	SSW11.7	SSW27
15-May	ESE9	S5	NNE9	ESE4	SE1	NW2	NNE2	S3	SSE4	SE5	SE5	ESE6	E9	E10	SE21	SSE24	S21	S23	SSW22	SSW26	SSW30	S33	SSW28	NW24	S8.6	S33
16-May	NNW24	NNW31	N27	N25	NNW28	NW35	NW40	NW39	NW42	NW41	NW42	NW42	NW39	NW39	NW42	NW39	NW37	NW41	N34	N32	N32	N25	N28	NNW27	NNW32.5	NW42
17-May	NNW29	NNW24	NNW28	NNW34	N26	NNE24	NNE27	NNE29	NNE30	NNE28	N26	NNE24	NNE24	NNE22	NNE22	NNE18	NNE18	NNE19	NNE18	NNE17	NE15	E11	SE13	SE22	NNE19.5	NNW34
18-May	SSE21	SSE24	SSE24	SSE27	S21	S18	SSE17	SSE14	SE11	SE12	SSE13	SSE11	SSE15	SSE13	SSE14	SSW12	S10	SSW13	S13	SSW12	SSW15	S22	SSW33	SSW31	S16.2	SSW33
19-May	SSW26	S23	S26	S27	S26	SSE21	SSE17	SSE18	SSE14	SSE15	SSE14	SSE11	SSE5	SE3	ESE1	NNW5	NW7	NNW7	NNW11	N18	N32	N34	N29	N30	SE3.3	N34
20-May	N33	N27	N28	N26	N23	N19	N15	N11	N8	N7	NNE4	NNE4	ENE4	ENE8	E4	ESE4	SE11	SE12	SE17	SE21	SE20	SE21	SE18	SE22	NE7.3	N33
21-May	SE24	SE22	SE21	SE24	SE23	SE21	SE18	SE13	SE15	SSE15	SSE11	SSE12	SSE12	SSE13	SSE14	SSE13	SE14	SE13	SE19	SE17	ESE9	E8	SE13	SE11	SE15.4	SE24
22-May	NNE4	NE18	NNE16	N25	N27	N30	N32	N28	N27	N29	N30	N31	NNE35	NNE30	NNE31	NNE29	NE34	NE34	NE34	NE33	ENE39	ENE35	NE30	ENE29	NNE26.4	ENE39
23-May	E18	E24	E27	E27	E24	E22	E20	E18	ESE16	ESE16	ESE17	ESE21	ESE19	ESE18	SE23	ESE19	ESE21	SE25	SE21	SE22	SE27	SE23	SE25	SE29	ESE20.4	SE29
24-May	SE25	SE22	SE14	SE21	SE23	SE26	SE25	SE21	SSE22	SSE17	S12	SSE9	SSE10	SW16	SW21	WSW22	W25	WSW21	WSW17	W20	W19	W20	W18	W17	S10.0	SE26
25-May	W16	WNW18	WNW19	WNW15	NW13	NW9	NW5	W2	WSW4	W4	ENE6	ENE7	E9	NE11	ENE9	ENE9	ENE11	ENE10	E5	SE17	SSE21	SE22	SSE24	SSE25	SE1.7	SSE25
26-May	SSE23	SSE25	SSE24	SE23	SSE22	SSE20	SSE17	SSE9	SSE9	SE8	SE6	ESE9	ESE10	SE7	NE6	NW6	SE3	SSE8	SSE11	SSE15	SSE20	SSE26	SSE28	SSE31	SSE14.3	SSE31
27-May	S31	SSE26	SSE25	SSE28	SSE30	SSE30	SSE26	S19	SSE15	SSE20	S29	SSE32	SSE31	SSE27	SSE28	S26	S25	S22	SSW19	S16	S21	SSE29	SSE35	S32	S25.7	SSE35
28-May	SSE29	S28	S24	SSE26	SSE22	SSE20	SSE18	SSE15	SE12	SSE13	SW24	SW29	SW36	SW38	WSW39	WSW36	WSW32	WSW39	WSW33	W23	W21	WNW30	WNW26	W17	SW18.4	WSW39
29-May	WNW21	NW15	WNW11	SSW11	S11	SSW5	SW6	WSW7	SSE7	S7	WSW26	SW30	SW35	WSW41	WSW42	SW40	SW29	WSW23	SW23	SW18	SW17	WSW17	N19	NE23	WSW15.1	WSW42
30-May	NE22	ENE12	SSE3	NW2	SE3	SE8	S12	SSE9	SE9	SSE6	SE5	SE7	ENE11	ENE11	WSW2	WNW10	WNW25	WNW31	NW18	N14	NNE14	ENE12	NE15	SW10	NNE2.5	WNW31
31-May	WNW19	WNW8	SSW9	W14	WNW16	NW4	WSW4	S5	WSW4	ESE2	E7	E6	ESE7	SE8	S12	S17	SSE16	SSE9	SE14	SSE16	SSE19	SSE6	NW13	W9	SSW4.1	WNW19

SE8.5 SE8.5 SE7.7 SE8.5 SE8.8 SE9.2 SE8.5 SE6.8 SE6.2 SE7.0 SSE6.7 SSE8.3 SSE8.3 SSE7.0 S7.3 S7.9 S6.4 S5.4 SSE5.5 SSE5.7 SE7.2 SE8.2 SE7.7 SE7.9	Diurnal Average
NNW34 NNW34 N28 NNW34 SSE33 NW35 NW40 NW39 NW42 NW41 NW42 NW42 NW39 WSW41 NW42 SW40 NW37 NNW41 N34 ENE33 ENE39 ENE35 SSE35 NNW35	Diurnal Maximum

All monthly, daily, and diurnal averages have been calculated using vector methods



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 11 km/h on May 30 17:00 Minimum Value: 1 km/h on May 25 04:00 Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 3 Median = 4 Q ₃ = 6 P ₉₀ = 7 P ₉₉ = 10																		Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0							
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	4	3	2	4	5	4	5	4	3	5	6	6	6	7	7	6	5	5	3	3	3	2	6	5	7
2-May	4	6	3	2	1	3	2	3	2	2	3	4	4	6	5	5	5	4	3	2	1	6	1	2	6
3-May	2	2	2	2	2	1	2	4	3	5	7	7	7	6	7	8	6	5	4	3	3	3	3	2	8
4-May	2	4	7	7	5	8	3	5	4	4	3	4	4	5	3	4	5	4	5	5	4	4	3	5	8
5-May	8	7	6	8	6	7	7	5	7	6	6	8	9	7	8	8	10	10	9	9	9	11	9	10	11
6-May	8	10	7	8	8	7	6	5	6	8	8	9	9	8	6	9	9	9	8	9	8	6	5	5	10
7-May	7	8	6	6	6	7	7	6	6	8	8	9	9	9	11	6	4	4	4	3	4	7	6	6	11
8-May	6	7	8	6	3	5	6	4	4	4	6	5	5	5	5	6	5	3	6	4	4	2	3	3	8
9-May	2	1	3	2	2	2	1	3	2	4	2	2	3	3	3	5	3	3	3	8	3	2	1	3	8
10-May	2	2	1	1	1	1	1	2	2	2	2	2	3	7	5	4	5	3	8	3	2	4	4	4	8
11-May	2	2	2	2	3	5	3	4	3	3	3	3	4	4	5	5	4	4	4	1	2	3	2	5	5
12-May	2	2	2	5	5	3	4	4	4	3	5	7	7	7	6	6	5	4	3	4	7	4	5	3	7
13-May	2	2	3	1	2	2	3	1	3	3	3	4	4	4	4	5	4	5	2	2	1	2	2	2	5
14-May	2	2	5	3	3	5	1	3	3	2	3	4	4	5	5	5	5	5	5	4	6	3	3	3	6
15-May	4	4	2	2	1	1	1	1	1	2	2	2	3	3	6	6	5	6	4	2	2	2	6	4	6
16-May	5	4	5	4	6	6	6	6	6	7	7	8	6	9	8	9	7	8	7	7	6	5	7	4	9
17-May	5	5	4	6	6	5	5	5	5	5	5	5	5	6	5	5	5	4	3	3	2	2	7	4	7
18-May	3	3	2	2	3	2	3	3	3	4	5	4	5	5	5	5	5	3	4	2	1	4	2	3	5
19-May	2	3	3	2	2	2	2	2	3	2	2	3	2	2	1	2	2	2	2	5	5	4	5	5	5
20-May	5	5	5	5	5	5	3	4	2	2	2	2	3	3	3	3	4	5	3	3	4	5	7	5	7
21-May	5	5	5	4	4	5	5	3	3	3	2	2	3	3	4	3	3	2	2	2	5	3	5	6	6
22-May	6	3	2	4	4	4	6	4	4	3	5	5	5	6	5	5	6	7	5	6	6	6	6	6	7
23-May	7	6	5	6	6	6	6	5	5	6	7	9	7	8	10	8	9	11	9	9	7	6	6	7	11
24-May	7	6	6	8	8	8	7	5	4	4	3	3	5	4	3	4	5	3	3	3	3	2	2	2	8
25-May	2	2	2	1	2	2	2	1	2	3	3	4	3	3	3	3	3	3	3	4	2	2	2	2	4
26-May	3	1	2	1	1	1	3	2	2	2	2	4	4	4	3	3	3	3	3	4	1	2	1	1	4
27-May	2	2	1	2	2	2	2	3	3	5	7	6	5	6	6	5	4	5	5	3	2	3	3	3	7
28-May	2	2	2	2	2	2	3	4	3	5	7	7	8	7	7	8	7	7	7	4	3	5	4	2	8
29-May	1	2	2	4	2	3	2	2	3	5	7	7	6	8	9	9	6	4	5	3	2	2	5	4	9
30-May	3	7	1	2	2	2	2	3	3	2	4	4	3	5	4	5	11	6	4	3	2	4	4	4	11
31-May	3	7	5	2	2	5	2	2	2	2	4	3	3	4	3	4	3	2	2	4	3	3	4	6	7
Diurnal Maximum																									





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed 75 m (WS75m) - km/h
Mannix - May 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	54	7.26	7.26
6 - 11	129	17.34	24.60
12 - 19	208	27.96	52.55
20 - 28	256	34.41	86.96
29 - 38	80	10.75	97.72
> 38	17	2.28	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Wind Speed 75 m (WS75m) - km/h
Mannix - May 2023

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1	4	0	1	4	4	10	5	7	1	0	5	3	0	7	2	54
6 - 11	3	2	4	10	10	13	23	20	9	8	6	2	2	5	8	4	129
12 - 19	6	8	5	5	3	10	62	43	19	10	5	6	8	10	7	1	208
20 - 28	14	10	5	0	6	4	90	56	28	12	8	4	5	4	4	6	256
29 - 38	13	7	4	3	0	0	4	20	7	3	6	3	0	2	2	6	80
> 38	0	0	0	1	0	0	0	0	0	0	1	4	0	0	10	1	17
Totals	37	31	18	20	23	31	189	144	70	34	26	24	18	21	38	20	744

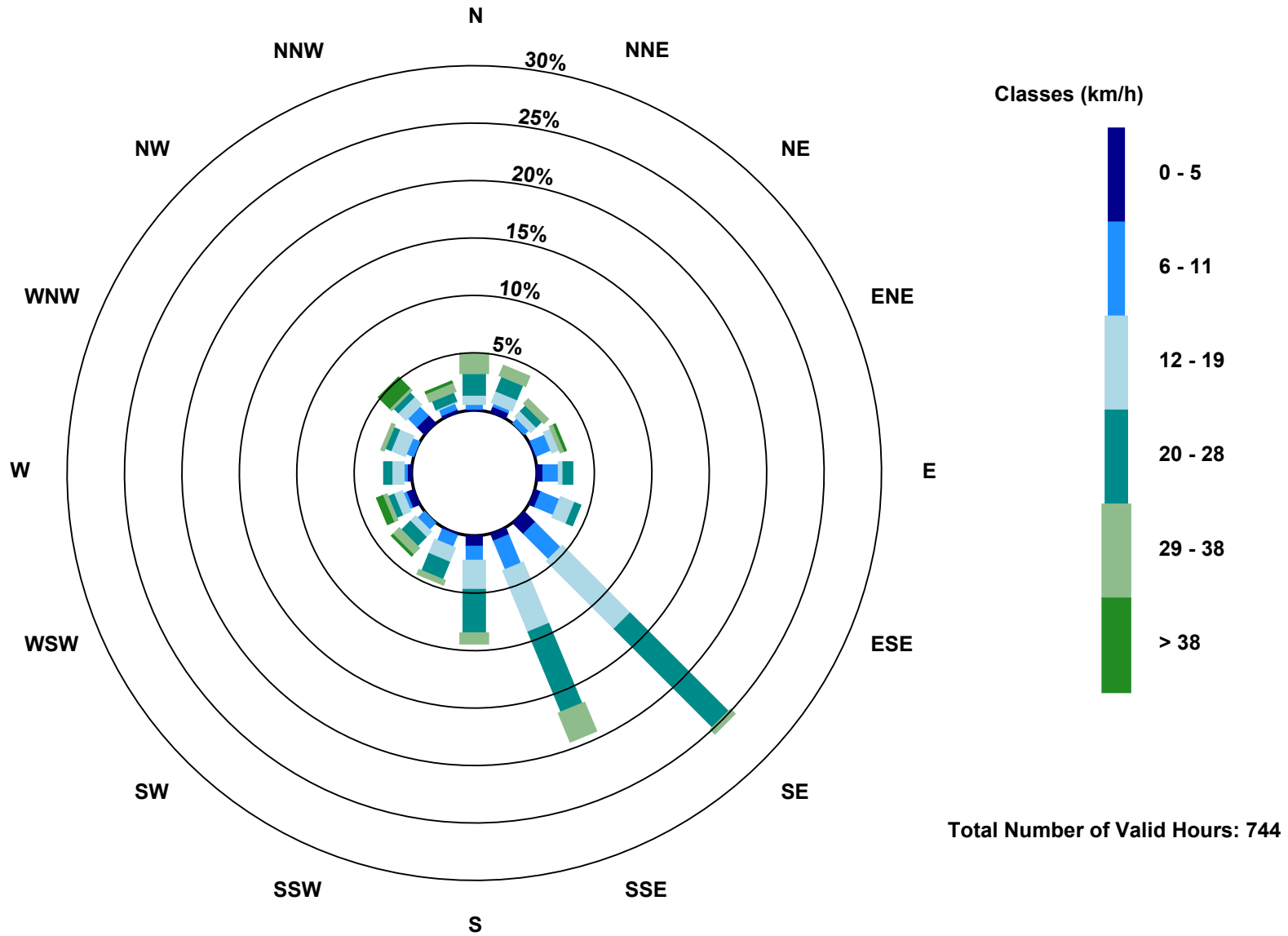
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed 75 m (WS75m) - km/h
Mannix





Maximum Speed: 44 km/h on May 16 09:00	Maximum Daily Speed Average: 34.0 km/h on May 16	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 2 21:00	Minimum Daily Speed Average: 1.2 km/h on May 25	Hours of Data: 744
Maximum Diurnal Speed Average: 9.2 km/h at hour 6	Minimum Diurnal Speed Average: 5.3 km/h at hour 18	Hours of Missing Data: 0
Monthly Average Velocity: 7.3 km/h 149.9 deg	Percentiles: $P_1 = 2$ $P_{10} = 7$ $Q_1 = 12$ Median = 20 $Q_3 = 26$ $P_{90} = 31$ $P_{99} = 41$	Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	SE25	SE24	SE27	SE27	SE24	SE24	SE22	SE17	SE15	SE17	SSE23	SE23	SSE28	S31	S27	S27	S26	SSW27	SSW25	SW16	S19	SSE26	W14	NNW38	SSE17.6	NNW38	
2-May	NNW36	NNW37	NNW22	NW23	NW23	NNW23	WNW15	W7	NW7	NW9	NW9	NNW10	NW11	WNW11	WNW15	WNW16	NW16	WNW12	NNW12	NW5	SE0	SE12	SE20	SSE21	NW10.3	NNW37	
3-May	SSE27	SSE26	SSE25	SSE29	SSE33	SSE30	SSE24	SE24	SSE15	SSE17	S26	S33	SSE33	S31	S28	SSE28	S32	SSE32	S27	SSE29	SSE29	SSE32	SSE33	SE29	SSE27.6	S33	
4-May	SE28	SE29	SE23	SE24	SE26	SE19	SSE15	SE13	SE13	SE12	SE7	ESE9	ESE8	SE13	ESE7	NE7	N16	NNE30	NNE24	ENE14	NE24	NE20	E15	ESE16	ESE11.7	NNE30	
5-May	SE23	ESE20	ESE18	SE21	SE27	SE27	SE30	ESE17	SE13	SE21	SE22	SE26	SE29	SE26	ESE25	ESE26	ESE27	ESE29	ESE28	ESE28	SE26	ESE23	SE31	SE29	SE28	SE25.0	SE31
6-May	SE30	SE29	ESE21	SE24	SE26	SE27	SE19	SE16	SE18	SE22	SE24	SE27	SE25	ESE22	ESE22	SE24	SE27	SE30	SE29	SE30	SE23	SE22	SE21	SE24	SE24.1	SE30	
7-May	SE25	SE22	SE19	SE20	ESE15	SE17	SE19	ESE16	ESE17	SE25	SE22	SE25	SE26	SE26	SE30	SSE34	SSE20	SSE17	ESE14	E13	ESE9	ESE18	SE23	SE26	SE20.1	SSE34	
8-May	SE29	SE27	SE25	SE28	SE24	SE20	SE19	SE15	SE14	SE16	SE14	SSE22	SSE25	SSE23	S20	S22	SSE18	SSE14	SSW7	WNW22	WSW13	WSW20	SW14	SSE16	SSE15.3	SE29	
9-May	SSE10	SE11	S9	SW7	SSW2	SE13	SSE14	SSE8	S6	S7	S10	S11	S12	ESE6	NNW1	NW8	NW5	NNW10	NNE7	SSW10	SSW14	WSW13	SW7	W12	SSW4.9	SSW14	
10-May	WNW4	S8	SSW8	SW9	WSW10	SW10	SSW7	SSW4	S5	SSE7	SE5	E3	NNW5	NW14	WNW14	W12	N5	E6	NE13	NNE24	NNE28	NE22	ENE20	E11	NNE2.2	NNE28	
11-May	ENE8	S5	SE2	SE6	SE11	SE12	SE9	SE10	SE9	SE8	ENE5	ENE8	ESE7	SE9	SSE11	SE7	SE8	E14	SE15	S17	S16	SW12	SSW8	SE18	SE7.8	SE18	
12-May	S17	SSE17	SE20	SE20	SE21	SE23	SE22	SE18	SSE13	SSE18	SSE24	SSE22	SSE22	SE21	SE22	SE23	SSE20	SSE18	SSE19	SE20	SE27	SE34	SE31	SSE28	SE21.3	SE34	
13-May	SE28	SE22	SSE28	SSE26	SSE23	SSE22	SSE19	SSE15	S20	S22	S19	SSW21	SSW22	S22	SSW24	S26	SSW22	S19	S23	S25	S28	SSW31	SSW30	SSW31	S22.3	SSW31	
14-May	SSW30	SW29	SSW20	SW16	SSW10	S10	SSW16	SSW15	S6	SE5	SE9	S15	SSW16	SW17	SW21	SW23	SW25	SW27	SW26	WSW19	WNW14	NNW14	NNE17	NE15	SW12.3	SSW30	
15-May	E11	S5	NNE8	E4	E2	NW3	NNW3	SSE3	SSE4	SE5	SE5	ESE6	E9	E11	SE21	SE24	S21	S23	SSW23	SSW27	SSW32	SSW36	SSW24	NW26	S8.6	SSW36	
16-May	NNW26	NNW33	N28	N27	NNW30	NW37	NW41	NW41	NW44	NW42	NW43	NW43	NW40	NW41	NW43	NW40	NW39	NW43	N35	N34	N33	N26	N30	NNW29	NNW34.0	NW44	
17-May	NNW32	NNW26	NNW29	NNW36	N27	NNE25	NNE27	NNE30	N30	NNE29	N27	N25	NNE24	NNE22	NNE22	NNE18	NNE18	NNE19	NNE18	NNE17	NNE16	E12	ESE14	SE23	NNE20.1	NNW36	
18-May	SSE23	SSE26	SSE26	SSE29	S23	S20	S18	SSE13	SE11	SE12	SSE13	SSE11	SSE15	SSE13	SSE13	SSW12	S10	SSW13	S13	SSW12	SSW15	S21	SSW35	SSW34	S16.8	SSW35	
19-May	SSW28	SSW24	S28	S28	S28	SSE21	SSE17	SSE18	SSE14	SSE14	SSE13	SSE10	SSE5	SE2	E1	NNW5	NW7	NNW7	NNW12	N20	N34	N36	N31	N32	SSE2.7	N36	
20-May	N34	N29	N30	N27	N25	N20	N16	N11	N8	N7	NNE4	N4	NE4	ENE8	E4	ESE4	SE11	SE13	SE17	SE21	SE21	SE22	SE20	SE23	NE7.7	N34	
21-May	SE25	SE24	SE23	SE25	SE24	SE23	SE19	SE14	SE16	SSE15	SSE11	SSE12	SSE12	SSE13	SSE14	SSE13	SE14	SE13	SE19	SE17	ESE10	E9	SE15	SE12	SE16.1	SE25	
22-May	N5	NNE18	NNE17	N27	N29	N32	N34	N30	N28	N30	N31	N31	N36	NNE30	NNE32	NNE29	NE35	NE35	NE34	NE34	ENE40	ENE36	NE31	ENE29	NNE27.2	ENE40	
23-May	E21	E26	E28	E29	E27	E27	E26	ESE25	ESE25	ESE24	ESE24	ESE28	ESE26	ESE23	ESE29	ESE24	ESE28	ESE29	ESE25	SE25	SE28	SE24	SE26	SE30	ESE24.9	SE30	
24-May	SE26	SE23	ESE19	SE23	SE25	SE28	SE25	SE21	SE22	SE17	S12	SSE8	SSE10	SW16	SW22	WSW22	W25	WSW21	WSW17	W20	W19	W20	W19	W18	S9.9	SE28	
25-May	W17	WNW20	WNW20	WNW16	NW15	NW11	NW6	W2	WSW4	W4	NE5	NE7	E10	NNE11	ENE9	ENE11	ENE10	E5	SE18	SSE22	SE23	SSE25	SSE27	SE1.2	SSE27		
26-May	SSE25	SSE24	SSE24	SSE24	SSE24	SSE21	SSE17	SSE9	SSE8	SE8	SE6	ESE9	ESE10	SE7	NE6	NW6	SE3	SE7	SSE11	SSE15	SSE20	SSE27	SSE31	SSE32	SSE14.5	SSE32	
27-May	S31	S26	S25	S28	S30	SSE31	S27	S20	SSE16	SSE20	S29	S31	SSE30	SSE27	SSE28	S25	S25	S22	SSW20	SSW17	S21	SSE29	SSE36	S33	S25.8	SSE36	
28-May	S30	S28	S25	S26	SSE22	SSE22	SSE18	SSE15	SE12	SSE13	SW25	SW30	SW37	SW38	WSW40	WSW36	WSW33	WSW39	WSW34	W24	W23	WNW32	WNW28	WNW19	SW19.4	WSW40	
29-May	WNW21	NW14	WNW11	SW10	SSW11	SW5	WSW7	WSW7	SSE7	S7	WSW26	WSW30	SW36	WSW41	WSW42	SW41	WSW29	WSW23	SW23	SW19	SW17	W19	N20	NE25	WSW15.4	WSW42	
30-May	NE24	ENE15	SE3	WNW2	SE5	SE9	S11	SSE10	SE9	SSE6	SE5	SE7	ENE11	ENE11	WSW2	WNW10	WNW26	WNW32	NW19	N15	N16	ENE13	NE16	SW9	NNE2.9	WNW32	
31-May	WNW19	WNW9	SSW8	W12	WNW13	NW5	W5	S5	WSW4	ESE2	E7	E6	ESE8	SE8	SSW11	S16	SSE16	SSE10	SE13	SSE16	SSE19	SSE6	NW13	WNW9	SSW3.7	SSE19	

SE8.6 SE8.4 SE8.1 SE8.7 SE8.9 SE9.2 SE8.4 SE7.0 SE6.4 SE7.1 SSE6.7 SSE8.3 SSE8.4 SSE7.1 S7.3 S7.8 S6.2 S5.3 SSE5.4 SSE5.6 SE7.1 SE8.3 SE7.9 SE8.0	Diurnal Average
NNW36 NNW37 N30 NNW36 SSE33 NW37 NW41 NW41 NW44 NW42 NW43 NW43 NW40 WSW41 NW43 SW41 NW39 NW43 N35 NE34 ENE40 N36 SSE36 NNW38	Diurnal Maximum

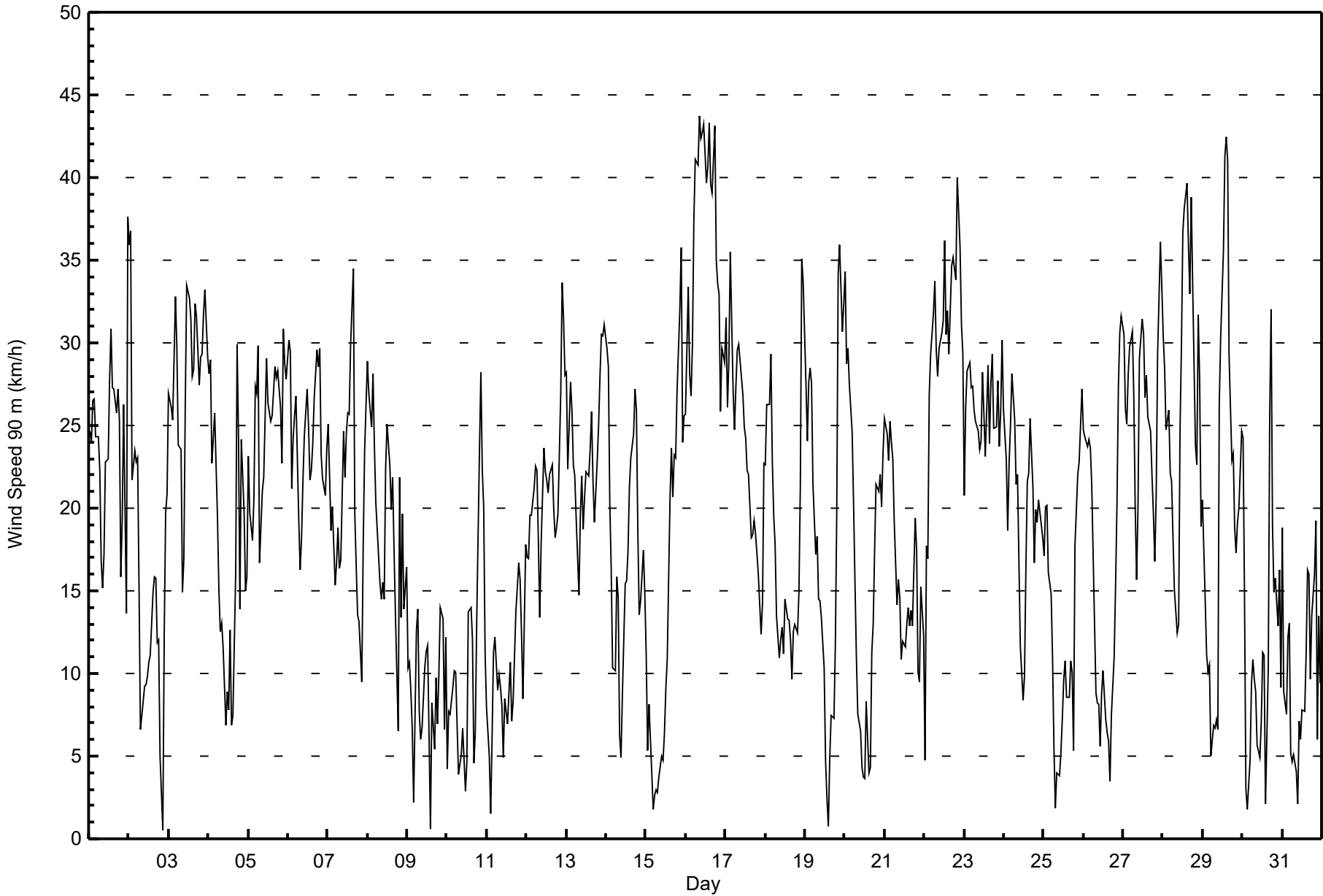
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed 90 m (WS90m) - km/h
Mannix - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 12 km/h on May 30 17:00 Minimum Value: 1 km/h on May 10 07:00 Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 2 Median = 4 Q ₃ = 5 P ₉₀ = 6 P ₉₉ = 8																	Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0								
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	3	2	1	2	3	2	4	4	3	4	5	5	6	7	7	6	5	4	3	3	2	2	7	5	7
2-May	4	5	3	2	1	3	3	3	2	2	3	4	4	6	5	5	5	4	3	2	1	6	1	3	6
3-May	2	2	2	2	2	1	2	4	3	5	7	7	7	6	7	8	5	5	4	3	3	2	2	2	8
4-May	1	2	6	5	4	6	3	4	3	3	3	4	4	4	3	4	5	4	5	4	3	3	2	5	6
5-May	6	5	5	7	5	6	6	5	5	5	5	6	7	6	7	7	7	8	7	7	7	7	7	7	8
6-May	6	7	5	5	6	5	5	4	4	6	6	6	6	6	6	7	7	7	6	7	6	5	4	4	7
7-May	6	7	5	5	5	6	6	5	5	6	7	7	7	7	9	6	4	4	3	2	4	6	5	5	9
8-May	5	5	6	6	3	4	5	3	3	4	5	5	4	5	4	6	5	3	6	3	4	2	4	3	6
9-May	3	1	3	2	2	3	1	3	2	4	2	2	3	3	4	6	4	2	3	9	3	2	2	2	9
10-May	3	2	1	1	1	2	1	2	2	2	2	2	3	7	5	4	5	3	8	3	2	5	4	5	8
11-May	2	2	1	2	3	4	3	3	3	3	3	3	4	4	4	4	4	4	3	1	2	3	2	6	6
12-May	2	2	2	3	4	3	2	3	4	4	5	7	7	6	5	5	4	4	2	4	7	4	4	3	7
13-May	1	1	2	2	2	1	3	2	3	2	3	4	4	3	4	5	4	5	2	2	2	2	2	2	5
14-May	2	2	5	3	3	5	2	3	3	2	2	4	4	5	4	5	5	4	5	5	4	6	2	3	6
15-May	3	4	3	3	1	2	2	1	1	2	2	2	3	3	5	6	5	6	4	2	2	1	7	4	7
16-May	5	4	5	3	6	6	6	6	6	6	7	7	6	9	7	9	7	8	7	7	6	5	7	4	9
17-May	5	5	4	6	6	5	5	5	4	5	5	4	5	5	5	5	5	4	3	3	2	3	6	3	6
18-May	2	3	2	2	3	2	3	3	3	4	4	4	4	5	5	4	5	3	4	2	1	4	2	3	5
19-May	2	3	3	2	2	1	1	1	3	2	2	3	2	2	1	2	2	2	2	5	5	4	4	5	5
20-May	4	5	5	5	4	5	3	4	2	2	3	2	3	3	3	3	3	4	3	3	4	4	5	3	5
21-May	3	4	4	4	3	4	5	2	3	3	2	2	3	3	4	3	3	2	2	1	5	2	4	5	5
22-May	6	3	2	3	4	4	5	4	3	3	4	5	4	5	5	5	6	7	5	6	6	5	5	6	7
23-May	7	6	5	5	4	6	5	5	5	7	8	9	7	7	8	6	8	8	6	7	6	5	5	6	9
24-May	6	5	5	5	6	6	5	4	4	4	3	2	3	5	4	3	4	5	3	3	2	3	2	2	6
25-May	2	2	1	1	2	2	2	1	2	3	3	4	3	3	3	3	3	3	3	3	2	1	2	2	4
26-May	3	1	1	1	1	1	4	2	2	2	2	4	4	4	3	3	3	2	3	3	1	2	1	2	4
27-May	2	2	2	2	2	2	2	3	3	5	6	6	5	6	6	5	4	4	5	3	2	3	2	3	6
28-May	2	2	2	2	2	1	3	3	2	5	7	7	8	6	6	8	7	6	7	4	3	4	4	2	8
29-May	1	2	1	3	2	2	2	2	2	5	7	7	6	8	9	8	6	4	5	3	2	3	5	4	9
30-May	3	8	2	2	2	2	1	3	2	2	3	4	3	5	4	5	12	6	4	3	2	4	3	4	12
31-May	3	7	4	3	3	5	3	2	2	2	3	3	3	4	3	4	3	2	2	4	2	3	4	7	7
Diurnal Maximum																									





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed 90 m (WS90m) - km/h
Mannix - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	52	6.99	6.99
6 - 11	124	16.67	23.66
12 - 19	175	23.52	47.18
20 - 28	265	35.62	82.80
29 - 38	110	14.78	97.58
> 38	18	2.42	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Wind Speed 90 m (WS90m) - km/h
Mannix - May 2023

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	3	1	2	1	6	3	10	3	4	2	1	3	3	2	3	5	52
6 - 11	3	3	4	8	9	11	22	17	11	9	5	4	1	6	9	2	124
12 - 19	4	9	3	3	4	10	40	41	12	9	8	4	9	10	6	3	175
20 - 28	12	9	5	1	6	21	84	48	35	13	8	5	5	6	3	4	265
29 - 38	20	6	5	2	1	3	16	18	9	8	5	5	0	2	1	9	110
> 38	0	0	0	1	0	0	0	0	0	0	1	4	0	0	12	0	18
Totals	42	28	19	16	26	48	172	127	71	41	28	25	18	26	34	23	744

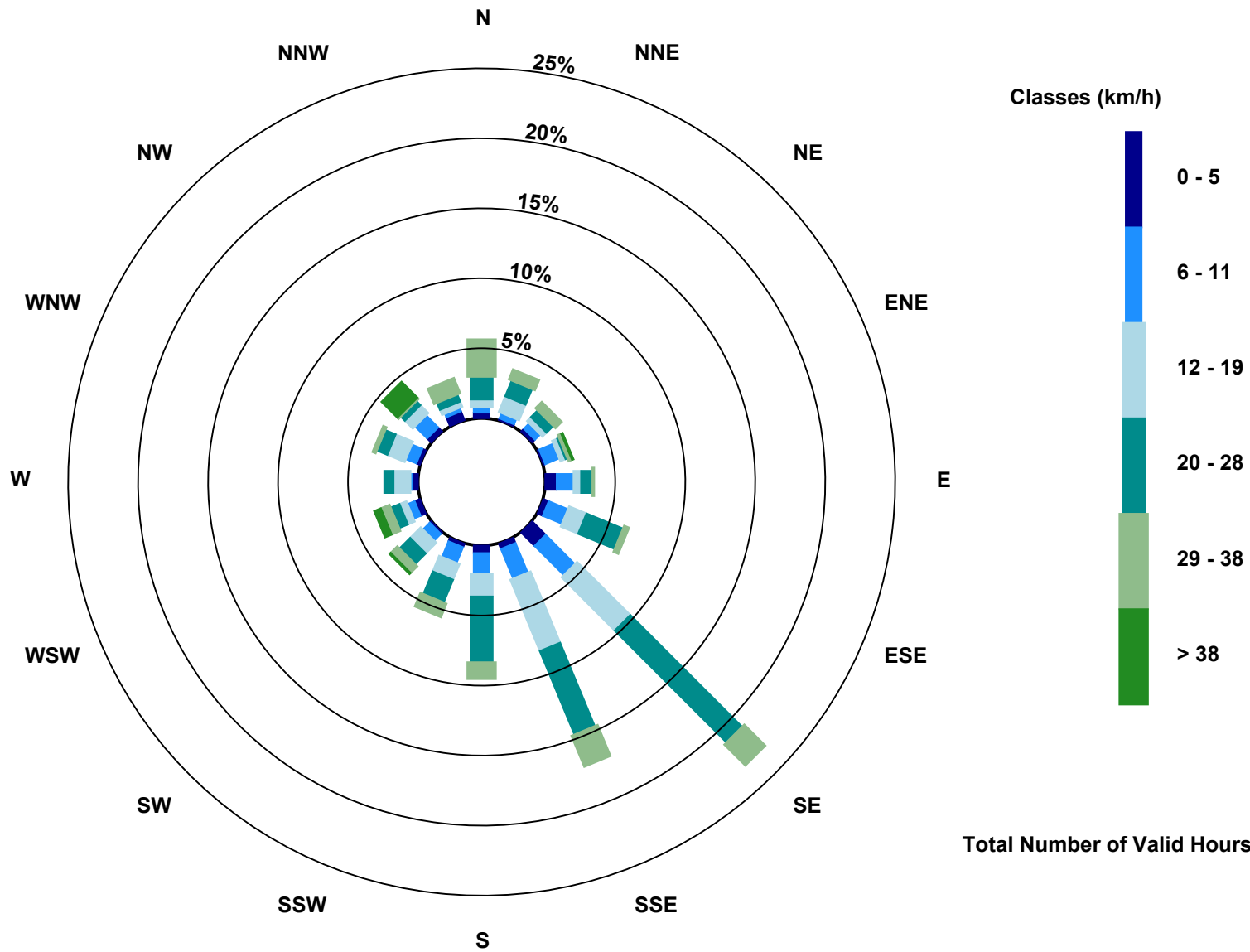
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed 90 m (WS90m) - km/h
Mannix





Direction of Maximum Speed: 253 deg on May 29 14:00		Hours in Service:	744
Direction of Maximum Daily Speed Average: 133.6 deg on May 5		Hours of Data:	744
Direction of Minimum Speed: 222 deg on May 9 15:00		Hours of Missing Data:	0
Direction of Minimum Daily Speed Average: 1.1 deg on May 30		Percent Operational Time:	100.0
Monthly Average Direction: 147.3 deg			

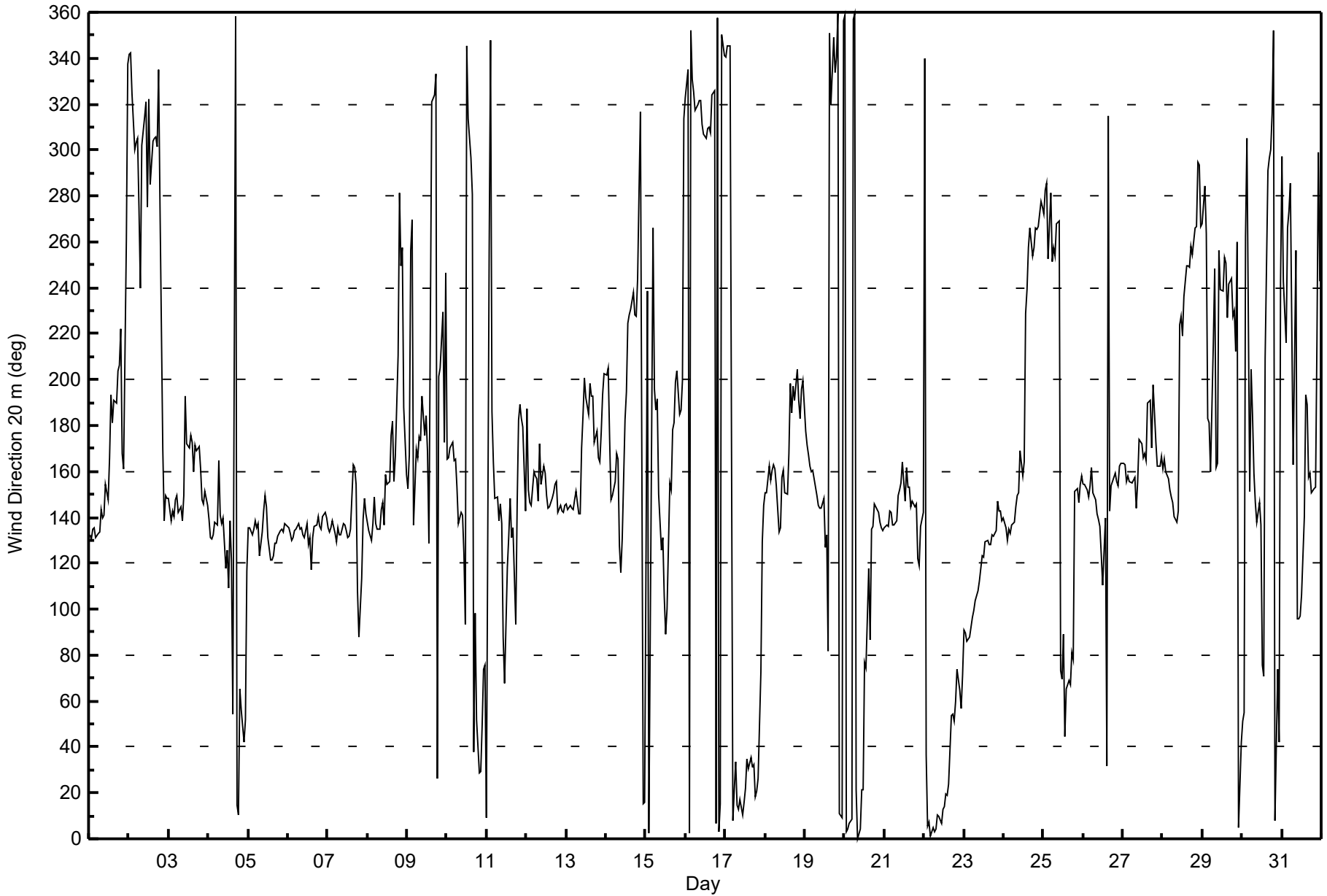
Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	132	130	135	135	131	133	133	143	140	141	154	147	166	194	181	191	190	204	206	222	168	161	261	337	162.6
2-May	342	342	324	300	303	305	274	240	302	314	321	275	322	285	304	305	306	302	335	276	170	139	149	148	307.4
3-May	148	138	143	140	147	149	142	145	139	149	193	172	170	176	172	160	171	169	171	161	148	146	151	145	159.0
4-May	139	131	131	133	138	137	165	141	137	140	118	126	109	138	121	54	358	15	10	65	56	42	52	117	103.2
5-May	135	135	133	135	139	135	138	124	134	143	149	144	131	121	121	123	129	129	132	134	135	134	137	137	133.6
6-May	136	133	130	131	134	135	137	135	135	132	131	137	128	131	117	131	136	137	140	136	135	140	142	140	134.0
7-May	136	134	136	139	133	129	136	133	132	137	137	134	131	132	135	163	162	154	108	88	113	139	148	141	136.9
8-May	138	134	130	137	149	137	135	135	143	146	136	159	154	156	176	182	156	167	210	281	249	258	188	159	155.4
9-May	153	167	256	270	136	170	166	175	173	193	176	184	168	129	222	321	324	333	27	201	205	230	172	247	193.1
10-May	165	166	170	173	165	165	153	137	142	141	124	93	345	314	296	281	38	98	52	29	29	49	74	76	91.0
11-May	9	255	348	186	164	149	149	139	146	137	88	68	119	132	149	131	136	93	146	182	189	183	180	143	141.1
12-May	187	152	147	145	160	158	157	147	172	154	162	159	149	144	145	148	151	154	156	142	145	143	142	145	151.3
13-May	146	144	145	144	144	148	151	141	142	170	184	201	192	185	198	193	193	173	178	166	164	177	193	203	171.6
14-May	202	205	175	148	149	155	168	166	128	116	131	183	194	225	228	231	238	228	228	244	282	317	15	16	206.8
15-May	124	238	2	176	266	196	187	192	150	126	131	105	89	100	155	152	178	181	199	204	185	187	199	313	170.1
16-May	323	335	2	352	331	325	317	319	322	321	311	307	305	309	310	308	324	326	7	357	3	15	350	341	327.8
17-May	340	345	346	345	8	21	34	14	13	17	10	16	22	35	31	35	31	32	18	21	27	73	129	145	19.3
18-May	151	151	162	156	160	163	161	154	133	135	158	161	151	150	168	198	185	197	191	204	191	183	196	199	168.0
19-May	178	172	167	162	160	161	153	149	145	144	144	148	127	132	82	351	320	349	334	340	360	11	9	356	109.7
20-May	359	3	4	7	9	357	360	21	0	5	21	21	77	74	118	86	135	136	146	144	142	138	135	134	59.0
21-May	136	136	136	143	142	136	137	138	149	152	155	164	147	162	153	153	145	147	145	146	122	119	136	142	143.8
22-May	340	37	6	7	1	5	3	4	11	10	7	13	14	20	19	24	54	54	51	60	74	65	56	71	31.3
23-May	91	89	86	88	92	97	99	104	108	112	118	123	123	129	130	128	128	132	132	134	147	143	143	138	117.0
24-May	140	135	130	135	133	137	138	145	150	151	169	158	164	229	239	257	266	254	258	266	265	266	278	275	193.0
25-May	272	283	286	252	282	251	257	254	268	269	73	70	89	44	65	69	67	81	78	151	152	146	154	158	129.4
26-May	154	154	152	149	154	162	151	148	141	139	136	124	110	140	32	315	143	154	157	159	156	154	163	163	149.1
27-May	163	163	156	158	155	155	157	158	144	155	174	172	166	168	165	190	191	170	198	186	173	162	162	167	167.0
28-May	161	165	160	157	152	149	147	140	138	143	224	228	219	236	250	250	249	258	254	266	267	295	293	267	228.2
29-May	268	285	263	183	181	160	215	248	162	163	257	239	239	253	251	227	242	244	227	230	212	260	5	42	240.6
30-May	51	55	263	305	151	204	185	159	146	138	146	137	75	71	209	291	297	300	316	352	8	74	42	242	352.4
31-May	297	243	216	266	273	285	225	163	256	96	96	97	106	140	194	189	158	159	151	152	153	217	299	243	188.2

138.0 134.7 131.3 135.7 136.0 136.2 139.3 133.0 130.8 133.1 152.5 155.2 147.6 162.6 176.1 187.5 178.7 171.3 160.1 155.7 141.5 138.9 137.4 143.8
Diurnal Average

All monthly, daily, and diurnal averages have been calculated using vector methods



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 100 deg on May 9 15:00 Minimum Value: 4 deg on May 1 22:00 Percentiles: P ₁ = 7 P ₁₀ = 10 Q ₁ = 12 Median = 16 Q ₃ = 24 P ₉₀ = 42 P ₉₉ = 81																			Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0						
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	8	7	8	8	7	8	9	10	11	13	19	15	18	22	20	20	19	17	19	11	12	4	53	12	53
2-May	12	13	24	9	11	19	20	74	31	26	32	41	42	44	31	23	37	25	20	31	72	13	6	8	74
3-May	6	8	9	8	8	9	9	9	10	25	24	16	18	18	21	18	16	13	15	7	11	9	8	9	25
4-May	8	7	8	8	9	10	32	14	12	15	36	34	38	24	40	44	19	12	11	50	18	23	17	20	50
5-May	9	9	10	11	10	9	9	15	12	14	12	15	14	17	16	15	14	14	11	9	10	9	10	9	17
6-May	9	9	9	9	10	10	10	13	11	13	14	13	19	14	16	15	14	11	10	10	9	13	13	12	19
7-May	10	11	13	9	11	14	12	12	13	13	17	14	14	15	12	11	14	23	24	10	26	12	12	11	26
8-May	10	9	8	12	11	10	12	11	15	17	18	21	13	15	25	16	23	17	58	19	24	24	28	17	58
9-May	16	12	27	9	42	14	19	28	37	56	23	28	27	39	100	62	66	34	22	75	34	37	24	37	100
10-May	22	12	25	8	6	11	15	30	24	20	38	80	82	44	36	43	93	39	44	13	13	18	16	48	93
11-May	20	76	73	62	58	52	26	23	19	26	55	35	43	59	44	73	44	21	16	12	7	21	21	17	76
12-May	24	18	7	7	14	9	13	26	30	18	21	20	23	21	17	15	19	18	12	11	12	11	11	12	30
13-May	11	10	10	10	11	12	11	12	14	23	19	20	22	19	23	19	20	19	15	9	8	11	11	11	23
14-May	12	12	24	18	14	13	11	19	30	24	17	32	32	25	25	17	20	15	13	49	45	46	10	34	49
15-May	59	67	48	69	22	39	44	42	26	34	28	35	19	21	25	16	26	21	20	13	11	12	51	19	69
16-May	15	15	15	17	16	16	13	14	14	15	14	14	16	19	17	14	15	15	19	16	19	15	18	15	19
17-May	15	16	15	15	24	17	15	15	14	20	22	20	19	24	22	27	23	21	18	16	14	22	22	12	27
18-May	10	10	10	10	10	13	17	19	17	25	33	38	26	30	33	40	51	29	22	20	7	9	12	12	51
19-May	12	15	9	9	9	11	14	12	14	13	14	19	24	39	88	38	38	21	14	16	17	12	14	17	88
20-May	15	16	15	16	16	20	18	23	22	38	58	64	70	36	51	61	21	18	12	13	12	11	11	11	70
21-May	12	11	11	12	12	11	11	13	12	15	20	23	22	23	25	22	15	13	11	10	73	40	12	20	73
22-May	62	13	15	13	13	15	15	14	14	12	15	15	13	14	13	19	15	14	13	15	13	13	13	15	62
23-May	20	12	11	11	10	12	12	12	12	14	16	15	16	14	13	14	14	12	12	12	14	14	13	11	20
24-May	13	11	13	11	11	11	11	14	13	17	19	36	34	25	16	18	12	13	14	11	9	9	10	9	36
25-May	8	9	14	14	23	36	31	45	45	73	40	42	27	40	31	30	23	18	46	12	10	12	11	11	73
26-May	10	11	10	11	12	9	11	26	22	24	39	33	38	56	68	48	78	33	19	10	10	9	8	9	78
27-May	9	10	9	10	10	11	10	15	17	18	22	21	19	20	20	25	21	24	21	15	8	8	11	11	25
28-May	10	12	15	10	12	13	13	15	16	23	31	24	19	18	13	16	17	15	15	11	13	13	12	16	31
29-May	16	10	41	12	42	18	36	33	43	59	21	16	18	15	14	18	18	18	16	14	16	35	28	15	59
30-May	11	92	16	73	32	24	19	20	19	33	60	60	25	41	92	35	16	13	20	15	21	34	37	52	92
31-May	14	82	34	33	13	92	51	44	50	75	32	42	44	47	26	26	16	14	12	13	17	59	35	55	92
	62	92	73	73	58	92	51	74	50	75	60	80	82	59	100	73	93	39	58	75	73	59	53	55	
Diurnal Maximum																									





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 45 m (WD45m) - deg

Mannix - May 2023

Direction of Maximum Speed: 306 deg on May 16 15:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 324.3 deg on May 16	Hours of Data: 744
Direction of Minimum Speed: 227 deg on May 9 15:00	Hours of Missing Data: 0
Direction of Minimum Daily Speed Average: 1.6 deg on May 25	Percent Operational Time: 100.0
Monthly Average Direction: 144.3 deg	

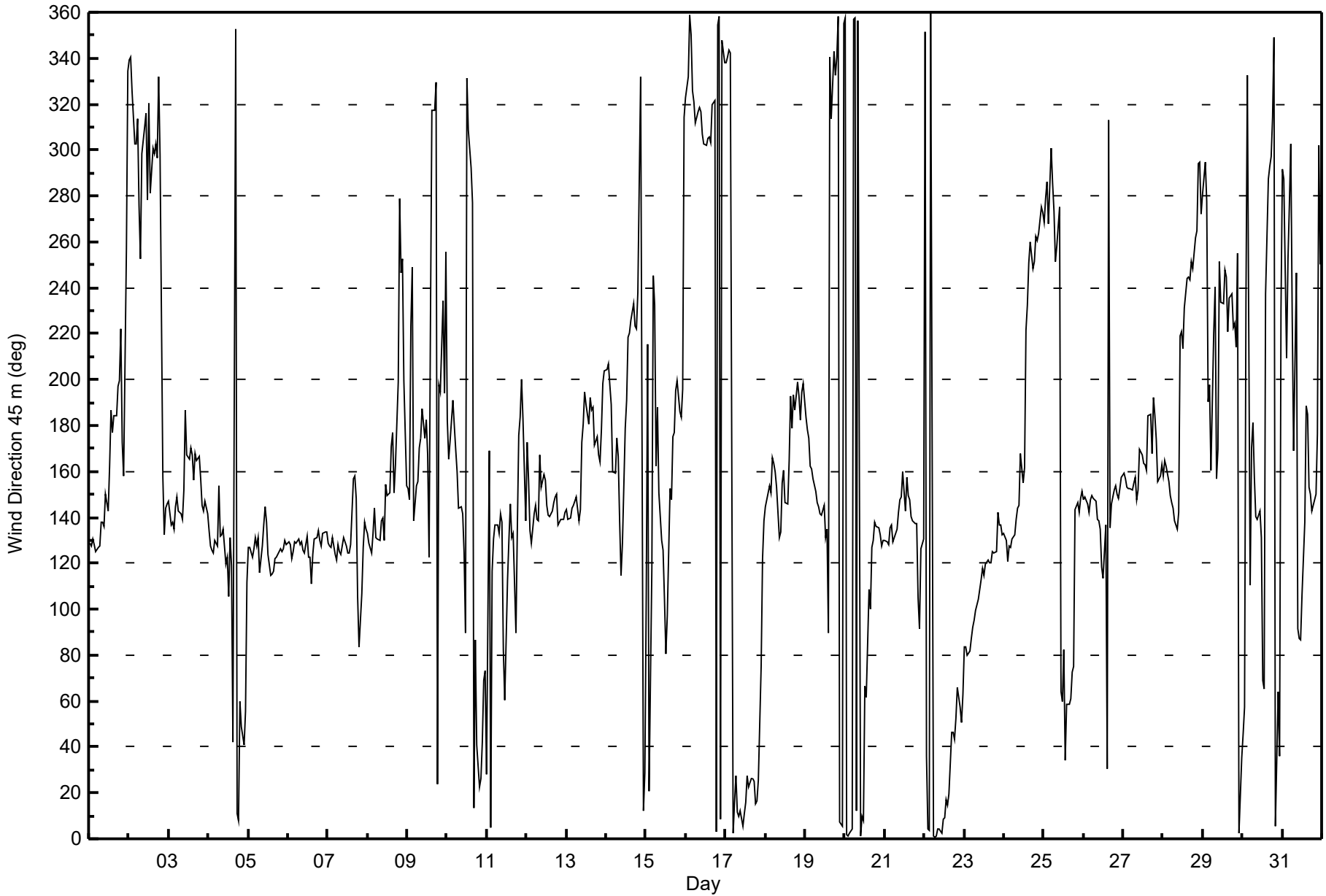
Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	129	128	130	128	125	127	128	138	138	136	150	143	162	187	177	184	185	197	200	222	173	158	257	334	159.2
2-May	339	340	326	303	303	313	276	253	299	310	316	278	320	281	301	299	303	297	332	298	157	132	144	146	307.5
3-May	147	137	138	135	145	149	143	142	139	152	187	167	165	170	167	156	168	165	166	157	145	143	147	141	154.4
4-May	134	127	125	125	130	127	154	132	133	135	119	123	105	131	119	42	353	11	8	60	49	41	56	112	97.9
5-May	127	127	123	127	131	128	131	116	128	136	144	138	124	115	115	117	122	123	124	126	125	126	130	128	126.4
6-May	129	128	122	125	129	129	131	128	129	126	125	132	123	123	111	124	131	131	134	130	127	133	133	134	127.9
7-May	129	127	127	131	124	121	128	125	124	131	129	127	124	125	128	157	158	148	105	83	107	127	138	135	129.9
8-May	133	128	125	133	144	131	131	130	139	139	130	154	150	151	171	177	151	163	199	279	246	253	199	154	151.5
9-May	152	148	223	249	138	154	155	170	174	187	175	182	167	123	227	317	317	330	24	198	195	234	194	256	187.8
10-May	183	165	173	191	180	170	160	144	145	142	124	90	331	309	292	277	14	87	41	23	26	42	69	73	78.1
11-May	28	169	5	117	131	137	137	133	142	138	82	61	113	130	146	131	133	90	135	176	184	200	183	139	137.4
12-May	173	156	134	128	141	145	139	138	167	153	159	156	145	141	140	143	146	149	150	137	139	139	139	142	144.9
13-May	143	139	140	144	146	147	149	139	143	173	181	195	189	180	192	187	188	171	175	167	164	178	198	204	169.6
14-May	204	207	197	189	160	159	174	167	138	115	129	179	191	219	220	226	233	223	222	238	286	332	12	29	206.3
15-May	106	216	21	117	245	232	162	188	151	130	126	105	81	97	152	147	175	177	195	200	186	184	196	314	168.6
16-May	323	332	359	350	326	321	312	316	318	317	307	302	302	305	306	303	320	322	3	354	358	9	348	338	324.3
17-May	338	340	343	342	3	16	27	11	10	12	5	11	16	27	22	26	26	25	16	17	26	75	122	139	14.0
18-May	145	148	154	151	166	164	160	153	131	134	155	161	146	146	165	193	179	193	187	199	193	183	195	198	167.2
19-May	184	178	175	162	161	157	151	146	145	141	141	145	131	135	90	340	314	343	332	340	358	7	5	355	124.9
20-May	358	2	1	2	4	357	358	12	356	1	10	8	66	62	108	100	127	130	138	136	135	133	127	130	52.8
21-May	130	129	128	135	136	130	131	135	142	148	149	160	143	158	150	148	140	138	137	138	105	92	126	131	136.5
22-May	351	36	4	4	360	1	1	1	5	4	3	8	9	17	15	20	47	47	43	53	66	58	50	63	25.3
23-May	84	84	80	81	87	92	95	99	104	108	113	118	115	120	122	120	120	125	125	142	137	137	132	111.6	
24-May	133	130	121	128	127	131	132	139	144	145	168	155	162	221	232	251	260	248	252	262	260	263	275	273	184.4
25-May	269	279	286	268	301	286	274	251	258	275	64	59	82	34	58	59	61	73	75	143	146	142	148	152	134.0
26-May	148	149	146	142	147	149	148	147	139	139	135	118	113	137	31	313	136	146	152	154	150	149	152	158	145.1
27-May	159	157	153	153	153	152	155	157	148	152	170	167	164	163	160	184	185	168	192	184	174	156	158	163	163.3
28-May	158	165	162	155	149	146	144	139	135	142	219	221	214	231	244	244	244	252	249	262	265	294	295	272	220.0
29-May	281	295	278	190	198	160	220	240	157	170	251	234	233	248	245	221	235	237	223	225	214	255	2	36	237.4
30-May	46	57	234	332	110	170	181	157	140	139	143	131	69	65	238	288	293	297	314	349	6	64	36	230	356.7
31-May	292	288	210	253	276	302	228	169	247	91	87	86	106	138	189	185	153	150	143	147	150	176	302	250	192.5

135.6 131.8 128.6 131.9 133.4 130.8 136.3 128.9 127.4 130.9 151.2 153.4 146.7 159.6 173.4 184.1 176.1 168.6 155.8 152.7 140.1 137.2 135.5 139.8
 Diurnal Average

All monthly, daily, and diurnal averages have been calculated using vector methods



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0														Hours in Service: 744											
Maximum Value: 99 deg on May 9 15:00														Hours of Data: 744											
Minimum Value: 3 deg on May 26 23:00														Hours of Missing Data: 0											
Percentiles: P ₁ = 3 P ₁₀ = 6 Q ₁ = 8 Median = 11 Q ₃ = 19 P ₉₀ = 36 P ₉₉ = 78														Hours of Calibration: 0											
														Percent Operational Time: 100.0											
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	6	4	4	5	3	4	6	8	9	11	16	13	14	16	15	14	13	10	15	7	11	5	54	9	54
2-May	8	10	20	6	5	11	17	78	24	19	24	37	34	39	26	20	30	23	14	23	74	9	4	5	78
3-May	4	6	3	4	6	4	6	7	8	21	18	11	14	13	17	14	12	11	11	5	8	6	5	6	21
4-May	5	3	5	5	6	8	26	10	9	13	33	29	35	20	34	36	17	8	8	46	14	20	18	14	46
5-May	7	6	9	9	7	6	6	12	9	12	10	12	12	14	14	13	12	12	9	7	8	8	9	7	14
6-May	6	7	7	6	7	6	8	10	9	11	14	11	17	12	13	13	12	9	9	8	8	11	10	8	17
7-May	7	10	11	6	10	12	9	10	11	10	14	12	13	11	11	8	12	20	22	10	21	10	10	8	22
8-May	7	6	6	9	8	8	8	7	11	13	13	16	11	12	20	9	19	12	57	18	21	19	27	14	57
9-May	12	8	31	12	45	9	11	22	25	41	18	18	20	33	99	63	68	23	17	71	28	12	30	11	99
10-May	56	7	12	14	9	11	12	22	18	13	31	76	69	32	28	42	79	35	38	8	8	15	13	24	79
11-May	20	48	80	35	14	38	21	17	13	21	50	33	44	50	40	73	40	19	12	9	4	27	25	12	80
12-May	16	17	5	4	9	6	7	22	26	12	16	15	19	16	16	12	15	15	10	7	8	7	7	7	26
13-May	5	4	4	4	4	6	5	7	10	12	8	9	14	11	12	10	11	14	8	4	3	7	5	5	14
14-May	6	6	10	21	14	7	6	11	32	18	14	22	21	19	20	15	15	10	8	41	29	37	10	24	41
15-May	37	72	24	63	42	68	96	45	22	29	21	30	19	20	21	10	20	13	15	6	4	3	45	14	96
16-May	9	12	10	11	11	10	8	10	9	11	11	11	13	16	15	11	10	12	15	11	14	11	12	9	16
17-May	10	10	10	10	20	11	9	9	9	13	17	14	14	18	17	22	17	15	14	10	11	19	17	8	22
18-May	7	5	4	4	5	8	10	14	12	21	23	31	21	26	27	30	38	23	13	12	5	7	7	5	38
19-May	5	6	5	4	3	5	8	6	8	7	8	12	26	33	75	29	25	16	10	9	10	7	9	10	75
20-May	9	11	8	10	10	12	11	16	11	22	43	48	71	28	55	60	17	16	7	7	7	7	7	7	71
21-May	6	6	6	8	7	5	6	10	9	9	12	15	14	16	17	15	10	8	6	5	55	32	5	11	55
22-May	90	10	16	7	7	8	8	7	7	7	9	9	8	10	8	13	12	10	9	13	10	9	10	12	90
23-May	19	11	9	9	9	10	10	11	11	13	12	13	11	10	11	11	9	8	9	11	9	9	7	7	19
24-May	8	7	10	7	7	7	10	8	11	11	27	26	19	12	16	10	9	10	8	7	6	8	6	6	27
25-May	6	4	6	13	11	21	24	44	29	55	37	41	22	33	28	26	19	17	41	8	6	6	7	6	55
26-May	6	4	5	5	7	4	6	16	16	15	31	27	32	49	64	43	82	28	13	7	6	4	3	3	82
27-May	4	4	4	4	5	6	5	9	12	11	15	16	14	14	16	17	15	19	14	13	7	3	6	6	19
28-May	6	6	9	5	6	7	8	9	9	17	26	19	14	15	10	13	14	13	13	8	10	8	5	11	26
29-May	8	8	20	11	10	17	35	27	36	63	17	13	15	13	11	14	15	14	11	8	16	29	21	10	63
30-May	7	61	28	50	16	24	9	16	12	23	54	52	22	37	89	31	13	8	15	10	15	27	29	52	89
31-May	9	71	28	5	10	83	39	32	40	76	29	40	36	44	16	19	12	9	7	10	14	73	34	60	83
														Diurnal Maximum											





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 75 m (WD75m) - deg

Mannix - May 2023

Direction of Maximum Speed: 309 deg on May 16 15:00																Hours in Service: 744	
Direction of Maximum Daily Speed Average: 328.8 deg on May 16																Hours of Data: 744	
Direction of Minimum Speed: 312 deg on May 9 15:00								Direction of Minimum Daily Speed Average: 1.7 deg on May 25								Hours of Missing Data: 0	
Monthly Average Direction: 150.8 deg																Percent Operational Time: 100.0	

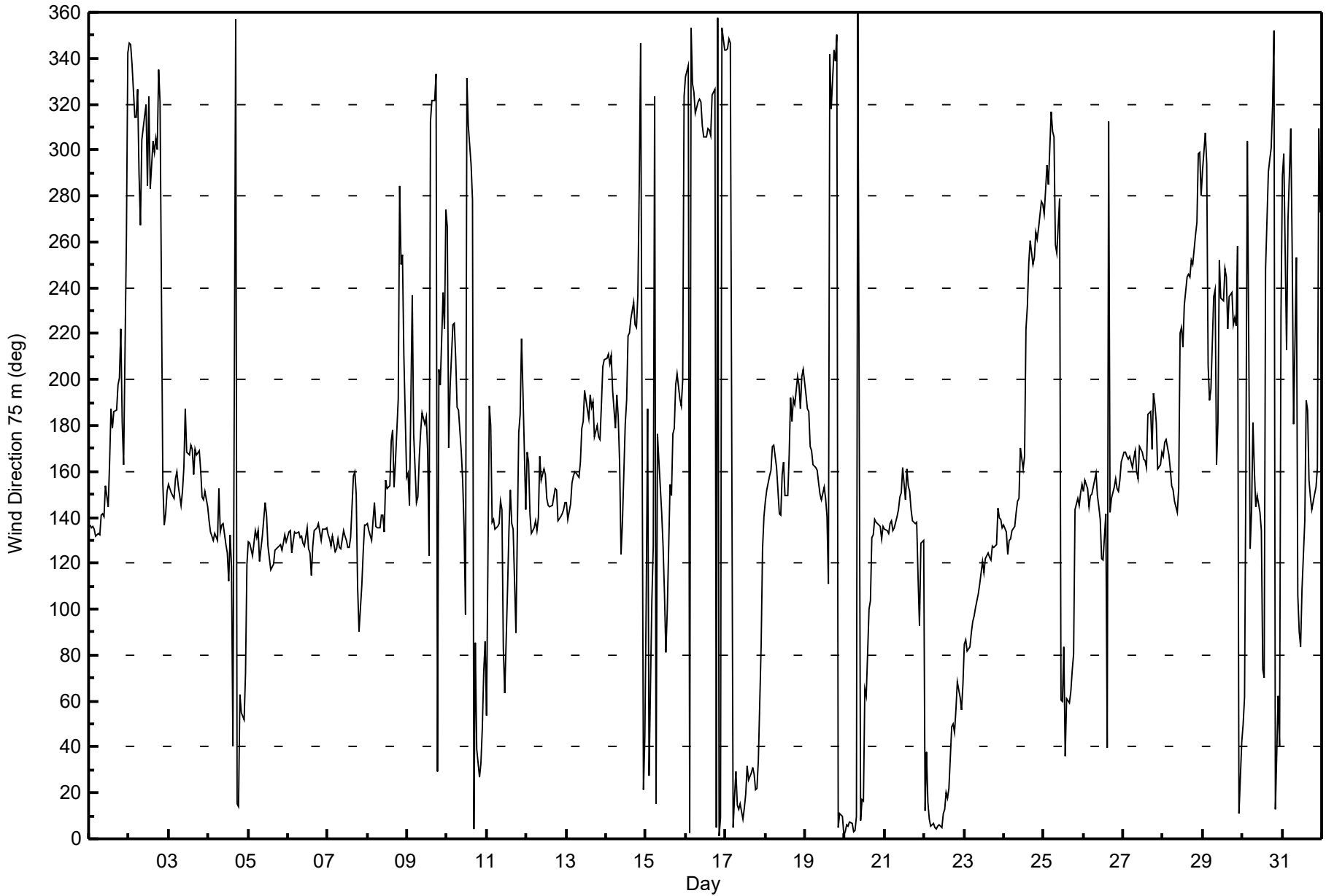
Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	137	136	136	135	132	133	132	141	142	140	154	145	164	187	179	186	187	198	201	222	181	163	262	342	163.1
2-May	347	346	338	314	314	326	290	267	304	315	320	284	324	283	304	299	305	300	335	321	154	137	142	152	317.0
3-May	155	151	149	148	157	160	153	145	151	161	187	168	167	172	170	158	170	167	169	160	149	147	151	145	159.3
4-May	139	134	132	130	133	130	152	134	137	137	128	125	112	133	119	40	357	15	14	63	55	52	72	120	101.0
5-May	129	129	123	129	134	131	134	121	132	139	146	141	127	117	119	119	126	126	127	128	126	129	132	129	129.8
6-May	134	134	125	129	134	133	134	131	132	129	127	135	127	125	114	128	134	135	137	134	130	135	135	136	131.6
7-May	133	130	127	132	125	126	130	127	126	134	132	130	127	127	131	158	160	150	110	90	111	125	137	137	132.8
8-May	137	134	130	138	147	136	136	136	141	141	134	156	152	154	173	178	153	164	192	284	250	255	211	157	156.7
9-May	159	145	190	237	176	146	149	166	177	185	181	184	169	123	312	322	322	333	29	204	197	238	222	274	187.6
10-May	266	170	196	224	224	209	188	187	169	156	135	97	332	311	294	278	4	85	39	27	33	48	72	86	48.5
11-May	54	188	180	138	139	135	136	137	147	143	83	64	109	135	152	137	135	90	134	177	185	218	195	144	142.9
12-May	169	164	142	133	135	138	134	140	166	156	161	158	148	145	145	149	152	152	138	141	141	143	146	146	147.0
13-May	146	139	146	155	158	160	159	157	164	179	182	195	191	183	193	188	191	175	180	175	174	189	206	209	175.5
14-May	210	211	207	211	195	179	193	183	164	124	138	181	191	219	220	226	234	224	223	237	285	347	21	45	212.8
15-May	105	187	27	104	128	324	15	176	165	142	127	107	81	99	154	149	177	179	197	202	192	189	200	323	173.8
16-May	332	337	2	353	329	325	316	321	322	321	311	305	305	309	309	306	324	326	5	358	1	9	353	344	328.8
17-May	344	344	348	347	5	18	29	15	13	16	9	13	19	32	26	29	31	28	21	22	34	84	126	140	17.2
18-May	147	152	158	160	171	172	166	162	141	141	159	164	150	149	167	192	182	192	189	201	198	187	201	204	172.5
19-May	193	187	186	171	169	163	162	161	155	150	148	153	148	140	111	341	318	344	339	350	5	11	10	2	144.7
20-May	3	6	5	7	7	3	4	9	360	8	17	17	65	62	100	104	131	132	139	138	137	136	130	136	52.9
21-May	135	134	133	138	138	134	136	140	143	149	151	162	148	161	154	151	143	138	137	138	113	93	129	130	139.2
22-May	12	38	16	8	5	7	5	4	5	6	5	11	13	20	17	22	49	50	46	56	68	62	56	67	28.8
23-May	85	87	82	84	90	95	97	101	107	111	116	121	116	122	124	123	122	128	127	128	144	140	139	136	113.8
24-May	136	134	124	130	131	134	136	142	147	148	170	161	167	222	232	251	261	250	253	264	261	266	277	277	191.2
25-May	272	283	294	285	316	308	306	259	255	279	60	60	83	36	61	59	64	73	80	144	148	145	150	154	132.6
26-May	152	156	152	145	149	150	153	159	150	144	139	122	121	142	40	313	142	148	153	157	152	151	156	164	150.3
27-May	169	168	167	165	167	161	166	169	160	157	171	168	165	165	161	185	186	170	194	189	181	161	163	169	169.0
28-May	166	173	174	167	161	154	152	147	142	152	220	223	214	232	245	246	245	252	250	263	269	298	299	280	221.9
29-May	291	307	294	206	191	196	236	239	163	181	252	236	234	249	245	222	236	238	224	227	223	258	11	42	242.0
30-May	50	62	166	304	126	143	181	160	145	149	142	134	74	70	248	291	296	301	319	352	13	62	40	228	15.6
31-May	289	298	213	270	289	310	256	181	253	106	90	84	109	138	191	186	156	149	144	150	153	161	309	273	196.1

142.5 139.9 137.5 141.8 141.9 136.0 141.8 138.4 136.4 137.5 157.2 158.4 152.6 166.4 181.5 189.6 182.9 173.7 159.7 158.1 143.7 143.2 142.1 143.9
Diurnal Average

All monthly, daily, and diurnal averages have been calculated using vector methods

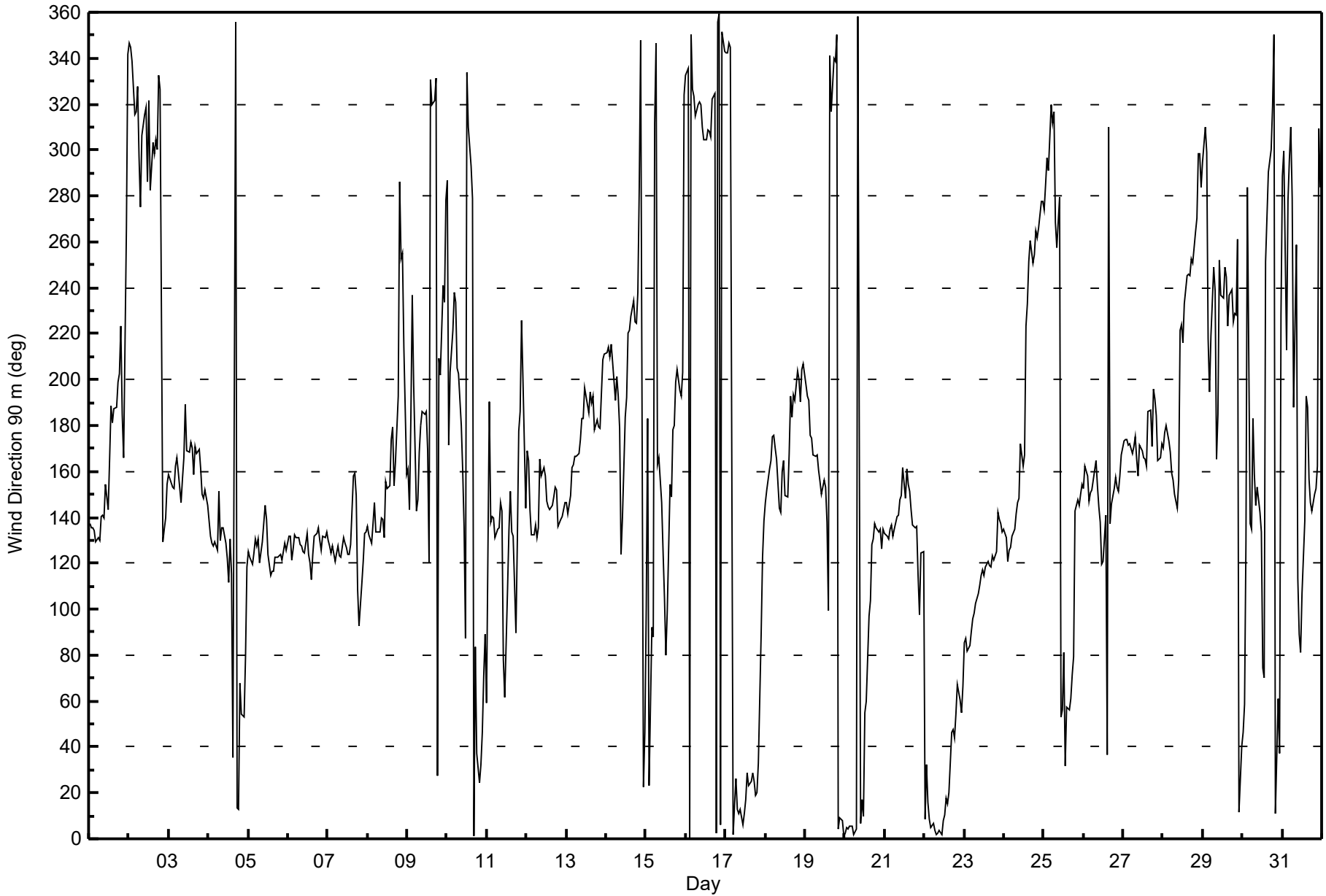


Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0											Hours in Service: 744														
Maximum Value: 96 deg on May 9 15:00											Hours of Data: 744														
Minimum Value: 2 deg on May 26 23:00											Hours of Missing Data: 0														
Percentiles: P ₁ = 3 P ₁₀ = 5 Q ₁ = 7 Median = 11 Q ₃ = 17 P ₉₀ = 34 P ₉₉ = 74											Hours of Calibration: 0														
											Percent Operational Time: 100.0														
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	5	3	3	4	5	4	7	7	8	10	14	11	13	14	14	13	12	9	15	8	9	4	55	8	55
2-May	6	9	16	6	5	6	15	66	20	17	22	37	34	38	24	19	28	23	12	21	82	9	4	4	82
3-May	4	5	5	3	4	4	7	6	9	17	17	10	13	12	14	13	10	10	10	4	6	4	4	5	17
4-May	3	3	7	7	5	10	21	10	9	12	29	26	31	20	34	32	16	7	8	42	13	19	19	13	42
5-May	9	9	12	10	6	7	6	13	10	10	8	11	13	15	15	14	12	13	10	9	11	9	9	9	15
6-May	7	8	11	9	8	6	9	12	9	11	15	10	17	13	15	13	13	8	8	8	10	12	9	7	17
7-May	8	12	14	8	13	12	10	12	13	9	14	13	13	12	11	8	11	18	21	9	19	13	10	7	21
8-May	7	6	9	7	6	9	8	7	9	12	15	14	9	11	18	7	17	11	57	19	19	15	24	11	57
9-May	13	8	27	19	46	7	7	17	20	36	15	15	16	34	96	56	68	20	15	64	24	7	28	15	96
10-May	59	5	6	12	8	10	11	32	18	18	27	71	65	30	24	43	72	23	34	5	6	12	10	13	72
11-May	22	41	66	15	6	22	16	14	12	22	44	27	43	43	28	68	34	18	12	9	6	29	27	10	68
12-May	8	11	7	7	6	4	4	17	20	10	13	14	16	14	15	11	13	13	9	7	7	5	5	5	20
13-May	3	3	3	3	3	3	4	7	9	6	7	7	13	9	10	9	12	6	4	3	7	3	3	3	13
14-May	4	4	6	9	16	13	8	11	37	17	16	19	20	19	18	14	14	10	7	37	26	35	12	12	37
15-May	26	65	24	35	51	31	51	44	21	28	21	28	18	21	18	10	18	11	15	5	3	3	41	13	65
16-May	8	11	9	10	9	9	7	9	8	10	11	11	12	16	15	11	9	10	14	9	12	10	10	7	16
17-May	9	8	7	8	18	10	8	8	8	10	15	11	12	17	16	19	14	13	11	8	12	17	15	5	19
18-May	5	3	3	3	3	5	9	12	12	19	20	28	18	22	25	26	34	20	12	11	5	6	6	3	34
19-May	5	5	5	3	3	4	5	5	8	7	7	12	25	36	73	24	25	15	10	10	8	5	7	7	73
20-May	7	8	7	8	8	9	7	13	11	17	42	43	65	24	54	55	17	17	6	6	6	7	10	6	65
21-May	5	5	6	6	5	5	5	9	9	9	11	13	12	12	15	12	7	6	4	4	43	24	10	12	43
22-May	80	5	17	6	6	6	6	5	5	5	7	7	7	8	7	12	10	9	8	12	7	7	9	11	80
23-May	19	10	9	9	10	10	10	12	12	13	14	13	14	13	11	13	12	10	10	11	10	9	8	6	19
24-May	8	7	12	9	8	7	7	8	7	11	10	23	25	17	12	16	10	7	9	8	7	7	7	6	25
25-May	5	4	5	12	7	11	22	59	32	57	33	41	19	31	26	23	15	13	37	6	4	4	4	4	59
26-May	4	3	5	2	3	3	5	14	13	12	27	25	30	40	64	42	86	25	11	6	6	3	2	5	86
27-May	2	4	4	4	4	5	5	8	10	11	13	14	13	13	14	15	13	18	13	14	8	4	5	5	18
28-May	5	5	7	4	5	4	7	9	9	16	24	18	13	14	8	12	13	12	11	7	10	7	5	8	24
29-May	8	7	16	17	6	27	34	25	32	64	17	11	13	12	11	12	14	13	10	8	17	28	17	8	64
30-May	6	25	47	67	35	16	11	11	12	24	50	43	24	35	89	29	13	8	14	10	10	24	23	52	89
31-May	11	55	43	12	7	93	63	21	35	80	32	36	32	36	14	17	10	8	7	11	14	76	35	68	93
Diurnal Maximum																									





Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 92 deg on May 9 15:00 Minimum Value: 1 deg on May 26 23:00 Percentiles: P ₁ = 3 P ₁₀ = 4 Q ₁ = 7 Median = 10 Q ₃ = 17 P ₉₀ = 32 P ₉₉ = 74																	Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0								
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	5	3	2	4	3	3	4	7	8	10	14	12	13	14	14	13	12	8	15	8	9	5	54	7	54
2-May	6	8	15	5	4	6	13	50	19	16	20	35	30	32	23	17	27	22	10	18	90	8	3	3	90
3-May	4	4	5	3	5	4	8	6	10	16	17	10	14	12	14	13	10	9	10	4	6	3	3	4	17
4-May	3	2	6	5	4	8	21	10	9	11	29	25	31	19	34	30	15	7	8	40	14	19	20	10	40
5-May	7	7	8	8	6	5	5	10	8	10	8	12	11	11	11	10	10	11	8	7	8	7	9	8	12
6-May	6	8	8	6	8	6	8	11	9	10	14	10	15	10	12	12	12	8	8	8	8	11	8	7	15
7-May	7	11	12	7	10	11	9	10	11	9	12	12	12	10	10	8	12	19	18	8	17	12	9	7	19
8-May	7	6	7	7	6	9	9	8	10	12	15	15	10	11	19	7	17	11	56	19	18	12	22	11	56
9-May	15	9	25	19	57	7	7	15	19	34	16	16	16	40	92	59	58	18	14	59	24	7	25	14	92
10-May	50	6	8	11	3	11	11	30	21	20	26	67	62	25	23	39	70	21	32	4	5	12	10	9	70
11-May	21	39	57	15	7	15	12	13	14	21	43	25	44	42	24	63	36	18	11	10	7	29	27	11	63
12-May	7	11	7	9	5	4	2	15	17	10	13	15	17	15	15	12	14	14	10	7	7	5	5	4	17
13-May	2	4	4	3	3	3	5	7	7	4	7	7	13	9	10	8	9	12	6	3	4	7	3	3	13
14-May	4	4	5	7	13	15	7	12	41	14	17	19	18	17	13	13	9	6	34	26	34	13	11	41	
15-May	22	60	29	37	37	39	36	39	21	28	21	26	19	19	18	11	17	11	15	4	3	2	40	12	60
16-May	7	10	8	9	8	8	7	8	7	9	10	10	11	15	14	10	8	10	14	8	11	9	10	6	15
17-May	8	7	7	8	17	9	8	7	7	9	14	10	11	16	16	18	14	12	10	7	13	15	12	5	18
18-May	5	3	4	2	4	5	9	12	13	18	20	28	19	22	26	25	34	19	13	10	5	5	5	3	34
19-May	4	5	5	3	3	3	4	4	9	7	8	12	26	44	90	24	23	12	10	9	8	5	6	7	90
20-May	6	7	6	7	7	8	7	11	12	16	35	41	60	25	54	53	16	16	5	6	6	6	9	5	60
21-May	4	5	4	6	4	4	5	9	9	9	13	13	12	12	14	13	7	7	4	4	38	20	7	10	38
22-May	67	4	15	6	5	5	5	5	5	4	7	7	6	7	6	12	9	8	7	12	7	7	9	11	67
23-May	19	10	9	9	9	9	8	9	8	10	11	10	11	10	8	10	9	7	7	9	11	9	8	6	19
24-May	8	6	9	7	6	6	7	8	7	11	11	22	26	16	12	16	9	7	9	7	6	6	7	5	26
25-May	5	4	5	13	5	8	18	72	32	52	35	36	19	30	25	23	14	13	37	6	4	3	4	3	72
26-May	4	4	7	2	3	3	6	14	14	13	23	26	32	38	60	38	84	26	12	5	6	4	1	6	84
27-May	3	5	5	4	4	4	5	7	10	12	13	14	13	14	15	16	13	18	12	14	9	5	5	4	18
28-May	5	6	7	5	4	4	7	10	11	18	24	17	13	14	8	12	13	12	11	7	9	7	5	7	24
29-May	8	6	12	21	9	24	29	21	32	58	16	11	12	11	10	11	13	12	9	8	17	26	17	7	58
30-May	4	18	45	74	24	12	14	12	14	25	44	41	26	33	87	25	14	7	13	10	9	25	22	54	87
31-May	11	45	54	12	6	54	48	20	32	86	34	36	31	34	14	17	10	9	7	11	15	75	34	75	86
Diurnal Maximum																									





Maximum Value: 1.5 km/h on May 5 08:00		Maximum Daily Average: 1.2 km/h on May 23		Hours in Service: 744																																												
Minimum Value: -1.4 km/h on May 16 09:00		Minimum Daily Average: -0.8 km/h on May 16		Hours of Data: 744																																												
Maximum Diurnal Average: 0.5 km/h at hour 13		Minimum Diurnal Average: 0.3 km/h at hour 20		Hours of Missing Data: 0																																												
Monthly Average: 0.36 km/h		Percentiles: P ₁ = -0.9 P ₁₀ = -0.3 Q ₁ = 0.1 Median = 0.4 Q ₃ = 0.7 P ₉₀ = 0.9 P ₉₉ = 1.4		Hours of Calibration: 0																																												
				Percent Operational Time: 100.0																																												
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	0.8	0.7	0.8	0.7	0.7	0.8	0.6	0.6	0.5	0.4	0.8	0.8	0.9	0.5	0.6	0.3	0.2	0.3	0.2	0.1	0.6	0.8	0.1	-0.9	0.5	0.9																						
2-May	-0.7	-0.6	-0.4	-0.3	-0.2	0.0	-0.1	0.1	0.1	-0.2	-0.1	0.0	0.1	0.3	-0.3	-0.5	-0.5	-0.2	-0.1	0.0	0.2	0.6	0.5	0.5	-0.1	0.6																						
3-May	0.6	1.0	0.8	0.8	0.7	0.6	0.7	0.8	0.9	0.8	0.6	0.7	0.9	0.7	0.8	1.2	0.8	0.8	0.7	0.9	0.9	0.9	1.0	0.7	0.8	1.2																						
4-May	0.7	0.9	0.7	0.9	0.8	0.7	0.4	0.6	0.5	0.5	0.6	0.6	0.4	0.8	0.3	0.1	-0.5	-0.6	-0.5	0.1	0.0	0.1	0.0	0.9	0.4	0.9																						
5-May	0.7	0.8	1.2	1.0	1.0	0.9	1.0	1.5	0.9	0.8	1.2	1.1	1.1	1.4	1.5	1.3	1.3	1.2	1.0	1.0	0.8	0.9	1.0	1.0	1.1	1.5																						
6-May	0.9	0.9	0.4	0.7	0.8	0.8	0.5	0.7	0.7	1.1	1.0	1.1	1.1	1.1	0.8	1.1	1.0	0.9	1.0	0.6	0.7	0.4	0.6	0.8	1.1																							
7-May	0.7	0.8	0.7	0.5	0.8	1.1	0.8	0.7	0.9	0.8	1.2	0.9	1.3	1.2	1.1	1.1	0.7	0.5	0.4	0.3	0.7	0.8	0.5	0.6	0.8	1.3																						
8-May	0.9	0.7	0.7	1.0	0.7	0.6	0.8	0.7	0.6	0.7	0.6	0.7	1.1	0.8	0.5	0.4	0.6	0.5	0.2	-0.2	0.2	0.1	0.1	0.5	0.6	1.1																						
9-May	0.3	0.3	0.0	0.0	0.1	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.5	0.7	0.6	0.2	0.0	-0.3	0.0	0.1	0.2	0.1	0.0	0.1	0.2	0.7																						
10-May	0.0	0.4	0.1	0.1	0.2	0.2	0.1	0.3	0.4	0.3	0.5	0.3	0.1	-0.6	0.2	0.0	0.4	0.2	0.1	-0.2	-0.1	0.1	0.5	0.3	0.2	0.5																						
11-May	-0.2	0.0	0.0	0.1	0.1	0.5	0.2	0.4	0.5	0.5	0.5	0.4	0.3	0.5	0.3	0.2	0.4	0.8	0.6	0.2	0.1	0.1	0.1	0.5	0.3	0.8																						
12-May	0.1	0.5	0.5	0.6	0.5	0.5	0.4	0.4	0.3	0.6	0.8	0.8	0.9	0.9	0.8	1.0	0.7	0.7	0.6	0.5	0.8	0.9	0.7	0.6	0.6	1.0																						
13-May	0.6	0.5	0.4	0.4	0.5	0.5	0.6	0.3	0.5	0.4	0.3	0.2	0.4	0.2	0.4	0.2	0.5	0.5	0.3	0.6	0.7	0.4	0.2	0.1	0.4	0.7																						
14-May	0.1	0.1	0.1	0.1	0.4	0.5	0.3	0.4	0.3	0.4	0.2	0.4	0.4	0.1	0.2	0.2	0.3	0.2	0.0	0.1	0.0	-0.1	-0.4	-0.2	0.2	0.5																						
15-May	0.2	0.0	-0.2	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.4	0.6	0.3	0.9	0.9	1.1	0.6	0.4	0.2	0.1	0.3	0.2	0.3	-0.6	0.3	1.1																						
16-May	-0.6	-0.7	-0.6	-0.5	-0.5	-0.6	-1.2	-0.9	-1.4	-1.1	-1.1	-1.0	-0.8	-0.7	-1.1	-0.9	-1.0	-0.9	-0.5	-0.7	-0.6	-0.3	-0.6	-0.4	-0.8	-0.3																						
17-May	-0.6	-0.4	-0.6	-0.8	-0.4	-0.1	-0.2	-0.6	-0.5	-0.4	-0.4	-0.5	0.0	0.0	0.2	0.2	0.1	0.0	-0.2	-0.1	-0.1	0.4	0.7	0.7	-0.1	0.7																						
18-May	0.6	0.6	0.4	0.6	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.6	0.8	0.6	0.4	0.1	0.3	0.2	0.2	0.2	0.1	0.3	0.1	0.2	0.4	0.8																						
19-May	0.3	0.4	0.5	0.8	0.8	0.5	0.5	0.6	0.6	0.6	0.7	0.5	0.3	0.1	0.1	0.1	0.0	-0.2	-0.3	-0.4	-0.6	-0.7	-0.6	-0.7	0.2	0.8																						
20-May	-0.7	-0.6	-0.7	-0.6	-0.4	-0.4	-0.3	-0.1	-0.1	0.1	0.2	0.0	0.3	0.2	0.5	0.5	0.5	0.6	0.5	0.7	0.5	0.6	0.7	0.7	0.1	0.7																						
21-May	0.6	0.7	0.7	0.7	0.5	0.5	0.6	0.4	0.5	0.6	0.6	0.4	0.6	0.4	0.6	0.6	0.6	0.4	0.4	0.4	0.2	0.2	0.6	0.5	0.5	0.7																						
22-May	-0.2	-0.2	-0.4	-0.4	-0.6	-0.5	-0.6	-0.6	-0.5	-0.7	-0.6	-0.6	-0.7	-0.5	-0.5	-0.3	0.3	0.5	0.3	0.5	0.9	1.1	0.6	1.0	-0.1	1.1																						
23-May	1.0	1.1	1.2	1.3	1.5	1.4	1.5	1.3	1.2	1.2	1.4	1.1	1.5	1.4	1.2	1.2	1.3	1.1	1.1	0.9	1.0	0.7	0.9	0.8	1.2	1.5																						
24-May	0.8	0.8	1.2	0.8	1.0	1.1	0.9	0.8	0.9	0.7	0.4	0.5	0.3	0.3	0.3	0.3	0.2	0.2	0.4	0.3	0.2	0.3	0.4	0.3	0.5	1.2																						
25-May	0.3	0.0	-0.1	0.0	0.0	0.2	0.2	-0.1	-0.1	0.1	0.5	0.3	0.2	0.1	0.5	0.7	0.5	0.7	0.3	0.7	0.7	0.5	0.7	0.7	0.3	0.7																						
26-May	0.6	0.8	0.7	0.5	0.4	0.4	0.4	0.6	0.5	0.4	0.2	0.8	0.7	0.6	0.2	-0.1	0.4	0.3	0.5	0.4	0.5	0.7	0.6	0.7	0.5	0.8																						
27-May	0.8	0.7	0.7	0.7	0.8	0.9	1.0	0.8	0.6	0.9	0.9	0.7	1.0	0.8	1.0	0.5	0.3	0.6	0.4	0.2	0.3	0.8	0.9	0.6	0.7	1.0																						
28-May	0.8	0.7	0.7	0.8	0.7	0.7	0.7	0.6	0.6	0.7	0.4	0.4	0.1	0.5	0.2	0.4	0.1	0.1	0.3	0.2	0.0	-0.6	-0.3	0.1	0.4	0.8																						
29-May	0.1	-0.1	0.0	0.0	0.1	0.2	-0.1	0.0	0.3	0.8	0.3	0.3	0.3	-0.1	0.1	0.1	0.2	0.4	0.1	0.2	0.0	0.0	-0.4	0.0	0.1	0.8																						
30-May	0.1	0.1	-0.2	-0.1	0.0	-0.1	0.4	0.4	0.3	0.4	0.4	0.6	0.6	0.5	0.3	-0.2	-0.4	-0.8	-0.5	-0.3	-0.2	0.3	0.1	0.1	0.1	0.6																						
31-May	-0.3	-0.2	0.1	0.1	0.0	0.0	0.2	0.6	0.0	0.4	0.7	0.5	0.4	0.1	0.1	0.4	0.7	0.4	0.5	0.5	0.6	0.1	-0.2	0.3	0.3	0.7																						
																								0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	Diurnal Average
																								1.0	1.1	1.2	1.3	1.5	1.4	1.5	1.5	1.2	1.2	1.4	1.1	1.5	1.4	1.5	1.3	1.3	1.2	1.1	1.0	1.0	1.1	1.0	1.0	Diurnal Maximum



Summary of Hour Standard Deviations

Mannix - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0																				Hours in Service: 744					
Maximum Value: 4.0 km/h on May 16 18:00																				Hours of Data: 744					
Minimum Value: 0.2 km/h on May 11 04:00																				Hours of Missing Data: 0					
Percentiles: P ₁ = 0.3 P ₁₀ = 0.8 Q ₁ = 1.3 Median = 1.7 Q ₃ = 2.4 P ₉₀ = 3.0 P ₉₉ = 3.6																				Hours of Calibration: 0					
																				Percent Operational Time: 100.0					
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	1.6	1.4	1.5	1.6	1.5	1.6	1.8	1.5	1.5	1.9	2.4	2.3	2.7	3.2	3.0	2.9	2.5	2.5	2.2	0.6	0.5	0.4	1.2	2.7	3.2
2-May	2.6	2.8	1.1	0.7	1.0	0.8	0.7	1.0	1.6	1.8	2.0	2.1	2.3	2.2	2.1	1.9	1.9	1.3	1.3	0.3	0.3	0.7	0.4	0.6	2.8
3-May	0.8	1.3	1.2	1.4	1.2	1.4	1.7	1.8	1.5	2.0	2.9	3.3	3.2	3.3	2.8	2.6	2.8	2.6	2.2	1.4	1.5	1.8	1.6	1.4	3.3
4-May	1.5	1.7	1.6	1.8	1.9	1.8	0.9	1.2	1.6	1.7	1.5	1.7	2.0	2.0	1.6	1.6	2.2	2.6	2.1	1.7	1.7	1.0	1.0	1.7	2.6
5-May	2.2	2.0	2.2	2.2	2.4	2.3	2.4	2.3	2.1	2.1	2.3	2.7	2.9	3.2	3.2	3.2	3.1	3.0	3.3	2.9	2.5	3.0	2.8	2.7	3.3
6-May	2.4	2.4	2.3	2.1	2.0	2.2	2.0	1.9	2.1	2.6	2.7	2.8	2.8	2.9	2.8	2.7	2.8	2.7	2.7	2.7	2.3	1.9	1.7	1.8	2.9
7-May	2.2	2.0	2.0	1.7	1.6	1.9	2.0	2.1	2.3	2.5	2.8	2.8	2.9	3.1	3.1	2.7	1.9	1.5	1.3	1.1	1.3	2.3	2.1	2.1	3.1
8-May	2.3	2.2	2.1	2.2	1.6	1.6	1.8	1.7	1.7	1.8	2.0	2.3	2.3	2.0	2.2	2.5	1.9	1.3	1.1	1.5	1.0	1.1	0.6	1.0	2.5
9-May	0.6	0.5	0.4	0.3	0.2	0.8	0.9	1.0	1.2	1.7	1.6	1.8	2.1	1.9	1.7	1.9	1.5	1.2	0.9	1.2	1.0	0.5	0.3	0.3	2.1
10-May	0.4	0.9	0.3	0.3	0.4	0.7	0.7	1.0	1.2	1.4	1.6	1.8	1.9	2.0	2.2	2.0	1.8	0.9	1.7	1.9	1.8	1.4	1.5	0.8	2.2
11-May	0.4	0.3	0.3	0.2	0.4	0.7	0.8	1.4	1.5	1.6	1.7	1.9	1.8	2.1	1.9	1.7	1.6	1.8	1.5	0.9	0.5	0.6	0.6	1.0	2.1
12-May	0.4	0.8	0.7	1.0	0.9	1.0	1.1	1.6	1.4	2.0	2.4	2.4	2.5	2.4	2.3	2.2	2.0	1.8	1.5	1.3	2.1	2.3	2.2	1.8	2.5
13-May	1.6	1.2	1.2	1.3	1.4	1.4	1.5	1.2	1.1	1.6	1.9	2.2	2.5	2.5	2.5	2.7	2.1	1.7	1.6	1.2	1.2	1.3	1.1	1.3	2.7
14-May	1.3	1.3	0.9	0.6	0.7	0.9	1.1	1.3	1.0	1.2	1.4	2.1	2.3	2.2	2.6	2.5	2.5	2.5	2.2	1.2	1.1	1.2	1.1	0.5	2.6
15-May	0.6	0.4	0.3	0.3	0.3	0.4	0.4	0.5	0.9	1.3	1.3	1.5	1.6	1.9	2.3	2.4	2.4	2.4	2.2	1.6	1.3	1.4	1.5	2.0	2.4
16-May	2.0	2.8	2.6	2.2	2.5	3.3	3.5	3.5	3.7	3.6	3.5	3.5	3.3	3.6	3.7	3.3	3.4	4.0	3.5	3.3	3.0	2.2	2.8	2.3	4.0
17-May	2.5	2.4	2.7	3.3	2.8	2.5	2.9	3.0	3.0	3.2	3.1	2.9	3.0	3.0	3.0	2.6	2.5	2.3	2.0	1.6	1.0	1.1	1.7	1.7	3.3
18-May	1.3	1.3	1.1	1.0	1.0	1.3	1.7	1.7	1.7	1.9	2.1	2.2	2.2	2.1	2.3	2.1	1.9	1.8	1.5	1.0	0.5	1.0	1.4	1.7	2.3
19-May	1.3	1.1	1.1	1.3	1.4	1.2	1.2	1.5	1.5	1.6	1.5	1.4	1.0	0.9	0.9	0.9	1.0	0.8	1.0	1.3	2.6	2.9	2.7	3.0	3.0
20-May	3.2	2.7	2.6	2.6	2.4	2.0	1.5	1.5	1.3	1.5	1.4	1.6	1.8	1.7	1.4	1.5	1.6	1.5	1.5	1.7	1.9	1.8	2.1	1.9	3.2
21-May	2.1	2.1	2.0	1.9	1.7	1.9	1.7	1.2	1.5	1.5	1.4	1.6	1.6	1.7	1.7	1.7	1.5	1.2	1.3	1.0	0.9	0.7	1.7	1.2	2.1
22-May	0.7	1.1	0.9	1.9	2.3	2.8	2.9	2.6	2.6	2.8	3.1	3.1	3.3	3.0	3.0	3.1	3.5	3.3	3.3	3.2	3.6	3.5	2.9	2.9	3.6
23-May	2.4	2.6	2.6	2.6	2.5	2.5	2.5	2.4	2.6	2.9	3.2	3.4	3.2	3.1	3.4	3.1	3.6	3.4	3.0	2.8	2.6	2.3	2.4	2.7	3.6
24-May	2.5	2.2	2.4	2.5	2.5	2.8	2.5	2.1	2.0	1.8	1.6	1.6	1.6	2.0	2.1	2.0	2.1	2.1	1.7	1.6	1.4	1.4	1.4	1.3	2.8
25-May	0.9	0.8	0.8	0.4	0.8	0.7	0.8	1.2	1.2	1.4	1.8	1.6	1.8	1.8	1.8	1.6	1.7	1.6	1.0	1.4	1.3	1.3	1.3	1.4	1.8
26-May	1.1	1.4	1.4	1.3	0.9	0.9	1.3	1.4	1.5	1.6	1.7	2.0	2.2	1.8	1.8	1.7	1.4	1.3	1.2	1.0	0.9	1.1	1.1	1.5	2.2
27-May	1.6	1.5	1.1	1.4	1.5	1.9	2.0	1.7	1.7	2.2	3.2	3.3	3.1	2.9	3.0	3.0	2.8	2.4	2.0	1.0	0.8	1.1	1.8	1.7	3.3
28-May	1.6	1.7	1.4	1.6	1.3	1.4	1.6	1.8	1.6	1.8	2.8	3.2	3.8	3.5	3.5	3.4	3.0	3.2	3.0	1.7	1.3	2.3	1.7	0.7	3.8
29-May	0.4	0.6	0.3	0.5	0.4	0.8	1.0	1.3	1.6	1.8	2.8	3.1	3.4	3.6	3.7	3.7	2.8	2.4	2.2	1.7	0.7	0.6	1.6	1.6	3.7
30-May	1.3	0.9	0.3	0.4	0.3	0.4	1.2	1.3	1.4	1.4	1.6	1.9	2.3	2.1	1.7	1.6	2.5	2.8	2.0	1.2	1.0	1.0	1.3	0.8	2.8
31-May	1.2	0.7	0.5	0.4	0.6	0.5	0.9	1.2	1.2	1.5	1.8	1.8	1.6	1.6	1.5	2.0	1.7	0.9	1.1	1.2	1.3	0.7	1.2	1.6	2.0
Diurnal Maximum																									
3.2 2.8 2.7 3.3 2.8 3.3 3.5 3.5 3.7 3.6 3.5 3.5 3.8 3.6 3.7 3.7 3.6 4.0 3.5 3.3 3.6 3.5 2.9 3.0																									



Summary of Hour Averages

Mannix - May 2023

Maximum Value: 2.1 km/h on May 5 08:00		Maximum Daily Average: 1.1 km/h on May 23		Hours in Service: 744																							
Minimum Value: -1.2 km/h on May 16 09:00		Minimum Daily Average: -0.6 km/h on May 16		Hours of Data: 744																							
Maximum Diurnal Average: 0.5 km/h at hour 11		Minimum Diurnal Average: 0.1 km/h at hour 20		Hours of Missing Data: 0																							
Monthly Average: 0.29 km/h		Percentiles: $P_1 = -0.9$ $P_{10} = -0.5$ $Q_1 = -0.1$ Median = 0.3 $Q_3 = 0.7$ $P_{90} = 0.9$ $P_{99} = 1.4$		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.7	0.7	0.8	0.8	0.7	0.6	0.4	0.3	0.1	0.2	0.5	0.7	0.9	0.1	0.9	0.1	-0.3	-0.3	-0.3	-0.4	0.2	0.5	-0.2	-1.1	0.3	0.9	
2-May	-0.8	-0.9	-0.6	-0.7	-0.5	-0.6	-0.5	-0.1	0.0	-0.5	-0.3	-0.3	0.2	0.6	-0.5	-0.7	-1.1	-0.1	-0.2	-0.2	0.0	0.6	0.4	0.4	-0.3	0.6	
3-May	0.6	1.2	1.1	1.1	0.9	0.9	0.9	0.7	0.6	1.0	0.3	0.3	0.6	0.2	1.1	1.3	0.7	0.6	0.5	0.8	0.8	0.7	0.9	0.6	0.8	1.3	
4-May	0.8	0.9	0.6	0.7	0.9	0.6	0.1	0.4	0.2	0.4	0.7	0.6	0.9	0.3	0.2	0.3	-0.5	-0.1	-0.2	0.0	0.4	0.5	0.4	1.1	0.4	1.1	
5-May	0.4	0.5	1.2	1.0	0.8	0.7	1.0	2.1	0.4	0.4	1.1	0.7	0.9	1.4	1.4	1.4	1.0	1.0	0.7	0.6	0.5	0.5	0.5	0.5	0.9	2.1	
6-May	0.5	0.5	0.0	0.4	0.4	0.5	0.0	0.6	0.3	1.0	0.9	0.9	1.0	1.2	1.0	0.7	0.9	0.8	0.9	0.5	0.3	0.3	0.2	0.5	0.6	1.2	
7-May	0.6	0.5	0.5	0.4	0.9	1.4	0.4	0.5	0.8	0.4	1.5	0.9	1.1	1.0	0.8	0.7	0.7	0.4	0.4	0.1	1.2	0.7	0.3	0.3	0.7	1.5	
8-May	0.7	0.5	0.2	0.8	0.7	0.4	0.5	0.2	0.3	0.6	0.7	0.6	0.8	0.7	0.5	0.3	0.4	0.4	0.3	-0.5	-0.2	-0.3	-0.1	0.4	0.4	0.8	
9-May	0.3	0.4	-0.2	-0.2	0.0	0.3	0.2	0.2	0.4	0.9	0.2	0.3	0.4	0.6	1.1	0.2	-0.2	-0.5	0.0	0.0	0.0	-0.3	-0.1	-0.2	0.2	1.1	
10-May	0.0	0.2	0.0	-0.2	-0.2	-0.1	-0.2	0.1	0.1	0.0	0.5	-0.1	0.1	-0.5	0.1	0.1	0.3	0.0	0.3	-0.1	-0.1	0.1	0.5	0.3	0.0	0.5	
11-May	0.0	0.0	0.0	0.0	0.1	0.6	0.4	0.3	0.4	0.6	0.9	0.7	0.4	0.7	0.5	0.3	0.7	0.9	0.6	0.1	0.0	-0.2	-0.1	0.7	0.4	0.9	
12-May	0.1	0.4	0.5	0.7	0.4	0.5	0.4	0.4	0.0	0.7	0.5	0.5	0.7	0.9	0.5	0.8	0.5	0.7	0.8	0.5	0.7	1.0	1.0	0.8	0.6	1.0	
13-May	0.9	0.6	0.5	0.7	0.6	0.8	0.6	0.2	0.5	0.2	0.2	-0.1	-0.1	0.2	0.2	-0.1	0.1	0.5	0.1	0.3	0.5	0.1	-0.4	-0.6	0.3	0.9	
14-May	-0.5	-0.5	-0.2	-0.1	0.1	0.3	0.0	0.3	0.3	0.1	0.0	0.3	0.2	-0.1	0.0	-0.7	-0.4	-0.6	-0.5	-0.2	-0.2	-0.1	-0.3	-0.1	-0.1	0.3	
15-May	0.2	0.0	-0.1	0.0	0.0	-0.1	0.0	-0.2	0.1	0.4	0.5	0.7	0.2	0.7	0.9	1.0	0.6	0.5	-0.2	-0.5	-0.1	0.0	0.1	-0.6	0.2	1.0	
16-May	-0.8	-1.0	-0.3	-0.5	-0.5	-0.5	-0.8	-0.8	-1.2	-1.0	-0.9	-0.9	-0.7	-0.4	-0.9	-0.9	-0.8	-0.6	0.1	-0.5	-0.3	0.2	-0.5	-0.8	-0.6	0.2	
17-May	-0.9	-0.6	-0.6	-1.0	-0.1	0.7	0.4	-0.3	-0.3	0.0	0.0	-0.4	0.4	0.3	0.3	0.2	0.3	0.2	0.1	0.0	0.0	0.4	1.3	0.7	0.0	1.3	
18-May	0.5	0.5	0.4	0.4	0.3	0.4	0.6	0.7	0.4	0.4	0.4	0.8	0.7	0.6	0.7	-0.3	0.4	0.1	0.1	-0.2	-0.2	0.1	-0.4	-0.5	0.3	0.8	
19-May	0.0	0.1	0.3	0.7	0.7	0.6	0.5	0.6	0.8	0.6	0.7	0.6	0.3	0.0	0.0	0.1	0.0	-0.3	-0.4	-0.7	-0.5	-0.4	-0.4	-0.6	0.1	0.8	
20-May	-0.5	-0.3	-0.3	-0.1	-0.4	-0.2	-0.2	0.2	-0.4	0.2	0.5	-0.3	0.6	0.1	0.2	0.6	0.4	0.8	0.6	0.5	0.4	0.6	0.4	0.7	0.2	0.8	
21-May	0.6	1.0	0.7	0.6	0.6	0.4	0.5	0.4	0.3	0.4	0.6	0.5	0.8	0.7	0.8	0.9	0.6	0.2	0.5	0.2	0.3	0.0	0.7	0.6	0.5	1.0	
22-May	0.0	-0.1	-0.4	-0.4	-0.4	-0.3	-0.4	-0.4	-0.4	-0.5	-0.4	-0.4	-0.4	0.2	-0.1	0.4	0.9	1.0	0.9	0.8	1.3	1.4	0.8	1.3	0.2	1.4	
23-May	1.0	0.8	1.2	1.0	1.0	1.2	1.2	0.8	0.8	1.2	1.9	1.0	1.7	1.8	1.3	1.4	1.6	1.1	0.8	0.7	0.8	0.8	0.8	0.9	1.1	1.9	
24-May	0.9	0.6	1.4	0.6	0.8	1.1	0.8	0.8	0.8	0.6	0.2	0.4	0.1	-0.1	0.0	-0.3	-0.4	-0.3	-0.1	-0.4	-0.3	-0.2	0.0	-0.2	0.3	1.4	
25-May	-0.1	-0.3	-0.6	-0.4	-0.5	0.1	0.1	-0.4	-0.1	-0.1	0.8	0.5	0.1	0.2	0.7	0.9	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.2	0.9	
26-May	0.6	0.9	0.8	0.8	0.3	0.3	0.4	1.0	0.9	0.5	0.0	1.0	0.8	1.1	0.4	0.0	0.7	0.4	0.3	0.3	0.6	0.6	0.6	0.7	0.6	1.1	
27-May	0.9	0.8	0.8	0.7	0.8	0.9	0.8	0.7	1.0	0.9	1.4	0.5	1.5	0.8	1.1	0.4	-0.4	0.6	0.2	-0.1	0.2	0.7	0.8	0.6	0.7	1.5	
28-May	0.8	0.6	0.6	0.9	0.8	0.9	0.7	0.7	0.6	0.9	-0.2	0.3	-0.8	-0.5	-0.5	-0.5	-0.8	-0.5	-0.6	-0.5	-0.4	-0.7	-0.5	-0.4	0.0	0.9	
29-May	-0.5	-0.5	-0.3	-0.2	-0.2	0.0	-0.3	-0.1	0.3	1.4	0.0	-0.7	-0.6	-1.1	-0.8	-0.7	-0.5	0.0	-0.4	-0.3	-0.4	-0.4	-0.3	0.1	-0.3	1.4	
30-May	0.3	0.2	-0.3	-0.2	0.0	-0.1	0.0	0.3	0.1	0.2	0.1	0.8	0.2	0.7	0.4	-0.5	-0.1	-0.7	-0.2	-0.3	-0.2	0.3	0.1	-0.1	0.0	0.8	
31-May	-0.5	-0.2	-0.2	-0.3	-0.5	-0.1	0.0	0.5	0.2	0.7	0.9	0.9	0.3	0.0	-0.1	0.3	0.6	0.2	0.2	0.5	0.7	0.2	-0.2	0.6	0.2	0.9	
		0.2	0.2	0.2	0.3	0.3	0.4	0.3	0.4	0.3	0.4	0.5	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.1	0.2	0.3	0.2	0.2	Diurnal Average		
		1.0	1.2	1.4	1.1	1.0	1.4	1.2	2.1	1.0	1.4	1.9	1.0	1.7	1.8	1.4	1.4	1.6	1.1	0.9	0.8	1.3	1.4	1.3	1.3	Diurnal Maximum	



Summary of Hour Standard Deviations

Mannix - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0																				Hours in Service: 744					
Maximum Value: 4.4 km/h on May 16 18:00																				Hours of Data: 744					
Minimum Value: 0.2 km/h on May 9 04:00																				Hours of Missing Data: 0					
Percentiles: P ₁ = 0.3 P ₁₀ = 0.6 Q ₁ = 1.2 Median = 1.9 Q ₃ = 2.7 P ₉₀ = 3.3 P ₉₉ = 4.0																				Hours of Calibration: 0					
																				Percent Operational Time: 100.0					
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	1.5	1.1	1.3	1.3	1.1	1.3	1.8	1.9	1.9	2.7	2.8	3.1	3.5	3.4	3.3	3.2	2.6	2.4	2.1	0.5	0.4	0.5	1.5	2.8	3.5
2-May	2.8	3.1	1.3	0.7	0.7	0.8	0.4	1.1	1.8	2.1	2.5	2.7	3.0	2.8	3.0	2.3	2.2	1.7	1.6	0.4	0.4	0.6	0.3	0.4	3.1
3-May	0.5	1.2	0.9	1.1	0.8	1.2	1.7	1.9	1.5	2.4	3.4	3.6	3.6	3.6	3.3	3.1	3.2	2.8	2.1	1.3	1.5	1.9	1.8	1.3	3.6
4-May	1.4	1.2	1.5	1.6	1.7	1.7	0.9	1.3	2.0	2.3	1.8	2.3	2.6	2.5	2.2	2.1	2.6	2.7	2.1	2.1	1.5	1.6	1.0	2.1	2.7
5-May	2.1	2.0	2.6	2.4	2.5	2.3	2.5	2.9	2.7	2.5	3.0	3.6	3.7	3.7	3.8	3.9	3.6	3.6	3.8	3.1	2.9	3.4	3.4	3.1	3.9
6-May	2.7	2.6	2.5	2.2	2.3	2.4	2.3	2.5	2.3	3.2	3.6	3.7	3.5	3.8	3.5	3.3	3.6	3.4	3.3	3.1	2.6	2.4	1.9	2.1	3.8
7-May	2.4	2.4	2.7	1.8	1.9	2.4	2.4	2.7	2.9	3.1	3.6	3.7	3.7	3.6	3.7	2.9	2.0	1.9	1.5	1.2	1.7	2.9	2.7	2.6	3.7
8-May	2.7	2.2	2.1	2.4	1.9	1.6	2.2	1.9	2.2	2.4	2.9	2.6	2.8	2.5	2.7	2.5	2.3	1.6	1.2	1.6	1.1	1.0	0.7	0.8	2.9
9-May	0.5	0.4	0.3	0.2	0.3	0.5	0.8	1.1	1.4	2.2	2.0	2.1	2.9	2.5	2.2	2.5	2.0	1.5	1.0	1.2	0.7	0.4	0.4	0.3	2.9
10-May	0.3	0.4	0.2	0.2	0.3	0.4	0.6	0.8	1.2	1.6	1.9	2.2	2.4	2.5	2.8	2.6	2.1	1.3	1.8	1.8	1.9	1.6	1.9	1.1	2.8
11-May	0.4	0.4	0.4	0.2	0.4	0.9	0.9	1.5	2.0	2.0	2.2	2.4	2.4	2.8	2.7	2.4	2.3	2.2	1.9	0.5	0.4	0.6	0.8	0.9	2.8
12-May	0.4	0.6	0.5	0.9	0.6	0.5	0.9	1.6	1.6	2.5	2.6	2.8	3.1	3.2	3.1	2.8	2.4	2.3	1.5	1.3	2.4	2.6	2.4	1.9	3.2
13-May	1.4	0.9	0.9	0.9	1.2	1.3	1.3	1.1	0.9	1.3	1.7	2.1	2.3	2.4	2.5	2.7	2.0	1.9	1.1	0.6	0.7	0.9	0.8	0.9	2.7
14-May	1.0	1.2	1.1	0.9	0.9	0.5	0.6	1.0	1.1	1.2	1.6	2.5	2.8	2.7	3.1	2.6	3.0	2.6	2.2	1.1	1.7	1.3	1.0	0.5	3.1
15-May	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.5	1.3	1.6	1.5	1.7	2.0	2.4	2.9	3.0	2.7	2.4	2.1	1.3	0.8	1.0	1.2	2.0	3.0
16-May	2.0	2.8	2.5	2.1	2.7	3.6	3.5	3.7	3.8	3.7	3.8	3.7	3.4	3.8	4.0	3.5	3.7	4.4	3.7	3.4	3.1	2.5	2.9	2.3	4.4
17-May	2.7	2.5	2.6	3.2	2.8	2.8	2.9	2.9	2.9	3.2	3.3	2.9	3.2	3.4	3.2	3.0	3.0	2.5	2.1	1.6	1.1	1.3	1.9	1.6	3.4
18-May	1.4	1.1	0.9	0.9	0.6	1.1	1.9	1.9	1.9	2.2	2.8	2.9	2.9	2.9	3.0	2.5	2.6	2.3	1.6	0.8	0.2	0.4	0.9	1.2	3.0
19-May	1.2	0.9	0.8	0.8	0.7	0.8	1.0	1.3	1.5	1.5	1.5	1.7	1.4	1.3	1.0	1.3	1.2	1.0	1.1	1.5	2.6	2.7	2.6	3.1	3.1
20-May	3.2	2.9	2.7	2.9	2.6	2.0	1.5	1.6	1.3	1.8	1.8	1.9	2.1	2.3	1.9	2.0	1.9	1.8	1.5	1.9	2.0	1.8	2.1	1.8	3.2
21-May	1.9	1.8	1.6	1.8	1.8	1.7	1.5	1.3	1.5	1.9	1.8	2.1	2.1	2.2	2.2	2.1	1.7	1.2	1.3	0.8	0.9	1.0	1.2	1.2	2.2
22-May	0.7	0.9	0.8	1.6	2.2	2.4	2.7	2.4	2.3	2.4	2.7	2.9	2.8	3.0	2.8	3.2	3.2	3.3	3.2	3.1	3.6	3.2	2.7	3.4	3.6
23-May	2.9	3.1	2.9	2.9	2.8	2.9	2.8	2.7	3.1	3.6	4.0	4.1	4.1	3.7	4.0	3.7	4.3	3.7	3.3	3.1	2.8	2.6	2.9	2.9	4.3
24-May	2.9	2.3	2.7	2.5	2.7	2.9	2.7	2.4	2.3	1.7	1.7	2.1	2.1	2.1	2.5	2.1	2.2	2.4	1.7	1.7	1.5	1.5	1.4	1.1	2.9
25-May	0.9	0.6	0.5	0.3	0.6	0.8	0.9	1.2	1.7	1.9	2.2	2.1	2.3	2.2	2.0	2.1	2.2	2.0	1.3	1.5	1.1	1.0	1.2	1.2	2.3
26-May	1.2	0.9	0.9	1.1	0.8	0.6	1.1	1.8	1.8	2.1	2.1	2.8	2.7	2.5	2.2	2.3	1.9	2.1	1.3	0.9	0.4	0.8	0.7	0.7	2.8
27-May	0.6	0.9	1.0	1.2	1.5	1.8	1.5	1.6	1.8	2.7	3.3	3.4	3.5	3.2	3.4	3.1	2.6	2.5	1.9	0.7	0.4	0.7	1.2	1.1	3.5
28-May	1.1	1.1	1.1	1.1	1.3	1.5	1.4	1.8	1.8	2.4	3.0	3.7	3.7	4.0	4.0	3.7	3.2	3.5	3.4	1.9	1.2	1.9	1.4	0.6	4.0
29-May	0.4	0.3	0.3	0.3	0.3	0.7	1.1	1.7	1.9	2.3	3.5	3.4	3.8	3.9	4.1	3.9	3.3	2.9	2.2	1.5	0.6	0.6	2.0	1.4	4.1
30-May	1.2	1.2	0.6	0.5	0.4	0.3	0.9	1.4	1.5	1.8	2.1	2.5	2.5	2.8	2.4	2.2	2.5	2.5	1.8	1.3	1.1	1.1	1.3	1.0	2.8
31-May	0.5	0.4	0.4	0.5	0.4	0.5	1.1	1.5	1.6	1.9	2.3	2.4	2.4	2.0	1.8	2.3	1.8	1.1	0.9	1.1	1.0	0.7	1.0	2.0	2.4
Diurnal Maximum																									



Maximum Value: 1.9 km/h on May 29 10:00		Maximum Daily Average: 0.6 km/h on May 27		Hours in Service: 744																																													
Minimum Value: -0.8 km/h on May 6 02:00		Minimum Daily Average: -0.3 km/h on May 6		Hours of Data: 744																																													
Maximum Diurnal Average: 0.5 km/h at hour 11		Minimum Diurnal Average: 0.0 km/h at hour 20		Hours of Missing Data: 0																																													
Monthly Average: 0.22 km/h		Percentiles: $P_1 = -0.7$ $P_{10} = -0.3$ $Q_1 = 0.0$ Median = 0.2 $Q_3 = 0.5$ $P_{90} = 0.8$ $P_{99} = 1.3$		Hours of Calibration: 0																																													
				Percent Operational Time: 100.0																																													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	-0.2	-0.3	-0.1	-0.1	-0.3	-0.3	-0.5	-0.4	-0.4	-0.4	0.6	0.1	0.8	0.1	1.4	0.3	-0.2	-0.3	-0.1	-0.1	0.2	0.6	0.2	-0.6	0.0	1.4																							
2-May	-0.1	-0.5	0.0	0.0	0.2	-0.1	0.3	0.1	0.4	-0.2	0.2	0.2	0.8	1.3	0.0	0.2	-0.8	0.5	0.1	0.0	0.2	0.2	0.1	0.4	0.1	1.3																							
3-May	0.6	0.6	0.6	0.4	0.9	1.0	0.7	0.1	0.5	1.2	0.5	0.1	0.5	0.2	1.4	1.0	0.7	0.6	0.6	0.9	0.5	0.1	0.5	0.0	0.6	1.4																							
4-May	-0.1	-0.3	-0.3	-0.1	0.1	-0.1	-0.1	0.0	-0.1	0.0	0.7	0.6	1.1	0.0	0.2	0.5	-0.4	0.1	0.2	0.0	0.4	0.6	0.5	1.0	0.2	1.1																							
5-May	-0.5	-0.3	0.6	0.4	0.0	-0.2	-0.1	1.5	-0.6	-0.3	0.3	-0.1	-0.2	0.4	0.2	0.7	-0.2	-0.1	0.0	-0.4	-0.4	-0.6	-0.6	-0.7	-0.1	1.5																							
6-May	-0.6	-0.8	-0.6	-0.7	-0.7	-0.5	-0.8	0.2	-0.5	0.2	0.0	-0.2	0.3	0.3	0.2	-0.1	-0.2	-0.5	0.0	-0.7	-0.8	-0.3	-0.5	-0.3	-0.3	0.3																							
7-May	-0.5	0.1	-0.3	-0.4	0.2	0.9	-0.3	0.0	0.3	-0.7	0.8	0.1	0.0	0.1	-0.4	0.1	0.9	0.1	-0.2	-0.3	1.6	0.2	-0.3	-0.7	0.1	1.6																							
8-May	-0.5	-0.5	-0.8	-0.1	0.2	-0.3	-0.1	-0.6	-0.1	0.2	0.5	0.2	0.2	0.4	0.4	0.3	0.0	0.6	0.8	0.2	0.3	0.1	-0.1	0.4	0.1	0.8																							
9-May	0.3	0.3	0.2	0.0	0.2	0.2	0.3	0.4	0.5	1.3	0.4	0.3	0.4	0.6	1.7	0.6	0.2	0.0	0.0	0.3	0.2	0.1	0.1	0.2	0.4	1.7																							
10-May	0.2	0.3	0.1	0.0	-0.1	-0.1	-0.1	0.2	0.1	-0.1	0.3	-0.3	0.3	0.1	0.7	0.6	0.8	0.0	0.5	0.1	0.1	0.0	0.4	0.1	0.2	0.8																							
11-May	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.5	1.1	1.0	0.3	1.1	0.5	0.0	0.9	0.7	0.0	0.2	0.2	0.0	0.1	0.4	0.3	1.1																							
12-May	0.4	0.4	0.0	-0.2	-0.2	-0.2	-0.1	0.0	0.1	0.6	0.1	0.3	0.1	0.5	-0.1	0.1	-0.1	0.4	0.7	-0.2	-0.2	-0.4	0.2	0.1	0.1	0.7																							
13-May	0.3	0.1	0.2	0.9	0.8	1.0	0.7	0.1	0.4	0.2	0.2	0.0	-0.1	0.3	0.3	0.0	0.2	0.5	0.3	0.4	0.4	0.0	-0.4	-0.4	0.3	1.0																							
14-May	-0.4	-0.3	0.0	0.0	0.1	0.3	0.0	0.3	0.4	-0.1	0.3	0.6	0.3	0.4	-0.2	0.1	-0.3	0.0	0.2	0.3	0.7	-0.1	0.0	0.1	0.7	0.7																							
15-May	0.1	0.3	0.1	0.2	0.1	0.2	0.2	0.0	0.3	0.3	0.4	0.9	0.4	0.7	0.7	0.6	0.9	0.5	-0.1	-0.4	-0.1	0.0	0.4	0.0	0.3	0.9																							
16-May	-0.2	-0.5	0.3	-0.2	0.3	0.3	0.5	0.4	-0.4	0.1	0.4	0.4	0.5	0.9	0.3	0.2	-0.1	0.4	0.6	0.1	0.2	0.3	0.0	-0.4	0.2	0.9																							
17-May	-0.3	-0.4	-0.3	-0.6	0.0	0.8	0.4	-0.1	-0.3	0.2	0.3	-0.5	0.5	0.3	0.3	0.2	0.2	0.3	0.0	0.1	0.2	0.2	1.1	-0.1	0.1	1.1																							
18-May	0.2	0.4	0.5	0.3	0.4	0.4	0.6	0.7	0.2	0.3	0.1	0.8	0.5	0.3	0.9	-0.3	0.8	0.1	0.3	0.0	0.0	0.1	-0.5	-0.5	0.3	0.9																							
19-May	0.0	0.0	0.1	0.4	0.4	0.7	0.4	0.5	0.5	0.4	0.5	0.5	0.3	0.0	0.1	0.3	0.4	0.0	-0.1	-0.3	-0.1	-0.1	-0.1	-0.2	0.2	0.7																							
20-May	0.0	0.3	-0.1	0.3	0.1	0.2	0.3	0.3	-0.1	0.3	1.2	-0.3	0.9	0.2	0.1	0.5	0.0	0.5	0.0	-0.4	-0.4	-0.3	-0.5	-0.2	0.1	1.2																							
21-May	-0.3	0.0	-0.2	-0.2	-0.1	-0.5	-0.3	0.0	0.0	0.1	0.4	0.6	0.5	0.7	0.6	0.7	0.2	-0.2	-0.2	-0.3	0.3	0.4	-0.1	0.0	0.1	0.7																							
22-May	0.2	0.0	-0.1	0.0	0.1	0.0	-0.2	0.0	0.2	-0.4	-0.1	0.0	-0.2	0.3	0.2	0.5	0.7	0.8	0.8	0.5	0.7	0.9	0.6	0.8	0.3	0.9																							
23-May	0.6	-0.2	0.3	-0.1	0.1	-0.2	-0.3	-0.5	-0.3	0.4	1.1	0.2	1.1	0.9	0.1	0.7	0.7	-0.1	-0.3	0.0	-0.2	-0.1	-0.1	-0.3	0.2	1.1																							
24-May	-0.3	-0.4	0.6	-0.3	-0.4	-0.2	-0.2	0.0	0.1	0.3	0.3	0.4	0.3	0.3	0.2	0.3	0.4	0.5	0.3	0.4	0.4	0.5	0.5	0.5	0.2	0.6																							
25-May	0.3	0.2	0.2	0.0	-0.1	0.8	0.4	0.0	0.2	0.0	1.2	0.5	-0.2	0.2	0.9	1.1	0.6	0.4	1.0	0.1	0.1	0.0	0.3	0.6	0.4	1.2																							
26-May	0.3	1.0	0.6	0.3	0.3	0.1	0.4	0.9	1.1	0.3	-0.2	0.9	0.5	1.4	0.9	0.1	1.0	0.6	0.4	0.4	0.5	0.4	0.5	0.7	0.6	1.4																							
27-May	0.7	0.6	0.6	0.6	0.8	0.9	0.6	0.7	0.9	0.7	1.5	0.3	1.3	0.8	1.0	0.5	-0.5	0.7	0.4	0.2	0.2	0.7	0.7	0.6	0.6	1.5																							
28-May	0.8	0.4	0.5	0.6	0.8	0.8	0.5	0.2	0.2	0.9	0.2	0.9	-0.5	0.2	0.3	0.2	0.0	0.5	0.3	0.2	0.4	0.5	0.5	0.1	0.4	0.9																							
29-May	0.3	0.2	0.2	0.0	0.1	0.2	0.0	0.2	0.2	1.9	0.9	-0.3	-0.1	-0.2	0.2	-0.2	-0.1	0.6	0.1	0.1	0.0	0.2	-0.1	-0.1	0.2	1.9																							
30-May	0.4	0.3	0.2	0.1	0.1	0.1	0.0	0.4	0.0	0.1	0.2	1.1	-0.1	0.6	1.0	0.0	0.8	0.5	0.4	0.0	0.1	0.3	0.1	0.2	0.3	1.1																							
31-May	0.4	0.4	0.1	0.2	0.3	0.2	0.3	0.5	0.5	0.9	1.0	1.3	-0.1	0.1	-0.1	0.6	0.4	0.0	-0.2	0.2	0.4	0.6	0.6	1.0	0.4	1.3																							
																								0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.3	0.5	0.3	0.3	0.4	0.5	0.3	0.3	0.2	0.0	0.2	0.2	0.1	0.1	Diurnal Average		
																								0.8	1.0	0.6	0.9	0.9	1.0	0.7	1.5	1.1	1.9	1.5	1.3	1.3	1.4	1.7	1.1	1.0	0.8	1.0	0.9	1.6	0.9	1.1	1.0	Diurnal Maximum	



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 1																				Hours in Service: 744					
Maximum Value: 4.8 km/h on May 23 13:00																				Hours of Data: 744					
Minimum Value: 0.2 km/h on May 10 03:00																				Hours of Missing Data: 0					
Percentiles: P ₁ = 0.3 P ₁₀ = 0.6 Q ₁ = 1.1 Median = 2.0 Q ₃ = 2.8 P ₉₀ = 3.5 P ₉₉ = 4.3																				Hours of Calibration: 0					
																				Percent Operational Time: 100.0					
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	1.5	1.1	1.0	1.1	1.3	1.2	1.5	1.7	1.9	2.6	3.1	3.3	3.7	3.6	3.8	3.5	2.8	2.2	1.9	0.5	0.4	0.5	1.8	2.4	3.8
2-May	2.5	2.5	1.3	0.4	0.4	0.4	0.4	1.1	2.0	2.2	2.7	3.2	3.5	3.3	3.5	2.8	2.6	2.0	1.5	0.4	0.4	0.7	0.3	0.3	3.5
3-May	0.5	0.7	0.8	0.8	0.7	0.8	0.9	1.4	1.4	2.6	3.9	3.8	3.7	3.7	3.8	3.3	3.1	2.8	2.2	1.3	1.3	1.4	1.5	0.9	3.9
4-May	0.8	1.2	1.4	1.7	1.5	1.8	0.9	1.4	2.1	2.3	2.1	2.7	2.9	2.7	2.5	2.7	2.2	2.2	2.2	2.5	1.4	1.6	1.5	2.7	2.9
5-May	2.1	2.0	2.9	2.6	2.0	1.8	2.2	3.3	2.8	2.6	3.2	3.6	4.1	4.4	4.2	4.3	3.8	3.8	3.6	2.8	3.0	3.2	3.3	3.0	4.4
6-May	2.6	2.5	2.7	2.1	2.2	2.2	2.3	2.8	2.5	3.6	4.1	3.9	3.9	4.0	4.3	3.6	3.7	3.4	3.2	2.8	2.5	2.5	2.0	2.1	4.3
7-May	2.5	2.8	3.1	1.8	2.3	2.7	2.6	3.0	3.2	3.2	3.8	4.0	3.9	3.9	3.5	2.6	2.4	2.1	2.0	1.6	2.2	3.1	2.8	2.6	4.0
8-May	2.5	2.2	2.2	2.1	1.7	1.6	2.4	1.9	2.3	2.6	3.4	2.8	2.7	2.6	2.8	2.6	2.5	1.8	1.4	1.4	1.2	0.9	0.6	0.5	3.4
9-May	0.4	0.5	0.3	0.2	0.3	0.4	0.7	1.2	1.4	2.4	2.2	2.2	3.0	2.7	2.7	2.8	2.1	1.7	1.0	1.3	0.8	0.4	0.6	0.4	3.0
10-May	0.4	0.4	0.2	0.3	0.3	0.3	0.4	0.7	1.1	1.5	2.0	2.2	2.8	3.1	3.1	2.8	2.5	1.7	2.0	1.5	1.3	1.5	2.3	1.2	3.1
11-May	0.6	0.7	0.5	0.4	0.5	1.1	1.0	1.6	2.2	2.3	2.6	2.7	2.9	3.4	3.2	2.7	2.8	2.9	2.1	0.5	0.4	0.7	1.0	0.7	3.4
12-May	0.5	0.5	0.6	1.2	0.9	0.6	1.0	1.4	1.5	2.6	2.8	3.2	3.3	3.6	3.3	3.0	2.6	2.3	1.5	1.4	2.1	2.2	2.2	1.7	3.6
13-May	0.9	0.6	0.6	0.6	0.8	0.7	0.9	0.6	0.6	1.2	1.5	2.0	2.2	2.5	2.8	2.7	2.0	2.0	1.1	0.5	0.7	0.9	0.8	1.2	2.8
14-May	1.2	1.2	1.2	1.0	1.1	0.7	0.6	0.8	0.9	1.3	1.6	2.7	3.2	3.1	3.3	2.9	3.1	2.6	2.0	1.3	1.9	1.7	0.9	0.6	3.3
15-May	0.9	0.7	0.3	0.4	0.3	0.3	0.2	0.5	1.2	1.6	1.7	1.9	2.6	2.8	3.0	3.1	2.9	2.5	2.1	1.1	0.6	0.7	1.6	1.9	3.1
16-May	2.0	2.8	2.6	1.9	2.9	3.7	3.6	3.6	3.4	3.6	3.7	3.7	3.5	4.0	4.1	3.5	3.4	4.3	3.6	3.4	3.1	2.6	3.0	2.1	4.3
17-May	2.6	2.4	2.4	3.1	2.7	2.6	2.8	2.9	2.7	3.2	3.3	3.0	3.6	3.5	3.5	3.3	3.3	2.8	2.0	1.6	0.8	1.8	2.5	1.3	3.6
18-May	1.1	0.8	0.7	0.8	0.6	1.0	1.8	2.1	1.9	2.4	3.0	3.2	3.1	3.4	3.4	2.9	3.0	2.4	1.7	0.7	0.3	0.4	0.6	0.9	3.4
19-May	1.2	1.0	0.9	0.8	0.7	0.7	0.7	0.7	1.2	1.1	1.4	1.6	1.5	1.2	1.2	1.5	1.4	1.2	1.1	1.8	2.5	2.4	2.4	3.0	3.0
20-May	2.8	2.8	2.5	2.9	2.5	2.0	1.5	1.4	1.3	2.1	2.2	2.2	2.4	2.8	2.3	2.6	2.1	1.9	1.4	1.5	1.8	1.7	2.1	1.7	2.9
21-May	1.8	1.7	1.5	1.4	1.5	1.5	1.3	1.2	1.4	1.9	1.9	2.3	2.3	2.5	2.4	2.2	1.8	1.2	0.9	0.7	1.1	1.2	1.5	1.4	2.5
22-May	0.7	0.4	0.6	1.3	2.0	2.1	2.4	2.0	1.9	2.0	2.6	2.9	2.5	2.9	2.7	3.0	3.3	2.9	3.0	3.0	3.5	3.1	2.6	3.7	3.7
23-May	3.5	3.7	3.6	3.2	3.5	4.0	4.0	3.9	4.1	4.4	4.6	4.6	4.8	4.0	4.1	4.1	4.3	3.4	3.1	3.2	2.7	2.8	2.9	2.8	4.8
24-May	2.7	2.0	3.0	2.4	2.5	2.7	2.5	2.4	2.0	1.8	1.7	2.3	2.4	2.2	2.6	1.9	2.3	2.3	1.8	1.6	1.5	1.6	1.6	1.1	3.0
25-May	0.9	0.7	0.4	0.3	0.5	0.9	1.0	1.4	1.9	2.2	2.4	2.5	2.6	2.4	2.2	2.7	2.6	2.1	1.6	1.3	0.9	0.6	0.8	1.0	2.7
26-May	1.1	0.5	0.6	0.5	0.5	0.5	0.8	1.8	2.1	2.2	2.0	3.1	3.3	3.0	2.5	2.6	2.2	2.5	1.6	0.7	0.4	0.6	0.6	0.4	3.3
27-May	0.5	0.9	0.9	1.0	1.1	1.3	1.0	1.6	1.9	2.6	3.5	3.5	4.0	3.8	3.5	3.5	2.7	2.5	2.2	0.8	0.4	0.6	0.9	0.8	4.0
28-May	1.0	1.0	0.9	0.8	0.9	1.0	1.1	1.5	1.6	2.5	3.3	3.9	3.9	4.3	3.8	3.7	3.3	3.7	3.5	2.0	1.1	1.8	1.2	0.8	4.3
29-May	0.3	0.3	0.3	0.4	0.4	0.4	1.1	1.8	2.1	2.4	3.9	3.4	3.7	4.1	4.1	3.8	3.4	3.2	2.3	1.5	0.6	0.7	2.4	1.3	4.1
30-May	1.0	1.3	0.7	0.4	0.5	0.5	0.7	1.4	1.4	1.7	2.1	3.0	2.7	3.1	2.8	2.6	2.7	2.5	1.9	1.2	1.1	1.4	1.4	1.1	3.1
31-May	0.5	0.5	0.5	0.5	0.4	0.7	1.0	1.5	1.7	2.0	2.5	2.7	2.7	2.5	2.0	2.5	1.9	1.0	0.8	0.9	0.7	1.0	1.5	2.3	2.7
Diurnal Maximum																									
3.5 3.7 3.6 3.2 3.5 4.0 4.0 3.9 4.1 4.4 4.6 4.6 4.8 4.4 4.3 4.3 4.3 4.3 4.3 3.6 3.4 3.5 3.2 3.3 3.7																									



Summary of Hour Averages

Mannix - May 2023

Maximum Value: 1.9 km/h on May 22 22:00 Maximum Daily Average: 1.1 km/h on May 22																						Hours in Service: 744 Hours of Data: 744				
Minimum Value: -1.4 km/h on May 28 13:00 Minimum Daily Average: -0.3 km/h on May 14 Maximum Diurnal Average: 0.3 km/h at hour 11 Minimum Diurnal Average: -0.1 km/h at hour 20 Monthly Average: 0.11 km/h Percentiles: $P_1 = -1.2$ $P_{10} = -0.5$ $Q_1 = -0.2$ Median = 0.1 $Q_3 = 0.4$ $P_{90} = 0.9$ $P_{99} = 1.6$																						Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.3	0.4	0.7	0.5	-0.2	-0.1	-0.5	-0.3	-0.6	-0.4	0.4	0.0	0.1	-0.7	0.9	-0.4	-1.0	-1.1	-0.8	-0.6	-0.4	-0.1	-0.1	0.0	-0.2	0.9
2-May	0.5	0.3	0.3	0.0	0.1	0.0	0.0	-0.1	0.1	-0.5	-0.1	-0.2	0.7	1.0	-0.2	0.0	-1.0	0.3	0.1	-0.1	0.1	0.4	0.6	0.1	0.1	1.0
3-May	0.1	0.3	0.4	0.4	0.2	0.1	0.2	0.3	0.3	0.9	-0.1	-0.6	-0.1	-0.5	1.0	0.5	-0.1	-0.2	0.0	0.2	0.4	0.2	0.3	0.3	0.2	1.0
4-May	0.7	0.2	-0.2	-0.4	0.2	-0.3	0.0	0.0	-0.1	-0.1	0.7	0.5	1.2	0.0	0.0	0.5	-0.2	0.9	1.0	0.3	1.0	1.0	0.8	0.8	0.3	1.2
5-May	-0.9	-0.8	0.3	0.2	0.1	-0.3	0.0	1.2	-0.6	-0.3	0.3	-0.1	-0.3	0.6	0.5	0.7	-0.2	0.0	-0.7	-0.9	-0.7	-1.0	-0.5	-1.0	-0.2	1.2
6-May	-0.4	-0.6	-1.1	-1.0	-0.5	-0.2	-0.7	0.2	-0.6	0.2	0.0	-0.1	0.6	0.1	0.6	-0.2	-0.1	-0.1	0.4	-0.6	-0.9	-0.4	-0.4	-0.1	-0.2	0.6
7-May	-0.4	0.2	-0.4	-0.5	0.2	0.9	-0.3	-0.1	0.2	-0.8	0.5	0.0	0.1	-0.2	-0.6	-0.5	0.6	0.1	0.1	0.0	1.6	0.5	-0.1	-0.5	0.0	1.6
8-May	-0.2	-0.3	-0.7	0.3	0.3	-0.1	-0.2	-0.7	-0.3	0.1	0.6	0.0	-0.1	0.1	-0.1	-0.5	-0.4	0.3	0.6	-0.2	-0.1	-0.4	-0.5	0.1	-0.1	0.6
9-May	0.0	0.3	-0.1	-0.3	0.0	0.3	0.2	0.1	0.1	1.1	-0.1	-0.2	0.0	0.7	1.8	0.5	0.0	-0.1	0.1	-0.1	-0.3	-0.3	-0.2	-0.1	0.1	1.8
10-May	0.0	0.0	-0.2	-0.2	-0.3	-0.3	-0.4	0.0	-0.2	-0.4	-0.1	-0.7	0.0	0.0	0.6	0.4	0.8	-0.1	0.9	0.7	0.9	0.7	0.9	0.4	0.1	0.9
11-May	0.2	0.0	0.1	0.2	0.2	0.3	0.1	0.1	-0.1	0.4	1.3	1.2	0.0	1.0	0.1	-0.3	0.9	1.0	0.1	-0.3	-0.3	-0.3	-0.3	0.5	0.3	1.3
12-May	-0.1	0.0	0.3	0.0	0.1	0.4	0.2	0.0	-0.2	0.3	-0.6	-0.3	-0.2	0.3	-0.4	0.2	-0.3	0.2	0.4	0.0	0.2	0.3	0.6	0.3	0.1	0.6
13-May	0.6	0.8	0.5	0.2	0.1	0.1	-0.1	-0.5	-0.2	-0.4	-0.3	-0.6	-0.8	-0.4	-0.4	-0.6	-0.4	0.0	-0.4	-0.3	-0.2	-0.9	-1.2	-1.2	-0.3	0.8
14-May	-1.1	-0.9	-0.7	-0.5	-0.4	-0.1	-0.6	-0.2	0.1	-0.3	-0.2	-0.2	0.1	-0.1	-0.1	-0.9	-0.6	-1.1	-0.8	-0.4	-0.1	0.9	0.3	0.3	-0.3	0.9
15-May	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.2	1.0	0.5	0.8	0.4	0.3	0.4	-0.1	-0.7	-1.1	-0.9	-0.7	-0.3	0.0	0.0	1.0
16-May	0.0	0.0	1.3	0.3	0.3	0.5	0.7	0.6	-0.4	0.2	0.2	0.3	0.3	0.6	-0.1	-0.3	0.0	0.6	1.7	1.1	1.3	0.8	0.8	-0.1	0.5	1.7
17-May	0.1	-0.1	0.0	0.1	0.7	1.4	1.1	0.7	0.5	1.0	0.8	0.0	1.2	0.8	0.8	0.6	0.7	0.8	0.5	0.5	0.6	0.5	1.0	0.3	0.6	1.4
18-May	0.3	0.0	-0.1	-0.5	-0.1	0.0	0.2	0.4	0.2	0.3	-0.2	0.4	0.4	0.0	0.6	-0.7	0.6	-0.4	-0.1	-0.5	-0.5	-0.5	-1.4	-1.4	-0.1	0.6
19-May	-0.9	-0.6	-0.7	-0.2	-0.2	0.1	-0.2	-0.3	0.2	0.2	0.4	0.3	0.1	-0.4	-0.2	0.2	0.3	-0.1	-0.1	0.0	0.8	1.2	0.8	0.5	0.1	1.2
20-May	0.9	1.1	0.8	1.1	0.9	0.9	0.6	0.4	-0.1	0.2	1.4	-0.4	0.8	0.2	-0.1	0.5	0.0	0.7	0.2	0.0	-0.3	0.1	-0.6	0.2	0.4	1.4
21-May	0.2	0.2	0.0	0.2	0.5	-0.2	0.1	0.1	0.1	-0.1	0.1	0.3	0.3	0.5	0.3	0.6	0.1	-0.2	0.3	0.1	0.5	0.6	-0.4	-0.1	0.2	0.6
22-May	0.3	0.4	0.3	0.9	0.9	0.9	0.6	0.7	0.7	0.3	0.6	0.9	0.8	1.4	1.1	1.5	1.7	1.7	1.8	1.5	1.6	1.9	1.5	1.5	1.1	1.9
23-May	1.0	0.4	1.0	0.7	0.9	0.7	0.3	0.1	0.3	0.7	1.1	0.1	1.2	0.6	-0.4	0.2	0.1	-0.8	-0.7	-0.1	-0.1	0.1	0.1	0.0	0.3	1.2
24-May	0.0	-0.2	0.3	-0.6	-0.6	0.2	0.1	0.2	0.0	0.3	-0.1	0.2	0.2	-0.3	-0.3	-0.3	-0.5	-0.2	0.1	-0.2	-0.2	-0.2	0.1	0.0	-0.1	0.3
25-May	-0.1	-0.2	-0.1	-0.3	-0.3	0.7	0.3	-0.1	-0.1	-0.5	1.3	0.6	-0.2	0.5	1.0	1.4	0.6	0.6	1.2	0.1	0.1	0.1	0.2	0.2	0.3	1.4
26-May	0.0	0.3	0.3	0.5	0.2	0.1	0.0	0.6	0.9	0.1	-0.5	0.8	0.4	1.4	1.2	-0.2	0.9	0.4	0.1	-0.1	0.1	0.1	-0.1	-0.1	0.3	1.4
27-May	0.0	-0.1	-0.1	-0.1	0.0	0.1	-0.2	0.2	0.6	0.3	0.8	-0.4	0.7	0.3	0.6	-0.2	-1.3	0.1	-0.1	-0.3	-0.4	-0.1	-0.1	-0.1	0.0	0.8
28-May	-0.1	-0.3	-0.1	-0.1	0.2	0.5	0.2	0.1	0.2	0.8	-0.7	0.1	-1.4	-1.0	-0.9	-0.8	-0.9	-0.5	-0.6	-0.4	0.0	0.2	0.3	-0.2	-0.2	0.8
29-May	0.0	0.0	0.1	-0.3	-0.2	0.0	-0.3	0.0	0.0	1.7	0.3	-1.3	-1.2	-1.3	-1.0	-1.4	-1.0	0.0	-0.6	-0.5	-0.5	-0.1	0.4	0.5	-0.3	1.7
30-May	1.1	0.6	0.1	-0.1	0.1	0.1	-0.4	0.2	-0.1	-0.2	0.0	1.1	-0.1	0.7	1.0	-0.2	0.4	0.2	0.4	0.1	0.4	0.6	0.4	-0.2	0.3	1.1
31-May	0.0	0.3	-0.1	-0.1	0.1	0.1	0.0	0.3	0.2	1.0	1.0	1.4	-0.2	-0.1	-0.7	0.2	0.1	-0.4	-0.3	-0.1	0.2	0.6	0.5	0.7	0.2	1.4
																								Diurnal Average		
																								Diurnal Maximum		



Summary of Hour Standard Deviations

Mannix - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 1																				Hours in Service: 744					
Maximum Value: 4.7 km/h on May 23 12:00																				Hours of Data: 744					
Minimum Value: 0.2 km/h on May 10 03:00																				Hours of Missing Data: 0					
Percentiles: P ₁ = 0.3 P ₁₀ = 0.5 Q ₁ = 1.0 Median = 2.1 Q ₃ = 3.0 P ₉₀ = 3.7 P ₉₉ = 4.3																				Hours of Calibration: 0					
																				Percent Operational Time: 100.0					
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	1.5	1.0	0.8	0.9	1.0	0.8	1.3	1.7	2.0	3.0	3.3	3.5	3.9	3.9	4.1	3.7	2.9	2.1	1.8	0.5	0.4	0.5	2.0	2.4	4.1
2-May	2.4	2.3	1.5	0.5	0.5	0.4	0.3	1.1	2.1	2.4	2.9	3.5	4.1	3.8	4.0	3.1	2.9	2.3	1.5	0.5	0.3	0.6	0.5	0.2	4.1
3-May	0.3	0.5	0.9	0.8	0.7	0.8	0.7	1.3	1.3	2.8	4.2	4.0	4.2	4.0	4.2	3.5	3.4	3.0	2.3	1.2	1.1	1.3	1.3	0.8	4.2
4-May	0.9	0.9	1.2	1.2	1.2	1.7	0.9	1.4	2.2	2.6	2.3	2.9	3.2	3.0	2.8	2.9	2.9	2.2	2.2	2.5	1.6	1.8	1.4	2.7	3.2
5-May	2.1	2.0	2.9	2.7	1.8	1.6	1.9	3.4	2.8	2.7	3.3	3.9	4.2	4.3	4.1	4.2	3.8	3.9	3.8	2.9	3.2	3.3	3.4	3.3	4.3
6-May	2.6	2.6	2.7	2.0	2.3	2.1	2.4	3.1	2.8	3.7	4.3	4.2	3.9	4.4	4.1	3.8	3.9	3.6	3.3	2.8	2.4	2.5	1.9	2.2	4.4
7-May	2.4	3.0	3.2	1.9	2.5	2.7	2.7	3.2	3.5	3.3	4.0	4.3	3.9	3.8	3.6	2.8	2.6	2.3	1.7	1.3	2.3	3.3	2.9	2.7	4.3
8-May	2.6	2.2	2.2	2.0	1.7	1.6	2.4	2.1	2.5	2.9	3.8	3.0	2.8	2.9	3.1	2.6	2.7	1.9	1.6	1.3	1.2	0.8	0.7	0.5	3.8
9-May	0.4	0.4	0.3	0.2	0.2	0.4	0.6	1.2	1.5	2.6	2.3	2.5	3.3	3.1	3.1	3.2	2.3	1.8	1.2	1.3	0.8	0.5	0.7	0.4	3.3
10-May	0.4	0.4	0.2	0.2	0.2	0.2	0.4	0.6	1.1	1.6	2.2	2.4	3.2	3.6	3.5	3.2	2.8	1.9	1.9	1.3	1.2	1.5	2.3	1.0	3.6
11-May	0.7	0.8	0.6	0.4	0.3	1.2	0.9	1.7	2.3	2.6	2.8	3.2	3.2	3.9	3.7	3.0	3.3	2.7	2.2	0.7	0.5	0.9	1.0	0.7	3.9
12-May	0.5	0.5	0.6	1.1	0.8	0.4	0.6	1.2	1.6	2.7	3.1	3.6	3.5	4.0	3.6	3.3	2.8	2.5	1.5	1.3	2.2	2.1	2.1	1.6	4.0
13-May	0.8	0.6	0.6	0.7	0.7	0.6	0.8	0.5	0.5	1.1	1.5	1.9	2.3	2.6	2.9	2.8	2.0	2.0	1.0	0.5	0.7	0.9	0.9	1.3	2.9
14-May	1.3	1.3	1.3	1.2	1.1	0.7	0.6	0.7	0.9	1.2	1.8	2.9	3.5	3.4	3.5	3.2	3.3	2.6	2.0	1.3	2.1	2.0	1.0	0.6	3.5
15-May	0.4	0.7	0.3	0.3	0.3	0.3	0.2	0.5	1.3	1.7	1.8	2.0	2.7	2.9	3.2	3.2	3.1	2.6	2.1	1.0	0.6	0.4	1.6	1.7	3.2
16-May	1.9	2.5	2.7	1.9	2.7	3.5	3.6	3.6	3.2	3.5	3.8	3.8	3.7	3.9	4.2	3.5	3.3	4.2	3.6	3.8	3.4	2.8	3.2	2.3	4.2
17-May	2.5	2.3	2.3	3.1	2.6	2.6	2.7	2.8	2.7	3.3	3.3	3.0	3.8	3.7	3.6	3.6	3.6	3.0	2.1	1.5	0.6	1.6	2.6	1.3	3.8
18-May	1.0	0.6	0.6	0.4	0.6	1.0	1.8	2.3	2.0	2.6	3.4	3.5	3.4	3.9	3.7	3.3	3.6	2.6	1.9	0.8	0.3	0.4	0.6	0.9	3.9
19-May	1.1	1.0	0.9	0.8	0.7	0.5	0.6	0.6	1.3	1.1	1.5	1.6	1.7	1.3	1.4	1.6	1.5	1.3	1.2	1.9	2.6	2.4	2.3	3.0	3.0
20-May	2.7	2.8	2.6	2.9	2.5	2.1	1.4	1.4	1.4	2.2	2.5	2.5	2.7	3.1	2.5	3.1	2.3	2.0	1.2	1.4	1.8	1.6	2.2	1.6	3.1
21-May	1.5	1.6	1.3	1.4	1.3	1.2	1.0	1.1	1.3	1.9	1.9	2.4	2.5	2.7	2.6	2.4	1.9	1.2	0.7	0.7	1.2	1.3	1.5	1.3	2.7
22-May	0.7	0.5	0.5	1.2	2.1	2.0	2.3	1.9	1.8	2.0	2.6	3.0	2.4	2.9	2.6	3.0	3.4	2.8	2.9	3.0	3.4	3.1	2.7	3.6	3.6
23-May	3.2	3.5	3.5	3.1	3.3	3.3	3.2	3.0	3.3	3.8	4.6	4.7	4.7	4.1	4.2	4.2	4.6	3.6	3.3	3.3	2.9	2.9	3.0	2.8	4.7
24-May	2.8	2.0	3.0	2.5	2.4	2.6	2.5	2.3	2.0	1.9	1.8	2.7	2.8	2.3	2.7	2.0	2.2	2.2	1.8	1.5	1.6	1.5	1.5	1.1	3.0
25-May	0.9	0.6	0.3	0.3	0.5	1.0	1.0	1.5	2.1	2.5	2.6	2.8	2.8	2.8	2.4	3.0	2.8	2.3	1.9	1.3	0.8	0.6	0.6	0.9	3.0
26-May	1.0	0.3	0.6	0.3	0.5	0.5	0.7	1.9	2.2	2.3	2.4	3.4	3.7	3.5	2.8	3.0	2.5	2.9	1.7	0.7	0.3	0.4	0.4	0.3	3.7
27-May	0.4	1.0	0.9	1.0	1.0	1.1	0.9	1.6	1.9	2.9	3.8	3.8	4.6	4.1	3.8	3.9	2.8	2.5	2.3	0.9	0.4	0.4	0.8	0.6	4.6
28-May	0.9	1.0	0.8	0.7	0.8	0.9	1.0	1.5	1.7	2.6	3.3	4.1	4.1	4.5	4.0	3.9	3.5	3.8	3.5	2.0	1.2	1.7	1.1	0.7	4.5
29-May	0.3	0.3	0.3	0.5	0.4	0.4	1.1	1.9	2.2	2.8	4.2	3.7	3.7	4.2	4.1	3.9	3.7	3.4	2.4	1.5	0.6	0.9	2.5	1.4	4.2
30-May	1.0	1.2	0.9	0.5	0.4	0.4	0.6	1.4	1.5	1.9	2.4	3.4	2.9	3.4	3.2	3.0	2.8	2.5	2.0	1.2	1.1	1.2	1.3	1.2	3.4
31-May	0.6	0.5	0.5	0.5	0.4	0.7	0.9	1.7	1.8	2.2	2.9	3.2	2.9	3.0	2.1	2.8	1.9	1.0	0.7	0.9	0.5	1.1	1.6	2.6	3.2
3.2 3.5 3.5 3.1 3.3 3.5 3.6 3.6 3.5 3.8 4.6 4.7 4.7 4.5 4.2 4.2 4.6 4.2 3.8 3.8 3.4 3.3 3.4 3.6																									
Diurnal Maximum																									



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS06
PATRICIA MCINNES
MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

August 30, 2023

Revision 01

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA McINNES (AMS06)
 May 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	708	36	36	100	11.4	0	1.7	0
H2S(ppb) Average	692	42	52	98.66	1.1	0	0.3	0
TRS (ppb) Average	0	0	0	NaN	--	0	--	0
THC (ppm) Average	695	35	49	98.12	2.3	-	2.1	-
NMHC(ppm) Average	695	35	49	98.12	0.186	-	0.028	-
CH4(ppm) Average	695	35	49	98.12	2.2	-	2.1	-
O3 (ppb) Average	709	35	35	100	74.3	0	54.6	-
NO2 (ppb) Average	705	36	39	99.6	22.9	0	5.5	-
NO (ppb) Average	705	36	39	99.6	8.5	-	1.1	-
NOX (ppb) Average	705	36	39	99.6	26.9	-	6.6	-
NH3 (ppb) Average	631	40	113	90.19	35.7	0	18.1	-
PM2.5 (ug/m3) Average	742	2	2	100	598.8	94	326.4	15
Temperature 2 m (C) Average	744	0	0	100	31.7	-	23.7	-
Relative Humidity (%) Average	744	0	0	100	96.9	-	73.1	-
Wind Speed 10 m (km/h) Average	744	0	0	100	35	-	20	-
Wind Direction 10 m (deg) Average	744	0	0	100	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA McINNES (AMS06)
 APRIL 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	708	0.5	1	-	0	0	0.1	0.2	0.5	0.9	11.4
H2S(ppb) Average	692	0.13	0.1	-	0	0	0.1	0.1	0.2	0.3	1.1
TRS (ppb) Average	0	--	--	-	--	0	0	0	0	0	--
THC (ppm) Average	695	1.98	0.1	-	1.9	1.9	1.9	2	2	2	2.3
NMHC(ppm) Average	695	0.002	0.014	-	0	0	0	0	0	0	0.186
CH4(ppm) Average	695	1.97	0	-	1.9	1.9	1.9	2	2	2	2.2
O3 (ppb) Average	709	40.09	11.5	-	6.6	23.9	32.8	41	48.1	53.6	74.3
NO2 (ppb) Average	705	2.64	2.7	-	0	0.3	0.8	1.9	3.6	5.6	22.9
NO (ppb) Average	705	0.43	0.7	-	0	0	0	0.2	0.5	1	8.5
NOX (ppb) Average	705	3.07	3.1	-	0	0.4	1	2.2	4.1	6.3	26.9
NH3 (ppb) Average	631	1.39	4.9	-	0	0	0	0	0	0	35.7
PM2.5 (ug/m3) Average	742	44.23	76.9	-	2.1	5.4	8	18.1	37.6	116.4	598.8
Temperature 2 m (C) Average	744	16.73	6.3	-	0.2	8.6	11.5	16.5	21.8	25.4	31.7
Relative Humidity (%) Average	744	47.05	19.9	-	14.7	22.1	31.4	43.4	62.1	77	96.9
Wind Speed 10 m (km/h) Average	744	11.3	6	-	0	4	7	10	15	20	35
Wind Direction 10 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA McINNES (AMS06)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
H2S	08 May 2023 13:00	08 May 2023 15:00	3	Maintenance - calibration gas cylinder replaced
H2S	09 May 2023 09:00	09 May 2023 15:00	7	Maintenance - multi-point verification check
TRS	01 May 2023 01:00	01 Jun 2023 00:00	744	Not in Service
THC/NMHC/CH4	26 May 2023 01:00	26 May 2023 13:00	13	Unstable Operation - excessive baseline drift
THC/NMHC/CH4	26 May 2023 14:00	26 May 2023 14:00	1	Maintenance - multi-point verification check
NO2, NH3	08 May 2023 11:00	08 May 2023 13:00	3	Maintenance - calibration gas cylinder replaced
NH3	01 May 2023 06:00	31 May 2023 08:00	70	Stabilization after daily span



Wood Buffalo Environmental Association
Summary of Hour Averages

Sulphur Dioxide (SO₂) - ppb
Patricia McInnes - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 11.4 ppb on May 25 09:00	Maximum Daily Average: 1.7 ppb on May 25		Hours of Data:	708
Minimum Value: 0.0 ppb on May 2 14:00	Minimum Daily Average: 0.0 ppb on May 24		Hours of Missing Data:	36
Maximum Diurnal Average: 0.8 ppb at hour 12	Minimum Diurnal Average: 0.3 ppb at hour 24		Hours of Calibration:	36
Monthly Average: 0.50 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.5 P ₉₀ = 0.9 P ₉₉ = 4.8		Percent Operational Time:	100.0

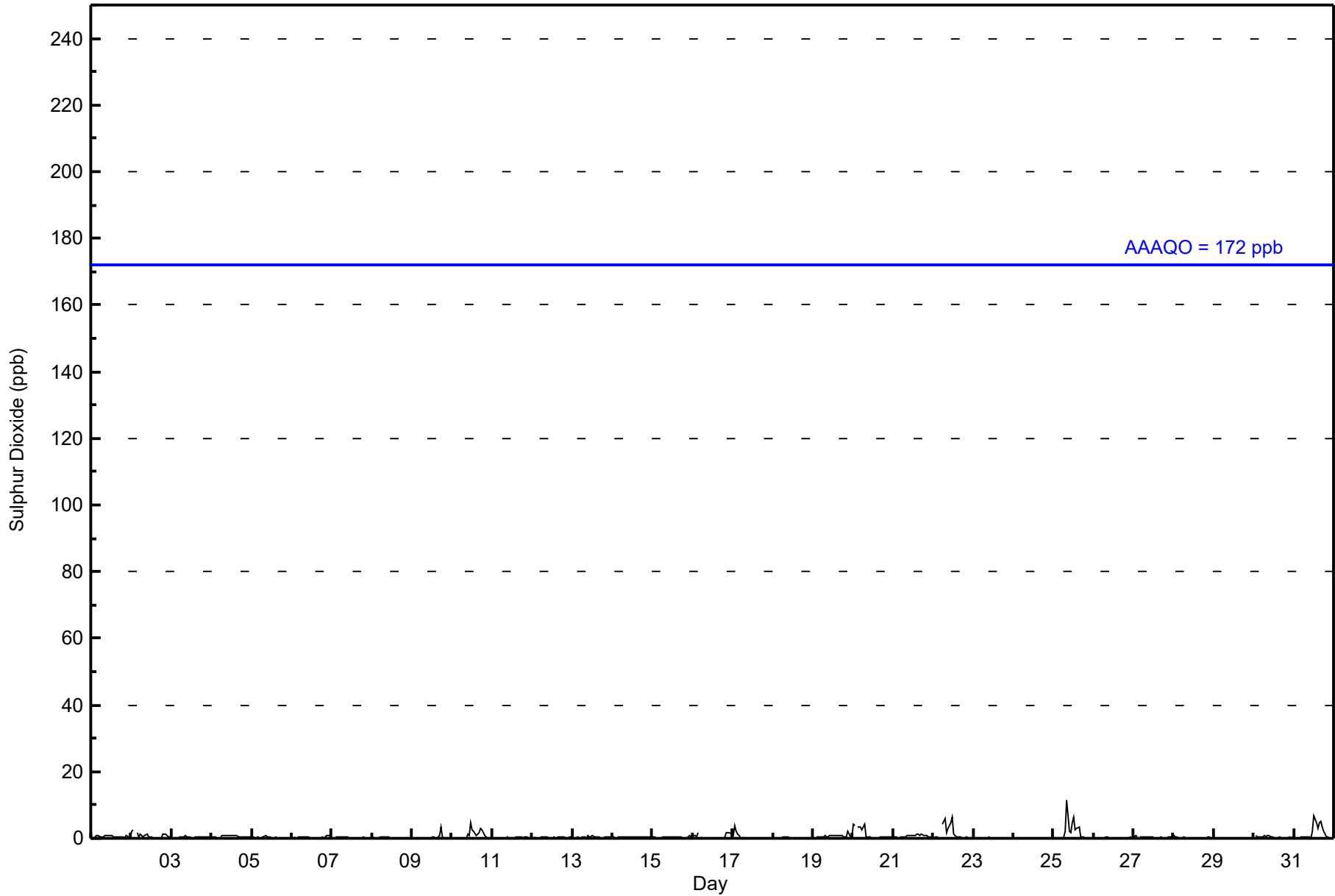
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.5	Z	0.4	0.7	0.8	0.6	0.4	0.6	1.0	0.9	0.9	0.8	0.8	0.4	0.5	0.3	0.3	0.3	0.4	0.3	0.2	0.7	0.3	0.6	0.5	1.0
2-May	2.1	2.3	Z	1.6	0.5	1.3	0.7	0.2	0.8	1.1	0.6	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.0	0.5	0.2	0.7	2.3
3-May	0.1	0.0	0.1	Z	0.0	0.3	0.6	0.3	0.6	0.5	0.3	0.3	0.2	0.1	0.3	0.3	0.4	0.4	0.4	0.4	0.2	0.2	0.3	0.2	0.3	0.6
4-May	0.5	0.5	0.5	0.5	Z	0.5	0.7	0.7	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.4	0.5	0.5	0.5	0.3	0.4	0.4	0.6	0.9
5-May	0.4	0.2	0.2	0.2	0.2	Z	0.4	0.4	0.7	0.5	0.4	0.3	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.7
6-May	Z	0.3	0.2	0.2	0.3	0.4	0.4	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.2	0.1	0.5	0.8	0.8	0.4	0.3	0.8
7-May	0.2	Z	0.1	0.2	0.3	0.3	0.3	0.4	0.2	0.2	0.2	0.1	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.4
8-May	0.3	0.3	Z	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.3	0.1	0.2	0.2	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.5
9-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.0	0.0	0.8	3.3	0.2	0.0	0.0	0.0	0.0	0.2	3.3
10-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	1.2	1.0	4.6	2.5	2.0	0.7	1.3	1.6	2.9	2.4	0.7	0.4	0.0	0.0	0.0	0.9	4.6
11-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.4	0.2	0.2	0.1	0.4
12-May	Z	0.2	0.2	0.1	0.1	0.3	0.3	0.4	0.3	0.3	0.2	0.0	0.2	0.2	0.1	0.3	0.3	0.4	0.4	0.4	0.1	0.1	0.4	0.5	0.3	0.5
13-May	0.4	Z	0.3	0.2	0.1	0.2	0.4	0.4	0.2	0.7	0.6	0.6	0.8	0.6	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.3	0.3	0.4	0.8
14-May	0.3	0.4	Z	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.2	0.3	0.3	0.5	0.6
15-May	0.3	0.2	0.3	Z	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.3	0.1	0.2	0.2	0.2	1.1	0.6	0.4	1.1
16-May	0.8	0.8	0.5	1.6	Z	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.2	0.2	0.6	1.8	1.6	1.9	1.5	0.6	1.9
17-May	0.6	3.9	2.0	1.1	0.4	Z	0.5	0.1	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.5	3.9
18-May	Z	0.1	0.1	0.0	0.0	0.1	0.2	0.5	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.5
19-May	0.1	Z	0.3	0.3	0.4	0.4	0.5	0.6	0.5	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.5	0.4	0.6	1.9	0.5	0.4	0.6	1.9
20-May	4.1	3.9	Z	3.2	3.2	2.7	3.5	4.3	0.6	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.4	1.3	4.3
21-May	0.4	0.4	0.3	Z	0.3	0.3	0.5	0.5	0.7	0.7	0.7	0.7	0.8	0.8	1.1	1.4	1.0	1.1	1.0	0.8	0.8	0.4	0.3	0.4	0.7	1.4
22-May	0.2	0.2	0.6	0.4	Z	4.4	5.3	6.1	1.9	2.9	4.8	6.4	1.1	0.6	0.5	0.3	0.2	0.1	0.1	0.2	0.3	0.1	0.0	0.0	1.6	6.4
23-May	0.0	0.1	0.0	0.1	0.2	Z	0.1	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
24-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.3	0.0	0.3
25-May	0.3	Z	0.2	0.2	0.2	0.2	0.2	1.9	11.4	2.0	1.7	4.6	6.3	2.6	2.8	3.5	0.4	0.6	0.3	0.1	0.1	0.1	0.0	0.0	1.7	11.4
26-May	0.0	0.0	Z	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.2
27-May	0.3	0.7	0.4	Z	0.3	0.5	0.6	0.6	0.6	0.3	0.5	0.3	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.7
28-May	0.9	0.6	0.3	0.2	Z	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.2	0.9
29-May	0.0	0.0	0.1	0.1	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.1	0.5
30-May	Z	0.8	0.6	0.5	0.4	0.4	0.7	0.6	0.9	1.0	0.5	0.2	0.1	0.2	0.2	0.3	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.4	1.0
31-May	0.3	Z	0.2	0.2	0.2	0.3	0.4	0.4	0.3	0.2	0.2	2.0	6.7	4.8	3.1	4.8	5.2	3.5	1.9	0.4	0.4	0.2	0.1	0.1	1.6	6.7
																								Diurnal Average		
																								Diurnal Maximum		

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Patricia McInnes - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Patricia McInnes - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	707	99.86	99.86
11 - 20	1	0.14	100.00
21 - 60	0	0.00	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Patricia McInnes - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	24	16	22	17	24	116	96	56	81	62	62	25	25	21	30	30	707
11 - 20	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	16	22	17	24	117	96	56	81	62	62	25	25	21	30	30	708

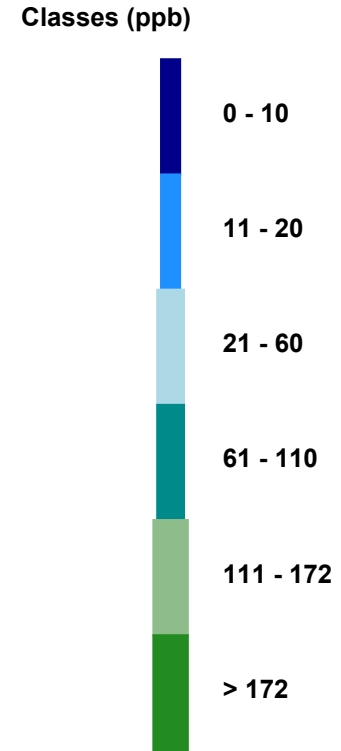
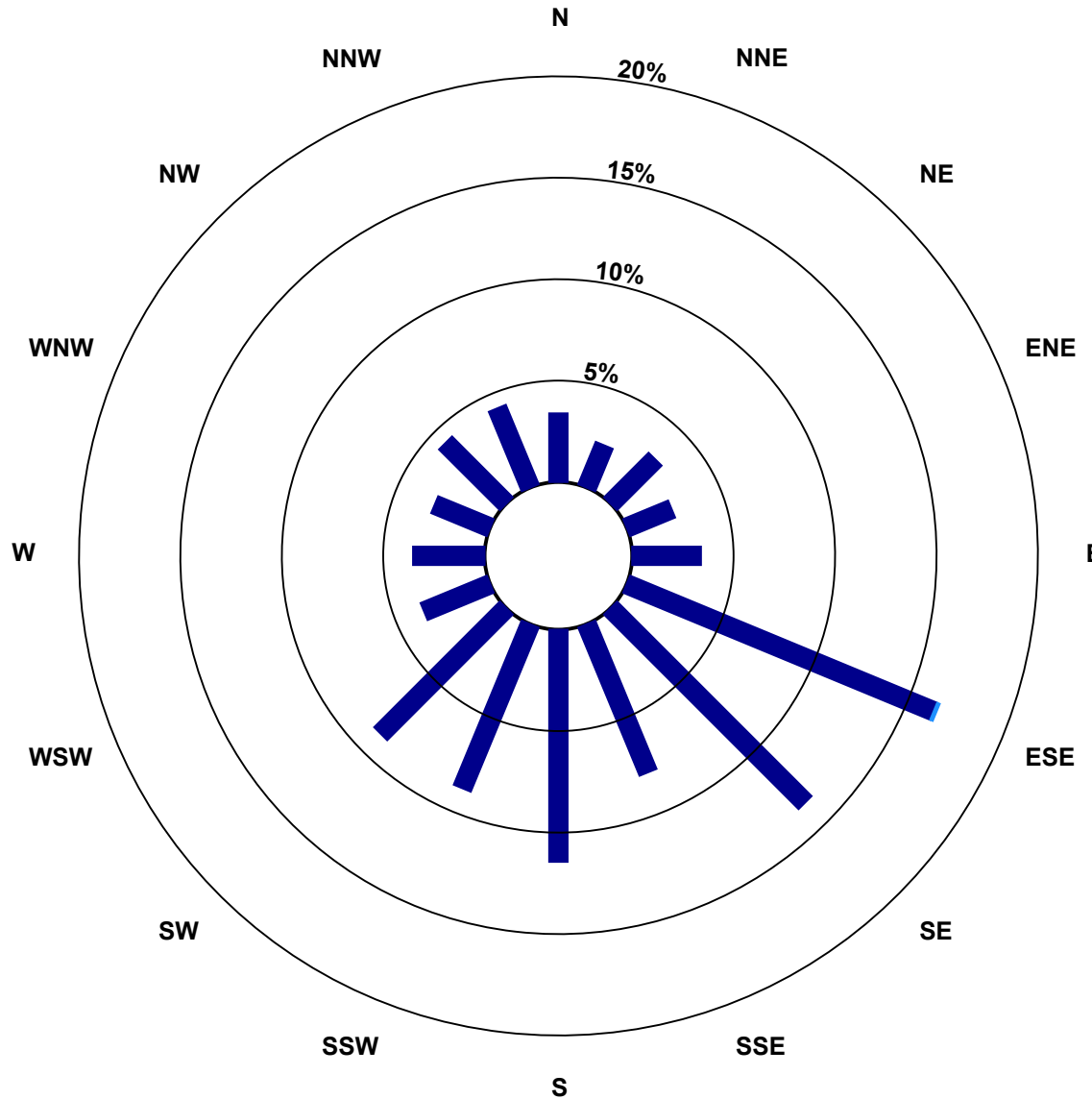
Total Number of Valid Hours: 708

Total Number of Hours: 744

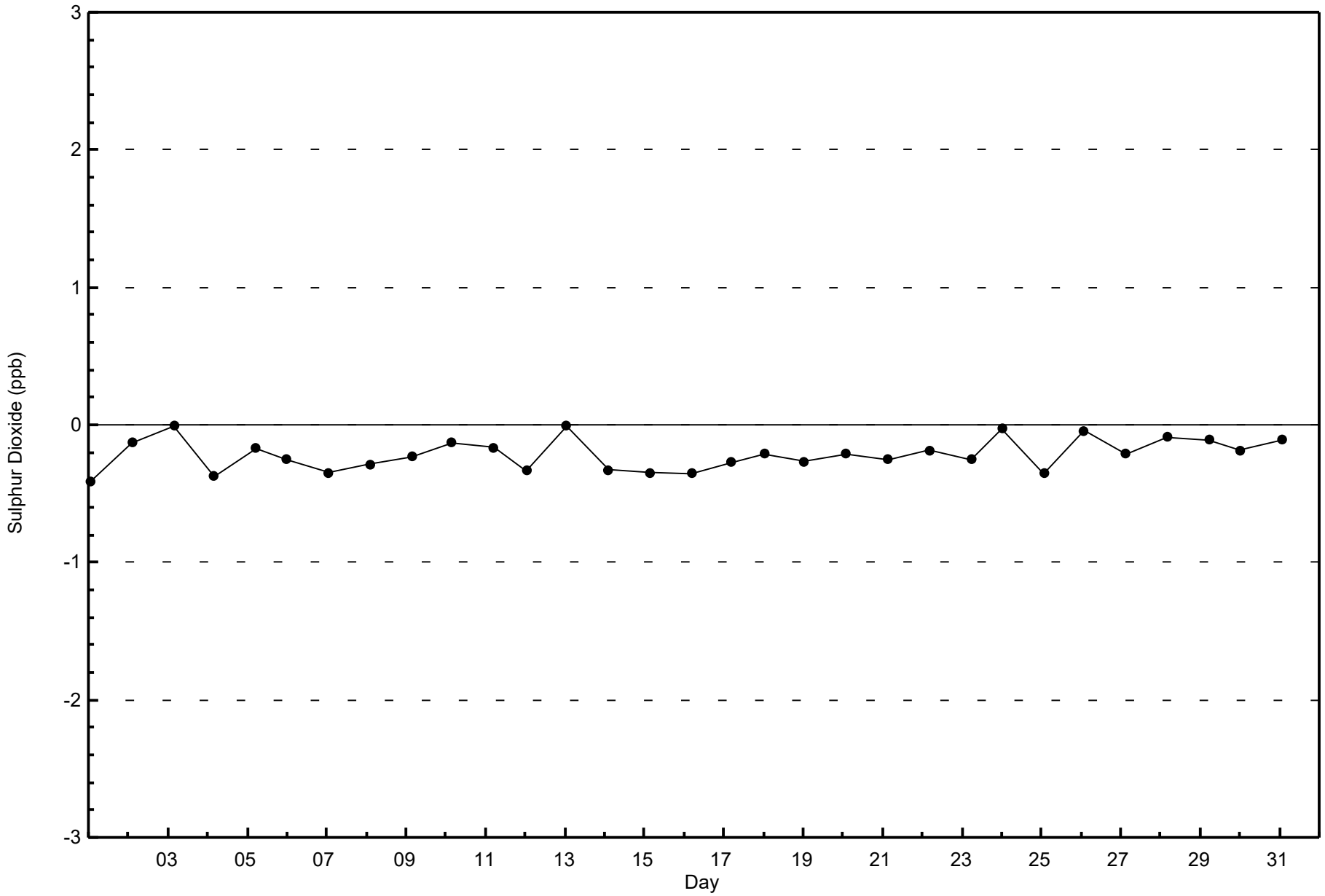


Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Patricia McInnes



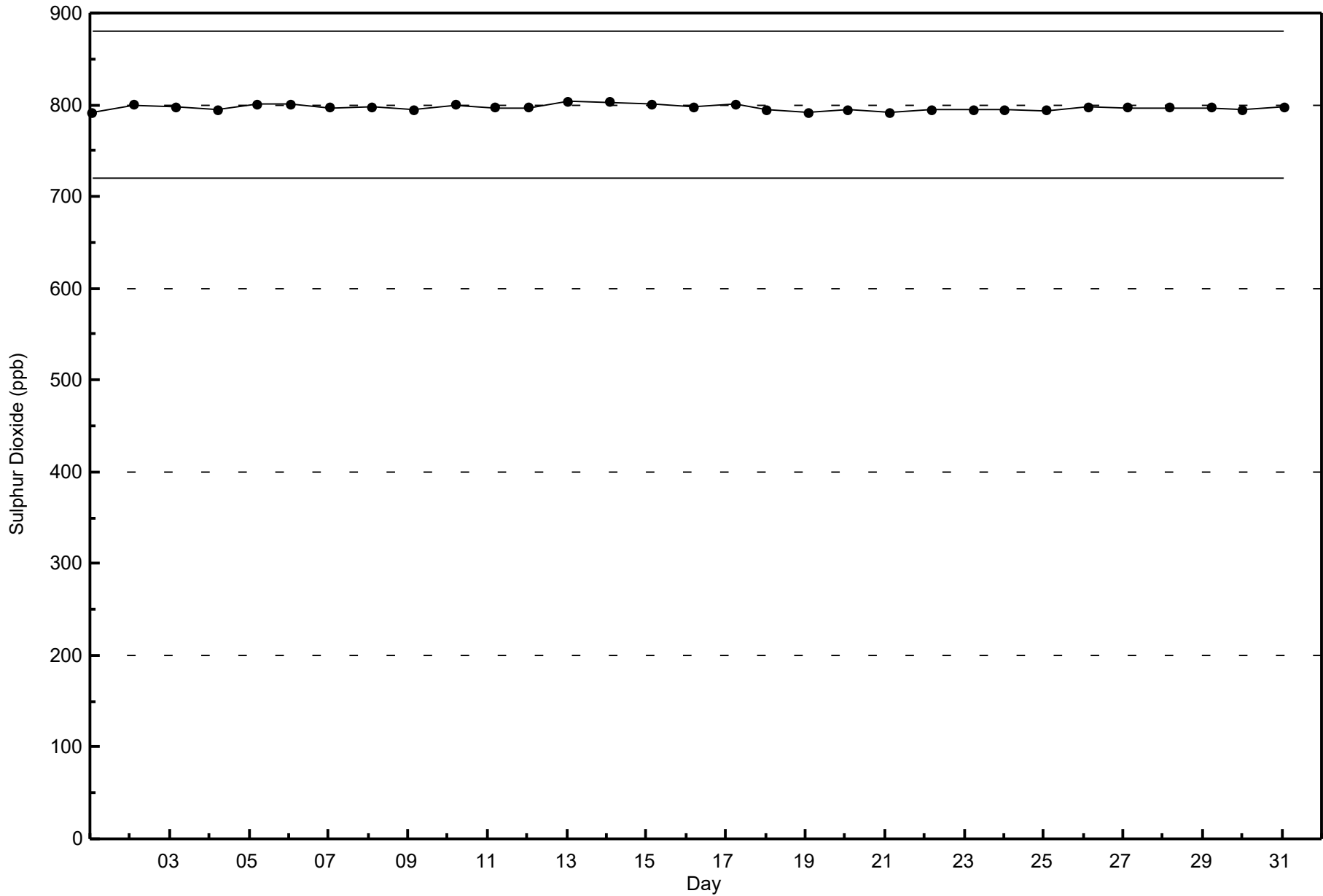
Total Number of Valid Hours: 708

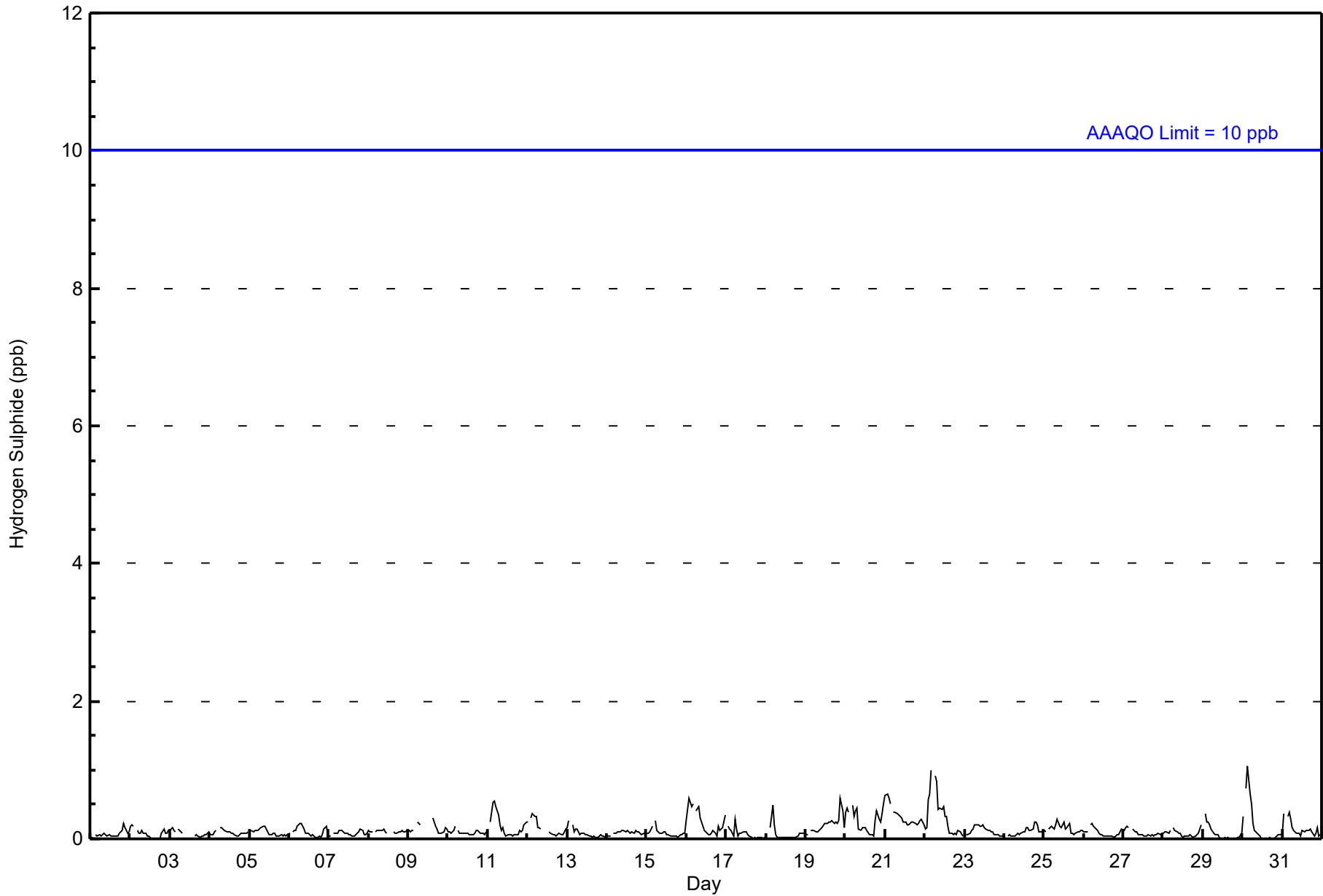




Wood Buffalo Environmental Association
Span Responses

Sulphur Dioxide (SO₂) - ppb
Patricia McInnes - May 2023







Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Patricia McInnes - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	692	100.00	100.00
3 - 4	0	0.00	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 692

Total Number of Hours: 744



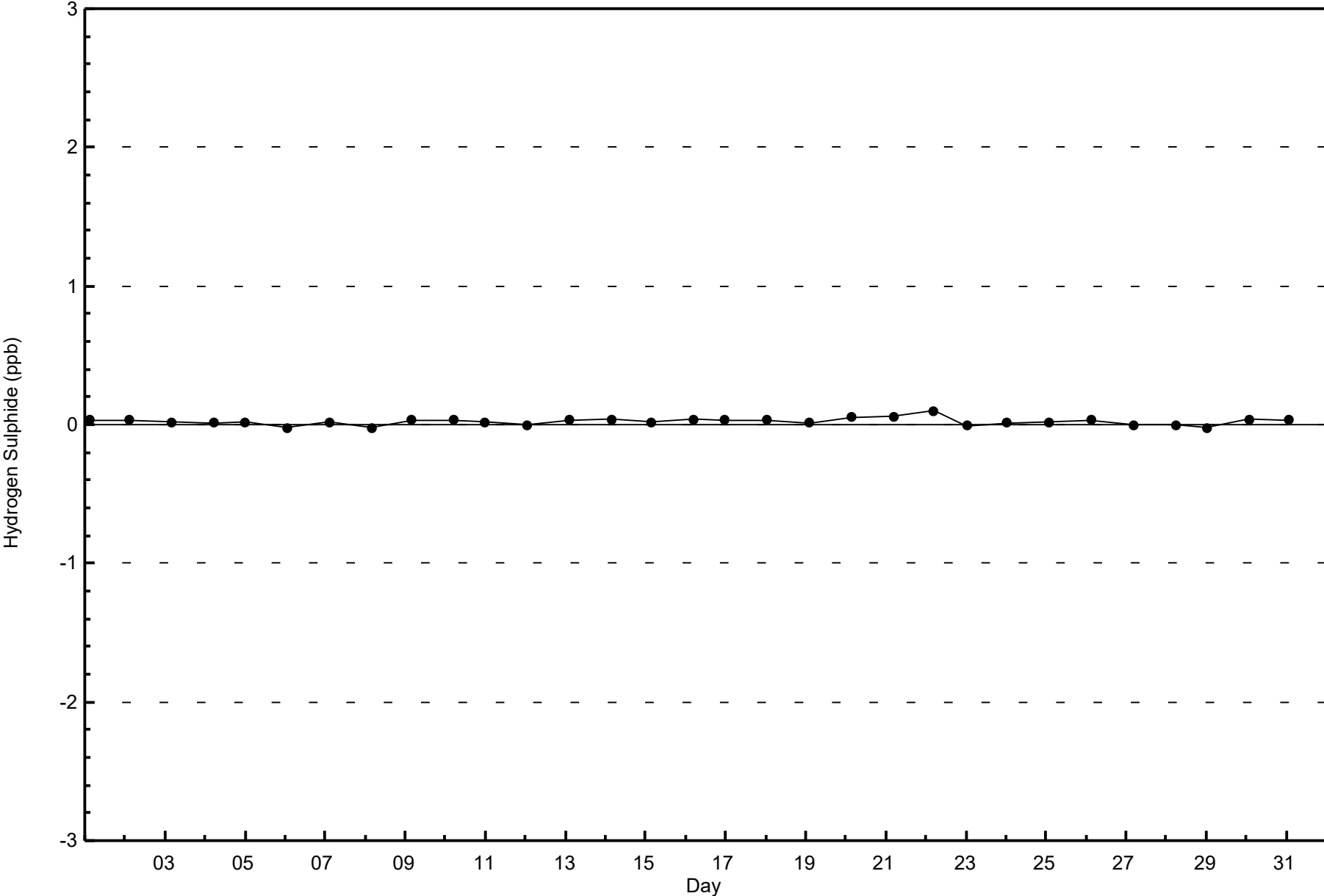
**Wood Buffalo Environmental Association
Frequency Distribution**

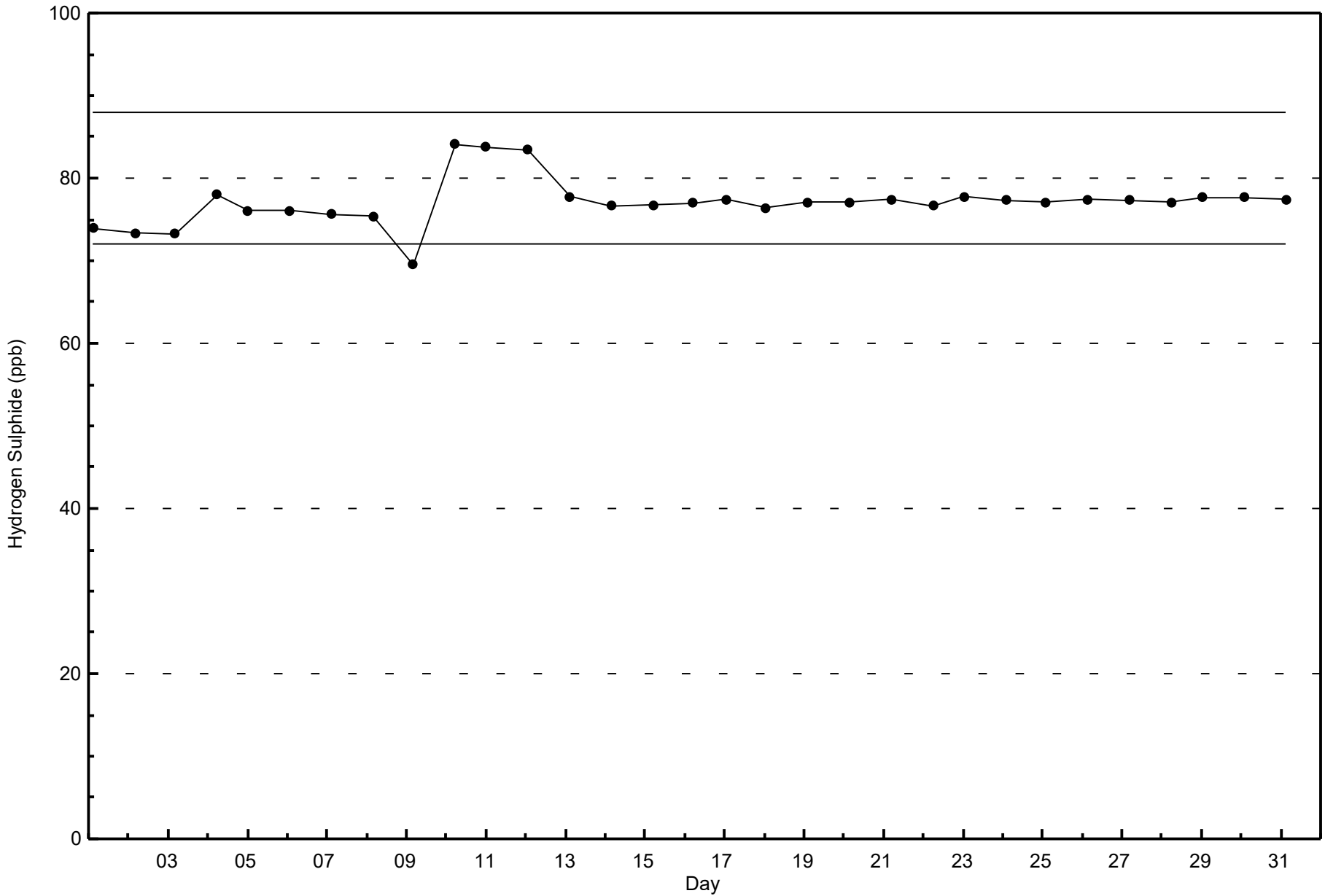
**Hydrogen Sulphide (H₂S) - ppb
Patricia McInnes - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	26	17	19	15	24	117	91	54	74	61	61	24	26	21	29	33	692
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	26	17	19	15	24	117	91	54	74	61	61	24	26	21	29	33	692

Total Number of Valid Hours: 692

Total Number of Hours: 744







Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Patricia McInnes - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	0
Maximum Value: -- ppb on May 1 00:00	Maximum Daily Average: -- ppb on Apr 30		Hours of Data:	0
Minimum Value: -- ppb on May 1 00:00	Minimum Daily Average: -- ppb on Apr 30		Hours of Missing Data:	0
Maximum Diurnal Average: -- ppb at hour 0	Minimum Diurnal Average: -- ppb at hour 0		Hours of Calibration:	0
Monthly Average: -- ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.0		Percent Operational Time:	0.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
2-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
3-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
4-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
5-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
6-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
7-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
8-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
9-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
10-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
11-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
12-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
13-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
14-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
15-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
16-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
17-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
18-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
19-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
20-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
21-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
22-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
23-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
24-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
25-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
26-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
27-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
28-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
29-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
30-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
31-May	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--

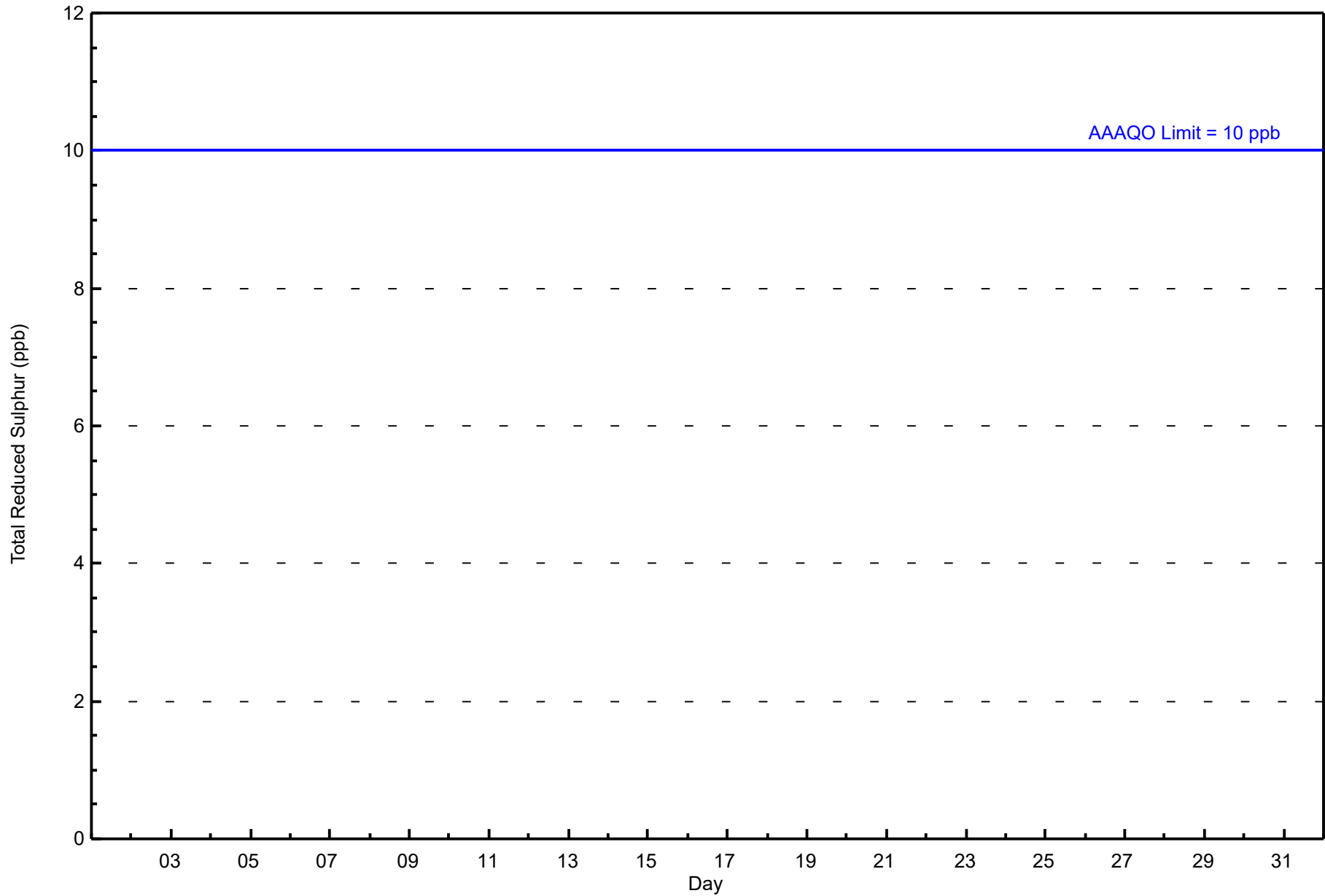
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Diurnal Average
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Diurnal Maximum

NS - Not in Service
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb



Wood Buffalo Environmental Association
Hourly Averages

Total Reduced Sulphur (TRS) - ppb
Patricia McInnes - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Patricia McInnes - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	0	0.00	0.00
3 - 4	0	0.00	0.00
5 - 7	0	0.00	0.00
8 - 11	0	0.00	0.00
> 11	0	0.00	0.00

Total Number of Valid Hours: 0

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Patricia McInnes - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

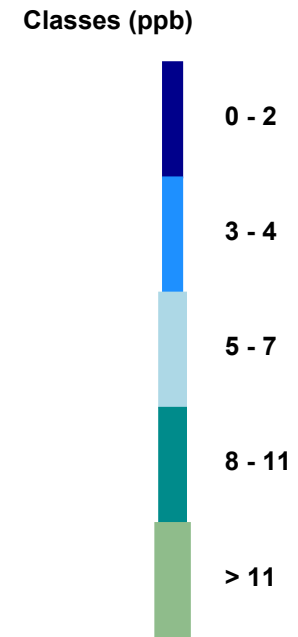
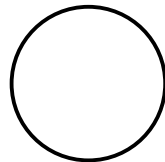
Total Number of Valid Hours: 0

Total Number of Hours: 744

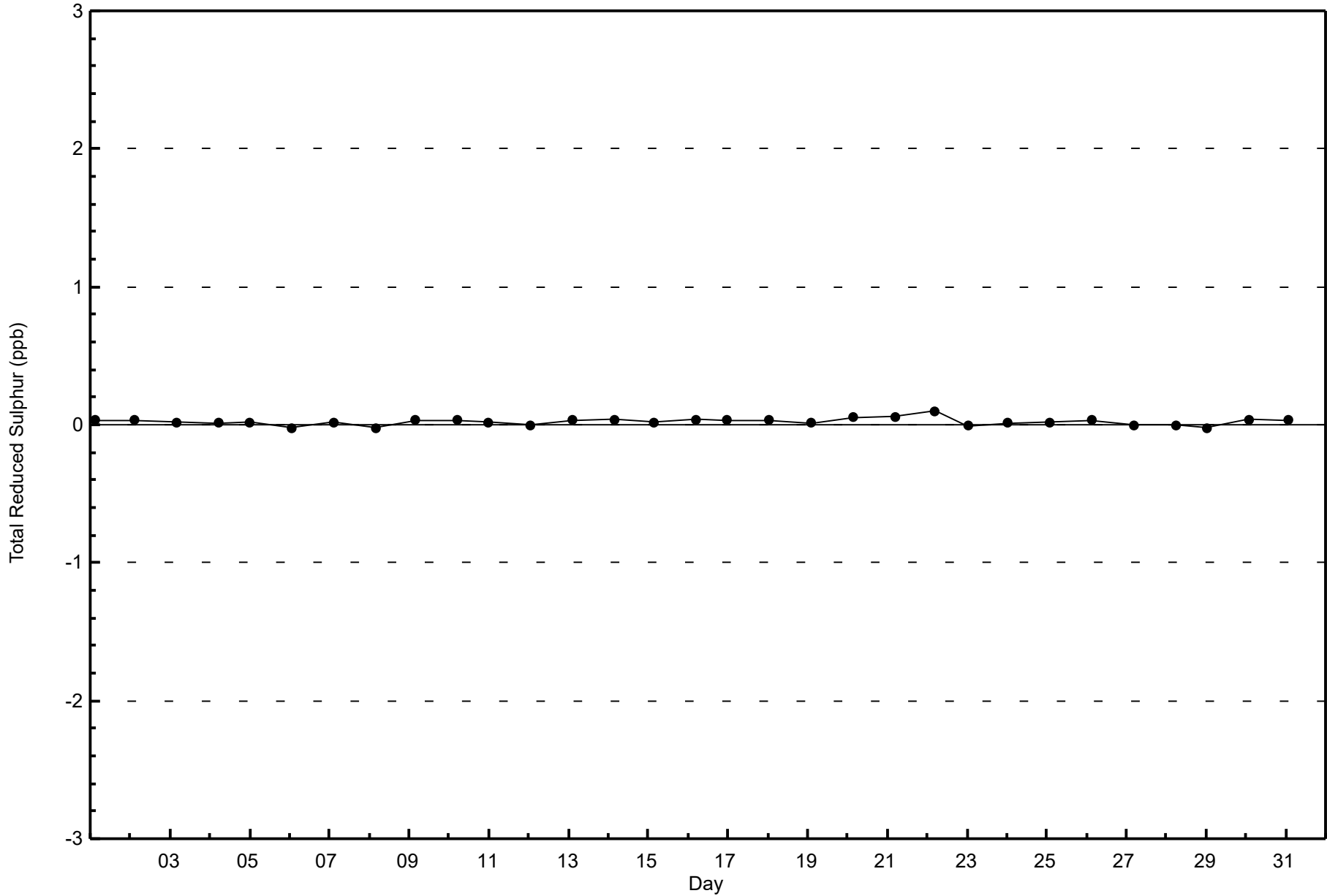


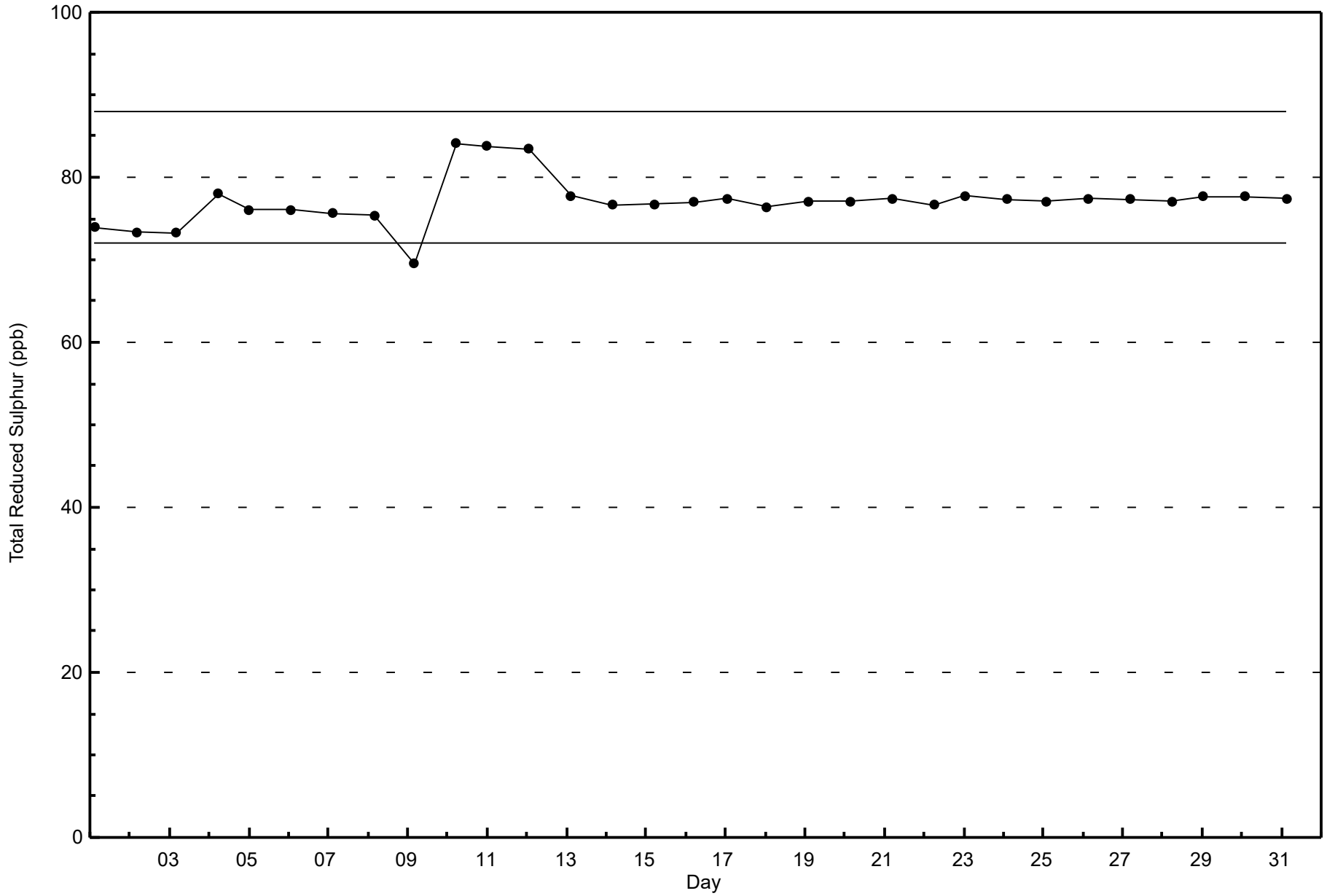
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Reduced Sulphur (TRS) - ppb
Patricia McInnes



Total Number of Valid Hours: 0







Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

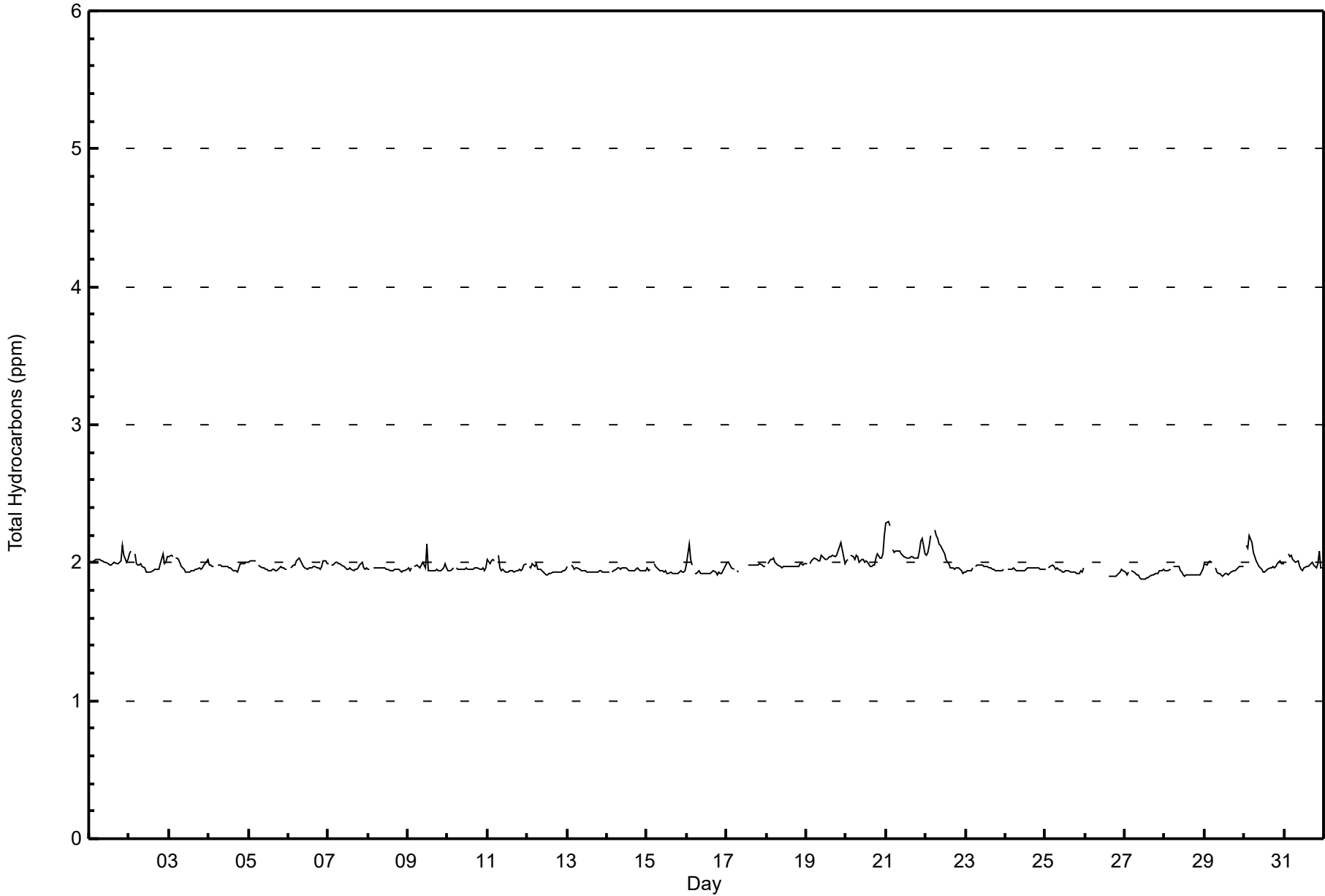
Patricia McInnes - May 2023

Maximum Value: 2.3 ppm on May 21 02:00		Maximum Daily Average: 2.1 ppm on May 21		Hours in Service: 744																											
Minimum Value: 1.9 ppm on May 27 12:00		Minimum Daily Average: 1.9 ppm on May 27		Hours of Data: 695																											
Maximum Diurnal Average: 2.0 ppm at hour 2		Minimum Diurnal Average: 2.0 ppm at hour 15		Hours of Missing Data: 49																											
Monthly Average: 1.98 ppm		Percentiles: P ₁ = 1.9 P ₁₀ = 1.9 Q ₁ = 1.9 Median = 2.0 Q ₃ = 2.0 P ₉₀ = 2.0 P ₉₉ = 2.2		Hours of Calibration: 35																											
				Percent Operational Time: 98.1																											
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24							
1-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1		
2-May	2.1	2.1	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1
3-May	2.0	2.1	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1
4-May	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
5-May	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
6-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
7-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
8-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
9-May	2.0	1.9	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
10-May	1.9	1.9	1.9	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
11-May	2.0	2.0	2.0	2.0	2.0	Z	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
12-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
13-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
14-May	1.9	1.9	Z	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
15-May	2.0	1.9	1.9	Z	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
16-May	2.0	2.1	2.0	2.0	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
17-May	2.0	2.0	2.0	2.0	2.0	Z	1.9	1.9	C	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
18-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
19-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
20-May	2.0	2.0	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.0	2.0	2.1	2.2	2.0	2.0	2.0	2.0	2.2
21-May	2.3	2.3	2.3	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.3
22-May	2.1	2.1	2.1	2.2	Z	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.2
23-May	1.9	1.9	1.9	1.9	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
24-May	Z	2.0	1.9	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
25-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
26-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
27-May	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
28-May	1.9	1.9	1.9	2.0	Z	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
29-May	2.0	2.0	2.0	2.0	2.0	Z	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
30-May	Z	2.1	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
31-May	2.0	Z	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
																								Diurnal Average							
																								Diurnal Maximum							
Z - zerospan																								C - Calibration		M - Maintenance		UO - Unstable Operation			



Wood Buffalo Environmental Association
Hourly Averages

Total Hydrocarbons (THC) - ppm
Patricia McInnes - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Patricia McInnes - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	644	92.66	92.66
2.1 - 3.0	51	7.34	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 695

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Patricia McInnes - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	13	16	21	16	21	111	82	47	79	60	60	25	24	16	27	26	644
2.1 - 3.0	11	0	1	1	2	6	9	4	2	1	1	0	1	5	3	4	51
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	16	22	17	23	117	91	51	81	61	61	25	25	21	30	30	695

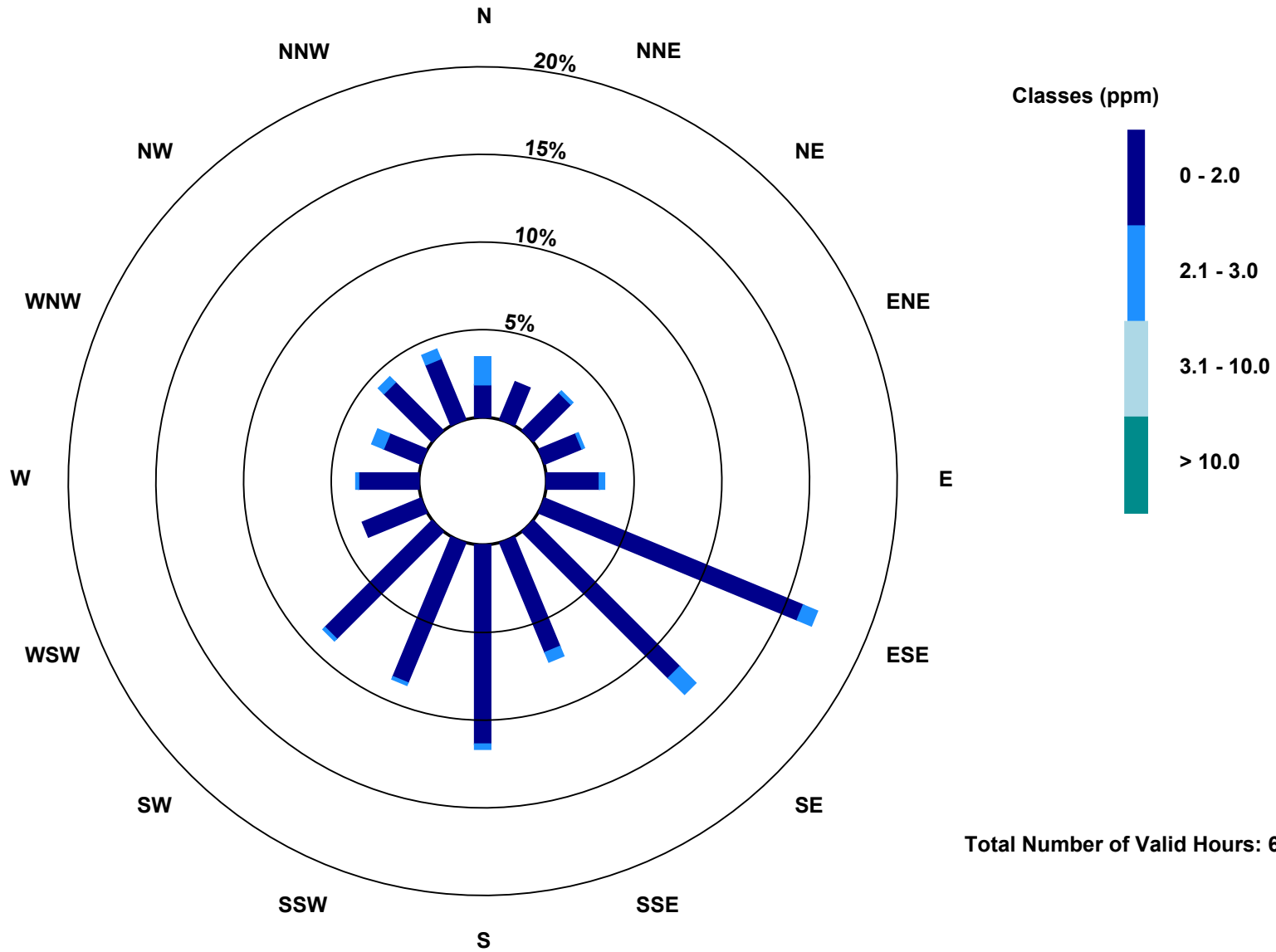
Total Number of Valid Hours: 695

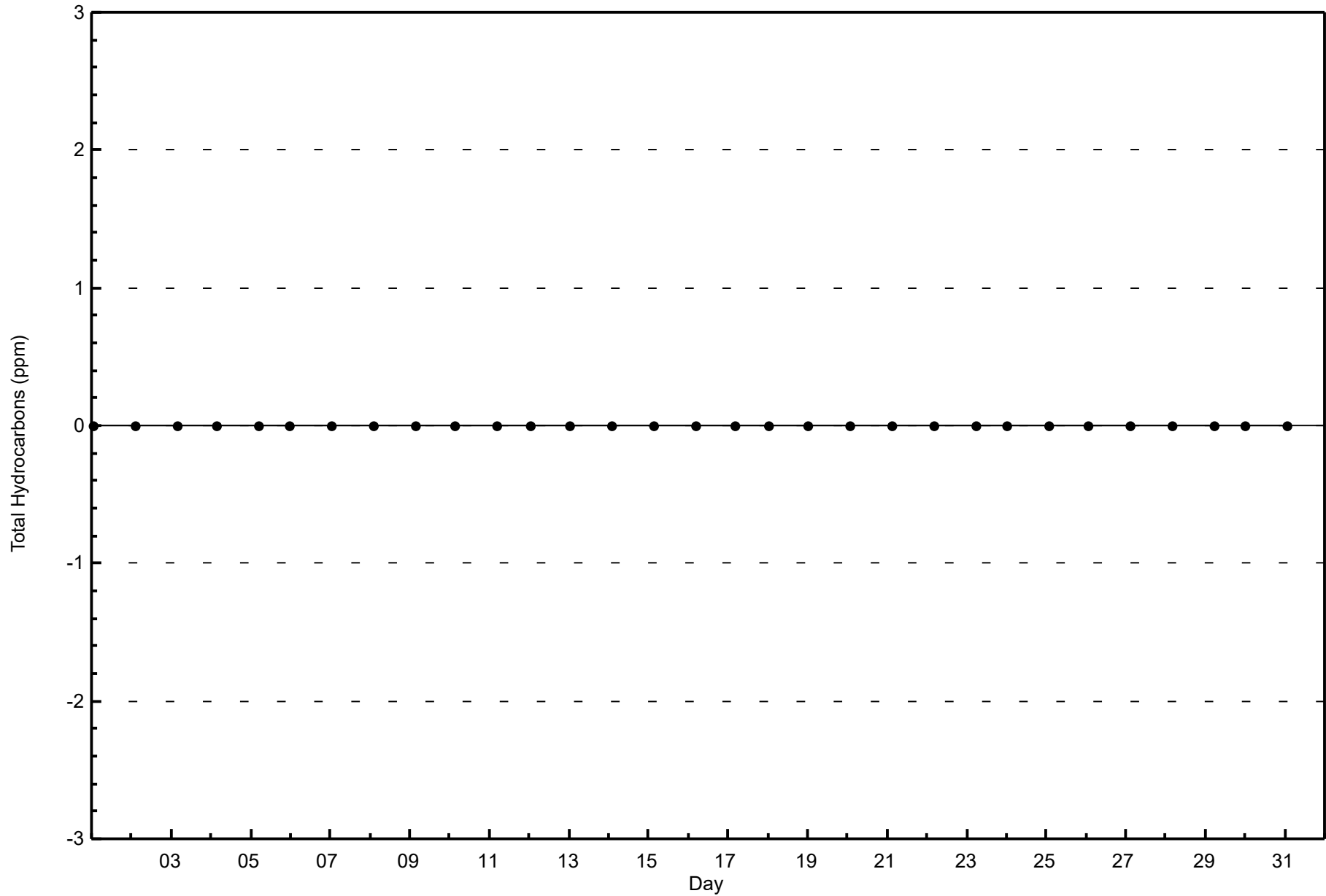
Total Number of Hours: 744

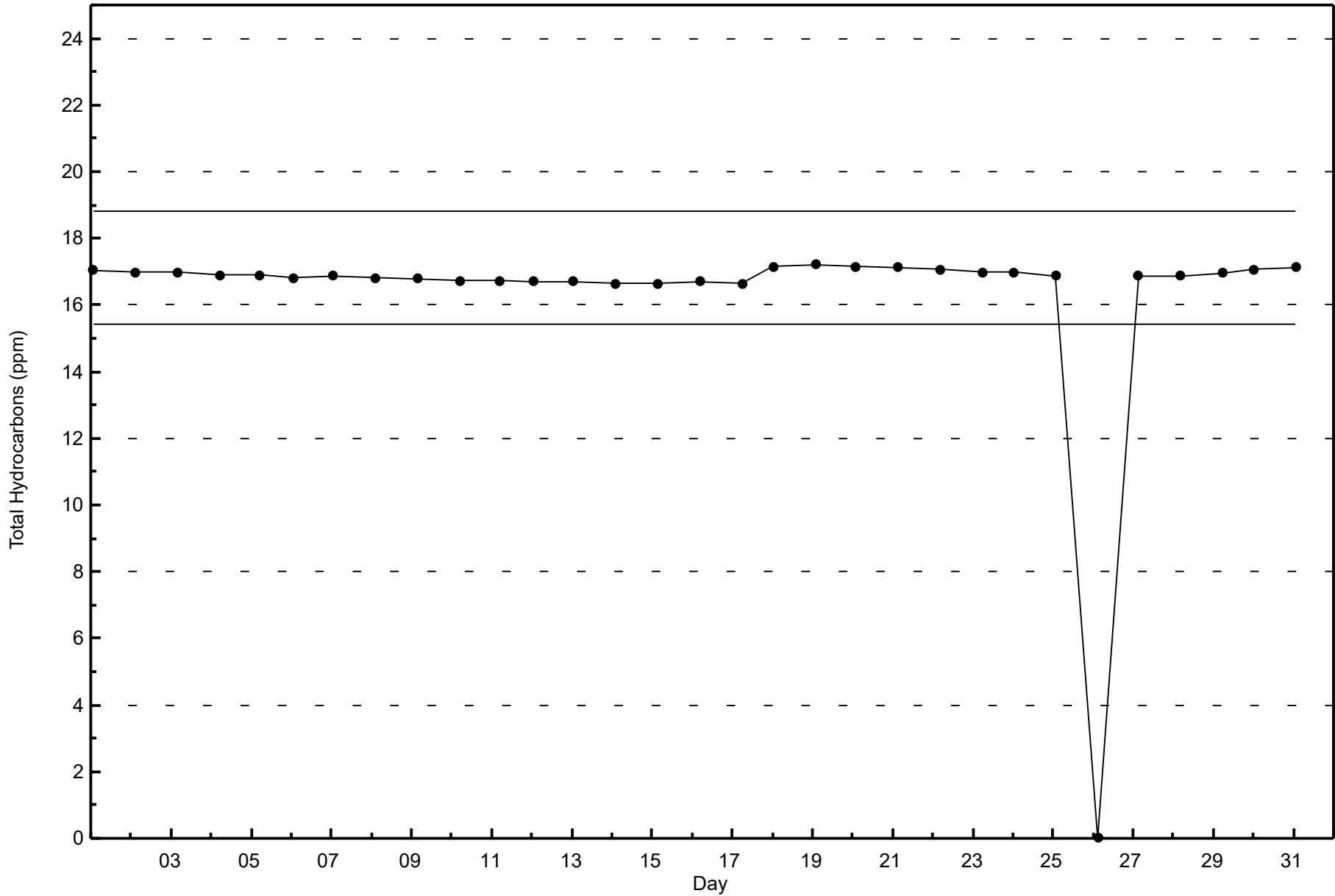


Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Patricia McInnes





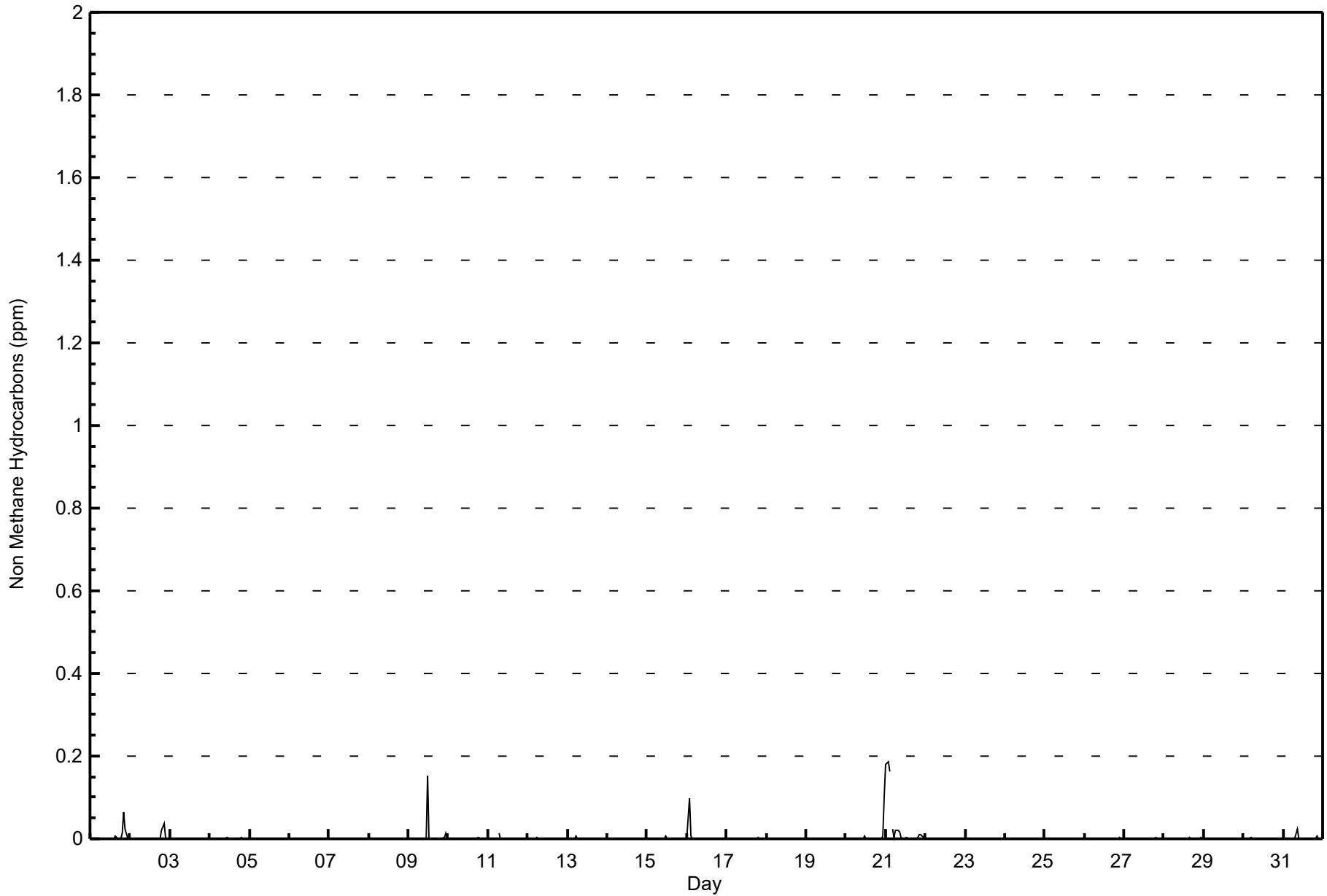




Summary of Hour Averages

Patricia McInnes - May 2023

Maximum Value: 0.186 ppm on May 21 02:00		Maximum Daily Average: 0.028 ppm on May 21		Hours in Service: 744																							
Minimum Value: 0.000 ppm on May 1 01:00		Minimum Daily Average: 0.000 ppm on May 3		Hours of Data: 695																							
Maximum Diurnal Average: 0.012 ppm at hour 2		Minimum Diurnal Average: 0.000 ppm at hour 4		Hours of Missing Data: 49																							
Monthly Average: 0.002 ppm		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.0		Hours of Calibration: 35																							
				Percent Operational Time: 98.1																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.014	0.064	0.022	0.000	0.000	0.005	0.064	
2-May	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.038	0.000	0.000	0.000	0.003	0.038	
3-May	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
4-May	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.003	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.004	
5-May	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
6-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
7-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
8-May	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
9-May	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.152	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.012	0.000	0.007	0.152	
10-May	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.002	
11-May	0.000	0.000	0.000	0.000	0.000	Z	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.012	
12-May	Z	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	
13-May	0.000	Z	0.000	0.000	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	
14-May	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15-May	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	
16-May	0.000	0.097	0.006	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.097	
17-May	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	C	C	C	C	C	0.000	0.000	0.000	0.000	0.001	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.003	
18-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
19-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.002	
20-May	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.103	0.005	0.103	
21-May	0.179	0.186	0.163	Z	0.024	0.004	0.020	0.020	0.016	0.003	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.009	0.010	0.006	0.000	0.028	0.186	
22-May	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	
23-May	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
24-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
25-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
26-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	--	0.004		
27-May	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.003	
28-May	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.004	
29-May	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
30-May	Z	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	
31-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.000	0.001	0.025		
		0.007	0.012	0.006	0.000	0.001	0.001	0.001	0.001	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.004	0.001	0.001	0.003	Diurnal Average		
		0.179	0.186	0.163	0.000	0.024	0.007	0.020	0.020	0.025	0.003	0.003	0.152	0.002	0.001	0.000	0.006	0.000	0.001	0.002	0.020	0.064	0.022	0.012	0.103	Diurnal Maximum	
Z - zerospan		C - Calibration					M - Maintenance					UO - Unstable Operation															





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Patricia McInnes - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	667	95.97	95.97
0.006 - 0.05	21	3.02	98.99
0.06 - 0.1	3	0.43	99.42
> 0.1	4	0.58	100.00

Total Number of Valid Hours: 695

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Patricia McInnes - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	24	16	20	14	21	112	86	48	79	58	60	25	25	21	29	29	667
0.006 - 0.05	0	0	2	2	2	2	4	2	2	3	1	0	0	0	0	1	21
0.06 - 0.1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	3
> 0.1	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	4
Totals	24	16	22	17	23	117	91	51	81	61	61	25	25	21	30	30	695

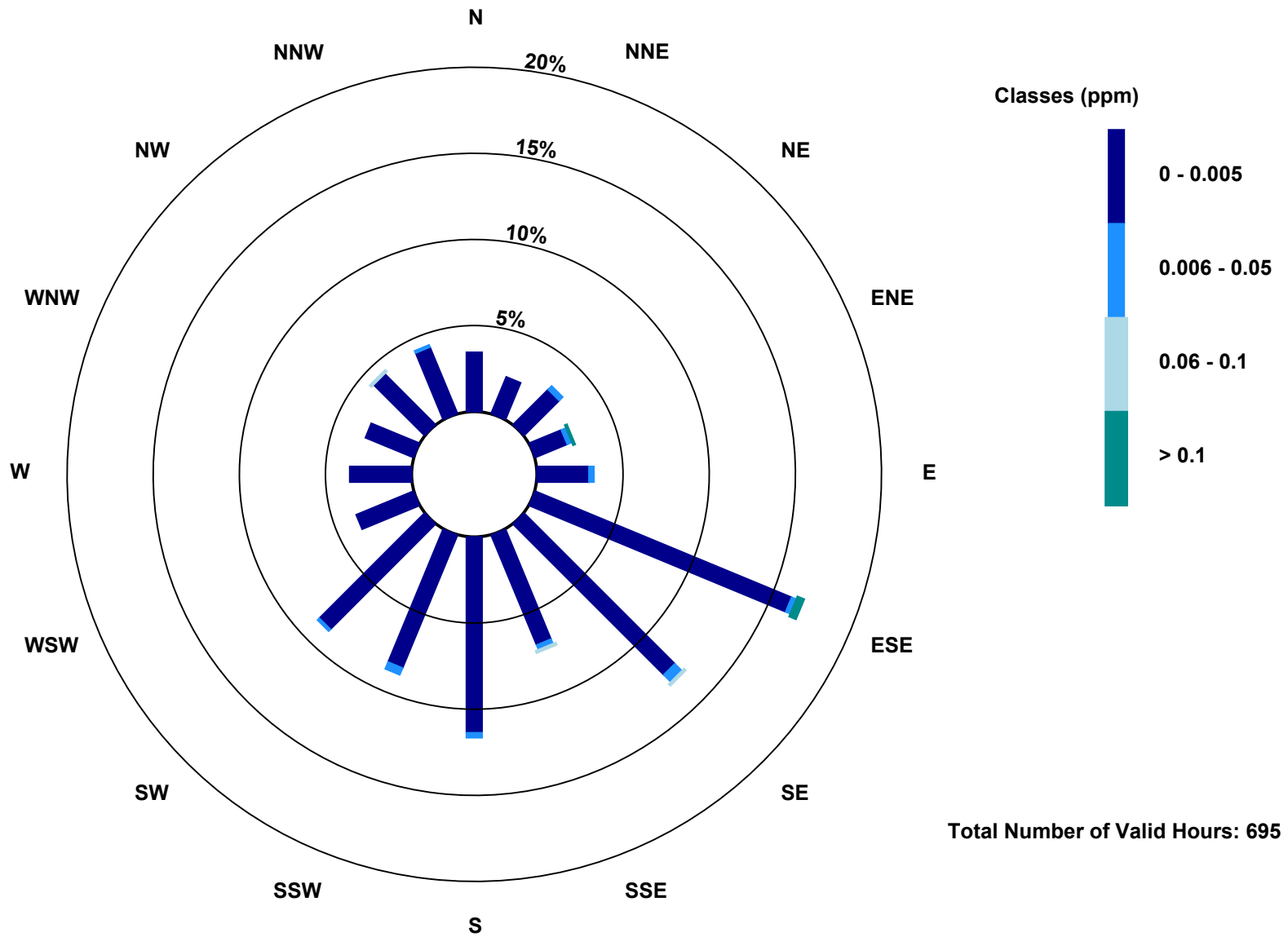
Total Number of Valid Hours: 695

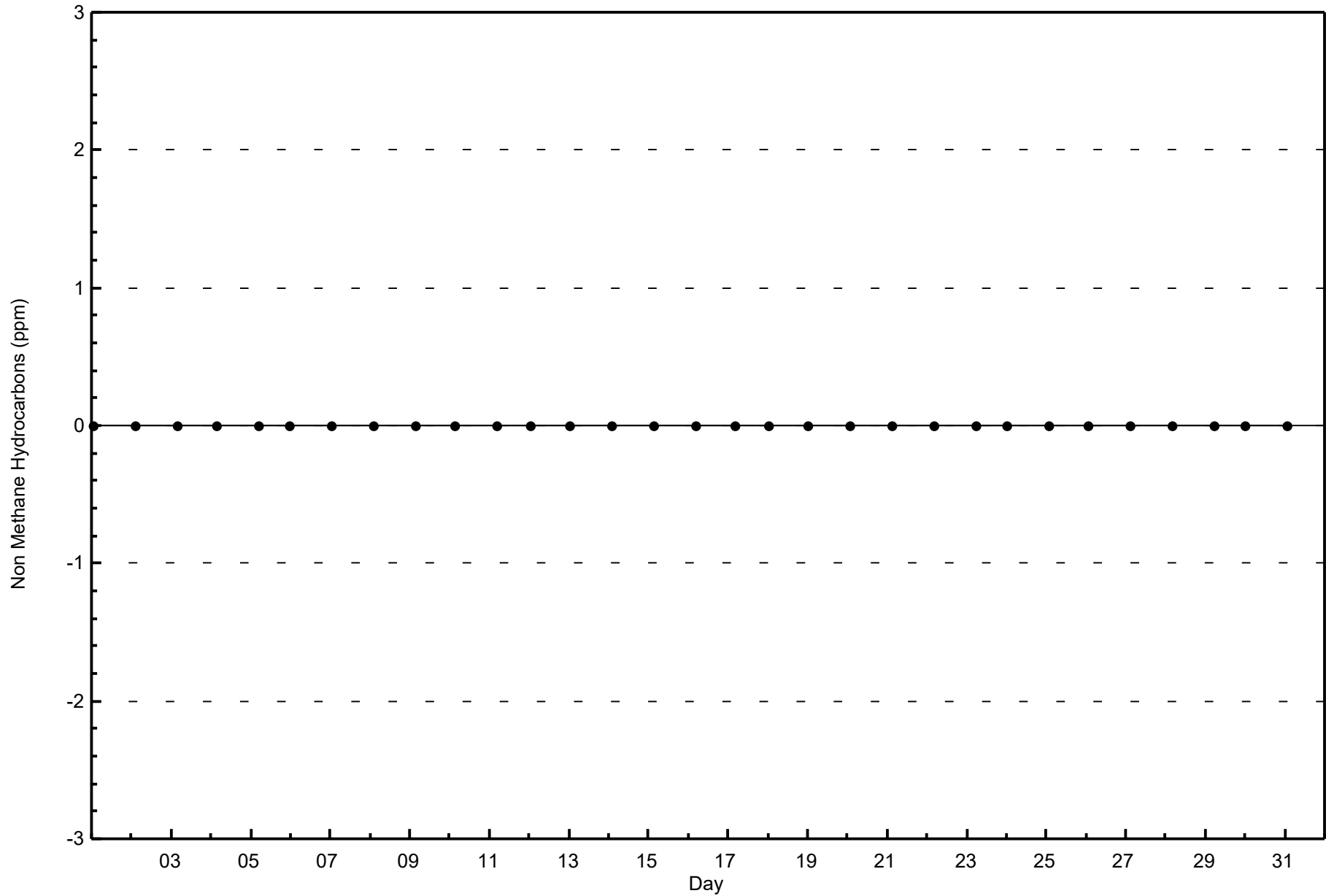
Total Number of Hours: 744

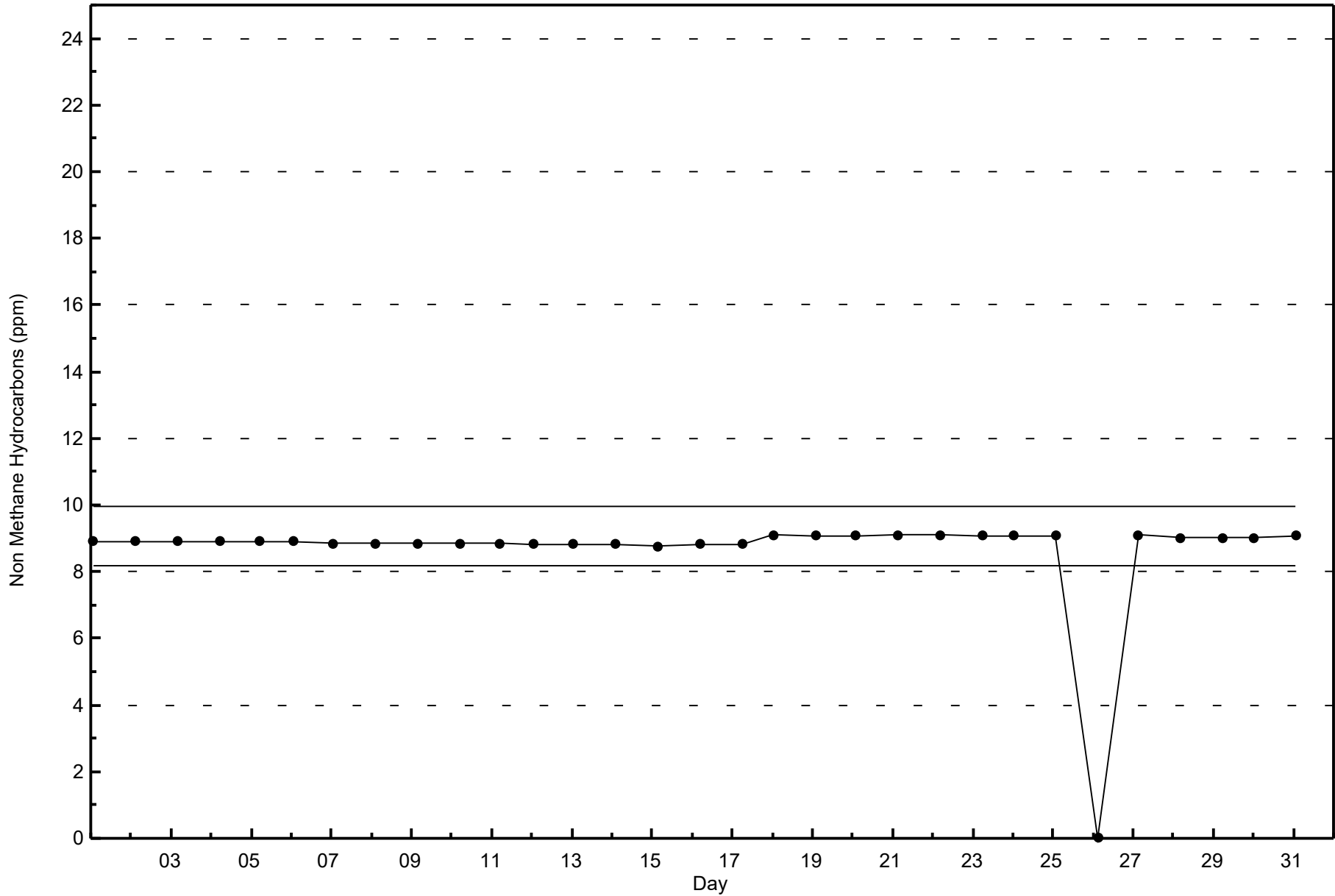


Wood Buffalo Environmental Association
Wind Rose May 2023

Non Methane Hydrocarbons (NMHC) - ppm
Patricia McInnes









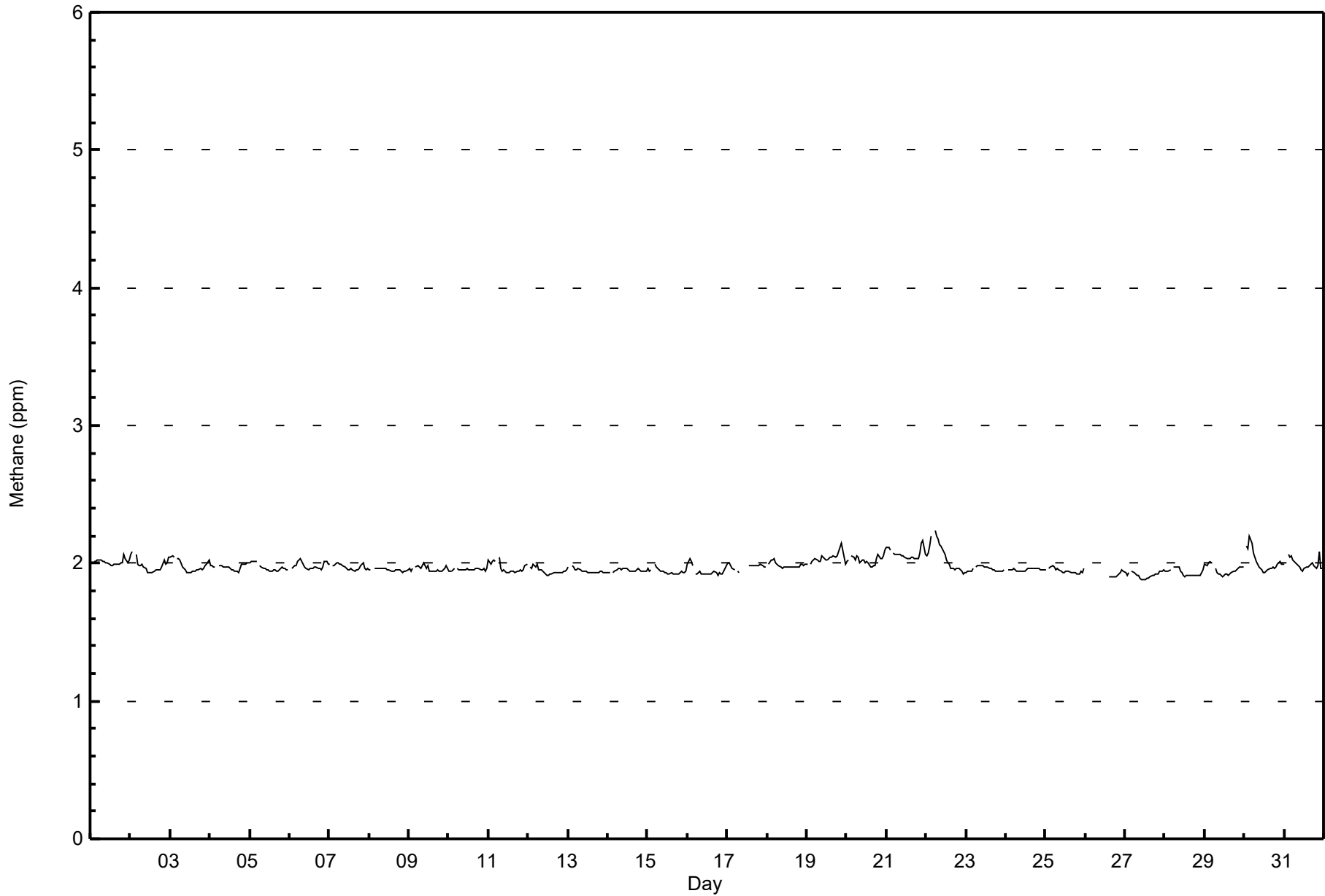
Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH₄) - ppm

Patricia McInnes - May 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744																															
Maximum Value: 2.2 ppm on May 22 06:00		Maximum Daily Average: 2.1 ppm on May 21																	Hours of Data:	695																																	
Minimum Value: 1.9 ppm on May 27 12:00		Minimum Daily Average: 1.9 ppm on May 27																	Hours of Missing Data:	49																																	
Maximum Diurnal Average: 2.0 ppm at hour 4		Minimum Diurnal Average: 2.0 ppm at hour 15																	Hours of Calibration:	35																																	
Monthly Average: 1.97 ppm		Percentiles: P ₁ = 1.9 P ₁₀ = 1.9 Q ₁ = 1.9 Median = 2.0 Q ₃ = 2.0 P ₉₀ = 2.0 P ₉₉ = 2.1																	Percent Operational Time:	98.1																																	
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																													
1-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1																									
2-May	2.1	2.1	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1																								
3-May	2.0	2.1	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1																								
4-May	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																								
5-May	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																								
6-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																								
7-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																								
8-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0																								
9-May	2.0	1.9	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																								
10-May	1.9	1.9	1.9	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0																								
11-May	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																								
12-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.0	2.0																								
13-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0																								
14-May	1.9	1.9	Z	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0																								
15-May	2.0	1.9	1.9	Z	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0																								
16-May	2.0	2.0	2.0	2.0	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0																								
17-May	2.0	2.0	2.0	2.0	2.0	Z	1.9	1.9	C	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																								
18-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																								
19-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1																								
20-May	2.0	2.0	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.1																								
21-May	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.2																								
22-May	2.1	2.1	2.1	2.2	Z	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.2																								
23-May	1.9	1.9	1.9	1.9	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0																								
24-May	Z	2.0	1.9	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																								
25-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0																								
26-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	--	2.0	2.0																								
27-May	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9																								
28-May	1.9	1.9	1.9	2.0	Z	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0																								
29-May	2.0	2.0	2.0	2.0	2.0	Z	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																								
30-May	Z	2.1	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2																								
31-May	2.0	Z	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1																								
																								2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	Diurnal Average	
																								2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	Diurnal Maximum
Z - zerospan																								C - Calibration				M - Maintenance				UO - Unstable Operation																					





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Patricia McInnes - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	649	93.38	93.38
2.1 - 3.0	46	6.62	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 695

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Patricia McInnes - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	13	16	21	17	21	111	82	48	80	60	61	25	24	16	28	26	649
2.1 - 3.0	11	0	1	0	2	6	9	3	1	1	0	0	1	5	2	4	46
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	16	22	17	23	117	91	51	81	61	61	25	25	21	30	30	695

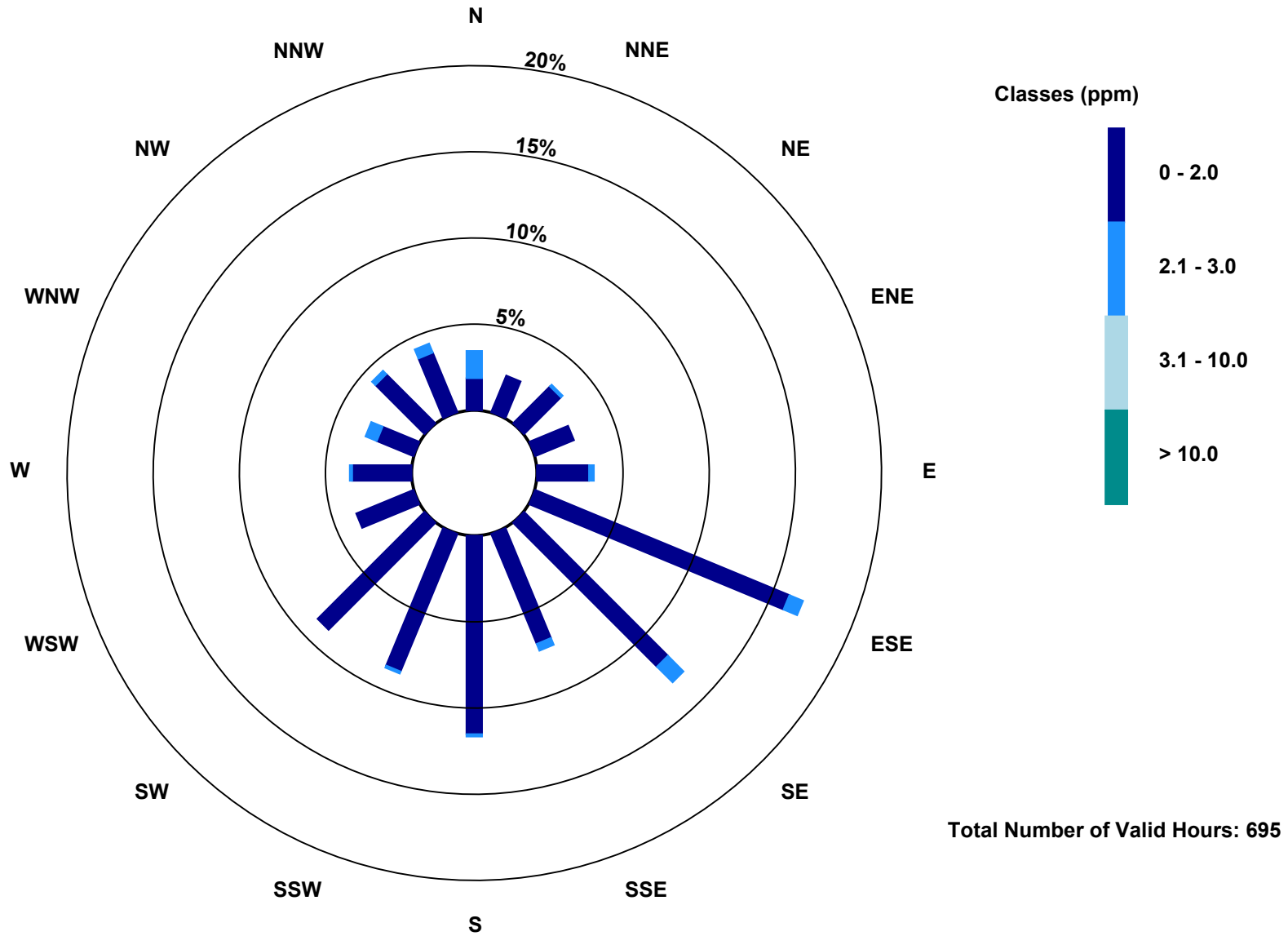
Total Number of Valid Hours: 695

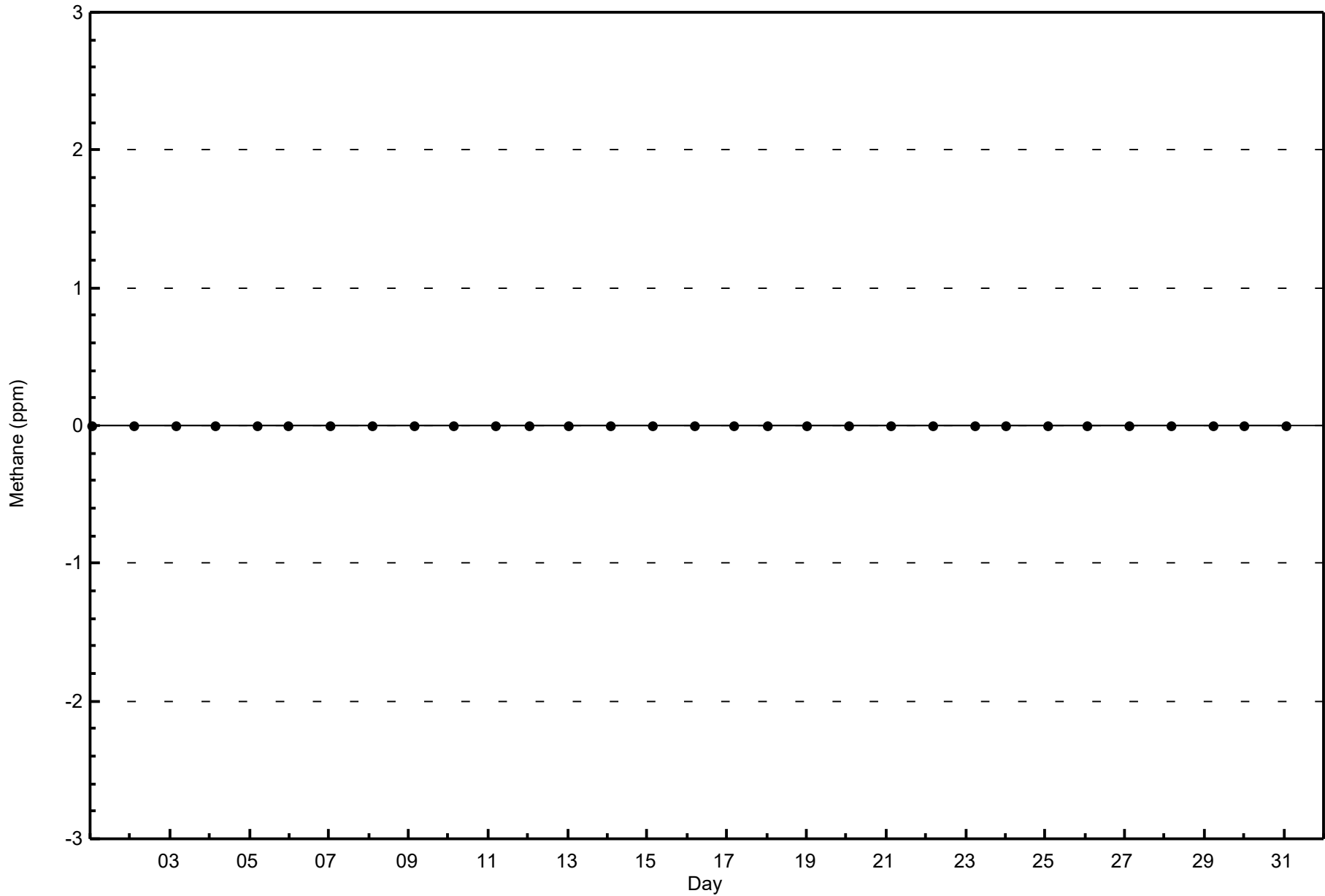
Total Number of Hours: 744

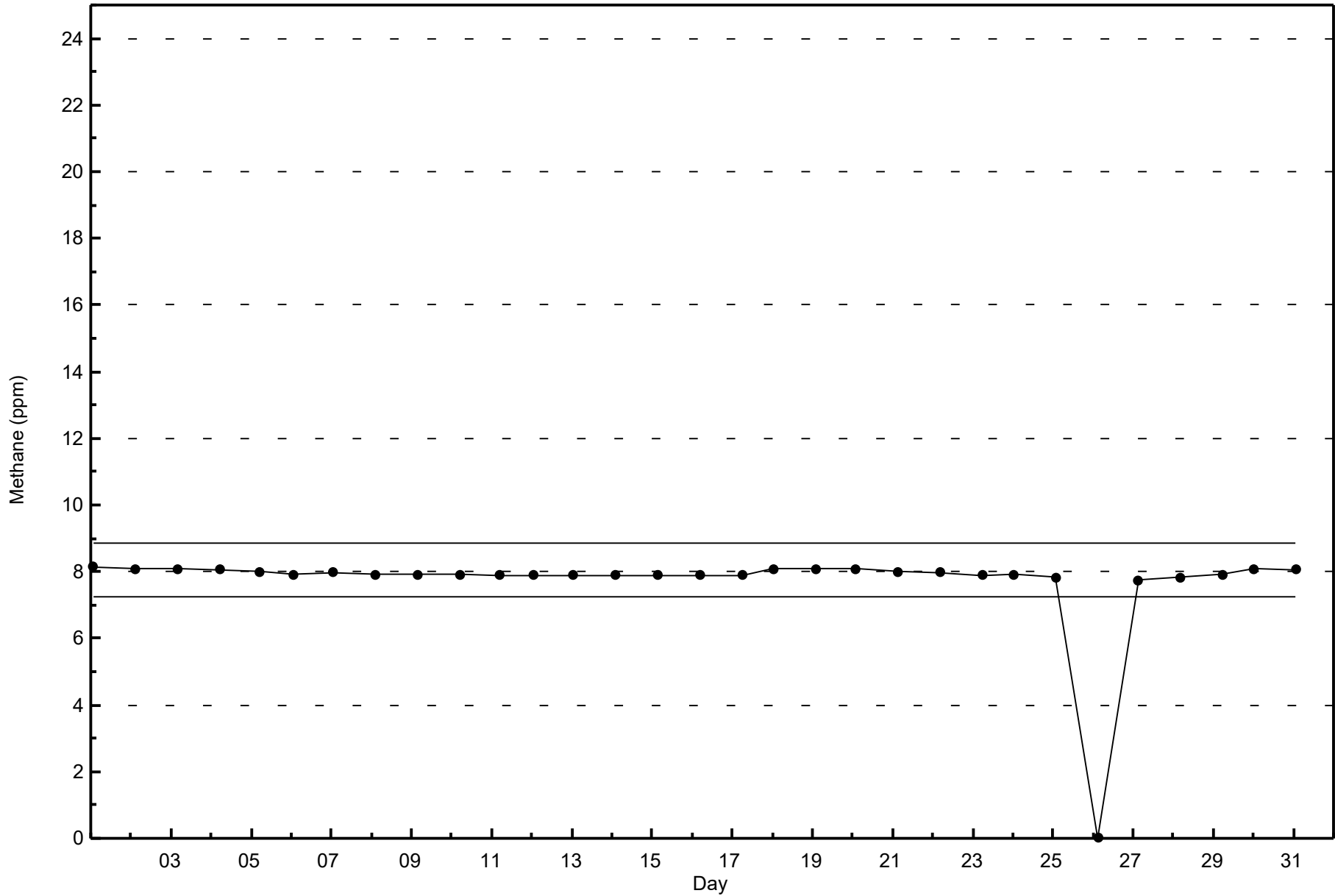


Wood Buffalo Environmental Association
Wind Rose May 2023

Methane (CH₄) - ppm
Patricia McInnes









Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Patricia McInnes - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 74.3 ppb on May 31 16:00	Maximum Daily Average: 54.6 ppb on May 4		Hours of Data:	709
Minimum Value: 6.6 ppb on May 25 06:00	Minimum Daily Average: 22.2 ppb on May 24		Hours of Missing Data:	35
Maximum Diurnal Average: 49.2 ppb at hour 16	Minimum Diurnal Average: 28.5 ppb at hour 5		Hours of Calibration:	35
Monthly Average: 40.09 ppb	Percentiles: P ₁ = 12.2 P ₁₀ = 23.9 Q ₁ = 32.8 Median = 41.0 Q ₃ = 48.1 P ₉₀ = 53.6 P ₉₉ = 65.7		Percent Operational Time:	100.0

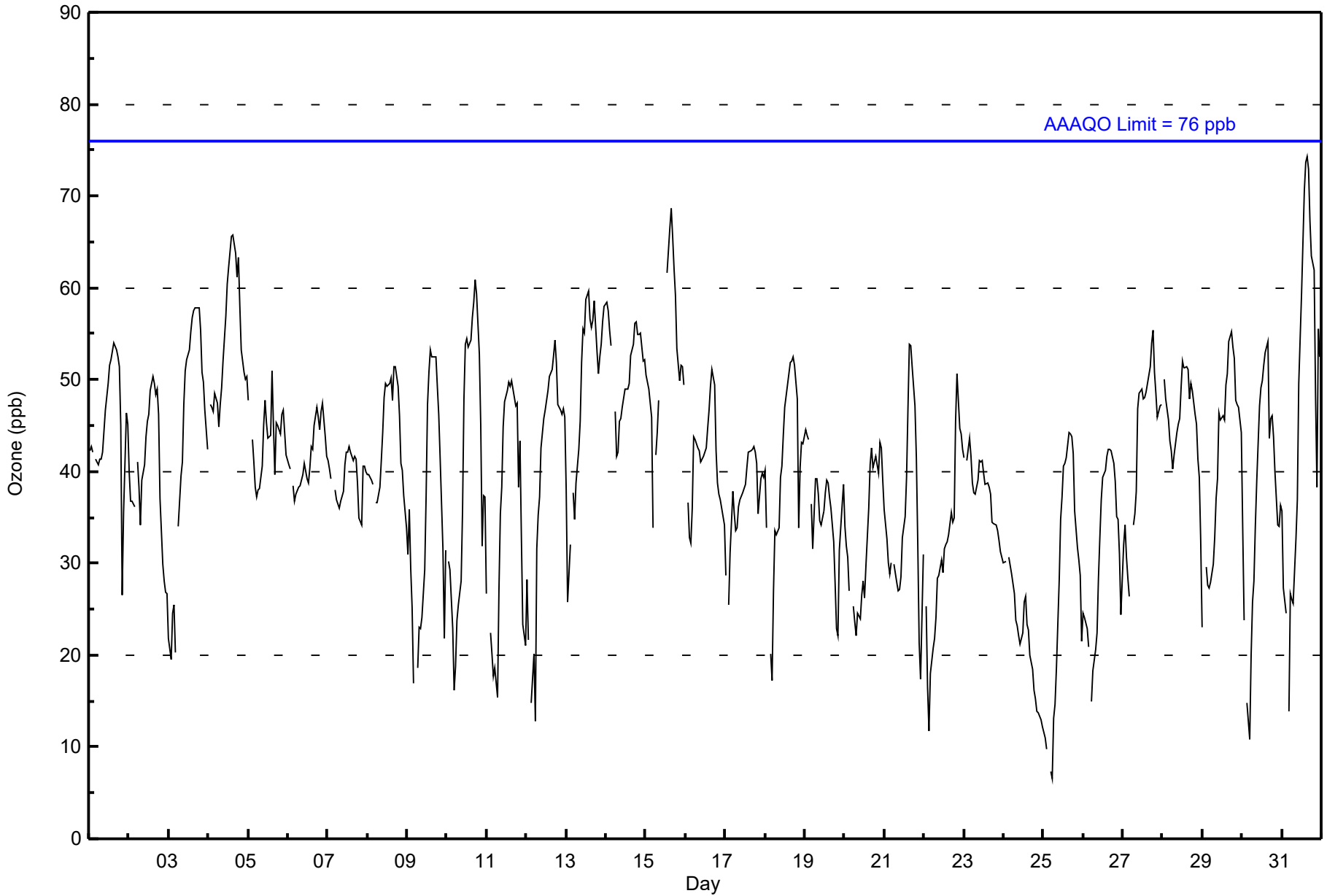
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	42.2	42.6	42.2	Z	41.4	40.8	41.4	41.3	42.1	44.5	46.7	49.6	51.6	52.1	53.1	53.9	53.2	52.5	51.4	45.1	26.6	35.5	46.4	45.2	45.3	53.9																						
2-May	40.0	36.7	36.7	36.1	Z	41.0	38.3	34.1	39.0	40.7	43.7	45.5	46.3	48.8	50.4	49.6	48.4	48.9	46.2	37.0	29.9	28.1	26.9	26.7	40.0	50.4																						
3-May	21.8	19.5	24.5	25.5	20.3	Z	34.0	39.5	41.1	47.3	50.9	52.2	53.3	55.2	56.8	57.5	57.8	57.7	57.8	55.4	50.8	49.8	46.7	42.4	44.3	57.8																						
4-May	Z	47.2	46.9	46.5	48.5	47.4	44.8	47.3	49.1	52.0	56.9	60.5	62.3	63.9	65.5	65.7	63.7	61.2	63.2	58.0	53.3	50.8	50.0	50.3	54.6	65.7																						
5-May	47.8	Z	43.5	41.0	38.2	37.2	38.0	38.1	40.5	45.1	47.7	45.3	43.6	44.0	51.0	45.0	39.7	45.4	45.0	44.0	46.2	46.7	44.2	41.8	43.4	51.0																						
6-May	40.7	40.2	Z	38.4	36.8	37.5	38.4	38.4	39.0	39.7	40.9	39.1	38.8	40.4	42.7	42.4	45.0	47.0	45.9	44.5	46.6	47.4	43.8	41.6	41.5	47.4																						
7-May	41.2	40.2	39.2	Z	38.0	36.9	36.5	36.1	36.7	37.8	40.8	42.1	42.7	42.0	41.1	41.7	41.4	38.7	35.0	34.2	40.6	40.5	40.0	39.4	39.4	42.7																						
8-May	39.7	39.7	39.1	38.5	Z	36.6	36.5	38.3	41.2	44.3	48.1	49.6	49.2	49.6	50.1	47.7	51.4	51.4	49.2	46.1	40.9	40.1	37.3	33.8	43.4	51.4																						
9-May	31.0	35.9	29.4	25.1	17.0	Z	18.6	23.0	22.9	24.1	29.3	37.4	47.3	50.7	53.3	52.4	52.5	52.5	49.3	46.3	41.5	31.6	21.9	31.5	35.9	53.3																						
10-May	Z	30.2	29.2	22.9	16.2	18.7	23.9	25.5	28.0	35.7	48.0	53.8	54.4	53.6	54.3	56.7	58.4	60.8	59.3	52.8	45.0	31.9	37.4	37.2	40.6	60.8																						
11-May	26.7	Z	22.4	20.1	17.7	18.6	15.4	27.1	35.4	38.2	44.8	47.6	48.8	49.7	49.3	49.9	48.9	47.1	47.4	38.3	43.4	32.9	23.3	21.0	35.4	49.9																						
12-May	28.2	21.7	Z	14.8	20.1	12.8	31.5	35.2	37.2	42.6	45.7	46.7	47.7	48.9	50.3	51.1	52.7	54.3	51.9	47.3	46.7	46.2	46.9	46.0	40.3	54.3																						
13-May	38.0	25.8	32.0	Z	37.7	34.7	38.8	42.4	45.5	51.9	55.5	55.1	58.7	59.6	56.5	55.6	56.4	58.5	53.1	50.6	52.5	53.9	56.2	57.9	49.0	59.6																						
14-May	58.4	57.4	55.4	53.6	Z	46.5	41.6	42.1	45.4	45.8	47.0	48.9	49.0	49.0	49.6	52.7	53.9	56.1	56.3	54.9	54.9	55.1	52.0	52.2	51.2	58.4																						
15-May	50.5	49.7	49.0	46.0	33.9	Z	41.8	44.2	47.8	C	C	C	C	61.7	66.6	68.7	65.6	62.1	59.1	53.4	49.9	51.6	51.4	49.4	52.7	68.7																						
16-May	Z	36.6	32.8	32.2	35.9	43.8	43.5	42.5	42.3	41.1	41.4	41.7	42.6	44.7	46.6	49.3	51.0	49.4	42.2	38.8	37.6	36.9	35.9	34.2	41.0	51.0																						
17-May	28.6	Z	25.5	31.2	37.9	35.5	33.6	33.8	36.2	36.9	37.6	38.1	38.6	40.4	42.2	42.2	42.5	42.8	42.1	40.8	35.4	39.2	39.9	39.4	37.4	42.8																						
18-May	40.1	33.8	Z	20.1	17.2	26.9	33.6	33.0	33.9	39.3	40.5	44.0	47.0	49.4	50.6	51.8	52.0	52.5	51.5	47.9	33.9	40.4	43.2	43.0	40.3	52.5																						
19-May	44.6	43.9	43.4	Z	36.4	31.5	39.1	39.3	37.5	34.6	34.1	35.8	37.7	39.1	38.8	37.3	36.0	32.3	27.8	22.8	22.1	31.5	36.4	38.6	35.7	44.6																						
20-May	34.1	31.8	30.6	27.0	Z	25.3	23.6	22.1	24.6	23.9	26.6	28.1	26.3	29.8	36.0	40.7	42.6	40.4	41.1	41.6	39.9	43.2	42.6	39.0	33.1	43.2																						
21-May	35.8	32.7	30.0	28.9	30.0	Z	30.0	27.8	27.0	27.1	28.6	32.8	35.1	39.3	46.9	53.9	53.8	51.4	47.1	41.5	32.2	21.3	17.4	30.9	34.9	53.9																						
22-May	Z	25.3	16.5	11.7	18.0	20.7	21.8	24.1	28.4	28.7	30.3	29.0	31.5	32.1	32.4	33.1	35.6	34.5	34.9	45.4	50.6	44.7	44.1	42.3	31.1	50.6																						
23-May	41.5	Z	41.2	43.7	41.6	38.7	37.8	37.6	39.0	41.2	41.0	41.2	39.8	38.6	38.8	38.3	37.5	34.5	34.4	34.2	33.6	32.6	31.3	30.7	37.8	43.7																						
24-May	30.1	30.2	Z	30.6	29.7	28.8	26.7	23.8	23.1	22.1	21.2	22.5	25.8	26.4	23.4	22.8	19.9	18.5	16.2	15.2	13.8	13.8	13.0	12.1	22.2	30.6																						
25-May	11.5	10.9	9.7	Z	7.3	6.6	13.1	14.6	18.7	28.2	34.8	37.2	40.6	40.9	41.5	44.2	44.1	43.8	41.9	35.7	31.8	30.4	28.7	21.5	27.7	44.2																						
26-May	24.5	24.0	22.8	20.9	Z	14.9	18.3	20.6	22.4	28.4	32.8	36.9	39.3	40.1	41.6	42.4	42.5	42.3	40.9	38.9	35.1	34.7	31.0	24.4	31.3	42.5																						
27-May	32.1	34.2	30.6	28.4	26.4	Z	34.1	35.4	37.8	46.8	48.5	48.9	48.0	48.1	48.6	49.6	51.4	53.9	55.4	50.8	48.5	45.9	47.1	47.3	43.4	55.4																						
28-May	Z	50.0	48.0	45.6	43.3	42.2	40.3	41.8	44.3	45.1	45.8	49.1	52.0	51.2	51.3	51.1	47.9	49.5	48.8	46.2	45.1	41.3	39.4	32.6	45.7	52.0																						
29-May	23.0	Z	29.6	27.7	27.3	27.9	29.9	32.7	37.0	39.2	46.4	45.6	46.1	45.6	49.5	50.7	54.2	55.2	53.6	52.3	47.7	47.3	46.9	44.2	41.7	55.2																						
30-May	33.7	23.8	Z	14.7	10.8	19.9	25.8	28.0	34.1	38.9	47.1	49.1	49.8	51.6	53.0	54.2	43.6	45.8	46.0	43.7	39.9	34.1	34.0	36.3	37.3	54.2																						
31-May	35.7	27.3	24.6	Z	13.9	26.6	26.1	25.6	32.7	36.9	49.6	54.4	59.3	70.6	73.7	74.3	72.9	67.2	63.5	61.9	48.2	38.2	55.5	52.5	47.4	74.3																						
																								35.4	34.3	33.7	30.8	28.5	30.7	32.2	33.4	35.8	38.3	41.8	43.6	45.1	47.0	48.6	49.2	48.9	48.7	47.1	44.1	40.6	39.3	39.1	38.3	Diurnal Average
																								58.4	57.4	55.4	53.6	48.5	47.4	44.8	47.3	49.1	52.0	56.9	60.5	62.3	70.6	73.7	74.3	72.9	67.2	63.5	61.9	54.9	55.1	56.2	57.9	Diurnal Maximum

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Patricia McInnes - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ozone (O₃) - ppb
Patricia McInnes - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	41	5.78	5.78
21 - 50	541	76.30	82.09
51 - 82	127	17.91	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Ozone (O₃) - ppb
Patricia McInnes - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	2	0	0	0	1	1	3	5	3	5	0	3	8	3	3	4	41
21 - 50	26	17	15	13	19	103	86	38	52	38	37	15	15	15	24	28	541
51 - 82	0	0	7	4	4	12	6	12	24	17	24	7	3	3	3	1	127
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	28	17	22	17	24	116	95	55	79	60	61	25	26	21	30	33	709

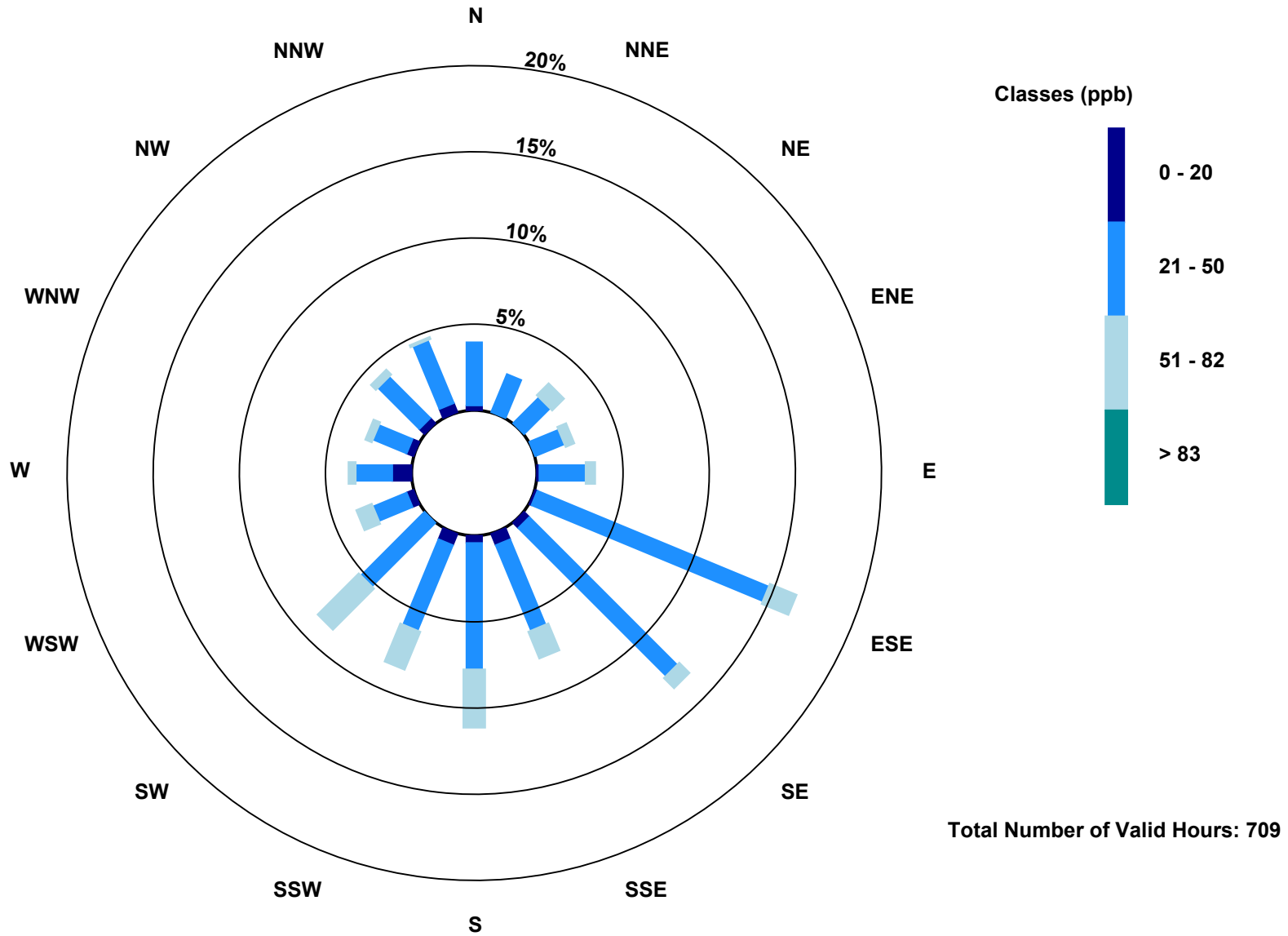
Total Number of Valid Hours: 709

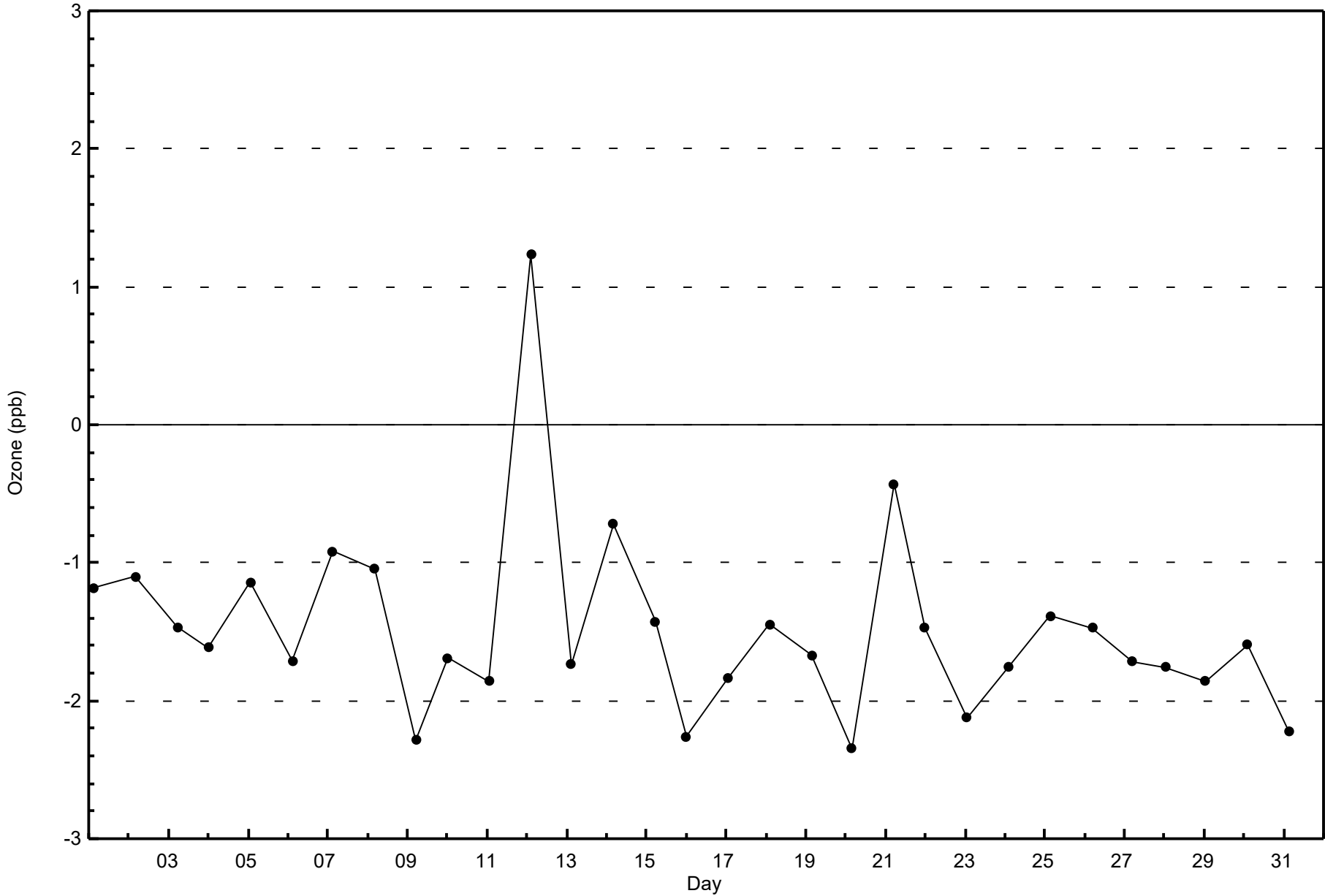
Total Number of Hours: 744

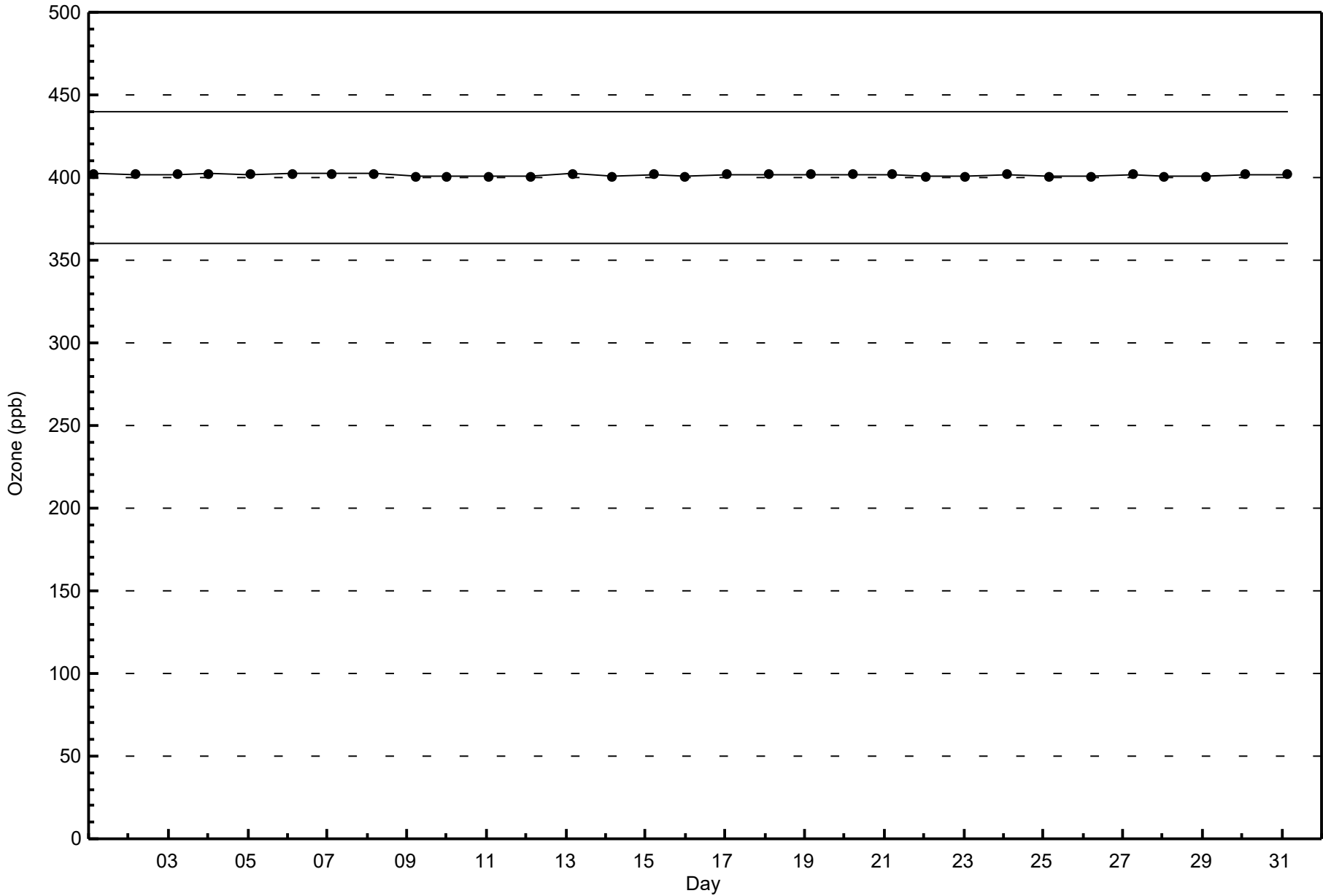


Wood Buffalo Environmental Association
Wind Rose May 2023

Ozone (O₃) - ppb
Patricia McInnes







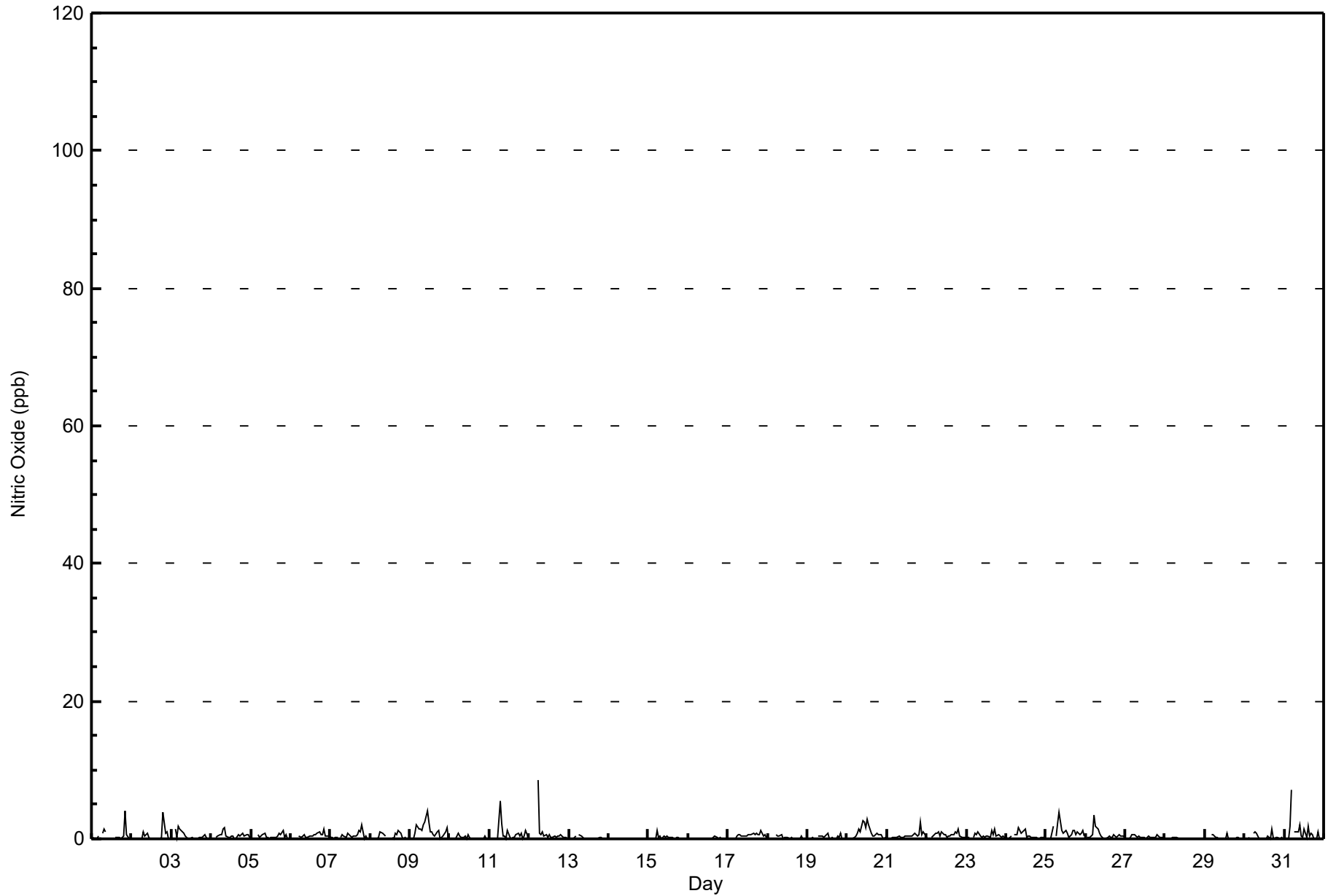


Maximum Value: 8.5 ppb on May 12 06:00		Maximum Daily Average: 1.1 ppb on May 9		Hours in Service: 744																							
Minimum Value: 0.0 ppb on May 1 23:00		Minimum Daily Average: 0.0 ppb on May 14		Hours of Data: 705																							
Maximum Diurnal Average: 1.0 ppb at hour 6		Minimum Diurnal Average: 0.0 ppb at hour 2		Hours of Missing Data: 39																							
Monthly Average: 0.43 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.2 Q ₃ = 0.5 P ₉₀ = 1.0 P ₉₉ = 3.4		Hours of Calibration: 36																							
				Percent Operational Time: 99.6																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.2	0.0	0.0	0.1	0.4	Z	0.7	1.4	1.0	C	C	C	C	C	0.2	0.1	0.1	0.1	0.1	0.4	4.0	0.6	0.0	0.0	0.5	4.0	
2-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.4	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	3.9	0.8	1.1	0.0	0.0	0.4	3.9	
3-May	0.1	Z	1.4	0.2	1.9	1.3	1.3	0.9	0.4	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.2	0.2	0.5	0.5	0.3	0.0	0.0	0.4	1.9	
4-May	0.0	0.0	Z	0.3	0.4	0.6	0.7	1.5	1.6	0.4	0.3	0.3	0.4	0.3	0.1	0.0	0.5	0.5	0.6	0.8	0.4	0.5	0.6	0.2	0.5	1.6	
5-May	0.2	0.1	0.1	Z	0.6	0.3	0.4	0.7	0.7	0.2	0.2	0.1	0.3	0.2	0.2	0.3	0.3	0.8	0.6	1.2	0.2	0.5	0.0	0.0	0.3	1.2	
6-May	0.0	0.0	0.0	0.0	Z	0.5	0.2	0.5	0.6	0.2	0.1	0.3	0.4	0.3	0.7	0.5	0.7	0.9	0.6	0.5	1.4	0.5	0.4	0.5	0.4	1.4	
7-May	0.2	0.1	0.1	0.2	0.2	Z	0.3	0.5	0.5	0.2	0.8	0.6	0.4	0.2	0.5	0.3	0.7	1.1	1.0	2.0	0.0	0.4	0.0	0.0	0.5	2.0	
8-May	Z	0.0	0.0	0.0	0.1	0.2	1.0	0.9	0.6	0.5	M	M	M	0.2	0.1	0.8	0.7	1.2	0.8	0.1	0.0	0.1	0.0	0.0	0.4	1.2	
9-May	0.0	Z	0.0	0.7	2.0	1.4	1.5	1.2	2.0	2.5	4.0	2.5	1.0	1.0	0.6	0.3	1.1	1.2	0.1	0.2	0.3	0.9	1.7	0.0	1.1	4.0	
10-May	0.0	0.0	Z	0.0	0.4	0.9	0.4	0.3	0.3	0.3	0.1	0.6	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.4	0.0	0.0	0.2	0.9	
11-May	0.0	0.0	0.0	Z	0.1	0.0	5.6	2.3	0.4	0.4	0.0	1.1	0.2	0.0	0.3	0.2	0.5	0.9	0.4	0.9	0.1	0.4	1.3	0.1	0.7	5.6	
12-May	0.0	0.0	0.1	0.1	Z	8.5	0.8	0.6	0.9	0.5	0.5	0.2	0.5	0.3	0.1	0.4	0.2	0.5	0.5	0.5	0.3	0.2	0.2	0.0	0.7	8.5	
13-May	0.1	0.1	0.0	0.1	0.4	Z	0.5	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.5	
14-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-May	0.0	Z	0.0	0.0	0.0	1.2	0.3	0.4	0.1	0.3	0.1	0.5	0.1	0.2	0.2	0.0	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.2	1.2	
16-May	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4	
17-May	0.0	0.0	0.1	Z	0.1	0.5	0.5	0.6	0.5	0.3	0.4	0.4	0.6	0.7	0.7	0.8	0.7	0.9	0.6	0.6	1.3	0.5	0.7	0.1	0.5	1.3	
18-May	0.1	0.0	0.0	0.1	Z	0.6	0.5	0.4	0.6	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.2	0.6	
19-May	0.0	0.0	0.0	0.2	0.1	Z	0.4	0.5	0.4	0.4	0.2	0.6	0.9	0.1	0.0	0.3	0.1	0.1	0.4	0.3	0.8	0.0	0.1	0.0	0.2	0.9	
20-May	Z	0.1	0.0	0.1	0.2	0.4	0.7	1.4	1.0	2.7	2.5	1.6	2.9	2.1	0.9	0.4	0.5	0.6	0.8	0.5	0.5	0.3	0.1	0.1	0.9	2.9	
21-May	0.1	Z	0.1	0.2	0.2	0.3	0.2	0.4	0.2	0.2	0.3	0.4	0.3	0.3	0.4	0.5	0.7	0.8	0.4	0.5	2.3	0.6	1.1	0.5	0.5	2.3	
22-May	0.0	0.0	Z	0.1	0.4	0.9	0.8	1.0	0.5	1.0	0.6	0.6	0.3	0.3	0.4	0.7	0.6	1.0	0.9	1.4	0.4	0.2	0.1	0.2	0.5	1.4	
23-May	0.2	0.2	0.2	Z	0.2	0.8	0.7	1.1	0.3	0.3	0.3	0.2	0.4	0.5	0.3	1.2	0.6	1.5	0.4	0.6	0.4	0.1	0.3	0.2	0.5	1.5	
24-May	0.2	0.0	0.2	0.4	Z	0.6	0.6	1.5	1.2	0.9	1.1	1.4	0.2	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.0	0.5	1.5	
25-May	0.0	0.0	0.0	0.0	1.9	Z	0.4	2.3	3.9	1.2	0.7	0.9	1.2	0.9	0.3	0.7	1.1	1.3	0.6	1.0	0.7	0.9	1.1	0.4	0.9	3.9	
26-May	Z	0.2	0.1	0.3	0.7	3.4	1.7	1.5	0.8	0.5	0.2	0.0	0.0	0.3	0.5	0.3	0.2	0.5	0.2	0.5	0.6	0.5	0.4	0.4	0.6	3.4	
27-May	0.1	Z	0.1	0.2	0.6	0.6	0.4	0.3	0.3	0.3	0.1	0.2	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.6	0.5	0.2	0.1	0.1	0.3	0.6	
28-May	0.0	0.0	Z	0.0	0.1	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	
29-May	0.0	0.0	0.0	Z	0.6	0.6	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.8	
30-May	0.0	0.0	0.0	0.2	Z	0.8	1.1	0.8	0.4	0.0	0.1	0.0	0.0	0.0	0.4	0.0	1.4	0.1	0.1	0.3	0.2	0.1	0.2	0.0	0.3	1.4	
31-May	0.1	0.0	0.0	1.7	7.1	Z	1.0	0.9	1.1	2.1	0.4	0.1	1.3	0.2	1.9	0.3	0.9	0.7	0.0	0.0	0.9	0.0	0.0	0.0	0.9	7.1	
																								Diurnal Average			
																								Diurnal Maximum			
Z - zerospan C - Calibration M - Maintenance																											



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Patricia McInnes - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitric Oxide (NO) - ppb
Patricia McInnes - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	705	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Patricia McInnes - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	18	22	17	24	116	94	54	79	60	58	26	27	23	30	30	705
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	18	22	17	24	116	94	54	79	60	58	26	27	23	30	30	705

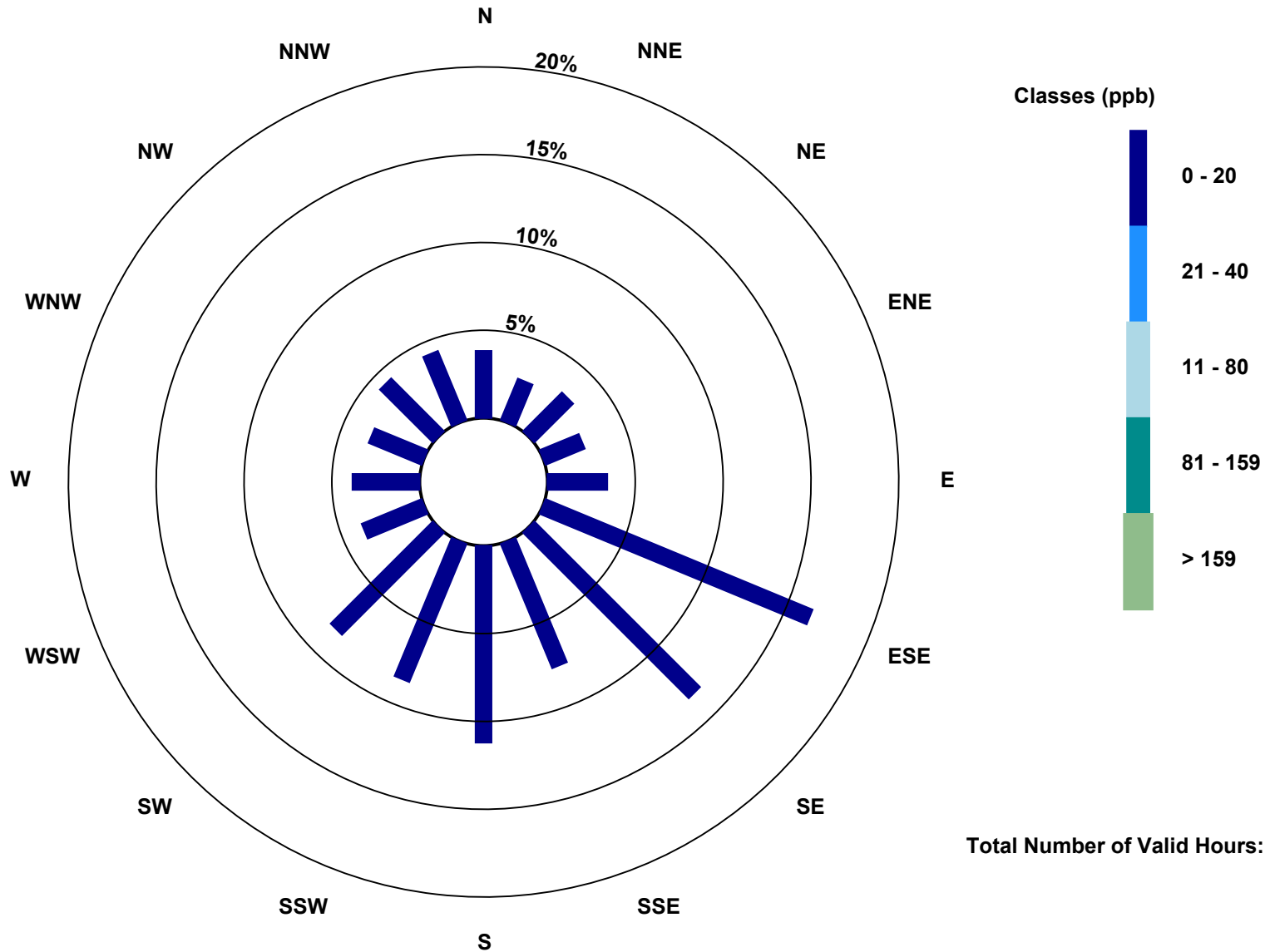
Total Number of Valid Hours: 705

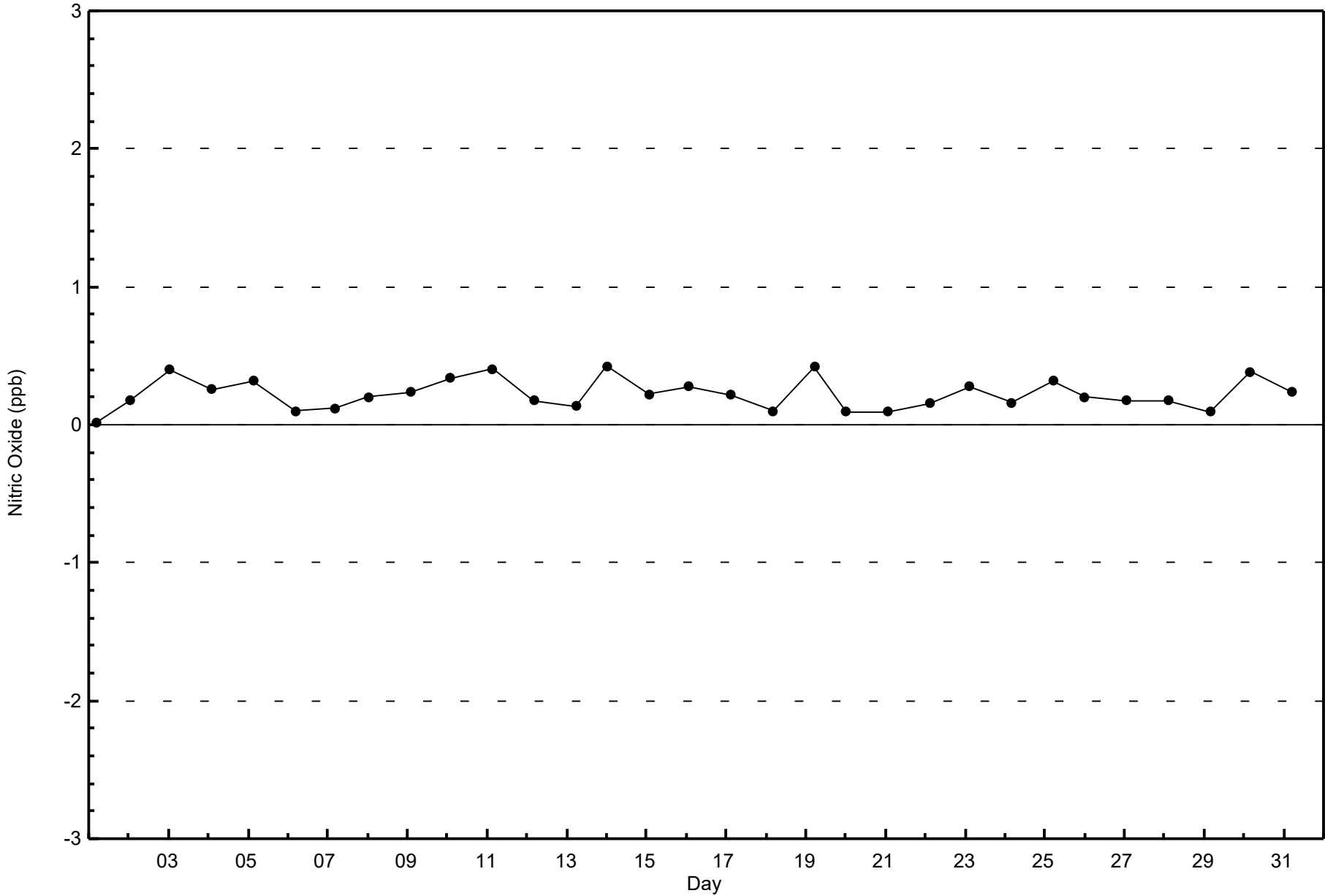
Total Number of Hours: 744

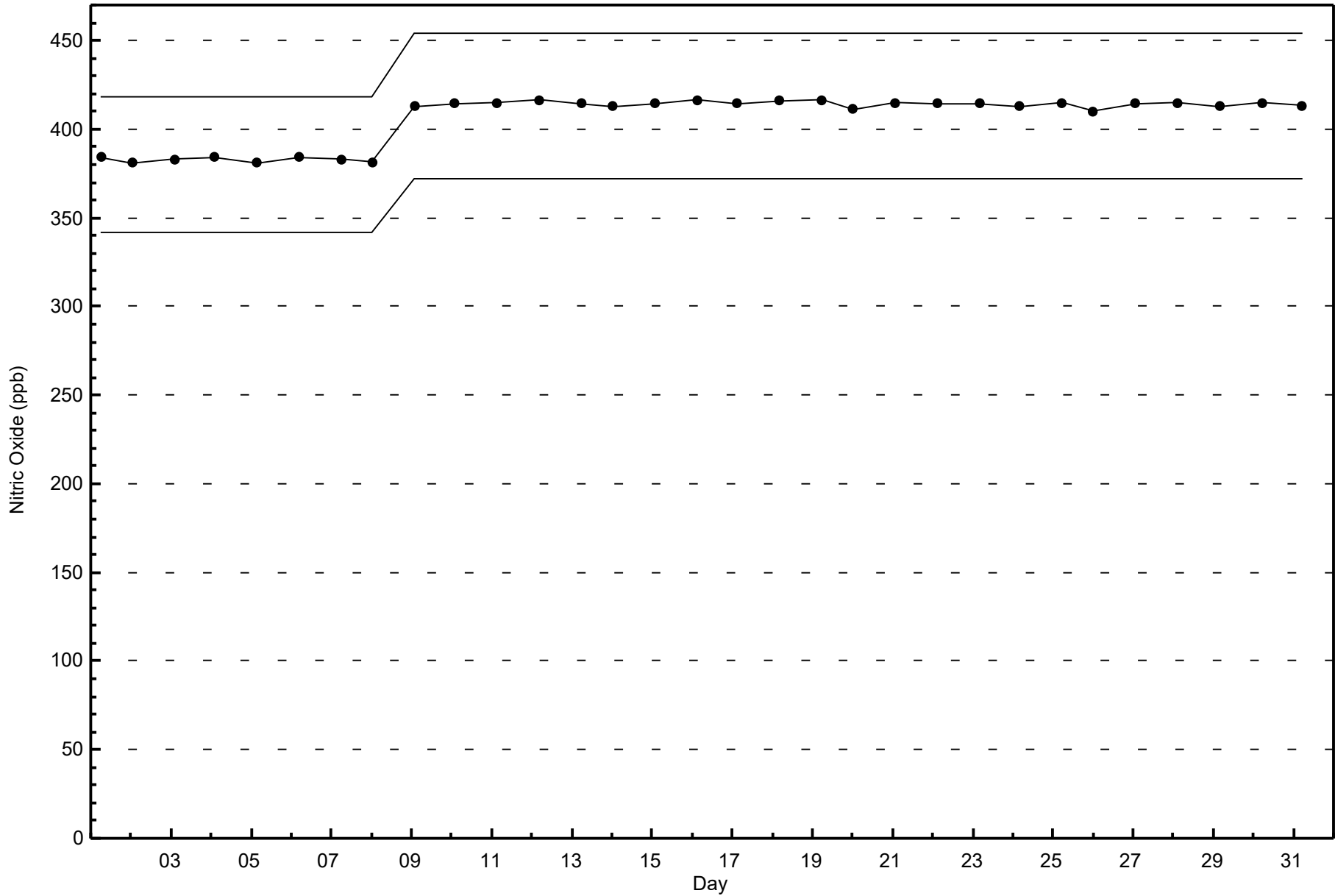


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Patricia McInnes









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

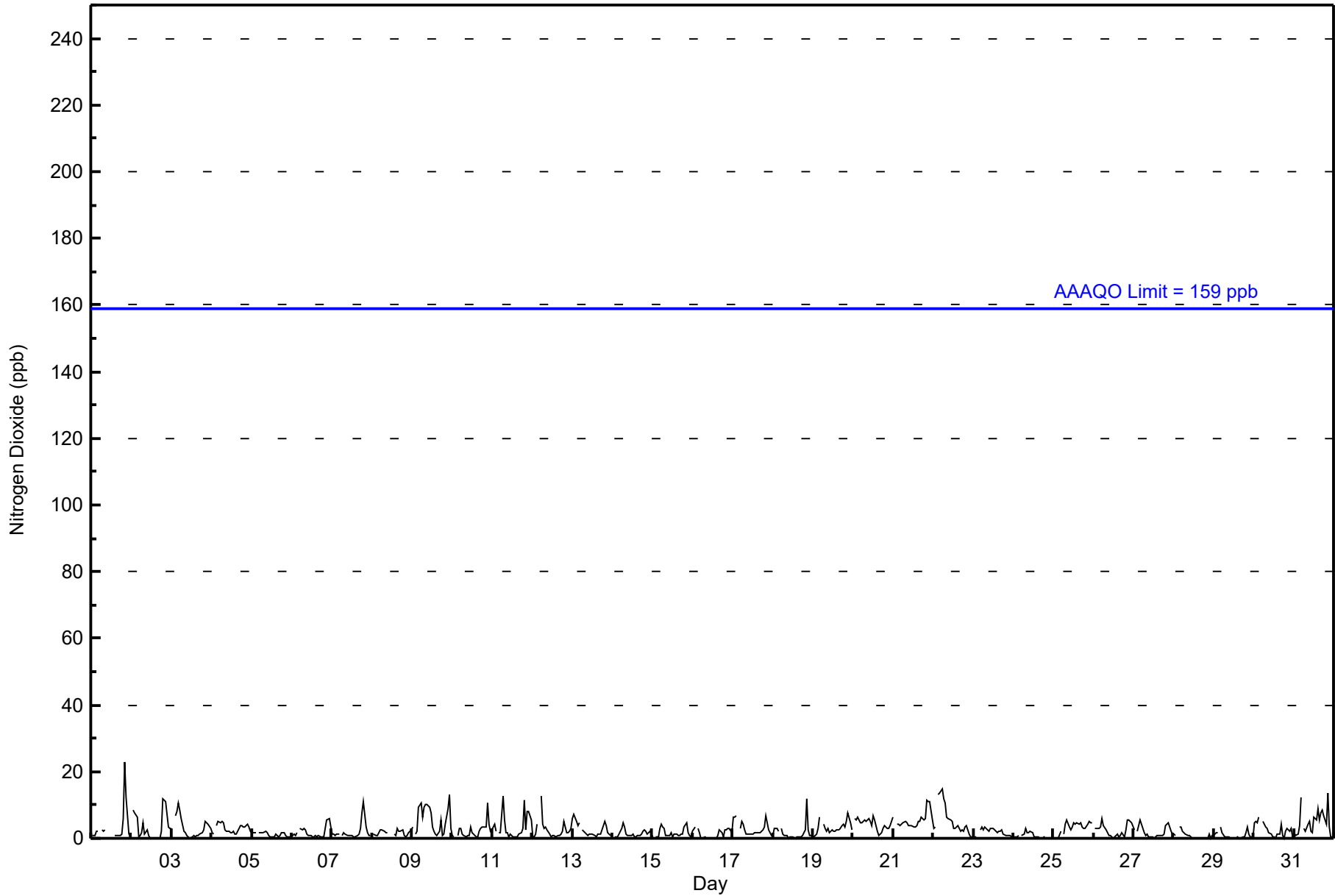
Patricia McInnes - May 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744				
Maximum Value: 22.9 ppb on May 1 21:00		Maximum Daily Average: 5.5 ppb on May 21																	Hours of Data:	705						
Minimum Value: 0.0 ppb on May 2 12:00		Minimum Daily Average: 0.8 ppb on May 24																	Hours of Missing Data:	39						
Maximum Diurnal Average: 4.9 ppb at hour 21		Minimum Diurnal Average: 1.4 ppb at hour 15																	Hours of Calibration:	36						
Monthly Average: 2.64 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.3 Q ₁ = 0.8 Median = 1.9 Q ₃ = 3.6 P ₉₀ = 5.6 P ₉₉ = 12.5																	Percent Operational Time:	99.6						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.8	0.9	1.0	2.1	2.2	Z	2.4	2.3	2.6	C	C	C	C	C	0.8	0.8	0.9	0.7	1.2	6.0	22.9	12.3	1.1	0.7	3.4	22.9
2-May	Z	8.6	7.6	6.2	0.5	0.8	1.8	4.6	1.1	2.6	0.9	0.0	0.0	0.0	0.0	0.0	0.1	0.0	2.1	11.8	10.9	7.3	3.3	2.8	3.2	11.8
3-May	3.0	Z	6.6	7.9	10.5	8.3	6.0	2.3	1.6	1.0	0.3	0.2	0.4	0.7	0.5	0.8	0.9	1.2	1.7	2.7	4.9	4.8	4.1	3.0	3.2	10.5
4-May	1.5	1.4	Z	3.7	5.2	4.5	5.1	4.5	2.7	2.3	2.2	1.7	1.5	2.1	1.2	1.2	3.0	3.7	3.9	3.2	3.5	4.1	3.6	2.1	3.0	5.2
5-May	1.9	1.7	1.6	Z	1.9	1.9	1.8	1.9	2.1	1.6	0.9	0.6	0.3	0.5	1.2	0.9	0.5	0.9	1.6	1.9	0.7	0.5	0.4	0.3	1.2	2.1
6-May	1.0	1.2	0.8	1.5	Z	3.0	2.6	2.8	2.4	1.4	0.8	0.8	0.6	0.6	0.8	0.6	0.7	0.5	0.3	0.4	3.0	5.5	6.1	3.4	1.8	6.1
7-May	1.4	1.1	0.8	1.3	1.4	Z	0.9	1.5	1.2	0.8	1.0	0.9	0.7	0.5	0.6	0.8	1.4	3.1	7.6	11.2	3.6	1.9	0.9	1.0	2.0	11.2
8-May	Z	1.1	0.9	0.9	1.7	2.4	2.7	2.2	1.8	1.7	M	M	M	1.1	0.7	3.0	2.3	2.3	2.6	0.8	0.6	0.9	1.5	2.6	1.7	3.0
9-May	3.2	Z	1.1	2.2	9.2	10.7	6.3	9.3	10.1	10.0	9.2	7.6	3.2	2.2	1.2	0.8	2.1	5.3	1.0	1.4	4.3	8.7	13.2	3.1	5.5	13.2
10-May	0.7	0.6	Z	1.0	3.1	3.1	1.2	0.8	0.6	0.9	0.7	3.3	1.8	1.2	0.6	0.6	2.1	3.1	3.4	3.2	3.4	10.6	4.4	2.3	2.3	10.6
11-May	2.7	4.3	2.1	Z	1.9	1.5	12.6	5.5	1.6	1.5	0.5	1.2	0.5	0.4	0.6	0.6	1.4	1.9	2.9	11.4	2.5	8.1	8.0	5.5	3.4	12.6
12-May	0.3	0.5	1.4	4.3	Z	12.5	4.1	3.0	3.6	2.5	1.3	0.3	0.7	0.7	0.5	1.0	0.8	1.4	2.2	4.9	1.8	1.7	2.2	2.8	2.4	12.5
13-May	5.8	7.1	4.9	3.7	4.7	Z	2.5	1.6	1.1	0.8	1.2	1.1	1.1	1.0	0.6	1.1	1.4	1.3	3.8	4.9	4.0	1.9	1.2	0.8	2.5	7.1
14-May	Z	0.6	0.5	0.6	1.2	2.9	4.8	3.3	1.1	0.9	1.0	1.0	1.2	0.6	0.5	0.9	1.0	1.1	2.0	2.4	2.1	1.4	2.1	1.3	1.5	4.8
15-May	0.4	Z	0.5	0.3	2.8	4.2	3.6	2.9	0.8	0.8	1.0	1.8	0.6	1.1	1.2	0.7	0.7	1.3	1.2	3.6	4.6	1.9	0.8	0.3	1.6	4.6
16-May	2.0	3.5	Z	3.1	1.8	0.1	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.9	2.6	1.8	0.4	2.6	2.7	2.9	3.0	1.5	1.3	3.5
17-May	6.2	6.5	6.8	Z	3.1	5.0	4.3	2.4	1.4	1.1	1.2	1.3	1.4	1.6	1.7	1.7	1.7	2.0	2.4	3.3	6.6	2.7	1.9	0.8	2.9	6.8
18-May	0.9	2.9	2.9	2.3	Z	3.0	1.2	0.8	0.9	0.2	0.3	0.4	0.4	0.2	0.4	0.5	0.6	0.4	0.8	2.7	11.8	2.5	0.7	1.0	1.6	11.8
19-May	0.6	0.8	1.4	3.1	6.5	Z	4.4	2.9	2.1	2.8	1.9	2.4	2.0	2.3	2.4	2.6	2.4	3.7	4.2	3.5	5.2	7.8	4.7	2.4	3.1	7.8
20-May	Z	6.1	5.6	6.3	4.6	4.7	5.1	5.7	5.1	6.1	4.9	4.0	6.6	5.4	2.2	0.8	1.3	1.7	2.9	4.0	2.9	2.8	4.0	5.2	4.3	6.6
21-May	6.2	Z	4.2	4.1	4.0	4.4	4.7	4.9	4.6	4.0	3.7	3.7	3.6	3.6	4.0	5.0	5.2	6.3	5.3	6.1	11.5	11.2	11.2	5.3	5.5	11.5
22-May	2.8	3.2	Z	13.0	13.6	14.9	12.0	10.7	6.2	6.0	5.4	5.2	3.0	2.8	3.2	3.7	2.3	2.7	2.3	3.4	4.0	1.3	0.6	0.4	5.3	14.9
23-May	0.3	0.6	0.5	Z	2.7	3.2	2.7	3.2	2.4	2.3	2.9	2.8	2.8	2.6	1.9	2.3	2.1	2.7	1.1	0.8	0.7	0.8	0.7	0.6	1.9	3.2
24-May	0.4	0.4	0.4	0.7	Z	0.8	1.4	3.0	1.9	1.5	2.0	1.6	0.6	0.6	0.4	0.3	0.1	0.2	0.3	0.2	0.2	0.1	0.1	0.2	0.8	3.0
25-May	0.1	0.0	0.1	0.1	2.1	Z	1.4	4.2	5.6	3.4	2.4	3.5	4.5	4.4	4.5	4.4	4.6	3.3	3.0	3.0	4.4	5.2	4.7	4.8	3.2	5.6
26-May	Z	3.1	3.1	2.9	3.5	6.0	3.9	2.6	1.5	0.9	0.7	0.3	0.1	0.7	1.3	0.6	1.0	1.7	0.6	2.5	5.4	5.6	5.2	4.8	2.5	6.0
27-May	2.5	Z	2.3	3.9	5.6	3.0	1.5	1.0	1.3	0.6	0.6	0.4	0.2	0.3	0.7	0.8	0.9	0.8	1.1	3.9	4.1	4.5	2.2	1.4	1.9	5.6
28-May	1.1	0.9	Z	3.3	3.5	2.3	1.7	1.2	1.0	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	1.4	0.2	0.7	0.8	3.5
29-May	0.7	1.7	1.7	Z	3.3	1.7	0.5	0.3	0.3	0.3	0.0	0.0	0.0	0.1	0.3	0.0	0.1	0.3	0.5	1.6	3.5	1.2	0.3	0.4	0.8	3.5
30-May	4.8	4.9	4.8	6.3	Z	5.0	4.1	3.2	2.9	1.9	1.4	0.6	0.6	0.2	1.2	1.1	4.4	0.7	0.2	2.1	2.9	2.3	2.8	0.5	2.6	6.3
31-May	1.7	0.9	1.3	3.9	12.1	Z	2.8	2.3	4.4	5.0	2.1	1.7	6.3	5.6	8.7	5.7	7.8	8.6	6.6	4.1	13.6	3.6	0.5	0.3	4.8	13.6
																								Diurnal Average		
																								Diurnal Maximum		
2.0 2.5 2.5 3.4 4.3 4.4 3.6 3.1 2.5 2.2 1.8 1.7 1.5 1.4 1.4 1.4 1.8 2.1 2.2 3.7 4.9 4.1 3.1 2.0																										
6.2 8.6 7.6 13.0 13.6 14.9 12.6 10.7 10.1 10.0 9.2 7.6 6.6 5.6 8.7 5.7 7.8 8.6 7.6 11.8 22.9 12.3 13.2 5.5																										
Z - zerospan C - Calibration M - Maintenance																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																										



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Patricia McInnes - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Patricia McInnes - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	704	99.86	99.86
21 - 40	1	0.14	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Patricia McInnes - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	18	22	17	24	116	94	53	79	60	58	26	27	23	30	30	704
21 - 40	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	18	22	17	24	116	94	54	79	60	58	26	27	23	30	30	705

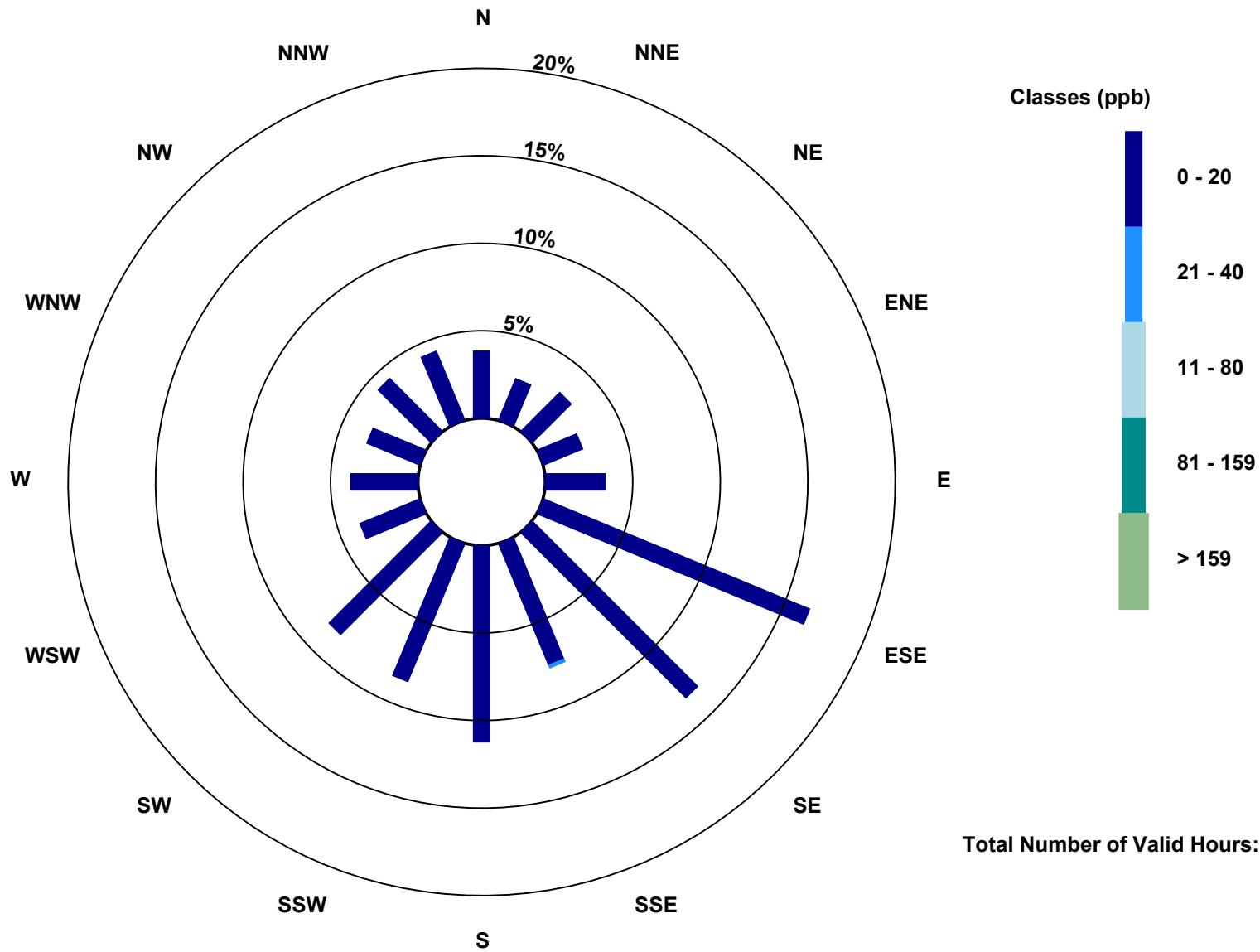
Total Number of Valid Hours: 705

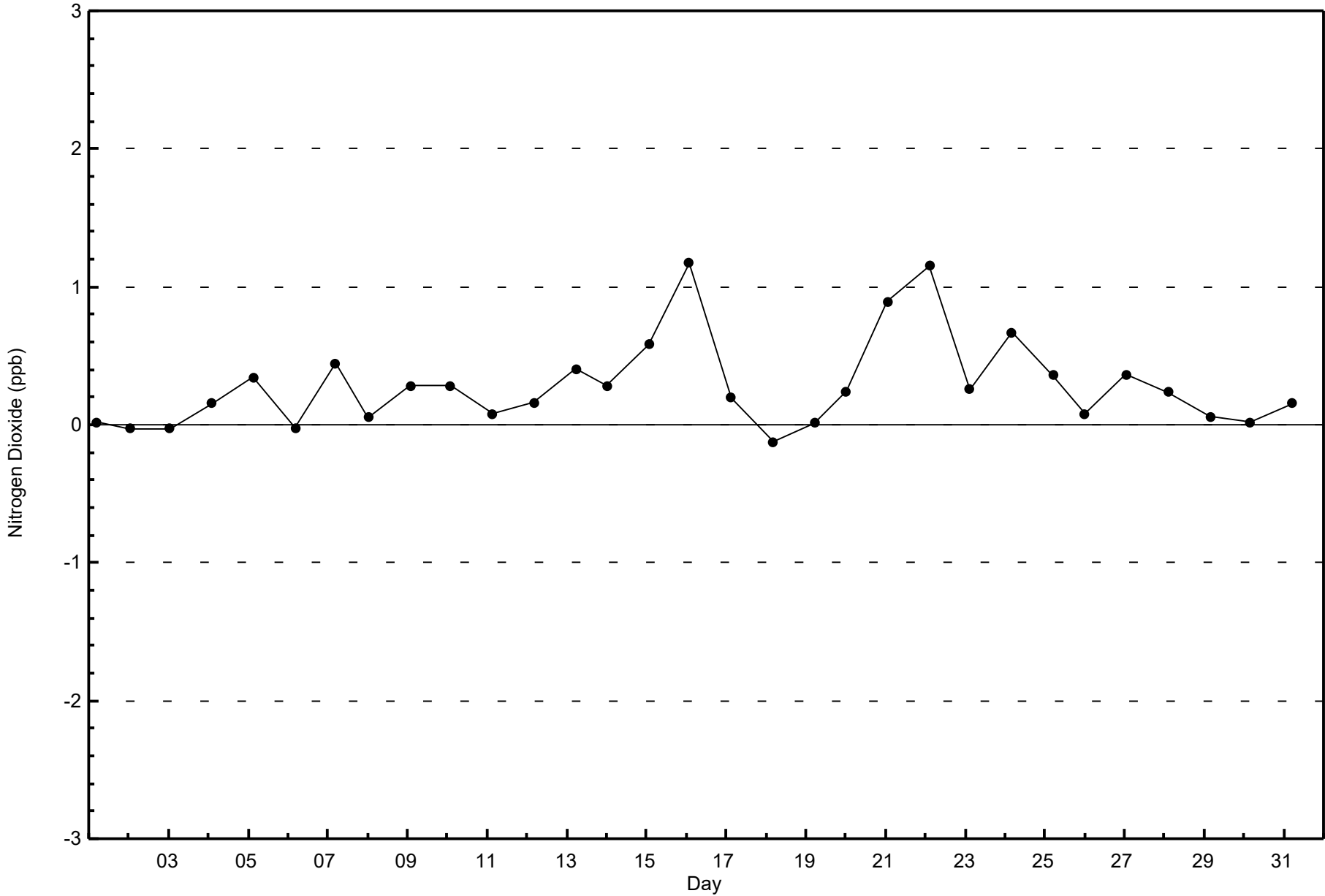
Total Number of Hours: 744

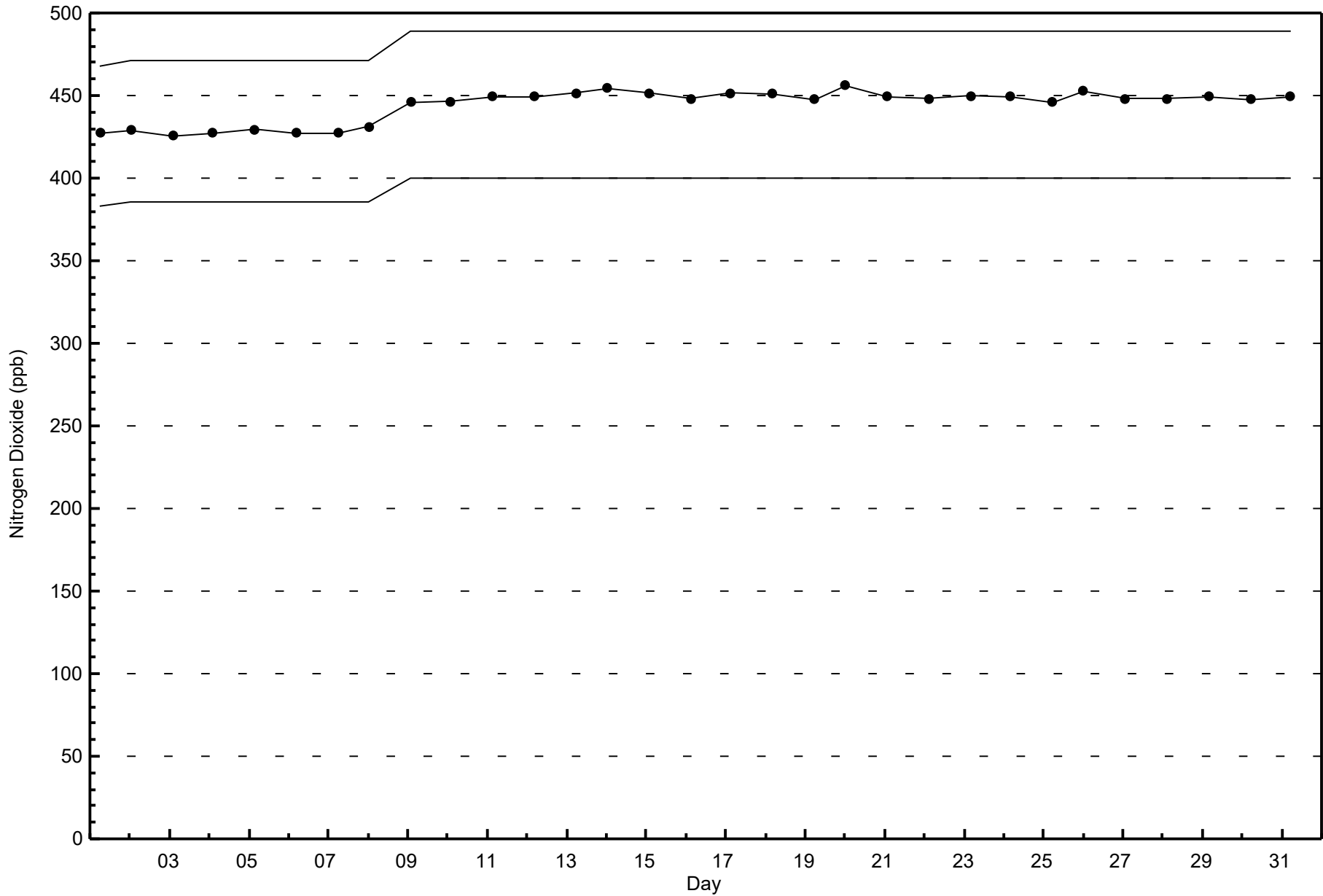


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Patricia McInnes









Wood Buffalo Environmental Association
Summary of Hour Averages

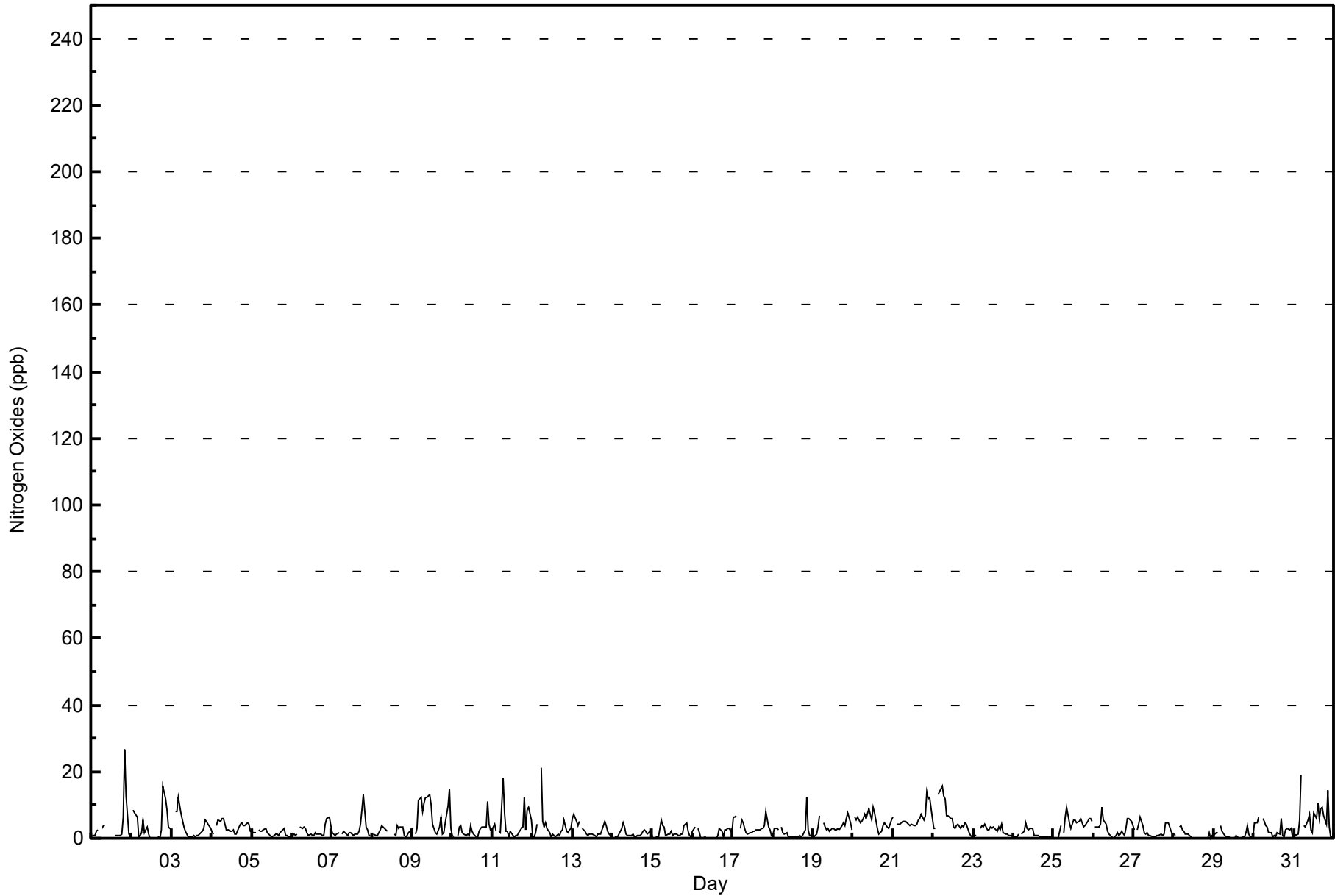
Nitrogen Oxides (NO_x) - ppb
Patricia McInnes - May 2023

Maximum Value: 26.9 ppb on May 1 21:00		Maximum Daily Average: 6.6 ppb on May 9		Hours in Service: 744																						
Minimum Value: 0.0 ppb on May 2 12:00		Minimum Daily Average: 0.9 ppb on May 28		Hours of Data: 705																						
Maximum Diurnal Average: 5.5 ppb at hour 21		Minimum Diurnal Average: 1.7 ppb at hour 16		Hours of Missing Data: 39																						
Monthly Average: 3.07 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.4 Q ₁ = 1.0 Median = 2.2 Q ₃ = 4.1 P ₉₀ = 6.3 P ₉₉ = 14.4		Hours of Calibration: 36																						
				Percent Operational Time: 99.6																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	1.0	0.9	1.0	2.2	2.6	Z	3.1	3.7	3.6	C	C	C	C	C	1.0	0.9	1.0	0.8	1.3	6.4	26.9	12.9	1.1	0.7	4.0	26.9
2-May	Z	8.6	7.6	6.2	0.5	0.8	1.8	5.6	1.5	3.4	1.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	2.4	15.7	11.7	8.4	3.3	2.8	3.6	15.7
3-May	3.1	Z	8.0	8.1	12.4	9.6	7.3	3.2	2.0	1.2	0.3	0.2	0.5	0.7	0.5	0.9	0.9	1.4	1.9	3.2	5.4	5.1	4.1	3.0	3.6	12.4
4-May	1.5	1.4	Z	4.0	5.6	5.1	5.8	6.0	4.3	2.7	2.5	2.0	1.9	2.4	1.3	1.2	3.5	4.2	4.5	4.0	3.9	4.6	4.2	2.3	3.4	6.0
5-May	2.1	1.8	1.7	Z	2.5	2.2	2.2	2.6	2.8	1.8	1.1	0.7	0.6	0.7	1.4	1.2	0.8	1.7	2.2	3.1	0.9	1.0	0.4	0.3	1.5	3.1
6-May	1.0	1.2	0.8	1.5	Z	3.5	2.8	3.3	3.0	1.6	0.9	1.1	1.0	0.9	1.5	1.1	1.4	1.4	0.9	0.9	4.4	6.0	6.5	3.9	2.2	6.5
7-May	1.6	1.2	0.9	1.5	1.6	Z	1.2	2.0	1.7	1.0	1.8	1.5	1.1	0.7	1.1	1.1	2.1	4.2	8.6	13.2	3.6	2.3	0.9	1.0	2.4	13.2
8-May	Z	1.1	0.9	0.9	1.8	2.6	3.7	3.1	2.4	2.2	M	M	M	1.3	0.8	3.8	3.0	3.5	3.4	0.9	0.6	1.0	1.5	2.6	2.1	3.8
9-May	3.2	Z	1.1	2.9	11.2	12.1	7.8	10.5	12.1	12.5	13.2	10.1	4.2	3.2	1.8	1.1	3.2	6.5	1.1	1.6	4.6	9.6	14.9	3.1	6.6	14.9
10-May	0.7	0.6	Z	1.0	3.5	4.0	1.6	1.1	0.9	1.2	0.8	3.9	2.0	1.2	0.6	0.6	2.1	3.2	3.4	3.2	3.4	11.0	4.4	2.3	2.5	11.0
11-May	2.7	4.3	2.1	Z	2.0	1.5	18.2	7.8	2.0	1.9	0.5	2.3	0.7	0.4	0.9	0.8	1.9	2.8	3.3	12.3	2.6	8.5	9.3	5.6	4.1	18.2
12-May	0.3	0.5	1.5	4.4	Z	21.0	4.9	3.6	4.5	3.0	1.8	0.5	1.2	1.0	0.6	1.4	1.0	1.9	2.7	5.4	2.1	1.9	2.4	2.8	3.1	21.0
13-May	5.9	7.2	4.9	3.8	5.1	Z	3.0	2.0	1.3	0.8	1.2	1.1	1.1	1.0	0.6	1.1	1.4	1.3	3.9	5.0	4.0	1.9	1.2	0.8	2.6	7.2
14-May	Z	0.6	0.5	0.6	1.2	2.9	4.8	3.3	1.1	0.9	1.0	1.0	1.2	0.6	0.5	0.9	1.0	1.1	2.0	2.4	2.1	1.4	2.1	1.3	1.5	4.8
15-May	0.4	Z	0.5	0.3	2.8	5.4	3.9	3.3	0.9	1.1	1.1	2.3	0.7	1.3	1.4	0.7	0.8	1.5	1.4	3.7	4.7	1.9	0.8	0.3	1.8	5.4
16-May	2.0	3.5	Z	3.2	1.8	0.1	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1.0	3.0	2.0	0.4	2.7	2.7	2.9	3.0	1.5	1.3	3.5
17-May	6.2	6.5	6.9	Z	3.2	5.5	4.8	3.0	1.9	1.4	1.6	1.7	2.0	2.3	2.4	2.5	2.4	2.9	3.0	3.9	7.9	3.2	2.6	0.9	3.4	7.9
18-May	1.0	2.9	2.9	2.4	Z	3.6	1.7	1.2	1.5	0.3	0.5	0.5	0.6	0.3	0.5	0.6	0.7	0.4	0.8	2.7	12.3	2.5	0.7	1.0	1.8	12.3
19-May	0.6	0.8	1.4	3.3	6.6	Z	4.8	3.4	2.5	3.2	2.1	3.0	2.9	2.4	2.4	2.9	2.5	3.8	4.6	3.8	6.0	7.8	4.8	2.4	3.4	7.8
20-May	Z	6.2	5.6	6.4	4.8	5.1	5.8	7.1	6.1	8.8	7.4	5.6	9.5	7.5	3.1	1.2	1.8	2.3	3.7	4.5	3.4	3.1	4.1	5.3	5.1	9.5
21-May	6.3	Z	4.3	4.3	4.2	4.7	4.9	5.3	4.8	4.2	4.0	4.1	3.9	3.9	4.4	5.5	5.9	7.1	5.7	6.6	13.8	11.8	12.3	5.8	6.0	13.8
22-May	2.8	3.2	Z	13.1	14.0	15.8	12.8	11.7	6.7	7.0	6.0	5.8	3.3	3.1	3.6	4.4	2.9	3.7	3.2	4.8	4.4	1.5	0.7	0.6	5.9	15.8
23-May	0.5	0.8	0.7	Z	2.9	4.0	3.4	4.3	2.7	2.6	3.2	3.0	3.2	3.1	2.2	3.5	2.7	4.2	1.5	1.4	1.1	0.9	1.0	0.8	2.3	4.3
24-May	0.6	0.4	0.6	1.1	Z	1.4	2.0	4.5	3.1	2.4	3.1	3.0	0.8	1.0	0.8	0.6	0.3	0.4	0.4	0.3	0.3	0.3	0.2	0.2	1.2	4.5
25-May	0.1	0.0	0.1	0.1	4.0	Z	1.8	6.5	9.5	4.6	3.1	4.4	5.7	5.3	4.8	5.1	5.7	4.6	3.6	4.0	5.1	6.1	5.8	5.2	4.1	9.5
26-May	Z	3.3	3.2	3.2	4.2	9.4	5.6	4.1	2.3	1.4	0.9	0.3	0.1	1.0	1.8	0.9	1.2	2.2	0.8	3.0	6.0	6.1	5.6	5.2	3.1	9.4
27-May	2.6	Z	2.4	4.1	6.2	3.6	1.9	1.3	1.6	0.9	0.7	0.6	0.3	0.4	1.0	1.0	1.1	1.0	1.3	4.5	4.6	4.7	2.3	1.5	2.1	6.2
28-May	1.1	0.9	Z	3.3	3.6	2.5	1.9	1.4	1.1	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	1.5	0.2	0.7	0.9	3.6
29-May	0.7	1.7	1.7	Z	3.9	2.3	0.7	0.5	0.4	0.3	0.0	0.0	0.0	0.9	0.3	0.0	0.1	0.3	0.5	1.7	3.6	1.2	0.3	0.4	0.9	3.9
30-May	4.8	4.9	4.8	6.5	Z	5.8	5.2	4.0	3.3	1.9	1.5	0.6	0.6	0.2	1.6	1.1	5.8	0.8	0.3	2.4	3.1	2.4	3.0	0.5	2.8	6.5
31-May	1.8	0.9	1.3	5.6	19.2	Z	3.8	3.2	5.5	7.1	2.5	1.8	7.6	5.8	10.6	6.0	8.7	9.3	6.6	4.1	14.5	3.6	0.5	0.3	5.7	19.2
																								Diurnal Average		
																								Diurnal Maximum		
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration M - Maintenance																										



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Patricia McInnes - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Patricia McInnes - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	703	99.72	99.72
21 - 40	2	0.28	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Patricia McInnes - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	18	22	17	24	116	93	53	79	60	58	26	27	23	30	30	703
21 - 40	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	18	22	17	24	116	94	54	79	60	58	26	27	23	30	30	705

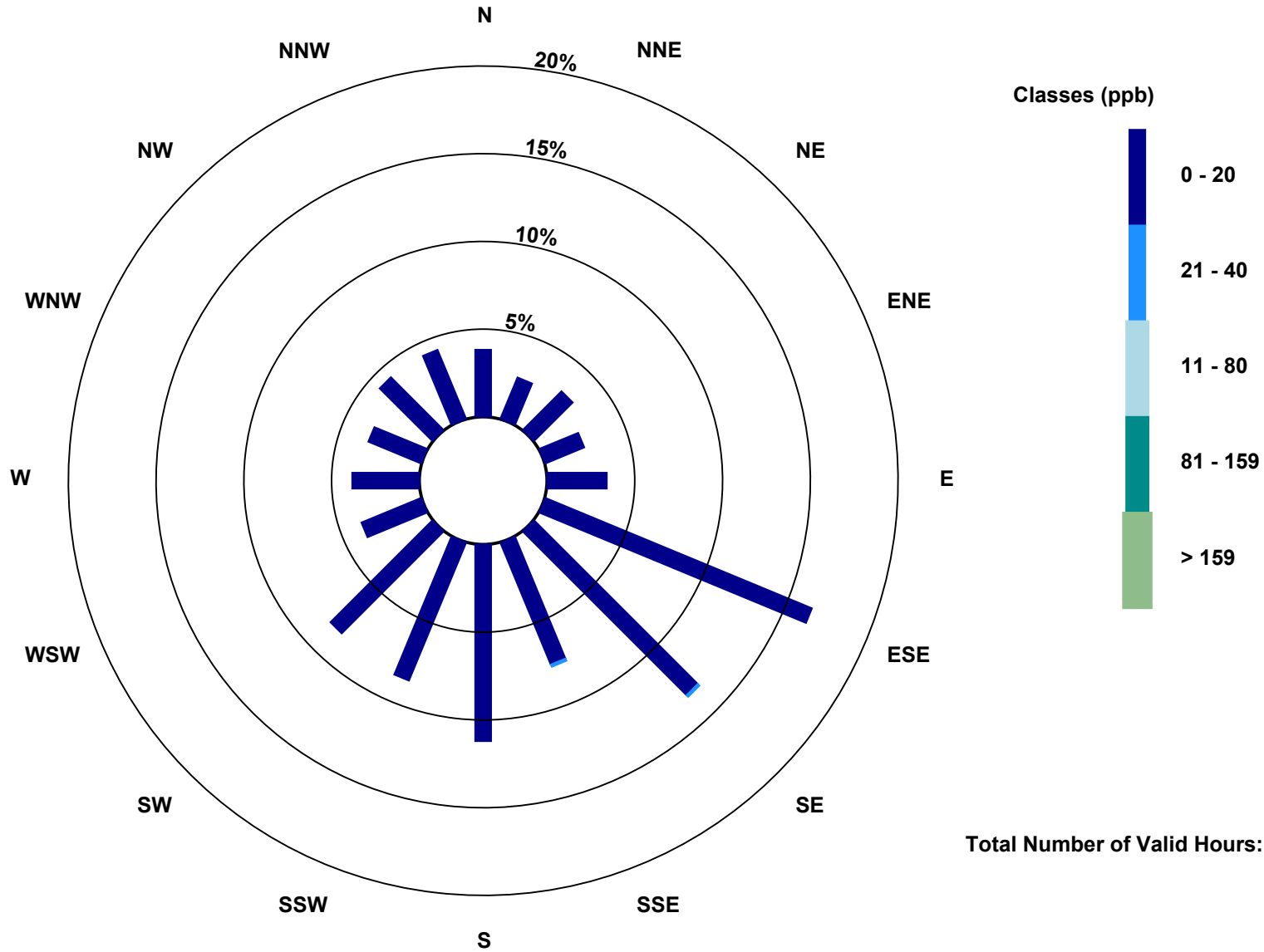
Total Number of Valid Hours: 705

Total Number of Hours: 744

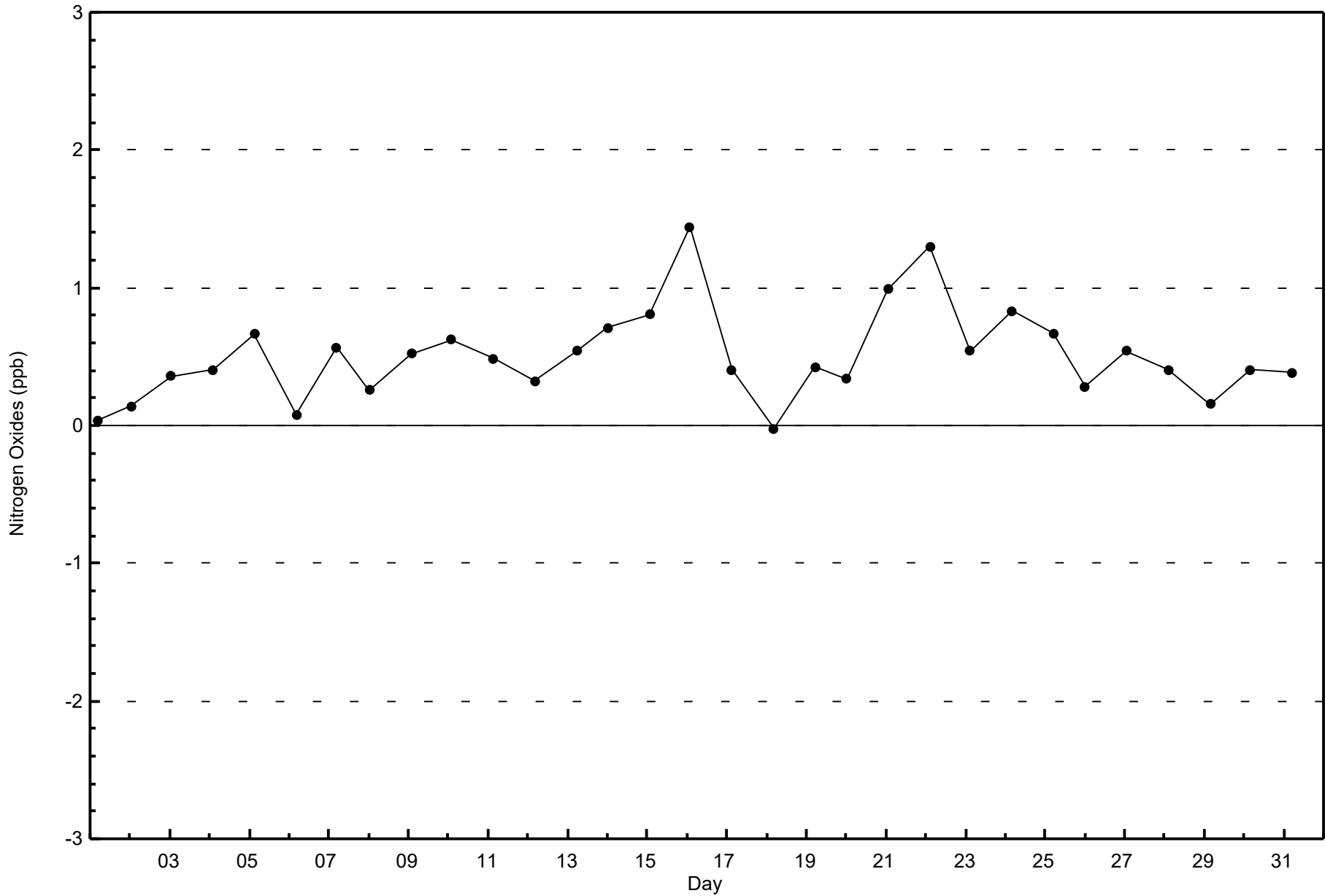


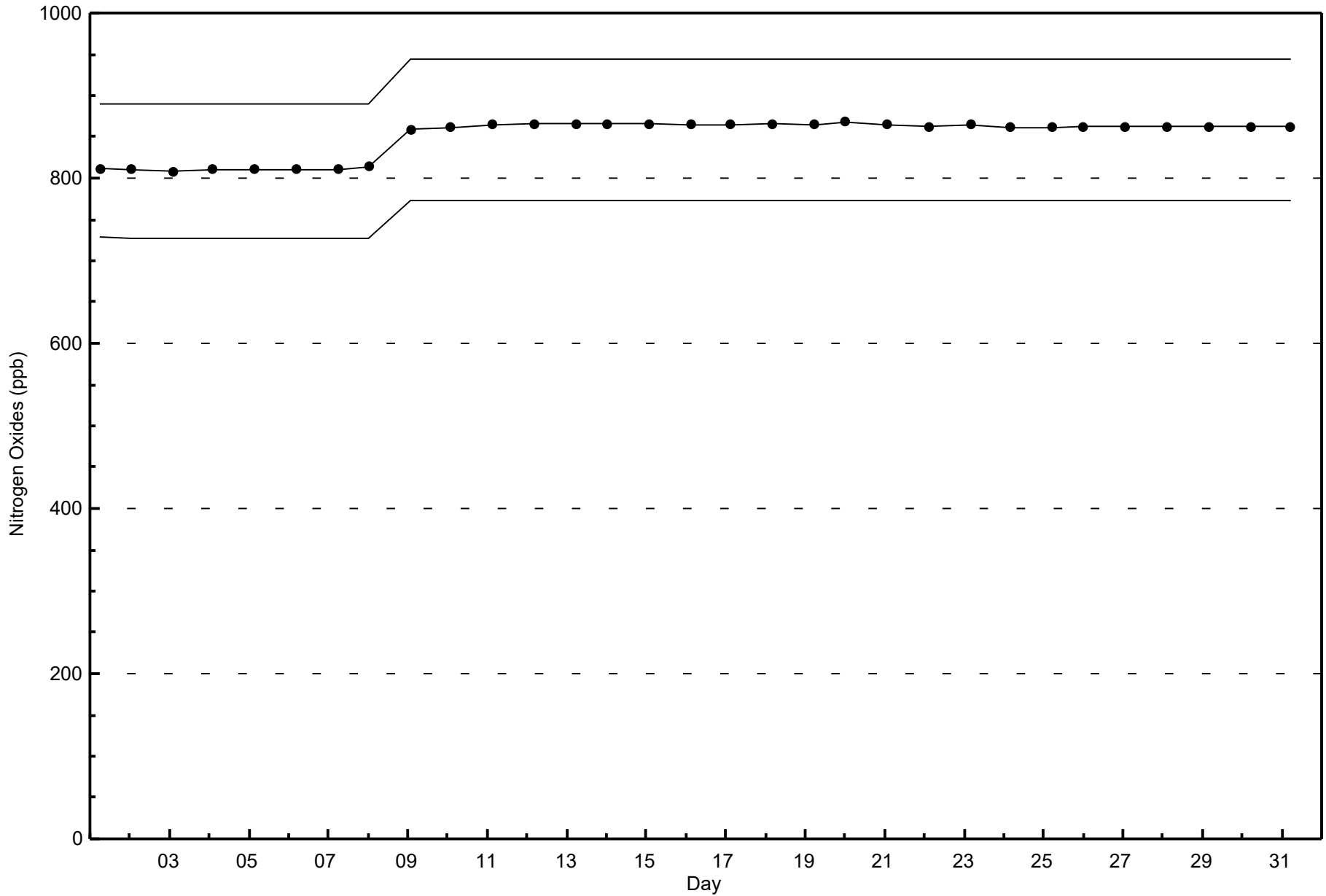
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Patricia McInnes



Total Number of Valid Hours: 705

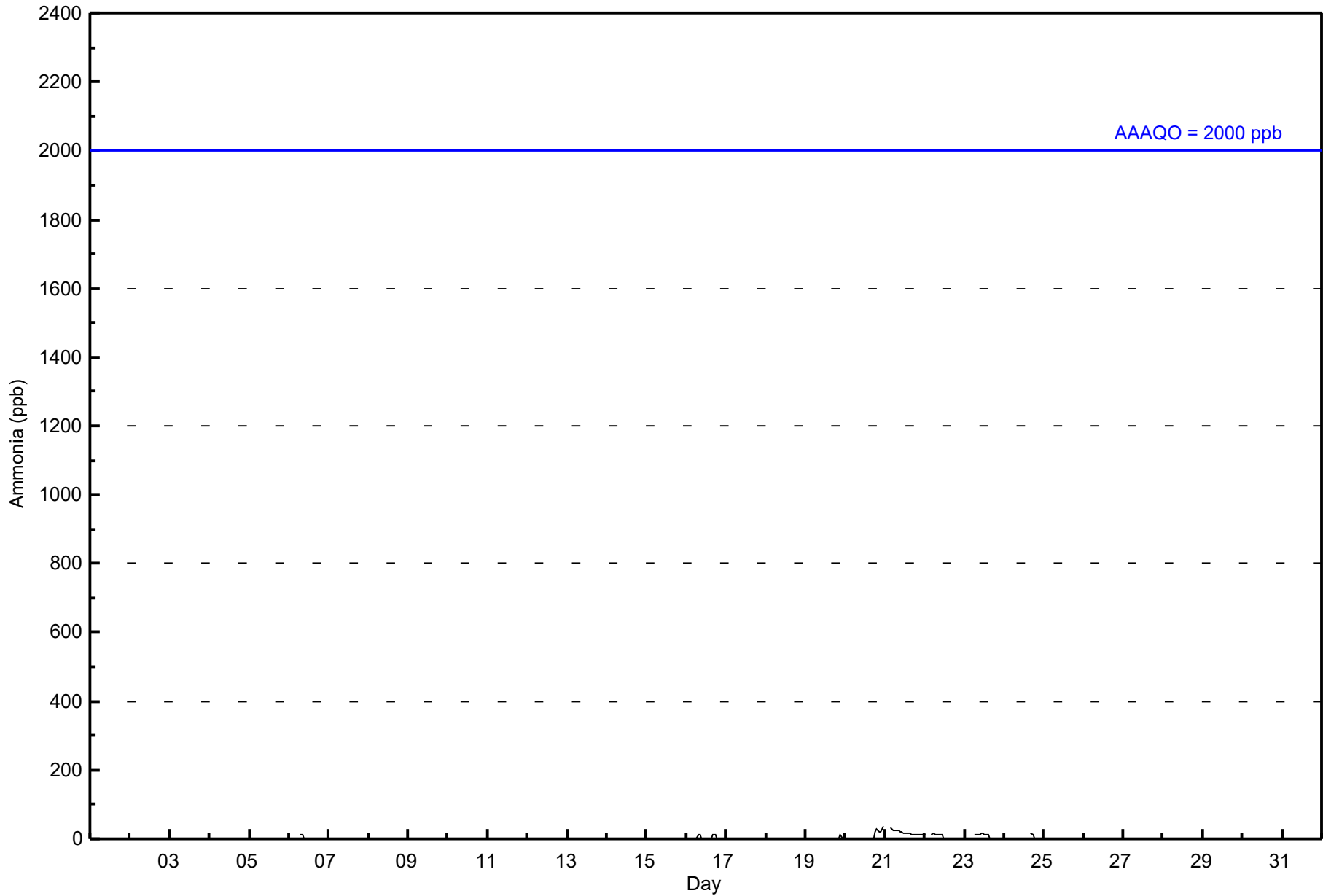






Wood Buffalo Environmental Association
Hourly Averages

Ammonia (NH₃) - ppb
Patricia McInnes - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ammonia (NH₃) - ppb
Patricia McInnes - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 5	577	91.44	91.44
6 - 10	0	0.00	91.44
11 - 15	38	6.02	97.46
16 - 20	4	0.63	98.10
21 - 25	6	0.95	99.05
> 26	6	0.95	100.00

Total Number of Valid Hours: 631

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ammonia (NH₃) - ppb
Patricia McInnes - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	15	18	21	17	15	76	76	48	74	50	52	23	23	20	25	24	577
6 - 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 15	7	0	1	0	6	15	2	0	0	0	0	0	2	0	2	3	38
16 - 20	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	4
21 - 25	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	6
> 26	0	0	0	0	0	2	4	0	0	0	0	0	0	0	0	0	6
Totals	22	18	22	17	21	97	88	48	74	50	52	23	25	20	27	27	631

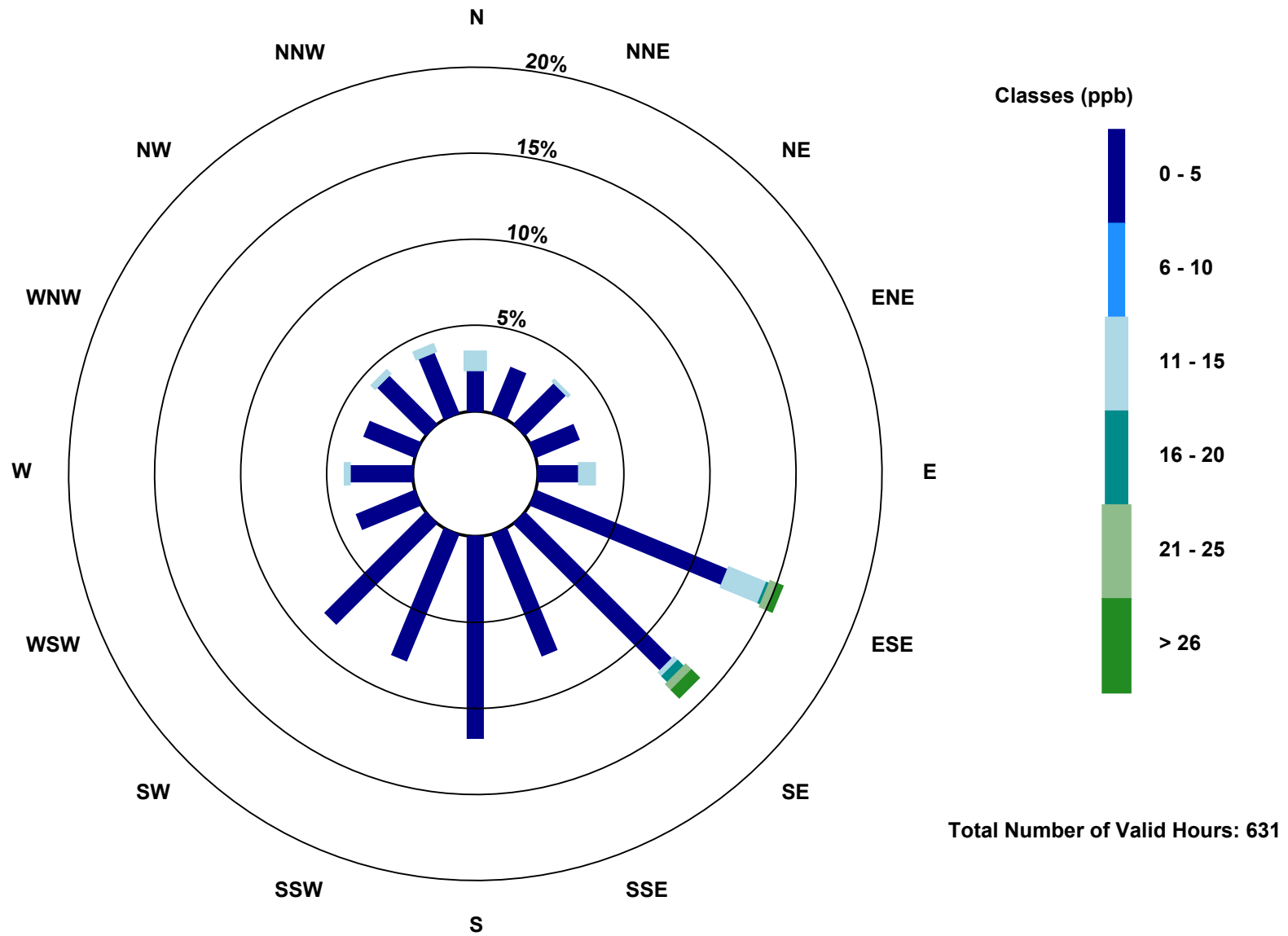
Total Number of Valid Hours: 631

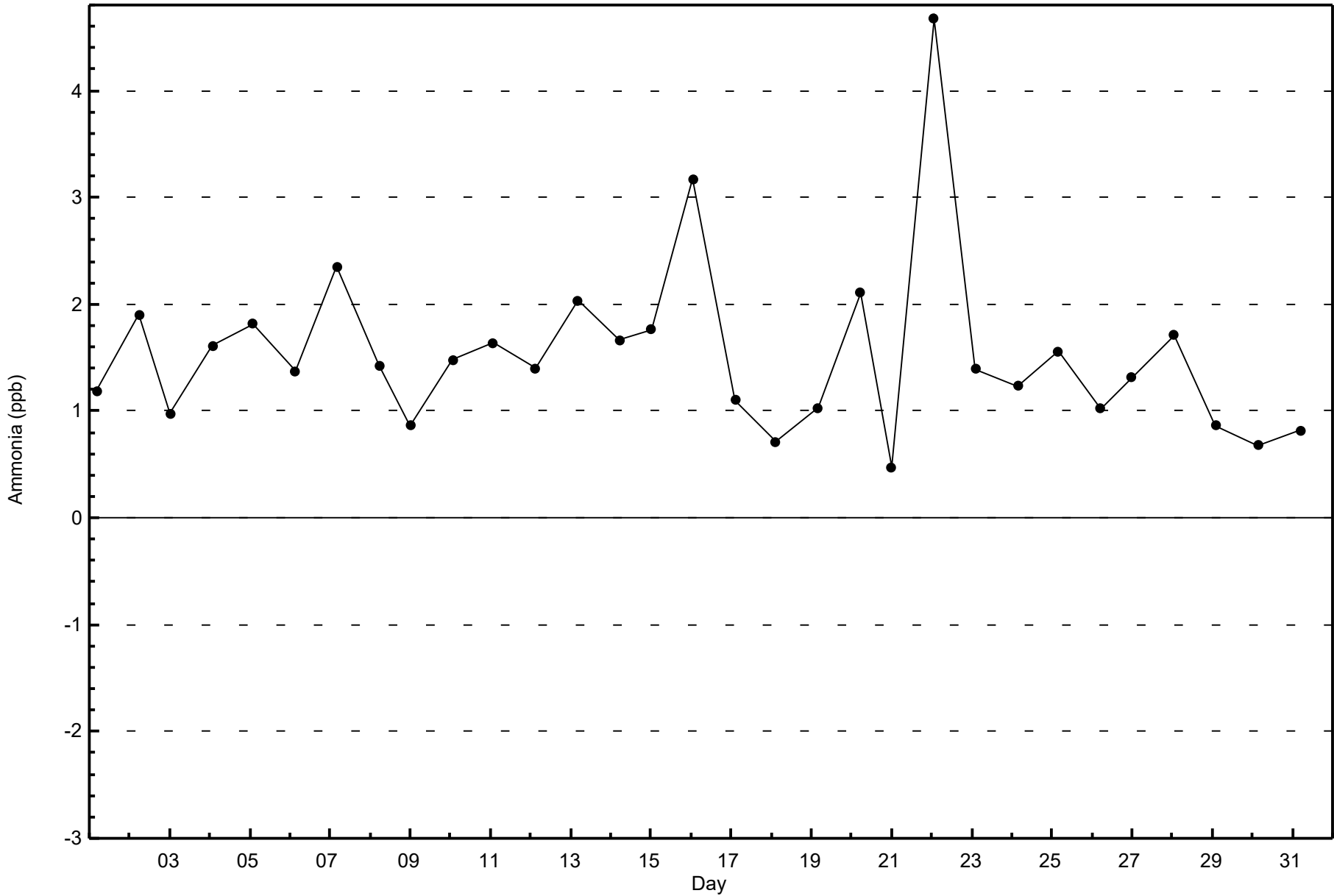
Total Number of Hours: 744

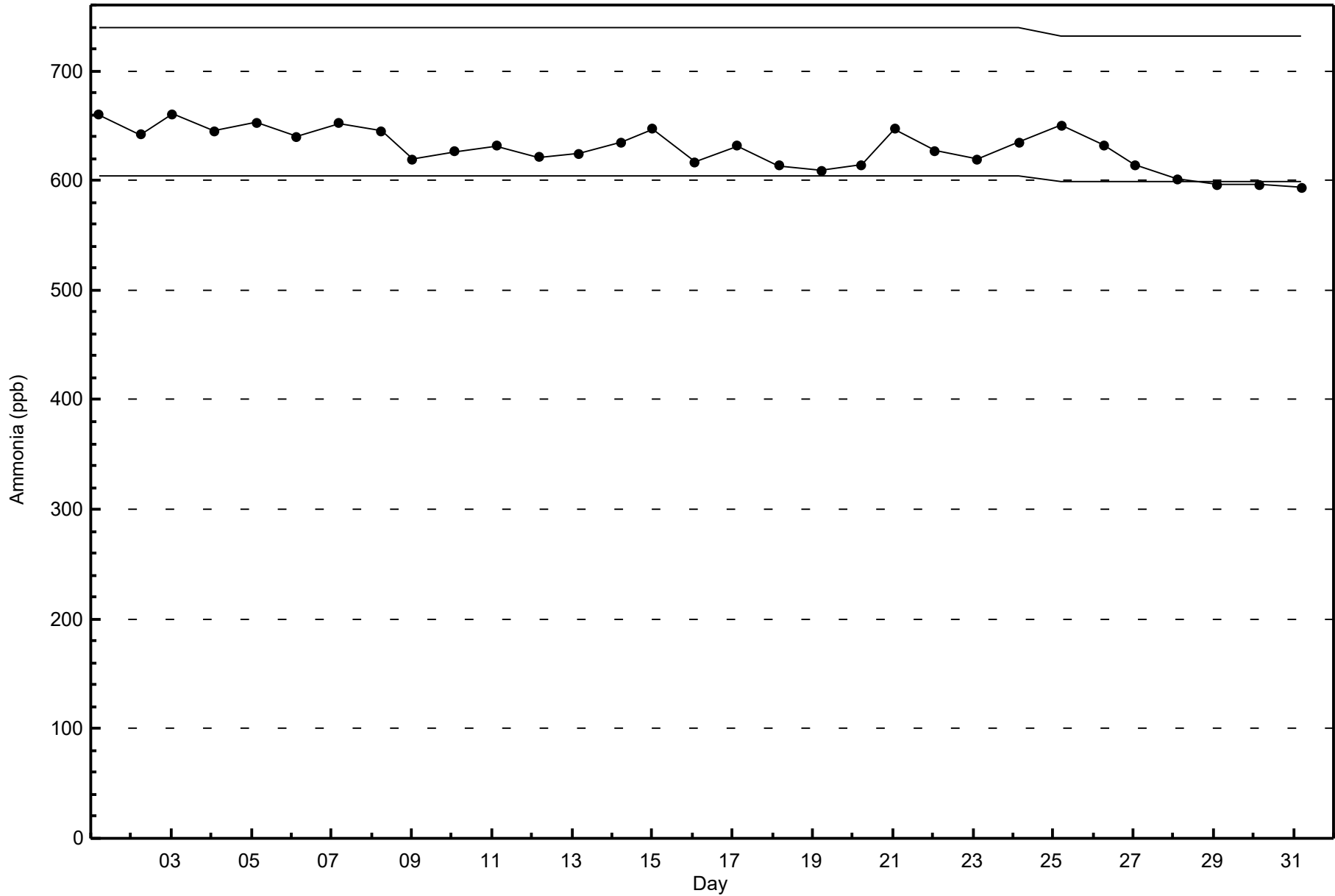


Wood Buffalo Environmental Association
Wind Rose May 2023

Ammonia (NH₃) - ppb
Patricia McInnes





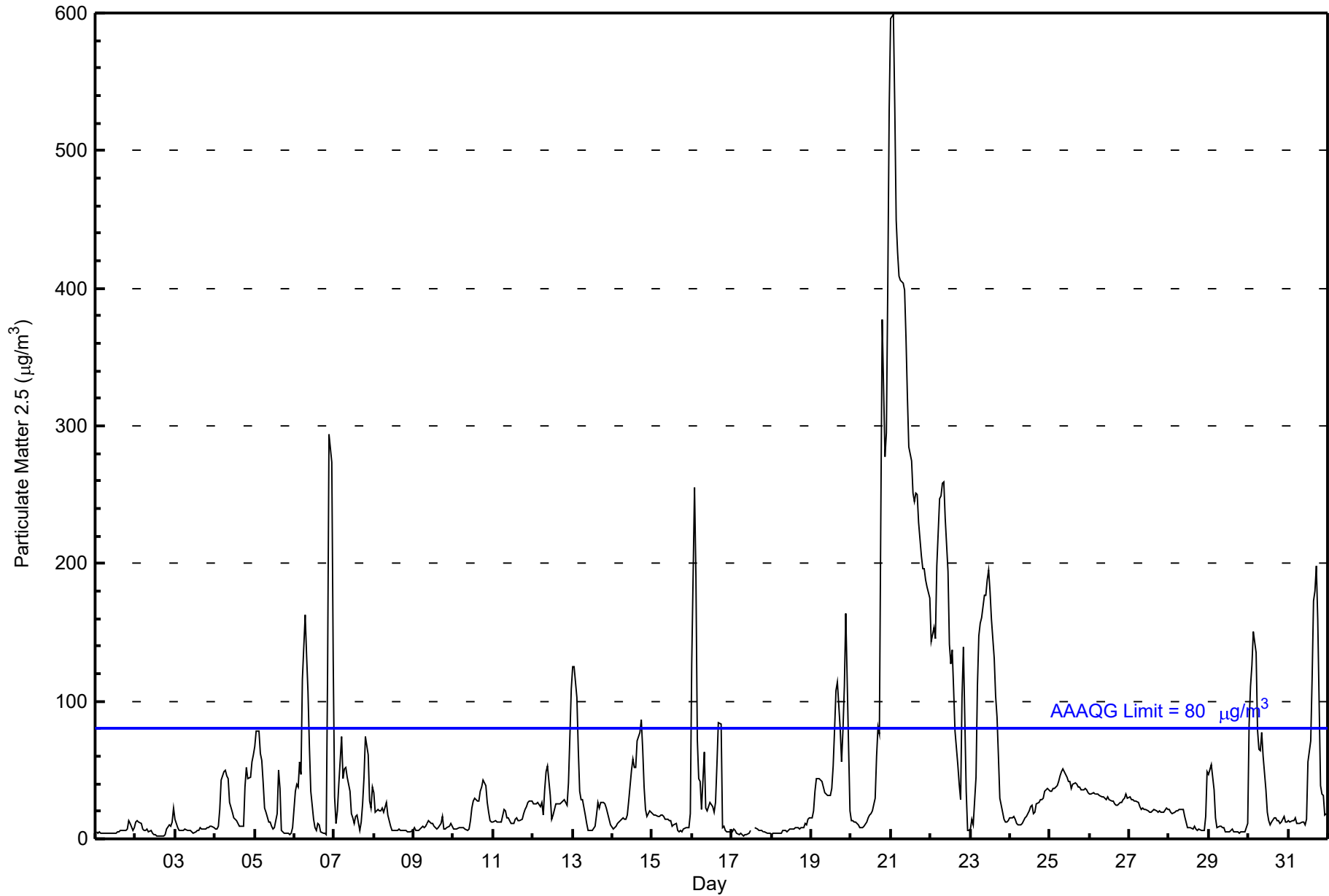




Summary of Hour Averages

Patricia McInnes - May 2023

Number of Exceedences (AAAQO):		1-hr: 94	24-hr: 15	Hours in Service:		744																					
Maximum Value: 598.8 µg/m ³ on May 21 02:00		Maximum Daily Average: 326.4 µg/m ³ on May 21		Hours of Data:		742																					
Minimum Value: 2.1 µg/m ³ on May 2 18:00		Minimum Daily Average: 4.9 µg/m ³ on May 17		Hours of Missing Data:		2																					
Maximum Diurnal Average: 56.5 µg/m ³ at hour 2		Minimum Diurnal Average: 34.3 µg/m ³ at hour 12		Hours of Calibration:		2																					
Monthly Average: 44.23 µg/m ³		Percentiles: P ₁ = 2.9 P ₁₀ = 5.4 Q ₁ = 8.0 Median = 18.1 Q ₃ = 37.6 P ₉₀ = 116.4 P ₉₉ = 404.9		Percent Operational Time:		100.0																					
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	5.2	4.5	4.7	4.5	4.4	4.4	4.3	4.5	4.3	4.2	4.5	4.3	4.4	4.7	5.4	5.8	5.7	5.6	5.9	7.4	13.7	11.7	6.2	8.3	5.8	13.7	
2-May	12.3	13.4	12.1	11.6	6.6	5.8	5.6	7.0	5.3	6.4	4.1	2.6	2.8	2.5	2.5	2.4	2.2	2.1	3.5	7.0	10.3	9.6	12.1	22.8	7.2	22.8	
3-May	14.6	7.6	6.5	6.2	6.5	5.9	6.7	6.0	5.9	6.1	4.8	4.5	5.2	5.6	6.3	8.1	7.6	7.5	7.6	7.9	8.1	9.1	9.5	7.9	7.1	14.6	
4-May	6.6	6.9	9.0	21.8	42.3	48.4	50.0	45.4	43.8	26.9	18.9	15.2	14.5	12.8	10.9	9.5	9.3	9.1	37.4	52.4	44.0	44.5	55.8	61.4	29.0	61.4	
5-May	67.2	78.1	77.9	62.3	57.1	40.8	22.8	19.6	12.7	12.4	8.7	7.6	7.8	18.5	49.3	36.3	5.8	5.0	4.4	4.1	3.9	3.4	3.7	8.5	25.7	78.1	
6-May	34.7	39.6	37.3	55.6	46.3	115.7	162.3	133.5	106.3	67.2	34.8	14.0	7.9	6.5	11.5	10.0	5.3	4.5	3.9	3.5	122.1	293.9	273.8	131.0	71.7	293.9	
7-May	30.2	11.1	20.7	39.4	74.2	44.1	51.3	51.6	45.0	34.1	18.2	14.9	10.8	16.5	16.8	6.6	11.8	25.0	44.5	73.8	61.0	27.8	22.6	37.7	32.9	74.2	
8-May	33.5	19.8	20.8	20.7	20.7	22.7	19.8	26.2	17.6	13.2	9.1	6.1	6.1	5.8	5.6	6.8	6.2	6.5	6.5	6.1	5.3	5.2	5.6	6.2	12.6	33.5	
9-May	8.2	6.3	6.3	6.3	7.5	8.9	8.5	8.8	10.9	13.1	11.7	10.8	8.7	8.6	7.2	8.0	11.4	16.3	7.1	7.5	8.3	8.8	10.7	8.7	9.1	16.3	
10-May	7.1	7.5	7.6	8.5	8.6	8.5	7.7	7.1	6.2	6.8	12.9	22.3	27.5	29.1	27.8	27.0	35.0	37.2	42.9	38.4	26.0	19.5	13.7	12.0	18.6	42.9	
11-May	12.1	13.0	12.5	12.2	12.1	12.0	21.4	19.9	15.6	15.4	13.4	11.1	11.0	14.1	15.0	13.6	13.5	14.4	18.4	21.6	23.5	26.2	27.0	27.6	16.5	27.6	
12-May	25.6	25.7	25.9	26.9	23.6	26.6	17.6	36.0	49.3	52.6	31.8	13.9	17.2	21.1	25.2	25.8	25.3	26.3	27.6	28.0	24.3	40.6	74.7	108.6	33.4	108.6	
13-May	124.9	125.0	102.8	65.0	34.2	28.5	28.9	17.5	11.1	6.4	6.0	5.9	5.9	9.5	17.5	26.0	22.7	26.8	26.4	25.5	22.2	18.0	13.7	9.9	32.5	125.0	
14-May	7.3	8.0	9.3	11.0	12.2	13.9	15.0	14.6	14.0	17.3	27.9	49.3	58.4	51.5	52.3	71.0	76.9	86.7	65.5	38.0	21.2	16.3	20.1	19.3	32.4	86.7	
15-May	18.1	17.6	17.1	16.3	16.4	17.2	16.9	15.9	13.8	13.9	13.0	12.7	9.2	10.3	10.8	6.4	5.4	5.9	5.5	6.9	7.9	7.8	8.1	18.0	12.1	18.1	
16-May	127.0	255.3	190.9	71.9	43.6	41.4	21.7	63.5	22.8	20.3	23.7	26.6	23.0	18.8	26.4	54.0	84.8	83.2	7.8	8.9	5.7	5.3	5.2	5.2	51.6	255.3	
17-May	5.0	7.0	6.0	4.5	3.4	4.0	3.5	2.5	3.2	3.2	4.3	5.9	C	C	8.0	6.9	6.3	6.2	5.9	4.9	4.7	4.2	3.7	3.7	4.9	8.0	
18-May	3.6	3.8	4.0	3.9	4.5	3.9	4.5	6.1	6.4	5.3	6.1	6.8	7.1	7.6	8.2	8.4	8.0	7.5	7.6	8.1	11.0	10.5	14.3	15.5	7.2	15.5	
19-May	15.4	20.4	34.4	44.2	43.5	43.8	41.6	37.8	33.6	33.0	31.1	31.9	36.8	53.3	79.1	107.3	113.8	80.5	55.6	78.9	111.1	163.3	66.8	20.8	57.4	163.3	
20-May	13.0	13.2	12.1	11.7	10.0	8.6	8.3	8.4	9.6	12.7	15.1	17.2	18.3	20.1	29.7	59.9	81.8	75.8	230.6	377.8	278.1	294.9	403.1	529.8	105.8	529.8	
21-May	595.5	598.8	531.0	449.0	426.5	409.2	405.7	403.8	398.3	364.2	321.4	285.2	274.1	251.6	245.1	250.8	250.5	229.5	205.9	196.7	196.2	187.7	183.1	174.5	326.4	598.8	
22-May	143.7	149.0	153.8	145.4	198.5	247.1	249.1	258.8	259.0	233.3	194.5	141.3	127.1	136.8	109.0	78.2	54.2	39.2	28.4	103.1	139.1	34.6	6.2	6.0	134.8	259.0	
23-May	6.7	14.5	10.7	45.2	110.7	147.5	156.7	160.3	177.4	177.3	188.4	194.9	180.1	159.9	131.6	103.6	88.7	60.3	29.8	19.2	14.6	12.3	12.7	13.6	92.4	194.9	
24-May	15.0	15.1	15.9	13.8	11.4	10.1	9.8	11.4	13.0	15.1	16.4	20.0	23.9	24.9	18.1	19.3	24.9	26.5	28.6	28.2	29.5	34.4	36.5	35.3	20.7	36.5	
25-May	34.4	34.7	36.2	36.2	38.3	41.9	45.5	49.2	50.9	46.4	44.5	41.6	41.9	36.6	39.8	41.1	39.6	37.6	37.4	35.7	36.0	36.9	35.1	33.2	39.6	50.9	
26-May	32.6	32.4	33.2	32.7	32.7	32.9	31.7	30.9	30.2	29.5	28.9	30.4	29.0	27.5	27.5	25.6	24.9	24.6	26.2	26.9	28.9	29.8	32.1	29.8	29.6	33.2	
27-May	30.4	28.8	28.4	27.1	27.0	26.6	23.7	21.2	21.9	21.7	21.3	19.9	19.2	18.9	20.0	21.4	20.8	19.4	19.9	19.2	18.9	19.8	22.2	21.7	22.5	30.4	
28-May	21.1	19.1	18.8	19.1	20.1	20.2	20.9	21.8	21.0	16.8	12.6	8.1	7.8	7.9	7.0	8.7	6.9	6.5	7.0	5.8	5.9	5.7	16.7	49.1	14.8	49.1	
29-May	46.9	53.8	45.0	35.9	14.9	8.3	9.5	9.3	7.8	7.8	5.5	5.3	5.4	6.0	7.5	5.3	4.8	4.6	4.5	4.7	4.7	4.8	4.7	10.9	13.2	53.8	
30-May	83.5	110.5	126.4	150.8	135.5	79.6	65.0	64.2	77.4	60.0	35.5	19.5	13.7	10.4	11.8	15.3	14.9	13.3	13.4	11.1	12.3	16.5	12.1	11.7	48.5	150.8	
31-May	12.8	12.4	12.7	13.7	14.9	11.2	10.8	11.2	12.1	12.1	9.9	14.0	55.8	70.8	116.4	172.6	179.5	198.0	159.8	38.8	33.0	31.6	17.5	18.4	51.7	198.0	
51.4 56.5 52.6 47.5 48.7 49.7 49.9 50.8 48.6 43.7 38.0 34.3 35.3 35.6 37.1 40.1 40.3 38.4 37.9 41.8 42.9 46.3 46.1 47.3																								Diurnal Average			
595.5 598.8 531.0 449.0 426.5 409.2 405.7 403.8 398.3 364.2 321.4 285.2 274.1 251.6 245.1 250.8 250.5 229.5 230.6 377.8 278.1 294.9 403.1 529.8																								Diurnal Maximum			
C - Calibration																											
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																											





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Patricia McInnes - May 2023**

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	78	10.51	10.51
6 - 15	265	35.71	46.23
16 - 25	110	14.82	61.05
26 - 80	195	26.28	87.33
> 81.0	94	12.67	100.00

Total Number of Valid Hours: 742

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Patricia McInnes - May 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	5	3	1	0	2	13	12	2	9	6	2	7	2	2	4	8	78
6 - 15	7	10	10	8	8	27	30	23	33	27	34	8	9	6	12	13	265
16 - 25	0	0	3	1	2	12	15	8	22	14	13	6	4	3	4	3	110
26 - 80	3	2	7	7	4	39	27	21	17	18	13	5	11	8	8	5	195
> 81.0	13	1	1	1	9	30	18	4	2	0	1	0	1	4	4	5	94
Totals	28	16	22	17	25	121	102	58	83	65	63	26	27	23	32	34	742

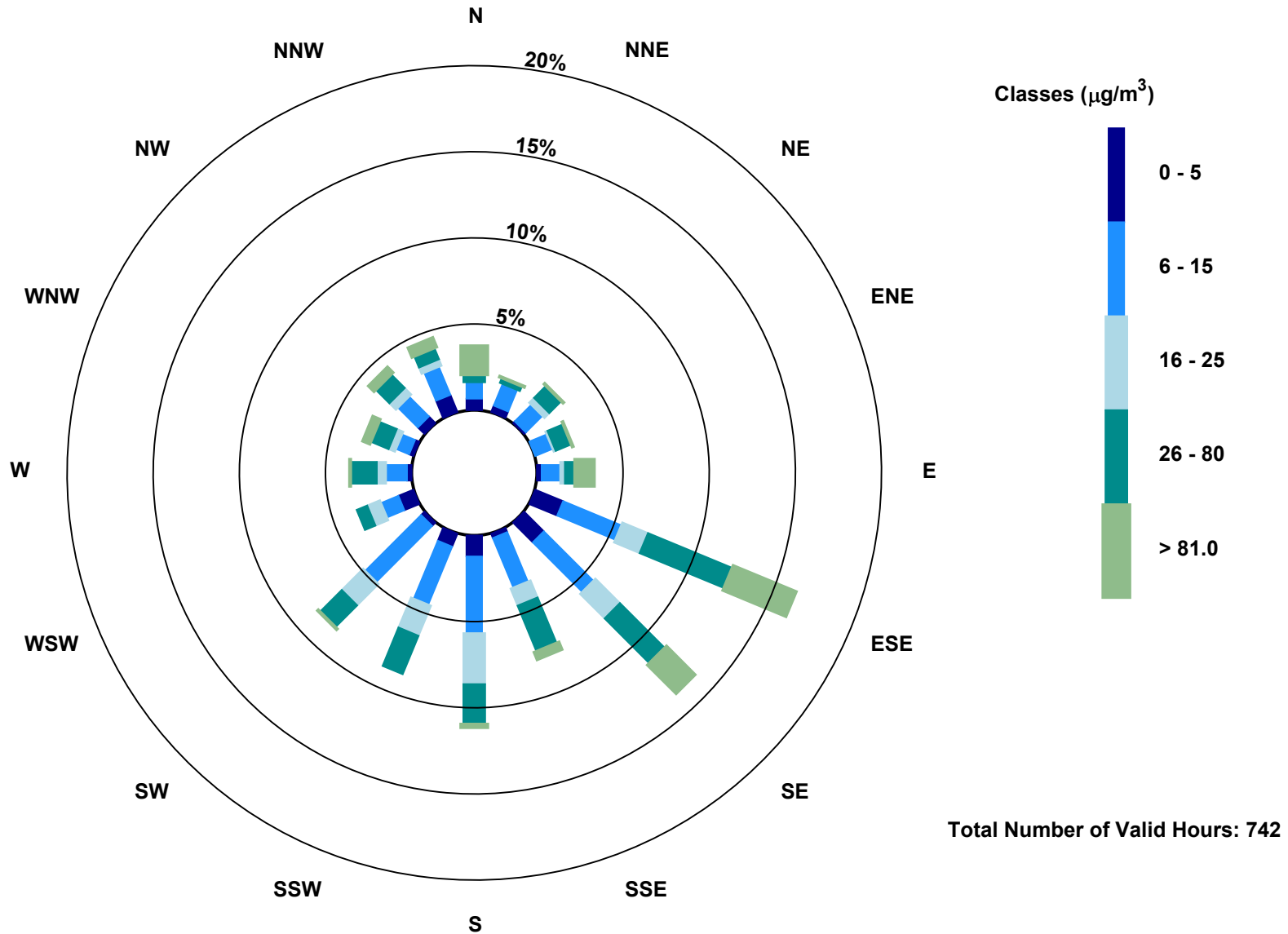
Total Number of Valid Hours: 742

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Patricia McInnes

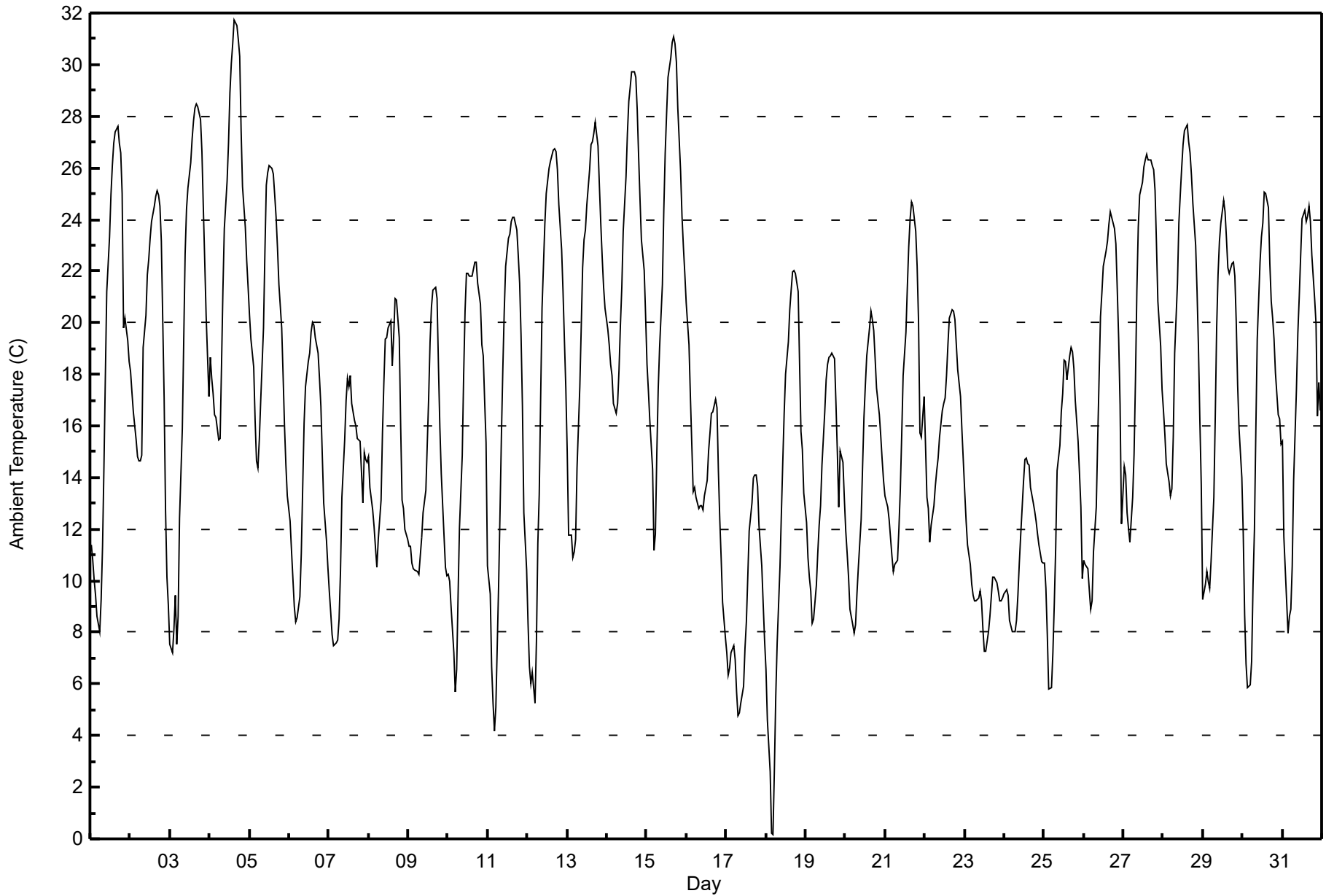




Wood Buffalo Environmental Association
Summary of Hour Averages

Ambient Temperature (AT) - C
Patricia McInnes - May 2023

Maximum Value: 31.7 C on May 4 16:00 Maximum Daily Average: 23.7 C on May 4																						Hours in Service: 744 Hours of Data: 744				
Minimum Value: 0.2 C on May 18 05:00 Minimum Daily Average: 8.9 C on May 17 Maximum Diurnal Average: 22.6 C at hour 17 Minimum Diurnal Average: 9.6 C at hour 5 Monthly Average: 16.73 C Percentiles: P ₁ = 5.0 P ₁₀ = 8.6 Q ₁ = 11.5 Median = 16.5 Q ₃ = 21.8 P ₉₀ = 25.4 P ₉₉ = 30.3																						Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	11.4	10.8	10.1	9.4	8.6	8.0	9.3	11.3	14.4	17.9	21.2	23.3	25.0	26.1	26.9	27.4	27.6	27.0	26.6	25.0	19.8	20.2	19.3	18.5	18.6	27.6
2-May	18.1	17.3	16.6	15.5	14.8	14.6	14.6	14.8	19.0	20.3	21.9	22.4	23.3	23.9	24.5	24.9	25.1	25.0	24.5	23.2	17.1	12.7	10.2	9.1	18.9	25.1
3-May	7.5	7.2	8.2	9.4	7.6	8.6	12.4	15.9	19.3	22.6	24.4	25.2	26.2	27.1	27.8	28.3	28.5	28.4	27.9	26.6	24.4	22.4	20.3	17.1	19.7	28.5
4-May	18.7	17.9	17.2	16.5	16.3	15.5	15.5	18.3	21.3	23.7	25.5	27.0	28.9	30.1	30.8	31.7	31.5	31.0	30.3	27.4	25.3	23.7	22.4	21.4	23.7	31.7
5-May	20.3	19.3	18.3	16.2	14.7	14.3	15.4	17.0	19.8	22.7	25.3	25.8	26.1	26.0	25.8	25.0	24.1	22.9	21.5	19.8	18.0	16.0	14.5	13.3	20.1	26.1
6-May	12.3	11.2	10.1	9.0	8.4	8.6	9.4	11.1	13.6	16.1	17.5	18.5	18.8	19.7	20.0	19.9	19.4	18.8	17.9	16.8	14.9	13.0	11.5	10.5	14.5	20.0
7-May	9.6	8.8	7.9	7.5	7.6	7.7	8.5	10.4	13.2	15.5	17.0	17.9	17.5	18.0	16.9	16.2	16.0	15.5	15.5	15.4	13.0	15.0	14.7	14.6	13.3	18.0
8-May	14.8	13.6	12.7	12.1	11.3	10.5	11.6	13.1	15.7	17.7	19.4	19.4	19.8	20.1	18.3	19.4	20.9	20.9	19.4	16.0	13.1	12.8	12.0	11.6	15.7	20.9
9-May	11.3	11.3	10.7	10.5	10.4	10.4	10.3	11.0	11.7	12.6	13.5	15.3	17.1	19.2	20.6	21.3	21.4	21.0	18.3	15.9	14.2	11.7	10.5	10.2	14.2	21.4
10-May	10.3	10.0	9.0	7.2	5.7	6.6	9.4	12.0	14.9	18.0	20.5	21.9	21.9	21.8	21.8	22.0	22.4	22.3	21.5	20.7	19.1	18.7	16.9	15.4	16.3	22.4
11-May	10.6	9.5	6.7	5.3	4.2	5.1	9.9	12.7	15.7	18.2	20.5	22.2	23.3	23.4	23.9	24.1	24.1	23.6	22.6	21.5	19.5	16.8	12.6	10.4	16.1	24.1
12-May	8.4	6.7	6.0	6.5	5.3	7.6	11.4	13.3	17.0	20.5	23.8	25.0	25.5	26.0	26.2	26.7	26.7	26.6	25.9	24.6	22.8	21.2	19.3	17.4	18.4	26.7
13-May	15.0	11.8	11.8	10.9	11.1	11.6	14.4	17.5	19.8	22.1	23.2	23.6	24.6	25.9	26.9	27.0	27.3	27.7	26.8	25.3	23.8	22.5	21.4	20.6	20.5	27.7
14-May	19.7	19.2	18.4	18.0	16.9	16.5	16.9	18.2	19.9	21.4	23.5	25.6	27.3	28.6	29.1	29.7	29.7	29.5	28.3	26.4	24.8	23.2	22.0	20.3	23.0	29.7
15-May	18.4	17.3	16.2	14.3	11.2	11.8	14.9	17.4	19.0	21.5	24.4	26.6	28.1	29.5	30.2	30.8	31.1	30.8	30.1	28.3	25.9	24.1	22.9	21.9	22.8	31.1
16-May	20.8	19.2	17.2	15.3	13.5	13.6	13.2	12.8	12.9	12.9	12.7	13.3	13.9	15.0	15.7	16.5	16.5	17.1	16.7	14.2	12.4	10.8	9.1	7.8	14.3	20.8
17-May	7.2	6.4	6.6	7.2	7.5	6.9	5.7	4.8	4.9	5.2	5.9	7.4	8.4	10.1	11.9	13.0	14.0	14.1	14.1	13.7	12.1	10.6	9.1	7.7	8.9	14.1
18-May	6.5	4.6	2.6	0.2	0.2	2.7	5.6	7.6	10.5	12.6	14.6	16.5	18.0	19.2	20.5	21.3	22.0	22.0	21.9	21.2	18.4	15.8	15.1	13.4	13.0	22.0
19-May	12.3	10.9	10.1	9.6	8.3	8.5	9.8	11.1	12.1	12.9	14.5	16.5	17.8	18.4	18.6	18.7	18.8	18.6	16.9	15.0	12.9	15.1	14.6	13.2	14.0	18.8
20-May	12.0	11.1	10.1	8.9	8.3	8.0	8.3	9.5	10.5	12.4	14.4	16.3	17.6	18.7	19.8	20.4	20.1	19.7	18.6	17.5	16.4	15.6	14.7	13.9	14.3	20.4
21-May	13.3	12.9	12.4	11.7	10.9	10.4	10.7	10.8	12.0	13.6	15.7	18.0	19.6	21.4	22.9	24.1	24.7	24.5	23.5	22.2	20.0	15.8	15.6	17.1	16.8	24.7
22-May	15.2	13.3	12.8	11.5	12.2	12.9	13.7	14.2	14.7	15.6	16.6	16.9	17.1	18.0	19.2	20.2	20.5	20.5	20.1	19.1	18.2	17.1	15.8	14.7	16.2	20.5
23-May	13.4	12.3	11.4	10.6	9.9	9.4	9.2	9.2	9.3	9.6	9.2	8.1	7.3	7.3	8.0	8.6	9.4	10.1	10.2	9.9	9.6	9.2	9.2	9.3	9.6	13.4
24-May	9.5	9.6	9.4	8.5	8.2	8.0	8.0	8.4	9.4	10.7	11.8	13.8	14.7	14.7	14.5	14.5	13.6	13.0	12.7	12.3	11.8	11.4	10.7	10.7	11.3	14.7
25-May	10.7	9.7	7.9	5.8	5.8	7.2	9.1	11.3	14.3	15.2	16.5	17.2	18.6	18.5	17.8	18.7	19.0	18.9	18.2	17.0	15.4	14.2	12.8	10.1	13.8	19.0
26-May	10.8	10.6	10.5	9.6	8.9	9.2	11.1	12.8	15.5	17.9	20.2	21.2	22.2	22.8	23.2	23.8	24.3	24.1	23.6	23.1	21.3	19.4	16.8	12.2	17.3	24.3
27-May	14.4	14.1	12.6	12.0	11.5	13.2	14.9	17.8	21.2	23.7	25.0	25.4	26.0	26.3	26.5	26.3	26.3	26.1	25.9	25.1	23.0	20.8	19.1	17.4	20.6	26.5
28-May	16.6	15.7	14.5	13.8	13.3	13.6	15.6	18.8	21.5	23.9	25.0	26.0	26.9	27.4	27.7	27.0	26.6	25.7	24.6	23.0	21.2	19.0	16.2	13.7	20.7	27.7
29-May	9.3	9.9	10.3	10.0	9.7	10.7	13.3	16.3	19.8	21.9	23.2	23.9	24.7	24.3	23.3	22.1	21.9	22.3	22.4	21.8	20.0	17.6	15.9	14.0	17.9	24.7
30-May	11.8	8.7	6.8	5.9	6.0	6.9	9.9	12.0	15.9	19.4	22.4	23.3	23.8	25.0	25.0	24.5	22.3	20.9	20.2	19.4	18.1	16.4	16.3	15.3	16.5	25.0
31-May	15.4	11.7	9.2	8.0	8.6	8.9	10.6	13.9	17.4	19.6	21.0	22.6	24.0	24.4	23.9	24.1	24.5	23.9	22.6	20.9	19.9	16.4	17.7	16.6	17.7	24.5
																								Diurnal Average		
																								Diurnal Maximum		





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Patricia McInnes - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	123	16.53	16.53
10 - 20	383	51.48	68.01
> 20	238	31.99	100.00

Total Number of Valid Hours: 744

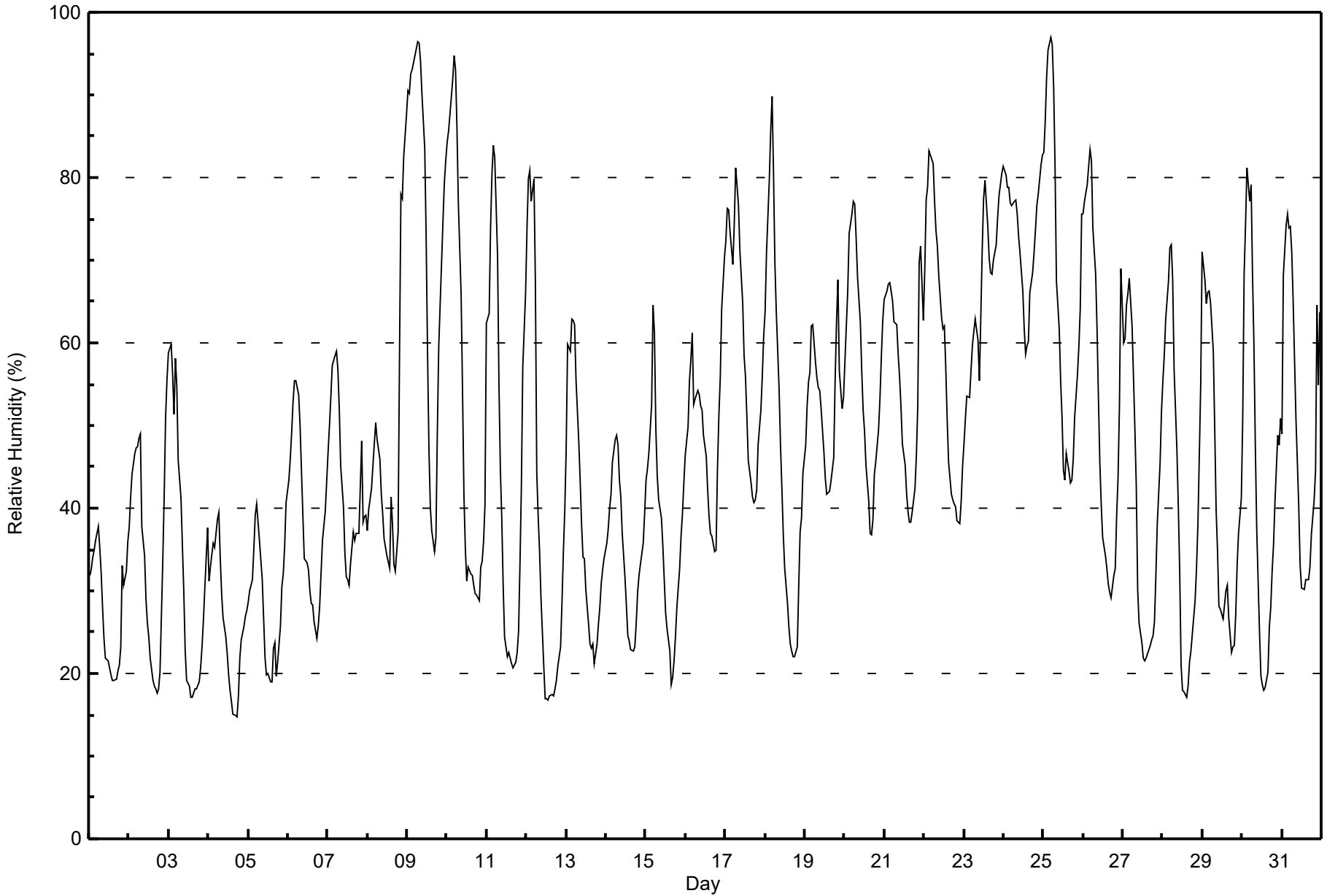
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Patricia McInnes - May 2023

Maximum Value: 96.9 % on May 25 05:00																						Maximum Daily Average: 73.1 % on May 9																						Hours in Service: 744			
Minimum Value: 14.7 % on May 4 18:00																						Minimum Daily Average: 26.2 % on May 4																						Hours of Data: 744			
Maximum Diurnal Average: 67.1 % at hour 5																						Minimum Diurnal Average: 30.8 % at hour 17																						Hours of Missing Data: 0			
Monthly Average: 47.05 %																						Percentiles: P ₁ = 17.1 P ₁₀ = 22.1 Q ₁ = 31.4 Median = 43.4 Q ₃ = 62.1 P ₉₀ = 77.0 P ₉₉ = 94.0																						Hours of Calibration: 0			
																																												Percent Operational Time: 100.0			
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																							
1-May	31.9	32.7	34.1	34.9	36.1	37.7	35.3	32.2	28.0	24.2	21.9	21.6	20.6	19.9	19.2	19.1	19.3	20.3	21.1	23.3	33.1	30.6	32.4	35.9	27.7	37.7																					
2-May	37.6	41.1	44.0	46.7	47.3	47.5	48.6	48.9	37.8	34.2	28.9	26.1	24.4	21.8	19.2	18.4	18.1	17.6	18.2	20.1	33.7	41.6	51.1	55.5	34.5	55.5																					
3-May	58.9	59.7	56.3	51.3	58.2	54.8	45.8	41.3	35.4	29.9	22.6	19.2	18.5	17.2	17.1	17.6	18.1	18.1	18.9	20.7	23.1	26.4	30.4	37.6	33.2	59.7																					
4-May	31.1	32.9	34.4	35.7	35.2	38.7	39.4	34.1	29.7	26.9	24.4	22.4	19.8	18.0	16.5	15.1	14.9	14.7	17.4	21.9	24.1	25.7	27.0	27.6	26.2	39.4																					
5-May	28.7	30.0	31.3	35.1	39.2	40.5	38.3	36.0	31.3	26.6	21.8	19.9	20.0	19.1	19.0	23.0	23.7	19.7	21.3	25.8	30.5	32.0	35.4	40.7	28.7	40.7																					
6-May	43.4	45.9	49.1	52.9	55.4	55.4	53.8	50.0	44.6	39.2	34.0	33.3	32.6	30.0	28.4	28.4	26.3	24.3	25.8	28.1	32.2	36.0	39.7	43.2	38.8	55.4																					
7-May	46.8	50.0	53.6	57.2	58.5	59.0	56.8	52.0	45.1	40.2	34.6	31.6	31.4	30.7	33.2	37.2	36.2	37.0	37.0	37.0	48.1	38.4	39.0	39.1	42.9	59.0																					
8-May	37.3	39.8	42.4	45.1	47.8	50.3	48.2	46.0	41.7	39.3	36.3	35.2	34.2	32.8	41.3	38.0	33.3	32.4	37.1	58.6	77.9	77.4	82.5	87.6	47.6	87.6																					
9-May	90.6	90.1	92.6	93.1	93.9	95.6	96.4	96.3	94.1	90.1	83.6	73.1	59.0	47.4	40.1	37.3	34.7	36.4	49.2	59.5	64.5	74.5	79.3	82.1	73.1	96.4																					
10-May	84.3	85.7	87.6	91.9	94.7	93.1	86.1	77.0	65.7	54.0	41.6	35.1	31.1	32.9	32.1	31.9	30.6	29.7	29.6	28.8	33.0	33.5	35.9	40.3	53.6	94.7																					
11-May	62.4	63.6	73.9	80.5	83.9	82.3	70.5	54.9	44.8	38.9	30.7	24.5	22.0	22.5	21.8	21.1	20.7	21.4	22.5	25.0	33.3	42.5	57.1	65.9	45.3	83.9																					
12-May	73.7	79.8	80.9	77.1	79.9	67.2	44.2	38.9	34.7	29.2	20.9	16.9	16.9	16.8	17.3	17.5	17.3	18.1	19.2	20.9	23.2	28.7	34.7	39.8	38.1	80.9																					
13-May	47.2	59.8	59.0	62.8	62.7	62.2	55.6	48.0	43.2	37.9	34.0	33.9	30.2	25.9	23.6	23.0	23.5	21.2	23.5	25.9	27.9	30.8	32.5	33.9	38.7	62.8																					
14-May	35.8	37.5	40.0	41.7	45.6	48.2	48.8	47.7	43.4	41.4	36.9	31.5	28.2	24.5	24.0	23.0	22.8	23.2	26.1	29.7	31.8	33.2	35.7	39.3	35.0	48.8																					
15-May	43.4	44.8	46.6	52.5	64.6	61.1	49.7	43.9	40.9	38.8	35.4	31.4	27.2	25.4	22.6	18.7	19.5	21.5	24.4	28.0	32.7	36.6	39.4	43.0	37.2	64.6																					
16-May	46.4	49.9	55.5	57.9	61.2	52.6	53.3	54.2	53.7	52.3	51.9	48.8	46.3	42.1	39.0	36.9	36.6	34.7	34.8	44.7	51.2	55.8	64.0	70.4	49.8	70.4																					
17-May	72.3	76.4	76.2	73.5	69.4	74.4	81.3	79.0	76.6	71.2	64.8	58.5	55.9	51.0	45.8	43.1	41.4	40.7	41.1	42.2	47.7	51.8	56.0	60.8	60.5	81.3																					
18-May	63.7	70.9	79.7	85.6	89.9	80.7	69.7	63.7	54.5	47.6	42.4	36.9	32.7	28.4	25.6	23.6	22.6	22.1	22.0	23.2	30.5	37.0	38.8	44.3	47.3	89.9																					
19-May	47.6	52.3	55.3	56.5	62.0	62.2	57.6	55.8	54.6	54.2	52.0	46.8	43.5	41.7	41.8	42.0	43.1	46.2	55.4	62.5	67.6	56.6	52.1	53.3	52.6	67.6																					
20-May	57.8	62.1	66.3	73.2	75.7	77.1	76.8	72.7	68.0	62.5	56.7	51.9	49.3	45.3	40.8	37.0	36.8	38.6	44.1	45.7	49.5	53.2	58.3	62.7	56.8	77.1																					
21-May	65.3	66.2	67.1	67.2	66.3	65.1	62.5	62.2	58.7	55.9	52.3	47.7	45.3	41.8	39.6	38.4	38.3	39.4	42.4	46.2	52.5	69.7	71.6	62.8	55.2	71.6																					
22-May	68.8	77.3	78.8	83.2	82.7	81.7	77.1	73.5	71.7	68.1	63.1	61.8	62.1	56.9	50.7	45.5	41.6	41.0	40.6	40.2	38.4	38.1	40.8	45.1	59.5	83.2																					
23-May	47.8	50.8	53.5	53.4	56.7	59.7	61.3	62.9	60.4	55.3	63.0	71.1	77.5	79.7	74.0	70.2	68.5	68.3	70.1	71.9	75.1	77.9	79.1	80.4	66.2	80.4																					
24-May	81.4	80.3	78.8	78.8	77.0	76.7	77.2	77.3	75.6	72.9	70.9	66.2	61.6	58.6	59.6	60.1	66.0	68.5	70.8	73.5	76.6	77.9	81.5	82.7	72.9	82.7																					
25-May	83.1	86.8	92.2	95.4	96.9	96.2	91.0	81.5	67.5	61.7	55.4	51.0	44.5	43.4	46.6	44.4	43.0	43.5	45.9	50.9	56.0	59.5	64.1	75.6	65.7	96.9																					
26-May	75.6	77.1	79.1	81.3	83.5	82.0	73.8	68.3	61.7	53.2	45.5	40.4	36.4	34.2	32.7	30.8	29.8	29.2	31.9	32.6	39.1	43.8	52.6	69.0	53.5	83.5																					
27-May	60.0	60.6	64.6	66.0	67.8	62.0	56.0	49.6	42.7	30.2	26.1	23.7	21.8	21.4	21.8	22.3	23.5	24.1	24.7	26.3	31.8	38.1	45.5	51.7	40.1	67.8																					
28-May	55.4	58.4	62.9	67.5	71.5	71.8	67.6	56.8	47.2	40.3	32.4	21.1	17.9	17.9	17.1	18.5	21.3	22.7	24.7	28.7	32.8	37.9	46.3	54.9	41.4	71.8																					
29-May	71.1	67.7	64.7	66.1	66.2	64.9	59.0	49.8	39.9	34.9	28.2	27.9	26.6	28.4	30.1	30.7	26.7	22.6	23.2	23.4	27.1	33.0	37.0	41.1	41.3	71.1																					
30-May	50.9	68.3	74.2	81.1	77.1	79.2	68.1	59.9	47.5	37.5	24.9	19.7	18.6	17.9	18.3	20.1	25.5	28.0	32.4	35.6	40.7	48.9	47.7	50.8	44.7	81.1																					
31-May	48.9	68.2	74.2	75.7	73.8	74.1	71.0	65.1	50.8	45.5	40.2	33.0	30.3	30.2	31.3	31.3	31.4	32.9	36.8	41.1	44.6	64.5	54.9	63.8	50.6	75.7																					
																						56.4	60.2	62.9	65.2	67.1	66.3	62.0	57.4	51.3	46.3	41.2	37.5	35.1	33.0	31.9	31.1	30.8	30.9	33.3	36.8	42.3	46.2	49.8	54.2	Diurnal Average	
																						90.6	90.1	92.6	95.4	96.9	96.2	96.4	96.3	94.1	90.1	83.6	73.1	77.5	79.7	74.0	70.2	68.5	68.5	70.8	73.5	77.9	77.9	82.5	87.6	Diurnal Maximum	





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Patricia McInnes - May 2023

Maximum Speed: 35 km/h on May 29 15:00		Maximum Daily Speed Average: 19.4 km/h on May 23		Hours in Service: 744																						
Minimum Speed Value: 0 km/h on May 9 10:00		Minimum Daily Speed Average: 1.0 km/h on May 9		Hours of Data: 744																						
Maximum Diurnal Speed Average: 4.8 km/h at hour 19		Minimum Diurnal Speed Average: 2.4 km/h at hour 2		Hours of Missing Data: 0																						
Monthly Average Velocity: 3.7 km/h 152.1 deg		Percentiles: P ₁ = 1 P ₁₀ = 4 Q ₁ = 7 Median = 10 Q ₃ = 15 P ₉₀ = 20 P ₉₉ = 28		Percent Operational Time: 100.0																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SE12	SE13	SE11	SE12	SE15	SE14	SE15	SE14	ESE13	SE13	SE13	S17	S20	S20	S19	SSW18	SSW19	SW19	SSW14	SSW7	S3	S9	SW9	NW15	SSE10.5	S20
2-May	NNW20	NNW20	NNW10	NW9	NW10	NW9	W3	SSW6	E3	ENE7	NNW8	NNW11	NNW6	WNW11	NW10	NW12	NW12	NNW9	NNE7	ENE5	SW1	SW4	SW3	SW1	NW6.2	NNW20
3-May	S4	S5	SSE7	SE8	S7	S8	SSE8	S10	SSE10	SSW13	S21	S21	S21	S19	SSE20	S18	S19	S19	SSE16	SSE12	SSE10	SE9	SE7	SE7	S12.0	S21
4-May	ESE10	SE10	SE9	ESE10	ESE12	ESE9	SE7	SE11	ESE10	ESE9	E6	ESE9	E11	ESE12	NE8	NE6	E3	SE10	ESE14	ESE17	ESE12	E10	E8	ESE13	ESE9.3	ESE17
5-May	ESE13	ESE10	ESE14	ESE15	ESE15	ESE14	ESE16	ESE15	ESE15	SE12	SE17	SE23	SE23	ESE24	SE24	ESE26	ESE28	ESE26	ESE26	ESE20	ESE23	ESE20	ESE19	ESE20	ESE18.9	ESE28
6-May	SE19	ESE17	ESE17	SE17	SE15	ESE14	ESE16	ESE14	ESE14	ESE18	SE21	ESE21	ESE22	ESE19	ESE21	ESE22	ESE24	ESE23	ESE25	ESE23	SE16	SE11	SE10	SE10	ESE17.6	ESE25
7-May	SE11	ESE11	SE12	ESE14	ESE19	ESE19	ESE19	ESE17	ESE15	ESE18	SE23	SE23	ESE23	SE22	SSE23	SSE17	SSE13	SE9	ENE7	ENE5	NNW1	ESE13	ESE16	ESE17	SE14.7	SSE23
8-May	SE18	ESE16	ESE16	SE15	SE11	SE11	ESE11	ESE12	SE10	ESE13	SE14	SSE15	SE14	S11	SW14	SE7	ESE10	SE12	ESE14	WSW13	WNW11	WSW8	S4	S4	SE8.9	SE18
9-May	SSE5	SE4	NNW6	W3	SSE2	SE1	WSW3	ESE0	NNE3	NE0	ESE3	ENE4	NE4	ENE5	NE4	NE7	NE6	SE5	SW18	SW14	SSW6	WNW2	S2	SSW7	S1.0	SW18
10-May	SSW7	SSW6	SW6	SSW3	SSW4	SSW6	SW7	S7	S6	SSE5	SSE3	NE1	WNW10	W16	WNW20	WNW10	S7	S3	NW2	NNW6	NNW12	NE8	NNE7	E6	WSW2.8	WNW20
11-May	N2	NNE5	WNW3	NW3	NNW3	NW3	SSE2	SE5	ESE6	ESE7	ESE9	ESE8	E8	SSE6	SE6	SSE8	SSE6	S12	S9	S5	SW8	SSW4	SE2	SSW3	SSE3.1	S12
12-May	WSW5	SSW2	SSW2	SSE4	S4	SE5	SE8	SSE7	SE5	SSE4	SE13	SE18	SE18	SE16	SSE13	SSE14	SSE12	SSE10	SSE10	ESE9	SE12	ESE15	SE11	SE8	SE8.7	SE18
13-May	SE6	SSE6	S6	SSW6	SSW8	SSW6	S7	SSE7	S8	SW11	SW11	SW12	SW15	SSW14	SW15	SW14	SSW12	SSW14	S7	S7	SSW8	SSW9	SW11	SW11	SSW9.0	SW15
14-May	SW9	SW12	SW13	SW16	SW13	SW6	S3	SW9	SW18	WSW17	SW17	SW16	SSW14	SW16	SW18	SW17	SW18	SW17	SW12	SW9	SW10	WSW8	SW4	SW9	SSW12.4	SW18
15-May	SW8	SW6	SW7	W7	WSW3	SW5	SSW4	S6	SSW8	S7	SE7	SSE6	S8	SE9	SE12	S14	S15	S15	S14	S10	S7	SSW8	SSW9	WNW11	SSW7.0	S15
16-May	NW15	NW17	NNW14	N10	WNW9	NW18	NW20	NNW30	NNW28	NNW27	NW28	NW28	NW29	NW29	NW29	NW28	NW22	NW24	NNW23	N16	N11	N10	NNW8	NNW10	NW19.4	NNW30
17-May	NW8	WNW9	WNW9	NNW14	NNW20	N18	NNE18	NNE19	N22	N21	N20	NNE18	NNE20	NNE15	NNE12	NNE14	N13	NNE13	NNE12	NE10	E7	ESE9	ESE9	SE10	NNE11.4	N22
18-May	SSE9	SE4	SE3	SSW4	SSW4	SSW5	S7	S11	SSW9	SSW10	S9	SSE7	S8	S9	SSE10	S9	SSW9	SSW9	SSW9	SSW6	S4	SSW8	SSW10	SSW9	S7.0	S11
19-May	SW12	SSW10	SSW9	S8	SSE7	SSE6	S7	S8	S8	SSE8	S7	S9	SSW9	SW8	WSW8	W9	WNW8	NNW7	NW4	WNW5	WNW7	N13	N12	NNW13	SW3.2	N13
20-May	NNW12	NNW13	NNW11	NNW13	NNW13	NNW9	N10	N10	NNE8	NNE5	ENE6	ENE6	NE5	E6	ESE7	ESE10	ESE11	ESE13	ESE13	ESE13	SE13	ESE14	ESE14	SE11	ENE5.2	ESE14
21-May	ESE11	ESE13	ESE12	SE12	SE12	SE12	SE10	SE9	ESE10	SE10	SE7	SE7	SE7	ESE8	E7	ESE6	ESE8	ESE11	ESE10	ESE9	E5	NE3	E3	SE7	ESE8.4	ESE13
22-May	SE4	N6	N6	NNW6	NNW9	N11	N13	N15	N15	N17	N19	N20	N21	N22	NNE20	NNE16	NE18	NE20	ENE21	E21	ENE19	ENE21	ENE21	ENE23	NNE13.0	ENE23
23-May	E24	E21	E19	E23	E23	E20	E21	E20	E20	E21	ESE23	ESE21	ESE25	ESE20	ESE24	ESE22	ESE20	ESE16	SE22	SE19	SE17	SE15	SE14	SE14	ESE19.4	ESE25
24-May	SE13	SE15	ESE17	ESE15	ESE17	ESE19	ESE15	ESE11	SE14	SE9	ESE7	SE6	SW16	WSW17	WSW18	WSW18	W18	W16	W17	WSW14	WSW11	W11	W8	W7	SSW5.6	ESE19
25-May	W9	WNW8	W6	W6	WNW3	NW3	WNW4	NNW1	SE12	NE5	ENE6	NE6	NE9	NE11	NW6	NNE5	ENE10	ESE9	ESE9	SE11	SE8	SE7	SE6	SSE4	ENE1.8	SE11
26-May	SSE5	SE6	SE7	SE7	SE8	SE6	SE7	SSE6	SSE7	SSE7	SSE7	SSW7	SW3	E6	NE7	N6	W2	SSE3	SSW8	SSE6	SE7	SSE6	S5	SSW5	SSE4.4	SE8
27-May	S7	SSW7	SSW6	S6	S6	SSE8	S8	S9	S9	S19	S18	S19	S18	S17	S17	S15	S14	SSW14	S11	S6	SSE8	S7	S8	SSW8	S10.9	S19
28-May	SSW10	SSW10	SSW9	SSW7	SSW6	S6	S7	S9	SSW12	SW17	SW19	SW24	WSW27	WSW26	WSW26	W24	WSW24	WSW26	W24	W14	W12	W10	WNW9	W6	WSW13.7	WSW27
29-May	WSW4	SSW4	SW7	SW7	SSW8	S5	SW8	SW9	SW11	SW12	W17	W21	WSW26	W27	W35	WSW26	WSW22	WSW17	SW15	SSW10	SW6	WSW9	WSW11	WNW9	WSW12.8	W35
30-May	NNW6	WNW5	WNW5	N3	SSE4	SSW4	SSE5	S6	SSE7	SE6	SE7	S5	SSE9	SSW1	ENE5	NW4	NW13	NW17	NW11	N8	NNW3	WNW4	SSW6	WNW7	WNW1.5	NW17
31-May	SW3	NW5	WNW5	WSW3	SSE4	SW5	S4	SW0	NE0	E6	NE7	NE9	ENE7	SSE6	S10	SSE9	ESE9	ESE8	SSE8	S7	SE3	W5	SW9	W10	SSE2.2	W10
SE3.0 SE2.4 SSE2.7 SE3.1 SE3.7 SE3.6 SE4.3 SE4.3 SE4.1 SE4.2 SE4.5 SSE4.5 SSE4.6 S4.6 S4.6 S3.8 S4.2 S4.3 SSE4.8 SE4.3 SSE3.5 SE3.4 SSE3.7 SSE2.5																								Diurnal Average		
E24 E21 E19 E23 E23 E20 E21 NNW30 NNW28 NNW27 NW28 NW28 NW29 NW29 W35 NW28 ESE28 ESE26 ESE26 ESE23 ESE23 ENE21 ENE21 ENE23																								Diurnal Maximum		

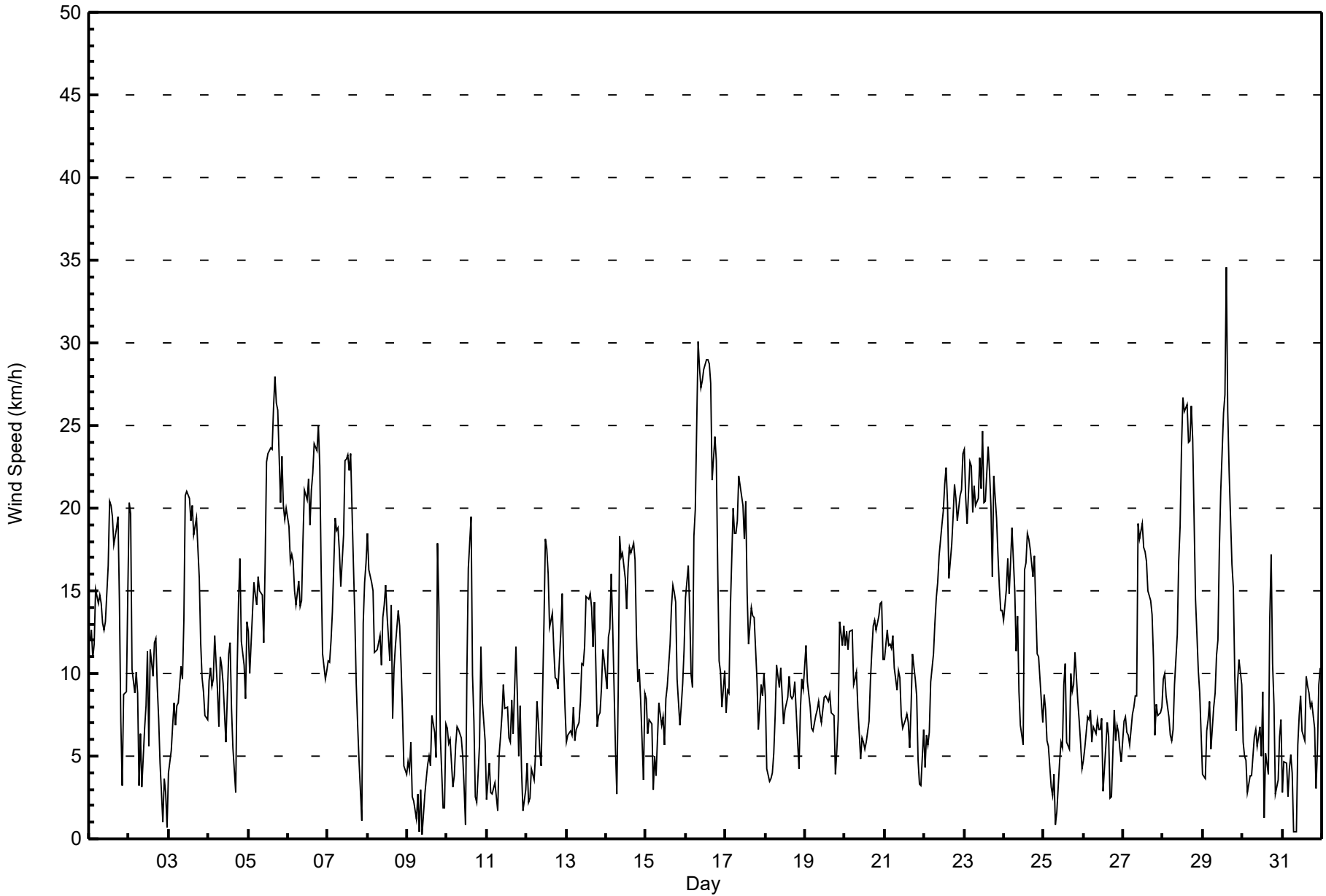
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Patricia McInnes - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 7 km/h on May 30 17:00														Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0											
Minimum Value: 1 km/h on May 19 20:00																									
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	2	2	2	2	3	3	3	3	3	3	4	5	5	5	5	5	5	4	3	3	2	1	2	5	5
2-May	4	4	3	1	2	2	2	1	2	2	5	5	5	4	5	5	4	4	3	1	1	1	1	1	5
3-May	2	1	3	1	1	1	1	2	2	5	5	5	6	6	5	4	5	5	4	3	2	1	2	2	6
4-May	1	2	3	2	3	4	2	3	2	3	2	4	3	4	4	3	4	2	6	4	3	3	2	3	6
5-May	3	2	4	4	3	3	4	3	3	4	5	5	6	6	6	6	7	6	6	5	6	5	4	4	7
6-May	4	4	3	3	3	3	4	3	3	5	5	5	6	6	6	5	6	6	6	5	4	3	2	2	6
7-May	2	2	2	3	4	4	4	4	4	4	6	6	6	6	6	5	4	3	2	1	2	3	3	3	6
8-May	4	3	3	4	3	3	3	3	3	3	4	4	4	3	6	3	3	4	4	5	5	2	2	1	6
9-May	1	3	2	2	2	2	2	2	2	1	1	1	2	2	2	3	3	4	4	4	1	1	2	2	4
10-May	2	1	1	1	1	2	2	1	2	2	2	2	7	5	5	4	3	2	2	2	3	2	2	2	7
11-May	1	3	1	1	1	1	2	2	2	2	3	4	3	4	4	3	3	3	3	1	1	2	1	2	4
12-May	1	1	1	1	1	2	2	2	2	2	6	4	5	5	5	4	4	3	3	3	3	3	2	2	6
13-May	1	1	1	1	1	1	1	2	2	2	3	2	3	3	4	4	3	4	2	1	1	2	2	1	4
14-May	2	2	2	3	2	3	2	6	4	4	3	3	3	4	4	4	4	4	2	1	1	3	2	1	6
15-May	1	2	2	4	1	1	1	2	2	2	2	3	4	4	5	4	4	4	4	3	1	2	2	4	5
16-May	3	3	4	2	4	5	6	6	6	6	6	7	6	7	6	6	7	5	6	6	3	2	2	2	7
17-May	1	1	1	6	5	4	5	4	5	5	4	4	4	6	4	5	4	4	3	2	1	3	2	2	6
18-May	2	2	2	1	1	2	2	2	3	3	3	4	4	4	4	4	3	4	3	3	1	2	2	2	4
19-May	2	2	2	1	1	1	1	2	2	2	2	2	3	2	2	2	2	2	1	1	1	2	3	3	3
20-May	2	2	2	2	2	2	2	2	2	2	3	2	3	3	3	3	3	3	3	3	3	3	4	2	4
21-May	3	3	2	2	3	3	3	2	3	2	2	2	2	3	2	2	2	2	2	2	2	1	1	1	3
22-May	2	2	3	3	2	2	3	3	3	3	5	5	5	5	4	4	4	5	5	5	5	6	6	5	6
23-May	6	6	5	6	6	5	6	5	5	6	6	7	5	6	6	5	5	5	6	6	5	4	4	4	7
24-May	4	4	4	4	4	5	4	3	3	3	1	2	5	3	4	4	4	4	4	3	2	2	2	1	5
25-May	2	2	1	1	2	1	1	1	1	3	3	3	4	4	2	2	3	3	2	3	2	1	1	2	4
26-May	1	1	1	1	2	1	2	2	2	2	3	3	3	4	3	2	2	3	3	2	1	1	2	1	4
27-May	1	2	1	1	1	2	2	2	3	5	5	5	5	6	5	4	4	4	4	2	2	2	2	2	6
28-May	2	2	2	1	1	1	2	3	3	4	4	5	6	6	7	6	6	5	6	5	4	4	1	2	7
29-May	1	2	2	3	2	1	3	2	3	4	6	5	7	7	7	6	6	4	3	3	1	1	1	2	7
30-May	2	1	2	1	1	1	1	1	2	2	3	4	3	3	3	2	7	5	2	2	2	3	2	3	7
31-May	2	1	1	1	2	1	1	1	1	2	3	3	3	3	2	2	2	2	3	2	1	2	3	5	5
														Diurnal Maximum											





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed (WS) - km/h
Patricia McInnes - May 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	118	15.86	15.86
6 - 11	324	43.55	59.41
12 - 19	208	27.96	87.37
20 - 28	89	11.96	99.33
29 - 38	5	0.67	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Patricia McInnes - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	2	4	8	5	4	3	10	15	14	14	10	5	4	9	7	4	118
6 - 11	10	3	12	7	11	35	49	32	47	40	25	6	11	13	8	15	324
12 - 19	10	9	1	1	1	57	35	9	18	10	27	7	7	0	8	8	208
20 - 28	6	2	1	4	9	26	8	2	4	1	1	8	4	1	6	6	89
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	1	5
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	28	18	22	17	25	121	102	58	83	65	63	26	27	23	32	34	744

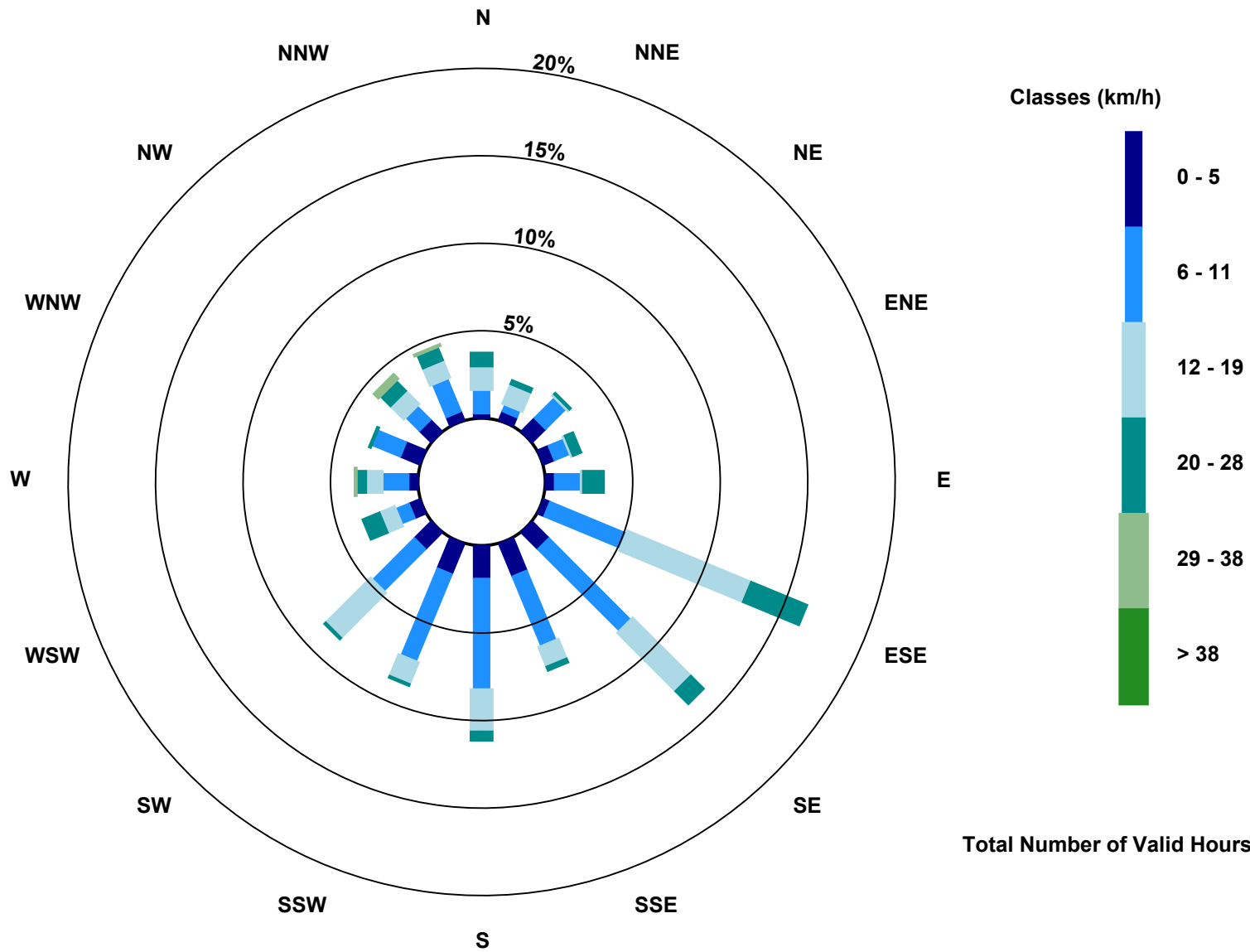
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Patricia McInnes





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Patricia McInnes - May 2023

Direction of Maximum Speed: 266 deg on May 29 15:00		Hours in Service:	744
Direction of Maximum Daily Speed Average: 108.2 deg on May 23		Hours of Data:	744
Direction of Minimum Speed: 40 deg on May 9 10:00		Hours of Missing Data:	0
Direction of Minimum Daily Speed Average: 1.0 deg on May 9		Percent Operational Time:	100.0
Monthly Average Direction: 152.1 deg			

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	127	128	138	133	130	129	126	125	119	124	129	174	182	191	186	195	203	215	206	194	169	181	226	308	166.1
2-May	337	336	337	308	318	324	279	199	88	66	345	332	333	282	309	307	315	331	25	67	234	234	217	231	325.1
3-May	178	172	152	146	177	177	159	178	164	198	190	187	180	178	164	179	188	176	166	163	150	141	142	132	172.5
4-May	123	124	130	123	117	117	137	124	119	123	80	104	92	120	55	45	95	126	102	108	114	92	99	113	110.4
5-May	110	114	121	113	121	123	122	123	108	128	128	132	124	120	128	114	106	105	112	109	115	117	121	120	117.7
6-May	125	123	121	124	124	119	118	116	103	119	124	107	104	106	111	105	103	111	122	117	136	129	126	127	116.4
7-May	125	122	124	117	118	120	117	115	109	115	133	128	121	126	150	158	154	126	77	78	338	113	121	121	124.2
8-May	128	123	122	129	125	125	122	121	125	108	131	147	144	171	222	134	116	142	122	256	290	248	178	182	140.3
9-May	150	130	328	279	155	132	238	103	28	40	119	61	54	73	45	42	40	124	224	227	213	296	174	201	176.0
10-May	209	209	228	205	211	212	216	189	177	166	163	43	283	259	286	290	175	178	321	339	346	40	32	83	251.3
11-May	10	18	296	315	328	310	153	134	115	118	115	102	89	155	144	153	155	175	178	182	231	205	139	193	147.8
12-May	250	212	193	158	186	129	139	160	141	148	132	132	126	129	149	158	163	166	152	123	124	123	131	127	141.5
13-May	143	164	177	202	197	193	170	165	189	217	214	233	223	213	214	219	205	210	191	189	198	210	223	221	204.9
14-May	226	232	228	229	227	226	188	219	225	238	232	218	204	223	224	224	228	224	221	224	224	247	230	222	225.3
15-May	229	216	233	271	250	221	210	180	208	171	136	153	172	126	139	186	176	189	188	186	183	197	205	288	191.4
16-May	324	315	329	356	302	309	318	329	327	327	319	307	306	309	310	314	311	321	338	8	355	356	338	327	322.1
17-May	316	289	315	336	345	11	25	17	8	1	7	17	22	30	26	20	9	23	24	54	95	109	118	135	15.4
18-May	147	143	146	197	199	206	181	190	208	212	169	154	171	185	166	183	199	206	205	205	186	198	211	204	188.4
19-May	216	205	199	186	165	161	170	175	172	158	177	177	198	226	255	265	287	348	322	300	302	352	357	347	226.8
20-May	347	344	345	343	345	346	352	6	18	26	61	67	52	85	115	117	113	104	114	118	124	118	123	124	64.4
21-May	116	122	121	124	127	130	128	132	122	128	129	136	129	110	101	111	105	106	114	115	98	38	98	136	119.4
22-May	127	10	355	338	341	353	353	358	1	356	355	359	3	6	15	28	50	54	71	86	70	71	73	76	30.7
23-May	83	83	82	95	98	97	97	100	101	102	112	109	109	112	116	114	116	120	126	125	141	132	129	126	108.2
24-May	124	125	123	121	120	120	117	122	125	124	108	134	232	242	244	239	260	262	263	258	257	264	265	277	191.7
25-May	279	300	271	266	300	310	289	348	120	49	61	44	43	49	324	20	72	116	121	126	137	131	139	152	74.4
26-May	150	136	128	131	137	137	140	152	147	166	156	199	218	80	50	8	267	156	206	163	143	155	171	199	149.6
27-May	184	194	195	188	172	161	173	175	174	185	176	191	175	169	176	184	184	195	187	185	162	176	187	202	181.3
28-May	211	210	204	197	192	187	169	185	198	223	231	235	242	239	239	266	237	250	261	262	274	266	296	260	237.9
29-May	244	207	226	233	208	186	236	230	222	219	261	260	244	260	266	253	243	244	230	212	217	239	248	292	244.4
30-May	337	302	295	4	158	202	159	169	154	145	134	184	150	209	75	309	318	313	320	350	333	297	213	286	283.3
31-May	215	306	283	258	163	226	172	225	42	92	50	52	77	161	174	159	116	109	156	173	132	275	234	272	163.2

142.6 141.4 147.8 140.7 137.2 131.2 130.0 135.0 131.3 141.3 142.8 154.3 160.6 174.5 189.2 187.8 172.5 168.9 158.4 145.8 149.0 142.5 152.1 156.8
 Diurnal Average

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

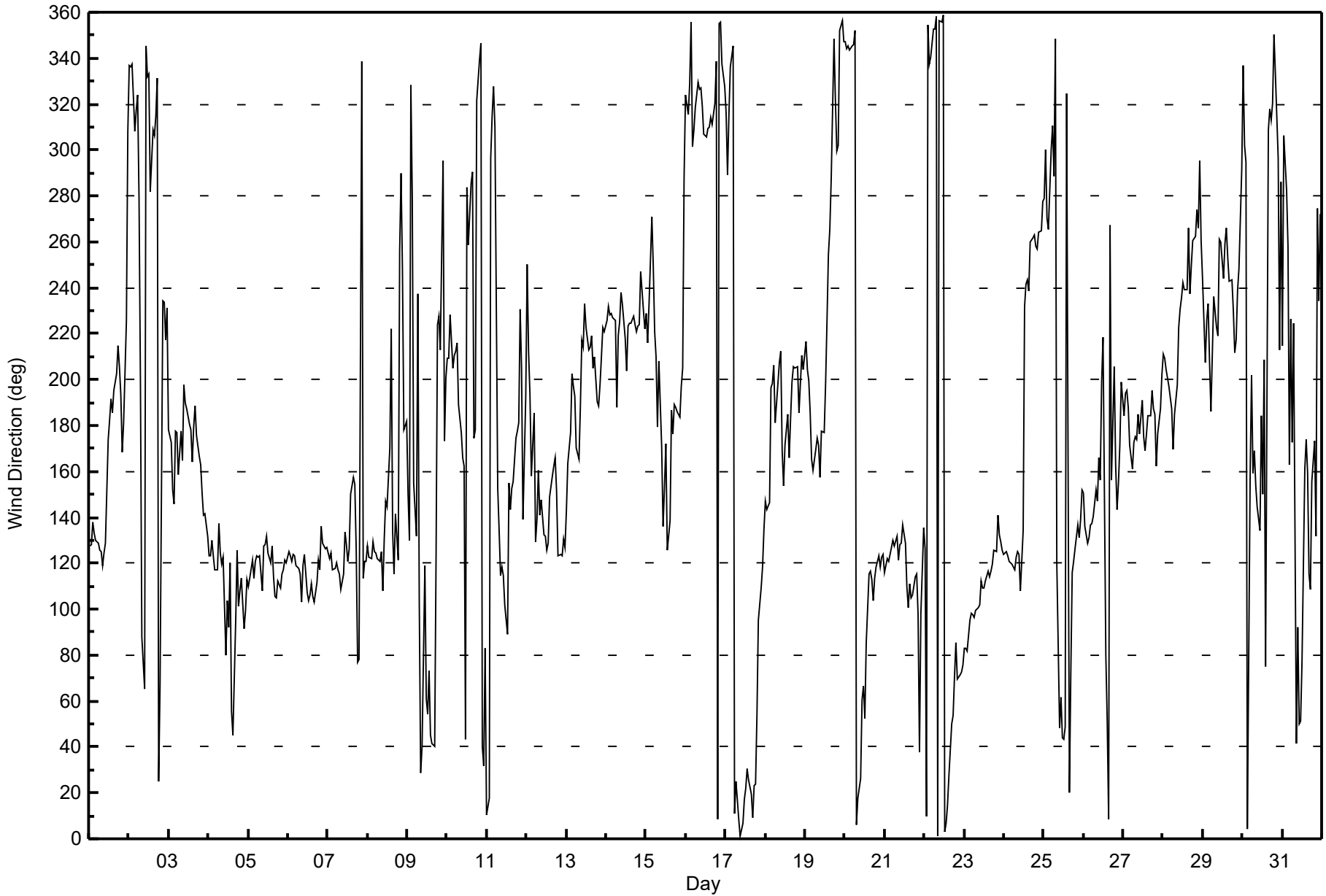
Wind Direction (WD) - deg
Patricia McInnes - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0															Hours in Service: 744										
Maximum Value: 106 deg on May 10 12:00															Hours of Data: 744										
Minimum Value: 7 deg on May 29 22:00															Hours of Missing Data: 0										
Percentiles: P ₁ = 9 P ₁₀ = 12 Q ₁ = 14 Median = 18 Q ₃ = 28 P ₉₀ = 46 P ₉₉ = 91															Hours of Calibration: 0										
															Percent Operational Time: 100.0										
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	11	11	11	9	11	12	13	14	15	17	25	36	17	20	20	19	22	13	15	18	38	14	29	22	38
2-May	10	10	17	13	14	12	48	23	72	36	71	53	79	40	52	36	33	32	33	30	62	21	27	86	86
3-May	26	7	16	10	8	11	11	15	27	34	17	16	21	19	18	17	14	16	13	9	9	20	17	34	
4-May	11	10	15	13	14	19	17	14	17	24	33	27	26	27	41	55	92	18	28	13	14	17	17	12	92
5-May	14	14	13	11	13	12	13	14	14	31	20	20	20	18	19	19	14	13	14	13	12	13	13	13	31
6-May	14	12	12	12	13	13	14	14	15	18	18	17	15	21	20	19	15	18	16	13	17	14	14	9	21
7-May	10	11	11	10	10	11	12	12	17	18	18	20	18	20	16	17	19	28	12	28	79	12	12	12	79
8-May	13	13	13	14	14	15	14	17	19	21	22	17	18	32	18	18	21	26	19	47	32	46	45	30	47
9-May	26	80	27	77	41	101	61	93	57	89	36	39	41	49	68	39	40	45	15	12	17	72	62	13	101
10-May	14	15	20	25	25	15	21	17	23	41	79	106	62	22	21	43	44	77	78	34	17	16	18	21	106
11-May	53	42	29	41	31	25	93	27	33	29	28	48	45	55	72	36	63	19	14	14	14	42	67	55	93
12-May	15	23	46	30	29	25	14	28	26	43	24	20	21	28	31	29	28	29	21	16	12	11	13	11	46
13-May	14	8	10	11	13	13	15	19	18	17	16	12	17	16	18	17	17	15	15	11	14	13	9	10	19
14-May	9	9	9	10	9	73	61	25	12	13	15	17	19	19	19	17	14	12	10	10	9	49	69	10	73
15-May	15	10	39	30	23	23	17	23	20	36	31	59	42	41	32	27	23	18	17	14	13	15	14	43	59
16-May	12	12	15	18	18	12	14	15	13	13	14	13	14	14	15	14	13	12	25	16	16	15	21	8	25
17-May	17	9	16	15	15	16	13	14	18	18	18	16	20	26	32	28	24	20	22	25	13	13	12	16	32
18-May	14	46	53	13	20	21	16	19	31	30	35	58	45	42	36	35	37	31	24	19	13	15	14	15	58
19-May	12	14	16	16	9	11	13	17	16	19	22	20	24	30	21	14	23	22	12	9	16	16	15	14	30
20-May	13	14	14	11	12	16	17	15	21	48	41	43	55	46	44	24	19	14	13	13	13	12	13	13	55
21-May	13	13	12	12	13	13	14	15	14	17	21	30	30	29	29	36	19	16	13	12	26	43	41	24	43
22-May	46	37	30	19	13	15	15	16	15	17	17	18	17	16	13	19	15	15	14	14	15	15	14	14	46
23-May	14	13	13	15	14	14	14	14	15	13	15	15	15	14	14	14	14	17	16	16	18	16	17	16	18
24-May	15	14	12	13	13	14	15	16	15	19	23	53	20	17	14	16	14	14	13	11	11	11	11	13	53
25-May	15	8	20	10	79	35	19	91	81	74	51	58	43	30	39	51	26	24	19	14	12	12	17	24	91
26-May	22	9	12	11	11	13	14	23	31	31	49	44	86	72	39	45	87	83	32	28	10	12	30	15	87
27-May	14	16	15	13	12	14	14	16	22	18	23	21	27	24	22	22	21	21	19	20	13	18	21	23	27
28-May	17	14	16	15	18	18	18	22	21	20	18	17	16	19	20	19	20	16	14	15	14	28	10	15	28
29-May	25	57	19	25	14	24	24	24	22	30	28	22	21	19	14	16	15	18	13	18	13	7	7	19	57
30-May	28	21	19	46	41	23	20	19	23	47	43	70	37	96	63	58	18	16	12	17	73	43	31	36	96
31-May	70	13	37	65	38	17	26	97	97	41	39	37	60	61	23	22	25	16	25	21	33	18	31	30	97
															70 80 53 77 79 101 93 97 97 89 79 106 86 96 72 58 92 83 78 47 79 72 69 86										
															Diurnal Maximum										



Wood Buffalo Environmental Association
Hourly Averages

Wind Direction (WD) - deg
Patricia McInnes - May 2023





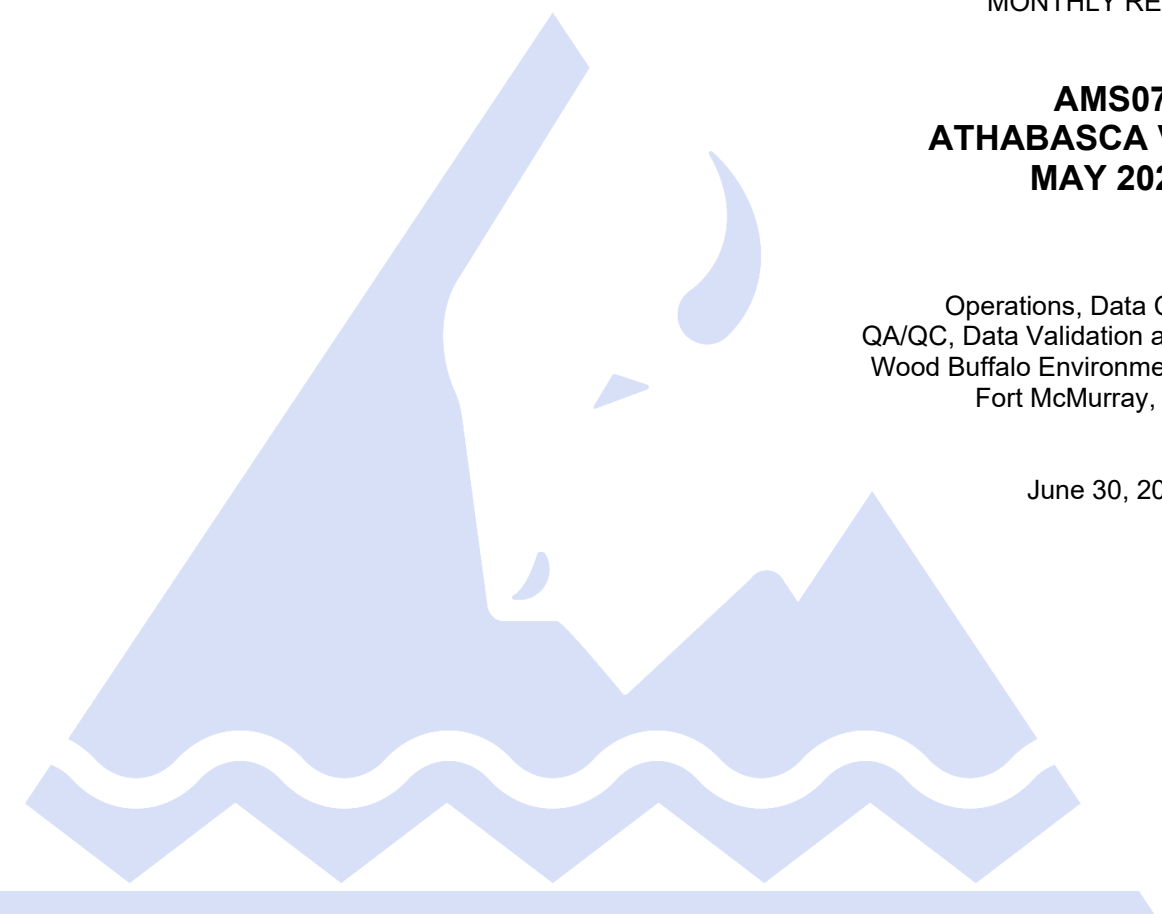
WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS07 ATHABASCA VALLEY MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ATHABASCA VALLEY (AMS07)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	709	35	35	100	9.6	0	1.6	0
TRS (ppb) Average	707	37	37	100	1.1	0	0.5	0
THC (ppm) Average	707	35	37	99.73	2.5	-	2.2	-
NMHC (ppm) Average	707	35	37	99.73	0.45	-	0.127	-
CH4(ppm) Average	707	35	37	99.73	2.3	-	2.1	-
O3 (ppb) Average	709	35	35	100	69.1	0	50.3	-
NO2 (ppb) Average	708	36	36	100	21.8	0	8.8	-
NO (ppb) Average	708	36	36	100	10	-	1.3	-
NOX (ppb) Average	708	36	36	100	23.1	-	9.5	-
PM2.5 (ug/m3) Average	739	0	5	99.33	616.2	107	331.7	17
CO(ppm) Average	710	34	34	100	2.9	0	1.4	-
Temperature 2 m (C) Average	744	0	0	100	32.6	-	23.9	-
Relative Humidity (%) Average	744	0	0	100	95.3	-	73.9	-
Barometric Pressure (inHg) Average	744	0	0	100	29.4	-	29.4	-
Wind Speed 10 m (km/h) Average	744	0	0	100	37	-	22	-
Wind Direction 10 m (deg) Average	744	0	0	100	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ATHABASCA VALLEY (AMS07)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
THC/NMHC/CH4	08 May 2023 07:00	08 May 2023 08:00	2	Maintenance - replaced support gas cylinder
PM2.5	22 May 2023 15:00	22 May 2023 15:00	1	Unstable Operation - flatline in analyzer output signal
PM2.5	23 May 2023 05:00	23 May 2023 08:00	4	Analyzer Failure - inconsistent response



Wood Buffalo Environmental Association
Summary of Hour Averages

Sulphur Dioxide (SO₂) - ppb
Athabasca Valley - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 9.6 ppb on May 10 13:00	Maximum Daily Average: 1.6 ppb on May 2		Hours of Data:	709
Minimum Value: 0.0 ppb on May 5 19:00	Minimum Daily Average: 0.1 ppb on May 29		Hours of Missing Data:	35
Maximum Diurnal Average: 1.0 ppb at hour 13	Minimum Diurnal Average: 0.2 ppb at hour 23		Hours of Calibration:	35
Monthly Average: 0.37 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.3 P ₉₀ = 0.7 P ₉₉ = 4.8		Percent Operational Time:	100.0

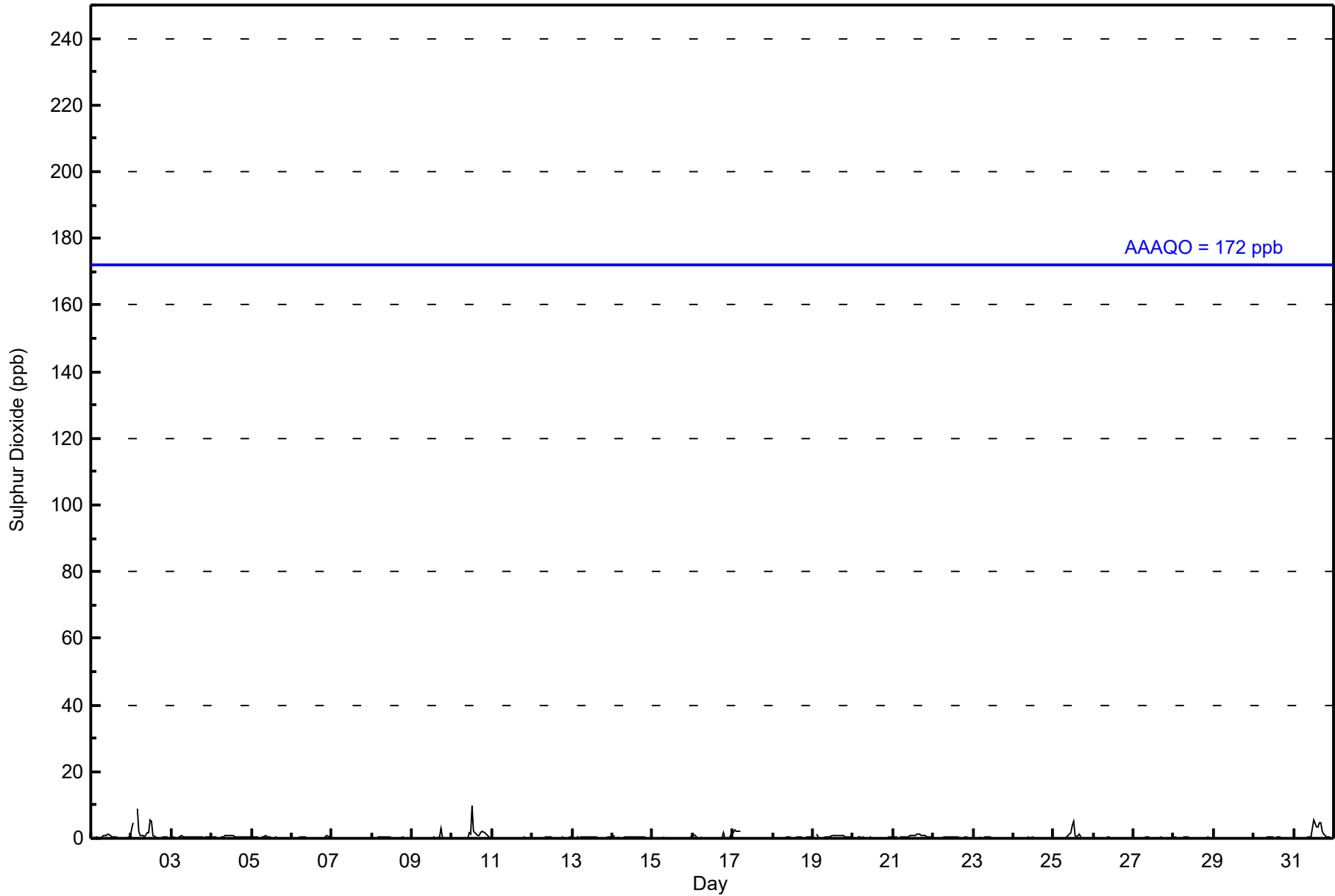
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	0.1	Z	0.2	0.2	0.2	0.2	0.3	0.7	0.9	1.0	1.1	0.7	0.5	0.5	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	1.1																						
2-May	2.9	4.8	Z	8.8	2.1	1.0	0.7	0.8	0.4	1.8	1.5	5.3	5.0	1.0	0.3	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	1.6	8.8																						
3-May	0.2	0.2	0.2	Z	0.3	0.4	0.7	0.6	0.5	0.5	0.5	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.7																						
4-May	0.3	0.3	0.3	0.2	Z	0.3	0.3	0.4	0.7	0.8	0.7	0.7	0.8	0.6	0.5	0.5	0.5	0.3	0.5	0.4	0.3	0.3	0.2	0.2	0.5	0.8																						
5-May	0.4	0.4	0.3	0.2	0.2	Z	0.3	0.5	0.7	0.6	0.5	0.2	0.1	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7																						
6-May	Z	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	0.6	0.3	0.2	0.7																						
7-May	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.2																						
8-May	0.2	0.2	Z	0.3	0.2	0.3	0.3	0.4	0.6	0.5	0.4	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.6																						
9-May	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.4	0.2	0.1	0.2	3.2	0.4	0.1	0.1	0.1	0.0	0.0	0.2	3.2																						
10-May	0.0	0.0	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.1	1.5	1.1	9.6	2.3	1.4	0.8	0.9	1.8	2.2	1.8	1.2	0.8	0.4	0.1	1.1	9.6																						
11-May	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2																						
12-May	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.3	0.4	0.2	0.5																						
13-May	0.3	Z	0.4	0.3	0.2	0.3	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.5	0.5	0.3	0.5																						
14-May	0.5	0.7	Z	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.3	0.7																						
15-May	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.3	C	C	C	C	0.1	0.1	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.2	0.1	0.3	0.1	0.3																						
16-May	1.1	0.7	0.4	0.1	Z	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	1.7	0.0	0.0	0.0	0.0	1.6	0.3	1.7																							
17-May	1.7	2.4	1.9	2.3	1.9	Z	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.5	2.4																						
18-May	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.2	0.1	0.1	0.1	0.4	0.5	0.4	0.3	0.2	0.2	0.2	0.3	0.4	0.3	0.2	0.5																						
19-May	0.4	Z	1.2	0.3	0.1	0.1	0.2	0.3	0.3	0.3	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.6	0.3	0.2	0.3	0.2	0.5	1.2																						
20-May	0.2	0.2	Z	0.4	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.2	0.4																						
21-May	0.4	0.3	0.3	Z	0.3	0.3	0.5	0.4	0.5	0.6	0.7	0.8	0.8	1.0	1.2	1.2	1.2	1.0	0.7	0.7	0.6	0.3	0.3	0.3	0.6	1.2																						
22-May	0.2	0.1	0.2	0.1	Z	0.2	0.3	0.4	0.3	0.3	0.4	0.4	0.3	0.3	0.4	0.2	0.2	0.1	0.1	0.4	0.3	0.1	0.0	0.1	0.2	0.4																						
23-May	0.1	0.1	0.1	0.1	0.2	Z	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3																						
24-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2																						
25-May	0.1	Z	0.1	0.1	0.0	0.1	0.1	0.1	0.3	1.1	1.7	4.0	5.0	0.9	0.5	1.2	0.4	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.7	5.0																						
26-May	0.0	0.0	Z	0.1	0.0	0.0	0.1	0.1	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.3																						
27-May	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.3	0.5	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.5																						
28-May	0.2	0.2	0.2	0.2	Z	0.2	0.3	0.4	0.3	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.4																						
29-May	0.1	0.0	0.0	0.0	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1																						
30-May	Z	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.5	0.3	0.2	0.2	0.3	0.3	0.1	0.0	0.1	0.2	0.1	0.1	0.2	0.1	0.2	0.5																						
31-May	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	3.0	5.4	3.5	3.5	4.8	4.9	2.2	1.2	0.6	0.4	0.2	0.2	0.1	1.4	5.4																						
																								0.4	0.5	0.2	0.6	0.3	0.2	0.2	0.3	0.3	0.4	0.4	0.7	1.0	0.5	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	Diurnal Average
																								2.9	4.8	1.9	8.8	2.1	1.0	0.7	0.8	0.9	1.8	1.7	5.3	9.6	3.5	3.5	4.8	4.9	3.2	2.2	1.8	1.2	0.8	0.6	1.6	Diurnal Maximum

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Athabasca Valley - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	709	100.00	100.00
11 - 20	0	0.00	100.00
21 - 60	0	0.00	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Athabasca Valley - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	24	7	6	16	29	74	197	61	50	37	48	34	24	18	37	47	709
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	7	6	16	29	74	197	61	50	37	48	34	24	18	37	47	709

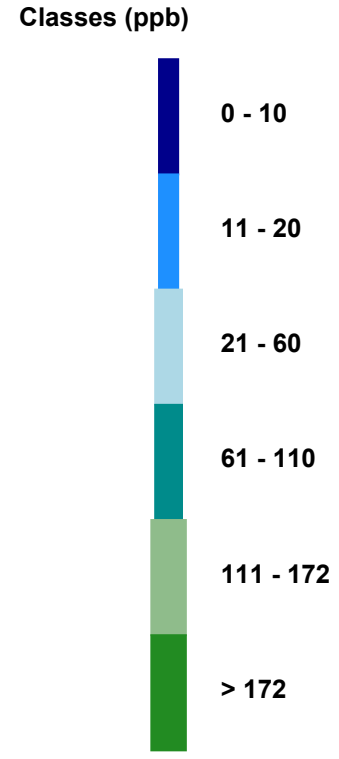
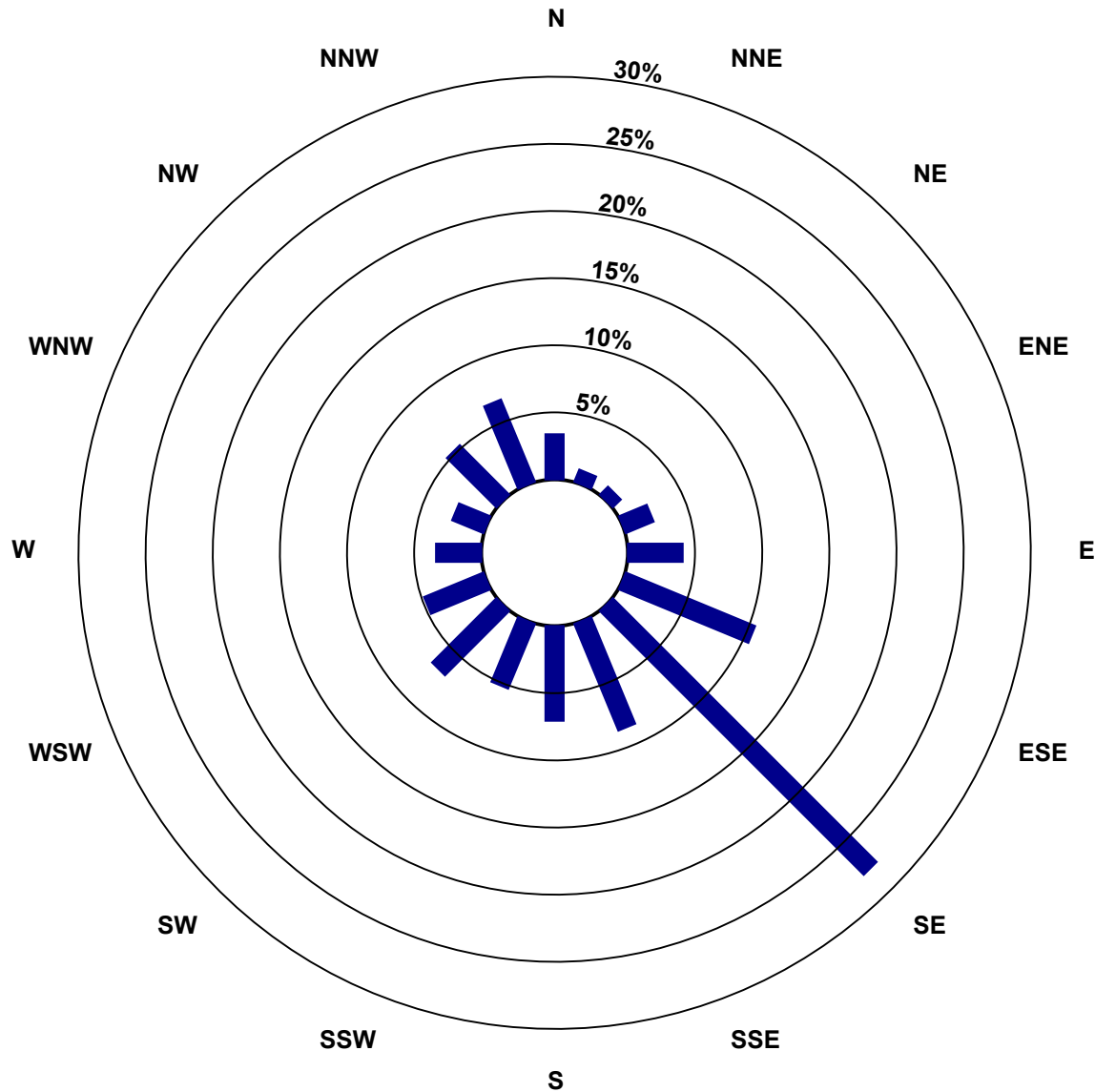
Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Athabasca Valley

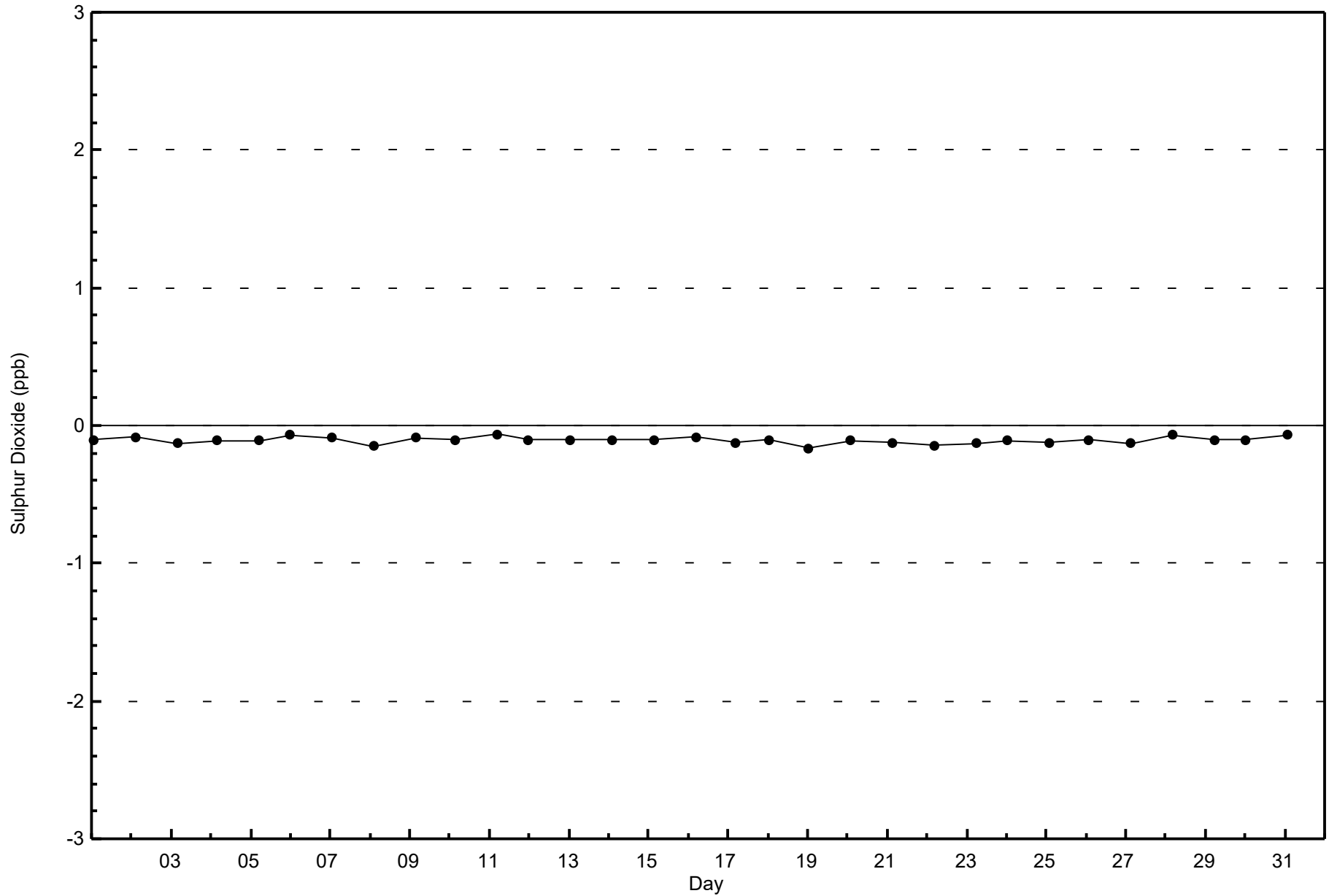


Total Number of Valid Hours: 709



Wood Buffalo Environmental Association
Zero Responses

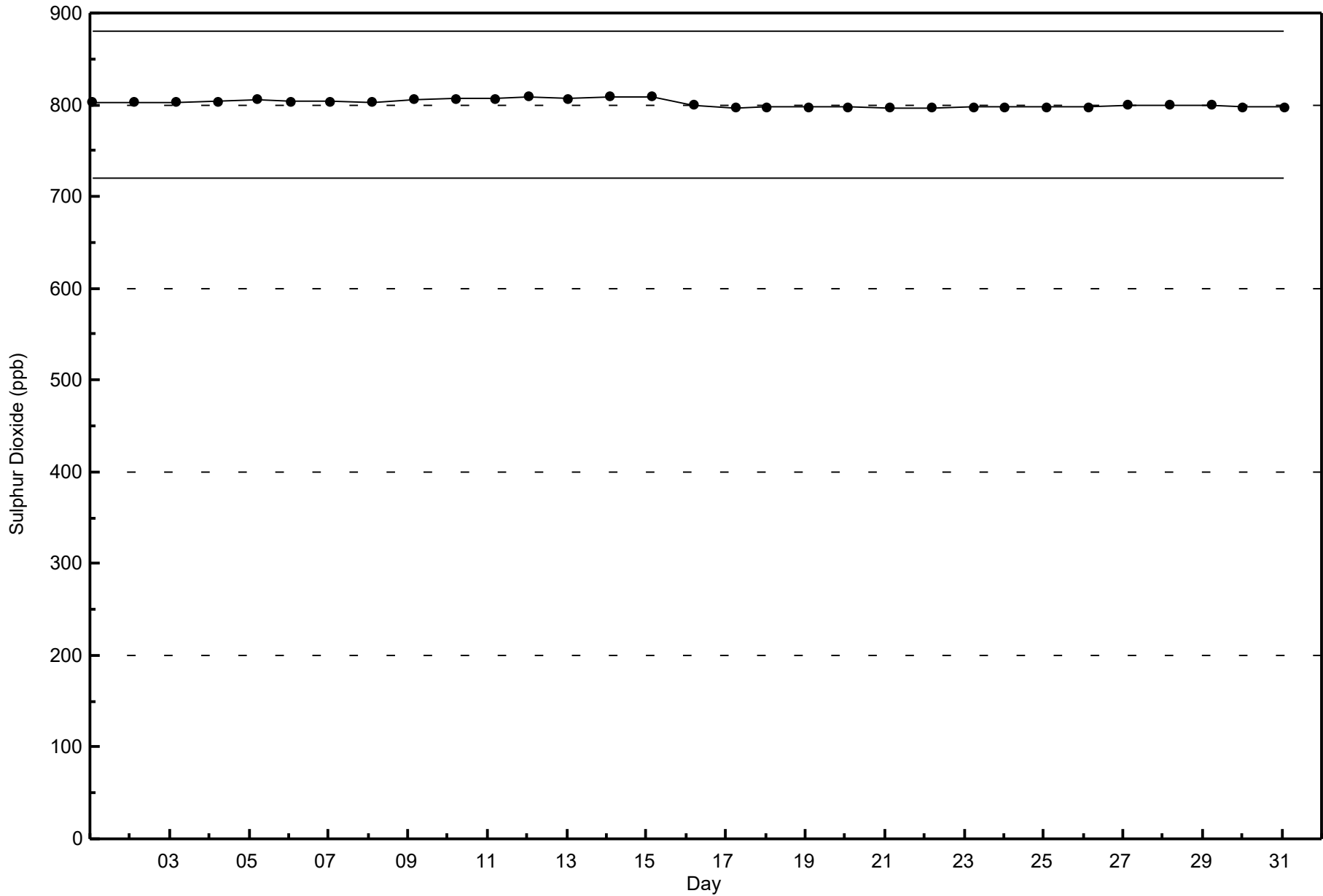
Sulphur Dioxide (SO₂) - ppb
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Span Responses

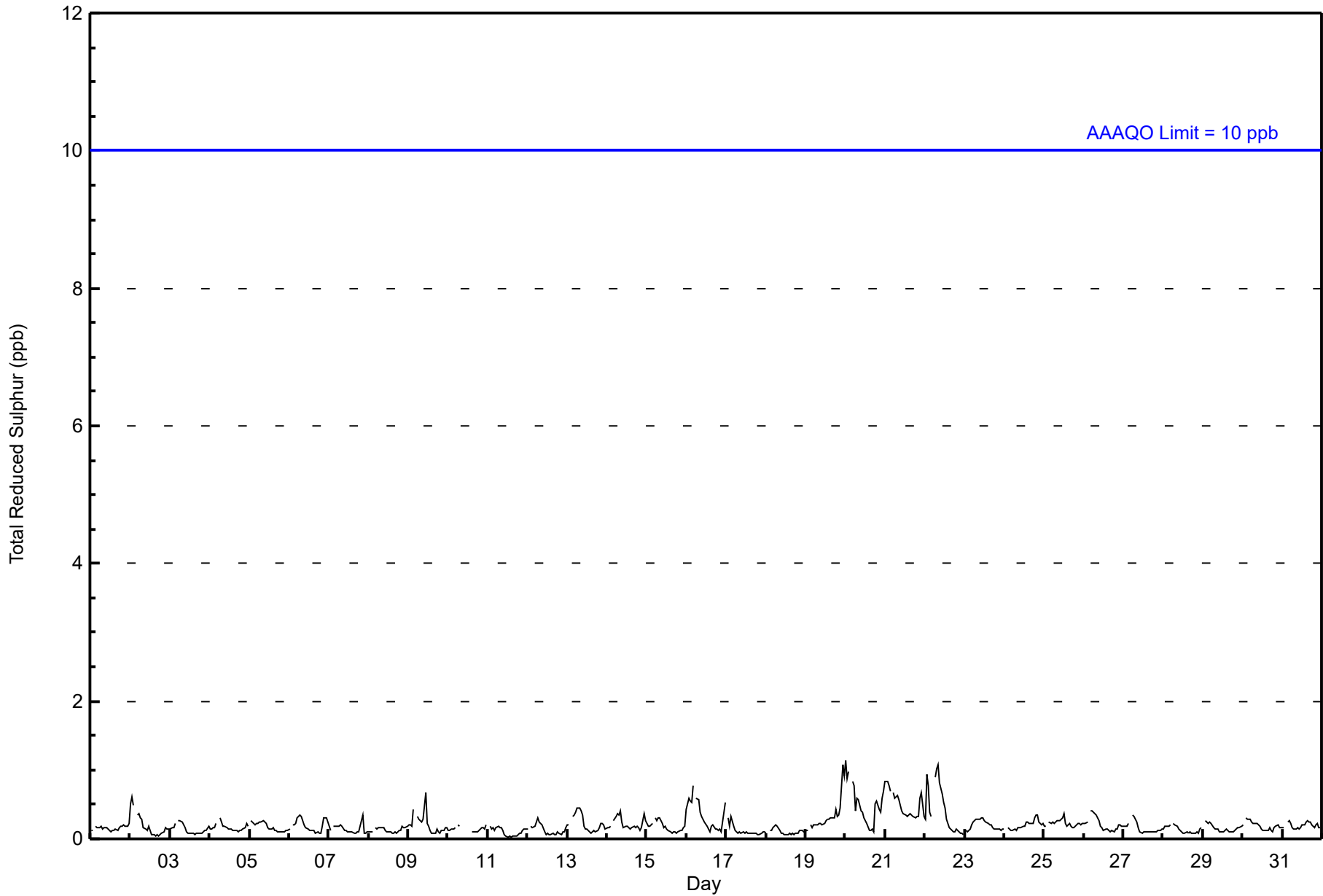
Sulphur Dioxide (SO₂) - ppb
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Hourly Averages

Total Reduced Sulphur (TRS) - ppb
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Athabasca Valley - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	707	100.00	100.00
3 - 4	0	0.00	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Athabasca Valley - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	24	8	6	15	30	76	197	63	48	35	48	35	23	18	33	48	707
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	8	6	15	30	76	197	63	48	35	48	35	23	18	33	48	707

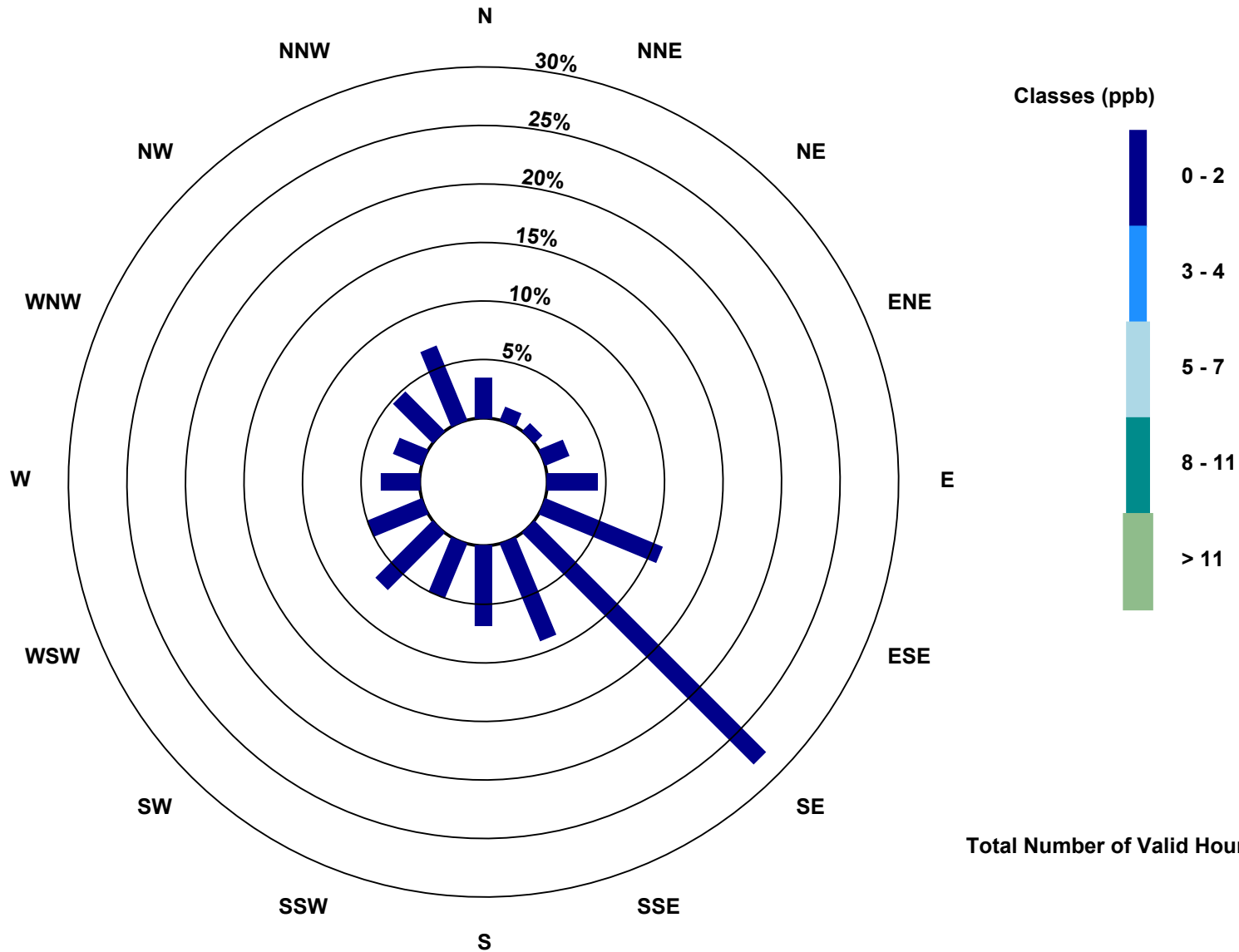
Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Total Reduced Sulphur (TRS) - ppb
Athabasca Valley

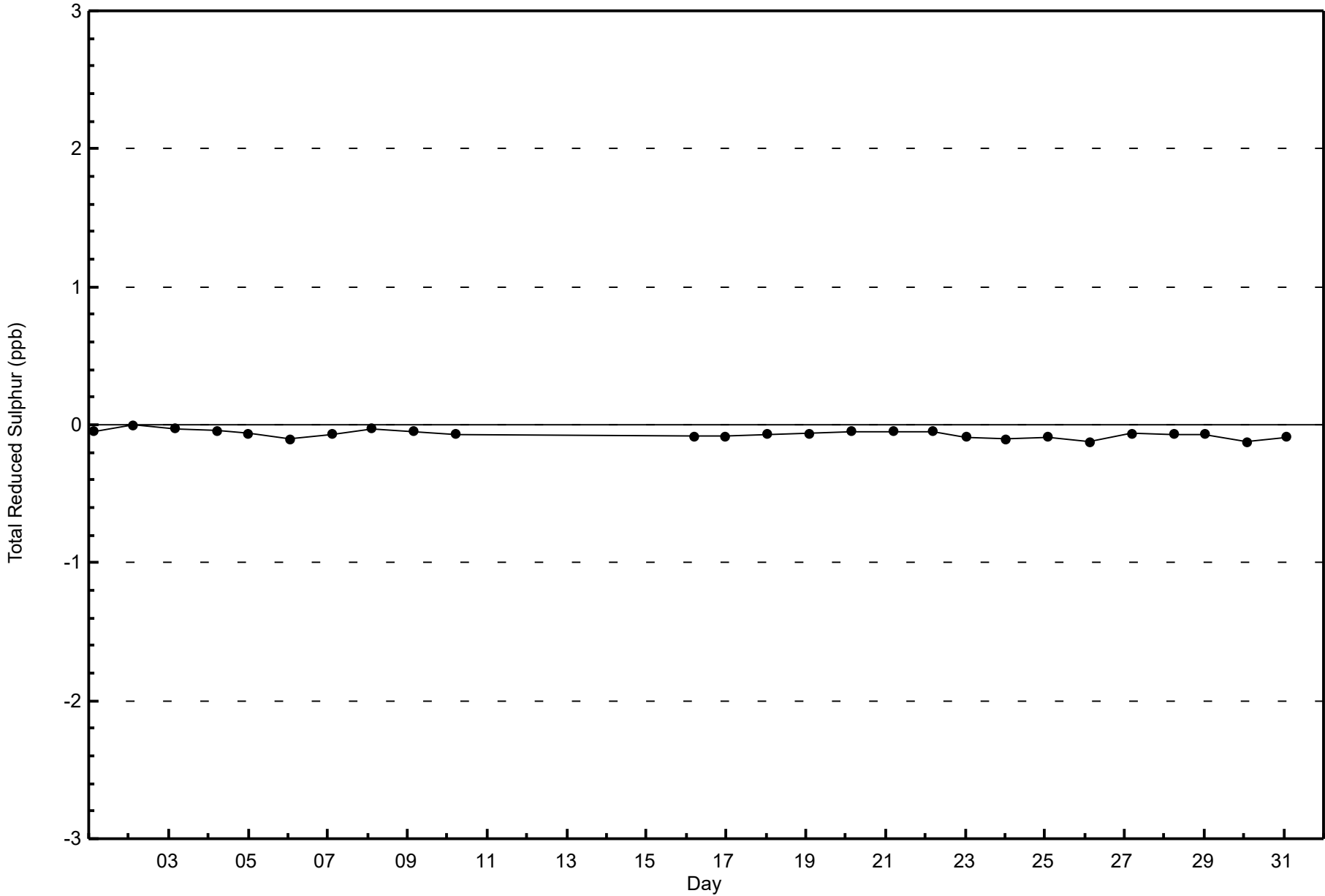


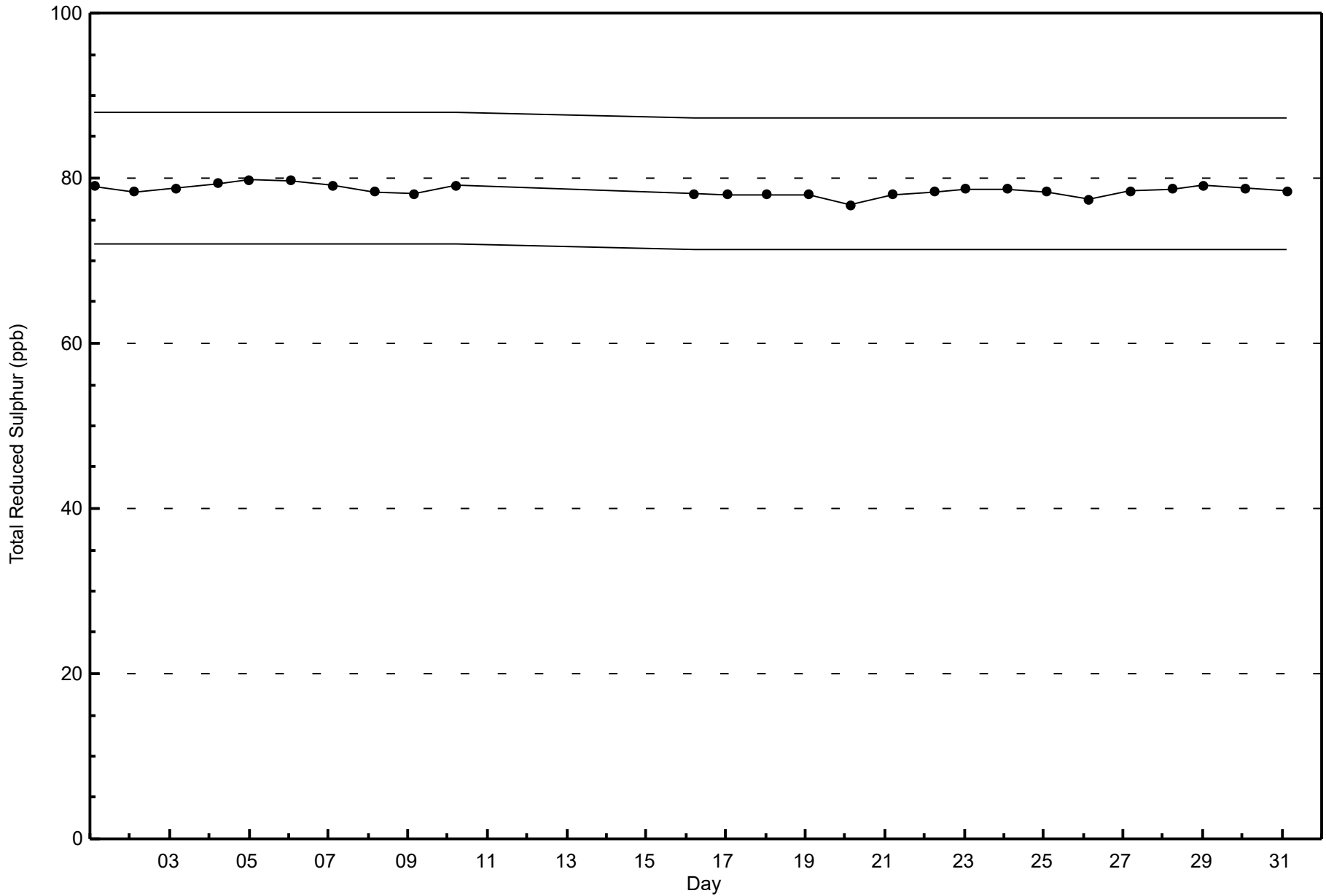
Total Number of Valid Hours: 707



Wood Buffalo Environmental Association
Zero Responses

Total Reduced Sulphur (TRS) - ppb
Athabasca Valley - May 2023







Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

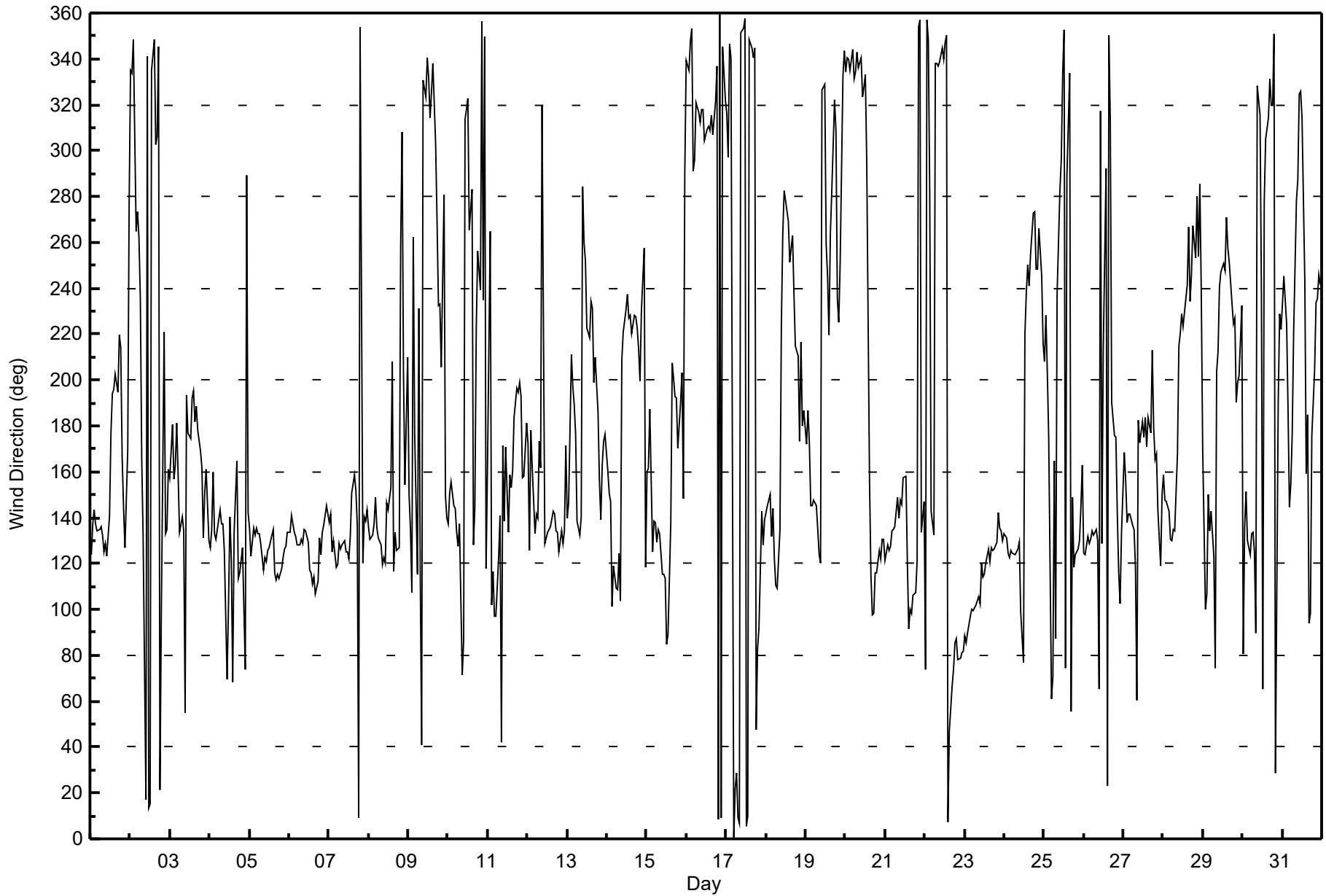
Athabasca Valley - May 2023

Maximum Value: 2.5 ppm on May 4 07:00		Maximum Daily Average: 2.2 ppm on May 21		Hours in Service: 744																																														
Minimum Value: 1.9 ppm on May 29 12:00		Minimum Daily Average: 2.0 ppm on May 8		Hours of Data: 707																																														
Maximum Diurnal Average: 2.1 ppm at hour 7		Minimum Diurnal Average: 2.0 ppm at hour 15		Hours of Missing Data: 37																																														
Monthly Average: 2.05 ppm		Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.2 P ₉₉ = 2.4		Hours of Calibration: 35																																														
				Percent Operational Time: 99.7																																														
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																										
1-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.1																								
2-May	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.1																							
3-May	2.1	2.2	2.1	Z	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.2																							
4-May	2.1	2.1	2.1	2.0	Z	2.0	2.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5																							
5-May	2.1	2.1	2.1	2.1	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
6-May	Z	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.1																							
7-May	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
8-May	2.0	2.0	Z	2.0	2.0	2.0	M	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																							
9-May	2.0	2.0	2.0	Z	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1																							
10-May	2.0	2.0	2.0	2.1	Z	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2																							
11-May	2.1	2.0	2.1	2.1	2.1	Z	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
12-May	Z	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
13-May	2.1	Z	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.2	2.1	2.1	2.1	2.3																							
14-May	2.1	2.0	Z	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1																							
15-May	2.2	2.1	2.1	Z	2.1	2.2	2.2	2.4	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.4																							
16-May	2.1	2.2	2.2	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2																							
17-May	2.1	2.1	2.1	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
18-May	Z	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
19-May	2.0	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.2	2.1	2.3																								
20-May	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.2	2.3	2.2	2.2	2.3	2.3	2.1	2.3	2.3																							
21-May	2.4	2.4	2.4	Z	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.4																							
22-May	2.2	2.2	2.2	2.2	Z	2.3	2.4	2.4	2.4	2.4	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.4																							
23-May	2.0	2.0	2.0	2.0	2.0	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
24-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.1	2.0	2.1	2.1																							
25-May	2.1	Z	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.2																							
26-May	2.1	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.1	2.1	2.1	2.2																							
27-May	2.2	2.2	2.2	Z	2.2	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.2																							
28-May	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
29-May	2.0	2.1	2.2	2.2	2.2	Z	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2																							
30-May	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
31-May	2.0	Z	2.0	2.0	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2																							
																								2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	Diurnal Average			
																								2.4	2.4	2.4	2.2	2.3	2.3	2.5	2.4	2.4	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.3	2.3	2.3	Diurnal Maximum	
Z - zerospan		C - Calibration					M - Maintenance																																											



Wood Buffalo Environmental Association
Hourly Averages

Wind Direction (WD) - deg
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Athabasca Valley - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	467	66.05	66.05
2.1 - 3.0	240	33.95	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Athabasca Valley - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	19	7	4	11	21	39	114	29	39	33	42	28	18	12	32	19	467
2.1 - 3.0	5	0	2	5	8	35	81	32	11	4	6	6	6	6	5	28	240
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	7	6	16	29	74	195	61	50	37	48	34	24	18	37	47	707

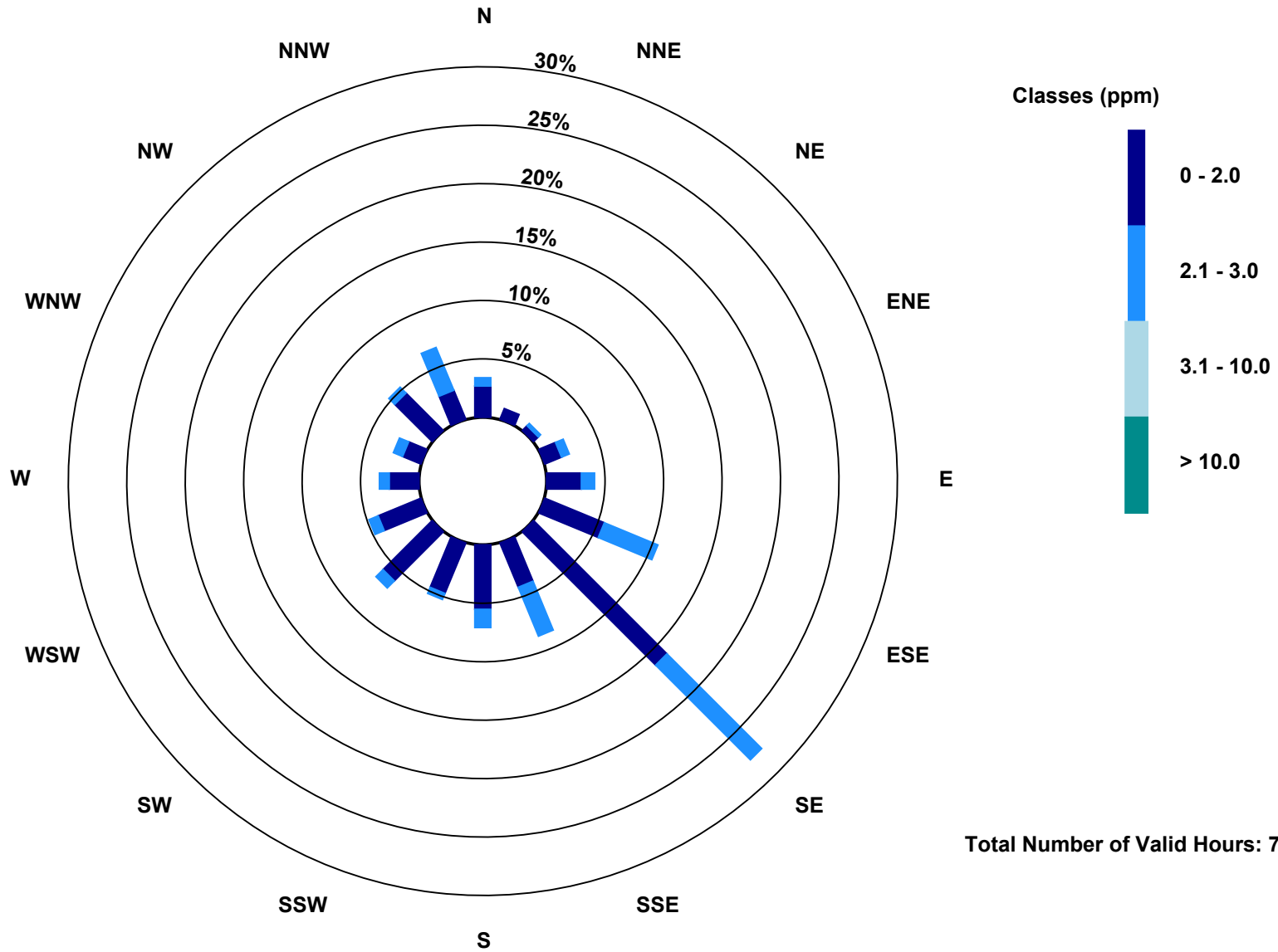
Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Athabasca Valley



Total Number of Valid Hours: 707

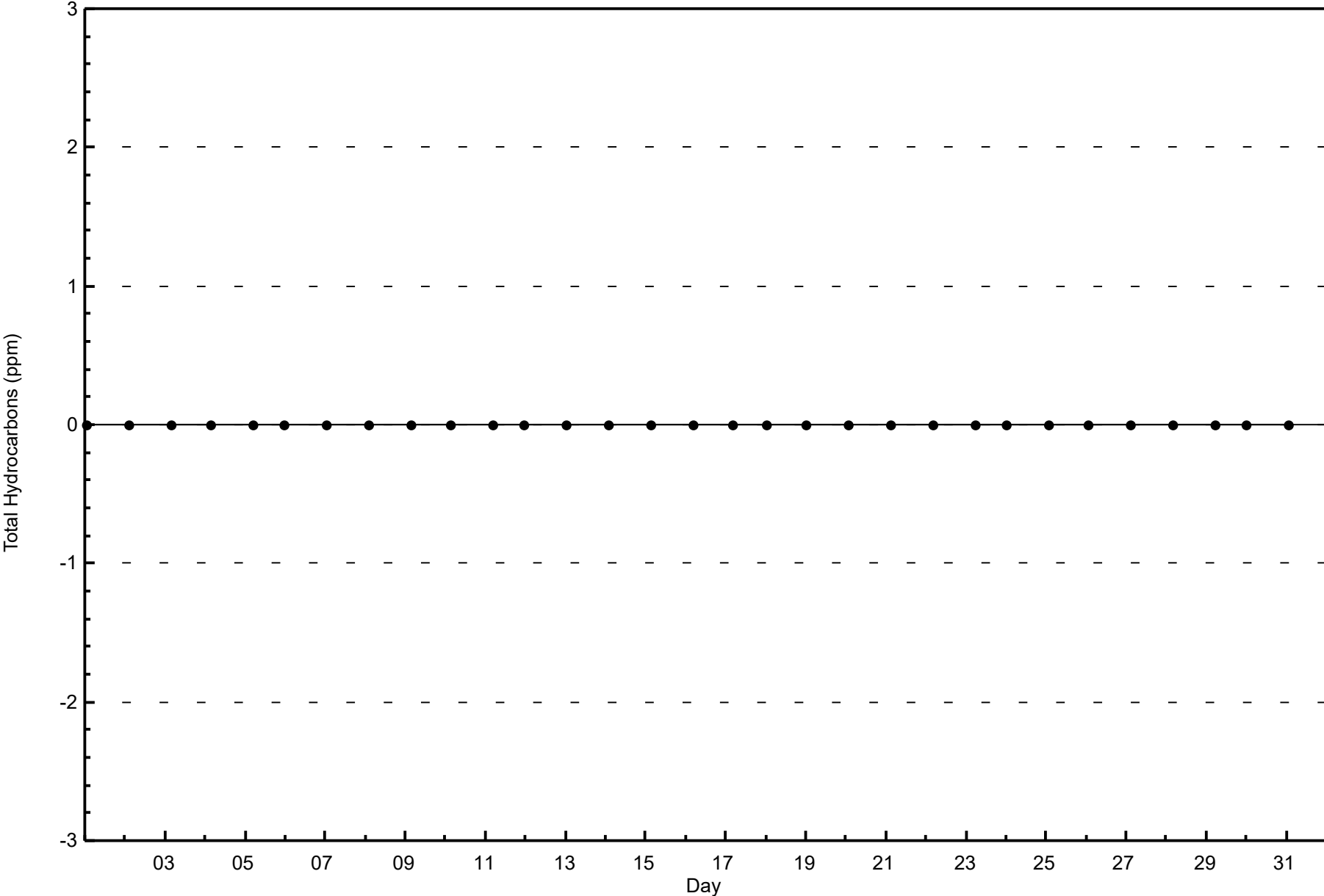


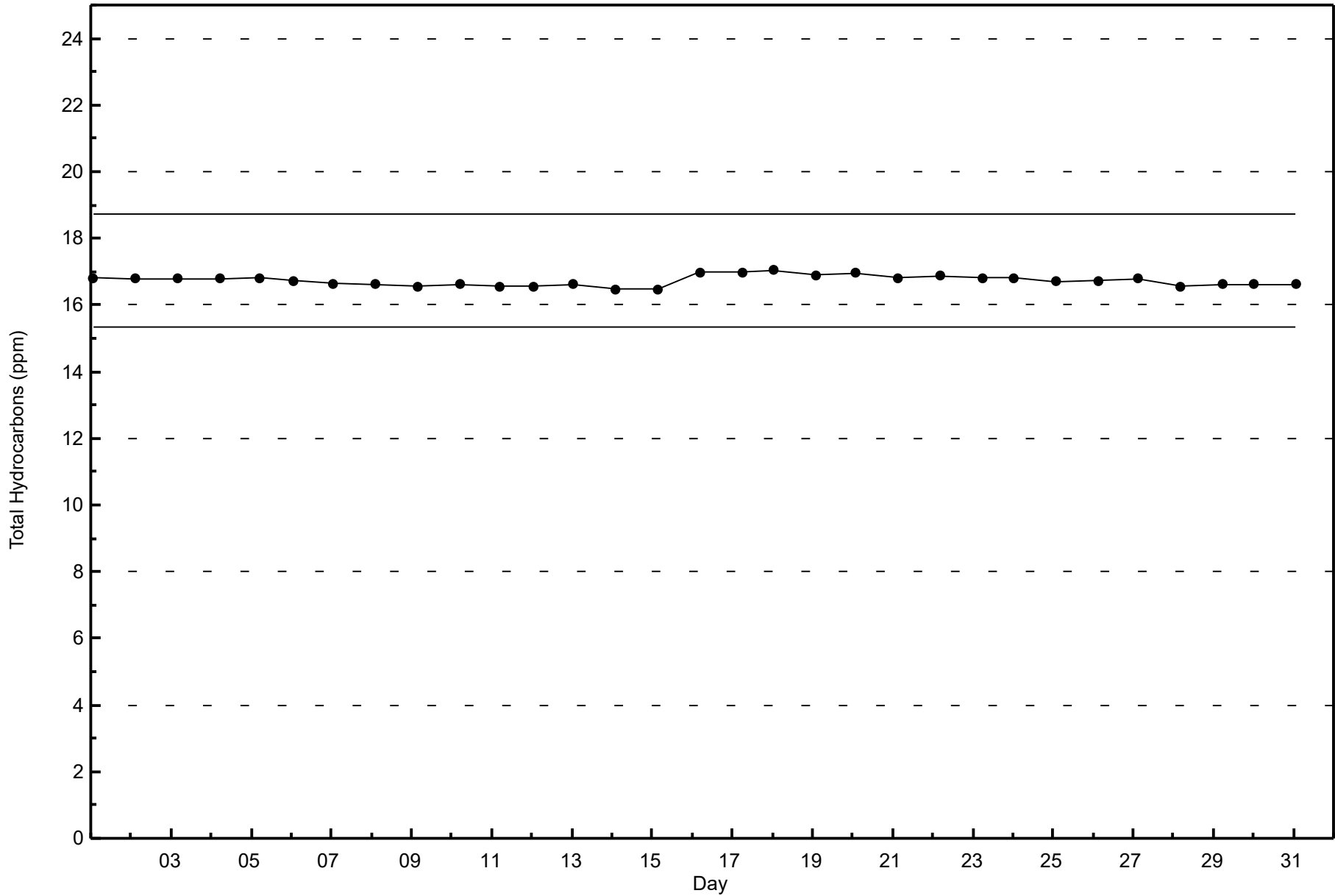
Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Athabasca Valley - May 2023





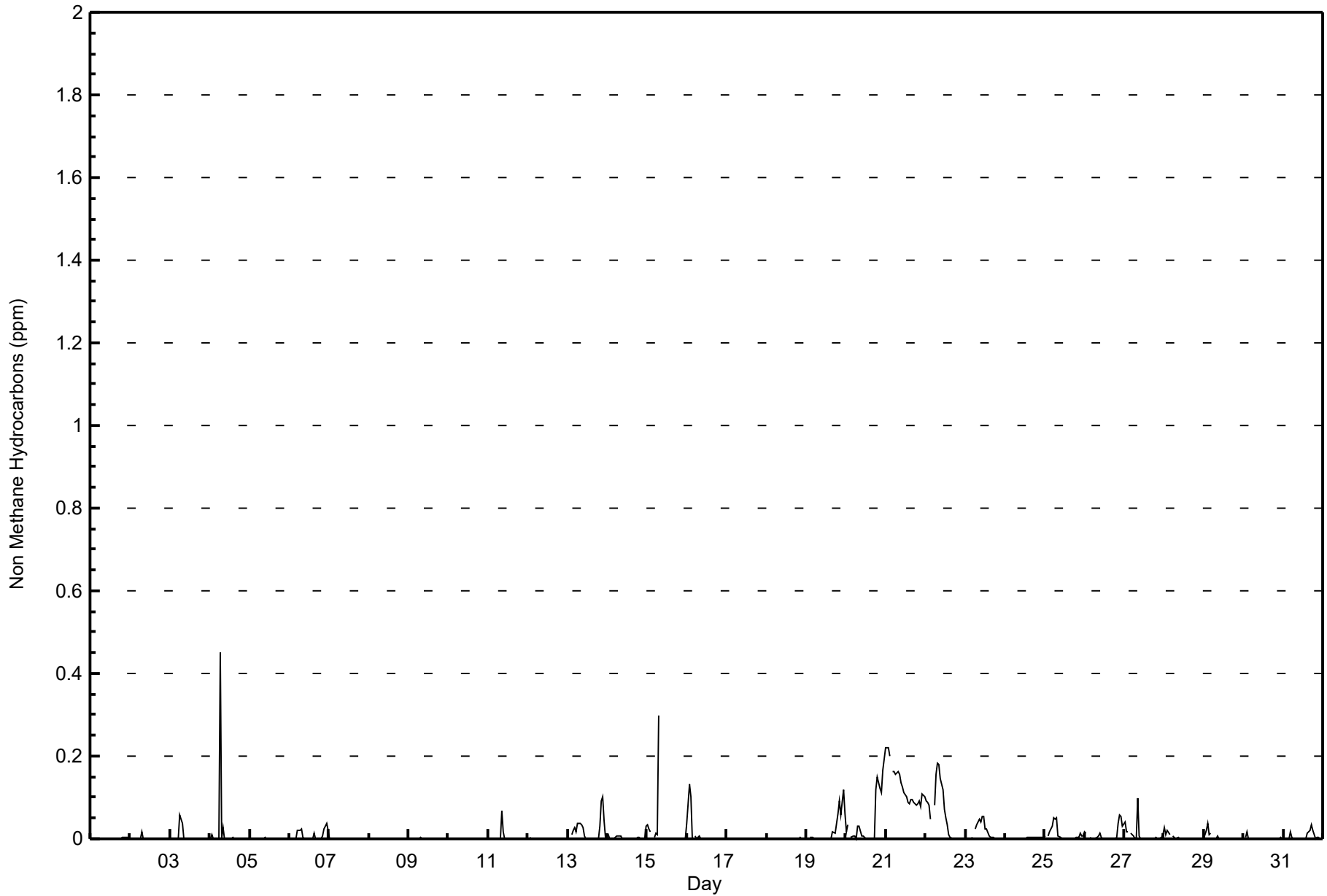


Maximum Value: 0.450 ppm on May 4 07:00		Maximum Daily Average: 0.127 ppm on May 21		Hours in Service: 744																									
Minimum Value: 0.000 ppm on May 1 01:00		Minimum Daily Average: 0.000 ppm on May 8		Hours of Data: 707																									
Maximum Diurnal Average: 0.032 ppm at hour 7		Minimum Diurnal Average: 0.004 ppm at hour 15		Hours of Missing Data: 37																									
Monthly Average: 0.013 ppm		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.2		Hours of Calibration: 35																									
				Percent Operational Time: 99.7																									
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24					
1-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.005	0.003	0.002	0.000	0.001	0.005			
2-May	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.019			
3-May	0.000	0.000	0.000	Z	0.000	0.000	0.057	0.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.057			
4-May	0.000	0.009	0.000	0.000	Z	0.000	0.450	0.000	0.027	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021	0.450			
5-May	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.002		
6-May	Z	0.000	0.000	0.000	0.001	0.021	0.020	0.024	0.002	0.000	0.000	0.000	0.000	0.000	0.015	0.000	0.000	0.000	0.000	0.000	0.006	0.023	0.037	0.021	0.007	0.037			
7-May	0.002	Z	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.002		
8-May	0.000	0.000	Z	0.000	0.000	0.000	M	M	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
9-May	0.000	0.000	0.000	Z	0.000	0.002	0.000	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.002	
10-May	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001		
11-May	0.001	0.001	0.000	0.000	0.000	Z	0.000	0.000	0.067	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.004	0.067			
12-May	Z	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.002	
13-May	0.002	Z	0.010	0.020	0.027	0.018	0.036	0.036	0.033	0.027	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.092	0.101	0.045	0.004	0.021	0.101			
14-May	0.011	0.001	Z	0.000	0.001	0.006	0.007	0.005	0.008	0.001	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.002	0.003	0.001	0.000	0.000	0.032	0.003	0.032	0.032		
15-May	0.033	0.022	0.016	Z	0.004	0.013	0.010	0.300	C	C	C	C	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.021	0.300			
16-May	0.037	0.131	0.103	0.000	Z	0.008	0.001	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.131				
17-May	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
18-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.001	0.000	0.000	0.000	0.000	0.003	0.003	
19-May	0.000	Z	0.004	0.004	0.002	0.001	0.001	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.001	0.017	0.012	0.037	0.063	0.093	0.057	0.117	0.061	0.020	0.117	0.117	0.117	0.117	
20-May	0.017	0.033	Z	0.005	0.006	0.006	0.001	0.032	0.029	0.005	0.005	0.003	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.118	0.150	0.122	0.111	0.166	0.043	0.192	0.192		
21-May	0.221	0.220	0.202	Z	0.164	0.162	0.155	0.162	0.155	0.136	0.125	0.113	0.101	0.088	0.086	0.096	0.093	0.087	0.080	0.085	0.091	0.078	0.108	0.102	0.127	0.221	0.221		
22-May	0.091	0.089	0.081	0.048	Z	0.081	0.156	0.184	0.180	0.146	0.120	0.071	0.051	0.033	0.009	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.058	0.184	0.184		
23-May	0.000	0.000	0.000	0.000	0.003	Z	0.023	0.033	0.046	0.041	0.055	0.055	0.023	0.025	0.007	0.004	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.014	0.055	0.055		
24-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.004	0.003	0.002	0.003	0.005	0.005	0.005	0.004	0.005	0.003	0.002	0.005	0.005		
25-May	0.006	Z	0.007	0.016	0.032	0.050	0.048	0.052	0.006	0.003	0.002	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.005	0.012	0.006	0.008	0.011	0.052	0.052		
26-May	0.018	0.014	Z	0.003	0.001	0.001	0.002	0.002	0.007	0.014	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.036	0.056	0.054	0.029	0.011	0.056	0.056		
27-May	0.041	0.017	0.015	Z	0.014	0.006	0.002	0.005	0.099	0.007	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.002	0.000	0.002	0.004	0.010	0.010	0.099	0.099		
28-May	0.027	0.012	0.019	0.010	Z	0.008	0.005	0.001	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.004	0.027	0.027		
29-May	0.002	0.019	0.037	0.011	0.013	Z	0.000	0.001	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.004	0.037	0.037		
30-May	Z	0.004	0.016	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.003	0.000	0.000	0.001	0.016	0.016		
31-May	0.000	Z	0.001	0.001	0.018	0.004	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.014	0.016	0.020	0.033	0.022	0.000	0.002	0.002	0.000	0.000	0.006	0.033	0.033		
		0.019	0.023	0.020	0.005	0.011	0.015	0.032	0.030	0.022	0.013	0.011	0.008	0.006	0.005	0.004	0.004	0.004	0.004	0.008	0.011	0.015	0.015	0.018	0.015	Diurnal Average			
		0.221	0.220	0.202	0.048	0.164	0.162	0.450	0.300	0.180	0.146	0.125	0.113	0.101	0.088	0.086	0.096	0.093	0.087	0.118	0.150	0.122	0.111	0.166	0.192	Diurnal Maximum			
Z - zerospan		C - Calibration			M - Maintenance																								



Wood Buffalo Environmental Association
Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm
Athabasca Valley - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Athabasca Valley - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	553	78.22	78.22
0.006 - 0.05	98	13.86	92.08
0.06 - 0.1	40	5.66	97.74
> 0.1	16	2.26	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Athabasca Valley - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	19	7	5	11	21	50	150	39	41	32	46	32	23	14	34	29	553
0.006 - 0.05	2	0	0	3	5	13	29	16	9	5	0	1	1	4	3	7	98
0.06 - 0.1	3	0	1	2	3	9	6	5	0	0	2	1	0	0	0	8	40
> 0.1	0	0	0	0	0	2	10	1	0	0	0	0	0	0	0	3	16
Totals	24	7	6	16	29	74	195	61	50	37	48	34	24	18	37	47	707

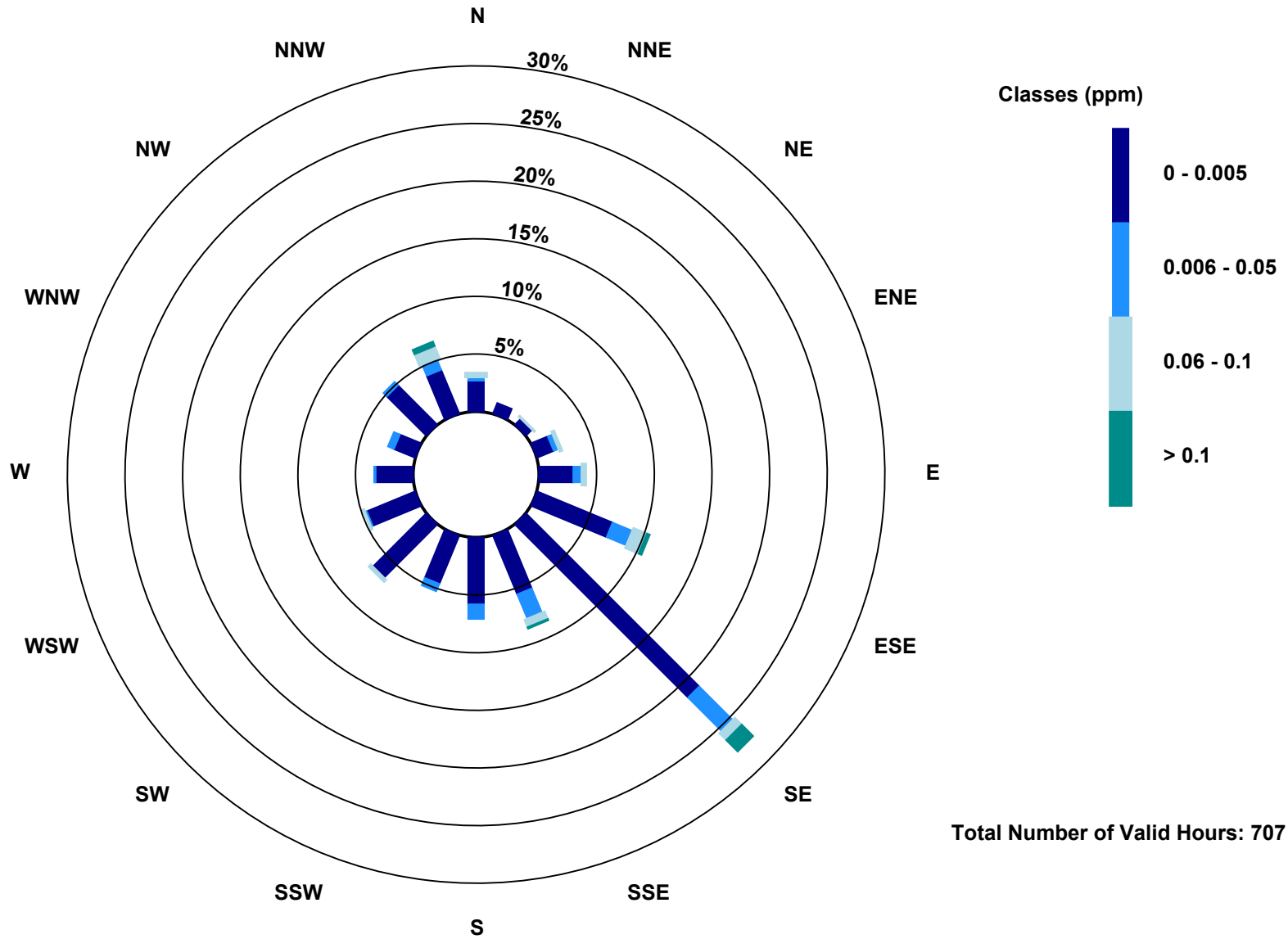
Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

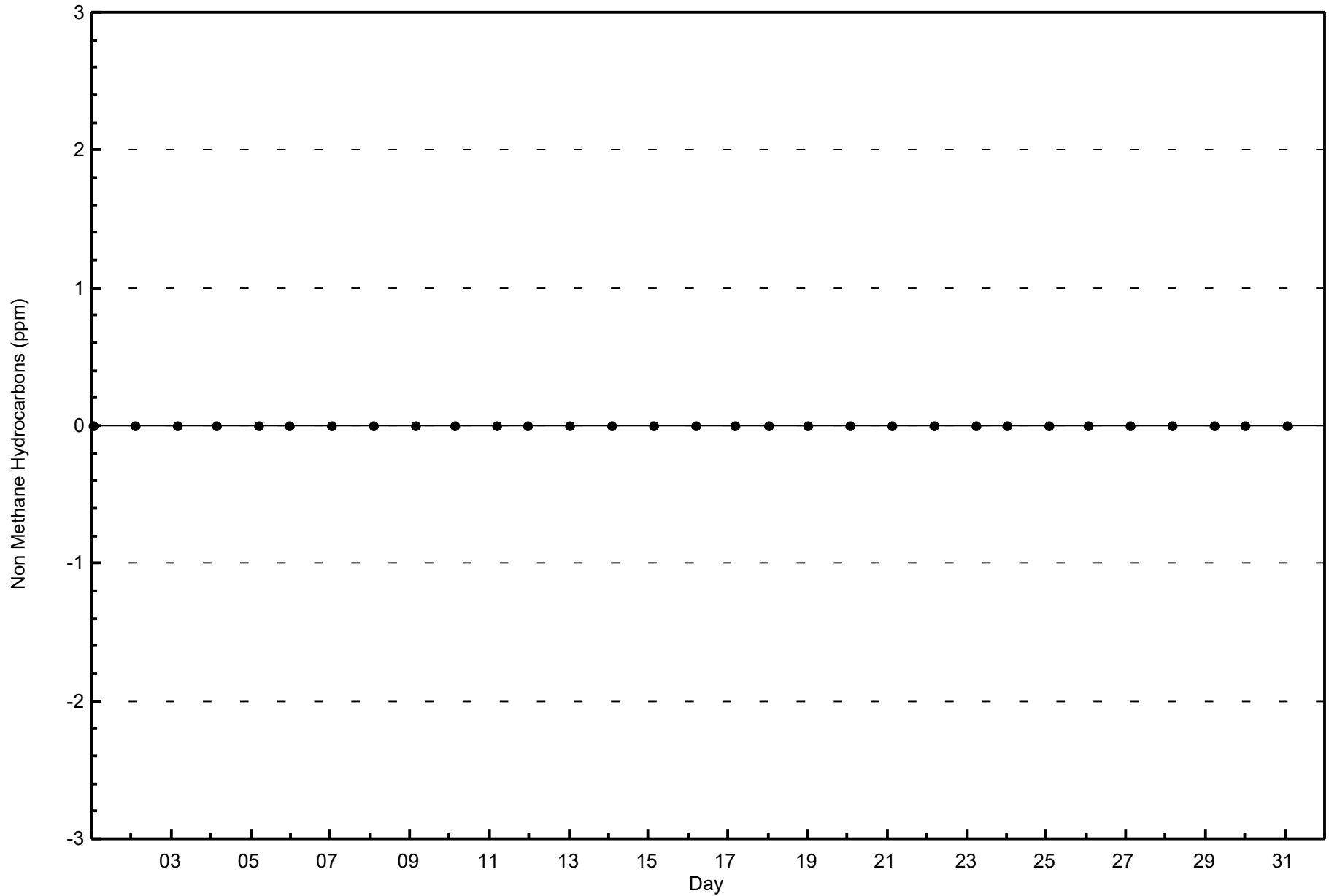
Non Methane Hydrocarbons (NMHC) - ppm
Athabasca Valley

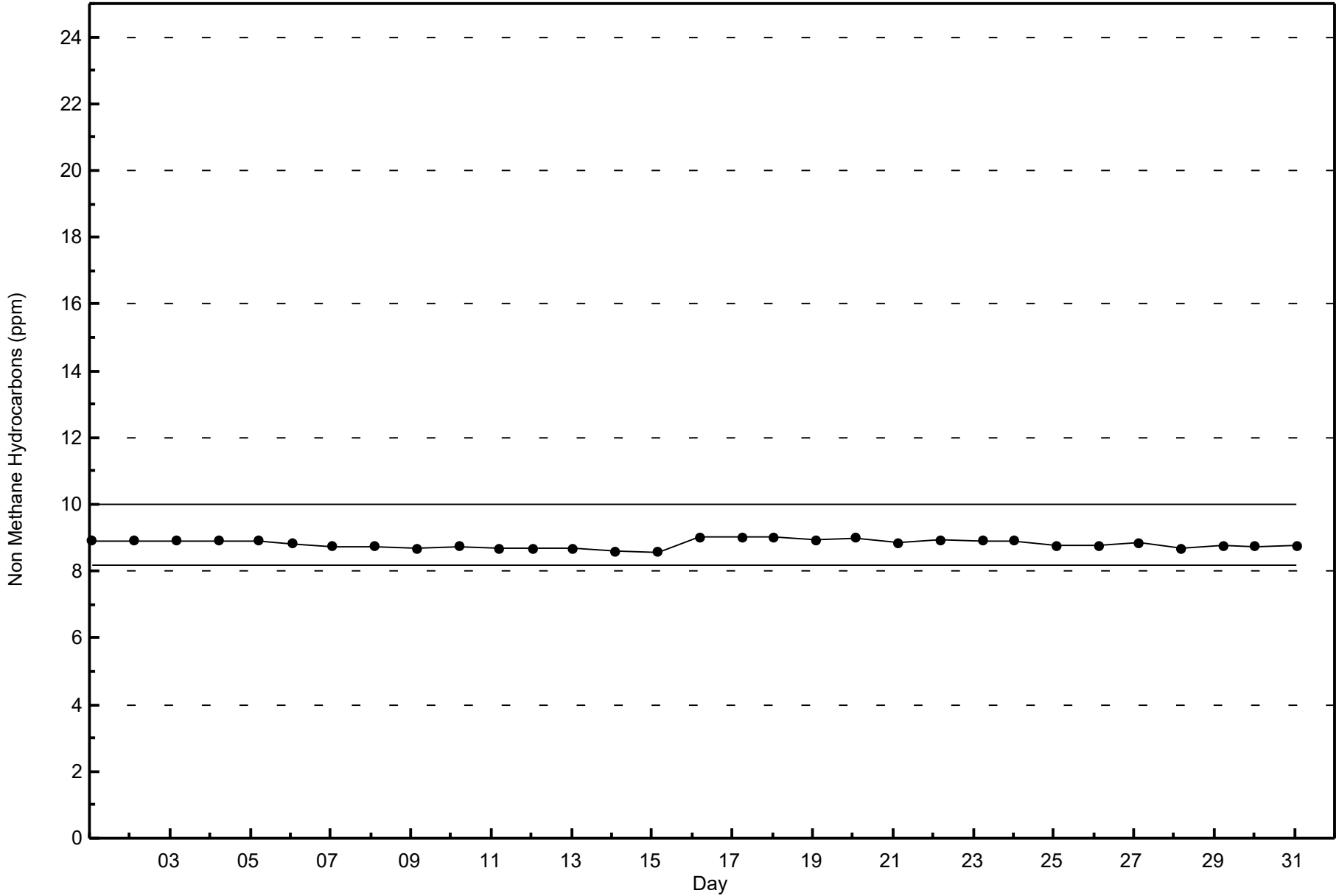




Wood Buffalo Environmental Association
Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm
Athabasca Valley - May 2023







Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH₄) - ppm

Athabasca Valley - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 2.3 ppm on May 22 07:00	Maximum Daily Average: 2.1 ppm on May 21		Hours of Data:	707
Minimum Value: 1.9 ppm on May 29 12:00	Minimum Daily Average: 2.0 ppm on May 8		Hours of Missing Data:	37
Maximum Diurnal Average: 2.1 ppm at hour 6	Minimum Diurnal Average: 2.0 ppm at hour 15		Hours of Calibration:	35
Monthly Average: 2.04 ppm	Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.1 P ₉₉ = 2.2		Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.1
2-May	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1
3-May	2.1	2.2	2.1	Z	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.2
4-May	2.1	2.1	2.1	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
5-May	2.1	2.1	2.1	2.1	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
6-May	Z	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1
7-May	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
8-May	2.0	2.0	Z	2.0	2.0	2.0	M	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
9-May	2.0	2.0	2.0	Z	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1
10-May	2.0	2.0	2.0	2.1	Z	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2
11-May	2.1	2.0	2.1	2.1	2.1	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
12-May	Z	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
13-May	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.1	2.2
14-May	2.1	2.0	Z	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1
15-May	2.1	2.1	2.1	Z	2.1	2.2	2.2	2.1	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2
16-May	2.1	2.1	2.1	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
17-May	2.1	2.1	2.1	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
18-May	Z	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
19-May	2.0	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2
20-May	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21-May	2.2	2.2	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.2
22-May	2.1	2.2	2.1	2.1	Z	2.2	2.3	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3
23-May	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
24-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
25-May	2.0	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1
26-May	2.1	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1
27-May	2.1	2.1	2.1	Z	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2
28-May	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
29-May	2.0	2.1	2.1	2.2	2.2	Z	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2
30-May	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
31-May	2.0	Z	2.0	2.0	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2

2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	Diurnal Average
2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	Diurnal Maximum

Z - zerospan C - Calibration M - Maintenance

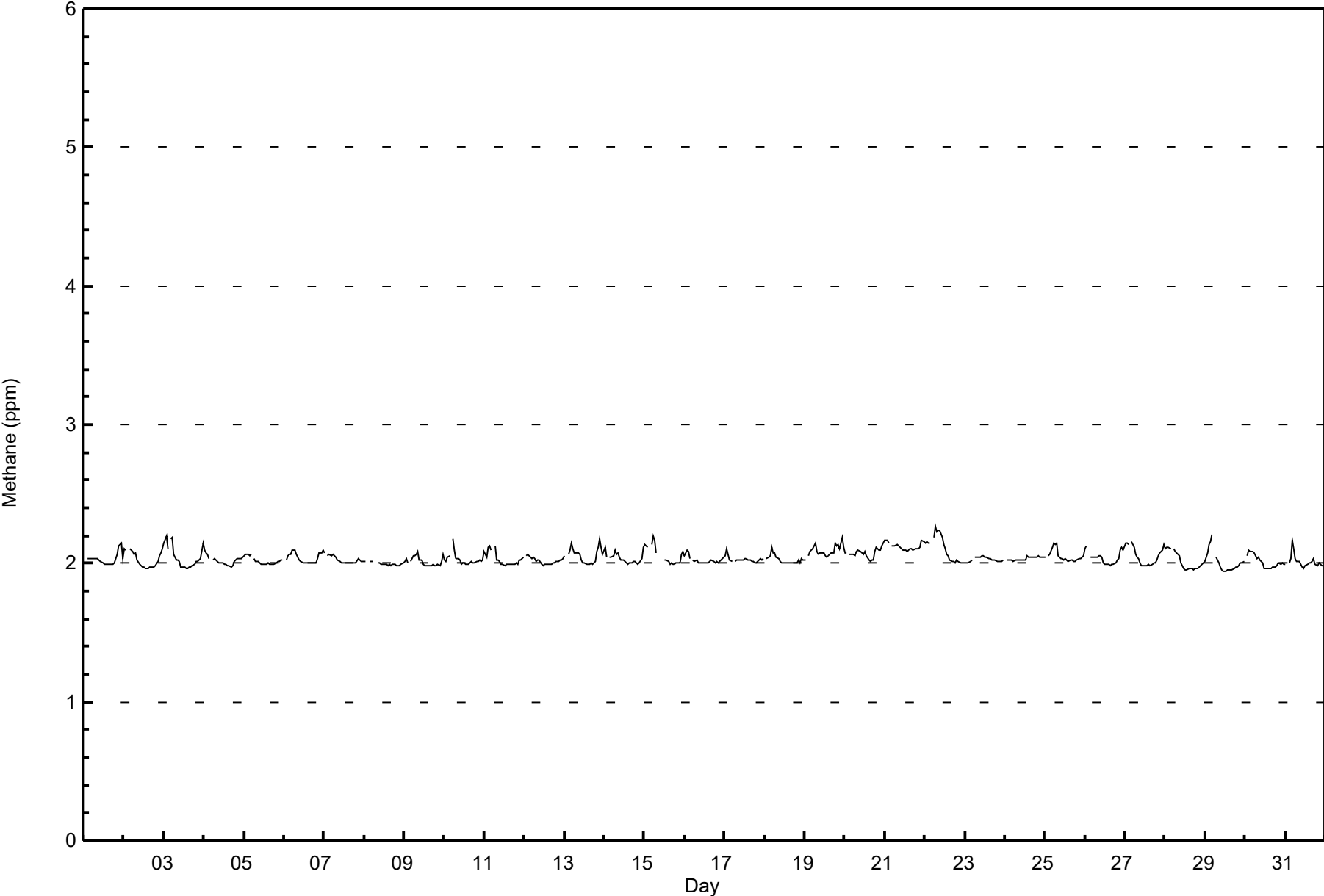


Wood Buffalo Environmental Association

Hourly Averages

Methane (CH₄) - ppm

Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Athabasca Valley - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	487	68.88	68.88
2.1 - 3.0	220	31.12	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Athabasca Valley - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	19	7	5	12	23	44	118	29	39	34	43	32	19	12	32	19	487
2.1 - 3.0	5	0	1	4	6	30	77	32	11	3	5	2	5	6	5	28	220
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	7	6	16	29	74	195	61	50	37	48	34	24	18	37	47	707

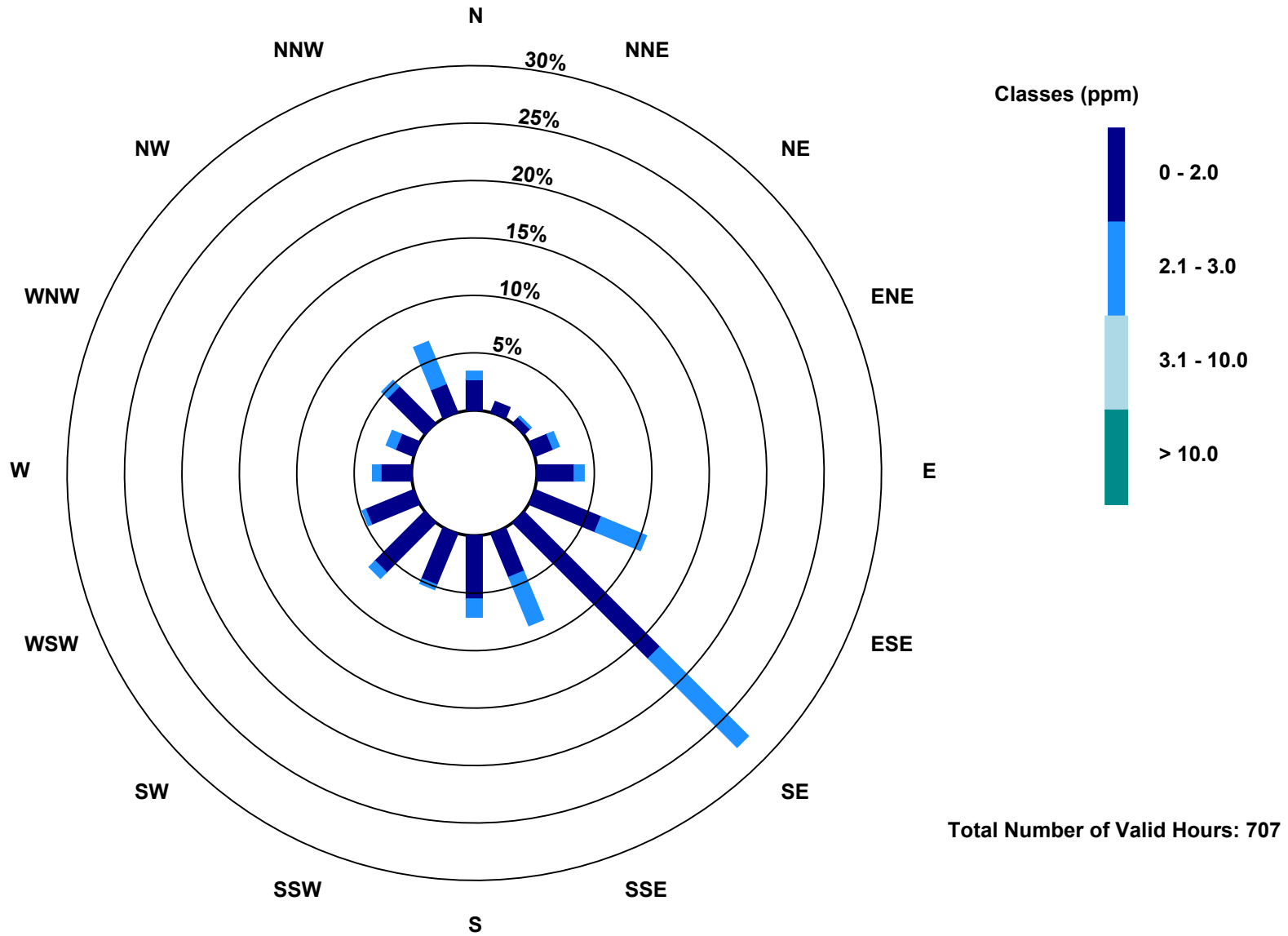
Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Methane (CH₄) - ppm
Athabasca Valley



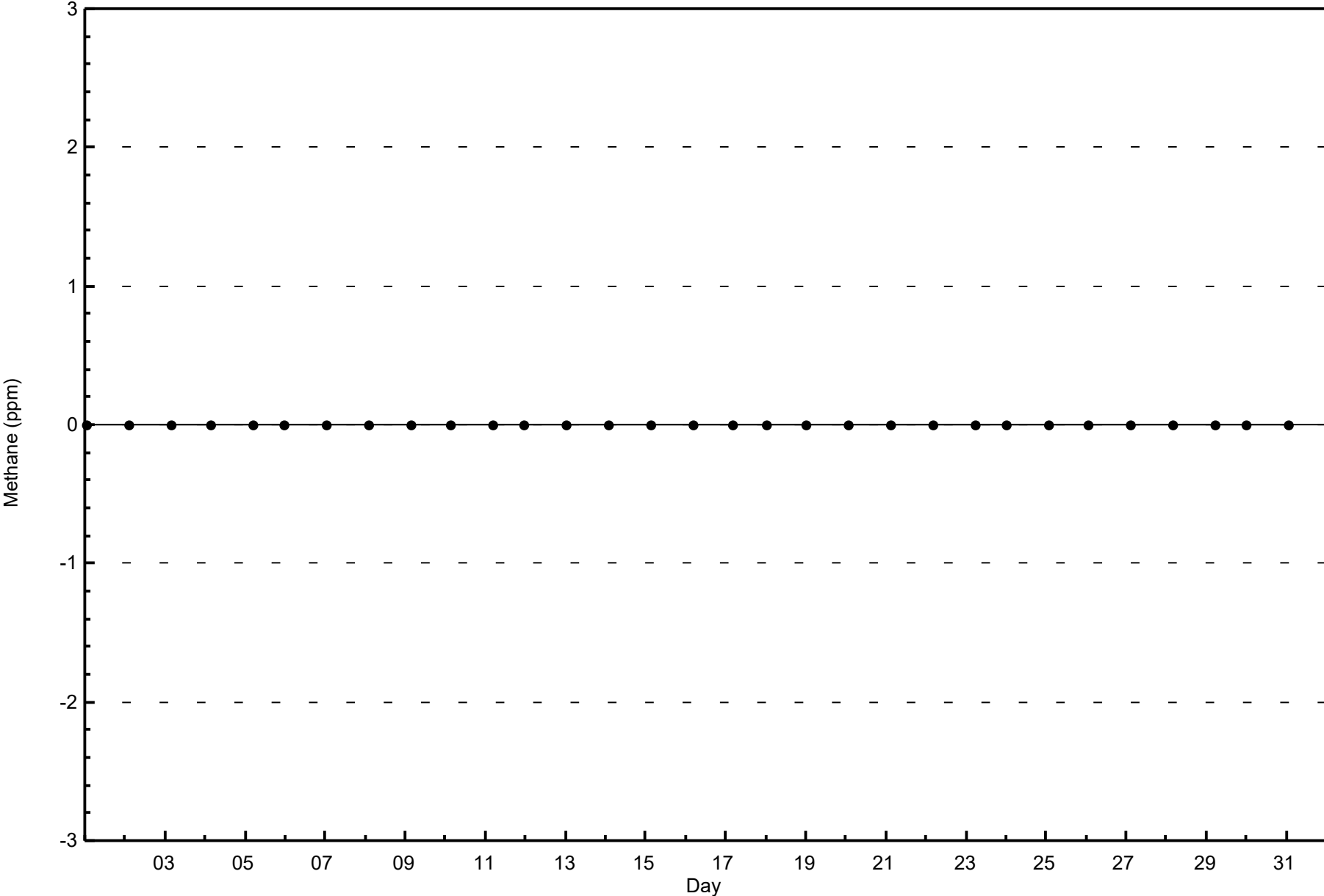


Wood Buffalo Environmental Association

Zero Responses

Methane (CH₄) - ppm

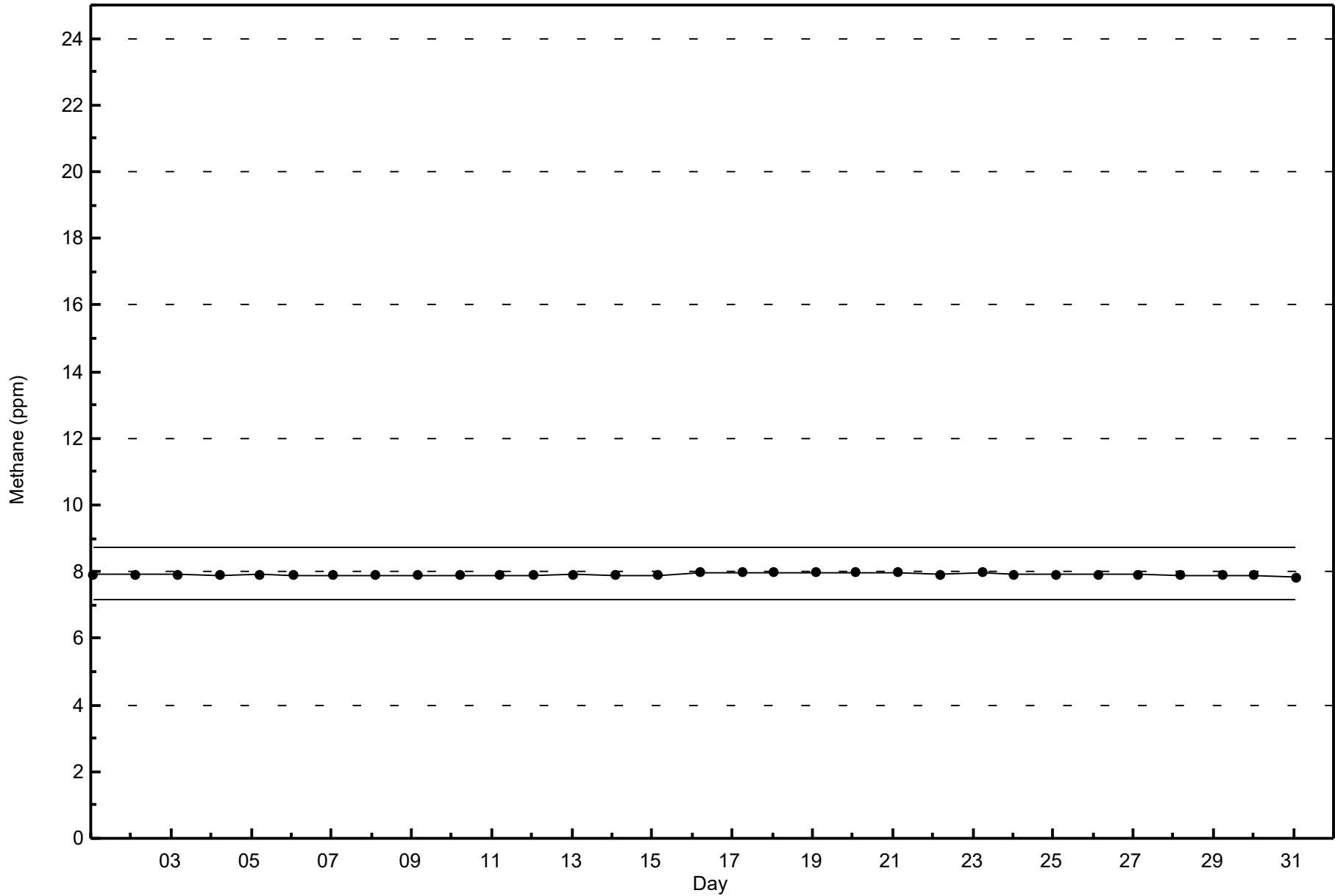
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Span Responses

Methane (CH₄) - ppm
Athabasca Valley - May 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Athabasca Valley - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 69.1 ppb on May 31 17:00	Maximum Daily Average: 50.3 ppb on May 4		Hours of Data:	709
Minimum Value: 3.0 ppb on May 25 06:00	Minimum Daily Average: 20.7 ppb on May 24		Hours of Missing Data:	35
Maximum Diurnal Average: 46.4 ppb at hour 16	Minimum Diurnal Average: 22.4 ppb at hour 5		Hours of Calibration:	35
Monthly Average: 35.05 ppb	Percentiles: P ₁ = 7.9 P ₁₀ = 18.4 Q ₁ = 25.9 Median = 36.1 Q ₃ = 43.7 P ₉₀ = 49.5 P ₉₉ = 62.1		Percent Operational Time:	100.0

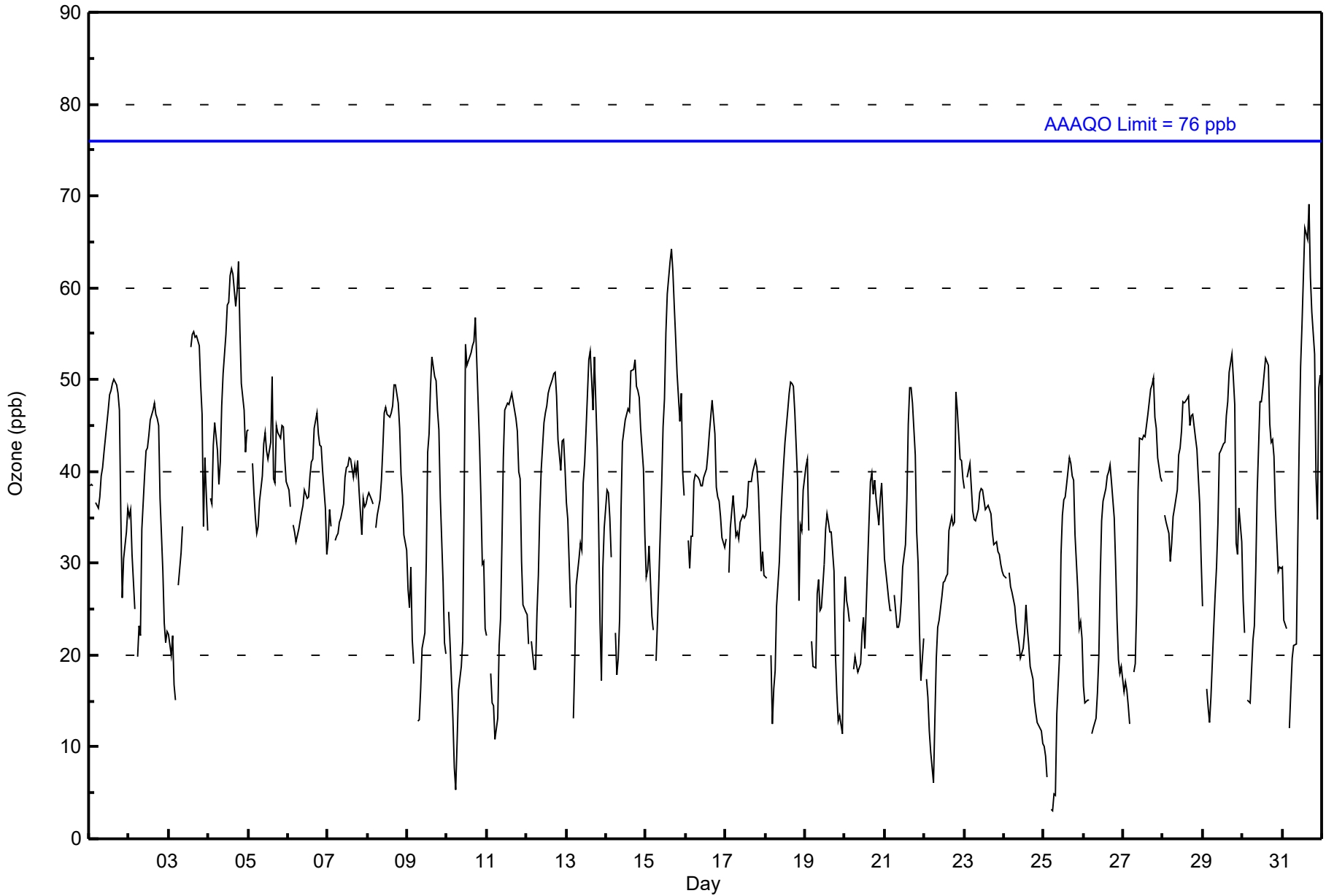
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	38.4	38.6	38.5	Z	36.6	36.0	37.2	39.5	40.4	42.1	43.6	46.7	48.4	48.9	49.6	50.0	49.4	48.5	46.7	35.2	26.2	30.5	33.4	36.1	40.9	50.0																							
2-May	35.1	35.9	31.0	25.0	Z	19.8	23.2	22.1	33.7	39.7	42.3	42.6	43.9	45.5	46.6	47.5	46.3	45.7	45.0	37.1	29.2	23.5	21.4	22.6	35.0	47.5																							
3-May	22.3	20.0	22.1	16.8	15.1	Z	27.6	31.1	34.0	C	C	C	C	53.6	54.9	55.2	54.6	54.8	53.7	49.5	46.2	34.0	41.6	33.6	37.9	55.2																							
4-May	Z	37.1	36.5	42.9	45.3	42.2	38.7	41.0	47.2	50.6	54.9	58.1	58.4	61.4	62.1	61.5	58.0	59.6	62.8	55.4	49.5	46.7	42.1	44.3	50.3	62.8																							
5-May	44.5	Z	40.9	37.7	35.1	33.3	34.0	36.7	39.5	43.1	44.2	42.3	41.3	43.1	50.3	39.1	38.8	45.0	44.2	43.6	45.0	44.8	41.3	39.0	41.2	50.3																							
6-May	38.0	36.1	Z	34.2	33.4	32.4	33.7	34.6	35.6	36.3	38.0	37.1	37.3	39.5	41.1	41.3	44.7	46.4	44.1	42.8	42.7	40.1	36.0	31.0	38.1	46.4																							
7-May	32.5	35.9	34.0	Z	32.4	32.9	33.3	34.5	34.9	36.4	39.4	40.4	40.6	41.5	41.3	39.3	40.7	39.7	41.2	37.9	33.1	37.1	36.1	36.5	37.0	41.5																							
8-May	37.2	37.7	36.9	36.4	Z	33.9	35.3	37.0	39.0	42.5	46.3	46.9	46.2	45.9	46.4	47.1	49.5	49.4	47.4	44.7	39.7	37.3	33.2	31.4	41.2	49.5																							
9-May	27.2	25.1	29.6	21.6	19.1	Z	12.9	12.9	16.4	20.8	22.4	30.3	42.0	44.1	49.1	52.5	50.4	49.9	46.7	44.6	37.3	27.9	21.3	20.1	31.5	52.5																							
10-May	Z	24.8	21.3	13.1	7.8	5.4	10.6	16.2	18.8	21.5	36.5	53.8	51.5	52.1	53.0	53.6	54.1	56.7	52.1	43.0	37.1	29.8	30.2	22.9	33.3	56.7																							
11-May	22.1	Z	18.0	14.8	14.4	10.8	13.1	21.1	23.9	32.2	41.4	46.7	47.5	47.3	47.9	48.5	47.7	45.8	44.4	40.0	39.2	30.2	25.4	24.7	32.5	48.5																							
12-May	24.4	21.3	Z	21.5	18.4	18.4	24.5	28.7	35.6	40.1	45.3	46.4	47.2	48.5	49.1	50.1	50.6	50.8	48.2	43.5	40.1	43.4	43.5	40.4	38.3	50.8																							
13-May	36.6	34.7	25.2	Z	13.1	19.5	27.6	30.5	32.2	31.4	38.7	40.9	44.3	52.2	53.1	50.1	46.6	52.5	42.5	34.1	23.7	17.2	29.5	33.8	35.2	53.1																							
14-May	38.0	37.6	35.0	30.6	Z	22.4	17.8	19.7	24.0	35.9	43.1	45.6	46.2	46.8	46.6	51.0	51.2	52.2	49.3	48.8	48.1	44.7	40.3	33.1	39.5	52.2																							
15-May	28.6	29.4	31.9	24.3	22.7	Z	19.4	23.7	28.2	38.7	44.9	47.9	55.0	59.3	62.9	64.2	61.8	58.0	54.4	50.6	45.4	48.6	40.0	37.3	42.5	64.2																							
16-May	Z	32.6	29.4	33.0	32.9	38.9	39.7	39.4	39.0	38.5	38.5	39.3	40.2	41.9	44.1	45.9	47.8	44.0	38.3	37.3	36.8	35.0	32.8	31.8	38.1	47.8																							
17-May	32.6	Z	29.0	33.8	37.4	35.2	32.9	33.3	32.6	34.5	35.2	35.0	35.3	36.2	38.9	39.0	40.0	40.5	41.3	40.4	38.1	29.2	31.3	28.7	35.2	41.3																							
18-May	28.6	28.4	Z	20.0	12.6	16.3	18.3	25.3	30.2	34.7	37.9	40.8	43.2	46.7	48.5	49.7	49.6	49.3	46.6	39.1	25.9	34.2	33.6	37.9	34.7	49.7																							
19-May	40.6	41.4	33.6	Z	21.6	18.7	18.6	26.7	28.3	24.8	25.2	29.9	33.7	35.4	34.5	33.4	33.4	29.2	20.1	15.8	12.8	13.5	11.5	24.5	26.4	41.4																							
20-May	28.5	25.9	25.0	23.6	Z	18.4	19.8	18.9	18.2	19.1	22.4	24.1	20.8	25.4	34.6	38.9	39.8	37.6	39.1	37.0	34.2	37.1	38.7	34.7	28.8	39.8																							
21-May	30.5	27.6	26.1	24.8	24.8	Z	26.6	23.1	23.0	23.8	25.9	29.6	32.1	36.9	45.2	49.2	49.1	47.4	41.9	33.4	30.0	22.5	17.3	21.8	31.0	49.2																							
22-May	Z	17.4	15.4	11.7	9.4	6.1	13.1	19.7	23.0	23.8	26.5	27.9	28.1	28.6	28.9	33.6	35.1	34.2	34.4	48.7	46.7	41.3	41.2	39.1	27.6	48.7																							
23-May	38.1	Z	39.4	40.9	38.4	35.7	34.7	34.6	35.8	37.7	38.1	37.9	37.0	35.8	36.2	35.9	35.4	33.4	32.1	32.3	31.3	31.0	29.9	29.2	35.2	40.9																							
24-May	28.6	28.3	Z	29.0	27.5	26.9	25.3	23.5	22.2	21.1	19.7	20.7	22.4	25.4	22.8	21.0	18.8	17.3	14.9	13.8	12.7	12.4	11.7	10.4	20.7	29.0																							
25-May	10.1	9.0	6.7	Z	3.2	3.0	4.9	4.7	13.6	20.1	31.0	35.3	36.9	37.3	38.5	41.5	40.9	39.6	39.1	33.0	27.0	22.9	23.7	21.8	23.6	41.5																							
26-May	16.7	14.8	15.1	15.1	Z	11.4	12.0	13.2	15.9	19.9	28.5	34.6	36.7	38.1	39.4	40.0	40.7	38.9	35.0	29.7	23.8	19.5	18.0	18.8	25.0	40.7																							
27-May	16.0	17.0	16.2	14.5	12.5	Z	18.2	19.1	25.5	37.9	43.6	43.5	43.9	43.8	45.0	46.2	49.0	49.5	50.2	45.9	44.6	41.5	39.4	39.0	34.9	50.2																							
28-May	Z	35.3	34.5	33.3	30.3	32.3	35.0	35.9	37.9	41.8	42.5	44.3	47.5	47.4	47.9	48.2	45.0	46.1	46.2	43.7	42.4	39.3	36.4	30.5	40.2	48.2																							
29-May	25.3	Z	16.3	14.4	12.7	15.4	23.1	26.5	29.6	34.4	41.9	42.3	43.0	43.1	46.0	47.6	50.7	52.8	50.1	47.3	32.1	31.0	35.9	32.4	34.5	52.8																							
30-May	25.9	22.4	Z	15.1	14.8	18.4	21.6	23.2	29.2	37.7	47.6	47.6	48.9	50.6	52.4	51.6	45.2	43.2	43.4	41.6	36.0	29.1	29.6	29.4	35.0	52.4																							
31-May	29.6	23.8	22.9	Z	12.1	16.0	19.7	21.1	21.2	32.5	43.2	51.4	56.1	66.5	66.0	65.3	69.1	61.1	57.4	52.8	39.4	34.8	49.1	50.6	41.8	69.1																							
																								29.8	28.4	27.3	25.1	22.4	23.1	24.3	26.4	29.3	33.1	37.6	40.3	41.9	44.2	45.9	46.4	46.2	45.8	43.6	40.1	35.4	32.6	32.1	31.2	Diurnal Average	
																								44.5	41.4	40.9	42.9	45.3	42.2	39.7	41.0	47.2	50.6	54.9	58.1	58.4	66.5	66.0	65.3	69.1	61.1	62.8	55.4	49.5	48.6	49.1	50.6	Diurnal Maximum	

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Athabasca Valley - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	99	13.96	13.96
21 - 50	553	78.00	91.96
51 - 82	57	8.04	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Athabasca Valley - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	1	0	1	4	4	12	34	8	6	2	5	6	4	2	1	9	99
21 - 50	23	8	4	9	22	57	161	49	34	25	37	25	17	15	30	37	553
51 - 82	0	0	0	2	4	5	8	2	7	8	7	4	2	1	6	1	57
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	8	5	15	30	74	203	59	47	35	49	35	23	18	37	47	709

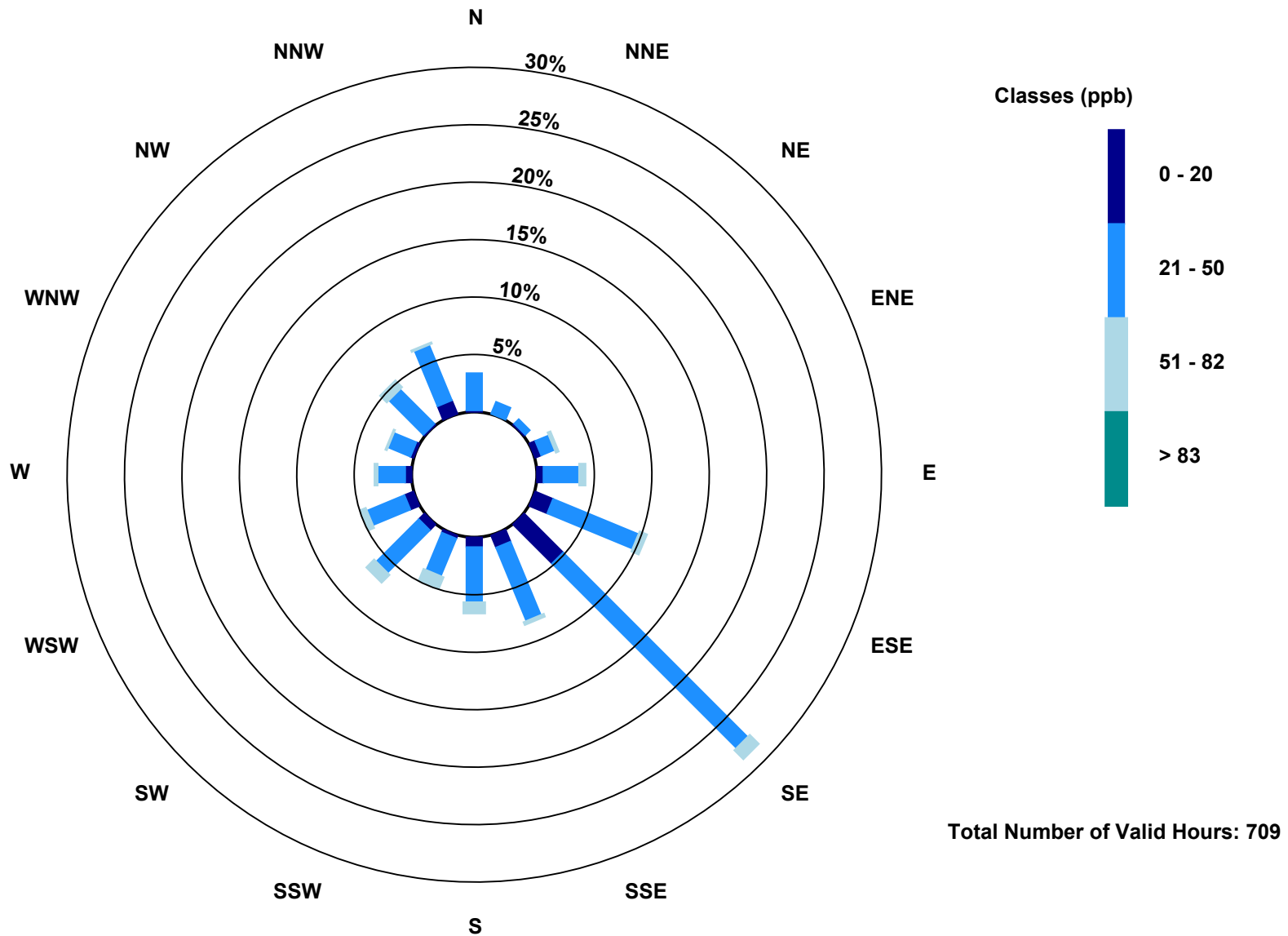
Total Number of Valid Hours: 709

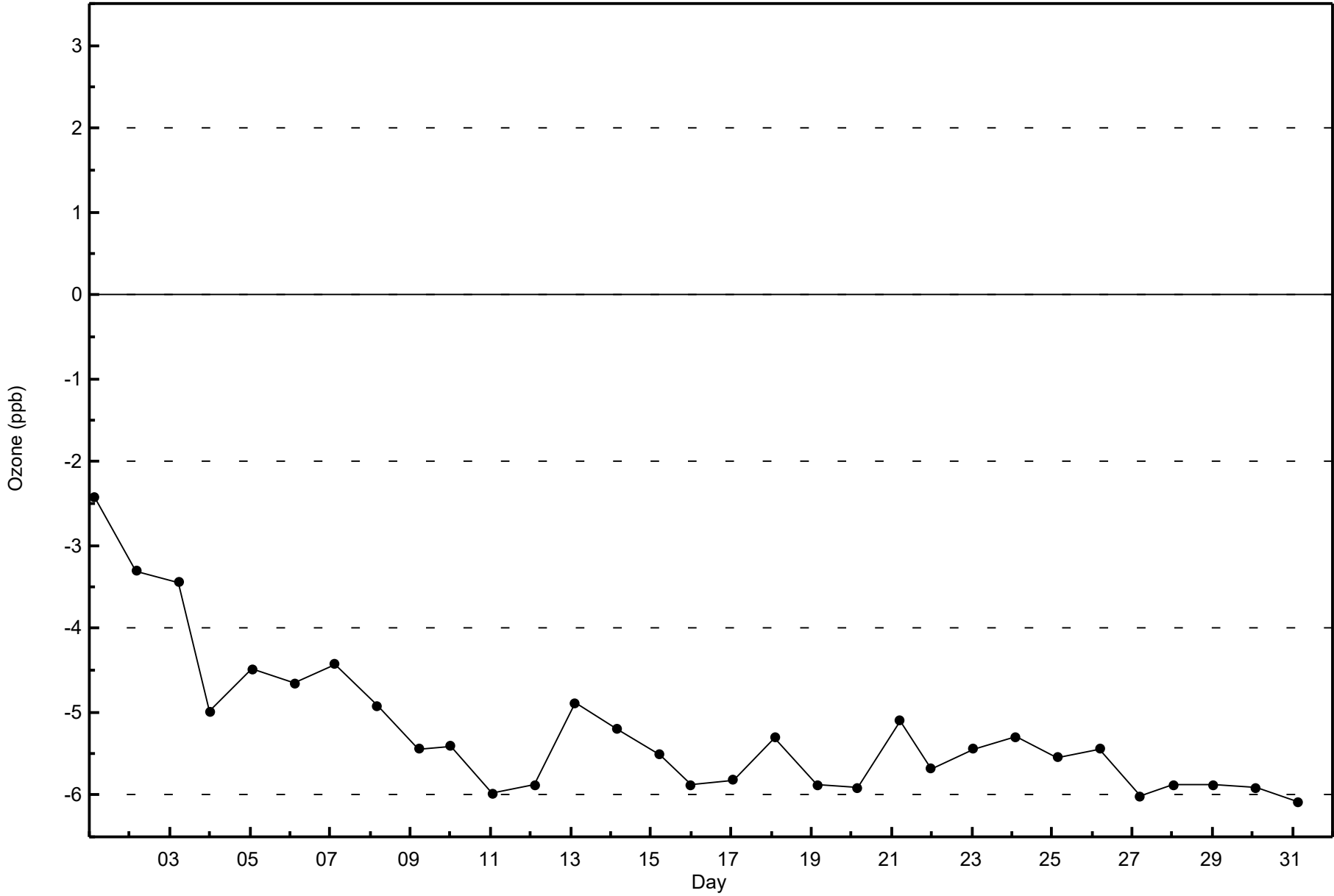
Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Ozone (O_3) - ppb
Athabasca Valley

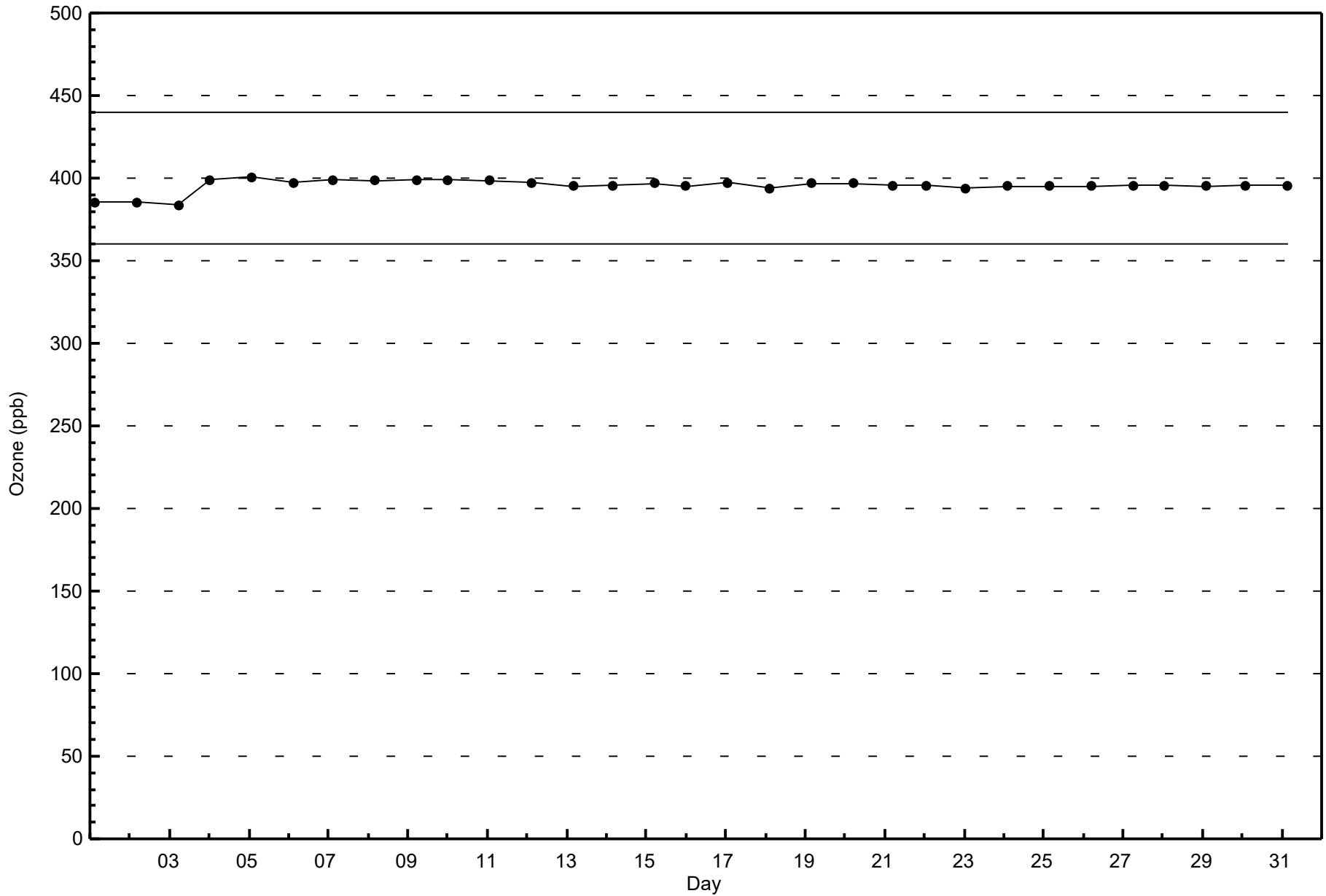






Wood Buffalo Environmental Association
Span Responses

Ozone (O₃) - ppb
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Summary of Hour Averages

Nitric Oxide (NO) - ppb
Athabasca Valley - May 2023

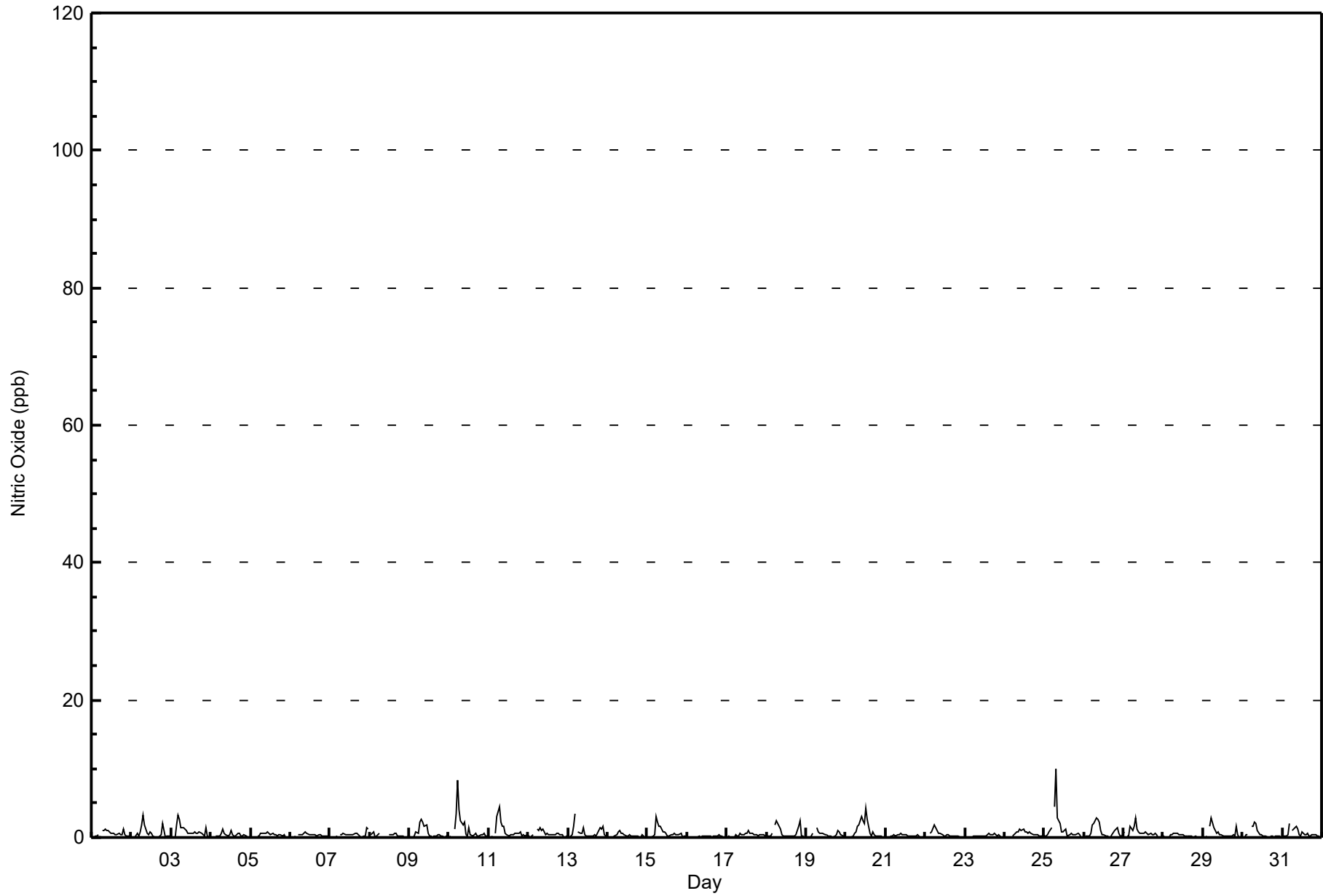
Maximum Value: 10.0 ppb on May 25 08:00		Maximum Daily Average: 1.3 ppb on May 25		Hours in Service: 744																							
Minimum Value: 0.0 ppb on May 15 22:00		Minimum Daily Average: 0.1 ppb on May 16		Hours of Data: 708																							
Maximum Diurnal Average: 1.6 ppb at hour 8		Minimum Diurnal Average: 0.1 ppb at hour 2		Hours of Missing Data: 36																							
Monthly Average: 0.58 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.1 Q ₁ = 0.1 Median = 0.3 Q ₃ = 0.6 P ₉₀ = 1.4 P ₉₉ = 3.4		Hours of Calibration: 36																							
Percentiles: P ₁ = 0.0 P ₁₀ = 0.1 Q ₁ = 0.1 Median = 0.3 Q ₃ = 0.6 P ₉₀ = 1.4 P ₉₉ = 3.4		Percent Operational Time: 100.0																									
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.1	0.1	0.1	0.1	0.4	Z	0.9	1.0	1.2	1.1	0.9	0.6	0.6	0.6	0.4	0.5	0.7	0.5	0.4	1.3	0.4	0.2	0.2	0.2	0.5	1.3	
2-May	Z	0.0	0.1	0.6	0.2	0.8	1.8	3.2	1.7	0.7	0.4	0.8	0.7	0.2	0.0	0.1	0.1	0.1	0.4	1.9	0.1	0.2	0.2	0.3	0.6	3.2	
3-May	0.1	Z	0.1	1.7	3.2	2.7	1.5	1.4	1.3	1.0	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.5	0.4	0.2	1.4	0.2	0.1	0.9	3.2		
4-May	0.1	0.0	Z	0.2	0.3	0.2	0.6	1.3	0.6	0.5	0.3	0.3	0.9	0.4	0.2	0.3	0.7	0.7	0.3	0.3	0.3	0.2	0.0	0.0	0.4	1.3	
5-May	0.0	0.0	0.0	Z	0.1	0.3	0.6	0.7	0.6	0.7	0.7	0.4	0.5	0.3	0.3	0.3	0.4	0.4	0.2	0.4	0.1	0.0	0.1	0.3	0.7		
6-May	0.1	0.1	0.1	0.1	Z	0.3	0.4	0.5	0.7	0.7	0.6	0.4	0.4	0.4	0.4	0.5	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.3	0.7	
7-May	0.0	0.0	0.0	0.1	0.1	Z	0.4	0.5	0.6	0.4	0.3	0.4	0.4	0.4	0.4	0.7	0.6	0.4	0.2	0.1	0.2	0.2	1.5	1.3	0.4	1.5	
8-May	Z	0.5	0.8	0.1	0.2	0.4	0.6	C	C	C	C	C	0.5	0.4	0.3	0.5	0.5	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.3	0.8	
9-May	0.1	Z	0.1	0.3	0.8	0.5	2.3	2.6	2.2	1.6	1.9	0.5	0.3	0.2	0.1	0.1	0.1	0.5	0.3	0.3	0.2	0.1	0.2	0.4	0.7	2.6	
10-May	0.1	0.1	Z	1.3	3.4	8.4	4.1	2.4	1.9	2.2	0.5	0.2	1.4	0.3	0.2	0.3	0.7	0.2	0.2	0.3	0.4	0.5	0.1	0.2	1.3	8.4	
11-May	0.1	0.1	0.1	Z	0.7	3.0	4.4	2.2	1.6	1.6	0.6	0.3	0.2	0.5	0.4	0.3	0.6	0.7	0.5	0.8	0.2	0.3	0.2	0.4	0.9	4.4	
12-May	0.3	0.1	0.2	0.4	Z	1.2	1.1	1.4	1.1	1.1	0.4	0.6	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.1	0.1	0.3	0.5	1.4	
13-May	0.0	0.0	0.3	1.6	3.5	Z	0.8	0.6	0.6	1.5	0.3	0.1	0.2	0.2	0.2	0.3	0.2	0.3	0.2	0.9	1.4	1.3	1.7	0.5	0.3	0.7	3.5
14-May	Z	0.1	0.1	0.0	0.2	0.3	0.9	1.1	0.7	0.6	0.4	0.3	0.2	0.3	0.3	0.2	0.3	0.2	0.3	0.1	0.0	0.1	0.3	0.1	0.1	0.3	1.1
15-May	0.0	Z	0.1	0.2	0.4	3.1	2.3	1.7	1.6	0.8	0.8	0.6	0.3	0.2	0.4	0.5	0.5	0.5	0.4	0.5	0.6	0.0	0.1	0.3	0.7	3.1	
16-May	0.0	0.0	Z	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.3	
17-May	0.1	0.1	0.1	Z	0.1	0.4	0.3	0.3	0.5	0.4	0.4	0.5	0.7	1.0	0.5	0.6	0.5	0.5	0.5	0.3	0.4	0.4	0.4	0.2	0.4	1.0	
18-May	0.1	0.1	0.2	0.5	Z	1.7	2.4	2.0	1.2	0.3	0.3	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.4	1.5	2.4	0.2	0.2	0.1	0.7	2.4	
19-May	0.0	0.0	0.1	0.3	0.6	Z	1.4	0.9	0.6	0.7	0.7	0.4	0.3	0.2	0.3	0.1	0.1	0.1	0.4	1.0	0.9	0.5	0.1	0.0	0.4	1.4	
20-May	Z	0.0	0.1	0.0	0.2	0.6	0.9	1.6	1.8	3.1	2.4	2.0	4.4	2.7	0.6	0.1	0.8	0.4	0.2	0.2	0.1	0.1	0.0	0.1	1.0	4.4	
21-May	0.0	Z	0.0	0.1	0.2	0.3	0.2	0.4	0.4	0.6	0.4	0.4	0.5	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.3	0.6	
22-May	0.0	0.0	Z	0.6	0.8	1.9	1.4	1.0	0.6	0.6	0.4	0.2	0.2	0.3	0.5	0.3	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.4	1.9	
23-May	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.7	0.5	0.5	0.5	0.6	0.3	0.4	0.1	0.1	0.1	0.2	0.7	
24-May	0.0	0.0	0.0	0.1	Z	0.2	0.7	0.8	0.8	1.2	1.0	1.1	0.8	0.9	0.6	0.8	0.6	0.4	0.3	0.4	0.3	0.1	0.1	0.5	0.5	1.2	
25-May	0.1	0.1	0.4	0.8	1.4	Z	4.5	10.0	2.9	2.0	0.8	0.8	1.1	1.2	0.3	0.3	0.7	0.4	0.4	0.5	0.6	0.5	0.1	0.1	1.3	10.0	
26-May	Z	0.1	0.2	0.2	0.6	1.8	2.0	2.9	2.7	2.2	1.0	0.4	0.4	0.3	0.2	0.1	0.0	0.4	1.0	1.3	1.3	0.6	0.2	0.1	0.9	2.9	
27-May	0.8	Z	0.1	0.3	1.7	0.9	1.7	2.7	1.2	0.9	0.5	0.5	0.7	0.8	0.7	0.5	0.5	0.4	0.5	0.6	0.4	0.1	0.0	0.3	0.7	2.7	
28-May	0.2	0.1	Z	0.1	0.4	0.5	0.5	0.6	0.5	0.3	0.3	0.5	0.4	0.3	0.2	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.3	0.6	
29-May	0.0	0.1	0.2	Z	1.6	2.8	1.5	1.1	0.7	0.8	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.3	0.4	0.2	1.7	0.4	0.1	0.1	0.6	2.8	
30-May	0.0	0.1	0.3	0.5	Z	1.6	1.6	2.3	2.0	1.1	0.5	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.5	2.3	
31-May	0.1	0.2	0.1	0.5	2.0	Z	1.1	1.2	1.7	1.2	0.4	0.3	0.8	0.4	0.4	0.6	0.2	0.3	0.4	0.4	0.3	0.2	0.1	0.1	0.6	2.0	
																								Diurnal Average			
																								Diurnal Maximum			
																								0.58			
																								1.6			
																								0.58			
																								1.3			
																								0.1			
																								0.1			
																								0.3			
																								3.4			

Z - zerospan C - Calibration



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitric Oxide (NO) - ppb
Athabasca Valley - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	708	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Athabasca Valley - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	24	8	6	15	31	72	202	54	50	37	49	35	25	19	37	44	708
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	8	6	15	31	72	202	54	50	37	49	35	25	19	37	44	708

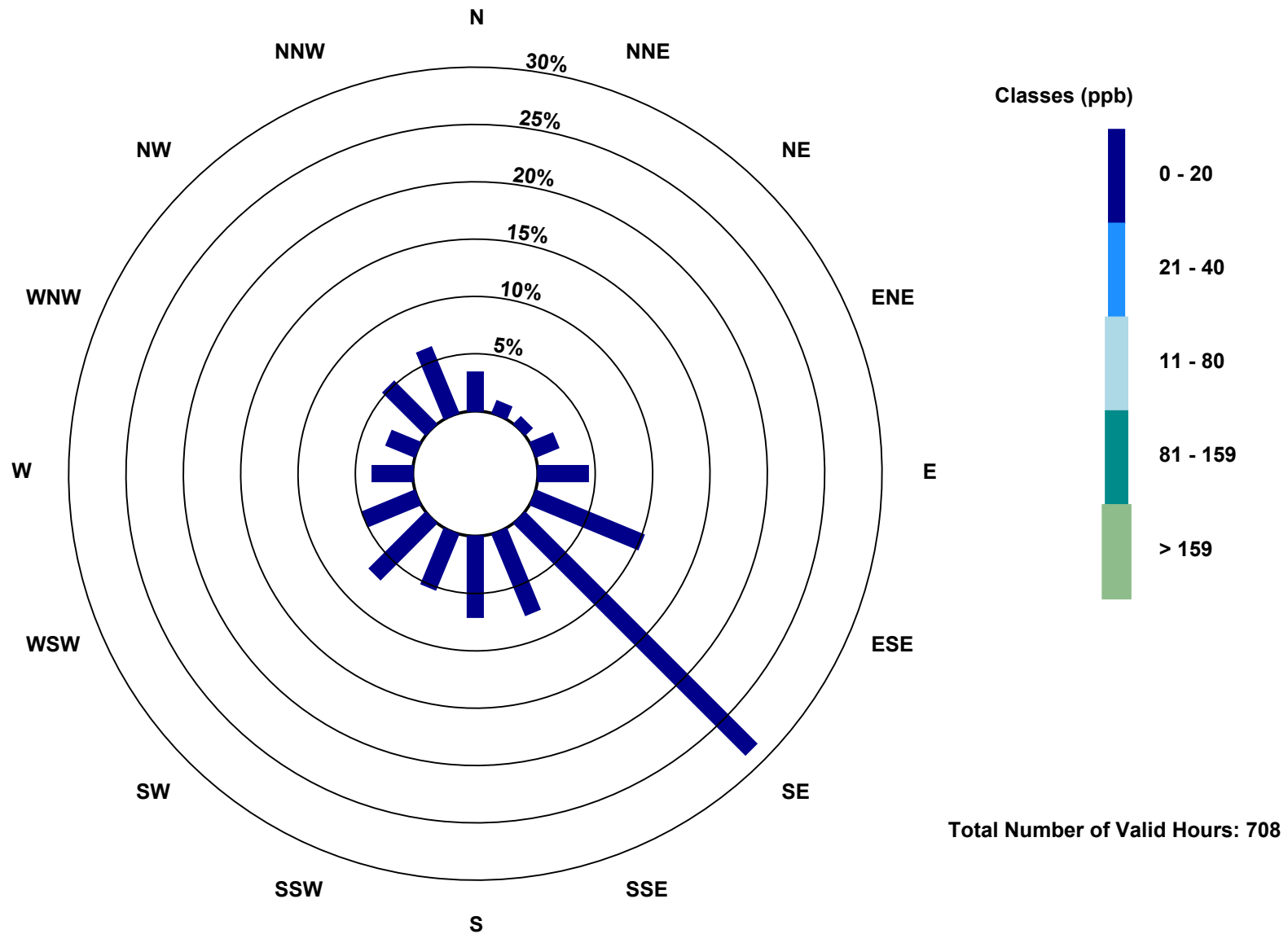
Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

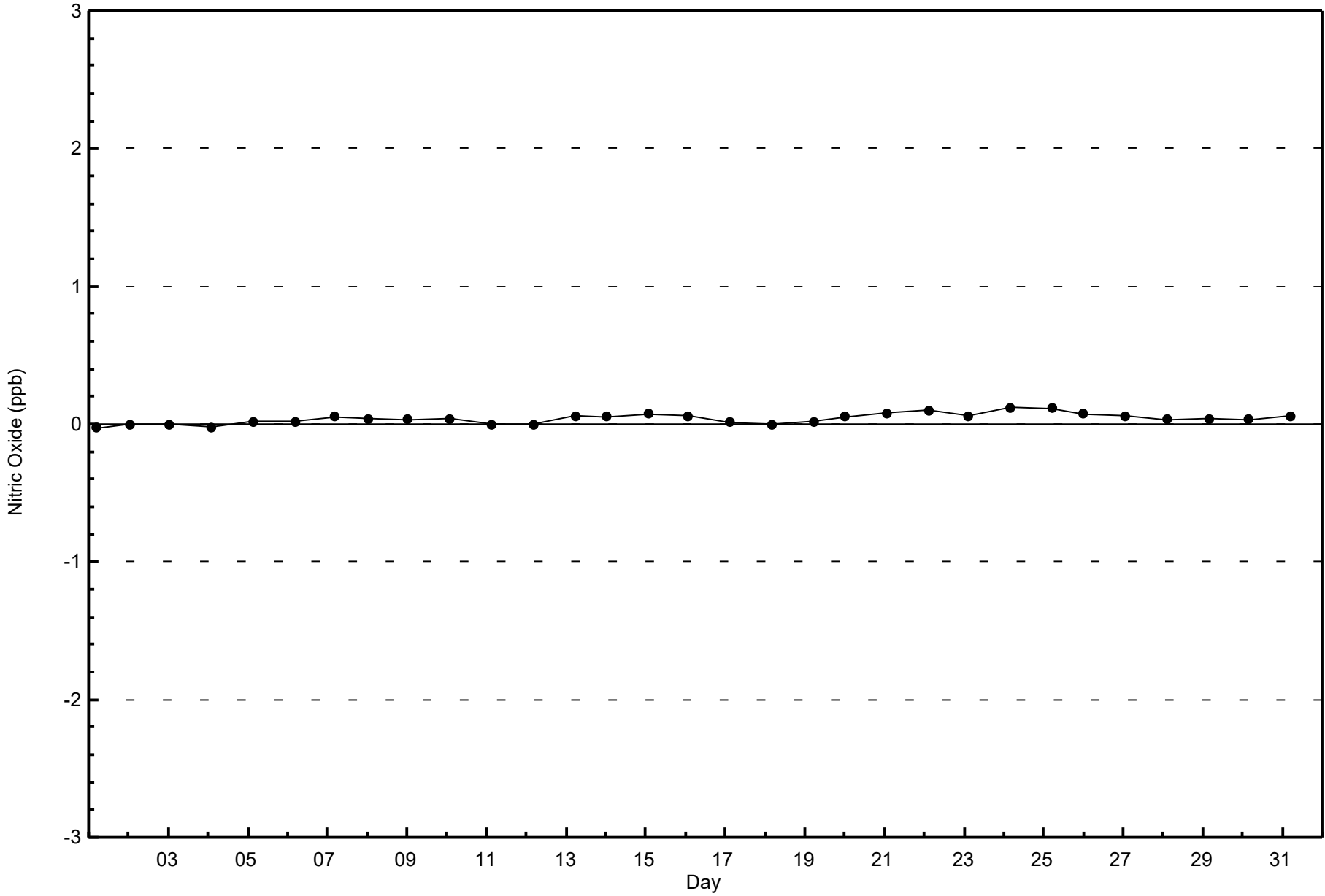
Nitric Oxide (NO) - ppb
Athabasca Valley

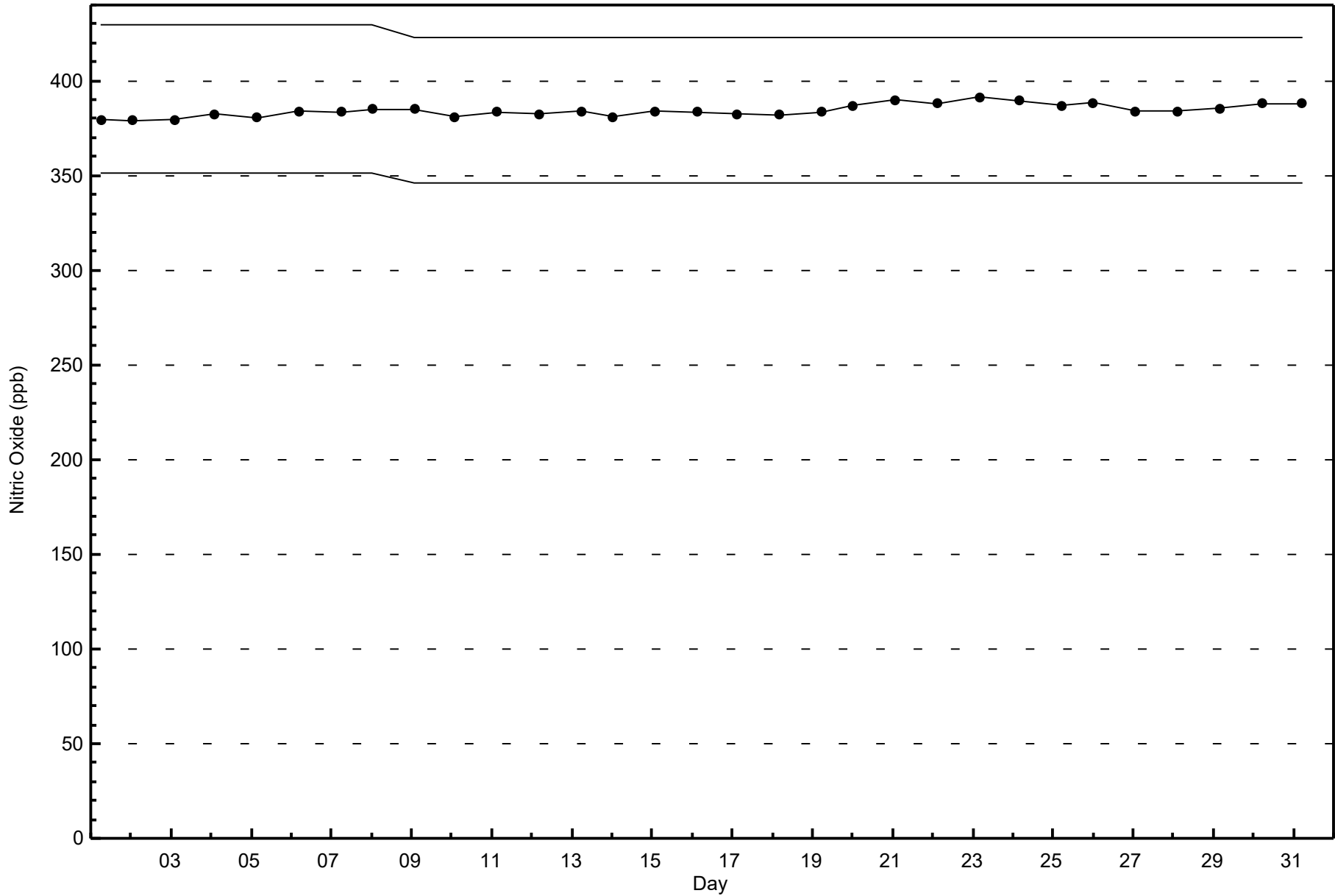




Wood Buffalo Environmental Association
Zero Responses

Nitric Oxide (NO) - ppb
Athabasca Valley - May 2023







Wood Buffalo Environmental Association
Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb
Athabasca Valley - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 21.8 ppb on May 13 21:00	Maximum Daily Average: 8.8 ppb on May 13		Hours of Data:	708
Minimum Value: 0.4 ppb on May 2 15:00	Minimum Daily Average: 1.9 ppb on May 5		Hours of Missing Data:	36
Maximum Diurnal Average: 7.1 ppb at hour 21	Minimum Diurnal Average: 2.4 ppb at hour 15		Hours of Calibration:	36
Monthly Average: 4.27 ppb	Percentiles: P ₁ = 0.5 P ₁₀ = 1.3 Q ₁ = 2.1 Median = 3.4 Q ₃ = 5.5 P ₉₀ = 8.4 P ₉₉ = 16.1		Percent Operational Time:	100.0

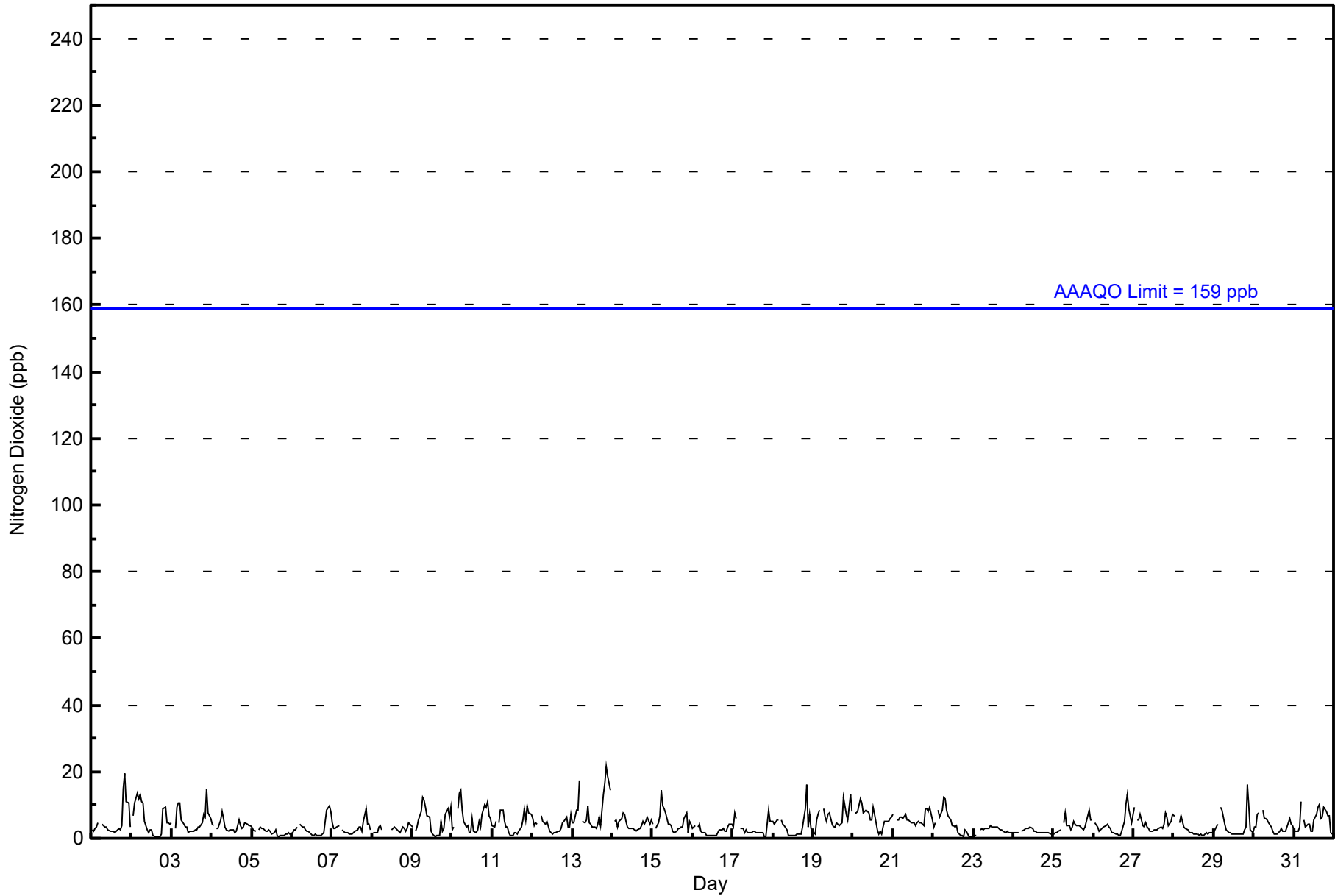
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	2.5	2.1	3.0	3.5	4.7	Z	4.2	3.7	3.3	3.4	2.7	2.3	2.0	2.2	1.8	2.2	2.8	2.7	3.7	14.7	19.6	11.0	10.5	3.4	4.9	19.6																							
2-May	Z	6.6	10.8	13.5	12.0	13.3	11.1	10.7	4.9	2.4	1.9	2.5	2.4	0.7	0.4	0.4	0.4	0.6	1.4	9.0	9.5	4.6	4.5	4.1	5.6	13.5																							
3-May	4.8	Z	3.1	9.3	10.7	10.4	5.7	4.3	3.6	3.3	1.9	2.0	2.1	2.2	2.5	2.7	3.3	3.3	4.5	7.4	6.5	14.8	7.8	5.9	5.3	14.8																							
4-May	4.3	3.7	Z	2.8	3.1	5.3	7.9	6.0	3.2	2.6	2.1	2.4	2.5	2.4	1.5	2.1	5.6	3.8	2.8	3.3	4.8	4.3	4.0	3.7	3.7	7.9																							
5-May	3.3	2.5	2.1	Z	2.6	3.2	3.1	2.9	2.3	2.3	2.4	2.0	1.2	1.5	2.5	0.9	0.6	0.7	0.8	0.9	1.3	1.1	1.5	1.4	1.9	3.3																							
6-May	1.9	2.5	2.5	3.2	Z	4.2	3.5	3.2	2.6	2.3	2.0	1.3	1.0	1.0	1.1	1.0	0.7	0.9	1.1	1.5	5.1	8.4	9.7	8.1	3.0	9.7																							
7-May	4.6	2.8	2.9	3.4	3.7	Z	2.6	2.1	1.9	1.6	1.2	1.2	1.4	1.7	2.1	2.7	3.5	3.5	2.1	5.1	9.0	4.2	4.3	2.5	3.0	9.0																							
8-May	Z	1.7	1.5	1.9	3.2	3.8	2.6	C	C	C	C	C	2.6	3.4	2.8	2.6	2.1	1.8	3.2	2.9	2.3	2.9	4.5	3.7	2.8	4.5																							
9-May	3.6	Z	2.2	3.2	5.3	8.2	12.4	11.6	9.5	6.6	6.2	2.0	1.1	0.8	0.5	0.8	0.9	4.9	2.1	2.8	7.0	8.8	6.3	9.2	5.0	12.4																							
10-May	2.6	3.3	Z	9.0	13.7	14.6	8.3	5.2	3.6	4.0	1.7	1.6	6.1	2.3	1.8	2.4	5.0	3.6	7.1	10.1	9.2	11.1	6.7	5.9	6.0	14.6																							
11-May	3.8	3.3	5.1	Z	4.5	8.5	8.4	5.1	3.4	3.6	1.8	1.0	0.7	1.5	1.5	1.3	2.1	3.5	5.3	8.8	5.6	9.7	7.5	7.3	4.5	9.7																							
12-May	6.1	3.8	4.7	4.4	Z	6.9	5.0	4.5	4.3	5.0	2.1	1.7	1.4	1.5	1.8	2.0	2.2	3.1	4.8	5.1	6.3	3.6	3.6	7.0	4.0	7.0																							
13-May	4.5	4.6	8.3	8.4	17.5	Z	4.9	4.5	5.5	9.6	4.5	4.3	3.5	3.4	3.1	4.1	6.4	3.9	13.2	16.5	21.8	18.5	16.5	14.2	8.8	21.8																							
14-May	Z	5.2	5.3	3.3	5.1	5.8	7.8	7.1	5.1	3.5	2.8	2.8	2.6	2.1	2.6	3.0	3.9	5.0	4.1	5.1	6.2	4.4	5.7	4.4	4.4	7.8																							
15-May	4.3	Z	2.8	4.7	6.7	14.2	9.8	9.1	7.8	4.3	4.1	3.9	2.2	1.7	2.0	2.8	3.0	3.2	3.5	6.0	7.5	1.9	5.2	4.4	5.0	14.2																							
16-May	2.8	3.8	Z	3.2	4.3	2.2	1.5	1.7	1.0	1.0	1.0	0.9	0.9	0.8	1.0	1.5	2.6	2.7	2.8	2.1	2.0	3.3	4.2	4.3	2.2	4.3																							
17-May	3.4	7.7	5.9	Z	3.0	2.9	3.1	1.6	2.5	1.9	1.7	1.8	2.3	2.2	1.6	1.8	1.9	1.9	1.9	0.6	0.5	8.4	5.2	5.0	3.0	8.4																							
18-May	5.2	4.2	5.4	5.5	Z	5.5	4.1	4.0	2.4	1.0	1.0	0.9	0.7	0.8	1.1	1.3	1.3	1.4	3.4	9.1	16.2	3.5	7.0	3.0	3.8	16.2																							
19-May	1.5	1.3	5.5	7.0	8.5	Z	8.8	6.5	5.0	7.2	7.8	4.1	3.5	3.5	4.6	4.3	3.7	4.6	12.4	9.6	7.4	5.7	13.0	7.9	6.2	13.0																							
20-May	Z	7.8	7.8	8.2	12.0	10.5	7.8	8.2	8.6	7.8	5.5	5.4	9.5	7.3	2.7	1.4	2.2	1.3	3.5	5.1	5.0	5.1	6.1	6.5	6.3	12.0																							
21-May	7.4	Z	5.7	5.7	6.4	6.3	5.9	7.4	5.7	5.6	4.9	4.6	4.6	3.9	4.7	5.0	4.7	4.7	4.0	8.9	8.9	8.1	9.5	5.5	6.0	9.5																							
22-May	3.6	4.5	Z	8.4	6.4	8.3	12.2	12.0	8.5	6.8	5.3	3.9	3.7	3.3	3.7	1.8	0.8	0.8	0.6	2.7	2.1	0.5	0.4	0.5	4.4	12.2																							
23-May	0.5	0.8	0.7	Z	2.6	2.9	2.7	2.9	2.9	2.9	3.8	3.6	3.4	3.4	3.5	3.0	2.6	2.7	2.3	1.9	2.1	1.7	1.7	1.7	2.4	3.8																							
24-May	1.6	1.6	1.6	1.7	Z	2.1	2.4	2.9	3.0	3.0	3.3	3.0	2.2	2.2	1.8	1.8	1.9	1.9	1.9	1.5	1.5	1.5	1.4	1.3	2.0	3.3																							
25-May	1.3	1.5	1.9	2.1	2.6	Z	4.5	7.5	4.0	3.9	2.7	3.5	4.9	4.2	3.7	3.7	3.2	3.0	2.7	3.2	6.7	8.3	5.6	5.4	3.9	8.3																							
26-May	Z	4.7	3.2	2.0	2.4	3.1	3.2	3.8	4.3	3.5	2.8	1.7	1.7	1.4	1.2	0.9	0.8	2.0	5.2	10.1	13.1	8.8	6.8	4.5	4.0	13.1																							
27-May	9.2	Z	5.3	5.5	7.0	3.7	3.3	4.8	3.2	3.0	2.2	2.1	2.4	2.5	2.5	3.0	3.2	3.0	4.1	7.8	6.5	4.0	4.9	7.1	4.4	9.2																							
28-May	6.9	6.6	Z	4.8	6.6	4.9	3.4	2.8	2.6	1.9	1.8	1.5	1.4	1.2	1.1	0.9	1.1	1.0	1.0	1.7	1.3	1.6	1.7	1.9	2.6	6.9																							
29-May	1.8	3.2	4.4	Z	9.5	8.4	4.2	2.7	2.0	1.9	1.5	1.4	1.2	1.2	1.3	1.3	1.3	1.4	2.5	3.4	16.2	9.9	2.4	1.8	3.7	16.2																							
30-May	3.5	3.5	7.2	7.7	Z	8.3	5.9	6.0	5.5	4.7	3.3	2.3	1.2	1.3	1.4	2.2	2.8	2.0	2.0	2.2	3.3	5.8	4.1	3.8	3.9	8.3																							
31-May	2.5	2.3	2.3	3.4	11.1	Z	5.4	3.5	4.3	4.2	2.3	2.3	5.4	7.0	9.5	10.1	6.0	6.5	9.3	7.9	6.9	6.8	1.8	1.2	5.3	11.1																							
																								3.8	3.7	4.3	5.2	6.7	6.7	5.7	5.3	4.2	3.8	2.9	2.5	2.6	2.4	2.4	2.4	2.6	2.7	3.9	5.7	7.1	6.3	5.6	4.8	Diurnal Average	
																								9.2	7.8	10.8	13.5	17.5	14.6	12.4	12.0	9.5	9.6	7.8	5.4	9.5	7.3	9.5	10.1	6.4	6.5	13.2	16.5	21.8	18.5	16.5	14.2	Diurnal Maximum	

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Athabasca Valley - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Athabasca Valley - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	707	99.86	99.86
21 - 40	1	0.14	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Athabasca Valley - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	24	8	6	15	31	72	201	54	50	37	49	35	25	19	37	44	707
21 - 40	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	8	6	15	31	72	202	54	50	37	49	35	25	19	37	44	708

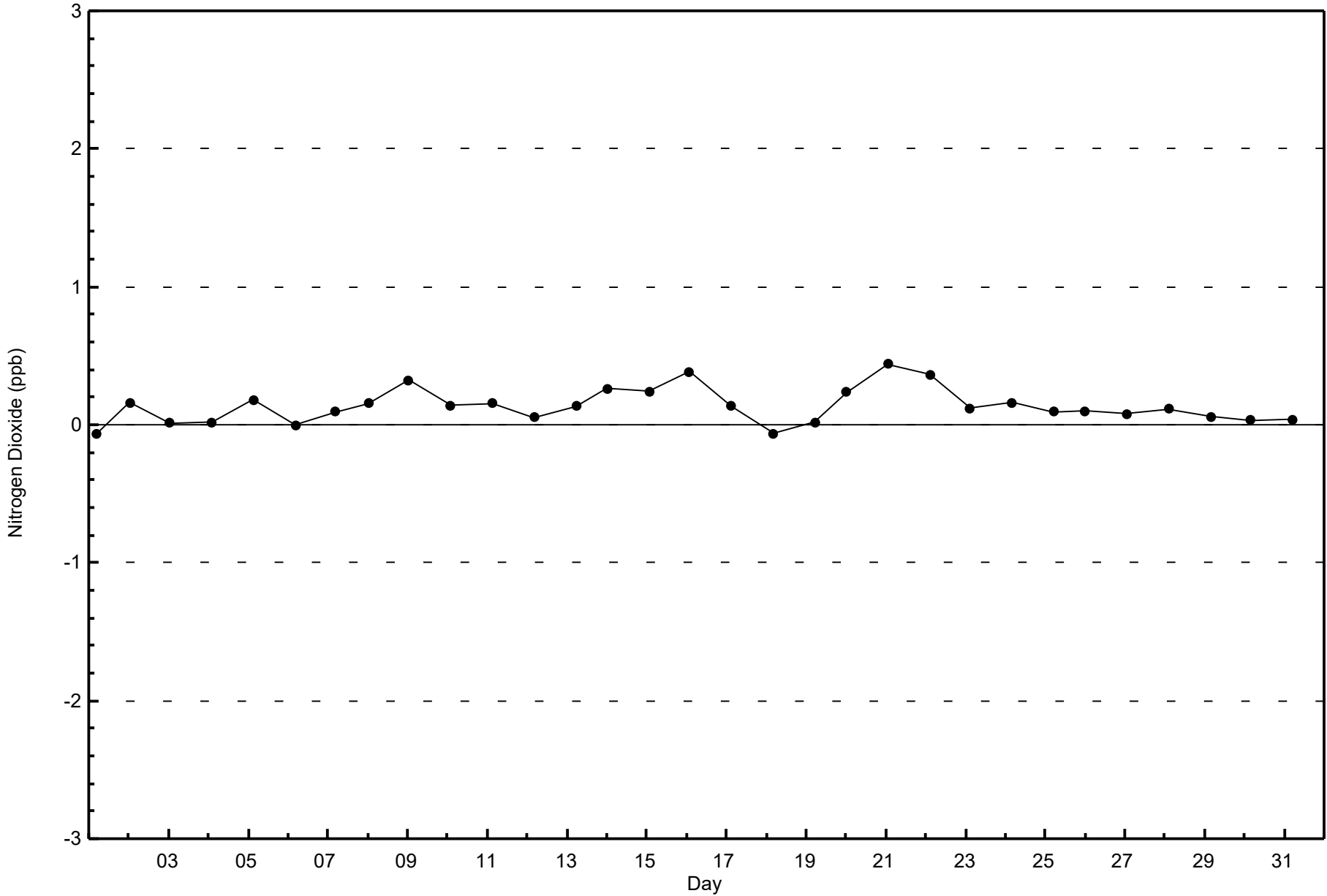
Total Number of Valid Hours: 708

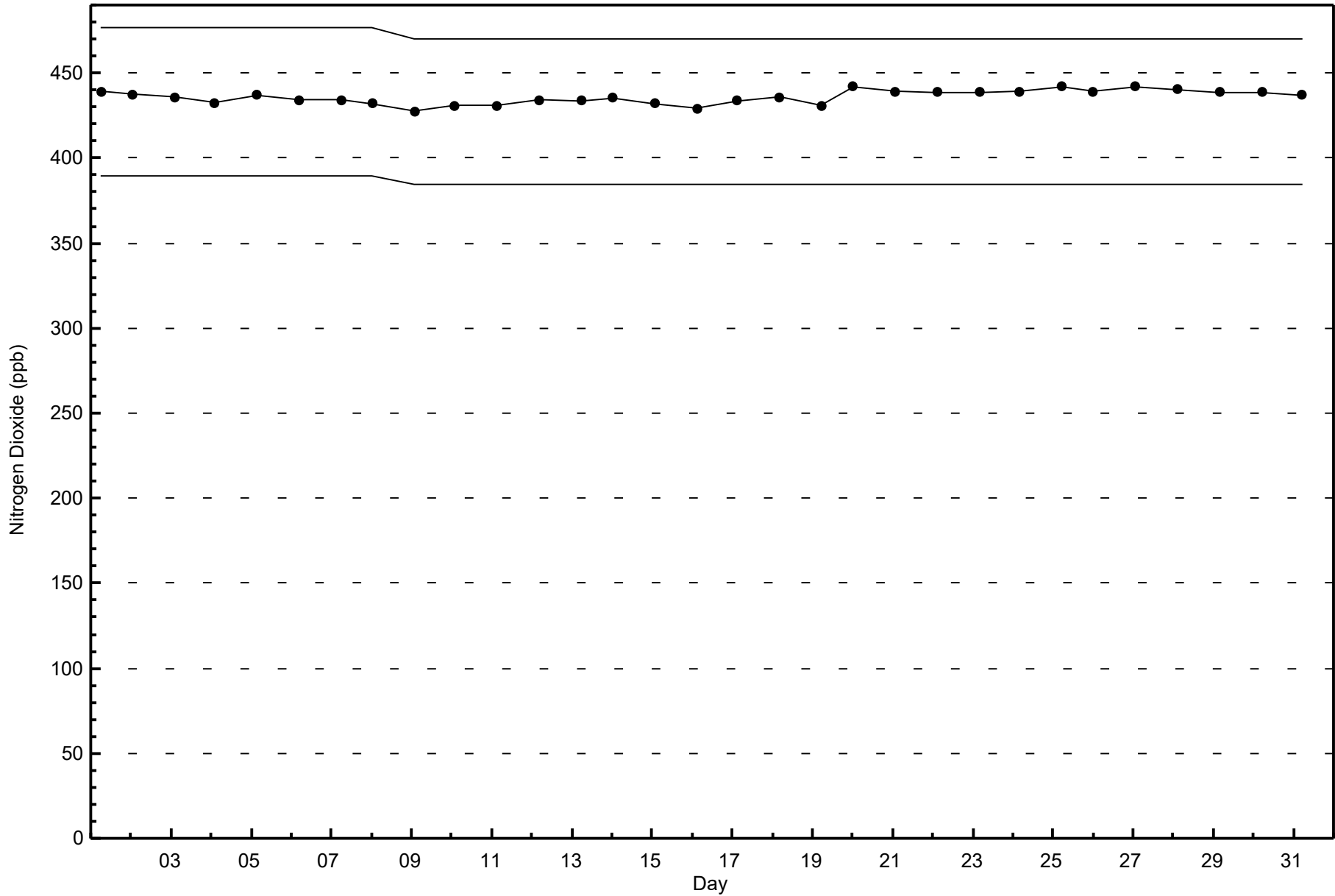
Total Number of Hours: 744



Wood Buffalo Environmental Association
Zero Responses

Nitrogen Dioxide (NO₂) - ppb
Athabasca Valley - May 2023







Wood Buffalo Environmental Association
Summary of Hour Averages

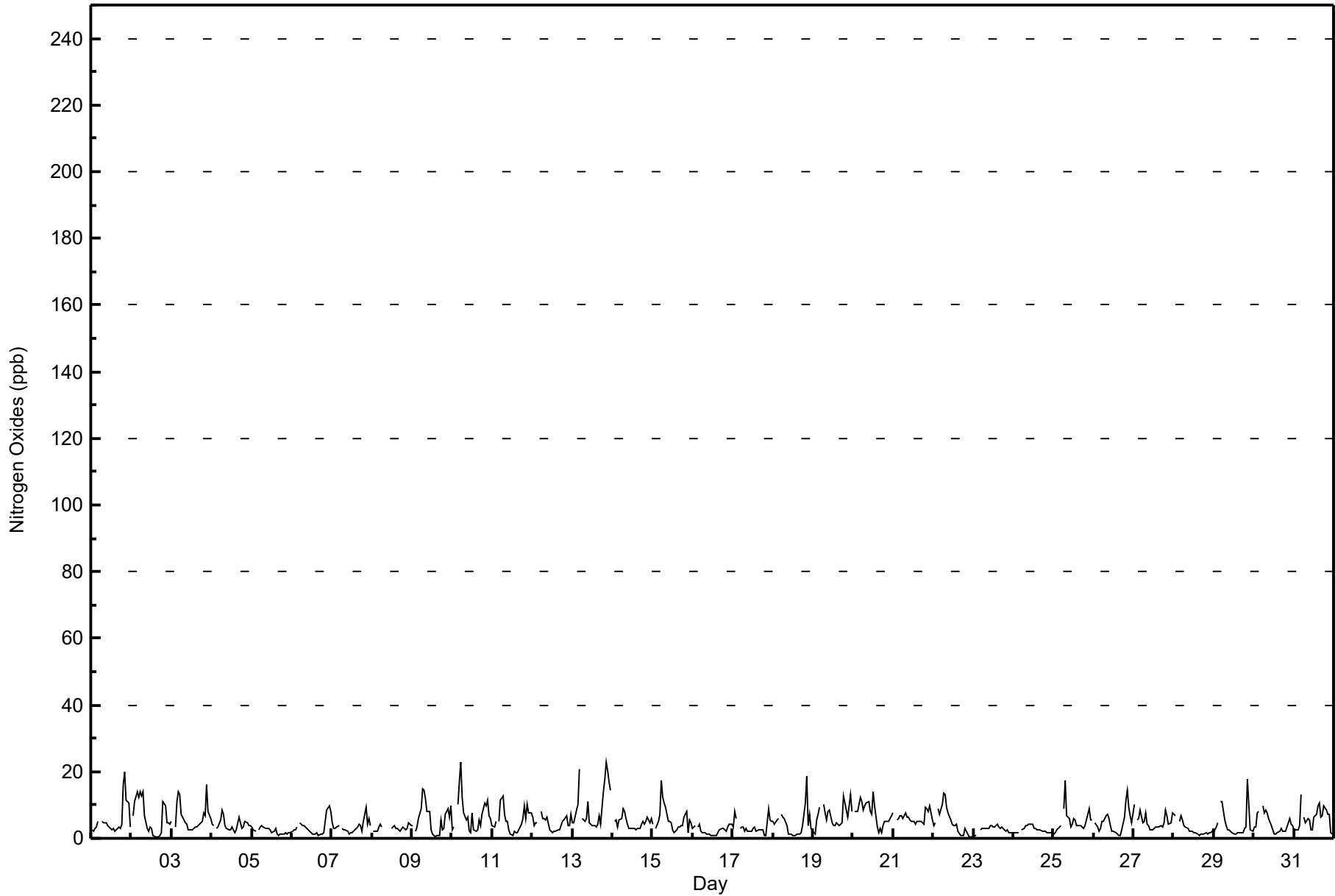
Nitrogen Oxides (NO_x) - ppb
Athabasca Valley - May 2023

Maximum Value: 23.1 ppb on May 13 21:00																					Maximum Daily Average: 9.5 ppb on May 13					Hours in Service: 744	
Minimum Value: 0.4 ppb on May 22 23:00											Minimum Daily Average: 2.2 ppb on May 5					Hours of Data: 708											
Maximum Diurnal Average: 8.1 ppb at hour 6											Minimum Diurnal Average: 2.7 ppb at hour 15					Hours of Missing Data: 36											
Monthly Average: 4.84 ppb											Percentiles: P ₁ = 0.6 P ₁₀ = 1.5 Q ₁ = 2.4 Median = 3.8 Q ₃ = 6.1 P ₉₀ = 9.6 P ₉₉ = 17.9					Hours of Calibration: 36											
																Percent Operational Time: 100.0											
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	2.6	2.2	3.1	3.6	5.1	Z	5.1	4.7	4.5	4.5	3.6	2.9	2.6	2.8	2.2	2.7	3.5	3.2	4.1	16.0	20.0	11.2	10.7	3.6	5.4	20.0	
2-May	Z	6.6	10.9	14.1	12.2	14.1	12.9	13.9	6.6	3.1	2.3	3.3	3.1	0.9	0.4	0.5	0.5	0.7	1.8	10.9	9.6	4.8	4.7	4.4	6.2	14.1	
3-May	4.9	Z	3.2	11.0	13.9	13.1	7.2	5.7	4.9	4.3	2.5	2.6	2.7	2.9	3.2	3.4	4.0	4.1	5.0	7.8	6.7	16.2	8.0	6.0	6.2	16.2	
4-May	4.4	3.7	Z	3.0	3.4	5.5	8.5	7.3	3.8	3.1	2.4	2.7	3.4	2.8	1.7	2.4	6.3	4.5	3.1	3.6	5.1	4.5	4.0	3.7	4.0	8.5	
5-May	3.3	2.5	2.1	Z	2.7	3.5	3.7	3.6	2.9	3.0	3.1	2.7	1.6	2.0	2.8	1.2	0.9	1.1	1.2	1.1	1.7	1.2	1.5	1.5	2.2	3.7	
6-May	2.0	2.6	2.6	3.3	Z	4.5	3.9	3.7	3.3	3.0	2.6	1.7	1.4	1.4	1.5	1.5	0.9	1.2	1.4	1.7	5.3	8.6	9.9	8.2	3.3	9.9	
7-May	4.6	2.8	2.9	3.5	3.8	Z	3.0	2.6	2.5	2.0	1.5	1.6	1.8	2.1	2.5	3.4	4.1	3.9	2.3	5.2	9.2	4.4	5.8	3.8	3.4	9.2	
8-May	Z	2.2	2.3	2.0	3.4	4.2	3.2	C	C	C	C	C	3.1	3.8	3.1	3.1	2.6	2.1	3.5	3.0	2.4	3.0	4.6	3.8	3.1	4.6	
9-May	3.7	Z	2.3	3.5	6.1	8.7	14.7	14.2	11.7	8.2	8.1	2.5	1.4	1.0	0.6	0.9	1.0	5.4	2.4	3.1	7.2	8.9	6.5	9.6	5.7	14.7	
10-May	2.7	3.4	Z	10.3	17.1	23.0	12.4	7.6	5.5	6.2	2.2	1.8	7.5	2.6	2.0	2.7	5.7	3.8	7.3	10.4	9.6	11.6	6.8	6.1	7.3	23.0	
11-May	3.9	3.4	5.2	Z	5.2	11.5	12.8	7.3	5.0	5.2	2.4	1.3	0.9	2.0	1.9	1.6	2.7	4.2	5.8	9.6	5.8	10.0	7.7	7.7	5.4	12.8	
12-May	6.4	3.9	4.9	4.8	Z	8.1	6.1	5.9	5.4	6.1	2.5	2.3	1.8	1.9	2.2	2.4	2.6	3.6	5.3	5.5	6.7	3.7	3.7	7.3	4.5	8.1	
13-May	4.5	4.6	8.6	10.0	21.0	Z	5.7	5.1	6.1	11.1	4.8	4.4	3.7	3.6	3.3	4.3	6.7	4.1	14.1	17.9	23.1	20.2	17.0	14.5	9.5	23.1	
14-May	Z	5.3	5.4	3.3	5.3	6.1	8.7	8.2	5.8	4.1	3.2	3.1	3.0	2.9	2.4	2.9	3.2	4.2	5.1	4.1	5.2	6.5	4.5	5.8	4.7	8.7	
15-May	4.3	Z	2.9	4.9	7.1	17.3	12.1	10.8	9.4	5.1	4.9	4.5	2.5	1.9	2.4	3.3	3.5	3.7	3.9	6.5	8.1	1.9	5.3	4.7	5.7	17.3	
16-May	2.8	3.8	Z	3.2	4.4	2.3	1.6	1.8	1.1	1.1	1.1	1.0	1.0	0.9	1.1	1.6	2.7	2.8	3.0	2.4	2.2	3.5	4.3	4.4	2.4	4.4	
17-May	3.5	7.8	6.0	Z	3.1	3.3	3.4	1.9	3.0	2.3	2.1	2.3	3.0	3.2	2.1	2.4	2.4	2.4	2.4	0.9	0.9	8.8	5.6	5.2	3.4	8.8	
18-May	5.3	4.3	5.6	6.0	Z	7.2	6.5	6.0	3.6	1.3	1.3	1.1	0.8	0.9	1.3	1.5	1.5	1.6	3.8	10.6	18.6	3.7	7.2	3.1	4.5	18.6	
19-May	1.5	1.3	5.6	7.3	9.1	Z	10.2	7.4	5.6	7.9	8.5	4.5	3.8	3.7	4.9	4.4	3.8	4.7	12.8	10.6	8.3	6.2	13.1	7.9	6.7	13.1	
20-May	Z	7.8	7.9	8.2	12.2	11.1	8.7	9.8	10.4	10.9	7.9	7.4	13.9	10.0	3.3	1.5	3.0	1.7	3.7	5.3	5.1	5.2	6.1	6.6	7.3	13.9	
21-May	7.4	Z	5.7	5.8	6.6	6.6	6.1	7.8	6.1	6.2	5.3	5.0	5.1	4.2	5.0	5.2	4.9	4.9	4.2	9.2	9.1	8.2	9.6	5.6	6.3	9.6	
22-May	3.6	4.5	Z	9.0	7.2	10.2	13.6	13.0	9.1	7.4	5.7	4.1	3.9	3.6	4.2	2.1	0.9	0.9	0.7	2.8	2.3	0.5	0.4	0.5	4.8	13.6	
23-May	0.5	0.8	0.7	Z	2.7	3.0	2.8	3.1	3.1	3.1	3.9	3.8	3.6	3.6	4.2	3.5	3.1	3.2	2.9	2.2	2.5	1.8	1.8	1.8	2.7	4.2	
24-May	1.6	1.6	1.6	1.8	Z	2.3	3.1	3.7	3.8	4.2	4.3	4.1	3.0	3.1	2.4	2.6	2.5	2.3	2.2	1.9	1.8	1.6	1.5	1.8	2.6	4.3	
25-May	1.4	1.6	2.3	2.9	4.0	Z	9.0	17.5	6.9	5.9	3.5	4.3	6.0	5.4	4.0	4.0	3.9	3.4	3.1	3.7	7.3	8.8	5.7	5.5	5.2	17.5	
26-May	Z	4.8	3.4	2.2	3.0	4.9	5.2	6.7	7.0	5.7	3.8	2.1	2.1	1.7	1.4	1.0	0.8	2.4	6.2	11.4	14.4	9.4	7.0	4.6	4.8	14.4	
27-May	10.0	Z	5.4	5.8	8.7	4.6	5.0	7.5	4.4	3.9	2.7	2.6	3.1	3.3	3.2	3.5	3.7	3.4	4.6	8.4	6.9	4.1	4.9	7.4	5.1	10.0	
28-May	7.1	6.7	Z	4.9	7.0	5.4	3.9	3.4	3.1	2.2	2.1	2.0	1.8	1.5	1.3	1.0	1.3	1.2	1.1	1.8	1.3	1.6	1.8	2.0	2.8	7.1	
29-May	1.8	3.3	4.6	Z	11.1	11.2	5.7	3.8	2.7	2.7	2.0	1.8	1.5	1.5	1.6	1.5	1.5	1.7	2.9	3.6	17.9	10.3	2.5	1.9	4.3	17.9	
30-May	3.5	3.6	7.5	8.2	Z	9.9	7.5	8.3	7.5	5.8	3.8	2.7	1.4	1.4	1.5	2.3	2.9	2.1	2.1	2.3	3.6	6.0	4.2	3.9	4.4	9.9	
31-May	2.6	2.5	2.4	3.9	13.1	Z	6.5	4.7	6.0	5.4	2.7	2.6	6.2	7.4	9.9	10.7	6.2	6.8	9.7	8.3	7.2	7.0	1.9	1.3	5.9	13.1	
																								Diurnal Average			
																								Diurnal Maximum			
3.8 3.8 4.4 5.6 7.6 8.1 7.1 6.9 5.4 4.8 3.6 3.0 3.2 2.9 2.7 2.7 3.0 3.1 4.2 6.2 7.6 6.6 5.8 5.0																											
10.0 7.8 10.9 14.1 21.0 23.0 14.7 17.5 11.7 11.1 8.5 7.4 13.9 10.0 9.9 10.7 6.7 6.8 14.1 17.9 23.1 20.2 17.0 14.5																											
Z - zerospan C - Calibration																											



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Athabasca Valley - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	705	99.58	99.58
21 - 40	3	0.42	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Athabasca Valley - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	24	8	6	15	31	72	200	54	49	37	49	35	25	19	37	44	705
21 - 40	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	3
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	8	6	15	31	72	202	54	50	37	49	35	25	19	37	44	708

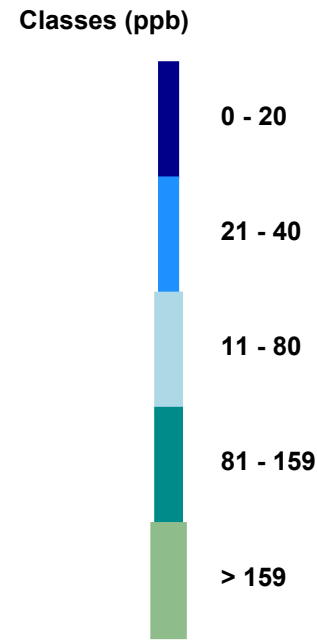
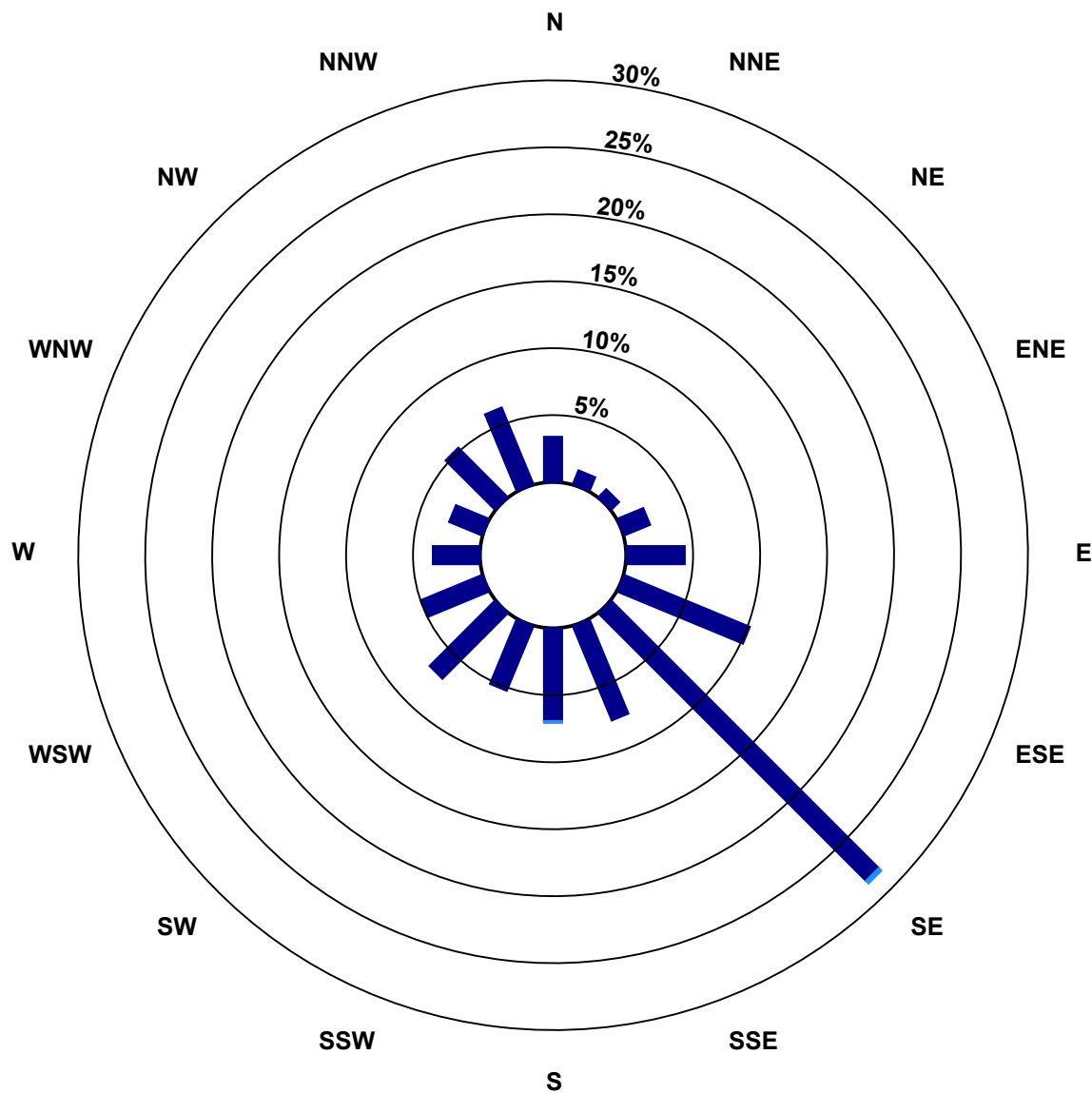
Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Athabasca Valley

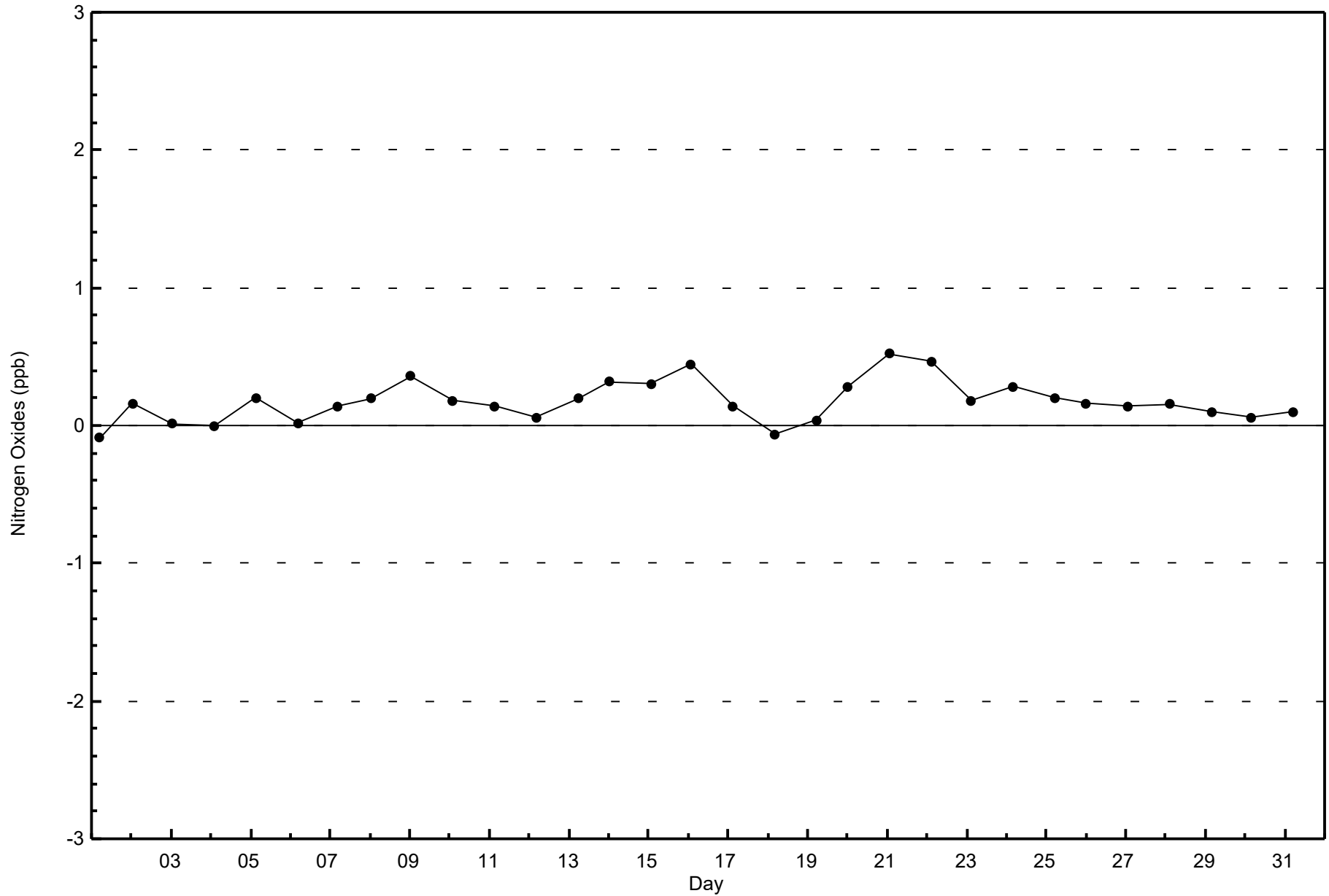


Total Number of Valid Hours: 708



Wood Buffalo Environmental Association
Zero Responses

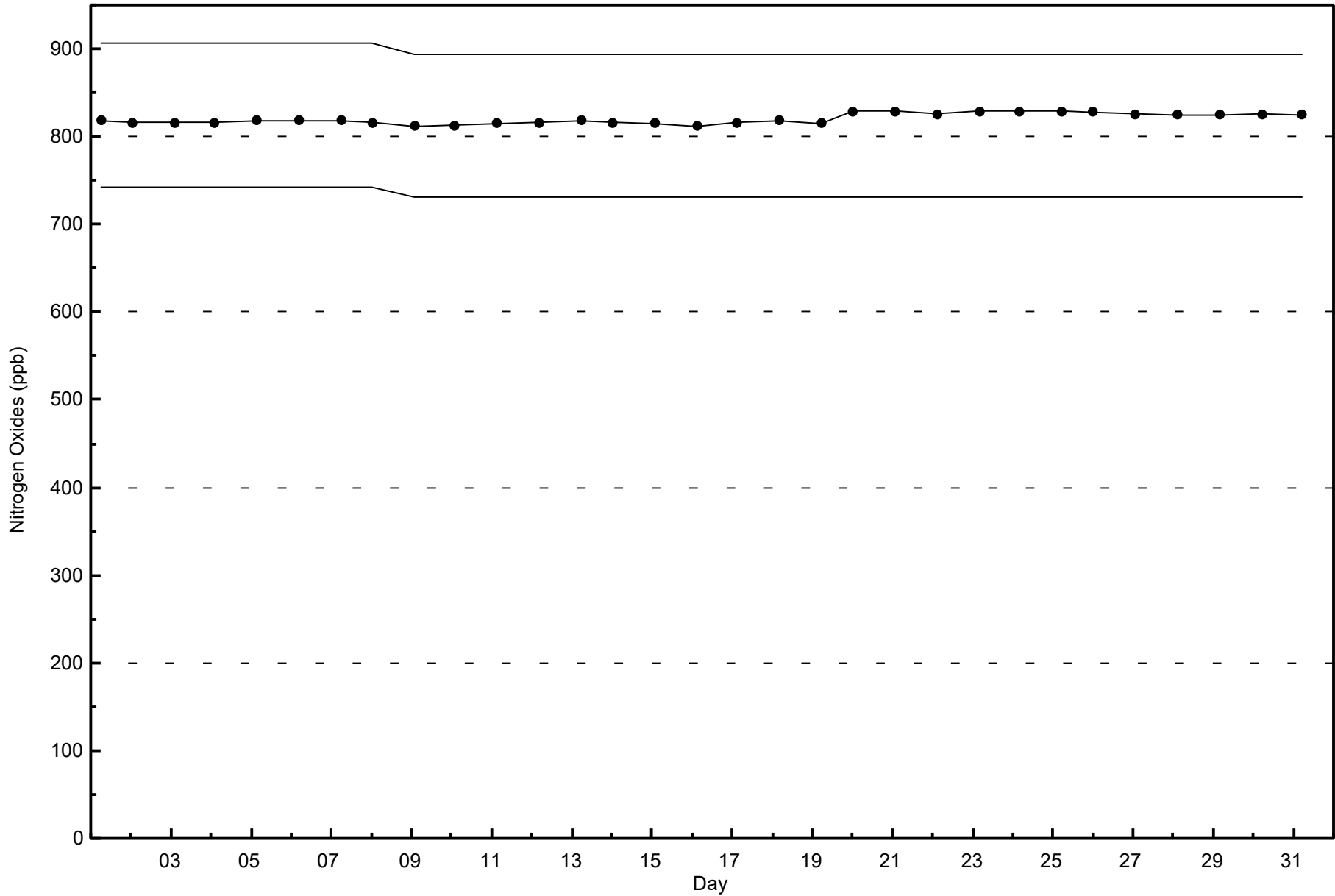
Nitrogen Oxides (NO_x) - ppb
Athabasca Valley - May 2023

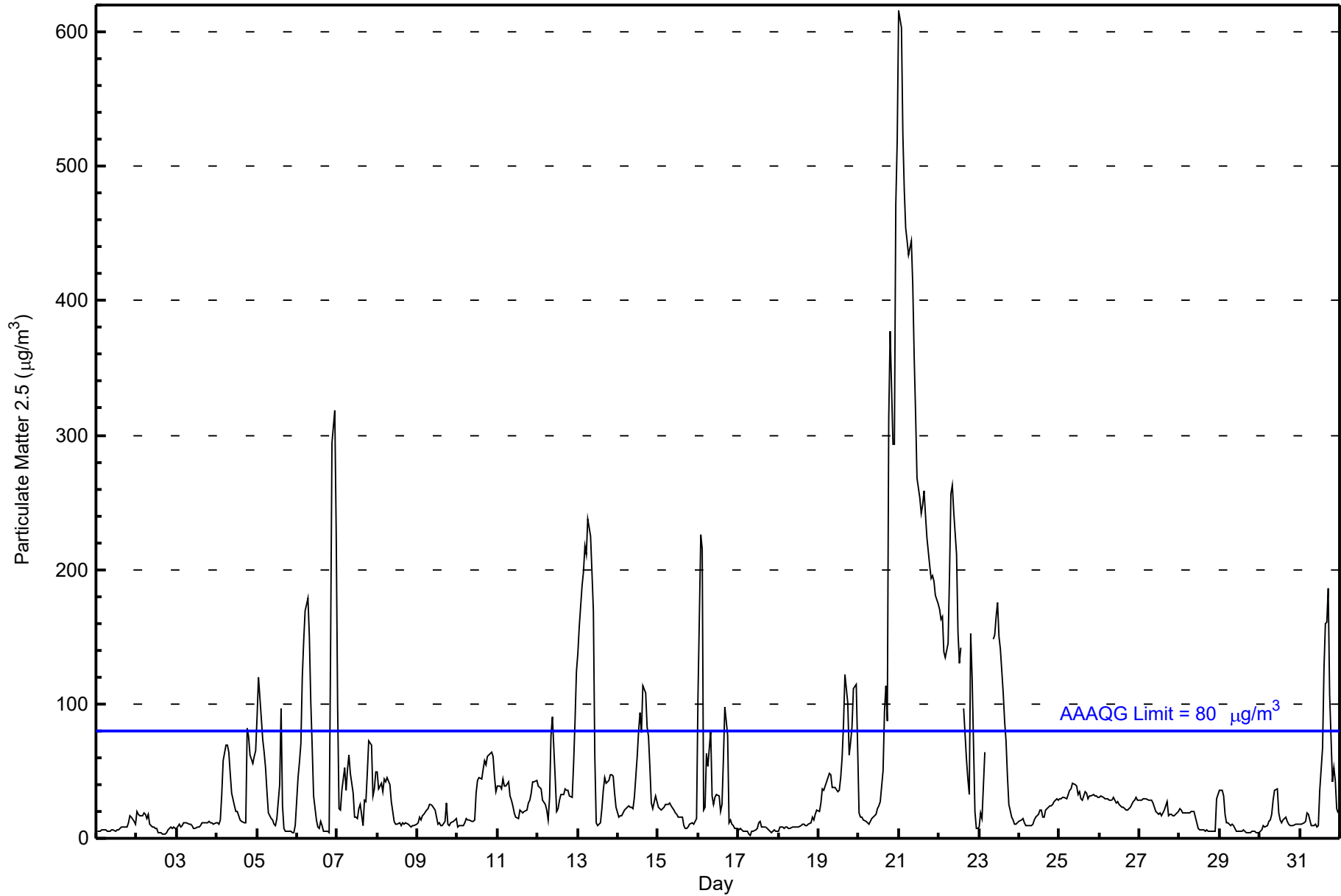




Wood Buffalo Environmental Association
Span Responses

Nitrogen Oxides (NO_x) - ppb
Athabasca Valley - May 2023







Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Athabasca Valley - May 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	48	6.50	6.50
6 - 15	240	32.48	38.97
16 - 25	134	18.13	57.10
26 - 80	211	28.55	85.66
> 81.0	106	14.34	100.00

Total Number of Valid Hours: 739

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - µg/m³
Athabasca Valley - May 2023**

Concentration Ranges (µg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	4	3	0	0	3	6	8	0	1	2	4	9	2	1	1	4	48
6 - 15	8	4	2	4	6	20	65	22	14	20	21	9	10	5	12	18	240
16 - 25	2	1	1	2	5	15	29	18	21	4	5	7	6	2	6	10	134
26 - 80	5	0	2	8	7	17	78	17	11	9	14	9	6	8	15	5	211
> 81.0	4	0	1	2	8	18	34	7	5	2	5	1	1	3	3	12	106
Totals	23	8	6	16	29	76	214	64	52	37	49	35	25	19	37	49	739

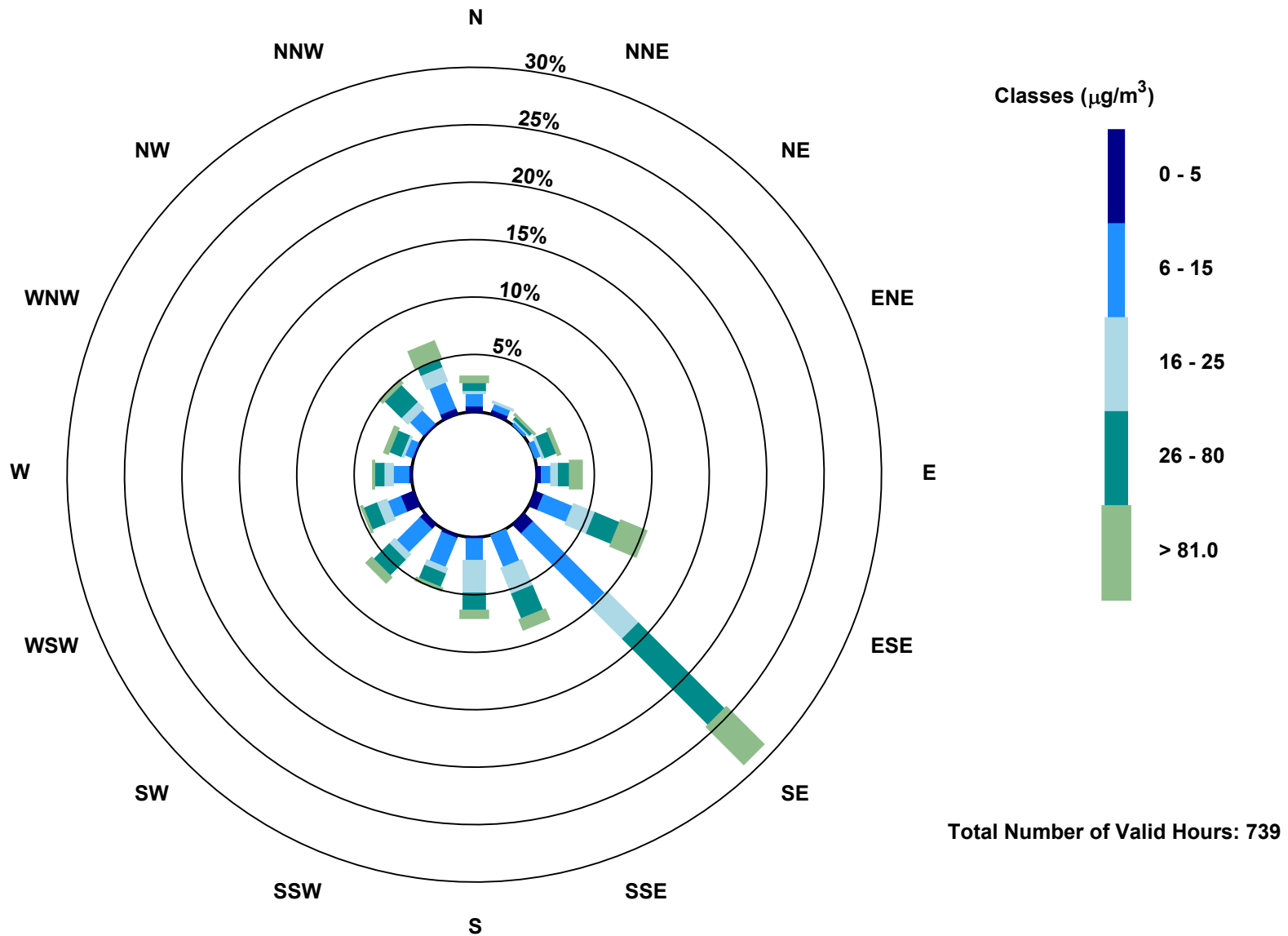
Total Number of Valid Hours: 739

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Athabasca Valley





Wood Buffalo Environmental Association

Summary of Hour Averages

Carbon Monoxide (CO) - ppm

Athabasca Valley - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 2.9 ppm on May 21 01:00	Maximum Daily Average: 1.4 ppm on May 21		Hours of Data:	710
Minimum Value: 0.1 ppm on May 17 06:00	Minimum Daily Average: 0.1 ppm on May 17		Hours of Missing Data:	34
Maximum Diurnal Average: 0.4 ppm at hour 8	Minimum Diurnal Average: 0.2 ppm at hour 13		Hours of Calibration:	34
Monthly Average: 0.30 ppm	Percentiles: P ₁ = 0.1 P ₁₀ = 0.1 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.3 P ₉₀ = 0.6 P ₉₉ = 1.9		Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.4	0.2	0.2	0.1	0.2	0.4	
2-May	0.1	Z	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2
3-May	0.1	0.2	Z	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
4-May	0.2	0.1	0.1	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.3	0.3
5-May	0.3	0.4	0.4	0.3	Z	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.4
6-May	0.3	0.3	0.3	0.4	0.5	Z	0.9	0.8	0.6	0.5	0.3	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.4	0.8	0.8	0.6	0.4	0.9	0.9
7-May	Z	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.2	0.4	0.4
8-May	0.3	Z	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3
9-May	0.1	0.1	Z	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
10-May	0.1	0.1	0.1	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3
11-May	0.2	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.3
12-May	0.2	0.2	0.2	0.2	0.2	Z	0.1	0.2	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.4	0.4	0.2	0.4	0.4
13-May	Z	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.7	0.7	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.8
14-May	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.4
15-May	0.2	0.2	Z	0.2	0.2	0.2	C	C	C	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
16-May	0.4	0.8	0.7	Z	0.2	0.3	0.3	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.8	0.8
17-May	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2
18-May	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3
19-May	Z	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.4	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.3	0.5
20-May	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.4	0.4	0.4	1.6	1.9	1.4	1.4	2.2	2.5	0.6	2.5	
21-May	2.9	2.8	Z	2.2	2.1	2.0	1.8	1.8	1.7	1.4	1.3	1.1	1.1	1.0	1.0	1.1	1.1	1.0	0.9	0.9	0.9	0.8	0.8	0.8	1.4	2.9	
22-May	0.7	0.7	0.7	Z	0.5	0.6	0.9	1.2	1.2	1.1	1.0	0.7	0.6	0.7	0.6	0.5	0.3	0.3	0.2	0.5	0.4	0.1	0.1	0.1	0.6	1.2	
23-May	0.1	0.1	0.1	0.3	Z	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.5	0.5	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.4	0.8	
24-May	0.1	0.2	0.2	0.2	0.2	Z	0.1	0.2	0.1	0.1	0.2	0.2	0.3	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0.6	
25-May	Z	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.4	0.6	
26-May	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
27-May	0.3	0.3	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3
28-May	0.3	0.2	0.2	Z	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3
29-May	0.3	0.3	0.3	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.3
30-May	0.1	0.1	0.2	0.1	0.1	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2
31-May	Z	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.5	0.6	0.6	0.7	0.4	0.3	0.3	0.3	0.2	0.2	0.3	0.7	0.7

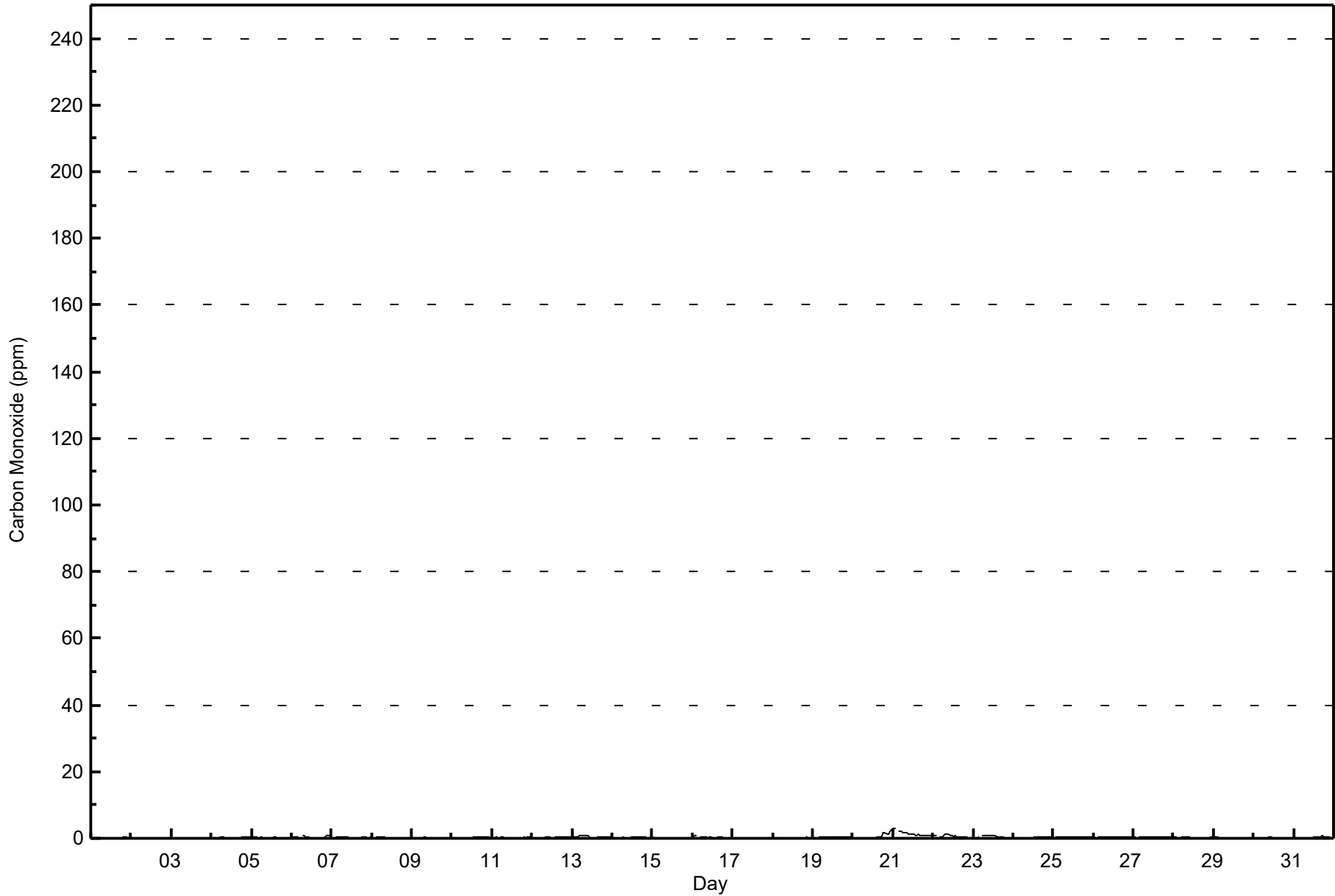
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2.9	2.8	0.7	2.2	2.1	2.0	1.8	1.8	1.7	1.4	1.3	1.1	1.1	1.0	1.0	1.1	1.1	1.0	1.6	1.9	1.4	1.4	2.2	2.5	0.6	2.5	0.6	2.5	Diurnal Maximum

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 13 ppm



Wood Buffalo Environmental Association
Hourly Averages

Carbon Monoxide (CO) - ppm
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Carbon Monoxide (CO) - ppm
Athabasca Valley - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.3	573	80.70	80.70
0.4 - 0.5	65	9.15	89.86
0.6 - 0.7	25	3.52	93.38
0.8 - 1.4	35	4.93	98.31
1.5 - 10	12	1.69	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 710

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Carbon Monoxide (CO) - ppm
Athabasca Valley - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	17	8	5	12	19	56	158	52	44	33	40	26	21	14	33	35	573
0.4 - 0.5	0	0	1	2	4	3	17	5	3	1	8	8	4	3	4	2	65
0.6 - 0.7	3	0	0	2	3	2	4	0	3	2	0	1	0	1	0	4	25
0.8 - 1.4	2	0	0	0	4	10	9	4	0	0	0	0	0	0	0	6	35
1.5 - 10	0	0	0	0	0	3	8	1	0	0	0	0	0	0	0	0	12
> 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	22	8	6	16	30	74	196	62	50	36	48	35	25	18	37	47	710

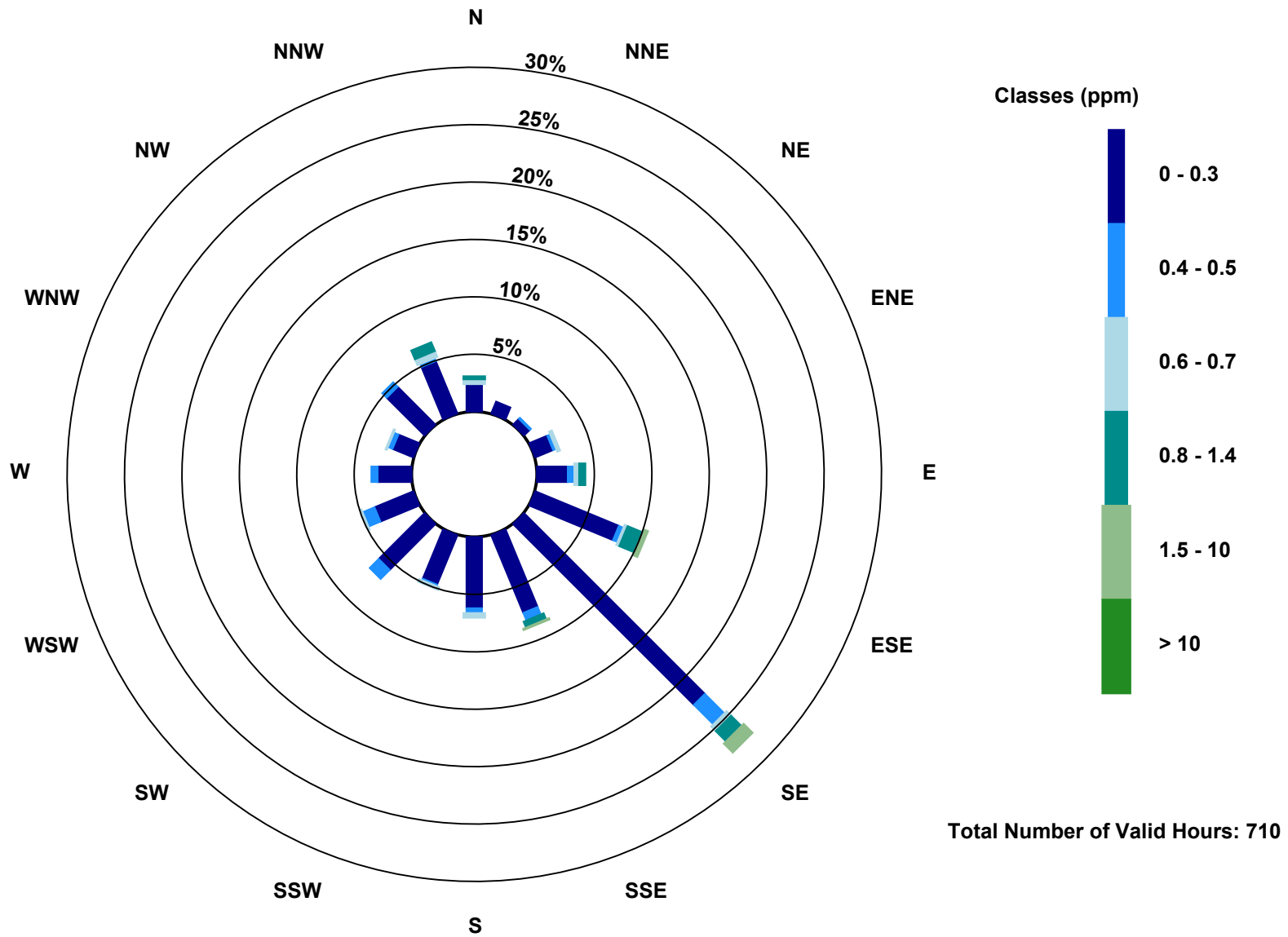
Total Number of Valid Hours: 710

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

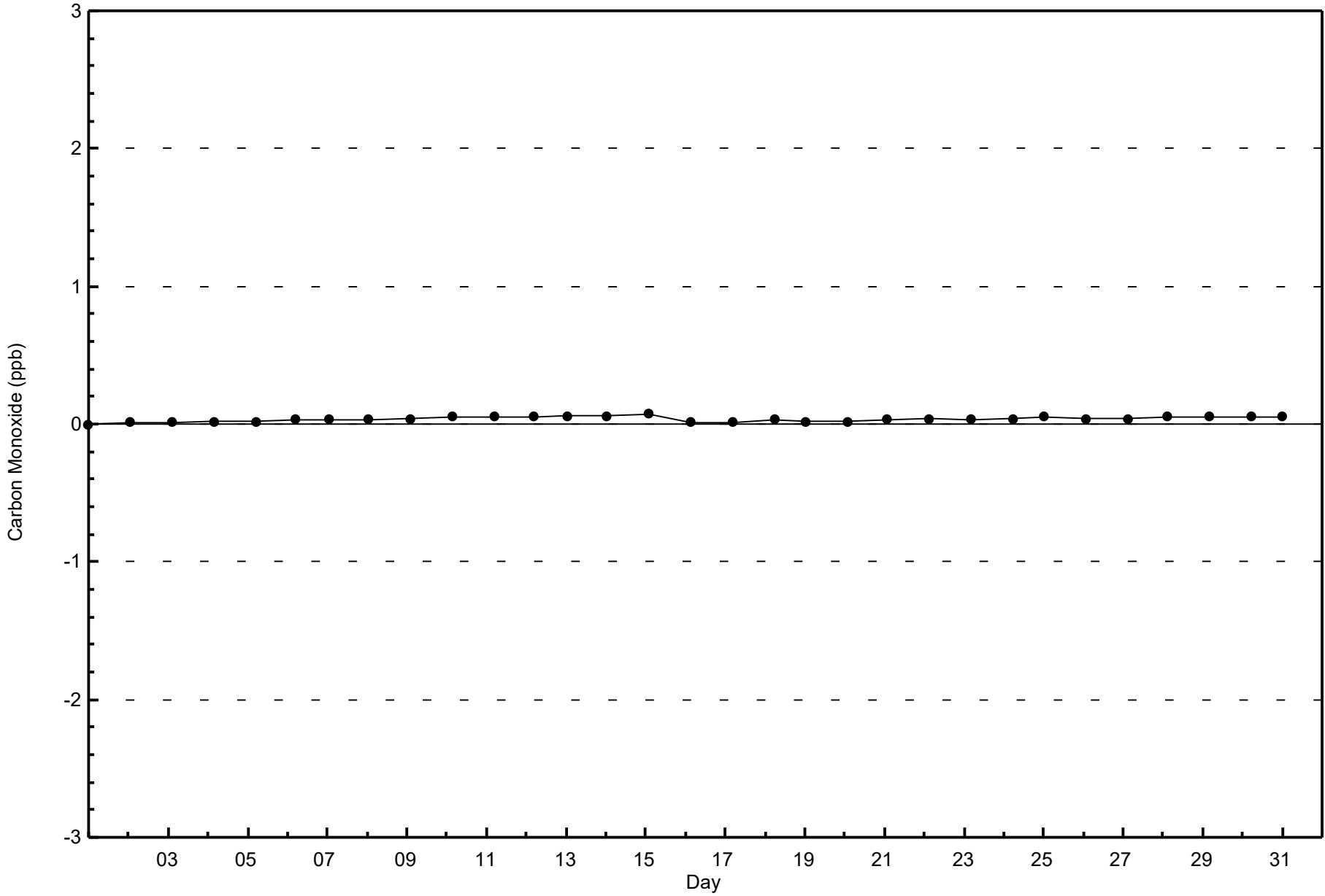
Carbon Monoxide (CO) - ppm
Athabasca Valley





Wood Buffalo Environmental Association
Zero Responses

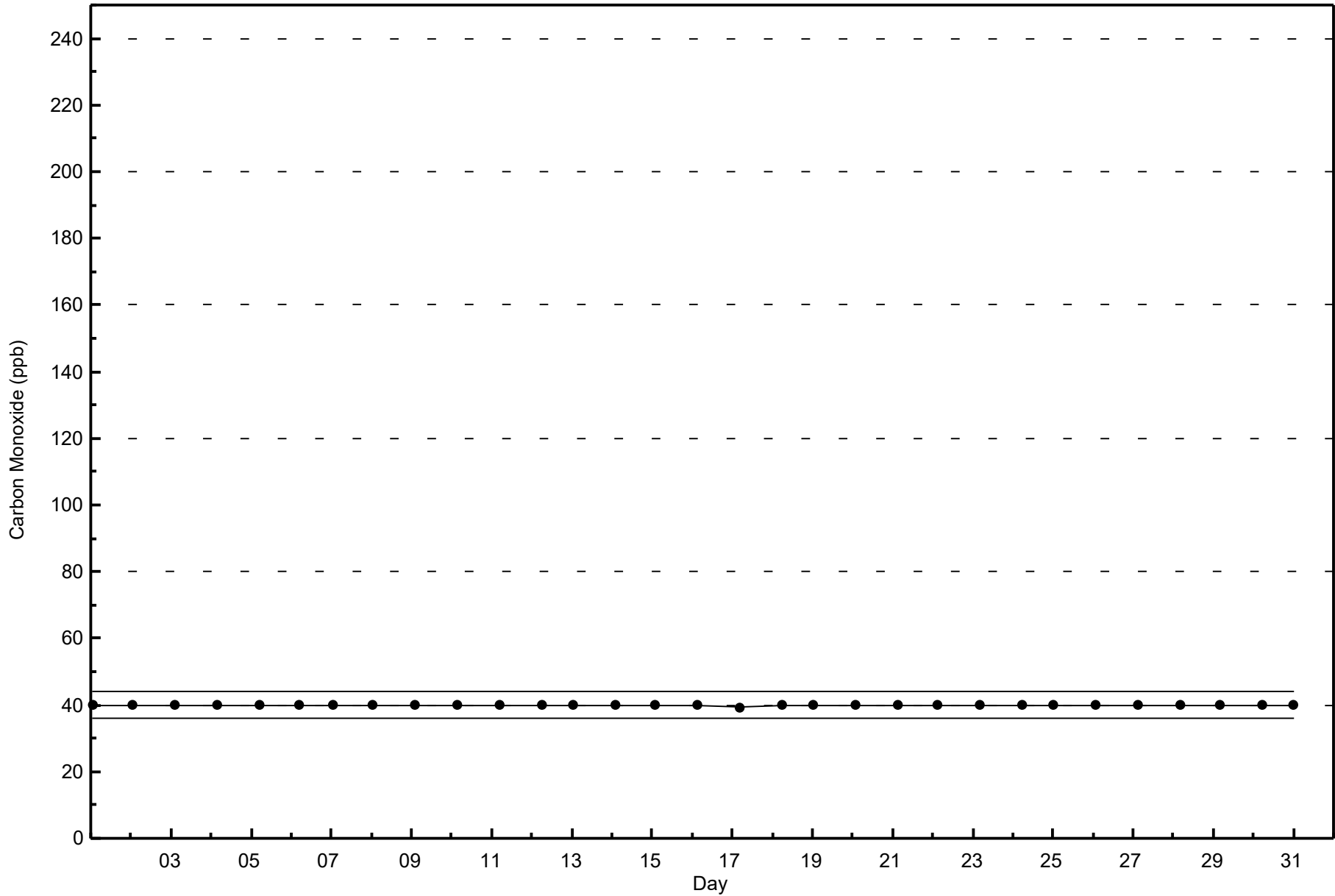
Carbon Monoxide (CO) - ppb
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Span Responses

Carbon Monoxide (CO) - ppb
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Summary of Hour Averages

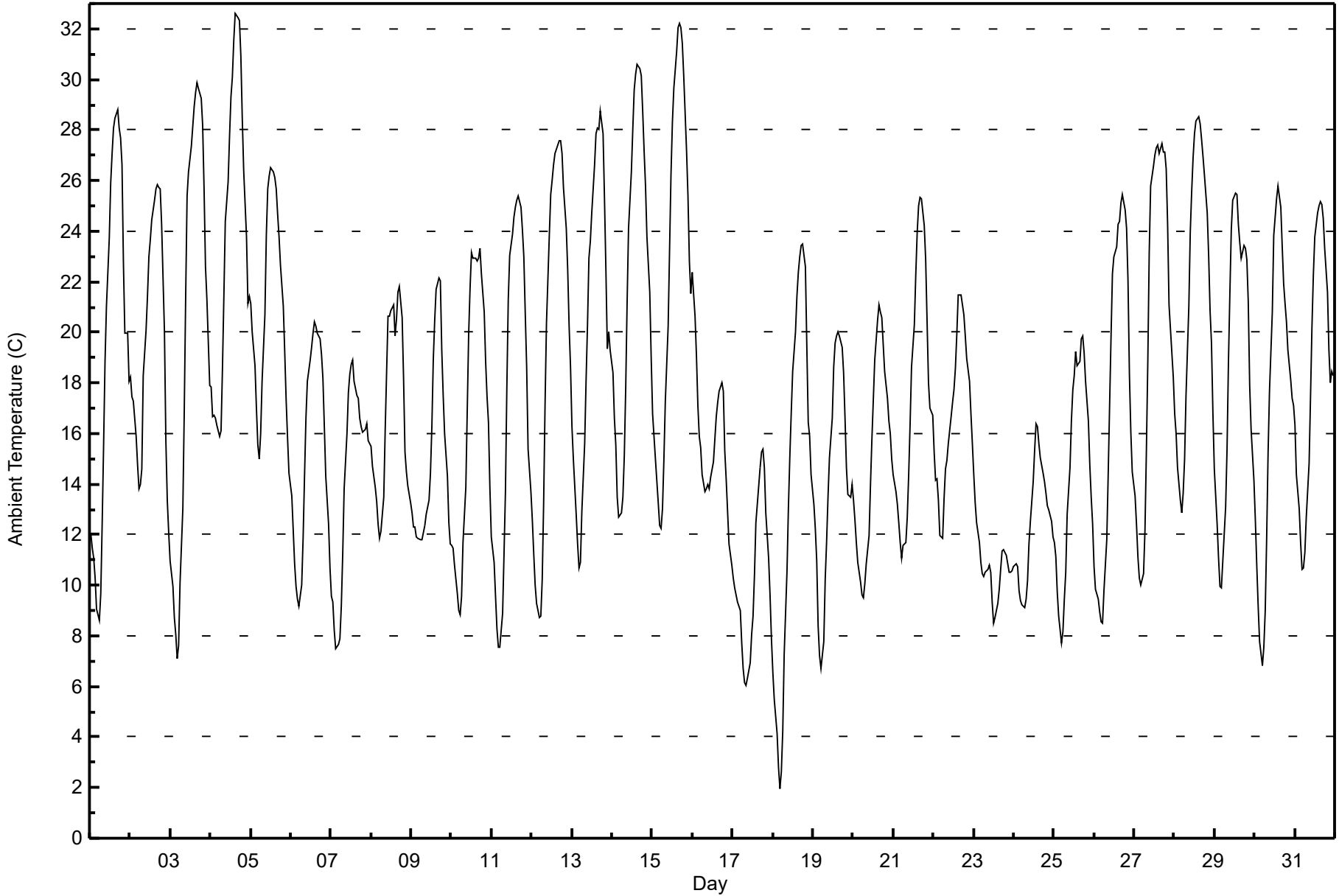
Ambient Temperature (AT) - C
Athabasca Valley - May 2023

Maximum Value: 32.6 C on May 4 16:00 Maximum Daily Average: 23.9 C on May 4																						Hours in Service: 744				
Minimum Value: 2.0 C on May 18 05:00 Minimum Daily Average: 10.1 C on May 17																						Hours of Data: 744				
Maximum Diurnal Average: 23.5 C at hour 17 Minimum Diurnal Average: 10.2 C at hour 6																						Hours of Missing Data: 0				
Monthly Average: 17.39 C Percentiles: P₁ = 6.2 P₁₀ = 9.7 Q₁ = 12.4 Median = 16.7 Q₃ = 22.3 P₉₀ = 26.2 P₉₉ = 31.3																						Hours of Calibration: 0				
																						Percent Operational Time: 100.0				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	12.0	11.5	11.1	10.3	9.1	8.6	9.7	12.5	15.5	18.8	21.1	23.7	25.9	27.1	28.1	28.5	28.8	28.1	27.7	26.6	22.8	20.0	20.0	18.1	19.4	28.8
2-May	18.2	17.5	17.3	15.9	14.8	13.8	14.0	14.6	18.3	20.1	21.4	23.0	23.6	24.5	25.2	25.6	25.8	25.7	25.6	24.3	20.0	15.7	13.3	12.1	19.6	25.8
3-May	10.9	10.0	8.7	8.0	7.1	7.6	10.1	13.0	16.9	21.4	25.4	26.3	27.3	28.1	28.9	29.5	29.9	29.6	29.3	28.2	25.7	22.6	21.3	17.9	20.2	29.9
4-May	17.8	16.6	16.7	16.6	16.3	15.9	16.1	18.6	21.4	24.4	26.0	27.7	29.3	30.1	31.5	32.6	32.4	32.3	31.0	28.5	26.4	23.8	21.2	21.4	23.9	32.6
5-May	21.1	20.0	18.7	17.0	15.6	15.0	16.0	18.1	20.7	23.8	25.7	26.2	26.5	26.3	26.1	25.7	24.7	23.8	22.6	21.0	19.2	17.3	15.8	14.5	20.9	26.5
6-May	13.5	12.2	10.9	9.9	9.4	9.2	10.0	11.9	14.3	16.6	18.1	18.9	19.4	20.0	20.4	20.2	20.0	19.7	19.1	18.2	16.3	14.3	12.4	10.7	15.2	20.4
7-May	9.5	9.3	8.2	7.5	7.7	7.9	9.2	11.3	13.8	16.0	17.6	18.3	18.8	18.9	18.1	17.5	17.4	16.6	16.3	16.0	16.2	16.4	15.7	15.6	14.2	18.9
8-May	15.5	14.7	13.9	13.3	12.4	11.9	12.1	13.5	16.1	18.4	20.6	20.6	20.9	21.1	19.9	20.5	21.6	21.8	20.6	18.2	15.3	14.5	13.9	13.3	16.9	21.8
9-May	12.8	12.3	12.3	11.9	11.8	11.8	11.8	12.1	12.4	12.8	13.4	14.4	16.3	18.9	20.5	21.7	22.1	22.1	19.3	17.5	16.0	14.3	12.5	11.6	15.1	22.1
10-May	11.6	11.5	10.8	9.7	9.0	8.8	9.6	11.7	13.9	16.9	19.9	21.8	23.1	22.9	22.9	22.8	22.9	23.3	22.3	20.8	18.8	17.4	16.5	13.9	16.8	23.3
11-May	11.9	10.9	9.5	8.3	7.5	7.5	8.9	11.2	13.7	17.8	21.3	23.0	23.9	24.5	25.0	25.2	25.4	24.9	24.0	23.0	20.8	18.6	15.4	13.7	17.3	25.4
12-May	12.6	11.3	10.0	9.3	8.7	8.8	10.3	13.3	17.2	20.3	23.9	25.4	26.0	26.6	27.1	27.4	27.6	27.6	27.1	25.7	24.1	22.5	20.3	18.6	19.6	27.6
13-May	16.3	15.0	12.8	11.7	10.7	10.9	12.9	15.6	18.1	20.3	22.9	23.6	24.7	26.6	27.9	28.1	28.0	28.8	27.9	25.3	22.5	19.4	20.0	19.3	20.4	28.8
14-May	18.4	16.6	15.5	13.5	12.7	12.9	13.5	15.1	17.8	21.2	24.1	26.3	28.0	29.6	30.2	30.6	30.4	30.2	28.8	27.2	25.8	23.8	21.6	19.0	22.2	30.6
15-May	16.8	15.9	15.0	13.2	12.4	12.3	13.0	15.0	17.3	20.2	23.3	26.2	28.3	29.6	31.1	32.0	32.2	32.1	31.5	30.1	27.2	25.4	22.8	21.5	22.7	32.2
16-May	22.4	20.6	19.1	17.1	15.9	15.4	14.4	13.7	13.8	14.0	13.8	14.3	14.9	15.8	16.7	17.2	17.7	18.0	17.7	15.3	14.2	12.9	11.7	10.8	15.7	22.4
17-May	10.3	9.9	9.6	9.3	9.0	7.7	6.7	6.2	6.0	6.3	6.9	8.0	8.8	10.4	12.5	14.0	14.6	15.3	15.4	14.7	12.8	11.1	9.6	7.9	10.1	15.4
18-May	6.5	5.5	4.1	2.8	2.0	2.7	4.3	7.3	10.6	13.1	15.1	16.8	18.5	20.0	21.4	22.4	23.0	23.4	23.5	22.6	19.4	16.4	15.9	14.4	13.8	23.5
19-May	13.2	12.3	11.0	8.4	7.2	6.7	7.8	10.2	11.7	13.5	15.0	16.6	18.6	19.6	19.8	20.0	19.9	19.4	18.4	16.6	14.6	13.6	13.5	14.0	14.2	20.0
20-May	13.4	12.6	11.7	10.9	10.1	9.6	9.5	10.1	10.9	12.0	14.0	15.8	17.3	18.9	20.5	21.1	20.8	20.6	19.5	18.4	17.4	16.5	16.0	15.0	15.1	21.1
21-May	14.4	13.7	13.2	12.5	11.7	11.1	11.6	11.7	12.7	14.4	16.4	18.6	20.3	22.3	23.9	25.0	25.4	25.3	24.2	22.9	20.4	18.0	17.0	16.8	17.6	25.4
22-May	15.3	14.2	14.2	13.3	12.0	11.8	13.4	14.6	14.9	15.6	16.7	17.2	17.7	18.6	19.9	21.5	21.5	21.1	20.7	19.8	19.0	18.1	16.8	15.6	16.8	21.5
23-May	14.3	13.2	12.5	11.7	10.9	10.5	10.3	10.5	10.6	10.8	10.5	9.3	8.5	8.7	9.3	9.8	10.7	11.4	11.4	11.2	10.9	10.5	10.5	10.6	10.8	14.3
24-May	10.7	10.8	10.8	9.8	9.4	9.2	9.1	9.5	10.2	11.6	12.5	14.1	15.3	16.4	16.3	15.6	15.0	14.4	14.1	13.7	13.2	13.0	12.5	11.9	12.5	16.4
25-May	11.7	11.1	9.7	8.8	7.7	8.1	9.4	10.5	12.8	14.6	16.5	17.7	18.3	19.3	18.7	18.9	19.8	19.9	19.2	18.1	16.5	14.8	13.5	12.4	14.5	19.9
26-May	10.7	9.9	9.4	8.9	8.5	8.5	9.8	11.8	14.4	17.1	19.8	22.3	23.0	23.4	24.3	24.4	25.1	25.4	24.8	24.1	22.1	18.3	16.1	14.5	17.4	25.4
27-May	13.6	12.4	11.1	10.3	10.0	10.5	12.2	15.3	18.8	23.1	25.8	26.6	27.0	27.3	27.4	27.1	27.5	27.1	27.1	26.5	24.3	21.1	19.2	18.2	20.4	27.5
28-May	16.8	16.0	14.7	13.4	12.9	13.6	15.0	17.5	21.0	23.9	25.5	26.9	27.9	28.3	28.5	28.2	27.7	27.0	26.3	24.7	23.0	20.9	19.6	16.8	21.5	28.5
29-May	14.6	12.4	11.1	10.0	9.9	11.0	13.1	15.4	18.8	21.6	24.1	25.2	25.5	25.5	24.3	23.6	22.9	23.4	23.3	22.9	21.2	17.9	16.1	14.2	18.7	25.5
30-May	12.6	10.8	9.2	7.8	6.8	7.6	9.0	11.8	15.2	17.7	20.8	23.8	24.6	25.3	25.8	24.9	23.4	21.9	21.1	20.4	19.3	18.1	17.4	17.1	17.2	25.8
31-May	16.4	14.4	13.0	11.7	10.6	10.7	11.3	12.7	14.8	17.5	20.2	22.3	23.8	24.7	25.0	25.2	25.1	24.5	23.3	21.6	19.3	18.0	18.5	18.3	18.4	25.2
																						Diurnal Average				
																						Diurnal Maximum				



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Athabasca Valley - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Athabasca Valley - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	86	11.56	11.56
10 - 20	408	54.84	66.40
> 20	250	33.60	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association

Summary of Hour Averages

Barometric Pressure (BP) - inHg

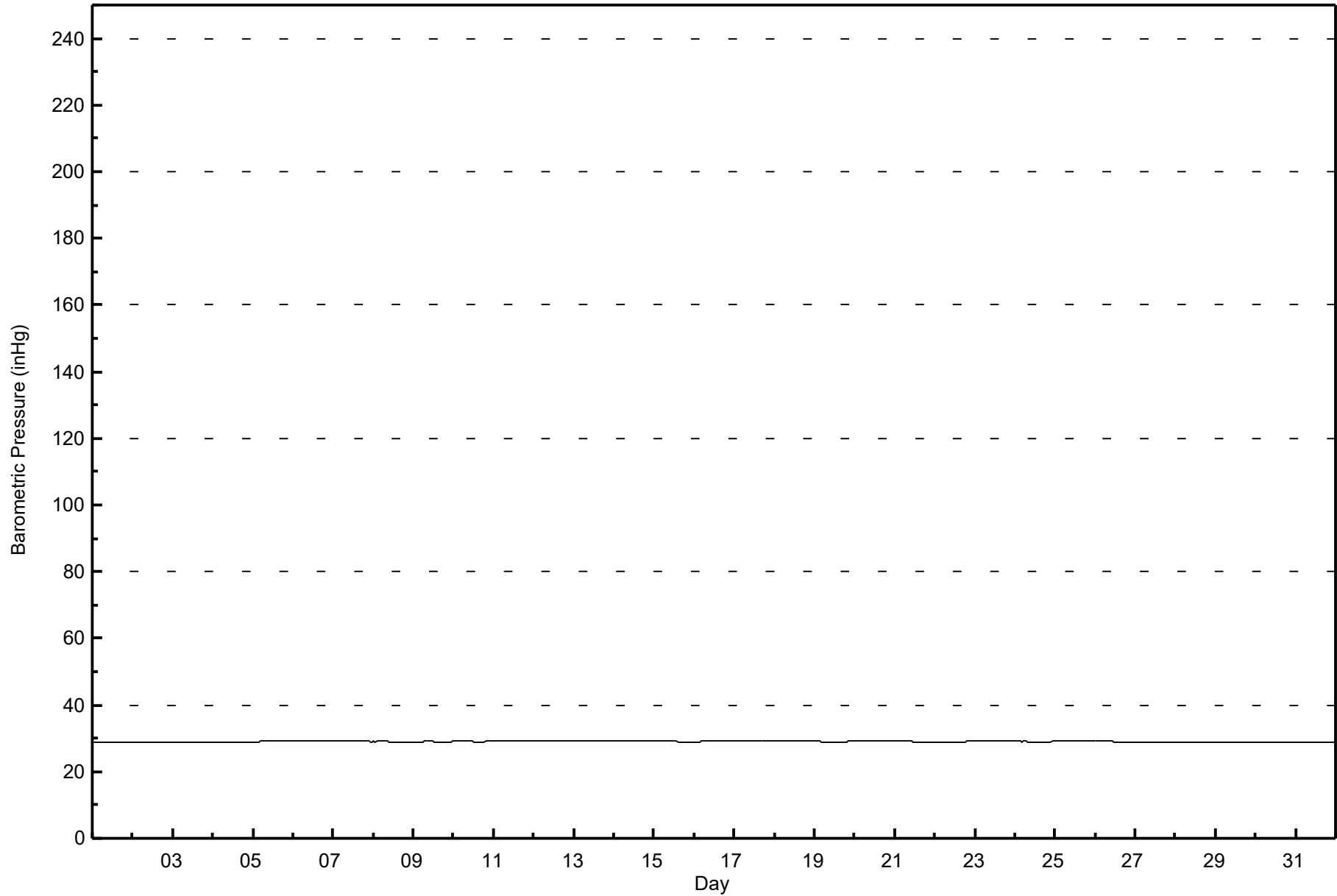
Athabasca Valley - May 2023

Maximum Value: 29.4 inHg on May 13 09:00		Maximum Daily Average: 29.4 inHg on May 13																				Hours in Service: 744																										
Minimum Value: 28.6 inHg on May 28 16:00		Minimum Daily Average: 28.7 inHg on May 28																				Hours of Data: 744																										
Maximum Diurnal Average: 29.1 inHg at hour 9		Minimum Diurnal Average: 29.0 inHg at hour 18																				Hours of Missing Data: 0																										
Monthly Average: 29.03 inHg		Percentiles: P ₁ = 28.6 P ₁₀ = 28.8 Q ₁ = 28.9 Median = 29.0 Q ₃ = 29.2 P ₉₀ = 29.3 P ₉₉ = 29.4																				Hours of Calibration: 0																										
		Percent Operational Time: 100.0																																														
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.8	28.8																							
2-May	28.8	28.8	28.8	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.8	28.9	28.9	28.9	28.9	28.9	28.9	28.9																							
3-May	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.8	28.8	28.8																							
4-May	28.8	28.8	28.8	28.8	28.8	28.8	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.8	28.8	28.9	28.9	28.9	28.9	29.0	29.0																							
5-May	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.2	29.2																							
6-May	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.3	29.3	29.3	29.2	29.2	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.2	29.2	29.2	29.2	29.1	29.2																							
7-May	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	29.1																							
8-May	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	28.9	29.0	29.0	28.9	28.9	28.9	29.0	29.0	29.0	29.0	29.0	29.0																							
9-May	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0																							
10-May	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.0																							
11-May	29.1	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.2	29.2																							
12-May	29.2	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.4	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.4	29.4	29.3																							
13-May	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.3	29.3	29.3	29.3	29.3	29.4	29.4	29.4	29.4																							
14-May	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.2	29.2	29.2	29.2	29.3	29.3	29.3																							
15-May	29.3	29.3	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.0	29.0	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.1																							
16-May	28.9	28.9	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.1	29.2																							
17-May	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.2	29.2	29.2	29.2	29.2	29.3	29.3	29.3	29.2																							
18-May	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.2																							
19-May	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	28.9	28.9	28.9	29.0	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.0																							
20-May	29.1	29.1	29.2	29.2	29.2	29.2	29.2	29.3	29.3	29.3	29.3	29.3	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2																							
21-May	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0																							
22-May	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.0																							
23-May	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1																							
24-May	29.1	29.1	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0																							
25-May	29.1	29.0	29.0	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1																							
26-May	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0	28.9	29.1																							
27-May	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	28.9	28.9	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.9																							
28-May	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.7	28.7	28.7																							
29-May	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.8	28.8	28.8	28.7																							
30-May	28.8	28.8	28.8	28.8	28.8	28.9	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.9	28.9	28.9	28.8																							
31-May	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.8	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9																							
																								29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	Diurnal Average	
																								29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.3	29.3	29.3	29.3	29.3	29.4	29.4	29.4	Diurnal Maximum



Wood Buffalo Environmental Association
Hourly Averages

Barometric Pressure (BP) - inHg
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Summary of Hour Averages

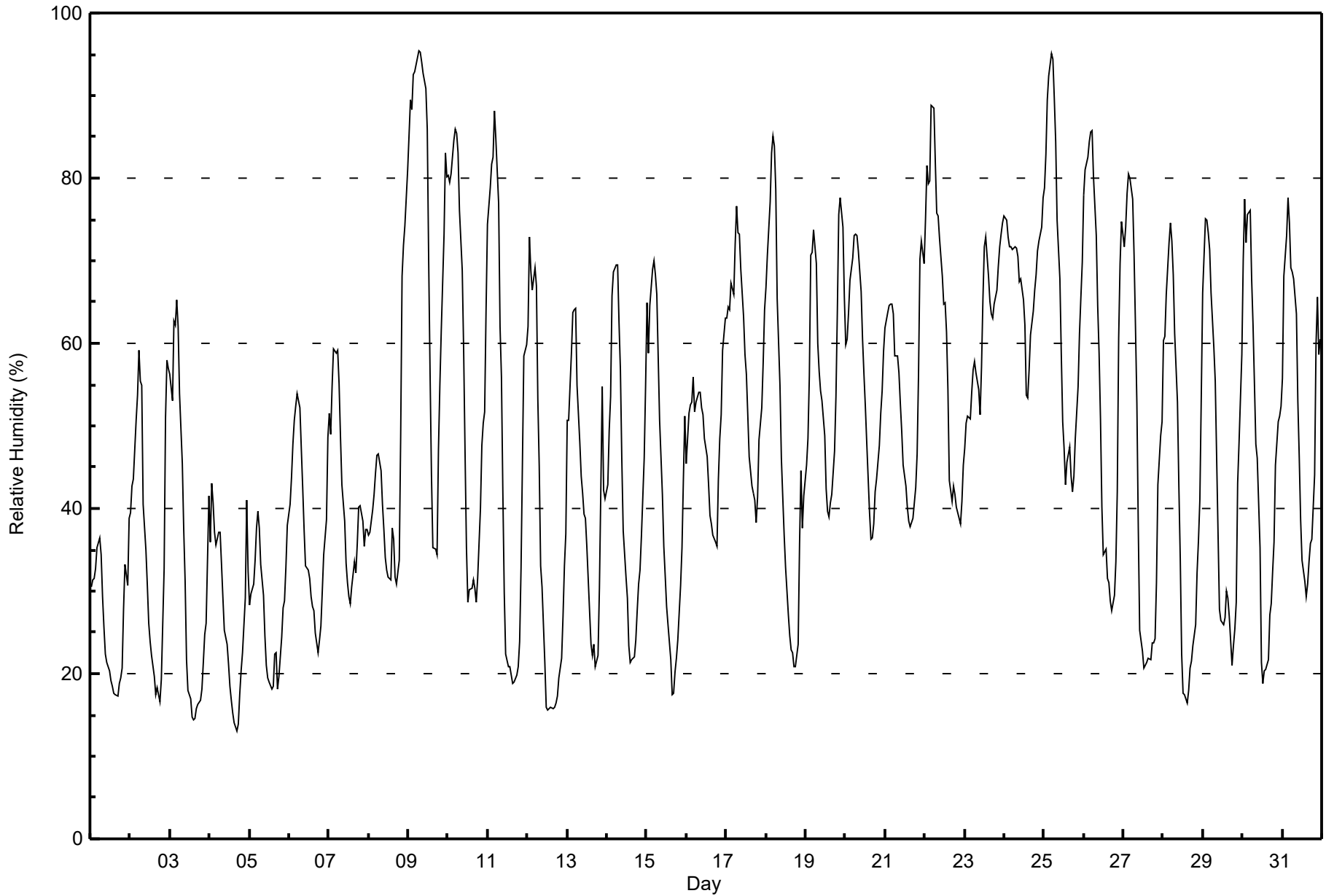
Relative Humidity (RH) - %
Athabasca Valley - May 2023

Maximum Value: 95.3 % on May 9 07:00 Maximum Daily Average: 73.9 % on May 9 Minimum Value: 13.0 % on May 4 17:00 Minimum Daily Average: 26.3 % on May 1 Maximum Diurnal Average: 68.0 % at hour 5 Minimum Diurnal Average: 29.8 % at hour 17 Monthly Average: 47.76 % Percentiles: P ₁ = 15.7 P ₁₀ = 21.4 Q ₁ = 31.1 Median = 46.0 Q ₃ = 64.3 P ₉₀ = 74.8 P ₉₉ = 92.6																						Hours in Service:	744																								
																						Hours of Data:	744																								
																						Hours of Missing Data:	0																								
																						Hours of Calibration:	0																								
																						Percent Operational Time:	100.0																								
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																							
1-May	30.5	31.3	31.6	32.8	35.3	36.4	34.5	29.4	25.6	22.4	21.4	20.4	19.1	18.5	17.6	17.4	17.4	18.9	19.5	20.6	27.8	33.2	30.7	38.8	26.3	38.8																					
2-May	39.6	42.6	43.5	50.6	53.8	59.1	55.5	54.9	40.5	34.8	30.7	26.1	23.8	22.2	19.7	17.5	18.3	17.5	16.6	19.3	32.7	51.1	58.0	57.0	36.9	59.1																					
3-May	56.2	53.1	62.8	62.2	65.2	62.0	53.9	45.4	37.4	31.1	21.8	18.0	16.9	14.7	14.3	14.6	15.8	16.3	16.8	18.1	21.3	24.8	26.2	41.5	33.8	65.2																					
4-May	36.0	43.0	40.6	37.1	35.7	37.1	37.2	33.2	29.1	25.2	23.5	21.1	18.5	16.8	15.3	14.1	13.0	13.9	17.5	20.4	22.5	29.2	41.0	32.4	27.2	43.0																					
5-May	28.3	29.7	30.9	33.7	37.7	39.7	37.7	33.3	29.4	24.6	21.0	19.5	19.0	18.1	18.5	22.3	22.6	18.1	19.7	24.4	28.0	28.9	32.9	38.0	27.3	39.7																					
6-May	40.6	43.7	47.9	50.6	52.4	54.0	52.3	47.3	42.5	37.4	33.0	32.6	31.6	29.3	28.1	27.6	25.0	22.5	24.0	25.7	29.9	34.4	38.7	48.7	37.5	54.0																					
7-May	51.5	49.1	54.7	59.3	58.8	59.1	55.1	48.7	43.0	38.5	33.4	31.0	29.4	28.4	30.5	33.5	32.2	35.8	40.1	40.3	38.5	35.5	37.4	37.5	41.7	59.3																					
8-May	36.7	37.2	39.9	41.7	44.3	46.5	46.6	44.6	40.4	37.5	34.0	32.5	31.8	31.4	37.6	36.2	31.7	30.8	33.6	48.6	68.1	71.8	74.2	81.0	44.1	81.0																					
9-May	85.3	89.6	88.3	92.5	93.0	94.6	95.3	95.3	94.0	92.7	90.8	86.0	70.3	56.5	44.0	35.2	35.1	34.3	47.1	54.9	61.6	73.2	83.1	80.2	73.9	95.3																					
10-May	80.3	79.6	80.5	84.6	85.9	85.4	83.1	76.1	68.8	59.1	46.9	35.3	28.6	30.2	30.4	31.4	30.3	28.6	31.5	39.9	47.7	50.3	51.6	63.9	55.4	85.9																					
11-May	74.4	78.8	81.7	82.5	88.2	84.7	76.9	62.0	55.9	42.1	29.8	22.4	20.9	20.8	19.9	18.9	19.0	19.9	20.8	23.9	32.7	45.6	58.4	59.9	47.5	88.2																					
12-May	62.0	72.9	68.9	66.4	69.1	67.0	53.2	45.1	33.1	30.5	21.4	16.0	15.7	15.7	15.9	15.8	16.0	16.4	17.3	19.5	21.9	27.0	33.0	36.9	35.7	72.9																					
13-May	50.6	50.7	58.7	63.7	64.1	64.3	54.9	48.0	43.8	41.9	39.3	38.8	35.4	27.5	23.6	22.1	23.6	20.9	22.2	30.4	42.2	54.8	42.1	41.2	41.9	64.3																					
14-May	42.8	49.5	53.6	65.7	68.7	69.6	69.5	62.6	56.8	46.0	37.2	31.7	29.2	23.4	21.4	21.6	22.0	24.1	27.5	30.8	32.6	36.7	46.2	55.0	42.7	69.6																					
15-May	65.0	58.9	64.5	69.0	70.0	68.3	66.0	58.4	50.7	41.7	35.5	31.9	28.1	25.9	21.8	17.5	17.7	20.1	21.8	24.1	30.7	35.3	43.5	51.2	42.4	70.0																					
16-May	45.5	51.5	52.6	52.8	55.9	51.7	52.8	54.1	54.0	52.1	51.4	48.4	46.3	42.9	39.1	38.1	36.9	35.9	35.4	43.5	48.5	51.3	59.1	63.1	48.5	63.1																					
17-May	63.1	64.5	64.1	67.2	66.0	72.0	76.5	73.5	73.2	69.0	63.2	58.7	56.3	51.4	46.3	42.7	41.8	41.1	38.3	41.3	48.2	52.1	57.6	64.0	58.0	76.5																					
18-May	66.8	70.7	77.1	83.1	85.1	83.9	78.6	65.4	54.9	46.2	41.4	36.8	32.9	27.0	24.5	23.0	22.5	20.9	20.8	23.6	35.8	44.6	37.6	41.5	47.7	85.1																					
19-May	45.3	48.5	56.1	70.7	71.0	73.8	69.7	60.0	56.6	54.3	53.0	48.8	42.5	39.7	39.0	40.7	41.7	46.9	53.6	64.0	75.6	77.6	74.1	65.6	57.0	77.6																					
20-May	59.8	60.5	63.8	67.6	70.3	73.0	73.2	73.0	71.2	66.3	60.6	56.4	52.4	47.9	39.4	36.2	36.4	38.2	42.0	43.5	47.7	51.5	54.2	59.0	56.0	73.2																					
21-May	61.9	63.7	64.6	64.8	64.7	63.6	58.5	58.5	56.5	52.7	49.3	45.3	42.7	40.1	38.5	37.8	38.2	38.9	42.5	46.6	56.3	70.1	72.3	69.7	54.1	72.3																					
22-May	75.0	81.6	79.4	79.7	88.7	88.4	81.9	75.7	75.4	72.8	68.2	64.8	64.9	61.4	54.3	43.4	40.8	42.7	41.7	40.1	39.5	38.2	40.9	45.2	61.9	88.7																					
23-May	47.3	50.3	51.2	50.9	54.0	56.7	57.8	56.4	54.3	51.4	57.2	65.3	71.7	72.9	68.1	65.1	63.5	63.1	64.8	66.4	69.4	71.7	73.2	74.6	61.5	74.6																					
24-May	75.4	75.0	72.8	71.7	71.6	71.3	71.6	71.5	70.5	67.5	67.8	65.2	62.2	53.7	53.4	56.7	61.1	63.9	66.4	68.3	71.2	72.4	74.1	77.6	68.0	77.6																					
25-May	78.7	82.8	89.5	92.4	95.1	94.4	89.6	84.5	74.9	67.7	58.6	50.6	47.3	42.9	45.5	47.5	44.0	42.1	44.0	48.5	54.7	61.2	65.5	69.8	65.5	95.1																					
26-May	78.0	81.0	82.5	84.4	85.6	85.8	80.2	73.0	64.6	58.8	50.8	40.2	34.4	35.1	31.6	31.0	28.9	27.6	29.5	33.6	42.0	60.7	69.7	74.7	56.8	85.8																					
27-May	71.7	74.1	78.1	80.6	80.0	77.5	70.7	62.0	52.8	37.8	25.3	22.6	20.7	21.0	21.4	21.9	21.6	23.7	23.8	24.3	31.0	42.9	48.8	50.5	45.2	80.6																					
28-May	60.4	60.8	65.9	72.2	74.6	72.3	68.3	61.2	52.9	42.7	33.9	22.4	17.7	17.4	16.5	18.0	20.6	21.5	23.4	25.9	32.3	36.2	41.1	53.4	42.1	74.6																					
29-May	66.1	75.1	74.9	73.4	71.3	66.1	59.4	55.3	46.2	36.9	27.8	26.4	25.9	26.7	30.0	29.1	26.9	21.0	23.3	25.4	28.7	43.0	47.9	58.7	44.4	75.1																					
30-May	70.1	77.5	72.2	75.5	76.1	67.7	62.2	55.0	47.8	46.1	35.2	21.4	18.9	20.3	20.5	21.7	27.1	28.5	32.3	36.0	45.3	50.5	51.2	52.4	46.3	77.5																					
31-May	55.7	68.2	73.0	77.6	74.6	69.1	68.6	67.9	63.6	53.1	46.2	38.7	33.8	31.1	29.3	30.8	33.5	35.8	36.3	44.1	59.8	65.6	58.6	60.4	53.1	77.6																					
																						58.1	61.1	63.4	66.4	68.0	67.6	64.2	59.1	53.6	47.8	42.2	37.9	35.1	32.6	30.8	30.0	29.8	30.0	32.1	36.0	42.7	49.1	52.4	56.2	Diurnal Average	
																						85.3	89.6	89.5	92.5	95.1	94.6	95.3	95.3	94.0	92.7	90.8	86.0	71.7	72.9	68.1	65.1	63.5	63.9	66.4	68.3	75.6	77.6	83.1	81.0	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Athabasca Valley - May 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Athabasca Valley - May 2023

Maximum Speed: 37 km/h on May 29 15:00	Maximum Daily Speed Average: 20.7 km/h on May 16	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 2 21:00	Minimum Daily Speed Average: 1.1 km/h on May 10	Hours of Data: 744
Maximum Diurnal Speed Average: 5.4 km/h at hour 6	Minimum Diurnal Speed Average: 1.9 km/h at hour 10	Hours of Missing Data: 0
Monthly Average Velocity: 3.2 km/h 151.1 deg	Percentiles: $P_1 = 1$ $P_{10} = 3$ $Q_1 = 5$ Median = 8 $Q_3 = 13$ $P_{90} = 18$ $P_{99} = 30$	Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SE10	SE12	SE10	SE12	SE14	SE14	SE13	SE14	SE12	SE9	ESE17	SE16	S19	SSW16	SSW17	SSW17	SSW15	SW15	SW12	SSE6	SE2	SE7	S8	W5	SSE10.0	S19
2-May	NNW15	NNW13	NNW6	W2	W3	W2	SW5	SSE1	SE2	NNE3	NNW8	NNE11	NNE11	NNW7	N8	WNW9	NW9	NNW9	NNE4	E4	SW0	SE1	SE2	SSE2	NNW3.9	NNW15
3-May	SSE2	S4	SSE1	SSE4	S3	SSE3	SE8	SE11	SE8	NE2	SSW18	S19	S17	SSW19	SSW17	S17	S16	S16	S15	SSE12	SE12	SSE7	SSE7	SE5	S9.4	SSW19
4-May	SE5	SE6	SSE6	SE13	SE13	SE11	SE8	SE10	SE12	SE9	ENE2	ESE8	SE13	ESE10	ENE6	SE6	SSE8	ESE8	ESE12	ESE13	SE9	ENE1	WNW1	SE2	SE7.4	SE13
5-May	SE7	ESE10	SE12	SE13	SE15	SE15	SE15	SE16	ESE13	ESE13	ESE17	SE21	SE21	SE22	SE23	ESE22	ESE23	ESE23	ESE19	ESE17	ESE19	SE17	SE13	SE13	SE16.4	SE23
6-May	SE14	SE12	SE12	SE14	SE14	SE11	SE12	SE15	SE16	SE18	SE18	SE17	ESE18	ESE17	ESE19	ESE20	ESE21	ESE22	SE25	SE17	SE13	SE8	SE5	SE4	SE14.9	SE25
7-May	SE6	SE9	SE8	SE8	ESE9	ESE12	SE12	SE17	SE16	SE17	SE18	SE19	ESE20	SE22	SSE22	SSE16	SSE12	SE7	N2	N4	ESE3	SE9	SE9	SE11	SE11.3	SSE22
8-May	SE13	SE16	SE15	SE15	SSE12	SE11	SE12	SE17	ESE13	ESE14	ESE16	SE16	SE13	SSE12	SSW11	ESE6	SE11	SE13	SE13	WSW14	NW9	SSW4	SSE3	SSW3	SE9.4	SE17
9-May	SSE3	SE7	ESE1	W4	S2	ESE4	SW1	ESE3	NE2	NNW3	NW4	NNW6	NNW8	NW6	NW7	NNW7	WNW6	W1	SW18	SW14	SSW2	W3	SSE2	SE5	W1.7	SW18
10-May	SE5	SSE5	SSE4	SE4	SE4	SE5	SE6	SE3	ENE5	E5	NW3	NW5	NW7	W18	NNW19	SE3	SE9	SW5	WSW2	WSW2	N2	SW2	N5	ESE1	SW1.1	WNW19
11-May	SSE1	W1	ESE2	ESE3	E3	E2	ESE4	SE4	NE3	S6	SE6	S4	SE3	SSE10	SSE9	SSE7	S8	SSW12	SSW8	SSW6	SSW7	SSE3	SSE2	S3	SSE4.1	SSW12
12-May	S3	SE2	S3	SSE4	SE2	SE4	SE6	S8	SSE7	NW2	SE10	SE17	SE15	SE14	SE14	SE13	SE12	SE12	SE11	SE8	SE9	SE13	SE10	S6	SE8.1	SE17
13-May	SE5	SSE6	SSW2	SSW1	S5	S5	SE11	SE11	SE7	WNW2	W1	WSW4	SW6	SW8	SW10	SW8	SSW3	SSW9	S4	SSE3	SE5	SSE4	S6	S7	S4.3	SE11
14-May	SSE7	SSE8	SSE8	ESE5	ESE10	ESE7	ESE5	SE8	ESE6	SSW6	SW11	SW13	WSW12	SW14	SW16	SW17	SW15	SW11	SW6	SW4	SSW6	SW6	WSW1	ESE3	SSW6.0	SW17
15-May	SSE1	SSE3	S4	SE4	SE5	SE5	SE5	SE7	SE8	ESE7	ESE6	ESE6	E7	E8	SE6	SSW13	SSW15	SSW14	SSW12	S11	S6	SSW5	SSE6	WNW6	SSE5.2	SSW15
16-May	NNW14	NNW13	NNW13	N12	WNW12	WNW21	NW29	NW32	NW32	NW31	NW31	NW33	NW30	NW33	NW32	NW30	NW25	NW23	NNW21	N13	N13	N10	NNW8	NW10	NW20.7	NW33
17-May	NW12	WNW11	NNW11	NNW16	N16	NNE14	NNE14	N15	N16	N20	N17	N15	N15	N12	NNW12	NNW13	NNW14	NNW13	NE10	E11	E9	SE3	SE6	SE6	N9.8	N20
18-May	SE5	SE5	SSE6	SE4	SE6	ESE5	ESE7	ESE7	SE4	SW5	W3	WNW6	W6	W7	WSW9	WSW9	W10	WSW6	SW6	SSW4	S4	SW6	S6	S6	SSW3.3	W10
19-May	S6	S8	S5	SE6	SE8	SSE6	SE5	SE7	SE6	ESE2	NW3	NNW3	W4	WSW7	SW7	W7	WNW8	NW5	NW3	SW6	SW4	WSW6	NNW6	NNW7	SW2.2	S8
20-May	NNW10	NNW8	NNW9	NNW13	NNW9	NNW10	NNW11	NNW11	NNW11	NNW8	NW6	NNW7	NNW8	WNW5	SSE4	ESE8	E10	E11	ESE11	ESE8	SE9	ESE8	SE11	SE10	NNE3.1	NNW13
21-May	ESE5	SE7	SE11	SE10	SE11	SE11	SE10	SSE9	SE8	SSE10	SE8	SSE9	SSE9	ESE8	E7	E7	E8	ESE9	ESE7	ESE2	N3	N3	SE2	SSE5	SE6.6	SE11
22-May	ENE1	N5	N4	W3	SE1	SE0	NNW9	NNW18	NNW17	NNW17	NNW16	NNW20	NNW15	N15	N13	NE16	ENE18	ENE17	E20	E21	ENE18	E23	E23	E23	NE9.4	E23
23-May	E20	E19	E16	E18	E17	E16	E17	ESE15	ESE17	ESE18	ESE18	ESE18	ESE17	ESE17	SE22	ESE15	SE18	SE16	SE17	SE18	SE18	SE16	SE13	SE12	ESE16.3	SE22
24-May	SE11	SE10	SE13	ESE11	SE12	SE16	SE13	SE12	SE12	SE10	E7	ENE5	SW9	WSW17	WSW18	WSW16	WSW18	W21	W18	WSW14	WSW13	W13	WSW7	SW7	SSW5.5	W21
25-May	SSW4	SW5	SSW4	S2	ENE2	ENE1	SSE1	E3	WSW2	WNW4	WNW5	NNW9	N7	ENE8	WNW5	NNW7	NE6	SSE9	ESE8	SE10	SE6	SE6	SE5	SSE4	ESE1.1	SE10
26-May	SE3	SE5	SE10	SE12	SE11	SE10	SE10	SE7	ENE5	NW4	SE2	SW8	WNW4	NNE5	N8	NW4	S6	S10	S7	SE5	ESE2	ESE4	SE2	SE3.8	SE12	
27-May	SSE4	SSE4	SE3	SE5	SE6	SE11	SE11	ESE6	ENE4	S9	S18	S15	S16	S15	S17	S13	S13	SSW9	S10	SSE9	SSE10	SE3	ESE7	SSE6	SSE8.4	S18
28-May	SSE6	SSE9	SSE9	SE7	SE8	SE8	SE12	SE10	SSE4	SW12	SW17	SW21	SW22	SW22	WSW23	W27	SW25	WSW24	W27	WSW15	W16	WSW14	WNW13	WSW5	SW10.8	W27
29-May	S2	E3	ESE4	SSE3	SE5	SE6	ESE3	ENE6	SSW6	SSW13	WSW17	WSW19	WSW23	WSW26	W37	WSW28	WSW24	SW17	SW14	SW7	S5	SSW4	SSW7	SW6	WSW9.4	W37
30-May	E3	SE1	SSE3	SE3	SE4	SE7	SE7	SE5	E6	NNW4	NW5	WSW7	ENE2	W10	NW9	NW4	NNW11	NW19	NW14	N6	NNE1	S1	SW5	SW1	NW1.8	NW19
31-May	SW4	WSW4	SW6	S3	SE5	SSE4	S3	SW4	W3	WNW4	NW5	NW7	NW7	WSW7	SSE10	S7	E8	E7	S8	SSW4	SW2	SW4	WSW15	WSW11	SW3.0	WSW15

SE2.8	SE3.5	SE3.9	SE4.3	SE5.2	SE5.4	ESE5.2	ESE5.3	ESE3.9	SE1.9	SSE1.9	S2.2	S2.8	SSW4.5	SW4.5	SSW3.6	S3.8	S3.6	S4.1	SSE4.2	SE3.5	SSE3.2	SSE3.2	SSE3.2	SSE3.2	Diurnal Average
E20	E19	E16	E18	E17	WNW21	NW29	NW32	NW32	NW31	NW31	NW33	NW30	NW33	W37	NW30	SW25	WSW24	W27	E21	ESE19	E23	E23	E23	Diurnal Maximum	

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

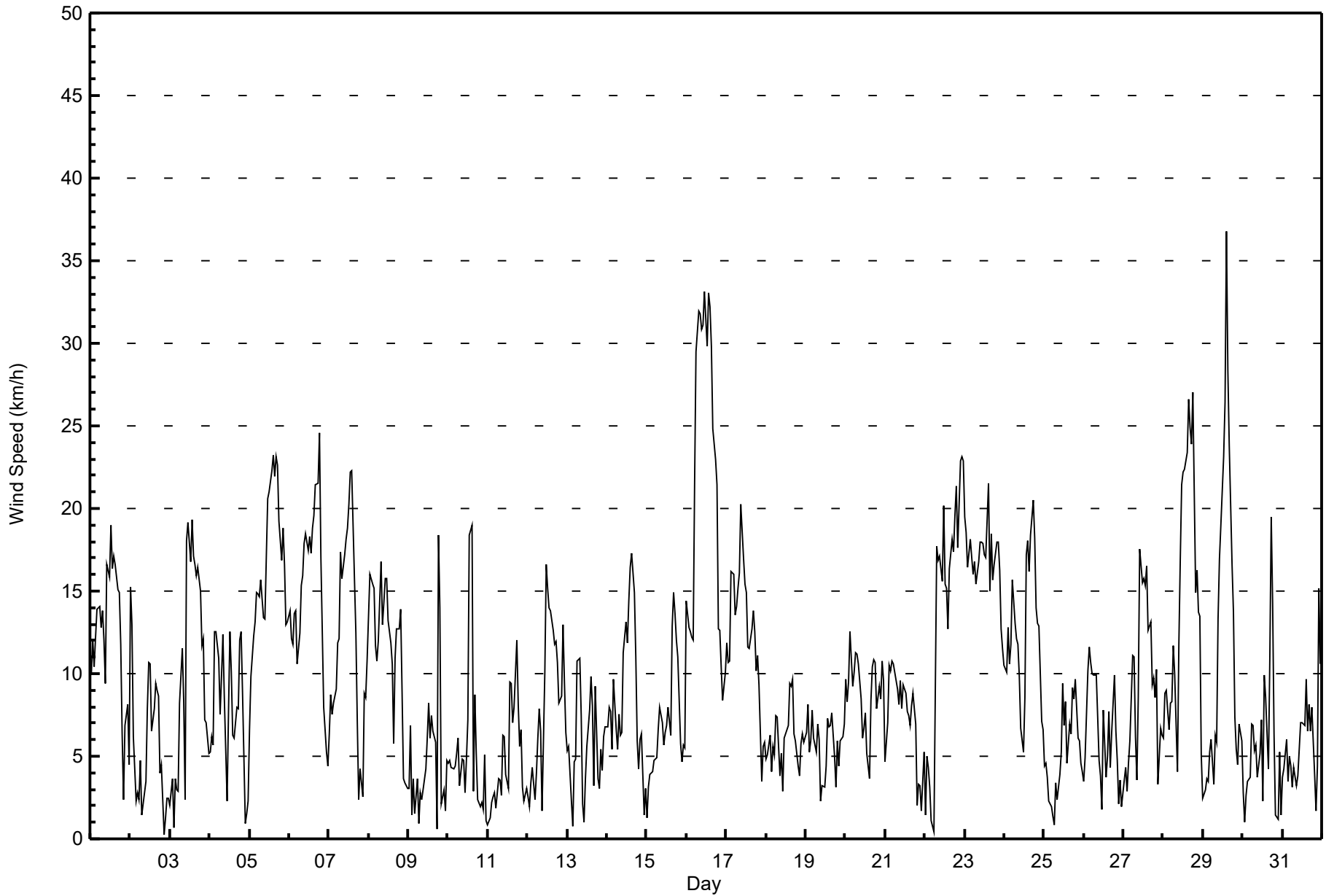
Wind Speed (WS) - km/h
Athabasca Valley - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 10 km/h on May 29 16:00 Minimum Value: 1 km/h on May 9 14:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 8																		Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0							
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	2	2	2	3	2	3	3	3	3	3	4	5	6	5	5	5	5	4	4	2	2	3	2	3	6
2-May	4	2	3	2	2	1	2	1	2	2	3	4	4	3	3	4	4	3	2	2	1	1	1	1	4
3-May	1	2	2	1	1	2	3	2	2	2	5	5	5	5	5	5	4	4	4	3	2	3	1	2	5
4-May	1	2	2	3	3	4	2	3	3	3	2	3	3	3	3	3	3	2	3	3	2	2	2	2	4
5-May	3	3	3	3	3	3	3	4	4	4	5	6	6	6	6	7	6	7	6	5	5	5	3	3	7
6-May	3	2	2	3	3	3	3	4	4	4	5	5	6	5	6	6	6	6	5	5	4	2	2	1	6
7-May	2	2	2	3	2	3	3	4	4	5	5	6	6	6	6	5	4	4	1	1	3	2	2	3	6
8-May	3	3	3	3	3	3	4	4	3	4	4	4	4	3	5	3	4	5	3	8	6	2	2	2	8
9-May	2	3	1	2	2	2	2	2	1	3	1	2	1	1	1	2	2	4	4	4	1	1	1	2	4
10-May	2	1	2	1	1	1	1	2	1	1	1	2	4	5	5	5	3	2	1	2	2	1	2	2	5
11-May	1	2	1	1	1	1	2	1	2	3	3	3	3	3	4	4	4	3	2	2	2	1	2	2	4
12-May	2	1	1	2	1	2	2	3	2	2	6	5	5	5	5	4	4	4	4	3	3	3	2	2	6
13-May	2	3	1	1	1	2	3	2	2	1	1	2	1	3	2	3	1	4	2	1	1	1	1	1	4
14-May	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	4	3	3	2	1	1	3	2	1	4
15-May	1	2	2	2	1	1	1	2	2	2	2	2	2	3	3	5	4	4	3	2	2	2	2	5	5
16-May	4	3	4	4	3	4	6	5	7	6	6	7	8	7	6	7	6	5	6	4	4	3	3	2	8
17-May	3	2	3	4	5	4	4	4	5	5	5	4	4	5	5	4	4	4	4	3	2	2	1	2	5
18-May	1	1	2	1	1	1	1	2	2	3	3	2	2	2	3	4	3	2	2	1	2	2	2	2	4
19-May	2	2	3	3	2	1	1	2	1	2	2	2	2	2	1	2	2	2	1	2	2	1	2	2	3
20-May	2	2	2	3	2	2	2	3	2	2	2	1	2	1	4	3	2	2	3	2	2	2	3	2	4
21-May	3	2	2	2	2	2	3	2	2	3	2	2	2	3	3	2	2	2	2	2	2	1	1	2	3
22-May	1	2	2	2	2	1	6	4	4	3	4	4	4	4	3	5	5	4	6	5	4	5	6	6	6
23-May	5	4	4	6	5	5	5	4	5	5	6	6	6	6	6	5	5	5	5	7	5	5	3	3	7
24-May	3	3	3	3	3	5	5	4	3	3	2	2	5	4	4	4	5	5	4	3	2	3	1	2	5
25-May	2	2	2	2	1	1	2	1	2	1	2	3	2	4	1	2	3	3	2	3	2	2	2	1	4
26-May	2	2	3	2	2	3	2	2	2	1	1	3	3	4	2	2	2	3	2	2	1	1	2	1	4
27-May	2	2	2	2	2	2	2	2	1	6	5	5	5	5	5	4	4	2	2	2	4	2	2	1	6
28-May	1	1	1	2	3	3	3	2	2	3	4	4	5	6	7	8	6	5	8	5	7	5	3	3	8
29-May	2	2	1	1	1	2	2	1	3	3	6	6	7	7	8	10	6	4	3	2	1	3	2	3	10
30-May	1	1	1	1	1	2	2	1	2	2	2	2	3	4	3	2	8	5	3	2	1	2	4	2	8
31-May	2	2	3	3	2	2	1	1	1	1	2	2	2	2	3	2	2	2	3	1	2	2	9	4	9
Diurnal Maximum																									



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Athabasca Valley - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed (WS) - km/h
Athabasca Valley - May 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	220	29.57	29.57
6 - 11	266	35.75	65.32
12 - 19	207	27.82	93.15
20 - 28	40	5.38	98.52
29 - 38	11	1.48	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Athabasca Valley - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	7	4	3	10	7	20	50	29	18	13	15	7	12	9	12	4	220
6 - 11	4	2	2	3	13	25	84	28	20	11	17	9	5	6	10	27	266
12 - 19	12	2	1	3	6	25	73	6	14	13	13	13	4	3	3	16	207
20 - 28	1	0	0	0	6	7	7	1	0	0	4	6	3	1	2	2	40
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	1	0	10	0	11
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	8	6	16	32	77	214	64	52	37	49	35	25	19	37	49	744

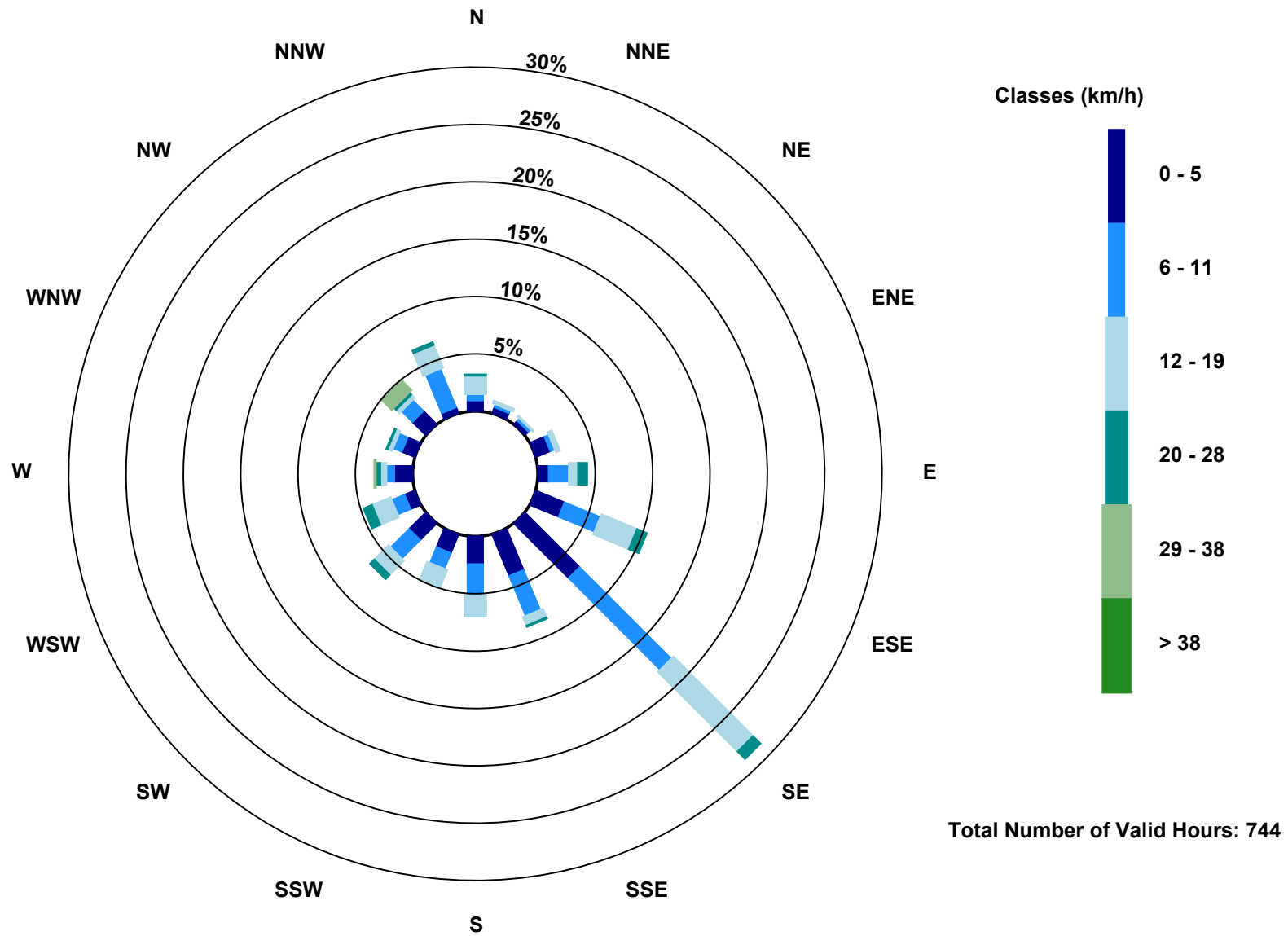
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Athabasca Valley





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Athabasca Valley - May 2023

Direction of Maximum Speed: 271 deg on May 29 15:00		Hours in Service: 744
Direction of Maximum Daily Speed Average: 320.0 deg on May 16		Hours of Data: 744
Direction of Minimum Speed: 221 deg on May 2 21:00	Direction of Minimum Daily Speed Average: 1.1 deg on May 10	Hours of Missing Data: 0
Monthly Average Direction: 151.1 deg		Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	124	137	144	137	134	135	136	133	125	129	123	141	177	194	196	203	194	220	214	167	144	127	170	277	160.0
2-May	335	334	348	265	273	262	235	165	131	17	341	14	15	335	349	302	306	346	21	99	221	133	135	161	340.0
3-May	157	181	157	163	181	159	133	140	134	55	193	177	174	192	196	182	189	178	169	162	131	151	161	130	170.6
4-May	127	135	160	133	131	139	144	137	137	126	70	102	140	122	69	133	165	114	116	122	127	74	289	142	129.1
5-May	135	123	136	132	135	133	133	129	117	123	121	126	127	132	135	116	113	116	113	118	123	126	127	134	125.1
6-May	134	141	137	133	132	128	128	130	129	135	134	129	117	116	111	114	107	112	131	124	134	137	145	142	126.1
7-May	138	141	125	130	118	120	129	126	128	130	125	125	122	132	150	159	152	137	9	354	120	140	138	143	132.4
8-May	136	130	132	137	149	136	131	128	119	123	120	146	144	153	208	116	133	125	127	258	308	203	154	210	140.4
9-May	150	135	107	262	177	115	231	115	41	331	323	341	332	314	325	338	303	269	232	233	206	280	150	140	271.4
10-May	137	151	155	145	144	133	127	137	71	86	314	318	323	266	283	128	145	222	256	239	357	235	350	118	217.4
11-May	160	265	102	116	97	97	123	141	42	171	138	171	133	159	153	160	183	196	195	199	193	157	158	181	164.5
12-May	172	125	178	161	133	142	140	173	161	320	129	131	134	135	136	143	142	134	134	125	134	129	134	172	139.5
13-May	140	147	211	197	189	176	138	133	140	284	260	252	223	219	234	231	199	210	186	157	139	163	173	177	182.1
14-May	160	150	147	102	119	109	108	124	104	208	221	230	238	227	228	220	228	222	214	200	230	257	118	199.6	
15-May	160	162	188	125	138	138	129	135	133	116	115	113	85	89	138	207	201	193	192	170	191	203	148	290	160.4
16-May	339	335	348	354	291	296	321	317	312	318	318	305	309	311	309	315	307	321	337	9	359	9	345	322	320.0
17-May	316	297	347	340	0	22	29	9	7	351	353	357	6	10	348	344	340	345	47	83	92	143	128	139	3.1
18-May	142	145	150	132	144	122	110	109	135	224	264	283	278	269	251	257	263	238	215	210	173	216	180	186	203.6
19-May	172	187	173	145	145	148	145	135	124	120	326	329	260	245	220	263	282	322	309	235	225	251	333	343	215.2
20-May	334	340	340	335	344	331	335	343	336	341	323	328	333	295	156	115	97	98	116	116	126	122	131	131	18.2
21-May	121	128	126	128	134	135	136	149	140	148	146	157	158	122	92	100	98	106	107	121	354	357	134	147	128.4
22-May	74	357	349	281	143	132	338	338	337	339	345	340	347	350	7	47	66	74	85	87	78	79	81	82	35.7
23-May	89	85	90	97	100	99	101	102	106	103	120	114	116	120	126	121	127	125	127	129	142	136	134	130	113.7
24-May	133	131	124	123	126	125	124	125	126	130	99	77	219	238	250	241	254	273	273	248	249	266	245	216	201.9
25-May	208	228	204	175	61	71	165	87	238	283	296	334	353	75	288	333	56	149	118	124	126	130	145	163	119.7
26-May	125	124	132	129	130	134	133	135	130	65	317	129	214	292	23	350	314	191	176	175	142	116	103	133	137.3
27-May	168	156	138	141	141	136	135	118	61	183	173	182	175	184	171	184	177	213	179	166	168	143	119	150	165.8
28-May	158	148	147	143	130	130	135	134	168	215	220	229	224	229	242	267	234	246	267	253	280	254	285	239	230.2
29-May	171	100	107	150	134	143	123	74	204	212	240	247	251	247	271	257	252	233	225	227	191	199	202	232	236.8
30-May	81	136	151	130	124	133	133	125	89	328	315	237	65	278	305	314	331	320	320	351	29	191	229	222	314.7
31-May	233	245	225	187	145	155	177	220	278	287	324	326	314	243	159	185	94	98	176	205	234	235	246	242	219.7
127.8 133.5 129.6 125.6 128.2 127.2 121.5 118.5 110.8 125.2 157.2 173.3 180.0 203.8 214.8 209.2 186.2 182.0 168.9 155.5 144.6 151.4 151.5 155.5																									
Diurnal Average																									

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

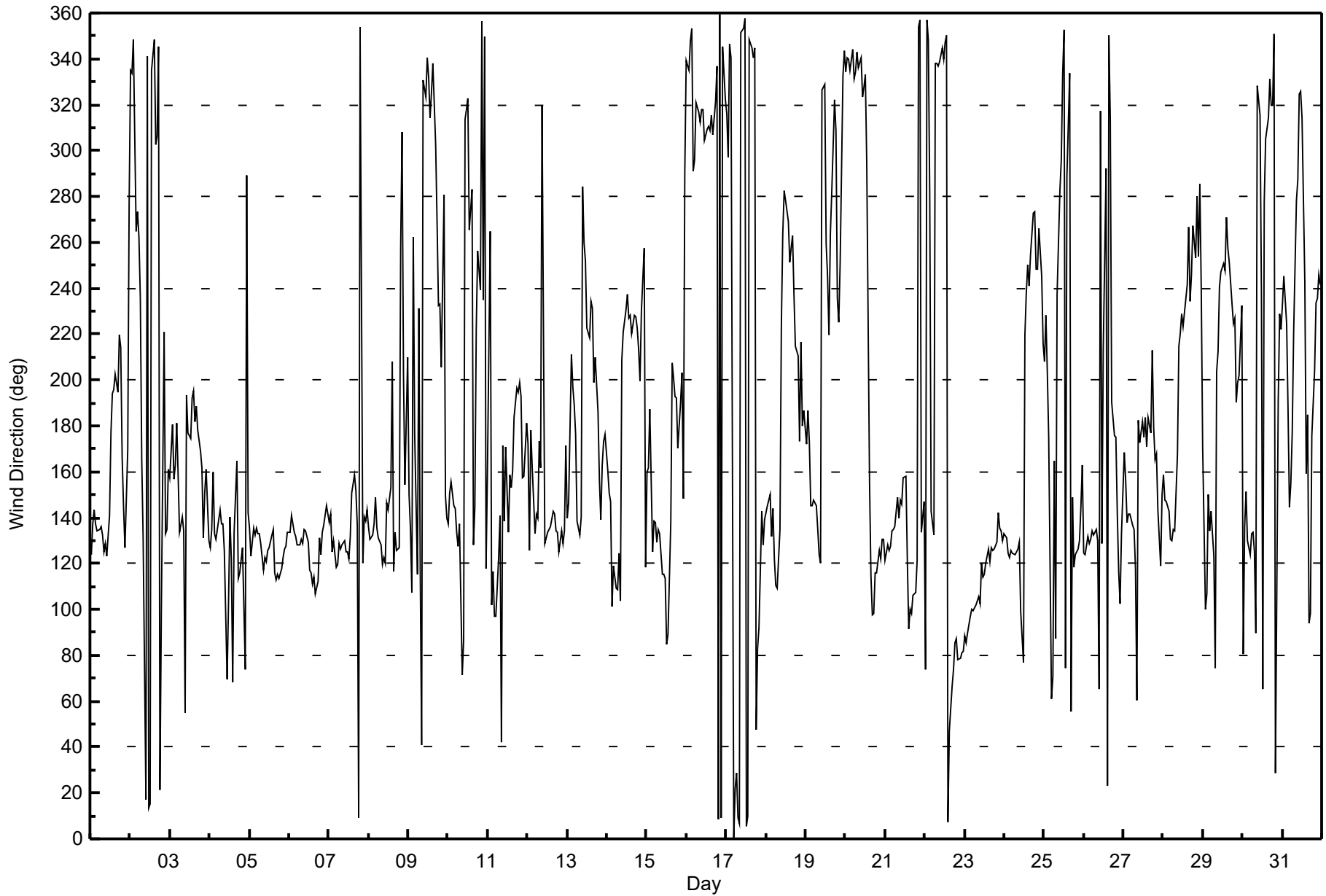
Wind Direction (WD) - deg
Athabasca Valley - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 104 deg on May 9 18:00 Minimum Value: 10 deg on May 9 14:00 Percentiles: P ₁ = 11 P ₁₀ = 13 Q ₁ = 17 Median = 23 Q ₃ = 42 P ₉₀ = 66 P ₉₉ = 92																			Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0						
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	15	13	13	13	12	12	14	15	18	29	18	29	22	30	27	24	25	19	17	23	80	20	34	71	80
2-May	13	12	31	79	45	74	33	84	80	61	25	33	39	61	42	45	42	36	55	38	88	75	59	57	88
3-May	61	63	91	51	53	69	23	13	15	83	29	28	26	25	28	26	21	18	16	12	16	23	15	26	91
4-May	21	20	29	13	14	19	19	16	16	26	84	33	20	24	60	70	49	26	20	18	18	93	78	83	93
5-May	32	22	16	13	13	12	12	13	20	21	20	18	19	18	19	20	20	19	19	19	17	17	15	15	32
6-May	15	14	14	14	14	16	17	16	16	17	22	24	26	24	23	24	20	20	15	17	18	17	23	39	39
7-May	23	16	28	26	20	18	16	13	16	20	22	20	20	20	16	17	25	41	56	24	81	17	16	16	81
8-May	16	14	15	16	20	17	20	13	20	20	22	19	20	21	27	47	21	28	15	52	56	33	40	53	56
9-May	46	59	79	54	74	45	89	47	57	68	16	24	10	10	11	31	29	104	13	14	67	45	78	31	104
10-May	42	27	36	25	14	13	13	68	41	22	53	23	32	16	24	89	32	19	52	80	77	87	35	86	89
11-May	91	82	53	43	43	74	56	60	64	52	51	85	98	35	33	57	46	23	14	44	25	58	65	61	98
12-May	71	63	56	48	65	56	29	39	30	84	83	26	22	38	34	34	33	22	17	19	19	13	21	26	84
13-May	21	50	45	94	30	37	14	13	16	66	82	45	19	21	17	17	52	36	40	18	20	28	17	14	94
14-May	12	14	17	31	20	40	25	17	29	59	19	15	14	15	13	13	14	20	21	16	57	90	62	90	90
15-May	85	52	62	45	30	23	17	17	12	26	35	30	32	36	62	28	25	24	21	14	37	37	24	61	85
16-May	19	20	22	25	23	11	13	12	12	12	13	13	14	13	13	12	11	13	30	23	23	23	27	16	30
17-May	14	16	33	23	25	22	27	25	24	23	29	26	27	41	44	26	22	33	30	13	11	46	30	28	46
18-May	32	26	18	37	24	32	23	27	67	62	85	40	34	46	33	35	18	40	28	24	58	23	22	31	85
19-May	32	21	39	33	13	19	22	18	22	80	72	45	50	19	13	24	12	35	26	11	46	20	27	19	80
20-May	14	21	18	14	20	13	13	19	13	18	20	18	14	29	96	35	21	18	20	20	18	19	21	20	96
21-May	39	20	11	13	14	16	23	17	17	18	21	23	26	33	31	25	22	20	19	77	54	63	74	34	77
22-May	83	49	67	49	80	95	53	15	14	16	22	17	21	22	21	22	16	16	13	13	12	12	13	13	95
23-May	14	13	16	20	20	18	19	20	21	19	20	22	22	21	16	21	17	20	20	18	21	18	18	18	22
24-May	18	17	16	18	18	19	23	19	17	21	27	60	40	17	18	18	18	13	15	15	12	14	17	19	60
25-May	40	33	62	67	71	84	95	68	79	37	30	18	44	58	25	12	59	31	24	19	18	22	41	46	95
26-May	44	35	18	14	16	15	14	15	17	51	45	92	36	74	64	29	63	48	14	19	21	65	48	65	92
27-May	46	40	53	29	23	11	12	26	49	79	21	29	32	25	27	25	22	28	25	14	29	64	23	10	79
28-May	17	11	12	30	20	34	13	14	60	16	15	15	14	15	18	20	13	16	15	17	13	18	12	85	85
29-May	61	50	45	47	27	18	66	17	58	10	28	24	17	19	14	18	17	13	12	12	19	64	42	61	66
30-May	81	88	55	41	44	15	16	28	44	72	46	31	91	18	37	59	29	15	10	19	88	90	81	89	91
31-May	60	50	69	57	28	35	52	32	30	32	21	16	16	36	30	36	21	19	26	46	88	23	28	35	88
91 88 91 94 80 95 95 84 80 84 85 92 98 74 96 89 63 104 56 80 88 93 90 89																									
Diurnal Maximum																									



Wood Buffalo Environmental Association
Hourly Averages

Wind Direction (WD) - deg
Athabasca Valley - May 2023





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS08 FORT CHIPEWYAN MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS08)

MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2(ppb) Average	707	36	37	99.87	6.7	0	1.1	0
TRS (ppb) Average	706	35	38	99.6	1.1	0	0.5	0
O3(ppb) Average	707	35	37	99.73	69.6	0	49.6	-
NO2(ppb) Average	705	36	39	99.6	11.4	0	3.4	-
NO(ppb) Average	705	36	39	99.6	2.1	-	0.4	-
NOX(ppb) Average	705	36	39	99.6	11.4	-	3.7	-
PM2.5(ug/m3) Average	739	3	5	99.73	808.3	112	248.7	12
CO(ppm) Average	663	33	81	93.55	2.2	0	0.6	-
CO2(ppm) Average	660	35	84	93.41	441.6	-	433.5	-
Temperature 2 m (C) Average	744	0	0	100	28.4	-	21.6	-
Relative Humidity (%) Average	736	0	8	98.92	96.9	-	76.7	-
Wind Speed 10 m (km/h) Average	743	0	1	99.87	40	-	28	-
Wind Direction 10 m (deg) Average	743	0	1	99.87	-	-	-	-
PC(mm) Total	744	0	0	100	2.1	-	2.3	-
Leaf Wetness (% of range) Average	744	0	0	100	19.8	-	1.4	-
Global Solar Radiation (W/m2) Average	744	0	0	100	880.6	-	330.9	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS08)

MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2(ppb) Average	707	0.32	0.5	-	0	0	0	0.1	0.4	0.8	6.7
TRS (ppb) Average	706	0.22	0.2	-	0.1	0.1	0.1	0.2	0.3	0.4	1.1
O3(ppb) Average	707	41.23	8.3	-	9.3	31.9	36.8	41.2	45.5	51.8	69.6
NO2(ppb) Average	705	1.17	1.4	-	0	0.3	0.3	0.7	1.4	2.8	11.4
NO(ppb) Average	705	0.09	0.2	-	0	0	0	0	0.1	0.2	2.1
NOX(ppb) Average	705	1.25	1.5	-	0	0.3	0.3	0.7	1.4	2.9	11.4
PM2.5(ug/m3) Average	739	43.28	81.4	-	0.6	2.9	4.3	13.7	34.4	122.8	808.3
CO(ppm) Average	663	0.14	0.2	-	0	0	0	0.1	0.1	0.4	2.2
CO2(ppm) Average	660	412.1	17.5	-	382.7	387.5	394.9	420.8	427.2	431.2	441.6
Temperature 2 m (C) Average	744	14.58	4.8	-	3.5	9.2	11	14.1	17.4	21.4	28.4
Relative Humidity (%) Average	736	54.79	15.8	-	20.2	32.6	43	55.5	66.7	74.4	96.9
Wind Speed 10 m (km/h) Average	743	15.3	8	-	1	6	10	14	20	26	40
Wind Direction 10 m (deg) Average	743	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	744	-	-	4.46	-	-	-	-	-	-	-
Leaf Wetness (% of range) Average	744	0.13	1.1	-	0	0	0	0	0	0	19.8
Global Solar Radiation (W/m2) Average	744	254.79	274.2	-	0	0	0.7	138	493.3	697	880.6

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS08)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
TRS,O3,NO2,PM2.5	20 May 2023 18:00	20 May 2023 18:00	1	Station power failure
TRS,O3,NO2,PM2.5	27 May 2023 19:00	27 May 2023 19:00	1	Station power failure
SO2, CO,CO2	27 May 2023 19:00	27 May 2023 19:00	1	Station power failure
CO,CO2	11 May 2023 10:00	11 May 2023 11:00	2	Maintenance - verify daily QA response
NO2	11 May 2023 09:00	11 May 2023 09:00	1	Maintenance - verify daily QA response
CO2	18 May 2023 09:00	18 May 2023 10:00	2	Maintenance - verify daily QA response
CO2	20 May 2023 18:00	22 May 2023 13:00	44	Station power failure
CO	20 May 2023 18:00	22 May 2023 14:00	45	Station power failure
TRS	12 May 2023 08:00	12 May 2023 08:00	1	Station power failure
Relative Humidity	25 May 2023 01:00	25 May 2023 06:00	6	Sensor operated out of range
Relative Humidity	26 May 2023 03:00	26 May 2023 04:00	2	Sensor operated out of range
Wind Speed, Wind Direction	10 May 2023 03:00	10 May 2023 03:00	1	Flat line in sensor output signal



Wood Buffalo Environmental Association
Summary of Hour Averages

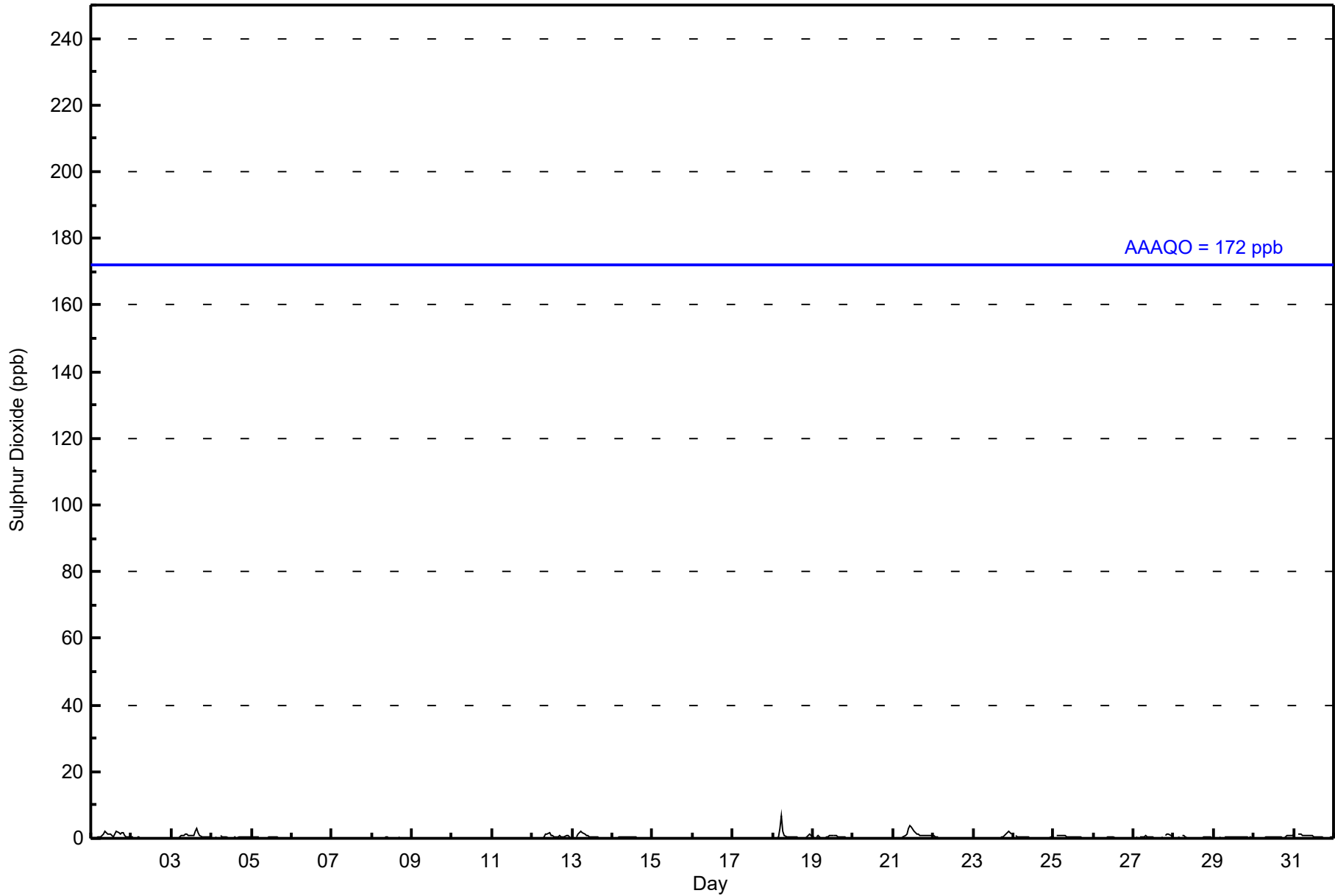
Sulphur Dioxide (SO₂) - ppb
Fort Chipewyan - May 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744					
Maximum Value: 6.7 ppb on May 18 06:00		Maximum Daily Average: 1.1 ppb on May 21																	Hours of Data:	707							
Minimum Value: 0.0 ppb on May 8 04:00		Minimum Daily Average: 0.0 ppb on May 9																	Hours of Missing Data:	37							
Maximum Diurnal Average: 0.6 ppb at hour 6		Minimum Diurnal Average: 0.1 ppb at hour 2																	Hours of Calibration:	36							
Monthly Average: 0.32 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.4 P ₉₀ = 0.8 P ₉₉ = 2.3																	Percent Operational Time:	99.9							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.2	Z	0.2	0.2	0.2	0.2	0.7	1.5	2.0	1.6	1.2	1.2	0.7	0.6	1.2	2.0	1.6	1.3	1.6	1.6	0.7	0.4	0.3	0.3	0.9	2.0	
2-May	0.3	0.3	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	
3-May	0.1	0.1	0.1	Z	0.1	0.2	0.7	1.0	1.3	1.2	1.0	0.8	1.0	0.8	2.0	2.8	1.6	1.0	0.5	0.4	0.4	0.3	0.3	0.2	0.8	2.8	
4-May	0.2	0.2	0.2	0.3	Z	0.9	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.4	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.9	
5-May	0.2	0.2	0.3	0.3	0.3	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3	
6-May	Z	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
7-May	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
8-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2	C	C	C	C	C	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.3	
9-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
10-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
11-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	
12-May	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.5	1.1	1.4	1.7	1.0	0.6	0.5	0.4	0.4	0.7	0.6	0.4	0.6	0.7	0.7	0.5	0.1	0.5	1.7	
13-May	0.1	Z	0.5	1.2	1.7	2.2	1.8	1.1	1.0	0.8	0.6	0.5	0.4	0.3	0.3	0.3	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.6	2.2	
14-May	0.1	0.1	Z	0.2	0.2	0.3	0.4	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.5	
15-May	0.0	0.0	0.1	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	
16-May	0.1	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
17-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
18-May	Z	0.0	0.0	0.3	2.9	6.7	2.3	0.7	0.5	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.8	1.1	0.7	0.8	6.7
19-May	0.3	Z	0.2	0.7	0.5	0.2	0.1	0.1	0.2	0.5	0.6	0.7	0.7	0.7	0.7	0.6	0.5	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.4	0.7	
20-May	0.1	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
21-May	0.0	0.0	0.0	Z	0.1	0.2	0.4	0.7	1.5	2.8	3.9	3.2	2.3	1.6	1.2	1.1	1.0	0.9	0.9	0.8	0.7	0.7	0.7	0.7	1.1	3.9	
22-May	0.8	0.5	0.4	0.3	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	
23-May	0.0	0.0	0.0	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.5	1.1	1.9	2.2	1.6	1.2	0.4	2.2	
24-May	Z	0.8	0.6	0.5	0.4	0.3	0.2	0.2	0.3	0.5	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	0.3	0.8	
25-May	0.6	Z	0.7	0.6	0.7	0.8	0.7	0.7	0.6	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.4	0.8	
26-May	0.1	0.1	Z	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3	
27-May	0.2	0.2	0.2	Z	0.5	0.6	0.6	0.7	0.6	0.5	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	1.3	
28-May	0.2	0.1	0.2	0.3	Z	0.6	0.7	0.6	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.3	0.2	0.3	0.2	0.1	0.2	0.7	
29-May	0.1	0.0	0.0	0.1	0.3	Z	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.5	0.3	0.3	0.2	0.1	0.4	0.2	0.3	0.5	
30-May	Z	0.1	0.0	0.1	0.0	0.1	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.2	0.1	0.1	0.4	0.9	0.7	0.7	0.8	0.4	0.9	
31-May	1.4	Z	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	0.8	0.7	0.6	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.2	0.2	0.6	0.6	0.7	1.4	
																								Diurnal Average			
																								Diurnal Maximum			
																								0.2			
																								1.4			
Z - zerospan																								C - Calibration		PF - Power Failure	
Alberta Ambient Air Quality Objectives (AAAQO):																								1-hr 172 ppb		24-hr 48 ppb	



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Fort Chipewyan - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Fort Chipewyan - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	707	100.00	100.00
11 - 20	0	0.00	100.00
21 - 60	0	0.00	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Fort Chipewyan - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	15	14	22	61	231	40	31	41	57	39	18	21	41	21	24	30	706
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	14	22	61	231	40	31	41	57	39	18	21	41	21	24	30	706

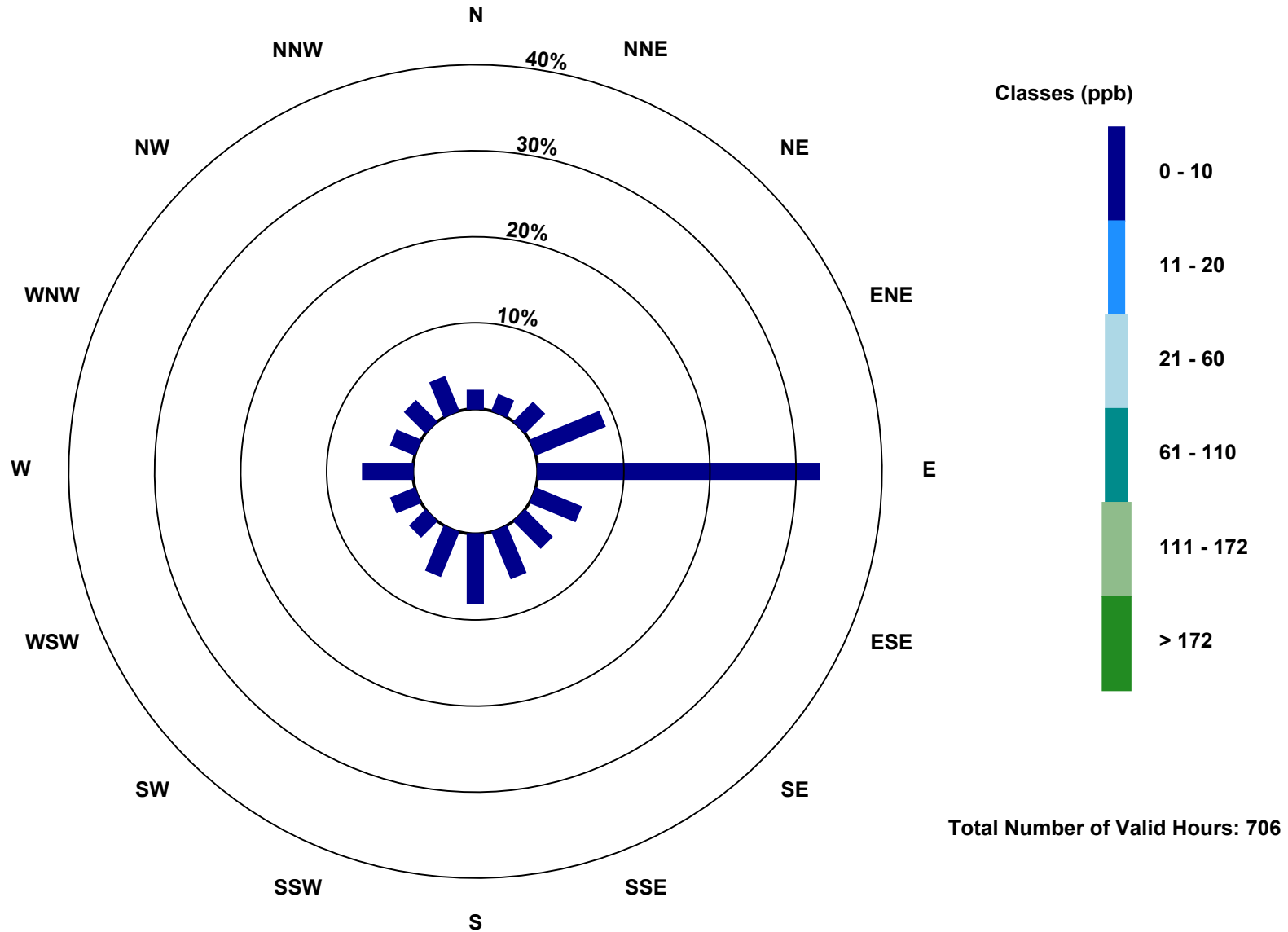
Total Number of Valid Hours: 706

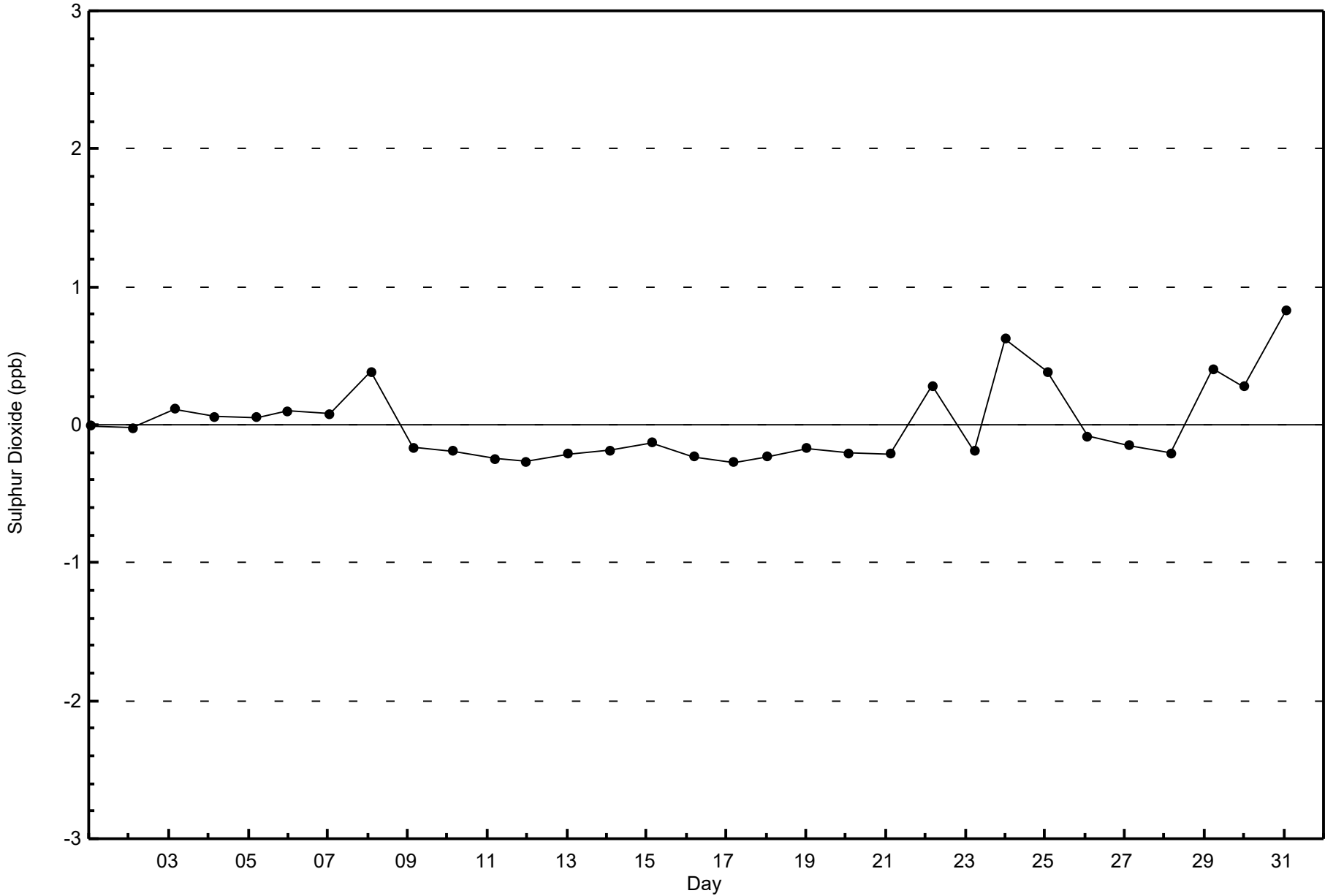
Total Number of Hours: 744

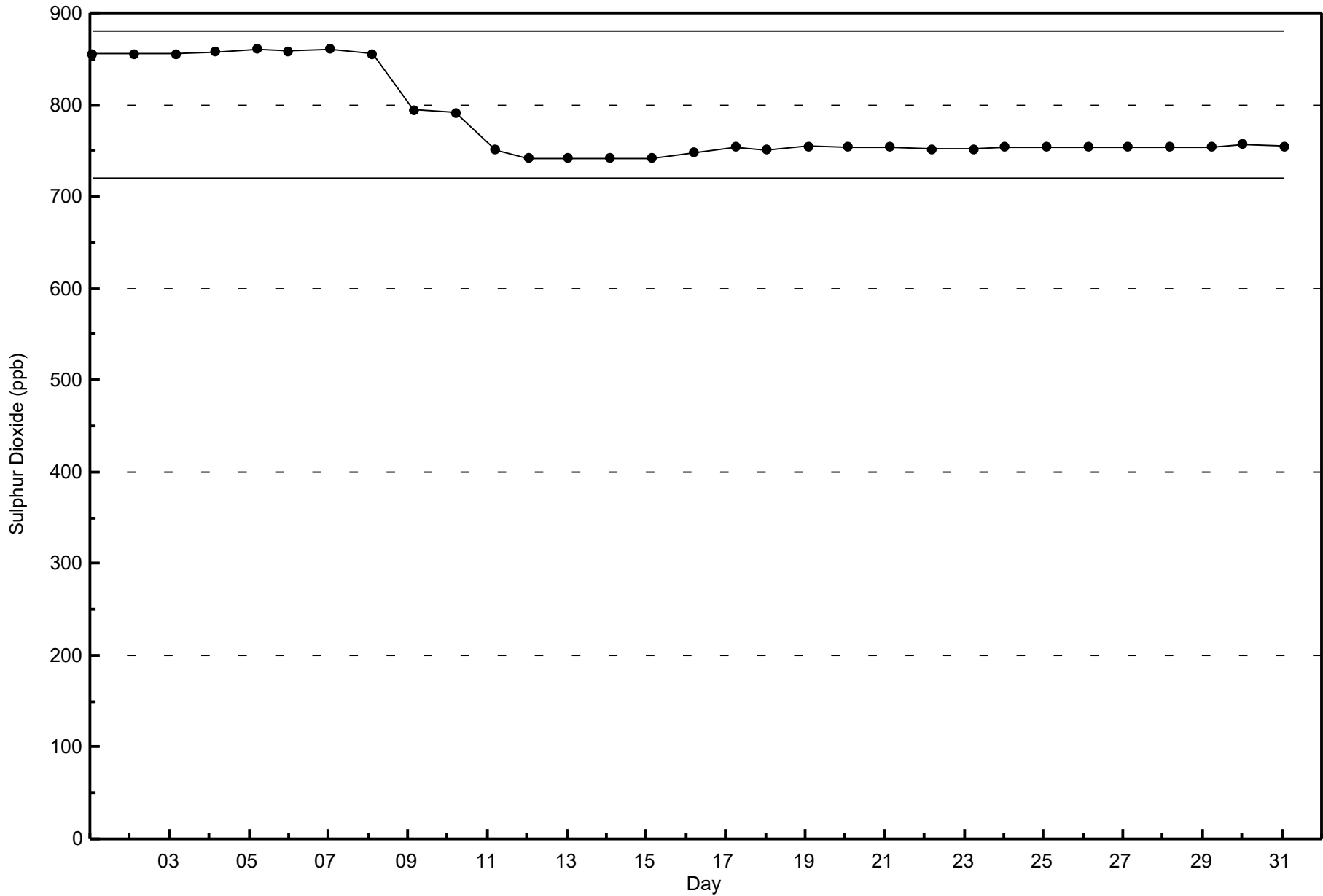


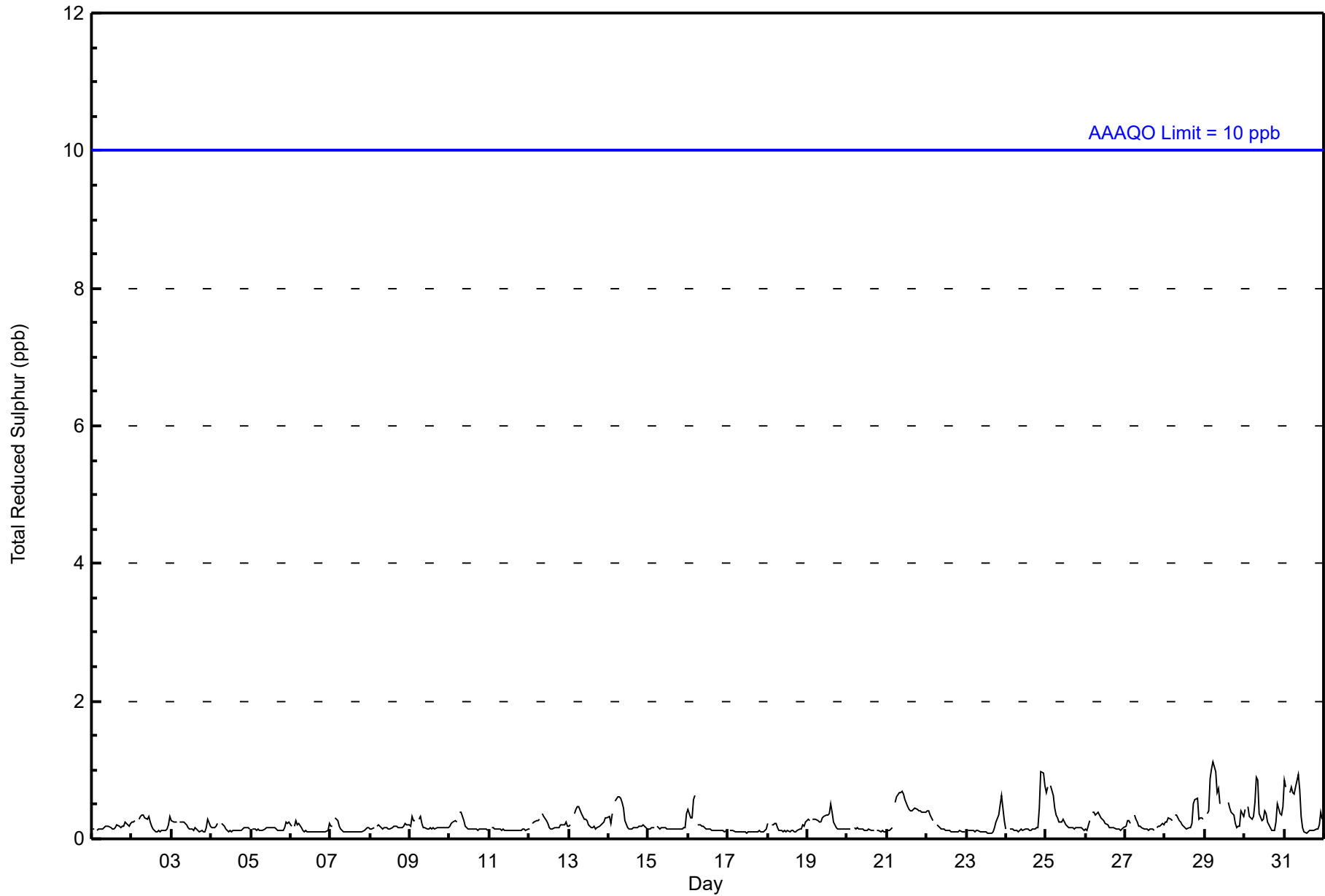
Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Fort Chipewyan











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Fort Chipewyan - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	706	100.00	100.00
3 - 4	0	0.00	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Fort Chipewyan - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	14	13	23	58	229	41	33	43	57	34	19	21	42	25	22	31	705
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	14	13	23	58	229	41	33	43	57	34	19	21	42	25	22	31	705

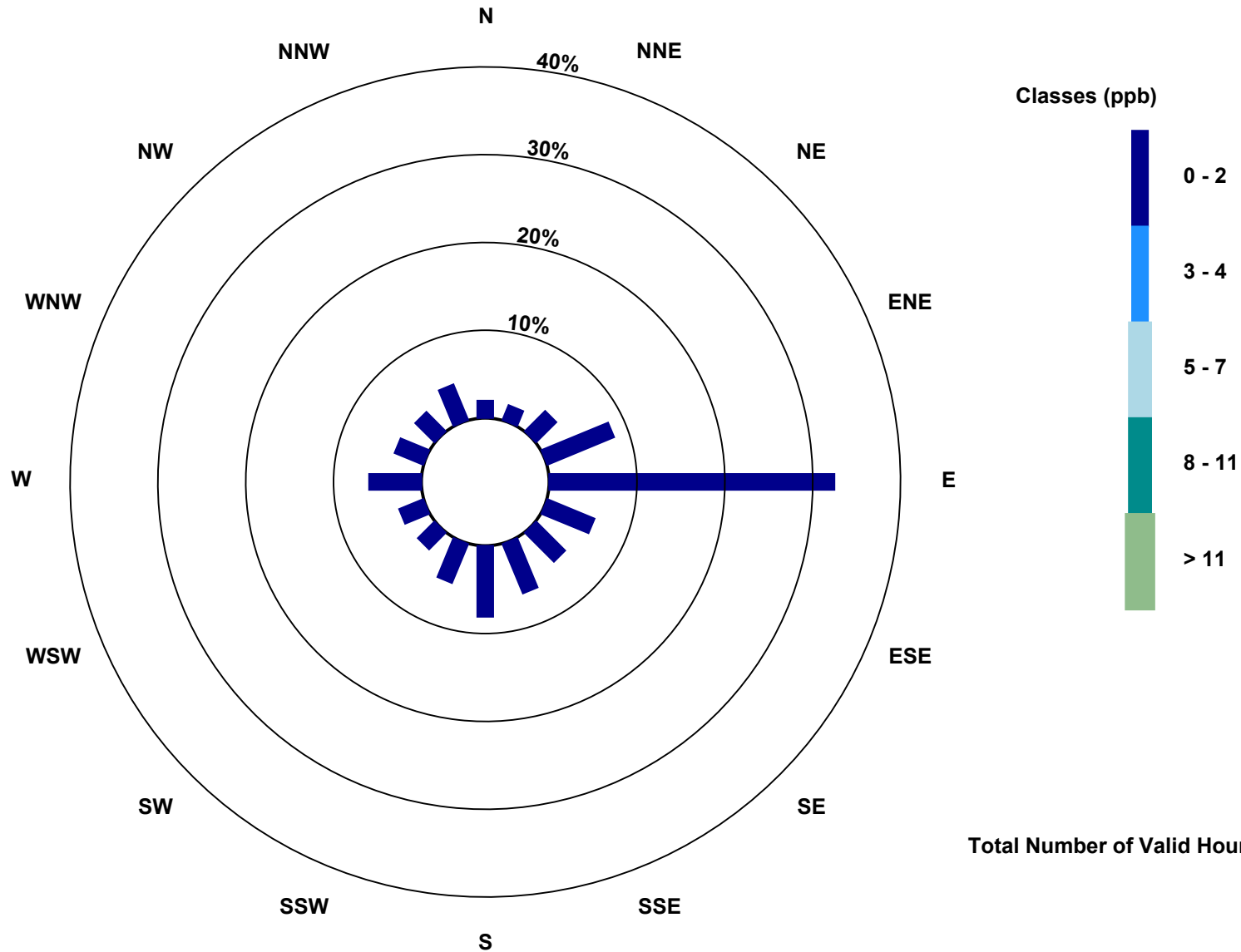
Total Number of Valid Hours: 705

Total Number of Hours: 744

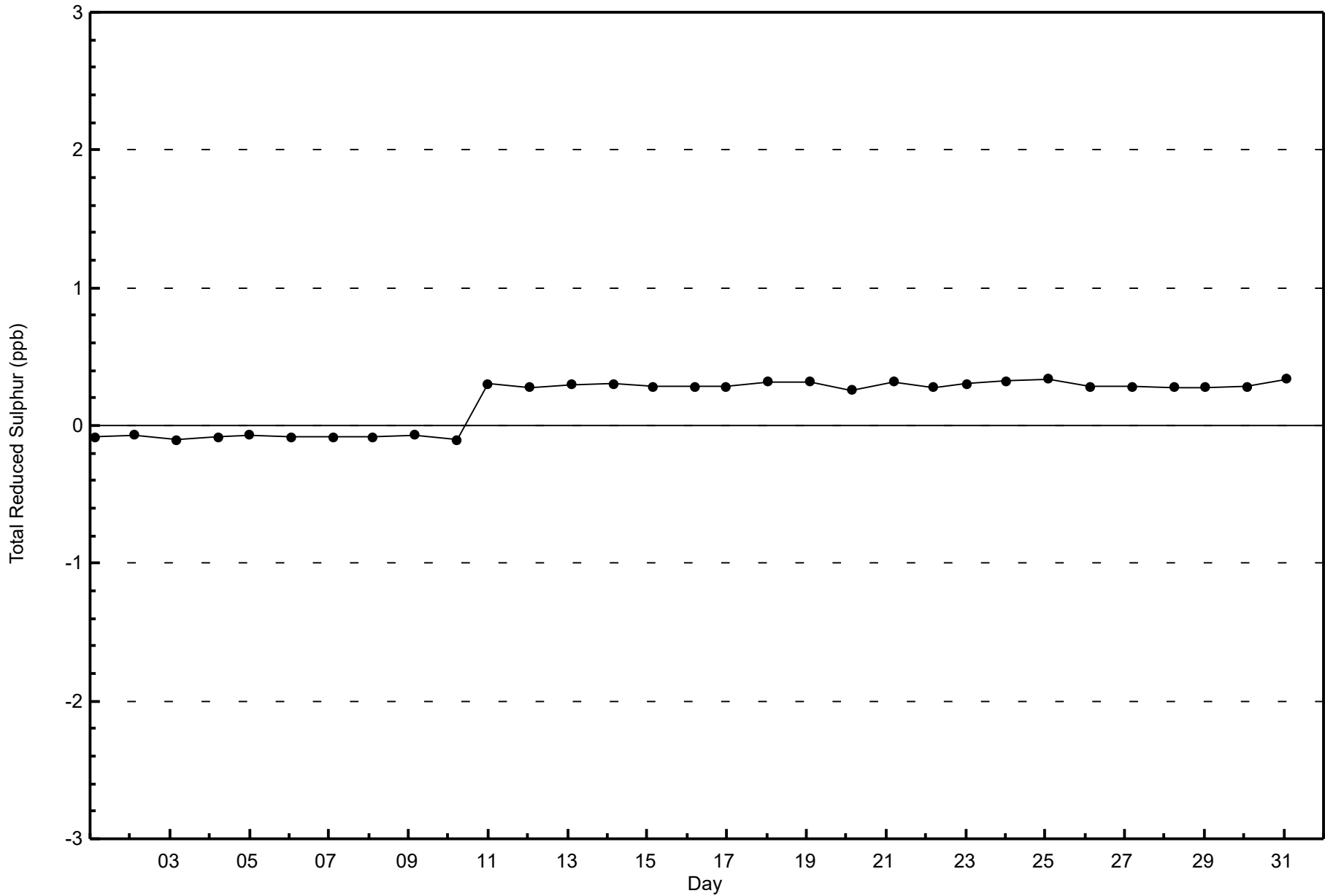


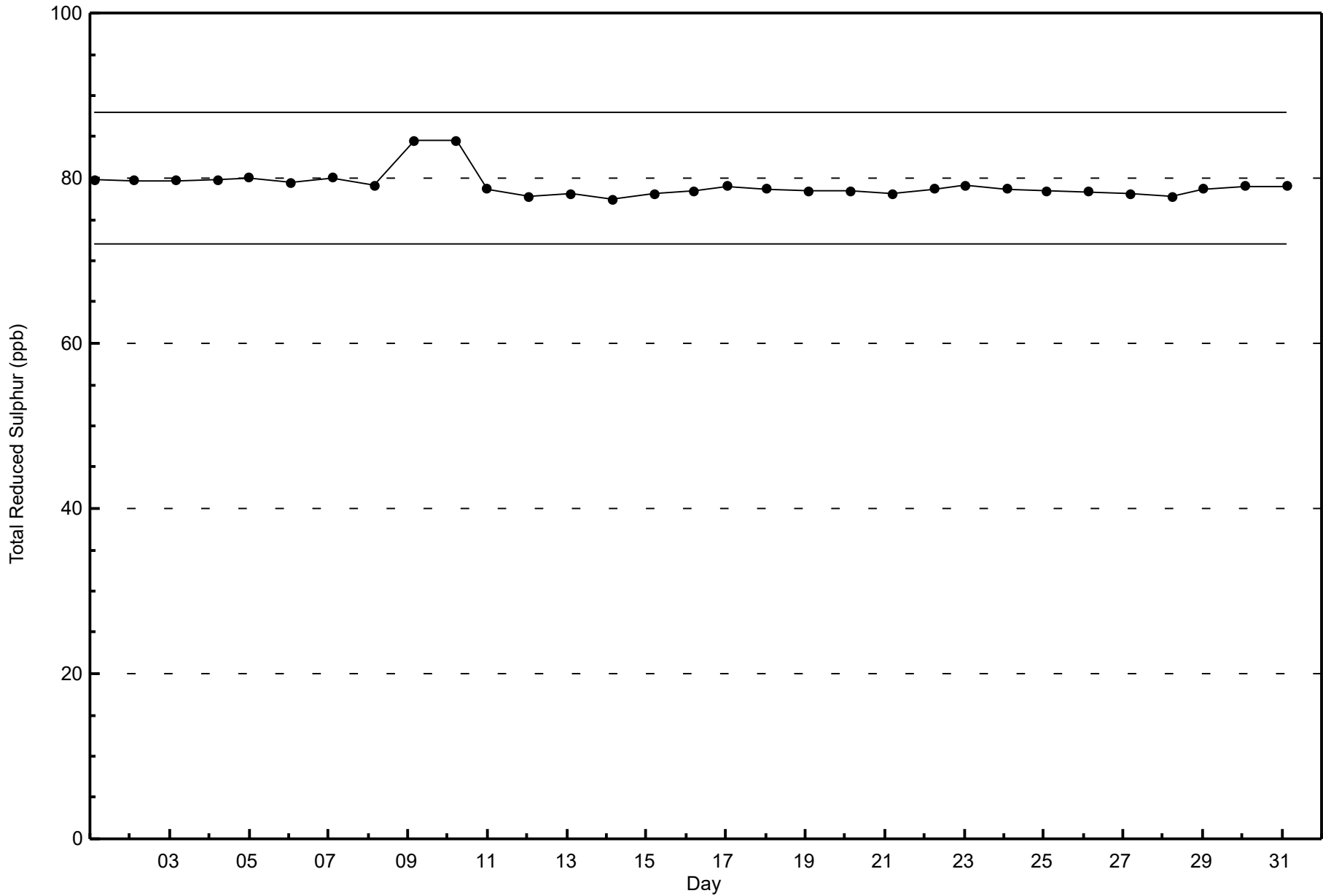
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Reduced Sulphur (TRS) - ppb
Fort Chipewyan



Total Number of Valid Hours: 705





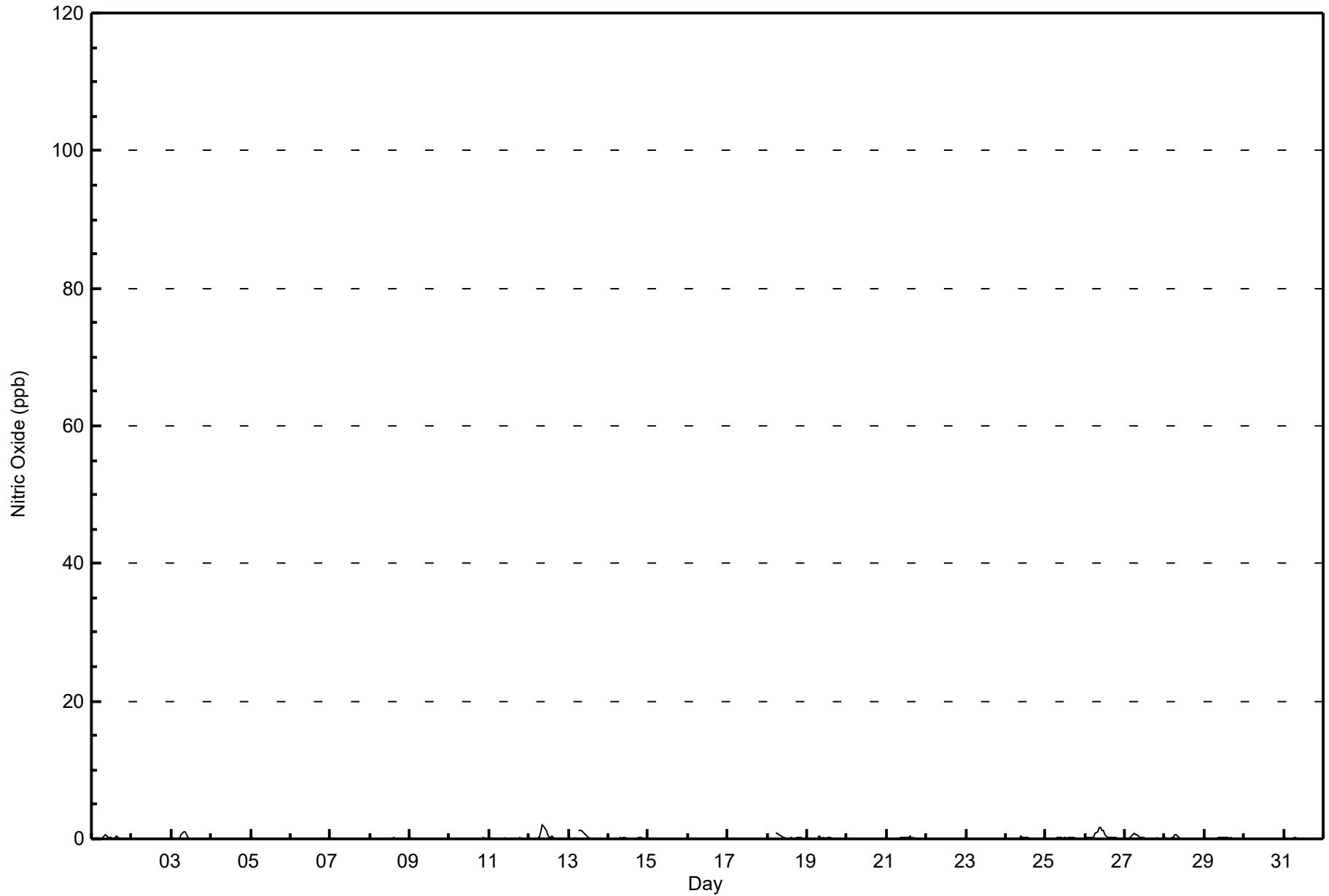


Maximum Value: 2.1 ppb on May 12 09:00		Maximum Daily Average: 0.4 ppb on May 26		Hours in Service: 744																							
Minimum Value: 0.0 ppb on May 1 01:00		Minimum Daily Average: 0.0 ppb on May 7		Hours of Data: 705																							
Maximum Diurnal Average: 0.3 ppb at hour 9		Minimum Diurnal Average: 0.0 ppb at hour 24		Hours of Missing Data: 39																							
Monthly Average: 0.09 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.1 P ₉₀ = 0.2 P ₉₉ = 1.2		Hours of Calibration: 36																							
				Percent Operational Time: 99.6																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.5	0.5	0.4	0.2	0.1	0.1	0.0	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	
2-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-May	0.0	Z	0.0	0.0	0.0	0.0	0.5	1.0	1.1	0.6	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.1	
4-May	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
5-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
9-May	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
10-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1
11-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	M	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.2
12-May	0.0	0.0	0.0	0.1	Z	0.1	0.3	1.0	2.1	1.9	1.2	0.5	0.2	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.4	2.1	
13-May	0.0	0.0	0.0	0.1	0.2	Z	1.1	1.2	1.1	0.8	0.7	0.4	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	1.2	
14-May	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.3
15-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
17-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0
18-May	0.1	0.1	0.1	0.1	Z	0.8	0.8	0.6	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.2	0.8	0.8
19-May	0.0	0.0	0.0	0.0	0.1	Z	0.2	0.3	0.3	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3
20-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	PF	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
21-May	0.0	Z	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.4
22-May	0.0	0.1	Z	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
23-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
24-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.4	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
25-May	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.2
26-May	Z	0.1	0.1	0.1	0.1	0.2	0.8	1.1	1.6	1.6	1.2	1.3	0.6	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.0	0.0	0.1	0.1	0.4	1.6	
27-May	0.1	Z	0.1	0.1	0.3	0.8	0.7	0.6	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	PF	0.2	0.1	0.0	0.0	0.0	0.2	0.8	
28-May	0.1	0.1	Z	0.1	0.1	0.3	0.7	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	
29-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	
30-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
31-May	0.0	0.0	0.1	0.1	0.1	Z	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
																								Diurnal Average			
																								Diurnal Maximum			
Z - zerospan		C - Calibration				M - Maintenance				PF - Power Failure																	



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Fort Chipewyan - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitric Oxide (NO) - ppb
Fort Chipewyan - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	705	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Fort Chipewyan - May 2023**

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Totals
0 - 20	15	14	22	61	223	40	31	44	59	38	18	21	41	25	25	28	705
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	14	22	61	223	40	31	44	59	38	18	21	41	25	25	28	705

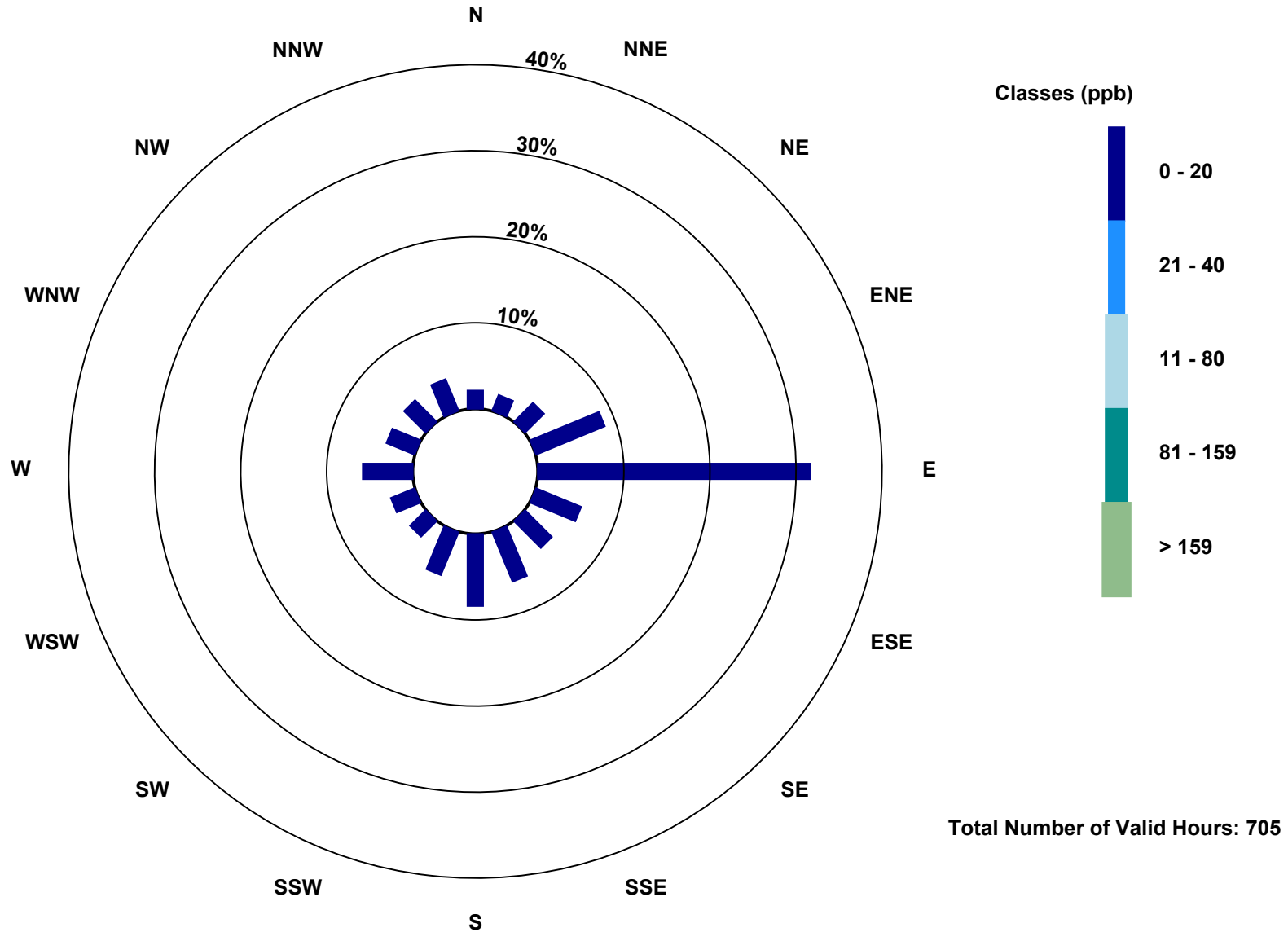
Total Number of Valid Hours: 705

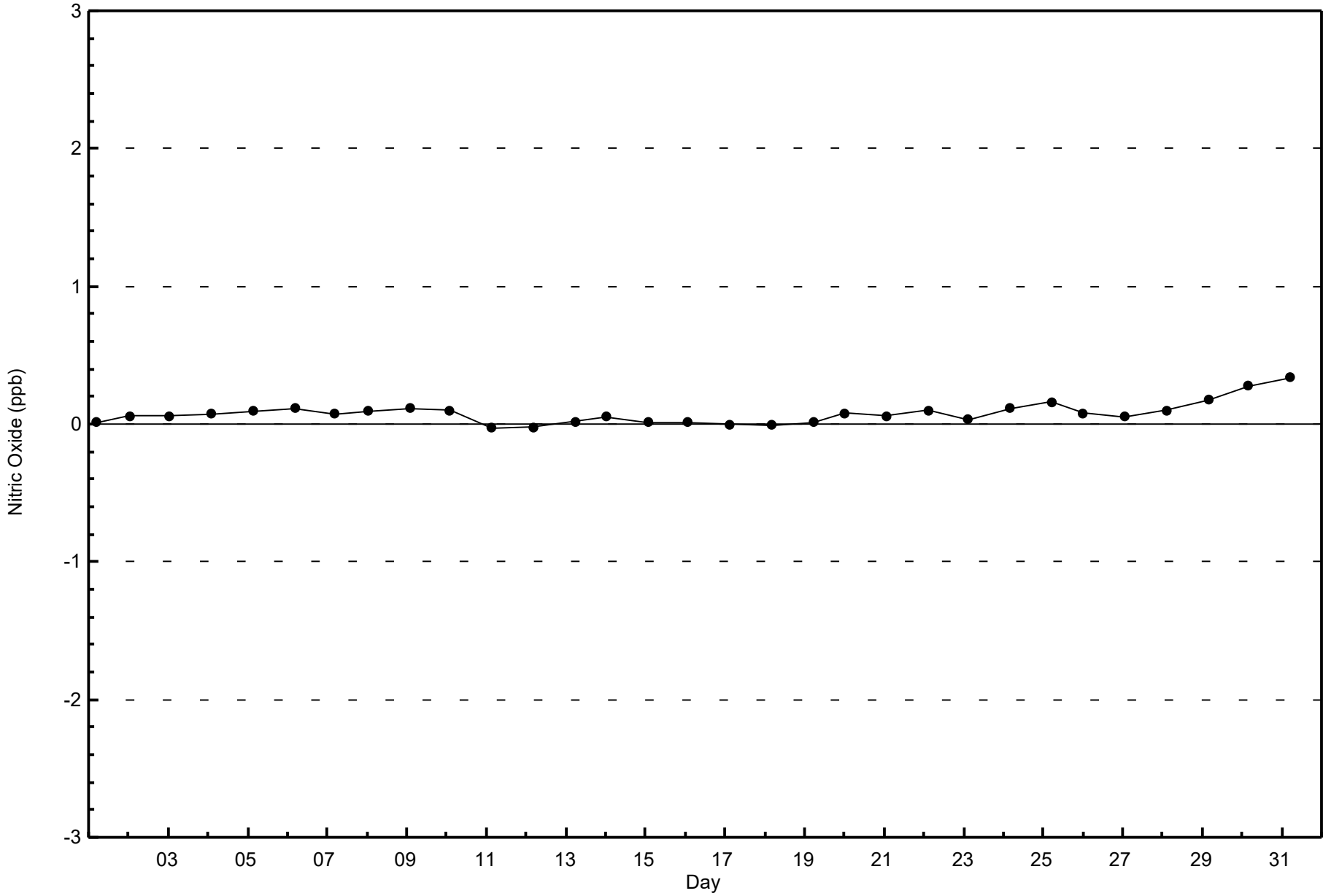
Total Number of Hours: 744

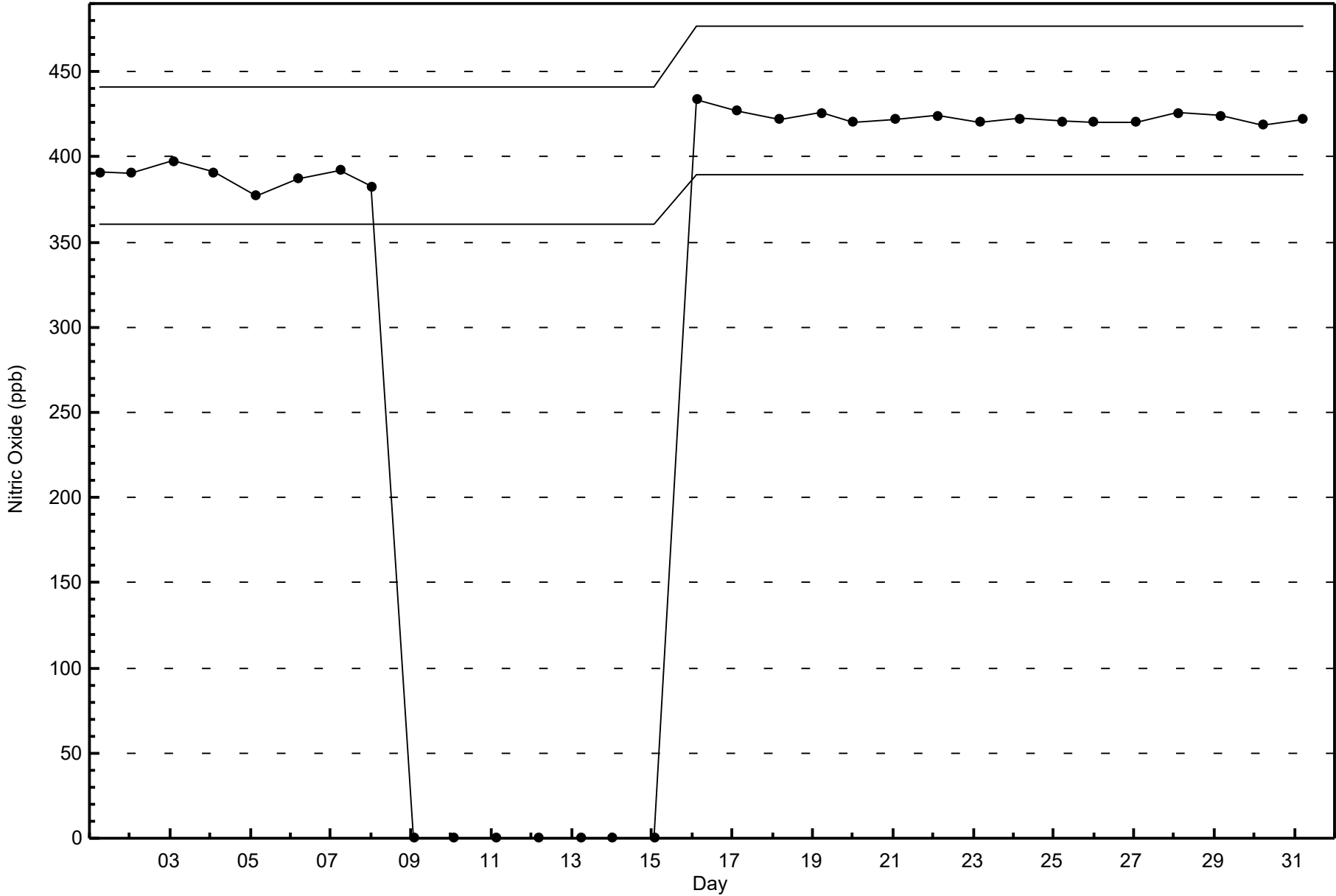


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Fort Chipewyan









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

Fort Chipewyan - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 11.4 ppb on May 23 22:00	Maximum Daily Average: 3.4 ppb on May 13		Hours of Data:	705
Minimum Value: 0.0 ppb on May 25 07:00	Minimum Daily Average: 0.2 ppb on May 7		Hours of Missing Data:	39
Maximum Diurnal Average: 1.7 ppb at hour 9	Minimum Diurnal Average: 0.8 ppb at hour 17		Hours of Calibration:	36
Monthly Average: 1.17 ppb	Percentiles: P ₁ = 0.1 P ₁₀ = 0.3 Q ₁ = 0.3 Median = 0.7 Q ₃ = 1.4 P ₉₀ = 2.8 P ₉₉ = 7.2		Percent Operational Time:	99.6

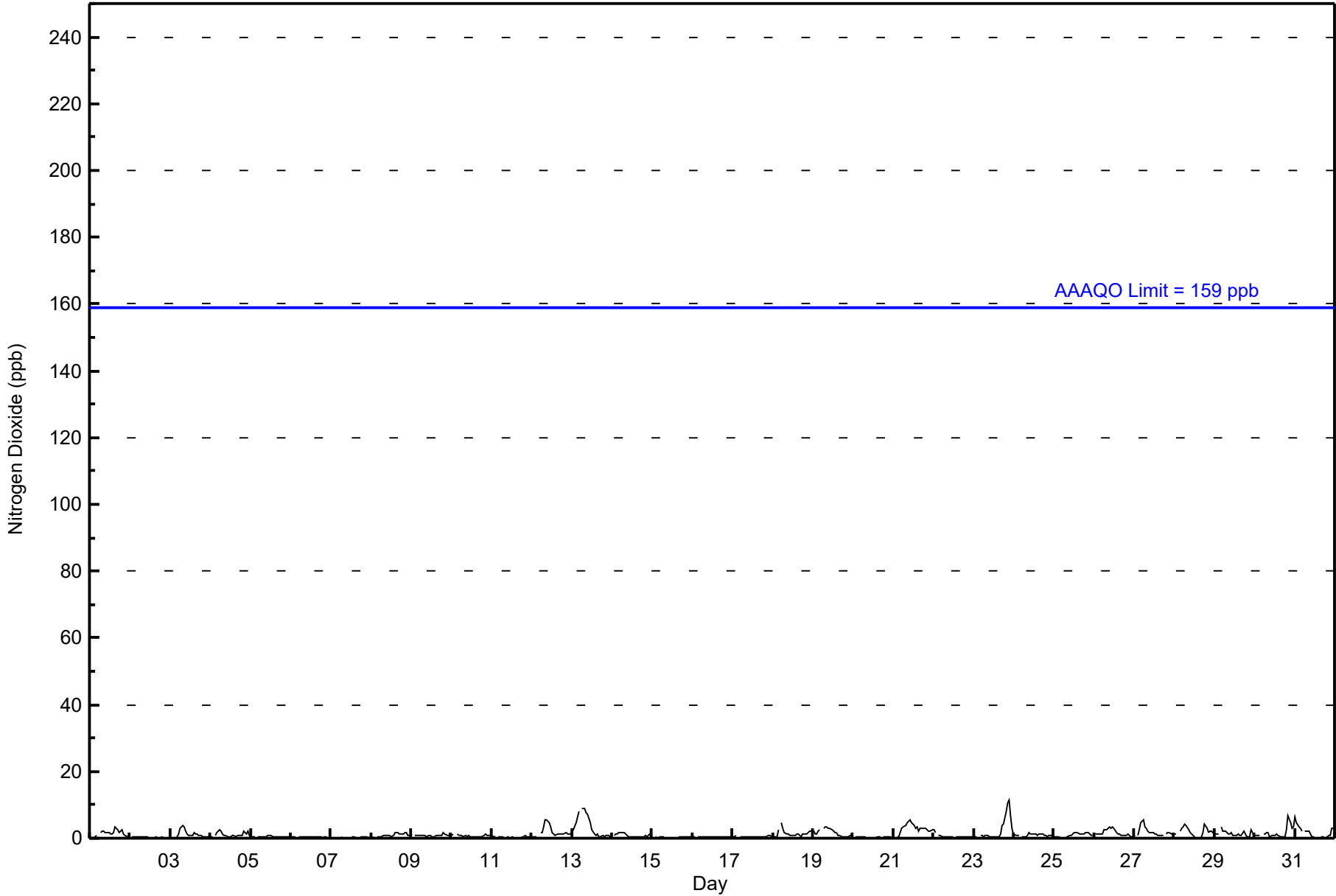
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	0.2	0.2	0.2	0.4	0.7	Z	1.7	2.2	2.2	1.8	1.5	1.5	1.1	1.1	1.9	3.3	2.4	1.9	2.2	2.5	1.2	0.7	0.5	0.5	1.4	3.3																							
2-May	Z	0.6	0.6	0.6	0.5	0.4	0.4	0.5	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.3	0.1	0.1	0.1	0.2	0.3	0.6																							
3-May	0.2	Z	0.2	0.2	0.3	1.4	2.9	3.7	3.5	2.1	1.1	0.7	0.7	0.8	1.7	1.4	1.1	0.9	0.7	0.6	0.6	0.6	0.5	1.2	3.7																								
4-May	0.5	0.6	Z	1.0	1.7	2.4	2.1	1.3	0.8	0.7	0.4	0.4	0.4	0.7	1.0	0.6	0.7	0.9	0.9	1.0	2.3	1.1	2.3	0.7	1.1	2.4																							
5-May	0.5	0.5	0.5	Z	0.5	0.3	0.4	0.4	0.5	0.6	0.7	0.7	0.7	0.6	0.6	0.5	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.5	0.7																							
6-May	0.3	0.3	0.3	0.2	Z	0.3	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.2	0.4	0.3	0.2	0.2	0.3	0.4																							
7-May	0.2	0.2	0.2	0.2	0.2	Z	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.3																							
8-May	Z	0.3	0.2	0.2	0.3	0.4	0.4	0.8	1.0	1.0	1.0	0.8	0.6	0.9	1.9	1.9	1.5	1.3	1.3	1.4	1.5	1.6	1.0	1.0	1.0	1.9																							
9-May	1.1	Z	1.0	1.0	1.0	0.9	0.7	0.7	0.7	0.6	0.7	0.7	0.6	0.6	0.6	0.7	0.8	1.0	0.8	1.7	1.2	0.8	1.0	0.5	0.8	1.7																							
10-May	0.7	1.1	Z	1.1	0.7	0.9	0.7	0.6	0.7	0.6	0.9	0.6	0.6	0.6	0.5	0.4	0.5	0.4	0.5	0.7	1.3	0.9	0.9	1.0	0.7	1.3																							
11-May	1.0	0.6	0.5	Z	0.4	0.4	0.3	0.2	M	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.5	0.5	0.7	0.5	0.3	0.3	0.4	1.0																							
12-May	0.3	0.5	0.6	0.6	Z	1.6	1.6	3.4	5.7	5.4	4.8	3.3	1.9	1.3	1.0	1.1	1.4	1.3	1.4	1.4	1.6	1.4	1.2	1.1	1.9	5.7																							
13-May	1.5	2.6	4.5	6.5	8.1	Z	9.0	9.1	7.7	7.2	6.1	4.5	2.6	1.3	1.0	1.1	0.6	0.5	0.7	0.6	1.0	0.8	0.8	0.6	3.4	9.1																							
14-May	Z	0.7	1.1	1.3	1.5	1.5	1.5	1.7	1.2	0.9	0.6	0.3	0.3	0.4	0.3	0.5	0.5	0.6	0.6	0.9	0.6	1.3	0.3	0.8	1.7																								
15-May	0.3	Z	0.3	0.2	0.3	0.3	0.3	0.3	C	C	C	C	C	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.6	0.5	0.3	0.3	0.6																							
16-May	0.3	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4																							
17-May	0.3	0.6	0.8	Z	0.6	0.6	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.5	0.3	0.3	0.4	0.4	0.4	0.8	0.9	0.3	0.4	0.9																							
18-May	0.3	0.4	0.5	2.7	Z	4.6	3.0	1.7	1.4	1.1	1.0	0.9	0.9	0.8	1.1	1.1	0.7	0.6	1.1	1.2	1.4	1.8	2.0	2.2	1.4	4.6																							
19-May	2.0	1.4	1.3	2.1	2.5	Z	3.1	3.3	3.3	3.0	2.9	2.7	2.3	1.9	1.9	1.0	0.7	0.4	0.3	0.3	0.3	0.3	0.7	0.4	1.7	3.3																							
20-May	Z	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.2	0.3	0.4																							
21-May	0.3	Z	0.3	0.5	1.6	2.9	3.5	3.9	4.5	5.2	5.5	4.8	3.8	3.1	3.2	2.3	2.8	2.8	2.9	2.8	2.7	2.1	2.2	2.5	2.9	5.5																							
22-May	2.6	1.9	Z	1.0	0.7	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	2.6																							
23-May	0.5	0.5	0.5	Z	0.9	0.7	0.6	0.7	0.7	0.5	0.5	0.4	0.4	0.4	0.3	0.4	1.4	3.9	4.4	8.1	10.6	11.4	6.8	3.1	2.5	11.4																							
24-May	1.1	0.7	0.7	Z	0.5	0.5	0.5	0.9	1.5	1.2	1.2	1.3	1.1	1.0	1.1	1.2	1.1	0.7	0.8	0.6	0.8	0.7	0.6	0.6	0.9	1.5																							
25-May	0.4	0.4	0.3	0.3	0.2	Z	0.0	0.2	0.3	0.8	1.0	1.3	1.5	1.7	1.5	1.3	1.2	1.1	1.3	1.5	1.5	1.1	1.0	0.9	0.9	1.7																							
26-May	Z	1.2	1.3	1.3	1.2	1.1	2.7	2.6	3.1	3.4	3.0	3.6	2.8	1.8	1.3	1.1	0.9	0.9	0.8	0.7	1.1	0.8	0.6	0.6	1.6	3.6																							
27-May	0.7	Z	0.9	2.7	4.8	5.5	3.5	3.0	2.0	1.7	1.6	1.7	1.2	1.2	1.0	1.0	0.9	0.9	0.9	1.2	1.5	1.7	1.3	1.4	1.9	5.5																							
28-May	1.3	1.2	Z	2.0	3.1	3.5	4.2	3.7	2.4	1.5	1.1	0.7	0.5	0.2	0.2	0.2	0.4	1.5	4.1	2.9	1.5	2.2	2.0	1.6	1.8	4.2																							
29-May	1.3	1.1	1.3	Z	3.4	2.2	2.3	1.6	1.4	1.3	1.5	0.8	1.0	1.0	1.1	0.9	0.9	2.2	1.2	0.5	0.5	0.5	2.4	0.9	1.4	3.4																							
30-May	1.0	0.8	0.7	0.8	Z	1.1	1.3	1.8	1.8	0.6	0.7	0.8	0.9	1.1	0.9	0.6	0.5	0.4	0.6	2.5	6.6	4.5	3.1	3.5	1.6	6.6																							
31-May	6.5	4.5	3.3	2.9	2.3	Z	2.1	2.2	2.3	1.4	0.5	0.3	0.2	0.0	0.1	0.1	0.3	0.3	0.2	0.3	1.0	1.0	2.9	2.8	1.6	6.5																							
																								1.0	0.9	0.9	1.2	1.5	1.4	1.6	1.7	1.7	1.5	1.4	1.2	0.9	0.8	0.8	0.8	0.9	1.0	1.2	1.4	1.3	1.3	1.0	Diurnal Average		
																								6.5	4.5	4.5	6.5	8.1	5.5	9.0	9.1	7.7	7.2	6.1	4.8	3.8	3.1	3.2	3.3	2.8	3.9	4.4	8.1	10.6	11.4	6.8	3.5	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance PF - Power Failure
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Fort Chipewyan - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort Chipewyan - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	705	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort Chipewyan - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	15	14	22	61	223	40	31	44	59	38	18	21	41	25	25	28	705
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	14	22	61	223	40	31	44	59	38	18	21	41	25	25	28	705

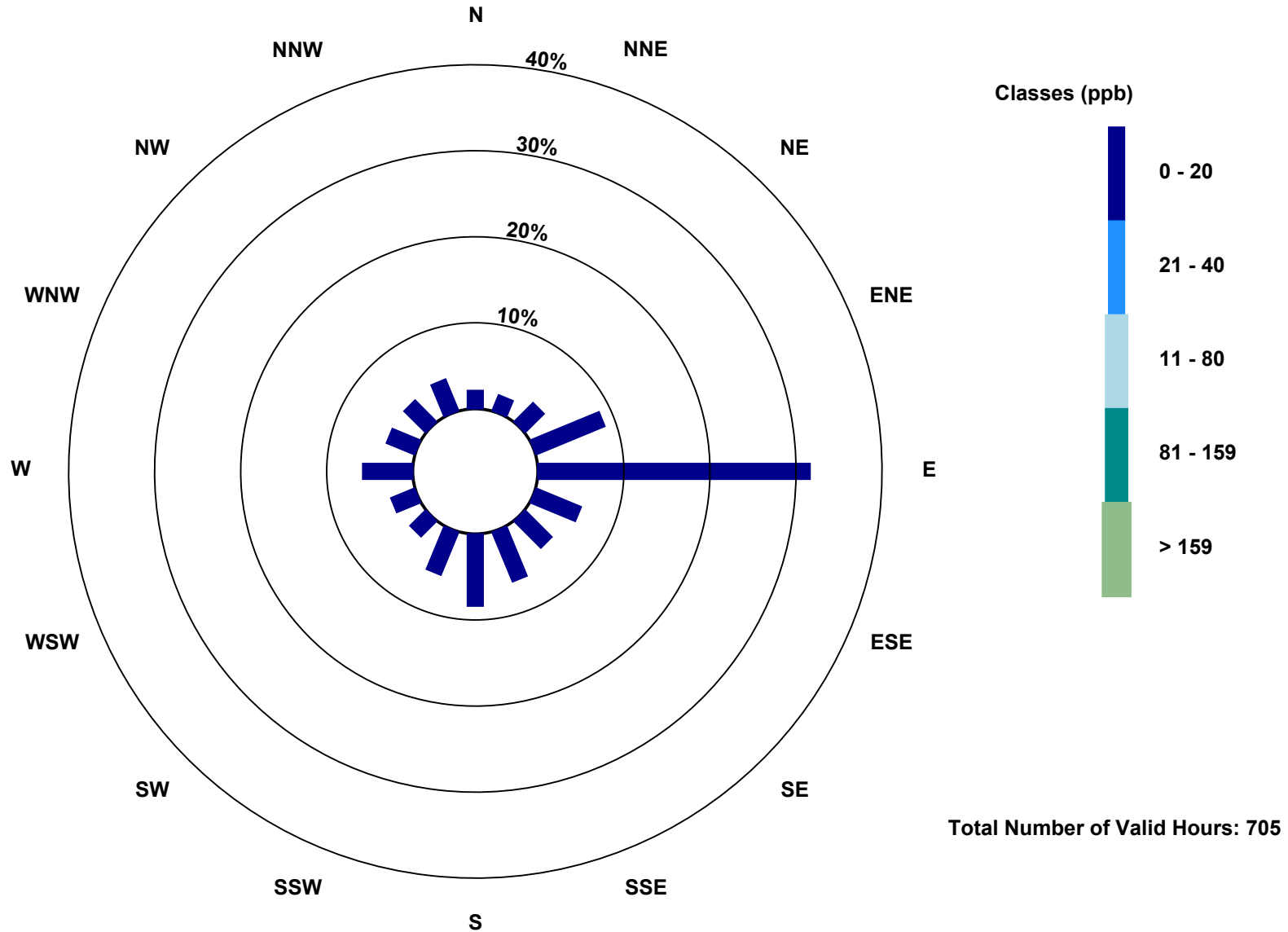
Total Number of Valid Hours: 705

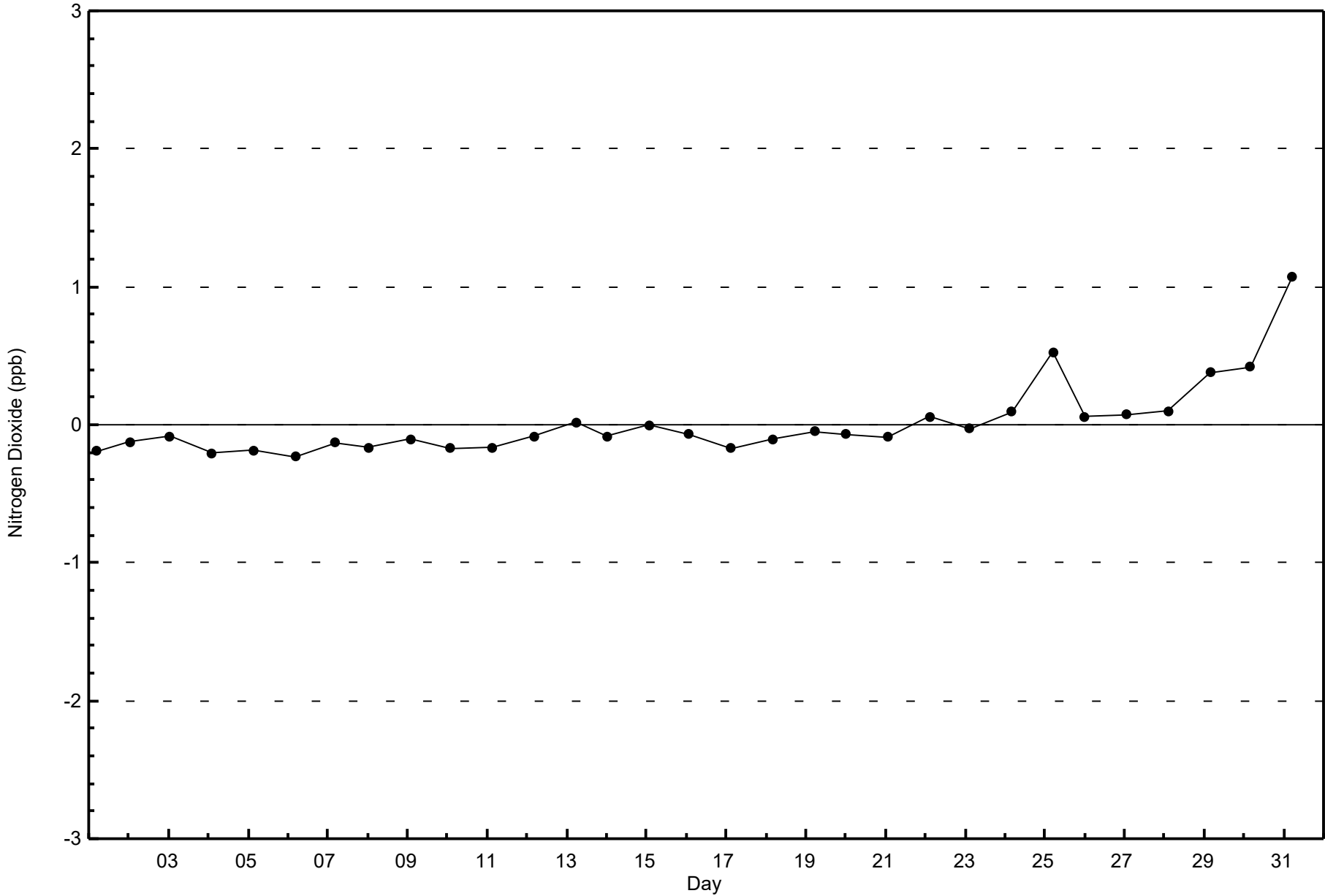
Total Number of Hours: 744

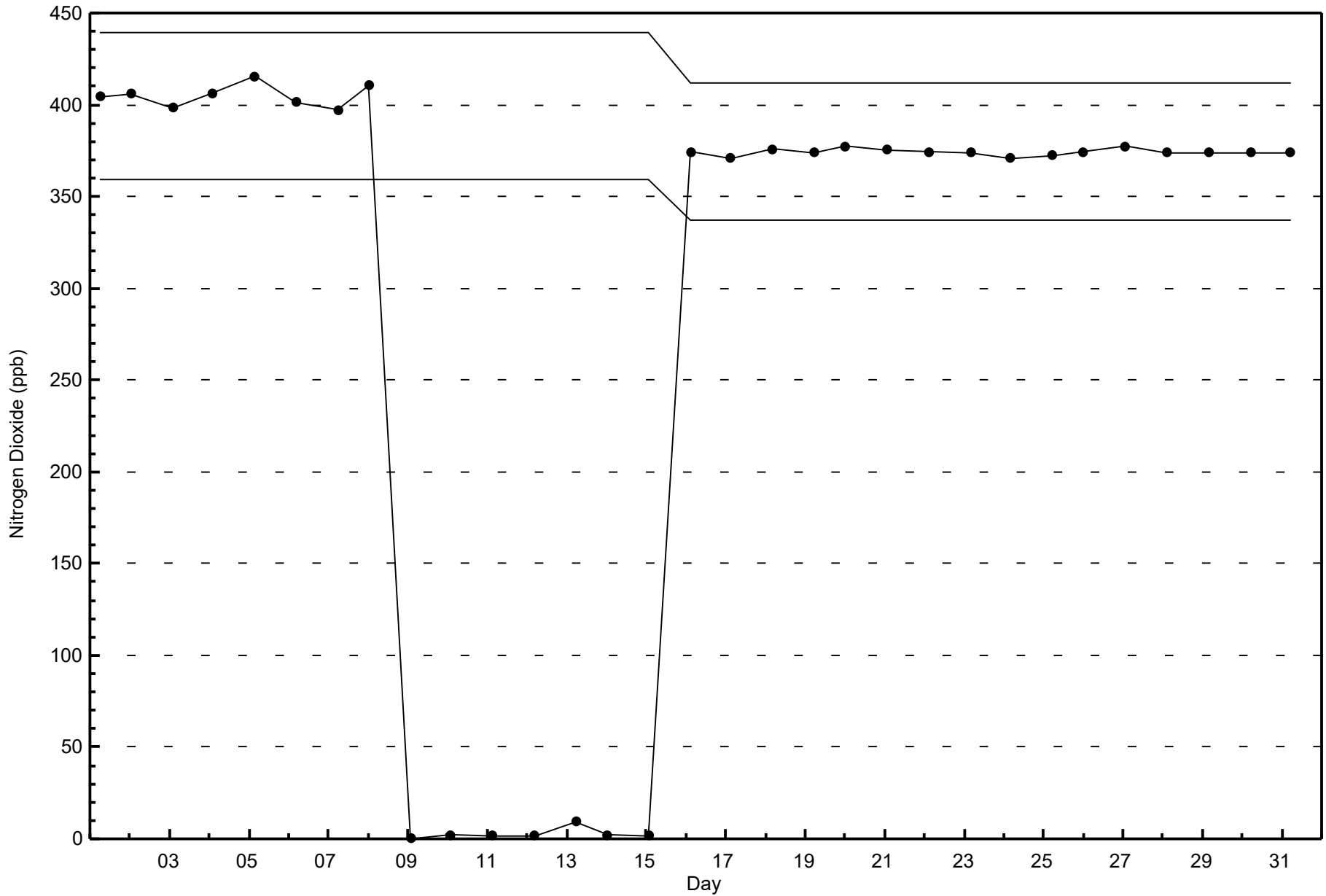


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Fort Chipewyan









Wood Buffalo Environmental Association
Summary of Hour Averages

Nitrogen Oxides (NO_x) - ppb
Fort Chipewyan - May 2023

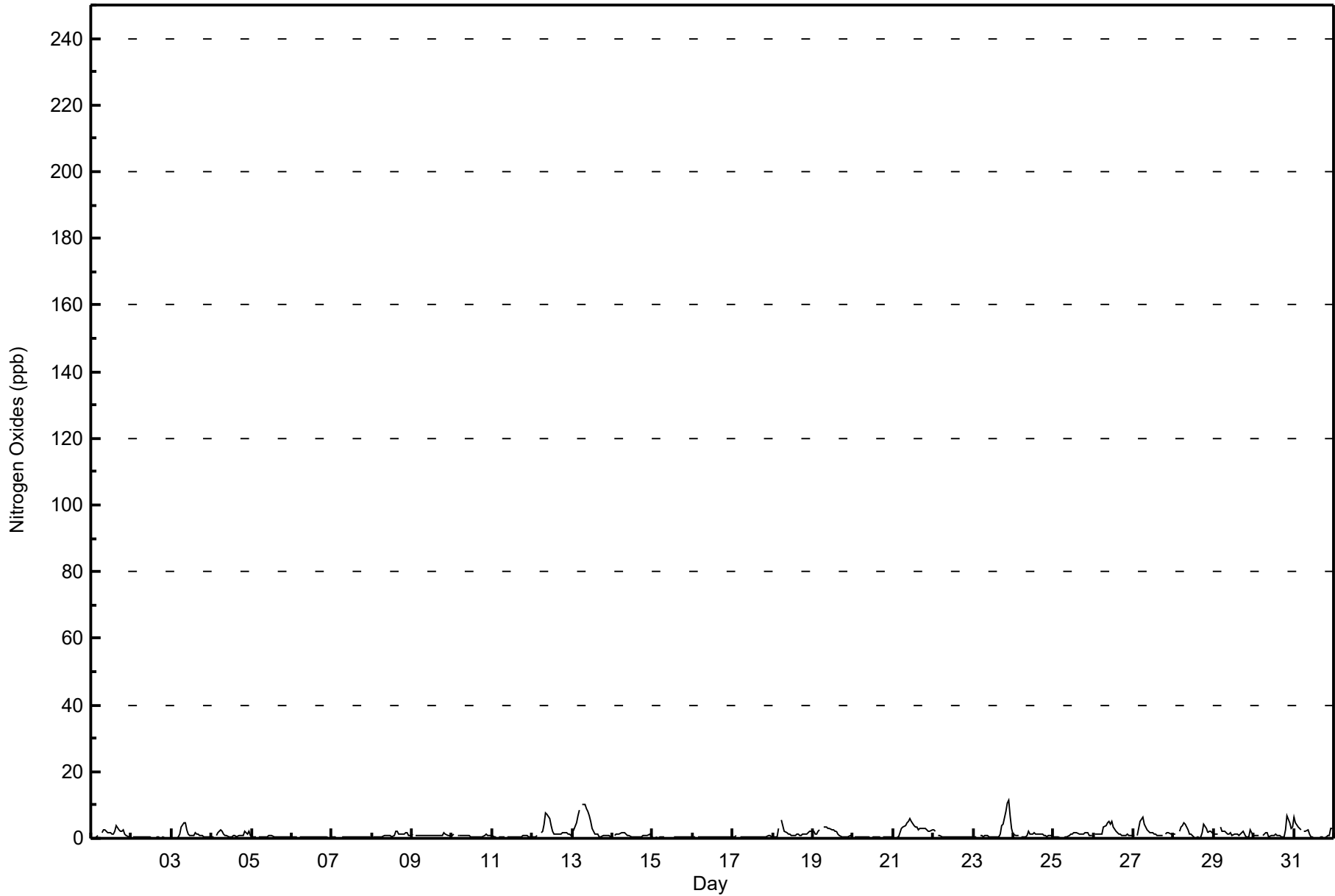
Maximum Value: 11.4 ppb on May 23 22:00		Maximum Daily Average: 3.7 ppb on May 13		Hours in Service: 744																							
Minimum Value: 0.0 ppb on May 31 14:00		Minimum Daily Average: 0.2 ppb on May 7		Hours of Data: 705																							
Maximum Diurnal Average: 2.0 ppb at hour 9		Minimum Diurnal Average: 0.8 ppb at hour 17		Hours of Missing Data: 39																							
Monthly Average: 1.25 ppb		Percentiles: P ₁ = 0.1 P ₁₀ = 0.3 Q ₁ = 0.3 Median = 0.7 Q ₃ = 1.4 P ₉₀ = 2.9 P ₉₉ = 8.0		Hours of Calibration: 36																							
				Percent Operational Time: 99.6																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.2	0.2	0.2	0.4	0.7	Z	1.8	2.7	2.7	2.2	1.7	1.6	1.2	1.1	2.0	3.6	2.5	1.9	2.2	2.5	1.2	0.7	0.5	0.5	1.5	3.6	
2-May	Z	0.6	0.6	0.6	0.5	0.4	0.4	0.5	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.3	0.1	0.1	0.1	0.2	0.3	0.6	
3-May	0.2	Z	0.2	0.2	0.3	1.4	3.4	4.7	4.6	2.7	1.3	0.7	0.7	0.8	1.8	1.4	1.1	0.9	0.7	0.6	0.6	0.6	0.5	1.3	4.7		
4-May	0.5	0.6	Z	1.0	1.7	2.4	2.2	1.4	0.8	0.7	0.4	0.4	0.4	0.7	1.0	0.6	0.7	0.9	0.9	1.0	2.3	1.1	2.3	0.7	1.1	2.4	
5-May	0.5	0.5	0.5	Z	0.5	0.3	0.4	0.4	0.5	0.6	0.7	0.7	0.7	0.6	0.6	0.5	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.5	0.7	
6-May	0.3	0.3	0.3	0.2	Z	0.3	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.2	0.4	0.3	0.2	0.2	0.3	0.4	
7-May	0.2	0.2	0.2	0.2	0.2	Z	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.3	
8-May	Z	0.3	0.2	0.2	0.3	0.4	0.4	0.8	1.0	1.0	1.0	0.8	0.6	0.9	2.0	1.9	1.5	1.4	1.3	1.4	1.5	1.6	1.0	1.0	1.0	2.0	
9-May	1.1	Z	1.0	1.0	1.0	0.9	0.8	0.8	0.8	0.7	0.8	0.8	0.7	0.7	0.7	0.8	0.8	1.0	0.8	1.8	1.2	0.8	1.0	0.5	0.9	1.8	
10-May	0.7	1.1	Z	1.1	0.7	0.9	0.7	0.7	0.8	0.7	1.0	0.6	0.6	0.6	0.5	0.5	0.6	0.5	0.5	0.7	1.4	1.0	0.9	1.0	0.8	1.4	
11-May	1.0	0.6	0.5	Z	0.4	0.4	0.3	0.3	M	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.7	0.6	0.8	0.6	0.3	0.3	0.4	1.0	
12-May	0.3	0.5	0.6	0.7	Z	1.7	1.9	4.4	7.8	7.3	6.0	3.8	2.1	1.4	1.3	1.2	1.5	1.4	1.5	1.5	1.7	1.5	1.2	1.1	2.3	7.8	
13-May	1.5	2.6	4.5	6.6	8.3	Z	10.1	10.3	8.8	8.0	6.8	4.9	2.8	1.4	1.1	1.2	0.6	0.5	0.7	0.7	1.0	0.8	0.8	0.6	3.7	10.3	
14-May	Z	0.7	1.1	1.3	1.5	1.6	1.6	1.8	1.3	1.0	0.7	0.4	0.4	0.5	0.4	0.6	0.6	0.6	0.9	0.7	1.0	0.7	1.4	0.3	0.9	1.8	
15-May	0.3	Z	0.3	0.2	0.3	0.3	0.3	0.3	C	C	C	C	C	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.6	0.5	0.3	0.3	0.6	
16-May	0.3	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	
17-May	0.3	0.6	0.8	Z	0.6	0.6	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.6	0.4	0.3	0.4	0.5	0.5	0.8	1.0	0.4	0.5	1.0	
18-May	0.4	0.5	0.6	2.8	Z	5.4	3.8	2.3	1.9	1.4	1.2	1.0	1.0	0.9	1.2	1.2	0.7	0.7	1.2	1.3	1.5	1.9	2.0	2.2	1.6	5.4	
19-May	2.0	1.4	1.3	2.1	2.6	Z	3.3	3.6	3.6	3.1	3.1	2.8	2.5	2.0	2.0	1.1	0.8	0.5	0.3	0.3	0.3	0.3	0.7	0.4	1.7	3.6	
20-May	Z	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	PF	0.4	0.3	0.4	0.4	0.3	0.2	0.3	0.4
21-May	0.3	Z	0.4	0.6	1.6	2.9	3.5	3.9	4.6	5.3	5.7	5.0	3.9	3.2	3.6	2.4	2.9	2.9	3.0	2.9	2.7	2.1	2.2	2.5	3.0	5.7	
22-May	2.6	2.0	Z	1.0	0.7	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	2.6	
23-May	0.5	0.5	0.5	Z	0.9	0.7	0.6	0.7	0.7	0.6	0.5	0.4	0.4	0.3	0.4	1.4	3.9	4.4	8.1	10.6	11.4	6.8	3.1	2.5	11.4		
24-May	1.1	0.7	0.7	Z	0.5	0.5	0.5	1.0	1.9	1.3	1.4	1.5	1.2	1.1	1.2	1.2	1.2	0.8	0.8	0.6	0.8	0.7	0.6	1.0	1.9		
25-May	0.4	0.4	0.3	0.3	0.2	Z	0.1	0.4	0.5	0.9	1.1	1.4	1.6	1.8	1.6	1.4	1.3	1.2	1.4	1.6	1.6	1.1	1.0	1.0	1.0	1.8	
26-May	Z	1.3	1.4	1.4	1.3	1.3	3.5	3.7	4.7	5.0	4.2	4.9	3.4	2.1	1.5	1.3	1.1	1.0	1.0	0.8	1.1	0.8	0.7	0.7	2.1	5.0	
27-May	0.8	Z	1.0	2.8	5.1	6.3	4.2	3.6	2.3	1.9	1.8	1.8	1.3	1.3	1.0	1.0	0.9	1.0	PF	1.4	1.6	1.7	1.3	1.4	2.1	6.3	
28-May	1.4	1.3	Z	2.1	3.2	3.8	4.9	4.4	2.7	1.5	1.1	0.7	0.5	0.2	0.2	0.2	0.4	1.5	4.1	2.9	1.5	2.2	2.0	1.6	1.9	4.9	
29-May	1.3	1.1	1.3	Z	3.4	2.2	2.3	1.7	1.5	1.4	1.8	1.0	1.1	1.1	1.2	1.0	1.1	2.2	1.2	0.5	0.5	0.5	2.4	0.9	1.4	3.4	
30-May	1.0	0.8	0.7	0.8	Z	1.1	1.3	1.8	1.8	0.6	0.7	0.8	1.0	1.2	0.9	0.6	0.5	0.4	0.6	2.5	6.6	4.5	3.1	3.5	1.6	6.6	
31-May	6.5	4.5	3.4	3.0	2.4	Z	2.3	2.3	2.4	1.5	0.5	0.3	0.2	0.0	0.1	0.1	0.3	0.3	0.2	0.3	1.0	1.0	2.9	2.8	1.7	6.5	
																								Diurnal Average			
																								Diurnal Maximum			
																								Diurnal Average			
																								Diurnal Maximum			
																								Diurnal Average			
																								Diurnal Maximum			

Z - zerospan C - Calibration M - Maintenance PF - Power Failure



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Fort Chipewyan - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Fort Chipewyan - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	705	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Fort Chipewyan - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	15	14	22	61	223	40	31	44	59	38	18	21	41	25	25	28	705
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	14	22	61	223	40	31	44	59	38	18	21	41	25	25	28	705

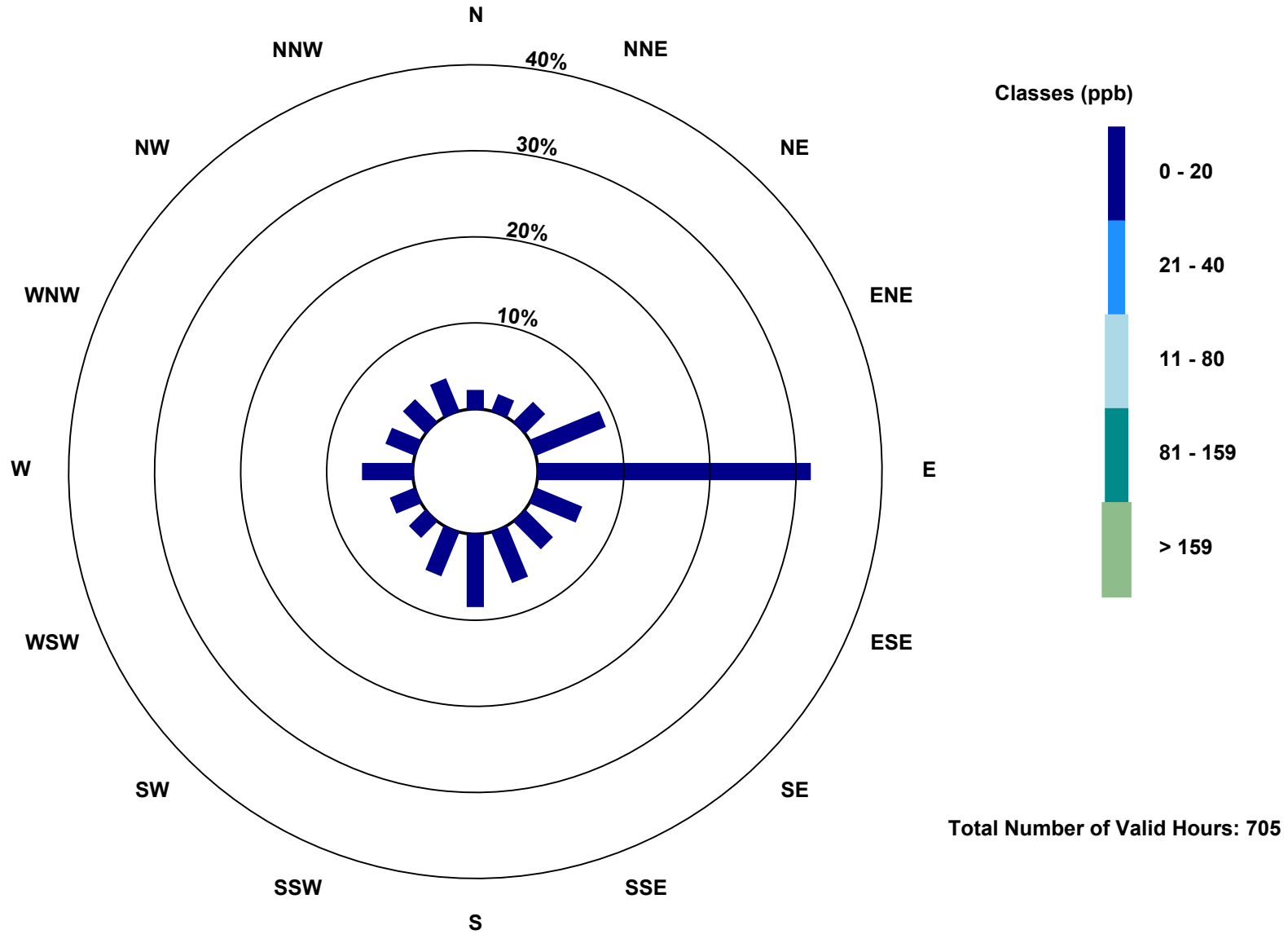
Total Number of Valid Hours: 705

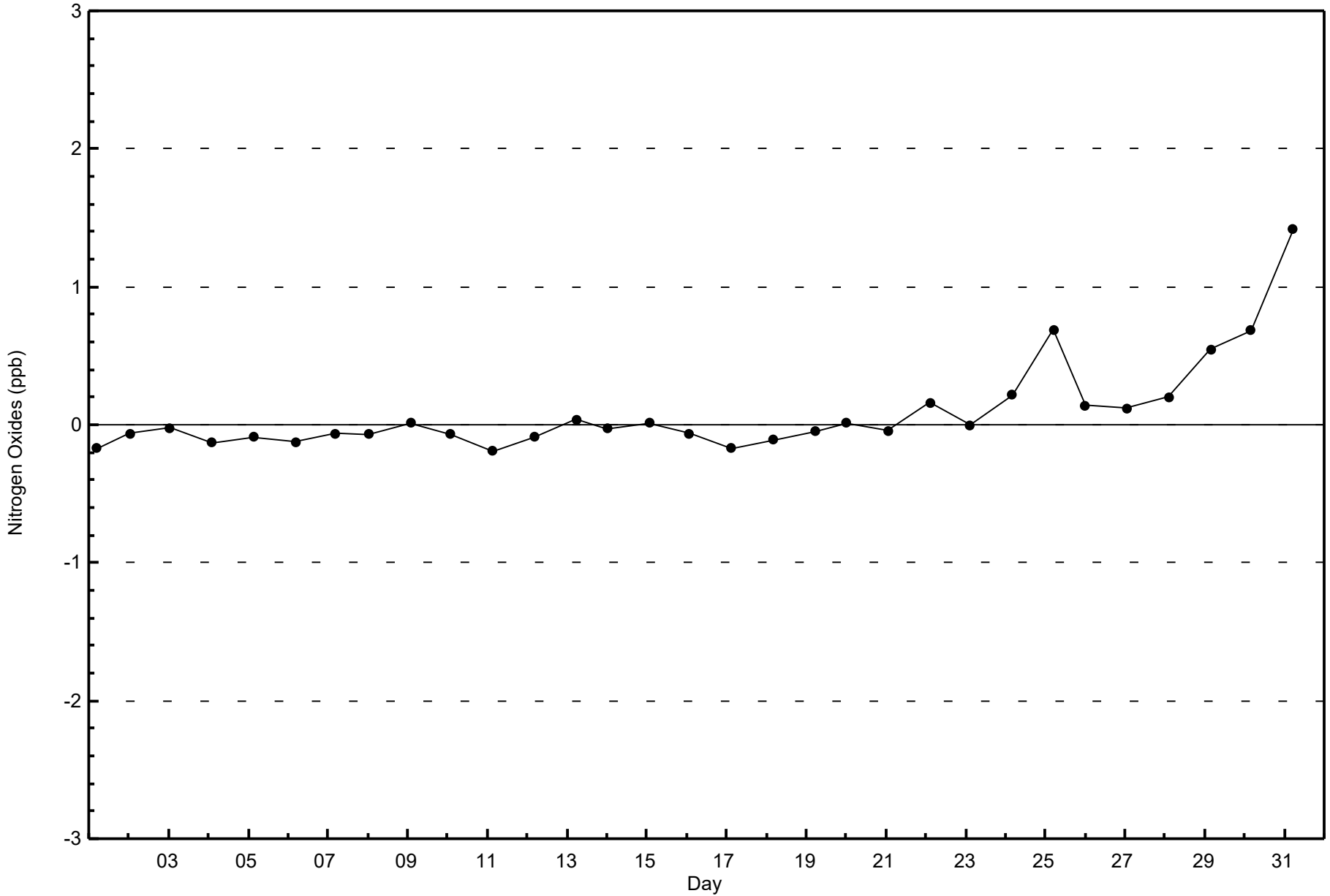
Total Number of Hours: 744

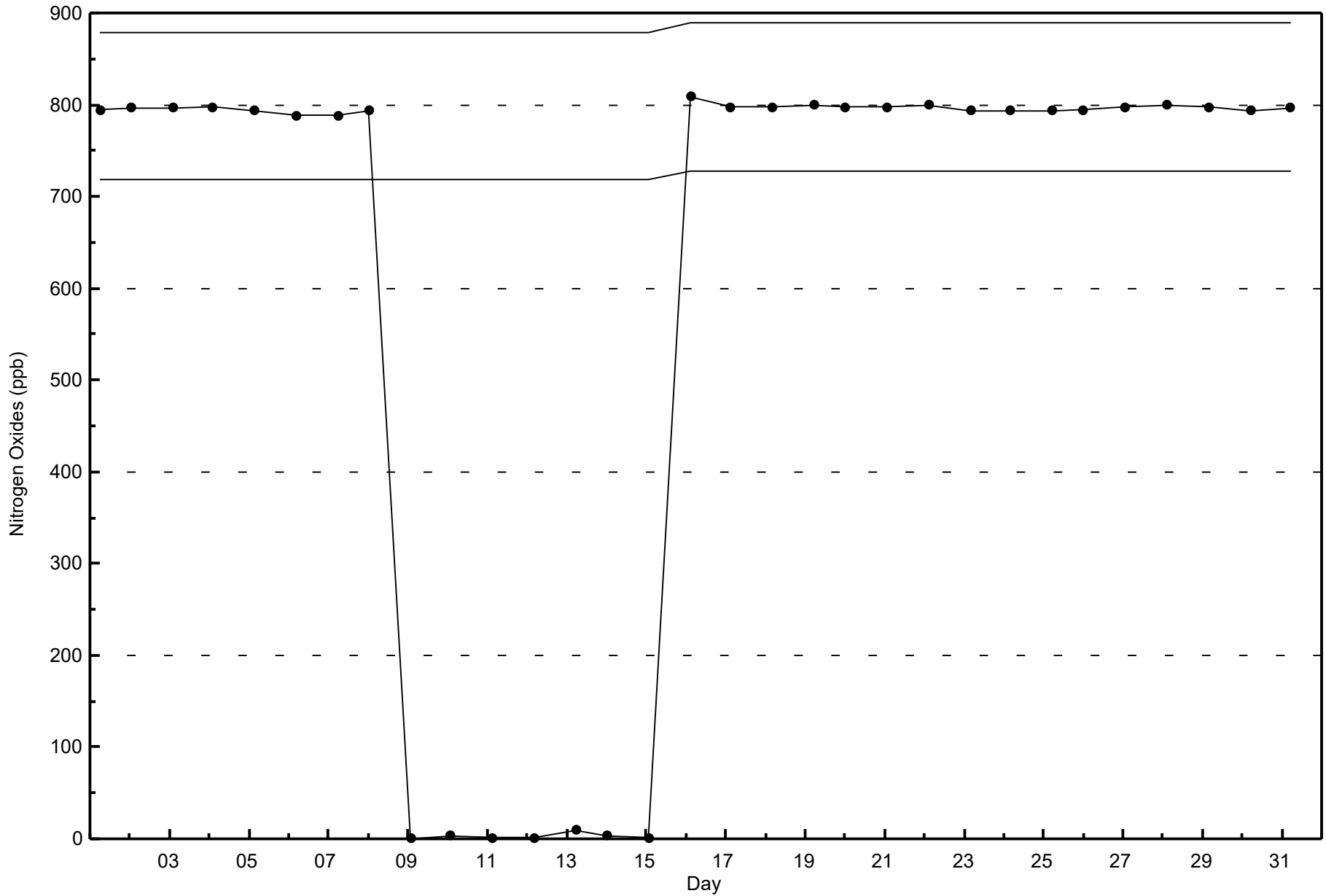


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Fort Chipewyan









Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Fort Chipewyan - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 69.6 ppb on May 23 20:00	Maximum Daily Average: 49.6 ppb on May 23		Hours of Data:	707
Minimum Value: 9.3 ppb on May 25 05:00	Minimum Daily Average: 29.4 ppb on May 24		Hours of Missing Data:	37
Maximum Diurnal Average: 47.6 ppb at hour 18	Minimum Diurnal Average: 33.5 ppb at hour 6		Hours of Calibration:	35
Monthly Average: 41.23 ppb	Percentiles: P ₁ = 14.5 P ₁₀ = 31.9 Q ₁ = 36.8 Median = 41.2 Q ₃ = 45.5 P ₉₀ = 51.8 P ₉₉ = 61.9		Percent Operational Time:	99.7

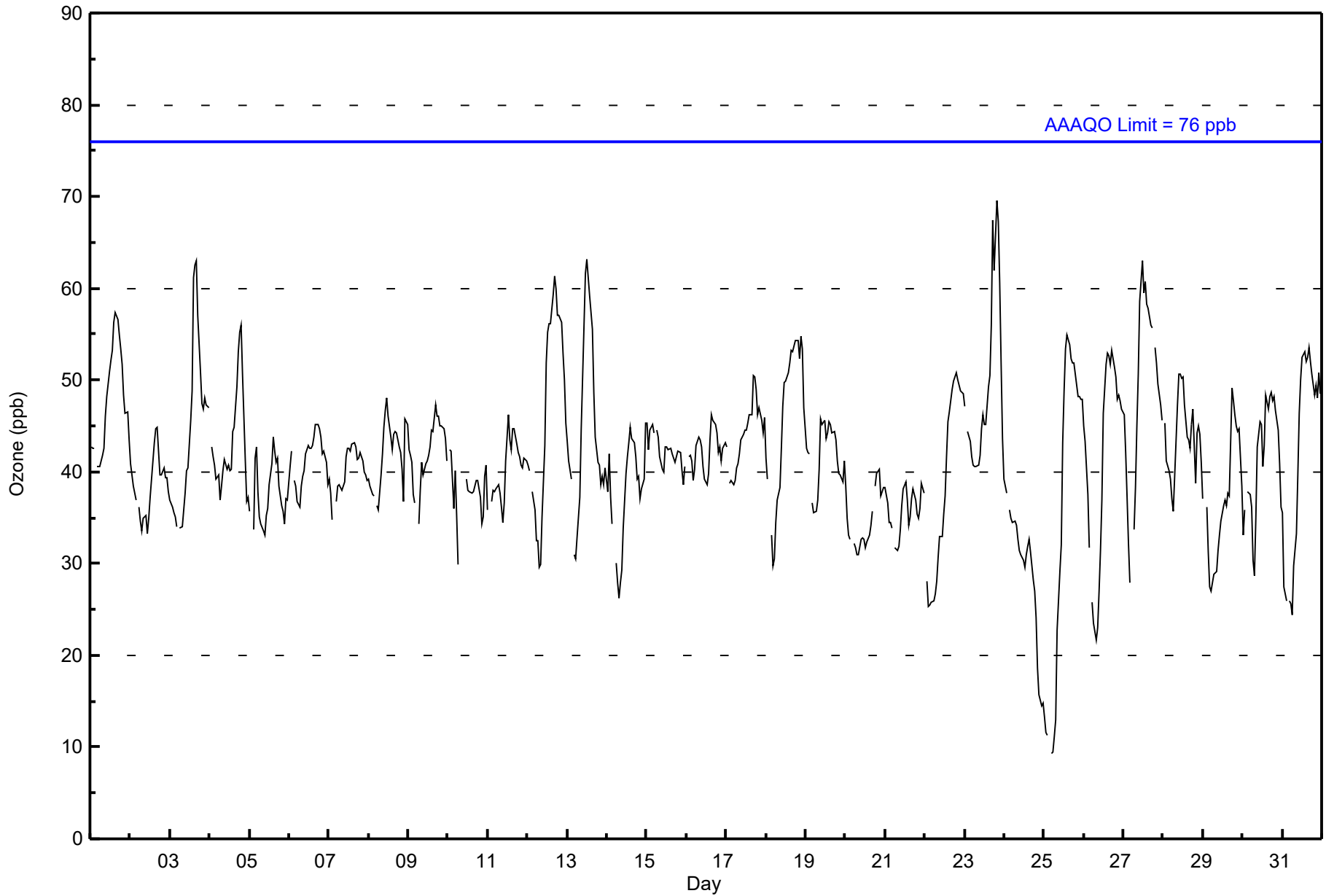
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	42.7	42.6	42.5	Z	40.6	40.6	41.2	41.7	42.5	46.0	48.3	50.9	52.2	53.2	56.3	57.3	56.5	54.8	53.4	51.7	48.3	46.3	46.5	43.4	47.8	57.3																							
2-May	40.8	39.6	38.4	36.9	Z	36.2	34.6	33.5	34.9	35.3	33.3	34.9	37.2	39.2	43.2	44.6	44.8	42.3	39.7	39.7	40.4	39.3	39.4	37.8	38.5	44.8																							
3-May	36.9	36.1	35.6	35.1	34.1	Z	33.9	34.0	35.9	37.7	40.2	40.5	45.7	48.9	61.2	62.5	63.0	57.0	50.8	47.5	46.8	48.1	47.3	47.0	44.6	63.0																							
4-May	Z	42.8	41.6	40.7	39.2	39.7	36.9	38.4	40.2	41.4	40.3	40.7	40.0	40.3	44.4	44.8	49.2	53.0	55.2	56.0	50.7	41.2	36.7	37.2	43.1	56.0																							
5-May	35.6	Z	33.7	41.5	42.7	37.8	35.1	34.3	33.5	33.1	35.3	36.0	38.7	40.9	43.8	42.3	41.1	41.5	38.4	36.3	35.7	34.3	37.0	36.9	37.6	43.8																							
6-May	40.6	42.2	Z	39.0	38.5	36.8	36.2	38.4	39.5	40.2	42.0	42.8	42.6	42.5	42.8	43.7	45.1	45.2	44.6	43.8	42.0	42.3	41.0	38.6	41.3	45.2																							
7-May	39.2	37.7	34.8	Z	36.7	38.5	38.6	38.3	37.9	38.9	41.6	42.6	42.5	42.2	43.0	43.2	42.8	41.4	41.5	42.1	41.2	40.0	39.7	39.1	40.1	43.2																							
8-May	39.2	38.5	37.5	37.4	Z	36.3	35.9	39.7	41.9	44.8	46.6	48.0	46.0	43.8	42.4	44.1	44.4	44.3	42.7	42.2	40.2	36.7	45.8	45.1	41.9	48.0																							
9-May	42.4	41.8	41.0	37.5	36.7	Z	34.3	38.0	41.0	39.7	40.8	41.2	41.8	42.7	44.6	44.4	47.3	46.0	46.0	45.0	45.0	44.8	43.7	41.2	42.0	47.3																							
10-May	Z	42.4	42.3	35.9	40.1	35.2	29.9	C	C	C	C	39.2	38.0	37.9	37.7	37.8	38.4	39.0	39.1	37.3	34.3	35.1	39.6	40.7	37.9	42.4																							
11-May	35.8	Z	36.8	38.0	37.8	38.1	38.7	37.7	36.2	34.4	36.6	41.2	46.2	43.4	42.4	44.7	44.8	42.9	42.1	41.7	40.7	40.4	41.4	41.2	40.1	46.2																							
12-May	40.7	40.1	Z	37.8	35.9	32.4	32.6	29.6	29.8	35.1	42.8	51.9	55.2	56.1	56.1	59.3	61.4	59.9	57.1	57.0	56.3	52.9	50.0	45.3	46.8	61.4																							
13-May	43.3	41.2	39.3	Z	31.0	30.6	32.8	37.2	44.8	50.3	55.9	61.6	63.2	59.3	57.4	55.6	48.6	43.8	41.0	40.7	38.7	39.6	38.7	40.4	45.0	63.2																							
14-May	37.8	41.9	37.2	34.4	Z	30.0	28.0	26.2	27.9	29.2	33.8	39.8	41.6	43.1	44.9	43.6	43.1	41.6	39.3	39.5	37.1	38.1	39.1	45.4	37.5	45.4																							
15-May	45.3	42.4	44.5	45.1	44.3	Z	44.5	43.8	41.6	40.3	40.0	42.7	42.7	42.4	42.5	42.0	41.4	41.1	41.6	42.2	42.1	40.1	38.5	40.6	42.3	45.3																							
16-May	Z	41.7	41.8	41.2	39.1	40.2	42.9	43.7	43.4	42.7	40.6	39.2	38.6	39.8	43.5	46.1	45.6	45.1	44.2	42.1	42.8	41.2	42.5	43.2	42.2	46.1																							
17-May	42.7	Z	38.8	39.0	38.5	39.0	40.5	40.9	41.9	43.5	44.1	44.5	44.6	45.3	46.3	46.2	50.5	50.3	49.0	46.3	47.0	45.6	44.2	45.9	44.1	50.5																							
18-May	41.5	39.3	Z	33.1	29.8	30.5	34.5	36.9	38.3	42.5	47.1	49.8	49.9	50.9	51.9	53.2	53.1	53.7	54.3	54.3	52.4	54.8	53.4	47.0	45.7	54.8																							
19-May	42.6	42.1	41.9	Z	36.6	35.5	35.6	36.9	40.2	45.8	45.2	45.6	43.7	44.2	45.5	45.1	44.3	44.4	43.4	41.2	39.8	39.6	38.9	41.2	41.7	45.8																							
20-May	38.4	34.9	33.1	32.7	Z	32.2	31.7	30.9	30.9	32.6	32.8	32.6	31.7	32.3	33.1	34.2	35.7	PF	38.4	39.7	40.2	37.4	37.8	38.2	34.6	40.2																							
21-May	38.2	36.7	34.5	34.5	33.9	Z	31.7	31.4	31.9	33.6	36.2	38.1	38.8	36.8	34.1	35.1	37.1	38.2	36.9	35.4	34.9	35.9	38.8	37.7	35.7	38.8																							
22-May	Z	28.0	25.3	25.5	25.7	26.0	26.7	28.0	30.7	32.9	33.0	35.4	37.4	41.7	45.4	46.6	48.9	49.8	50.4	50.8	50.0	48.9	48.7	48.5	38.4	50.8																							
23-May	47.2	Z	44.4	43.3	41.7	40.7	40.6	40.5	40.8	41.8	44.6	46.2	45.2	45.1	49.2	50.5	56.0	67.4	61.9	69.6	67.3	60.5	51.9	43.7	49.6	69.6																							
24-May	39.3	37.7	Z	35.8	34.9	34.5	34.6	34.1	32.6	31.5	30.9	30.3	29.6	30.9	31.9	32.7	31.2	28.2	27.0	24.1	18.6	15.8	14.5	14.8	29.4	39.3																							
25-May	13.3	11.6	11.3	Z	9.3	9.5	11.2	12.9	22.8	29.2	32.0	43.1	48.7	53.4	54.9	53.9	52.3	51.8	51.9	50.6	48.2	48.2	47.9	47.9	35.5	54.9																							
26-May	45.1	43.3	37.5	31.8	Z	25.7	23.5	21.6	23.1	27.0	31.4	36.9	46.3	51.7	53.0	52.6	51.7	53.3	51.5	50.3	47.8	48.3	47.7	46.8	41.2	53.3																							
27-May	46.3	42.0	37.2	32.2	27.9	Z	33.6	38.3	45.0	50.7	58.5	63.0	59.6	60.7	58.3	57.8	55.9	55.6	PF	53.5	51.9	49.6	47.4	45.6	48.7	63.0																							
28-May	Z	45.3	41.2	40.1	39.2	37.0	35.6	39.5	47.3	50.6	50.7	50.2	50.3	47.3	43.8	43.5	42.6	45.2	46.8	38.8	44.3	45.0	44.1	41.0	43.9	50.7																							
29-May	37.1	Z	36.1	31.3	27.4	27.0	28.9	29.0	29.1	31.5	33.2	34.7	36.3	36.9	36.3	37.6	37.4	49.1	47.8	46.2	44.9	44.5	44.6	38.4	36.7	49.1																							
30-May	33.1	35.8	Z	37.8	37.6	36.1	30.4	28.7	35.0	42.7	45.5	45.1	40.6	42.8	48.4	46.8	48.2	48.7	47.8	48.2	46.7	44.5	40.9	36.2	41.2	48.7																							
31-May	35.6	27.5	26.0	Z	25.9	25.6	24.4	29.7	33.2	39.6	46.4	50.0	52.5	53.0	52.0	52.4	53.5	52.0	50.7	48.3	49.4	48.1	50.8	48.5	42.4	53.5																							
																								39.3	38.3	36.7	36.7	34.8	33.5	33.5	34.5	36.5	38.8	41.0	43.2	44.1	44.8	46.1	46.6	47.0	47.6	45.8	45.2	44.1	42.8	42.5	41.4	Diurnal Average	
																								47.2	45.3	44.5	45.1	44.3	40.7	44.5	43.8	47.3	50.7	58.5	63.0	63.2	60.7	61.2	62.5	63.0	67.4	61.9	69.6	67.3	60.5	53.4	48.5	Diurnal Maximum	

Z - zerospan C - Calibration PF - Power Failure
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Fort Chipewyan - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Fort Chipewyan - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	11	1.56	1.56
21 - 50	607	85.86	87.41
51 - 82	89	12.59	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Fort Chipewyan - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	1	0	0	1	0	0	0	0	0	0	0	0	5	1	2	1	11
21 - 50	12	12	22	55	211	35	28	33	35	29	12	20	33	23	18	28	606
51 - 82	1	1	2	3	20	4	2	10	24	9	5	1	4	1	1	1	89
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	14	13	24	59	231	39	30	43	59	38	17	21	42	25	21	30	706

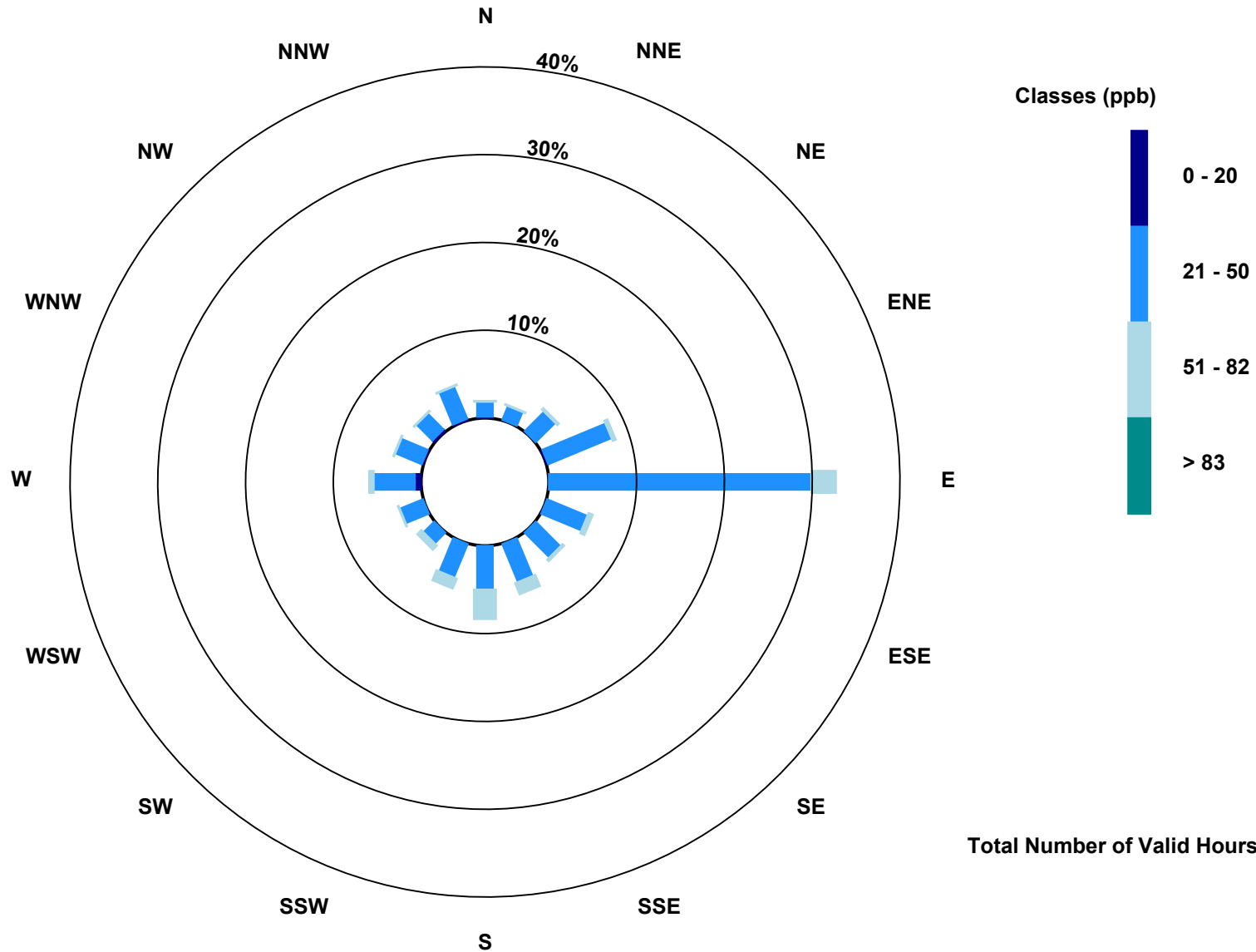
Total Number of Valid Hours: 706

Total Number of Hours: 744

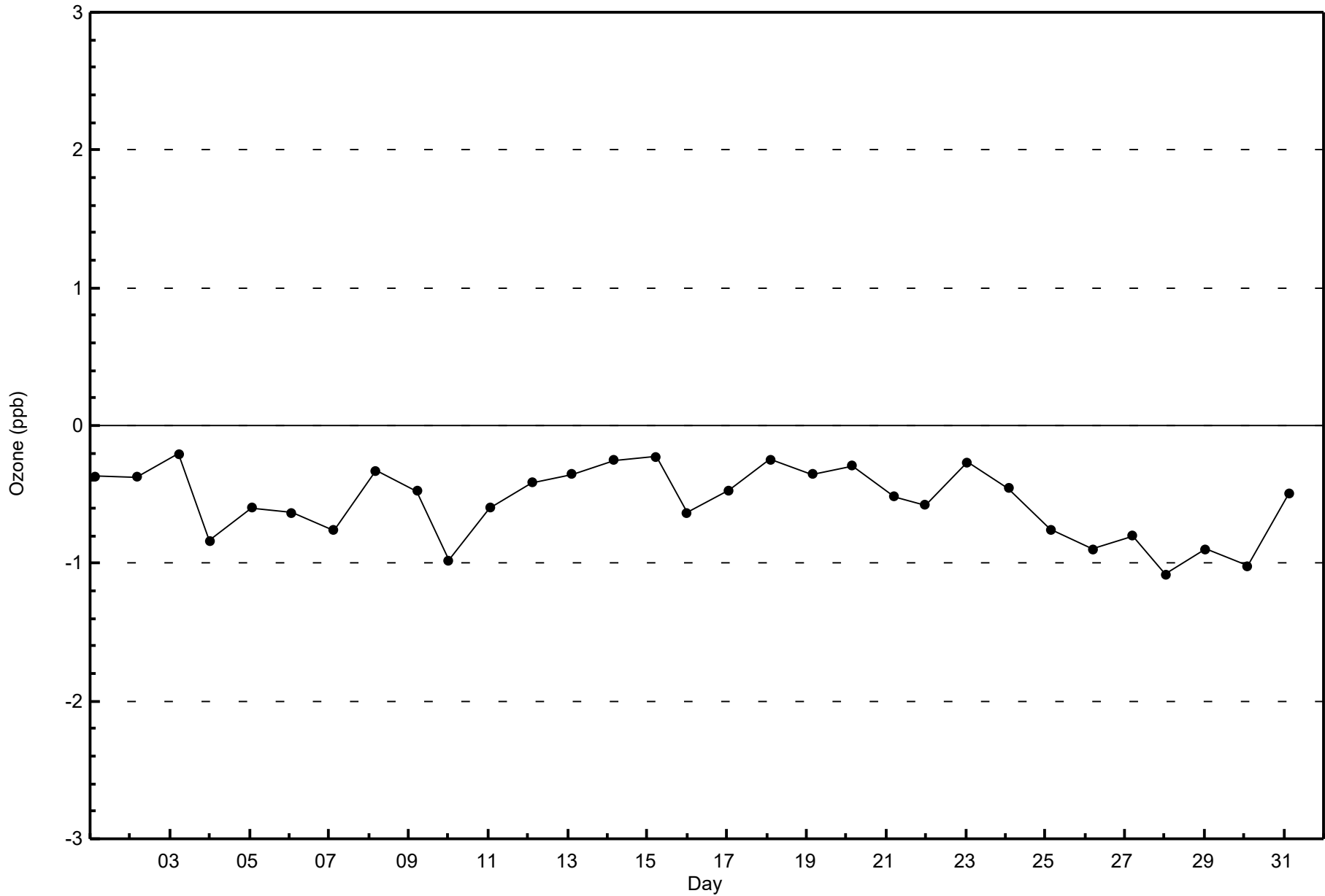


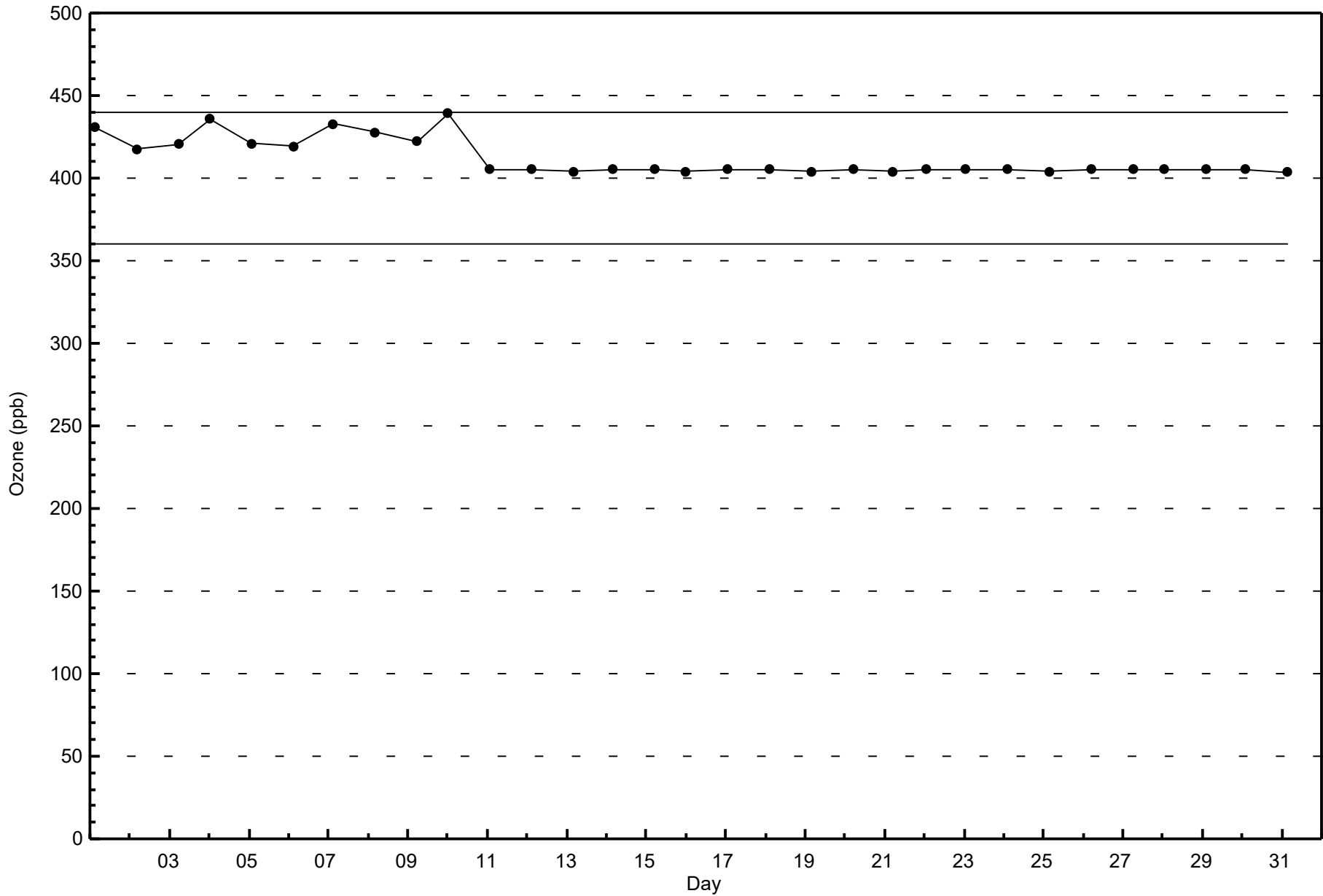
Wood Buffalo Environmental Association
Wind Rose May 2023

Ozone (O₃) - ppb
Fort Chipewyan



Total Number of Valid Hours: 706







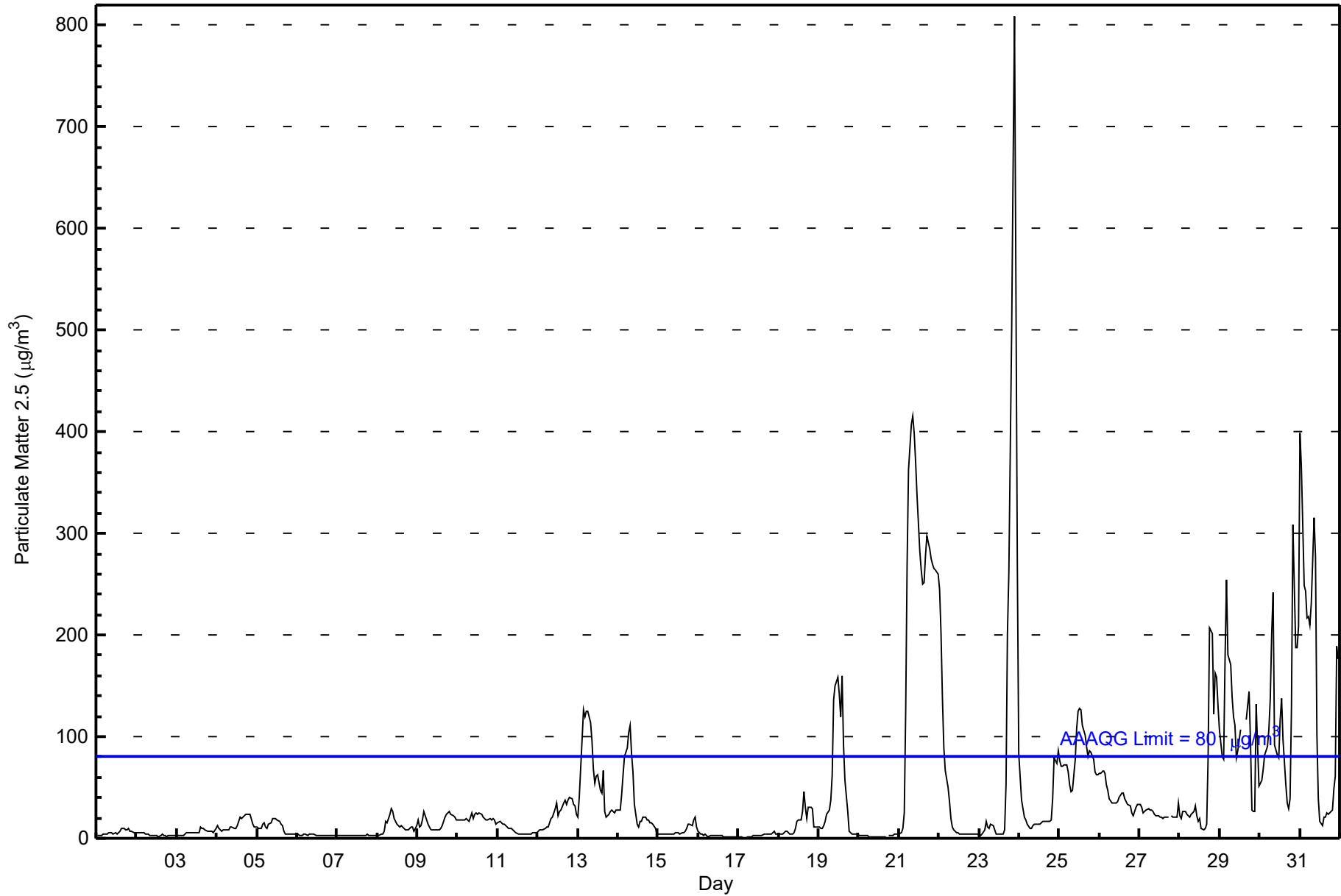
Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM_{2.5}) - µg/m³

Fort Chipewyan - May 2023

Number of Exceedences (AAAQO):		1-hr: 112		24-hr: 12		Hours in Service:															744					
Maximum Value: 808.3 µg/m ³ on May 23 22:00		Maximum Daily Average: 248.7 µg/m ³ on May 21		Hours of Data:															739							
Minimum Value: 0.6 µg/m ³ on May 17 05:00		Minimum Daily Average: 2.4 µg/m ³ on May 20		Hours of Missing Data:															5							
Maximum Diurnal Average: 62.1 µg/m ³ at hour 22		Minimum Diurnal Average: 30.2 µg/m ³ at hour 16		Hours of Calibration:															3							
Monthly Average: 43.28 µg/m ³		Percentiles: P ₁ = 1.4 P ₁₀ = 2.9 Q ₁ = 4.3 Median = 13.7 Q ₃ = 34.4 P ₉₀ = 122.8 P ₉₉ = 388.3		Percent Operational Time:															99.7							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	2.4	2.5	2.9	3.2	3.7	4.0	4.5	5.0	5.2	5.1	4.8	4.9	4.8	5.0	7.0	10.0	9.1	8.1	8.9	9.5	7.5	6.9	5.9	5.6	5.7	10.0
2-May	5.6	5.4	5.3	5.1	4.9	4.5	4.2	4.0	3.3	2.8	3.3	2.9	2.4	1.8	2.3	3.9	2.9	2.8	2.1	3.3	2.2	2.1	2.2	2.3	3.4	5.6
3-May	2.5	2.4	2.4	2.8	3.2	4.0	5.4	6.0	6.0	6.0	5.9	5.0	5.3	6.0	10.5	10.4	10.0	9.0	7.6	7.0	7.0	6.4	5.9	9.4	6.1	10.5
4-May	11.9	9.8	8.1	7.4	7.7	8.2	8.4	8.5	10.7	11.8	9.6	9.9	11.9	16.5	20.4	19.8	21.7	23.2	23.9	23.0	24.0	13.8	11.6	11.7	13.9	24.0
5-May	10.6	9.3	9.7	13.7	15.9	11.7	10.4	13.2	15.7	19.3	19.8	19.1	18.7	17.1	14.3	12.0	6.8	4.5	4.2	4.1	3.9	4.1	3.8	3.8	11.1	19.8
6-May	3.5	3.3	3.4	3.4	3.6	3.7	3.3	3.9	4.8	3.9	3.9	3.2	2.8	2.6	2.7	2.6	3.0	3.1	3.5	3.0	3.1	3.0	2.6	2.8	3.3	4.8
7-May	3.1	3.2	3.2	3.3	3.3	3.2	3.4	3.2	3.3	3.2	3.0	2.9	3.0	3.0	2.9	3.0	3.0	3.0	3.5	3.2	2.9	2.7	2.6	2.8	3.1	3.5
8-May	3.0	3.1	3.6	4.3	6.8	16.7	15.6	23.4	29.7	26.6	19.7	16.0	13.6	11.0	12.8	11.7	9.5	7.7	8.8	9.5	10.5	11.6	7.5	12.6	12.3	29.7
9-May	17.8	11.0	12.2	17.9	26.7	18.5	13.7	10.6	8.4	8.8	8.3	7.9	8.2	8.0	9.7	12.3	20.8	23.0	25.7	25.8	24.3	21.8	20.6	18.0	15.8	26.7
10-May	17.9	18.2	17.8	18.2	18.6	18.8	17.7	17.3	24.7	19.5	23.4	24.6	23.7	24.4	23.3	20.8	19.8	18.2	17.6	18.8	18.1	18.9	17.6	14.6	19.7	24.7
11-May	15.5	17.2	15.0	13.9	13.7	12.9	9.7	9.5	9.3	8.5	6.5	5.1	4.1	4.7	4.4	4.1	4.0	3.9	4.0	4.2	4.4	5.0	5.4	5.6	7.9	17.2
12-May	6.7	7.9	8.0	8.1	9.2	11.2	10.7	14.8	19.8	21.4	28.7	35.4	22.7	27.0	28.0	35.1	37.5	34.0	38.0	39.8	39.4	33.5	31.7	24.3	23.9	39.8
13-May	20.8	40.0	97.0	126.2	119.4	124.4	124.6	114.2	96.0	68.1	53.6	61.5	63.2	47.8	44.7	66.4	26.0	20.4	24.1	26.2	28.2	26.9	24.6	27.2	61.3	126.2
14-May	28.4	27.2	43.6	62.3	81.0	89.2	103.8	110.9	83.5	65.7	32.7	14.1	11.7	16.0	16.9	21.2	21.1	17.4	18.6	15.9	15.8	14.1	10.3	4.6	38.6	110.9
15-May	3.6	4.6	4.0	3.7	3.9	4.1	4.2	4.7	4.6	4.8	5.2	4.9	4.9	4.9	5.0	5.6	7.5	10.0	14.2	13.7	12.5	18.6	21.4	10.8	7.6	21.4
16-May	6.9	4.8	3.8	2.9	3.8	3.0	1.9	2.9	3.1	2.2	2.5	2.6	2.2	2.5	2.4	1.6	1.4	1.3	2.0	1.9	1.7	1.6	1.8	1.8	2.6	6.9
17-May	1.6	1.4	0.9	0.7	0.6	0.9	1.3	1.4	1.7	2.3	2.6	2.9	3.0	3.2	3.3	3.7	4.4	4.4	4.3	4.4	4.3	6.4	4.8	4.4	2.9	6.4
18-May	4.5	4.6	4.8	5.4	6.6	6.3	4.9	4.3	4.5	4.9	9.2	16.1	17.5	18.5	26.9	45.2	30.9	19.8	30.2	30.1	29.2	11.5	10.6	11.4	14.9	45.2
19-May	11.1	10.1	9.8	11.9	17.4	23.5	28.2	37.4	62.9	135.8	150.5	159.0	142.3	119.3	159.4	92.2	57.3	26.9	7.6	6.1	4.3	4.0	3.8	3.5	53.5	159.4
20-May	3.4	3.2	3.1	2.9	2.5	2.2	2.0	1.9	1.8	1.5	1.4	1.4	1.3	1.3	1.6	1.5	1.9	PF	2.9	3.2	3.3	3.6	3.9	3.9	2.4	3.9
21-May	3.8	6.1	9.4	24.7	125.0	269.0	362.2	407.0	415.4	399.1	370.6	338.3	281.8	263.5	250.6	250.9	277.3	297.2	284.6	274.7	269.6	265.9	263.4	259.7	248.7	415.4
22-May	245.1	200.8	137.2	89.0	66.1	50.2	36.1	19.7	10.6	8.8	5.9	5.0	4.3	4.1	4.0	4.0	4.2	3.7	3.7	3.6	3.7	3.7	3.7	3.6	38.4	245.1
23-May	3.4	3.4	3.7	8.6	17.1	10.9	9.2	13.7	13.2	8.2	4.5	3.7	3.9	4.5	4.0	8.2	52.3	201.5	261.1	500.6	659.1	808.3	543.4	269.3	142.3	808.3
24-May	83.3	37.5	29.9	21.5	18.5	14.1	10.3	10.3	11.9	13.3	13.3	14.4	15.1	16.5	17.0	17.3	16.3	16.7	17.6	38.7	78.9	73.5	86.0	28.6	86.0	
25-May	76.3	71.2	70.2	72.2	72.2	65.6	53.2	46.1	46.9	78.2	108.5	124.6	128.5	126.9	111.7	100.8	90.6	80.6	85.6	84.9	77.6	65.7	63.0	63.1	81.8	128.5
26-May	63.4	63.7	66.4	64.3	52.8	46.7	38.8	34.9	34.2	34.3	34.9	36.4	40.7	44.9	43.9	38.7	35.4	33.3	32.4	25.5	22.4	27.1	30.9	32.9	40.8	66.4
27-May	33.6	30.7	25.4	26.5	27.7	29.3	28.5	27.8	26.3	24.2	21.7	22.4	20.5	21.4	19.9	20.8	20.2	21.1	PF	22.0	21.5	20.9	21.2	34.5	24.7	34.5
28-May	22.0	19.1	25.8	27.0	23.5	21.7	21.4	24.0	26.1	31.3	22.6	16.4	18.8	10.1	8.3	9.4	13.6	79.6	207.5	201.7	122.3	162.0	157.9	130.2	58.4	207.5
29-May	107.6	80.2	78.5	177.1	253.8	181.2	171.1	138.9	120.0	111.1	79.4	86.8	107.0	C	C	C	116.3	144.2	94.4	28.1	25.9	25.9	131.7	52.1	110.1	253.8
30-May	53.6	56.6	68.6	82.1	89.7	106.3	137.2	201.4	241.6	91.3	81.7	79.8	116.7	137.9	97.4	52.3	34.5	29.3	38.9	128.7	308.5	187.9	187.2	208.1	117.4	308.5
31-May	399.3	365.2	249.4	243.5	217.2	218.0	209.9	231.3	15.8	276.7	102.1	38.4	16.8	13.1	20.9	21.2	25.6	24.1	25.2	28.0	49.3	60.8	188.3	177.1	146.5	399.3
41.0 36.2 33.0 37.2 42.4 44.6 47.0 50.1 53.6 48.3 40.0 37.6 36.2 32.7 32.5 30.2 31.8 39.1 43.4 50.6 59.5 62.1 60.1 48.3																								Diurnal Average		
399.3 365.2 249.4 243.5 253.8 269.0 362.2 407.0 415.4 399.1 370.6 338.3 281.8 263.5 250.6 250.9 277.3 297.2 284.6 500.6 659.1 808.3 543.4 269.3																								Diurnal Maximum		
C - Calibration PF - Power Failure																										
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort Chipewyan - May 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	236	31.94	31.94
6 - 15	147	19.89	51.83
16 - 25	118	15.97	67.79
26 - 80	127	17.19	84.98
> 81.0	111	15.02	100.00

Total Number of Valid Hours: 739

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - µg/m³
Fort Chipewyan - May 2023

Concentration Ranges (µg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	5	5	15	33	87	17	17	10	7	6	1	2	3	5	14	9	236
6 - 15	4	3	2	12	56	11	4	12	14	6	4	1	4	4	4	6	147
16 - 25	1	1	1	9	40	4	6	6	14	10	3	6	9	3	2	2	117
26 - 80	2	3	5	6	27	6	3	7	18	15	6	5	10	4	3	7	127
> 81.0	3	2	1	3	23	6	3	11	8	2	5	8	17	10	2	7	111
Totals	15	14	24	63	233	44	33	46	61	39	19	22	43	26	25	31	738

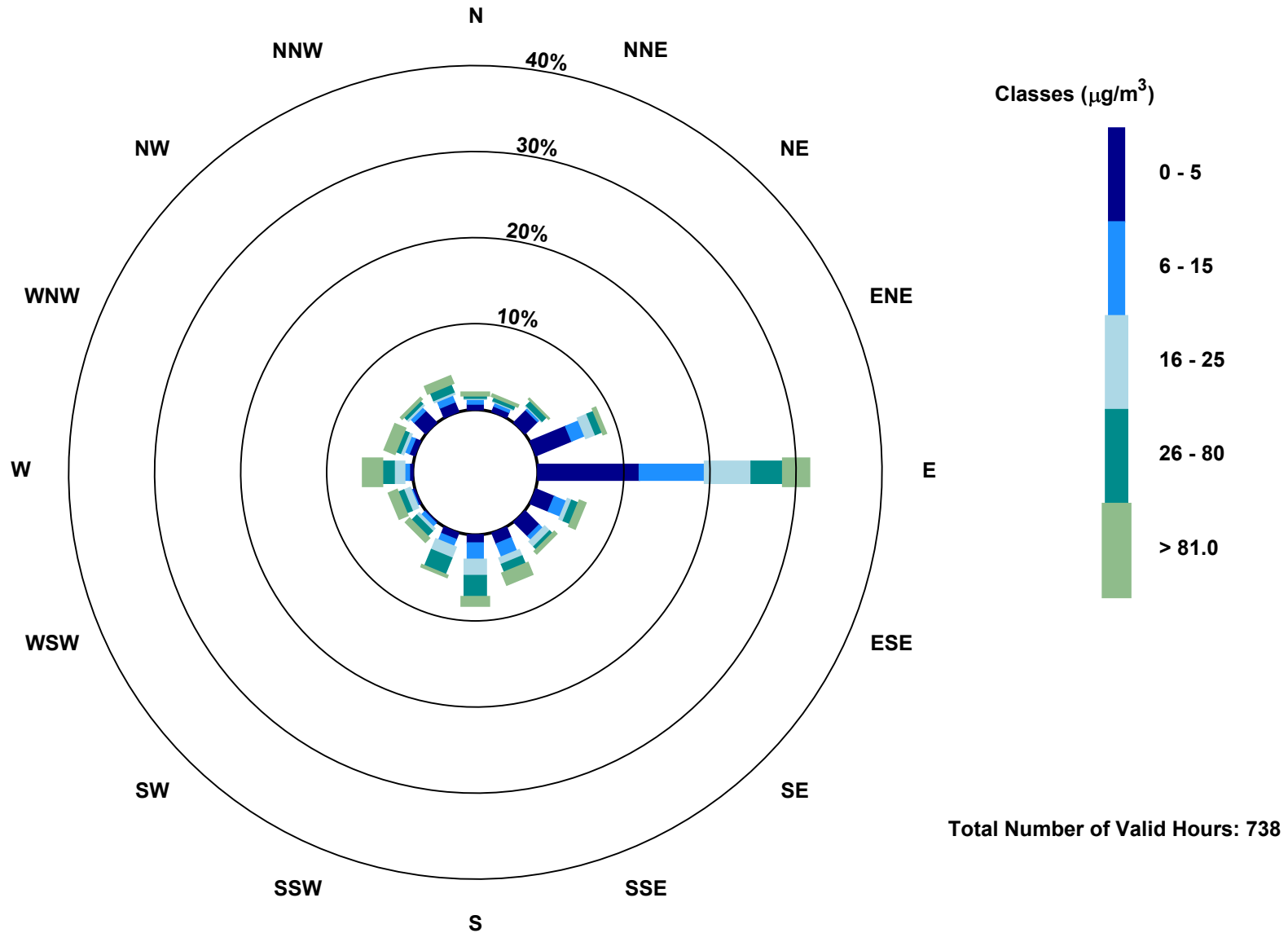
Total Number of Valid Hours: 738

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort Chipewyan





Wood Buffalo Environmental Association

Summary of Hour Averages

Carbon Monoxide (CO) - ppm

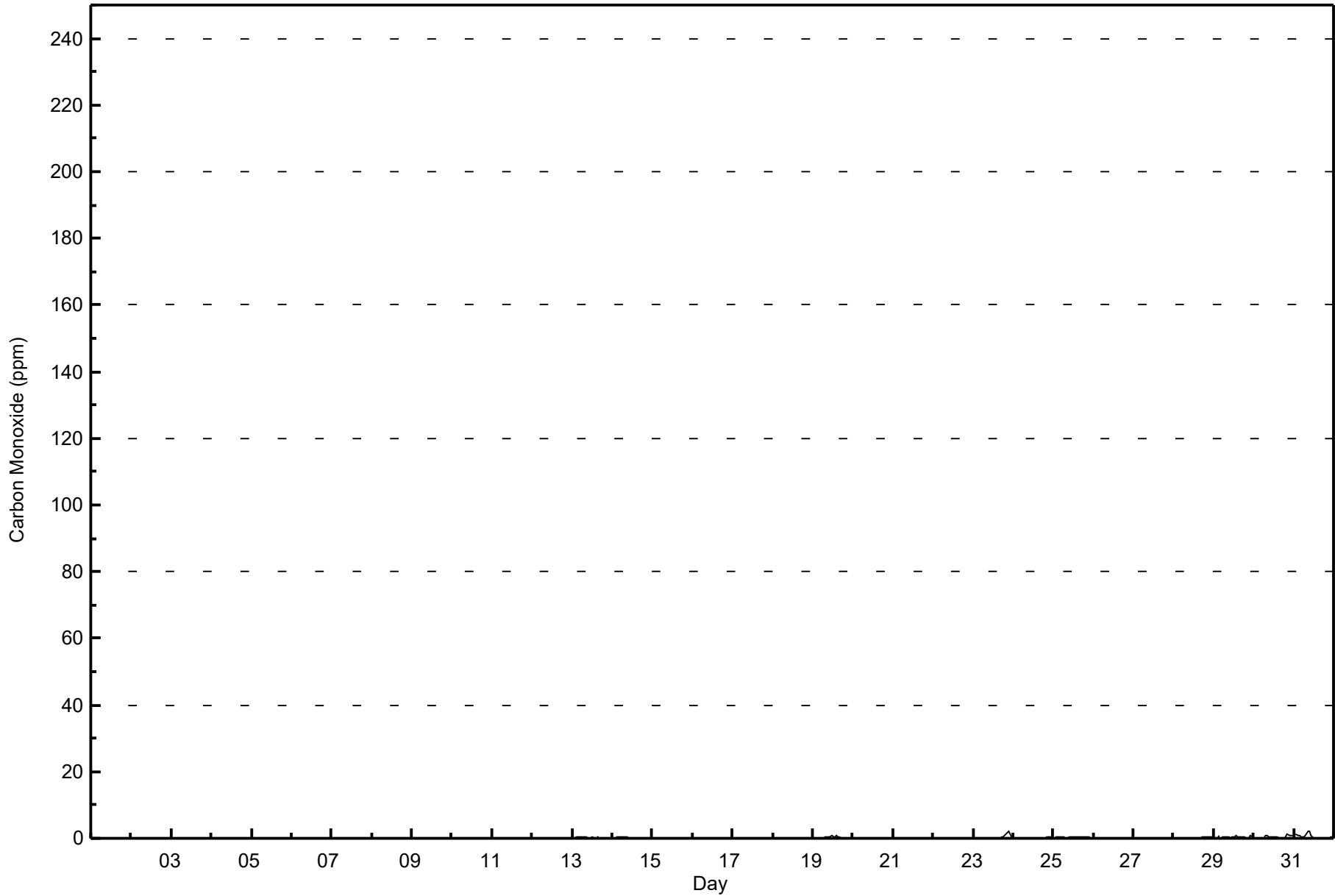
Fort Chipewyan - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0										Hours in Service: 744																									
Maximum Value: 2.2 ppm on May 31 10:00										Maximum Daily Average: 0.6 ppm on May 31										Hours of Data: 663															
Minimum Value: 0.0 ppm on May 22 15:00										Minimum Daily Average: 0.0 ppm on May 2										Hours of Missing Data: 81															
Maximum Diurnal Average: 0.2 ppm at hour 9										Minimum Diurnal Average: 0.1 ppm at hour 1										Hours of Calibration: 33															
Monthly Average: 0.14 ppm										Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.1 P ₉₀ = 0.4 P ₉₉ = 1.2										Percent Operational Time: 93.6															
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24											
1-May	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
2-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
5-May	0.0	0.0	0.0	0.1	Z	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
6-May	0.0	0.0	0.1	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
7-May	Z	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8-May	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
9-May	0.1	0.0	Z	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10-May	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
11-May	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	M	M	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
12-May	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
13-May	Z	0.2	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4
14-May	0.1	Z	0.2	0.3	0.4	0.4	0.5	0.5	0.4	0.3	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5
15-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	
16-May	0.0	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1
17-May	0.1	0.1	0.1	0.1	Z	0.1	0.1	C	C	C	C	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
18-May	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
19-May	Z	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.6	0.6	0.7	0.6	0.5	0.7	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.7
20-May	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	--
21-May	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	--
22-May	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0
23-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	1.2	1.7	2.1	1.2	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	2.1
24-May	0.2	0.1	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5
25-May	Z	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4
26-May	0.2	Z	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
27-May	0.1	0.1	Z	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
28-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.6	0.3	0.4	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.6
29-May	0.2	0.1	0.1	0.7	Z	0.6	0.6	0.4	0.4	0.3	0.1	0.3	0.5	0.8	0.6	0.5	0.5	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
30-May	0.2	0.1	0.1	0.2	0.2	Z	0.4	0.8	0.9	0.3	0.2	0.2	0.4	0.4	0.3	0.1	0.1	0.0	0.1	0.4	1.2	0.8	0.7	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1.2
31-May	Z	1.5	0.9	0.7	0.6	0.6	0.6	0.9	2.2	2.2	0.8	0.2	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	2.2	
																								Diurnal Average											
																								Diurnal Maximum											
																								0.1 0.1 0.1 0.2 0.1 0.1 0.1 0.2 0.2 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.2											
																								0.2 1.5 0.9 0.7 0.6 0.6 0.6 0.9 2.2 2.2 0.8 0.7 0.6 0.8 0.7 0.5 0.5 0.4 0.6 1.2 1.7 2.1 1.2 0.9											
Z - zerospan C - Calibration M - Maintenance PF - Power Failure																																			
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 13 ppm																																			



Wood Buffalo Environmental Association
Hourly Averages

Carbon Monoxide (CO) - ppm
Fort Chipewyan - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Carbon Monoxide (CO) - ppm
Fort Chipewyan - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.3	592	89.29	89.29
0.4 - 0.5	34	5.13	94.42
0.6 - 0.7	20	3.02	97.44
0.8 - 1.4	12	1.81	99.25
1.5 - 10	4	0.60	99.85
> 10	0	0.00	99.85

Total Number of Valid Hours: 663

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Carbon Monoxide (CO) - ppm
Fort Chipewyan - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	11	9	20	52	198	36	28	35	54	35	16	13	24	17	19	24	591
0.4 - 0.5	1	1	0	0	7	1	0	2	1	2	0	3	6	7	3	0	34
0.6 - 0.7	1	0	0	1	2	0	0	2	0	0	0	4	8	1	0	1	20
0.8 - 1.4	0	1	1	0	1	2	0	0	1	0	1	0	3	0	1	1	12
1.5 - 10	0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	4
> 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	13	11	21	53	208	39	30	40	57	37	17	20	41	25	23	26	661

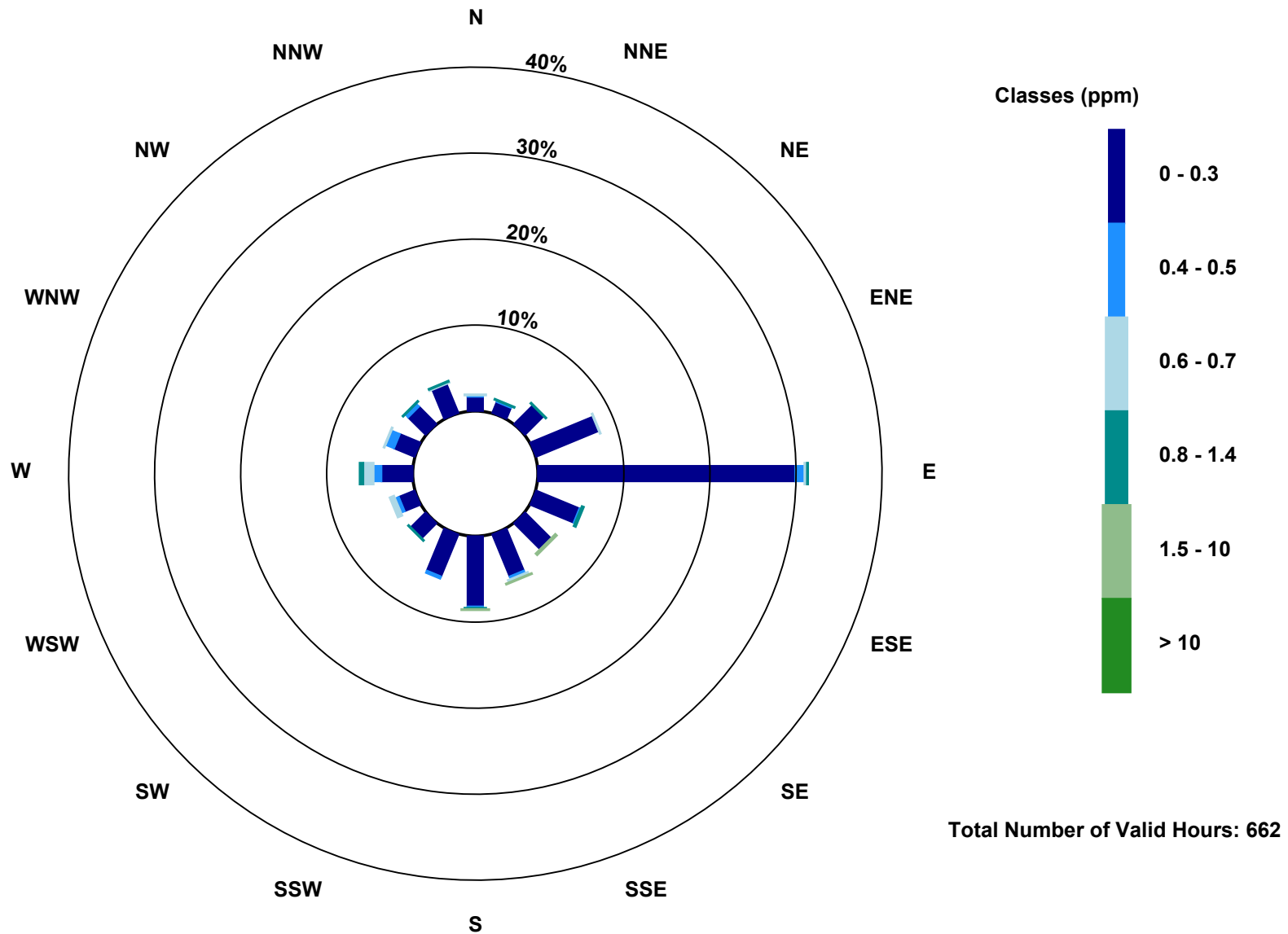
Total Number of Valid Hours: 662

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Carbon Monoxide (CO) - ppm
Fort Chipewyan





Wood Buffalo Environmental Association
Summary of Hour Averages

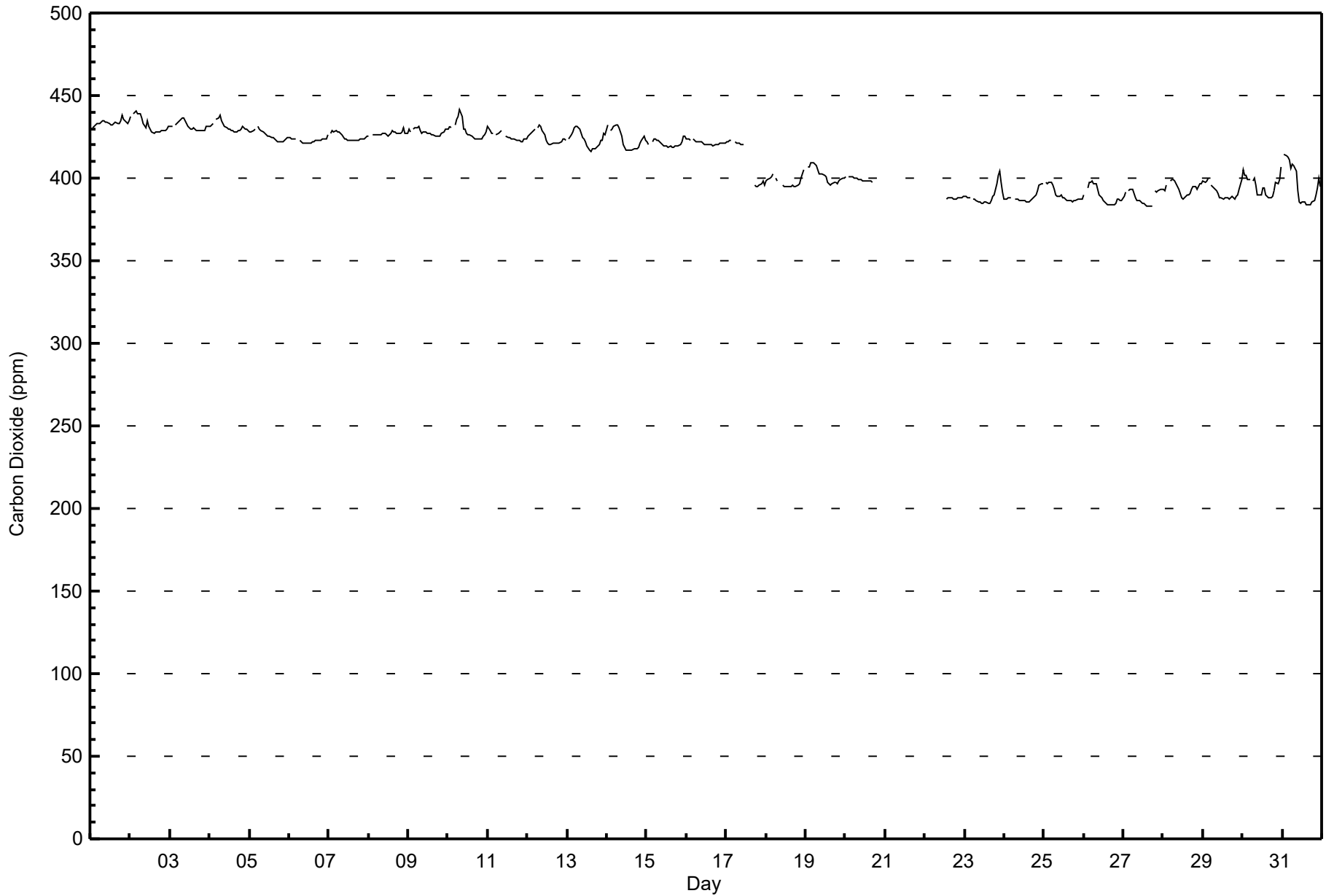
Carbon Dioxide (CO₂) - ppm
Fort Chipewyan - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 441.6 ppm on May 10 08:00 Maximum Daily Average: 433.5 ppm on May 1 Minimum Value: 382.7 ppm on May 27 17:00 Minimum Daily Average: 388.5 ppm on May 27 Maximum Diurnal Average: 418.2 ppm at hour 6 Minimum Diurnal Average: 408.1 ppm at hour 17 Monthly Average: 412.10 ppm Percentiles: P ₁ = 383.6 P ₁₀ = 387.5 Q ₁ = 394.9 Median = 420.8 Q ₃ = 427.2 P ₉₀ = 431.2 P ₉₉ = 437.9																								Hours in Service: 744 Hours of Data: 660 Hours of Missing Data: 84 Hours of Calibration: 35 Percent Operational Time: 93.4			
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	Z	430.4	431.0	431.8	432.7	433.2	433.9	434.8	434.7	434.2	433.7	432.9	432.2	431.8	432.6	433.9	433.1	433.0	434.6	438.0	435.7	434.4	432.7	434.5	433.5	438.0	
2-May	437.3	Z	438.9	440.4	439.1	439.2	438.8	436.4	432.8	430.9	434.4	431.6	429.3	428.0	427.3	428.1	427.9	427.7	428.2	428.5	428.6	429.0	429.8	431.2	432.3	440.4	
3-May	431.2	431.7	Z	432.4	433.2	433.6	435.0	436.2	436.1	434.6	433.1	431.1	429.9	429.4	430.6	429.8	428.9	428.8	428.7	428.4	428.6	429.1	431.0	431.2	431.4	436.2	
4-May	431.5	432.3	433.2	Z	435.8	436.3	437.9	434.4	433.3	431.7	430.2	429.7	429.3	428.7	428.8	427.9	428.3	428.8	429.0	429.5	431.6	430.1	429.3	429.1	431.2	437.9	
5-May	427.9	427.8	429.1	429.5	Z	430.9	429.5	429.0	428.3	427.0	426.1	425.0	425.4	424.9	424.5	424.0	422.7	422.4	422.0	422.0	422.3	423.3	423.8	424.5	425.7	430.9	
6-May	424.4	423.4	423.6	423.8	423.6	Z	423.3	421.9	421.0	420.9	421.0	421.1	421.3	421.6	421.9	422.4	422.9	423.0	423.0	422.9	423.5	423.8	423.6	426.0	422.8	426.0	
7-May	Z	427.3	428.9	428.2	428.8	428.1	427.6	427.2	425.9	424.1	423.6	423.2	423.2	423.3	423.1	423.3	423.0	423.1	423.4	423.6	424.0	425.0	425.8	425.1	428.9		
8-May	425.8	Z	426.2	426.2	426.1	426.5	426.6	426.3	427.4	427.3	426.8	426.2	425.3	427.0	428.5	428.1	427.8	426.9	427.0	427.4	428.1	430.6	427.0	427.4	427.1	430.6	
9-May	429.3	428.3	Z	429.7	430.8	430.3	431.5	428.5	427.5	428.3	427.7	426.8	427.1	426.8	426.5	426.3	425.6	425.8	425.5	425.7	426.7	427.6	429.7	429.4	427.9	431.5	
10-May	429.9	431.3	430.3	Z	432.5	435.4	437.0	441.6	437.1	429.8	429.3	427.2	426.2	426.0	425.0	424.3	423.5	423.4	423.6	424.1	424.0	425.3	426.4	428.2	428.8	441.6	
11-May	431.3	429.0	427.3	427.0	Z	426.6	427.0	427.6	428.5	M	M	425.3	424.5	424.9	424.1	423.6	423.4	423.1	422.9	422.7	422.4	422.4	423.4	423.7	425.3	431.3	
12-May	425.5	426.6	426.9	428.1	430.0	Z	430.3	432.5	431.7	428.9	426.2	422.6	421.1	420.2	420.6	421.4	421.2	420.8	420.8	421.2	421.7	423.4	423.9	423.0	424.7	432.5	
13-May	Z	423.9	425.9	428.4	430.3	431.1	431.3	429.8	427.4	424.8	423.4	421.9	419.7	417.0	415.9	418.0	417.5	417.9	419.2	420.0	422.9	422.7	426.8	426.0	423.6	431.3	
14-May	432.4	Z	428.8	429.4	431.4	432.2	432.0	430.9	427.9	425.5	420.4	417.1	416.7	417.2	417.2	417.2	417.7	417.4	417.8	418.3	420.9	422.8	425.4	422.8	423.5	432.4	
15-May	422.4	420.4	Z	422.1	423.4	423.3	423.0	423.0	422.1	420.7	419.3	419.3	419.3	418.9	419.1	418.9	418.8	419.1	419.4	419.9	420.5	422.1	425.3	425.2	421.1	425.3	
16-May	423.5	423.5	423.3	Z	423.3	422.6	421.8	422.0	422.1	421.8	421.2	420.7	420.3	420.2	420.0	419.9	419.9	420.4	420.5	420.5	420.8	421.0	421.4	421.6	421.4	423.5	
17-May	421.6	422.3	422.7	422.7	Z	421.9	421.4	420.9	421.2	420.7	420.4	C	C	C	C	C	C	C	395.7	395.2	395.0	395.8	397.0	398.1	396.0	--	422.7
18-May	398.3	399.4	400.2	401.2	402.2	Z	399.7	397.9	M	M	395.7	395.1	394.7	394.6	394.7	395.1	395.6	395.1	395.3	395.8	396.4	400.0	402.1	405.0	397.8	405.0	
19-May	Z	406.9	407.0	409.6	409.4	409.3	407.5	404.7	402.4	402.3	402.1	402.1	401.3	397.5	396.3	396.0	396.7	397.1	397.4	396.9	398.3	399.5	400.1	399.9	401.8	409.6	
20-May	400.5	Z	400.6	400.9	400.5	400.0	399.8	399.9	399.6	398.8	398.5	398.5	398.4	398.4	398.3	398.1	397.8	PF	PF	PF	PF	PF	PF	PF	--	400.9	
21-May	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	--	--	
22-May	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	387.7	387.8	388.1	388.3	387.7	387.4	387.7	388.1	388.2	388.5	388.6	--	388.6	
23-May	388.7	389.2	388.5	388.2	Z	387.6	387.3	386.8	385.8	385.3	385.0	385.2	385.2	385.3	385.0	385.0	386.1	389.0	389.7	396.5	401.3	404.2	397.7	391.1	389.3	404.2	
24-May	387.6	387.4	387.9	388.0	Z	387.2	387.1	386.9	386.8	386.3	386.0	386.3	386.0	386.3	385.7	385.9	386.6	388.3	388.6	389.6	392.7	395.7	396.7	396.8	388.6	396.8	
25-May	Z	397.2	396.9	397.5	397.3	395.4	393.6	389.9	388.7	389.2	389.6	388.3	388.1	387.6	386.8	386.4	386.2	385.7	386.1	386.7	387.4	387.3	387.5	387.5	389.9	397.5	
26-May	389.7	Z	394.1	397.3	397.2	398.0	396.3	396.5	392.9	389.9	389.2	388.2	386.7	384.8	383.5	383.5	383.6	383.6	383.5	385.2	387.6	387.4	386.1	386.3	389.2	398.0	
27-May	389.0	391.8	Z	392.7	393.6	393.4	390.7	388.5	386.4	386.1	386.1	385.1	384.5	383.9	383.4	382.9	382.7	382.8	PF	392.1	391.5	392.2	393.6	393.1	388.5	393.6	
28-May	393.2	392.0	396.1	Z	398.4	399.2	399.1	398.3	395.0	393.0	390.9	388.4	387.4	388.4	389.7	390.2	390.8	392.8	395.3	395.0	392.8	395.0	396.5	396.9	393.7	399.2	
29-May	398.6	397.5	398.0	399.9	Z	395.6	393.8	392.9	392.2	390.7	388.5	388.2	387.5	388.3	388.4	388.2	387.3	389.3	388.0	387.0	388.8	389.5	393.3	399.5	391.8	399.9	
30-May	405.5	401.5	401.7	399.4	399.1	Z	398.7	399.9	395.6	389.7	389.8	389.9	394.1	393.8	390.2	387.8	387.9	388.2	389.2	392.1	397.5	396.8	399.5	406.9	395.4	406.9	
31-May	Z	414.7	413.2	412.9	410.7	406.2	408.1	407.5	404.2	392.5	385.3	385.0	385.6	385.3	384.3	383.9	384.1	384.0	385.7	386.2	389.9	394.4	399.6	394.7	395.6	414.7	
415.0 414.8 415.2 415.5 417.4 418.2 416.2 415.6 414.8 412.4 410.8 410.1 409.7 408.5 408.3 408.2 408.1 408.3 409.5 409.6 410.7 411.7 412.5 412.8																								Diurnal Average			
437.3 432.3 438.9 440.4 439.1 439.2 438.8 441.6 437.1 434.6 434.4 432.9 432.2 431.8 432.6 433.9 433.1 433.0 434.6 438.0 435.7 434.4 432.7 434.5																								Diurnal Maximum			
Z - zerospan C - Calibration M - Maintenance PF - Power Failure																											



Wood Buffalo Environmental Association
Hourly Averages

Carbon Dioxide (CO₂) - ppm
Fort Chipewyan - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Carbon Dioxide (CO₂) - ppm
Fort Chipewyan - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
400 - 420	74	11.21	11.21
420 - 440	337	51.06	62.27
440 - 460	1	0.15	62.42
460 - 480	0	0.00	62.42
480 - 500	0	0.00	62.42
> 500	0	0.00	62.42

Total Number of Valid Hours: 660

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Carbon Dioxide (CO₂) - ppm
Fort Chipewyan - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
400 - 420	0	1	3	2	13	1	2	2	4	9	5	10	14	2	2	4	74
420 - 440	7	4	9	25	132	28	20	19	27	15	1	4	7	9	16	13	336
440 - 460	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
460 - 480	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480 - 500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	7	5	12	27	145	30	22	21	31	24	6	14	21	11	18	17	411

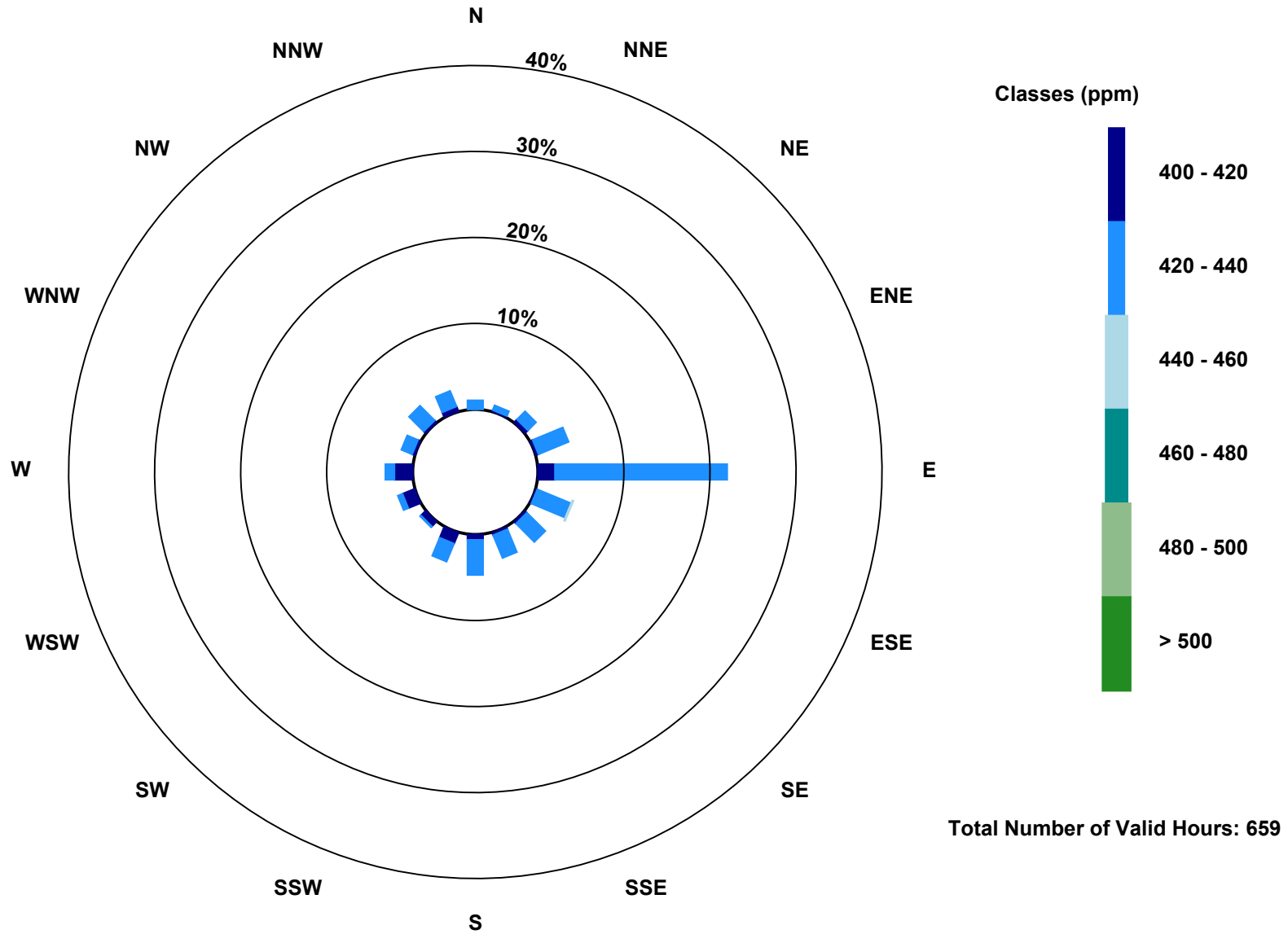
Total Number of Valid Hours: 659

Total Number of Hours: 744



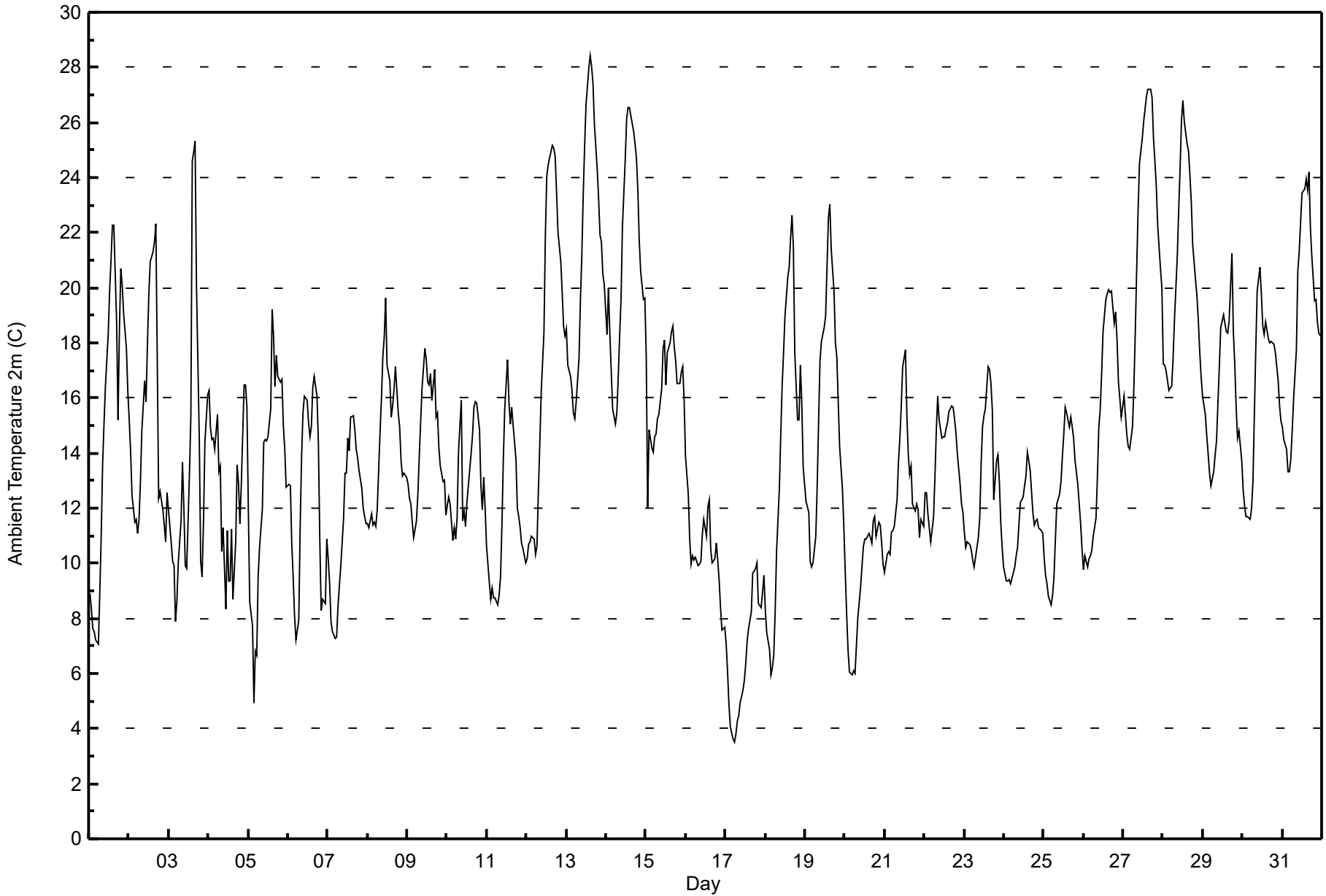
Wood Buffalo Environmental Association
Wind Rose May 2023

Carbon Dioxide (CO₂) - ppm
Fort Chipewyan





Maximum Value: 28.4 C on May 13 15:00		Maximum Daily Average: 21.6 C on May 13		Hours in Service: 744																							
Minimum Value: 3.5 C on May 17 06:00		Minimum Daily Average: 6.7 C on May 17		Hours of Data: 744																							
Maximum Diurnal Average: 18.4 C at hour 15		Minimum Diurnal Average: 10.5 C at hour 5		Hours of Missing Data: 0																							
Monthly Average: 14.58 C		Percentiles: P ₁ = 4.9 P ₁₀ = 9.2 Q ₁ = 11.0 Median = 14.1 Q ₃ = 17.4 P ₉₀ = 21.4 P ₉₉ = 26.9		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	8.9	8.3	7.6	7.5	7.2	7.1	9.0	11.0	13.6	15.1	16.4	18.3	19.9	21.0	22.3	22.3	18.8	15.2	18.5	20.7	20.1	19.1	17.8	16.2	15.1	22.3	
2-May	15.2	14.0	12.5	11.5	11.6	11.1	11.6	13.0	14.8	16.6	15.8	17.9	19.8	20.9	21.3	21.7	22.3	17.4	12.3	12.6	11.9	11.4	10.8	12.5	15.0	22.3	
3-May	12.0	10.7	10.0	9.9	7.9	8.6	10.0	11.5	13.7	12.0	9.9	9.8	13.3	15.4	24.6	24.9	25.3	20.1	14.6	10.1	9.5	11.5	14.4	16.1	13.6	25.3	
4-May	16.3	14.9	14.5	14.5	14.1	15.4	13.3	13.5	10.4	11.3	8.4	11.2	9.3	9.4	11.3	8.7	10.8	13.6	12.9	11.5	12.9	16.5	16.5	15.7	12.8	16.5	
5-May	12.0	8.6	7.7	4.9	6.8	6.7	9.5	10.6	12.0	14.4	14.5	14.4	14.6	15.6	19.2	18.2	16.4	17.6	16.8	16.6	16.7	15.0	14.1	12.7	13.1	19.2	
6-May	12.9	12.8	10.7	9.5	8.1	7.2	8.0	11.3	13.8	15.4	16.1	15.9	15.1	14.6	14.9	16.4	16.8	16.1	14.4	10.9	8.3	8.7	8.5	10.9	12.4	16.8	
7-May	10.2	9.3	7.9	7.5	7.3	7.3	8.4	9.2	9.9	11.7	13.3	13.3	14.5	14.1	15.3	15.3	14.8	14.1	13.8	13.4	12.7	12.0	11.7	11.4	11.6	15.3	
8-May	11.4	11.3	11.8	11.4	11.5	11.3	11.9	14.7	16.0	17.5	18.2	19.6	17.2	16.6	15.3	15.7	16.3	17.1	15.5	15.0	13.7	13.2	13.3	13.1	14.5	19.6	
9-May	12.9	12.3	12.2	11.5	10.9	11.5	12.5	13.9	15.2	16.4	17.8	17.4	16.6	16.5	16.9	15.9	17.0	15.3	15.4	14.2	13.5	12.9	13.0	11.8	14.3	17.8	
10-May	12.1	12.4	12.2	10.8	11.3	10.9	11.6	14.0	15.9	11.5	11.9	11.3	12.2	12.8	14.0	14.7	15.7	15.9	15.8	14.8	12.8	12.0	13.1	12.0	13.0	15.9	
11-May	10.6	9.3	8.7	9.1	8.7	8.7	8.5	8.8	9.5	11.4	13.8	15.6	17.4	15.8	15.1	15.6	15.0	13.8	12.0	11.7	11.3	10.7	10.5	10.0	11.7	17.4	
12-May	10.2	10.7	10.8	11.0	10.9	10.3	10.6	12.6	14.3	16.2	18.4	21.9	24.1	24.5	24.7	25.1	25.1	24.8	23.4	22.0	20.9	19.8	18.6	18.2	17.9	25.1	
13-May	18.5	17.2	16.8	16.3	15.5	15.2	15.9	17.4	19.5	21.1	23.3	25.1	26.6	28.0	28.4	28.0	27.4	26.0	24.3	23.2	21.9	21.7	20.5	20.1	21.6	28.4	
14-May	18.3	20.0	18.4	17.0	15.6	15.0	15.4	16.8	18.2	19.6	22.2	24.7	26.1	26.5	26.6	26.2	25.7	25.2	24.7	23.5	21.7	20.6	19.6	19.6	21.1	26.6	
15-May	17.5	12.0	14.9	14.2	14.0	14.6	14.7	15.3	15.4	16.3	17.8	18.1	16.5	17.6	18.0	18.4	18.6	17.9	17.3	16.5	16.5	16.9	17.2	16.0	16.3	18.6	
16-May	13.9	12.5	10.9	10.0	10.2	10.1	10.2	9.9	10.0	10.1	11.0	11.6	11.0	12.0	12.3	10.5	10.0	10.2	10.7	10.1	9.4	8.4	7.6	7.7	10.4	13.9	
17-May	7.1	6.1	4.9	4.1	3.6	3.5	3.8	4.3	4.5	5.0	5.4	5.8	6.4	7.2	7.6	8.2	9.6	9.7	9.8	10.0	8.6	8.4	8.9	9.6	6.7	10.0	
18-May	8.3	7.5	6.9	6.0	6.2	6.7	8.2	10.4	12.7	14.7	16.5	17.6	18.9	20.4	20.7	21.8	22.6	21.5	17.7	15.2	15.2	17.2	15.8	13.5	14.3	22.6	
19-May	12.3	12.1	11.9	10.1	9.9	10.0	11.0	12.8	15.1	17.4	18.0	18.6	19.0	20.8	22.5	23.0	21.4	19.9	18.0	17.5	15.9	14.2	12.7	11.3	15.6	23.0	
20-May	9.7	8.2	6.9	6.0	6.0	6.1	6.0	7.0	8.0	9.2	9.9	10.6	10.9	10.9	11.1	10.9	10.7	11.5	11.7	11.0	11.5	11.4	10.7	10.0	9.4	11.7	
21-May	9.7	10.3	10.4	10.3	11.1	11.2	11.4	12.3	13.7	14.5	15.7	17.1	17.8	15.4	13.9	13.2	13.5	12.1	11.9	12.1	12.0	10.9	11.6	11.3	12.6	17.8	
22-May	12.5	12.6	11.8	11.3	10.8	11.6	13.1	14.8	16.1	15.2	14.5	14.6	14.6	14.9	15.1	15.5	15.7	15.7	15.2	14.7	14.0	12.9	12.2	11.8	13.8	16.1	
23-May	11.1	10.6	10.8	10.7	10.5	10.1	9.9	10.2	10.9	11.6	13.6	14.9	15.4	15.6	17.1	17.0	16.5	15.6	12.3	13.7	13.9	13.0	11.5	10.6	12.8	17.1	
24-May	9.8	9.3	9.4	9.4	9.3	9.5	9.8	10.2	10.6	11.5	12.2	12.4	12.8	13.2	14.1	13.7	13.3	11.8	11.4	11.5	11.6	11.3	11.2	11.1	11.3	14.1	
25-May	10.2	9.5	9.3	8.8	8.5	8.8	9.5	10.9	12.2	12.5	12.9	13.9	14.7	15.7	15.5	14.9	15.3	15.0	14.5	13.7	12.9	12.2	11.4	10.5	12.2	15.7	
26-May	9.8	10.3	9.9	10.1	10.3	10.5	11.0	11.6	13.2	15.0	15.6	16.9	18.4	19.6	19.8	19.9	19.8	19.9	18.7	19.1	18.1	16.6	16.0	15.3	15.2	19.9	
27-May	16.1	15.4	14.6	14.3	14.1	14.9	16.4	18.3	20.7	22.8	24.5	25.4	26.0	26.5	26.9	27.2	27.2	26.9	25.4	24.6	23.7	22.2	20.7	20.0	21.5	27.2	
28-May	17.2	17.2	17.0	16.3	16.4	16.4	17.4	18.9	21.2	22.8	24.4	26.1	26.8	26.0	25.2	24.9	24.1	23.1	21.6	20.3	19.8	18.8	17.7	16.8	20.7	26.8	
29-May	16.0	15.4	14.7	14.0	13.2	12.8	13.3	13.9	14.4	15.8	17.1	18.6	19.0	18.7	18.4	18.4	18.8	21.3	18.4	17.2	15.7	14.5	14.8	13.7	16.2	21.3	
30-May	12.7	12.1	11.7	11.7	11.6	12.0	13.0	15.4	17.7	19.9	20.7	19.8	18.6	18.3	18.8	18.2	18.0	18.1	18.0	17.9	17.6	16.6	15.7	15.1	16.2	20.7	
31-May	15.0	14.5	14.1	13.3	13.3	13.8	14.8	16.0	17.7	20.6	21.3	22.4	23.4	23.6	24.0	23.5	24.2	22.2	21.1	19.6	19.6	18.8	18.4	18.2	18.9	24.2	
		12.6	11.9	11.3	10.7	10.5	10.6	11.3	12.6	13.9	15.0	15.9	16.8	17.3	17.7	18.4	18.3	18.3	17.6	16.4	15.6	15.0	14.5	14.1	13.6	Diurnal Average	
		18.5	20.0	18.4	17.0	16.4	16.4	17.4	18.9	21.2	22.8	24.5	26.1	26.8	28.0	28.4	28.0	27.4	26.9	25.4	24.6	23.7	22.2	20.7	20.1	Diurnal Maximum	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ambient Temperature 2m (AT 2m) - C
Fort Chipewyan - May 2023

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	114	15.32	15.32
10 - 20	531	71.37	86.69
> 20	99	13.31	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

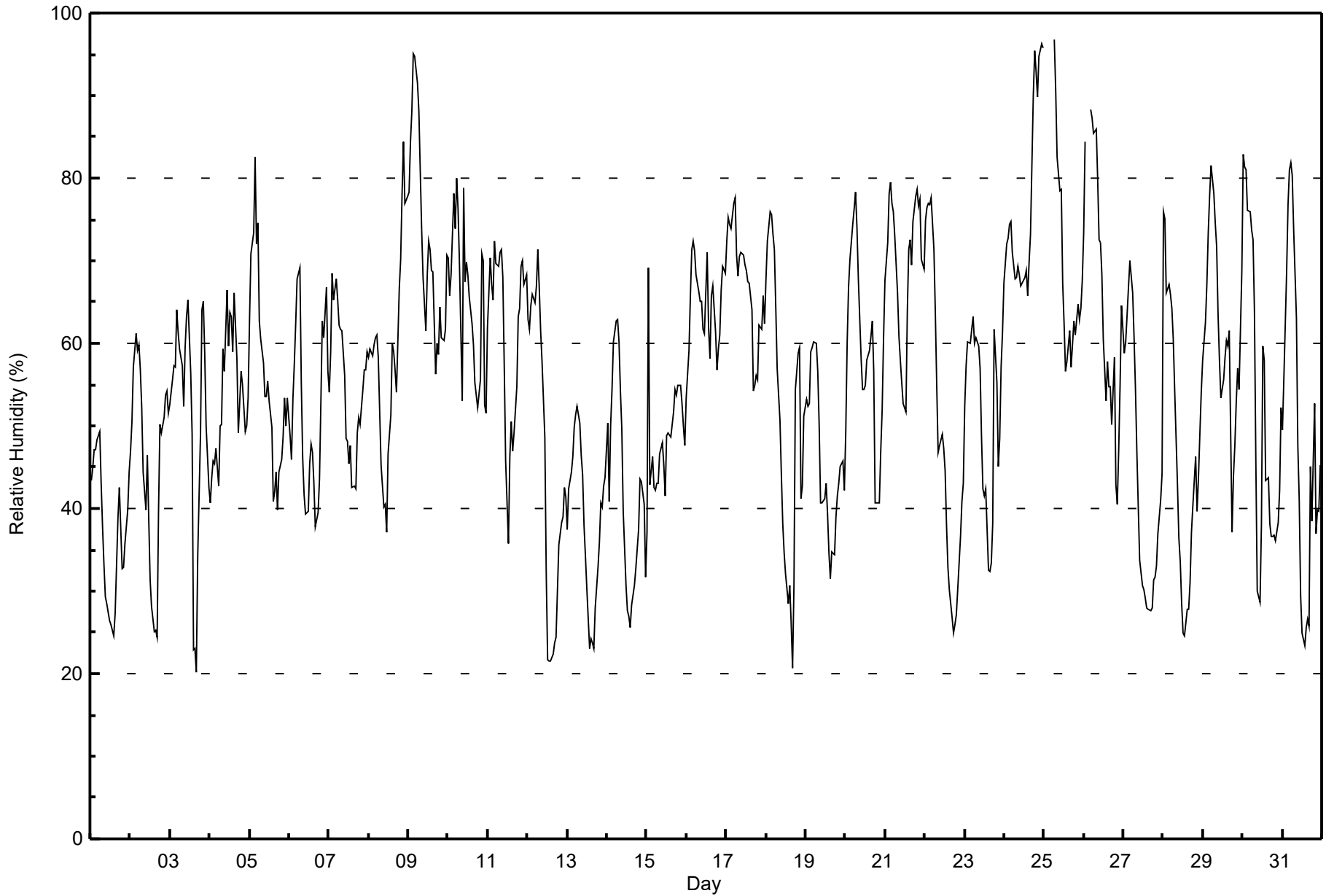
Relative Humidity (RH) - %
Fort Chipewyan - May 2023

Maximum Value: 96.9 % on May 25 07:00 Maximum Daily Average: 76.7 % on May 24																						Hours in Service: 744 Hours of Data: 736				
Minimum Value: 20.2 % on May 3 17:00 Minimum Daily Average: 36.9 % on May 1																						Hours of Missing Data: 8 Hours of Calibration: 0				
Maximum Diurnal Average: 68.2 % at hour 5 Minimum Diurnal Average: 43.6 % at hour 17																						Percent Operational Time: 98.9				
Monthly Average: 54.79 % Percentiles: P ₁ = 23.1 P ₁₀ = 32.6 Q ₁ = 43.0 Median = 55.5 Q ₃ = 66.7 P ₉₀ = 74.4 P ₉₉ = 92.4																										
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	43.4	44.9	47.2	47.1	48.4	49.3	43.0	37.7	33.2	29.4	28.4	26.5	26.0	25.2	24.6	27.3	38.8	42.5	37.6	32.6	32.9	35.8	39.9	44.4	36.9	49.3
2-May	46.9	50.5	57.1	61.1	59.2	59.8	56.9	52.3	44.4	39.9	46.5	38.8	31.4	28.2	25.2	25.3	24.4	39.6	50.2	49.2	51.0	53.6	54.2	51.5	45.7	61.1
3-May	52.5	55.6	57.4	57.1	64.1	61.4	59.3	57.4	52.3	59.6	63.2	65.3	56.5	49.0	22.8	23.1	20.2	34.3	49.2	64.0	65.1	58.8	50.0	42.5	51.7	65.3
4-May	40.7	43.7	45.8	45.5	47.3	42.8	50.0	50.2	59.4	56.6	66.5	59.7	63.8	63.2	59.0	66.1	58.1	49.1	52.9	56.6	55.0	49.3	50.0	53.3	53.5	66.5
5-May	62.6	70.8	73.3	82.5	72.1	74.5	62.7	60.5	57.6	53.6	53.6	55.4	53.1	49.9	40.9	42.0	44.4	39.9	44.4	45.9	48.7	53.3	50.0	53.4	56.0	82.5
6-May	48.8	45.9	53.2	57.4	62.3	67.8	69.2	55.3	46.1	41.8	39.4	39.6	45.4	47.9	46.8	43.0	37.8	39.4	43.6	52.8	62.7	60.8	66.8	56.7	51.3	69.2
7-May	54.0	59.0	68.4	65.3	67.8	65.3	62.2	61.7	61.5	56.0	48.5	48.1	45.4	47.6	42.5	42.6	42.4	49.1	51.0	50.1	54.4	56.8	56.8	58.9	54.8	68.4
8-May	58.3	59.4	58.4	59.8	60.7	61.0	58.3	45.3	42.7	40.2	40.6	37.1	46.5	51.3	60.0	58.9	56.8	54.1	66.6	70.2	78.2	84.4	77.0	77.8	58.5	84.4
9-May	78.4	84.3	88.2	95.1	94.7	91.6	88.1	80.8	73.6	67.9	61.5	68.3	72.4	71.3	68.8	68.6	56.3	60.0	58.7	64.3	60.6	60.4	61.6	70.6	72.8	95.1
10-May	70.3	65.7	68.4	78.1	74.0	80.0	76.2	69.7	53.1	78.9	67.5	69.8	68.2	65.5	62.4	59.8	55.3	53.7	52.3	55.6	70.8	70.0	52.6	51.5	65.4	80.0
11-May	61.8	70.4	67.1	65.3	72.3	69.6	69.4	71.0	71.4	68.0	57.3	45.7	35.7	46.2	50.5	46.9	49.2	54.8	63.1	64.3	69.3	70.0	67.1	68.4	61.4	72.3
12-May	62.8	61.8	64.5	65.9	64.9	67.0	71.4	66.7	61.5	57.8	48.7	32.2	21.8	21.5	21.5	22.4	23.8	24.4	30.0	35.6	38.3	39.0	42.6	41.4	45.3	71.4
13-May	37.5	42.4	44.4	46.3	49.8	51.4	52.4	50.4	46.5	44.1	37.9	34.2	30.3	23.1	24.3	23.7	23.1	28.0	32.9	35.9	40.7	40.1	42.7	43.7	38.6	52.4
14-May	50.4	40.9	50.0	54.3	60.2	62.7	63.0	60.2	54.3	49.7	39.6	30.8	27.6	26.9	25.6	28.2	30.6	32.8	35.1	37.4	43.5	43.2	40.6	31.7	42.5	63.0
15-May	37.1	69.2	42.9	46.3	42.6	42.2	43.1	43.1	46.7	48.0	45.2	41.5	48.9	49.1	48.7	50.2	51.7	54.4	53.8	55.0	54.9	52.7	50.0	47.6	48.5	69.2
16-May	53.5	59.1	65.8	71.4	72.4	71.1	68.3	66.3	65.1	65.1	61.6	61.2	71.0	61.9	58.2	65.8	67.0	61.3	56.7	59.4	61.0	66.4	69.4	68.6	64.5	72.4
17-May	72.3	75.3	74.4	73.9	77.0	77.6	70.7	68.1	70.5	71.0	70.6	69.6	68.7	67.4	67.2	64.1	54.2	55.0	56.1	55.6	62.2	61.7	65.7	62.4	67.1	77.6
18-May	67.7	72.3	76.0	75.6	73.2	71.3	64.4	56.9	50.7	44.2	38.1	34.6	32.0	28.5	30.6	26.1	20.7	30.7	54.5	58.8	59.4	41.2	42.7	51.2	50.1	76.0
19-May	53.3	52.3	52.7	58.9	59.4	60.1	60.0	56.7	50.2	40.7	40.6	41.1	43.0	39.3	34.7	31.6	34.8	34.5	39.0	41.6	43.1	45.0	45.8	42.2	45.9	60.1
20-May	49.1	59.9	66.9	70.1	74.5	76.2	78.3	74.1	67.8	58.1	54.3	54.5	55.0	57.9	59.2	60.9	62.8	56.6	40.7	40.6	40.7	46.9	51.8	60.5	59.1	78.3
21-May	67.6	72.2	78.2	79.4	77.0	75.9	73.1	66.2	60.9	58.0	55.3	52.7	51.7	63.9	71.3	72.5	69.5	74.8	77.8	78.6	76.7	77.4	70.2	69.0	69.6	79.4
22-May	74.9	76.5	77.0	76.8	77.6	71.4	63.7	54.9	46.9	47.6	48.9	47.4	44.6	38.0	32.8	30.2	26.7	25.0	26.0	27.1	30.2	36.7	40.9	43.1	48.5	77.6
23-May	52.3	57.4	60.2	60.0	61.8	63.2	59.9	60.7	59.6	56.9	48.6	42.5	41.6	42.4	32.5	32.4	33.4	38.1	61.6	55.2	45.1	48.5	57.1	61.4	51.3	63.2
24-May	67.4	72.0	72.7	74.4	74.7	71.0	67.8	68.0	69.4	68.3	66.9	67.6	67.9	68.8	65.8	69.9	73.2	90.0	95.4	92.8	89.8	94.8	96.4	95.8	76.7	96.4
25-May	OR	OR	OR	OR	OR	OR	96.9	90.7	82.6	78.5	78.7	67.4	62.4	56.6	57.8	61.6	57.0	59.8	62.7	61.1	64.8	62.9	64.3	67.7	68.5	96.9
26-May	73.4	84.4	OR	OR	88.3	87.3	85.5	85.9	79.9	72.5	72.1	68.4	60.5	53.1	57.8	54.8	54.8	50.1	58.2	42.8	40.6	46.9	54.9	64.6	65.3	88.3
27-May	58.7	60.2	63.4	66.7	70.0	66.1	60.7	54.5	46.8	40.1	33.7	30.7	30.1	29.1	28.0	27.9	27.6	27.9	31.4	31.7	33.1	37.0	40.9	44.2	43.4	70.0
28-May	75.9	75.0	66.1	67.2	66.0	64.2	60.5	54.5	42.9	36.5	33.6	28.5	24.9	24.5	27.7	27.8	30.9	37.2	40.4	46.2	39.6	43.8	49.0	54.1	46.5	75.9
29-May	58.0	62.5	67.1	73.4	77.9	81.5	78.1	74.6	71.8	63.6	58.0	53.4	55.7	58.3	60.4	59.6	61.5	37.1	43.9	47.6	53.0	57.0	54.3	68.8	61.5	81.5
30-May	83.0	81.4	81.1	76.0	75.9	73.7	72.5	63.8	45.8	29.9	28.6	38.1	59.6	58.0	43.4	43.8	38.1	36.7	36.6	36.8	36.0	38.4	42.1	52.1	53.0	83.0
31-May	49.4	55.5	68.7	76.7	81.1	81.9	80.4	73.9	63.1	47.7	41.0	29.5	24.9	23.4	25.7	26.6	25.8	45.1	38.5	52.7	37.0	39.8	39.7	45.2	48.9	81.9
																								Diurnal Average		
																								Diurnal Maximum		
																								58.7 62.7 64.0 66.5 68.2 68.0 66.6 62.3 57.4 53.9 50.8 47.7 47.3 46.4 44.4 44.6 43.6 45.7 49.7 51.5 52.9 54.0 54.4 56.3		
																								83.0 84.4 88.2 95.1 94.7 91.6 96.9 90.7 82.6 78.9 78.7 69.8 72.4 71.3 71.3 72.5 73.2 90.0 95.4 92.8 89.8 94.8 96.4 95.8		
OR - Out of Range																										



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Fort Chipewyan - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %
Fort Chipewyan - May 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	137	18.61	18.61
40 - 60	309	41.98	60.60
60 - 80	258	35.05	95.65
80 - 100	32	4.35	100.00

Total Number of Valid Hours: 736

Total Number of Hours: 744

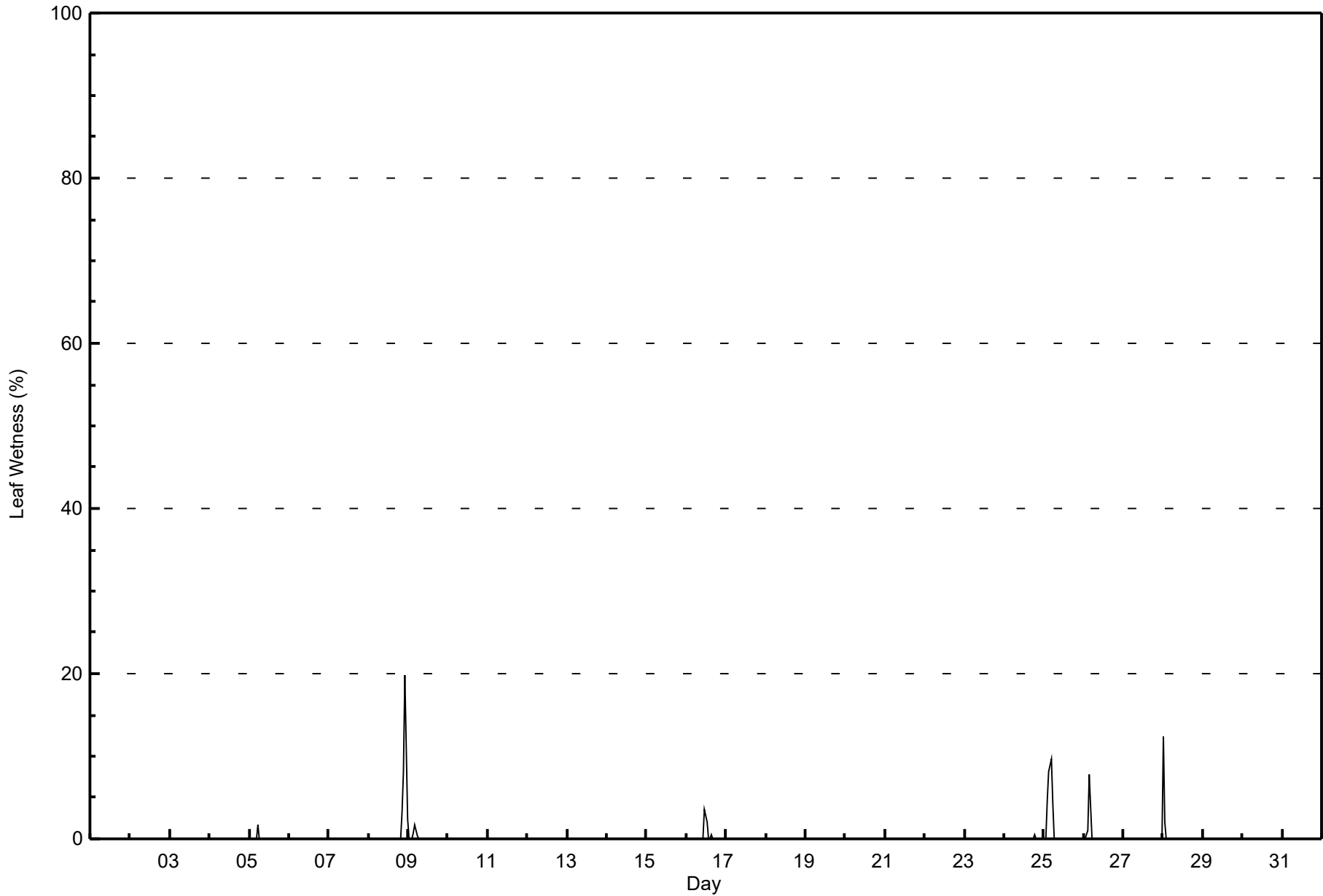


Maximum Value: 19.8 % on May 8 23:00		Maximum Daily Average: 1.4 % on May 8		Hours in Service: 744																																
Minimum Value: 0.0 % on May 1 01:00		Minimum Daily Average: 0.0 % on May 1		Hours of Data: 744																																
Maximum Diurnal Average: 0.6 % at hour 23		Minimum Diurnal Average: 0.0 % at hour 7		Hours of Missing Data: 0																																
Monthly Average: 0.13 %		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 4.1		Hours of Calibration: 0																																
				Percent Operational Time: 100.0																																
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24												
1-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
2-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
3-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
4-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
5-May	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.7		
6-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
7-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
8-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
9-May	0.0	0.0	0.0	0.7	1.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.6	
10-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
11-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
12-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
13-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
14-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
15-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
16-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	2.1	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.6
17-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
18-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
19-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
20-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
21-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
22-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
23-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
24-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
25-May	0.0	0.0	4.5	8.2	9.6	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	9.6
26-May	0.0	0.0	1.0	7.9	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	7.9
27-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28-May	12.3	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	12.3	
29-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.4	0.1	0.2	0.5	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.1	Diurnal Average										
		12.3	2.0	4.5	8.2	9.6	4.2	0.0	0.0	0.0	0.0	0.0	3.6	2.1	0.0	0.4	0.0	0.0	0.0	0.4	0.0	3.2	8.2	19.8	2.4	Diurnal Maximum										



Wood Buffalo Environmental Association
Hourly Averages

Leaf Wetness (LW) - %
Fort Chipewyan - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Leaf Wetness (LW) - %
Fort Chipewyan - May 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 0.3	723	97.18	97.18
0.4 - 0.5	3	0.40	97.58
0.6 - 0.7	1	0.13	97.72
0.8 - 1.4	1	0.13	97.85
1.5 - 10	14	1.88	99.73
> 10	2	0.27	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association

Summary of Hour Averages

Precipitation (PC) - mm

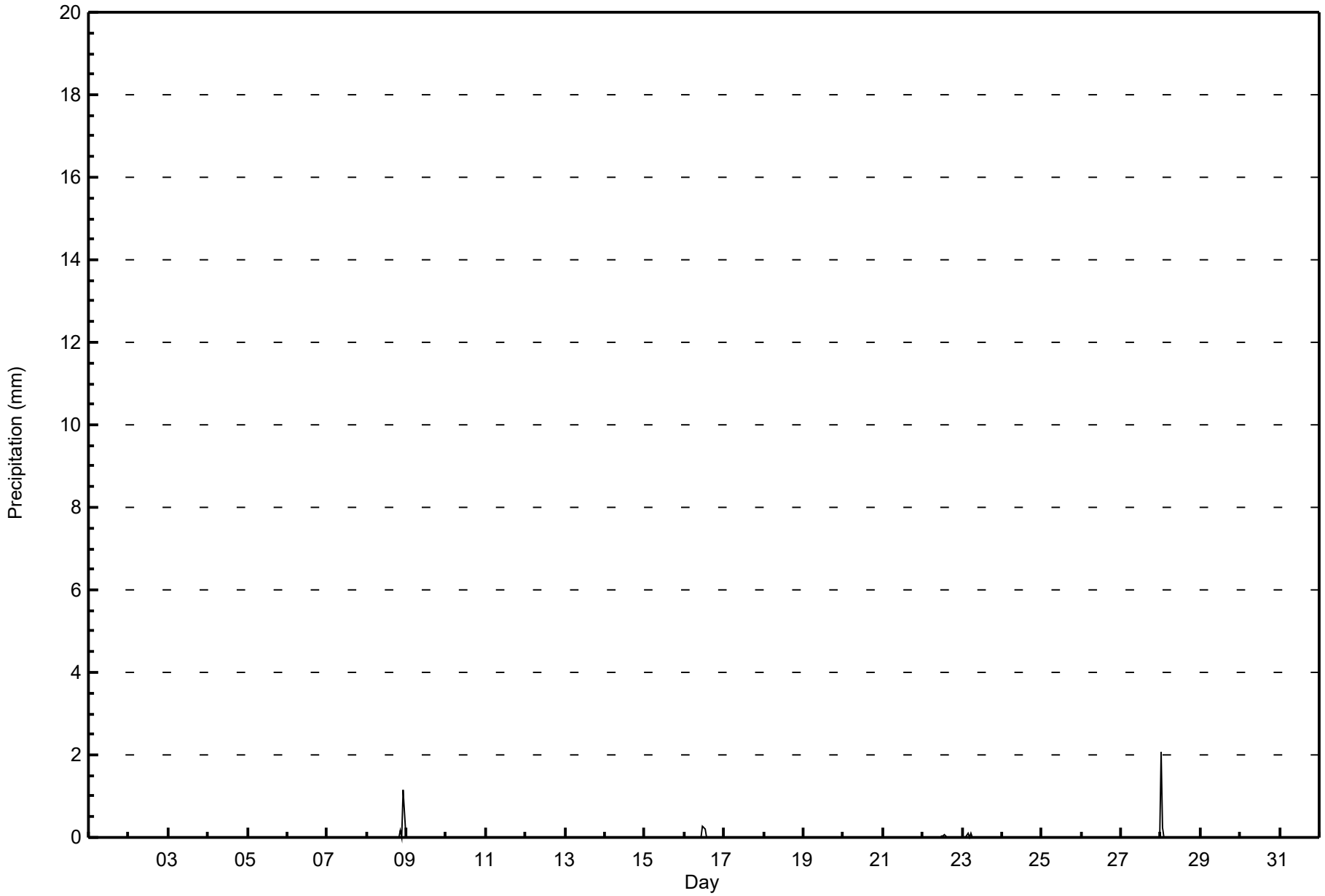
Fort Chipewyan - May 2023

Maximum Value: 2.1 mm on May 28 01:00		Maximum Daily Total: 2.3 mm on May 28		Hours in Service: 744																																													
Minimum Value: 0.0 mm on May 1 01:00		Minimum Daily Total: 0.0 mm on May 1		Hours of Data: 744																																													
Maximum Diurnal Total: 2.1 mm at hour 1		Minimum Diurnal Total: 0.0 mm at hour 3		Hours of Missing Data: 0																																													
Monthly Total: 4.46 mm		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.1		Hours of Calibration: 0																																													
				Percent Operational Time: 100.0																																													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																
2-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																
3-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																
4-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																
5-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																
6-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																
7-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																
8-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.1															
9-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
10-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
11-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
12-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
13-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
14-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
15-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
16-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3															
17-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
18-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
19-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
20-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
21-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
22-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1															
23-May	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1																
24-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
25-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
26-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
27-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
28-May	2.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	2.1																
29-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
30-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
31-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
																								2.1	0.3	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.1	0.0	Diurnal Average	
																								2.1	0.3	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.1	0.0	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Precipitation (PC) - mm
Fort Chipewyan - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Precipitation (PC) - mm
Fort Chipewyan - May 2023

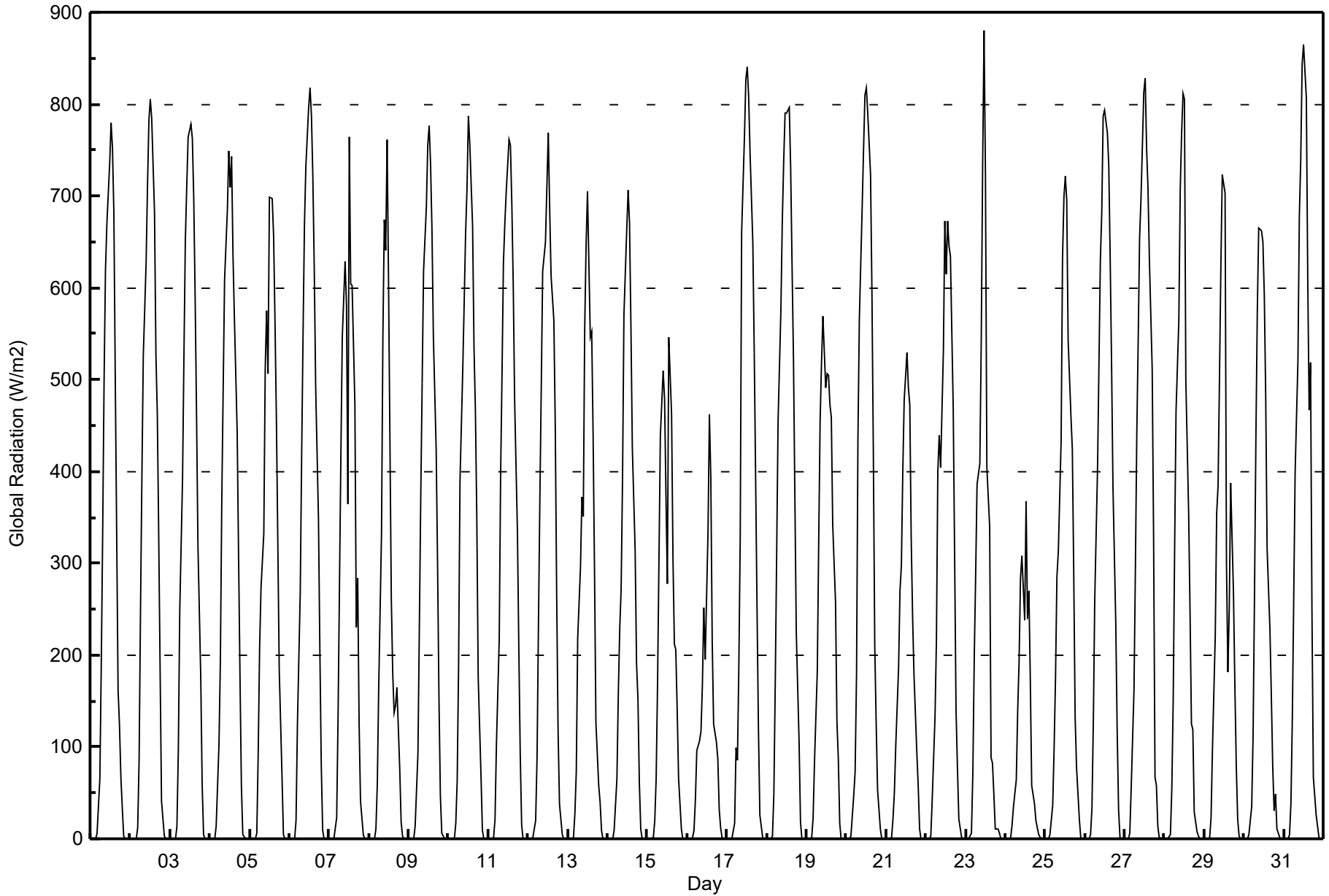
Concentration Ranges (mm)	Number of Hours	%	Cumulative %
0 - 0.3	742	99.73	99.73
0.4 - 0.5	0	0.00	99.73
0.6 - 0.7	0	0.00	99.73
0.8 - 1.4	1	0.13	99.87
1.5 - 10	1	0.13	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Maximum Value: 880.6 W/m2 on May 23 12:00		Maximum Daily Average: 330.9 W/m2 on May 18		Hours in Service:	744																					
Minimum Value: 0.0 W/m2 on May 1 01:00		Minimum Daily Average: 102.7 W/m2 on May 24		Hours of Data:	744																					
Maximum Diurnal Average: 695.9 W/m2 at hour 13		Minimum Diurnal Average: 0.0 W/m2 at hour 2		Hours of Missing Data:	0																					
Monthly Average: 254.79 W/m2		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.7 Median = 138.0 Q ₃ = 493.3 P ₉₀ = 697.0 P ₉₉ = 815.6		Hours of Calibration:	0																					
				Percent Operational Time:	100.0																					
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.0	0.0	0.0	0.0	5.8	65.0	189.6	333.1	496.7	619.7	669.6	736.0	779.3	752.7	681.1	500.4	161.6	122.8	67.5	32.8	2.6	0.0	0.0	0.0	259.0	779.3
2-May	0.0	0.0	0.0	0.1	12.2	85.7	248.9	394.8	527.0	627.0	711.2	782.9	806.2	784.5	681.8	528.0	461.6	329.1	182.6	41.0	3.1	0.0	0.0	0.0	300.3	806.2
3-May	0.0	0.0	0.0	0.1	13.7	95.4	246.4	391.7	526.1	650.7	710.4	763.7	778.3	762.4	696.7	589.0	460.6	318.3	175.3	59.2	4.0	0.0	0.0	0.0	301.7	778.3
4-May	0.0	0.0	0.0	0.0	13.0	101.7	193.1	367.8	490.1	608.6	684.6	749.7	709.7	743.3	636.6	568.0	442.5	306.5	177.1	57.4	3.9	0.0	0.0	0.0	285.6	749.7
5-May	0.0	0.0	0.0	0.0	5.7	93.0	207.8	272.9	332.6	511.3	574.9	506.1	698.1	697.1	655.9	561.0	455.1	322.2	184.4	66.8	5.3	0.0	0.0	0.0	256.3	698.1
6-May	0.0	0.0	0.0	0.1	20.6	125.5	268.0	415.7	549.2	667.4	732.8	797.0	816.9	786.9	720.2	621.2	492.5	349.4	205.4	81.3	8.5	0.1	0.0	0.0	319.1	816.9
7-May	0.0	0.0	0.0	0.2	22.9	134.0	275.8	418.4	546.6	629.2	581.8	365.1	763.7	603.6	602.9	473.4	229.9	283.1	127.3	40.6	5.0	0.0	0.0	0.0	254.3	763.7
8-May	0.0	0.0	0.0	0.1	10.7	59.9	165.4	332.0	550.5	673.5	640.9	761.6	608.3	260.8	179.9	136.8	145.5	164.3	76.6	19.0	3.1	0.0	0.0	0.0	199.5	761.6
9-May	0.0	0.0	0.0	0.3	13.6	93.2	231.1	371.9	495.6	618.4	687.9	754.9	776.5	734.5	663.7	547.7	424.0	299.2	152.6	47.8	5.6	0.0	0.0	0.0	288.3	776.5
10-May	0.0	0.0	0.0	0.4	16.5	61.9	187.4	389.1	512.0	584.5	658.8	708.5	787.2	757.3	666.4	535.6	467.0	349.4	175.3	68.4	9.4	0.1	0.0	0.0	289.0	787.2
11-May	0.0	0.0	0.0	1.1	21.8	102.7	217.1	396.9	506.2	627.1	669.6	704.9	761.6	755.0	691.4	604.6	477.5	334.6	205.9	91.8	15.1	0.2	0.0	0.0	299.4	761.6
12-May	0.0	0.0	0.0	1.0	20.2	88.5	233.0	368.9	491.5	618.3	649.8	709.9	768.4	687.0	614.0	564.0	448.5	265.1	117.4	38.0	4.0	0.0	0.0	0.0	278.6	768.4
13-May	0.0	0.0	0.0	0.9	27.2	73.3	218.2	295.5	372.4	351.3	555.7	646.5	704.7	545.6	552.1	438.7	293.4	126.9	58.0	39.2	9.2	0.2	0.0	0.0	221.2	704.7
14-May	0.0	0.0	0.0	0.2	9.2	66.0	158.0	228.9	271.2	392.7	570.4	663.8	706.5	669.6	557.2	426.1	314.0	191.4	153.1	61.5	10.9	0.2	0.0	0.0	227.1	706.5
15-May	0.0	0.0	0.0	1.2	19.6	64.9	168.6	303.5	439.9	510.1	478.4	373.5	277.2	545.8	462.0	304.7	212.8	205.9	139.6	65.3	10.3	0.3	0.0	0.0	191.0	545.8
16-May	0.0	0.0	0.0	1.0	9.2	42.3	96.8	106.7	117.3	167.8	251.2	195.7	333.9	461.9	393.9	215.2	125.7	105.6	86.7	32.1	12.9	0.9	0.0	0.0	114.9	461.9
17-May	0.0	0.0	0.0	0.6	16.5	99.6	85.2	187.5	330.2	661.2	764.9	826.6	840.4	808.7	747.1	648.9	528.8	389.9	248.5	119.3	25.9	0.8	0.0	0.0	305.4	840.4
18-May	0.0	0.0	0.0	2.8	49.1	170.4	311.1	454.4	575.7	671.3	737.0	790.1	790.0	796.7	728.5	623.0	521.1	371.2	224.4	105.0	18.2	0.7	0.0	0.0	330.9	796.7
19-May	0.0	0.0	0.0	1.4	22.2	83.6	183.5	323.1	455.3	518.9	568.7	490.9	506.1	505.0	473.1	458.4	341.0	258.6	127.4	86.5	16.9	0.7	0.0	0.0	225.9	568.7
20-May	0.0	0.0	0.0	2.6	47.6	72.6	179.9	436.0	565.8	686.7	751.0	810.0	818.1	790.3	723.8	593.4	419.1	209.9	126.2	53.1	10.5	0.3	0.0	0.0	304.0	818.1
21-May	0.0	0.0	0.0	1.6	21.9	50.7	102.8	185.9	270.7	297.1	399.8	477.5	529.7	491.5	473.2	327.7	242.0	177.8	94.3	58.7	11.0	0.7	0.0	0.0	175.6	529.7
22-May	0.0	0.0	0.0	3.5	42.9	133.5	215.3	399.4	438.8	404.2	531.9	673.0	614.1	673.2	645.6	634.6	468.0	308.2	140.9	77.5	21.7	1.3	0.0	0.0	267.8	673.2
23-May	0.0	0.0	0.0	6.4	72.3	197.2	287.1	386.7	408.6	543.0	734.1	880.6	722.7	404.3	340.7	89.1	83.1	49.0	11.2	10.3	6.6	0.3	0.0	0.0	218.0	880.6
24-May	0.0	0.0	0.0	1.3	14.5	35.2	64.7	139.2	193.0	283.1	308.7	238.5	366.9	238.8	270.7	174.6	58.1	38.7	20.0	12.2	5.1	0.8	0.0	0.0	102.7	366.9
25-May	0.0	0.0	0.0	4.3	36.0	98.7	175.1	284.7	312.2	433.8	632.0	699.0	722.1	695.5	543.0	460.0	424.2	290.3	132.8	78.2	21.6	1.4	0.0	0.0	251.9	722.1
26-May	0.0	0.0	0.0	4.0	34.0	127.8	260.7	405.0	517.2	630.2	682.2	787.4	793.4	768.5	733.6	633.2	517.2	382.6	234.5	116.7	32.0	2.1	0.0	0.0	319.3	793.4
27-May	0.0	0.0	0.0	5.6	55.7	161.8	293.7	441.1	543.1	654.8	697.3	813.8	829.0	751.4	708.3	630.5	511.6	326.5	67.8	58.0	14.0	1.3	0.0	0.0	315.2	829.0
28-May	0.0	0.0	0.0	3.9	55.5	153.3	315.6	465.0	564.3	705.5	769.0	811.5	805.3	499.1	355.5	246.7	125.8	119.5	29.0	7.5	3.5	0.3	0.0	0.0	251.5	811.5
29-May	0.0	0.0	0.0	1.8	23.2	97.3	221.7	354.0	385.0	500.6	621.7	723.0	702.7	300.1	181.9	252.2	386.7	267.3	165.8	79.0	21.8	2.4	0.0	0.0	220.3	723.0
30-May	0.0	0.0	0.0	4.9	35.5	112.5	264.7	436.0	573.6	664.4	661.9	650.2	591.6	482.1	315.2	228.3	157.2	79.0	31.2	48.1	10.5	2.0	0.0	0.0	222.9	664.4
31-May	0.0	0.0	0.0	4.0	37.6	131.9	262.8	399.0	520.5	677.7	739.8	843.7	864.9	807.5	610.9	467.0	518.8	248.0	67.8	25.9	14.2	2.3	0.0	0.0	301.8	864.9
	0.0	0.0	0.0	1.8	26.0	99.3	210.6	344.7	447.7	554.5	626.7	668.9	695.9	631.0	558.3	454.2	352.1	244.8	129.2	57.4	11.2	0.6	0.0	0.0		Diurnal Average
	0.0	0.0	0.0	6.4	72.3	197.2	315.6	465.0	575.7	705.5	769.0	880.6	864.9	808.7	747.1	648.9	528.8	389.9	248.5	119.3	32.0	2.4	0.0	0.0		Diurnal Maximum





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Global Radiation (GR) - W/m2
Fort Chipewyan - May 2023

Concentration Ranges (W/m2)	Number of Hours	%	Cumulative %
0 - 20	263	35.35	35.35
21 - 100	83	11.16	46.51
101 - 300	117	15.73	62.23
301 - 600	148	19.89	82.12
601 - 900	133	17.88	100.00
> 900	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Speed (WS) - km/h
Fort Chipewyan - May 2023

Maximum Speed: 40 km/h on May 23 07:00	Maximum Daily Speed Average: 24.7 km/h on May 23	Hours in Service: 744
Minimum Speed Value: 1 km/h on May 8 18:00	Minimum Daily Speed Average: 1.2 km/h on May 31	Hours of Data: 743
Maximum Diurnal Speed Average: 10.1 km/h at hour 13	Minimum Diurnal Speed Average: 4.3 km/h at hour 1	Hours of Missing Data: 1
Monthly Average Velocity: 6.5 km/h 106.4 deg	Percentiles: P ₁ = 3 P ₁₀ = 6 Q ₁ = 10 Median = 14 Q ₃ = 20 P ₉₀ = 26 P ₉₉ = 37	Percent Operational Time: 99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SE16	ESE16	ESE15	SE11	ESE9	E9	SE12	S18	SSE14	S22	S21	SSE24	SSE22	S23	S20	S12	ENE8	E7	NNE4	NW8	NNW13	NNW11	NNW11	NNW8	SSE7.8	SSE24
2-May	NNW7	NW5	NNW11	NW9	NW9	NNW10	NNW10	NNW10	NNW10	NNW10	W15	W11	SW8	SSW6	WSW10	W11	WSW8	ESE8	E12	E11	E13	E12	E9	ESE6	NW2.9	W15
3-May	E7	ESE10	ESE9	ESE10	E12	ESE11	E12	E12	E12	E15	E15	E15	E20	ESE18	SSE30	S26	SSE28	ESE18	E18	E13	E10	E14	ESE14	SSE16	ESE13.0	SSE30
4-May	SSE18	SSE16	SE11	SSW6	SSE3	S4	E5	ENE4	E9	E8	E11	E10	E12	E13	E10	E15	E16	ESE6	E5	E5	NE7	NNE11	NE9	ENE10	E7.2	SSE18
5-May	ENE11	ENE6	ENE4	E13	E16	E21	E15	E21	E24	E25	E23	E18	E21	E20	E22	E26	ESE27	SE31	ESE30	SE28	SE24	ESE22	SE21	SE16	E18.9	SE31
6-May	SSE20	SSE23	SE18	SE18	SE20	ESE17	E17	SE12	SSE17	SSE20	SE24	SE27	E23	E22	E21	E21	ENE25	E25	E24	E19	ENE11	E14	E17	SE18	ESE17.1	SE27
7-May	SSE17	SE11	ESE12	SE17	ESE16	E18	E18	E19	E18	E18	E20	E18	E20	E19	E20	E20	E20	E18	E14	E17	E17	E16	E16	E15	E16.3	E20
8-May	E17	E18	ESE15	E17	ESE20	ESE16	SE14	SSE20	SE23	SSE22	SE22	SSE25	ESE19	WNW7	WNW16	NW11	NNW7	N1	E5	ESE2	ESE2	SE6	S21	E5	SE9.1	SSE25
9-May	E9	ESE10	SSE13	S6	S9	SE4	S5	SSW10	SSW11	SSW10	SSE6	E12	E14	E14	E16	E14	E14	E12	E10	E8	E6	E7	E7	E7	ESE7.2	E16
10-May	E6	E5	UO	E6	ENE5	ENE3	NW3	ESE3	N8	E13	E22	E19	E20	E12	E15	E14	E11	E19	E14	ENE10	ESE4	E5	ENE6	ENE7	E9.2	E22
11-May	ENE6	E9	ENE13	E13	E15	E17	E15	E15	E15	E13	E17	E21	E23	E22	E24	E21	E20	E18	E16	E13	E8	E9	E9	E10	E15.0	E24
12-May	E11	E9	E9	E8	ESE5	E9	E10	E6	E7	E10	E10	S15	SSW27	SSW30	S30	SSW28	S26	S23	S18	S18	S19	S23	S22	S23	SSE12.7	SSW30
13-May	S27	S22	S23	SSW20	SSW17	S13	SSE7	S7	S12	SSW11	SSW16	SSW19	SSW22	SW22	W18	W16	W17	W13	WNW9	WSW6	SSW6	SSW6	SSW7	SSW9	SSW12.1	S27
14-May	WSW13	WSW14	W15	WSW15	W11	W10	W10	WNW11	WNW11	WNW9	WNW7	W7	WSW6	WSW10	W10	W12	W10	WSW8	WSW6	WSW4	NNW7	N5	NE9	NE17	W7.2	NE17
15-May	ENE12	E8	ENE17	ENE19	ENE16	ENE19	ENE23	ENE25	E27	E28	ENE29	E33	E31	E32	E34	E32	E31	E31	E29	E29	E27	ENE8	NNW12	NW23	ENE21.8	E34
16-May	NW24	NW23	WNW23	WNW23	WNW26	NW26	NW24	NW28	NW29	NW27	NW27	NW25	NW26	NW30	NNW26	NNW24	NNW23	NNW21	NNW21	N17	NNW17	N14	N13	N13	NW21.6	NW30
17-May	NNE15	NNE14	NE17	NE17	NE18	NE16	NE15	NE17	E25	E25	E23	E20	E20	E17	E22	E23	E22	E18	E14	ENE8	E8	ESE4	SE8	SSE16	ENE14.5	E25
18-May	S11	SSW5	S14	S16	S19	SSW16	SSW16	SSW16	SSW12	SSW11	S11	SW12	SW12	SSW11	S8	SW10	SW11	SSE4	E14	E12	ESE9	S20	S19	SW14	S10.2	S20
19-May	SW14	SW9	SSW11	SW11	SSW12	SSW12	SSW13	SSW13	SSW12	WSW12	W12	W13	W10	WNW10	NNW11	NNE17	NE23	NNE23	N15	N12	N12	NNE11	NNE14	NNE18	NW3.5	NNE23
20-May	NE17	NE17	NE15	NE13	ENE16	ENE20	ENE19	ENE20	E22	ENE22	E23	E25	E25	E24	E23	E21	E18	E17	ENE16	ENE15	ENE16	ENE16	E17	E18	ENE18.4	E25
21-May	E17	E14	E14	E16	E13	ESE10	ESE10	SSE9	S12	S16	SSE13	SSE12	SE16	E13	E15	E14	E13	E12	E6	E6	E7	E7	ESE4	NW7	ESE9.3	E17
22-May	NNW13	NNW14	NNW14	NNW14	NNW17	N13	NNE10	NNE13	NNE17	ENE30	ENE33	ENE37	ENE35	ENE37	ENE37	ENE38	ENE37	NE31	NE28	NE28	NE28	ENE29	ENE29	ENE29	NE22.5	ENE38
23-May	ENE26	ENE23	E30	E37	E37	E39	E40	E39	E36	ENE30	ENE32	E33	E30	E25	SE31	SE23	SE22	SSE24	SSE15	ESE29	SE21	SSE17	S16	SSE19	E24.7	E40
24-May	SSE19	SSE15	SSE16	SSE16	SSE14	SSE18	S26	S21	S17	S13	SSE15	SSE12	SE8	SE5	E8	W8	WNW11	W11	W12	W12	W10	W11	W11	W11	S8.6	S26
25-May	W10	WNW10	NW9	NW9	NW9	NNW10	N5	ENE4	E14	E16	E12	E12	E12	E12	E16	E16	E15	E13	E12	ENE12	ENE6	NE6	NE5	NE3	ENE5.9	E16
26-May	E3	E7	E7	ESE6	SSE6	SE6	ESE7	E7	E9	E9	E12	E15	E14	E13	E17	E17	E18	E17	E18	ENE18	ENE14	E17	E20	E21	E12.1	E21
27-May	E20	ESE15	SE13	SE12	S16	S18	S20	S22	S25	SSE26	S32	SSW37	SSW35	S38	S36	S34	S36	S34	S27	S24	S25	S24	S25	SSW20	S24.2	S38
28-May	NW5	SE14	SSE18	S26	S26	SSW19	SSW15	SSW14	SW13	SW13	SW12	WSW10	W12	WNW17	WNW13	W14	W10	W17	W19	WSW17	WNW20	WNW12	WNW10	WNW11	WSW10.1	S26
29-May	WNW10	WNW10	W8	W11	W12	W12	W11	WSW12	WSW11	SW8	SSW12	SSE7	E17	E15	E15	E14	ESE5	WNW21	NNW16	NNW7	NNW6	NNE5	NE7	SE2	WNW2.6	WNW21
30-May	SSE6	SSW11	SW7	SW6	SW6	SW7	WSW6	W8	NW7	W2	SSE6	E12	E21	E21	ENE21	ENE24	ENE27	ENE23	NNW8	N9	NNE7	NNW5	WNW7	W4	ENE3.9	ENE27
31-May	N1	WSW6	W6	WSW5	WSW4	W3	E4	ESE6	SE5	S8	SW15	WSW13	WSW10	W10	W6	WNW6	NNW6	E11	ENE7	E8	NE5	NNW8	N9	ENE14	W1.2	SW15

ESE4.3 ESE4.5 ESE4.6 SE4.8 SE4.9 ESE5.1 ESE5.4 ESE5.5 ESE6.4 ESE7.7 ESE8.6 ESE9.3 ESE10.1 ESE8.3 ESE8.6 E8.5 E8.6 E8.4 E7.7 E7.4 E5.9 E5.4 ESE5.1 ESE4.8	Diurnal Average
S27 NW23 E30 E37 E37 E39 E40 E39 E36 ENE30 ENE33 ENE37 SSW35 S38 ENE37 ENE38 ENE37 S34 ESE30 ESE29 NE28 ENE29 ENE29 ENE29	Diurnal Maximum

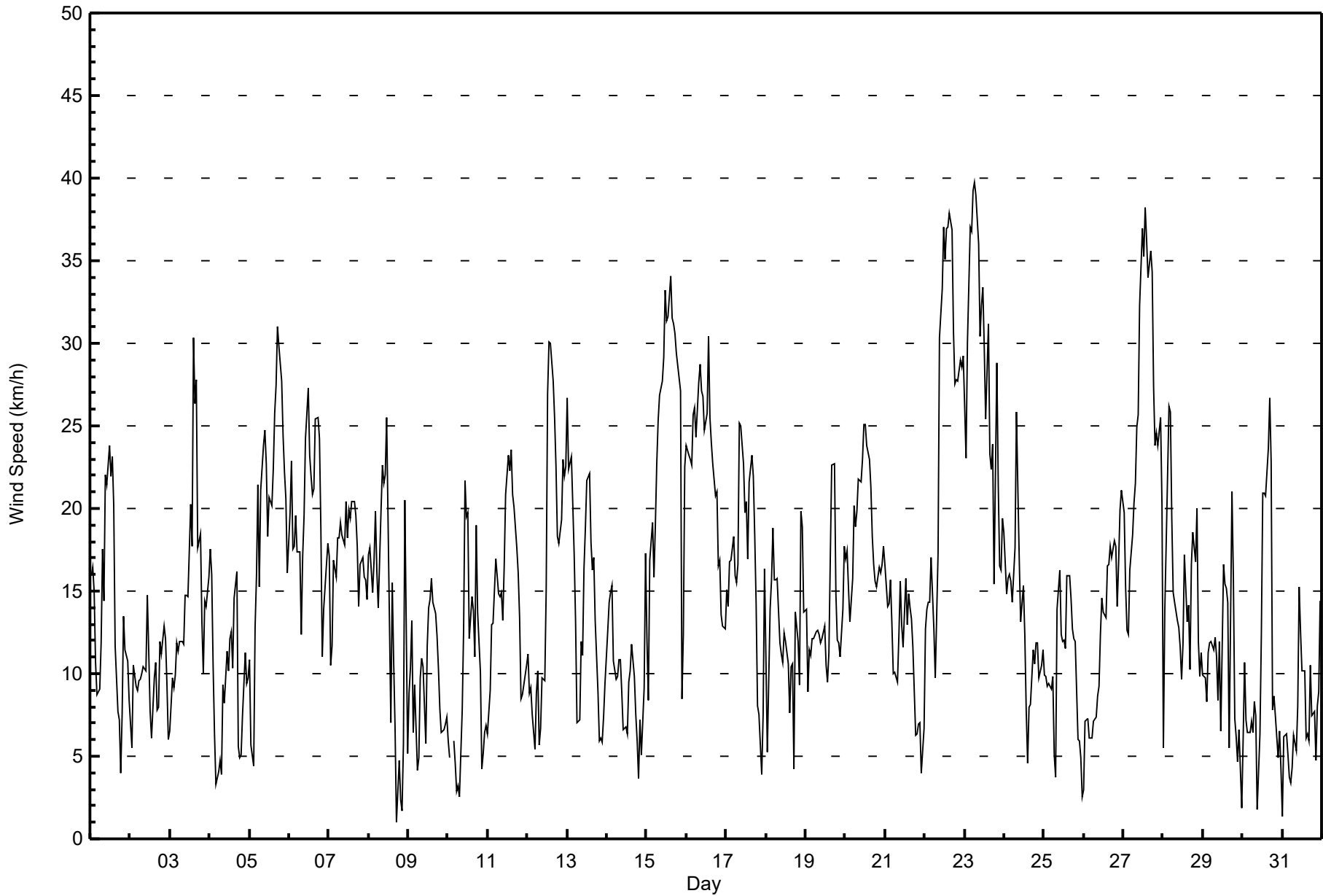
UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Fort Chipewyan - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 11 km/h on May 8 23:00														Hours in Service: 744 Hours of Data: 743 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9											
Minimum Value: 1 km/h on May 12 03:00																									
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 9																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	2	1	2	2	3	2	3	3	4	3	4	4	4	3	4	6	2	1	2	4	4	4	3	3	6
2-May	2	1	1	1	2	2	3	4	3	4	3	3	3	3	4	3	3	2	2	2	1	2	2	1	4
3-May	2	1	1	1	1	1	1	1	1	2	2	5	3	8	6	5	4	4	2	3	2	2	1	3	8
4-May	3	3	2	3	2	1	1	2	3	1	2	2	3	3	3	3	2	4	2	3	3	3	2	4	4
5-May	3	2	3	5	2	4	4	3	3	2	2	3	3	4	4	4	5	2	2	2	2	2	3	2	5
6-May	4	3	2	2	2	1	1	4	4	5	5	4	3	3	2	3	3	3	2	2	3	3	3	3	5
7-May	2	2	3	2	1	2	1	2	2	2	2	2	2	2	2	3	2	2	2	2	1	1	2	1	3
8-May	2	1	2	1	2	1	1	4	3	4	4	5	5	6	5	3	2	2	1	2	3	3	11	1	11
9-May	2	2	3	3	5	2	2	1	2	2	2	2	1	1	1	2	1	2	1	2	2	2	1	1	5
10-May	1	1	UO	2	1	1	2	2	3	4	4	3	2	3	3	2	4	2	1	2	1	1	1	1	4
11-May	2	1	2	2	1	3	2	1	2	2	3	2	2	2	2	2	1	2	2	3	2	2	1	1	3
12-May	1	1	1	1	1	1	2	2	1	2	2	8	5	5	6	5	4	4	2	1	2	2	2	2	8
13-May	3	3	3	3	3	3	3	2	3	3	3	4	5	4	4	4	4	2	1	2	1	2	3	5	5
14-May	3	3	4	3	3	2	2	2	3	2	3	3	3	3	3	3	2	2	1	1	2	3	5	3	5
15-May	3	1	4	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	2	2	2	7	7	8	8
16-May	8	7	7	6	7	8	8	9	9	8	9	9	8	10	10	10	9	8	8	6	6	5	4	5	10
17-May	5	4	5	4	4	4	4	4	3	2	2	2	2	3	3	2	3	1	2	2	1	1	4	2	5
18-May	3	1	4	2	3	4	3	3	3	2	2	3	3	3	4	4	3	4	2	1	2	3	4	2	4
19-May	2	3	2	2	2	2	2	2	2	3	3	3	3	3	5	6	6	6	5	5	4	3	5	5	6
20-May	4	4	2	2	3	3	2	3	2	3	3	2	3	3	2	3	2	3	3	4	3	3	2	3	4
21-May	3	2	2	1	2	1	2	2	3	3	3	2	3	2	2	2	1	1	2	1	1	1	1	3	3
22-May	3	3	3	3	4	4	3	4	6	8	6	6	6	6	6	6	7	6	5	5	5	5	4	4	8
23-May	4	5	3	5	5	5	3	3	6	3	4	4	4	4	5	4	3	6	4	5	2	4	3	3	6
24-May	3	2	2	2	2	3	3	4	3	3	3	2	3	4	2	2	6	3	2	3	3	2	3	2	6
25-May	2	2	2	2	1	2	3	2	4	1	1	1	1	1	2	2	2	2	2	3	1	1	1	2	4
26-May	2	1	1	2	1	1	2	1	1	1	1	1	1	2	2	1	1	1	1	2	2	3	2	2	3
27-May	2	2	2	2	3	2	3	3	3	4	6	6	6	6	6	6	5	4	4	3	4	3	4	7	7
28-May	4	5	5	3	3	4	3	3	2	3	3	3	4	5	4	4	3	5	5	4	6	4	3	2	6
29-May	2	2	2	3	3	3	3	3	3	2	2	3	2	2	3	4	5	6	6	3	2	1	1	1	6
30-May	5	3	2	2	3	2	2	3	3	2	2	2	2	2	3	3	4	5	3	3	3	2	2	2	5
31-May	2	4	2	2	1	1	1	1	2	2	4	3	3	4	3	3	2	4	3	3	2	2	2	3	4
														Diurnal Maximum											
UO - Unstable Operation																									





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed (WS) - km/h
Fort Chipewyan - May 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	50	6.73	6.73
6 - 11	213	28.67	35.40
12 - 19	282	37.95	73.35
20 - 28	148	19.92	93.27
29 - 38	47	6.33	99.60
> 38	3	0.40	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Fort Chipewyan - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	4	2	3	6	8	9	3	2	2	1	0	3	3	0	3	1	50
6 - 11	3	4	5	13	50	16	6	7	7	14	10	12	23	17	10	16	213
12 - 19	8	7	11	17	110	13	12	24	19	16	8	7	17	4	0	9	282
20 - 28	0	1	4	13	51	4	10	12	27	5	1	0	0	5	10	5	148
29 - 38	0	0	1	14	15	2	2	1	7	3	0	0	0	0	2	0	47
> 38	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3
Totals	15	14	24	63	237	44	33	46	62	39	19	22	43	26	25	31	743

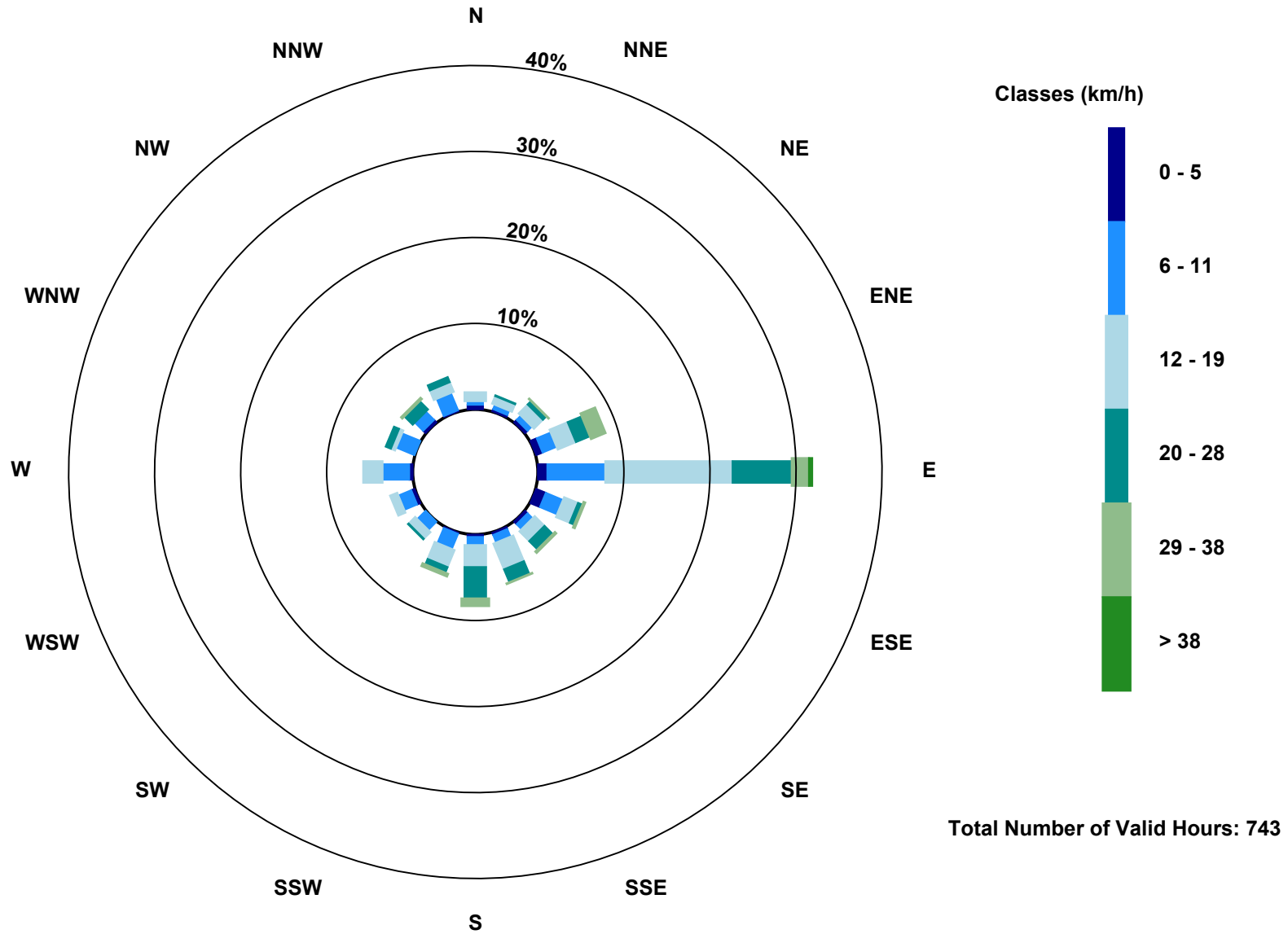
Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Fort Chipewyan





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Fort Chipewyan - May 2023

Direction of Maximum Speed: 92 deg on May 23 07:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 101.2 deg on May 23	Hours of Data: 743
Direction of Minimum Speed: 349 deg on May 8 18:00	Hours of Missing Data: 1
Direction of Minimum Daily Speed Average: 1.2 deg on May 31	Percent Operational Time: 99.9
Monthly Average Direction: 106.4 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	127	118	121	124	115	95	146	174	165	173	178	167	164	173	189	191	75	80	32	323	345	330	328	342	152.9
2-May	330	312	290	305	319	341	336	330	316	291	265	263	235	207	256	278	247	110	85	80	81	84	93	109	312.9
3-May	86	102	110	104	94	112	95	90	92	87	89	95	86	120	167	169	168	108	88	95	100	89	110	148	114.5
4-May	163	162	130	194	153	173	79	72	82	83	86	84	87	91	93	91	107	87	101	51	33	35	60	97.2	
5-May	62	67	72	87	87	93	83	85	82	80	84	84	85	86	84	87	114	124	123	127	126	115	131	136	100.0
6-May	158	155	140	136	134	118	95	142	150	154	143	129	89	89	88	83	77	79	81	86	77	84	88	139	112.3
7-May	166	131	113	132	120	95	84	84	83	86	86	87	86	85	84	85	82	86	83	81	87	92	92	89	93.5
8-May	92	98	112	96	113	105	125	156	146	149	144	157	106	283	294	307	331	349	90	110	110	127	177	98	129.0
9-May	91	117	167	185	176	129	190	208	197	196	147	94	93	91	90	91	87	85	85	86	92	81	83	90	114.6
10-May	89	87	UO	86	64	74	306	120	353	92	87	91	90	90	89	90	90	83	79	70	114	86	60	70	83.1
11-May	78	81	75	80	85	81	87	91	90	94	88	86	84	85	83	84	85	89	101	94	93	94	90	83	86.8
12-May	86	88	95	93	112	90	86	86	79	86	99	184	199	192	185	192	189	187	175	171	171	174	177	179	166.2
13-May	182	182	189	193	193	189	160	171	171	192	200	208	212	231	265	263	272	276	284	249	208	204	200	207	210.4
14-May	238	251	269	258	266	262	272	290	285	288	292	278	253	253	273	262	264	257	241	249	334	2	36	51	274.4
15-May	61	81	67	78	68	73	73	76	79	81	78	80	82	82	81	81	82	86	85	86	87	65	330	319	76.1
16-May	317	306	297	293	295	304	306	312	312	308	306	315	315	319	329	333	329	333	348	352	347	351	354	8	319.2
17-May	19	29	38	36	42	35	42	53	80	93	91	93	94	95	87	87	86	88	85	76	91	121	130	150	75.5
18-May	176	200	188	190	189	200	207	201	202	199	190	215	220	209	180	229	234	160	84	87	104	175	180	218	190.2
19-May	221	225	213	218	210	212	212	209	211	249	269	264	274	299	333	17	41	30	11	5	353	13	30	29	306.8
20-May	43	47	48	47	62	69	72	73	81	77	82	83	83	85	86	86	89	81	61	63	63	65	83	84	73.1
21-May	82	85	86	86	97	121	121	152	170	172	166	150	145	90	87	86	89	88	92	95	95	96	113	320	109.4
22-May	335	345	345	343	341	2	13	26	31	66	66	71	72	71	68	65	59	55	52	52	54	62	69	73	52.6
23-May	71	75	82	92	90	92	92	87	81	78	78	79	81	82	125	142	146	151	151	117	132	148	174	163	101.2
24-May	161	158	155	157	156	162	165	174	185	190	181	166	152	129	136	92	277	286	273	271	273	280	275	276	185.7
25-May	276	299	306	313	313	332	349	60	85	92	94	96	96	97	91	91	94	96	86	68	69	36	45	50	69.5
26-May	79	81	87	114	153	135	108	100	85	89	90	90	87	92	99	89	86	85	82	78	74	80	86	88	89.4
27-May	101	120	135	144	179	174	173	173	169	161	169	194	194	189	189	184	181	175	180	183	182	180	178	197	176.2
28-May	318	126	162	178	185	201	193	208	225	236	232	237	273	284	284	280	265	271	263	256	297	290	290	288	239.3
29-May	283	286	275	266	267	269	266	254	246	215	210	165	99	84	80	84	102	283	337	345	328	29	54	124	281.4
30-May	164	204	221	230	225	231	255	272	309	263	150	92	86	85	78	71	64	58	341	2	29	344	297	262	70.3
31-May	357	247	267	257	247	262	97	111	134	185	227	240	238	264	271	287	347	82	65	96	47	336	357	57	263.7

111.3 116.8 122.0 127.2 127.8 111.8 107.4 121.3 114.2 118.9 119.3 119.3 109.0 107.3 105.5 97.9 96.4 93.1 83.6 86.7 81.2 88.7 102.3 103.1
 Diurnal Average

UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

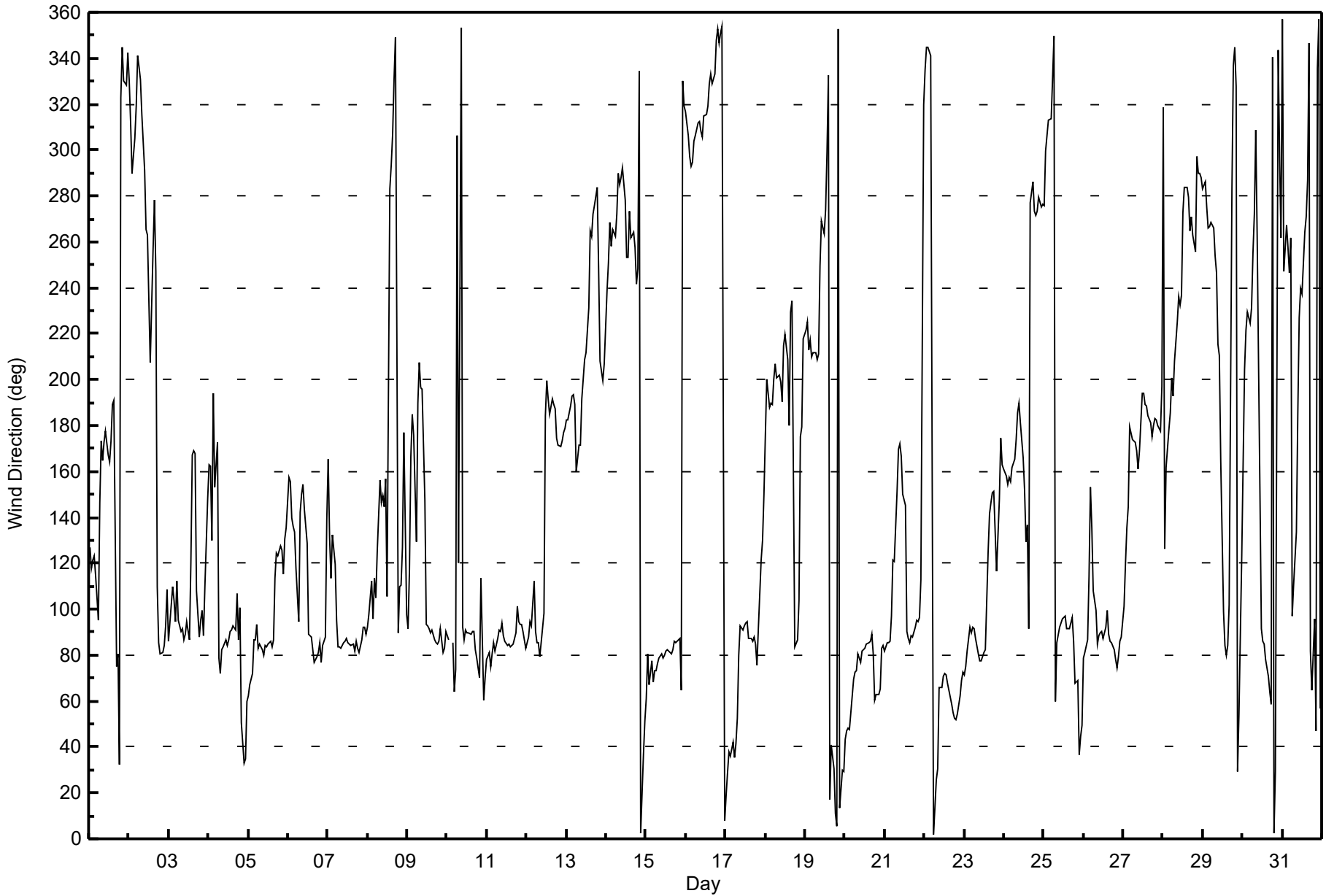
Wind Direction (WD) - deg
Fort Chipewyan - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 98 deg on May 8 18:00 Minimum Value: 3 deg on May 5 19:00 Percentiles: P ₁ = 4 P ₁₀ = 6 Q ₁ = 8 Median = 13 Q ₃ = 20 P ₉₀ = 32 P ₉₉ = 72											Hours in Service: 744 Hours of Data: 743 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9														
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	11	6	10	17	30	23	16	10	14	8	9	13	12	11	15	49	17	8	33	36	20	23	21	17	49
2-May	16	21	7	13	13	17	22	26	22	31	17	22	47	54	49	25	38	42	7	7	5	4	8	21	54
3-May	25	12	16	11	10	8	5	5	5	6	8	15	6	33	9	12	9	30	4	10	11	5	13	11	33
4-May	11	15	16	63	63	40	16	50	16	10	12	13	11	15	16	9	7	43	55	49	31	32	19	21	63
5-May	21	37	78	8	6	10	13	6	6	5	6	9	5	10	10	6	15	3	3	4	6	3	12	8	78
6-May	14	11	11	8	5	8	6	35	11	11	12	9	13	5	6	6	6	6	5	4	12	7	6	14	35
7-May	7	22	13	6	7	11	5	4	3	5	6	8	7	5	6	6	6	6	4	5	5	6	7	5	22
8-May	5	9	12	5	10	9	19	10	7	10	13	13	34	90	17	21	25	98	18	45	78	34	23	50	98
9-May	18	26	17	39	28	55	29	13	12	13	32	7	4	5	7	7	7	13	9	17	14	16	9	9	55
10-May	7	8	UO	7	19	54	49	56	41	9	6	7	6	10	7	8	15	6	8	11	25	18	6	10	56
11-May	13	11	6	9	5	6	5	5	5	6	5	5	5	5	5	5	4	7	5	6	7	7	10	9	13
12-May	7	10	8	12	19	8	7	16	10	11	20	44	12	14	11	11	13	10	7	4	5	4	5	6	44
13-May	7	7	8	8	8	13	30	22	11	16	9	15	11	18	17	16	17	15	17	16	24	13	20	18	30
14-May	13	15	13	13	16	13	16	14	14	22	29	56	56	36	23	18	17	17	13	19	17	31	39	9	56
15-May	12	11	11	9	12	13	12	10	8	7	8	7	6	5	6	6	5	4	4	4	4	70	21	21	70
16-May	21	17	17	16	16	19	19	19	19	18	18	21	20	20	24	28	28	27	25	25	24	21	25	23	28
17-May	21	19	15	13	14	17	14	17	9	7	6	7	7	7	6	7	7	5	8	19	11	29	17	7	29
18-May	19	21	8	7	7	12	11	11	13	13	17	20	22	23	37	41	24	61	5	4	26	6	11	10	61
19-May	11	19	12	14	10	10	8	9	10	23	19	21	24	28	32	26	19	17	23	23	22	19	15	14	32
20-May	11	10	9	10	13	13	15	15	11	15	11	9	9	8	6	8	4	15	15	15	16	16	9	6	16
21-May	9	10	10	7	10	14	13	19	11	8	13	14	20	8	5	6	4	5	19	13	13	6	27	32	32
22-May	16	15	14	15	15	22	21	18	19	21	17	16	15	16	16	16	14	13	12	11	11	15	16	17	22
23-May	17	14	8	7	7	7	5	5	13	15	14	12	10	9	13	9	8	12	31	5	6	25	15	10	31
24-May	11	12	10	10	10	11	11	10	10	14	21	12	20	38	54	7	69	15	14	15	15	14	15	14	69
25-May	15	15	13	12	15	18	69	56	15	7	6	7	6	7	4	5	6	6	11	15	20	10	9	32	69
26-May	29	11	17	25	20	15	11	12	8	7	5	5	5	7	6	5	4	5	7	8	11	7	5	5	29
27-May	9	11	10	20	9	7	7	7	9	10	10	11	12	12	11	12	10	9	8	7	7	6	6	41	41
28-May	77	25	20	6	9	10	11	18	14	20	25	38	28	17	17	17	17	19	17	17	20	20	23	13	77
29-May	14	15	15	17	14	15	17	21	22	26	14	50	8	5	9	8	63	25	23	25	22	30	18	73	73
30-May	35	20	22	20	22	15	24	21	33	83	34	7	4	6	11	14	14	13	43	20	37	36	29	45	83
31-May	90	40	18	23	27	49	26	9	37	19	19	27	37	35	62	50	54	39	45	23	48	18	30	13	90
Diurnal Maximum																									
UO - Unstable Operation																									



Wood Buffalo Environmental Association
Hourly Averages

Wind Direction (WD) - deg
Fort Chipewyan - May 2023





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS09 BARGE LANDING MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS09)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	708	35	36	99.87	59.8	0	7.8	0
TRS(ppb) Average	707	36	37	99.87	3.3	0	0.9	0
THC(ppm) Average	708	35	36	99.87	3.8	-	2.3	-
NMHC(ppm) Average	708	35	36	99.87	0.703	-	0.157	-
CH4(ppm) Average	708	35	36	99.87	3.3	-	2.2	-
NO2 (ppb) Average	707	37	37	100	42.4	0	14.5	-
NO (ppb) Average	707	37	37	100	36.6	-	4.9	-
NOX (ppb) Average	707	37	37	100	73	-	18.6	-
PM2.5(ug/m3) Average	742	2	2	100	491.1	99	314	15
Temperature (C) Average	744	0	0	100	33.2	-	23.4	-
Relative Humidity (%) Average	740	0	4	99.46	98.7	-	75.5	-
Barometric Pressure (inHg) Average	744	0	0	100	29.3	-	29.3	-
Wind Speed 20 m (km/h) Average	744	0	0	100	31	-	20	-
Wind Direction 20 m (deg) Average	744	0	0	100	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS09)

MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	708	1.72	4.9	-	0	0	0.1	0.3	1.1	4.1	59.8
TRS(ppb) Average	707	0.4	0.3	-	0.1	0.2	0.2	0.3	0.5	0.8	3.3
THC(ppm) Average	708	2.09	0.2	-	1.9	2	2	2	2.1	2.3	3.8
NMHC(ppm) Average	708	0.043	0.071	-	0	0	0	0	0.1	0.1	0.703
CH4(ppm) Average	708	2.04	0.1	-	1.9	1.9	2	2	2.1	2.2	3.3
NO2 (ppb) Average	707	7.88	7.5	-	0.3	1	2	5.3	11.8	18.8	42.4
NO (ppb) Average	707	1.58	4.2	-	0	0	0	0.2	1	3.8	36.6
NOX (ppb) Average	707	9.46	10.5	-	0.3	1	2.2	5.9	12.8	23.4	73
PM2.5(ug/m3) Average	742	43.82	66.3	-	2.1	6.1	11.4	21	40.1	108	491.1
Temperature (C) Average	744	17.13	6.6	-	1.4	9	11.7	16.5	22.2	26.4	33.2
Relative Humidity (%) Average	740	47.5	20.1	-	16	22.1	30.8	44.8	61.7	77.4	98.7
Barometric Pressure (inHg) Average	744	28.94	0.2	-	28.5	28.7	28.8	28.9	29.1	29.2	29.3
Wind Speed 20 m (km/h) Average	744	11.8	6	-	1	5	8	11	16	21	31
Wind Direction 20 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS09)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
SO2, TRS, THC/NMHC/CH4	23 May 2023 12:00	23 May 2023 12:00	1	Maintenance - sample manifold cleaned
Relative Humidity	25 May 2023 04:00	25 May 2023 07:00	4	Sensor operated out of range



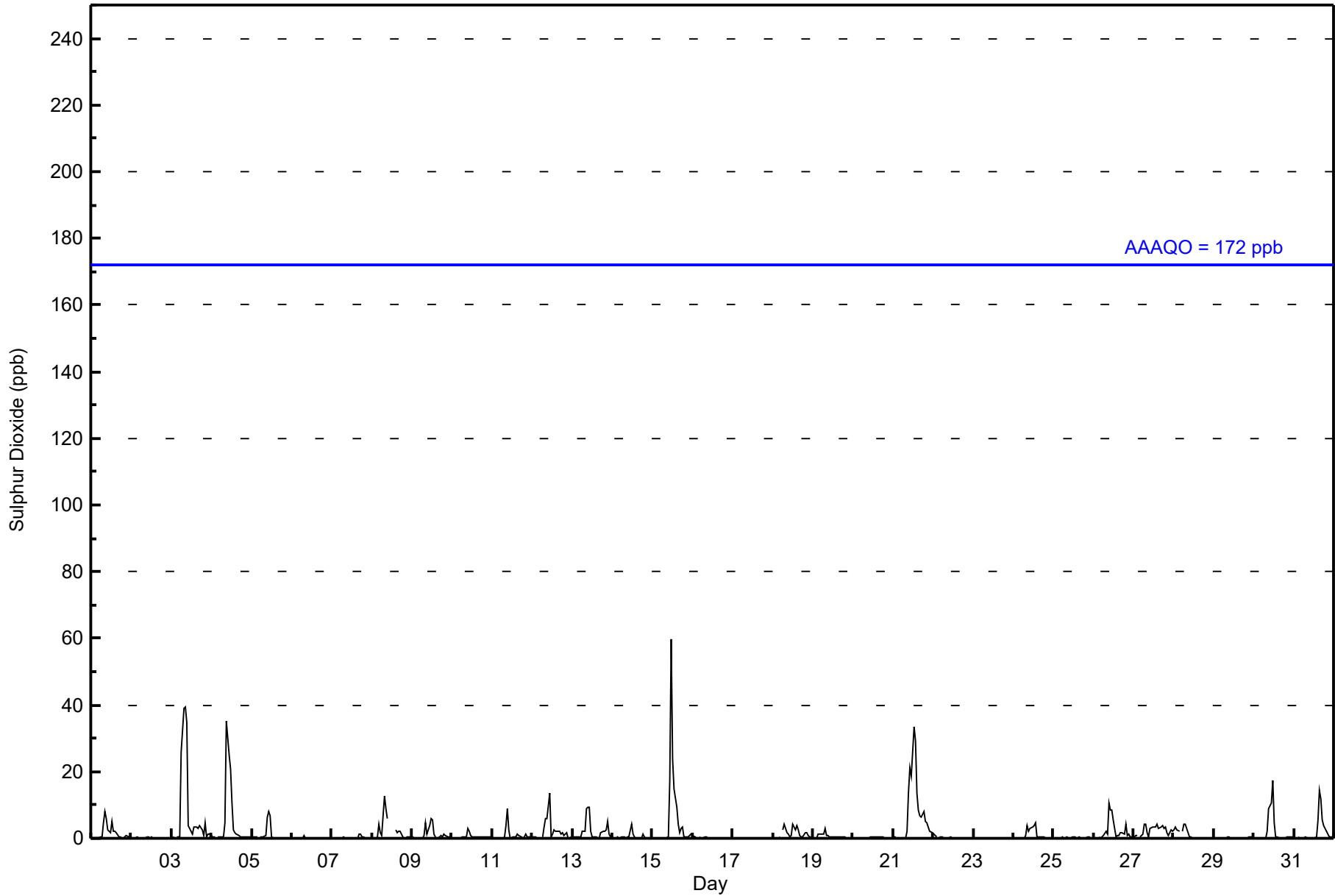
Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO₂) - ppb

Barge Landing - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service: 744														744						
Maximum Value: 59.8 ppb on May 15 12:00				Maximum Daily Average: 7.8 ppb on May 21		Hours of Data: 708														708						
Minimum Value: 0.0 ppb on May 5 21:00				Minimum Daily Average: 0.0 ppb on May 17		Hours of Missing Data: 36														36						
Maximum Diurnal Average: 5.5 ppb at hour 12				Minimum Diurnal Average: 0.3 ppb at hour 3		Hours of Calibration: 35														35						
Monthly Average: 1.72 ppb				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.3 Q ₃ = 1.1 P ₉₀ = 4.1 P ₉₉ = 25.6		Percent Operational Time: 99.9														99.9						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	Z	0.1	0.1	0.2	0.2	0.2	0.2	4.5	8.1	5.9	2.3	1.6	5.0	2.3	2.0	1.7	0.3	0.2	0.2	0.2	0.2	0.7	0.4	0.2	1.6	8.1
2-May	0.2	Z	0.2	0.3	0.1	0.1	0.2	0.1	0.1	0.3	0.3	0.2	0.4	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.4
3-May	0.2	0.3	Z	0.4	0.4	0.5	25.6	39.1	39.6	34.7	3.9	3.0	1.2	3.4	3.3	3.6	3.0	3.8	2.7	0.8	4.5	0.6	1.2	1.2	7.7	39.6
4-May	0.5	0.5	0.5	Z	0.4	0.5	0.5	0.5	4.6	35.0	25.1	20.8	10.7	2.7	1.7	1.1	0.7	0.6	0.4	0.5	0.5	0.6	0.6	0.5	4.8	35.0
5-May	0.5	0.5	0.4	0.4	Z	0.3	0.3	0.4	0.8	6.3	8.1	6.6	0.5	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1	8.1
6-May	0.1	0.0	0.0	0.0	0.0	Z	0.0	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.7
7-May	Z	0.0	0.0	0.1	0.1	0.1	0.1	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.2	0.6	0.6	0.1	0.0	0.0	0.0	0.2	1.5
8-May	0.0	Z	0.0	0.2	4.1	1.9	0.9	12.7	9.1	5.9	C	C	C	C	2.7	1.7	2.0	2.0	0.3	0.1	0.2	0.3	0.3	0.2	2.4	12.7
9-May	0.2	0.1	Z	0.1	0.1	0.2	0.2	0.8	4.7	1.4	3.8	5.9	5.5	1.4	0.4	0.2	0.6	0.7	0.5	1.1	1.0	0.4	0.2	0.2	1.3	5.9
10-May	0.2	0.2	0.2	Z	0.2	0.2	0.4	0.4	0.3	2.9	1.9	0.9	0.5	0.4	0.3	0.3	0.2	0.2	0.3	0.3	0.2	0.3	0.2	0.3	0.5	2.9
11-May	0.3	0.2	0.1	0.1	Z	0.2	0.2	0.2	3.7	8.9	2.7	0.2	0.3	0.5	0.5	1.2	0.7	0.3	0.2	0.2	1.1	0.6	0.3	0.4	1.0	8.9
12-May	0.4	0.3	0.3	0.1	0.2	Z	0.4	3.5	5.8	5.7	13.5	0.5	1.2	2.7	2.0	2.0	2.3	1.2	1.8	0.9	1.6	0.2	0.2	0.2	2.0	13.5
13-May	Z	0.4	0.4	0.3	0.3	0.6	2.2	2.3	8.8	9.3	9.5	2.0	0.4	0.5	0.3	0.1	0.2	1.6	2.2	2.0	2.4	5.0	1.1	0.5	2.3	9.5
14-May	0.4	Z	0.2	0.3	0.1	0.4	0.3	0.4	0.2	0.3	0.5	4.1	1.1	0.5	0.0	0.1	0.0	0.1	1.1	0.4	0.2	0.1	0.1	0.1	0.5	4.1
15-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.3	17.2	59.8	23.6	14.8	9.2	4.1	1.7	3.0	3.5	0.4	0.4	0.5	0.7	1.1	6.1	59.8
16-May	0.8	0.3	0.1	Z	0.5	0.2	0.1	0.3	0.4	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8
17-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18-May	0.0	0.0	0.0	0.1	0.3	Z	2.5	4.4	1.8	1.3	0.4	0.8	4.2	2.6	4.0	2.4	1.0	0.3	0.3	1.6	1.5	0.9	0.3	0.4	1.4	4.4
19-May	Z	0.1	0.0	1.3	1.2	1.3	1.2	3.0	0.9	0.8	0.4	0.6	0.6	0.6	0.5	0.6	0.6	0.4	0.4	0.3	0.1	0.0	0.0	0.0	0.6	3.0
20-May	0.1	Z	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.3
21-May	0.3	0.2	Z	0.1	0.1	0.1	0.2	0.1	2.1	13.4	21.3	18.7	33.4	29.2	13.5	8.5	7.0	6.5	8.1	5.2	4.5	3.3	2.2	1.7	7.8	33.4
22-May	1.2	0.7	0.5	Z	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	1.2
23-May	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.1	M	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1
24-May	Z	0.1	0.1	0.0	0.1	0.1	0.1	0.8	3.7	2.2	2.8	3.5	4.0	4.8	0.6	0.4	0.3	0.2	0.3	0.2	0.2	0.2	0.1	0.2	1.1	4.8
25-May	0.2	Z	0.2	0.1	0.2	0.2	0.1	0.0	0.2	0.1	0.2	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
26-May	0.2	0.2	Z	0.3	0.2	0.2	0.8	2.0	1.5	10.4	8.5	8.6	5.5	0.6	1.0	0.9	1.8	1.5	1.2	4.2	1.1	1.3	0.5	0.4	2.3	10.4
27-May	0.4	0.8	0.8	Z	0.5	1.4	4.2	4.3	1.9	0.4	2.8	3.5	3.3	3.5	4.2	3.0	3.3	4.0	2.9	3.3	1.8	0.9	2.6	2.0	2.4	4.3
28-May	2.6	3.3	2.4	2.2	Z	2.1	4.4	4.1	1.7	0.4	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	4.4
29-May	0.1	0.0	0.0	0.1	0.0	Z	0.1	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.1	0.3
30-May	Z	0.2	0.0	0.1	0.1	0.1	0.1	0.1	2.3	9.0	10.6	17.6	4.8	0.4	0.3	0.1	0.1	0.0	0.1	0.1	0.3	0.3	0.3	0.3	2.1	17.6
31-May	0.2	Z	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	5.4	14.2	11.8	5.3	3.9	2.2	1.1	0.3	0.3	0.3	2.0	14.2
																								Diurnal Average		
																								Diurnal Maximum		
0.4 0.3 0.3 0.3 0.4 0.4 1.5 2.8 3.3 5.0 4.6 5.5 3.6 2.4 1.7 1.5 1.3 1.1 1.0 0.8 0.8 0.6 0.4 0.4																										
2.6 3.3 2.4 2.2 4.1 2.1 25.6 39.1 39.6 35.0 25.1 59.8 33.4 29.2 13.5 14.2 11.8 6.5 8.1 5.2 4.5 5.0 2.6 2.0																										
Z - zerospan C - Calibration M - Maintenance																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Barge Landing - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	684	96.61	96.61
11 - 20	12	1.69	98.31
21 - 60	12	1.69	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Barge Landing - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	29	60	22	19	9	23	111	101	104	42	29	37	16	14	35	33	684
11 - 20	0	0	0	0	0	0	0	1	4	2	1	3	0	0	1	0	12
21 - 60	0	0	0	0	0	0	0	4	3	1	0	3	0	1	0	0	12
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	29	60	22	19	9	23	111	106	111	45	30	43	16	15	36	33	708

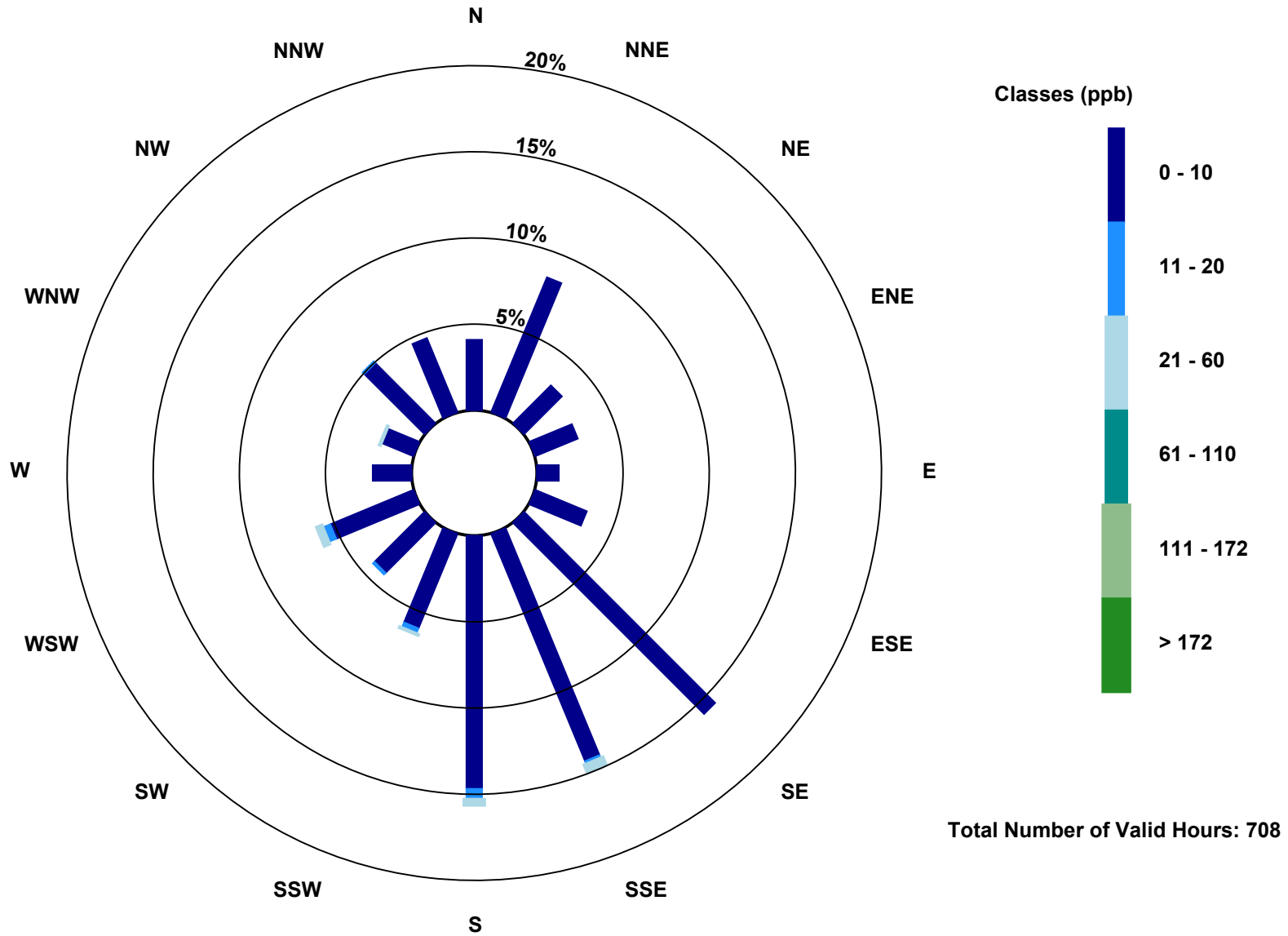
Total Number of Valid Hours: 708

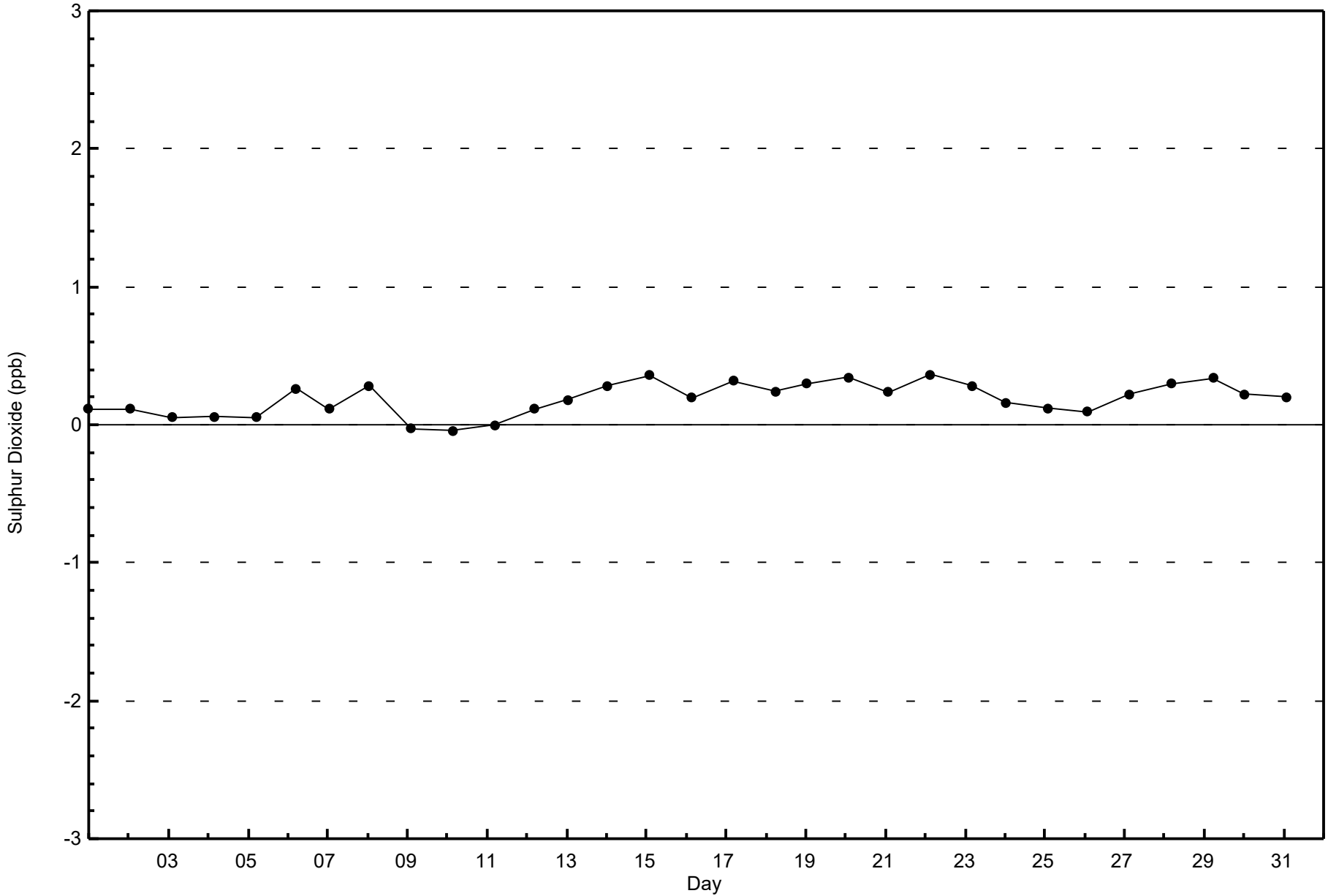
Total Number of Hours: 744

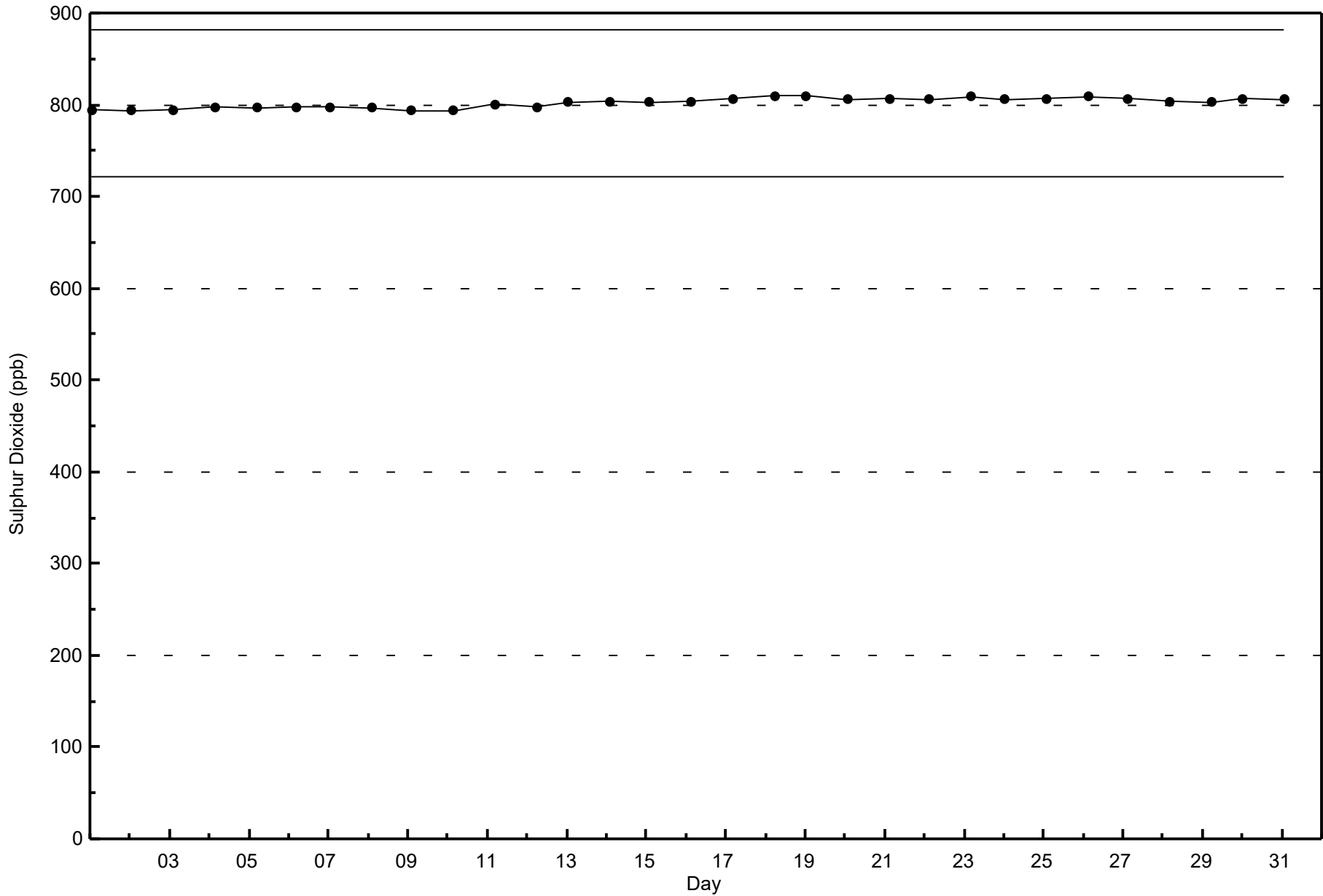


Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Barge Landing

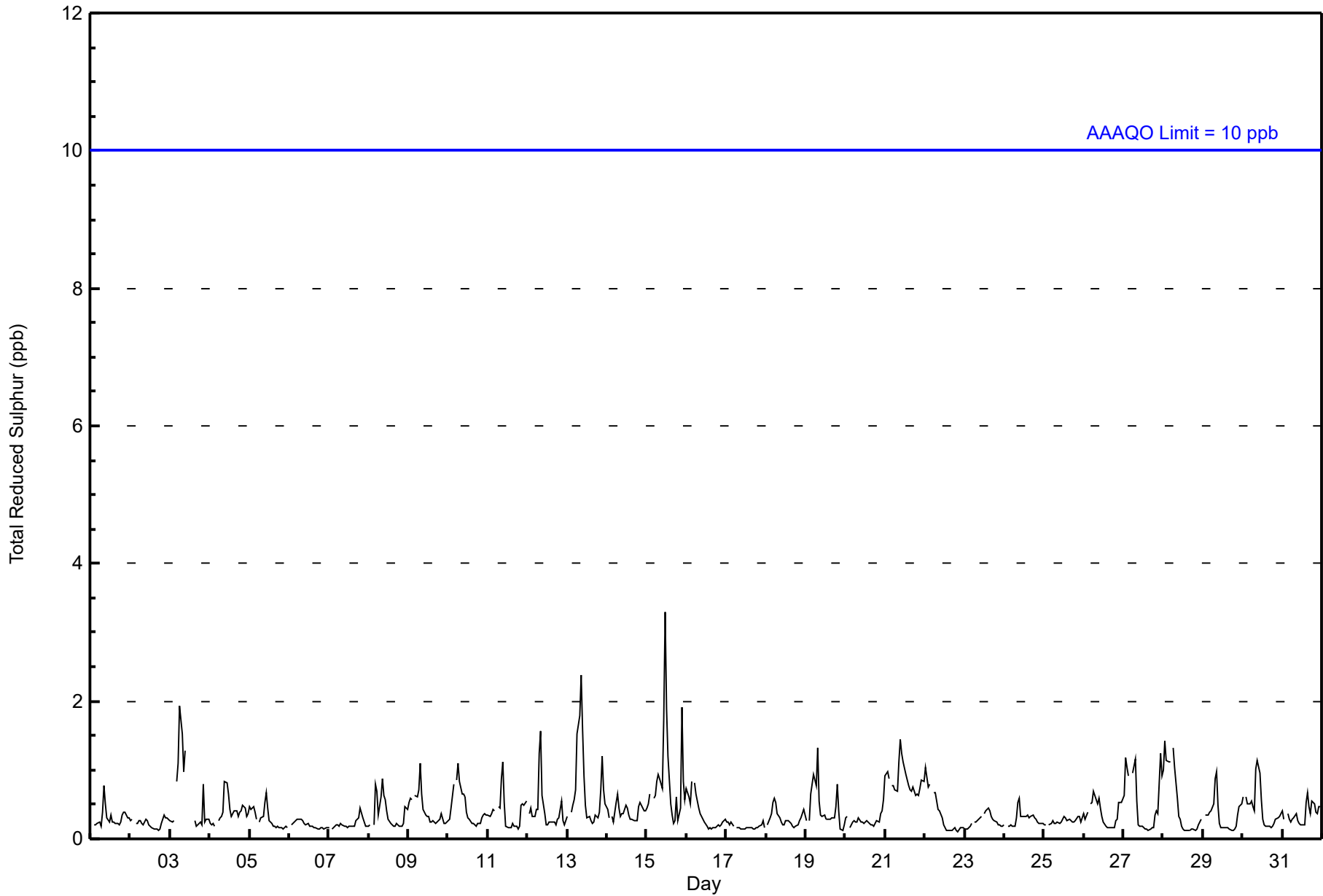








Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744																										
Maximum Value: 3.3 ppb on May 15 12:00		Maximum Daily Average: 0.9 ppb on May 15																	Hours of Data:	707																												
Minimum Value: 0.1 ppb on May 22 21:00		Minimum Daily Average: 0.2 ppb on May 17																	Hours of Missing Data:	37																												
Maximum Diurnal Average: 0.6 ppb at hour 9		Minimum Diurnal Average: 0.2 ppb at hour 18																	Hours of Calibration:	36																												
Monthly Average: 0.40 ppb		Percentiles: P ₁ = 0.1 P ₁₀ = 0.2 Q ₁ = 0.2 Median = 0.3 Q ₃ = 0.5 P ₉₀ = 0.8 P ₉₉ = 1.6																	Percent Operational Time:	99.9																												
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.4	0.8	0.5	0.3	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.3	0.3	0.3	0.2	0.3																					
2-May	0.3	0.3	Z	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2																					
3-May	0.3	0.2	0.3	Z	0.8	1.1	1.9	1.5	1.0	1.3	C	C	C	C	C	0.3	0.2	0.2	0.3	0.2	0.8	0.2	0.3	0.3	0.6	1.9																						
4-May	0.2	0.2	0.2	0.2	Z	0.3	0.3	0.3	0.4	0.8	0.8	0.7	0.4	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.5	0.4	0.3	0.4	0.4	0.8																						
5-May	0.5	0.4	0.5	0.4	0.3	Z	0.3	0.3	0.3	0.5	0.7	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.7																						
6-May	Z	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.3																						
7-May	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.4																						
8-May	0.2	0.2	Z	0.2	0.8	0.7	0.3	0.6	0.9	0.6	0.6	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.4	0.4	0.9																						
9-May	0.5	0.6	0.6	Z	0.6	0.6	0.7	1.1	0.6	0.4	0.3	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.4	0.2	0.2	0.2	0.4	1.1																						
10-May	0.3	0.3	0.4	0.8	Z	0.8	1.1	0.8	0.7	0.6	0.6	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.3	0.4	1.1																						
11-May	0.3	0.3	0.4	0.4	0.4	Z	0.5	0.5	0.9	1.1	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.6	0.4	1.1																						
12-May	Z	0.4	0.4	0.3	0.3	0.4	0.4	1.2	1.6	0.6	0.4	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.6	0.3	0.2	0.3	0.4	1.6																						
13-May	0.3	Z	0.4	0.5	0.6	0.7	1.5	1.8	2.4	1.6	0.9	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.4	0.7	1.2	0.7	0.5	0.7	2.4																						
14-May	0.4	0.3	Z	0.3	0.2	0.5	0.6	0.4	0.3	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.4	0.4	0.4	0.6																						
15-May	0.4	0.5	0.7	Z	0.6	0.6	0.8	0.9	0.9	0.7	1.7	3.3	1.9	1.2	0.5	0.3	0.2	0.3	0.6	0.3	0.5	1.9	0.8	0.6	0.9	3.3																						
16-May	0.7	0.6	0.5	0.8	Z	0.8	0.7	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.8																						
17-May	0.2	0.2	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3																						
18-May	Z	0.2	0.3	0.4	0.5	0.6	0.5	0.4	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.3	0.6																						
19-May	0.3	Z	0.3	0.6	0.8	0.9	0.8	1.3	0.6	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.8	0.4	0.1	0.1	0.2	1.3																						
20-May	0.3	0.3	Z	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.6	0.3	0.6																						
21-May	0.9	1.0	0.9	Z	0.8	0.8	0.7	0.7	1.1	1.5	1.2	1.1	0.9	0.9	0.8	0.7	0.7	0.7	0.6	0.7	0.6	0.7	0.8	0.8	0.9	1.5																						
22-May	1.0	0.9	0.8	0.8	Z	0.7	0.7	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.4	1.0																						
23-May	0.1	0.1	0.1	0.2	0.2	Z	0.2	0.3	0.3	0.3	0.3	M	0.4	0.4	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.5																						
24-May	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.6																						
25-May	0.2	0.2	Z	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.3																						
26-May	0.4	0.3	0.4	Z	0.5	0.5	0.7	0.6	0.5	0.6	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.5	0.5	0.5	0.4	0.7																						
27-May	0.6	1.2	1.0	0.9	Z	1.0	1.1	1.2	0.6	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.4	0.4	0.4	1.2	0.9	0.5	1.2																						
28-May	1.0	1.4	1.1	1.1	1.1	Z	1.3	1.0	0.6	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.5	1.4																						
29-May	Z	0.3	0.3	0.4	0.4	0.4	0.5	0.9	1.0	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.4	0.5	0.5	0.3	1.0																						
30-May	0.6	Z	0.6	0.5	0.5	0.5	0.5	0.4	1.0	1.1	1.0	0.6	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	1.1																						
31-May	0.4	0.3	Z	0.4	0.3	0.2	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.5	0.7	0.5	0.4	0.6	0.5	0.4	0.4	0.5	0.5	0.4	0.7																						
																								0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	Diurnal Average
																								1.0	1.4	1.1	1.1	1.1	1.1	1.9	1.8	2.4	1.6	1.7	3.3	1.9	1.2	0.8	0.7	0.7	0.7	0.6	0.8	0.8	1.9	1.2	0.9	Diurnal Maximum
Z - zerospan C - Calibration M - Maintenance																																																
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb																																																





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Barge Landing - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	706	99.86	99.86
3 - 4	1	0.14	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Barge Landing - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	29	62	21	20	9	23	110	105	111	46	31	42	18	12	32	35	706
3 - 4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	29	62	21	20	9	23	110	105	111	46	31	43	18	12	32	35	707

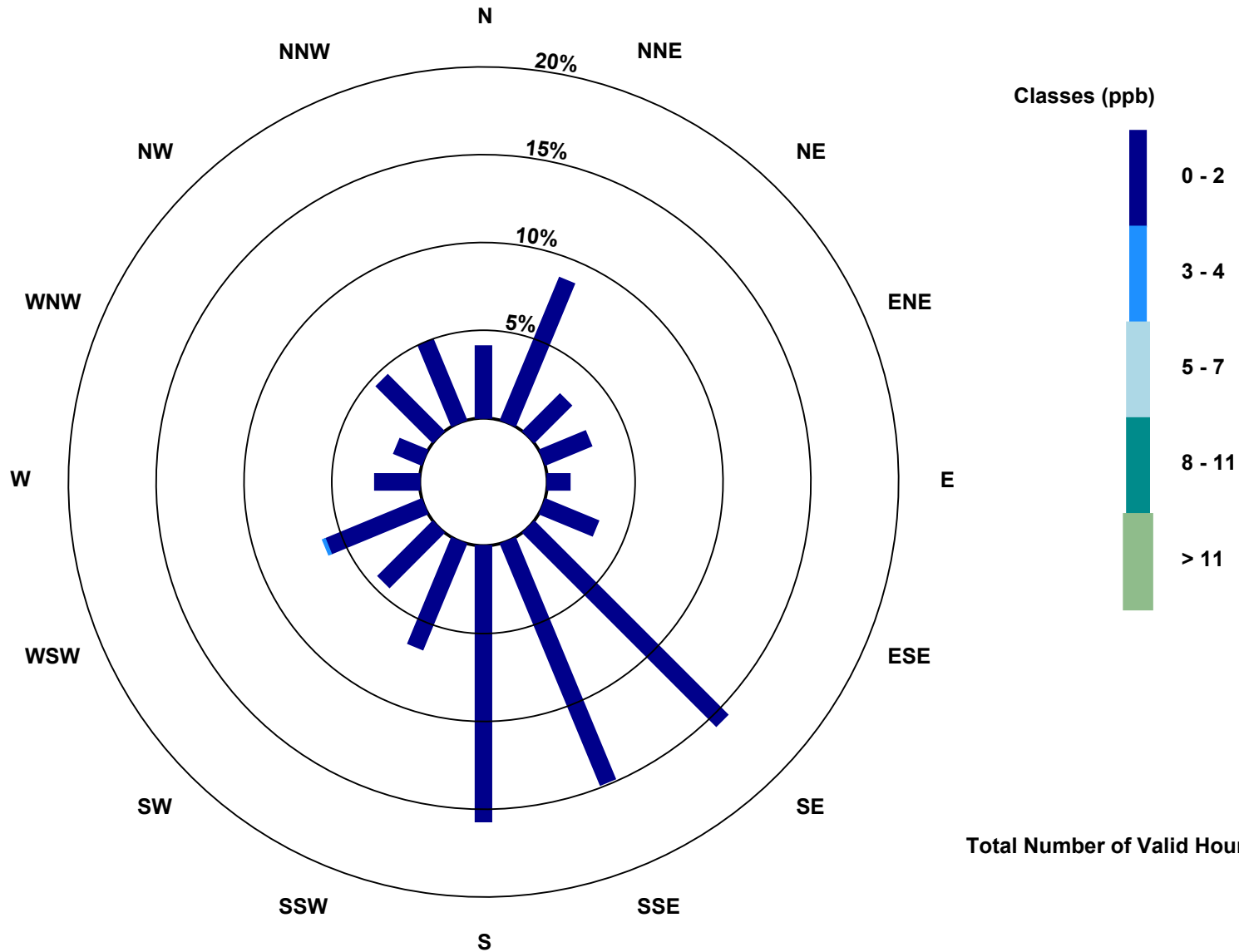
Total Number of Valid Hours: 707

Total Number of Hours: 744

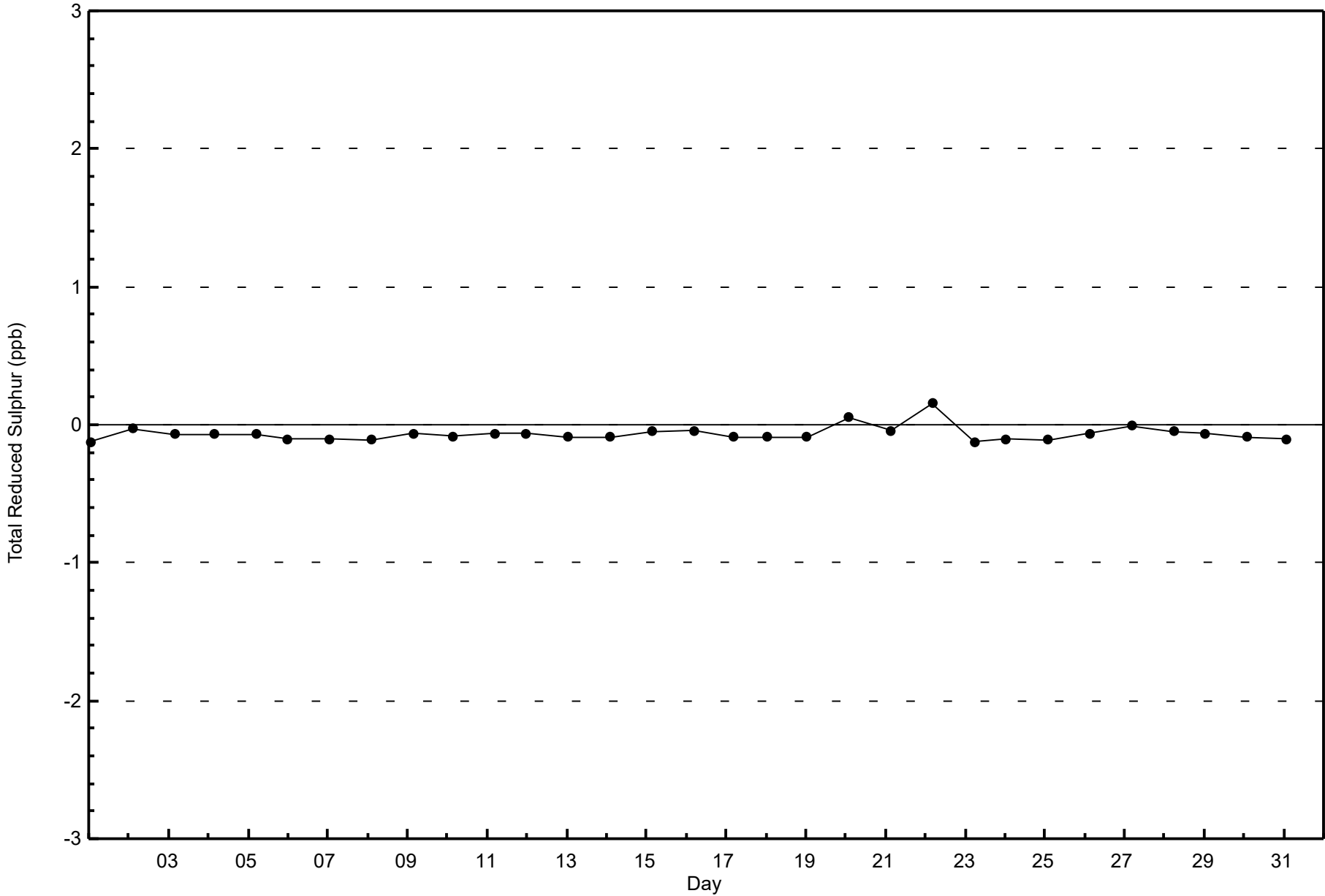


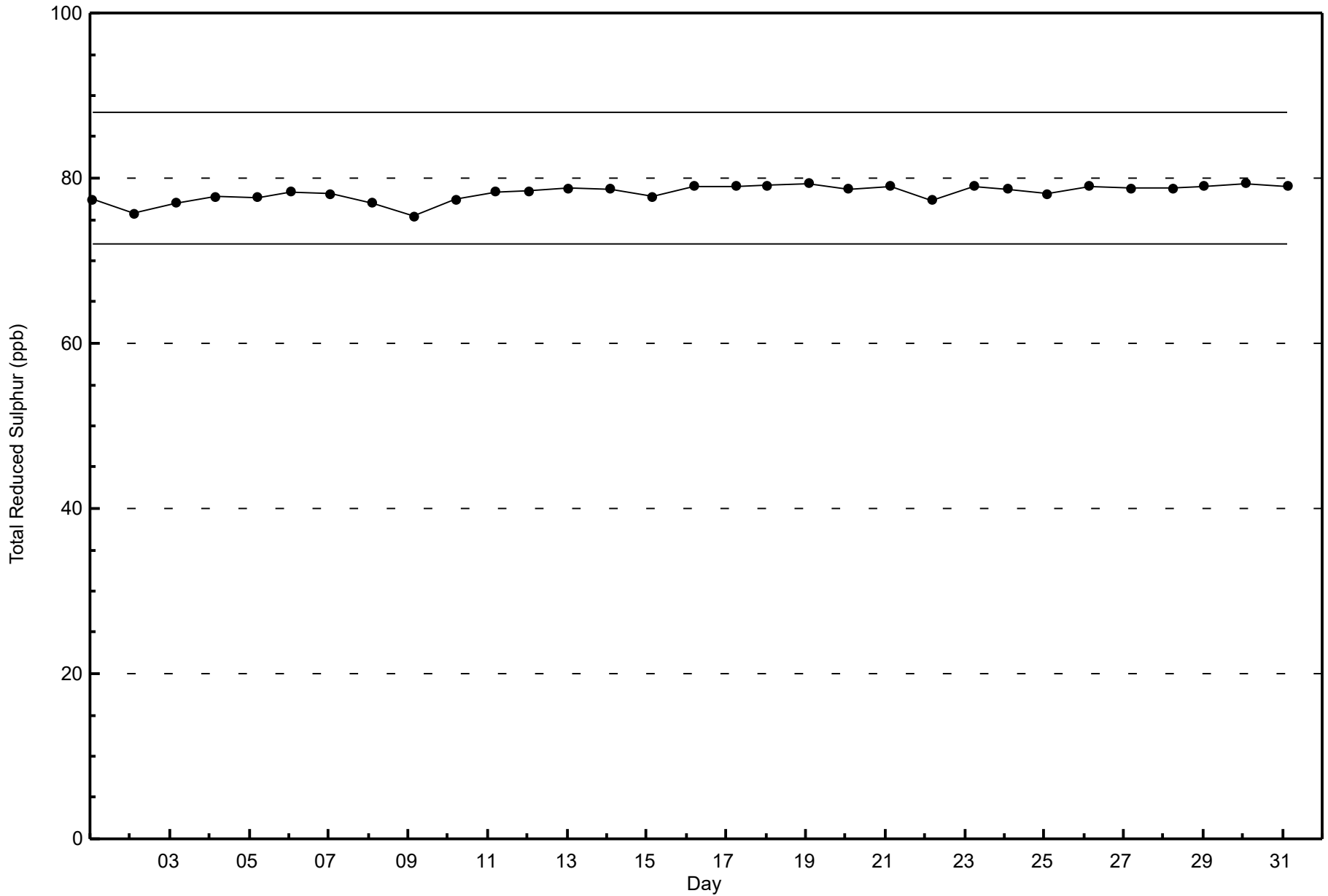
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Reduced Sulphur (TRS) - ppb
Barge Landing



Total Number of Valid Hours: 707







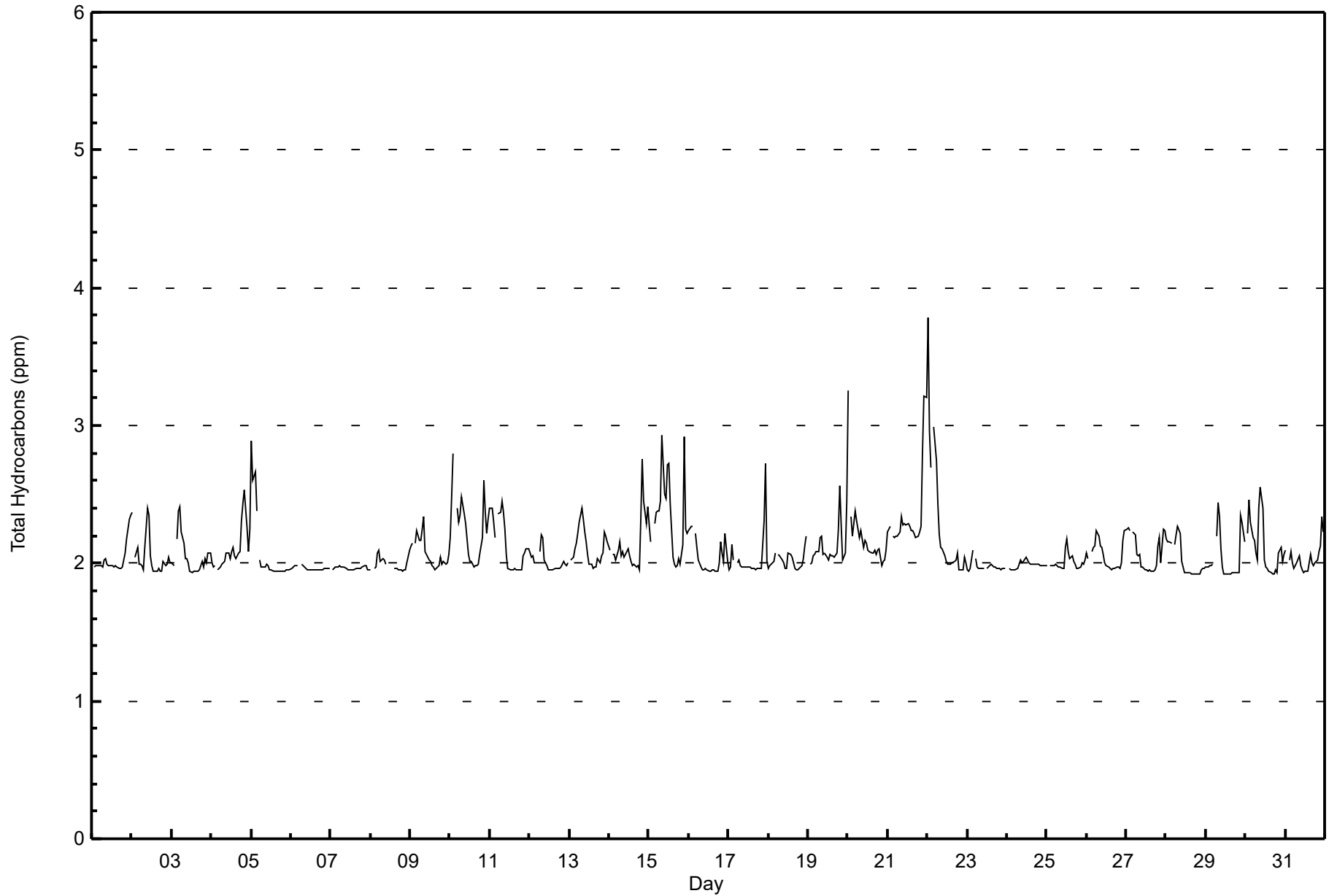
Maximum Value: 3.8 ppm on May 22 01:00		Maximum Daily Average: 2.3 ppm on May 21		Hours in Service: 744																						
Minimum Value: 1.9 ppm on May 28 19:00		Minimum Daily Average: 2.0 ppm on May 6		Hours of Data: 708																						
Maximum Diurnal Average: 2.3 ppm at hour 1		Minimum Diurnal Average: 2.0 ppm at hour 17		Hours of Missing Data: 36																						
Monthly Average: 2.09 ppm		Percentiles: P ₁ = 1.9 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.3 P ₉₉ = 2.9		Hours of Calibration: 35																						
				Percent Operational Time: 99.9																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.4	2.0	2.4	
2-May	2.4	Z	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.4	2.3	2.1	2.0	1.9	1.9	1.9	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.4
3-May	2.0	2.0	Z	2.2	2.4	2.4	2.2	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.4	
4-May	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.1	2.1	2.3	2.4	2.5	2.3	2.1	2.2	2.5	
5-May	2.9	2.6	2.7	2.4	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.1	2.9	
6-May	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
7-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	
8-May	2.0	Z	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	C	C	C	C	2.0	2.0	2.0	2.0	2.0	1.9	2.0	1.9	2.0	2.1	2.1	
9-May	2.1	2.1	Z	2.1	2.2	2.2	2.2	2.2	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3	
10-May	2.2	2.5	2.8	Z	2.4	2.3	2.4	2.5	2.4	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.6	2.4	2.2	2.3	2.8	
11-May	2.4	2.4	2.3	2.2	Z	2.4	2.4	2.5	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.5	
12-May	2.1	2.0	2.1	2.0	2.0	Z	2.1	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	
13-May	Z	2.0	2.0	2.1	2.1	2.2	2.3	2.4	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.1	2.4	
14-May	2.1	Z	2.1	2.1	2.0	2.1	2.2	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.8	2.4	2.3	2.4	2.8	
15-May	2.3	2.2	Z	2.3	2.4	2.4	2.4	2.5	2.9	2.5	2.5	2.7	2.7	2.4	2.0	2.0	2.0	2.0	2.0	2.1	2.9	2.2	2.2	2.3	2.9	
16-May	2.2	2.3	2.3	Z	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	1.9	1.9	2.0	2.2	2.1	2.0	2.2	2.0	2.3	
17-May	2.0	2.0	2.1	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.7	2.0	2.0	2.7	
18-May	2.0	2.0	2.0	2.0	2.1	Z	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.0	2.2	
19-May	Z	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.2	2.6	2.3	2.0	2.1	2.4	2.6	
20-May	3.3	Z	2.3	2.2	2.4	2.3	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	3.3	
21-May	2.2	2.3	Z	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.8	3.2	3.2	3.2	
22-May	3.8	3.0	2.7	Z	3.0	2.7	2.4	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	1.9	1.9	2.0	2.0	2.0	3.8	
23-May	2.0	1.9	2.0	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	
24-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
25-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	
26-May	2.1	2.0	Z	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.1	2.2	
27-May	2.2	2.3	2.2	Z	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.2	2.0	2.2	2.1	2.3	
28-May	2.2	2.2	2.2	2.2	Z	2.1	2.2	2.3	2.2	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.3	
29-May	2.0	2.0	2.0	2.0	2.0	Z	2.2	2.4	2.3	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.3	2.3	2.2	2.4	
30-May	Z	2.2	2.5	2.3	2.2	2.2	2.1	2.0	2.4	2.6	2.4	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	1.9	2.1	2.1	2.0	2.1	2.6	
31-May	2.1	Z	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.0	1.9	1.9	1.9	2.0	2.1	2.0	2.0	2.0	2.1	2.1	2.3	2.2	2.0	2.3	
																								Diurnal Average		
																								Diurnal Maximum		
																								Diurnal Average		
																								Diurnal Maximum		
																								Diurnal Average		
																								Diurnal Maximum		

Z - zerospan C - Calibration M - Maintenance



Wood Buffalo Environmental Association
Hourly Averages

Total Hydrocarbons (THC) - ppm
Barge Landing - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Barge Landing - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	430	60.73	60.73
2.1 - 3.0	274	38.70	99.44
3.1 - 10.0	4	0.56	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Barge Landing - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	5	27	9	13	6	20	90	62	58	33	18	31	15	11	22	10	430
2.1 - 3.0	21	32	13	6	3	3	21	44	53	12	12	12	1	4	14	23	274
3.1 - 10.0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	29	60	22	19	9	23	111	106	111	45	30	43	16	15	36	33	708

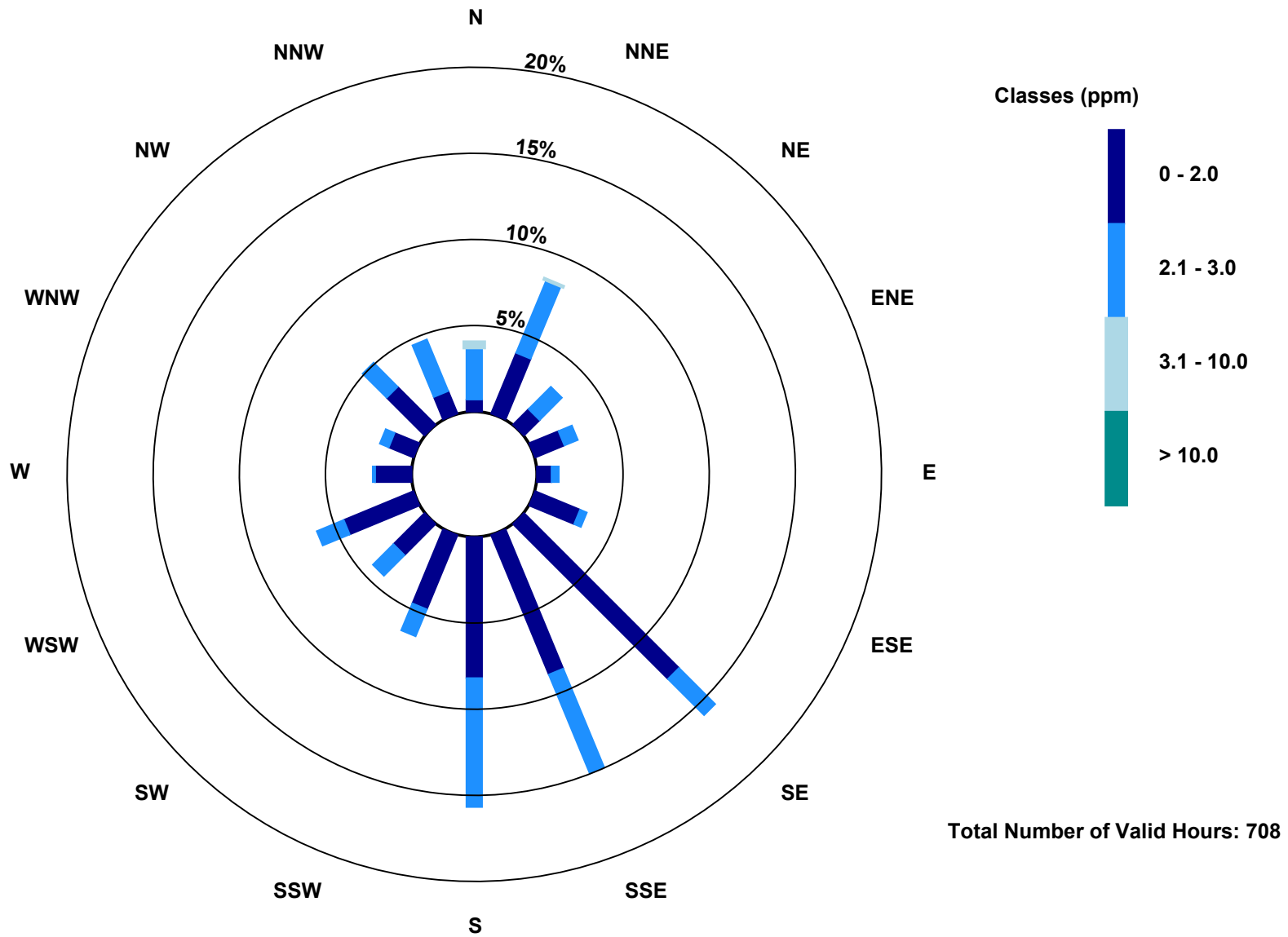
Total Number of Valid Hours: 708

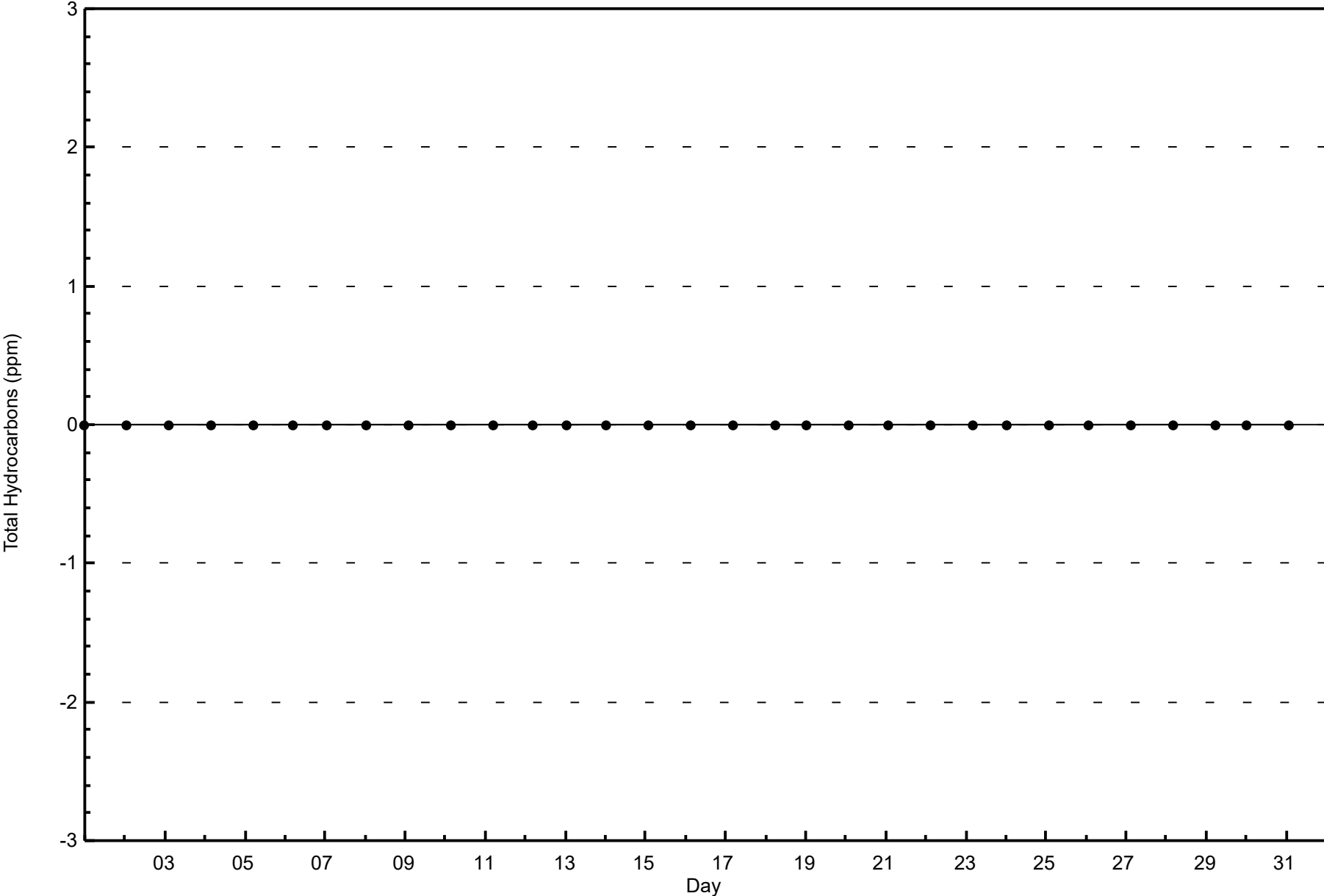
Total Number of Hours: 744

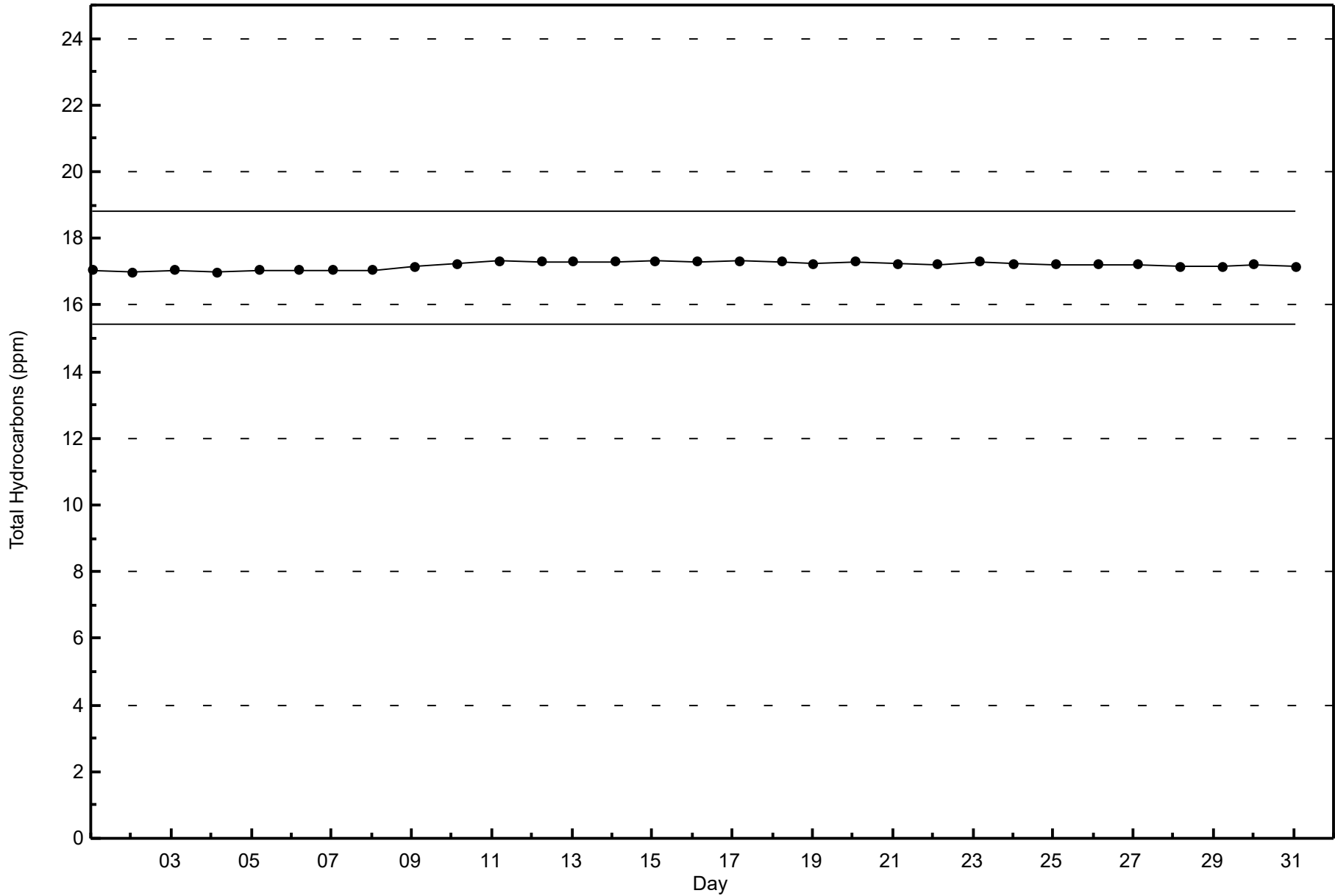


Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Barge Landing





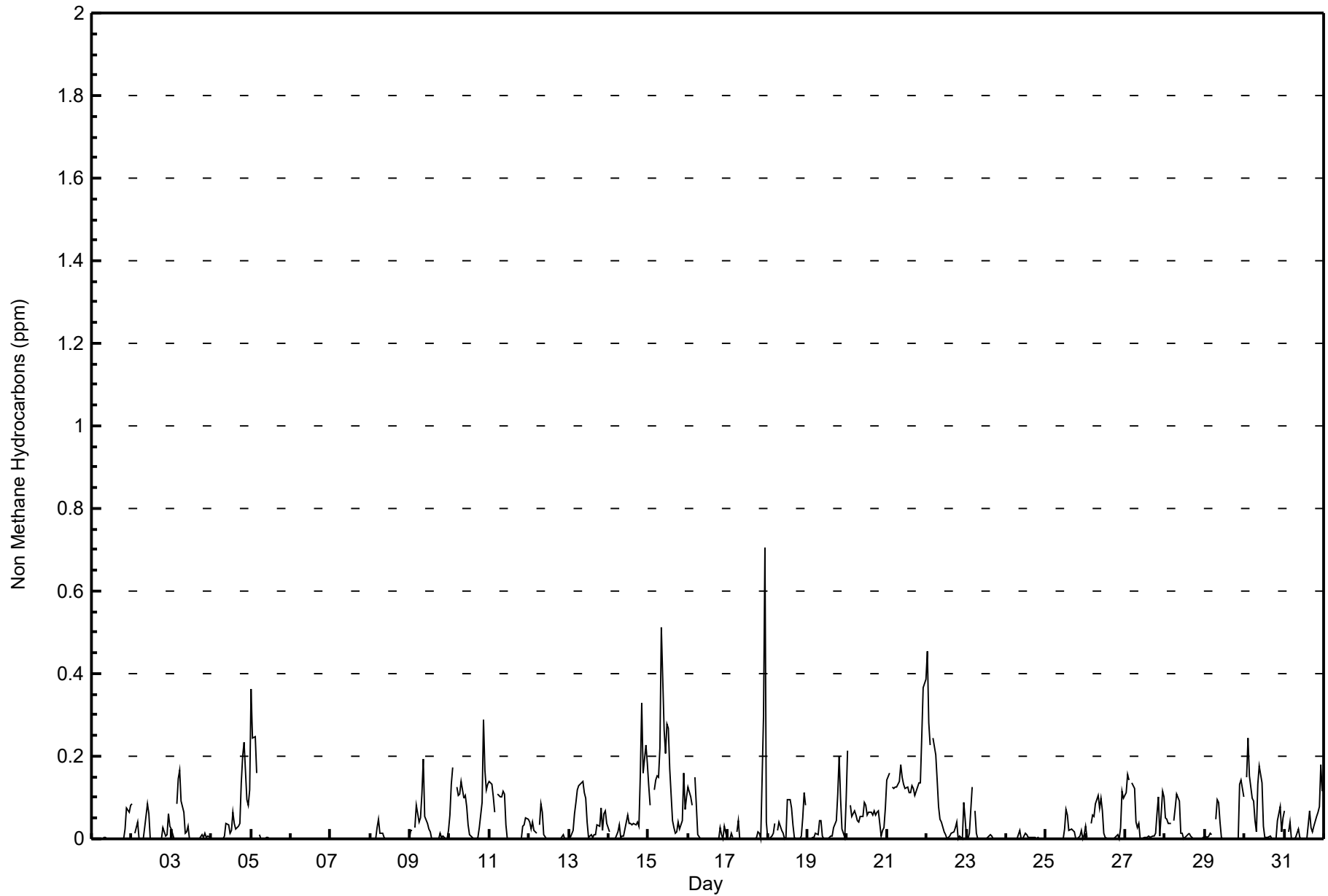




Summary of Hour Averages

Barge Landing - May 2023

Maximum Value: 0.703 ppm on May 17 23:00																								Maximum Daily Average: 0.157 ppm on May 21																								Hours in Service: 744	
Minimum Value: 0.000 ppm on May 1 02:00																								Minimum Daily Average: 0.000 ppm on May 6																								Hours of Data: 708	
Maximum Diurnal Average: 0.085 ppm at hour 23																								Minimum Diurnal Average: 0.012 ppm at hour 17																								Hours of Missing Data: 36	
Monthly Average: 0.043 ppm																								Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.1 P ₉₀ = 0.1 P ₉₉ = 0.3																								Hours of Calibration: 35	
																								Percent Operational Time: 99.9																									
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.023	0.074	0.065	0.083	0.011	0.083																							
2-May	0.085	Z	0.012	0.042	0.002	0.000	0.000	0.000	0.026	0.084	0.060	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.028	0.008	0.011	0.062	0.030	0.020	0.085																							
3-May	0.023	0.001	Z	0.085	0.145	0.168	0.090	0.064	0.015	0.016	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.002	0.014	0.003	0.007	0.003	0.030	0.168																							
4-May	0.001	0.000	0.000	Z	0.000	0.000	0.000	0.001	0.007	0.038	0.034	0.015	0.020	0.065	0.036	0.025	0.030	0.038	0.135	0.199	0.235	0.097	0.081	0.119	0.051	0.235																							
5-May	0.362	0.244	0.246	0.161	Z	0.009	0.000	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.045	0.362																							
6-May	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																							
7-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																							
8-May	0.000	Z	0.000	0.000	0.027	0.047	0.013	0.014	0.005	0.000	C	C	C	C	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.006	0.047																							
9-May	0.019	0.020	Z	0.028	0.080	0.042	0.052	0.107	0.192	0.054	0.039	0.024	0.015	0.000	0.000	0.000	0.000	0.000	0.014	0.004	0.006	0.000	0.000	0.021	0.031	0.192																							
10-May	0.056	0.133	0.174	Z	0.126	0.106	0.110	0.138	0.099	0.103	0.076	0.034	0.009	0.006	0.000	0.000	0.001	0.004	0.026	0.087	0.289	0.165	0.118	0.131	0.087	0.289																							
11-May	0.139	0.132	0.102	0.064	Z	0.107	0.102	0.102	0.115	0.107	0.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.032	0.034	0.050	0.048	0.051	0.139																								
12-May	0.039	0.024	0.042	0.020	0.012	Z	0.035	0.083	0.064	0.011	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.015	0.083																								
13-May	Z	0.005	0.020	0.060	0.087	0.118	0.131	0.135	0.141	0.113	0.098	0.042	0.004	0.009	0.003	0.010	0.011	0.035	0.032	0.075	0.021	0.061	0.068	0.039	0.057	0.141																							
14-May	0.017	Z	0.000	0.001	0.000	0.017	0.033	0.003	0.006	0.007	0.024	0.057	0.036	0.035	0.037	0.035	0.039	0.031	0.155	0.328	0.161	0.226	0.183	0.064	0.328																								
15-May	0.129	0.082	Z	0.119	0.143	0.151	0.148	0.222	0.510	0.266	0.208	0.278	0.269	0.168	0.044	0.026	0.014	0.017	0.042	0.024	0.045	0.159	0.072	0.102	0.141	0.510																							
16-May	0.126	0.103	0.083	Z	0.148	0.082	0.009	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.028	0.012	0.001	0.031	0.001	0.027	0.148																							
17-May	0.000	0.000	0.015	0.003	Z	0.018	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.016	0.015	0.000	0.298	0.703	0.039	0.050	0.703																							
18-May	0.000	0.000	0.006	0.015	0.038	Z	0.022	0.042	0.021	0.013	0.000	0.003	0.094	0.094	0.074	0.034	0.004	0.001	0.000	0.000	0.008	0.050	0.112	0.082	0.031	0.112																							
19-May	Z	0.000	0.000	0.005	0.003	0.013	0.011	0.045	0.044	0.006	0.000	0.000	0.000	0.002	0.006	0.005	0.027	0.046	0.108	0.199	0.100	0.022	0.004	0.095	0.032	0.199																							
20-May	0.212	Z	0.082	0.055	0.067	0.058	0.045	0.039	0.054	0.053	0.087	0.081	0.059	0.065	0.063	0.056	0.068	0.057	0.065	0.068	0.007	0.019	0.026	0.075	0.063	0.212																							
21-May	0.143	0.158	Z	0.126	0.121	0.127	0.125	0.138	0.180	0.151	0.133	0.123	0.124	0.111	0.113	0.129	0.121	0.105	0.125	0.134	0.137	0.247	0.364	0.385	0.157	0.385																							
22-May	0.455	0.280	0.226	Z	0.245	0.204	0.141	0.078	0.048	0.042	0.018	0.011	0.000	0.003	0.006	0.014	0.018	0.027	0.041	0.001	0.005	0.000	0.088	0.046	0.087	0.455																							
23-May	0.000	0.000	0.013	0.126	Z	0.067	0.013	0.000	0.000	0.000	0.001	M	0.001	0.003	0.011	0.007	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.126																							
24-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.022	0.000	0.000	0.015	0.009	0.005	0.003	0.004	0.002	0.002	0.002	0.004	0.002	0.000	0.001	0.000	0.003	0.022																							
25-May	0.001	Z	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.024	0.070	0.056	0.019	0.025	0.019	0.019	0.000	0.000	0.007	0.021	0.001	0.010	0.012	0.070																							
26-May	0.031	0.004	Z	0.036	0.057	0.055	0.086	0.104	0.076	0.097	0.067	0.013	0.003	0.001	0.000	0.000	0.001	0.000	0.006	0.012	0.002	0.028	0.116	0.099	0.039	0.116																							
27-May	0.112	0.156	0.143	Z	0.136	0.123	0.041	0.028	0.038	0.000	0.001	0.002	0.004	0.003	0.007	0.005	0.006	0.007	0.015	0.061	0.101	0.006	0.116	0.103	0.053	0.156																							
28-May	0.052	0.046	0.036	0.037	Z	0.045	0.076	0.107	0.092	0.014	0.014	0.001	0.005	0.008	0.012	0.005	0.004	0.001	0.000	0.000	0.000	0.001	0.000	0.003	0.024	0.107																							
29-May	0.005	0.003	0.007	0.012	0.011	Z	0.049	0.096	0.089	0.039	0.002	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.131	0.142	0.101	0.030	0.142																							
30-May	Z	0.149	0.244	0.152	0.099	0.090	0.043	0.019	0.134	0.176	0.136	0.032	0.005	0.002	0.004	0.006	0.000	0.000	0.002	0.000	0.044	0.079	0.017	0.052	0.064	0.244																							
31-May	0.068	Z	0.017	0.042	0.001	0.000	0.001	0.002	0.025	0.003	0.000	0.000	0.000	0.002	0.033	0.069	0.026	0.017	0.030	0.054	0.065	0.078	0.181	0.115	0.036	0.181																							
																								0.083	0.062	0.057	0.046	0.060	0.061	0.046	0.051	0.065	0.045	0.036	0.026	0.024	0.021	0.015	0.015	0.012	0.014	0.023	0.037	0.048	0.056	0.085	0.063	Diurnal Average	
																								0.455	0.280	0.246	0.161	0.245	0.204	0.148	0.222	0.510	0.266	0.208	0.278	0.269	0.168	0.113	0.129	0.121	0.105	0.135	0.199	0.328	0.298	0.703	0.385	Diurnal Maximum	
Z - zerospan																								C - Calibration				M - Maintenance																					





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Barge Landing - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	325	45.90	45.90
0.006 - 0.05	191	26.98	72.88
0.06 - 0.1	147	20.76	93.64
> 0.1	45	6.36	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



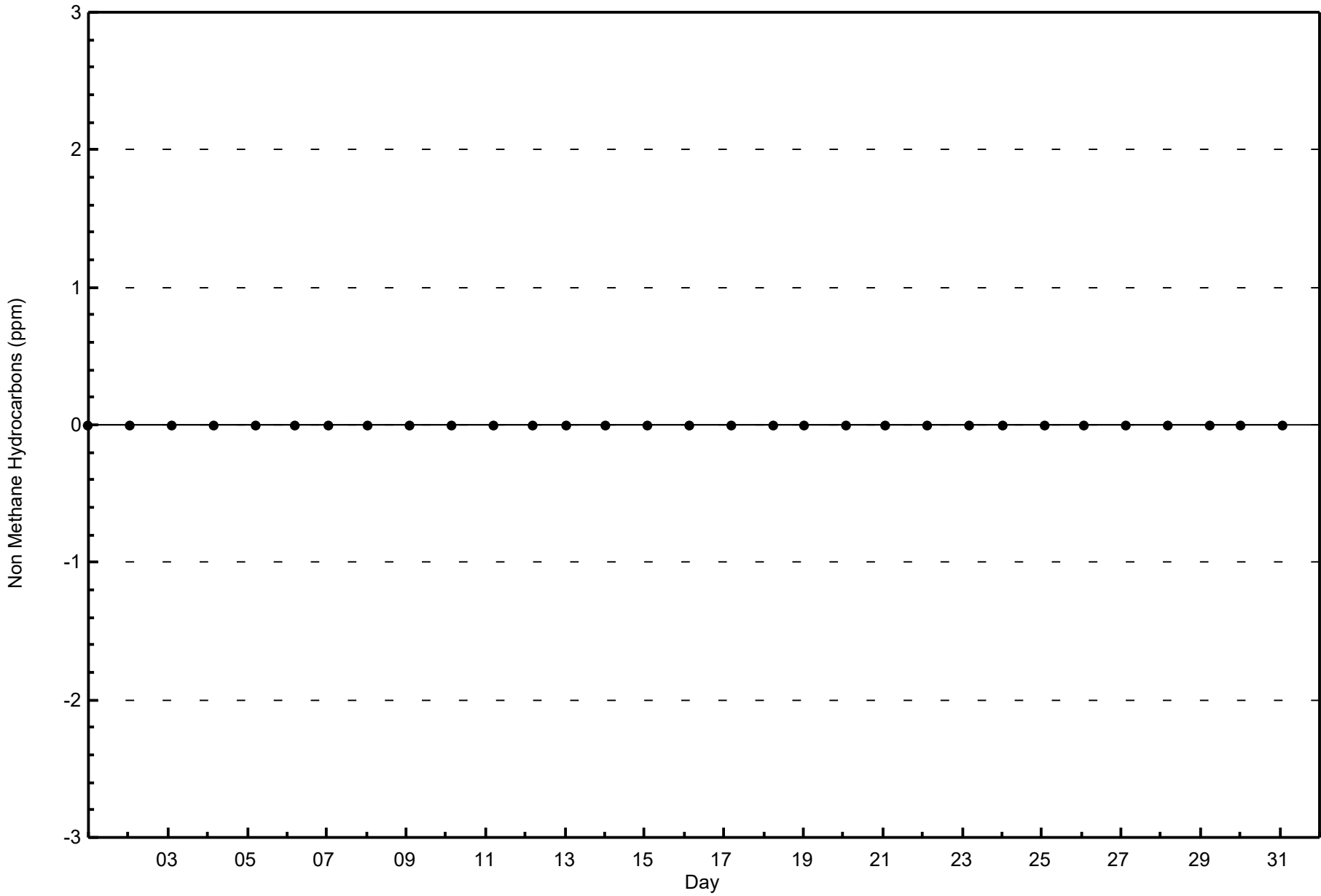
**Wood Buffalo Environmental Association
Frequency Distribution**

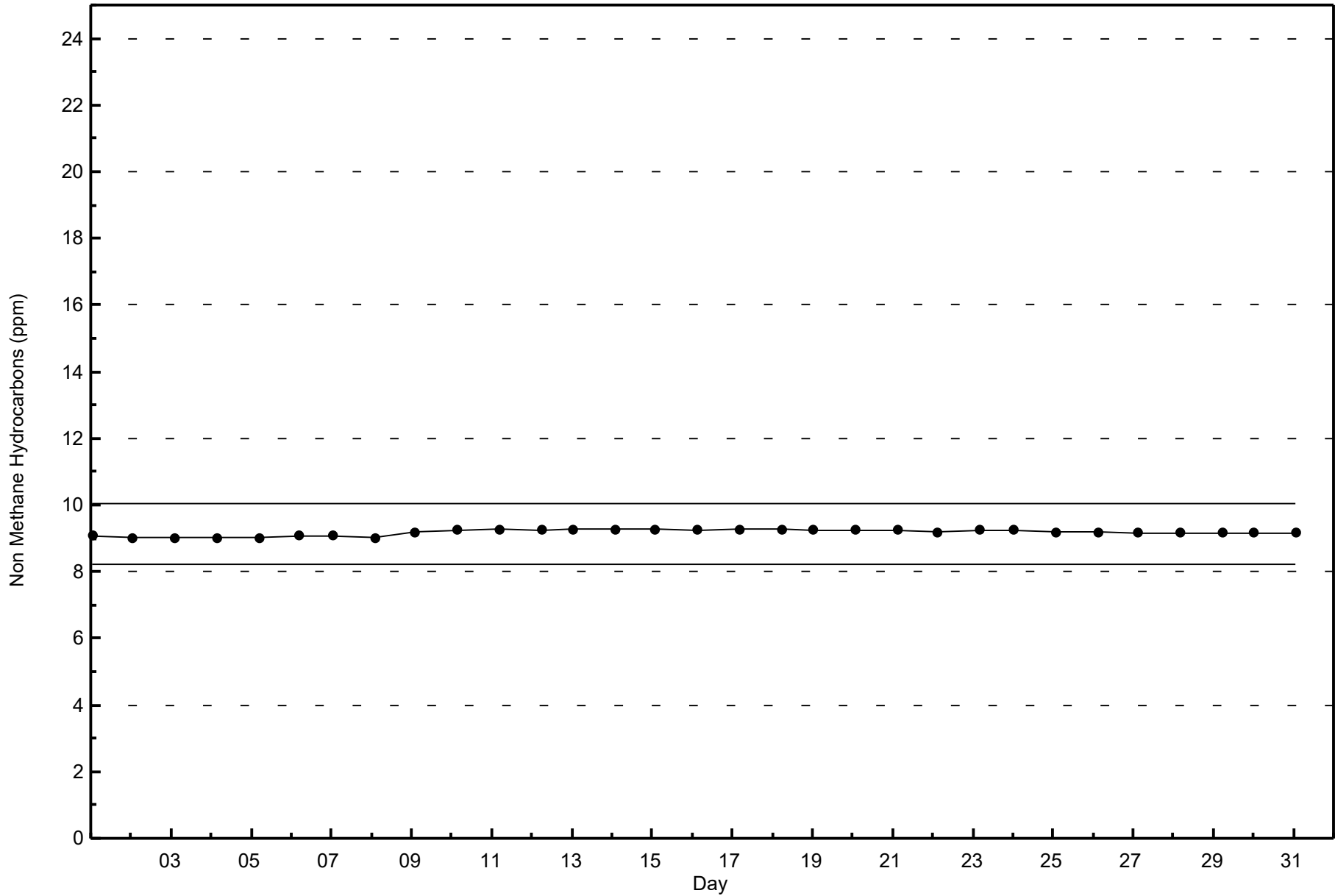
**Non Methane Hydrocarbons (NMHC) - ppm
Barge Landing - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	5	17	1	11	3	15	77	45	39	21	14	28	13	10	18	8	325
0.006 - 0.05	5	23	9	3	4	6	19	34	42	18	7	5	3	1	9	3	191
0.06 - 0.1	12	12	9	3	0	1	13	24	27	5	6	5	0	4	8	18	147
> 0.1	7	8	3	2	2	1	2	3	3	1	3	5	0	0	1	4	45
Totals	29	60	22	19	9	23	111	106	111	45	30	43	16	15	36	33	708

Total Number of Valid Hours: 708

Total Number of Hours: 744







Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH₄) - ppm

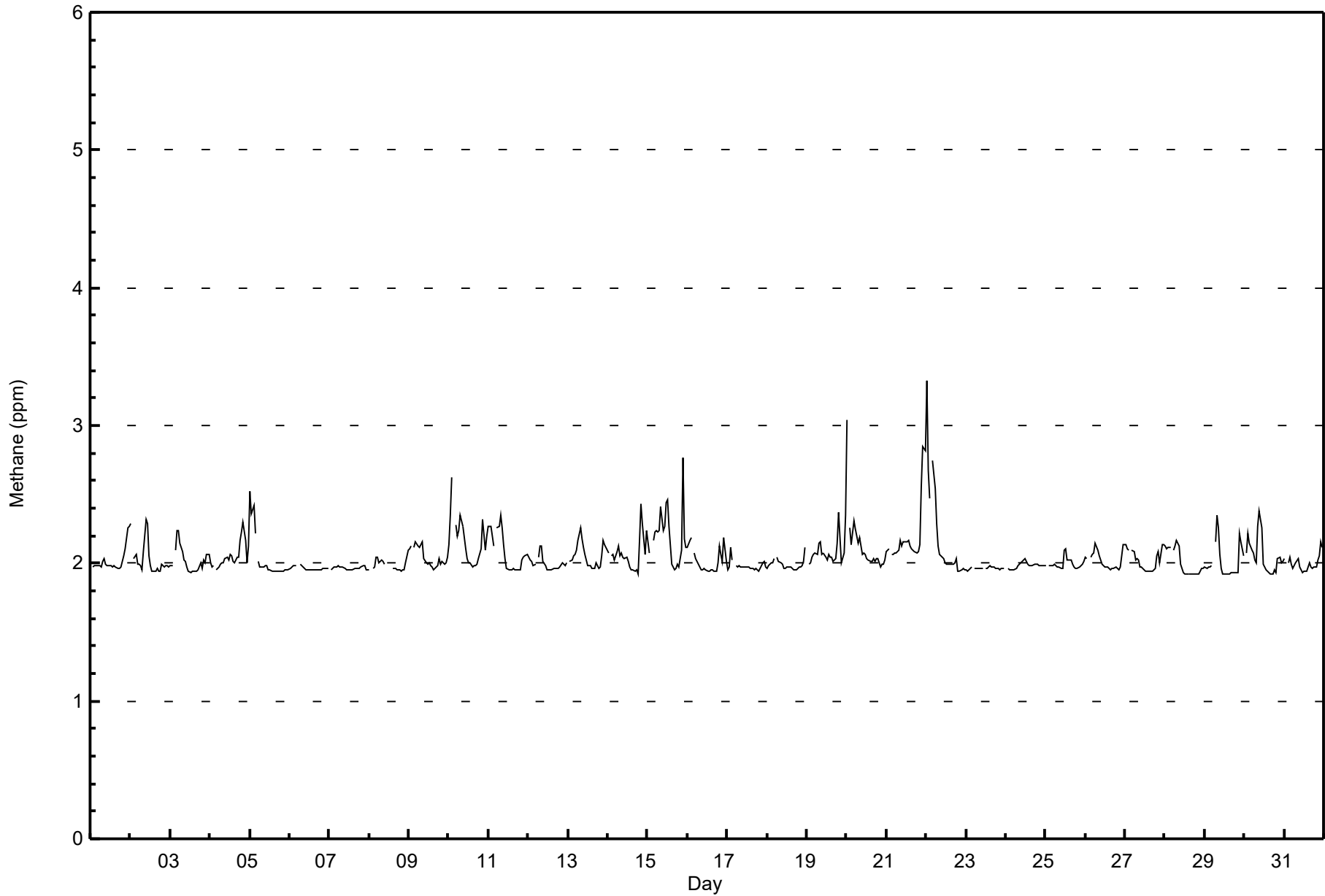
Barge Landing - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:														744																													
Maximum Value: 3.3 ppm on May 22 01:00		Maximum Daily Average: 2.2 ppm on May 21		Hours of Data:														708																															
Minimum Value: 1.9 ppm on May 28 15:00		Minimum Daily Average: 2.0 ppm on May 23		Hours of Missing Data:														36																															
Maximum Diurnal Average: 2.2 ppm at hour 1		Minimum Diurnal Average: 2.0 ppm at hour 17		Hours of Calibration:														35																															
Monthly Average: 2.04 ppm		Percentiles: P ₁ = 1.9 P ₁₀ = 1.9 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.2 P ₉₉ = 2.6		Percent Operational Time:														99.9																															
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.3	2.3	2.0	2.3																							
2-May	2.3	Z	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.3	2.3	2.1	2.0	1.9	1.9	1.9	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3																						
3-May	2.0	2.0	Z	2.1	2.2	2.2	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.2																							
4-May	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.3	2.2	2.0	2.1	2.1	2.3																							
5-May	2.5	2.4	2.4	2.2	Z	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.5																							
6-May	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																						
7-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0																						
8-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	C	C	C	C	2.0	2.0	2.0	2.0	2.0	1.9	2.0	1.9	2.0	2.1	2.0	2.1																							
9-May	2.1	2.1	Z	2.1	2.2	2.1	2.1	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2																						
10-May	2.1	2.4	2.6	Z	2.3	2.2	2.2	2.3	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.2	2.1	2.2	2.2	2.6																							
11-May	2.3	2.3	2.2	2.1	Z	2.3	2.3	2.4	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.4																							
12-May	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
13-May	Z	2.0	2.0	2.0	2.1	2.1	2.2	2.3	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.1	2.3																							
14-May	2.1	Z	2.1	2.0	2.1	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	1.9	2.0	1.9	1.9	1.9	2.2	2.4	2.3	2.1	2.2	2.1	2.4																							
15-May	2.2	2.1	Z	2.2	2.2	2.2	2.2	2.2	2.4	2.2	2.3	2.4	2.5	2.3	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.8	2.2	2.1	2.2	2.8																							
16-May	2.1	2.2	2.2	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	1.9	1.9	2.0	2.1	2.1	2.0	2.2	2.0	2.0	2.2																							
17-May	2.0	2.0	2.1	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.1																							
18-May	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1																							
19-May	Z	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.4	2.2	2.0	2.1	2.4	2.1	2.4																							
20-May	3.0	Z	2.3	2.1	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	3.0																							
21-May	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.5	2.8	2.8	2.2	2.8																							
22-May	3.3	2.7	2.5	Z	2.7	2.5	2.3	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.2	3.3																							
23-May	2.0	1.9	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																							
24-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																							
25-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
26-May	2.0	2.0	Z	2.0	2.1	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.2																							
27-May	2.1	2.1	2.1	Z	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.0	2.1	2.0	2.1																							
28-May	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.2	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.2																							
29-May	2.0	2.0	2.0	2.0	2.0	Z	2.2	2.3	2.3	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.2	2.2	2.1	2.0	2.3																							
30-May	Z	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.3	2.4	2.3	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.4																							
31-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.2																							
																								2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	Diurnal Average		
																								3.3	2.7	2.6	2.2	2.7	2.5	2.3	2.4	2.4	2.4	2.3	2.4	2.5	2.3	2.1	2.1	2.1	2.1	2.2	2.4	2.4	2.8	2.8	2.8	Diurnal Maximum	
Z - zerospan C - Calibration M - Maintenance																																																	



Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Barge Landing - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Barge Landing - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	494	69.77	69.77
2.1 - 3.0	213	30.08	99.86
3.1 - 10.0	1	0.14	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Barge Landing - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	8	33	14	16	8	20	93	73	70	37	22	33	16	11	26	14	494
2.1 - 3.0	21	26	8	3	1	3	18	33	41	8	8	10	0	4	10	19	213
3.1 - 10.0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	29	60	22	19	9	23	111	106	111	45	30	43	16	15	36	33	708

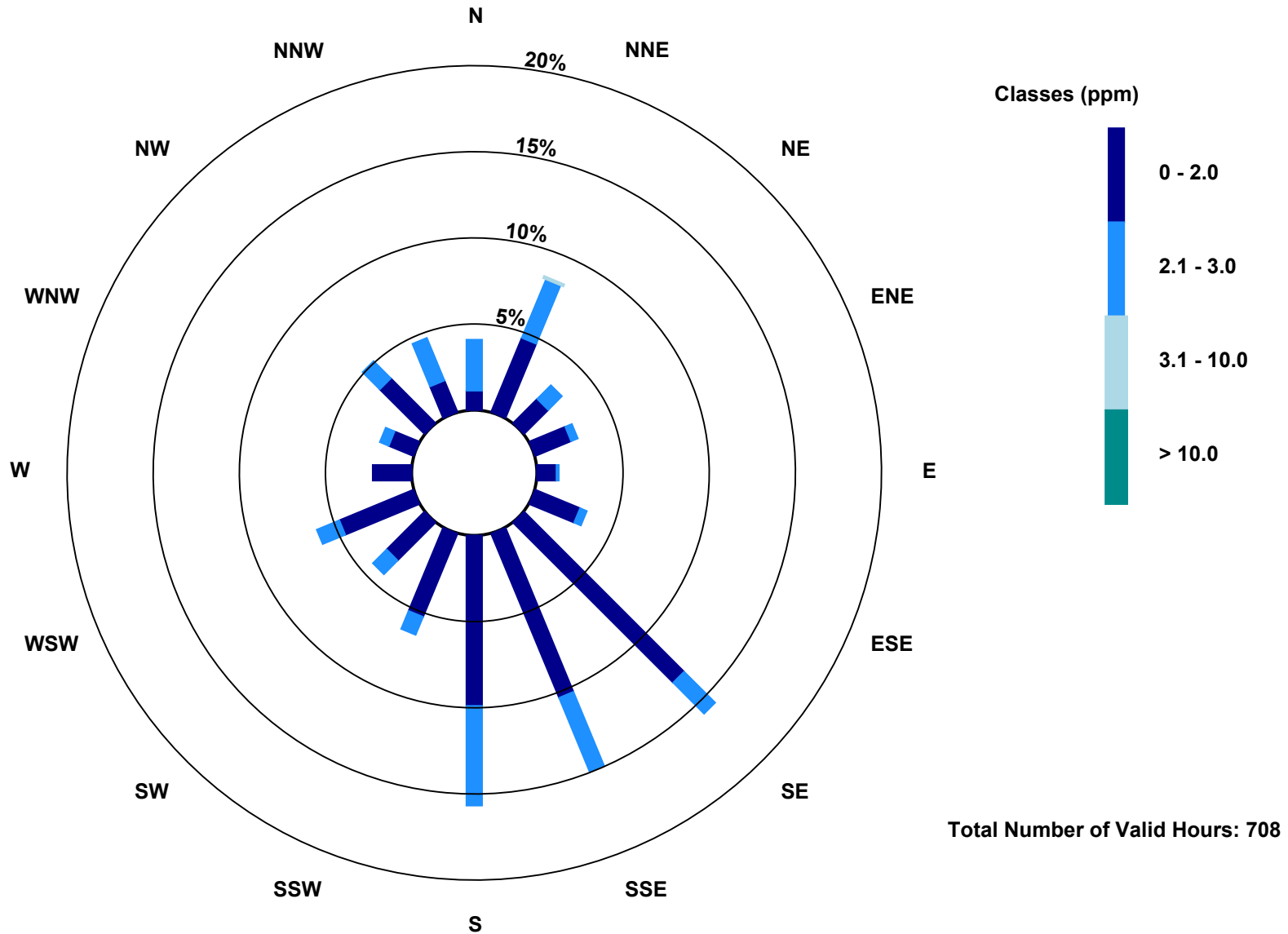
Total Number of Valid Hours: 708

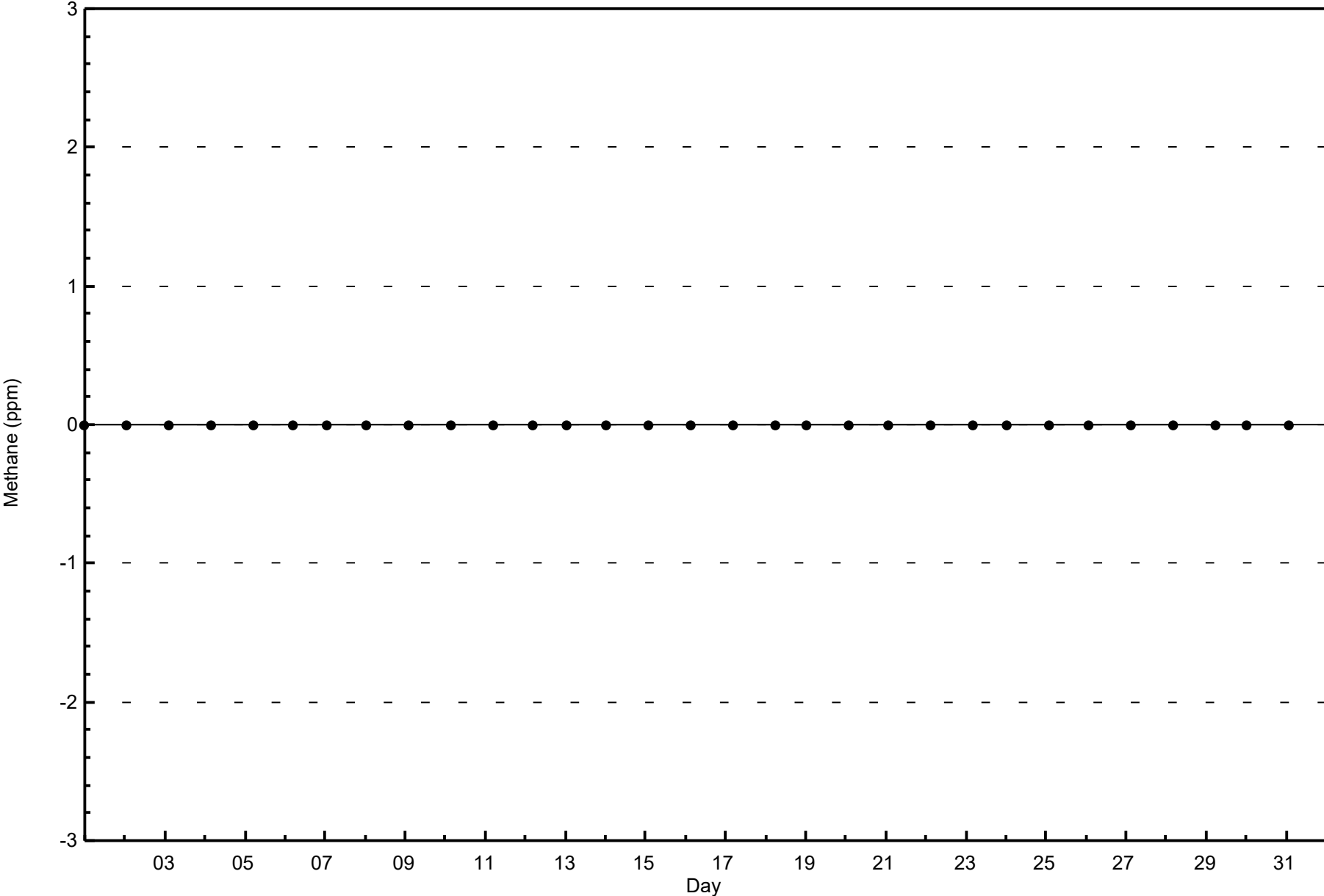
Total Number of Hours: 744

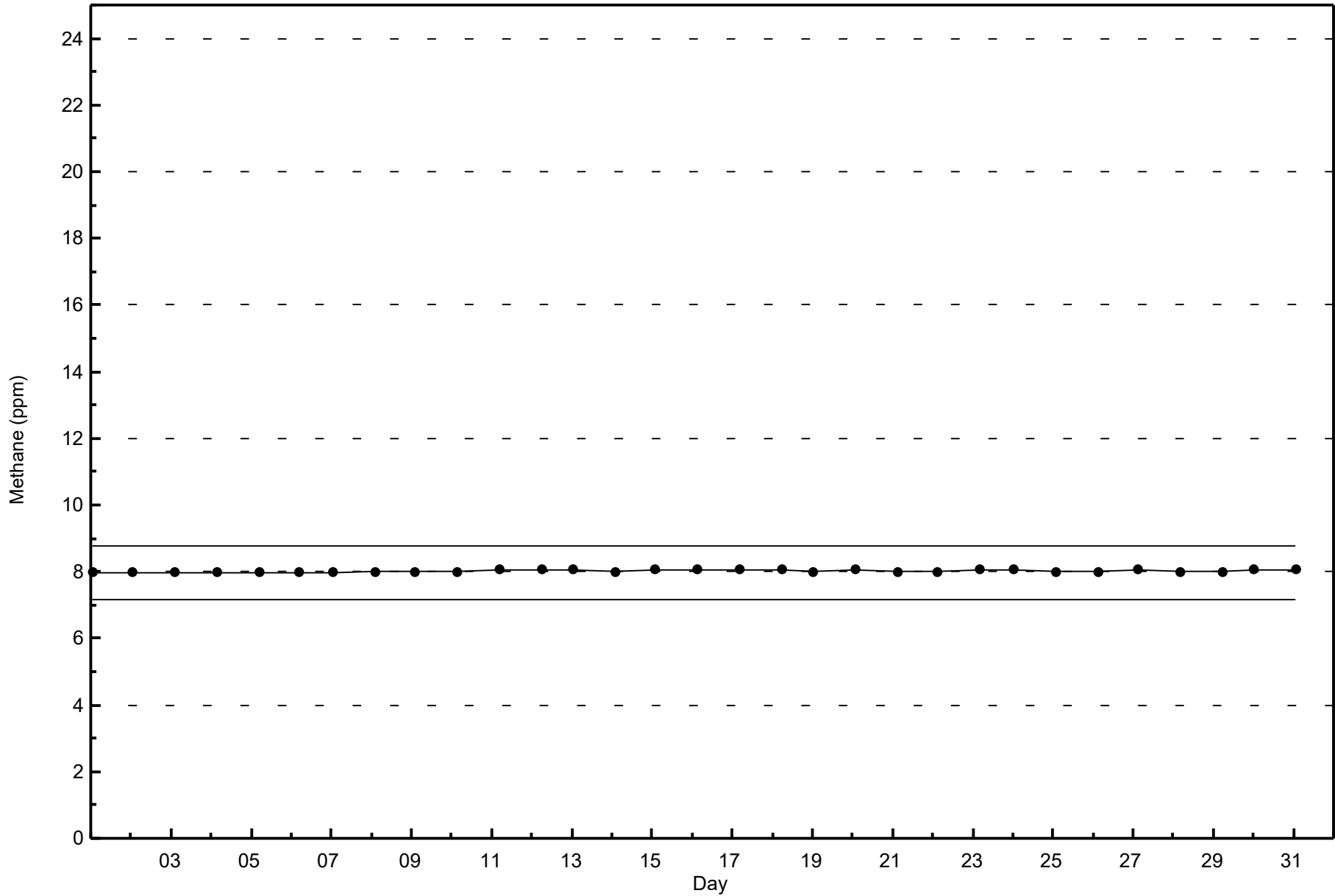


Wood Buffalo Environmental Association
Wind Rose May 2023

Methane (CH₄) - ppm
Barge Landing









Wood Buffalo Environmental Association
Summary of Hour Averages

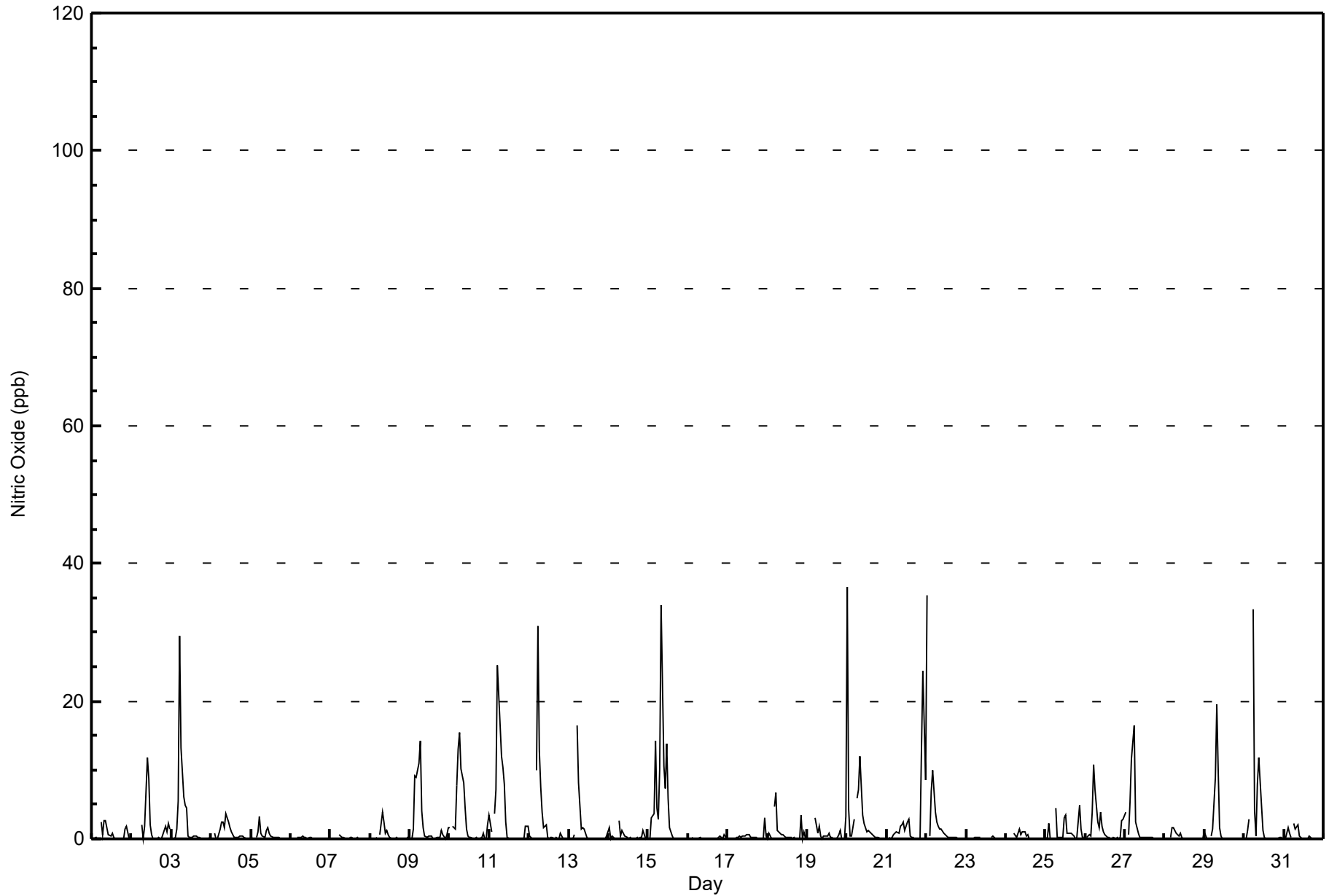
Nitric Oxide (NO) - ppb
Barge Landing - May 2023

Maximum Value: 36.6 ppb on May 20 01:00		Maximum Daily Average: 4.9 ppb on May 15		Hours in Service: 744																							
Minimum Value: 0.0 ppb on May 1 01:00		Minimum Daily Average: 0.1 ppb on May 6		Hours of Data: 707																							
Maximum Diurnal Average: 8.7 ppb at hour 6		Minimum Diurnal Average: 0.1 ppb at hour 19		Hours of Missing Data: 37																							
Monthly Average: 1.58 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.2 Q ₃ = 1.0 P ₉₀ = 3.8 P ₉₉ = 24.1		Hours of Calibration: 37																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.0	0.0	0.1	0.3	Z	2.4	0.6	2.7	2.6	1.6	0.5	0.4	0.8	0.2	0.0	0.1	0.0	0.0	0.0	0.1	1.4	1.7	0.0	0.1	0.7	2.7	
2-May	0.1	0.0	0.0	0.0	0.0	Z	2.0	0.1	1.9	11.8	8.8	2.0	0.5	0.1	0.0	0.0	0.1	0.0	0.0	0.6	1.9	1.0	2.3	1.4	1.5	11.8	
3-May	Z	0.0	0.2	1.4	5.4	29.4	13.2	6.1	4.9	4.4	0.3	0.3	0.1	0.4	0.3	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.1	2.9	29.4	
4-May	0.0	Z	0.9	0.0	0.0	1.5	2.5	2.4	1.7	3.7	2.3	1.5	1.0	0.6	0.3	0.2	0.2	0.4	0.5	0.4	0.2	0.0	0.0	0.0	0.9	3.7	
5-May	0.1	0.2	Z	0.1	1.0	3.3	0.7	0.3	0.2	1.3	1.7	0.9	0.4	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.5	3.3	
6-May	0.0	0.0	0.1	Z	0.1	0.3	0.3	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	
7-May	0.0	0.0	0.0	0.0	Z	0.7	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.7	
8-May	0.0	0.0	0.0	0.0	0.3	Z	0.6	3.8	2.5	0.9	1.3	0.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.5	0.5	3.8	
9-May	Z	0.1	1.5	9.1	9.0	10.9	14.2	4.0	1.6	0.4	0.2	0.4	0.4	0.4	0.1	0.1	0.2	0.1	0.2	1.3	0.6	0.0	0.6	1.6	2.5	14.2	
10-May	1.6	Z	1.9	1.5	7.8	13.1	15.5	10.3	8.0	4.5	1.5	0.4	0.2	0.1	0.0	0.0	0.2	0.1	0.1	0.1	0.7	0.0	0.0	2.0	3.0	15.5	
11-May	3.4	0.9	Z	3.6	7.1	25.3	16.6	12.0	10.4	7.9	2.4	0.2	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	1.7	1.9	4.1	25.3	
12-May	0.4	0.2	0.1	Z	9.9	31.0	12.9	7.6	4.0	1.6	2.0	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.8	0.0	0.0	0.0	0.0	3.1	31.0	
13-May	0.0	0.0	0.0	0.7	Z	16.5	8.2	1.4	1.7	1.4	0.7	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.3	1.4	16.5	
14-May	1.7	0.1	0.3	0.3	0.0	Z	2.7	0.5	1.2	0.7	0.5	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.2	0.2	1.2	0.0	0.1	0.4	2.7	
15-May	Z	0.0	3.0	3.7	14.3	4.6	2.9	10.1	33.9	10.6	7.3	13.7	5.9	1.6	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	33.9	
16-May	0.0	Z	0.2	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.3	0.5	0.1	0.0	0.6	0.0	0.1	0.6	0.6	
17-May	0.0	0.0	Z	0.0	0.1	0.2	0.2	0.3	0.2	0.3	0.5	0.6	0.7	0.6	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.1	3.1	0.4	0.4	3.1	
18-May	0.0	0.7	0.1	Z	4.7	6.7	1.2	1.0	0.7	0.7	0.5	0.3	0.2	0.1	0.2	0.1	0.2	0.1	0.0	0.0	3.6	0.0	1.0	0.2	1.0	6.7	
19-May	0.0	0.0	0.0	0.0	Z	3.1	0.8	1.8	0.4	0.1	0.4	0.4	0.4	0.7	0.3	0.2	0.0	0.0	0.1	0.5	1.3	0.0	0.0	3.2	0.6	3.2	
20-May	36.6	4.3	0.4	0.4	2.9	Z	6.0	7.2	12.0	3.4	2.2	1.6	1.0	1.2	0.9	0.7	0.4	0.2	0.2	0.2	0.0	0.0	0.0	0.0	3.6	36.6	
21-May	Z	0.1	0.0	0.1	0.5	0.8	1.0	0.8	1.8	2.1	2.5	1.2	2.4	2.9	0.4	0.1	0.1	0.1	0.0	0.1	0.0	12.9	24.4	8.5	2.7	24.4	
22-May	35.3	Z	0.4	7.0	9.9	3.8	2.5	1.9	1.5	1.4	0.7	0.5	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	2.9	35.3	
23-May	0.0	0.0	Z	0.0	0.1	0.3	0.2	0.1	0.1	C	C	C	C	C	C	0.2	0.4	0.2	0.1	0.1	0.1	0.0	0.0	0.0	--	0.4	
24-May	0.0	0.0	0.0	0.1	Z	0.8	0.3	0.7	1.4	0.7	0.9	1.1	0.4	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.4	
25-May	0.0	0.2	2.3	0.0	0.1	Z	4.4	0.2	0.1	0.2	0.1	3.1	3.6	0.8	0.9	0.9	0.6	0.3	0.1	0.2	4.9	1.4	0.2	0.2	1.1	4.9	
26-May	Z	0.2	0.6	0.4	3.8	10.8	7.2	2.3	1.7	3.9	1.7	1.0	0.7	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	2.6	2.9	1.8	10.8	
27-May	3.9	Z	0.6	5.2	11.6	16.4	2.5	1.7	0.8	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.9	16.4	
28-May	0.0	0.0	Z	0.1	1.6	1.7	1.2	0.9	0.5	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.7	
29-May	1.0	0.0	0.0	Z	0.4	1.4	8.9	19.5	9.9	1.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.9	19.5	
30-May	0.0	0.0	1.3	2.9	Z	33.4	4.0	0.5	7.9	11.8	4.7	1.3	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	3.0	33.4	
31-May	0.0	0.0	1.6	0.8	0.1	Z	2.2	1.5	2.1	0.4	0.1	0.0	0.1	0.0	0.1	0.4	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.4	2.2	
		3.2	0.3	0.6	1.4	3.6	8.7	4.4	3.3	3.7	2.6	1.5	1.1	0.7	0.4	0.2	0.2	0.1	0.1	0.1	0.2	0.5	0.6	1.2	0.8	Diurnal Average	
		36.6	4.3	3.0	9.1	14.3	33.4	16.6	19.5	33.9	11.8	8.8	13.7	5.9	2.9	0.9	0.9	0.6	0.4	0.5	1.3	4.9	12.9	24.4	8.5	Diurnal Maximum	
Z - zerospan		C - Calibration																									



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Barge Landing - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Barge Landing - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	699	98.87	98.87
21 - 40	8	1.13	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Barge Landing - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	24	61	22	20	9	18	108	106	115	46	28	41	17	14	36	34	699
21 - 40	3	1	0	0	0	0	0	2	0	0	1	1	0	0	0	0	8
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	62	22	20	9	18	108	108	115	46	29	42	17	14	36	34	707

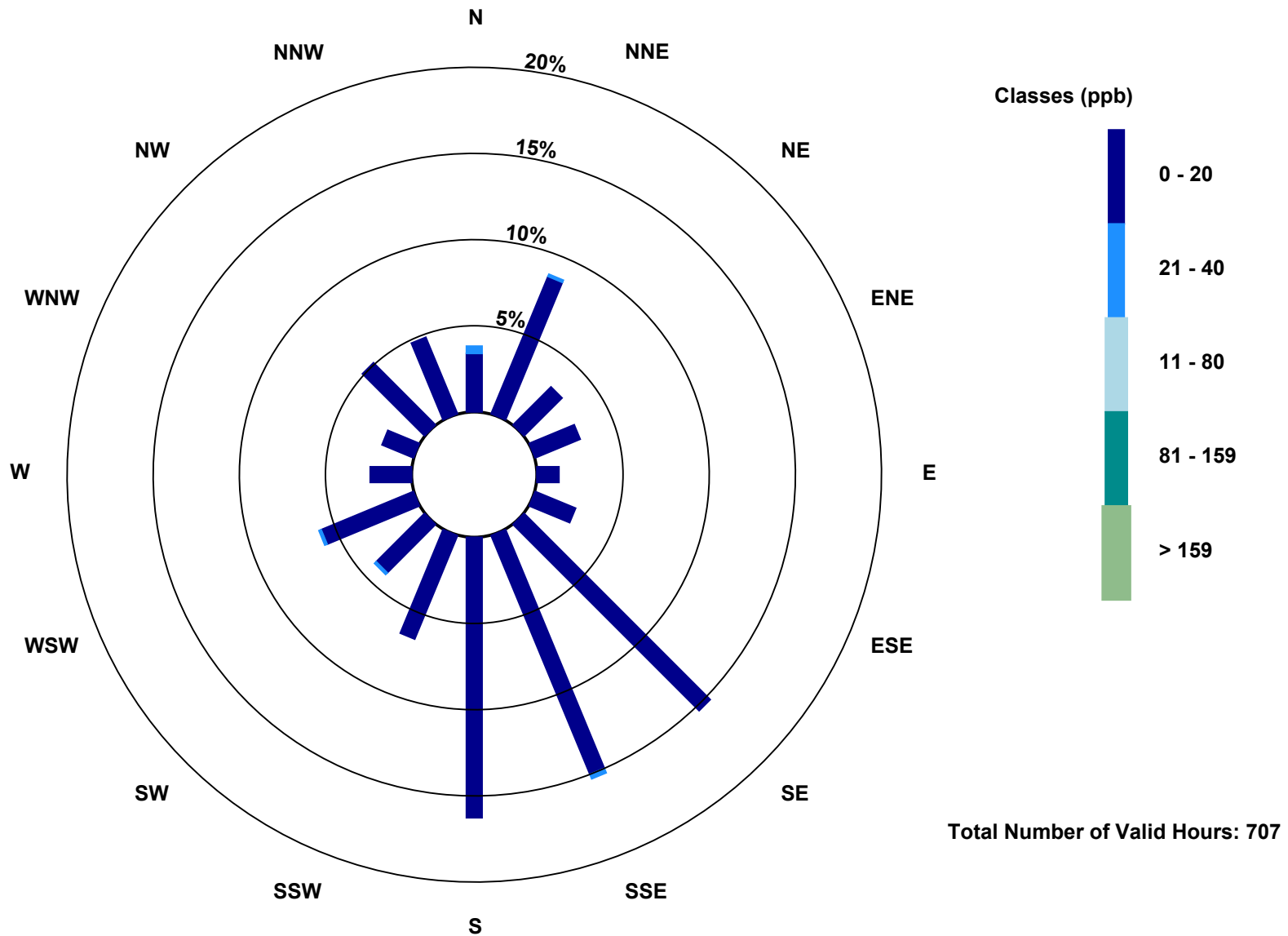
Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

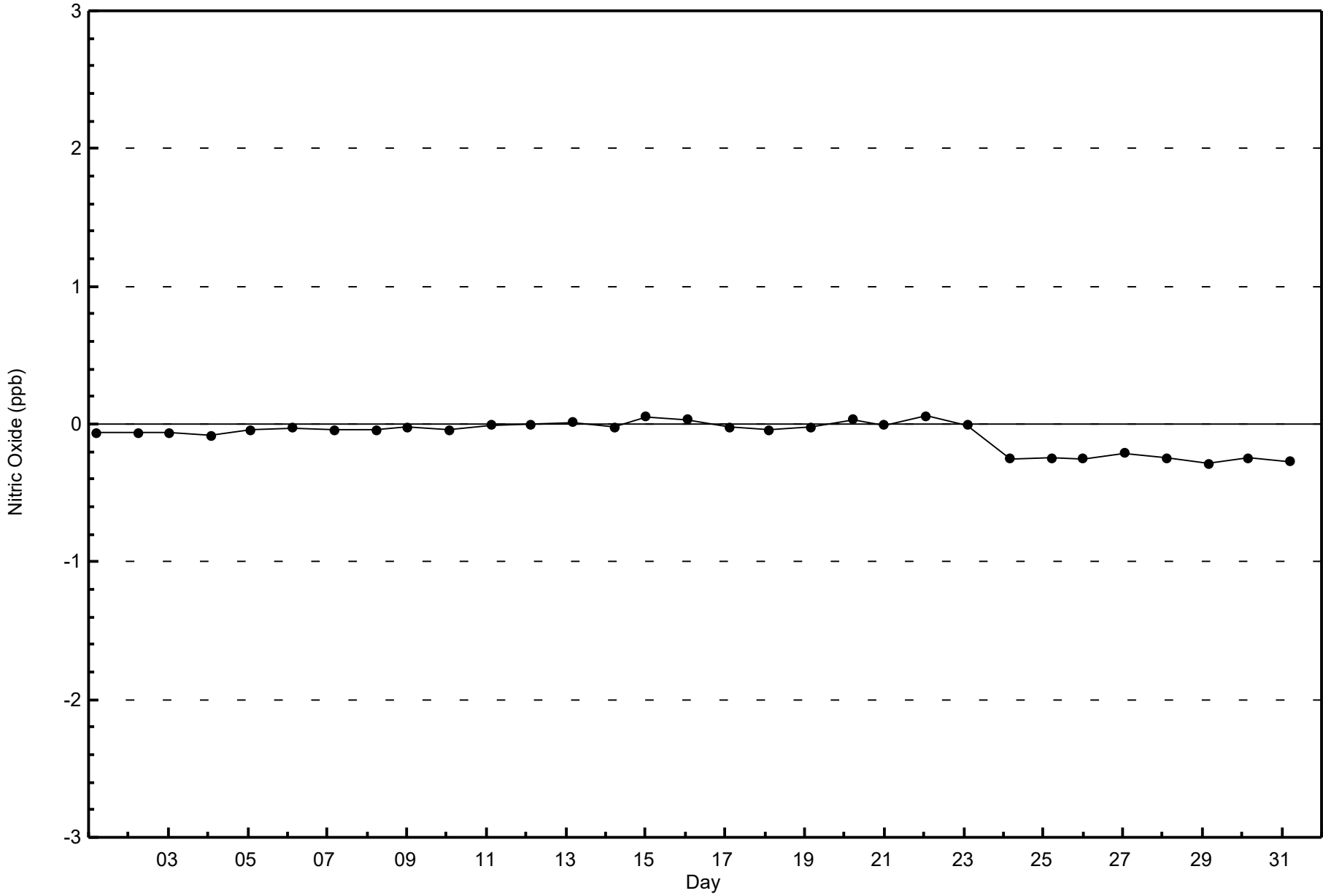
Nitric Oxide (NO) - ppb
Barge Landing

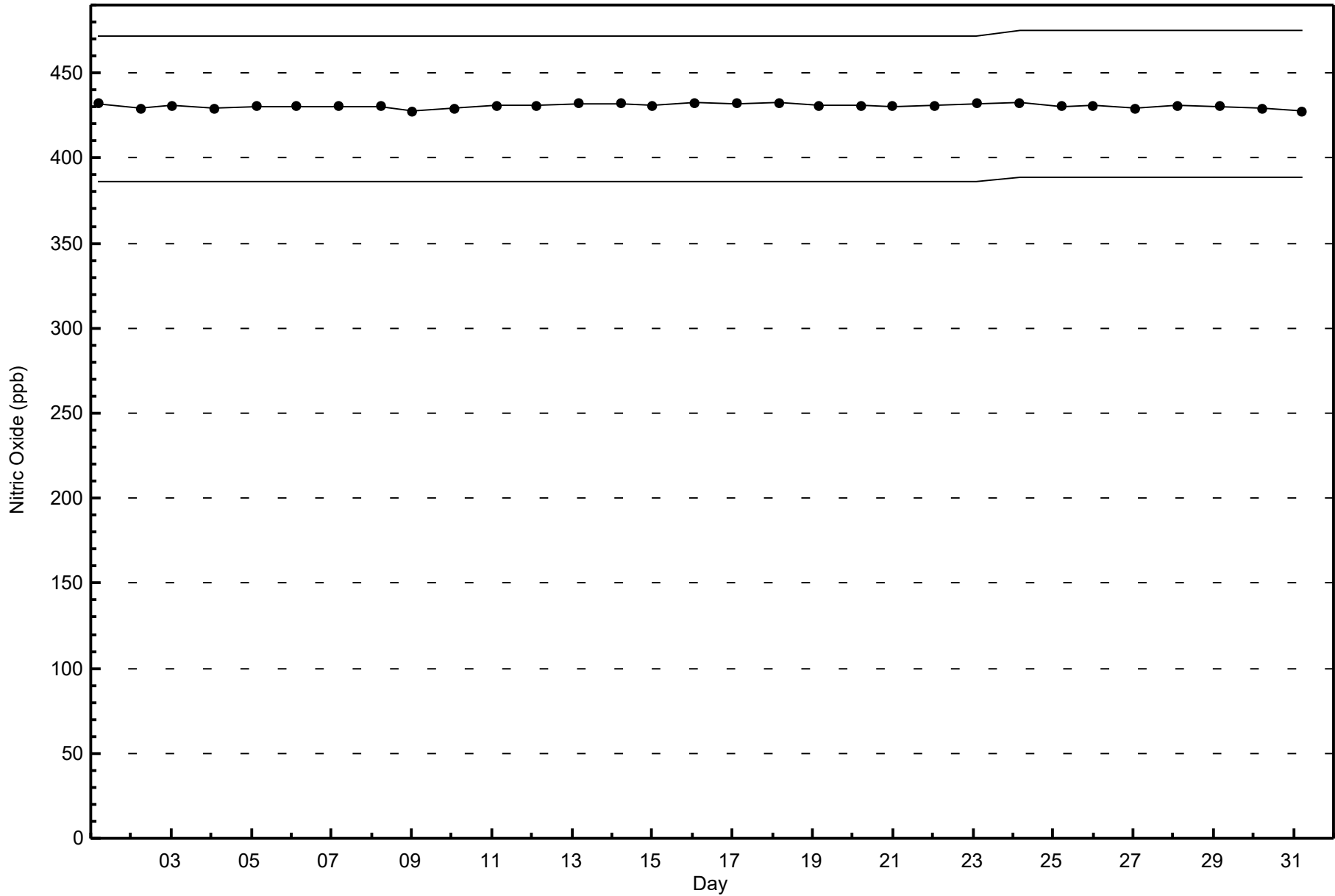




Wood Buffalo Environmental Association
Zero Responses

Nitric Oxide (NO) - ppb
Barge Landing - May 2023







Wood Buffalo Environmental Association

Summary of Hour Averages

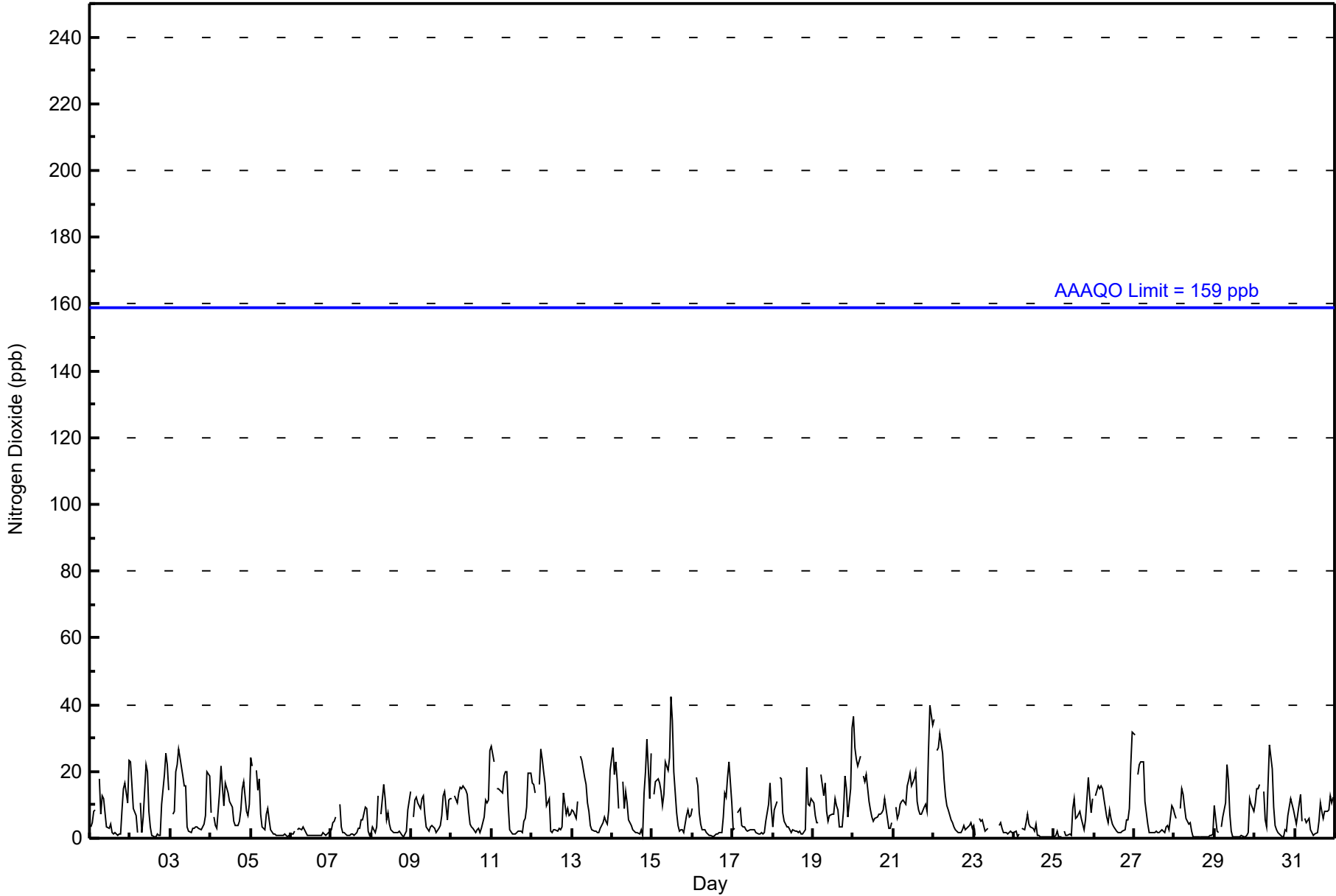
Nitrogen Dioxide (NO₂) - ppb

Barge Landing - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 42.4 ppb on May 15 12:00	Maximum Daily Average: 14.5 ppb on May 21		Hours of Data:	707
Minimum Value: 0.3 ppb on May 24 22:00	Minimum Daily Average: 1.5 ppb on May 6		Hours of Missing Data:	37
Maximum Diurnal Average: 14.2 ppb at hour 6	Minimum Diurnal Average: 2.6 ppb at hour 18		Hours of Calibration:	37
Monthly Average: 7.88 ppb	Percentiles: P ₁ = 0.3 P ₁₀ = 1.0 Q ₁ = 2.0 Median = 5.3 Q ₃ = 11.8 P ₉₀ = 18.8 P ₉₉ = 31.6		Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	3.2	4.8	8.0	8.6	Z	18.0	7.0	12.8	12.0	7.7	3.6	2.8	4.4	1.9	1.2	1.5	1.0	1.4	1.2	8.4	14.7	16.4	10.7	23.4	7.6	23.4
2-May	23.0	15.9	8.9	6.7	1.6	Z	10.6	1.8	6.2	22.1	19.9	8.1	3.4	0.9	0.5	0.6	1.3	0.8	0.7	10.2	19.2	25.4	21.9	14.3	9.7	25.4
3-May	Z	7.4	8.0	19.9	22.0	26.7	24.2	18.5	15.8	15.6	3.2	2.2	1.5	2.9	2.8	3.5	3.4	3.0	2.5	3.2	4.1	6.8	19.9	18.5	10.2	26.7
4-May	7.6	Z	6.3	3.8	3.1	14.1	21.4	15.2	9.7	16.6	13.5	10.9	10.2	9.2	5.2	3.9	4.0	5.0	8.3	14.8	16.8	8.2	6.9	10.3	9.8	21.4
5-May	24.1	21.8	Z	20.4	14.4	17.8	7.0	3.5	2.4	7.3	9.1	5.6	2.6	1.2	1.2	0.9	0.9	0.9	0.9	0.8	1.2	0.8	0.5	0.7	6.3	24.1
6-May	1.1	1.4	2.1	Z	2.7	3.0	2.7	3.2	2.4	1.5	1.0	1.0	0.9	0.7	0.7	0.7	0.9	0.7	0.9	1.5	1.1	1.0	1.7	2.2	1.5	3.2
7-May	2.7	4.5	4.9	6.4	Z	10.0	3.6	1.5	1.6	0.9	0.9	0.9	1.2	1.3	1.0	1.8	2.9	3.1	5.3	5.7	9.3	8.9	2.0	0.9	3.5	10.0
8-May	1.1	3.3	1.9	3.2	12.5	Z	7.4	16.0	11.8	5.7	7.6	4.4	2.4	1.6	1.9	1.9	1.8	2.0	0.9	0.5	1.4	2.0	8.3	13.8	4.9	16.0
9-May	Z	6.5	11.5	12.2	10.5	8.7	11.9	12.9	7.4	3.3	2.3	3.4	3.9	3.4	2.9	1.6	3.0	3.7	6.9	12.5	13.9	5.6	11.3	12.0	7.4	13.9
10-May	11.8	Z	12.7	10.6	13.5	15.3	15.0	15.5	14.5	13.2	7.9	4.3	3.6	3.0	1.9	2.4	2.9	1.7	2.8	6.3	11.4	10.6	11.3	26.2	9.5	26.2
11-May	27.7	22.8	Z	14.9	14.8	14.4	13.5	18.8	20.0	20.1	9.8	2.4	1.3	1.3	1.1	1.7	2.2	2.3	1.8	4.9	6.1	9.3	19.6	19.4	10.9	27.7
12-May	16.5	15.9	13.4	Z	16.0	26.6	23.9	20.0	16.7	9.9	11.9	2.2	1.8	2.4	2.4	2.2	2.8	2.5	3.4	13.5	7.2	8.9	6.9	7.4	10.2	26.6
13-May	8.6	8.1	5.9	10.9	Z	24.7	23.1	18.3	16.0	10.4	8.2	3.9	2.6	2.2	2.0	1.7	1.7	3.0	4.6	6.2	5.1	4.1	8.6	20.2	8.7	24.7
14-May	27.3	18.9	22.8	17.3	8.7	Z	17.0	9.1	13.9	10.5	5.6	4.0	2.5	2.3	1.6	1.8	1.3	2.4	1.0	13.7	20.0	29.6	11.8	25.4	11.7	29.6
15-May	Z	13.0	16.9	17.7	16.6	14.0	9.8	13.3	23.0	20.3	24.2	42.4	35.2	20.0	7.7	3.7	2.2	2.5	2.4	1.5	6.9	8.5	6.5	6.9	13.7	42.4
16-May	9.1	Z	18.3	15.5	7.7	4.4	2.6	2.5	1.8	1.1	1.0	1.0	0.6	0.9	1.3	1.3	1.5	1.7	6.2	13.7	12.4	18.2	22.9	10.5	6.8	22.9
17-May	2.7	3.1	Z	7.7	9.1	4.0	3.2	3.5	2.5	2.1	2.5	2.6	2.7	2.6	1.5	1.3	1.4	1.7	1.4	1.8	5.1	10.2	16.4	8.4	4.2	16.4
18-May	3.4	8.6	11.2	Z	18.3	17.6	7.6	5.1	3.2	3.2	2.5	1.8	2.4	2.0	2.1	1.6	2.0	1.3	1.3	2.7	21.1	10.0	9.8	11.8	6.5	21.1
19-May	10.7	6.7	4.7	4.7	Z	19.0	12.7	16.7	8.1	5.2	6.6	7.0	7.2	12.0	9.9	8.5	3.2	3.3	8.5	18.7	14.9	6.4	14.8	32.9	10.5	32.9
20-May	36.4	27.1	23.7	21.8	24.5	Z	18.6	17.0	19.1	10.9	8.6	6.5	5.0	6.1	6.5	7.1	7.4	7.6	8.5	11.7	6.0	2.8	2.9	4.5	12.6	36.4
21-May	Z	9.3	5.9	7.2	10.2	10.9	11.6	10.2	15.7	17.4	19.7	15.7	17.8	19.9	11.2	8.3	7.3	7.2	9.3	10.2	7.9	25.9	40.0	34.0	14.5	40.0
22-May	35.7	Z	26.2	27.1	31.2	25.3	18.0	12.7	9.7	8.6	5.5	4.6	3.4	2.4	2.0	1.7	1.7	2.4	3.7	2.7	3.0	3.9	4.7	3.0	10.4	35.7
23-May	4.0	0.9	Z	5.8	5.2	5.7	3.9	2.2	2.9	C	C	C	C	C	C	3.7	4.8	2.9	1.6	1.9	1.4	1.9	2.1	1.8	--	5.8
24-May	1.9	2.1	0.5	1.3	Z	3.1	2.4	4.8	7.2	4.2	3.2	2.9	2.1	4.4	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.3	0.3	0.3	2.0	7.2
25-May	0.3	1.0	2.3	0.5	0.5	Z	2.1	0.8	0.7	1.3	0.9	8.7	11.9	5.9	6.4	8.2	5.9	4.3	2.5	5.3	18.4	12.1	7.7	11.7	5.2	18.4
26-May	Z	12.7	15.6	14.7	15.5	14.9	12.0	6.4	4.7	8.6	5.8	4.2	3.6	2.0	1.7	1.9	1.8	2.3	2.4	5.3	5.3	8.9	22.1	31.6	8.9	31.6
27-May	31.0	Z	18.9	21.9	22.7	22.8	10.9	7.5	4.3	1.8	1.6	1.5	1.7	2.0	1.9	1.9	2.4	2.2	1.9	3.6	4.0	2.7	9.6	8.7	8.2	31.0
28-May	7.1	6.1	Z	9.0	14.7	13.1	9.5	6.1	4.1	4.5	2.1	0.6	0.5	0.3	0.3	0.3	0.3	0.5	0.5	0.4	0.4	0.8	1.0	1.4	3.6	14.7
29-May	9.9	2.1	1.8	Z	3.2	6.2	10.8	21.9	17.2	7.2	2.1	0.3	0.3	0.4	0.4	0.3	0.8	0.6	0.5	0.8	1.6	11.8	10.1	8.0	5.1	21.9
30-May	10.6	14.8	15.0	16.1	Z	14.0	5.6	3.2	16.1	27.8	20.7	9.3	3.8	2.6	1.9	0.7	0.5	0.5	2.7	2.0	6.9	11.7	10.2	8.3	8.9	27.8
31-May	6.3	4.2	10.0	13.1	5.2	Z	6.0	4.8	6.0	2.5	1.5	0.8	1.4	1.6	5.2	10.6	8.2	6.1	8.2	8.0	8.3	12.8	10.8	12.2	6.7	13.1
																								Diurnal Average		
																								Diurnal Maximum		

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Barge Landing - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	656	92.79	92.79
21 - 40	50	7.07	99.86
41 - 80	1	0.14	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Barge Landing - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	17	58	22	19	8	17	102	99	112	44	29	37	17	14	36	25	656
21 - 40	10	4	0	1	1	1	6	9	3	2	0	4	0	0	0	9	50
11 - 80	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	62	22	20	9	18	108	108	115	46	29	42	17	14	36	34	707

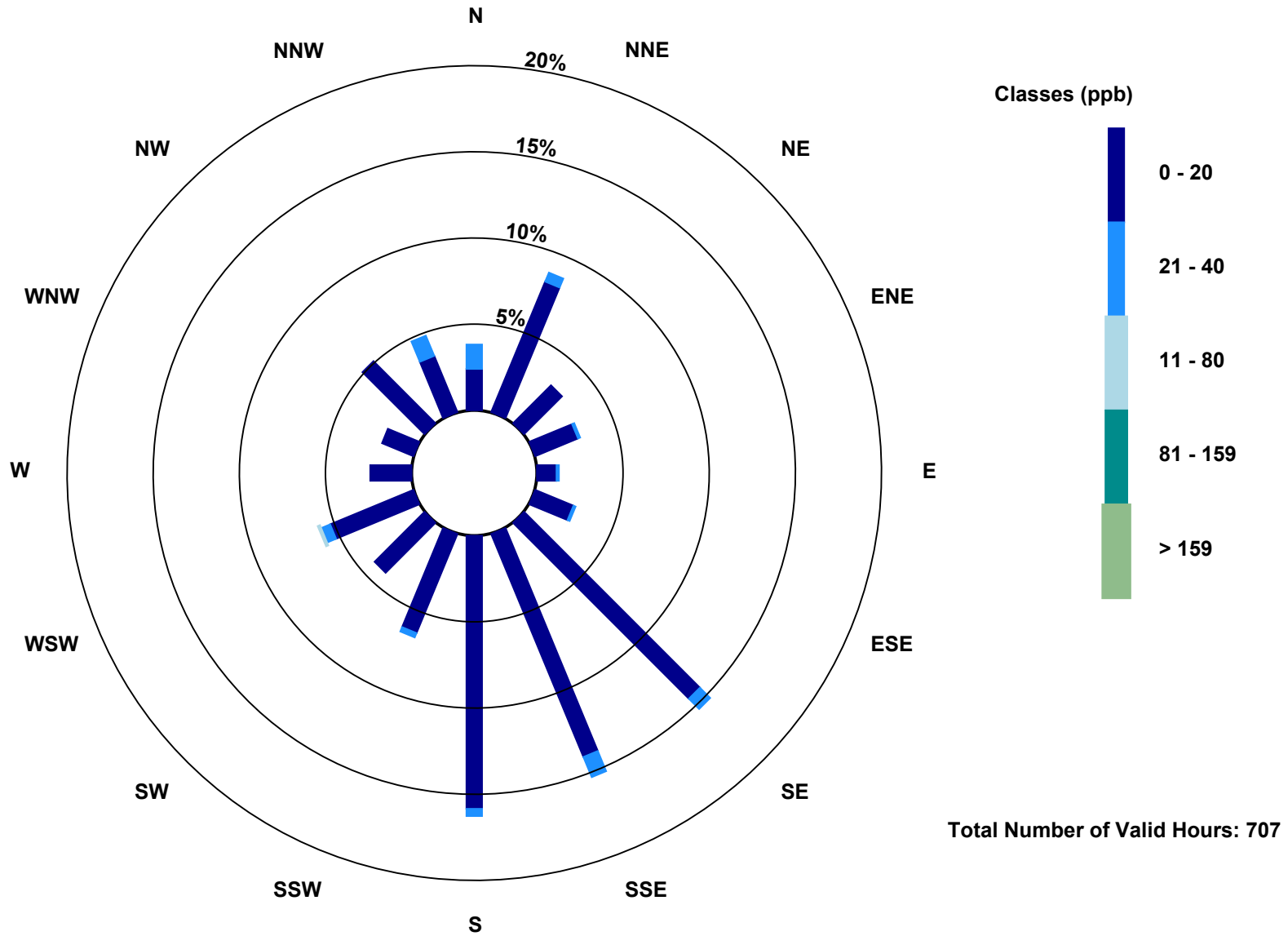
Total Number of Valid Hours: 707

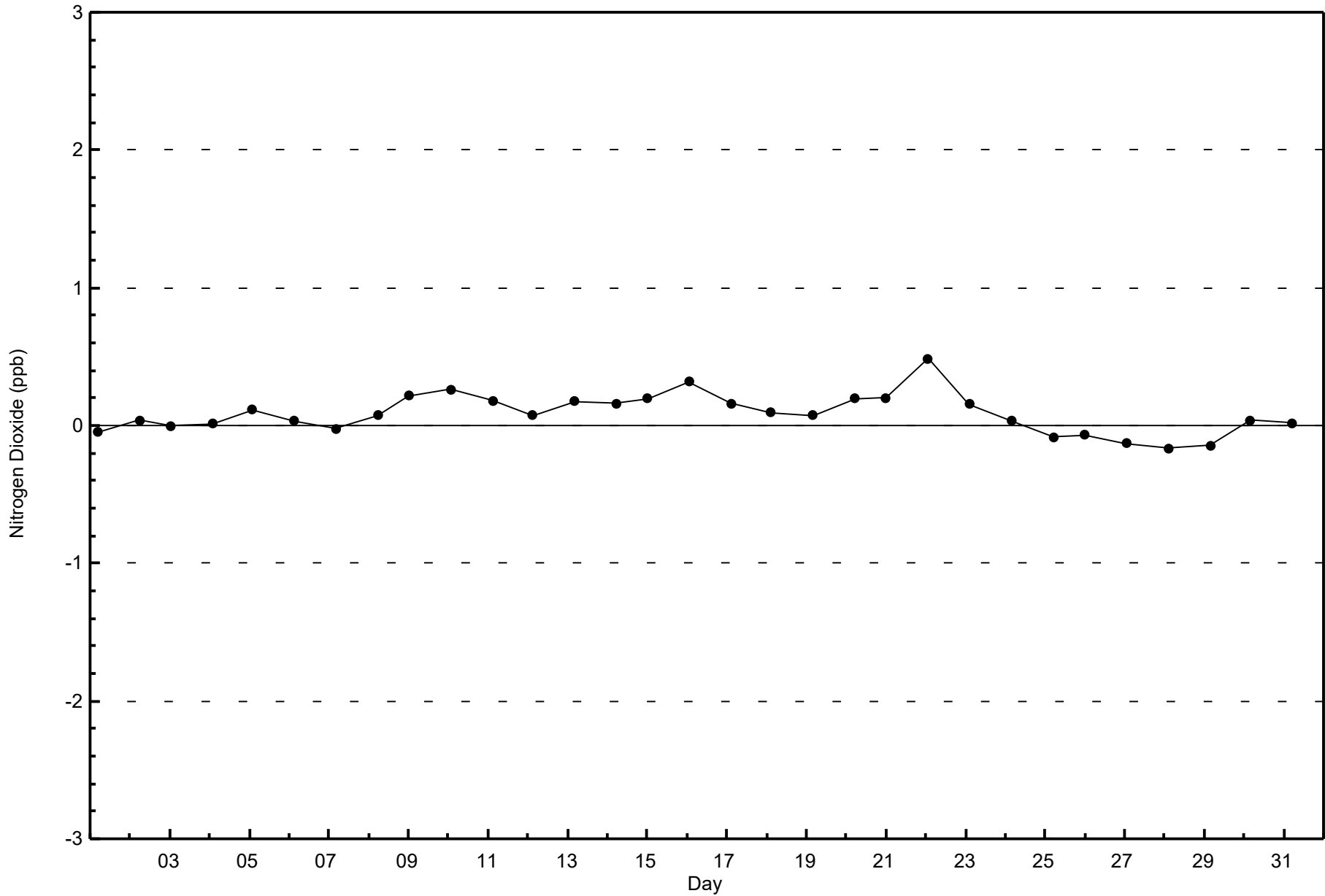
Total Number of Hours: 744

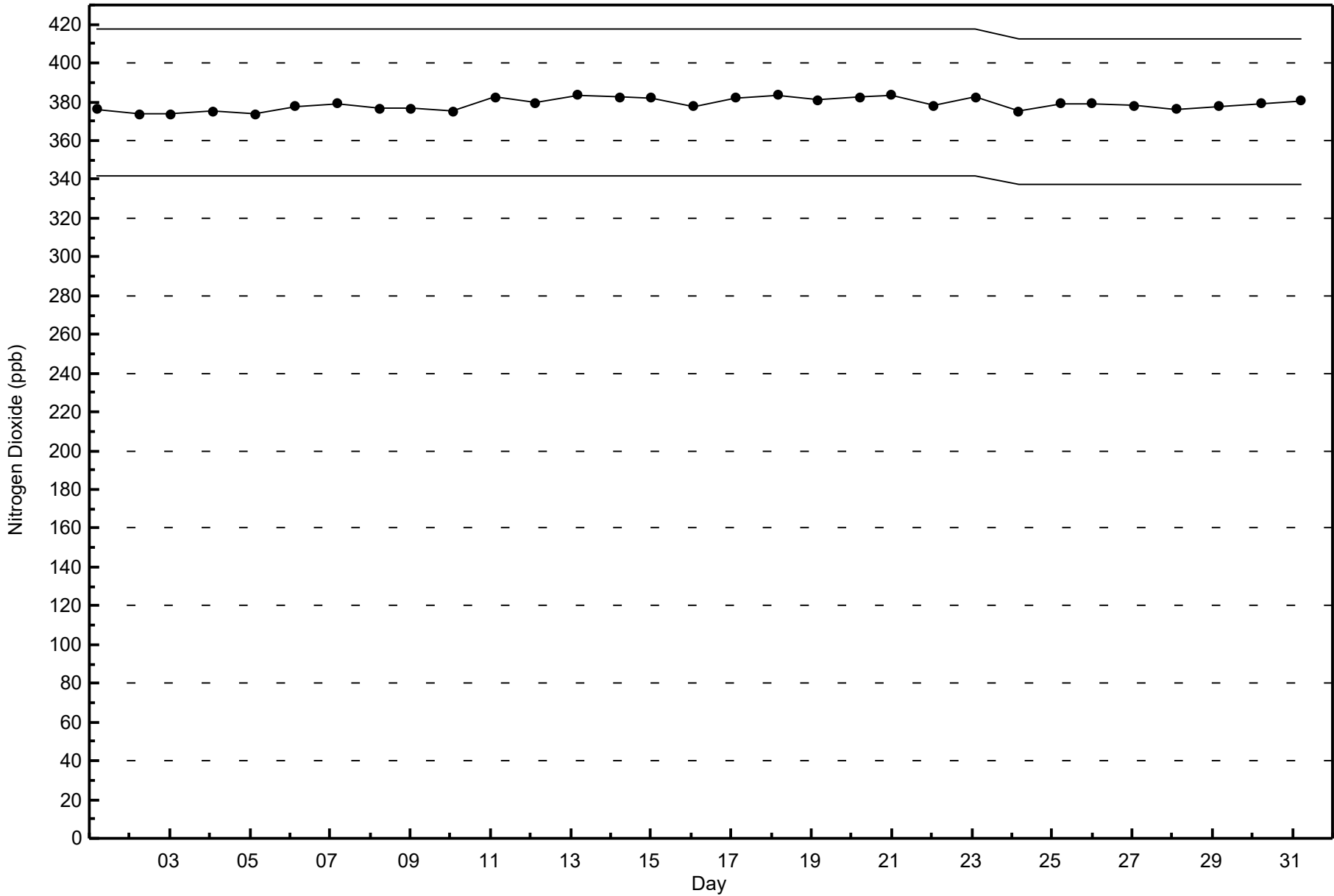


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Barge Landing









Wood Buffalo Environmental Association
Summary of Hour Averages

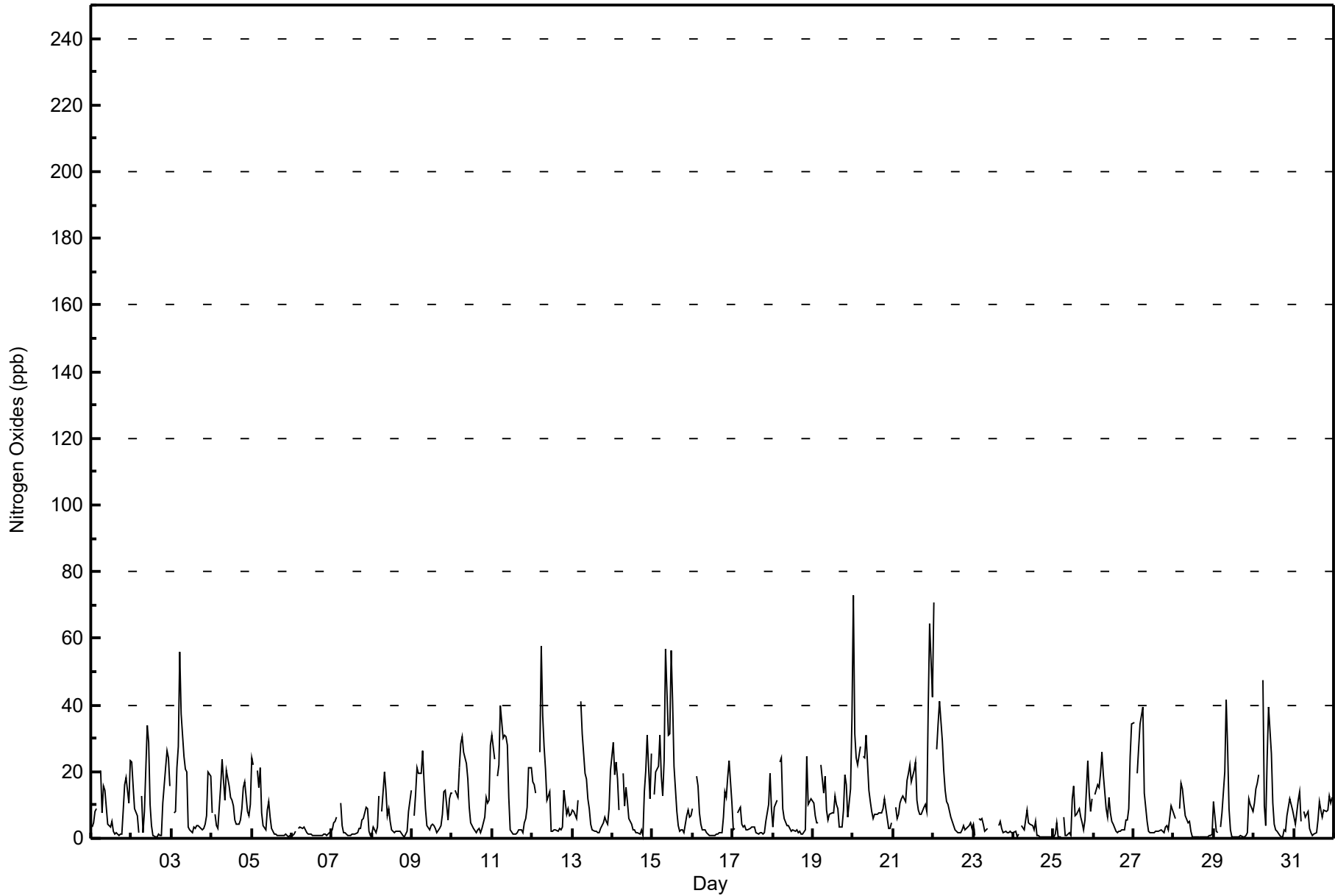
Nitrogen Oxides (NO_x) - ppb
Barge Landing - May 2023

Maximum Value: 73.0 ppb on May 20 01:00																						Maximum Daily Average: 18.6 ppb on May 15																						Hours in Service: 744					
Minimum Value: 0.3 ppb on May 28 17:00																						Minimum Daily Average: 1.6 ppb on May 6																						Hours of Data: 707					
Maximum Diurnal Average: 22.9 ppb at hour 6																						Minimum Diurnal Average: 2.7 ppb at hour 18																						Hours of Missing Data: 37					
Monthly Average: 9.46 ppb																						Percentiles: P ₁ = 0.3 P ₁₀ = 1.0 Q ₁ = 2.2 Median = 5.9 Q ₃ = 12.8 P ₉₀ = 23.4 P ₉₉ = 47.1																						Hours of Calibration: 37					
																																												Percent Operational Time: 100.0					
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	3.2	4.8	8.1	8.9	Z	20.4	7.6	15.5	14.6	9.3	4.1	3.2	5.2	2.1	1.2	1.6	1.0	1.4	1.2	8.5	16.1	18.1	10.7	23.5	8.3	23.5																							
2-May	23.1	15.9	8.9	6.7	1.6	Z	12.6	1.9	8.1	33.9	28.7	10.1	3.9	1.0	0.5	0.6	1.4	0.8	0.7	10.8	21.1	26.4	24.2	15.7	11.2	33.9																							
3-May	Z	7.4	8.2	21.3	27.4	56.1	37.4	24.6	20.7	20.0	3.5	2.5	1.6	3.3	3.1	3.9	3.7	3.2	2.5	3.2	4.1	6.8	19.9	18.6	13.2	56.1																							
4-May	7.6	Z	7.2	3.8	3.1	15.6	23.9	17.6	11.4	20.3	15.8	12.4	11.2	9.8	5.5	4.1	4.2	5.4	8.8	15.2	17.0	8.2	6.9	10.3	10.7	23.9																							
5-May	24.2	22.0	Z	20.5	15.4	21.1	7.7	3.8	2.6	8.6	10.8	6.5	3.0	1.3	1.4	1.0	1.0	1.0	0.9	0.8	1.2	0.8	0.5	0.7	6.8	24.2																							
6-May	1.1	1.4	2.2	Z	2.8	3.3	3.0	3.6	2.7	1.7	1.1	1.1	1.0	0.8	0.8	0.7	1.0	0.7	0.9	1.5	1.1	1.0	1.7	2.2	1.6	3.6																							
7-May	2.7	4.5	4.9	6.4	Z	10.7	3.9	1.7	1.8	1.0	1.0	1.0	1.3	1.4	1.1	1.9	3.0	3.2	5.4	5.7	9.3	8.9	2.0	0.9	3.6	10.7																							
8-May	1.1	3.3	1.9	3.2	12.8	Z	8.0	19.8	14.3	6.6	8.9	5.0	2.6	1.7	2.0	2.0	1.9	2.1	0.9	0.5	1.4	2.0	8.3	14.3	5.4	19.8																							
9-May	Z	6.6	13.0	21.3	19.5	19.6	26.1	16.9	9.0	3.7	2.5	3.8	4.3	3.8	3.0	1.7	3.2	3.8	7.1	13.8	14.5	5.6	11.9	13.6	9.9	26.1																							
10-May	13.4	Z	14.6	12.1	21.3	28.4	30.5	25.8	22.5	17.7	9.4	4.7	3.8	3.1	1.9	2.4	3.1	1.8	2.9	6.4	12.1	10.6	11.3	28.2	12.5	30.5																							
11-May	31.1	23.7	Z	18.5	21.9	39.7	30.1	30.8	30.4	28.0	12.2	2.6	1.4	1.3	1.1	1.7	2.3	2.4	1.8	4.9	6.1	9.3	21.3	21.3	15.0	39.7																							
12-May	16.9	16.1	13.5	Z	25.9	57.6	36.8	27.6	20.7	11.5	13.9	2.3	1.9	2.6	2.6	2.3	2.9	2.6	3.4	14.3	7.2	8.9	6.9	7.4	13.3	57.6																							
13-May	8.6	8.1	5.9	11.6	Z	41.2	31.3	19.7	17.7	11.8	8.9	4.1	2.7	2.2	2.0	1.7	1.7	3.1	4.7	6.3	5.1	4.1	8.7	20.5	10.1	41.2																							
14-May	29.0	19.0	23.1	17.6	8.7	Z	19.7	9.6	15.1	11.2	6.1	4.2	2.6	2.4	1.6	1.8	1.3	2.5	1.0	13.9	20.2	30.8	11.8	25.5	12.1	30.8																							
15-May	Z	13.0	19.9	21.4	30.9	18.6	12.7	23.4	56.9	30.9	31.5	56.1	41.1	21.6	8.1	3.8	2.2	2.5	2.4	1.5	6.9	8.5	6.5	6.9	18.6	56.9																							
16-May	9.1	Z	18.5	15.6	7.7	4.4	2.7	2.7	1.8	1.1	1.0	0.6	1.0	1.4	1.3	1.6	1.8	6.5	14.2	12.5	18.2	23.5	10.5	6.9	23.5																								
17-May	2.7	3.1	Z	7.7	9.2	4.2	3.4	3.8	2.7	2.4	3.0	3.2	3.4	3.2	1.8	1.5	1.6	1.9	1.5	1.8	5.1	10.3	19.5	8.8	4.6	19.5																							
18-May	3.4	9.3	11.3	Z	23.0	24.3	8.8	6.1	3.9	3.9	3.0	2.1	2.6	2.1	2.3	1.7	2.2	1.4	1.3	2.7	24.7	10.0	10.8	12.0	7.5	24.7																							
19-May	10.7	6.7	4.7	4.7	Z	22.1	13.5	18.5	8.5	5.3	7.0	7.4	7.6	12.7	10.2	8.7	3.2	3.3	8.6	19.2	16.2	6.4	14.8	36.1	11.1	36.1																							
20-May	73.0	31.4	24.1	22.2	27.4	Z	24.6	24.2	31.1	14.3	10.8	8.1	6.0	7.3	7.4	7.8	7.8	7.8	8.7	11.9	6.0	2.8	2.9	4.5	16.2	73.0																							
21-May	Z	9.4	5.9	7.3	10.7	11.7	12.6	11.0	17.5	19.5	22.2	16.9	20.2	22.8	11.6	8.4	7.4	7.3	9.3	10.3	7.9	38.8	64.4	42.5	17.2	64.4																							
22-May	71.0	Z	26.6	34.1	41.1	29.1	20.5	14.6	11.2	10.0	6.2	5.1	3.7	2.6	2.2	1.8	1.8	2.5	3.8	2.7	3.0	3.9	4.7	3.0	13.3	71.0																							
23-May	4.0	0.9	Z	5.8	5.3	6.0	4.1	2.3	3.0	C	C	C	C	C	C	3.9	5.2	3.1	1.7	2.0	1.5	1.9	2.1	1.8	--	6.0																							
24-May	1.9	2.1	0.5	1.4	Z	3.9	2.7	5.5	8.6	4.9	4.1	4.0	2.5	5.1	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.3	0.3	0.3	2.3	8.6																							
25-May	0.3	1.2	4.6	0.5	0.6	Z	6.5	1.0	0.8	1.5	1.0	11.8	15.5	6.7	7.3	9.1	6.5	4.6	2.6	5.5	23.3	13.5	7.9	11.9	6.3	23.3																							
26-May	Z	12.9	16.2	15.1	19.3	25.7	19.2	8.7	6.4	12.5	7.5	5.2	4.3	2.2	1.8	2.0	1.9	2.4	2.5	5.4	5.3	9.0	24.7	34.5	10.6	34.5																							
27-May	34.9	Z	19.5	27.1	34.3	39.2	13.4	9.2	5.1	1.9	1.7	1.6	1.8	2.2	2.1	2.1	2.6	2.3	1.9	3.6	4.0	2.7	9.6	8.7	10.1	39.2																							
28-May	7.1	6.1	Z	9.1	16.3	14.8	10.7	7.0	4.6	5.3	2.3	0.6	0.5	0.3	0.3	0.3	0.3	0.5	0.5	0.4	0.4	0.8	1.0	1.4	3.9	16.3																							
29-May	10.9	2.1	1.8	Z	3.6	7.6	19.7	41.4	27.1	8.9	2.4	0.3	0.3	0.4	0.4	0.3	0.8	0.6	0.5	0.8	1.6	11.9	10.1	8.0	7.0	41.4																							
30-May	10.6	14.8	16.3	19.0	Z	47.4	9.6	3.7	24.0	39.6	25.4	10.6	4.1	2.7	2.0	0.7	0.5	0.5	2.7	2.0	6.9	11.8	10.3	8.3	11.9	47.4																							
31-May	6.3	4.2	11.6	14.0	5.3	Z	8.2	6.3	8.1	2.9	1.6	0.8	1.5	1.6	5.3	11.0	8.4	6.2	8.3	8.1	8.3	12.8	10.8	12.2	7.1	14.0																							
																								15.7	9.6	11.3	13.2	15.8	22.9	15.2	13.2	13.3	11.7	8.6	6.6	5.4	4.4	3.1	3.0	2.8	2.7	3.4	6.4	8.7	9.8	11.9	13.4	Diurnal Average	
																								73.0	31.4	26.6	34.1	41.1	57.6	37.4	41.4	56.9	39.6	31.5	56.1	41.1	22.8	11.6	11.0	8.4	7.8	9.3	19.2	24.7	38.8	64.4	42.5	Diurnal Maximum	
Z - zerospan																								C - Calibration																									



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Barge Landing - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Barge Landing - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	612	86.56	86.56
21 - 40	82	11.60	98.16
41 - 80	13	1.84	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Barge Landing - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	15	53	22	19	8	16	95	90	106	43	26	33	17	11	34	24	612
21 - 40	9	8	0	1	1	2	13	15	9	2	2	6	0	3	2	9	82
11 - 80	3	1	0	0	0	0	0	3	0	1	1	3	0	0	0	1	13
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	62	22	20	9	18	108	108	115	46	29	42	17	14	36	34	707

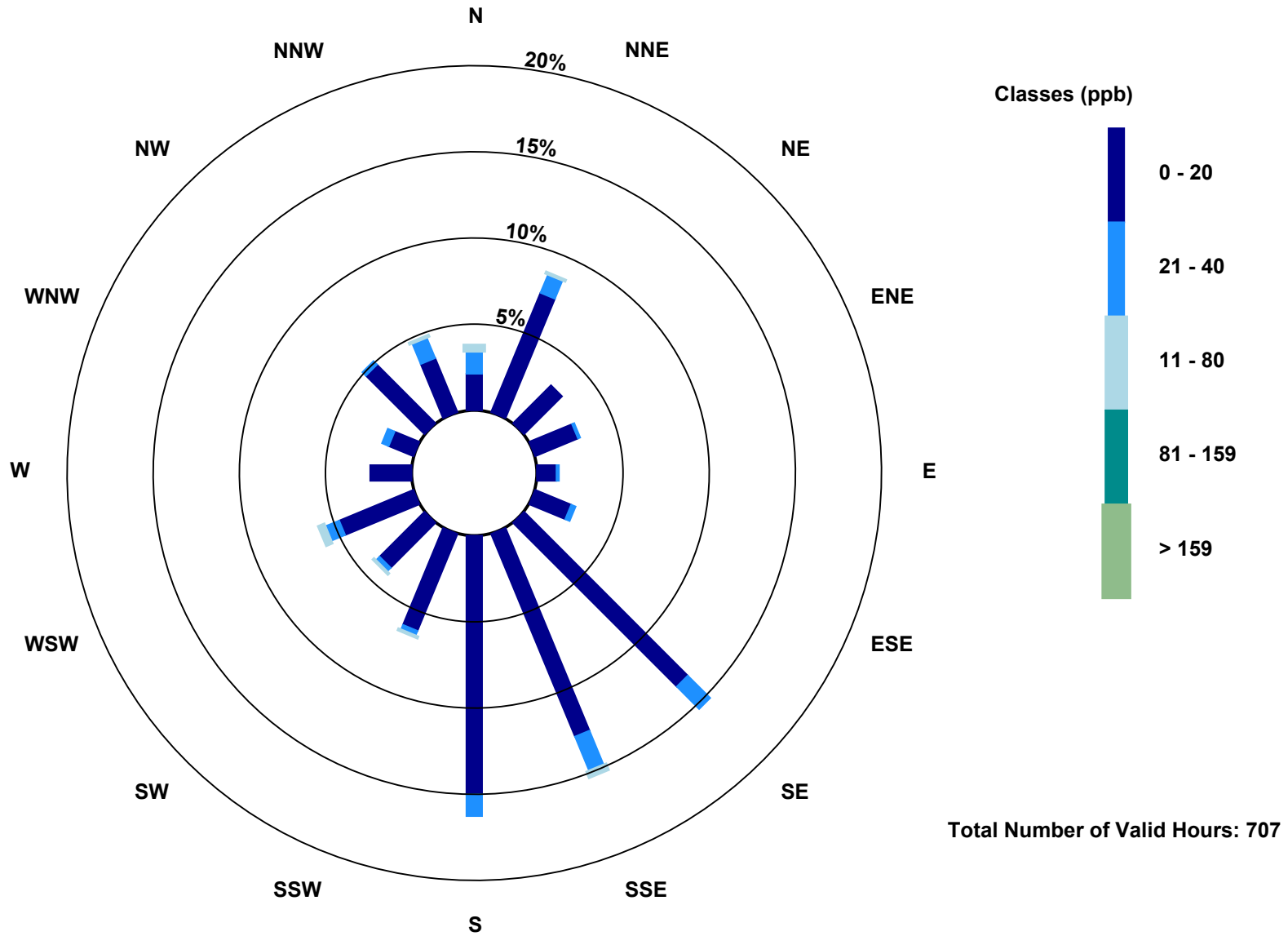
Total Number of Valid Hours: 707

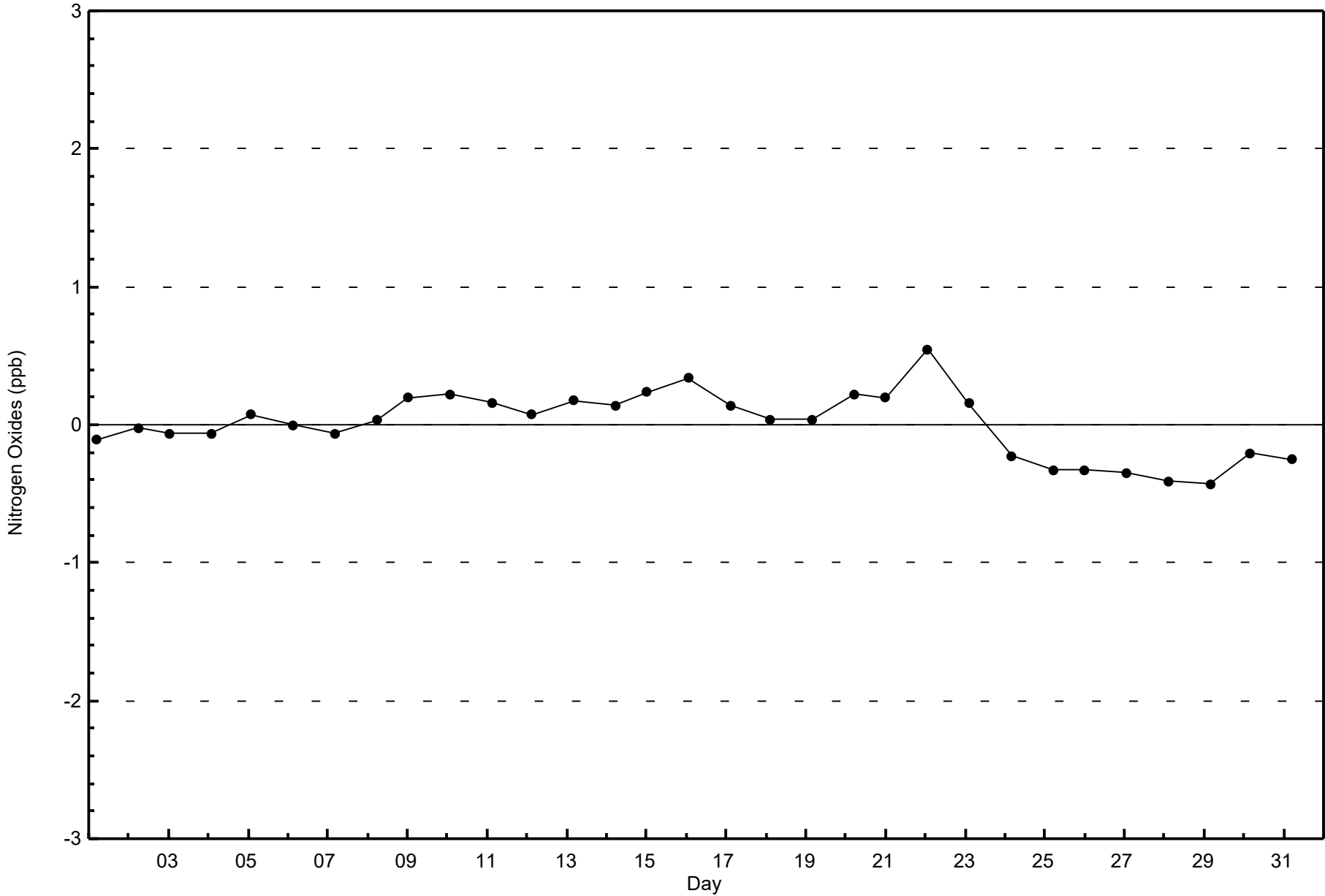
Total Number of Hours: 744

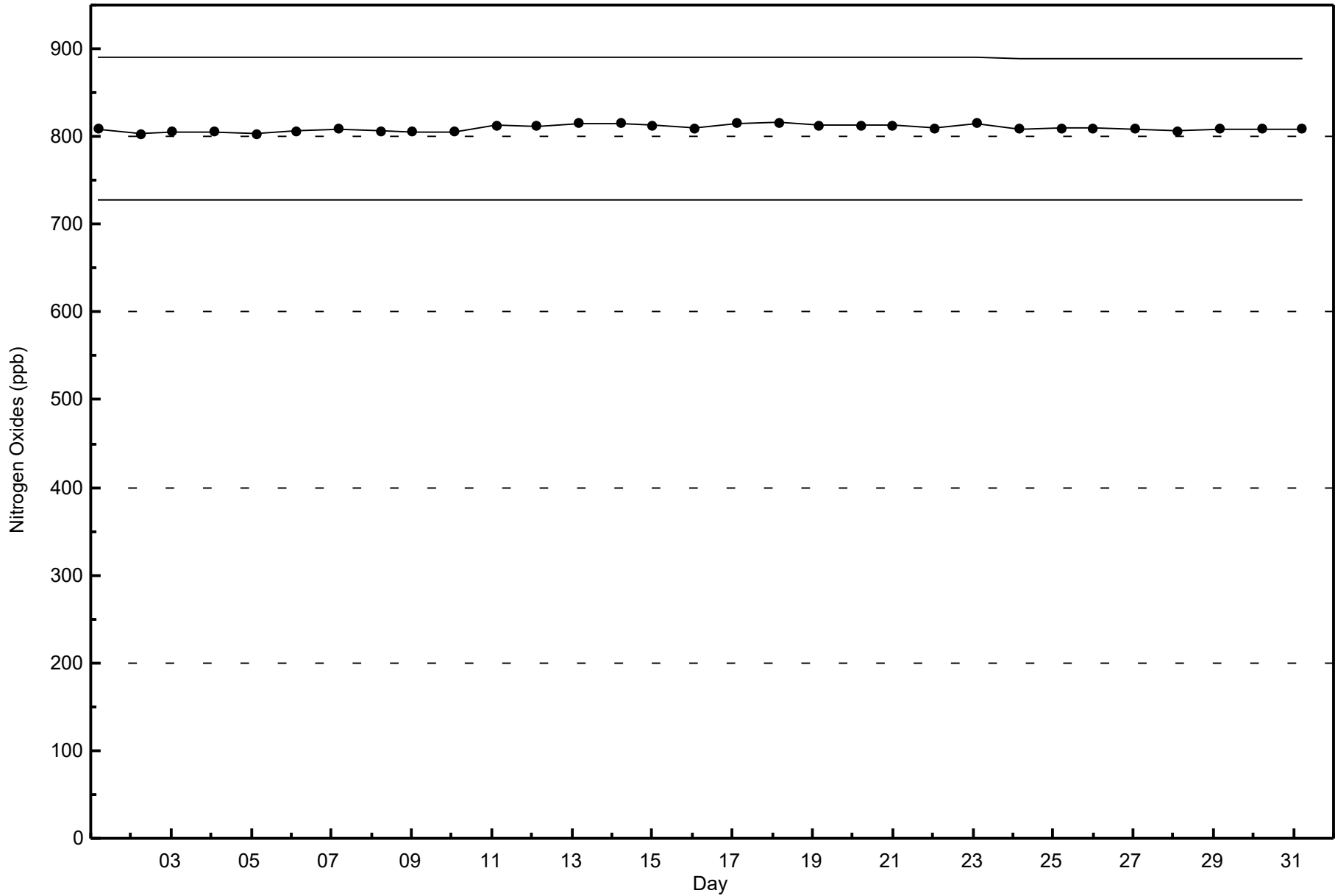


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Barge Landing





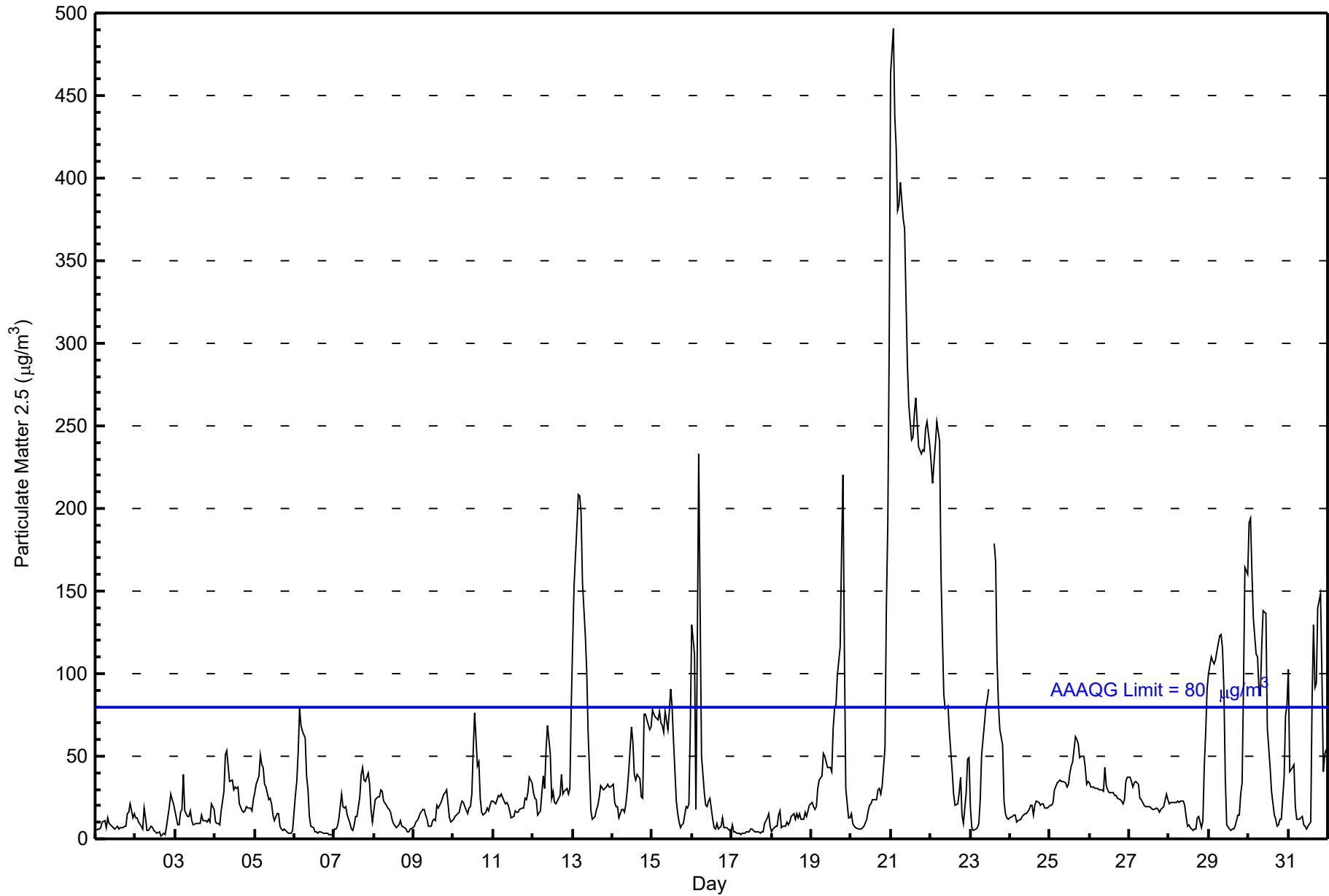




Summary of Hour Averages

Barge Landing - May 2023

Number of Exceedences (AAAQO):		1-hr: 99		24-hr: 15		Hours in Service:															744					
Maximum Value: 491.1 µg/m ³ on May 21 02:00		Maximum Daily Average: 314.0 µg/m ³ on May 21															Hours of Data:		742							
Minimum Value: 2.1 µg/m ³ on May 2 16:00		Minimum Daily Average: 5.5 µg/m ³ on May 17															Hours of Missing Data:		2							
Maximum Diurnal Average: 61.1 µg/m ³ at hour 5		Minimum Diurnal Average: 30.2 µg/m ³ at hour 14															Hours of Calibration:		2							
Monthly Average: 43.82 µg/m ³		Percentiles: P ₁ = 3.0 P ₁₀ = 6.1 Q ₁ = 11.4 Median = 21.0 Q ₃ = 40.1 P ₉₀ = 108.0 P ₉₉ = 372.7															Percent Operational Time:		100.0							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	4.8	5.6	6.0	6.4	9.8	10.8	7.1	12.4	9.7	8.5	7.6	6.3	7.2	7.2	6.3	6.7	7.1	7.7	7.5	14.9	16.1	21.0	13.1	15.1	9.4	21.0
2-May	13.1	12.3	10.3	7.5	6.1	18.9	12.7	5.5	5.4	7.2	6.9	4.9	4.1	3.2	4.2	2.1	2.7	3.0	2.8	7.5	19.2	27.0	23.9	21.2	9.7	27.0
3-May	16.7	8.5	8.1	16.0	18.0	38.9	16.9	13.6	13.9	17.3	11.3	8.5	9.0	9.1	9.1	9.2	14.0	10.7	11.2	9.9	11.9	10.0	21.0	18.0	13.8	38.9
4-May	10.2	9.7	9.3	8.8	16.9	29.0	50.8	53.0	44.2	34.5	35.6	29.3	31.0	30.6	31.4	21.0	16.9	15.9	17.2	19.8	18.9	18.4	16.7	23.6	24.7	53.0
5-May	28.0	32.7	38.1	50.5	44.6	42.8	32.7	31.4	23.4	24.5	21.0	14.0	11.1	15.4	15.6	7.6	6.1	4.7	5.7	4.6	3.5	3.3	3.1	4.8	19.5	50.5
6-May	25.9	34.4	52.9	78.7	69.0	65.1	61.1	38.3	29.7	13.4	7.5	6.8	4.6	3.8	3.6	4.6	4.5	3.5	3.2	3.1	3.7	2.8	2.8	3.0	21.9	78.7
7-May	5.7	5.7	7.7	12.2	27.1	19.4	18.5	19.6	14.6	9.1	6.1	4.7	8.3	13.4	13.9	25.8	39.3	43.1	35.8	34.5	39.8	33.4	17.7	10.5	19.4	43.1
8-May	16.7	23.6	25.1	25.4	30.0	28.6	22.9	20.3	18.9	17.7	16.5	11.8	9.3	6.6	7.9	8.1	10.8	7.6	6.8	6.1	4.4	4.4	5.5	6.6	14.2	30.0
9-May	7.9	9.9	11.1	12.4	15.0	17.6	18.1	14.3	11.5	7.5	7.8	11.0	11.9	11.2	20.0	18.9	21.9	24.3	26.9	28.2	29.7	12.3	10.5	10.9	15.5	29.7
10-May	12.0	13.8	14.6	16.5	20.2	23.3	22.1	19.3	15.2	18.5	19.7	27.4	54.5	76.0	44.0	46.5	24.2	16.0	14.5	16.3	18.5	17.0	20.7	23.0	24.7	76.0
11-May	22.8	21.3	23.6	26.1	25.3	26.8	22.5	21.6	21.6	20.3	16.7	13.0	13.2	16.9	16.1	16.1	17.7	18.9	18.8	24.3	23.8	28.0	37.7	34.3	22.0	37.7
12-May	27.8	24.8	23.3	14.7	16.8	28.3	38.4	30.8	53.9	68.4	51.9	24.3	29.2	22.3	20.8	24.9	26.3	39.0	27.1	28.8	30.3	27.2	30.3	81.0	32.9	81.0
13-May	119.0	153.8	189.1	208.3	207.8	197.5	154.8	124.0	102.2	65.5	41.3	16.9	11.8	13.6	17.5	20.6	25.0	32.6	29.5	30.6	31.5	33.2	31.0	31.3	78.7	208.3
14-May	32.7	21.9	19.2	19.2	12.9	18.2	17.4	16.1	21.1	29.7	40.3	68.1	58.8	39.2	35.5	38.6	36.5	25.3	24.8	75.5	75.6	72.0	66.4	68.2	38.9	75.6
15-May	78.1	75.3	73.7	72.4	77.0	70.0	68.5	64.7	77.4	65.9	77.5	90.5	79.6	59.4	22.9	15.3	9.8	7.1	8.8	9.4	19.4	19.0	21.1	68.4	51.3	90.5
16-May	129.3	111.6	17.6	118.8	232.7	139.5	50.3	28.1	20.4	19.7	23.0	24.9	11.8	6.5	6.3	9.3	5.7	7.5	12.8	6.6	6.6	6.4	5.9	4.0	41.9	232.7
17-May	8.1	4.0	3.8	3.4	3.3	2.7	3.4	3.7	3.4	4.2	4.3	5.7	6.2	5.4	4.2	4.3	4.2	3.8	4.1	4.6	9.5	12.7	15.0	7.3	5.5	15.0
18-May	4.0	5.8	7.7	7.6	14.3	17.3	6.9	7.8	8.0	9.9	8.7	10.3	13.9	15.7	11.7	15.2	13.0	15.2	11.4	11.7	16.0	13.7	17.1	20.3	11.8	20.3
19-May	22.3	19.1	17.8	19.8	30.4	35.4	38.3	51.5	50.0	46.8	43.2	43.1	40.8	66.7	79.2	81.6	98.8	116.2	173.4	220.1	115.2	30.8	12.3	12.9	61.1	220.1
20-May	15.7	9.7	7.7	6.5	6.1	6.2	6.0	6.8	8.0	11.7	17.0	20.1	21.6	23.4	23.9	23.7	29.6	30.7	27.2	32.4	54.8	140.7	189.4	297.9	42.4	297.9
21-May	463.6	491.1	437.3	418.6	380.6	383.9	397.4	375.1	369.2	326.8	287.4	262.4	241.6	243.2	258.0	267.2	251.8	237.4	233.3	235.4	234.7	248.7	252.6	237.9	314.0	491.1
22-May	227.1	215.7	228.1	238.7	252.7	240.8	161.4	122.4	87.6	78.9	80.3	64.1	52.6	40.8	26.8	19.9	21.6	28.2	37.0	14.8	9.6	28.1	48.5	49.3	99.0	252.7
23-May	19.0	6.5	5.3	5.9	7.0	9.2	23.3	50.9	69.3	79.4	83.8	90.7	C	C	179.2	167.4	108.1	81.7	66.5	57.0	22.6	15.0	12.5	12.2	53.3	179.2
24-May	12.7	13.6	14.3	14.2	10.4	11.2	12.0	13.1	14.8	15.1	15.0	17.5	20.3	20.4	14.8	20.7	23.1	21.6	20.1	21.6	21.4	18.9	18.4	19.3	16.9	23.1
25-May	20.2	20.4	22.0	29.9	33.8	35.1	35.3	35.1	34.7	34.1	31.1	33.1	40.2	43.9	46.4	62.3	60.4	57.3	49.6	50.3	50.2	43.0	33.3	34.8	39.0	62.3
26-May	34.1	31.3	31.3	30.1	30.2	30.1	29.9	29.3	28.4	43.2	32.2	29.3	27.9	27.9	27.6	26.6	26.6	24.4	23.4	22.6	21.2	23.7	34.5	37.7	29.3	43.2
27-May	37.3	34.8	31.4	34.2	35.1	33.0	24.7	23.7	22.3	20.1	19.8	19.4	19.2	19.0	17.9	17.6	18.3	18.2	16.2	18.2	18.6	19.3	26.9	23.6	23.7	37.3
28-May	20.9	21.9	21.7	22.2	22.4	23.2	21.8	23.3	23.2	20.0	13.9	7.7	8.2	6.9	5.4	5.7	5.6	12.7	13.2	6.8	11.3	44.4	64.3	91.0	21.6	91.0
29-May	99.8	109.8	107.3	105.9	108.6	113.4	122.5	123.6	115.3	90.7	36.8	8.2	5.6	5.5	6.2	6.1	7.8	14.4	14.7	26.8	34.3	92.6	164.7	159.9	70.0	164.7
30-May	191.6	193.7	162.1	134.2	111.9	110.2	91.4	86.2	115.7	138.0	136.2	66.8	55.0	43.0	28.5	14.2	12.2	7.6	8.7	12.0	11.5	37.4	75.0	80.4	80.1	193.7
31-May	102.3	40.5	43.4	45.2	19.2	12.0	12.1	11.9	13.6	8.5	7.5	5.5	8.0	9.8	86.1	130.1	91.6	94.2	140.2	148.1	99.1	40.7	50.9	54.0	53.1	148.1
59.0 57.5 53.9 58.4 61.1 59.3 51.7 47.7 46.7 43.7 39.0 33.8 30.6 30.2 35.2 36.7 33.6 33.2 35.2 38.8 34.9 36.9 43.3 50.4																								Diurnal Average		
463.6 491.1 437.3 418.6 380.6 383.9 397.4 375.1 369.2 326.8 287.4 262.4 241.6 243.2 258.0 267.2 251.8 237.4 233.3 235.4 234.7 248.7 252.6 297.9																								Diurnal Maximum		
C - Calibration																										
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Barge Landing - May 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	54	7.28	7.28
6 - 15	212	28.57	35.85
16 - 25	175	23.58	59.43
26 - 80	204	27.49	86.93
> 81.0	97	13.07	100.00

Total Number of Valid Hours: 742

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Barge Landing - May 2023**

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	4	10	4	2	0	2	19	0	0	0	3	2	0	1	3	4	54
6 - 15	11	10	6	4	3	4	37	24	43	17	12	14	6	4	11	6	212
16 - 25	5	14	4	3	1	6	17	41	40	8	1	9	7	5	5	9	175
26 - 80	4	22	7	10	3	7	32	33	27	14	7	12	2	4	11	9	204
> 81.0	7	6	2	1	2	5	11	16	8	7	8	6	3	1	6	8	97
Totals	31	62	23	20	9	24	116	114	118	46	31	43	18	15	36	36	742

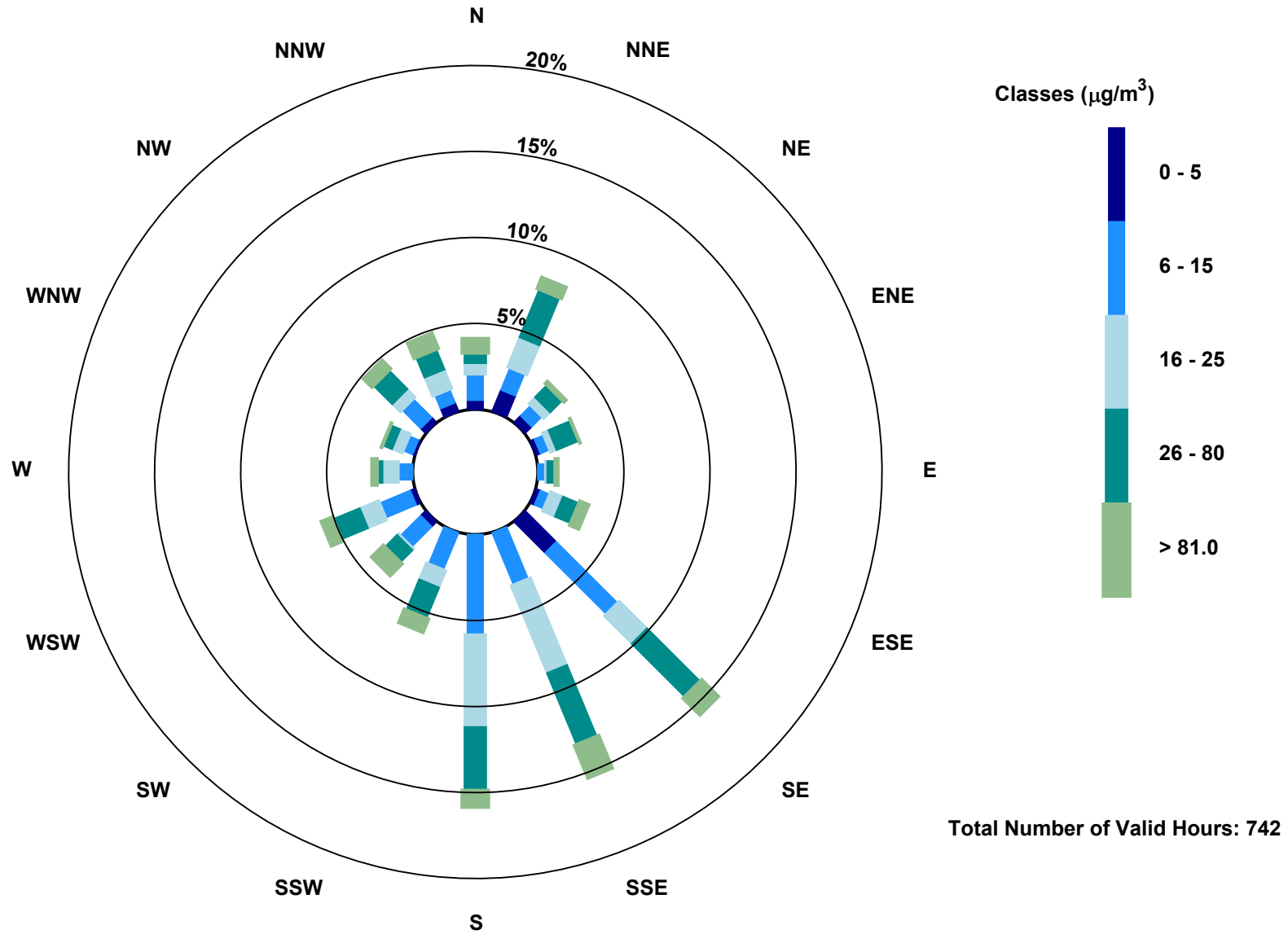
Total Number of Valid Hours: 742

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Barge Landing





Wood Buffalo Environmental Association
Summary of Hour Averages

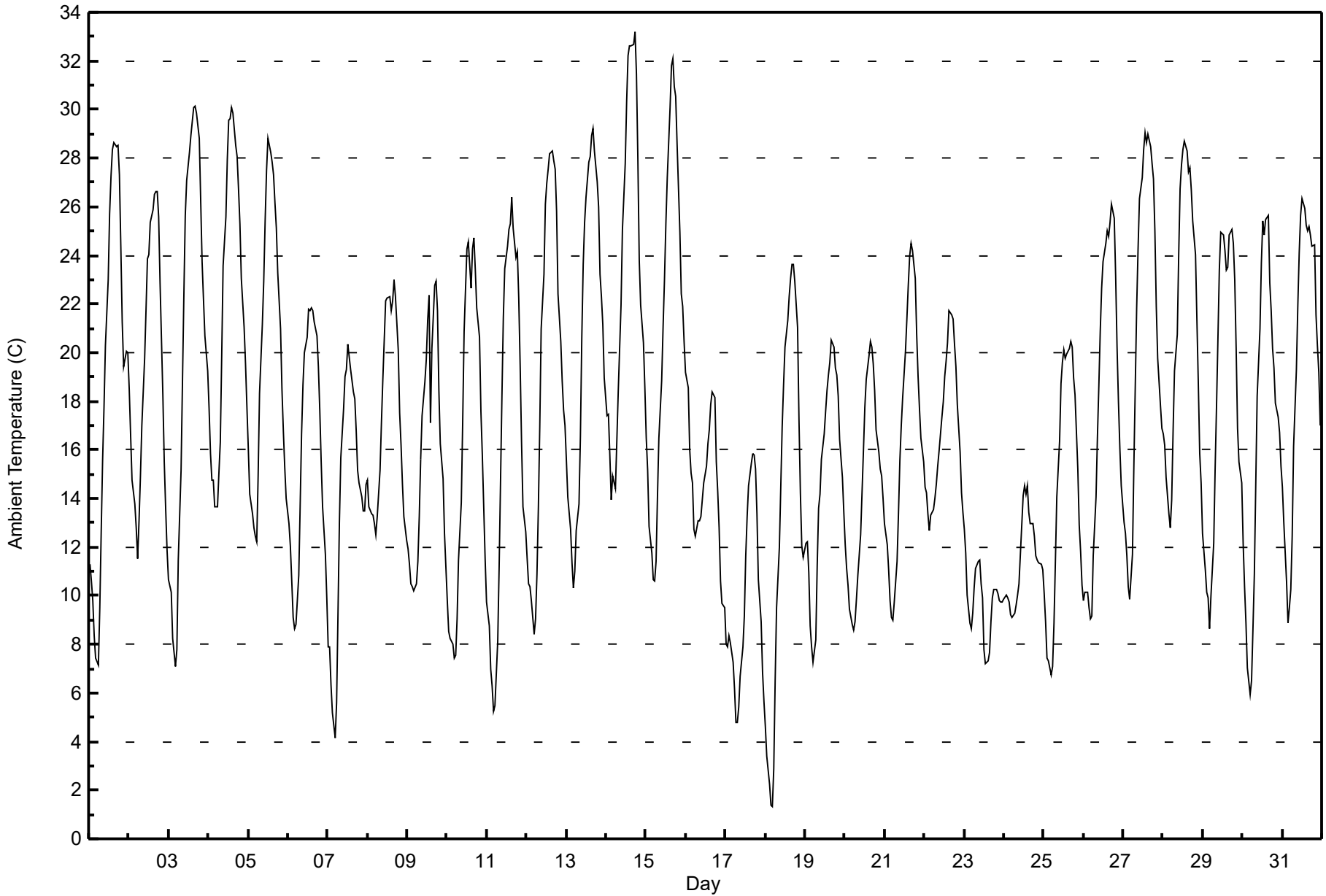
Ambient Temperature (AT) - C
Barge Landing - May 2023

Maximum Value: 33.2 C on May 14 18:00		Maximum Daily Average: 23.4 C on May 14		Hours in Service: 744																							
Minimum Value: 1.4 C on May 18 05:00		Minimum Daily Average: 9.7 C on May 17		Hours of Data: 744																							
Maximum Diurnal Average: 23.8 C at hour 17		Minimum Diurnal Average: 9.3 C at hour 5		Hours of Missing Data: 0																							
Monthly Average: 17.13 C		Percentiles: P ₁ = 4.8 P ₁₀ = 9.0 Q ₁ = 11.7 Median = 16.5 Q ₃ = 22.2 P ₉₀ = 26.4 P ₉₉ = 31.2		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	11.3	10.6	9.8	8.3	7.5	7.1	9.5	12.6	15.6	17.7	20.3	23.0	25.7	27.3	28.4	28.7	28.5	28.5	27.3	24.4	21.3	19.4	20.1	20.0	18.9	28.7	
2-May	18.5	16.6	14.7	13.8	12.8	11.6	13.1	14.9	17.0	19.8	21.8	23.8	24.0	25.4	25.9	26.5	26.6	26.6	25.6	22.9	18.3	15.5	13.6	11.9	19.2	26.6	
3-May	10.7	10.2	8.2	7.7	7.1	7.8	11.5	15.2	18.8	22.4	25.7	27.1	28.2	29.0	29.5	30.1	30.1	29.8	28.8	26.3	23.7	22.2	20.7	19.2	20.4	30.1	
4-May	17.7	15.8	14.8	14.7	13.7	13.7	15.0	16.3	19.8	23.6	25.6	27.9	29.6	29.6	30.1	29.8	28.5	28.1	26.7	25.3	23.0	21.0	19.6	17.7	22.0	30.1	
5-May	16.0	14.2	13.4	12.8	12.5	12.2	14.9	18.3	21.2	22.9	25.4	27.5	28.8	28.2	27.8	27.3	26.2	25.1	26.3	21.0	18.5	16.8	15.3	14.0	20.2	28.8	
6-May	13.0	12.0	10.6	9.1	8.7	8.8	10.8	13.7	16.7	18.7	20.0	20.6	21.8	21.7	21.8	21.7	21.2	20.7	19.4	17.7	15.5	13.6	11.7	9.9	15.8	21.8	
7-May	7.9	7.9	6.3	5.2	4.2	5.6	9.3	13.0	15.7	17.7	19.0	19.3	20.4	19.8	19.3	18.4	18.1	16.8	15.2	14.6	14.1	13.5	13.5	14.6	13.7	20.4	
8-May	14.8	13.7	13.4	13.3	13.0	12.5	13.2	15.1	17.1	18.9	20.5	22.1	22.2	22.3	21.7	22.1	23.0	22.3	20.1	17.5	16.2	14.6	13.3	12.3	17.3	23.0	
9-May	11.9	11.3	10.5	10.4	10.2	10.5	11.4	13.3	15.6	17.4	18.8	19.7	21.3	22.3	17.1	20.2	22.7	22.9	21.7	18.4	16.3	14.8	12.6	11.2	15.9	22.9	
10-May	9.8	8.5	8.3	8.0	7.4	7.6	9.1	11.5	13.8	17.2	20.9	22.6	24.2	24.5	22.6	24.3	24.7	23.4	21.8	20.6	17.6	15.8	13.7	11.5	16.2	24.7	
11-May	9.7	8.8	7.0	6.3	5.2	5.5	8.1	11.2	14.7	18.2	21.4	23.4	24.4	25.0	25.3	26.4	25.1	23.9	24.1	22.2	19.4	16.3	13.7	12.6	16.6	26.4	
12-May	11.5	10.5	10.3	9.8	8.4	9.1	10.9	13.6	16.9	21.0	23.2	26.1	27.0	27.6	28.2	28.3	27.9	27.5	25.8	22.4	20.4	18.8	17.6	17.0	19.2	28.3	
13-May	15.6	14.0	12.7	11.3	10.3	11.0	12.7	13.8	16.5	20.6	23.6	25.4	26.4	27.8	28.1	28.9	29.2	28.3	27.0	26.0	23.2	22.3	21.1	19.0	20.6	29.2	
14-May	17.4	17.5	15.8	14.0	14.9	14.4	16.4	18.4	20.2	22.0	25.1	27.8	30.3	32.2	32.6	32.6	32.7	33.2	31.5	28.0	23.8	22.0	20.4	18.5	23.4	33.2	
15-May	16.5	15.1	12.8	11.8	10.6	10.6	11.4	14.1	16.5	18.8	21.0	23.0	25.3	27.2	30.1	31.8	32.1	31.0	30.5	28.6	24.9	22.4	21.9	20.5	21.2	32.1	
16-May	19.2	18.5	16.0	15.1	14.6	12.8	12.4	13.1	13.1	13.3	13.9	14.6	15.3	16.3	16.8	17.9	18.4	18.1	15.5	14.3	12.8	10.6	9.7	9.5	14.7	19.2	
17-May	8.0	7.9	8.3	8.1	7.2	6.2	4.8	4.8	5.4	6.7	7.9	9.2	11.6	13.2	14.5	15.5	15.9	15.8	15.2	13.3	10.7	8.9	6.8	5.7	9.7	15.9	
18-May	4.6	3.4	2.2	1.4	1.4	2.9	6.5	9.5	12.0	14.5	17.0	18.7	20.2	21.3	22.3	23.1	23.6	23.7	22.9	21.0	17.2	14.2	12.0	11.6	13.6	23.7	
19-May	12.1	12.2	11.0	8.7	7.9	7.3	8.2	11.2	13.6	14.2	15.6	16.7	17.6	18.5	19.1	19.6	20.5	20.2	19.4	19.1	18.2	16.4	14.9	13.4	14.8	20.5	
20-May	12.1	11.1	10.4	9.5	8.8	8.6	8.9	9.8	10.8	12.5	14.2	16.0	17.8	18.9	19.9	20.5	20.2	19.6	18.5	16.8	15.9	15.2	14.9	14.0	14.4	20.5	
21-May	13.0	12.1	11.1	9.8	9.1	9.0	9.8	11.4	13.4	15.6	17.0	18.2	20.1	21.4	22.7	23.9	24.5	24.2	23.0	20.7	19.0	17.7	16.5	15.5	16.6	24.5	
22-May	14.4	14.3	13.4	12.7	13.3	13.6	14.0	14.6	15.3	16.0	17.4	18.0	19.0	19.6	20.4	21.7	21.6	21.4	20.4	19.4	17.8	15.9	14.2	13.4	16.7	21.7	
23-May	12.7	11.8	10.0	8.9	8.7	9.3	10.3	11.1	11.4	11.5	10.5	9.9	7.8	7.2	7.3	7.7	9.0	9.9	10.2	10.2	10.1	9.8	9.7	9.8	9.8	12.7	
24-May	9.8	10.0	9.9	9.7	9.2	9.1	9.3	9.6	10.0	10.5	11.7	14.1	14.5	14.2	14.5	13.4	13.0	13.0	12.5	11.7	11.5	11.3	11.3	11.0	11.5	14.5	
25-May	10.1	8.9	7.4	7.3	6.7	7.1	8.9	11.4	14.0	16.4	18.7	19.6	20.1	19.8	19.9	20.1	20.5	20.2	18.9	18.3	15.2	12.9	11.8	10.4	14.4	20.5	
26-May	9.8	10.1	10.2	9.5	9.1	9.2	11.6	14.1	16.6	18.6	20.9	22.7	23.7	24.5	25.0	24.8	25.4	26.1	25.5	23.2	20.2	18.0	16.1	14.5	17.9	26.1	
27-May	13.0	12.6	11.6	10.4	9.9	11.7	15.3	18.6	21.8	24.3	26.3	27.2	28.3	29.0	28.6	29.0	28.5	27.8	27.1	25.0	21.9	19.8	17.8	16.9	20.9	29.0	
28-May	16.6	16.2	14.9	13.4	12.8	13.9	16.8	19.2	20.8	24.0	26.7	27.7	28.3	28.7	28.3	27.4	27.6	26.7	25.4	24.0	21.3	18.7	15.8	14.6	21.3	28.7	
29-May	12.6	11.0	10.1	9.9	8.7	9.9	12.1	15.2	17.8	20.6	23.4	25.0	24.9	24.2	23.4	23.5	24.8	25.1	24.5	23.0	20.2	16.9	15.5	14.7	18.2	25.1	
30-May	12.2	10.4	8.9	7.0	5.9	6.5	8.6	10.9	14.6	18.2	21.0	23.7	25.4	24.9	25.5	25.7	22.9	21.7	20.2	19.4	17.9	17.3	16.7	15.3	16.7	25.7	
31-May	14.5	13.0	10.6	8.9	9.5	10.3	12.5	16.1	19.3	21.9	24.1	25.6	26.3	25.9	25.2	25.0	25.2	24.9	24.4	24.5	21.6	20.3	19.2	17.0	19.4	26.3	
		12.8	11.9	10.8	9.9	9.3	9.5	11.2	13.4	15.7	17.9	20.0	21.5	22.6	23.2	23.3	23.7	23.8	23.4	22.3	20.6	18.3	16.6	15.2	14.1	Diurnal Average	
		19.2	18.5	16.0	15.1	14.9	14.4	16.8	19.2	21.8	24.3	26.7	27.9	30.3	32.2	32.6	32.6	32.7	33.2	31.5	28.6	24.9	22.4	21.9	20.5	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Barge Landing - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Barge Landing - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	116	15.59	15.59
10 - 20	367	49.33	64.92
> 20	261	35.08	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

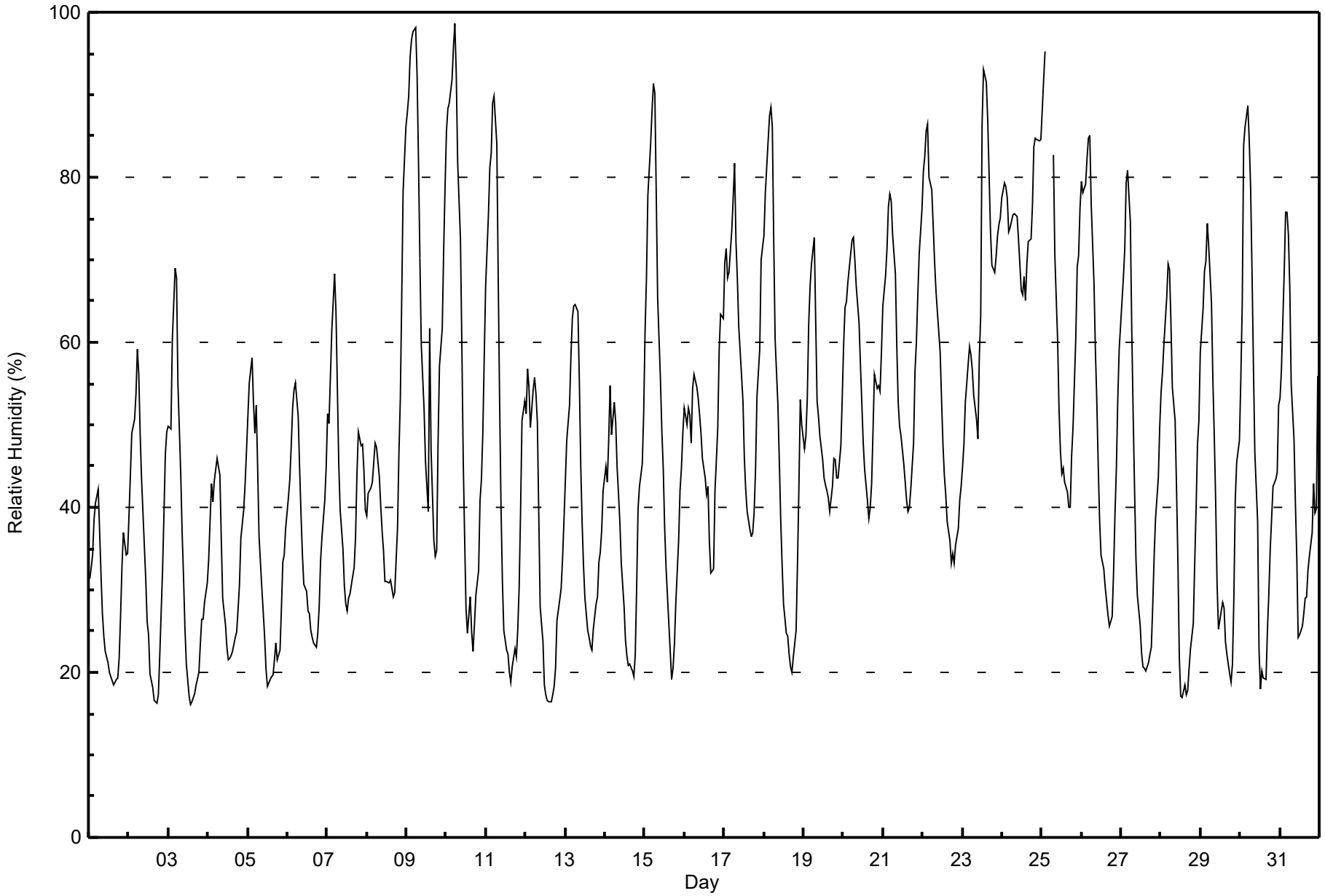
Relative Humidity (RH) - %
Barge Landing - May 2023

Maximum Value: 98.7 % on May 10 06:00																						Hours in Service: 744																								
Maximum Daily Average: 75.5 % on May 24																						Hours of Data: 740																								
Minimum Value: 16.0 % on May 3 14:00																						Hours of Missing Data: 4																								
Minimum Daily Average: 28.6 % on May 1																						Hours of Calibration: 0																								
Maximum Diurnal Average: 69.7 % at hour 6																						Percent Operational Time: 99.5																								
Minimum Diurnal Average: 29.8 % at hour 17																																														
Monthly Average: 47.50 %																																														
Percentiles: P ₁ = 16.7 P ₁₀ = 22.1 Q ₁ = 30.8 Median = 44.8 Q ₃ = 61.7 P ₉₀ = 77.4 P ₉₉ = 92.9																																														
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																						
1-May	31.3	32.7	34.2	38.5	40.5	42.1	37.1	31.9	27.2	24.4	22.6	21.2	20.0	19.4	18.9	18.5	19.2	19.4	21.9	26.9	32.9	37.0	34.3	34.3	28.6	42.1																				
2-May	38.9	43.9	49.1	50.7	53.7	59.1	56.2	48.8	43.4	35.2	31.1	26.1	24.5	19.9	18.2	16.6	16.4	16.2	17.3	22.0	32.4	39.2	46.4	49.1	35.6	59.1																				
3-May	49.8	49.6	60.3	64.8	69.0	67.7	54.8	44.1	37.0	31.5	25.4	21.0	17.1	16.0	16.4	16.9	17.5	18.4	20.1	23.5	26.4	26.5	28.4	30.8	34.7	69.0																				
4-May	33.8	38.5	42.9	40.7	43.2	45.9	44.9	43.9	36.0	29.0	25.8	23.1	21.5	21.7	22.0	22.6	24.3	24.9	27.6	30.7	36.2	39.7	42.7	46.8	33.7	46.8																				
5-May	51.0	55.1	58.1	52.7	49.0	52.3	44.7	36.4	30.1	27.4	24.2	20.3	18.2	19.2	19.5	19.7	21.5	23.6	21.5	22.7	27.8	33.3	34.2	37.5	33.3	58.1																				
6-May	41.1	43.4	47.4	52.1	54.2	55.1	51.1	44.8	39.2	34.3	30.7	29.9	27.5	27.1	25.1	24.3	23.5	23.0	24.7	28.0	33.5	36.5	40.9	44.8	36.8	55.1																				
7-May	51.4	50.2	55.7	61.4	68.3	63.7	54.4	45.3	39.6	35.0	30.5	28.3	27.5	29.0	29.5	31.6	32.7	36.4	44.1	49.1	47.4	47.6	44.4	39.7	43.5	68.3																				
8-May	38.9	41.7	42.4	43.0	45.4	47.8	47.3	43.8	40.2	37.1	34.7	31.0	31.1	30.8	31.3	30.2	29.1	29.6	37.5	46.4	53.0	65.2	78.2	86.0	43.4	86.0																				
9-May	87.9	89.9	94.5	96.7	97.6	98.2	92.4	82.0	70.1	59.7	51.8	45.6	42.5	39.4	61.7	46.9	36.0	34.0	34.8	48.0	57.0	61.7	71.3	78.8	65.8	98.2																				
10-May	85.6	88.3	89.0	91.9	95.7	98.7	92.5	81.8	72.6	59.7	45.6	36.2	27.6	24.7	29.2	24.9	22.5	25.8	29.4	32.3	40.9	43.4	48.9	58.1	56.1	98.7																				
11-May	66.8	75.5	81.2	82.8	89.0	89.8	84.0	67.9	52.9	40.1	31.0	25.0	22.6	22.1	20.1	18.9	20.6	22.8	21.8	25.3	30.5	39.7	50.5	52.9	47.2	89.8																				
12-May	51.4	56.8	54.5	49.7	54.2	55.7	53.7	50.3	39.2	28.0	23.7	18.4	17.2	16.6	16.4	16.5	17.3	18.3	20.5	26.2	28.8	30.1	33.7	38.4	34.0	56.8																				
13-May	43.2	48.1	52.4	58.3	62.9	64.5	64.5	63.8	55.4	45.2	38.1	32.9	28.9	25.0	24.3	23.2	22.7	25.2	28.3	29.1	33.4	34.5	37.3	42.0	41.0	64.5																				
14-May	44.9	43.1	48.2	54.7	48.7	52.7	50.3	45.0	41.7	38.2	33.3	27.9	24.0	22.1	20.9	21.1	20.2	19.5	22.2	30.4	39.8	42.5	45.3	51.3	37.0	54.7																				
15-May	61.4	67.9	77.8	84.1	88.2	91.3	90.2	77.9	65.4	55.5	49.3	44.8	37.6	32.8	25.9	22.5	19.2	20.5	23.4	28.5	35.9	42.1	44.8	49.0	51.5	91.3																				
16-May	52.1	50.0	52.0	51.2	47.9	54.3	56.0	54.7	53.3	51.3	49.0	45.9	43.6	41.5	42.6	35.7	32.0	32.6	42.0	45.8	49.7	59.2	63.5	62.8	48.7	63.5																				
17-May	69.6	71.3	67.8	68.5	73.6	77.4	81.8	72.2	67.6	61.8	56.0	52.8	46.0	42.1	39.5	37.3	36.5	36.9	39.4	44.5	53.4	59.2	70.0	71.5	58.2	81.8																				
18-May	73.0	78.1	84.4	87.5	88.5	86.2	72.4	60.4	52.4	45.6	38.5	33.1	28.4	24.8	24.5	22.2	20.7	20.0	21.8	25.1	33.2	42.3	53.0	49.9	48.6	88.5																				
19-May	47.1	48.6	53.2	62.2	66.7	69.5	72.7	62.6	52.8	50.9	48.6	45.8	43.6	42.8	42.1	41.2	39.5	42.6	45.9	45.8	43.5	43.5	47.4	53.4	50.5	72.7																				
20-May	59.8	64.3	65.0	67.3	70.6	72.3	72.8	70.0	66.7	62.4	57.3	52.6	47.9	44.5	40.9	38.6	39.9	42.9	49.3	56.1	54.5	54.8	54.1	58.6	56.8	72.8																				
21-May	64.3	68.1	71.3	76.4	77.9	77.1	73.0	68.3	59.5	52.7	49.8	48.7	45.2	43.0	40.9	39.5	40.0	42.2	47.8	56.5	59.9	65.6	70.6	76.1	58.9	77.9																				
22-May	80.6	82.5	85.6	86.5	80.1	78.4	74.3	69.8	66.2	63.8	58.8	53.1	47.7	43.8	41.5	38.4	35.9	33.3	34.4	33.3	35.4	37.5	40.8	42.5	56.0	86.5																				
23-May	45.0	47.7	52.7	57.2	59.5	58.5	56.7	53.6	50.7	48.2	58.2	63.2	86.7	93.1	91.5	87.0	80.3	73.5	69.3	68.4	70.4	72.9	74.3	75.2	66.4	93.1																				
24-May	77.5	79.3	78.8	77.5	73.4	73.9	75.4	75.6	75.4	75.2	72.5	66.3	65.7	68.0	65.0	69.5	72.3	72.5	76.7	83.8	84.7	84.5	84.4	84.6	75.5	84.7																				
25-May	88.1	91.8	95.3	OR	OR	OR	OR	82.7	70.6	60.2	51.9	46.7	44.0	44.8	43.1	41.8	39.9	40.0	46.2	49.7	60.7	69.1	70.5	76.2	60.7	95.3																				
26-May	79.5	78.2	79.2	82.2	84.8	85.1	76.9	67.1	59.0	53.0	45.2	38.5	34.2	32.6	30.3	28.7	27.0	25.6	26.8	32.2	39.2	44.8	53.1	59.2	52.6	85.1																				
27-May	64.9	67.7	71.4	79.3	80.9	74.6	61.6	51.2	42.2	33.7	29.4	25.8	22.3	20.7	20.5	20.2	21.2	22.2	23.1	28.1	34.0	38.7	43.6	49.8	42.8	80.9																				
28-May	54.0	56.4	59.9	65.5	69.5	68.8	62.6	54.6	50.6	42.3	33.4	21.9	17.1	16.9	18.5	17.3	17.9	20.5	22.9	25.9	33.2	39.8	47.7	50.5	40.3	69.5																				
29-May	58.7	64.0	68.7	69.8	74.3	71.6	64.8	55.4	48.7	40.6	30.6	25.2	27.5	28.5	27.8	23.8	22.1	19.8	18.8	21.0	29.0	40.9	45.5	48.1	42.7	74.3																				
30-May	55.7	64.8	83.8	86.1	88.6	84.5	78.7	68.5	57.2	46.6	38.3	22.8	18.0	20.2	19.3	19.2	25.0	29.4	34.9	38.7	42.5	43.4	44.3	52.4	48.5	88.6																				
31-May	53.3	56.6	68.5	75.7	75.7	73.1	66.7	54.9	48.3	40.4	33.8	24.3	24.6	25.6	27.2	28.9	29.2	32.3	34.1	37.0	42.8	39.3	39.8	56.0	45.3	75.7																				
																						58.1	61.1	65.3	67.2	69.1	69.7	65.5	59.0	52.0	45.5	40.3	35.4	33.2	32.2	32.1	30.4	29.8	30.4	33.2	37.5	42.6	46.9	51.1	55.0	Diurnal Average
																						88.1	91.8	95.3	96.7	97.6	98.7	92.5	82.7	75.4	75.2	72.5	66.3	86.7	93.1	91.5	87.0	80.3	73.5	76.7	83.8	84.7	84.5	84.4	86.0	Diurnal Maximum
OR - Out of Range																																														



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Barge Landing - May 2023



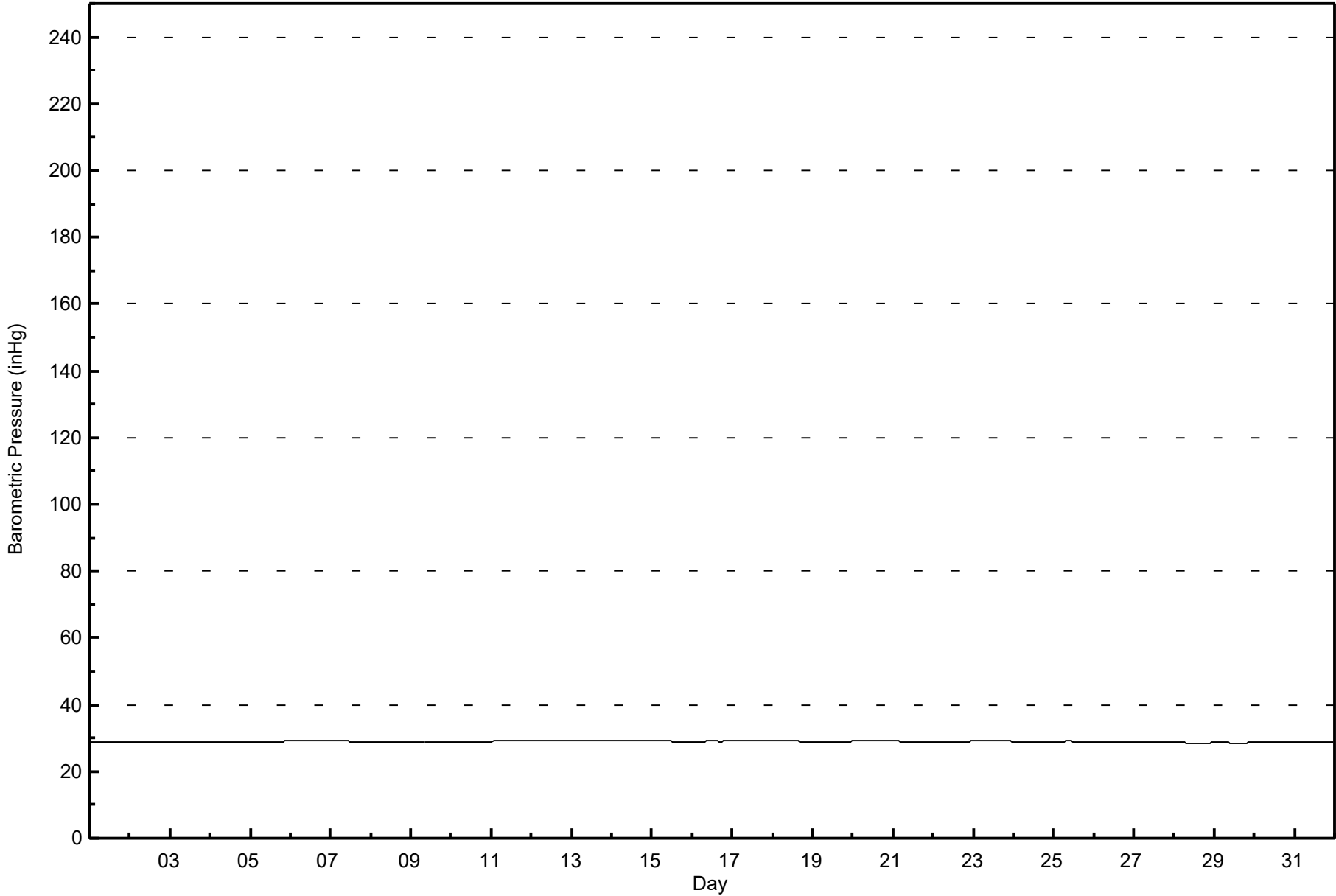


Maximum Value: 29.3 inHg on May 13 08:00 Maximum Daily Average: 29.3 inHg on May 13																						Hours in Service:	744			
Minimum Value: 28.5 inHg on May 28 15:00 Minimum Daily Average: 28.6 inHg on May 28																						Hours of Data:	744			
Maximum Diurnal Average: 29.0 inHg at hour 8 Minimum Diurnal Average: 28.9 inHg at hour 19																						Hours of Missing Data:	0			
Monthly Average: 28.94 inHg Percentiles: P ₁ = 28.5 P ₁₀ = 28.7 Q ₁ = 28.8 Median = 28.9 Q ₃ = 29.1 P ₉₀ = 29.2 P ₉₉ = 29.3																						Hours of Calibration:	0			
																						Percent Operational Time:	100.0			
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.7	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.7	28.7	28.7	28.8
2-May	28.7	28.7	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8
3-May	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.7	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.7	28.7	28.7	28.8
4-May	28.7	28.7	28.7	28.7	28.7	28.7	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.9	28.9	28.9	28.9	28.9
5-May	28.9	28.9	28.9	28.9	28.9	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.1
6-May	29.1	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.1	29.2
7-May	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	28.9	28.9	28.9	28.9	29.1
8-May	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9
9-May	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9
10-May	28.9	28.9	28.9	28.9	28.9	29.0	29.0	29.0	29.0	29.0	29.0	29.0	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0	29.0	29.0	29.0	29.0	29.0
11-May	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1
12-May	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.3	29.3	29.3	29.3	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.3	29.3
13-May	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.3
14-May	29.2	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.3
15-May	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.0	29.0	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	29.0
16-May	28.8	28.9	28.9	28.9	28.9	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.1	29.1	29.0
17-May	29.1	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2
18-May	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1
19-May	29.0	29.0	29.0	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.8	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0	29.0	29.0	29.1	28.9	
20-May	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.2
21-May	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.9
22-May	28.8	28.8	28.8	28.8	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0	29.0	29.0	29.0	29.0	28.9	
23-May	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	29.0	29.1	
24-May	29.0	29.0	29.0	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	
25-May	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	
26-May	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	28.9	28.9	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.9	
27-May	28.8	28.9	28.9	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.8	
28-May	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.6	28.6	28.6	28.6	
29-May	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.7	28.7	28.7	28.6	
30-May	28.7	28.7	28.7	28.7	28.7	28.8	28.8	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.8	28.7	
31-May	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	
																						Diurnal Average				
																						Diurnal Maximum				



Wood Buffalo Environmental Association
Hourly Averages

Barometric Pressure (BP) - inHg
Barge Landing - May 2023





Maximum Speed: 31 km/h on May 29 15:00		Maximum Daily Speed Average: 18.9 km/h on May 16		Hours in Service:	744																					
Minimum Speed Value: 1 km/h on May 11 05:00		Minimum Daily Speed Average: 1.2 km/h on May 25		Hours of Data:	744																					
Maximum Diurnal Speed Average: 6.0 km/h at hour 15		Minimum Diurnal Speed Average: 2.2 km/h at hour 19		Hours of Missing Data:	0																					
Monthly Average Velocity: 3.7 km/h 154.9 deg		Percentiles: P ₁ = 2 P ₁₀ = 5 Q ₁ = 8 Median = 11 Q ₃ = 16 P ₉₀ = 21 P ₉₉ = 27		Percent Operational Time:	100.0																					
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SE12	SSE13	SSE10	SE9	SE10	SE8	SSE6	SSE13	SSE16	SSE18	S18	SSE19	SSE17	S20	S19	SSW17	SSW16	SSW14	SSW16	SSW11	SSE11	S2	NNW16	N16	S10.3	S20
2-May	NNW14	N9	NW9	NW10	NW10	WNW4	WNW3	SW3	NW3	NNE5	WNW4	ENE6	N4	NNW11	NW10	NNW11	NNW12	WNW8	NW7	E7	ESE9	ESE7	SE9	SE9	NNW3.8	NNW14
3-May	SE10	SE7	S6	SSE10	S8	SSE10	SSE10	SSE9	SSE11	SSE11	S17	S21	S22	S22	S21	S20	S19	S18	S15	SSE14	SE15	SE16	SE15	SE14	SSE13.7	S22
4-May	SE11	SSE5	SE9	SE12	SSE10	SSE7	SSE5	ESE7	SSW4	SSW8	WSW7	WNW7	NW9	NNE10	NNE12	NNE19	NNE19	NNE21	NNE21	NNE21	NE18	NE16	ENE8	NE6.1	NNE21	
5-May	NNE6	ENE7	ESE6	SE7	SSE7	SE11	SSE15	SE13	SSE13	SSE16	SSE16	SSE21	SSE21	SE26	SE24	SE26	SE26	SE27	SE26	ESE25	SE18	SE21	SE21	SE20	SE16.5	SE27
6-May	SE22	SE20	SE17	SE16	SE17	SE15	SE15	SE17	SE16	SE21	SE21	SE19	SE18	SE19	SE21	ESE23	SE23	SE23	SE23	SE20	SE18	SE17	SE14	SE12	SE18.6	SE23
7-May	ESE12	ESE16	ESE8	ESE9	ESE10	SE7	SE10	SSE13	SE18	SE22	SE24	SE24	SE22	SE25	SE22	SSE24	SSE17	SE15	SSE6	ENE6	ENE9	E7	SE13	SE17	SE14.1	SE25
8-May	SSE15	SSE12	SSE16	SSE13	SSE14	SSE9	SSE14	SSE17	S13	S9	S12	S16	SSE16	S16	S12	SSW12	SSW13	S13	WSW12	W7	WSW9	SW8	SW9	S5	S10.6	SSE17
9-May	S6	NNW4	SW2	SE3	SE2	ESE2	S3	S5	SW8	W7	W7	WSW7	WSW10	SSW6	WSW11	WSW6	SSE5	WNW4	E4	SSE8	S6	SSW6	SSW6	SSW4	SSW3.8	WSW11
10-May	SW3	S6	S10	S9	SSE7	SE7	SE6	S5	WSW4	S5	ESE5	NNE4	NNE5	NNE2	WSW16	NW9	NNE11	NNE16	NE16	NE16	NNE13	NE12	NNE7	NNW3	NE2.2	NE16
11-May	NNW6	NNW9	NNW6	NNE4	NNE1	N3	WNW2	NW3	WSW3	NW5	E4	SE5	WSW6	W8	W6	ESE5	ESE10	SE11	ESE8	SSE7	S10	S7	SSE6	SE9	SSE1.3	SE11
12-May	SSE8	SE11	SE11	SE9	S8	SSE7	SE6	SW4	S7	S11	S10	S18	S16	S14	SSE16	SSE16	SSE14	SSE13	SSE10	SSE10	SSE13	SE13	SE14	SE12	SSE10.8	S18
13-May	SE12	SE11	SSE11	SSE11	SE10	SSE8	SSE10	SSE9	S9	S12	S13	S17	SSW19	SSW18	SSW17	SSW17	S17	S13	SSE11	SSE12	SSE14	S12	SSW8	S9	S11.8	SSW19
14-May	S9	S11	S7	S6	S11	S9	S11	S9	S8	S10	S10	S13	S16	S16	SSW17	SSW15	SW14	NNW13	NNW11	NE11	N9	NNE9	NE5	NNW6	S5.4	SSW17
15-May	NNW10	NNW9	NNW3	WNW3	NNW5	NNW6	NW5	NNE2	WSW2	SW4	WSW6	WSW6	WSW6	WSW3	SSE8	S11	S16	S13	S10	S10	S11	S11	WNW7	NNW8	SW3.0	S16
16-May	NNW12	N15	N10	NNW18	NW19	NW19	NW19	NW22	NNW25	NW24	NW25	NW31	NW26	NW25	NW25	NW27	NW28	NNW25	NNE21	N18	NNE16	N11	N14	N13	NNW18.9	NW31
17-May	NW9	N10	N15	N17	NNE16	NE19	NE20	NNE23	NNE20	NNE22	NNE19	NNE18	NNE18	NNE18	NNE19	NNE17	NNE16	NNE15	NE14	ENE13	ENE10	ENE10	E10	SE12	NNE14.1	NNE23
18-May	SE12	SSE10	SSE11	SSE10	SSE8	SSE8	SSE11	S11	SSW11	SSW11	S12	S12	S12	S12	S12	S12	S12	S11	S12	S10	SSE9	S9	S9	S12	S10.4	S12
19-May	S13	S13	SSE12	SSE11	SSE9	SSE8	S6	S9	S12	SSW11	S10	SSW12	SSW11	SSW9	SSW8	WSW4	NW6	NW6	NNW10	N13	NNE21	NNE22	N14	NNW14	SSW2.0	NNE22
20-May	N13	N12	N15	N15	N10	N10	NNE10	NNE11	NNE8	NNE9	NNE9	N10	N9	N9	NNW8	NNW7	NNW6	NW6	N4	ENE5	SE9	SE12	SE12	SSE12	NNE6.3	N15
21-May	SSE13	SSE13	SSE9	SSE9	SE9	SE9	SSE8	SSE7	SSE11	S11	S10	S10	S10	S8	S10	SSE9	SSE9	SE7	SE3	NNW6	NNE5	E11	N4	N9	SSE6.4	SSE13
22-May	NNE6	N8	NNW8	NNW11	NNW12	N12	N14	NNE17	NNE17	NNE19	NNE21	NNE24	NNE27	NNE26	NNE26	NNE25	NNE26	NNE29	NNE28	NE24	ENE25	ENE19	NE19	NE19	NNE18.1	NNE29
23-May	ENE17	ENE15	NE14	NE16	NE14	NE12	ENE11	E10	ESE14	ESE17	ESE16	ESE16	SE13	ESE10	ESE12	ESE14	ESE11	SE13	SE17	SE14	SE15	SE11	SE13	SE13	ESE11.6	SE17
24-May	SSE12	SE12	SE11	SE11	SE13	SE15	SSE16	SSE16	SSE15	S12	S11	S12	SSW9	WSW16	WSW17	WSW15	WSW13	WSW14	WSW11	WSW11	W10	W9	W8	W8	SSW8.2	WSW17
25-May	W9	W6	WNW7	WNW9	WNW6	SW3	WSW5	SW5	WSW5	ENE2	NNW4	NE8	NNE7	NE7	N8	NNE8	NE7	ENE5	ENE8	ENE6	SE5	SE9	SSE11	SE8	NNE1.2	SSE11
26-May	SE10	SE11	SE8	SSE8	SSE10	SSE9	S10	S8	S9	S8	SW6	SW7	SSW6	SSW6	S7	SSE5	SSW7	SE7	SSE8	SSE10	SE11	SSE11	SE11	SE11	SSE7.7	SSE11
27-May	SSE10	SE12	SE8	SE7	SE8	SSE7	SSE11	SSE11	S12	SSW18	S19	S21	S19	SSE22	S20	SSE21	S18	S19	S14	S12	SSE12	SSE12	SSE12	SSE14	S13.6	SSE22
28-May	SSE15	S12	SSE12	SSE10	SSE8	SSE10	SSE10	S12	SSW12	SSW13	SSW19	SW24	WSW24	SW26	WSW23	SW25	WSW23	WSW23	W23	W16	WNW14	WNW10	WSW9	W9	SW12.4	SW26
29-May	WNW5	W6	WSW8	W7	SSW5	SSW8	SW4	SSW6	SSW7	SW10	WSW17	WSW22	WSW21	SW25	SW31	SW27	SW18	WSW16	WSW15	WSW12	NW9	NNE10	NE15	NE13	WSW9.3	SW31
30-May	ENE3	NW5	NW6	SW6	WSW5	SW6	SW4	SW4	WSW5	SSW4	WSW7	SSW10	S6	WSW5	W9	W11	WNW21	NW17	NW10	NNW4	NE6	ENE7	ESE4	NW7	W3.9	WNW21
31-May	SW8	W5	NW4	S7	SW8	SW6	S6	S5	SSW6	SW4	E4	NNE6	SE2	WSW7	SSW9	SW10	SSW10	S8	SSE6	E3	NNW12	NNE15	NNE7	NW9	SW2.2	NNE15
SE3.9 SE3.7 SE3.2 SE3.1 SE3.3 SE3.5 SSE4.2 SSE4.4 S4.8 S5.3 S5.4 S5.9 S5.9 S5.4 SSW6.0 S5.0 S4.1 SSE2.4 SE2.2 ESE3.4 ESE4.3 ESE5.1 ESE3.8 ESE3.5																								Diurnal Average		
SE22 SE20 SE17 NNW18 NW19 NE19 NE20 NNE23 NNW25 NW24 NW25 NW31 NNE27 NNE26 SW31 NW27 NW28 NNE29 NNE28 ESE25 ENE25 NNE22 SE21 SE20																								Diurnal Maximum		

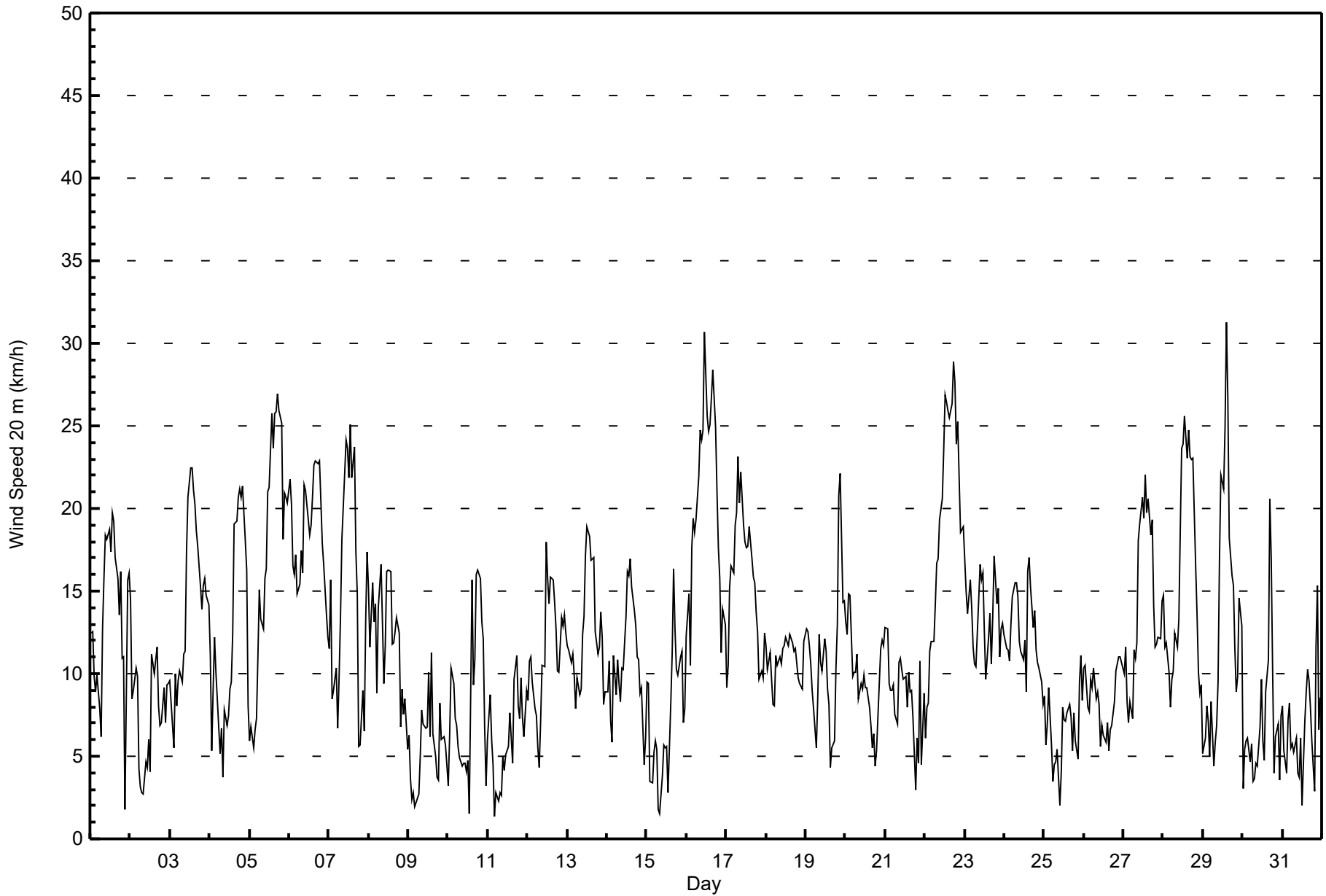
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed 20 m (WS20m) - km/h
Barge Landing - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 10 km/h on May 16 15:00														Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0											
Minimum Value: 1 km/h on May 13 04:00																									
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 6 P ₉₉ = 8																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	2	2	1	2	1	2	2	4	4	5	5	5	5	6	5	6	5	3	4	2	1	3	5	5	6
2-May	4	3	1	2	2	2	2	1	1	3	2	3	4	4	5	4	4	3	3	2	1	2	1	1	5
3-May	1	2	2	2	2	1	2	2	3	4	6	6	6	7	6	6	6	5	4	2	3	3	2	2	7
4-May	3	2	4	1	1	3	5	2	2	2	3	2	3	3	4	5	5	5	5	4	4	4	5	3	5
5-May	2	1	2	1	1	2	3	3	3	4	5	6	6	6	6	6	6	6	5	5	4	5	5	5	6
6-May	4	4	3	3	3	3	4	4	4	6	6	5	6	6	6	5	5	5	6	5	4	2	2	1	6
7-May	2	2	2	1	2	3	3	4	4	6	6	6	7	6	6	7	5	8	2	1	2	1	3	3	8
8-May	4	2	4	4	3	2	4	4	3	3	5	5	6	5	5	3	5	4	6	3	3	2	2	3	6
9-May	2	1	1	2	1	2	1	2	2	3	2	3	4	3	5	2	2	2	2	1	3	2	1	1	5
10-May	1	2	2	2	1	1	1	2	1	2	2	2	3	5	6	3	5	4	4	4	2	3	3	1	6
11-May	1	1	3	1	2	1	2	1	1	2	3	3	3	3	3	3	4	3	2	2	2	2	3	2	4
12-May	2	2	1	2	1	2	3	2	3	3	3	5	6	6	5	6	5	3	3	2	2	2	2	1	6
13-May	1	1	1	1	1	1	1	2	2	4	3	5	5	5	5	5	5	4	2	2	2	2	2	2	5
14-May	2	2	1	2	4	2	2	2	3	2	3	3	4	5	5	6	4	3	3	2	2	3	3	3	6
15-May	1	1	2	2	1	1	2	2	1	2	2	2	2	3	4	5	4	3	3	2	1	1	4	3	5
16-May	5	4	3	7	6	6	7	7	8	8	8	9	8	8	10	8	9	8	7	6	4	2	4	4	10
17-May	3	4	5	6	4	5	6	7	6	7	6	6	5	5	6	5	4	4	4	3	2	1	2	2	7
18-May	1	1	1	1	1	2	3	3	3	4	4	5	4	4	4	4	4	3	3	2	1	1	1	2	5
19-May	2	2	2	2	2	3	2	2	4	4	3	3	3	3	3	1	2	1	3	3	6	6	4	3	6
20-May	3	3	4	4	3	2	3	3	2	3	2	3	4	3	2	3	2	2	2	2	2	2	2	2	4
21-May	3	2	2	1	1	1	1	2	3	3	3	3	3	3	2	3	2	2	3	5	2	3	2	2	5
22-May	2	2	2	3	2	3	4	5	5	6	6	6	7	7	7	7	7	7	7	6	7	5	4	4	7
23-May	5	3	3	3	3	3	3	3	4	4	5	4	5	5	3	4	3	3	4	3	3	2	3	3	5
24-May	3	3	3	3	3	4	4	4	4	3	3	3	4	3	5	5	4	3	4	3	2	3	2	2	5
25-May	2	2	2	1	2	1	1	2	2	2	2	4	3	2	3	3	2	3	2	1	2	2	2	1	4
26-May	2	1	1	3	1	1	2	3	2	2	2	3	4	3	4	3	3	3	3	2	1	2	1	1	4
27-May	1	1	2	1	1	1	3	3	5	5	5	6	6	6	6	6	6	5	4	3	2	1	1	2	6
28-May	2	2	2	1	2	2	2	4	4	4	5	7	7	7	7	7	7	8	7	5	4	3	2	2	8
29-May	2	1	1	2	2	2	1	1	2	3	8	7	7	7	9	9	6	5	4	3	3	3	2	3	9
30-May	2	2	3	1	1	1	1	1	1	2	2	4	4	3	3	4	6	5	4	1	1	4	3	2	6
31-May	2	1	2	1	2	1	1	2	2	2	2	4	3	2	3	3	3	2	3	2	5	4	4	3	5
Diurnal Maximum																									





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed 20 m (WS20m) - km/h
Barge Landing - May 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	87	11.69	11.69
6 - 11	329	44.22	55.91
12 - 19	242	32.53	88.44
20 - 28	83	11.16	99.60
29 - 38	3	0.40	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h
Barge Landing - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	4	8	1	4	4	4	6	4	6	5	11	10	1	7	6	6	87
6 - 11	13	16	5	11	5	11	42	63	56	23	12	16	15	6	17	18	329
12 - 19	14	19	15	4	0	8	45	42	49	17	2	11	1	1	4	10	242
20 - 28	0	18	2	1	0	2	24	5	7	1	5	6	1	1	8	2	83
29 - 38	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	3
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	31	62	23	20	9	25	117	114	118	46	31	43	18	15	36	36	744

Total Number of Valid Hours: 744

Total Number of Hours: 744



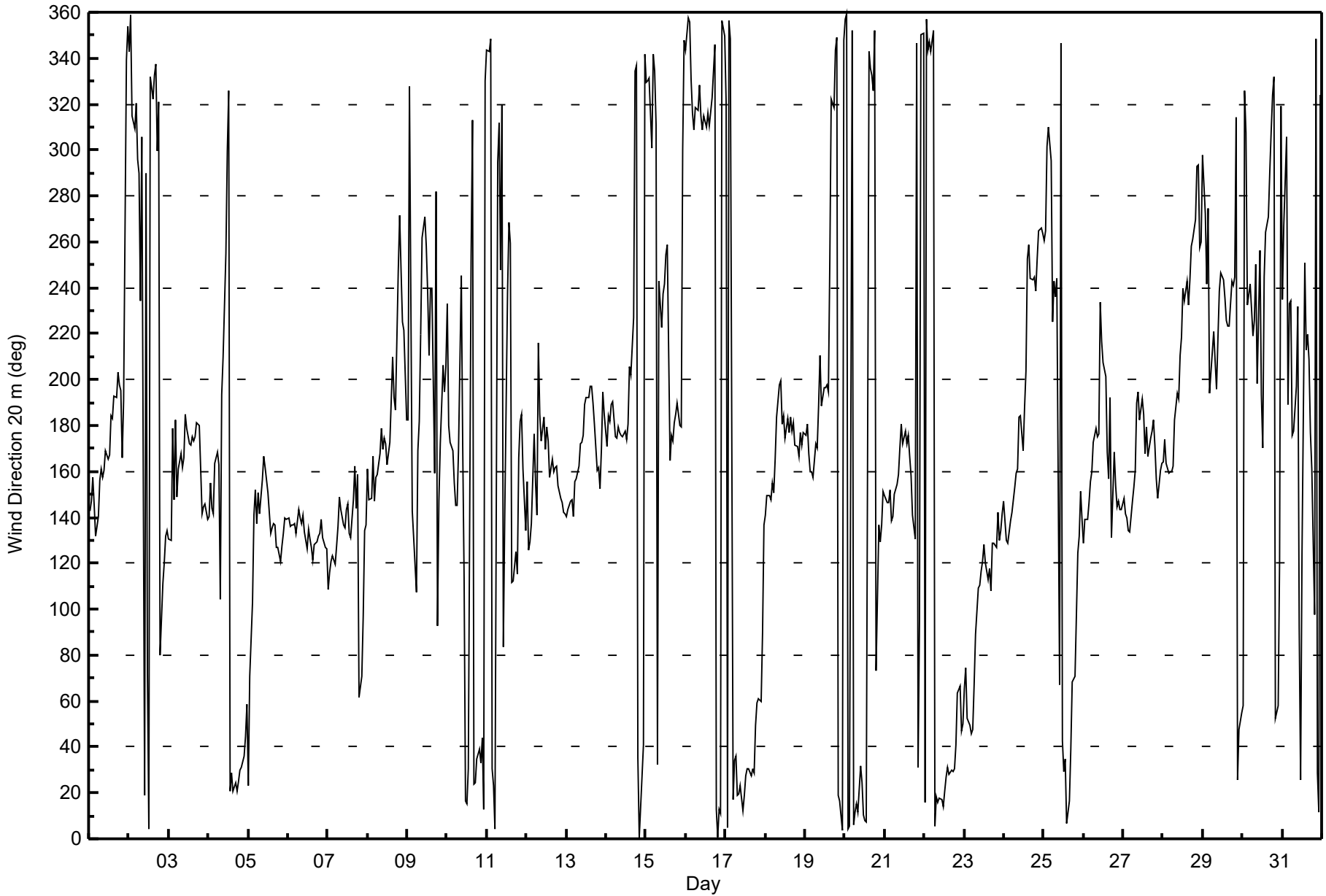
Direction of Maximum Speed: 225 deg on May 29 15:00																				Hours in Service: 744					
Direction of Maximum Daily Speed Average: 329.5 deg on May 16																				Hours of Data: 744					
Direction of Minimum Speed: 23 deg on May 11 05:00										Direction of Minimum Daily Speed Average: 1.2 deg on May 25										Hours of Missing Data: 0					
Monthly Average Direction: 154.9 deg																				Percent Operational Time: 100.0					
Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	143	147	158	145	132	140	156	161	157	160	169	166	167	184	183	193	192	203	197	195	166	191	340	354	170.9
2-May	343	359	315	309	321	296	290	234	306	19	290	72	4	332	322	333	337	300	321	80	111	120	132	134	340.9
3-May	131	130	179	147	183	149	161	168	162	166	185	179	172	171	175	173	175	181	180	161	142	144	146	139	164.9
4-May	140	155	144	141	163	168	163	104	193	210	255	300	326	21	28	21	24	21	25	30	31	36	44	58	43.8
5-May	23	71	103	141	152	137	151	141	156	166	162	156	150	133	136	137	137	127	127	121	127	133	140	139	137.2
6-May	140	136	137	137	138	133	143	140	137	141	134	127	135	131	127	121	128	129	132	133	139	131	127	126	133.2
7-May	109	116	121	123	120	128	136	149	143	137	136	143	146	133	131	148	162	144	159	62	71	97	134	137	134.2
8-May	161	147	148	166	147	157	158	168	179	170	174	172	163	173	191	210	192	186	247	271	248	225	222	182	179.1
9-May	182	327	234	143	131	107	169	182	220	261	271	258	238	211	240	240	159	282	93	147	172	206	195	206	212.9
10-May	233	180	173	169	155	145	145	169	246	172	114	16	15	31	254	313	24	24	35	39	33	44	13	330	49.4
11-May	343	343	348	31	23	4	295	312	247	320	84	140	238	268	259	112	112	125	115	166	182	185	161	134	148.8
12-May	156	126	130	137	176	155	141	216	185	173	184	170	180	173	158	166	160	162	162	154	148	146	142	141	158.9
13-May	141	143	147	148	140	156	157	162	172	173	176	189	192	192	197	197	190	180	161	161	152	169	195	185	172.8
14-May	171	185	182	189	190	175	175	180	177	175	178	174	180	206	202	227	334	337	36	0	14	41	341	189.0	
15-May	329	330	331	301	341	334	311	32	243	223	237	242	254	258	165	176	173	181	185	189	180	179	300	348	222.1
16-May	344	358	356	331	316	309	319	317	328	315	309	315	310	316	311	317	323	346	13	0	13	11	356	349	329.5
17-May	321	5	356	349	17	34	36	19	20	23	12	19	28	30	31	28	31	29	50	59	61	60	89	137	27.9
18-May	141	150	149	147	155	151	165	183	198	199	181	184	174	183	177	184	178	181	172	171	167	177	171	177	172.2
19-May	176	180	168	160	160	157	172	170	188	211	189	196	196	197	195	251	322	319	344	349	19	16	4	348	192.6
20-May	357	359	4	5	352	6	12	15	12	31	25	10	8	8	343	336	332	326	352	73	137	129	137	152	16.6
21-May	149	147	147	152	139	141	150	154	159	170	181	172	177	172	176	167	158	141	131	346	31	95	350	351	151.8
22-May	16	357	343	347	343	352	5	18	16	18	17	14	21	27	31	28	30	29	31	41	64	66	47	50	26.2
23-May	65	75	52	49	46	48	67	89	109	110	116	121	128	120	113	117	108	129	129	127	142	130	134	141	103.9
24-May	147	130	129	134	139	142	153	159	161	184	169	188	204	252	258	244	243	244	238	253	265	266	264	196.4	
25-May	261	265	301	310	295	225	243	236	244	67	346	43	29	35	7	17	39	68	70	71	124	132	151	139	28.3
26-May	129	139	139	147	156	160	173	179	175	176	234	216	207	201	169	157	192	131	168	154	145	147	143	143	161.3
27-May	149	142	140	134	134	147	153	160	189	195	183	191	185	168	179	166	174	178	182	171	157	148	160	164	169.2
28-May	164	174	163	160	160	160	163	182	194	192	211	219	240	234	243	233	243	258	261	269	293	294	257	260	225.4
29-May	297	272	242	274	194	203	221	208	196	218	239	247	243	236	225	223	224	243	241	245	314	26	48	55	237.7
30-May	58	326	307	232	242	231	219	226	250	198	256	193	171	245	264	271	291	308	324	332	52	58	121	319	276.3
31-May	235	267	306	189	233	234	176	178	197	232	92	26	124	251	213	220	209	177	161	98	348	29	12	324	228.9
137.6	126.8	135.5	139.2	146.0	142.3	149.8	156.3	171.4	170.5	179.8	178.1	182.8	179.9	193.9	189.1	182.2	161.1	135.0	108.7	105.1	105.1	113.5	121.1		
Diurnal Average																									
All monthly, daily, and diurnal averages have been calculated using vector methods																									



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction 20 m (WD20m) - deg
Barge Landing - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 95 deg on May 11 05:00 Minimum Value: 4 deg on May 3 00:00 Percentiles: P ₁ = 5 P ₁₀ = 9 Q ₁ = 13 Median = 20 Q ₃ = 28 P ₉₀ = 44 P ₉₉ = 83																			Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0						
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	7	9	8	11	6	9	20	15	17	17	21	23	26	25	22	23	21	21	17	16	8	81	29	21	81
2-May	19	22	20	17	10	33	61	35	57	69	67	54	85	36	44	33	32	29	30	27	7	10	6	4	85
3-May	5	9	41	10	25	7	14	16	21	25	24	25	20	22	23	21	22	22	18	12	9	10	8	7	41
4-May	6	48	20	6	10	34	86	55	63	41	37	36	29	24	20	14	15	16	14	13	12	13	15	24	86
5-May	36	32	29	16	13	11	11	16	19	19	23	22	19	19	17	19	15	14	12	10	10	12	12	12	36
6-May	11	10	9	9	10	12	13	14	19	19	20	16	25	22	23	19	19	17	15	11	11	8	6	7	25
7-May	10	8	8	8	6	14	15	19	16	17	17	18	19	18	16	14	19	20	32	12	16	23	10	10	32
8-May	21	10	14	20	11	16	14	15	23	32	30	27	26	24	30	29	35	23	43	33	28	22	24	44	44
9-May	35	29	41	57	85	68	28	36	25	35	26	41	38	65	31	28	47	63	52	7	49	26	20	27	85
10-May	26	19	7	10	13	12	18	29	34	51	53	76	71	92	21	24	39	16	14	14	12	15	33	29	92
11-May	8	6	40	27	95	74	43	37	72	42	74	70	71	37	55	72	30	12	13	21	14	39	39	33	95
12-May	20	9	7	13	9	18	44	50	43	29	26	22	30	40	30	30	25	18	14	9	7	7	8	7	50
13-May	6	5	6	5	5	8	8	11	18	18	19	21	20	22	21	22	21	20	11	10	6	15	13	14	22
14-May	7	11	20	49	18	13	14	18	28	21	26	24	23	31	27	26	44	21	18	17	18	36	62	19	62
15-May	7	9	67	43	24	16	18	60	85	60	40	37	37	78	48	36	23	19	20	15	9	9	58	22	85
16-May	16	23	21	18	18	18	19	20	19	19	21	20	21	24	21	19	21	27	21	22	19	17	21	18	27
17-May	21	22	22	21	19	18	20	19	20	17	26	24	21	22	24	23	20	20	17	13	10	9	21	7	26
18-May	6	7	7	7	11	13	18	24	26	35	35	38	34	37	35	35	37	24	19	10	8	8	8	13	38
19-May	11	13	14	16	15	19	26	18	22	23	26	22	24	28	29	38	26	12	20	16	17	17	20	16	38
20-May	20	22	19	19	21	20	20	19	25	23	25	27	32	26	32	29	39	17	20	47	8	7	11	10	47
21-May	8	8	8	8	6	11	9	16	15	19	27	23	24	37	23	23	20	14	60	63	49	11	59	20	63
22-May	25	20	23	16	14	19	21	18	19	19	20	21	16	15	16	16	16	15	16	15	15	13	13	15	25
23-May	19	13	15	12	14	15	21	18	16	14	15	13	18	21	13	12	15	13	12	12	12	11	12	13	21
24-May	14	15	12	11	11	12	14	15	17	19	22	31	24	33	18	16	15	17	16	16	17	16	15	15	33
25-May	11	22	11	9	19	25	22	25	33	89	71	38	56	31	44	33	32	46	13	11	26	10	8	10	89
26-May	7	6	10	8	7	7	15	27	26	29	58	57	71	61	65	44	43	36	23	10	5	6	9	4	71
27-May	5	7	5	8	5	12	12	20	26	22	22	26	26	24	27	23	27	19	20	13	10	9	8	10	27
28-May	9	12	9	10	8	13	17	22	23	25	26	22	22	19	23	19	18	20	19	19	16	13	14	15	26
29-May	21	19	8	18	41	23	26	30	35	27	26	20	22	18	18	19	21	21	23	14	40	37	11	16	41
30-May	47	23	41	30	23	10	18	25	44	59	24	45	68	71	38	32	19	18	20	25	12	73	70	28	73
31-May	32	40	61	24	9	17	28	36	41	63	76	60	91	36	36	21	28	24	17	36	37	16	42	29	91
47 48 67 57 95 74 86 60 85 89 76 76 91 92 65 72 47 63 60 63 49 81 70 44																									
Diurnal Maximum																									





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS11 LOWER CAMP MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS11)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	705	35	39	99.46	238.7	5	35.8	0
H2S (ppb) Average	706	36	38	99.73	29.3	13	4	2
THC (ppm) Average	705	35	39	99.46	4.5	-	2.4	-
CH4(ppm) Average	705	35	39	99.46	4.4	-	2.4	-
NMHC(ppm) Average	705	35	39	99.46	0.176	-	0.081	-
Temperature (C) Average	743	0	1	99.87	32.5	-	23.2	-
Relative Humidity (%) Average	743	0	1	99.87	99.6	-	73.6	-
Barometric Pressure (inHg) Average	743	0	1	99.87	29.5	-	29.5	-
Wind Speed 10 m (km/h) Average	743	0	1	99.87	28	-	21	-
Wind Direction 10 m (deg) Average	743	0	1	99.87	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS11)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	705	6.52	22.3	-	0	0.1	0.3	1	3.7	11.5	238.7
H2S (ppb) Average	706	0.97	2.8	-	0	0	0.1	0.3	0.8	1.6	29.3
THC (ppm) Average	705	2.15	0.2	-	1.9	2	2	2.1	2.2	2.4	4.5
CH4(ppm) Average	705	2.13	0.2	-	1.9	2	2	2.1	2.2	2.3	4.4
NMHC(ppm) Average	705	0.019	0.031	-	0	0	0	0	0	0.1	0.176
Temperature 2 m (C) Average	743	17.65	5.9	-	4.7	10.5	12.9	16.9	22	26	32.5
Relative Humidity (%) Average	743	50.7	20.1	-	13.2	23.2	35.3	49.8	66	79.3	99.6
Barometric Pressure (inHg) Average	743	29.12	0.2	-	28.7	28.9	29	29.1	29.2	29.4	29.5
Wind Speed 10 m (km/h) Average	743	10.4	7	-	0	3	6	9	14	21	28
Wind Direction 10 m (deg) Average	743	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS11)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL PARAMETERS	10 May 2023 08:00	10 May 2023 08:00	1	Maintenance - station logger/modem reset
SO2, THC/NMHC/CH4	12 May 2023 12:00	12 May 2023 13:00	2	Maintenance - station operator activities
H2S	12 May 2023 13:00	12 May 2023 13:00	1	Maintenance - station operator activities
SO2, THC/NMHC/CH4	16 May 2023 12:00	16 May 2023 12:00	1	Maintenance - sample manifold cleaned



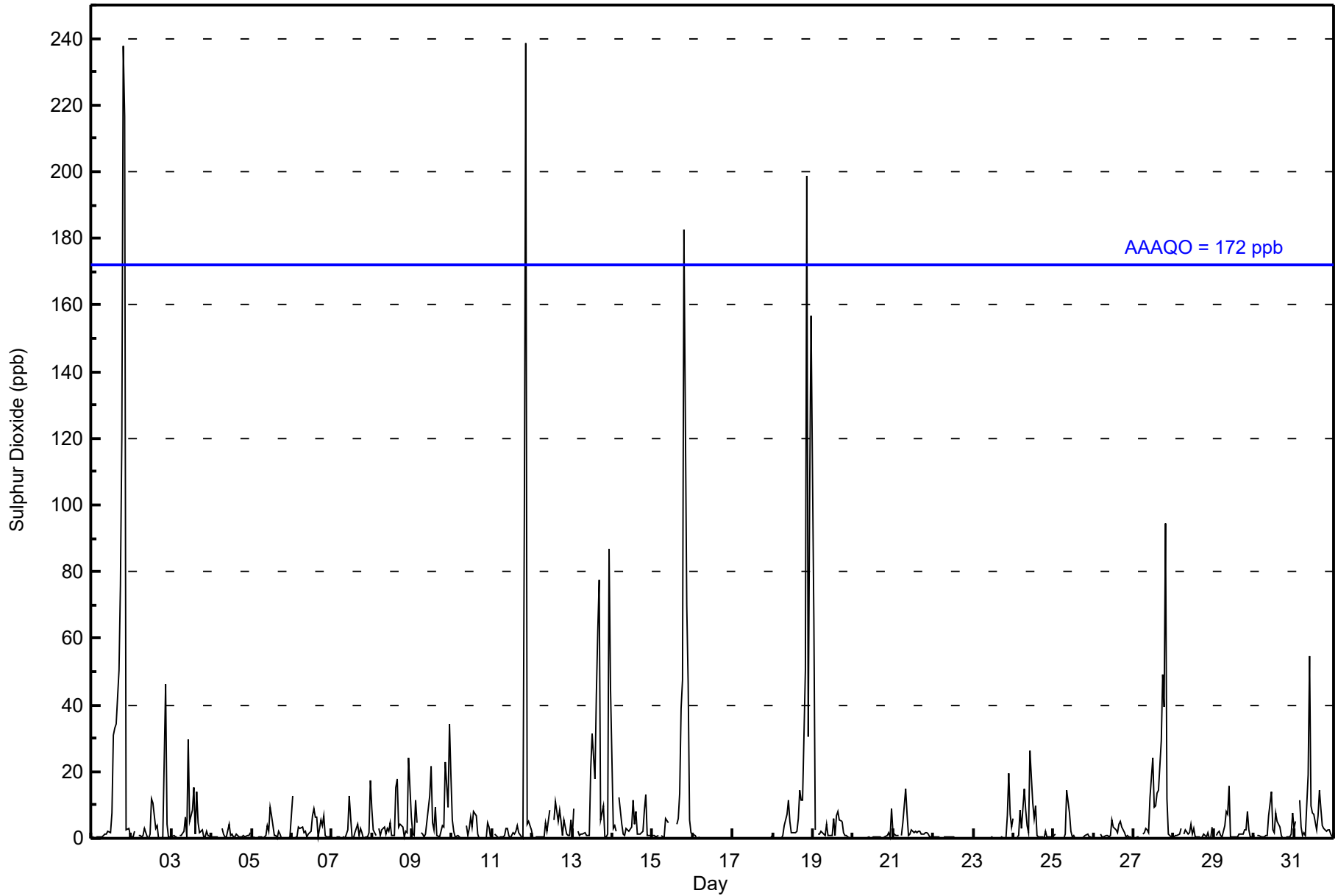
Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO₂) - ppb

Lower Camp - May 2023

Number of Exceedences (AAAQO):		1-hr: 5		24-hr: 0		Hours in Service:		744																																									
Maximum Value: 238.7 ppb on May 11 21:00		Maximum Daily Average: 35.8 ppb on May 1		Hours of Data:		705		Hours of Missing Data:		39																																							
Minimum Value: 0.0 ppb on May 16 15:00		Minimum Daily Average: 0.0 ppb on May 17		Hours of Calibration:		35		Percent Operational Time:		99.5																																							
Maximum Diurnal Average: 27.4 ppb at hour 21		Minimum Diurnal Average: 0.9 ppb at hour 6		Monthly Average: 6.52 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.1 Q ₁ = 0.3 Median = 1.0 Q ₃ = 3.7 P ₉₀ = 11.5 P ₉₉ = 100.5																																											
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	0.5	0.4	Z	0.5	0.5	0.5	0.4	1.0	1.1	1.4	2.2	1.5	7.5	30.9	33.0	34.5	50.3	75.8	120.4	237.7	216.7	2.4	3.1	0.7	35.8	237.7																							
2-May	0.3	0.3	2.1	Z	0.7	0.8	0.3	0.9	2.8	0.5	0.1	1.4	11.8	10.6	2.9	3.7	0.1	0.0	0.0	0.5	46.2	4.3	0.5	0.4	4.0	46.2																							
3-May	0.4	0.7	0.5	0.5	Z	1.0	0.7	2.2	6.5	0.5	29.5	5.2	8.3	15.1	1.1	13.8	4.7	1.9	2.5	0.3	0.4	2.2	0.9	0.3	4.3	29.5																							
4-May	0.4	0.4	0.4	0.3	0.4	Z	2.8	1.2	0.6	0.5	4.4	0.7	1.1	0.5	0.6	1.3	0.6	0.4	0.3	0.7	0.6	1.0	0.8	1.7	0.9	4.4																							
5-May	Z	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.8	3.9	2.1	9.5	6.7	1.1	1.0	0.1	2.0	1.4	0.0	0.1	0.1	0.0	0.1	0.5	1.3	9.5																							
6-May	12.7	Z	0.3	0.2	3.4	2.8	3.4	1.8	2.2	0.5	1.4	2.2	6.8	9.1	6.4	6.2	0.3	5.6	4.0	6.8	0.7	0.4	0.3	0.8	3.4	12.7																							
7-May	0.2	0.2	Z	0.2	0.2	0.1	0.1	0.4	0.1	2.6	12.8	6.2	0.6	0.0	1.9	4.1	1.0	2.9	1.7	0.1	0.3	0.5	1.6	17.2	2.4	17.2																							
8-May	8.9	2.4	0.7	Z	2.9	0.8	2.4	3.5	1.3	3.0	2.1	4.8	0.8	0.8	15.1	17.9	3.2	4.1	3.3	0.3	2.2	1.8	24.0	6.2	4.9	24.0																							
9-May	1.4	0.9	11.3	4.8	Z	1.8	1.1	0.6	1.1	5.3	12.9	21.8	4.6	2.7	9.5	0.7	0.5	2.0	3.8	3.2	22.7	9.2	34.2	19.2	7.6	34.2																							
10-May	5.7	2.0	0.6	0.7	0.3	0.2	Z	M	4.0	0.9	2.9	6.2	3.5	8.0	6.8	1.5	0.1	0.1	0.0	0.0	0.0	4.7	3.2	0.4	2.4	8.0																							
11-May	Z	1.3	0.8	0.2	0.1	0.3	0.4	0.7	2.8	2.8	0.6	0.2	1.9	1.2	2.3	3.8	1.8	0.4	0.2	96.3	238.7	4.3	5.0	2.6	16.0	238.7																							
12-May	0.6	Z	0.4	0.3	0.2	0.3	0.3	0.5	4.8	2.0	8.7	M	M	5.7	11.0	5.2	8.5	5.3	0.7	5.7	1.4	0.7	0.9	5.4	3.3	11.0																							
13-May	0.9	9.1	Z	2.3	1.0	1.1	1.1	1.5	1.0	0.8	0.8	20.6	31.2	17.9	43.1	62.2	77.6	5.6	9.8	0.5	0.4	1.5	86.7	45.3	18.3	86.7																							
14-May	3.0	3.9	1.9	Z	12.5	4.3	1.4	0.7	2.9	2.5	2.2	3.2	11.5	4.2	7.9	1.4	1.3	1.8	2.2	8.3	13.0	0.9	0.9	1.1	4.0	13.0																							
15-May	0.7	1.0	0.6	1.0	Z	1.0	0.6	0.6	5.9	4.7	C	C	C	C	4.4	6.1	13.7	39.0	47.6	182.7	70.0	46.2	5.3	1.9	22.8	182.7																							
16-May	1.2	0.7	0.2	0.1	0.3	Z	0.2	0.1	0.1	0.1	0.1	M	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.2	1.2																							
17-May	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5																							
18-May	1.4	Z	0.1	0.0	0.0	0.0	0.8	3.9	7.4	11.4	4.9	1.5	1.8	1.6	2.3	5.9	14.2	11.5	11.6	50.5	198.7	30.7	100.7	156.6	26.8	198.7																							
19-May	65.8	2.6	Z	1.2	1.1	2.3	1.1	0.9	4.2	0.8	0.6	0.8	5.9	1.0	7.0	8.0	5.4	5.3	1.7	1.0	0.8	0.3	0.1	0.1	5.1	65.8																							
20-May	0.2	0.1	0.2	Z	0.1	0.1	0.0	0.1	0.2	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.4	0.9	1.8	0.5	9.0	0.7	9.0																							
21-May	1.7	1.0	0.7	0.6	Z	0.9	4.8	15.0	7.2	0.9	1.1	2.4	1.8	2.1	1.9	2.1	2.2	1.4	1.3	1.8	1.8	1.3	0.5	0.4	2.4	15.0																							
22-May	0.4	0.4	0.4	0.5	0.5	Z	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.3	0.6																							
23-May	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.0	0.1	0.0	0.1	0.4	0.1	0.1	6.7	19.6	7.1	3.2	1.7	19.6																							
24-May	6.1	Z	0.5	0.8	8.6	2.8	14.6	8.6	3.6	1.8	26.4	10.7	5.9	9.9	1.0	0.4	0.3	0.3	0.2	2.3	0.5	0.3	0.5	0.2	4.6	26.4																							
25-May	0.9	1.5	Z	0.2	0.1	0.1	0.1	1.5	14.3	7.6	2.3	0.4	0.6	0.2	0.1	0.0	0.0	0.1	0.3	0.8	1.1	0.2	0.3	0.2	1.4	14.3																							
26-May	0.2	0.2	0.2	Z	1.3	0.3	0.6	1.0	0.6	0.3	0.7	5.5	3.5	2.3	1.5	4.2	5.2	3.3	1.7	0.4	0.6	0.2	0.3	0.2	1.5	5.5																							
27-May	0.2	0.2	0.2	0.2	Z	1.1	1.8	2.8	2.7	1.7	12.5	24.1	9.5	9.7	13.6	14.3	29.1	49.1	39.3	94.5	12.0	1.1	0.4	0.4	13.9	94.5																							
28-May	0.5	1.0	0.7	1.1	2.8	Z	1.4	2.5	1.3	1.6	4.4	1.4	2.8	0.6	0.4	0.6	0.2	0.6	1.2	0.4	1.8	0.1	0.1	3.5	1.3	4.4																							
29-May	Z	1.0	1.9	2.0	0.6	0.5	3.6	7.9	7.2	15.6	0.5	0.3	0.3	0.2	0.6	1.3	1.2	1.1	2.6	2.6	8.1	2.6	0.5	0.5	2.7	15.6																							
30-May	1.0	Z	0.8	1.1	0.3	0.2	0.5	1.0	0.7	6.6	13.8	2.6	1.8	7.5	5.0	3.6	0.7	0.1	0.0	0.2	0.4	0.6	1.1	7.7	2.5	13.8																							
31-May	2.9	5.3	Z	11.5	3.3	0.9	1.5	1.0	19.2	54.6	9.7	7.6	7.4	2.8	7.0	14.4	9.0	3.7	3.1	2.1	2.6	2.6	1.3	0.6	7.6	54.6																							
																								4.5	1.4	1.0	1.2	1.6	0.9	1.6	2.1	3.5	4.4	5.3	5.1	4.8	4.9	6.1	7.0	7.5	7.2	8.4	22.6	27.4	4.6	9.1	9.3	Diurnal Average	
																								65.8	9.1	11.3	11.5	12.5	4.3	14.6	15.0	19.2	54.6	29.5	24.1	31.2	30.9	43.1	62.2	77.6	75.8	120.4	237.7	238.7	46.2	100.7	156.6	Diurnal Maximum	
Z - zerospan C - Calibration M - Maintenance																																																	
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb																																																	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Lower Camp - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	628	89.08	89.08
11 - 20	36	5.11	94.18
21 - 60	25	3.55	97.73
61 - 110	9	1.28	99.01
111 - 172	2	0.28	99.29
> 172	5	0.71	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Lower Camp - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	27	24	27	19	18	46	245	65	7	3	1	20	29	23	45	29	628
11 - 20	0	1	1	0	0	2	9	6	9	2	1	0	2	1	1	1	36
21 - 60	0	0	0	0	1	1	3	0	13	6	1	0	0	0	0	0	25
61 - 110	0	0	0	0	0	0	0	0	5	4	0	0	0	0	0	0	9
111 - 172	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
> 172	0	0	0	0	0	0	0	1	2	2	0	0	0	0	0	0	5
Totals	27	25	28	19	19	49	257	72	36	19	3	20	31	24	46	30	705

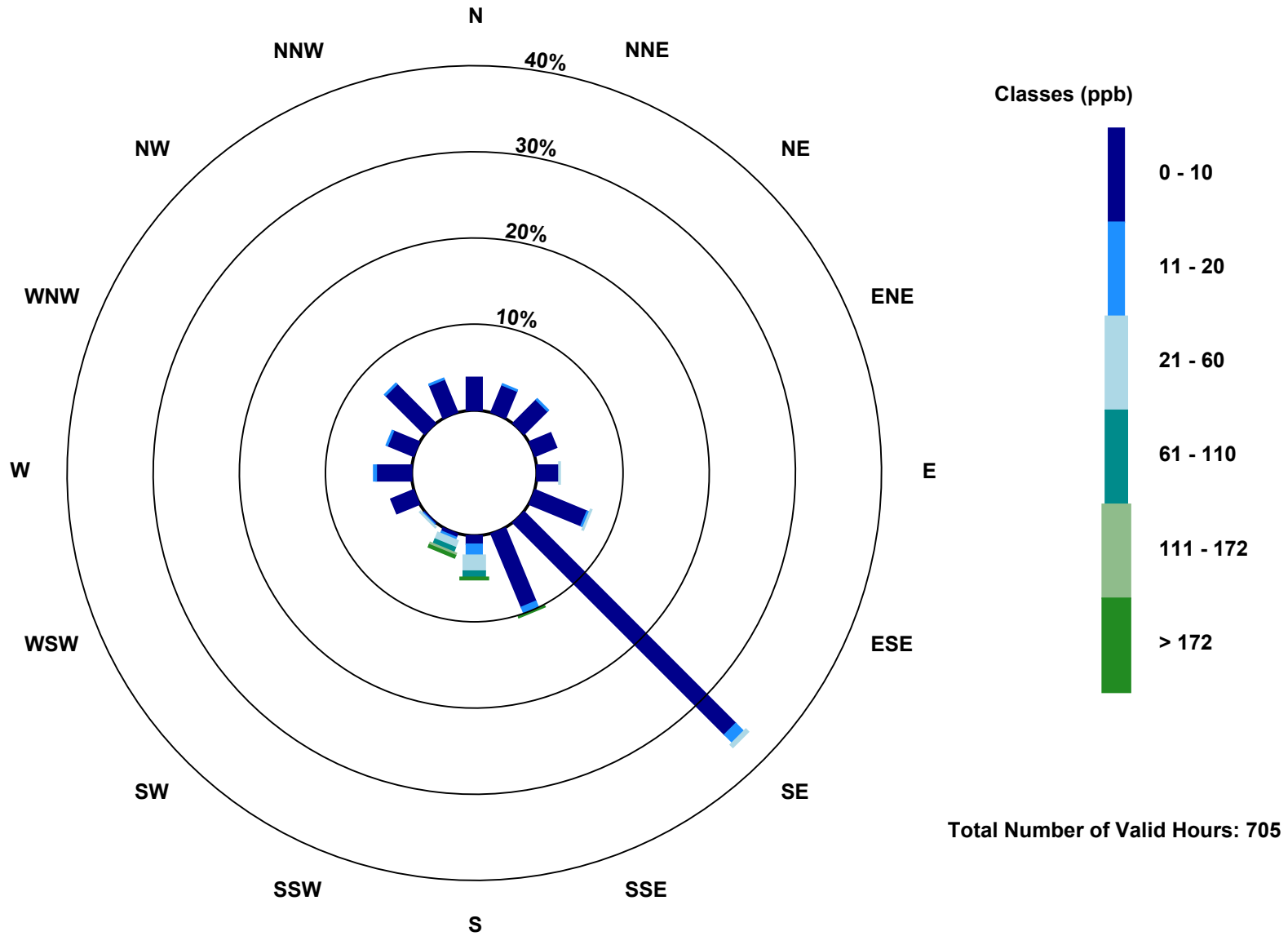
Total Number of Valid Hours: 705

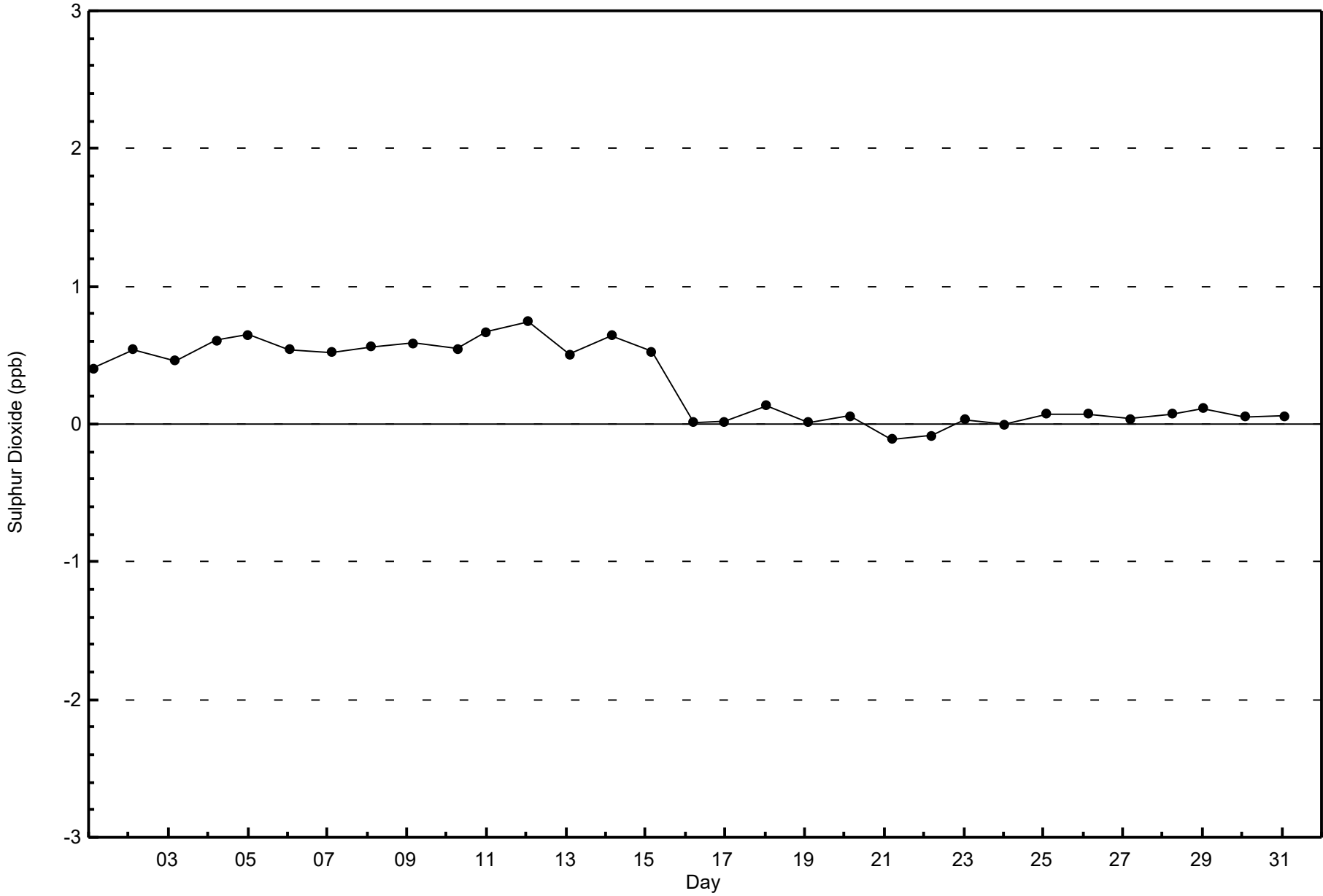
Total Number of Hours: 744

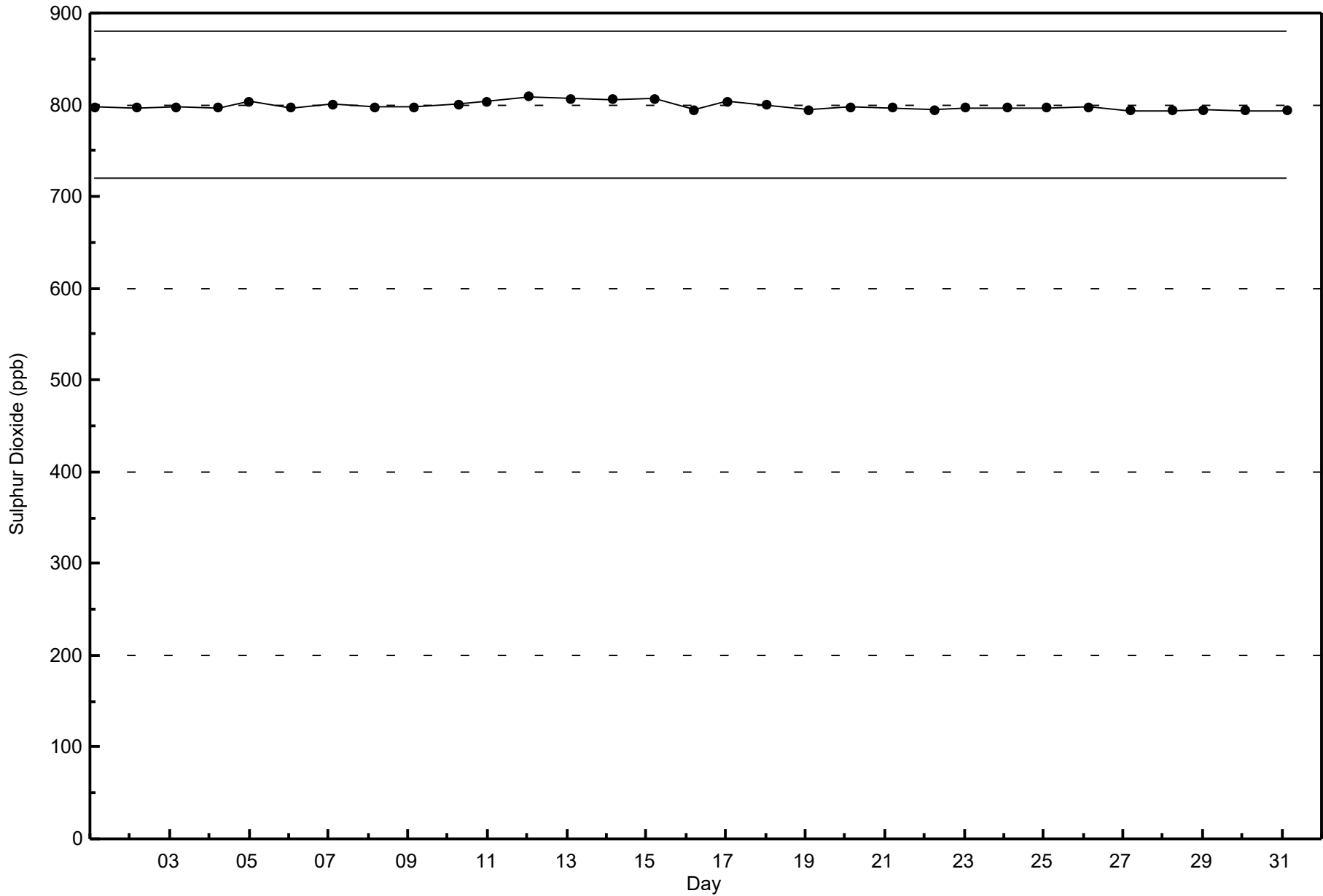


Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Lower Camp









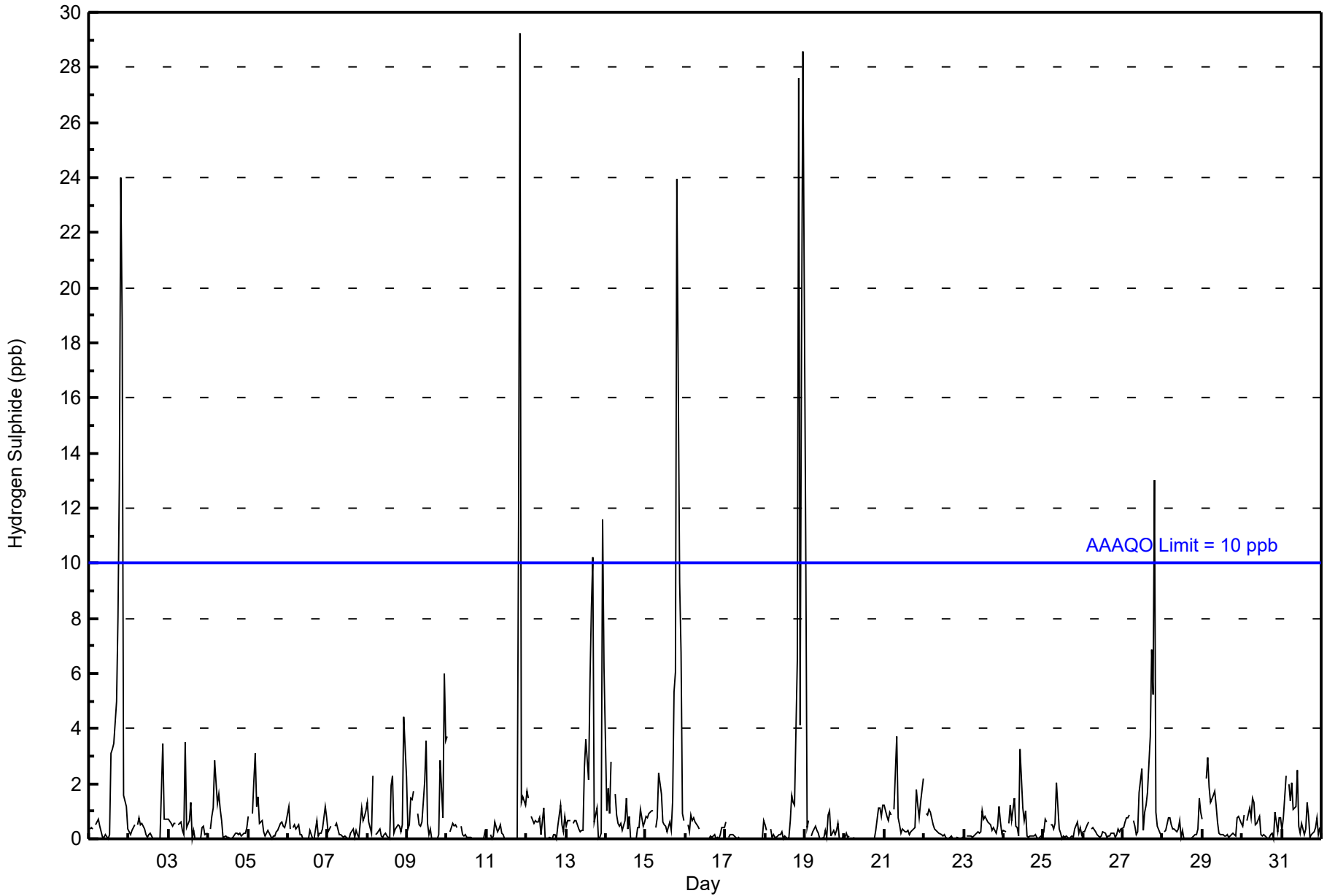
Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H₂S) - ppb

Lower Camp - May 2023

Number of Exceedences (AAAQO):		1-hr: 13		24-hr: 2		Hours in Service:		744																			
Maximum Value: 29.3 ppb on May 11 21:00		Maximum Daily Average: 4.0 ppb on May 18		Hours of Data:		706		Hours of Missing Data:		38																	
Minimum Value: 0.0 ppb on May 1 12:00		Minimum Daily Average: 0.1 ppb on May 17		Hours of Calibration:		36		Percent Operational Time:		99.7																	
Maximum Diurnal Average: 3.3 ppb at hour 21		Minimum Diurnal Average: 0.3 ppb at hour 10		Monthly Average: 0.97 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.3 Q ₃ = 0.8 P ₉₀ = 1.6 P ₉₉ = 13.0																					
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.3	0.4	0.4	Z	0.5	0.7	0.5	0.3	0.1	0.0	0.1	0.0	0.2	3.1	3.3	3.4	5.0	8.0	13.0	24.0	18.8	1.6	1.2	0.4	3.7	24.0	
2-May	0.3	0.2	0.3	0.5	Z	0.5	0.7	0.5	0.6	0.3	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.7	0.7	0.7	0.4	3.5	
3-May	0.7	0.6	0.5	0.5	0.5	Z	0.5	0.6	0.3	0.1	3.5	0.4	0.7	1.3	0.0	0.3	0.0	0.0	0.0	0.0	0.4	0.5	0.2	0.2	0.5	3.5	
4-May	Z	0.3	0.8	1.1	2.8	1.3	1.6	1.0	0.6	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.4	0.5	2.8	
5-May	0.8	Z	0.9	2.1	3.1	1.2	1.5	0.6	0.7	0.3	0.1	0.2	0.3	0.1	0.0	0.1	0.1	0.3	0.3	0.6	0.6	0.4	0.4	0.6	0.7	3.1	
6-May	1.2	0.4	Z	0.4	0.5	0.4	0.5	0.1	0.1	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.7	0.1	0.2	0.2	0.4	1.2	0.8	0.3	1.2	
7-May	0.2	0.3	0.5	Z	0.5	0.6	0.4	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.2	0.3	0.1	0.3	0.1	0.0	1.1	0.6	0.8	1.0	0.3	1.1	
8-May	1.3	0.6	0.2	2.3	Z	0.2	0.2	0.3	0.1	0.0	0.1	0.2	0.1	0.0	1.9	2.3	0.2	0.4	0.5	0.5	0.3	0.5	4.4	2.2	0.8	4.4	
9-May	0.3	0.5	1.4	1.4	1.7	Z	0.9	0.5	0.5	0.6	2.1	3.5	0.6	0.2	0.4	0.0	0.0	0.0	0.0	0.2	2.8	0.7	6.0	3.6	1.2	6.0	
10-May	3.7	Z	0.3	0.6	0.4	0.5	0.4	M	0.5	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	3.7	
11-May	0.1	Z	0.1	0.0	0.1	0.6	0.3	0.4	0.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.4	29.3	1.3	1.5	1.2	2.1	29.3	
12-May	1.7	1.5	Z	0.8	0.6	0.6	0.6	0.6	0.8	0.2	1.1	0.0	M	0.0	0.0	0.0	0.1	0.1	0.0	0.5	1.2	0.5	0.3	0.8	0.5	1.7	
13-May	0.4	0.7	0.7	Z	0.6	0.7	0.6	0.4	0.3	0.3	0.3	2.6	3.6	2.1	5.7	8.4	10.2	0.6	1.1	0.0	0.1	0.2	11.6	6.2	2.5	11.6	
14-May	1.0	1.8	0.9	2.8	Z	1.7	0.9	0.6	0.4	0.6	0.3	0.6	1.5	0.4	0.8	0.0	0.0	0.0	0.0	0.4	0.4	1.1	0.5	0.6	0.8	2.8	
15-May	0.8	0.8	0.9	1.0	1.0	Z	0.4	0.8	2.4	1.6	0.6	0.5	0.5	0.3	0.6	0.3	1.4	5.3	6.0	24.0	9.3	6.8	0.9	0.6	2.9	24.0	
16-May	Z	0.5	0.3	0.8	0.7	0.8	0.6	0.5	0.4	C	C	C	C	C	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.2	0.4	0.4	0.3	0.8	
17-May	0.6	Z	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.1	0.7	
18-May	0.5	0.3	Z	0.4	0.1	0.1	0.0	0.0	0.1	0.2	0.3	0.0	0.1	0.0	0.0	0.7	1.6	1.3	1.2	6.5	27.6	4.1	17.7	28.6	4.0	28.6	
19-May	10.9	0.4	0.6	Z	0.1	0.2	0.5	0.3	0.2	0.0	0.0	0.0	0.3	0.1	0.9	1.0	0.1	0.3	0.2	0.3	0.6	0.0	0.0	0.1	0.7	10.9	
20-May	0.0	0.2	0.0	0.1	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.1	1.1	0.8	1.2	0.2	1.2	
21-May	1.2	0.8	0.7	1.0	0.9	Z	1.1	3.7	0.8	0.5	0.2	0.4	0.3	0.2	0.3	0.2	0.2	0.3	0.4	1.8	1.2	0.8	1.3	2.2	0.9	3.7	
22-May	Z	0.9	0.9	1.1	1.0	0.5	0.3	0.3	0.3	0.2	0.2	0.1	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.1	
23-May	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.3	1.0	0.7	0.8	0.6	0.6	0.5	0.3	0.4	0.2	0.5	1.2	0.6	0.2	0.4	1.2	
24-May	0.3	0.3	Z	0.6	1.2	0.7	1.4	0.4	0.4	0.1	3.3	1.1	0.6	1.0	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.5	3.3	
25-May	0.2	0.7	0.6	Z	0.5	0.5	0.3	0.6	2.0	0.4	0.2	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.4	0.6	0.2	0.4	0.2	0.4	2.0	
26-May	0.2	0.3	0.5	0.6	Z	0.4	0.4	0.3	0.2	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.2	0.2	0.0	0.2	0.3	0.2	0.3	0.2	0.6	
27-May	0.4	0.6	0.7	0.8	0.9	Z	0.7	0.5	0.2	0.3	1.7	2.6	0.3	1.0	1.2	1.7	3.7	6.9	5.2	13.0	0.9	0.4	0.2	0.1	1.9	13.0	
28-May	Z	0.3	0.3	0.8	0.7	0.5	0.4	0.4	0.3	0.3	0.7	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	1.5	1.0	0.4	1.5	
29-May	0.7	Z	2.2	2.9	1.9	1.3	1.6	1.7	1.2	0.6	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.8	0.8	0.5	0.8	2.9	
30-May	0.4	0.9	Z	0.7	1.1	0.8	1.5	1.3	0.5	0.5	0.8	0.1	0.1	0.2	0.1	0.0	0.1	0.2	0.2	0.0	1.0	0.2	0.8	0.7	0.5	1.5	
31-May	0.3	0.8	2.3	Z	2.0	1.4	2.0	1.1	1.2	2.5	0.5	0.2	0.6	0.1	0.4	1.3	0.8	0.0	0.2	0.3	0.4	0.8	0.1	0.4	0.8	2.5	
																								Diurnal Average		1.1 0.6 0.7 0.9 0.9 0.6 0.7 0.6 0.5 0.3 0.6 0.5 0.4 0.4 0.6 0.7 0.8 0.8 1.0 2.7 3.3 0.8 1.8 1.8	
																								Diurnal Maximum		10.9 1.8 2.3 2.9 3.1 1.7 2.0 3.7 2.4 2.5 3.5 3.5 3.6 3.1 5.7 8.4 10.2 8.0 13.0 24.0 29.3 6.8 17.7 28.6	
Z - zerospan C - Calibration M - Maintenance																											
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb																											





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Lower Camp - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	659	93.34	93.34
3 - 4	21	2.97	96.32
5 - 7	10	1.42	97.73
8 - 11	4	0.57	98.30
> 11	12	1.70	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Lower Camp - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	28	25	27	20	16	47	256	70	17	5	2	20	33	20	44	29	659
3 - 4	0	0	1	0	0	1	7	0	9	2	1	0	0	0	0	0	21
5 - 7	0	0	0	0	1	0	0	0	5	4	0	0	0	0	0	0	10
8 - 11	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	4
> 11	0	0	0	0	0	0	0	1	6	5	0	0	0	0	0	0	12
Totals	28	25	28	20	17	48	263	71	38	19	3	20	33	20	44	29	706

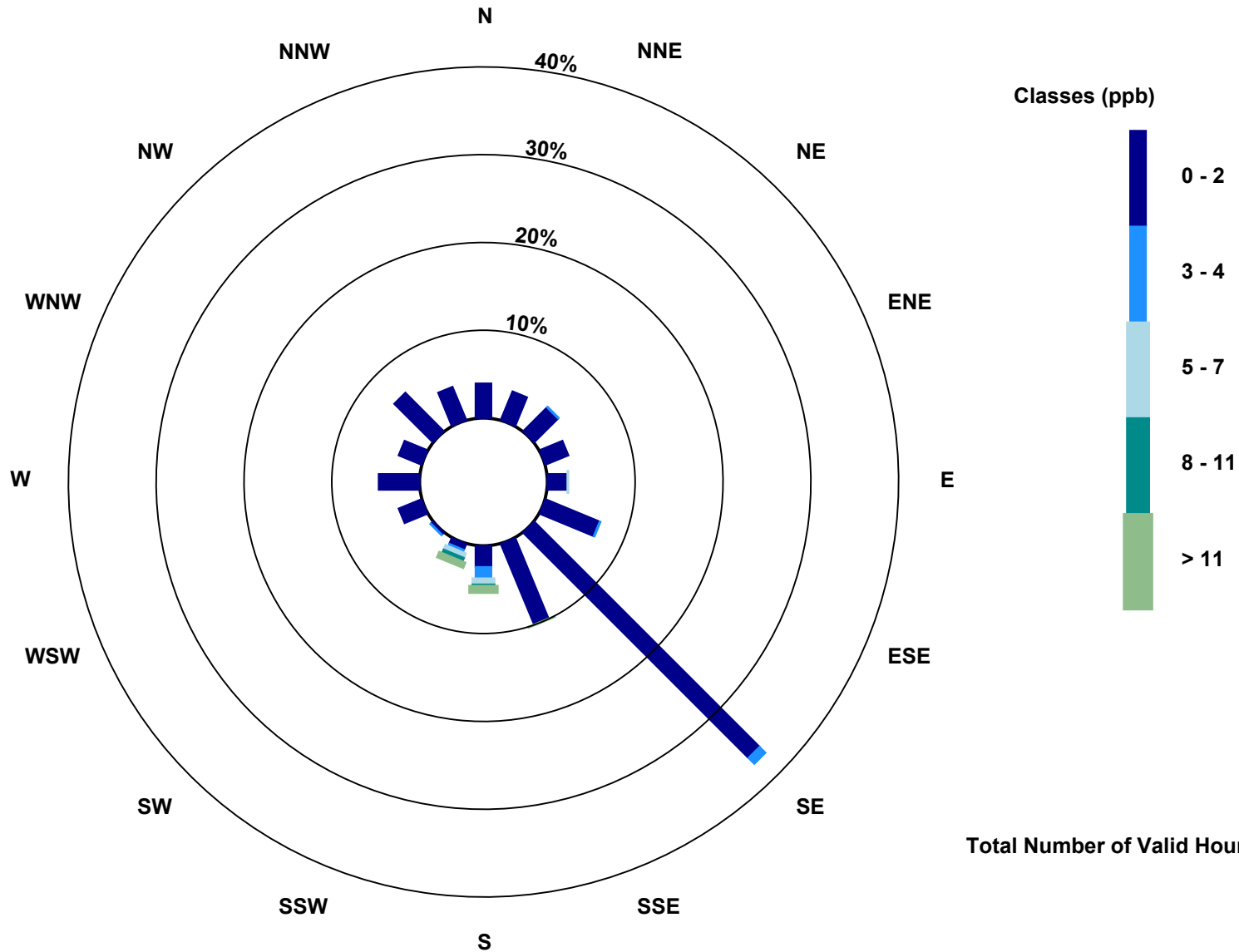
Total Number of Valid Hours: 706

Total Number of Hours: 744

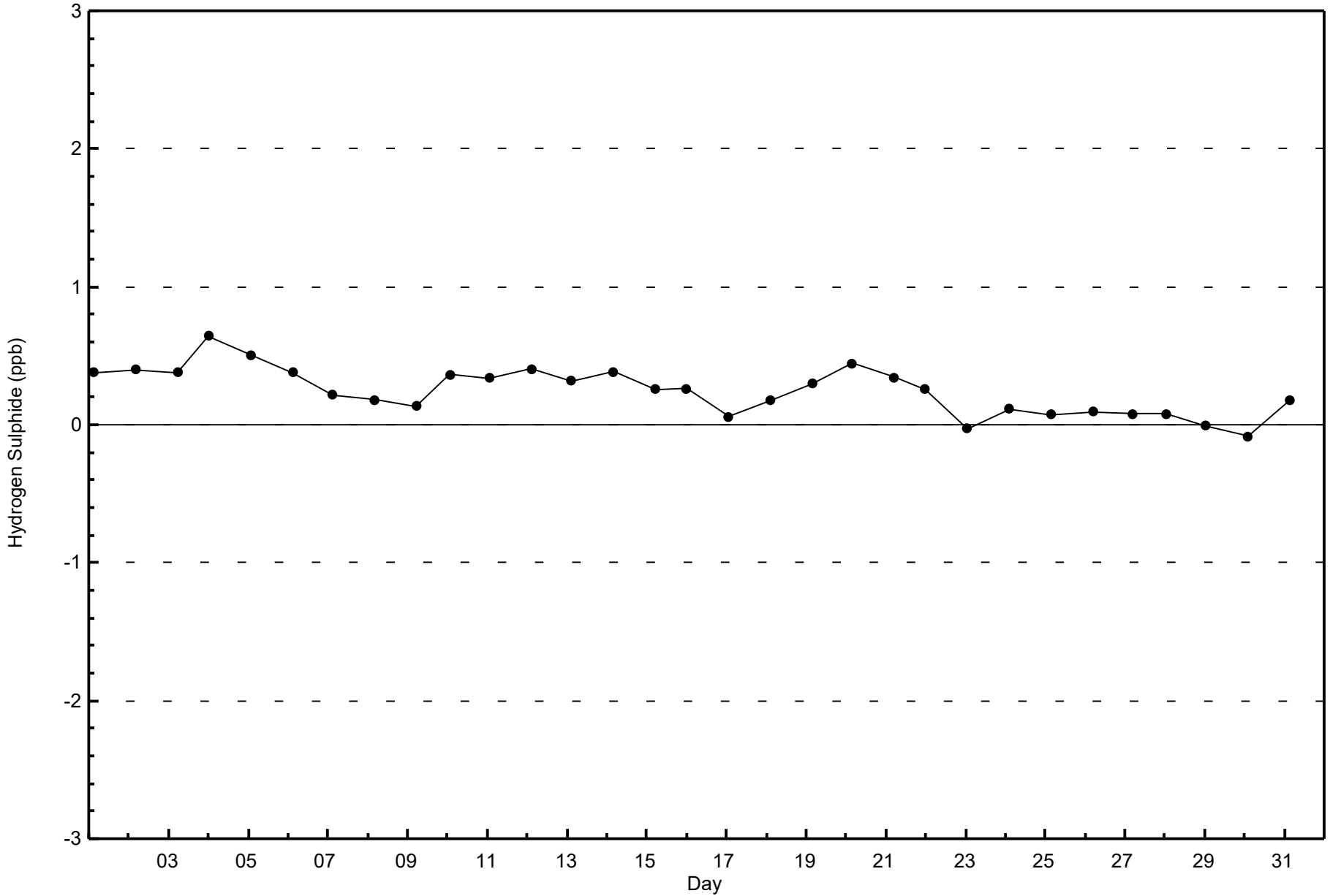


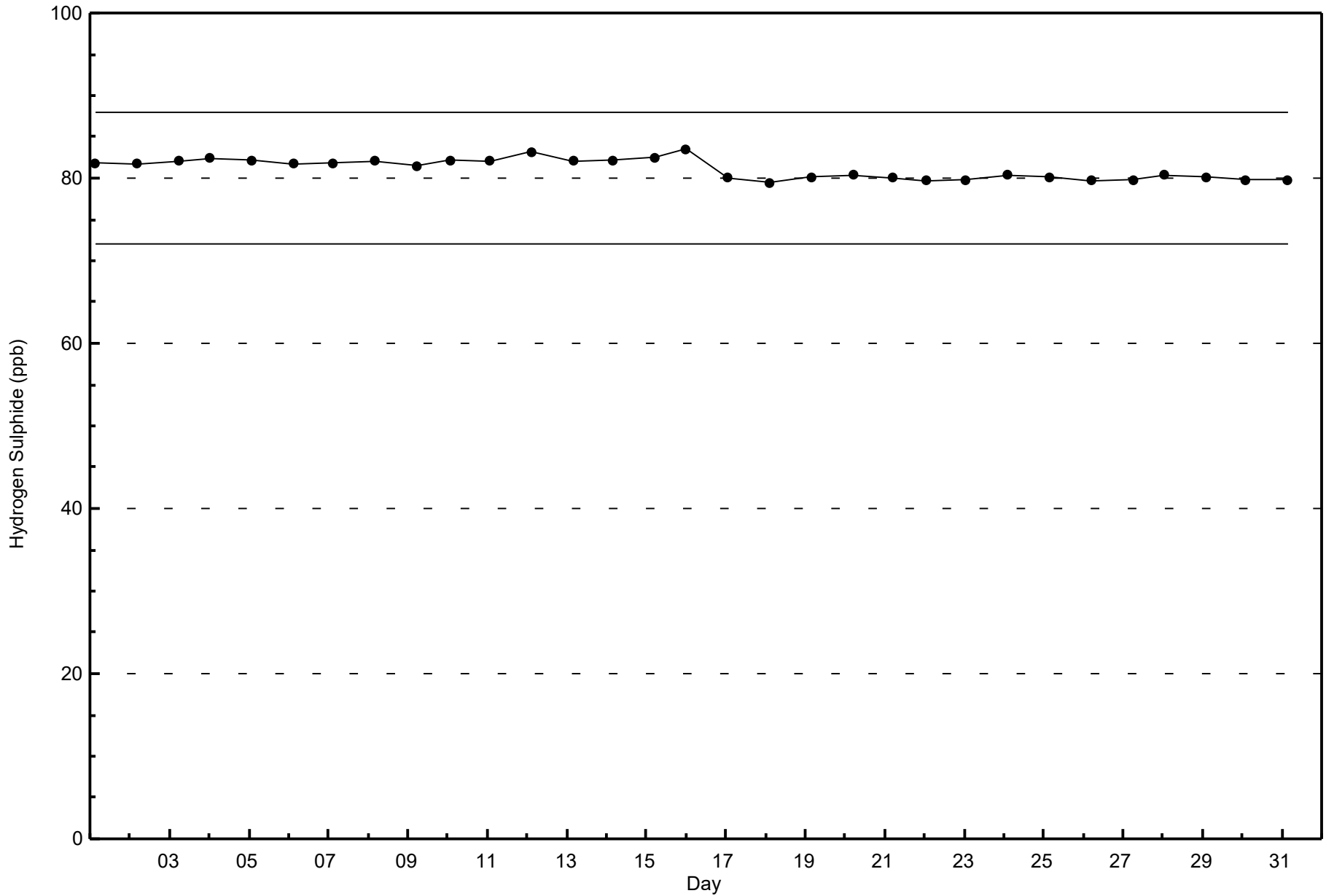
Wood Buffalo Environmental Association
Wind Rose May 2023

Hydrogen Sulphide (H₂S) - ppb
Lower Camp



Total Number of Valid Hours: 706







Wood Buffalo Environmental Association
Summary of Hour Averages

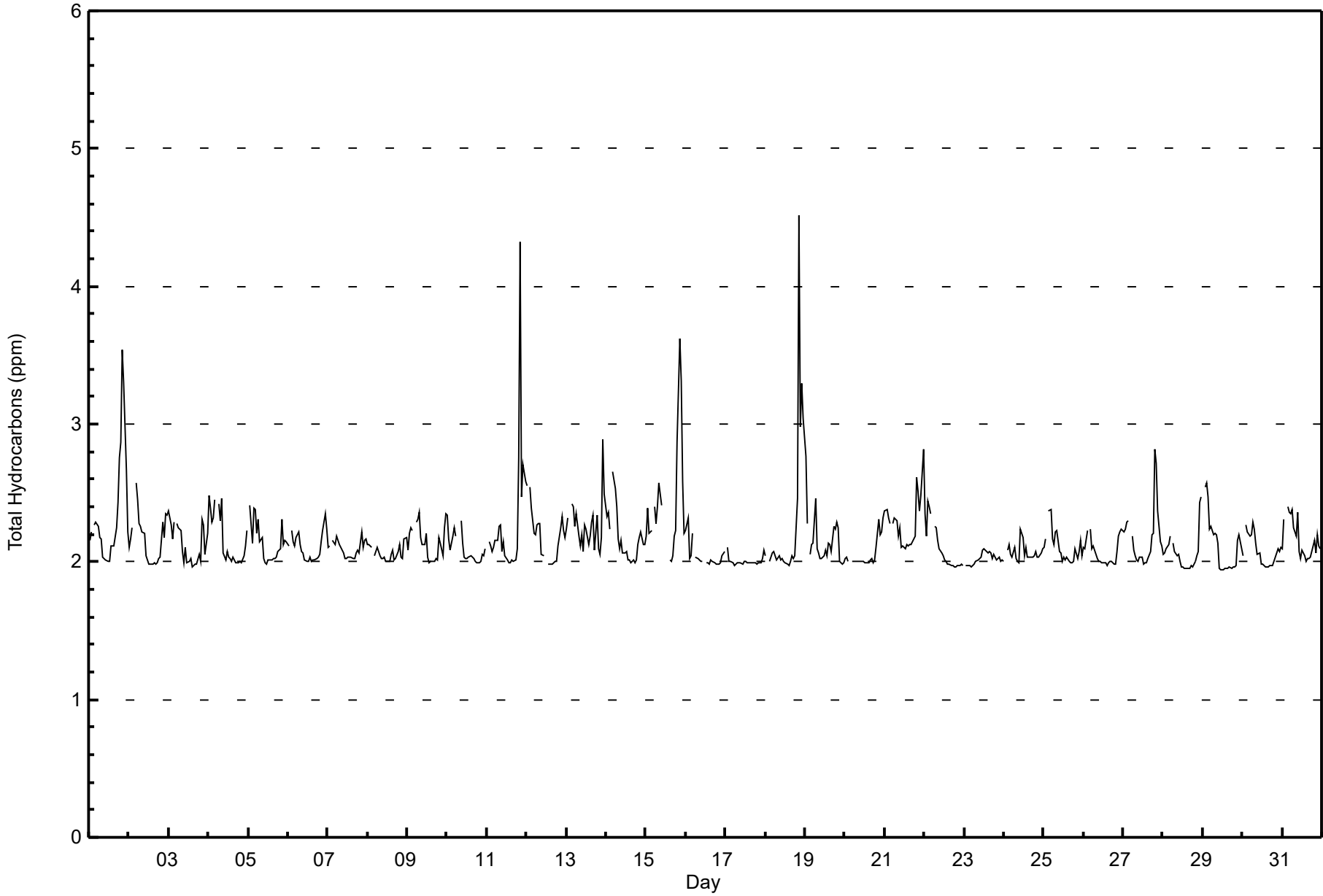
Total Hydrocarbons (THC) - ppm
Lower Camp - May 2023

Maximum Value: 4.5 ppm on May 18 21:00																				Maximum Daily Average: 2.4 ppm on May 15					Hours in Service: 744			
Minimum Value: 1.9 ppm on May 29 13:00																				Minimum Daily Average: 2.0 ppm on May 17					Hours of Data: 705			
Maximum Diurnal Average: 2.4 ppm at hour 21																				Minimum Diurnal Average: 2.0 ppm at hour 15					Hours of Missing Data: 39			
Monthly Average: 2.15 ppm																				Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.1 Q ₃ = 2.2 P ₉₀ = 2.4 P ₉₉ = 3.0					Hours of Calibration: 35			
																									Percent Operational Time: 99.5			
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
1-May	2.2	2.2	Z	2.3	2.3	2.3	2.2	2.2	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.4	2.8	2.9	3.5	3.3	2.7	2.2	2.3	3.5			
2-May	2.1	2.2	2.2	Z	2.6	2.5	2.3	2.3	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.2	2.4	2.3	2.2	2.6		
3-May	2.4	2.3	2.2	2.3	Z	2.3	2.2	2.2	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.3	2.1	2.2	2.1	2.4		
4-May	2.5	2.4	2.3	2.3	2.5	Z	2.3	2.4	2.3	2.5	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.5		
5-May	Z	2.4	2.1	2.4	2.4	2.2	2.3	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.3	2.1	2.2	2.1	2.1	2.4		
6-May	2.1	Z	2.2	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.3	2.2	2.1	2.1	2.3		
7-May	2.1	2.1	Z	2.2	2.1	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.1	2.1	2.2		
8-May	2.1	2.1	2.1	Z	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.1	2.1	2.0	2.0	2.2	2.2	2.1	2.1	2.2		
9-May	2.1	2.2	2.2	2.2	Z	2.3	2.3	2.4	2.2	2.1	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.1	2.0	2.2	2.3	2.1	2.4		
10-May	2.3	2.2	2.1	2.2	2.2	2.2	Z	M	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.3		
11-May	Z	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.8	4.3	2.5	2.7	2.6	2.3	4.3			
12-May	2.5	Z	2.5	2.4	2.2	2.2	2.3	2.3	2.3	2.1	2.0	M	M	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.2	2.2	2.2	2.2	2.5		
13-May	2.2	2.3	Z	2.4	2.4	2.3	2.3	2.2	2.1	2.2	2.1	2.3	2.2	2.1	2.2	2.3	2.3	2.1	2.3	2.1	2.1	2.2	2.9	2.5	2.3	2.9		
14-May	2.3	2.4	2.2	Z	2.7	2.5	2.4	2.2	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.1	2.1	2.2	2.7		
15-May	2.2	2.4	2.2	2.2	Z	2.4	2.3	2.4	2.6	2.4	C	C	C	C	2.0	2.0	2.0	2.0	2.2	2.2	2.9	3.6	3.3	2.6	2.2	2.4	3.6	
16-May	2.2	2.3	2.0	2.0	2.2	Z	2.0	2.0	2.0	2.0	2.0	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.3		
17-May	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.0	2.1
18-May	2.0	Z	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	4.5	3.0	3.3	3.0	2.3	4.5		
19-May	2.8	2.3	Z	2.1	2.1	2.1	2.5	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.3	2.2	2.3	2.2	2.0	2.0	2.0	2.2	2.8		
20-May	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.2	2.2	2.3	2.1	2.1	2.3		
21-May	2.4	2.4	2.3	2.3	Z	2.3	2.3	2.3	2.2	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.6	2.5	2.4	2.5	2.8	2.3	2.8		
22-May	2.4	2.2	2.4	2.4	2.3	Z	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4		
23-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1		
24-May	2.0	Z	2.1	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.2	2.2	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.1	2.2		
25-May	2.1	2.2	Z	2.4	2.4	2.2	2.1	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.2	2.0	2.1	2.4		
26-May	2.1	2.1	2.2	Z	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.1	2.1	2.2		
27-May	2.2	2.2	2.3	2.3	Z	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.8	2.7	2.4	2.1	2.1	2.2	2.2	2.8		
28-May	2.1	2.1	2.1	2.1	2.2	Z	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4	2.5	2.1	2.5		
29-May	Z	2.5	2.6	2.5	2.2	2.3	2.2	2.2	2.2	2.1	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.1	2.1	2.6		
30-May	2.0	Z	2.3	2.2	2.2	2.2	2.3	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.3		
31-May	2.1	2.3	Z	2.4	2.4	2.4	2.4	2.3	2.2	2.4	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.2	2.1	2.1	2.2	2.4		
																								Diurnal Average				
																								Diurnal Maximum				
Z - zerospan C - Calibration M - Maintenance																												



Wood Buffalo Environmental Association
Hourly Averages

Total Hydrocarbons (THC) - ppm
Lower Camp - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Lower Camp - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	309	43.83	43.83
2.1 - 3.0	389	55.18	99.01
3.1 - 10.0	7	0.99	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Lower Camp - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	16	19	20	11	8	18	82	36	13	1	2	17	20	6	23	17	309
2.1 - 3.0	11	6	8	8	11	31	175	34	18	18	1	3	11	18	23	13	389
3.1 - 10.0	0	0	0	0	0	0	0	2	5	0	0	0	0	0	0	0	7
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	25	28	19	19	49	257	72	36	19	3	20	31	24	46	30	705

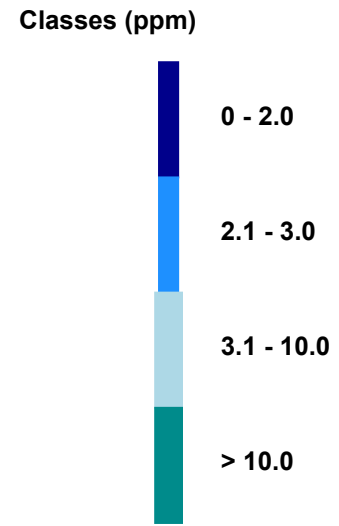
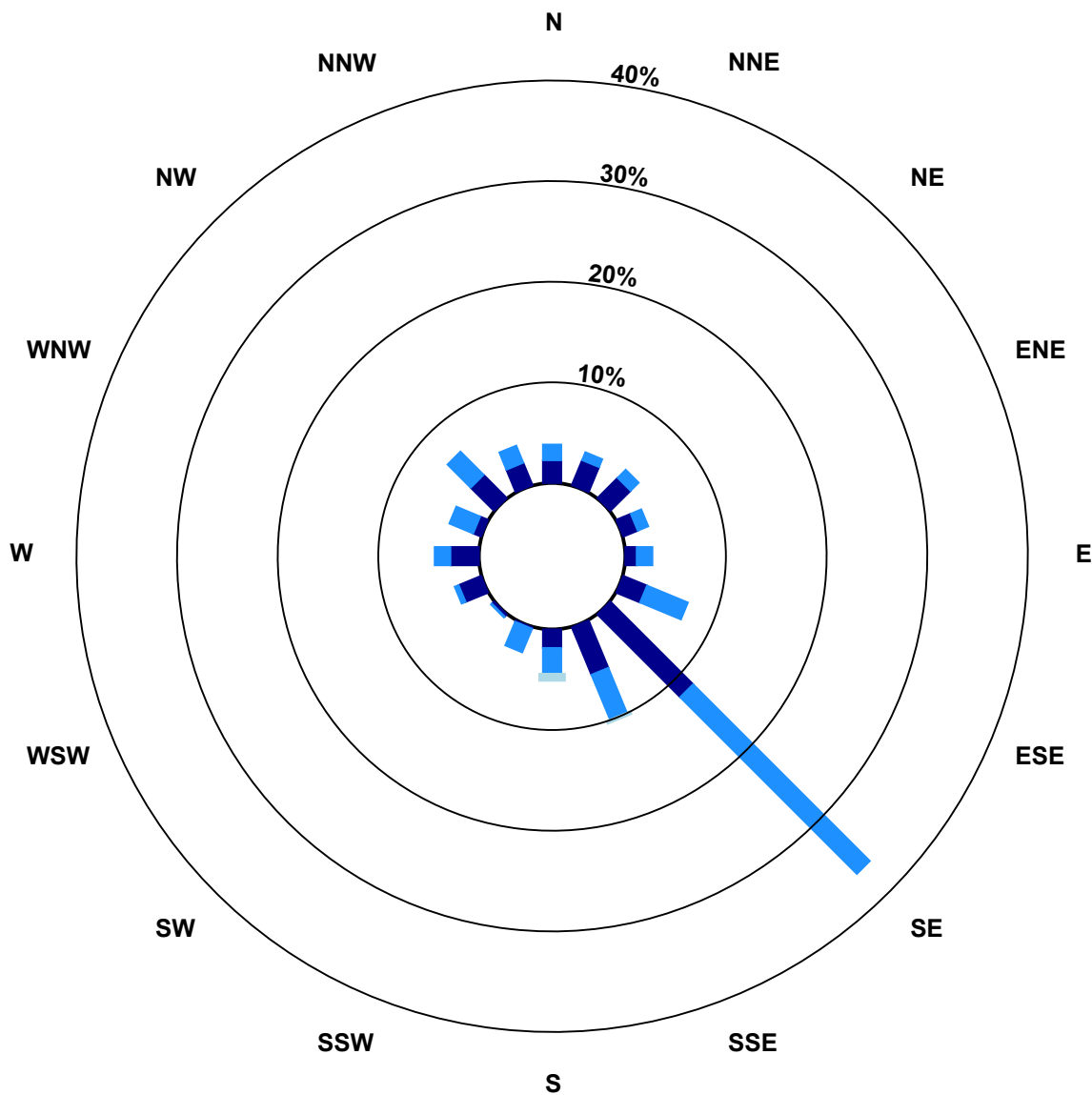
Total Number of Valid Hours: 705

Total Number of Hours: 744

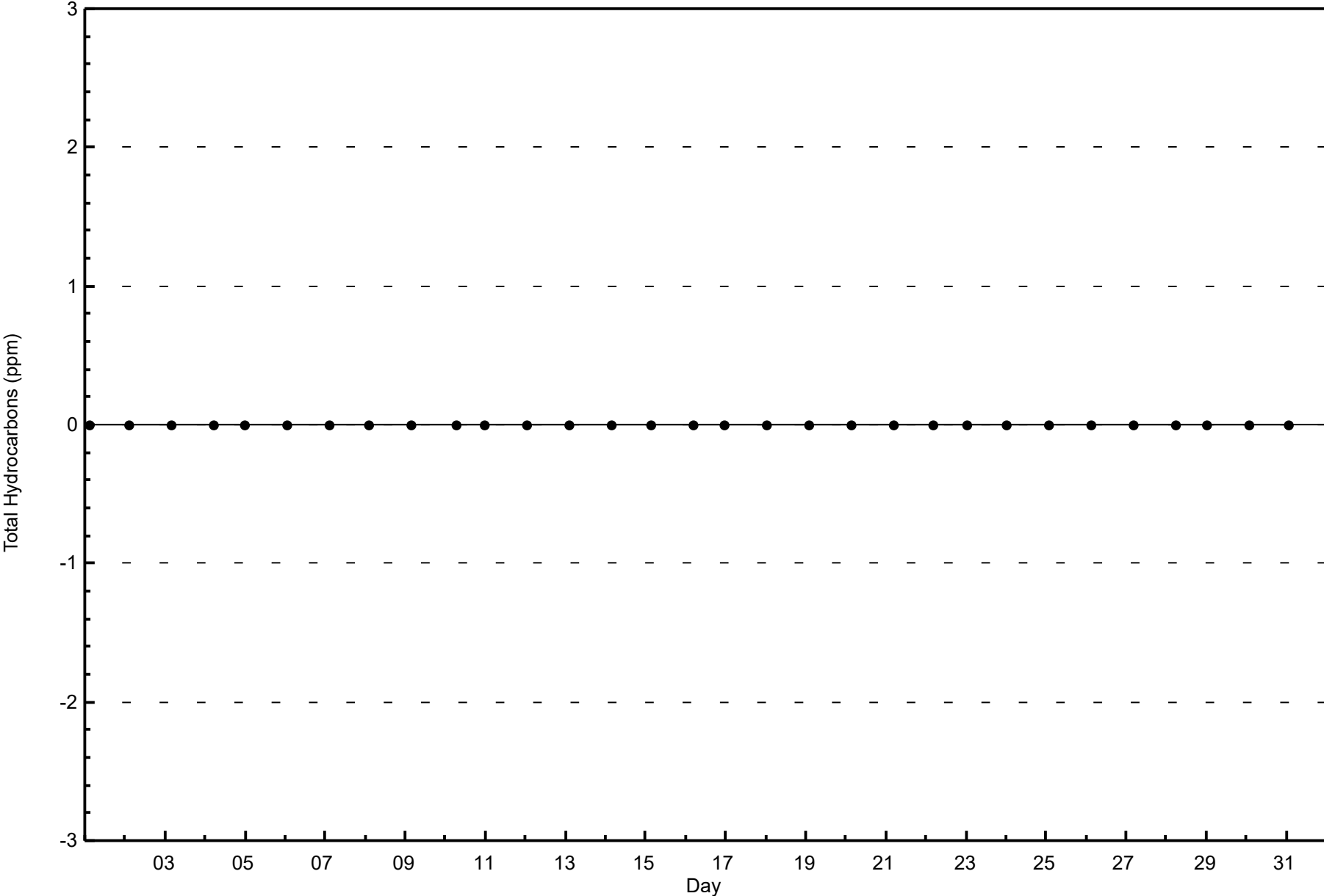


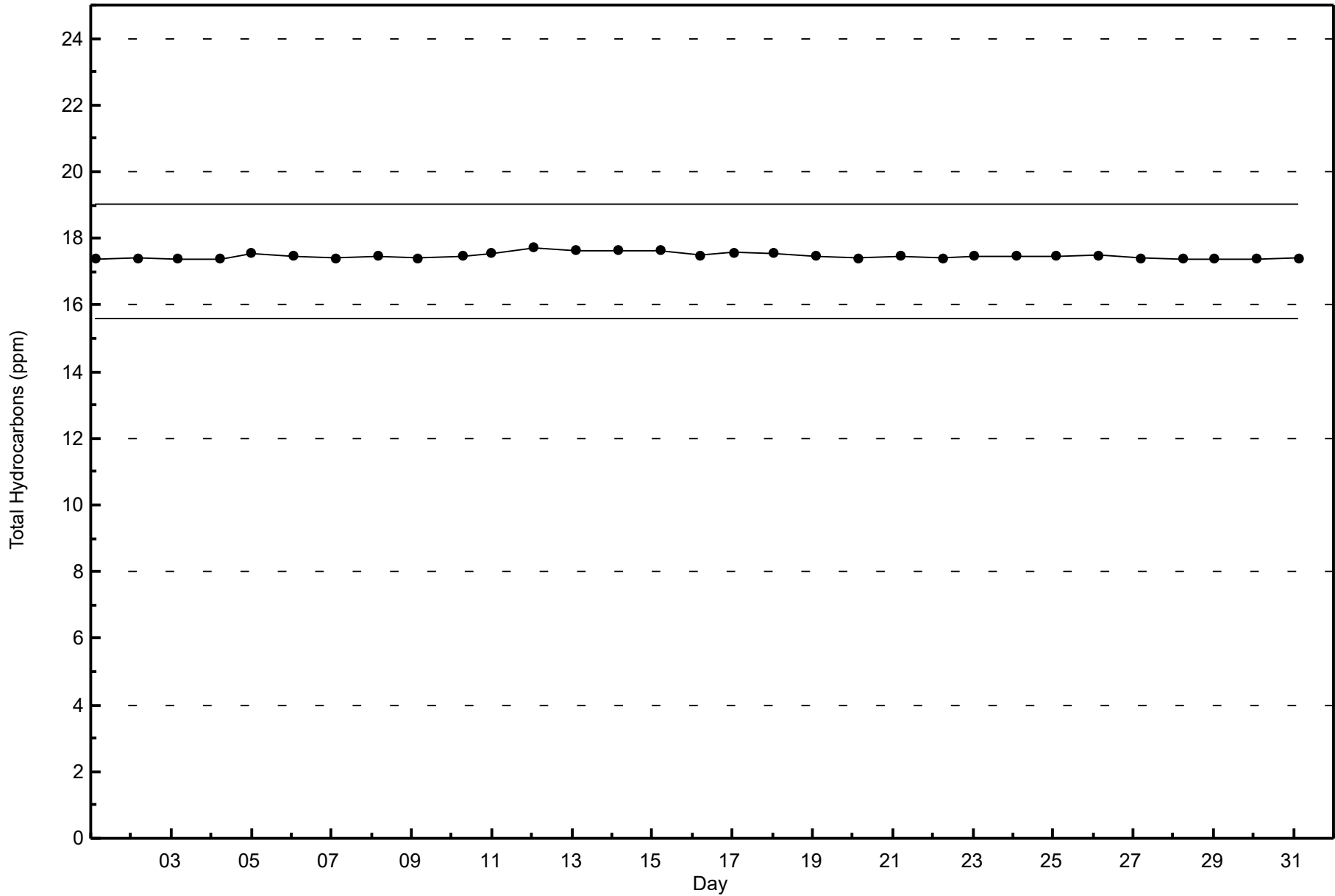
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Lower Camp



Total Number of Valid Hours: 705







Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH₄) - ppm

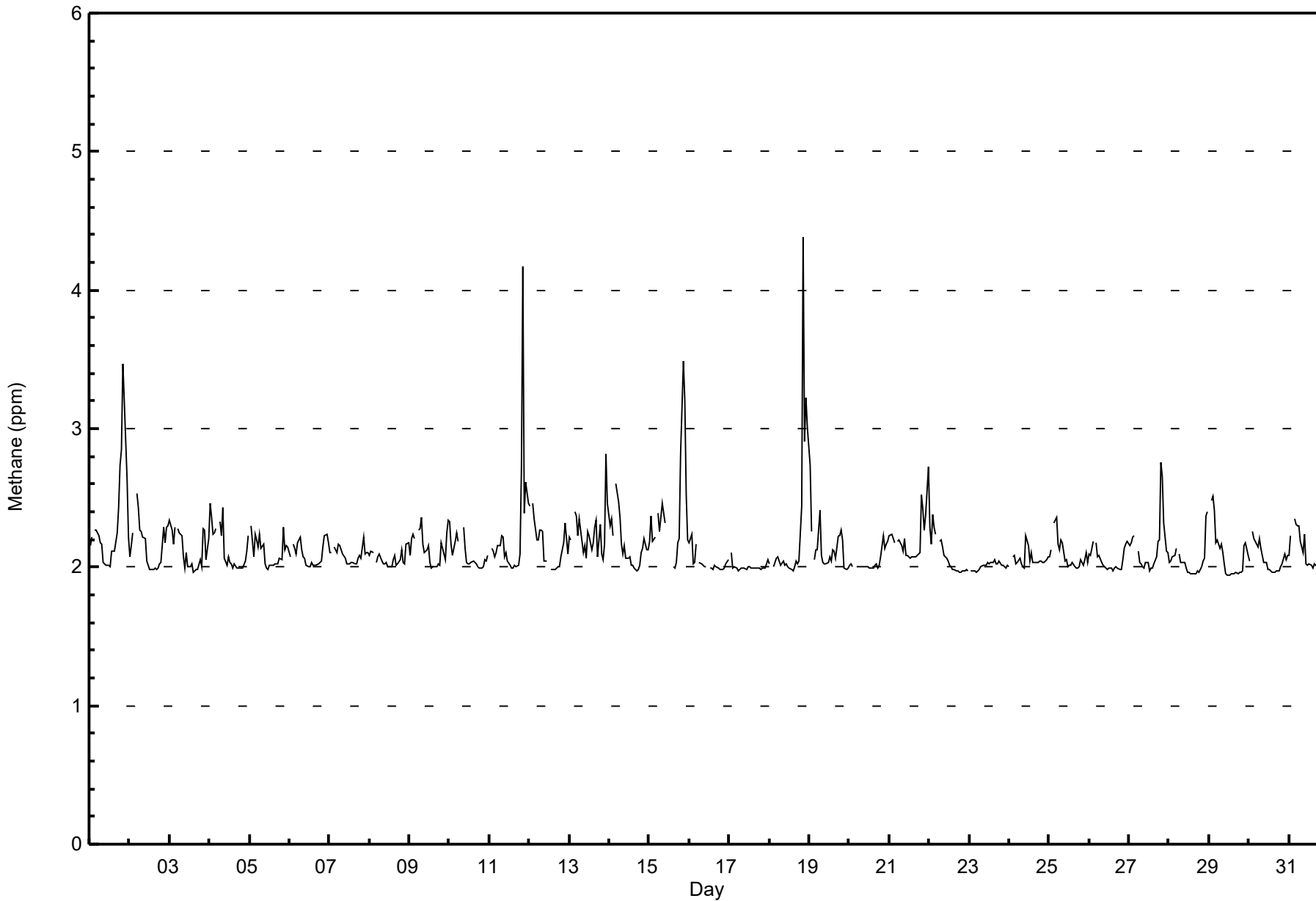
Lower Camp - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:														744						
Maximum Value: 4.4 ppm on May 18 21:00		Maximum Daily Average: 2.4 ppm on May 15		Hours of Data:														705								
Minimum Value: 1.9 ppm on May 29 13:00		Minimum Daily Average: 2.0 ppm on May 17		Hours of Missing Data:														39								
Maximum Diurnal Average: 2.4 ppm at hour 21		Minimum Diurnal Average: 2.0 ppm at hour 15		Hours of Calibration:														35								
Monthly Average: 2.13 ppm		Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.1 Q ₃ = 2.2 P ₉₀ = 2.3 P ₉₉ = 3.0		Percent Operational Time:														99.5								
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	2.2	2.2	Z	2.3	2.3	2.2	2.2	2.2	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.4	2.7	2.8	3.5	3.2	2.6	2.2	2.3	3.5	
2-May	2.1	2.2	2.2	Z	2.5	2.4	2.3	2.3	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.2	2.3	2.3	2.2	2.5	
3-May	2.3	2.3	2.2	2.3	Z	2.3	2.2	2.2	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.3	2.1	2.2	2.1	2.3	
4-May	2.5	2.4	2.2	2.2	2.3	Z	2.3	2.2	2.4	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.5	
5-May	Z	2.3	2.1	2.2	2.2	2.1	2.2	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.3	2.1	2.2	2.1	2.3	
6-May	2.1	Z	2.2	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.1	2.2	
7-May	2.1	2.1	Z	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.2	
8-May	2.1	2.1	2.1	Z	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.1	2.1	2.0	2.0	2.2	2.2	2.1	2.2	
9-May	2.1	2.2	2.2	2.2	Z	2.3	2.3	2.4	2.2	2.1	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.1	2.0	2.2	2.3	2.1	2.4	
10-May	2.3	2.2	2.1	2.2	2.2	2.2	Z	M	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.3	
11-May	Z	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.7	4.2	2.4	2.6	2.5	2.3	4.2	
12-May	2.4	Z	2.5	2.3	2.2	2.2	2.3	2.3	2.3	2.0	2.0	M	M	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.2	2.1	2.2	2.5	
13-May	2.2	2.2	Z	2.4	2.4	2.2	2.3	2.2	2.1	2.2	2.1	2.3	2.2	2.1	2.2	2.3	2.3	2.1	2.3	2.1	2.1	2.2	2.8	2.5	2.2	2.8
14-May	2.3	2.3	2.2	Z	2.6	2.5	2.4	2.2	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.6
15-May	2.2	2.4	2.2	2.2	Z	2.4	2.3	2.4	2.5	2.3	C	C	C	C	2.0	2.0	2.0	2.2	2.2	2.8	3.5	3.2	2.5	2.2	2.4	3.5
16-May	2.2	2.2	2.0	2.0	2.2	Z	2.0	2.0	2.0	2.0	2.0	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.2	
17-May	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	
18-May	2.0	Z	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.4	4.4	2.9	3.2	3.0	2.3	4.4	
19-May	2.7	2.3	Z	2.1	2.1	2.1	2.4	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.2	2.2	2.3	2.2	2.0	2.0	2.0	2.1	2.7
20-May	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.2	2.2	2.0	2.2	
21-May	2.2	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.5	2.4	2.3	2.4	2.7	2.2	2.7	
22-May	2.3	2.2	2.4	2.3	2.2	Z	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4	
23-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	
24-May	2.0	Z	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.0	2.2	2.2	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	
25-May	2.1	2.1	Z	2.3	2.4	2.2	2.1	2.2	2.2	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.0	2.1	2.4	
26-May	2.1	2.1	2.2	Z	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.1	2.2	
27-May	2.2	2.2	2.2	2.2	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.8	2.7	2.3	2.1	2.1	2.1	2.8	
28-May	2.0	2.0	2.1	2.1	2.1	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4	2.4	2.0	2.4	
29-May	Z	2.5	2.5	2.4	2.2	2.2	2.1	2.2	2.1	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.1	2.1	2.5	
30-May	2.0	Z	2.3	2.2	2.2	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.3	
31-May	2.1	2.2	Z	2.4	2.3	2.3	2.3	2.2	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.2	2.1	2.1	2.1	2.4	
																								Diurnal Average		
																								Diurnal Maximum		
																								2.2 2.7 2.5 2.5 2.4 2.6 2.5 2.4 2.4 2.5 2.3 2.2 2.3 2.2 2.1 2.2 2.3 2.3 2.4 2.7 2.8 4.4 3.2 3.2 3.0		
Z - zerospan			C - Calibration			M - Maintenance																				



Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Lower Camp - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Lower Camp - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	334	47.38	47.38
2.1 - 3.0	364	51.63	99.01
3.1 - 10.0	7	0.99	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Lower Camp - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	17	19	20	12	8	21	99	38	13	1	2	17	20	7	23	17	334
2.1 - 3.0	10	6	8	7	11	28	158	32	18	18	1	3	11	17	23	13	364
3.1 - 10.0	0	0	0	0	0	0	0	2	5	0	0	0	0	0	0	0	7
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	25	28	19	19	49	257	72	36	19	3	20	31	24	46	30	705

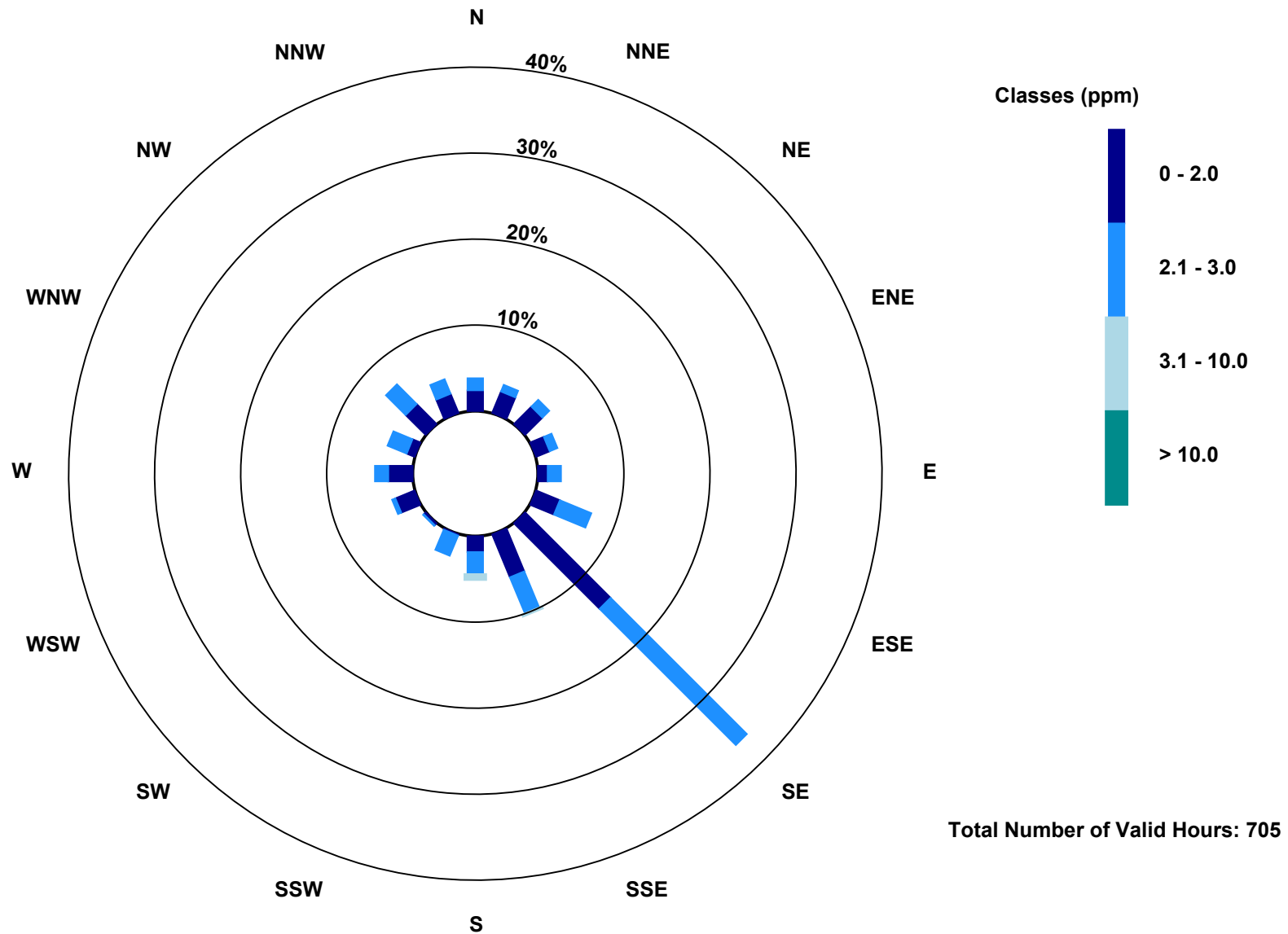
Total Number of Valid Hours: 705

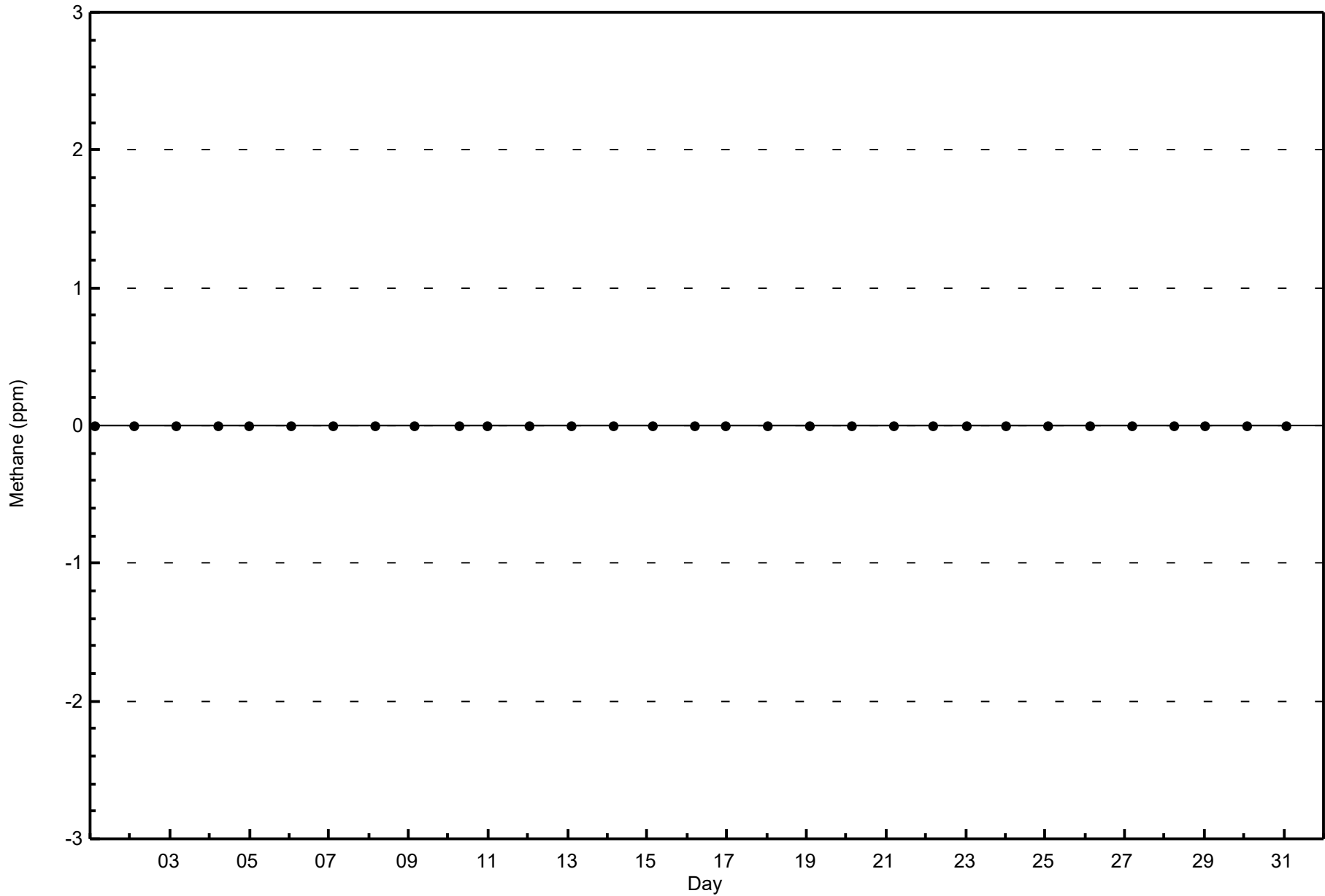
Total Number of Hours: 744

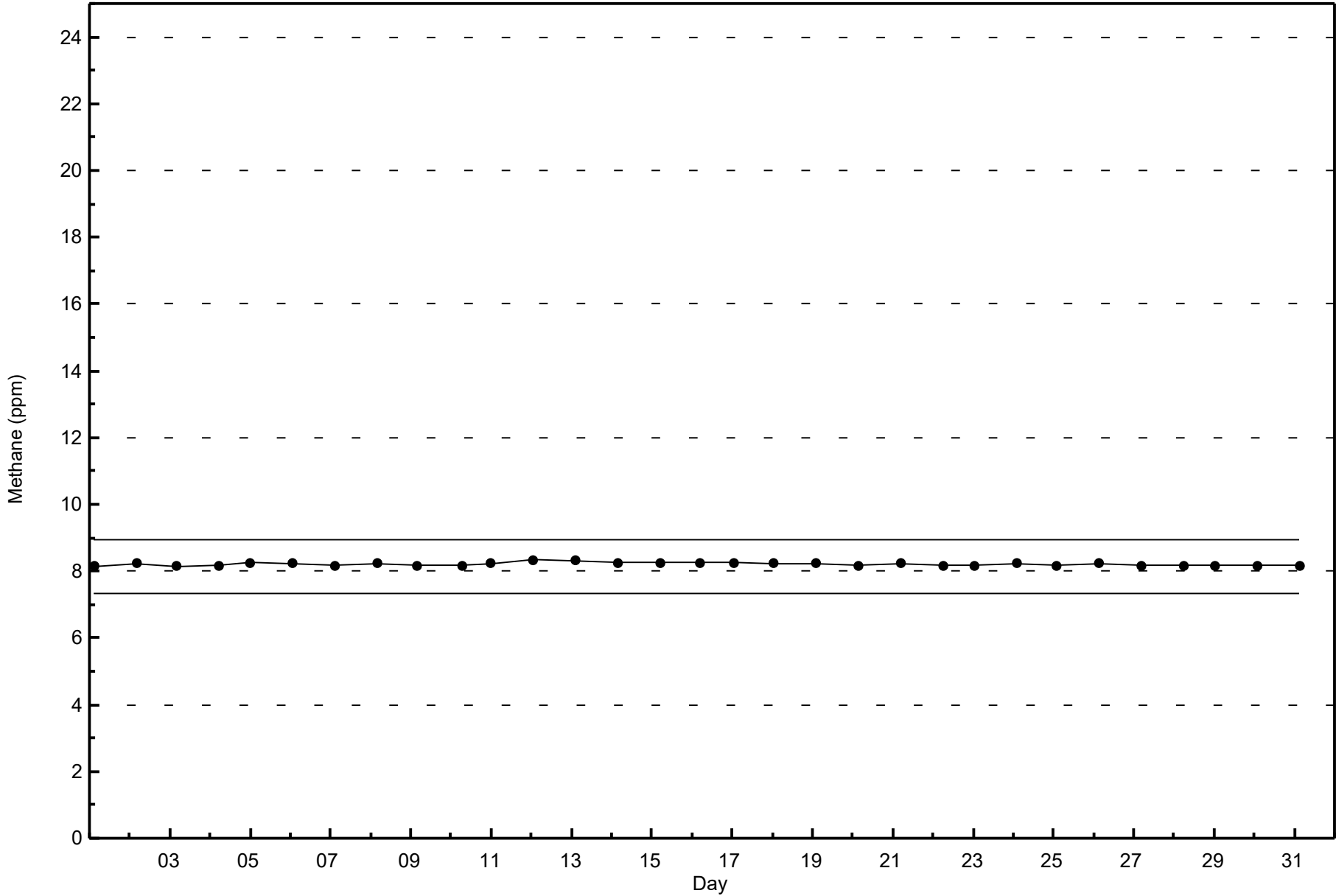


Wood Buffalo Environmental Association
Wind Rose May 2023

Methane (CH₄) - ppm
Lower Camp





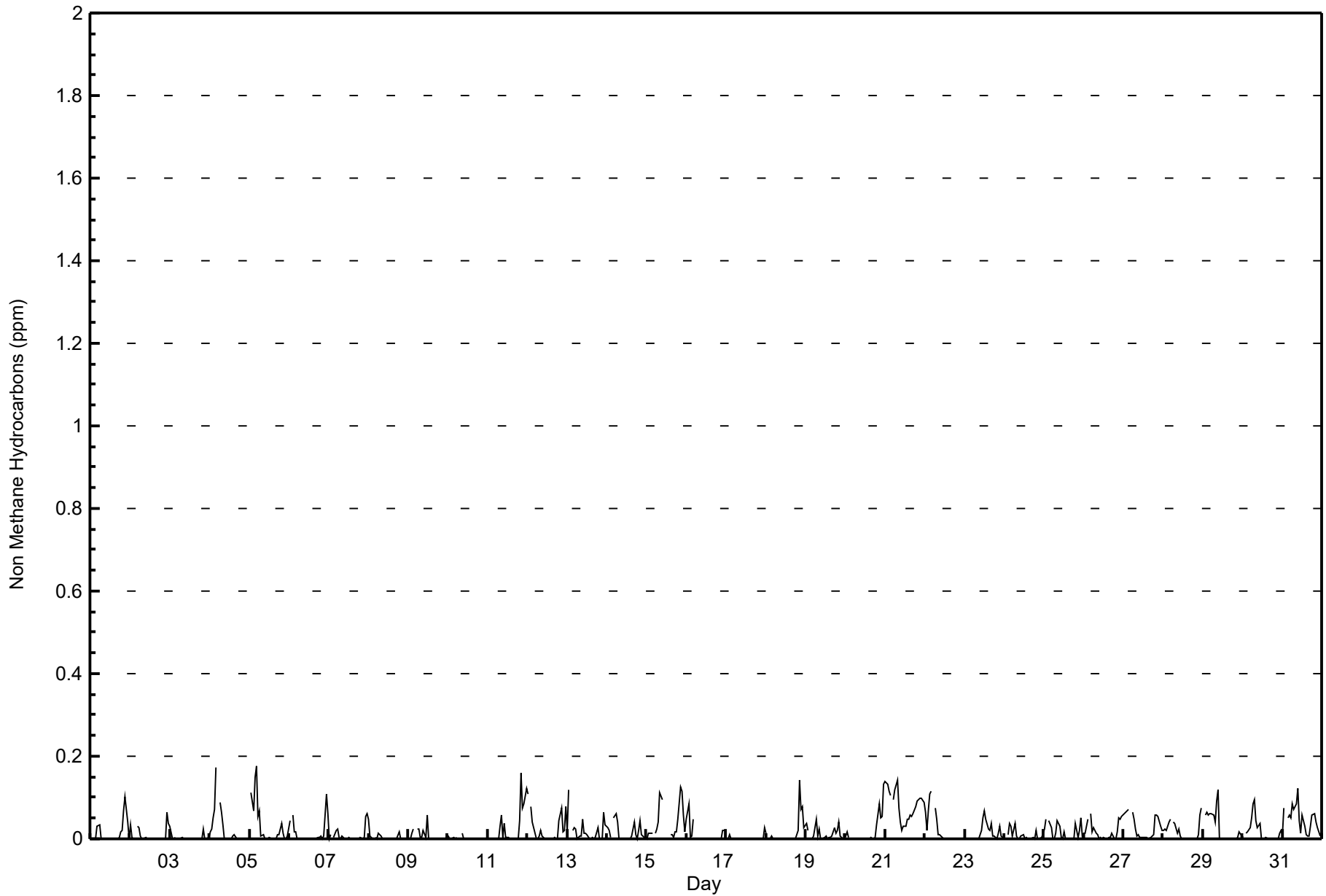




Summary of Hour Averages

Lower Camp - May 2023

Maximum Value: 0.176 ppm on May 5 05:00 Maximum Daily Average: 0.081 ppm on May 21																				Hours in Service: 744 Hours of Data: 705						
Minimum Value: 0.000 ppm on May 1 01:00 Minimum Daily Average: 0.001 ppm on May 10 Maximum Diurnal Average: 0.039 ppm at hour 5 Minimum Diurnal Average: 0.004 ppm at hour 15 Monthly Average: 0.019 ppm Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.1 P ₉₉ = 0.1																				Hours of Missing Data: 39 Hours of Calibration: 35 Percent Operational Time: 99.5						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.000	0.000	Z	0.000	0.029	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.016	0.020	0.067	0.101	0.039	0.000	0.013	0.101
2-May	0.033	0.004	0.000	Z	0.032	0.026	0.007	0.001	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.000	0.066	0.038	0.009	0.066
3-May	0.030	0.001	0.000	0.003	Z	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.023	0.001	0.000	0.002	0.003	0.030
4-May	0.018	0.023	0.052	0.071	0.174	Z	0.089	0.064	0.034	0.000	0.000	0.000	0.000	0.000	0.008	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.024	0.174
5-May	Z	0.113	0.069	0.151	0.176	0.056	0.067	0.007	0.010	0.000	0.000	0.002	0.002	0.000	0.000	0.001	0.009	0.009	0.009	0.036	0.015	0.000	0.000	0.005	0.032	0.176
6-May	0.043	Z	0.057	0.016	0.017	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.003	0.005	0.008	0.001	0.005	0.110	0.061	0.014	0.110	
7-May	0.000	0.011	Z	0.005	0.020	0.023	0.002	0.000	0.008	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.004	0.000	0.002	0.055	0.062	0.009	0.062
8-May	0.047	0.008	0.000	Z	0.004	0.000	0.014	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.004	0.047
9-May	0.000	0.000	0.015	0.025	Z	0.023	0.023	0.003	0.003	0.019	0.002	0.057	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.008	0.057
10-May	0.006	0.000	0.001	0.002	0.000	0.002	Z	M	0.012	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.012
11-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.032	0.056	0.002	0.039	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.043	0.159	0.075	0.086	0.123	0.027	0.159
12-May	0.110	Z	0.078	0.041	0.015	0.001	0.001	0.008	0.021	0.007	0.000	M	M	0.000	0.001	0.001	0.003	0.000	0.000	0.044	0.074	0.018	0.021	0.079	0.025	0.110
13-May	0.022	0.120	Z	0.021	0.026	0.023	0.000	0.005	0.005	0.048	0.013	0.013	0.010	0.000	0.001	0.002	0.002	0.002	0.027	0.001	0.000	0.002	0.066	0.033	0.019	0.120
14-May	0.026	0.020	0.002	Z	0.052	0.060	0.042	0.000	0.000	0.001	0.000	0.001	0.002	0.000	0.007	0.041	0.009	0.001	0.020	0.044	0.011	0.004	0.002	0.015	0.015	0.060
15-May	0.001	0.015	0.014	0.013	Z	0.012	0.025	0.042	0.111	0.095	C	C	C	C	0.009	0.012	0.005	0.016	0.019	0.048	0.127	0.114	0.059	0.015	0.040	0.127
16-May	0.047	0.085	0.004	0.007	0.047	Z	0.000	0.001	0.000	0.000	0.000	M	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022	0.021	0.011	0.085	
17-May	Z	0.000	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.027	0.002	0.027	
18-May	0.014	Z	0.000	0.005	0.000	0.000	0.002	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.142	0.072	0.079	0.027	0.016	0.142
19-May	0.036	0.020	Z	0.002	0.001	0.008	0.048	0.007	0.022	0.000	0.000	0.002	0.005	0.000	0.005	0.004	0.007	0.028	0.014	0.021	0.042	0.007	0.000	0.000	0.012	0.048
20-May	0.006	0.018	0.003	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.002	0.001	0.001	0.002	0.035	0.085	0.052	0.056	0.133	0.017	0.133
21-May	0.139	0.132	0.114	0.104	Z	0.095	0.119	0.143	0.075	0.041	0.020	0.032	0.031	0.047	0.046	0.059	0.056	0.062	0.077	0.093	0.096	0.098	0.099	0.090	0.081	0.143
22-May	0.063	0.019	0.068	0.108	0.114	Z	0.075	0.047	0.012	0.010	0.002	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.023	0.114
23-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.019	0.050	0.068	0.048	0.024	0.020	0.038	0.006	0.008	0.001	0.014	0.029	0.008	0.002	0.015	0.068
24-May	0.004	Z	0.010	0.036	0.032	0.005	0.039	0.006	0.002	0.000	0.008	0.011	0.000	0.004	0.001	0.001	0.000	0.002	0.000	0.022	0.001	0.000	0.002	0.012	0.009	0.039
25-May	0.024	0.048	Z	0.045	0.027	0.001	0.001	0.015	0.044	0.031	0.005	0.001	0.017	0.002	0.001	0.001	0.000	0.000	0.002	0.038	0.004	0.020	0.052	0.007	0.017	0.052
26-May	0.013	0.015	0.046	Z	0.062	0.017	0.029	0.012	0.009	0.001	0.004	0.001	0.003	0.000	0.000	0.002	0.003	0.013	0.000	0.000	0.017	0.050	0.048	0.054	0.017	0.062
27-May	0.060	0.065	0.068	0.072	Z	0.064	0.048	0.023	0.006	0.012	0.005	0.003	0.004	0.003	0.003	0.000	0.002	0.007	0.009	0.056	0.059	0.053	0.030	0.020	0.029	0.072
28-May	0.020	0.024	0.022	0.041	0.046	Z	0.041	0.037	0.014	0.023	0.007	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.012	0.058	0.075	0.018	0.075
29-May	Z	0.058	0.066	0.058	0.060	0.060	0.057	0.041	0.090	0.118	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.016	0.005	0.027	0.118	
30-May	0.003	Z	0.013	0.018	0.029	0.052	0.084	0.096	0.046	0.026	0.037	0.001	0.001	0.001	0.005	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.013	0.019	0.019	0.096
31-May	0.009	0.076	Z	0.052	0.059	0.050	0.083	0.070	0.084	0.123	0.044	0.012	0.058	0.030	0.009	0.007	0.006	0.030	0.057	0.062	0.040	0.028	0.018	0.008	0.044	0.123
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration M - Maintenance																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Lower Camp - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	398	56.45	56.45
0.006 - 0.05	213	30.21	86.67
0.06 - 0.1	90	12.77	99.43
> 0.1	4	0.57	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Lower Camp - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	18	21	22	13	9	25	122	42	22	9	2	15	23	9	25	21	398
0.006 - 0.05	7	2	6	5	6	11	91	25	6	8	1	5	5	10	18	7	213
0.06 - 0.1	2	2	0	1	4	13	41	5	7	2	0	0	3	5	3	2	90
> 0.1	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	4
Totals	27	25	28	19	19	49	257	72	36	19	3	20	31	24	46	30	705

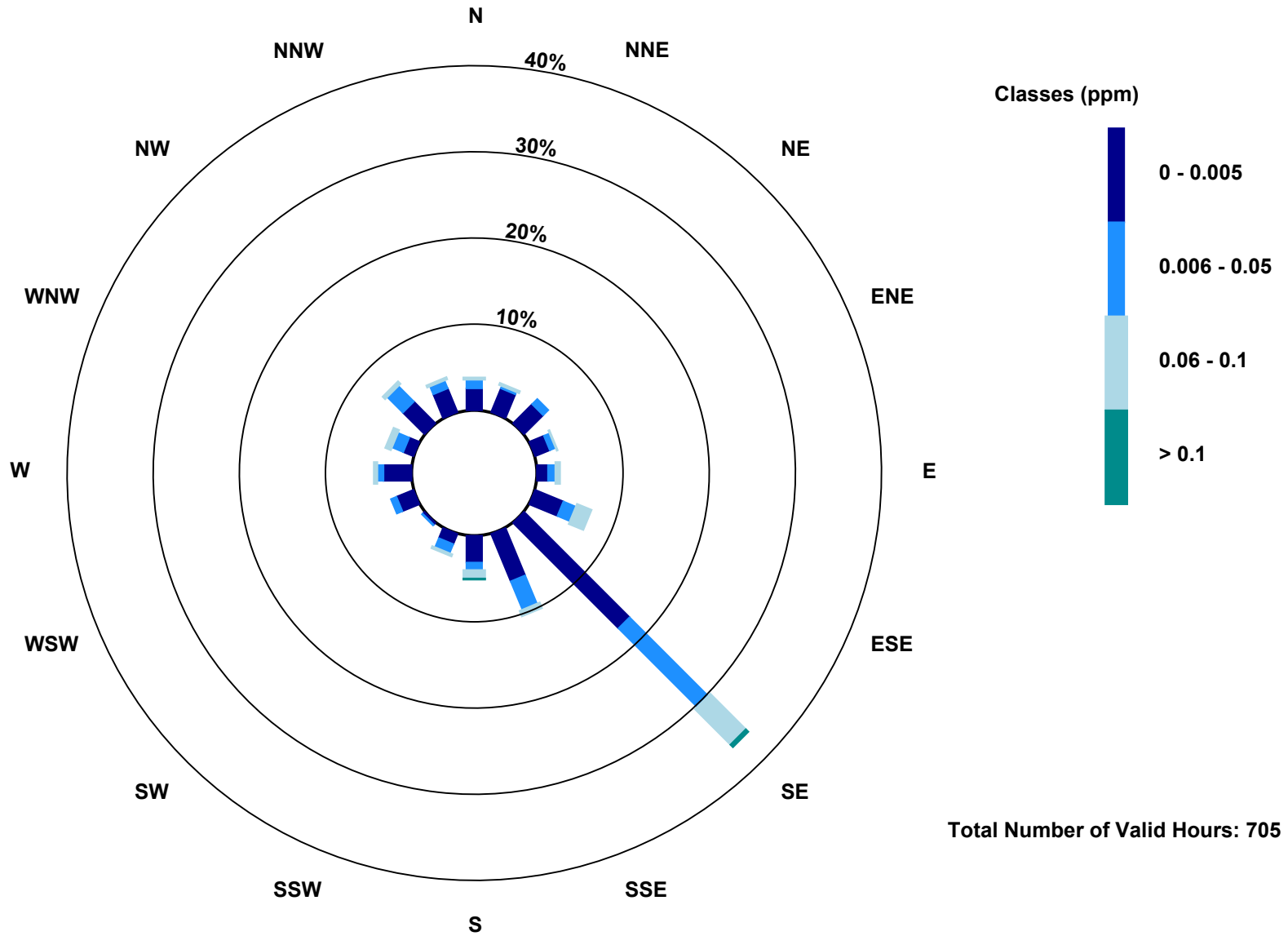
Total Number of Valid Hours: 705

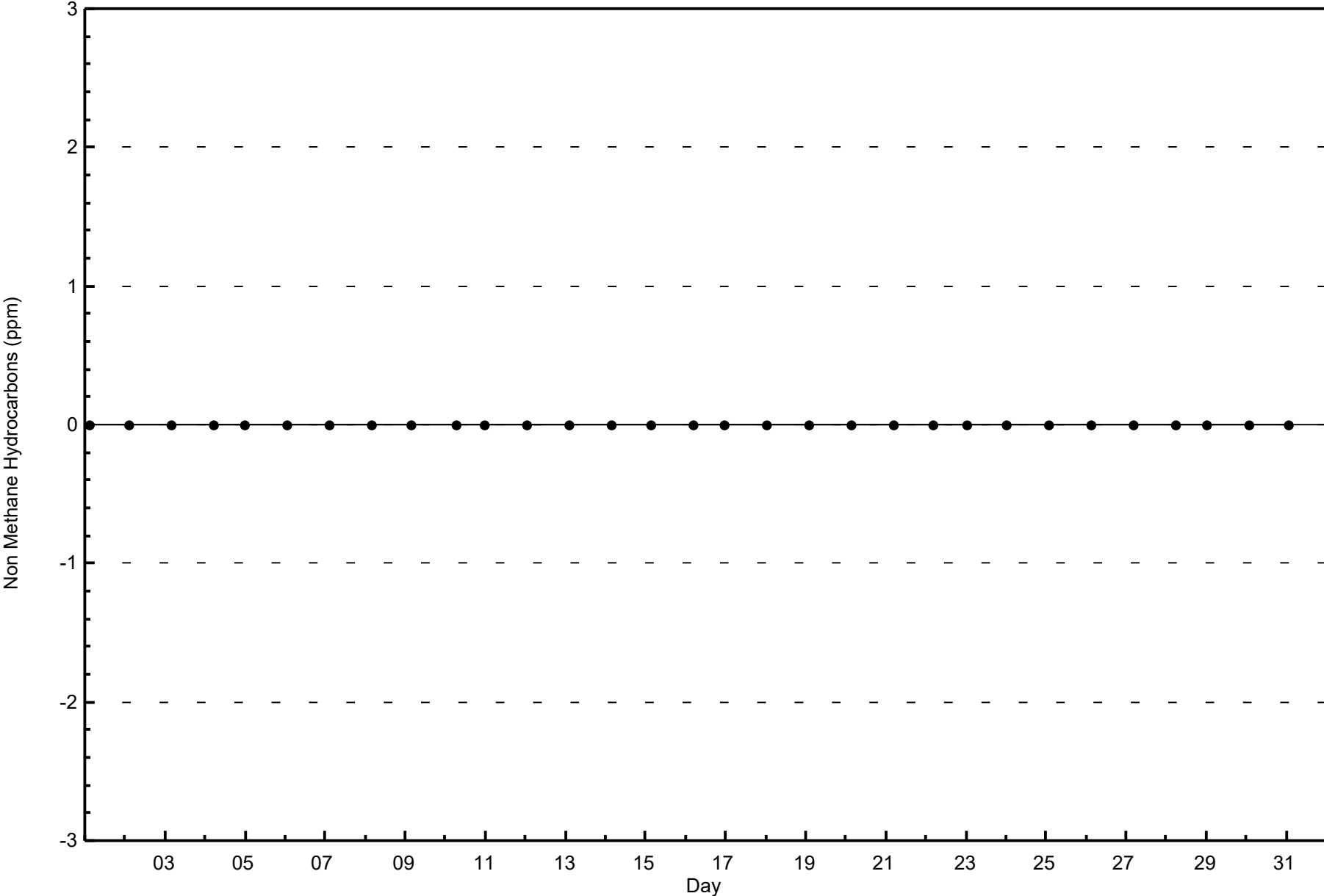
Total Number of Hours: 744

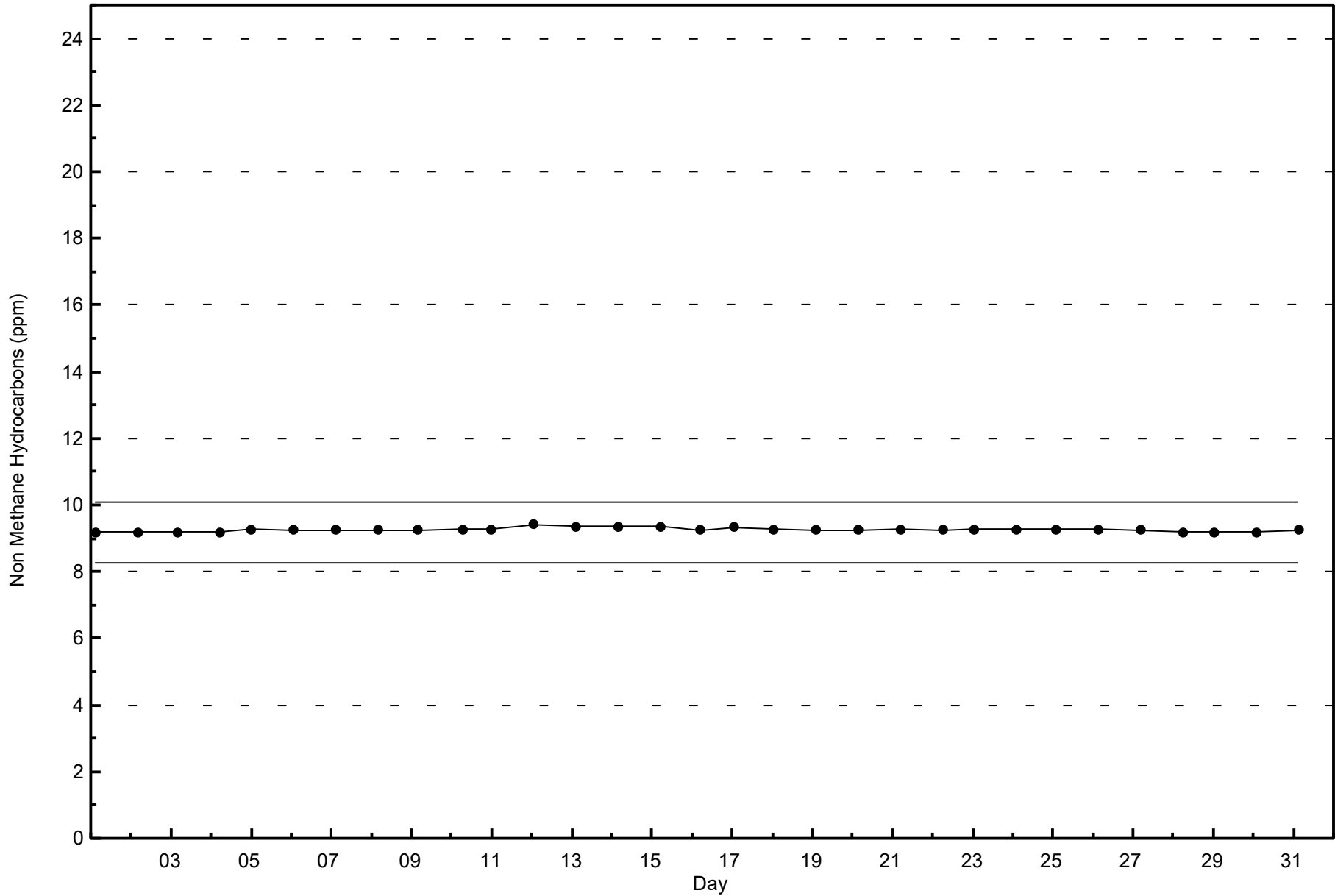


Wood Buffalo Environmental Association
Wind Rose May 2023

Non Methane Hydrocarbons (NMHC) - ppm
Lower Camp









Wood Buffalo Environmental Association
Summary of Hour Averages

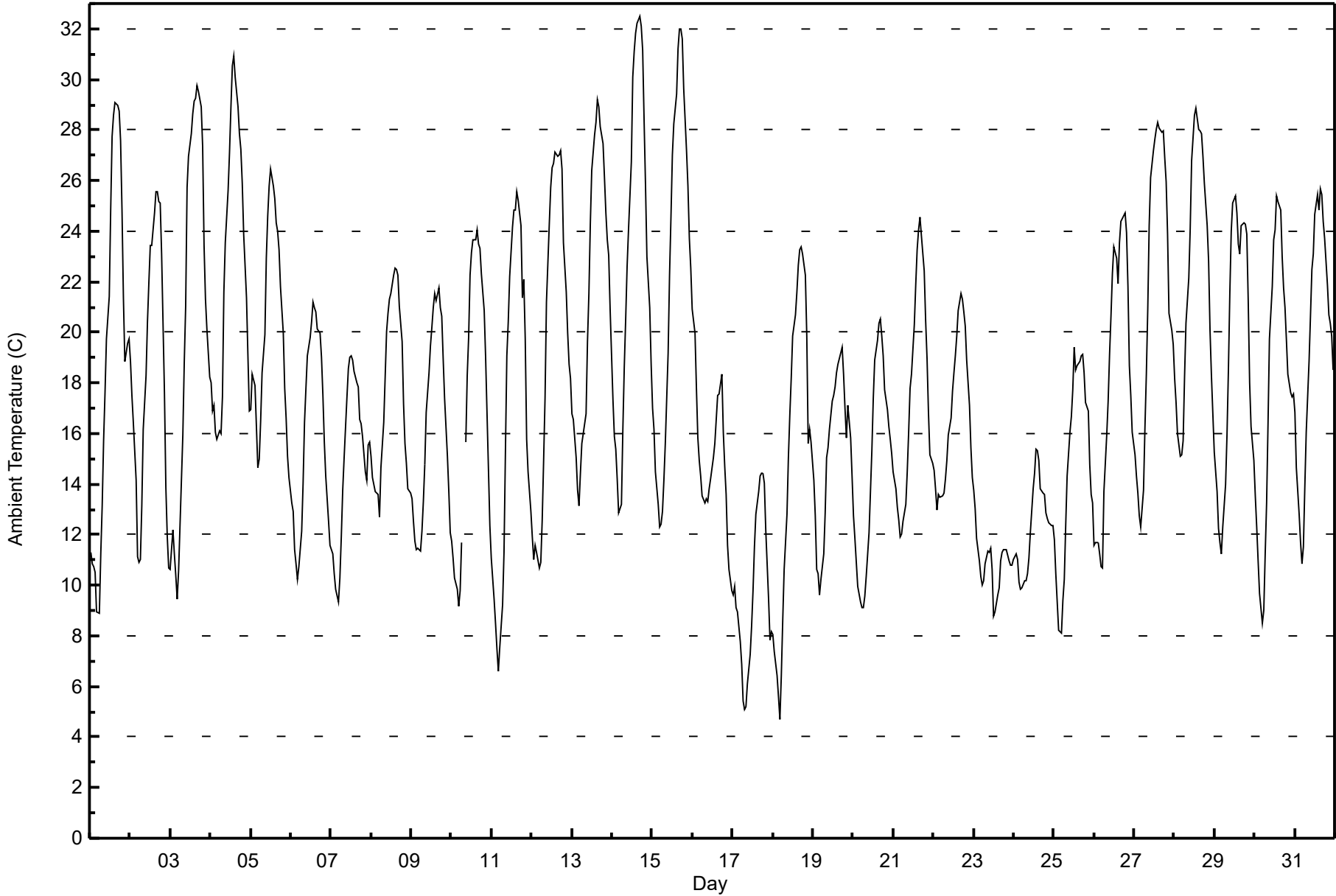
Ambient Temperature (AT) - C
Lower Camp - May 2023

Maximum Value: 32.5 C on May 14 17:00		Maximum Daily Average: 23.2 C on May 14		Hours in Service: 744																							
Minimum Value: 4.7 C on May 18 05:00		Minimum Daily Average: 9.7 C on May 17		Hours of Data: 743																							
Maximum Diurnal Average: 23.4 C at hour 17		Minimum Diurnal Average: 10.9 C at hour 5		Hours of Missing Data: 1																							
Monthly Average: 17.65 C		Percentiles: P ₁ = 6.5 P ₁₀ = 10.5 Q ₁ = 12.9 Median = 16.9 Q ₃ = 22.0 P ₉₀ = 26.0 P ₉₉ = 31.2		Hours of Calibration: 0																							
				Percent Operational Time: 99.9																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	11.3	10.9	10.7	10.5	8.9	8.9	11.2	13.2	15.7	17.6	19.7	21.4	24.8	27.7	28.6	29.1	29.0	28.8	27.6	24.8	21.4	18.8	19.6	19.7	19.2	29.1	
2-May	18.9	17.5	16.5	14.1	11.1	10.9	11.0	13.2	16.2	18.3	20.4	22.0	23.4	23.5	24.7	25.5	25.6	25.1	25.1	23.1	17.6	13.9	11.9	10.7	18.3	25.6	
3-May	10.6	12.2	11.2	10.4	9.4	10.6	12.3	15.9	18.8	21.1	25.7	26.9	27.9	28.6	29.1	29.2	29.7	29.6	28.9	27.4	23.4	21.3	20.1	18.2	20.8	29.7	
4-May	18.0	16.9	17.1	16.0	15.8	16.1	16.0	17.4	21.6	23.5	25.6	27.2	28.9	30.5	30.9	30.1	28.9	27.9	27.2	25.9	23.9	21.4	19.1	16.9	22.6	30.9	
5-May	16.9	18.3	17.9	16.3	14.6	15.0	16.5	18.4	19.9	22.9	24.6	25.8	26.4	25.8	25.3	24.3	24.0	23.3	21.8	20.0	17.8	16.6	15.1	14.3	20.1	26.4	
6-May	13.2	12.9	11.4	10.8	10.3	10.7	12.1	14.1	16.4	17.8	19.1	19.8	20.4	21.2	21.0	20.8	20.2	20.0	19.0	17.5	15.7	14.3	12.5	11.6	16.0	21.2	
7-May	11.4	11.2	10.5	9.8	9.4	10.3	11.9	13.8	15.0	17.5	18.5	19.0	19.1	18.9	18.4	18.0	17.8	16.6	16.4	15.9	14.5	14.1	15.5	15.6	15.0	19.1	
8-May	15.1	14.2	13.7	13.6	13.6	12.7	14.6	16.4	18.3	20.0	20.7	21.3	21.6	22.2	22.6	22.5	22.3	21.0	19.6	17.2	15.6	14.8	13.8	13.6	17.6	22.6	
9-May	13.4	12.5	11.7	11.4	11.5	11.4	12.1	13.3	14.8	16.9	18.4	19.4	20.2	21.0	21.5	21.3	21.8	21.0	20.6	18.9	17.4	15.1	13.7	12.1	16.3	21.8	
10-May	11.7	11.1	10.3	9.8	9.2	9.8	11.7	M	15.7	18.3	19.8	22.2	23.2	23.6	23.7	24.0	23.5	23.3	22.3	20.8	19.0	16.8	14.6	12.3	17.3	24.0	
11-May	11.1	9.5	8.5	7.5	6.6	7.6	9.3	11.3	15.3	19.0	20.4	22.2	24.2	24.8	24.9	25.6	25.2	24.2	21.4	22.1	19.7	15.7	14.5	12.9	16.8	25.6	
12-May	11.9	11.0	11.6	11.3	10.7	10.9	12.6	14.9	17.4	21.2	24.3	25.8	26.5	26.7	27.1	27.0	27.0	27.2	26.5	23.6	21.6	19.9	18.7	18.2	19.7	27.2	
13-May	16.8	16.6	15.1	13.7	13.1	14.4	15.6	16.4	16.8	19.6	21.6	24.3	26.4	27.8	28.3	29.2	28.9	28.1	27.5	26.1	24.7	23.7	23.1	20.9	21.6	29.2	
14-May	17.3	15.9	15.4	14.2	12.9	13.2	16.2	18.7	20.5	22.6	24.1	26.7	30.1	31.1	31.8	32.2	32.5	32.1	31.2	28.4	25.8	23.0	21.0	18.8	23.2	32.5	
15-May	17.0	16.2	14.5	13.2	12.3	12.4	12.9	14.1	15.6	19.2	22.2	24.6	27.0	28.2	29.4	31.2	32.0	32.0	31.6	29.6	27.2	25.8	23.7	22.5	22.3	32.0	
16-May	20.9	20.0	17.8	15.8	14.9	14.3	13.5	13.2	13.4	13.3	13.8	14.2	15.0	15.6	16.6	17.5	17.6	18.3	16.1	14.7	13.6	11.6	10.6	9.8	15.1	20.9	
17-May	9.6	9.9	9.1	8.9	7.8	6.9	5.4	5.1	5.2	6.1	7.3	8.4	9.8	11.5	12.8	13.7	14.3	14.4	14.5	14.1	12.2	9.5	7.8	8.1	9.7	14.5	
18-May	8.1	7.4	6.4	5.6	4.7	6.4	8.6	10.6	12.8	15.0	16.7	18.2	19.9	20.7	21.6	22.7	23.3	23.4	23.1	22.3	19.9	15.6	16.2	15.7	15.2	23.4	
19-May	14.1	12.7	10.6	10.5	9.6	10.3	11.3	12.9	15.0	15.4	16.2	17.3	17.5	17.8	18.4	18.8	19.0	19.4	18.4	17.0	15.8	17.1	15.8	14.3	15.2	19.4	
20-May	12.8	11.8	10.9	10.0	9.4	9.1	9.1	9.5	10.3	12.1	13.7	15.4	17.4	18.9	19.7	20.3	20.5	19.9	19.1	17.7	16.9	16.3	15.8	15.2	14.7	20.5	
21-May	14.5	13.8	13.1	12.6	11.9	12.0	12.5	13.2	14.5	16.0	17.8	18.4	20.3	21.9	23.3	24.1	24.6	23.8	22.4	20.5	18.9	16.9	15.2	14.8	17.4	24.6	
22-May	14.6	13.8	13.0	13.6	13.5	13.5	13.7	14.2	14.9	15.9	16.6	17.7	18.4	19.1	19.9	20.9	21.5	21.3	20.8	20.2	18.9	17.1	15.4	14.3	16.8	21.5	
23-May	13.8	13.1	11.9	10.9	10.4	10.0	10.2	10.8	11.3	11.3	11.5	10.6	8.8	8.9	9.6	9.9	11.0	11.3	11.4	11.4	11.2	11.0	10.8	10.8	10.9	13.8	
24-May	11.0	11.3	11.0	10.1	9.8	9.9	10.2	10.2	10.5	11.1	12.1	13.8	14.4	15.4	15.3	14.9	13.8	13.6	13.6	12.9	12.6	12.5	12.4	12.4	12.3	15.4	
25-May	11.8	10.4	9.3	8.2	8.1	9.4	10.2	12.3	14.3	16.0	16.7	17.7	19.4	18.5	18.7	18.9	19.1	19.2	18.4	17.2	16.9	14.8	13.6	13.3	14.7	19.4	
26-May	11.6	11.7	11.7	11.2	10.8	10.7	13.7	15.9	17.3	19.1	20.6	22.3	23.4	22.9	21.9	23.5	24.4	24.5	24.7	23.9	21.8	18.7	17.5	16.1	18.3	24.7	
27-May	15.2	14.3	13.6	12.7	12.3	13.8	16.2	18.3	20.9	24.2	26.1	27.2	27.6	28.0	28.3	28.1	27.9	27.9	26.9	26.0	23.9	20.8	20.1	19.5	21.7	28.3	
28-May	18.2	17.2	16.0	15.1	15.1	15.7	18.2	20.4	22.2	24.1	26.8	27.7	28.6	28.9	28.0	28.0	27.8	26.9	25.9	24.2	22.8	20.1	18.3	16.8	22.2	28.9	
29-May	15.3	13.7	12.3	11.7	11.3	12.3	14.0	15.9	18.5	21.6	24.0	25.1	25.4	24.7	23.5	23.1	24.2	24.3	24.3	23.9	21.3	18.0	16.3	14.9	19.1	25.4	
30-May	13.5	12.3	11.0	9.7	8.5	9.0	11.3	13.3	16.4	19.8	21.8	23.6	24.0	25.4	25.2	24.8	23.0	21.7	21.0	19.7	18.4	17.6	17.5	17.5	17.7	25.4	
31-May	16.8	14.6	12.8	11.7	10.8	11.5	13.8	16.1	18.9	20.7	22.5	23.1	24.7	25.5	24.9	25.7	25.4	24.4	23.7	21.9	20.7	20.3	19.9	18.5	19.5	25.7	
		14.1	13.4	12.5	11.7	10.9	11.3	12.5	14.1	16.0	18.0	19.7	21.0	22.1	22.8	23.1	23.4	23.4	23.1	22.3	20.9	19.1	17.2	16.1	15.2	Diurnal Average	
		20.9	20.0	17.9	16.3	15.8	16.1	18.2	20.4	22.2	24.2	26.8	27.7	30.1	31.1	31.8	32.2	32.5	32.1	31.6	29.6	27.2	25.8	23.7	22.5	Diurnal Maximum	
M - Maintenance																											



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Lower Camp - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Lower Camp - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	57	7.67	7.67
10 - 20	435	58.55	66.22
> 20	251	33.78	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

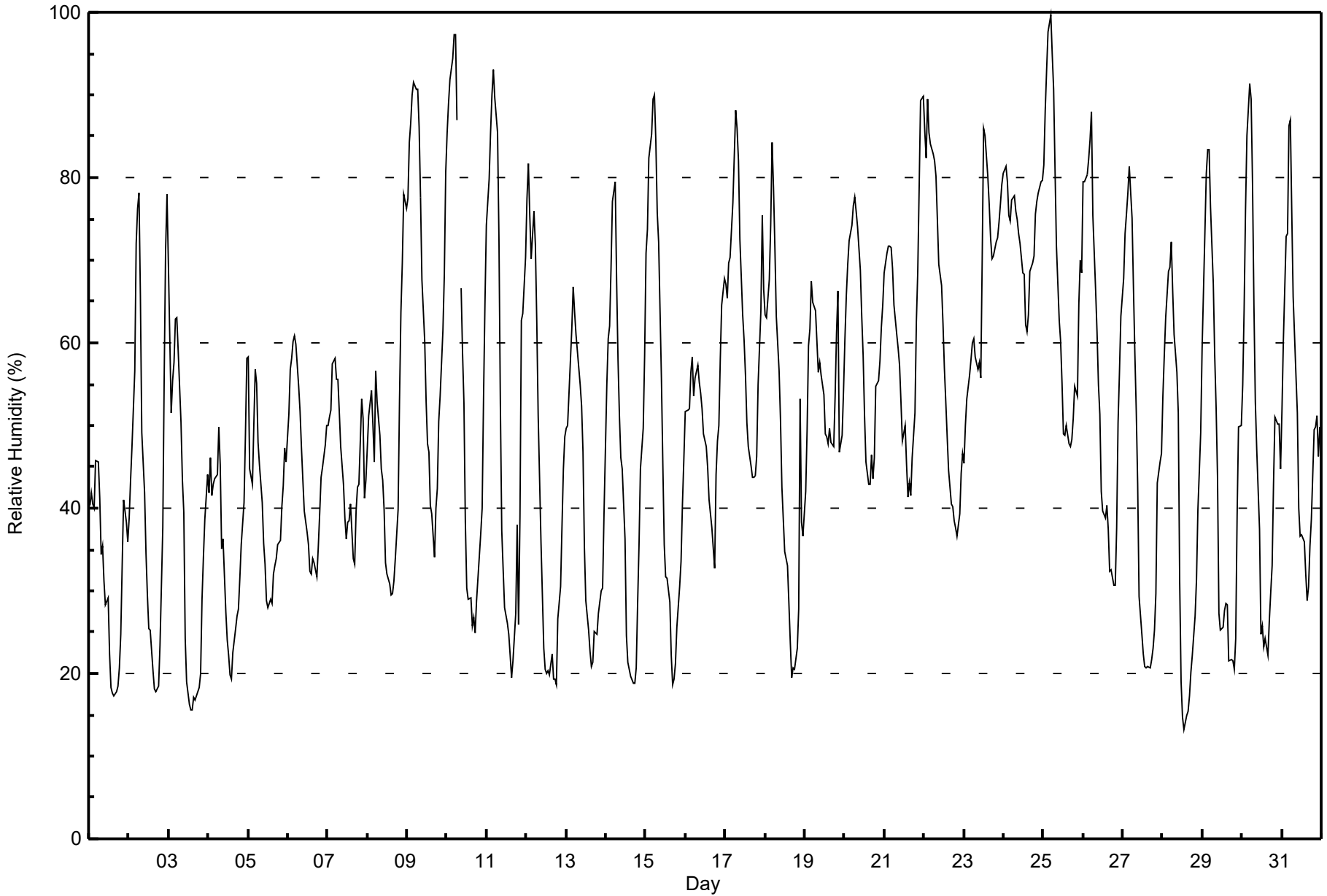
Relative Humidity (RH) - %
Lower Camp - May 2023

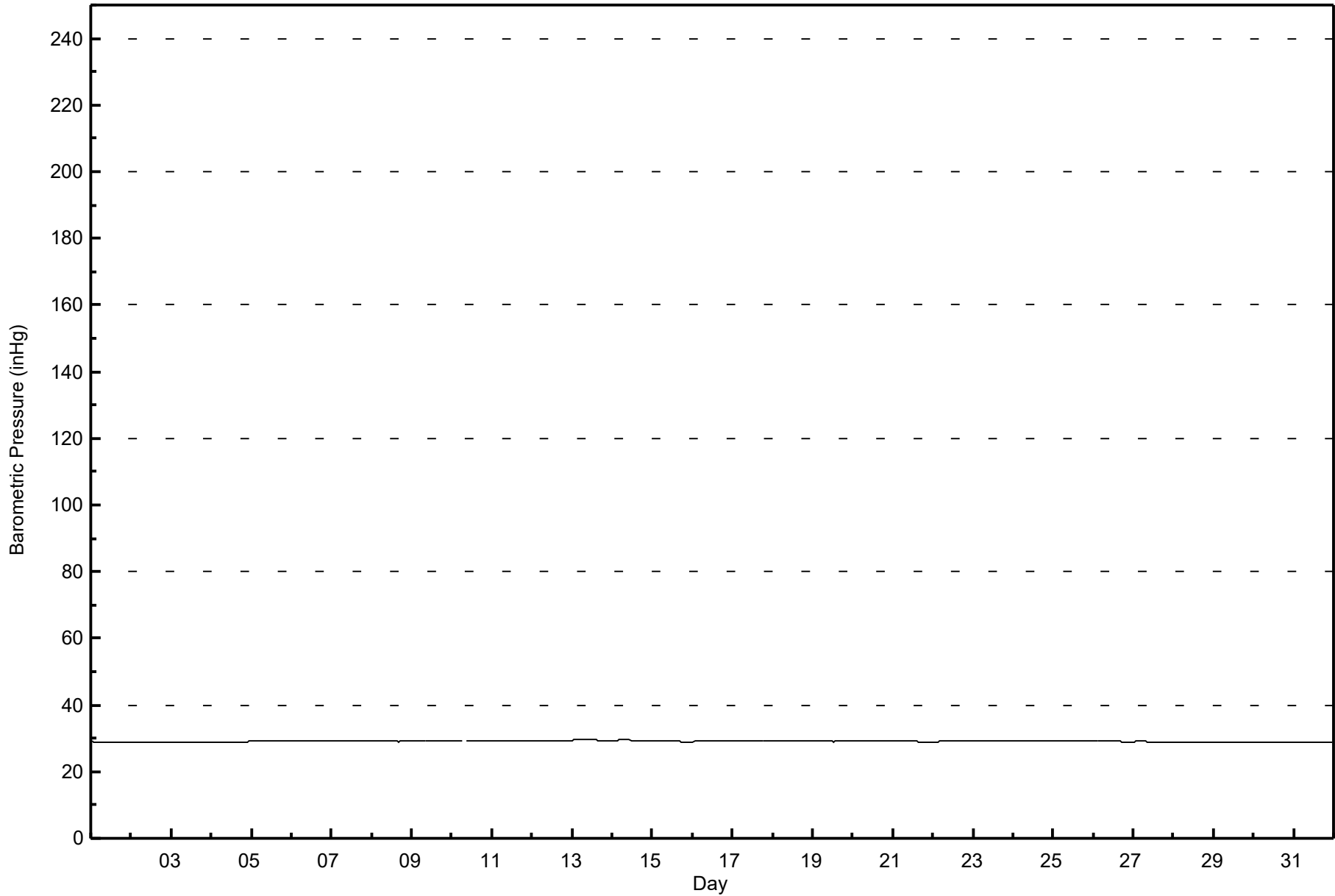
Maximum Value: 99.6 % on May 25 05:00																						Maximum Daily Average: 73.6 % on May 24																						Hours in Service: 744			
Minimum Value: 13.2 % on May 28 14:00																						Minimum Daily Average: 31.6 % on May 1																						Hours of Data: 743			
Maximum Diurnal Average: 73.6 % at hour 5																						Minimum Diurnal Average: 31.7 % at hour 17																						Hours of Missing Data: 1			
Monthly Average: 50.70 %																						Percentiles: P ₁ = 16.9 P ₁₀ = 23.2 Q ₁ = 35.3 Median = 49.8 Q ₃ = 66.0 P ₉₀ = 79.3 P ₉₉ = 92.5																						Hours of Calibration: 0			
																																												Percent Operational Time: 99.9			
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																							
1-May	40.3	41.9	40.5	40.1	45.8	45.6	41.2	34.4	35.5	31.2	28.3	29.2	22.3	18.3	17.7	17.2	17.7	18.5	20.7	24.8	33.0	41.1	38.3	35.9	31.6	45.8																					
2-May	38.9	43.4	47.5	56.7	72.0	76.3	78.1	65.7	49.2	41.8	34.5	29.4	25.4	25.2	20.3	18.2	17.7	18.1	18.5	23.4	37.6	55.9	71.3	78.0	43.5	78.1																					
3-May	69.5	51.6	55.4	57.6	63.0	63.1	59.0	50.3	43.3	39.4	24.3	19.0	16.3	15.6	15.7	17.1	16.7	17.3	18.2	20.0	29.0	34.0	38.6	44.1	36.6	69.5																					
4-May	41.9	46.1	41.5	42.9	43.6	44.0	49.8	45.2	35.1	36.2	27.4	24.1	22.1	19.8	19.4	22.6	25.4	27.0	27.8	31.5	35.6	40.7	48.9	58.1	35.7	58.1																					
5-May	58.3	44.8	43.0	50.1	56.8	55.1	48.0	45.2	40.6	35.8	33.2	28.7	27.9	29.0	28.5	32.1	33.1	34.0	35.6	36.1	40.2	42.7	47.3	45.6	40.5	58.3																					
6-May	51.4	56.7	58.1	60.1	60.9	59.8	54.7	51.7	47.3	43.5	39.7	37.2	35.6	32.4	32.1	33.9	33.3	31.7	35.2	39.4	43.8	44.9	47.7	50.1	45.0	60.9																					
7-May	50.0	51.0	51.8	57.4	58.1	55.6	55.6	51.6	47.4	42.8	38.8	36.3	38.2	38.4	40.4	33.9	33.2	39.7	42.6	42.9	53.2	50.8	41.1	43.4	45.6	58.1																					
8-May	47.3	51.2	54.2	50.1	45.5	56.6	52.8	48.9	44.7	43.5	39.9	33.4	32.1	30.8	29.4	29.7	31.2	33.8	39.8	53.1	63.7	69.7	78.0	76.3	47.3	78.0																					
9-May	77.5	84.2	86.6	90.1	91.5	90.7	90.7	86.2	77.6	67.5	60.1	52.9	47.7	46.7	40.4	39.3	34.1	40.0	42.3	50.5	53.6	61.5	68.3	80.7	65.0	91.5																					
10-May	85.5	88.9	91.8	94.4	97.3	97.2	86.9	M	66.6	58.7	52.7	38.3	30.4	29.0	29.1	25.8	26.7	24.9	28.8	34.3	36.9	40.0	53.4	64.8	55.8	97.3																					
11-May	74.3	79.8	85.4	90.0	93.1	89.7	85.5	72.5	52.6	37.3	32.5	27.9	26.1	24.7	22.3	19.6	21.5	27.3	38.0	25.9	39.0	62.7	63.5	70.3	52.6	93.1																					
12-May	77.4	81.7	75.5	70.2	76.0	71.8	62.5	51.2	43.6	35.9	23.1	20.4	20.0	20.3	19.9	22.4	19.4	19.3	18.6	26.7	30.6	37.8	44.8	48.7	42.4	81.7																					
13-May	49.6	49.9	57.7	61.7	66.9	63.8	61.0	56.9	54.9	52.4	46.8	35.2	28.7	25.3	22.7	20.8	21.4	25.1	24.8	27.3	28.6	30.1	30.3	39.3	40.9	66.9																					
14-May	54.8	60.6	62.0	69.0	77.2	79.5	67.5	57.9	51.2	46.2	44.7	36.3	24.6	21.4	20.5	19.7	18.8	18.9	20.7	28.5	35.5	44.7	49.7	58.5	44.5	79.5																					
15-May	70.8	73.7	82.3	85.3	89.5	90.0	84.4	75.8	72.2	55.7	45.2	35.5	31.7	31.5	28.6	22.2	18.7	19.4	21.2	25.5	30.5	33.6	40.5	45.9	50.4	90.0																					
16-May	51.6	51.9	52.0	56.5	58.3	53.5	55.7	57.2	55.3	54.0	52.0	49.0	47.5	44.8	41.1	39.3	37.7	32.7	44.0	48.2	50.1	57.9	64.6	67.8	50.9	67.8																					
17-May	67.1	65.4	69.6	70.4	77.0	82.5	88.2	86.0	82.1	72.5	63.3	60.4	56.1	50.3	47.4	45.1	43.7	43.7	43.8	46.4	55.0	63.8	75.5	66.4	63.4	88.2																					
18-May	63.4	63.1	67.6	74.2	84.3	78.9	71.5	63.3	56.6	50.6	42.6	38.6	34.8	33.0	28.5	23.8	19.5	20.7	20.5	23.0	27.7	53.2	38.3	36.6	46.4	84.3																					
19-May	42.0	49.5	59.7	61.7	67.5	64.9	64.0	60.2	56.5	57.7	56.2	53.7	49.0	48.6	47.8	49.6	48.0	47.5	53.6	61.1	66.3	46.8	48.8	54.2	54.8	67.5																					
20-May	60.6	65.7	69.4	72.4	74.3	76.7	77.6	76.0	74.1	68.8	63.2	58.5	51.1	45.6	42.9	42.8	46.5	43.6	46.1	54.7	55.3	57.8	61.8	64.6	60.4	77.6																					
21-May	68.4	70.8	71.8	71.6	71.5	69.0	64.5	61.0	59.3	57.2	52.9	48.2	50.0	45.2	41.3	43.1	41.6	46.1	51.6	62.5	68.6	78.9	89.3	89.8	61.4	89.8																					
22-May	85.7	82.3	89.6	85.4	84.0	82.8	82.0	80.2	74.8	69.5	67.0	62.3	56.9	52.9	48.7	44.5	40.6	40.2	38.5	37.6	36.6	39.3	44.3	46.6	61.4	89.6																					
23-May	45.4	50.0	53.2	56.1	58.0	60.0	60.5	58.3	56.8	57.7	55.7	70.0	85.9	85.2	80.2	76.7	72.7	70.2	70.5	72.1	72.7	74.6	76.7	79.2	66.6	85.9																					
24-May	80.5	81.3	79.5	75.5	74.7	77.3	77.8	75.9	75.0	73.2	72.0	68.4	68.3	62.2	61.3	63.5	68.6	69.7	70.5	75.6	77.2	78.2	79.5	79.7	73.6	81.3																					
25-May	81.5	88.1	93.0	97.6	99.6	94.9	90.7	81.0	71.7	62.7	60.2	55.1	49.0	48.7	50.0	47.8	47.5	48.4	50.8	54.7	53.6	64.8	70.0	68.5	67.9	99.6																					
26-May	79.5	79.5	80.3	82.1	84.6	87.9	75.5	66.2	61.1	54.9	51.3	42.0	39.7	38.9	40.4	37.4	32.4	32.6	30.7	30.7	37.6	50.4	56.4	63.1	55.6	87.9																					
27-May	67.8	73.2	75.5	78.2	81.3	75.0	66.5	58.6	51.7	42.9	29.3	24.8	22.4	20.9	20.7	20.9	20.7	21.7	23.1	25.2	29.7	43.0	45.7	46.7	44.4	81.3																					
28-May	53.6	58.4	63.0	68.6	69.2	72.3	66.2	61.1	56.4	51.5	31.0	19.0	14.7	13.2	15.0	15.4	17.2	20.2	22.2	26.9	31.4	39.8	44.4	49.2	40.8	72.3																					
29-May	59.2	73.4	80.5	83.5	83.4	76.5	67.2	58.5	52.2	43.8	27.2	25.2	25.5	27.6	28.4	28.4	21.5	21.6	21.5	20.6	24.2	39.2	49.8	50.1	45.4	83.5																					
30-May	54.9	64.1	76.1	85.0	91.4	89.6	79.4	64.6	52.9	47.2	37.5	24.8	25.8	23.2	24.3	22.2	26.5	29.9	33.0	43.0	51.0	50.2	50.1	44.8	49.6	91.4																					
31-May	51.6	60.2	73.0	73.1	86.3	86.9	75.9	65.6	56.1	51.6	39.9	36.7	36.7	35.9	32.0	28.9	30.5	35.4	38.6	49.5	49.8	51.2	46.3	49.9	51.7	86.9																					
																						61.3	64.0	67.3	69.9	73.6	73.1	69.1	62.2	56.6	51.1	44.3	39.4	36.9	35.0	33.5	32.4	31.7	32.9	35.2	39.4	44.4	50.9	54.9	58.0	Diurnal Average	
																						85.7	88.9	93.0	97.6	99.6	97.2	90.7	86.2	82.1	73.2	72.0	70.0	85.9	85.2	80.2	76.7	72.7	70.2	70.5	75.6	77.2	78.9	89.3	89.8	Diurnal Maximum	
M - Maintenance																																															



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Lower Camp - May 2023







Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Speed (WS) - km/h
Lower Camp - May 2023

Maximum Speed: 28 km/h on May 29 15:00	Maximum Daily Speed Average: 21.2 km/h on May 5	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 15 00:00	Minimum Daily Speed Average: 0.8 km/h on May 30	Hours of Data: 743
Maximum Diurnal Speed Average: 7.9 km/h at hour 10	Minimum Diurnal Speed Average: 2.0 km/h at hour 20	Hours of Missing Data: 1
Monthly Average Velocity: 4.3 km/h 134.7 deg	Percentiles: $P_1 = 1$ $P_{10} = 3$ $Q_1 = 6$ Median = 9 $Q_3 = 14$ $P_{90} = 21$ $P_{99} = 27$	Percent Operational Time: 99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	ESE12	SE10	SE6	SSE4	SE9	SE11	SE15	SE13	SE15	SE16	SE16	SE19	SSE15	S12	S12	SSW12	S11	SSW10	SSW10	SSW6	SSE7	SSE8	WNW8	NNW12	SSE8.5	SE19
2-May	NNW12	NW10	W7	W5	WNW1	NW2	NE1	SE2	NNW3	NE5	N6	E3	SSE3	NNE7	WNW5	NW8	NW10	NW10	NW7	W1	SE1	ESE2	ESE2	ENE1	NNW3.0	NNW12
3-May	SE7	SE12	SE11	SE12	SE11	SE16	SE19	SE13	SE15	SE17	S11	SSE15	SSE14	SSE14	SSE14	SSE14	SSE13	SSE12	S10	S8	SE10	SE12	SE13	SE10	SSE12.3	SE19
4-May	SE4	SE8	SSE5	SE9	SE8	ESE3	NW1	E2	SE11	SE14	SE10	SE9	SE10	SE8	SE7	N13	N21	NNE21	NNE16	NE13	NE9	W4	W2	WNW1	E3.9	NNE21
5-May	NW2	ESE13	ESE17	SE19	SE16	SE17	SE18	SE22	SE21	SE19	SE21	SE25	SE25	SE27	SE28	SE28	SE27	SE28	SE26	SE26	SE21	SE25	SE23	SE21	SE21.2	SE28
6-May	SE24	SE25	SE18	SE17	SE16	SE18	ESE20	SE21	SE21	SE25	SE24	SE23	SE23	SE20	SE21	SE24	SE26	SE23	SE22	SE24	SE23	SE20	ESE14	SE11	SE21.0	SE26
7-May	SE15	ESE14	ESE13	ESE14	ESE14	ESE15	SE22	SE22	SE23	SE22	SE24	SE23	SE27	SE27	SE25	SSE17	S9	SSE8	ESE9	NE4	NNW3	SE5	SE15	SE21	SE15.4	SE27
8-May	SE20	SE19	SE21	SE15	SSE11	SE15	SE19	SE17	SE15	SE15	SE15	SSE10	SSE12	SSE12	S10	S10	SSE10	S6	SE3	NW8	W8	WNW4	ESE1	SSE4	SSE9.9	SE21
9-May	SSE4	SE2	W4	ESE3	N2	E2	ESE3	ESE3	E3	SE8	SSE8	SSW8	SSE9	SE11	ESE2	NNW12	NNW8	N5	ENE6	SSW2	SW3	WSW1	S2	NE1	ESE1.4	NNW12
10-May	SE4	SE5	SE4	SSE4	SE5	SE7	SE8	M	SE8	SE7	SE8	SE5	NNW3	NW13	WNW14	WNW9	NNW9	NNE11	NE15	NNE10	NE7	W3	ENE2	NW4	NE1.8	NE15
11-May	N1	NW2	N2	NE1	ESE3	NW4	N4	NE2	ENE4	SE7	ENE3	ENE3	SE10	SE9	ESE8	SSE6	SE6	ESE10	SE7	SSW6	S2	E3	SE2	E3	ESE3.0	ESE10
12-May	NNE2	SE3	ESE4	SE8	SE6	SSE6	SE8	SE7	SSE4	SE10	SSE8	SSE11	SSE13	SE14	SE12	SE13	SSE10	SSE8	S7	SSE7	SSE8	SSE6	SE7	SE9	SSE7.7	SE14
13-May	SE9	SE6	SE9	SE8	SE11	SE12	SE11	SE8	SE8	SE9	SE8	S7	S8	S9	SSW11	SSW11	SSW10	SSE7	SSE6	SSE6	SSE8	SSE8	S7	E2	SSE7.6	SE12
14-May	ESE4	ESE1	SE6	S1	WNW2	SE5	SE6	SE8	SE8	SE9	SE10	SE9	SSW7	WSW11	SW12	WSW15	WSW17	WSW20	WSW16	WNW8	NNW5	NW4	WSW1	SSW0	SSW4.2	WSW20
15-May	ENE2	NW2	NNW1	NE1	ENE2	NW1	ENE2	NNE3	N3	SE5	SE8	SE6	SE6	SE9	SE10	SSE12	S10	S9	SSW9	SSW7	S7	S7	SSW3	NW8	SSE3.3	SSE12
16-May	WNW7	NNW14	N12	NNW9	NW14	NW24	NW22	NW23	NW27	NW26	NW27	NW27	NW24	NW25	NW26	NW23	NW22	NNW22	NNE20	N15	N13	NNW7	NW9	NNW5	NNW17.7	NW27
17-May	NW9	N11	N14	N17	NNE14	NE15	NE18	NE18	NNE18	NNE19	N18	NNE17	NNE15	NNE13	NE16	NE14	NNE14	NE14	NE10	NE6	NE1	E2	SSE8	NNE11.8	NNE19	
18-May	SSE9	SSE10	SSE7	SE7	SE5	SE8	SE14	SE12	SE10	SE11	SE10	SE10	SE9	SE10	SE9	S6	S7	S6	SSW6	S5	S5	SE4	S7	SSW10	SSE7.7	SE14
19-May	S8	SSE8	SE5	SE8	ESE6	SE7	SE8	SSE7	SE9	SE10	SE10	SE10	SE5	NNE5	NNE4	NNE5	N5	NW5	WNW5	WNW5	NW5	NNE17	N10	NNW8	E2.4	NNE17
20-May	NW7	NW8	NNW8	NNW7	NNW7	NNW8	N10	N7	NNW7	N7	NNW7	NNW6	NW5	WNW4	NNW3	ESE4	SE8	ESE12	ESE7	SE8	SE10	SE11	SE13	SE11	NE2.3	SE13
21-May	SE12	SE11	SE11	SE9	SE8	SE8	SE8	SE8	SE9	SE9	SE7	SSE6	SE9	SE7	SSE8	SE7	SSE7	SE6	SE6	WNW2	WNW3	ESE2	E1	WNW4	SE6.3	SE12
22-May	WNW4	NW1	W5	WNW5	NW6	NW7	N9	N13	N15	N14	N14	N17	NNE20	NNE20	NNE21	NE22	NE22	ENE20	ENE20	ENE19	E20	ENE15	NE13	NE10	NNE11.2	NE22
23-May	ESE12	ESE21	E18	E18	E18	ESE16	ESE15	ESE19	ESE22	ESE23	ESE23	SE26	ESE25	SE21	SE26	SE26	SE23	SE25	SE24	SE23	SE15	SE14	SE16	SE18	ESE19.6	SE26
24-May	SE15	SE16	SE18	SE14	SE18	SE21	SE20	SSE12	SSE12	SSE10	S6	SSE6	SE5	WSW8	WSW15	W17	W17	W16	W15	WNW15	W13	W13	NW12	NW12	SSW5.5	SE21
25-May	W10	NW4	W4	E2	NE1	NNW4	ENE2	E4	NW4	N2	NNE8	ENE3	SE6	NNE6	ENE4	NE4	E7	SE6	SE4	SE4	SSE7	SE6	SE5	SSE7	E1.5	W10
26-May	SE6	SE7	SSE8	SSE8	SE6	SE6	SE7	SE9	SE10	SE9	SE8	SE7	SE8	ENE6	ENE5	ESE7	ESE4	SE7	SSE6	S6	SSE6	SE5	SE6	SE8	SE6.3	SE10
27-May	SE9	SE9	SE6	SE6	SE7	SE8	SE10	SE13	SE13	SSE9	S11	S12	SSE14	S11	SSE11	S11	S11	SSW10	SSW8	S6	S6	SSE8	SSE9	SSE10	SSE8.9	SSE14
28-May	SSE10	SE9	SE8	SE9	SSE9	SE10	SE13	SE10	SE11	SE10	WSW15	WSW19	WSW23	W27	W24	W24	W23	W23	W23	W15	WNW15	NW16	NW9	W8	WSW8.5	W27
29-May	W5	NNW1	ESE3	SE4	ESE4	ESE6	SE5	E4	E5	ESE5	WSW17	W20	W21	W28	W28	WSW25	WSW19	WSW15	WSW15	WSW13	WSW8	WNW6	NW4	NW3	WSW8.0	W28
30-May	N1	NW2	NW3	WNW1	E2	ENE1	SE5	SE5	SE6	SE8	ESE7	ESE7	E4	ESE6	ESE5	NW6	NW18	NW18	NNW10	NNW4	NW3	SSE1	WNW1	WSW7	N0.8	NW18
31-May	W7	W2	S1	W1	NNE2	ESE3	SE6	SE6	SE6	SE5	ENE4	NE4	SE7	SE8	SSE4	SW8	SSE8	SSE5	SSE4	SE2	SE7	NNW2	W6	NNW7	SSE2.1	SW8

SE3.9 SE4.9 ESE4.8 SE5.0 ESE4.9 ESE5.5 ESE7.3 ESE6.9 ESE6.8 ESE7.9 SE5.5 SE5.7 SE6.3 SSE4.3 SSE3.8 S3.0 S2.4 SSE2.3 SE2.5 SE2.0 SE2.8 SE2.9 SE2.8 SE2.5	Diurnal Average
SE24 SE25 SE21 SE19 SE18 NW24 NW22 NW23 NW27 NW26 NW27 NW27 SE27 W28 W28 SE28 SE27 SE28 SE26 SE26 SE23 SE25 SE23 SE21	Diurnal Maximum

M - Maintenance
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

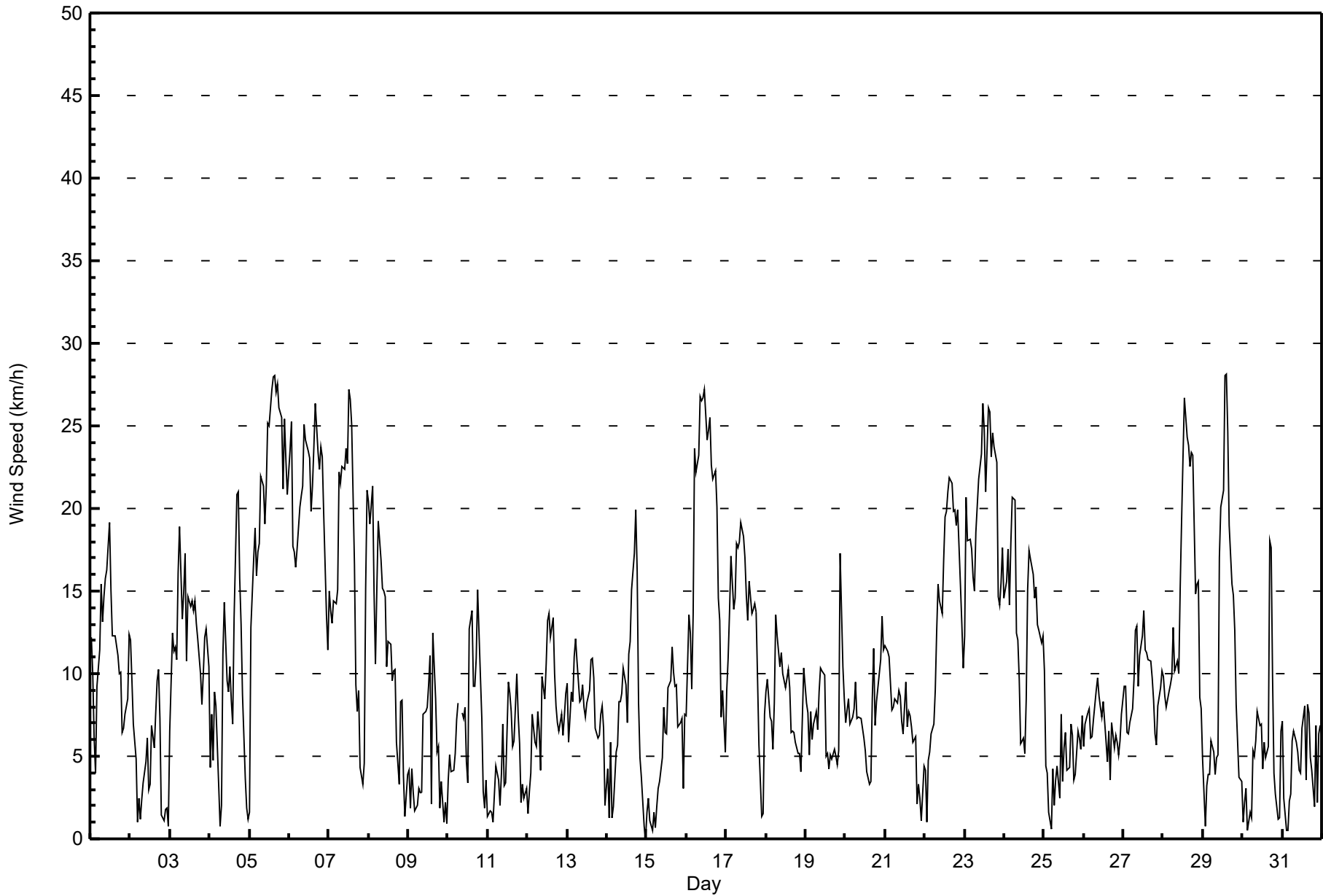
Wind Speed (WS) - km/h
Lower Camp - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 9 km/h on May 7 16:00 Minimum Value: 1 km/h on May 19 19:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7																	Hours in Service: 744 Hours of Data: 743 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9								
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	4	3	3	1	3	2	3	3	3	3	4	3	5	5	5	5	4	4	4	3	3	2	4	3	5
2-May	3	4	2	2	2	1	2	2	2	2	2	2	4	4	4	4	4	4	3	1	2	1	1	1	4
3-May	4	2	2	2	2	2	3	2	2	4	5	6	5	5	5	5	5	5	4	3	2	2	2	2	6
4-May	2	3	2	2	2	2	2	3	3	2	3	2	2	3	4	3	5	4	4	3	5	2	1	1	5
5-May	2	3	3	4	4	3	3	4	4	5	5	6	7	5	5	5	5	5	6	6	4	6	5	4	7
6-May	5	5	4	4	4	5	3	4	4	5	5	5	5	5	5	5	5	5	5	5	4	4	2	6	6
7-May	4	4	3	3	2	4	3	4	4	4	4	7	5	5	7	9	4	4	3	1	1	5	5	4	9
8-May	5	4	5	6	3	4	5	4	3	3	4	4	4	4	3	4	4	2	5	3	3	2	1	1	6
9-May	2	1	2	2	2	1	1	1	1	2	4	3	3	4	3	5	4	2	3	5	3	1	1	1	5
10-May	2	2	2	1	1	2	2	M	1	1	1	2	3	5	4	3	4	5	4	3	2	1	1	1	5
11-May	2	1	1	1	2	1	1	2	2	2	1	1	3	2	4	3	3	3	3	2	2	2	2	1	4
12-May	1	1	1	2	2	2	2	3	2	3	4	4	6	5	5	5	4	3	3	2	2	2	2	3	6
13-May	3	3	2	2	2	2	2	2	2	2	2	3	3	4	4	5	4	2	2	2	2	2	2	2	5
14-May	1	2	1	2	2	2	2	2	2	2	3	3	3	4	5	5	5	5	4	2	3	1	2	2	5
15-May	3	2	1	1	1	1	1	1	1	2	2	1	2	3	4	4	4	4	4	2	2	2	3	2	4
16-May	2	3	3	2	6	5	6	6	6	6	6	7	6	7	6	7	5	6	6	4	5	2	2	2	7
17-May	3	4	4	5	4	4	4	5	4	5	5	5	5	5	5	5	5	3	4	2	2	1	1	3	5
18-May	3	3	3	3	2	3	4	3	2	3	4	4	4	4	4	3	3	3	3	2	1	1	3	3	4
19-May	3	2	2	3	2	2	2	2	2	3	3	3	2	1	1	2	2	1	1	1	2	4	2	2	4
20-May	1	2	2	2	2	2	3	2	2	2	2	1	2	2	1	2	2	2	3	4	3	4	4	4	4
21-May	4	4	4	3	3	3	3	3	3	3	3	2	3	2	3	2	2	2	2	1	1	1	1	2	4
22-May	1	1	1	2	2	2	2	3	4	3	4	4	5	5	5	5	5	5	4	4	6	3	2	3	6
23-May	5	4	3	3	4	3	4	4	4	4	5	6	5	6	7	6	7	8	6	7	7	5	5	5	8
24-May	5	5	5	4	4	5	5	4	4	4	3	3	6	4	4	4	4	4	3	4	3	3	4	3	6
25-May	2	3	1	1	1	1	1	1	3	2	2	2	3	3	2	2	2	3	1	3	2	2	2	3	3
26-May	2	2	2	2	2	2	2	2	3	2	2	2	3	2	2	2	2	3	2	2	2	1	1	2	3
27-May	2	2	3	2	2	3	4	3	4	4	5	5	6	5	4	4	5	4	4	2	1	2	3	3	6
28-May	3	3	3	2	3	3	3	2	3	3	7	6	7	6	6	6	5	5	6	4	4	4	3	2	7
29-May	2	2	1	1	2	2	2	1	2	2	6	5	5	8	8	7	6	4	4	3	2	2	2	1	8
30-May	1	2	2	1	1	1	1	1	2	3	2	3	2	2	3	3	8	4	3	3	2	2	2	4	8
31-May	4	1	1	2	1	2	2	1	1	1	1	1	2	2	3	4	3	2	1	2	2	2	2	5	5
Diurnal Maximum																									
M - Maintenance																									



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Lower Camp - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Lower Camp - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	185	24.90	24.90
6 - 11	302	40.65	65.55
12 - 19	158	21.27	86.81
20 - 28	98	13.19	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Lower Camp - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	9	6	11	14	14	22	29	11	6	3	1	2	11	15	20	11	185
6 - 11	7	5	5	2	1	10	135	48	29	15	1	4	6	5	14	15	302
12 - 19	12	9	10	2	3	14	54	17	3	1	1	11	7	4	6	4	158
20 - 28	1	5	2	2	1	6	55	0	0	0	0	3	10	0	12	1	98
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	29	25	28	20	19	52	273	76	38	19	3	20	34	24	52	31	743

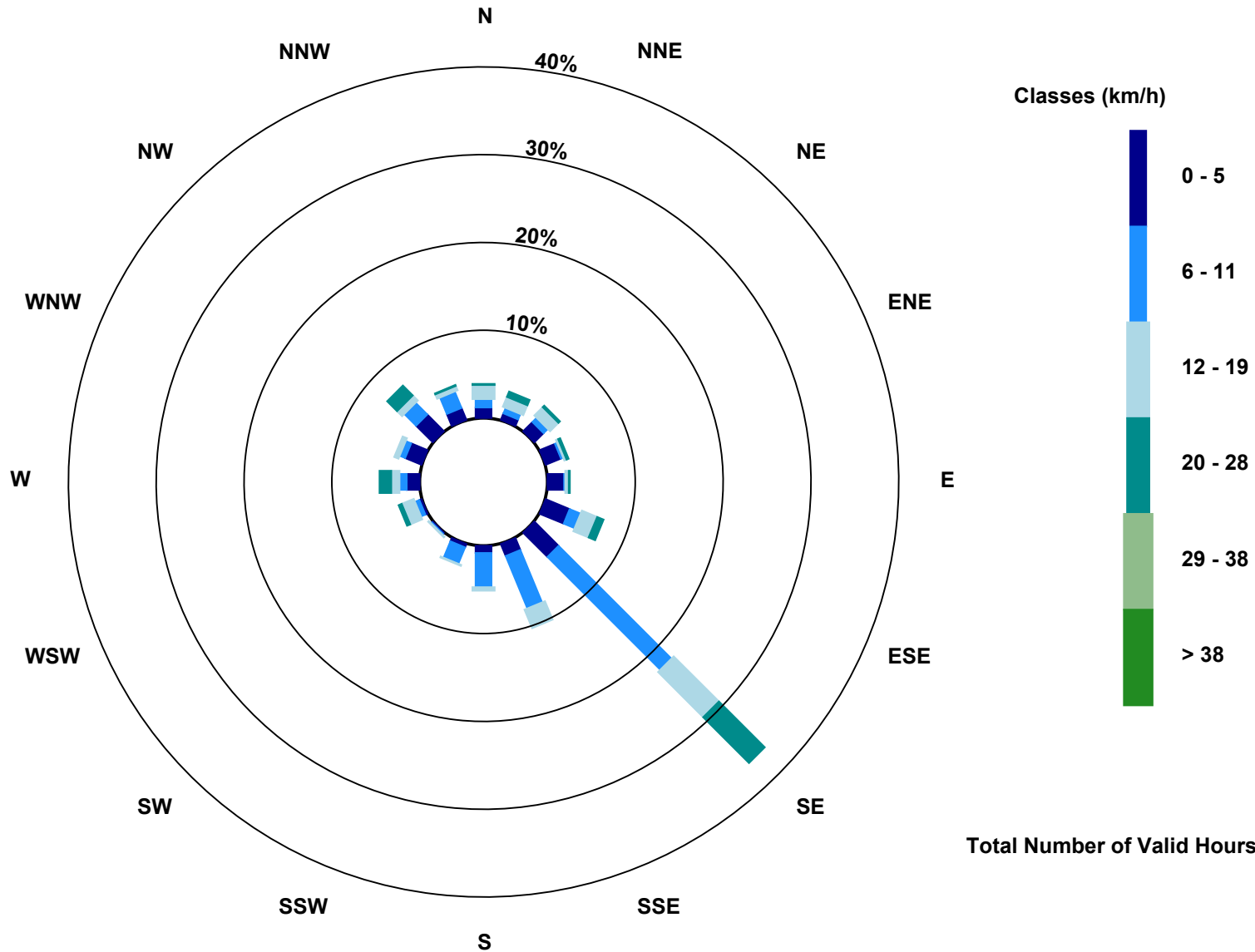
Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Lower Camp





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Lower Camp - May 2023

Direction of Maximum Speed: 265 deg on May 29 15:00		Hours in Service: 744
Direction of Maximum Daily Speed Average: 132.8 deg on May 5		Hours of Data: 743
Direction of Minimum Speed: 196 deg on May 15 00:00	Direction of Minimum Daily Speed Average: 0.8 deg on May 30	Hours of Missing Data: 1
Monthly Average Direction: 134.7 deg		Percent Operational Time: 99.9

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	123	130	143	158	125	126	130	131	137	141	140	141	152	185	182	195	189	195	208	209	156	147	303	339	153.9
2-May	337	326	278	270	301	312	41	131	343	36	8	94	149	31	289	317	311	318	323	267	144	117	118	75	329.4
3-May	132	146	145	145	140	142	134	138	137	137	187	168	167	167	161	157	167	167	173	169	146	146	146	143	151.8
4-May	145	138	149	142	145	111	325	94	138	135	132	135	138	135	129	350	11	16	12	48	46	281	271	302	84.8
5-May	323	113	118	132	133	132	126	134	131	137	136	137	135	135	133	135	134	133	134	132	129	135	134	141	132.8
6-May	137	131	133	132	129	128	119	128	132	131	135	136	136	139	136	135	133	139	137	137	129	127	121	129	132.5
7-May	124	112	105	113	102	114	125	131	125	130	134	131	131	131	134	159	171	157	119	40	341	138	143	139	128.8
8-May	137	133	133	144	156	134	133	135	137	137	136	159	159	156	169	188	154	178	145	307	263	303	119	162	147.1
9-May	153	133	273	105	3	81	106	102	95	127	153	199	148	129	112	342	343	353	75	213	232	256	185	53	122.8
10-May	129	132	135	147	142	134	135	M	138	136	135	127	346	311	301	302	347	21	40	33	44	259	58	304	53.8
11-May	4	320	10	54	109	304	352	50	78	126	66	78	133	135	120	148	134	121	141	197	180	98	129	101	120.4
12-May	33	129	123	144	145	147	140	144	152	132	163	156	149	144	144	142	156	153	171	155	151	153	142	138	146.7
13-May	138	139	135	140	138	138	136	142	144	134	141	170	180	184	205	196	198	160	165	154	154	158	174	88	156.7
14-May	107	110	137	175	285	133	133	140	142	136	145	208	249	236	243	249	247	247	290	344	311	237	196		213.3
15-May	59	305	343	55	73	313	59	18	8	129	137	142	141	130	132	157	172	185	210	203	184	178	205	305	161.7
16-May	289	329	0	342	323	323	323	324	325	325	322	322	313	317	324	319	320	339	18	359	6	333	323	339	328.8
17-May	321	353	3	355	27	36	49	35	28	22	9	28	17	30	40	40	31	46	45	44	45	46	97	151	27.6
18-May	158	159	156	146	143	138	133	131	132	129	133	138	143	134	143	170	183	183	198	179	190	139	183	193	151.6
19-May	173	152	134	130	119	139	144	147	139	136	137	135	138	33	17	18	359	310	303	299	317	22	1	345	100.5
20-May	316	326	346	340	329	343	1	359	339	351	347	339	325	301	334	107	129	112	118	130	130	125	128	137	36.4
21-May	134	132	131	136	143	137	138	141	139	134	138	160	133	144	150	144	150	142	134	298	288	123	88	292	140.1
22-May	292	310	276	298	322	322	350	9	8	4	355	6	27	30	23	34	56	67	59	64	86	71	56	55	32.7
23-May	103	106	98	95	100	104	103	111	116	119	119	128	120	127	132	128	129	137	130	135	141	141	139	138	121.7
24-May	137	131	133	140	142	138	140	156	161	160	181	162	144	241	258	274	272	268	277	282	267	275	304	308	201.4
25-May	274	305	277	82	49	348	57	87	322	9	16	72	125	21	66	35	95	126	137	141	161	141	144	148	89.2
26-May	139	142	147	149	139	144	140	136	131	134	135	129	136	64	68	113	110	125	168	174	168	141	140	140	135.9
27-May	144	142	137	138	133	134	138	131	131	147	176	178	165	169	167	174	189	203	200	186	172	150	156	155	159.3
28-May	151	133	138	140	147	136	135	140	137	136	238	246	251	259	266	261	269	275	269	281	292	308	308	266	246.1
29-May	278	343	116	125	122	114	127	88	97	121	258	267	265	270	265	254	253	252	239	244	249	290	325	307	255.5
30-May	2	315	320	296	96	77	124	129	133	133	123	103	100	119	110	322	313	316	328	333	310	152	297	255	355.8
31-May	264	270	170	270	19	117	133	137	138	128	66	45	136	134	159	223	165	151	158	134	143	336	279	329	152.5

140.7 125.0 123.0 127.4 122.4 120.5 119.2 119.9 120.5 123.1 135.6 142.6 146.1 150.8 161.4 181.9 174.7 157.9 144.9 143.8 142.1 132.8 138.1 145.2
 Diurnal Average

M - Maintenance
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

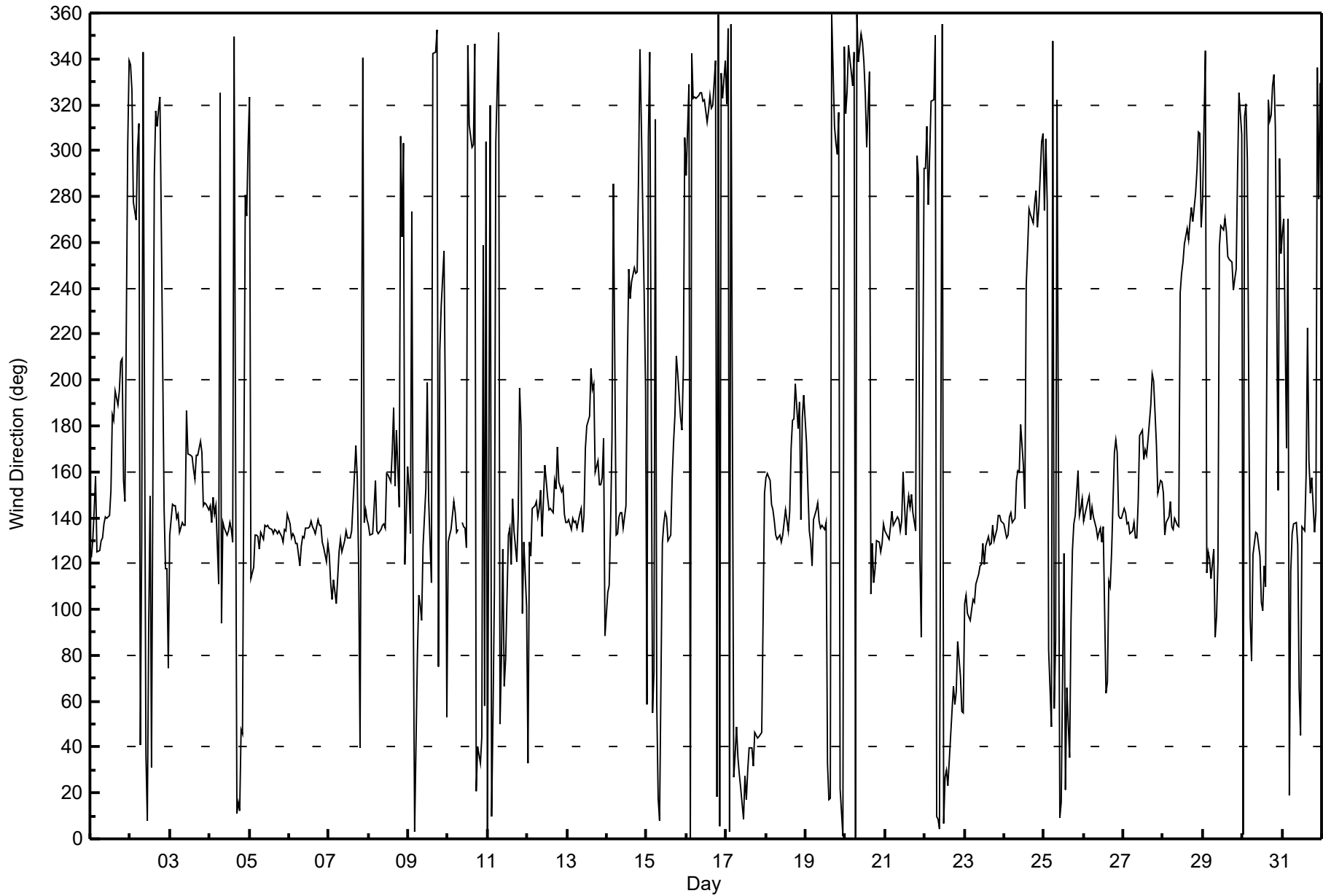
Wind Direction (WD) - deg
Lower Camp - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 108 deg on May 15 00:00 Minimum Value: 5 deg on May 3 07:00 Percentiles: P ₁ = 8 P ₁₀ = 12 Q ₁ = 17 Median = 25 Q ₃ = 39 P ₉₀ = 61 P ₉₉ = 91																			Hours in Service: 744 Hours of Data: 743 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9						
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	15	19	24	24	18	13	10	11	7	9	11	8	29	40	41	41	36	36	30	22	20	16	31	18	41
2-May	17	17	27	54	83	46	84	37	56	29	36	73	78	38	80	51	45	23	22	76	76	62	26	70	84
3-May	23	12	12	12	11	8	5	8	9	12	46	33	37	33	31	26	32	30	28	25	15	10	9	10	46
4-May	33	21	30	17	19	57	103	87	9	6	12	9	12	21	52	21	15	14	17	23	41	70	83	85	103
5-May	84	16	15	8	11	7	9	7	9	10	9	12	11	9	9	7	8	10	9	9	10	11	12	12	84
6-May	9	9	12	13	14	12	8	9	9	10	10	10	10	11	13	13	10	11	11	11	9	11	12	27	27
7-May	14	18	12	13	11	17	7	9	10	11	10	16	10	10	11	30	37	44	21	23	40	87	16	10	87
8-May	10	11	10	25	27	13	11	13	11	10	13	36	28	30	38	42	31	36	75	35	24	49	59	26	75
9-May	38	67	44	68	55	32	33	43	41	15	54	53	30	13	87	26	38	44	13	90	73	91	62	76	91
10-May	27	18	19	20	14	17	15	M	13	13	12	23	63	33	19	40	41	34	16	13	14	66	62	47	66
11-May	69	78	64	64	45	28	41	69	41	16	42	48	19	16	55	63	58	27	27	30	64	35	72	46	78
12-May	64	58	32	19	28	26	18	71	61	20	46	35	34	29	29	23	31	32	32	29	21	31	25	21	71
13-May	25	34	19	17	20	13	14	19	21	16	23	39	43	46	37	40	39	30	26	19	18	20	31	66	66
14-May	15	82	18	81	79	25	42	16	17	15	15	37	58	39	42	26	21	18	18	31	54	46	87	108	108
15-May	58	60	68	90	48	84	46	31	36	30	17	17	20	21	49	33	39	39	36	28	25	27	71	23	90
16-May	19	20	21	20	14	14	14	15	14	15	15	19	16	15	20	17	16	22	19	21	22	31	17	31	31
17-May	21	23	20	23	24	16	15	16	17	18	23	24	27	31	29	30	30	22	17	15	16	55	66	37	66
18-May	30	31	31	35	42	32	19	19	19	21	38	44	43	32	36	61	53	45	49	26	15	36	36	29	61
19-May	29	24	27	38	34	25	24	37	27	21	23	21	57	23	14	15	18	13	10	21	21	15	20	20	57
20-May	27	19	22	22	21	25	22	29	25	27	29	37	43	73	67	49	18	13	35	26	28	25	19	25	73
21-May	27	24	27	34	36	39	36	32	29	25	34	39	22	31	31	29	28	25	26	67	57	52	69	31	69
22-May	42	97	23	32	22	29	22	17	18	18	22	21	16	16	15	18	18	20	14	15	17	13	11	16	97
23-May	19	14	12	12	14	18	17	14	12	12	12	16	12	18	15	14	16	17	14	16	29	27	20	18	29
24-May	22	19	18	20	18	15	17	31	32	35	49	48	54	55	22	15	15	14	16	14	13	13	17	15	55
25-May	17	52	31	70	92	26	59	20	71	69	19	58	58	34	40	39	27	29	23	31	32	33	26	36	92
26-May	37	29	26	26	32	28	23	22	19	19	20	23	43	40	31	25	47	27	35	28	30	17	14	19	47
27-May	17	19	31	28	29	28	32	18	17	35	44	40	40	44	42	43	41	45	40	28	21	19	25	22	45
28-May	24	45	28	23	24	25	18	20	18	22	47	26	25	18	18	19	16	16	18	13	20	11	14	13	47
29-May	42	73	19	25	32	23	23	34	29	46	22	20	17	17	17	18	21	21	22	18	13	37	55	53	73
30-May	85	81	58	87	41	54	24	20	27	24	25	42	63	34	67	68	15	15	19	42	67	95	96	54	96
31-May	47	67	92	98	58	74	25	23	22	23	26	24	20	17	64	47	43	31	30	66	29	82	26	56	98
85 97 92 98 92 84 103 87 71 69 54 73 78 73 87 68 58 45 75 90 76 95 96 108																									
Diurnal Maximum																									
M - Maintenance																									



Wood Buffalo Environmental Association
Hourly Averages

Wind Direction (WD) - deg
Lower Camp - May 2023





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS13 FORT MCKAY SOUTH MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT McKAY SOUTH (AMS13)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2(ppb) Average	709	35	35	100	51.3	0	6.8	0
TRS(ppb) Average	708	36	36	100	4.2	0	1.5	0
THC(ppm) Average	709	35	35	100	3.6	-	2.4	-
NMHC(ppm) Average	709	35	35	100	0.193	-	0.042	-
CH4(ppm) Average	709	35	35	100	3.4	-	2.4	-
O3(ppb) Average	709	35	35	100	70.6	0	36.6	-
NO2(ppb) Average	680	44	64	97.31	44.4	0	13.4	-
NO(ppb) Average	680	44	64	97.31	22.4	-	2.8	-
NOX(ppb) Average	680	44	64	97.31	62.8	-	14.6	-
PM2.5(ug/m3) Average	744	0	0	100	584.8	134	368.4	20
ET(C) Average	744	0	0	100	32.7	-	23	-
RH(%) Average	744	0	0	100	97.9	-	75.8	-
WS(km/h) Average	744	0	0	100	25	-	15	-
WD(deg) Average	744	0	0	100	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT MCKAY SOUTH (AMS13)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2(ppb) Average	709	2.22	4.5	-	0.1	0.3	0.4	0.6	1.5	6	51.3
TRS(ppb) Average	708	0.72	0.5	-	0.3	0.4	0.4	0.6	0.8	1.3	4.2
THC(ppm) Average	709	2.1	0.2	-	2	2	2	2	2.1	2.2	3.6
NMHC(ppm) Average	709	0.005	0.023	-	0	0	0	0	0	0	0.193
CH4(ppm) Average	709	2.09	0.1	-	2	2	2	2	2.1	2.2	3.4
O3(ppb) Average	709	28.94	14.5	-	0.7	7.8	17.7	30.2	40	46.6	70.6
NO2(ppb) Average	680	5.67	5.8	-	0.1	0.8	1.7	3.6	8	13.3	44.4
NO(ppb) Average	680	0.92	2.5	-	0	0	0	0.1	0.6	2.2	22.4
NOX(ppb) Average	680	6.59	7.3	-	0.1	0.8	1.8	3.9	9.2	15.8	62.8
PM2.5(ug/m3) Average	744	53.4	77.4	-	2.4	7.7	13.2	27.1	51	130.8	584.8
Temperature 2 m (C) Average	744	16.45	7.1	-	-0.7	7.9	10.8	16	21.7	26.2	32.7
Relative Humidity (%) Average	744	49.87	21.3	-	16.1	22.2	31.7	46.8	67.2	81	97.9
Wind Speed 10 m (km/h) Average	744	8.7	6	-	0	2	4	7	13	18	25
Wind Direction 10 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT MCKAY SOUTH (AMS13)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
NO2	28 May 2023 08:00	28 May 2023 08:00	1	Maintenance - verify daily QA response
NO2	29 May 2023 15:00	30 May 2023 09:00	19	Maintenance - replaced sample pump



Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO₂) - ppb

Fort McKay South - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 51.3 ppb on May 15 12:00	Maximum Daily Average: 6.8 ppb on May 15		Hours of Data:	709
Minimum Value: 0.1 ppb on May 17 13:00	Minimum Daily Average: 0.3 ppb on May 17		Hours of Missing Data:	35
Maximum Diurnal Average: 7.2 ppb at hour 11	Minimum Diurnal Average: 0.5 ppb at hour 4		Hours of Calibration:	35
Monthly Average: 2.22 ppb	Percentiles: P ₁ = 0.2 P ₁₀ = 0.3 Q ₁ = 0.4 Median = 0.6 Q ₃ = 1.5 P ₉₀ = 6.0 P ₉₉ = 21.3		Percent Operational Time:	100.0

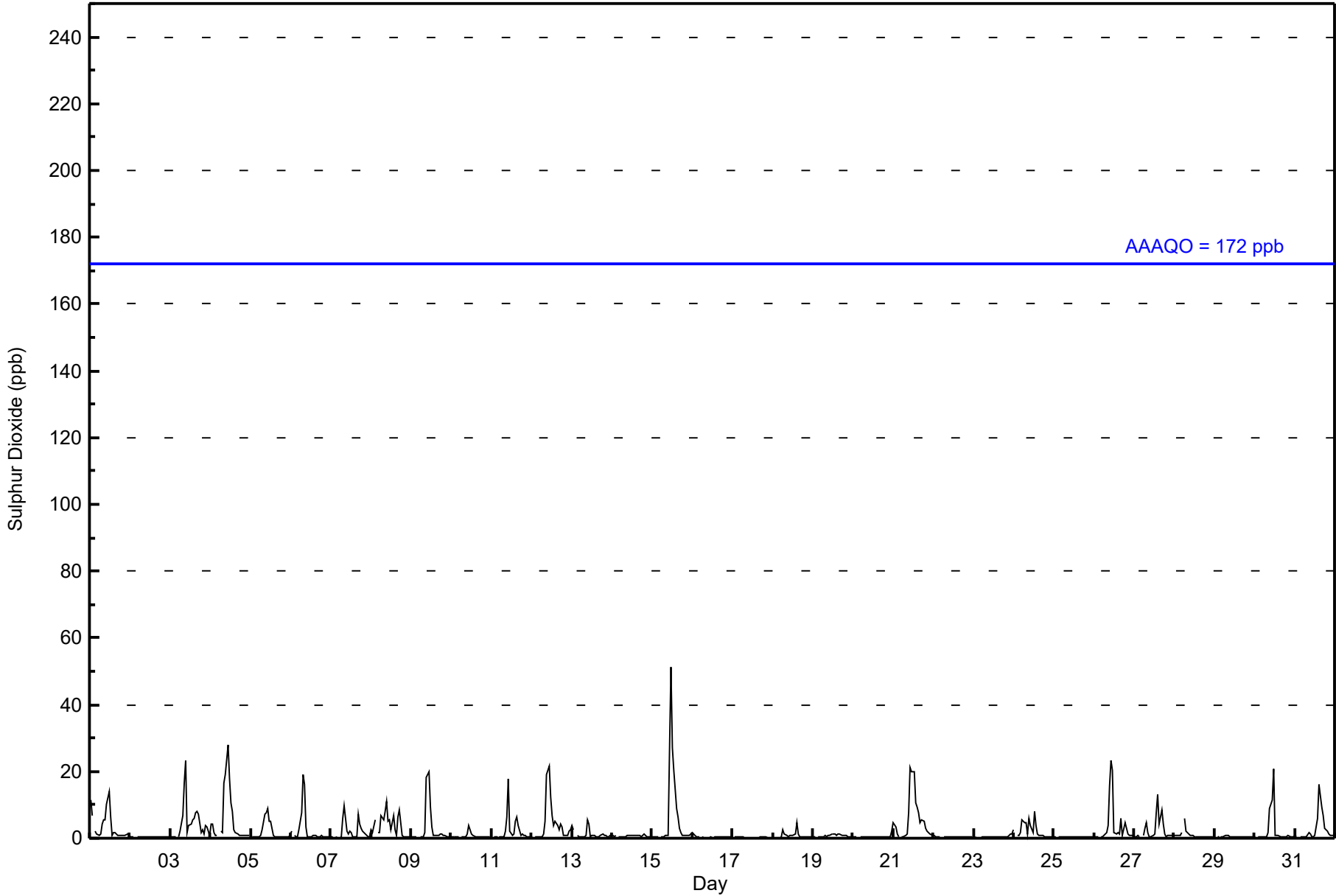
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	11.5	6.7	Z	2.0	1.2	0.9	1.1	4.2	5.6	5.4	10.4	14.0	6.3	0.9	1.6	1.6	0.8	0.8	0.8	0.8	0.9	0.9	1.1	0.7	3.5	14.0
2-May	0.6	0.4	0.6	Z	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.4	0.6
3-May	0.4	0.4	0.5	0.5	Z	0.5	1.9	6.7	16.4	23.3	1.7	4.0	4.4	5.5	6.0	7.7	7.9	7.0	1.8	2.6	1.3	3.8	3.4	0.9	4.7	23.3
4-May	4.1	4.2	1.7	0.8	0.6	Z	2.2	1.7	16.4	18.9	28.0	17.9	10.6	8.2	2.7	1.7	1.2	1.0	0.8	0.8	0.8	0.9	0.8	0.8	5.5	28.0
5-May	Z	0.6	0.6	0.5	0.4	0.4	0.9	2.6	7.2	7.8	8.8	4.9	4.9	1.1	0.4	0.4	0.4	0.5	0.3	0.3	0.3	0.3	0.3	0.2	1.9	8.8
6-May	2.1	Z	0.8	0.4	0.3	2.6	7.8	19.0	16.1	3.3	0.6	0.5	0.5	1.0	0.8	0.7	0.3	0.4	0.9	0.3	0.3	0.2	0.2	0.3	2.6	19.0
7-May	0.3	0.3	Z	0.2	0.2	0.2	0.4	6.1	9.8	2.3	1.1	2.2	1.9	0.3	0.6	0.5	7.4	4.4	3.2	2.2	1.1	0.7	0.6	0.4	2.0	9.8
8-May	2.7	1.6	5.4	Z	1.7	1.6	6.8	5.6	8.2	11.2	5.2	5.6	2.7	7.0	2.4	0.7	6.5	8.5	0.6	0.5	0.6	0.6	0.4	0.4	3.8	11.2
9-May	0.4	0.3	0.3	0.3	Z	0.5	0.6	0.6	1.5	18.2	19.7	9.2	3.5	0.9	0.8	0.7	0.8	1.5	1.3	1.0	0.7	0.5	0.4	0.4	2.8	19.7
10-May	0.4	0.3	0.3	0.3	0.3	Z	0.6	0.5	0.6	1.4	3.8	2.5	1.1	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.3	0.4	0.3	0.3	0.7	3.8
11-May	Z	0.3	0.2	0.2	0.2	0.3	0.4	0.5	1.9	6.6	17.7	2.2	1.0	1.1	4.9	6.2	3.8	0.8	1.3	0.7	0.8	0.6	0.5	0.5	2.3	17.7
12-May	0.6	Z	0.5	0.4	0.3	0.4	0.6	1.2	5.3	18.9	21.6	12.3	6.7	3.7	5.0	3.9	2.6	4.3	3.6	0.9	0.9	0.9	2.0	2.5	4.3	21.6
13-May	3.7	2.7	Z	0.7	0.4	0.5	0.5	0.5	0.7	5.7	4.4	0.6	0.7	0.8	0.5	0.6	0.6	1.0	1.3	0.8	0.8	0.6	0.5	0.8	1.3	5.7
14-May	1.0	0.5	0.6	Z	0.4	0.4	0.5	0.6	0.5	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.7	0.5	1.0	1.3	0.7	0.5	0.4	0.3	0.7	1.3
15-May	0.4	0.3	0.3	0.3	Z	0.4	0.4	0.6	0.7	0.8	26.7	51.3	27.1	20.5	9.0	6.2	3.1	1.5	1.0	0.9	1.0	0.8	1.0	1.2	6.8	51.3
16-May	1.6	1.0	0.5	0.5	0.5	Z	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.4	0.3	0.4	0.4	0.3	0.4	0.3	0.4	1.6
17-May	Z	0.5	0.3	0.3	0.4	0.3	0.3	0.2	C	C	C	C	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.2	0.2	0.1	0.3	0.5
18-May	0.2	Z	0.2	0.2	0.2	0.3	2.6	1.2	0.8	0.6	0.7	0.6	0.8	1.4	4.6	1.3	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.8	4.6
19-May	0.3	0.3	Z	0.3	0.3	0.2	0.4	0.9	0.6	0.7	0.9	1.3	1.2	1.3	1.0	1.1	1.1	1.0	0.9	0.8	0.7	0.5	0.4	0.4	0.7	1.3
20-May	0.4	0.4	0.4	Z	0.3	0.3	0.2	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.3	0.3	0.3	2.2	0.5	2.2
21-May	4.7	3.2	1.1	0.5	Z	0.5	0.6	0.7	1.4	7.7	21.3	19.8	20.0	10.7	9.5	7.7	4.8	5.5	4.9	3.1	2.1	1.5	1.1	1.0	5.8	21.3
22-May	0.8	0.6	0.5	0.5	0.6	Z	0.6	0.5	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.5	0.8
23-May	Z	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.7	1.3	1.3	0.4	1.3
24-May	2.4	Z	0.9	0.7	1.5	5.5	4.7	4.6	1.3	6.1	3.9	1.7	8.0	3.8	1.1	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5	2.2	8.0
25-May	0.4	0.4	Z	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.4	0.4	0.5
26-May	0.4	0.3	0.6	Z	0.4	0.3	1.0	1.7	3.8	15.6	23.5	20.2	1.8	1.3	1.5	1.2	5.9	0.9	4.6	3.1	1.1	0.9	0.9	0.8	4.0	23.5
27-May	0.6	0.6	0.8	0.6	Z	0.8	2.8	4.7	1.6	0.5	0.6	0.9	1.4	7.7	13.2	4.4	8.5	4.4	1.3	0.6	0.6	0.7	0.7	0.8	2.5	13.2
28-May	0.8	0.6	0.7	0.9	1.8	Z	6.1	2.3	1.2	1.0	0.8	0.7	0.6	0.6	0.5	0.5	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.4	1.0	6.1
29-May	Z	0.2	0.3	0.2	0.2	0.2	0.8	0.8	0.9	0.6	0.4	0.4	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.4	0.9
30-May	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.4	1.6	9.0	11.3	20.9	1.0	0.8	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.7	0.6	0.6	2.3	20.9
31-May	0.7	0.6	Z	0.3	0.3	0.4	0.5	0.5	1.7	1.1	0.6	0.6	0.8	5.8	15.9	12.9	9.3	6.9	3.1	2.2	1.4	1.0	0.7	0.7	2.9	15.9
1.6 1.1 0.7 0.5 0.5 0.7 1.5 2.3 3.6 5.7 7.2 6.6 3.6 2.9 2.8 2.1 2.3 1.8 1.2 0.9 0.7 0.7 0.7 0.7																								Diurnal Average		
11.5 6.7 5.4 2.0 1.8 5.5 7.8 19.0 16.4 23.3 28.0 51.3 27.1 20.5 15.9 12.9 9.3 8.5 4.9 3.1 2.1 3.8 3.4 2.5																								Diurnal Maximum		

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Fort McKay South - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Fort McKay South - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	675	95.20	95.20
11 - 20	25	3.53	98.73
21 - 60	9	1.27	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Fort McKay South - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	61	36	16	6	9	22	55	81	134	59	53	39	20	18	32	34	675
11 - 20	0	1	1	0	0	5	5	10	2	1	0	0	0	0	0	0	25
21 - 60	0	0	0	0	1	2	4	2	0	0	0	0	0	0	0	0	9
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	61	37	17	6	10	29	64	93	136	60	53	39	20	18	32	34	709

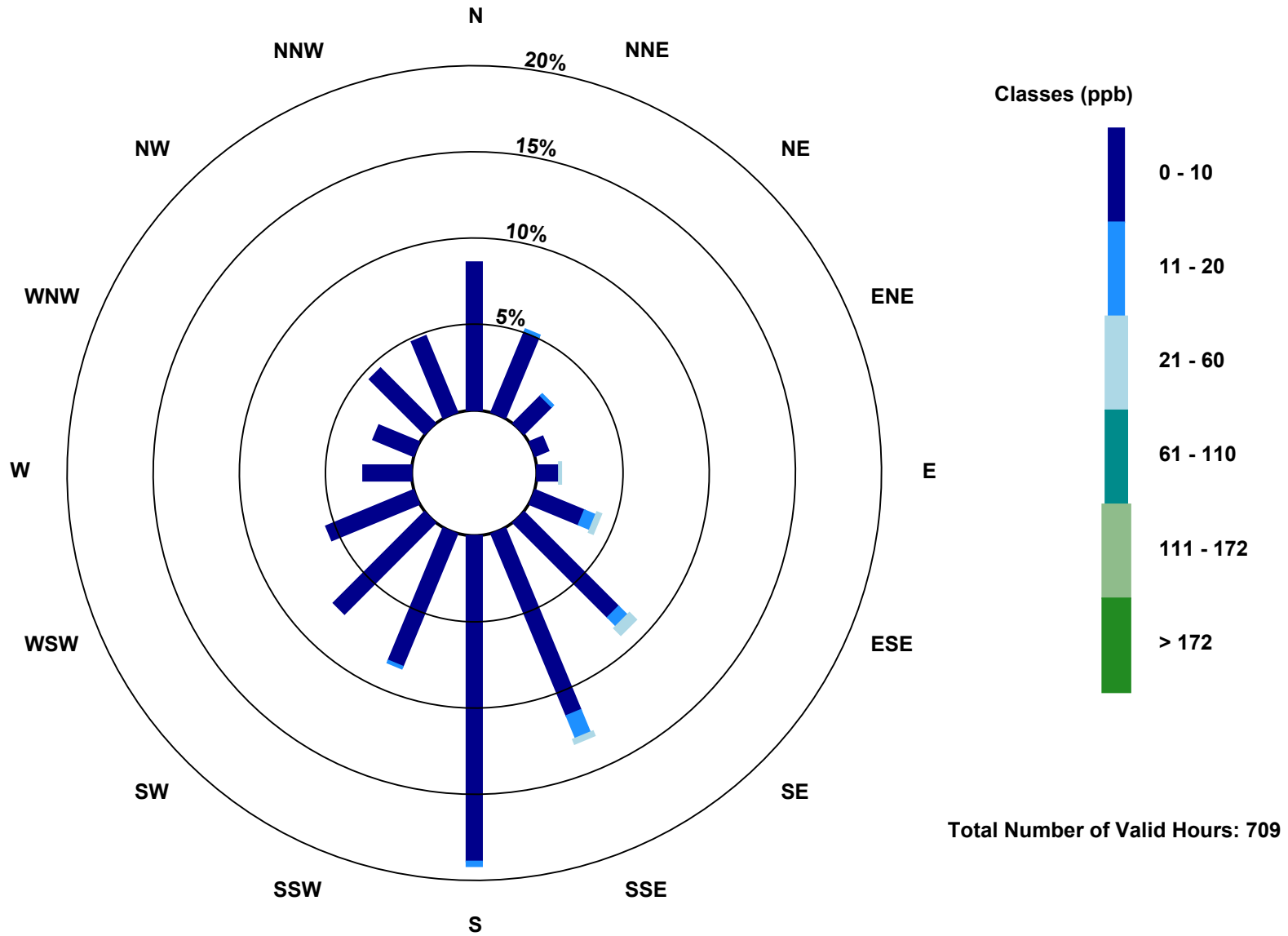
Total Number of Valid Hours: 709

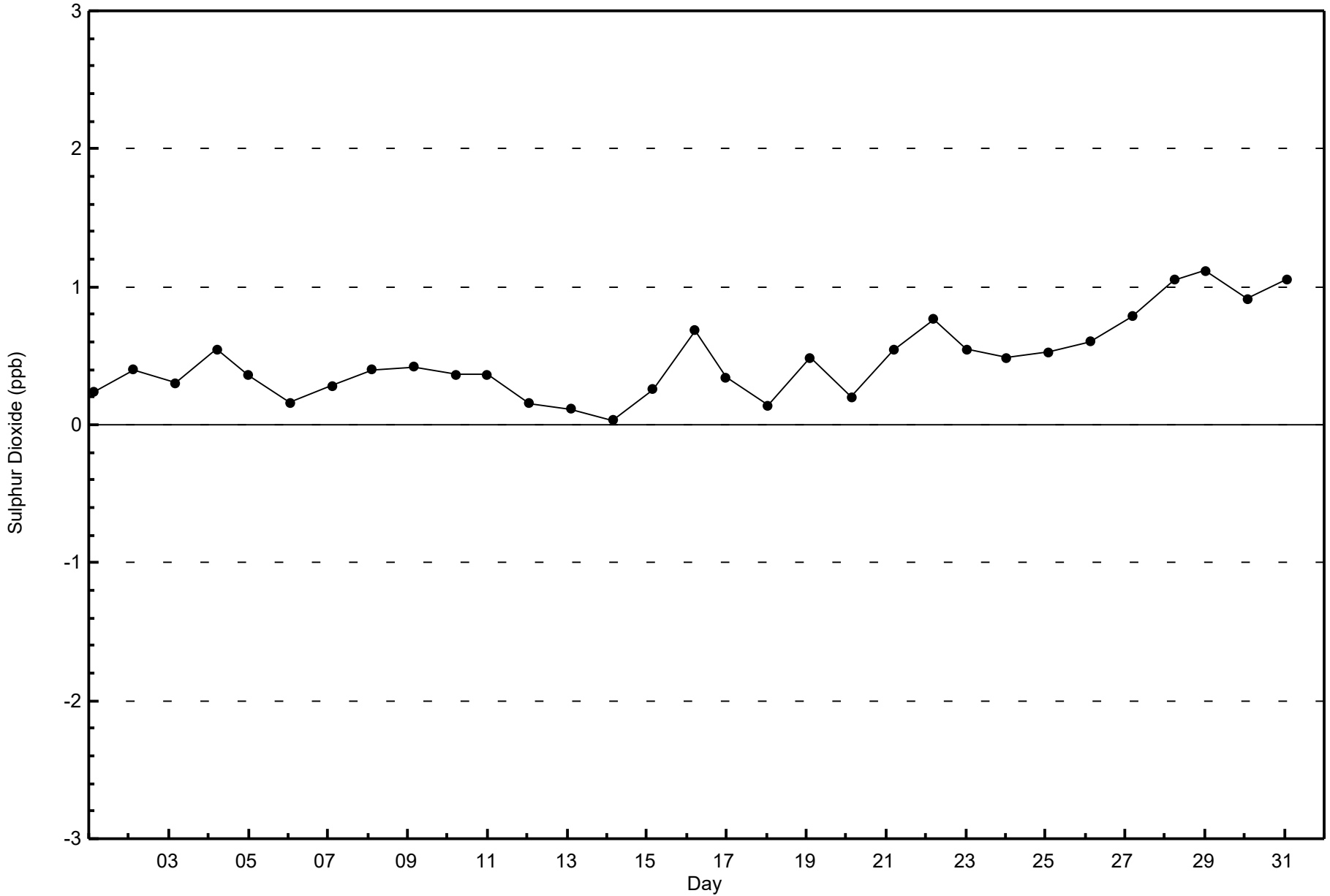
Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Fort McKay South

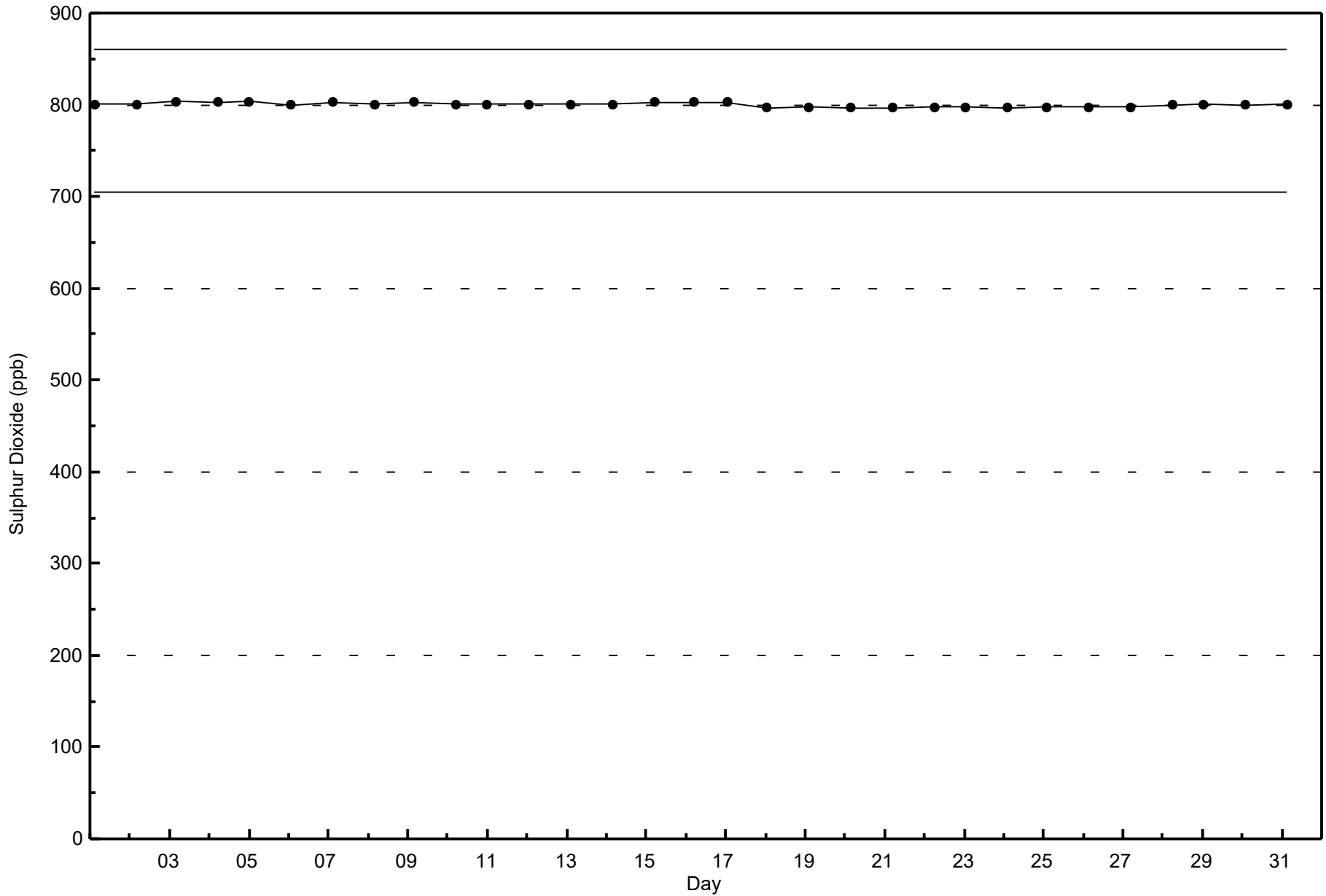






Wood Buffalo Environmental Association
Span Responses

Sulphur Dioxide (SO₂) - ppb
Fort McKay South - May 2023





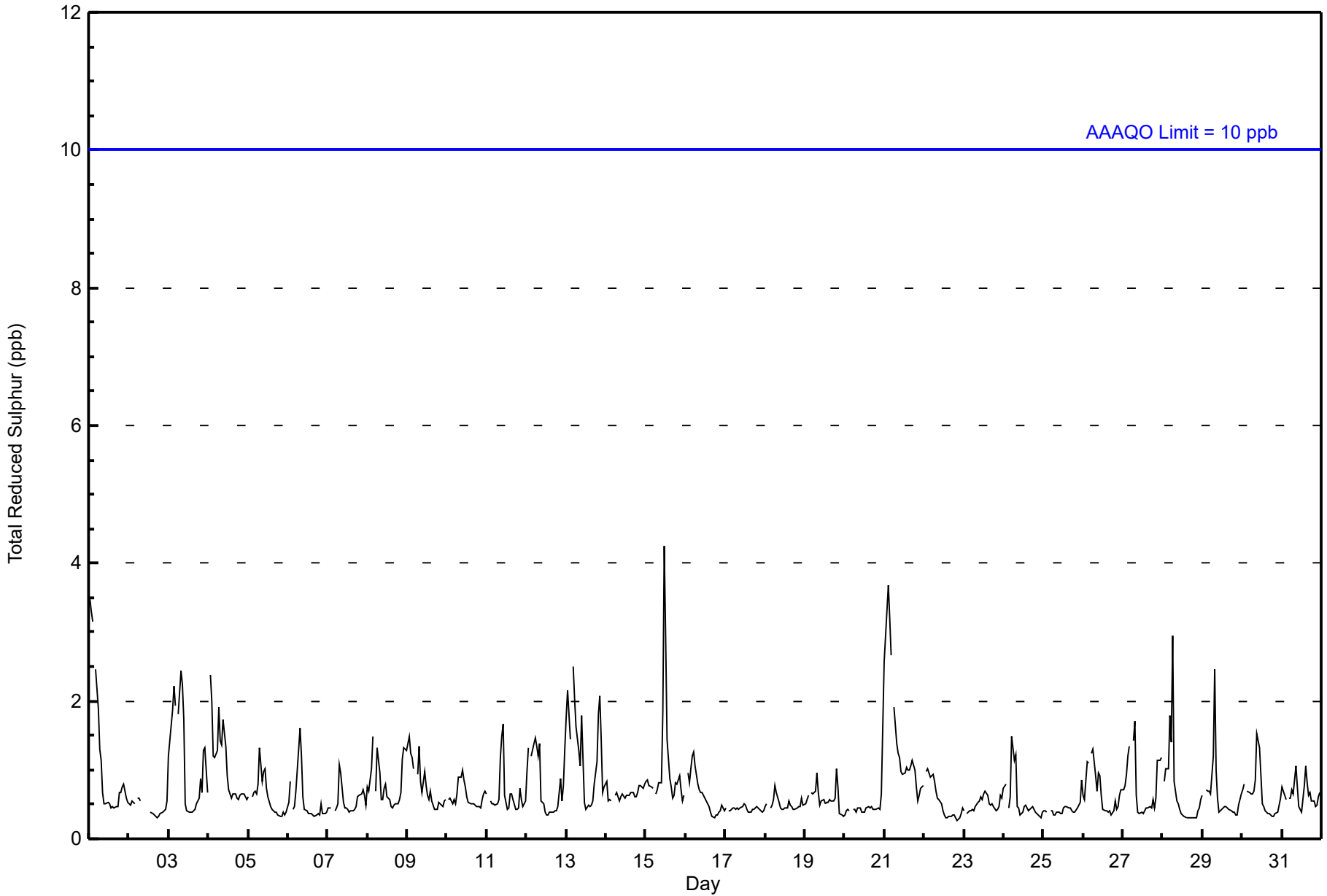
Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Fort McKay South - May 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744				
Maximum Value: 4.2 ppb on May 15 12:00		Maximum Daily Average: 1.5 ppb on May 21																	Hours of Data:	708						
Minimum Value: 0.3 ppb on May 22 21:00		Minimum Daily Average: 0.4 ppb on May 25																	Hours of Missing Data:	36						
Maximum Diurnal Average: 1.1 ppb at hour 2		Minimum Diurnal Average: 0.5 ppb at hour 17																	Hours of Calibration:	36						
Monthly Average: 0.72 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.4 Q ₁ = 0.4 Median = 0.6 Q ₃ = 0.8 P ₉₀ = 1.3 P ₉₉ = 2.9																	Percent Operational Time:	100.0						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	3.5	3.3	3.2	Z	2.5	1.9	1.3	1.1	0.7	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.7	0.7	0.7	0.8	0.6	0.5	1.1	3.5	
2-May	0.5	0.5	0.6	0.5	Z	0.6	0.6	0.6	C	C	C	C	C	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.4	0.6
3-May	1.2	1.7	1.9	2.2	1.9	Z	1.8	2.4	2.2	1.7	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.9	0.7	1.3	1.3	0.7	1.1	2.4	
4-May	Z	2.4	2.0	1.2	1.2	1.3	1.9	1.4	1.4	1.7	1.3	0.9	0.7	0.7	0.6	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.6	0.6	1.1	2.4
5-May	0.6	Z	0.6	0.7	0.7	0.6	0.8	1.3	0.8	1.0	1.0	0.7	0.6	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.6	1.3	
6-May	0.5	0.8	Z	0.4	0.5	0.7	1.3	1.6	1.2	0.6	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.5	0.4	0.4	0.6	1.6	
7-May	0.4	0.4	0.4	Z	0.4	0.4	0.5	1.1	1.0	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.7	0.7	0.6	0.5	0.5	1.1
8-May	0.8	0.7	1.0	1.5	Z	0.7	1.3	1.0	0.6	0.6	0.7	0.8	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.7	1.2	1.3	1.3	0.8	1.5
9-May	1.4	1.5	1.2	1.2	1.0	Z	0.9	1.3	0.8	0.7	1.0	0.8	0.6	0.6	0.7	0.6	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.8	1.5
10-May	Z	0.6	0.6	0.5	0.6	0.5	0.6	0.9	0.9	1.0	0.9	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.6	0.7	0.7	0.6	1.0
11-May	0.6	Z	0.6	0.5	0.5	0.5	0.5	0.6	1.2	1.5	1.7	0.6	0.4	0.4	0.7	0.6	0.6	0.4	0.4	0.4	0.7	0.6	0.5	0.6	0.7	1.7
12-May	1.0	1.3	Z	1.2	1.4	1.5	1.3	1.2	1.4	0.6	0.5	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.9	0.5	0.8	1.3	0.8	1.5
13-May	1.8	2.1	1.4	Z	2.5	2.0	1.6	1.3	1.1	1.8	1.2	0.5	0.4	0.5	0.5	0.5	0.5	0.8	1.1	1.8	2.1	1.5	0.7	0.8	1.2	2.5
14-May	0.8	0.5	0.6	0.6	Z	0.6	0.7	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.7	0.8	0.8	0.7	0.8	0.7	0.8
15-May	0.8	0.8	0.8	0.7	0.7	Z	0.7	0.7	0.8	0.8	1.8	4.2	2.9	1.4	0.9	0.8	0.6	0.6	0.8	0.8	0.9	0.7	0.6	0.6	1.1	4.2
16-May	Z	1.0	0.8	1.0	1.2	1.3	1.1	0.8	0.7	0.7	0.7	0.6	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.4	0.6	1.3
17-May	0.4	Z	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.5
18-May	0.5	0.5	Z	0.5	0.5	0.6	0.8	0.7	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.6	0.5	0.5	0.8
19-May	0.5	0.6	0.6	Z	0.7	0.6	0.7	0.9	0.7	0.5	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.6	0.6	1.0	0.7	0.4	0.4	0.3	0.6	1.0
20-May	0.3	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.7	1.6	0.5	1.6
21-May	2.6	3.3	3.7	3.2	2.7	Z	1.9	1.4	1.2	1.2	1.0	0.9	1.0	1.0	1.0	1.1	1.1	1.0	0.7	0.6	0.6	0.7	0.8	1.5	3.7	
22-May	Z	1.0	1.0	1.0	0.9	0.9	0.8	0.7	0.6	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	1.0
23-May	0.4	Z	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.6	0.6	0.5	0.7
24-May	0.7	0.8	Z	0.4	0.4	0.6	1.5	1.1	1.2	0.5	0.4	0.3	0.4	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.6	1.5
25-May	0.4	0.4	0.4	Z	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.9	0.4	0.9
26-May	0.6	0.6	1.1	1.1	Z	1.2	1.3	0.9	0.7	0.9	0.9	0.6	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.6	0.4	0.5	0.6	0.7	0.7	1.3
27-May	0.7	0.8	0.9	1.2	1.3	Z	1.4	1.7	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.6	0.5	0.6	1.1	1.1	1.2	0.8	1.7
28-May	Z	0.8	1.0	1.0	1.8	1.4	2.9	0.8	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.6	0.7	2.9
29-May	0.6	Z	0.7	0.7	0.7	0.7	1.2	2.5	1.0	0.6	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.7	0.6	2.5
30-May	0.7	0.8	Z	0.7	0.7	0.7	0.6	0.7	0.8	1.5	1.3	0.9	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.6	1.5
31-May	0.8	0.7	0.6	Z	0.6	0.6	0.7	0.7	1.1	0.8	0.5	0.4	0.4	0.8	1.1	0.8	0.6	0.7	0.6	0.6	0.5	0.5	0.6	0.7	0.7	1.1
																								Diurnal Average		
																								Diurnal Maximum		
																								0.9 1.1 1.0 0.9 1.0 0.9 1.0 1.0 0.8 0.8 0.7 0.7 0.6 0.5 0.5 0.5 0.5 0.5 0.5 0.6 0.6 0.6 0.6 0.7		
																								3.5 3.3 3.7 3.2 2.7 2.0 2.9 2.5 2.2 1.8 1.8 4.2 2.9 1.4 1.1 1.0 1.1 1.1 1.1 1.8 2.1 1.5 1.3 1.6		
Z - zerospan C - Calibration																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Fort McKay South - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	696	98.31	98.31
3 - 4	12	1.69	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Fort McKay South - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	64	37	14	6	9	27	62	94	129	59	48	41	22	18	32	34	696
3 - 4	0	0	0	0	1	1	1	1	4	2	0	1	1	0	0	0	12
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	64	37	14	6	10	28	63	95	133	61	48	42	23	18	32	34	708

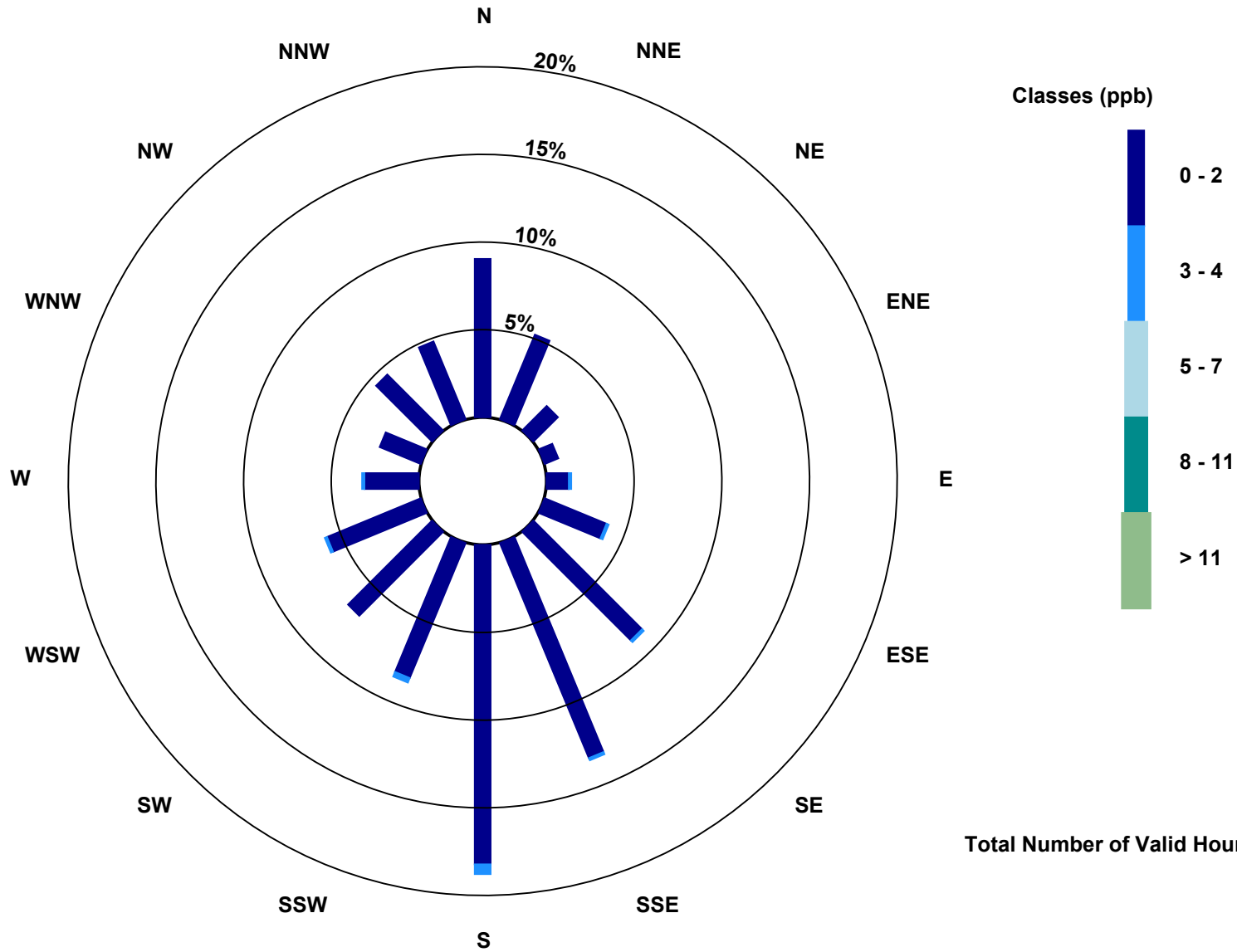
Total Number of Valid Hours: 708

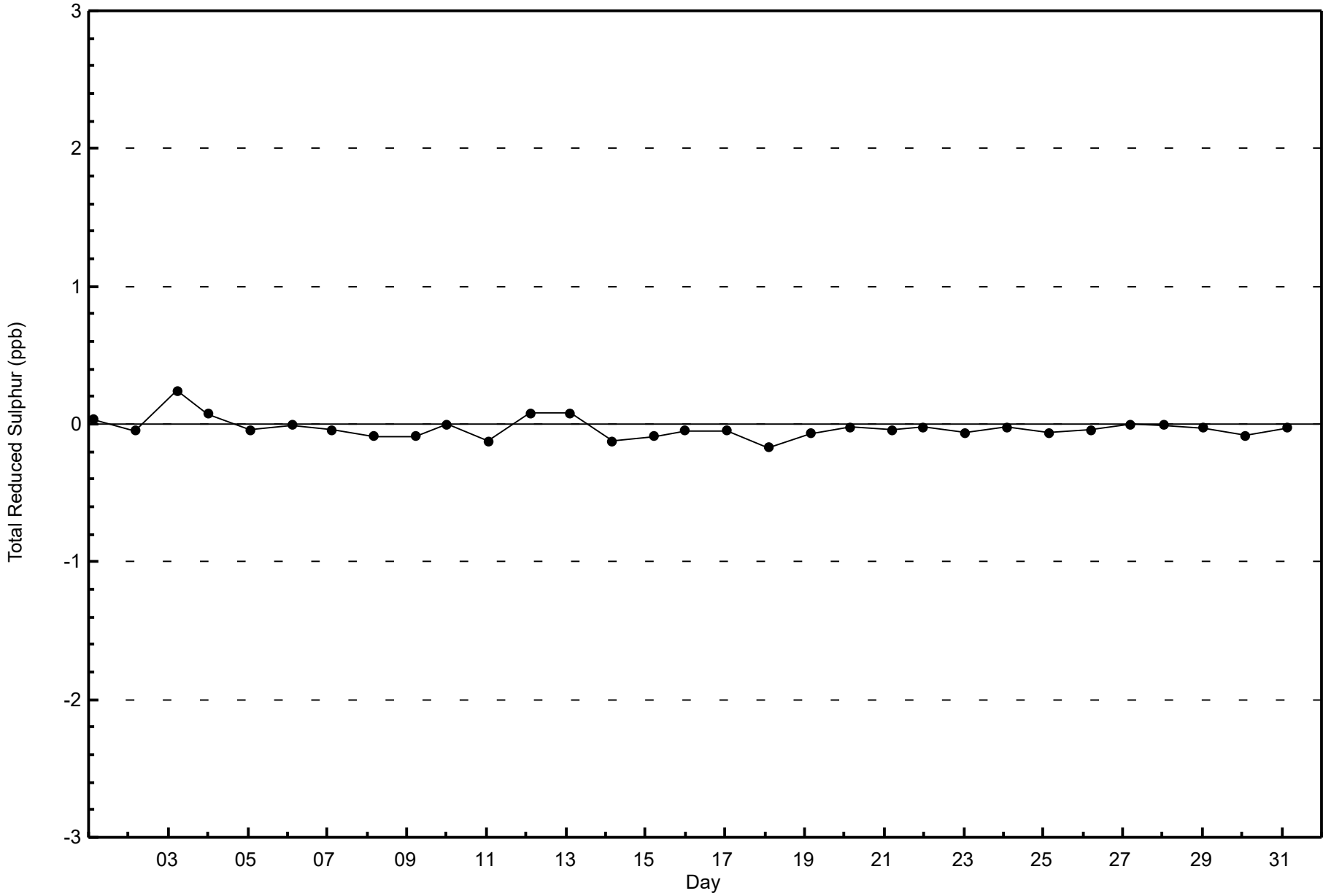
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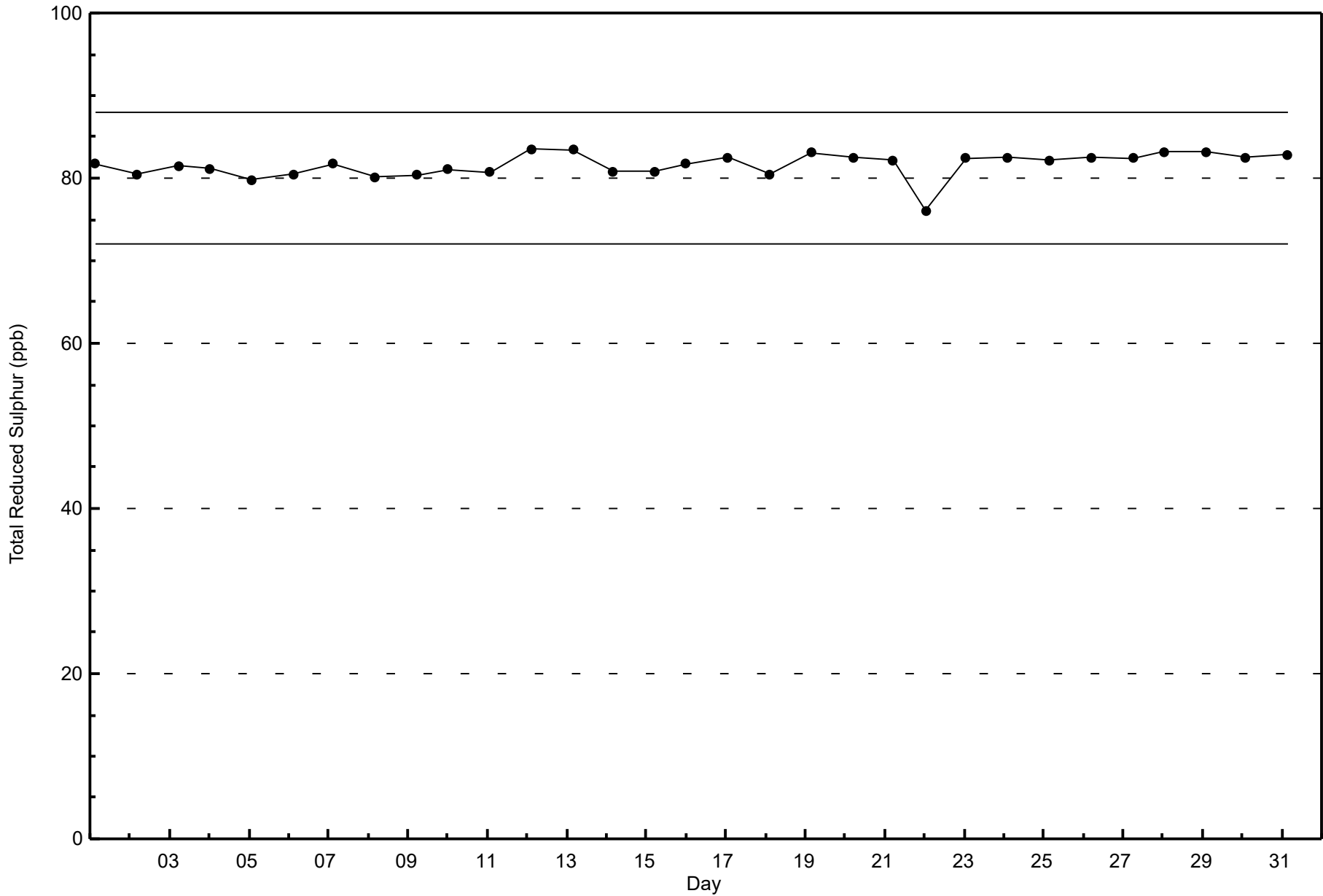


Wood Buffalo Environmental Association
Wind Rose May 2023

Total Reduced Sulphur (TRS) - ppb
Fort McKay South









Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

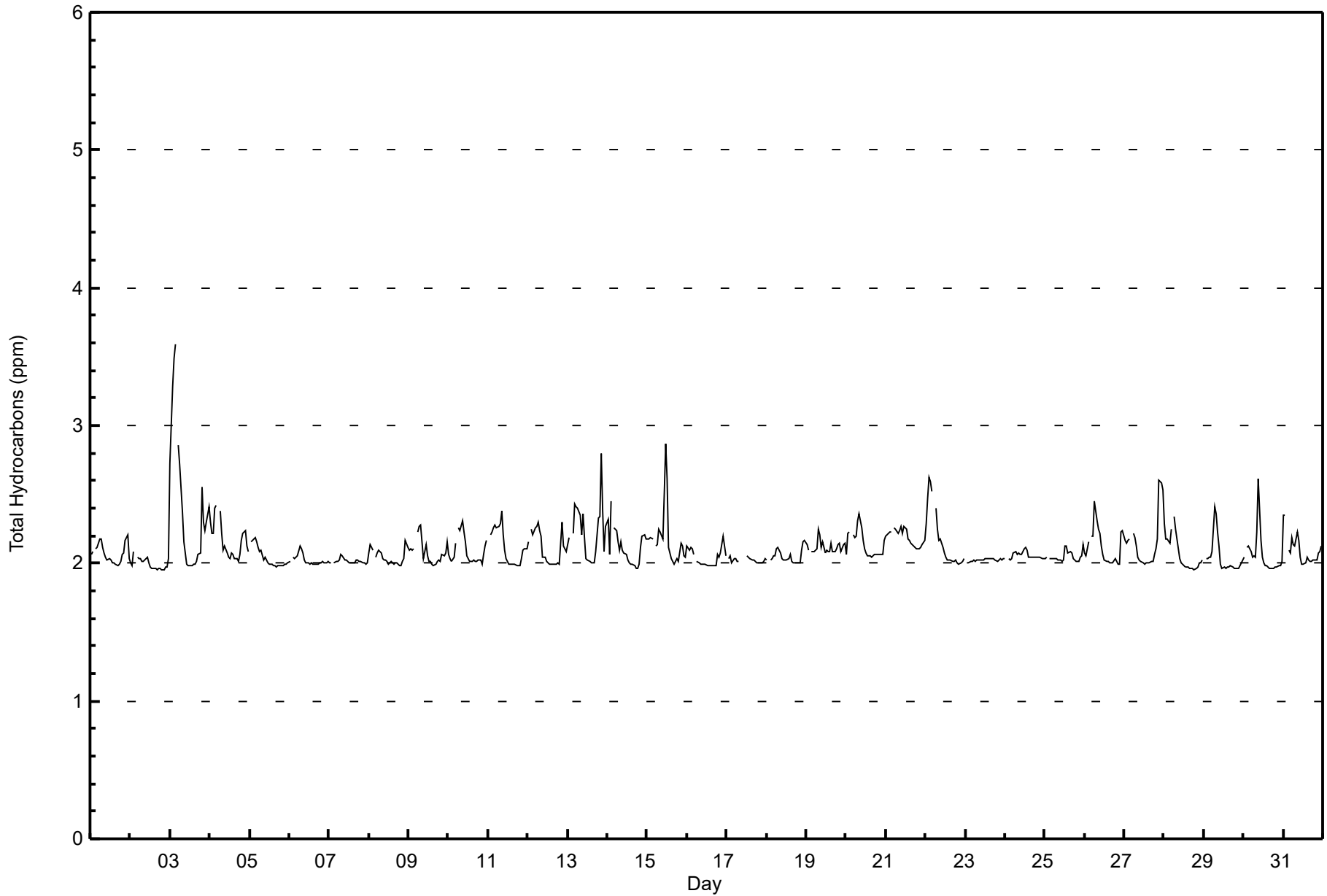
Fort McKay South - May 2023

Maximum Value: 3.6 ppm on May 3 04:00																				Maximum Daily Average: 2.4 ppm on May 3					Hours in Service: 744								
Minimum Value: 2.0 ppm on May 2 20:00																				Minimum Daily Average: 2.0 ppm on May 2					Hours of Data: 709								
Maximum Diurnal Average: 2.2 ppm at hour 3																				Minimum Diurnal Average: 2.0 ppm at hour 17					Hours of Missing Data: 35								
Monthly Average: 2.10 ppm																				Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.2 P ₉₉ = 2.7					Hours of Calibration: 35								
																				Percent Operational Time: 100.0													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24									
1-May	2.1	2.1	Z	2.1	2.1	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.0	2.1	2.2							
2-May	2.0	2.0	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1						
3-May	2.7	3.3	3.5	3.6	Z	2.9	2.7	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.6	2.3	2.2	2.3	2.4	2.4	2.4	3.6							
4-May	2.3	2.2	2.2	2.4	2.4	Z	2.4	2.2	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.1	2.1	2.2	2.4							
5-May	Z	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2							
6-May	2.0	Z	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1							
7-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1							
8-May	2.1	2.1	2.1	Z	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.1	2.0	2.2							
9-May	2.1	2.1	2.1	2.1	Z	2.2	2.3	2.3	2.2	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.1	2.3							
10-May	2.1	2.0	2.0	2.0	2.1	Z	2.3	2.2	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.3							
11-May	Z	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.4							
12-May	2.2	Z	2.2	2.2	2.3	2.3	2.3	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.1	2.1	2.1	2.1	2.3							
13-May	2.1	2.2	Z	2.2	2.4	2.4	2.4	2.4	2.2	2.4	2.2	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.3	2.8	2.4	2.1	2.3	2.2	2.8								
14-May	2.3	2.1	2.5	Z	2.3	2.2	2.2	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.1	2.5								
15-May	2.2	2.2	2.2	2.2	Z	2.1	2.1	2.2	2.2	2.2	2.5	2.9	2.6	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.9								
16-May	2.1	2.1	2.1	2.1	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.2	2.1	2.0	2.2								
17-May	Z	2.0	2.1	2.0	2.0	2.0	2.0	2.0	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1								
18-May	2.0	Z	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2								
19-May	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2								
20-May	2.1	2.2	2.2	Z	2.2	2.2	2.2	2.3	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4								
21-May	2.2	2.2	2.2	2.2	Z	2.3	2.2	2.2	2.2	2.3	2.2	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3								
22-May	2.3	2.5	2.6	2.6	2.5	Z	2.4	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.6								
23-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0								
24-May	2.0	Z	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1								
25-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1								
26-May	2.1	2.1	2.2	Z	2.2	2.2	2.5	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.5								
27-May	2.2	2.2	2.2	2.2	Z	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.6	2.6	2.5	2.1	2.6								
28-May	2.3	2.2	2.2	2.1	2.2	Z	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1								
29-May	Z	2.0	2.0	2.0	2.0	2.1	2.4	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.4								
30-May	2.0	Z	2.1	2.1	2.1	2.0	2.1	2.0	2.2	2.6	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.6								
31-May	2.3	2.3	Z	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.3								
																								Diurnal Average									
																								Diurnal Maximum									
Z - zerospan C - Calibration																																	



Wood Buffalo Environmental Association
Hourly Averages

Total Hydrocarbons (THC) - ppm
Fort McKay South - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Fort McKay South - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	371	52.33	52.33
2.1 - 3.0	335	47.25	99.58
3.1 - 10.0	3	0.42	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Fort McKay South - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	19	30	11	4	6	13	45	52	64	22	26	22	13	12	19	13	371
2.1 - 3.0	42	7	6	2	4	16	19	41	72	38	26	16	7	5	13	21	335
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	3
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	61	37	17	6	10	29	64	93	136	60	53	39	20	18	32	34	709

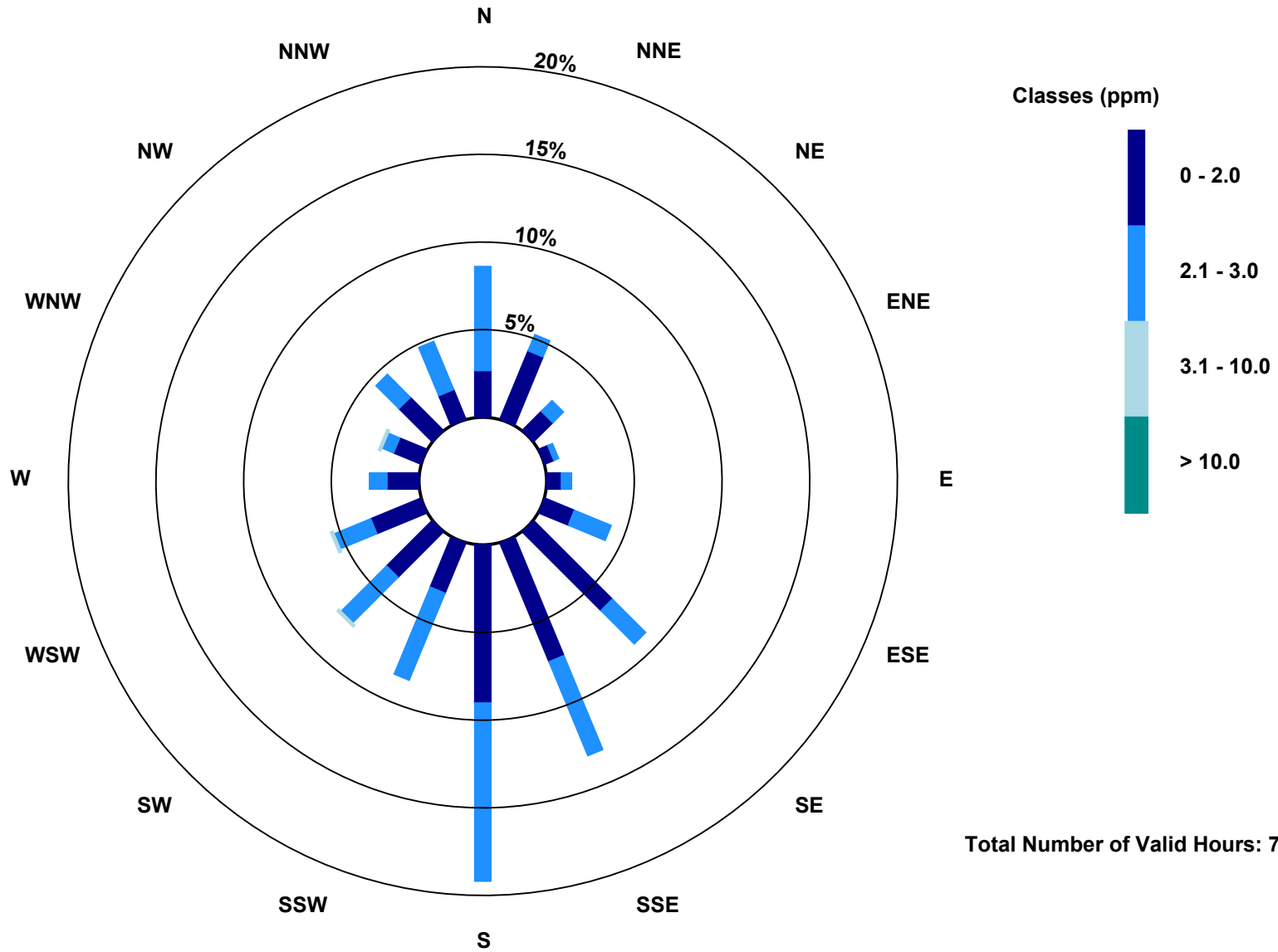
Total Number of Valid Hours: 709

Total Number of Hours: 744

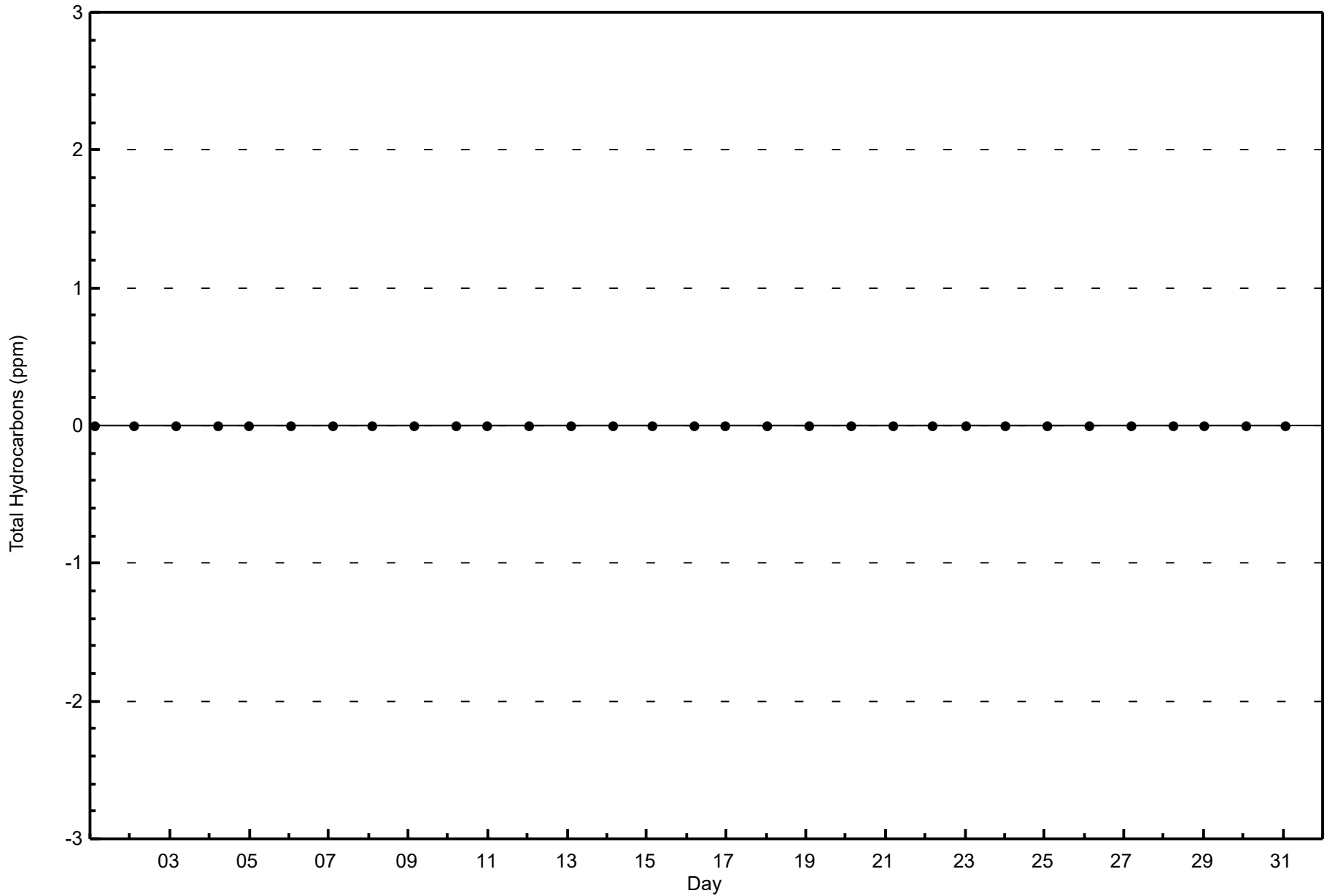


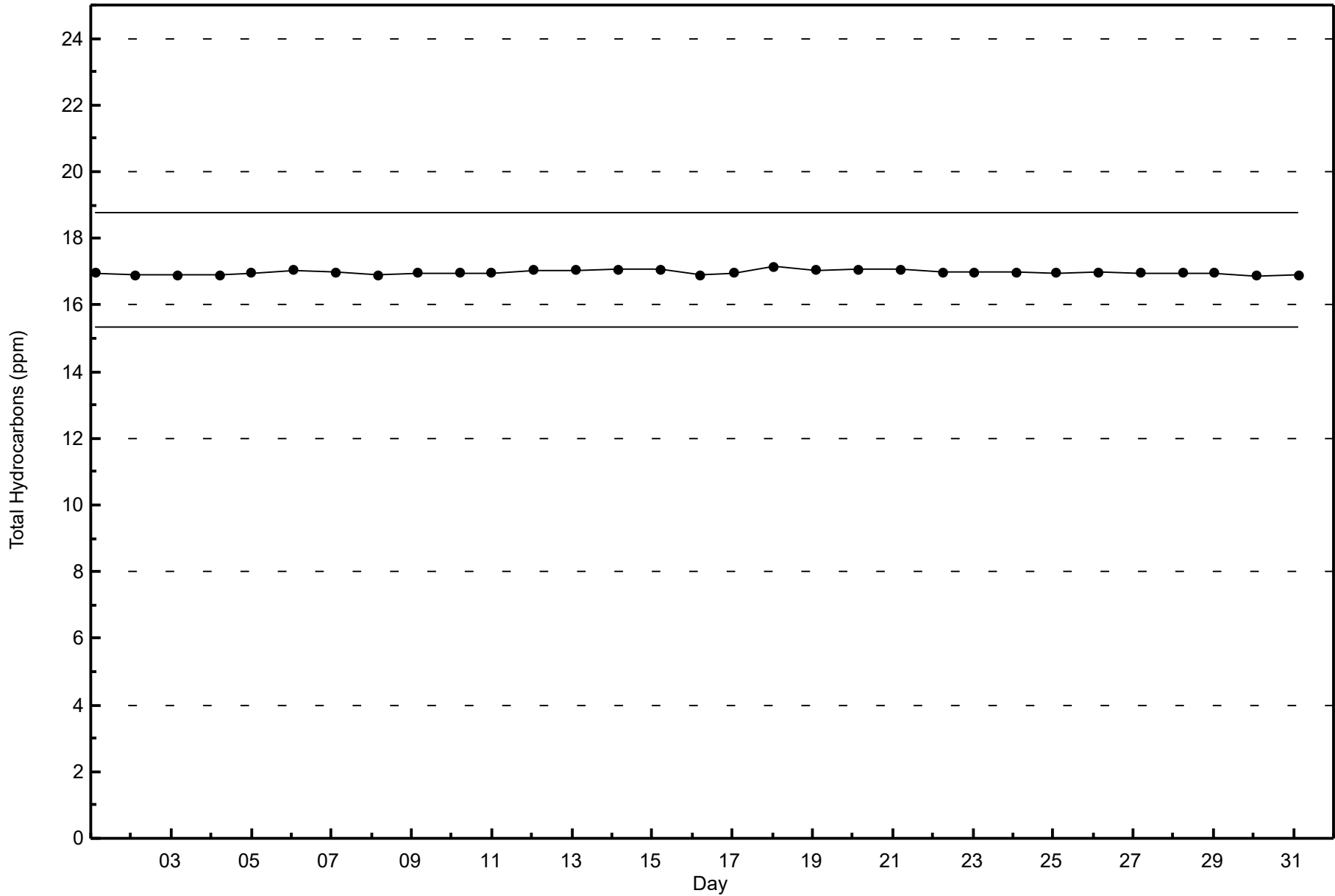
Wood Buffalo Environmental Association
Wind Rose May 2023

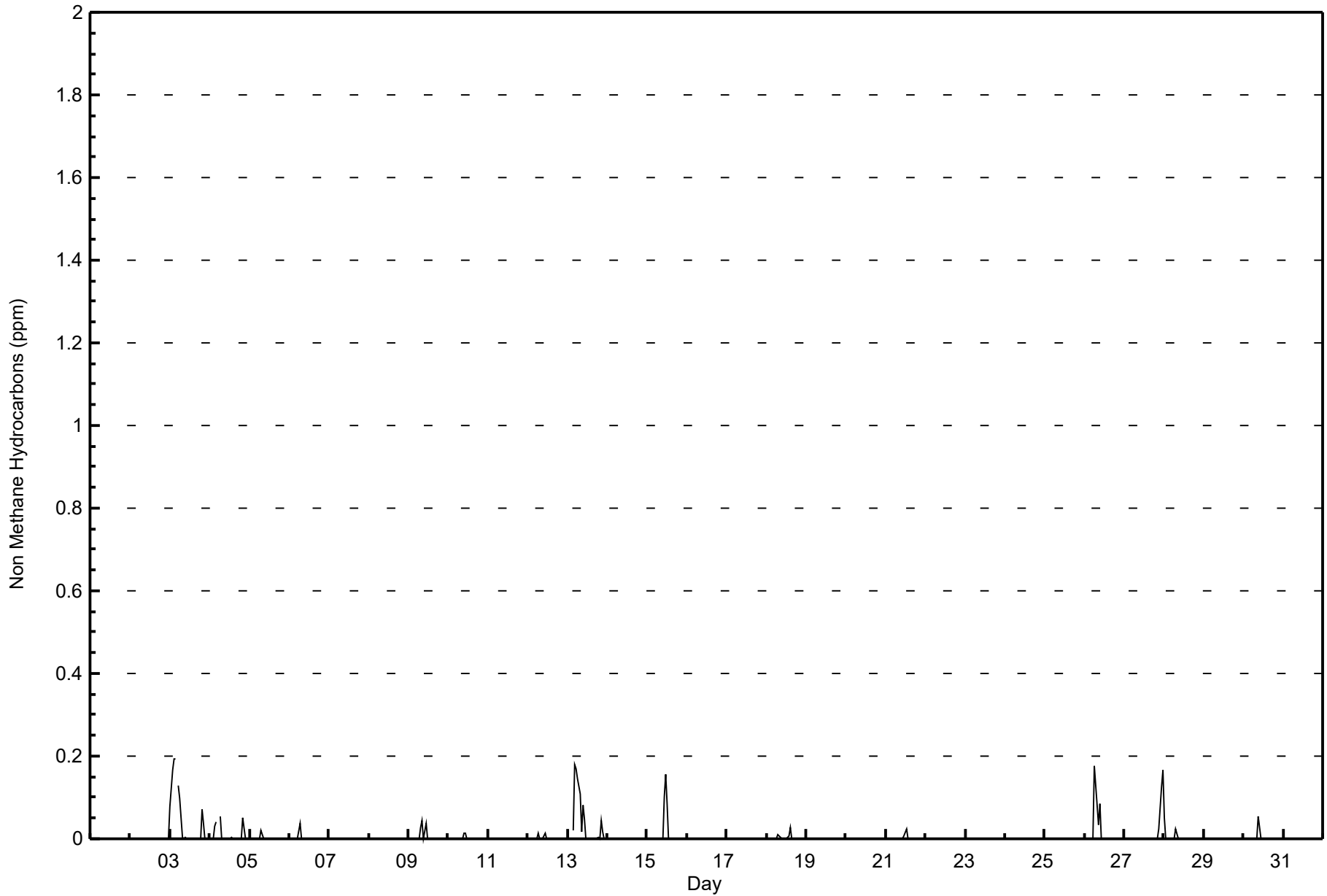
Total Hydrocarbons (THC) - ppm
Fort McKay South



Total Number of Valid Hours: 709









**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Fort McKay South - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	660	93.09	93.09
0.006 - 0.05	29	4.09	97.18
0.06 - 0.1	12	1.69	98.87
> 0.1	8	1.13	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Fort McKay South - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	60	37	17	5	8	26	59	80	124	56	50	36	20	17	31	34	660
0.006 - 0.05	1	0	0	1	1	2	3	8	8	1	1	2	0	0	1	0	29
0.06 - 0.1	0	0	0	0	0	1	2	4	3	2	0	0	0	0	0	0	12
> 0.1	0	0	0	0	1	0	0	1	1	1	2	1	0	1	0	0	8
Totals	61	37	17	6	10	29	64	93	136	60	53	39	20	18	32	34	709

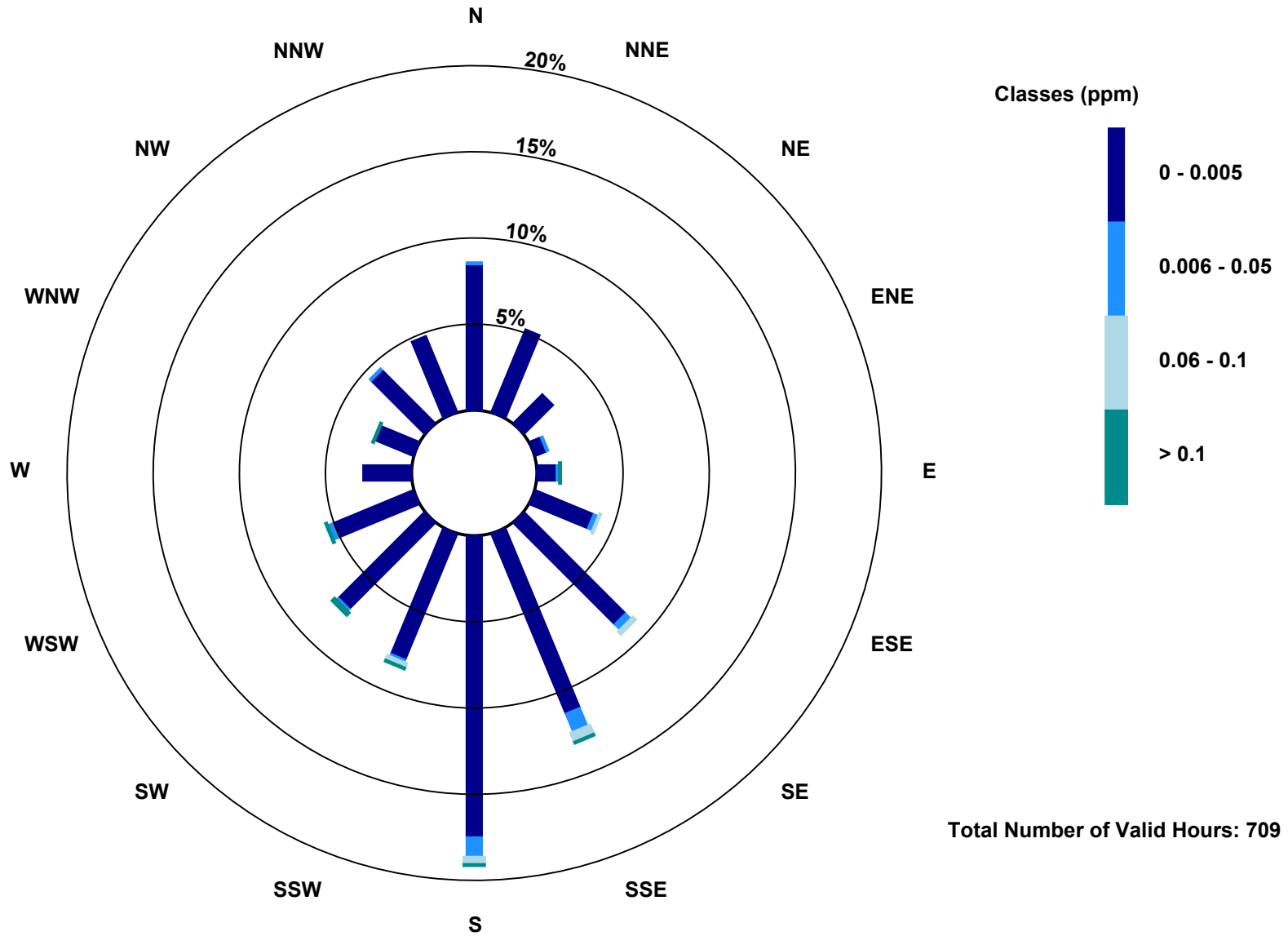
Total Number of Valid Hours: 709

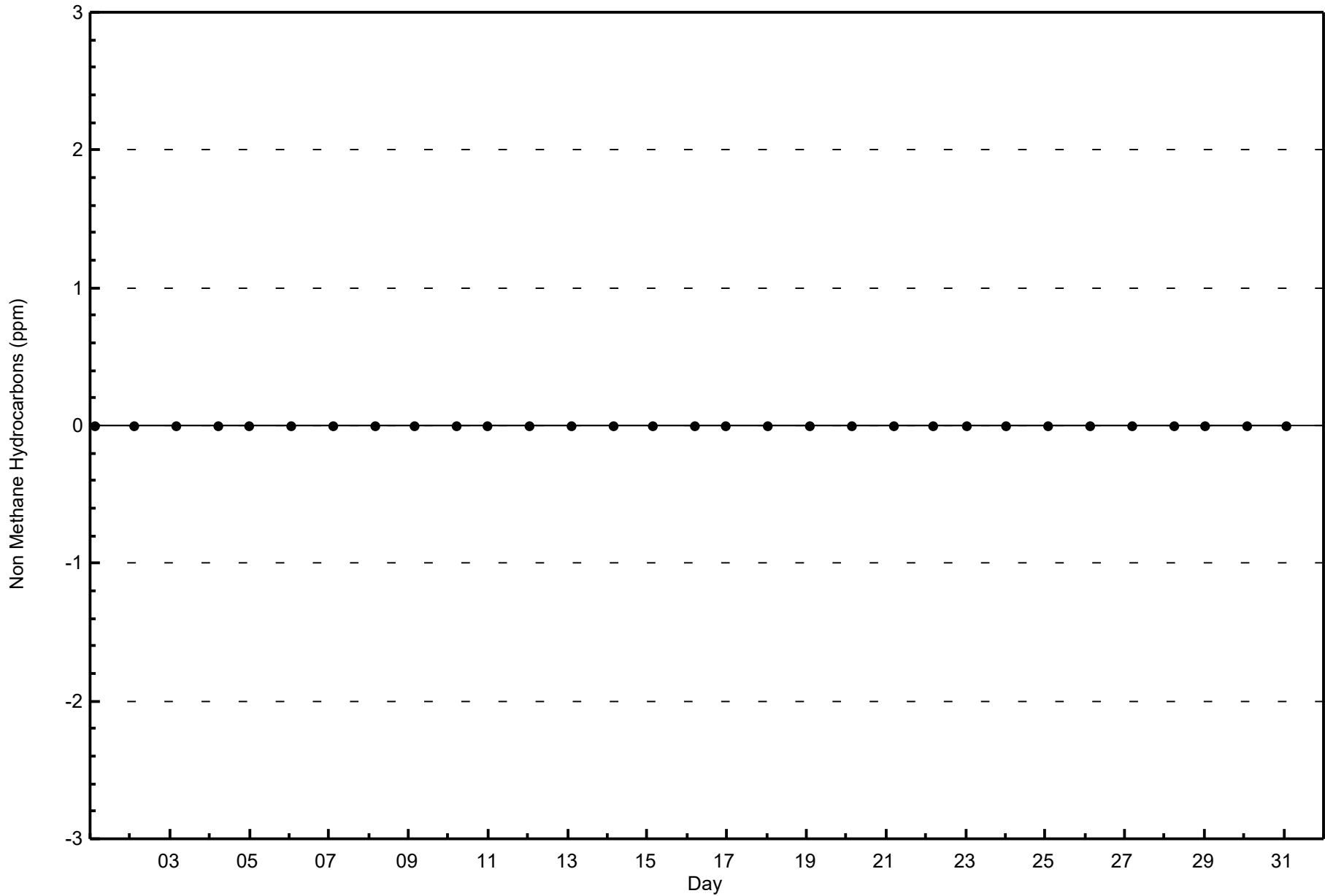
Total Number of Hours: 744

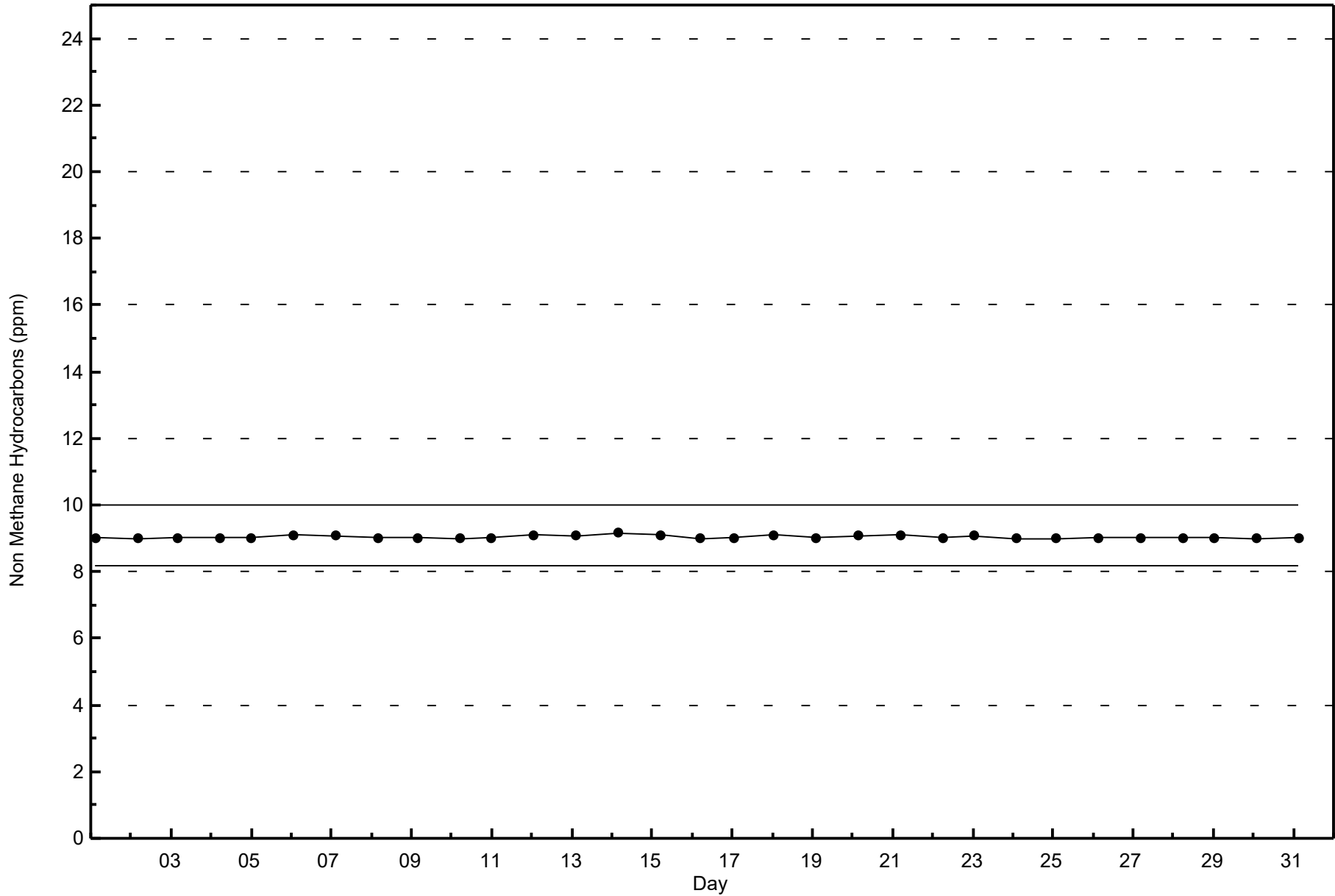


Wood Buffalo Environmental Association
Wind Rose May 2023

Non Methane Hydrocarbons (NMHC) - ppm
Fort McKay South

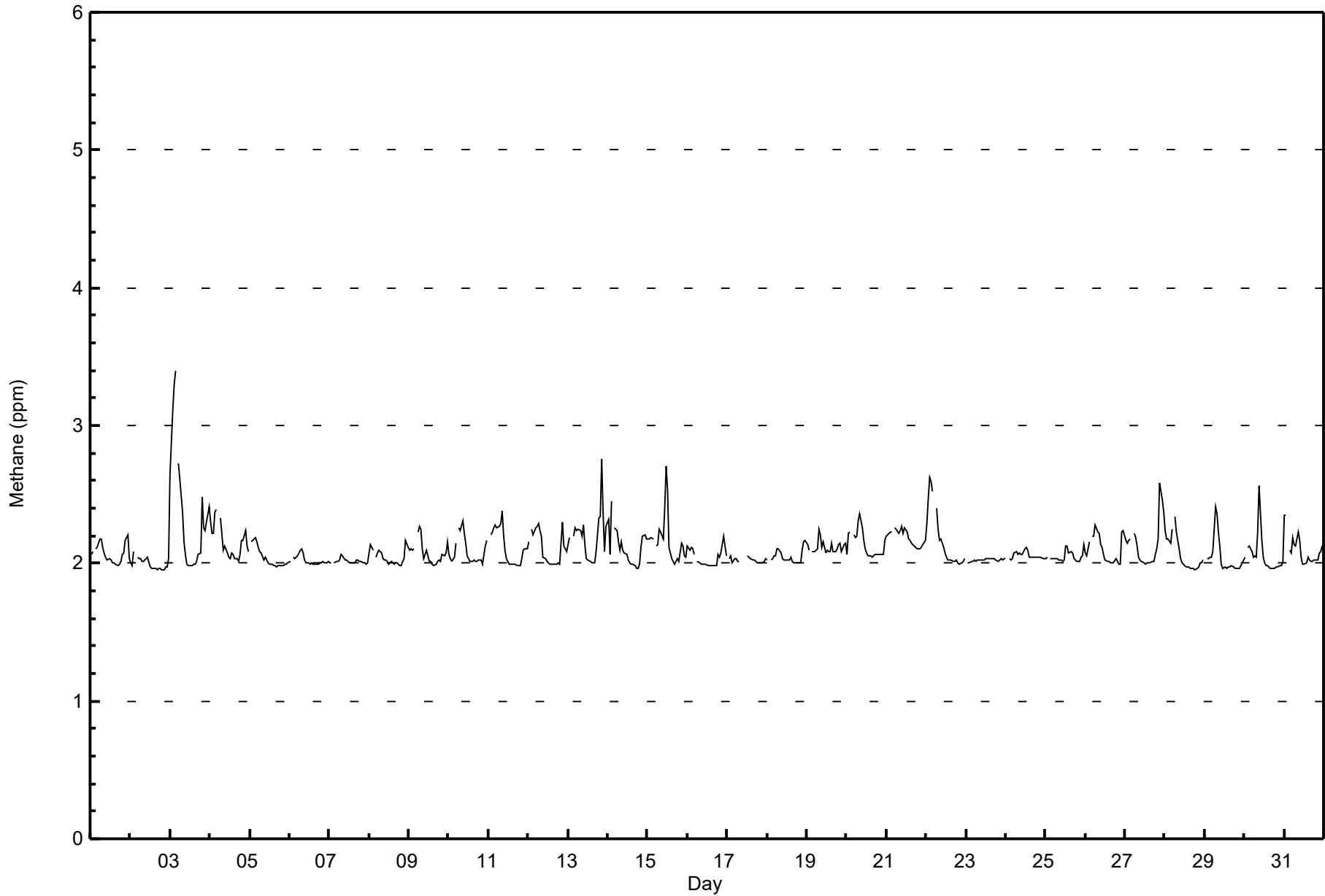








Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744																											
Maximum Value: 3.4 ppm on May 3 04:00		Maximum Daily Average: 2.4 ppm on May 3																	Hours of Data:	709																													
Minimum Value: 2.0 ppm on May 2 20:00		Minimum Daily Average: 2.0 ppm on May 2																	Hours of Missing Data:	35																													
Maximum Diurnal Average: 2.2 ppm at hour 3		Minimum Diurnal Average: 2.0 ppm at hour 17																	Hours of Calibration:	35																													
Monthly Average: 2.09 ppm		Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.2 P ₉₉ = 2.6																	Percent Operational Time:	100.0																													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	2.1	2.1	Z	2.1	2.1	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.0	2.1	2.2																							
2-May	2.0	2.0	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																						
3-May	2.6	3.1	3.3	3.4	Z	2.7	2.6	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.5	2.3	2.2	2.3	2.4	2.4	2.4	3.4																							
4-May	2.3	2.2	2.2	2.4	2.4	Z	2.3	2.2	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.1	2.1	2.2	2.4																							
5-May	Z	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2																							
6-May	2.0	Z	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
7-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
8-May	2.1	2.1	2.1	Z	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.1	2.0	2.2																							
9-May	2.1	2.1	2.1	2.1	Z	2.2	2.3	2.3	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.1	2.3																							
10-May	2.1	2.0	2.0	2.0	2.1	Z	2.3	2.2	2.3	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.3																							
11-May	Z	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.4																							
12-May	2.2	Z	2.2	2.2	2.3	2.3	2.3	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.1	2.1	2.1	2.1	2.3																							
13-May	2.1	2.2	Z	2.2	2.3	2.2	2.2	2.2	2.2	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.3	2.8	2.4	2.1	2.3	2.2	2.8																							
14-May	2.3	2.1	2.5	Z	2.3	2.2	2.2	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.1	2.5																							
15-May	2.2	2.2	2.2	2.2	Z	2.1	2.1	2.2	2.2	2.2	2.4	2.7	2.5	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.2	2.7																							
16-May	2.1	2.1	2.1	2.1	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.2	2.1	2.0	2.2																							
17-May	Z	2.0	2.1	2.0	2.0	2.0	2.0	2.0	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
18-May	2.0	Z	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.0	2.2																							
19-May	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2																							
20-May	2.1	2.2	2.2	Z	2.2	2.2	2.2	2.3	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4																							
21-May	2.2	2.2	2.2	2.2	Z	2.3	2.2	2.2	2.2	2.3	2.2	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.3																							
22-May	2.3	2.5	2.6	2.6	2.5	Z	2.4	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.6																							
23-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0																							
24-May	2.0	Z	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																							
25-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1																							
26-May	2.1	2.1	2.2	Z	2.2	2.2	2.3	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.1	2.3																							
27-May	2.2	2.2	2.2	2.2	Z	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.6	2.5	2.4	2.1	2.6																								
28-May	2.2	2.2	2.2	2.1	2.2	Z	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3																							
29-May	Z	2.0	2.0	2.0	2.0	2.1	2.4	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.4																							
30-May	2.0	Z	2.1	2.1	2.1	2.0	2.1	2.0	2.2	2.6	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.6																							
31-May	2.3	2.3	Z	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.3																							
																								2.1	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	Diurnal Average		
																								2.6	3.1	3.3	3.4	2.5	2.7	2.6	2.4	2.4	2.6	2.4	2.7	2.5	2.2	2.2	2.2	2.1	2.1	2.3	2.5	2.8	2.6	2.5	2.4	Diurnal Maximum	
Z - zerospan C - Calibration																																																	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Fort McKay South - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	372	52.47	52.47
2.1 - 3.0	334	47.11	99.58
3.1 - 10.0	3	0.42	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Methane (CH₄) - ppm
Fort McKay South - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	19	30	11	4	6	13	45	53	64	22	26	22	13	12	19	13	372
2.1 - 3.0	42	7	6	2	4	16	19	40	72	38	26	16	7	5	13	21	334
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	3
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	61	37	17	6	10	29	64	93	136	60	53	39	20	18	32	34	709

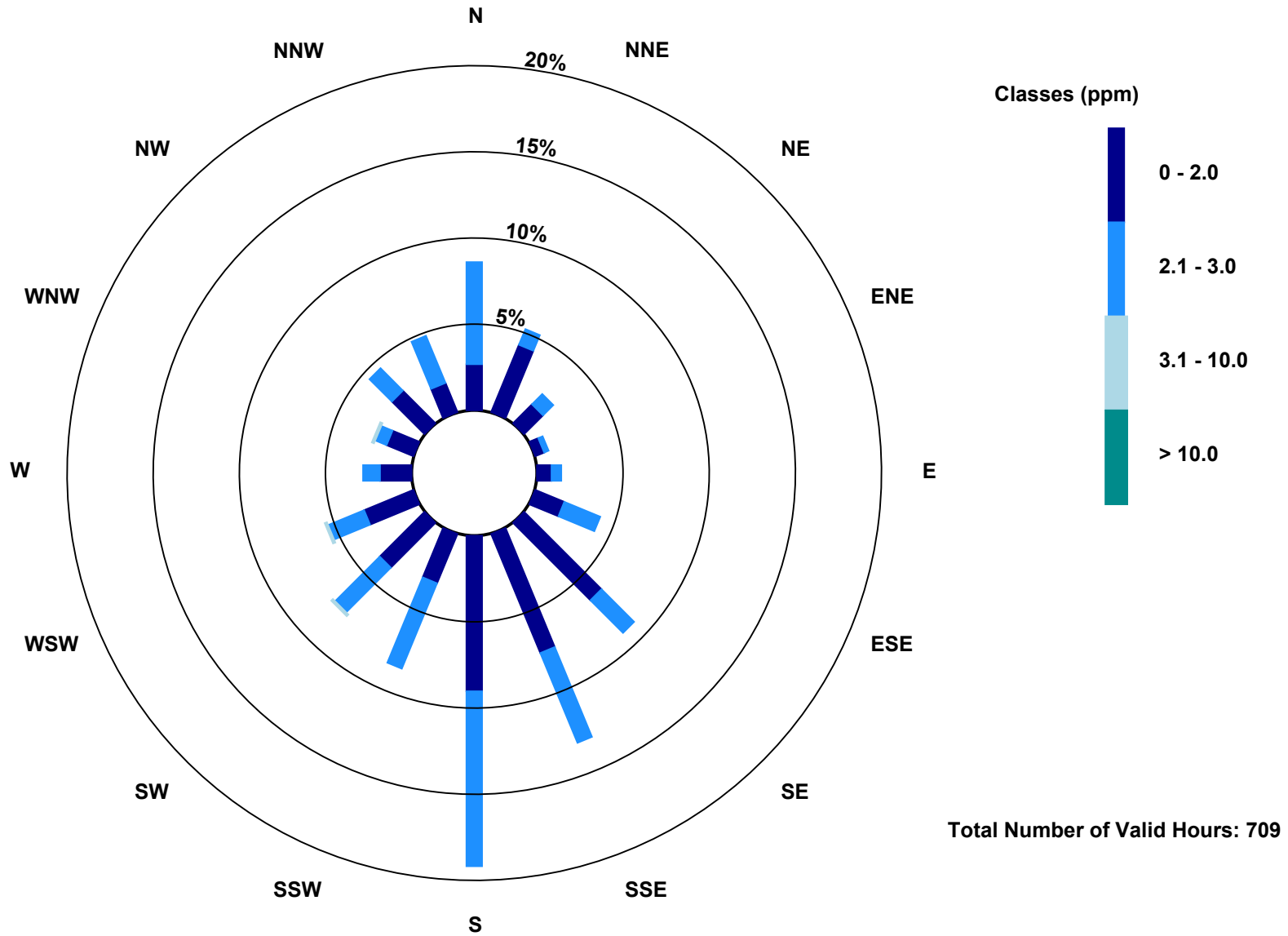
Total Number of Valid Hours: 709

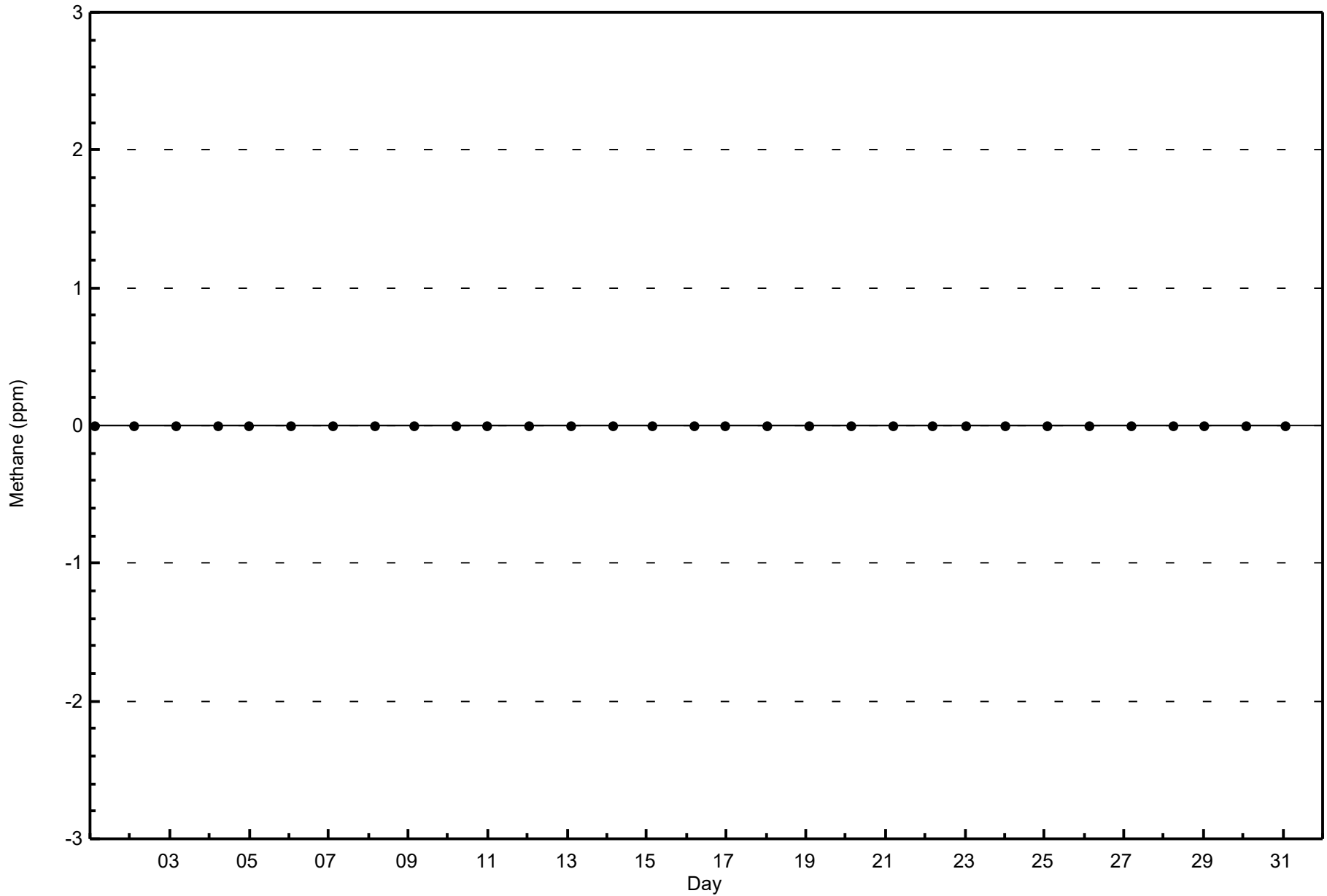
Total Number of Hours: 744

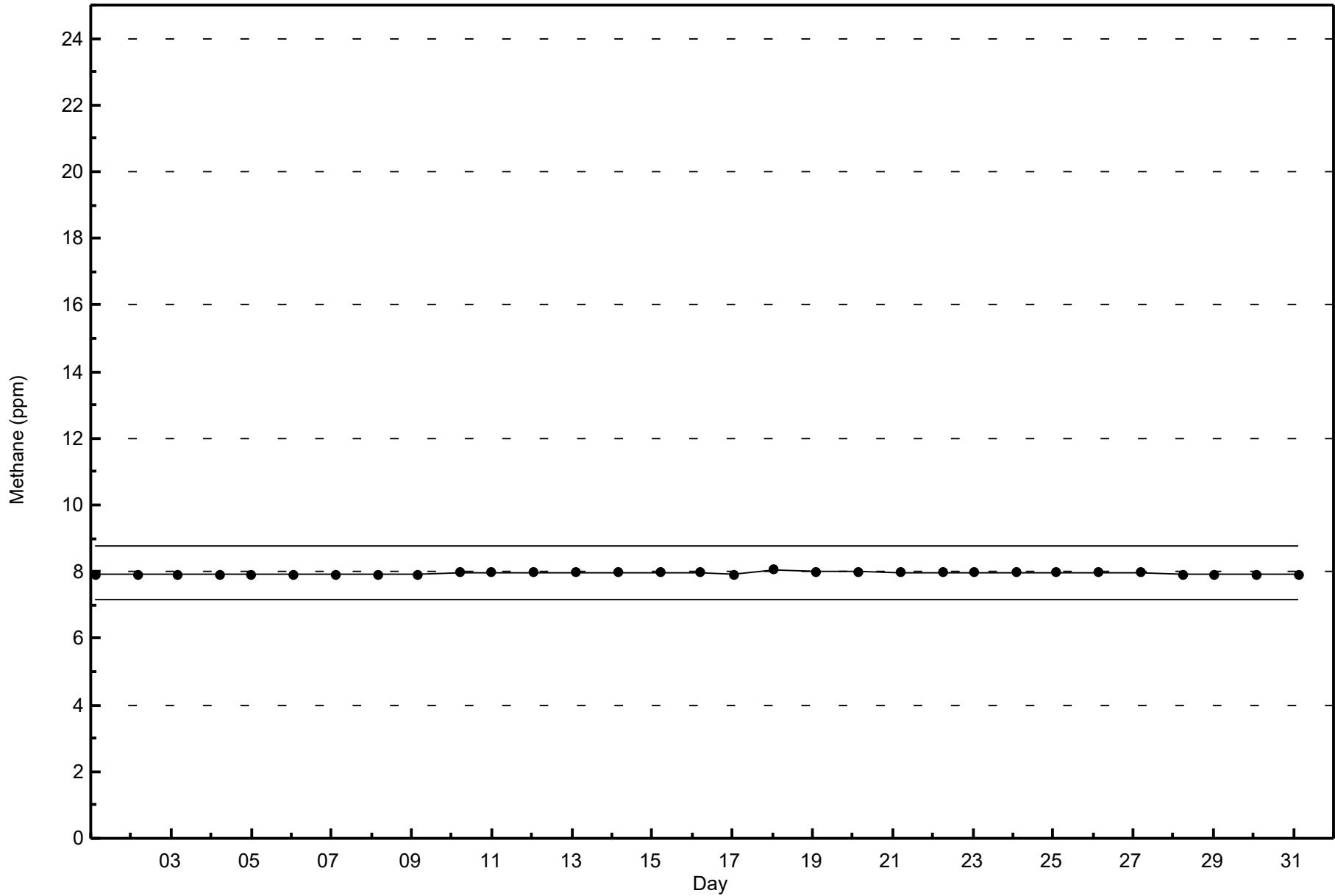


Wood Buffalo Environmental Association
Wind Rose May 2023

Methane (CH₄) - ppm
Fort McKay South









Wood Buffalo Environmental Association

Summary of Hour Averages

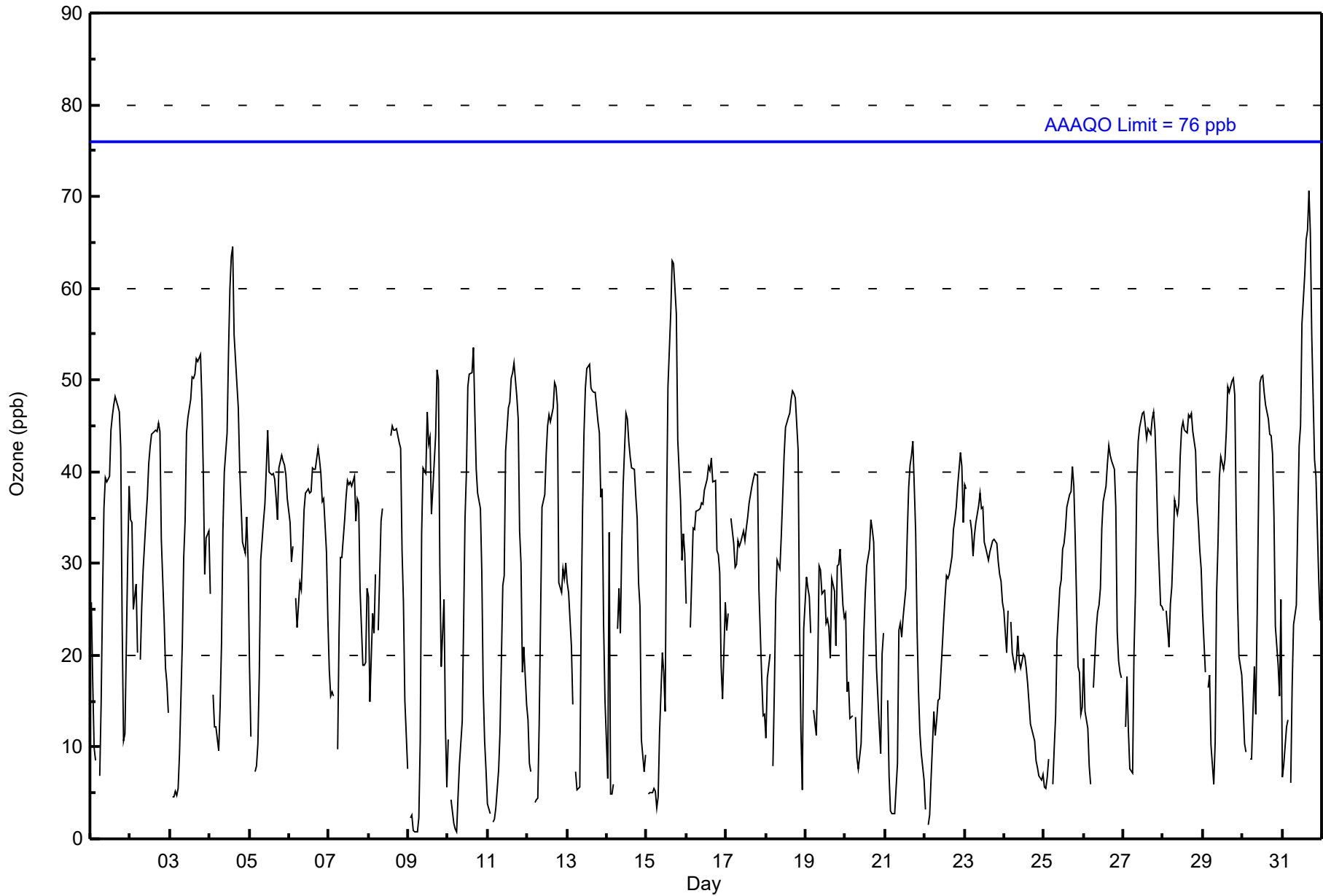
Ozone (O₃) - ppb

Fort McKay South - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 70.6 ppb on May 31 17:00	Maximum Daily Average: 36.6 ppb on May 28		Hours of Data:	709
Minimum Value: 0.7 ppb on May 9 06:00	Minimum Daily Average: 16.3 ppb on May 24		Hours of Missing Data:	35
Maximum Diurnal Average: 43.0 ppb at hour 16	Minimum Diurnal Average: 12.1 ppb at hour 6		Hours of Calibration:	35
Monthly Average: 28.94 ppb	Percentiles: P ₁ = 1.8 P ₁₀ = 7.8 Q ₁ = 17.7 Median = 30.2 Q ₃ = 40.0 P ₉₀ = 46.6 P ₉₉ = 62.6		Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	25.8	16.9	10.0	8.5	Z	6.9	14.7	26.4	36.1	39.3	38.9	39.6	44.5	46.1	47.3	48.2	47.2	46.5	42.5	23.7	10.7	11.4	30.7	38.4	30.4	48.2																							
2-May	34.7	34.4	25.0	27.8	20.3	Z	19.6	25.3	29.3	34.8	37.3	40.9	42.7	44.0	44.4	44.6	44.4	45.3	44.4	32.6	23.9	18.6	17.0	13.8	32.4	45.3																							
3-May	Z	4.5	4.6	5.1	4.7	5.5	9.3	21.4	30.7	34.7	44.3	45.9	48.0	50.3	50.2	50.6	52.3	52.1	52.8	47.8	39.8	28.8	32.8	33.6	32.6	52.8																							
4-May	26.7	Z	15.7	12.2	12.1	9.6	14.4	21.2	33.6	40.0	44.2	52.9	60.0	63.4	64.5	55.0	49.6	47.0	40.4	36.3	32.3	31.1	35.1	30.3	36.0	64.5																							
5-May	19.0	11.1	Z	7.4	8.0	10.4	18.1	30.3	34.7	36.4	40.3	44.5	40.0	39.7	39.8	39.1	37.2	34.8	40.4	41.8	41.1	40.7	39.7	37.1	31.8	44.5																							
6-May	34.5	30.2	31.9	Z	26.3	23.0	27.9	27.1	31.2	35.8	37.6	38.2	37.7	37.8	40.5	40.3	40.2	42.5	41.3	39.9	36.8	37.1	31.3	24.0	34.5	42.5																							
7-May	18.4	15.6	16.0	15.6	Z	9.7	22.4	30.6	30.6	34.7	37.2	39.0	38.5	38.9	38.4	39.5	34.6	37.1	36.5	27.1	19.0	19.0	19.3	27.2	28.1	39.5																							
8-May	26.4	14.9	24.5	22.4	28.8	Z	22.8	34.6	35.9	C	C	C	C	43.9	45.1	44.5	44.6	44.6	43.2	42.6	31.4	25.8	15.1	7.7	31.5	45.1																							
9-May	Z	2.3	2.6	0.9	0.7	0.7	2.3	10.6	33.2	40.4	39.8	46.6	43.1	43.7	35.4	38.1	43.9	51.2	50.1	29.9	18.7	26.0	12.2	5.7	25.1	51.2																							
10-May	10.8	Z	4.2	1.7	1.1	0.7	4.6	8.0	12.8	23.4	35.0	40.0	49.3	50.6	50.9	53.5	46.6	40.3	37.6	36.1	29.0	16.4	10.7	7.4	24.8	53.5																							
11-May	3.9	2.7	Z	1.8	2.1	3.4	7.5	11.6	19.6	27.7	28.7	42.2	46.9	47.7	50.2	50.8	51.9	48.2	45.8	33.5	30.0	18.2	21.0	14.6	26.5	51.9																							
12-May	13.0	8.2	7.3	Z	4.0	4.2	4.4	12.6	24.5	36.2	37.6	42.0	45.0	46.2	45.5	47.0	49.7	49.3	47.3	27.9	26.8	29.4	28.3	30.0	29.0	49.7																							
13-May	28.0	26.8	21.0	14.6	Z	7.3	5.4	5.7	24.3	36.0	44.3	49.1	51.3	51.7	49.1	48.9	48.6	48.7	45.4	44.2	37.2	38.1	23.5	15.1	33.2	51.7																							
14-May	6.5	33.3	4.8	4.9	6.0	Z	22.9	27.4	22.5	32.1	38.6	46.3	45.7	43.4	41.6	40.4	40.2	37.3	34.9	28.0	25.4	10.9	7.3	9.1	26.5	46.3																							
15-May	Z	4.9	5.1	5.0	5.4	5.3	3.3	4.6	11.6	20.2	18.1	13.8	35.3	49.3	57.3	63.0	62.7	60.0	57.2	43.5	36.8	30.4	33.2	31.1	28.6	63.0																							
16-May	25.6	Z	23.0	28.3	33.8	33.8	35.6	35.9	36.0	36.6	36.4	38.0	39.2	40.5	40.2	41.4	38.9	39.0	31.4	31.0	28.9	18.8	15.2	25.8	32.7	41.4																							
17-May	22.7	24.5	Z	34.9	32.2	29.6	29.8	32.4	31.9	32.4	33.5	32.5	33.8	35.0	36.6	38.4	39.2	39.7	39.6	39.6	27.2	17.5	13.4	13.6	30.9	39.7																							
18-May	10.9	17.6	20.2	Z	8.0	16.0	26.0	30.4	29.5	33.1	37.4	41.7	44.8	45.9	46.4	47.8	48.9	48.5	48.0	42.4	23.8	11.7	5.4	22.8	30.7	48.9																							
19-May	28.5	27.3	26.4	22.4	Z	14.0	11.3	18.4	29.7	29.3	26.6	27.1	23.5	23.9	23.0	19.6	28.4	27.0	21.1	29.8	29.9	31.6	25.5	24.1	24.7	31.6																							
20-May	24.5	16.1	17.1	13.2	13.4	Z	13.3	8.9	7.6	10.4	16.0	22.6	26.8	29.7	31.6	34.8	33.8	32.4	25.2	18.7	12.3	9.3	20.1	22.4	20.0	34.8																							
21-May	Z	15.1	6.9	3.0	2.7	2.7	2.7	8.2	22.7	23.5	22.0	24.1	27.4	33.2	38.2	40.7	41.8	43.3	33.4	22.9	16.1	11.6	9.3	6.3	19.9	43.3																							
22-May	3.2	Z	1.6	2.6	6.5	14.0	11.4	12.9	15.2	15.2	20.9	23.8	26.3	28.7	28.4	28.9	30.8	33.7	34.7	36.2	38.5	42.1	40.5	34.5	23.1	42.1																							
23-May	38.6	38.1	Z	34.8	33.6	30.8	33.1	34.5	36.2	37.6	35.9	36.2	32.4	31.7	30.4	31.3	31.9	32.4	32.7	32.2	30.2	28.9	28.1	25.8	32.9	38.6																							
24-May	24.9	20.3	24.9	Z	23.7	20.3	18.4	19.5	22.1	19.4	18.7	20.1	19.9	18.7	16.9	14.8	12.5	11.3	10.7	8.6	7.8	6.9	6.4	7.1	16.3	24.9																							
25-May	5.6	5.4	6.7	8.8	Z	6.0	10.0	13.4	21.7	27.3	28.3	31.6	32.2	33.7	36.1	37.5	37.9	40.6	38.5	32.6	18.8	18.2	13.6	14.3	22.6	40.6																							
26-May	19.6	13.9	12.0	7.9	5.9	Z	16.5	22.8	24.6	25.4	27.3	33.9	36.8	38.4	40.8	42.8	41.8	41.2	40.3	36.2	22.6	19.4	18.2	17.5	26.3	42.8																							
27-May	Z	12.2	17.7	11.7	7.7	7.2	20.3	26.6	38.7	43.3	44.8	46.4	46.6	45.2	43.7	44.7	44.1	45.7	46.6	44.5	39.7	33.4	25.4	25.3	33.1	46.6																							
28-May	24.9	Z	24.8	20.9	25.6	27.4	31.8	36.9	35.4	36.5	41.7	44.7	45.4	44.5	44.2	46.2	46.0	46.3	44.4	42.2	36.8	34.4	31.4	29.5	36.6	46.3																							
29-May	24.8	18.2	Z	16.5	17.8	10.2	6.0	10.5	26.7	32.1	39.4	41.6	40.3	41.4	44.6	49.3	48.7	49.9	50.2	48.4	35.5	26.0	19.8	17.9	31.1	50.2																							
30-May	14.3	10.3	9.4	Z	8.8	8.7	13.9	18.7	13.6	24.5	49.7	50.3	50.5	48.6	47.3	45.7	44.1	43.9	41.9	35.2	23.1	18.9	15.5	26.0	28.8	50.5																							
31-May	6.7	8.1	12.2	12.9	Z	6.1	16.6	23.3	25.4	34.7	42.9	45.0	56.2	61.5	65.3	66.3	70.6	66.1	54.9	41.3	39.5	33.8	28.2	23.8	36.6	70.6																							
																								20.1	16.7	14.4	13.3	13.6	12.1	16.0	21.0	26.7	31.1	34.8	38.0	40.3	41.9	42.4	43.0	43.0	42.8	40.4	34.7	28.1	24.0	21.7	21.3	Diurnal Average	
																								38.6	38.1	31.9	34.9	33.8	33.8	35.6	36.9	38.7	43.3	49.7	52.9	60.0	63.4	65.3	66.3	70.6	66.1	57.2	48.4	41.1	42.1	40.5	38.4	Diurnal Maximum	

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Fort McKay South - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	219	30.89	30.89
21 - 50	461	65.02	95.91
51 - 82	29	4.09	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Fort McKay South - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	17	2	5	1	3	3	2	17	33	27	35	31	15	7	9	12	219
21 - 50	46	32	13	5	7	23	57	71	90	31	17	12	7	9	21	20	461
51 - 82	2	3	0	0	0	3	2	4	12	1	0	0	1	1	0	0	29
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	65	37	18	6	10	29	61	92	135	59	52	43	23	17	30	32	709

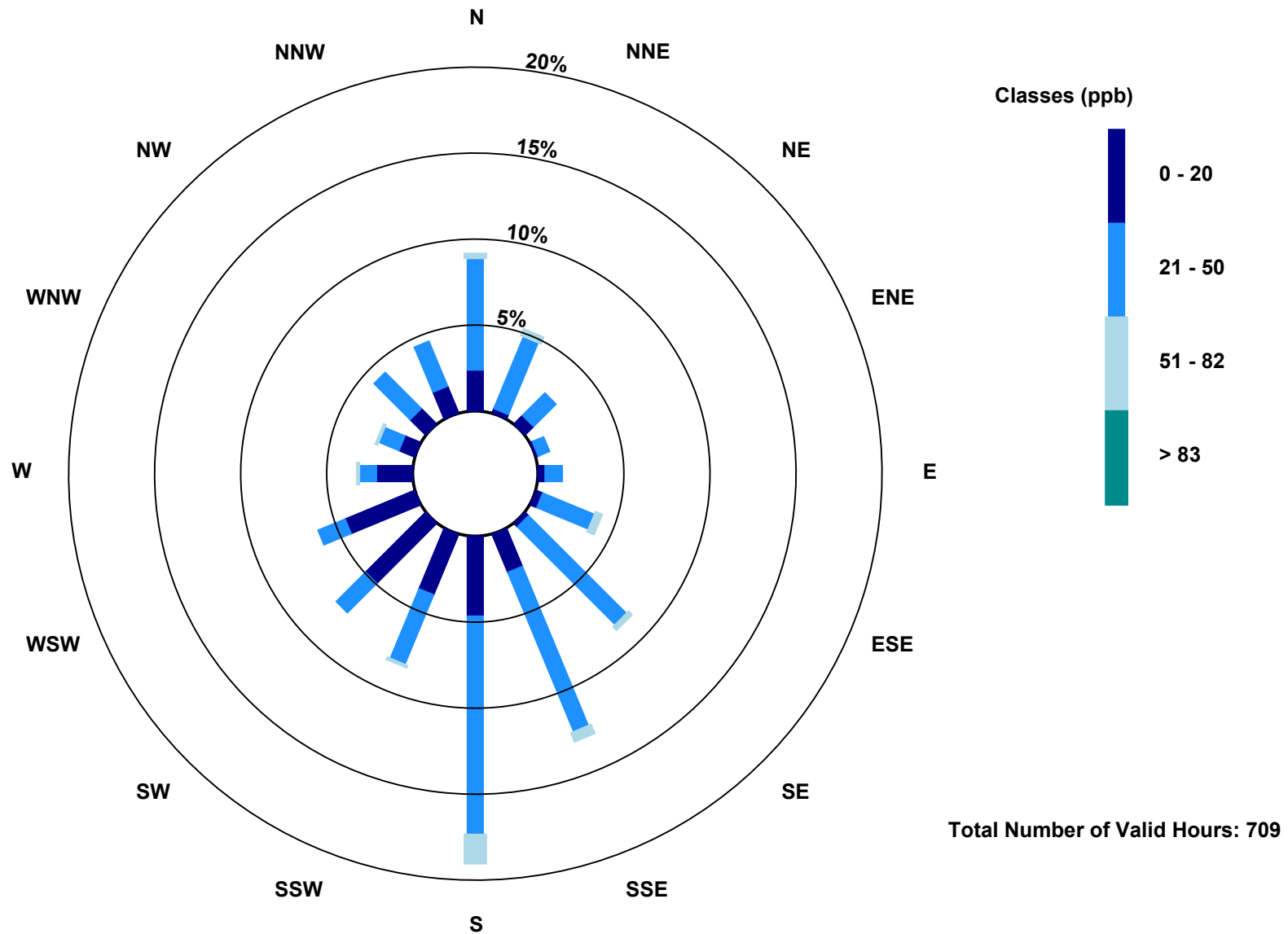
Total Number of Valid Hours: 709

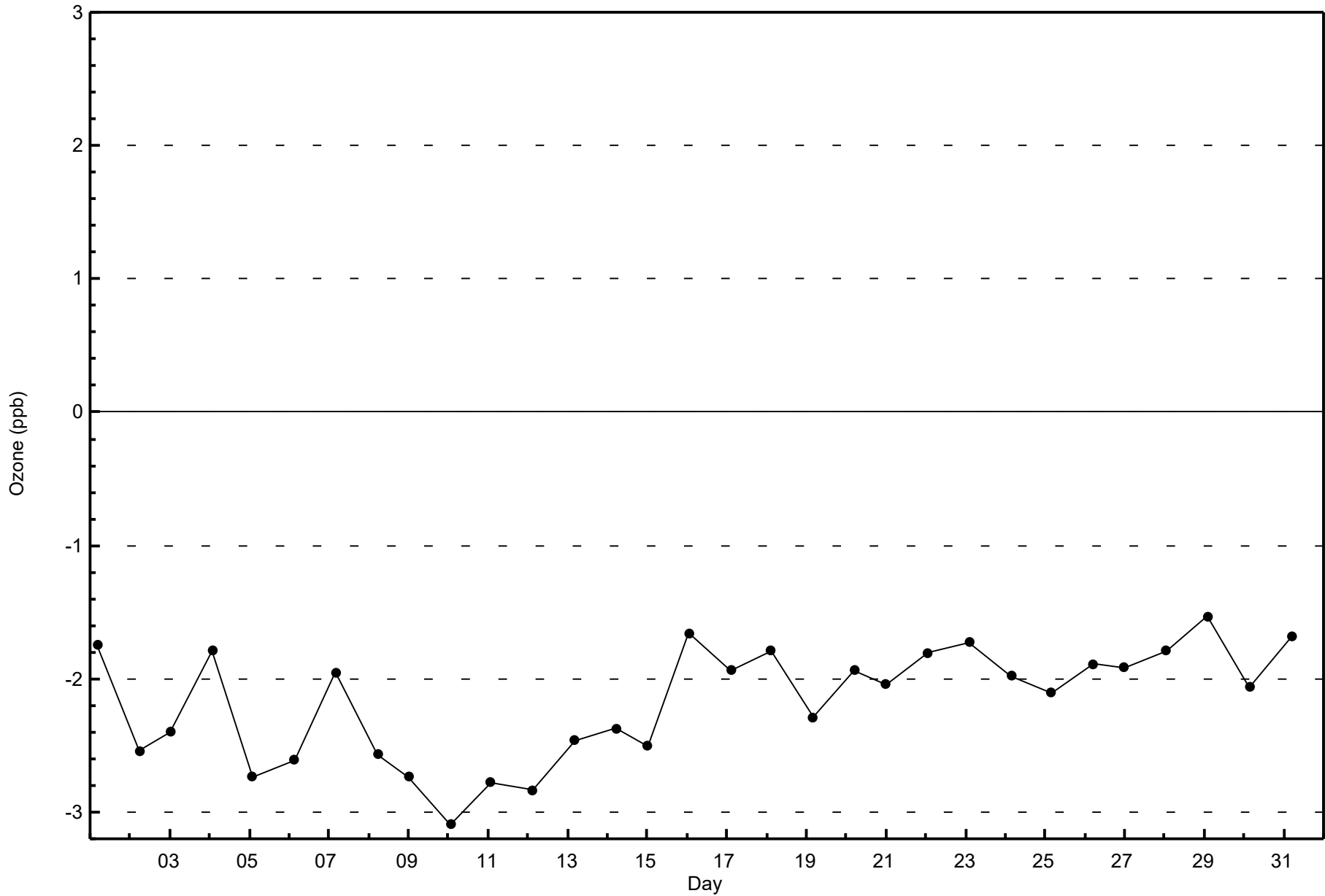
Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Ozone (O₃) - ppb
Fort McKay South

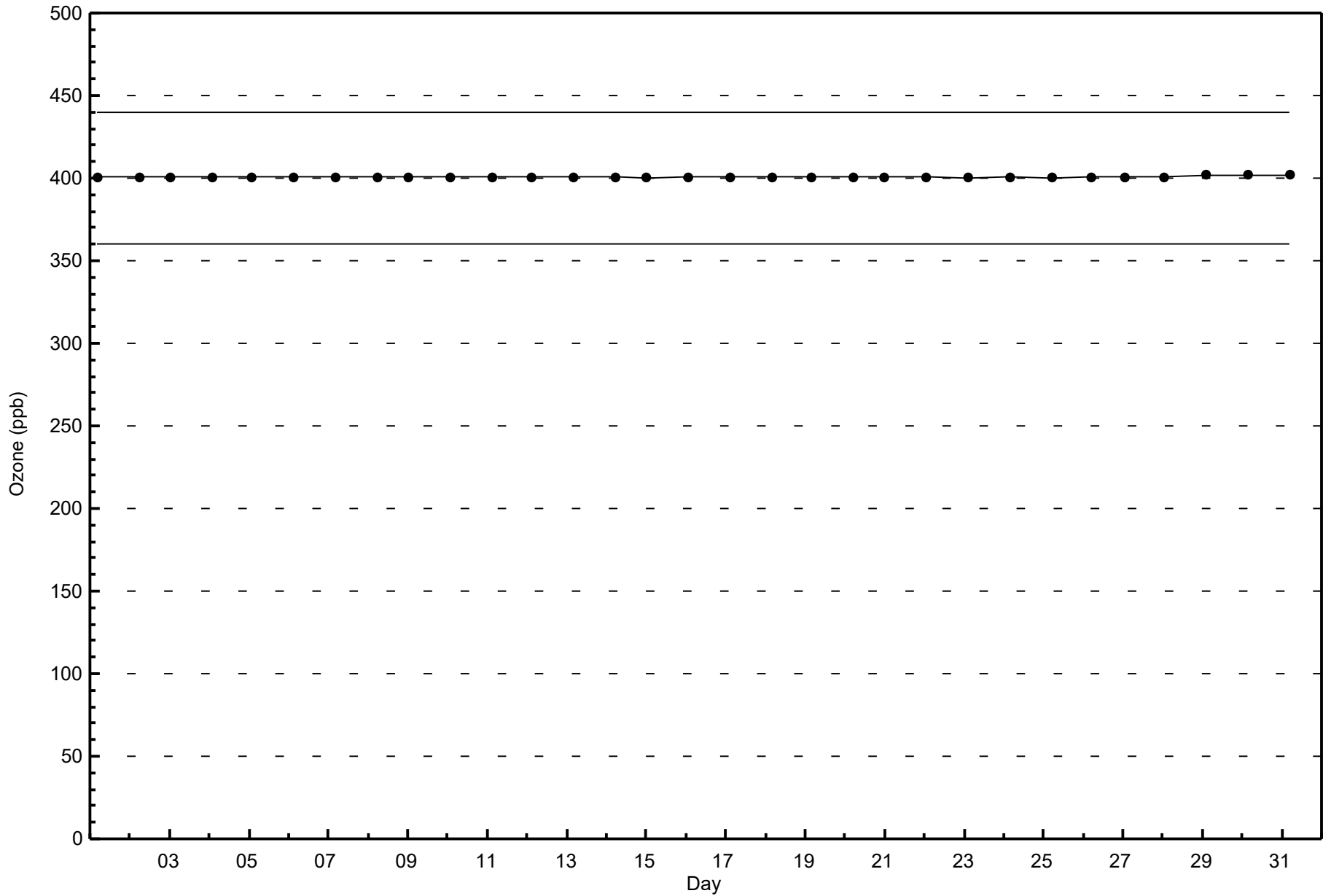






Wood Buffalo Environmental Association
Span Responses

Ozone (O₃) - ppb
Fort McKay South - May 2023





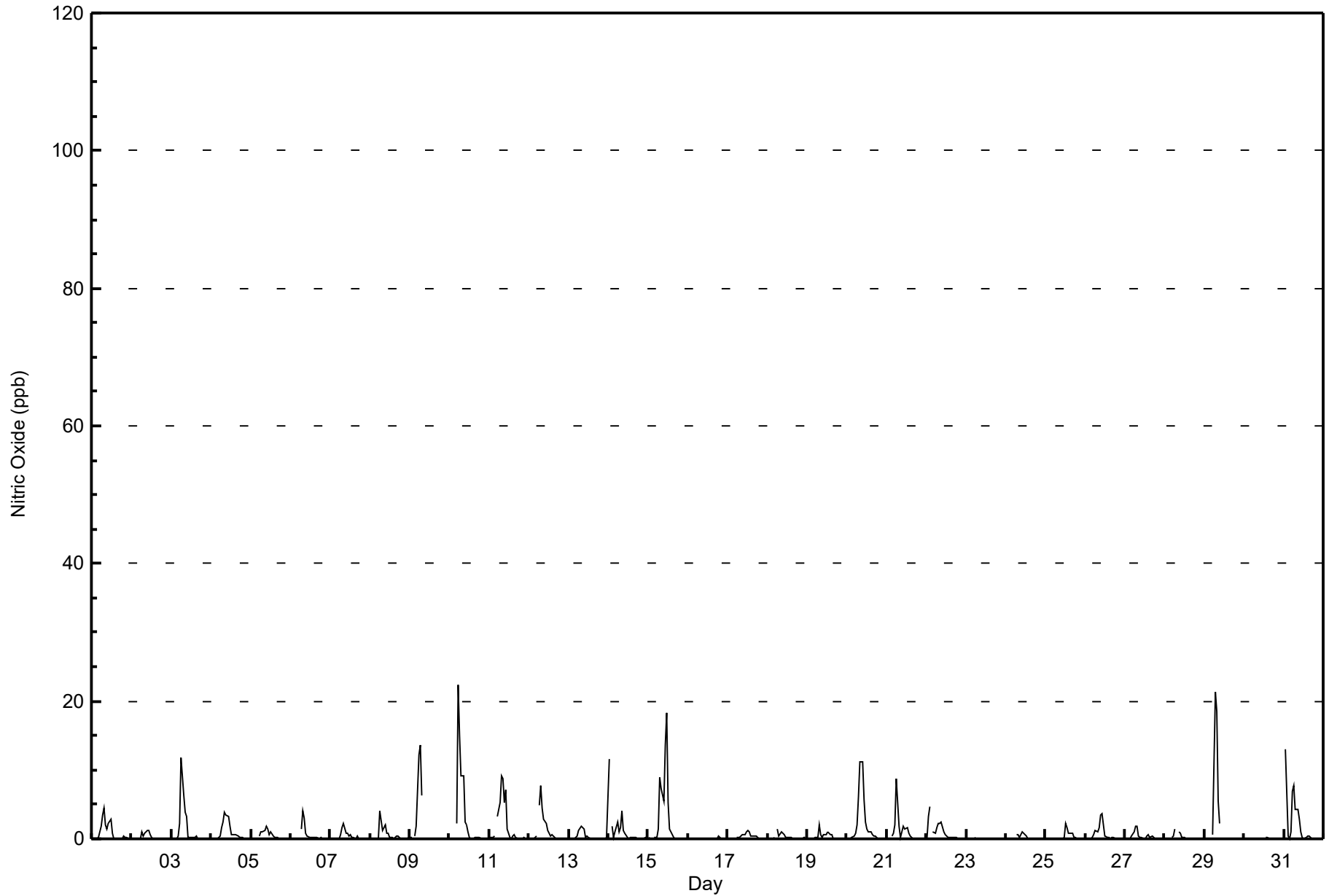
Maximum Value: 22.4 ppb on May 10 06:00																					Maximum Daily Average: 2.8 ppb on May 10					Hours in Service: 744	
Minimum Value: 0.0 ppb on May 2 03:00																					Minimum Daily Average: 0.0 ppb on May 23					Hours of Data: 680	
Maximum Diurnal Average: 3.9 ppb at hour 7																					Minimum Diurnal Average: 0.0 ppb at hour 21					Hours of Missing Data: 64	
Monthly Average: 0.92 ppb																					Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.6 P ₉₀ = 2.2 P ₉₉ = 13.2					Hours of Calibration: 44	
																										Percent Operational Time: 97.3	
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	Z	0.0	0.0	0.1	0.3	1.9	3.4	4.5	2.1	1.4	2.3	2.8	0.8	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.1	0.2	0.0	0.0	0.9	4.5	
2-May	0.0	Z	0.0	0.0	0.0	0.0	1.0	0.4	0.8	1.3	1.2	0.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.3	
3-May	0.0	0.0	Z	0.1	0.4	2.2	11.8	6.4	3.9	3.3	0.2	0.2	0.3	0.2	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	11.8		
4-May	0.0	0.0	0.0	Z	0.0	0.4	1.7	2.4	3.8	3.4	3.2	1.8	0.6	0.7	0.6	0.7	0.5	0.3	0.3	0.2	0.0	0.0	0.0	0.9	3.8		
5-May	0.0	0.0	0.1	0.1	Z	0.4	0.9	0.9	1.3	1.9	1.5	0.7	1.0	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.4	1.9		
6-May	0.0	0.0	0.0	0.0	0.0	Z	1.5	4.0	3.0	0.9	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.5	4.0		
7-May	Z	0.0	0.0	0.0	0.0	0.1	0.6	1.7	2.3	0.8	0.7	0.5	0.6	0.2	0.2	0.1	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.4	2.3		
8-May	0.0	Z	0.0	0.0	0.0	0.1	4.1	1.2	1.7	1.9	0.9	0.8	0.2	0.3	0.1	0.2	0.4	0.4	0.0	0.0	0.0	0.0	0.1	0.1	0.5	4.1	
9-May	0.1	0.2	Z	0.4	1.9	12.1	13.7	6.4	C	C	C	C	C	C	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	--	13.7	
10-May	0.0	0.0	0.0	Z	2.2	22.4	15.1	9.1	9.2	2.5	2.1	1.1	0.2	0.1	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	2.8	22.4		
11-May	0.2	0.2	0.3	0.4	Z	3.3	5.3	9.1	8.7	5.2	7.0	1.5	0.2	0.1	0.5	0.5	0.2	0.0	0.0	0.0	0.0	0.3	0.1	0.0	1.9	9.1	
12-May	0.0	0.0	0.0	0.0	0.4	Z	4.9	7.7	4.6	2.9	2.3	1.3	0.7	0.3	0.6	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	1.1	7.7		
13-May	Z	0.0	0.0	0.0	0.2	0.5	1.2	1.8	1.5	1.4	0.2	0.4	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.3	1.8		
14-May	11.6	Z	1.9	0.3	1.1	2.4	1.1	1.5	4.1	1.2	0.9	0.2	0.1	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.2	11.6		
15-May	0.0	0.2	Z	0.1	0.1	0.1	1.4	9.0	7.3	5.4	13.6	18.4	5.4	1.4	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	18.4		
16-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.2	0.1	0.1	0.1	0.0	0.0	0.5	
17-May	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.2	0.5	0.5	0.7	1.0	1.2	1.0	0.5	0.4	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.3	1.2		
18-May	0.0	0.0	0.0	0.0	0.3	Z	1.3	0.5	1.0	0.8	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.3	1.3	
19-May	Z	0.1	0.0	0.0	0.0	0.1	0.3	2.0	0.7	0.3	0.6	0.6	1.0	0.9	0.6	0.7	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.4	2.0		
20-May	0.0	Z	0.0	0.1	0.3	0.9	2.0	6.2	11.2	11.3	5.6	2.5	1.5	1.1	1.0	0.7	0.4	0.3	0.2	0.0	0.0	0.0	0.0	2.0	11.3		
21-May	0.0	0.0	Z	0.4	0.8	2.0	8.6	1.8	0.2	1.0	1.9	1.5	1.5	0.8	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.9	8.6		
22-May	0.2	3.2	4.6	Z	1.0	0.7	1.6	2.2	2.2	2.4	1.0	0.7	0.4	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.9	4.6		
23-May	0.0	0.0	0.0	0.0	Z	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.2	
24-May	0.0	0.0	0.0	0.0	0.0	Z	0.7	0.7	0.2	0.5	1.1	0.6	0.4	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	1.1		
25-May	Z	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.2	2.3	1.6	0.8	0.9	0.7	0.2	0.2	0.0	0.0	0.0	0.0	0.3	2.3		
26-May	0.0	Z	0.0	0.0	0.2	0.6	1.3	1.0	1.6	3.4	3.6	2.1	0.4	0.2	0.1	0.1	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.7	3.6		
27-May	0.0	0.0	Z	0.0	0.3	0.9	1.8	1.9	0.5	0.2	0.1	0.0	0.0	0.3	0.6	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.3	1.9		
28-May	0.0	0.0	0.0	Z	0.2	0.5	1.4	M	0.9	0.7	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.4		
29-May	0.0	0.0	0.0	0.0	Z	0.6	21.3	18.6	5.5	2.2	C	C	C	C	M	M	M	M	M	M	M	M	M	--	21.3		
30-May	M	M	M	M	M	M	M	M	M	C	C	C	C	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.1		
31-May	Z	13.0	0.3	0.1	1.1	7.0	7.7	4.2	4.2	2.9	1.0	0.3	0.1	0.2	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	1.9	13.0		
																								Diurnal Average			
																								Diurnal Maximum			
																								Diurnal Average			
																								Diurnal Maximum			
																								Diurnal Average			
																								Diurnal Maximum			

Z - zerospan C - Calibration M - Maintenance



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Fort McKay South - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Fort McKay South - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	678	99.71	99.71
21 - 40	2	0.29	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 680

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Nitric Oxide (NO) - ppb
Fort McKay South - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	64	37	17	6	9	27	63	91	128	58	45	30	21	18	33	31	678
21 - 40	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	64	37	17	6	9	27	63	92	128	58	46	30	21	18	33	31	680

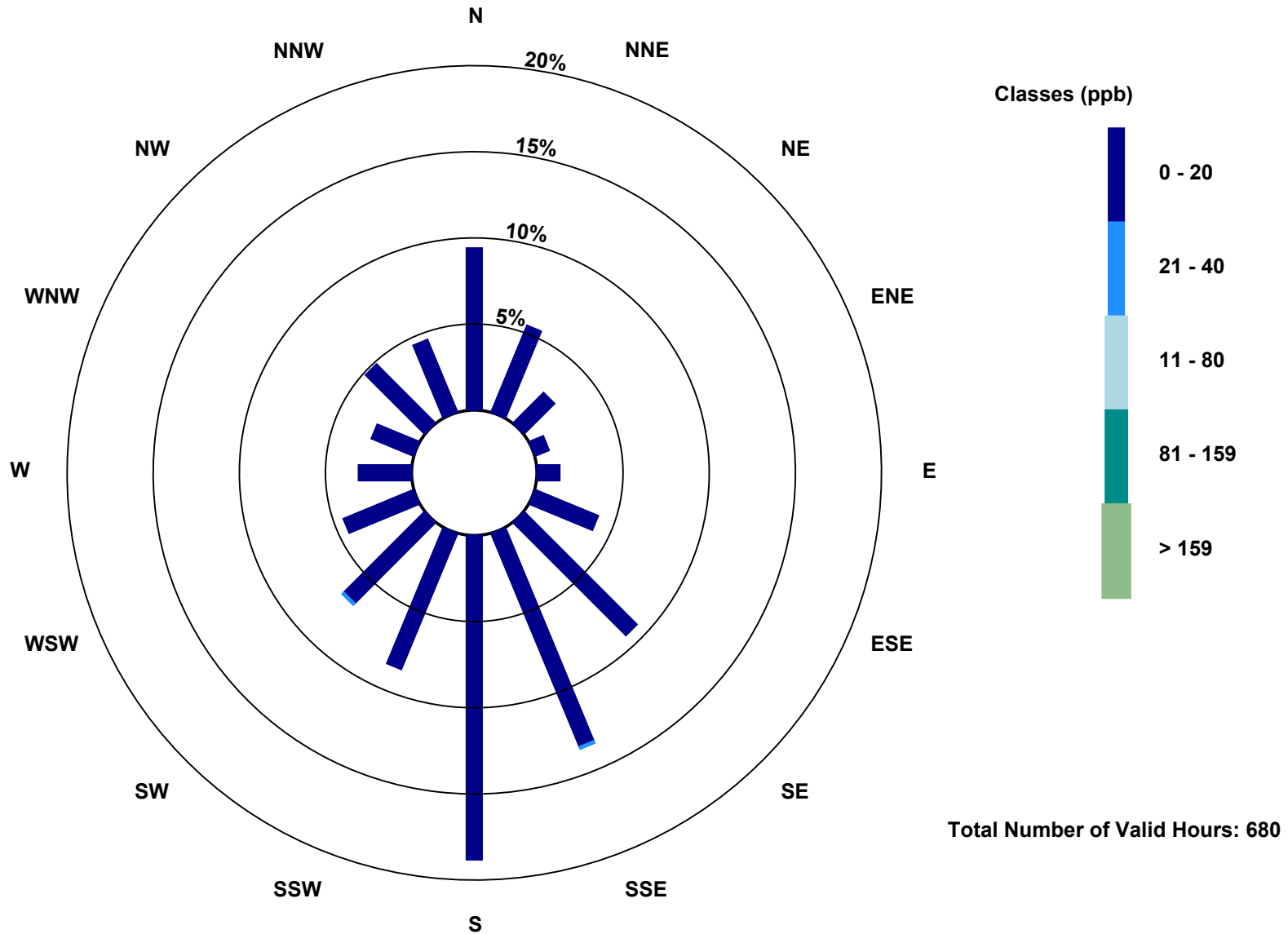
Total Number of Valid Hours: 680

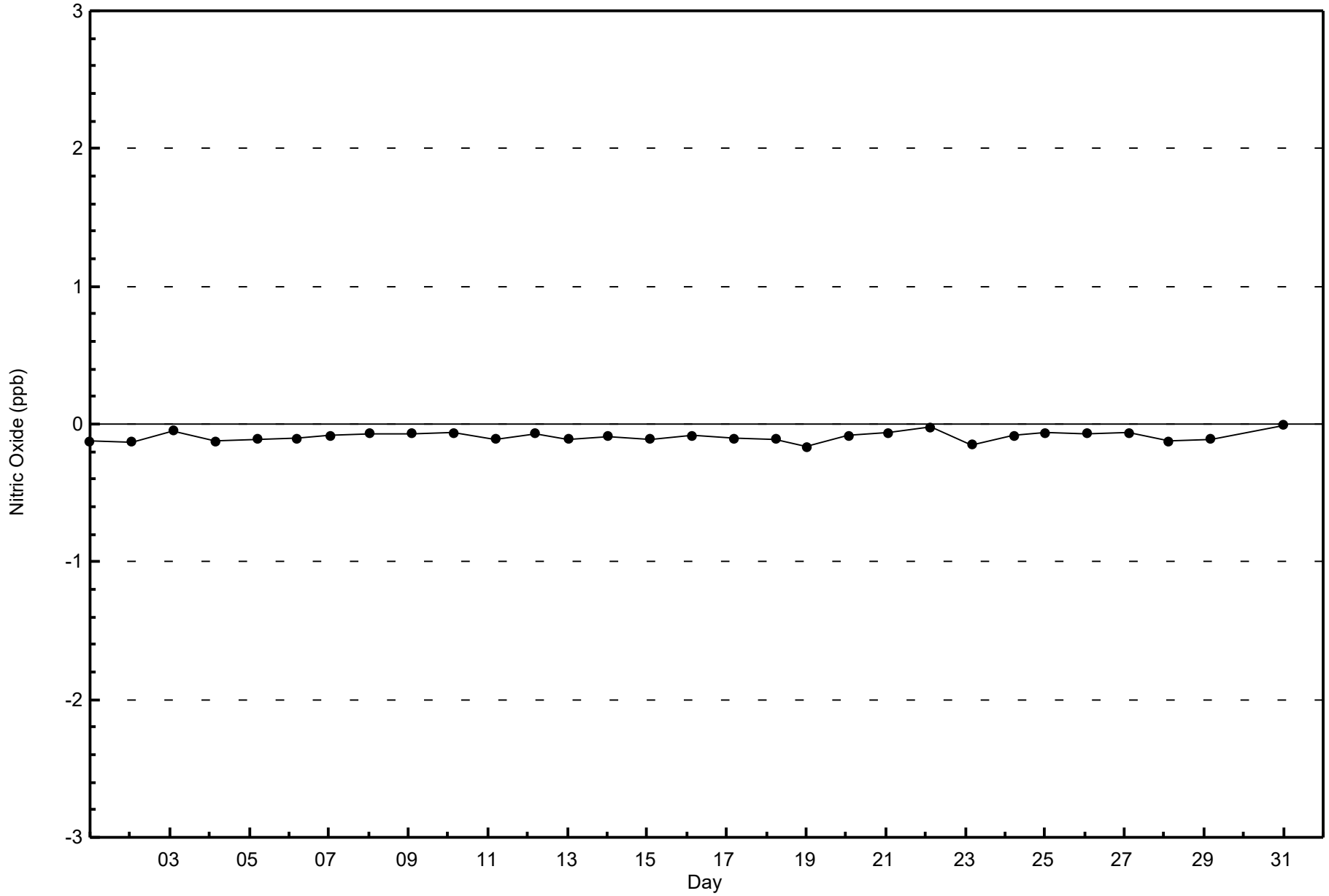
Total Number of Hours: 744

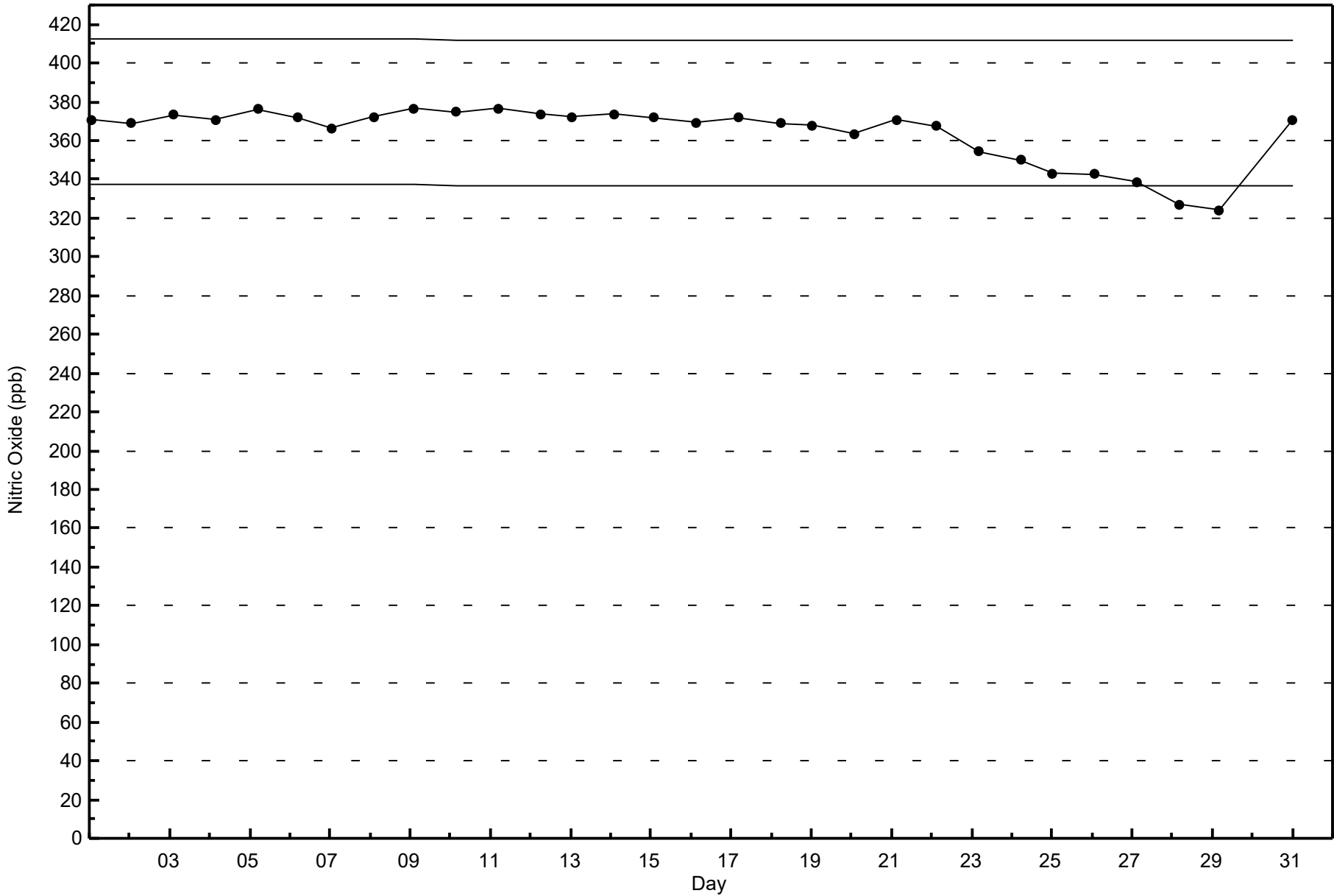


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Fort McKay South









Wood Buffalo Environmental Association
Summary of Hour Averages

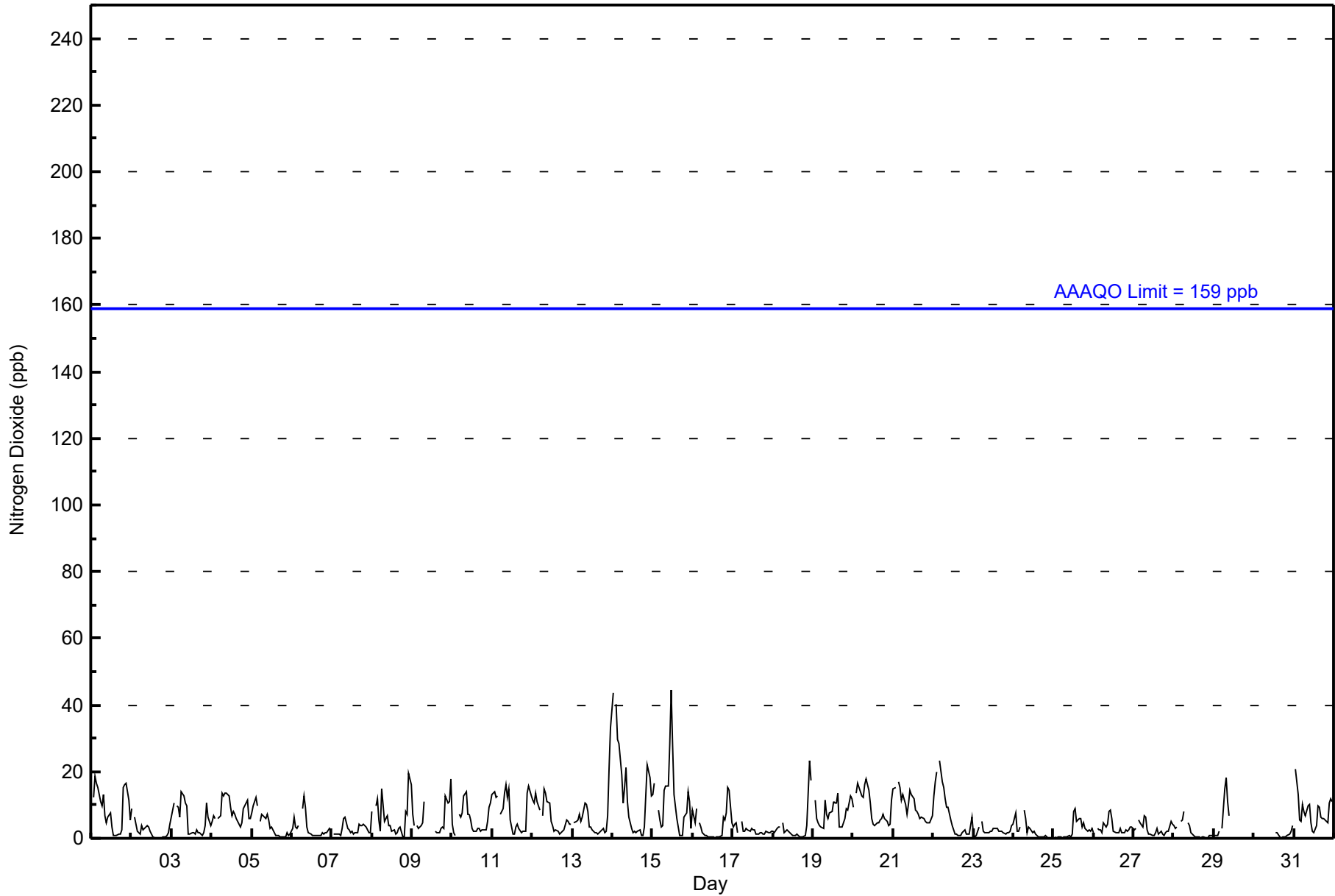
Nitrogen Dioxide (NO₂) - ppb
Fort McKay South - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		744																			
Maximum Value: 44.4 ppb on May 15 12:00		Maximum Daily Average: 13.4 ppb on May 14		Minimum Value: 0.1 ppb on May 28 17:00		Minimum Daily Average: 2.1 ppb on May 28		Hours of Data: 680																			
Maximum Diurnal Average: 9.0 ppb at hour 8		Minimum Diurnal Average: 2.1 ppb at hour 18		Hours of Missing Data: 64		Hours of Calibration: 44		Percent Operational Time: 97.3																			
Monthly Average: 5.67 ppb		Percentiles: P ₁ = 0.2 P ₁₀ = 0.8 Q ₁ = 1.7 Median = 3.6 Q ₃ = 8.0 P ₉₀ = 13.3 P ₉₉ = 28.2																									
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	Z	12.3	18.5	16.7	15.1	10.9	9.6	13.3	6.7	4.8	6.5	7.8	3.6	0.9	0.8	0.9	1.3	1.2	2.6	15.4	15.9	16.5	11.5	5.7	8.6	18.5	
2-May	9.1	Z	6.2	2.3	1.7	1.2	3.7	2.5	2.9	3.7	3.6	2.1	1.1	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.8	1.9	4.4	2.1	9.1	
3-May	6.4	10.8	Z	9.6	9.3	6.3	13.8	12.6	10.8	9.9	1.4	1.1	1.6	1.5	1.4	2.4	1.6	1.5	1.0	1.8	3.7	10.8	6.3	3.8	5.6	13.8	
4-May	4.9	6.7	6.0	Z	6.1	6.9	13.6	12.9	13.5	13.6	12.9	9.5	6.6	8.2	7.2	5.9	4.2	3.3	4.8	8.7	9.6	11.4	6.1	5.8	8.2	13.6	
5-May	7.5	9.7	12.1	9.6	Z	5.2	7.2	6.7	5.9	7.0	5.7	3.1	3.5	1.7	0.9	0.9	0.7	0.6	0.3	0.4	0.4	1.5	1.0	1.2	4.0	12.1	
6-May	2.9	6.3	3.3	3.0	3.9	Z	8.8	12.5	9.2	3.4	1.5	1.1	1.0	0.9	0.8	0.8	0.8	0.8	1.6	1.3	1.9	1.7	2.8	2.0	3.1	12.5	
7-May	Z	1.2	1.1	1.1	1.2	1.0	2.9	5.8	6.4	2.8	2.4	1.9	2.3	1.2	1.9	1.7	4.4	4.0	4.0	4.1	3.4	2.6	1.8	1.6	2.6	6.4	
8-May	8.1	Z	9.7	12.0	5.3	2.2	15.0	5.2	6.1	6.7	4.0	4.0	2.0	2.5	1.3	1.5	2.9	3.5	0.6	0.5	8.0	7.4	19.7	16.2	6.3	19.7	
9-May	7.1	3.7	Z	4.0	3.0	3.9	4.8	11.1	C	C	C	C	C	C	2.3	1.6	1.9	2.9	3.6	3.0	12.8	10.7	11.0	18.0	--	18.0	
10-May	4.3	1.7	0.8	Z	7.1	6.5	7.7	12.7	13.8	7.3	7.3	5.3	3.0	2.2	2.2	3.1	2.8	2.1	2.6	2.5	2.4	5.1	9.4	10.5	5.3	13.8	
11-May	13.3	14.1	12.2	12.6	Z	7.2	8.9	13.5	16.1	12.3	15.0	5.6	1.4	1.1	3.3	4.3	2.8	1.5	2.3	2.0	2.3	13.5	15.5	12.7	8.4	16.1	
12-May	11.6	10.6	13.4	11.1	8.5	Z	6.8	14.8	13.6	11.0	10.5	5.1	3.7	2.1	2.7	2.2	1.4	1.9	2.1	2.7	5.7	4.9	4.2	4.1	6.7	14.8	
13-May	Z	4.6	5.0	5.4	7.1	5.0	6.3	10.4	10.3	7.9	3.3	3.4	2.5	1.9	1.8	1.3	1.7	2.3	2.9	1.7	2.2	6.9	20.8	32.9	6.4	32.9	
14-May	43.7	Z	40.1	29.5	28.5	19.2	10.7	15.1	21.0	11.0	6.5	2.9	1.7	2.1	1.6	2.0	2.5	0.8	0.7	3.4	12.5	21.9	18.3	12.9	13.4	43.7	
15-May	13.2	16.6	Z	8.4	5.7	3.6	3.9	14.6	15.5	15.5	28.6	44.4	28.1	13.2	6.0	3.4	1.0	0.7	0.9	6.4	7.7	13.9	11.0	2.8	11.5	44.4	
16-May	8.4	4.8	9.1	Z	4.6	3.3	1.6	0.8	0.7	0.5	0.6	0.6	0.3	0.2	0.4	0.5	0.6	0.7	6.5	5.6	7.6	15.2	14.6	4.6	4.0	15.2	
17-May	3.3	4.3	4.7	1.9	Z	5.0	2.2	2.3	3.0	2.5	2.0	2.8	2.7	2.4	1.4	1.4	1.6	1.6	1.2	1.3	2.0	1.8	1.9	2.0	2.4	5.0	
18-May	2.1	1.8	3.0	3.5	3.4	Z	4.6	1.8	2.4	2.1	1.9	1.2	0.9	1.0	1.3	0.8	0.6	0.6	0.5	0.7	3.7	13.4	23.4	17.2	4.0	23.4	
19-May	Z	11.3	5.8	4.5	4.0	3.6	3.1	11.6	7.1	6.0	7.7	8.0	11.1	10.4	10.4	13.7	3.2	3.3	4.7	6.1	9.0	8.5	12.9	11.9	7.7	13.7	
20-May	9.2	Z	13.7	16.4	13.9	12.8	12.4	16.2	17.6	14.6	10.8	5.8	4.2	4.0	4.8	4.5	5.5	6.1	7.1	6.0	5.2	4.0	4.3	11.6	9.2	17.6	
21-May	15.0	15.3	Z	17.0	15.4	11.5	13.3	10.3	7.3	10.3	14.5	13.0	11.8	8.5	8.2	7.3	5.9	6.5	5.8	5.2	4.7	4.6	4.8	6.6	9.7	17.0	
22-May	12.5	17.1	19.9	Z	23.2	17.0	15.2	12.0	9.3	9.5	5.4	3.8	2.5	1.3	1.1	1.0	1.0	1.7	2.1	2.7	1.1	1.1	4.0	6.4	7.4	23.2	
23-May	1.2	0.4	0.7	3.2	Z	5.0	2.3	1.7	1.8	1.9	2.1	2.1	2.8	3.0	3.1	2.2	2.1	2.1	1.7	1.4	1.7	1.7	2.0	4.0	2.2	5.0	
24-May	4.3	7.7	2.2	2.1	3.6	Z	8.4	5.8	1.9	3.4	2.8	1.7	2.0	1.3	0.7	0.5	0.5	0.5	0.4	0.7	0.6	0.2	0.2	0.2	2.2	8.4	
25-May	Z	0.3	0.2	0.3	0.3	0.2	0.4	0.3	0.5	0.7	0.5	1.2	8.2	8.8	5.2	6.1	6.0	3.6	4.5	2.8	2.2	2.7	2.3	2.8	2.6	8.8	
26-May	1.9	Z	3.1	2.7	2.6	1.7	4.8	3.6	4.3	8.0	8.4	6.0	2.2	1.9	1.5	1.5	3.1	1.8	1.8	2.7	2.1	2.5	3.2	3.4	3.3	8.4	
27-May	2.5	2.8	Z	5.6	4.5	3.3	6.7	6.4	2.6	1.4	1.2	0.7	0.8	1.7	3.0	1.1	2.2	1.2	0.9	1.5	2.3	2.0	5.1	4.1	2.8	6.7	
28-May	3.9	3.0	3.4	Z	5.0	5.3	7.9	M	4.7	3.7	1.9	1.1	1.0	0.3	0.6	0.3	0.1	0.4	0.3	0.2	0.2	0.7	0.9	1.0	2.1	7.9	
29-May	1.0	1.0	1.0	2.3	Z	3.0	14.9	18.3	10.9	6.8	C	C	C	C	M	M	M	M	M	M	M	M	M	M	M	--	18.3
30-May	M	M	M	M	M	M	M	M	M	C	C	C	C	1.9	1.8	0.5	0.2	0.3	0.6	0.4	0.8	1.3	2.3	3.9	--	3.9	
31-May	Z	20.9	13.1	5.5	5.2	10.0	8.1	6.8	9.9	10.1	4.5	2.0	1.5	3.9	9.9	9.4	6.2	5.9	5.9	5.1	4.5	10.4	11.8	11.2	7.9	20.9	
																								Diurnal Average			
																								Diurnal Maximum			
8.2 7.6 8.3 7.6 7.5 6.2 7.7 9.0 8.1 6.8 6.2 5.3 4.1 3.1 2.9 2.8 2.3 2.1 2.5 3.2 4.6 6.7 7.8 7.5																											
43.7 20.9 40.1 29.5 28.5 19.2 15.2 18.3 21.0 15.5 28.6 44.4 28.1 13.2 10.4 13.7 6.2 6.5 7.1 15.4 15.9 21.9 23.4 32.9																											
Z - zerospan C - Calibration M - Maintenance																											
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																											



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Fort McKay South - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort McKay South - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	666	97.94	97.94
21 - 40	12	1.76	99.71
41 - 80	2	0.29	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 680

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort McKay South - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	63	37	17	6	8	26	62	92	126	55	44	28	21	18	33	30	666
21 - 40	1	0	0	0	0	1	1	0	2	3	1	2	0	0	0	1	12
11 - 80	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	2
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	64	37	17	6	9	27	63	92	128	58	46	30	21	18	33	31	680

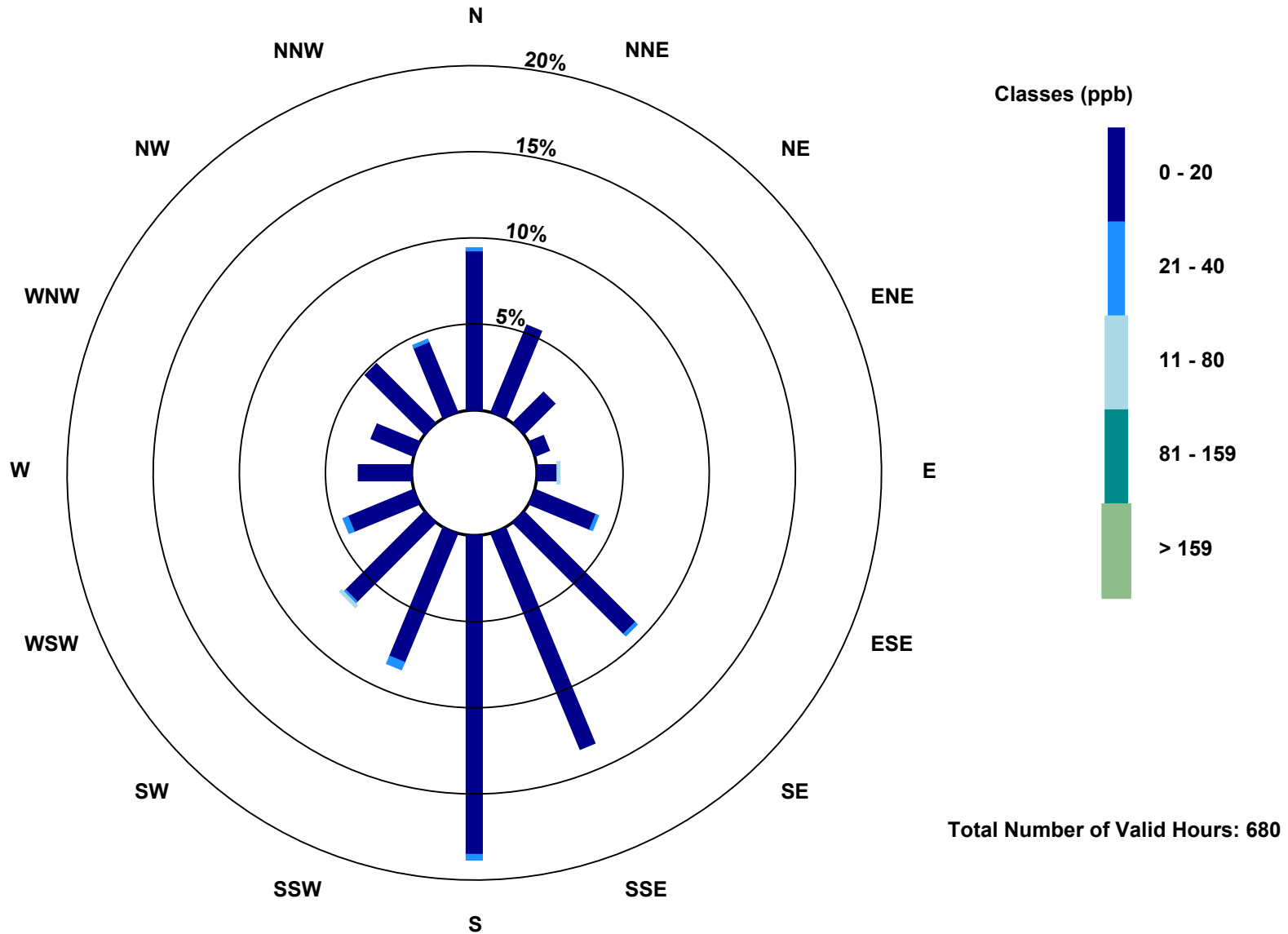
Total Number of Valid Hours: 680

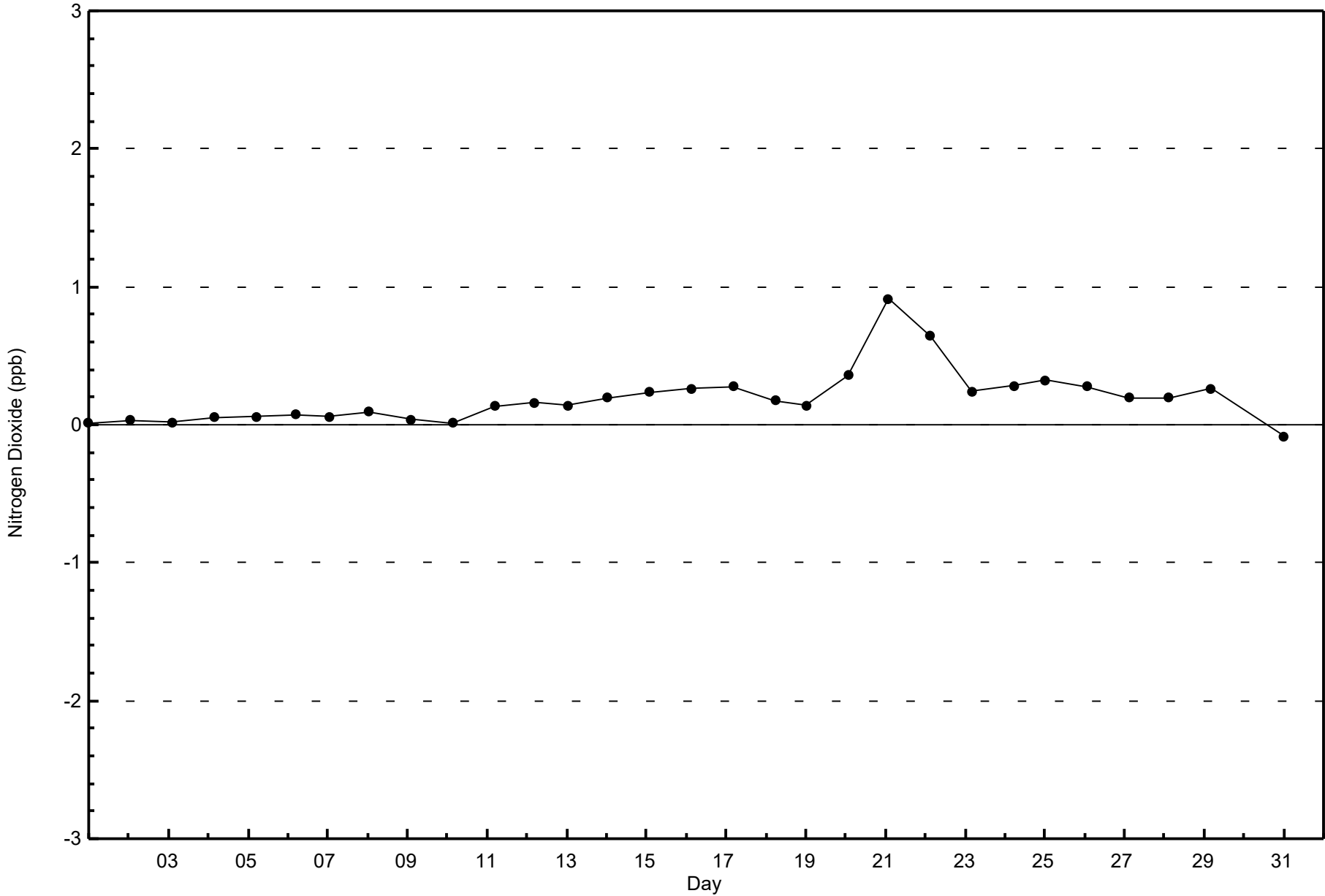
Total Number of Hours: 744

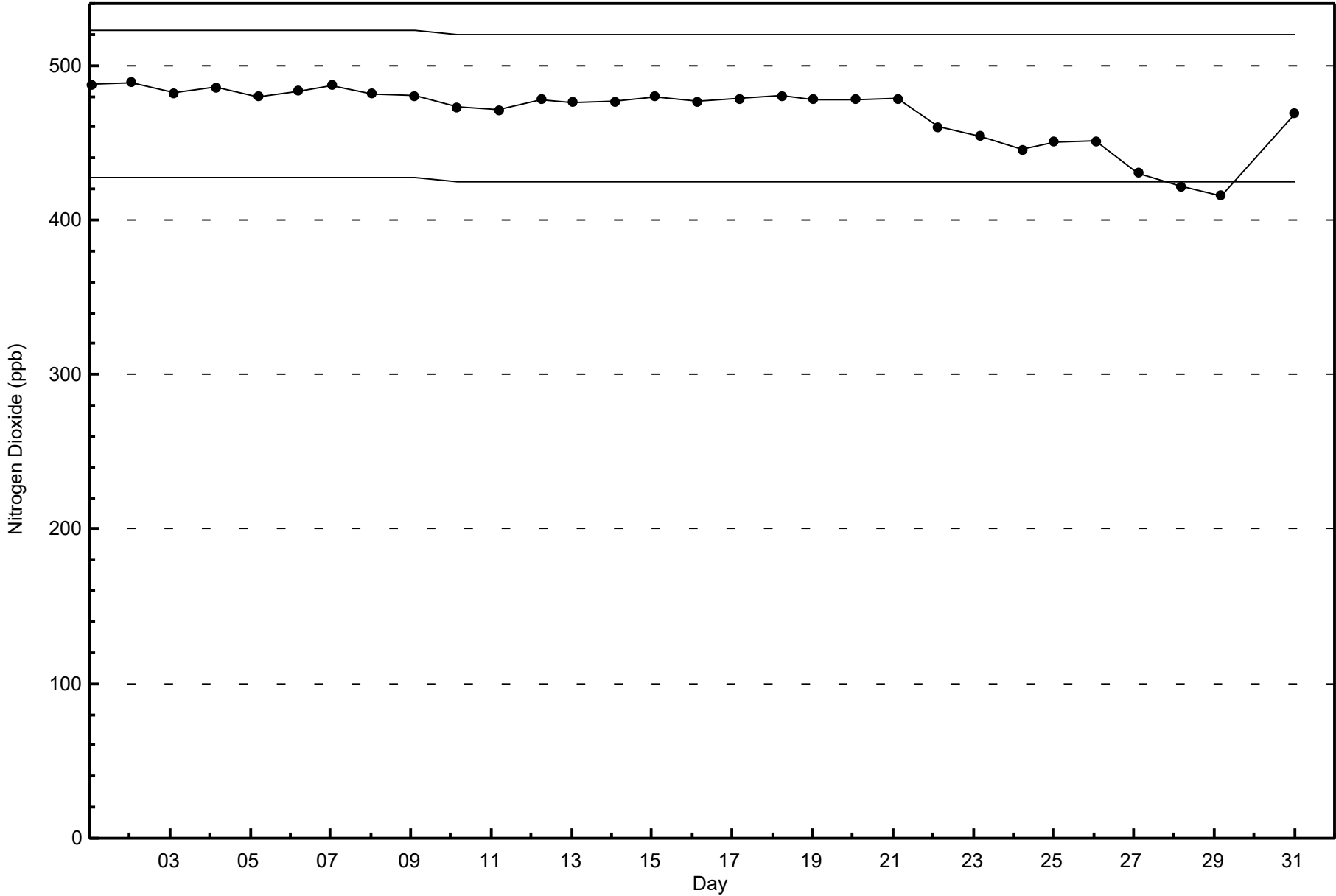


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Fort McKay South









Wood Buffalo Environmental Association
Summary of Hour Averages

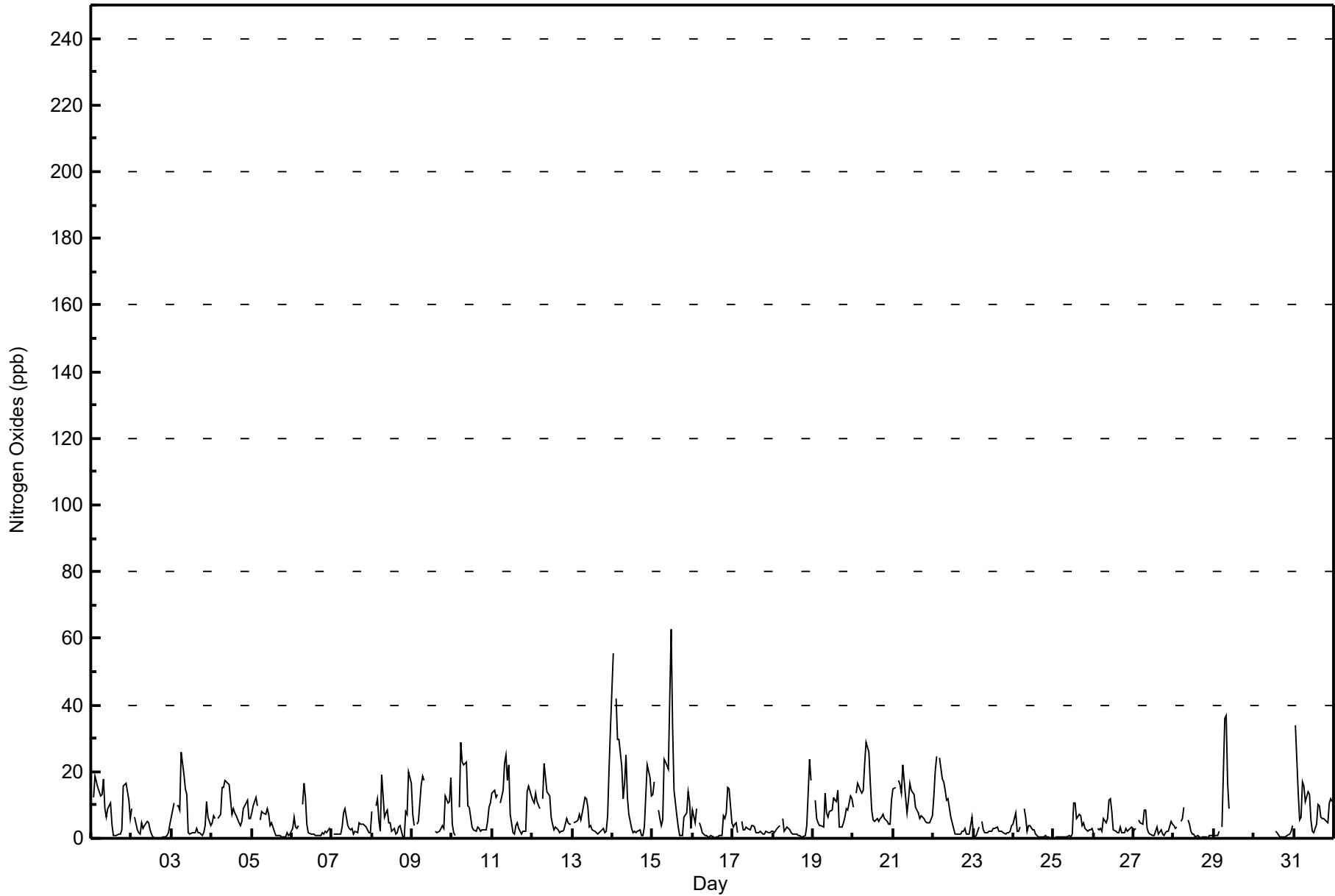
Nitrogen Oxides (NO_x) - ppb
Fort McKay South - May 2023

Maximum Value: 62.8 ppb on May 15 12:00		Maximum Daily Average: 14.6 ppb on May 14		Hours in Service: 744																							
Minimum Value: 0.1 ppb on May 28 17:00		Minimum Daily Average: 2.2 ppb on May 23		Hours of Data: 680																							
Maximum Diurnal Average: 12.7 ppb at hour 8		Minimum Diurnal Average: 2.2 ppb at hour 8		Hours of Missing Data: 64																							
Monthly Average: 6.59 ppb		Percentiles: P ₁ = 0.2 P ₁₀ = 0.8 Q ₁ = 1.8 Median = 3.9 Q ₃ = 9.2 P ₉₀ = 15.8 P ₉₉ = 33.6		Hours of Calibration: 44																							
				Percent Operational Time: 97.3																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	Z	12.3	18.5	16.8	15.4	12.8	13.0	17.8	8.8	6.2	8.8	10.6	4.4	1.0	0.9	1.0	1.4	1.3	2.7	15.9	16.0	16.7	11.5	5.7	9.5	18.5	
2-May	9.1	Z	6.2	2.3	1.7	1.2	4.7	2.9	3.7	5.0	4.8	2.6	1.3	0.4	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.8	1.9	4.4	2.4	9.1	
3-May	6.4	10.8	Z	9.7	9.7	8.5	25.6	19.0	14.7	13.2	1.6	1.3	1.9	1.7	1.6	2.8	1.7	1.5	1.0	1.8	3.7	10.8	6.3	3.8	6.9	25.6	
4-May	4.9	6.7	6.0	Z	6.1	7.3	15.3	15.3	17.3	17.0	16.1	11.3	7.2	8.9	7.8	6.6	4.7	3.6	5.1	8.9	9.6	11.4	6.1	5.8	9.1	17.3	
5-May	7.5	9.7	12.2	9.7	Z	5.6	8.1	7.6	7.2	8.9	7.2	3.8	4.5	2.0	1.0	1.0	0.8	0.7	0.3	0.4	0.4	1.5	1.0	1.2	4.4	12.2	
6-May	2.9	6.3	3.3	3.0	3.9	Z	10.3	16.5	12.2	4.3	1.8	1.3	1.2	1.1	1.0	0.9	0.9	0.9	1.7	1.3	1.9	1.7	2.8	2.0	3.6	16.5	
7-May	Z	1.2	1.1	1.1	1.2	1.1	3.5	7.5	8.7	3.6	3.1	2.4	2.9	1.4	2.1	1.8	4.8	4.1	4.1	4.1	3.4	2.6	1.8	1.6	3.0	8.7	
8-May	8.1	Z	9.7	12.0	5.3	2.3	19.1	6.4	7.8	8.6	4.9	4.8	2.2	2.8	1.4	1.7	3.3	3.9	0.6	0.5	8.0	7.4	19.8	16.3	6.8	19.8	
9-May	7.2	3.9	Z	4.4	4.9	16.0	18.5	17.5	C	C	C	C	C	C	2.3	1.6	2.0	3.0	3.6	3.0	12.8	10.7	11.0	18.1	--	18.5	
10-May	4.3	1.7	0.8	Z	9.3	28.9	22.8	21.8	23.0	9.8	9.4	6.4	3.2	2.3	2.2	3.2	3.0	2.2	2.7	2.5	2.4	5.1	9.4	10.5	8.1	28.9	
11-May	13.5	14.3	12.5	13.0	Z	10.5	14.2	22.6	24.8	17.5	22.0	7.1	1.6	1.2	3.8	4.8	3.0	1.5	2.3	2.0	2.3	13.8	15.6	12.7	10.3	24.8	
12-May	11.6	10.6	13.4	11.1	8.9	Z	11.7	22.5	18.2	13.9	12.8	6.4	4.4	2.4	3.3	2.5	1.5	2.0	2.1	2.7	5.7	4.9	4.2	4.1	7.9	22.5	
13-May	Z	4.6	5.0	5.4	7.3	5.5	7.5	12.2	11.8	9.3	3.5	3.8	2.6	2.0	1.9	1.4	1.8	2.3	2.9	1.7	2.2	6.9	20.8	33.2	6.8	33.2	
14-May	55.3	Z	42.0	29.8	29.6	21.6	11.8	16.6	25.1	12.2	7.4	3.1	1.8	2.3	1.8	2.2	2.7	0.8	0.7	3.4	12.5	21.9	18.4	12.9	14.6	55.3	
15-May	13.2	16.8	Z	8.5	5.8	3.7	5.3	23.6	22.8	20.9	42.2	62.8	33.5	14.6	6.6	3.6	1.0	0.7	0.9	6.4	7.7	13.9	11.0	2.8	14.3	62.8	
16-May	8.4	4.8	9.1	Z	4.6	3.3	1.6	0.8	0.7	0.5	0.6	0.6	0.3	0.2	0.4	0.5	0.6	0.8	7.0	5.8	7.7	15.3	14.7	4.6	4.1	15.3	
17-May	3.3	4.3	4.7	1.9	Z	5.1	2.3	2.5	3.5	3.0	2.7	3.8	3.9	3.4	1.9	1.8	2.0	1.9	1.4	1.3	2.0	1.8	1.9	2.0	2.7	5.1	
18-May	2.1	1.8	3.0	3.5	3.7	Z	5.9	2.3	3.4	2.9	2.4	1.5	1.1	1.1	1.4	0.9	0.7	0.6	0.5	0.7	3.8	13.5	23.6	17.3	4.2	23.6	
19-May	Z	11.4	5.8	4.5	4.0	3.7	3.4	13.6	7.8	6.3	8.3	8.6	12.1	11.3	11.0	14.4	3.3	3.4	4.8	6.2	9.0	8.5	12.9	11.9	8.1	14.4	
20-May	9.2	Z	13.7	16.5	14.2	13.7	14.4	22.4	28.8	25.9	16.4	8.3	5.7	5.1	5.8	5.2	5.9	6.4	7.3	6.0	5.2	4.0	4.3	11.6	11.1	28.8	
21-May	15.0	15.3	Z	17.4	16.2	13.5	21.9	12.1	7.5	11.3	16.4	14.5	13.3	9.3	8.6	7.5	6.0	6.6	5.8	5.2	4.7	4.6	4.8	6.7	10.6	21.9	
22-May	12.7	20.3	24.5	Z	24.2	17.7	16.8	14.2	11.5	11.9	6.4	4.5	2.9	1.4	1.3	1.2	1.2	1.9	2.3	2.8	1.1	1.1	4.0	6.4	8.4	24.5	
23-May	1.2	0.4	0.7	3.2	Z	5.2	2.4	1.7	1.8	1.9	2.1	2.1	2.8	3.0	3.2	2.2	2.2	2.2	1.8	1.4	1.7	1.7	2.0	4.0	2.2	5.2	
24-May	4.3	7.7	2.2	2.1	3.6	Z	9.1	6.5	2.1	3.9	3.9	2.3	2.4	1.4	0.7	0.5	0.6	0.5	0.4	0.7	0.6	0.2	0.2	0.2	2.4	9.1	
25-May	Z	0.3	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.8	0.5	1.4	10.5	10.4	6.0	7.0	6.7	3.8	4.7	2.8	2.2	2.7	2.3	2.8	2.9	10.5	
26-May	1.9	Z	3.1	2.7	2.8	2.3	6.1	4.6	5.9	11.4	12.0	8.1	2.6	2.1	1.6	1.6	3.4	1.9	1.9	2.8	2.1	2.5	3.2	3.4	3.9	12.0	
27-May	2.5	2.8	Z	5.6	4.8	4.2	8.5	8.3	3.1	1.6	1.3	0.7	0.8	2.0	3.6	1.3	2.5	1.3	0.9	1.5	2.3	2.0	5.1	4.1	3.1	8.5	
28-May	3.9	3.0	3.4	Z	5.2	5.8	9.3	M	5.6	4.4	2.2	1.3	1.2	0.4	0.7	0.3	0.1	0.4	0.3	0.2	0.2	0.7	0.9	1.0	2.3	9.3	
29-May	1.0	1.0	1.0	2.3	Z	3.6	36.2	36.9	16.4	9.0	C	C	C	C	M	M	M	M	M	M	M	M	M	M	M	--	36.9
30-May	M	M	M	M	M	M	M	M	M	C	C	C	C	2.0	1.9	0.5	0.2	0.3	0.6	0.4	0.8	1.3	2.3	3.9	--	3.9	
31-May	Z	33.9	13.4	5.6	6.3	17.0	15.8	11.0	14.1	13.0	5.5	2.3	1.6	4.1	10.2	9.7	6.4	6.0	6.0	5.1	4.5	10.4	11.8	11.2	9.8	33.9	
																								Diurnal Average			
																								Diurnal Maximum			
																								8.7 8.2 8.6 7.7 8.0 8.5 11.5 12.7 11.0 8.9 8.1 6.7 4.8 3.5 3.2 3.0 2.5 2.2 2.5 3.3 4.6 6.7 7.9 7.5			
																								55.3 33.9 42.0 29.8 29.6 28.9 36.2 36.9 28.8 25.9 42.2 62.8 33.5 14.6 11.0 14.4 6.7 6.6 7.3 15.9 16.0 21.9 23.6 33.2			
Z - zerospan C - Calibration M - Maintenance																											



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Fort McKay South - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Fort McKay South - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	646	95.00	95.00
21 - 40	30	4.41	99.41
41 - 80	4	0.59	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 680

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Fort McKay South - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	59	37	13	5	7	23	62	88	126	55	42	28	21	18	33	29	646
21 - 40	5	0	4	1	1	4	0	4	1	3	3	2	0	0	0	2	30
11 - 80	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	0	4
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	64	37	17	6	9	27	63	92	128	58	46	30	21	18	33	31	680

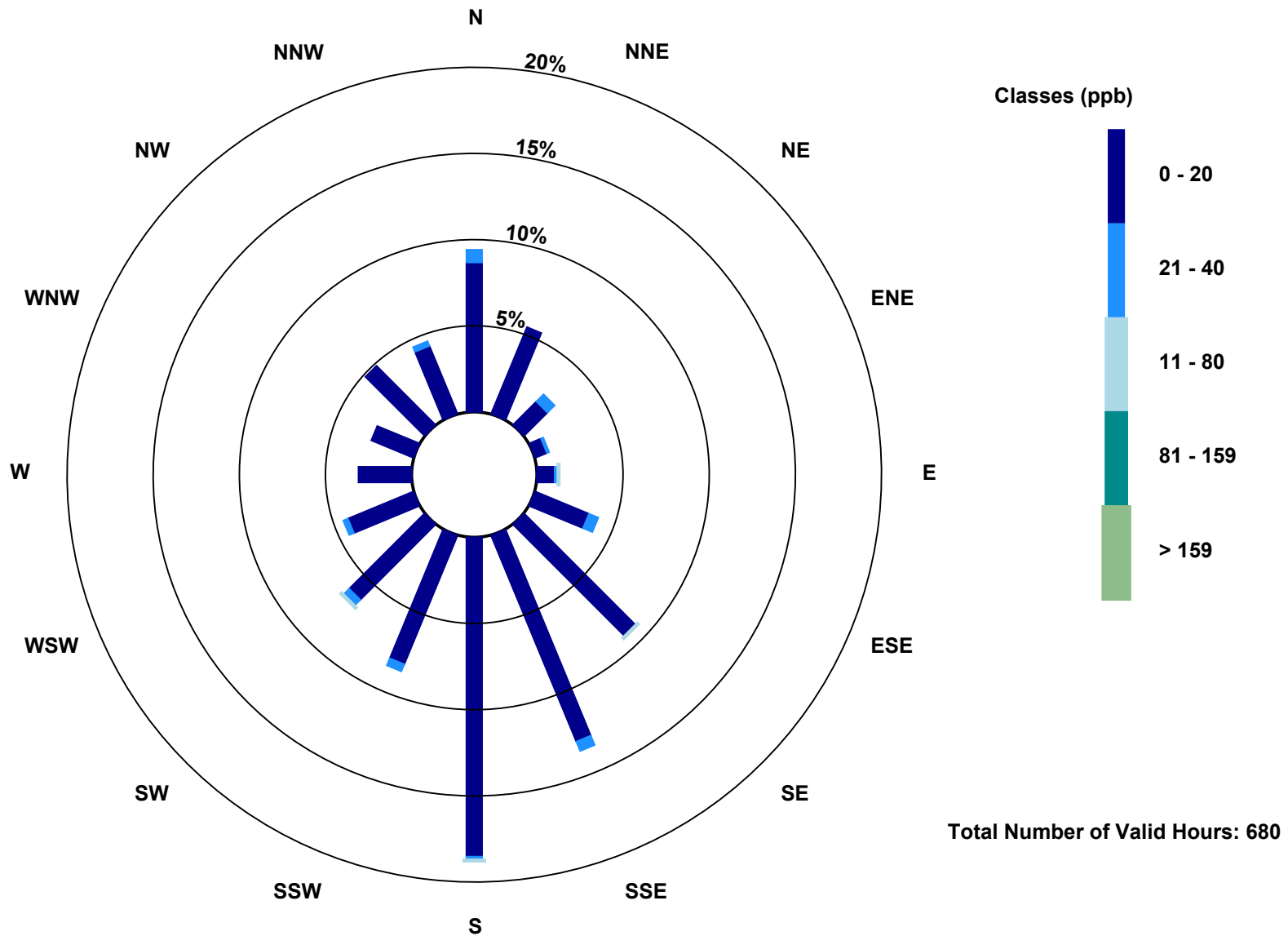
Total Number of Valid Hours: 680

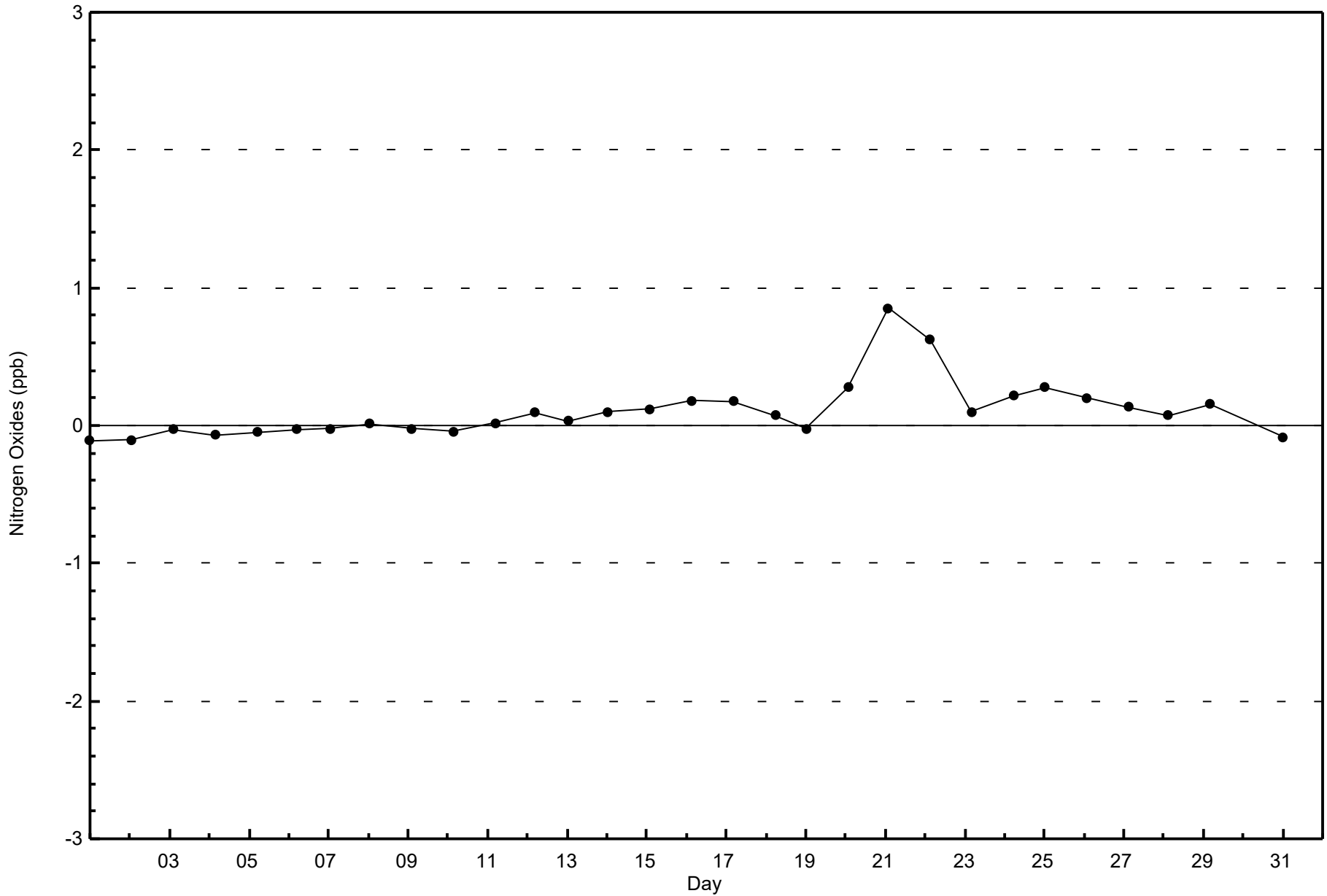
Total Number of Hours: 744

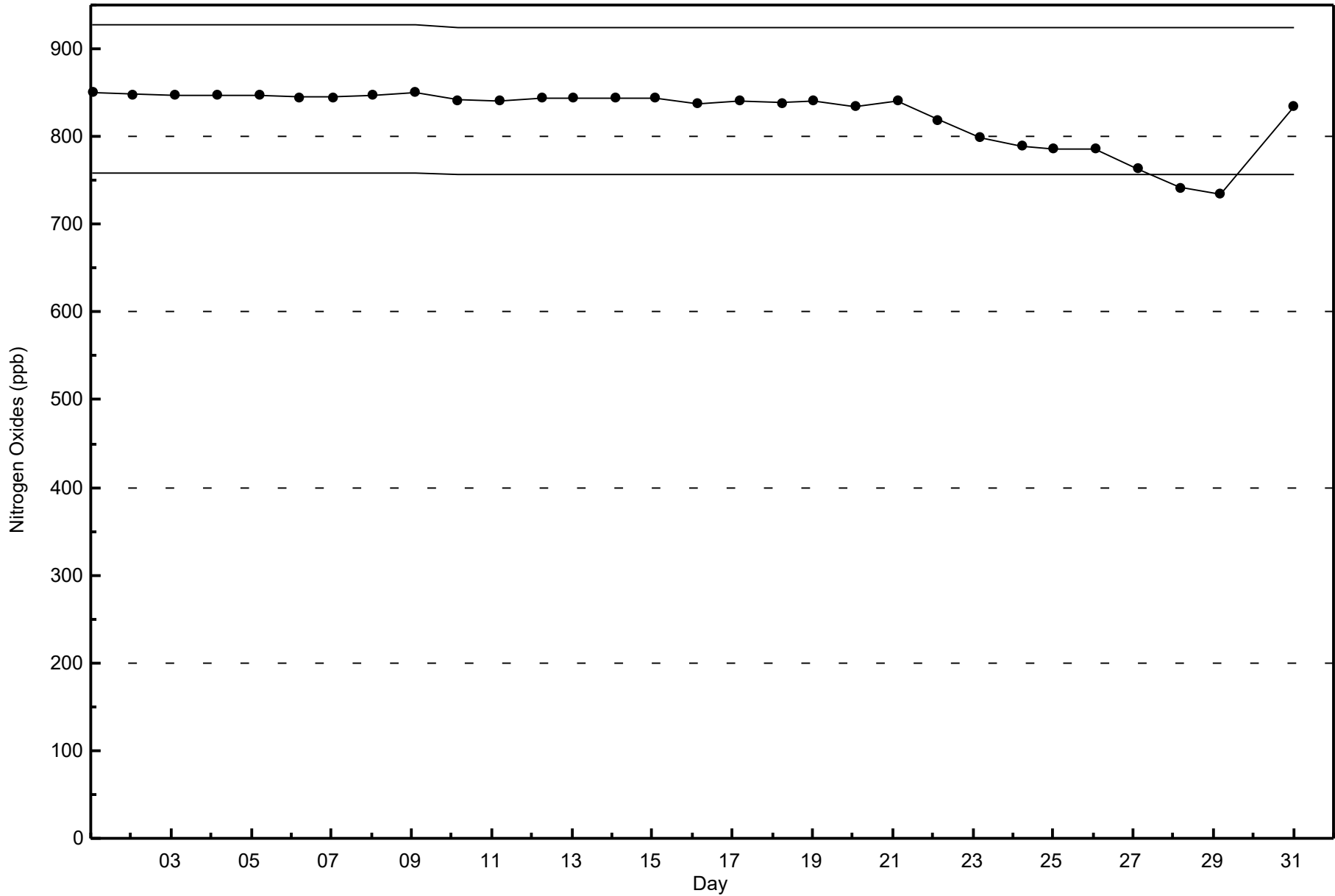


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Fort McKay South









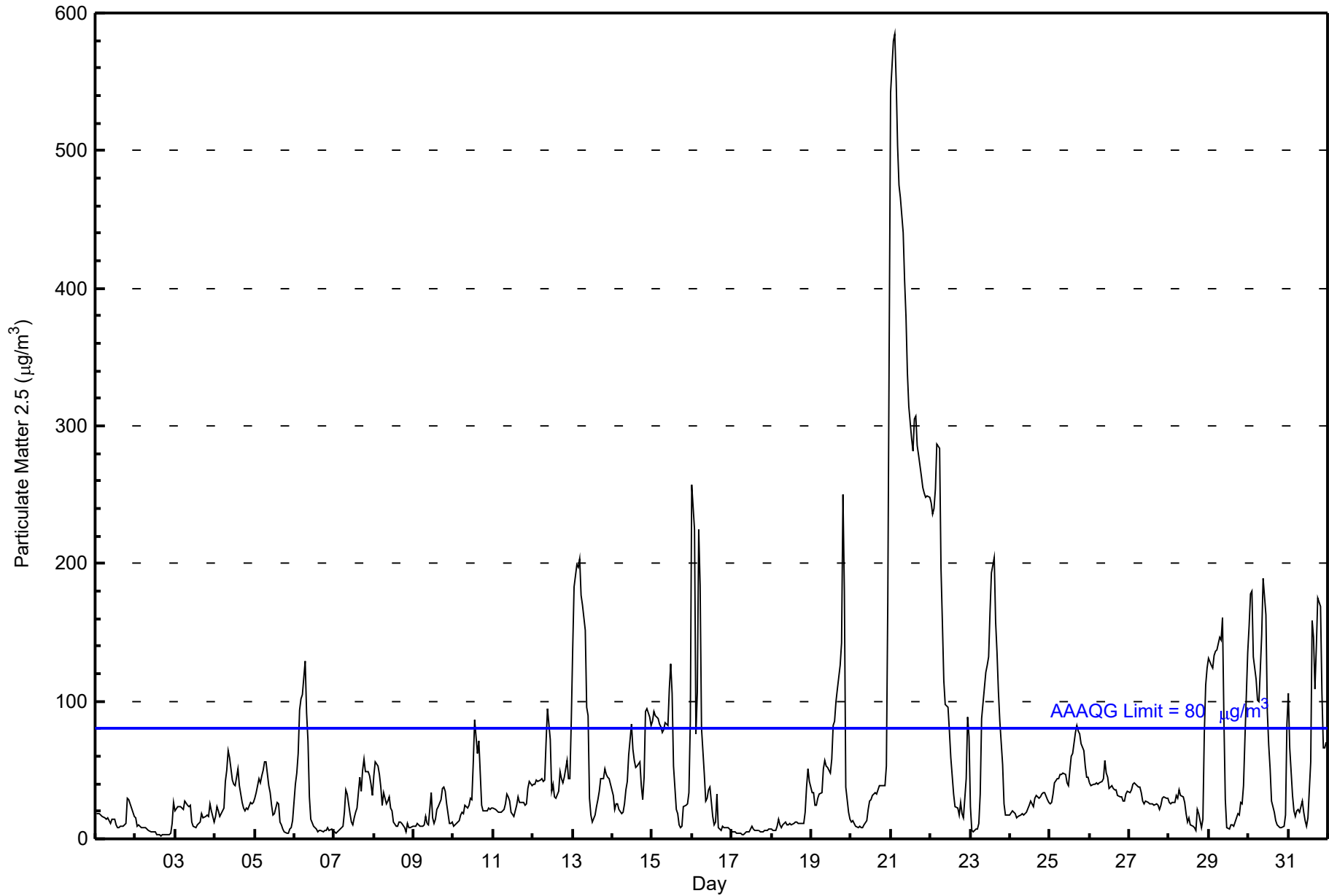
Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM_{2.5}) - µg/m³

Fort McKay South - May 2023

Number of Exceedences (AAAQO):		1-hr: 134		24-hr: 20		Hours in Service:		744																		
Maximum Value: 584.8 µg/m ³ on May 21 03:00		Maximum Daily Average: 368.4 µg/m ³ on May 21				Hours of Data:		744																		
Minimum Value: 2.4 µg/m ³ on May 2 16:00		Minimum Daily Average: 5.4 µg/m ³ on May 17				Hours of Missing Data:		0																		
Maximum Diurnal Average: 71.5 µg/m ³ at hour 2		Minimum Diurnal Average: 39.1 µg/m ³ at hour 22				Hours of Calibration:		0																		
Monthly Average: 53.40 µg/m ³		Percentiles: P ₁ = 3.3 P ₁₀ = 7.7 Q ₁ = 13.2 Median = 27.1 Q ₃ = 51.0 P ₉₀ = 130.8 P ₉₉ = 425.7				Percent Operational Time:		100.0																		
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	18.2	18.0	17.9	17.2	16.0	15.2	14.7	15.2	13.4	11.6	14.4	14.7	10.1	8.5	7.7	8.7	9.1	10.4	10.9	29.6	28.0	25.4	19.4	16.0	15.4	29.6
2-May	15.1	8.6	10.2	8.6	8.6	8.2	8.5	7.4	6.6	5.6	5.3	5.1	5.2	3.5	2.9	2.4	2.7	2.8	2.9	2.9	3.2	4.2	11.7	26.0	7.0	26.0
3-May	20.0	23.1	23.4	23.1	22.6	21.8	28.0	24.6	23.8	24.4	12.2	9.4	8.5	10.0	10.7	12.7	17.8	15.1	16.6	17.4	16.4	25.4	19.8	12.1	18.3	28.0
4-May	16.1	23.3	20.7	16.1	18.4	22.9	41.5	50.3	64.4	58.9	42.9	39.6	38.2	44.9	51.2	38.8	26.3	22.6	20.6	22.2	21.2	26.2	25.1	26.4	32.5	64.4
5-May	29.6	33.9	43.3	41.0	45.4	49.6	55.6	55.6	38.5	34.0	24.3	17.0	18.3	26.3	25.4	12.5	10.1	7.4	5.2	4.3	4.0	6.7	7.7	13.0	25.4	55.6
6-May	39.9	47.6	61.7	93.4	101.3	104.6	129.6	91.4	71.2	30.1	14.7	9.5	8.2	7.0	5.3	5.8	6.0	5.0	6.5	6.1	7.7	5.7	7.5	5.3	36.3	129.6
7-May	5.0	4.6	4.7	5.6	7.7	9.6	19.0	35.8	32.2	18.8	12.5	10.1	15.6	18.9	22.9	44.8	35.0	49.5	57.8	49.2	49.3	45.5	40.1	31.9	26.1	57.8
8-May	45.9	55.9	53.0	46.9	37.2	24.7	33.4	25.9	27.5	30.3	22.3	20.0	12.1	9.3	9.0	11.8	12.3	11.3	7.7	5.4	11.5	7.6	8.3	9.1	22.4	55.9
9-May	9.5	9.2	10.8	10.2	9.4	9.6	9.9	16.7	11.2	10.6	33.4	15.5	11.1	14.7	21.3	23.8	28.5	36.4	38.1	34.9	25.6	10.9	11.3	12.6	17.7	38.1
10-May	9.2	9.9	11.0	13.0	17.6	18.9	18.3	24.1	22.2	24.1	29.6	28.7	54.6	86.2	62.1	71.7	48.0	24.7	20.2	20.8	20.4	22.2	21.8	22.2	29.2	86.2
11-May	22.0	21.8	20.8	19.5	19.5	19.6	21.1	25.1	32.4	30.9	27.0	19.3	15.9	20.1	24.7	30.1	26.8	26.3	26.3	24.7	25.4	36.2	41.8	38.9	25.7	41.8
12-May	39.5	39.9	42.7	41.7	42.3	43.3	41.4	42.3	70.6	94.9	71.9	34.7	39.2	30.3	29.5	34.9	48.6	44.2	40.6	45.0	57.2	43.5	43.6	85.6	47.8	94.9
13-May	137.2	182.9	198.8	197.3	203.3	176.9	170.2	151.5	95.2	89.3	29.7	17.6	12.5	17.3	23.9	28.4	34.9	43.8	43.4	50.4	47.2	45.0	44.1	39.3	86.7	203.3
14-May	31.1	21.7	24.9	25.7	20.9	18.5	19.0	25.2	35.2	41.7	61.4	83.8	65.0	57.0	51.4	53.2	56.1	39.1	28.6	44.5	92.7	94.3	88.3	82.7	48.4	94.3
15-May	85.2	92.1	89.7	87.0	83.5	81.5	77.5	79.7	84.3	82.1	108.7	127.3	105.3	53.0	21.7	18.7	10.0	8.6	8.8	23.8	24.8	25.9	33.4	85.4	62.4	127.3
16-May	257.5	224.5	76.2	106.3	225.0	183.6	80.8	46.5	27.9	29.7	35.6	37.3	16.1	10.6	11.8	33.0	8.1	6.4	8.8	7.7	7.9	8.4	8.0	5.7	61.0	257.5
17-May	4.9	5.3	4.9	3.8	3.8	3.6	2.9	3.3	4.0	4.8	5.5	7.4	9.2	7.5	5.9	6.1	6.1	5.2	5.2	5.4	6.0	6.2	6.7	6.8	5.4	9.2
18-May	6.6	6.5	6.3	9.5	13.8	10.6	8.5	9.8	11.7	10.5	10.5	10.7	9.8	11.0	12.0	11.7	11.3	11.0	10.7	11.3	19.8	37.7	51.0	41.3	14.7	51.0
19-May	33.9	33.2	24.2	24.5	29.8	32.1	33.9	51.0	57.2	52.7	52.0	48.3	58.3	82.0	85.1	99.3	108.8	125.7	142.6	250.0	180.3	37.6	18.9	14.3	69.8	250.0
20-May	12.7	13.6	10.8	9.2	8.6	8.7	8.3	8.6	10.2	13.3	21.4	27.4	28.9	31.7	33.4	33.0	35.5	38.4	38.9	38.3	38.8	52.9	171.5	358.3	43.8	358.3
21-May	542.5	579.5	584.8	549.8	503.5	474.5	466.0	440.4	406.2	378.9	338.4	313.9	290.6	281.6	305.3	307.3	285.6	278.4	262.9	255.1	251.5	247.9	248.7	248.3	368.4	584.8
22-May	244.1	236.0	239.9	253.7	286.7	284.2	196.4	157.0	114.9	97.3	95.5	78.1	59.1	46.1	32.5	23.2	22.8	17.0	26.2	18.1	15.4	43.3	88.1	74.3	114.6	286.7
23-May	23.8	6.6	5.3	6.7	7.2	11.5	32.9	87.4	110.3	120.9	126.4	131.7	165.1	192.7	204.8	157.9	135.4	106.3	85.2	54.1	25.2	17.0	16.8	17.0	77.0	204.8
24-May	17.8	20.3	19.2	18.7	15.7	16.5	16.9	18.6	16.8	18.5	19.0	24.8	27.0	25.6	23.4	30.0	32.0	30.0	30.1	32.5	33.8	33.5	28.8	26.3	24.0	33.8
25-May	25.2	26.2	32.1	40.9	43.7	44.0	46.9	46.4	47.8	46.6	40.9	38.6	49.8	59.6	62.0	76.8	82.3	78.3	76.1	68.7	64.3	52.7	44.9	44.5	51.6	82.3
26-May	40.4	38.6	39.9	39.3	40.8	39.7	40.8	41.5	43.2	56.5	47.8	44.3	37.0	38.8	36.3	35.3	35.5	31.3	30.7	30.5	27.4	27.8	32.3	34.9	37.9	56.5
27-May	33.5	35.3	40.1	40.7	39.8	38.1	37.2	33.9	27.7	25.9	27.0	26.4	25.3	25.3	25.9	24.0	25.7	24.5	21.5	24.3	29.2	30.8	29.1	29.5	30.0	40.7
28-May	26.5	25.6	26.4	26.3	31.3	29.7	35.4	31.8	30.4	26.0	18.6	12.3	15.3	9.9	9.2	8.4	6.5	20.9	17.9	8.2	13.8	76.3	112.1	124.0	30.9	124.0
29-May	131.3	126.3	124.2	133.1	136.5	137.1	146.4	144.8	160.3	87.9	28.9	7.8	7.0	10.0	10.3	9.4	11.8	18.0	17.4	26.7	25.8	39.0	72.5	135.1	72.8	160.3
30-May	154.7	178.4	179.8	132.1	115.7	100.5	100.1	122.6	148.9	189.4	162.6	92.5	68.5	50.8	27.1	19.0	13.1	10.2	8.7	8.2	8.0	9.2	16.9	83.4	83.4	189.4
31-May	105.7	66.5	31.3	20.1	16.1	20.1	21.5	19.0	27.6	19.3	12.9	9.6	15.2	55.8	158.4	146.2	108.7	139.5	175.1	168.8	105.6	65.7	66.4	70.0	68.5	175.1
70.5 71.5 67.1 66.5 70.1 66.4 63.3 62.4 60.4 56.9 50.1 44.0 42.0 43.4 45.6 45.8 42.0 41.6 41.7 44.8 41.5 39.1 46.3 58.7																								Diurnal Average		
542.5 579.5 584.8 549.8 503.5 474.5 466.0 440.4 406.2 378.9 338.4 313.9 290.6 281.6 305.3 307.3 285.6 278.4 262.9 255.1 251.5 247.9 248.7 358.3																								Diurnal Maximum		
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort McKay South - May 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	37	4.97	4.97
6 - 15	167	22.45	27.42
16 - 25	138	18.55	45.97
26 - 80	268	36.02	81.99
> 81.0	134	18.01	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort McKay South - May 2023**

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	5	6	3	0	0	2	5	0	0	1	2	1	0	4	5	3	37
6 - 15	16	9	3	1	0	1	14	17	42	15	18	4	5	6	5	11	167
16 - 25	11	6	2	2	0	5	14	24	28	13	9	10	6	2	4	2	138
26 - 80	22	15	8	3	5	10	16	41	57	26	19	18	8	5	8	7	268
> 81.0	11	2	2	0	5	11	15	16	11	10	8	11	4	3	12	13	134
Totals	65	38	18	6	10	29	64	98	138	65	56	44	23	20	34	36	744

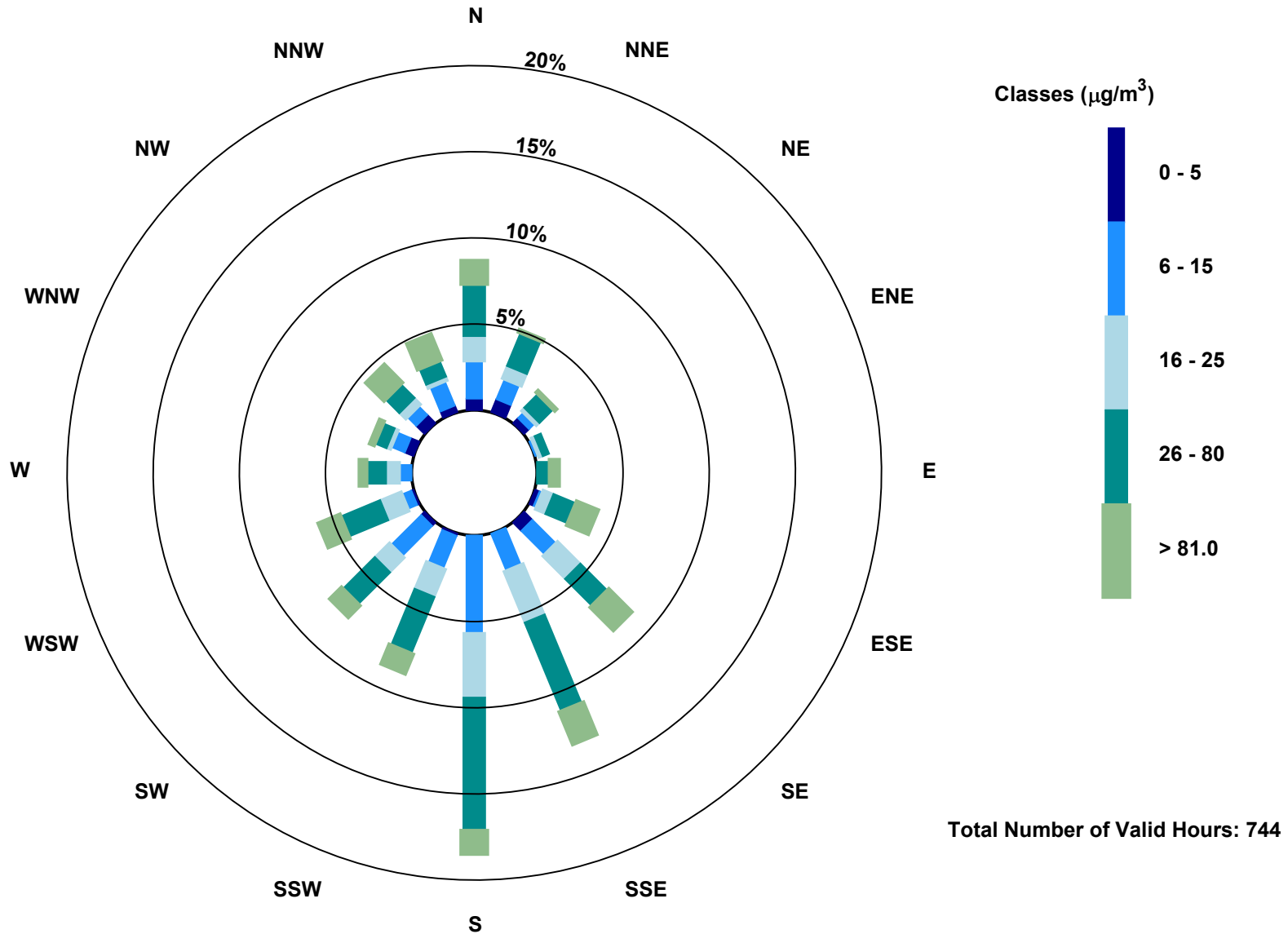
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort McKay South





Wood Buffalo Environmental Association
Summary of Hour Averages

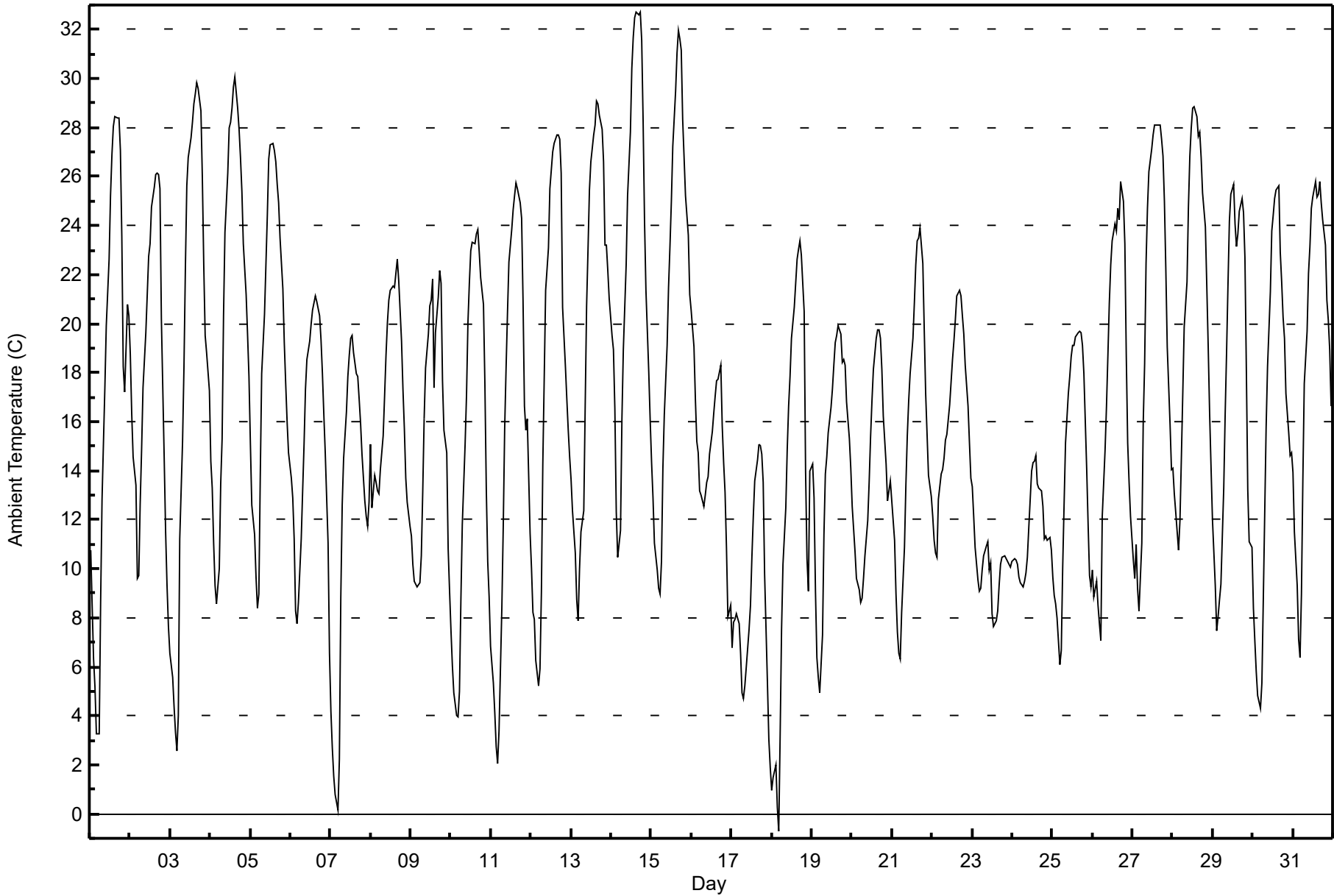
Ambient Temperature (AT) - C
Fort McKay South - May 2023

Maximum Value: 32.7 C on May 14 18:00		Maximum Daily Average: 23.0 C on May 14		Hours in Service: 744																							
Minimum Value: -0.7 C on May 18 05:00		Minimum Daily Average: 8.8 C on May 17		Hours of Data: 744																							
Maximum Diurnal Average: 23.5 C at hour 17		Minimum Diurnal Average: 7.4 C at hour 5		Hours of Missing Data: 0																							
Monthly Average: 16.45 C		Percentiles: P ₁ = 1.9 P ₁₀ = 7.9 Q ₁ = 10.8 Median = 16.0 Q ₃ = 21.7 P ₉₀ = 26.2 P ₉₉ = 31.4		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	10.8	8.5	6.3	5.1	3.2	3.2	8.7	12.8	15.2	17.4	19.9	22.7	25.2	26.9	28.0	28.5	28.4	28.4	27.1	23.5	18.2	17.2	20.8	20.3	17.8	28.5	
2-May	18.7	16.3	14.6	13.4	9.6	9.7	12.6	14.9	17.4	19.6	21.2	22.8	23.3	24.8	25.5	26.1	26.1	26.1	25.5	20.2	14.5	11.5	9.3	7.6	18.0	26.1	
3-May	6.5	5.6	4.3	3.3	2.5	4.0	11.2	15.2	18.3	22.3	25.6	26.8	27.6	28.2	28.9	29.4	29.8	29.6	28.7	26.0	22.4	19.5	18.8	17.3	18.8	29.8	
4-May	14.4	13.3	11.0	9.3	8.5	10.0	13.5	15.3	20.3	23.7	26.1	28.0	28.2	28.8	29.6	30.1	28.8	27.9	26.8	25.4	23.3	21.2	19.6	17.9	20.9	30.1	
5-May	15.2	12.6	11.4	9.6	8.4	9.0	13.8	18.0	20.4	22.4	24.4	26.7	27.3	27.3	27.1	26.6	25.7	24.9	23.5	21.4	19.2	17.6	16.0	14.7	19.3	27.3	
6-May	13.7	12.9	11.2	8.3	7.8	8.6	11.2	13.2	15.1	17.3	18.5	19.3	20.0	20.5	20.8	21.1	20.9	20.3	19.3	18.0	16.3	14.7	11.0	6.5	15.3	21.1	
7-May	4.2	2.7	1.5	0.8	0.2	2.2	8.8	12.6	14.5	16.4	17.8	18.7	19.4	19.5	18.8	17.9	17.8	17.0	16.0	14.7	12.8	12.2	11.7	12.7	12.1	19.5	
8-May	15.1	12.5	13.8	13.5	13.2	13.1	14.1	15.4	17.1	18.7	20.1	20.9	21.4	21.5	21.5	22.1	22.6	21.8	19.3	17.3	15.7	13.7	12.7	11.7	17.0	22.6	
9-May	11.3	10.2	9.5	9.4	9.3	9.4	10.5	13.1	16.1	18.2	19.6	20.7	20.9	21.8	17.4	19.6	21.0	22.2	21.7	17.7	15.7	14.7	10.8	9.1	15.4	22.2	
10-May	7.5	6.1	4.9	4.0	4.0	5.0	8.7	11.8	15.1	17.1	20.0	21.7	23.0	23.3	23.2	23.7	23.9	22.9	21.9	20.8	17.5	13.2	10.3	8.8	14.9	23.9	
11-May	6.8	5.4	4.1	2.7	2.0	3.4	8.4	11.7	15.7	18.2	20.5	22.5	23.9	24.7	25.2	25.8	25.5	24.9	24.3	21.0	16.6	15.6	16.1	11.5	15.7	25.8	
12-May	10.0	8.2	7.9	6.3	5.2	5.9	9.0	14.3	17.8	21.4	23.1	25.5	26.3	27.0	27.4	27.7	27.7	27.5	26.2	20.7	18.2	16.9	15.6	14.6	17.9	27.7	
13-May	13.7	12.4	10.6	8.7	7.9	10.0	11.5	12.4	16.6	20.7	23.0	25.5	26.6	27.7	28.1	29.1	28.9	28.5	27.9	26.6	23.2	23.2	22.2	21.0	20.3	29.1	
14-May	19.5	19.0	16.5	12.3	10.5	11.5	16.1	18.9	20.7	22.4	25.2	27.8	30.4	31.7	32.5	32.7	32.6	32.7	31.6	28.3	24.2	21.3	18.0	16.0	23.0	32.7	
15-May	14.3	12.9	11.1	10.0	9.2	8.9	10.3	14.1	16.3	19.1	21.5	23.1	25.0	27.2	29.5	31.0	32.0	31.6	31.1	28.3	25.2	24.4	23.6	21.2	20.9	32.0	
16-May	20.5	19.1	16.9	15.2	14.7	13.2	13.0	12.5	13.0	13.5	13.7	14.7	15.6	16.3	17.0	17.7	17.7	18.3	15.8	14.3	13.1	10.9	8.1	8.5	14.7	20.5	
17-May	6.8	7.8	7.9	8.2	7.7	6.6	4.9	4.7	5.2	6.0	7.5	8.5	10.5	12.1	13.6	14.5	15.1	15.0	14.7	13.5	9.8	5.4	3.0	1.9	8.8	15.1	
18-May	1.0	1.5	2.0	0.3	-0.7	3.2	7.5	10.2	12.5	14.8	16.6	17.9	19.4	20.7	21.7	22.6	23.0	23.4	22.8	20.5	14.0	10.4	9.1	14.0	12.8	23.4	
19-May	14.3	12.9	9.1	6.4	5.6	4.9	7.3	11.4	13.9	14.6	15.6	16.6	17.3	18.3	19.2	19.5	19.9	19.5	18.4	18.5	18.3	16.8	15.3	14.1	14.5	19.9	
20-May	12.6	11.6	10.7	9.6	9.1	8.6	8.8	9.6	10.5	11.9	13.5	15.4	16.9	18.1	19.4	19.8	19.8	19.4	18.1	16.3	14.3	12.7	13.2	13.6	13.9	19.8	
21-May	12.8	11.1	9.0	7.4	6.6	6.3	8.2	10.9	13.4	15.4	16.9	17.9	19.4	20.8	22.4	23.4	23.5	23.9	22.4	19.7	17.1	15.5	13.8	13.0	15.5	23.9	
22-May	12.1	11.2	10.7	10.4	12.8	13.9	14.0	14.5	15.2	15.5	16.7	17.6	18.5	19.3	20.1	21.2	21.3	21.1	20.3	19.6	18.3	16.6	15.1	13.7	16.2	21.3	
23-May	13.3	12.1	10.9	9.6	9.1	9.2	9.9	10.5	10.9	11.1	9.9	10.3	8.2	7.6	7.9	8.3	9.3	10.2	10.5	10.5	10.4	10.3	10.2	10.1	10.0	13.3	
24-May	10.3	10.4	10.3	10.2	9.7	9.4	9.2	9.5	9.8	10.5	11.7	14.0	14.3	14.4	14.6	13.5	13.3	13.2	12.5	11.2	11.3	11.2	11.3	10.8	11.5	14.6	
25-May	9.7	8.9	8.6	8.0	6.1	6.7	10.0	12.7	15.1	17.1	17.9	18.6	19.1	19.1	19.5	19.6	19.7	19.6	19.1	17.9	14.1	11.8	9.7	9.3	14.1	19.7	
26-May	9.9	8.9	9.5	8.5	7.8	7.1	12.1	14.8	16.6	18.7	20.8	22.4	23.4	24.1	23.8	24.7	24.2	25.8	25.0	23.3	18.7	15.1	13.5	12.1	17.1	25.8	
27-May	10.4	9.6	11.0	9.2	8.3	11.1	15.9	18.4	22.5	24.7	26.2	27.1	27.7	28.1	28.1	28.1	28.1	27.6	26.8	25.0	22.2	19.0	15.9	14.0	20.2	28.1	
28-May	14.1	13.1	12.3	10.8	12.0	14.5	17.1	19.9	21.7	24.8	26.9	28.0	28.8	28.9	28.5	27.6	27.8	26.8	25.3	24.0	21.6	19.0	16.4	14.2	21.0	28.9	
29-May	12.0	9.3	7.5	8.0	8.8	9.4	13.3	16.3	18.8	21.6	24.2	25.3	25.7	24.1	23.2	23.6	24.6	25.1	24.5	22.7	18.1	13.3	11.1	10.9	17.6	25.7	
30-May	8.4	7.1	5.8	4.8	4.3	5.4	8.7	12.2	15.7	18.3	21.3	23.8	24.4	25.1	25.5	25.6	22.9	21.7	20.2	19.4	17.2	15.5	14.6	14.8	16.0	25.6	
31-May	14.0	11.5	9.3	7.1	6.3	9.0	13.7	17.5	19.7	22.1	23.1	24.7	25.2	25.8	25.2	25.3	25.8	24.9	24.2	23.2	21.0	20.2	18.9	16.6	18.9	25.8	
		11.7	10.5	9.4	8.1	7.4	8.1	11.0	13.5	15.8	17.9	19.7	21.1	22.0	22.7	23.0	23.4	23.5	23.3	22.3	20.3	17.5	15.5	14.1	13.0	Diurnal Average	
		20.5	19.1	16.9	15.2	14.7	14.5	17.1	19.9	22.5	24.8	26.9	28.0	30.4	31.7	32.5	32.7	32.6	32.7	31.6	28.3	25.2	24.4	23.6	21.2	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Fort McKay South - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Fort McKay South - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	1	0.13	0.13
0 - 10	153	20.56	20.70
10 - 20	350	47.04	67.74
> 20	240	32.26	100.00

Total Number of Valid Hours: 744

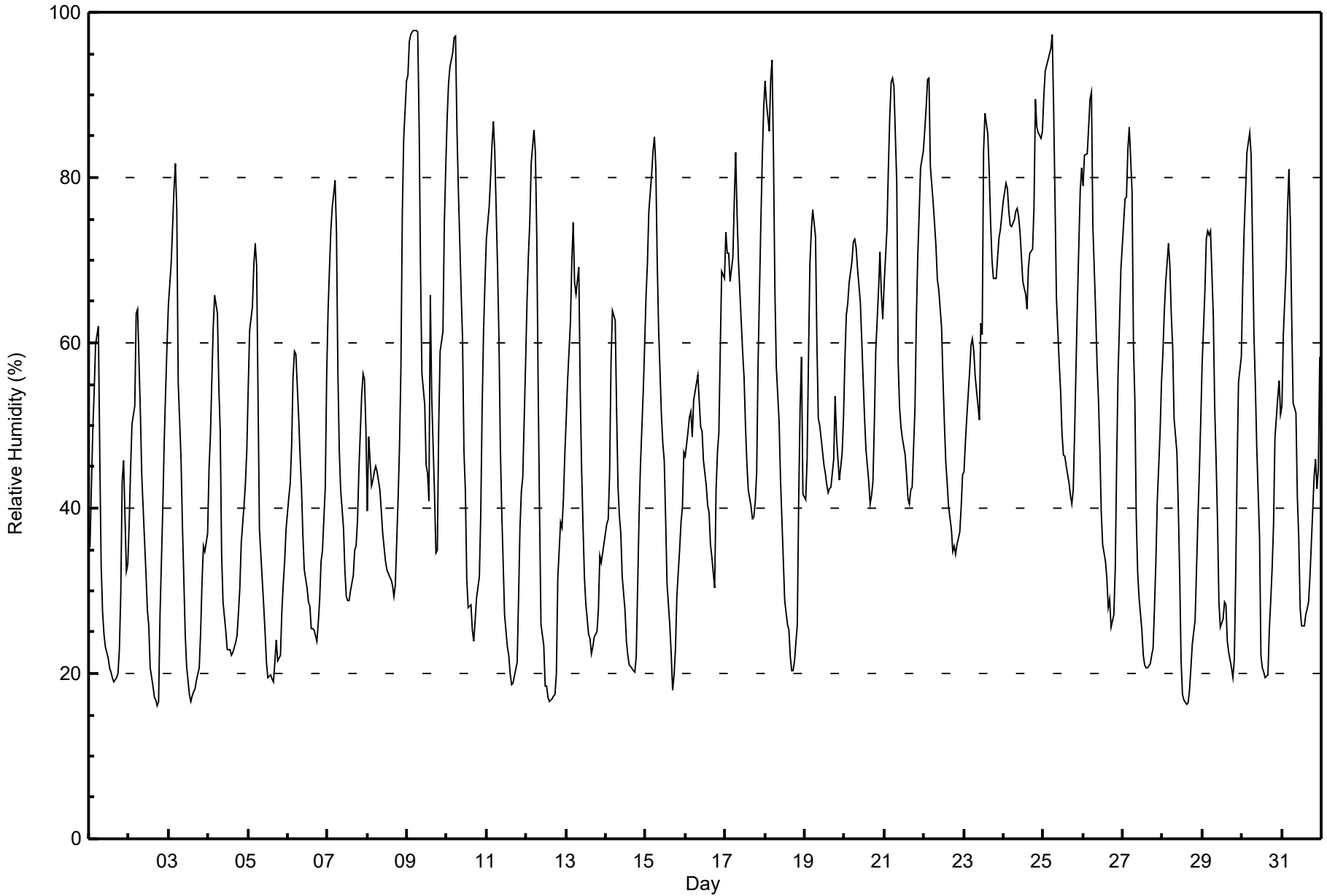
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Fort McKay South - May 2023

Maximum Value: 97.9 % on May 9 06:00 Maximum Daily Average: 75.8 % on May 24 Minimum Value: 16.1 % on May 2 18:00 Minimum Daily Average: 33.6 % on May 1 Maximum Diurnal Average: 76.1 % at hour 5 Minimum Diurnal Average: 30.4 % at hour 17 Monthly Average: 49.87 % Percentiles: P ₁ = 16.9 P ₁₀ = 22.2 Q ₁ = 31.7 Median = 46.8 Q ₃ = 67.2 P ₉₀ = 81.0 P ₉₉ = 96.7																						Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0																										
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	35.2	42.4	49.4	54.1	59.8	62.0	46.5	33.0	27.5	24.7	23.2	21.8	20.8	20.2	19.4	19.0	19.6	20.1	23.0	29.7	43.3	45.8	32.3	33.3	33.6	62.0																						
2-May	38.1	44.8	50.1	52.4	63.6	64.1	57.8	51.6	43.8	35.9	32.0	27.6	25.8	20.8	18.6	17.1	16.9	16.1	16.7	27.0	40.0	47.9	54.1	59.7	38.4	64.1																						
3-May	64.5	69.7	74.0	78.7	81.7	75.8	55.2	46.1	38.0	31.6	24.8	20.9	17.4	16.6	17.3	17.8	18.1	19.2	20.7	24.9	30.9	35.4	34.8	37.0	39.6	81.7																						
4-May	44.8	48.8	55.4	61.8	65.8	63.5	54.8	49.4	34.4	28.7	25.0	23.0	22.9	22.8	22.2	22.5	23.7	24.6	27.3	30.3	35.8	40.4	43.1	47.1	38.3	65.8																						
5-May	54.6	61.6	64.3	69.4	72.1	69.2	53.6	37.4	31.4	28.3	25.1	21.3	19.4	19.8	19.3	19.0	21.4	24.1	21.6	22.3	27.4	30.8	33.5	37.5	36.9	72.1																						
6-May	41.3	43.1	47.6	55.9	59.0	58.6	51.0	46.5	42.5	36.7	32.5	30.3	28.7	28.1	25.5	25.5	25.3	23.9	26.0	29.0	33.6	34.9	42.5	56.2	38.5	59.0																						
7-May	63.9	69.0	73.7	76.5	79.7	73.5	56.6	46.9	42.3	37.6	32.5	29.2	28.8	28.7	29.9	31.9	34.8	35.4	38.5	44.6	53.7	56.3	55.6	49.6	48.7	79.7																						
8-May	39.7	48.7	42.7	43.4	44.4	45.1	44.4	42.2	39.6	37.0	35.2	33.5	32.6	31.7	31.4	30.7	29.4	30.7	41.1	47.4	56.9	75.6	84.8	91.7	45.0	91.7																						
9-May	92.3	96.4	97.2	97.7	97.8	97.9	97.7	86.5	68.8	56.3	52.5	45.3	44.2	40.8	65.7	53.4	41.7	34.5	34.9	50.2	58.9	61.4	74.4	81.1	67.8	97.9																						
10-May	87.1	91.4	93.5	95.1	96.9	97.1	85.9	78.7	66.0	60.6	46.9	42.2	31.5	27.9	28.3	25.2	24.0	26.5	29.1	31.7	39.3	52.2	61.4	67.2	57.7	97.1																						
11-May	72.5	76.5	80.1	83.9	86.8	83.3	69.1	60.5	47.2	39.5	33.5	27.2	23.2	22.2	20.0	18.6	18.8	20.5	21.3	29.1	37.7	42.1	43.7	57.4	46.4	86.8																						
12-May	64.7	70.5	74.6	81.7	85.8	83.1	72.9	54.5	39.2	26.0	23.3	18.6	18.4	17.2	16.7	16.9	17.3	17.5	20.0	31.5	38.3	37.6	41.0	46.5	42.2	85.8																						
13-May	50.7	55.5	62.4	69.6	74.5	67.4	65.9	69.1	54.4	44.7	38.0	31.7	28.5	24.7	24.2	22.4	23.1	24.3	25.0	27.8	34.2	33.4	34.6	35.8	42.6	74.5																						
14-May	38.2	38.7	44.2	57.4	63.9	62.8	51.7	42.5	39.0	36.9	31.8	27.6	23.9	22.1	21.0	20.8	20.3	20.1	22.0	30.3	38.8	45.1	54.0	59.7	38.0	63.9																						
15-May	65.7	69.6	76.0	80.3	83.2	85.0	81.1	69.6	61.6	51.3	47.8	45.8	38.6	30.9	25.8	22.1	17.9	19.9	22.8	29.3	35.1	38.4	40.1	46.8	49.4	85.0																						
16-May	46.3	49.3	51.1	51.6	48.7	53.1	54.1	56.1	52.9	49.9	49.4	45.7	42.7	40.3	39.4	35.7	34.0	30.4	42.1	46.8	49.1	59.2	68.6	67.7	48.5	68.6																						
17-May	73.4	70.8	70.9	67.5	70.4	77.2	83.0	75.5	69.9	66.1	58.8	55.7	50.1	45.5	42.2	40.1	38.7	39.0	40.9	44.3	57.6	74.7	82.4	88.4	61.8	88.4																						
18-May	91.6	89.0	85.7	91.8	94.2	82.6	66.4	57.1	50.4	43.5	38.6	33.7	28.8	25.9	25.3	22.1	20.3	20.4	21.5	25.9	41.2	52.2	58.3	41.7	50.3	94.2																						
19-May	41.1	46.0	58.4	69.4	73.6	76.2	72.8	59.9	50.8	50.0	48.4	45.2	44.3	42.9	41.8	42.3	42.6	45.9	53.6	48.7	45.9	43.5	46.7	51.1	51.7	76.2																						
20-May	58.1	63.3	64.8	67.3	69.9	72.3	72.5	71.5	69.0	64.9	60.4	55.5	51.0	47.2	43.2	40.5	41.5	43.2	50.3	59.0	66.5	71.0	66.0	62.9	59.7	72.5																						
21-May	67.2	73.7	81.0	87.4	91.6	92.0	91.0	79.3	57.9	52.2	49.8	48.4	46.4	44.1	41.3	40.5	42.2	42.5	52.0	63.0	70.5	75.6	81.2	83.2	64.8	92.0																						
22-May	85.8	88.5	91.8	92.0	81.3	77.0	74.4	71.7	67.7	66.4	61.9	55.6	50.3	45.7	43.0	40.2	37.5	34.7	35.4	34.4	35.6	37.2	40.1	44.0	58.0	92.0																						
23-May	44.5	48.0	51.1	56.4	59.6	60.5	58.9	56.0	52.3	50.6	62.5	61.0	83.2	87.8	85.3	80.6	74.6	70.0	67.8	67.8	70.3	72.7	73.8	75.4	65.4	87.8																						
24-May	77.1	79.3	78.7	75.9	74.3	74.1	74.9	76.0	76.3	75.3	73.4	67.5	66.7	65.9	64.1	69.2	70.8	71.4	76.6	89.4	86.0	85.4	84.7	85.6	75.8	89.4																						
25-May	89.9	92.9	93.6	94.3	95.6	97.3	88.4	77.1	65.4	57.4	54.1	49.0	46.5	46.3	45.1	43.1	41.6	40.4	42.1	49.4	65.1	71.9	78.4	81.3	66.9	97.3																						
26-May	78.9	82.6	82.9	86.0	89.4	90.3	74.3	63.8	57.5	53.2	47.1	39.5	35.6	33.5	31.5	28.0	29.0	25.6	27.2	32.8	45.7	56.2	62.2	68.8	55.1	90.3																						
27-May	74.5	77.5	77.7	83.4	86.1	78.3	59.7	53.1	38.9	32.2	29.2	25.2	22.2	20.9	20.7	20.6	21.2	22.2	23.1	27.9	33.5	40.8	49.2	55.3	44.7	86.1																						
28-May	58.6	63.7	67.3	72.0	69.3	63.3	59.4	50.9	46.8	40.2	31.9	21.6	17.4	16.8	16.3	16.5	18.0	20.8	23.5	26.5	32.5	38.6	44.2	50.6	40.3	72.0																						
29-May	57.2	66.4	72.5	73.6	73.0	73.6	63.3	52.3	45.7	38.5	28.7	25.5	26.5	28.7	28.3	23.8	22.6	20.7	19.5	21.7	32.0	45.2	55.3	58.3	43.9	73.6																						
30-May	67.0	73.5	78.2	83.0	85.4	82.7	72.0	61.3	54.9	47.4	36.6	22.2	20.7	20.2	19.6	19.9	25.4	28.9	32.8	38.0	48.5	53.4	55.3	51.4	49.1	85.4																						
31-May	52.4	61.0	69.2	76.2	81.0	74.6	62.7	52.7	51.5	41.4	36.4	28.0	25.8	25.8	27.1	27.7	28.6	31.7	35.7	43.8	45.9	42.4	44.7	58.2	46.9	81.0																						
																								61.8	66.2	69.7	73.7	76.1	74.6	66.8	59.0	51.1	45.3	41.0	36.3	34.3	32.6	32.2	30.8	30.4	30.5	33.4	38.9	46.1	51.5	55.5	59.0	Diurnal Average
																								92.3	96.4	97.2	97.7	97.8	97.9	97.7	86.5	76.3	75.3	73.4	67.5	83.2	87.8	85.3	80.6	74.6	71.4	76.6	89.4	86.0	85.4	84.8	91.7	Diurnal Maximum





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Fort McKay South - May 2023

Maximum Speed: 25 km/h on May 5 17:00	Maximum Daily Speed Average: 15.1 km/h on May 16	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 14 04:00	Minimum Daily Speed Average: 1.5 km/h on May 19	Hours of Data: 744
Maximum Diurnal Speed Average: 6.9 km/h at hour 12	Minimum Diurnal Speed Average: 0.4 km/h at hour 6	Hours of Missing Data: 0
Monthly Average Velocity: 2.7 km/h 167.8 deg	Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 4 Median = 7 Q ₃ = 13 P ₉₀ = 18 P ₉₉ = 23	Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	S9	S5	SSW4	SSW1	NW1	SW1	NNE2	SSE13	SSE17	SSE20	SSE19	SSE19	S17	S17	S19	S18	S15	S13	S13	SSW6	SW2	W3	NNW14	N15	S7.9	SSE20
2-May	NNW12	NNW5	WNW5	WNW7	SW1	WNW0	N1	SW2	NNE4	NE6	NE6	NE8	ESE5	NNW8	WNW10	WNW7	NW11	WNW9	NW6	SSW1	SW3	SW2	SW2	SW2	NW3.0	NNW12
3-May	SSW2	WNW1	WSW3	SW2	SSW3	SSW1	SSE4	ESE5	SE10	SE11	S18	S23	S24	S24	S22	S21	S19	S18	S16	S10	S9	S8	S10	S8	S10.7	S24
4-May	S6	NW2	WSW1	SW3	SSW3	W1	NW0	ESE2	SSE9	ESE8	SE6	SSE5	NNE5	NNE9	N12	N18	NNE18	N18	N18	N14	N12	N11	N10	N7	NNE5.1	NNE18
5-May	NNW6	NNW4	NNW4	SW3	WNW2	NNE1	S3	SE12	SE13	SSE16	SSE18	SE19	SE22	SSE24	SE22	SE24	SSE25	SE19	SE19	SE17	SE12	SE17	SE18	SSE17	SE12.5	SSE25
6-May	SSE17	SSE16	SSE9	SE5	SE8	SSE9	SE15	SE15	SE18	SE20	SE21	SSE20	SSE21	SSE20	SE18	SE17	SE18	SE20	SE19	SE17	SE15	SE11	SE5	ESE2	SE14.8	SSE21
7-May	NNW2	NW4	WSW2	WNW2	WNW2	W2	SSE4	SE14	SSE18	SE20	SE22	SE21	SE23	SE23	SE19	SSE21	S14	SSE11	SSE4	N4	NW3	NE1	E2	SE6	SSE8.4	SE23
8-May	S11	S4	SSE11	SSE12	SSE14	SSE12	SSE14	SSE14	SSE13	SSE12	SE13	SE14	SSE17	S17	S13	SSW11	S13	S13	WSW10	WNW3	SW7	SW4	SW6	S3	S9.7	S17
9-May	SSW3	WNW1	SW3	S2	WSW1	SSW2	SSW1	S3	S5	SSE6	ESE6	S11	S11	S11	NW3	N1	ENE6	ESE4	SE4	SSW3	SW7	SSW5	S3	SSW2	S3.1	S11
10-May	SW2	SW4	SSW3	SSW3	SSW3	SW2	SSE3	ESE2	ESE4	ENE4	E5	NE4	NNE5	WNW6	W10	NNE9	N7	N10	NNE11	NNE8	N6	NNW4	W3	WSW1	N1.8	NNE11
11-May	WSW1	SW2	WNW2	SSW3	WSW2	W2	S1	NE4	E4	E5	NE5	ENE3	SE3	ESE9	SSE7	S7	SE7	ESE9	SSE9	S4	SSW5	SW5	SW4	S3	SSE2.4	SSE9
12-May	S3	SSW2	S2	WSW3	WSW3	WSW2	WSW1	ENE2	ESE6	SSE10	SSE8	SSE17	S14	S13	SSE15	SSE16	S12	SSE13	S7	S3	S5	S6	S6	SSW5	S6.7	SSE17
13-May	S6	SSW4	SSW3	SSE2	SSW3	SW1	SSE4	S1	SSE9	SSE10	S13	S18	S18	S17	S17	SSW17	S18	S12	S10	S9	S8	S11	SSW6	SW7	S9.0	S18
14-May	SW6	SW8	S4	WSW0	SSW3	SW1	S6	S8	S7	S9	S11	S14	SSE16	S17	SSW15	SSW15	SW12	NW6	N7	N4	NNW7	NNW5	NW3	WSW2	SSW5.0	S17
15-May	NW1	NW2	SSW2	W1	WNW1	WSW1	NW2	NE2	NE2	ESE5	SE4	E5	ESE5	ESE7	ESE11	SSE10	S16	S12	S12	S8	SSW7	SSW9	WNW7	NW6	SSE3.2	S16
16-May	NW8	NNW13	NNW11	NNW9	NNW15	NW13	NNW17	NNW18	NNW21	NNW23	NW18	NW21	NW19	NW17	NNW19	NW19	NNW18	NNW24	N19	N16	N14	N8	NNW4	NNW9	NNW15.1	NNW24
17-May	NW7	NW7	NNW9	N18	N17	NNE14	NNE14	N19	N18	N17	NNE18	N17	N17	NNE16	NNE16	NNE14	NNE14	NNE13	NNE10	NE7	N2	W2	SW4	SSW3	N11.0	N19
18-May	SSW3	S7	S6	SW4	S4	SSE6	SSE10	S10	S12	S13	S10	S14	SSW11	S13	SSE13	S14	S12	S11	S12	S7	SSW2	SSW4	SSW5	SSW11	S8.7	S14
19-May	SSW13	S8	SSE5	SW3	SSW2	SW3	S2	SSE7	S11	S11	S9	S11	S9	SSW9	SSW8	NW3	N5	N4	NW3	NNW10	N16	N17	N14	N11	SW1.5	N17
20-May	N11	N11	N14	NNW12	N11	NNW10	N11	N11	N10	N9	N9	N10	N10	N8	N7	N5	N5	N6	N3	N1	SW2	WSW1	S5	S7	N6.5	N14
21-May	S6	S5	SSE2	W2	WSW1	S3	N3	SE1	SSE11	SSE11	SSE10	SSE10	SE10	ESE8	ESE7	SE8	SE7	SE4	WSW1	NNW2	SW3	SW2	NW3	NNW4	SSE3.5	SSE11
22-May	NNW4	NW3	NNW2	NNW5	N9	N13	N15	N16	N17	N17	N18	N21	N20	NNE19	NNE18	NNE19	NNE21	NNE19	NNE20	NNE16	NE13	NE10	NNE10	NNE10	NNE13.5	NNE21
23-May	NE10	NE7	NNE8	NNE9	NNE7	NNE7	NE5	E7	E9	ESE10	ESE9	SE10	ESE8	ESE7	E6	ESE7	ESE9	SE12	SE12	SE12	SSE11	SSE12	SSE13	SSE13	ESE6.5	SSE13
24-May	SSE15	SSE10	SE7	SSE9	SE10	SSE15	SSE15	SSE15	SSE14	S10	S12	SSE12	S12	SSW8	WSW11	WSW11	WSW10	WSW8	WSW8	SW6	WSW6	WSW5	W6	W5	S7.4	SSE15
25-May	WSW6	W7	W7	WNW6	SSE2	SW2	W2	SW3	SW4	ENE5	NE9	NNE7	N7	NNE8	NNE8	NNE9	N9	NE5	NNE5	SE2	SW2	S4	S3	S5	NNW1.7	NNE9
26-May	S6	S2	SSW3	SSW3	WSW2	S4	SSE6	SSE7	SSE9	SE8	ESE7	SSE7	SSW5	S3	E3	SE6	E5	S7	SSE8	SSE8	S3	S5	SSW4	SSW4	SSE4.4	SSE9
27-May	SSW5	S4	SSW3	SSW3	SW3	SW2	SSE7	SE9	S14	S17	S17	S22	S21	SSE22	SSE23	SSE23	S17	S19	S14	S10	S7	SSE5	S3	S4	S11.1	SSE23
28-May	SW4	SSW6	S8	S7	S7	SSE6	SE9	S12	SSW11	S12	SSW16	SSW17	SSW18	SW18	SW19	SW19	WSW15	WSW16	W13	W8	NW9	WNW6	WSW5	WSW5	SW9.1	SW19
29-May	W5	S1	SSE3	WSW3	SW2	SW2	SSE5	SSE6	SE5	SSW7	WSW12	WSW13	SW17	SW17	SW20	SSW18	SSW15	SW11	WSW8	WSW6	W4	WSW2	WNW4	NW5	SW6.8	SW20
30-May	WSW3	SW1	SW2	SW2	W1	SSW2	WSW3	WSW4	NE3	E5	ESE7	SE8	SSE6	S6	WSW7	W9	NW15	NW11	NNW8	NW1	W2	W2	SW2	WNW4	WSW1.7	NW15
31-May	WSW5	WSW2	S2	SW2	S1	SSE2	S5	SSE6	ESE7	SE6	ENE7	SE7	ESE4	SE8	S11	SSW10	S10	SSE6	SSE3	NW2	NNW8	N8	NW4	W4	SSE2.4	S11

SSW2.3	SW1.4	SW1.1	W1.2	WSW0.6	SSW0.4	SE1.7	SE3.3	SE5.1	SE5.7	SSE5.7	SSE6.9	SSE6.8	SSE6.3	S5.6	S5.2	S3.7	SSE2.8	SSE1.7	SE1.1	SW0.7	SSW1.2	SW1.5	SW1.3	Diurnal Average	
SSE17	SSE16	N14	N18	N17	SSE15	NNW17	N19	NNW21	NNW23	SE22	S23	S24	SSE24	SSE23	SSE24	SSE25	NNW24	NNE20	SE17	N16	N17	SE18	SSE17	Diurnal Maximum	

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

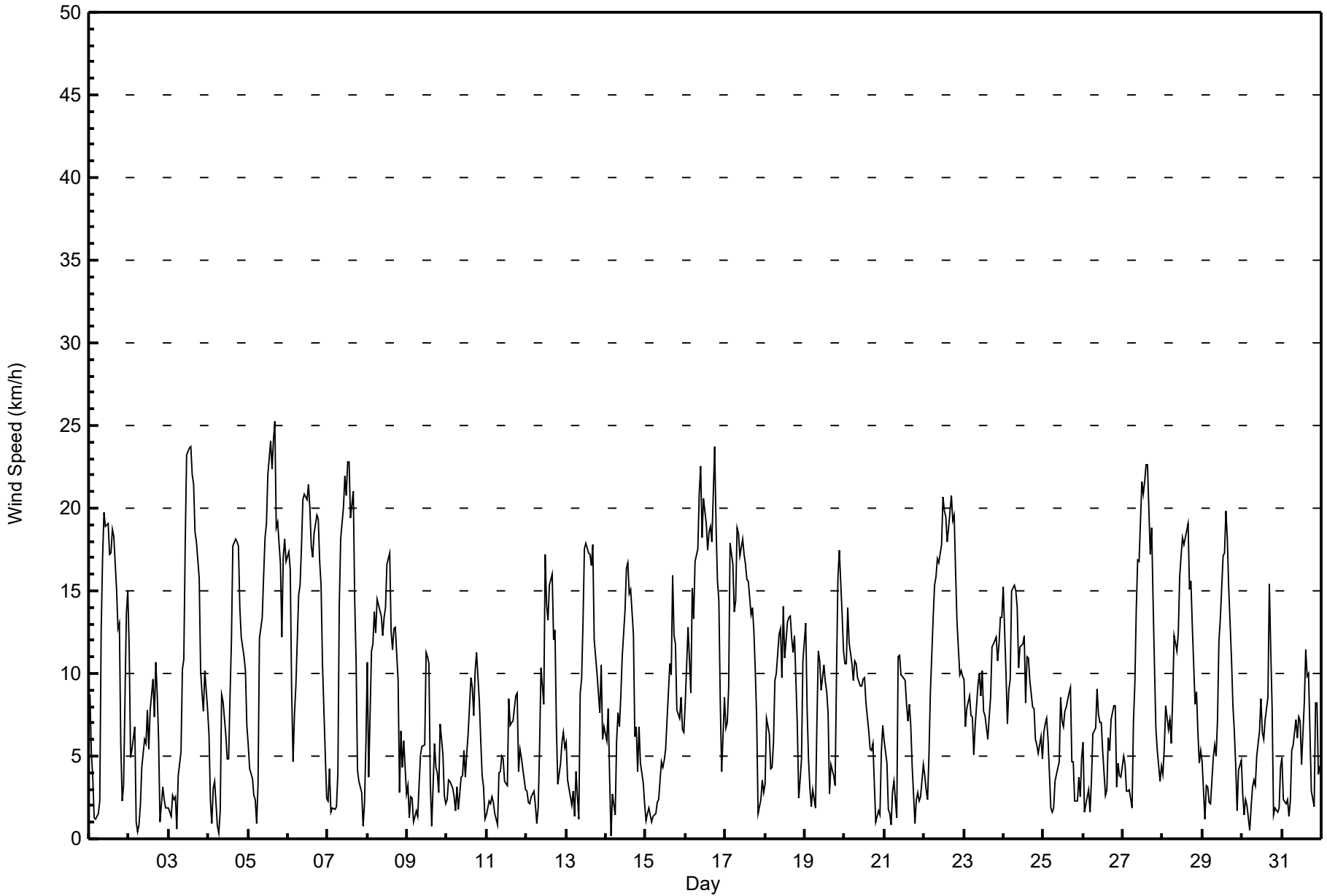
Wind Speed (WS) - km/h
Fort McKay South - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 7 km/h on May 16 10:00														Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0											
Minimum Value: 1 km/h on May 18 00:00																									
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 1 Median = 2 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	1	2	1	1	1	1	2	6	3	4	4	4	4	5	5	4	4	4	4	2	1	3	4	3	6
2-May	3	3	1	2	1	1	2	1	2	2	3	3	3	4	4	4	4	3	2	1	1	1	1	1	4
3-May	1	1	2	2	2	1	2	2	2	3	5	6	6	6	6	5	5	4	4	2	2	1	1	1	6
4-May	2	2	1	1	1	3	2	2	3	2	3	3	3	2	4	4	4	4	4	4	3	2	2	2	4
5-May	1	1	2	1	1	1	2	4	3	3	4	6	5	5	6	5	6	5	5	5	3	6	5	4	6
6-May	4	5	3	1	2	2	3	3	4	4	4	6	5	5	5	5	5	5	5	4	4	3	2	1	6
7-May	1	1	1	1	1	1	3	4	4	5	6	6	6	6	5	5	5	5	2	1	1	2	1	3	6
8-May	6	3	3	3	3	3	4	3	3	3	4	4	5	4	3	4	4	3	4	2	3	2	3	2	6
9-May	2	1	1	1	1	1	1	1	2	2	3	4	4	4	4	2	2	1	1	1	3	2	1	1	4
10-May	1	1	1	1	1	1	1	2	1	2	2	2	3	5	5	4	3	3	3	3	1	1	1	1	5
11-May	1	1	1	1	2	1	1	1	2	2	2	3	3	3	4	4	3	3	2	2	1	2	2	1	4
12-May	2	1	1	1	1	1	1	1	2	3	5	5	5	5	6	5	4	3	3	1	1	1	1	1	6
13-May	1	1	1	1	1	1	1	1	2	3	2	4	4	4	6	4	3	2	2	2	2	2	2	2	6
14-May	2	2	2	2	2	1	1	2	2	3	3	5	6	4	5	4	4	2	2	1	2	1	1	1	6
15-May	2	1	1	1	1	1	2	1	1	2	2	2	2	2	3	6	5	4	3	1	1	2	4	3	6
16-May	2	4	3	3	6	5	6	7	6	7	6	7	7	6	7	7	6	6	5	4	4	3	3	2	7
17-May	1	3	4	6	5	4	5	5	4	4	4	5	5	5	5	5	4	4	3	3	1	1	1	1	6
18-May	1	2	1	1	1	2	2	3	4	4	4	4	4	5	4	4	3	4	3	3	1	1	2	3	5
19-May	3	3	2	2	2	1	1	3	3	3	2	2	2	3	2	2	2	2	1	2	4	5	3	3	5
20-May	2	2	3	3	2	2	3	3	2	2	3	3	3	3	3	3	2	1	2	1	1	1	1	2	3
21-May	2	2	1	1	1	1	1	3	2	2	2	2	3	2	2	2	2	1	1	3	2	1	2	1	3
22-May	1	1	1	3	2	3	4	4	4	4	4	5	5	5	5	5	6	6	6	5	5	3	3	3	6
23-May	3	2	2	2	2	2	2	3	4	4	3	4	3	4	2	3	4	4	4	3	2	3	3	4	4
24-May	4	3	2	3	4	4	4	3	3	3	3	3	3	3	4	4	3	3	3	2	2	2	2	2	4
25-May	1	2	2	2	1	1	1	2	2	2	3	4	3	3	4	2	3	3	1	1	1	1	1	1	4
26-May	2	1	1	1	1	1	1	2	2	2	2	3	4	4	3	3	2	4	2	2	1	1	1	1	4
27-May	1	2	1	1	1	1	2	2	5	5	5	5	5	6	5	5	5	4	3	2	1	1	1	1	6
28-May	1	1	1	2	2	3	2	3	3	5	4	6	7	6	6	6	6	5	6	4	4	2	1	1	7
29-May	2	1	1	2	2	2	2	2	2	4	4	5	6	7	7	6	5	4	4	2	1	1	1	1	7
30-May	1	1	1	1	1	1	2	1	2	2	2	3	4	4	4	4	5	4	4	1	1	2	2	2	5
31-May	2	2	2	1	1	1	2	3	2	2	2	3	3	4	3	3	3	2	2	1	4	3	2	2	4
														Diurnal Maximum											



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Fort McKay South - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed (WS) - km/h
Fort McKay South - May 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	278	37.37	37.37
6 - 11	246	33.06	70.43
12 - 19	183	24.60	95.03
20 - 28	37	4.97	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Fort McKay South - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	12	6	9	4	7	11	9	15	36	41	41	29	16	12	18	12	278
6 - 11	24	16	8	2	3	18	20	37	49	15	8	11	6	8	9	12	246
12 - 19	27	14	1	0	0	0	25	35	46	9	6	4	1	0	6	9	183
20 - 28	2	2	0	0	0	0	10	11	7	0	1	0	0	0	1	3	37
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	65	38	18	6	10	29	64	98	138	65	56	44	23	20	34	36	744

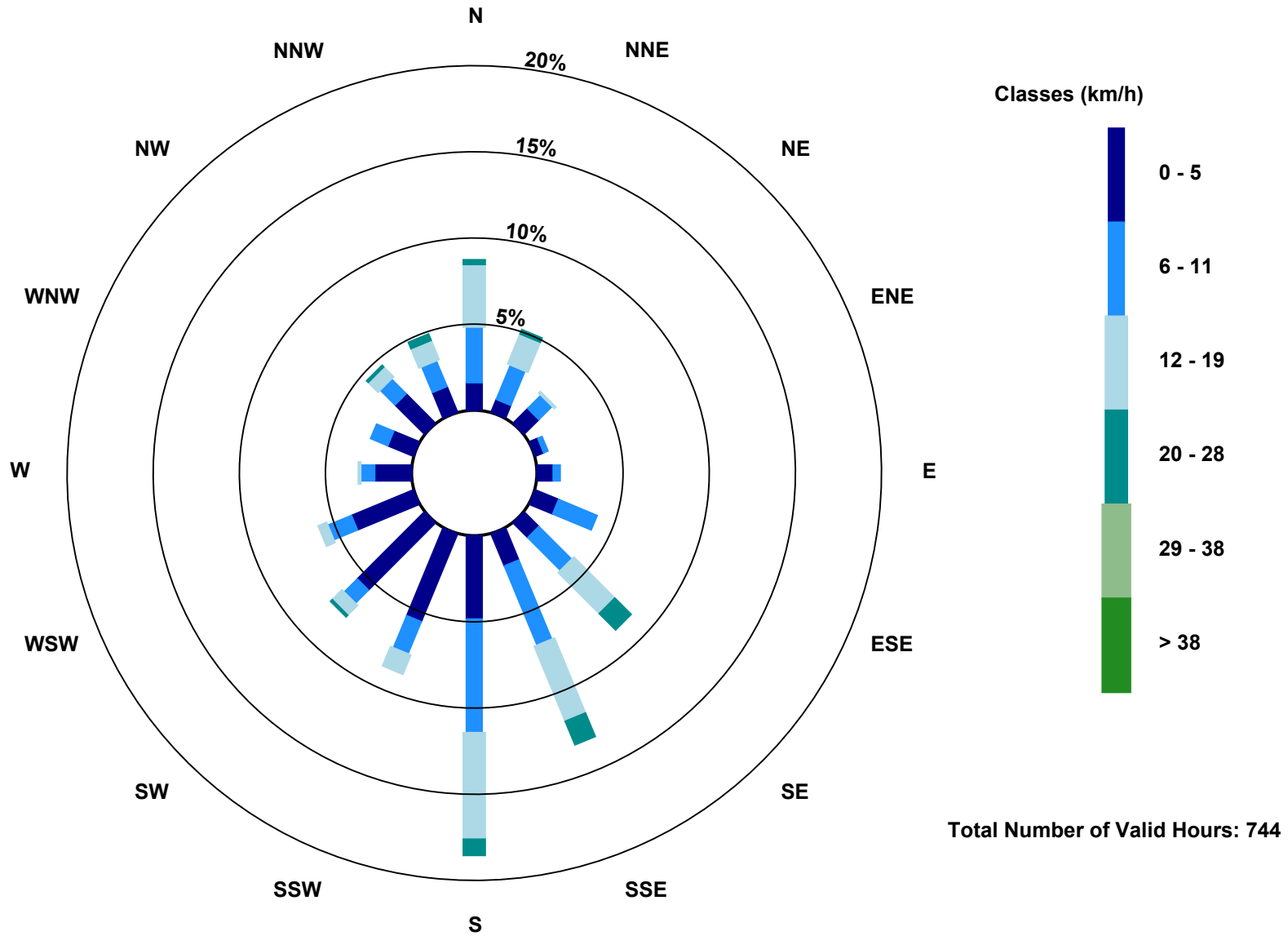
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Fort McKay South





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Fort McKay South - May 2023

Direction of Maximum Speed: 149 deg on May 5 17:00 Direction of Maximum Daily Speed Average: 331.6 deg on May 16	Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0
Direction of Minimum Speed: 243 deg on May 14 04:00 Direction of Minimum Daily Speed Average: 1.5 deg on May 19	Percent Operational Time: 100.0
Monthly Average Direction: 167.8 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	182	188	199	196	307	234	20	156	151	153	158	165	169	190	175	181	188	189	190	195	215	278	328	355	176.6
2-May	344	335	290	287	215	284	6	236	32	51	39	45	119	340	303	301	324	301	316	197	236	230	227	226	325.8
3-May	195	291	243	232	203	193	167	116	134	144	190	172	172	170	171	172	176	172	177	174	174	181	176	184	172.6
4-May	178	323	250	236	198	279	319	120	149	107	138	156	26	18	9	360	16	8	7	9	5	357	351	360	14.3
5-May	346	344	335	220	287	23	173	144	143	157	152	146	138	147	139	146	149	133	130	132	133	139	144	149	142.6
6-May	147	147	150	142	142	148	143	137	138	145	145	148	148	157	137	132	138	141	143	140	142	132	138	109	142.8
7-May	340	322	257	298	301	267	148	143	147	142	143	143	145	143	142	157	176	157	155	355	324	46	92	140	147.9
8-May	173	183	153	160	156	162	162	168	167	155	145	145	158	171	184	199	188	171	258	294	227	217	227	175	172.1
9-May	207	282	229	174	257	205	205	187	169	161	122	180	190	177	304	2	64	122	125	203	232	210	173	205	180.9
10-May	229	214	212	212	201	235	166	119	104	70	101	40	14	285	259	17	8	9	20	19	350	328	267	246	356.9
11-May	246	234	297	212	243	276	180	41	96	81	52	59	126	102	152	178	135	118	156	187	198	226	223	185	148.4
12-May	188	202	187	242	247	256	251	63	121	166	161	165	173	170	159	165	174	157	181	187	189	189	185	198	172.1
13-May	181	199	200	165	204	214	159	169	159	153	169	182	178	186	186	192	183	178	175	176	171	186	198	228	181.3
14-May	225	217	186	243	205	230	170	175	186	174	174	177	168	190	199	200	215	310	358	359	346	335	310	247	198.1
15-May	307	316	210	265	295	252	316	46	41	107	130	100	112	123	120	149	173	180	182	188	199	207	287	326	166.8
16-May	324	338	343	335	327	322	328	327	327	328	316	320	316	323	331	324	328	333	5	356	358	355	332	328	331.6
17-May	311	313	335	352	359	14	22	6	2	6	13	1	5	16	22	23	13	21	30	46	3	260	223	204	6.5
18-May	203	184	188	217	181	152	168	179	170	170	189	173	198	174	157	171	175	174	173	184	211	208	210	199	178.9
19-May	203	169	158	219	210	226	186	163	186	187	179	187	190	201	193	304	8	351	319	342	0	5	356	349	223.3
20-May	349	349	354	348	349	346	349	358	3	10	359	352	356	2	354	7	6	3	0	6	217	242	175	177	354.3
21-May	181	183	154	265	244	174	2	131	157	163	165	154	137	109	122	137	130	127	255	336	219	214	306	345	151.6
22-May	346	309	331	340	349	360	3	4	6	2	5	5	10	15	19	19	17	19	16	25	43	45	26	18	12.2
23-May	38	47	26	18	17	15	49	91	95	106	116	124	123	115	101	112	115	136	137	137	153	158	157	154	110.2
24-May	158	147	128	147	146	155	155	161	162	179	170	166	171	209	246	247	237	248	253	225	253	257	267	268	185.5
25-May	250	267	280	290	166	227	260	235	225	66	35	29	4	18	15	18	11	46	12	131	215	191	184	180	348.7
26-May	191	187	203	194	242	181	160	166	149	131	116	154	192	191	90	131	93	184	153	155	191	187	198	205	161.7
27-May	196	189	208	205	235	218	152	136	184	191	183	172	178	165	168	165	180	172	177	180	178	161	188	172	175.2
28-May	215	201	191	189	178	148	140	174	192	190	200	209	210	225	221	223	248	249	264	273	306	288	250	254	218.1
29-May	263	179	163	243	221	225	150	162	136	205	238	239	223	221	218	213	208	230	244	240	277	258	302	321	223.2
30-May	251	230	222	219	267	211	239	237	51	93	118	145	153	170	237	278	308	316	327	304	274	262	230	284	258.8
31-May	241	255	189	228	188	154	180	157	113	125	69	127	122	137	175	199	184	158	167	324	331	7	324	279	162.8

209.6 223.5 221.5 260.1 254.5 194.5 140.5 142.7 142.9 143.8 149.8 159.1 164.0 167.3 172.1 175.8 175.6 164.6 159.8 142.8 232.0 198.9 228.2 225.2
 Diurnal Average

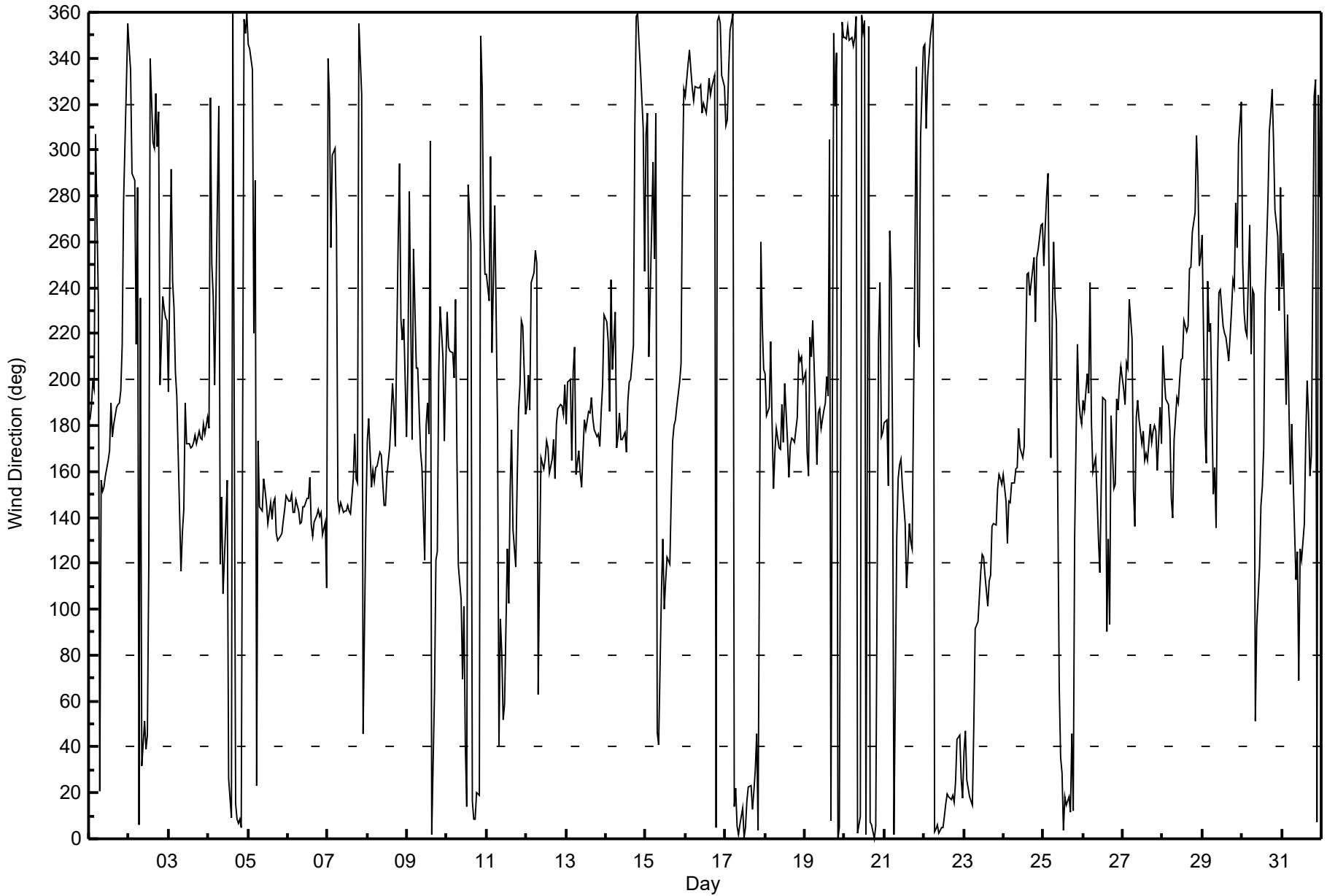
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Fort McKay South - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 101 deg on May 9 16:00																	Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0								
Minimum Value: 6 deg on May 13 21:00																									
Percentiles: P ₁ = 9 P ₁₀ = 15 Q ₁ = 18 Median = 25 Q ₃ = 43 P ₉₀ = 62 P ₉₉ = 91																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	9	14	10	71	59	41	76	47	14	15	16	19	26	22	20	18	18	19	15	13	26	53	20	17	76
2-May	17	22	21	18	87	95	83	76	49	45	62	50	68	53	54	64	41	33	34	78	16	15	28	21	95
3-May	34	59	41	40	53	91	35	39	15	19	22	16	18	18	19	17	19	14	13	9	12	10	8	10	91
4-May	13	69	88	29	20	94	97	83	22	31	52	65	67	24	21	19	17	18	18	16	16	16	13	18	97
5-May	16	20	27	39	41	88	35	16	16	17	21	18	17	14	18	15	14	19	17	16	14	15	13	14	88
6-May	12	13	17	20	14	11	12	16	16	18	17	18	17	25	25	26	19	18	17	16	13	15	23	45	45
7-May	50	12	60	24	30	44	71	13	14	14	16	19	17	20	16	17	18	33	55	22	46	83	38	27	83
8-May	33	52	20	24	8	9	13	16	21	26	23	30	22	19	22	25	27	18	45	78	32	48	34	60	78
9-May	43	58	57	27	61	55	53	36	46	42	62	28	38	41	92	101	28	44	59	48	21	42	51	67	101
10-May	57	22	29	22	31	33	24	77	49	58	47	82	70	78	41	42	39	19	17	21	23	14	27	57	82
11-May	50	30	46	61	30	57	73	36	39	49	59	90	89	42	79	60	59	31	14	19	21	48	47	50	90
12-May	55	55	35	17	19	47	80	78	37	27	44	21	26	32	27	23	24	21	21	29	16	12	10	14	80
13-May	12	21	21	56	32	66	16	84	14	32	18	18	15	19	16	22	15	16	11	9	6	11	19	18	84
14-May	17	19	55	91	63	78	16	18	32	22	18	21	20	27	26	29	32	61	31	51	11	15	31	54	91
15-May	60	52	63	67	69	62	63	43	75	47	64	51	46	40	25	43	18	18	14	9	11	14	49	20	75
16-May	17	15	17	19	20	24	22	23	20	21	26	25	26	26	27	23	21	21	20	18	17	21	48	15	48
17-May	17	25	23	19	21	21	22	22	19	21	22	23	25	25	29	31	24	25	23	26	62	13	35	17	62
18-May	17	10	13	24	19	13	17	27	23	24	39	26	38	28	34	24	32	24	15	13	24	35	19	16	39
19-May	18	31	29	54	42	28	63	17	18	21	26	23	22	28	27	66	41	42	21	14	18	17	17	16	66
20-May	15	15	16	15	16	15	14	18	21	21	28	28	29	36	44	48	32	22	34	83	46	45	14	17	83
21-May	28	10	70	35	60	38	19	71	13	18	23	19	21	25	34	24	17	24	66	56	41	52	44	17	71
22-May	19	28	19	11	13	17	17	18	17	18	19	19	20	19	21	20	20	20	19	20	27	25	20	23	28
23-May	27	26	21	18	19	19	35	37	29	26	28	25	24	29	29	26	25	19	18	17	16	13	13	16	37
24-May	15	16	19	16	18	13	13	15	18	15	23	19	39	30	29	28	29	27	26	31	26	25	24	39	39
25-May	16	20	22	32	48	64	73	47	63	65	37	61	51	41	38	27	25	59	21	68	48	20	26	15	73
26-May	21	73	25	45	62	14	21	34	28	25	37	62	76	100	88	51	44	51	26	13	15	12	13	15	100
27-May	17	25	25	26	19	38	14	15	33	22	22	19	21	16	18	15	21	16	15	10	9	12	24	22	38
28-May	20	21	15	14	21	44	16	20	23	26	26	29	29	30	29	26	34	30	32	35	24	26	19	17	44
29-May	52	83	16	64	72	58	22	34	57	55	39	36	32	30	25	28	27	36	34	20	28	78	31	25	83
30-May	34	53	49	53	84	26	33	47	83	49	36	44	52	81	55	46	26	27	26	70	32	88	63	45	88
31-May	24	65	56	55	72	60	32	52	32	45	42	48	66	46	18	23	24	32	68	26	27	23	47	47	72
Diurnal Maximum																									
60 83 88 91 87 95 97 84 83 65 64 90 89 100 92 101 59 61 68 83 62 88 63 67																									





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS14
ANZAC
MAY 2023**

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS14)
MAY 2023

MONTHLY SUMMARY for
AMD SECTION III.B.1(c)

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2(ppb) Average	709	35	35	100	5.8	0	1.4	0
TRS(ppb) Average	709	35	35	100	2.4	0	0.8	0
THC(ppm) Average	708	35	36	99.87	2.4	-	2.1	-
NMHC(ppm) Average	708	35	36	99.87	0.171	-	0.017	-
CH4(ppm) Average	708	35	36	99.87	2.2	-	2.1	-
NO2(ppb) Average	708	36	36	100	10.6	0	3.7	-
NO(ppb) Average	708	36	36	100	8.3	-	1	-
NOX(ppb) Average	708	36	36	100	16.5	-	3.9	-
O3(ppb) Average	710	34	34	100	66.1	0	53.7	-
PM2.5(ug/m3) Average	743	1	1	100	601.6	118	278.3	13
AT 2m(C) Average	744	0	0	100	31.1	-	23.8	-
RH(%) Average	744	0	0	100	99.1	-	81.4	-
WS(km/h) Average	743	0	1	99.87	29	-	22	-
WD(deg) Average	743	0	1	99.87	-	-	-	-
Leaf Wetness (% of range) Average	744	0	0	100	36.2	-	5.5	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS14)
MAY 2023

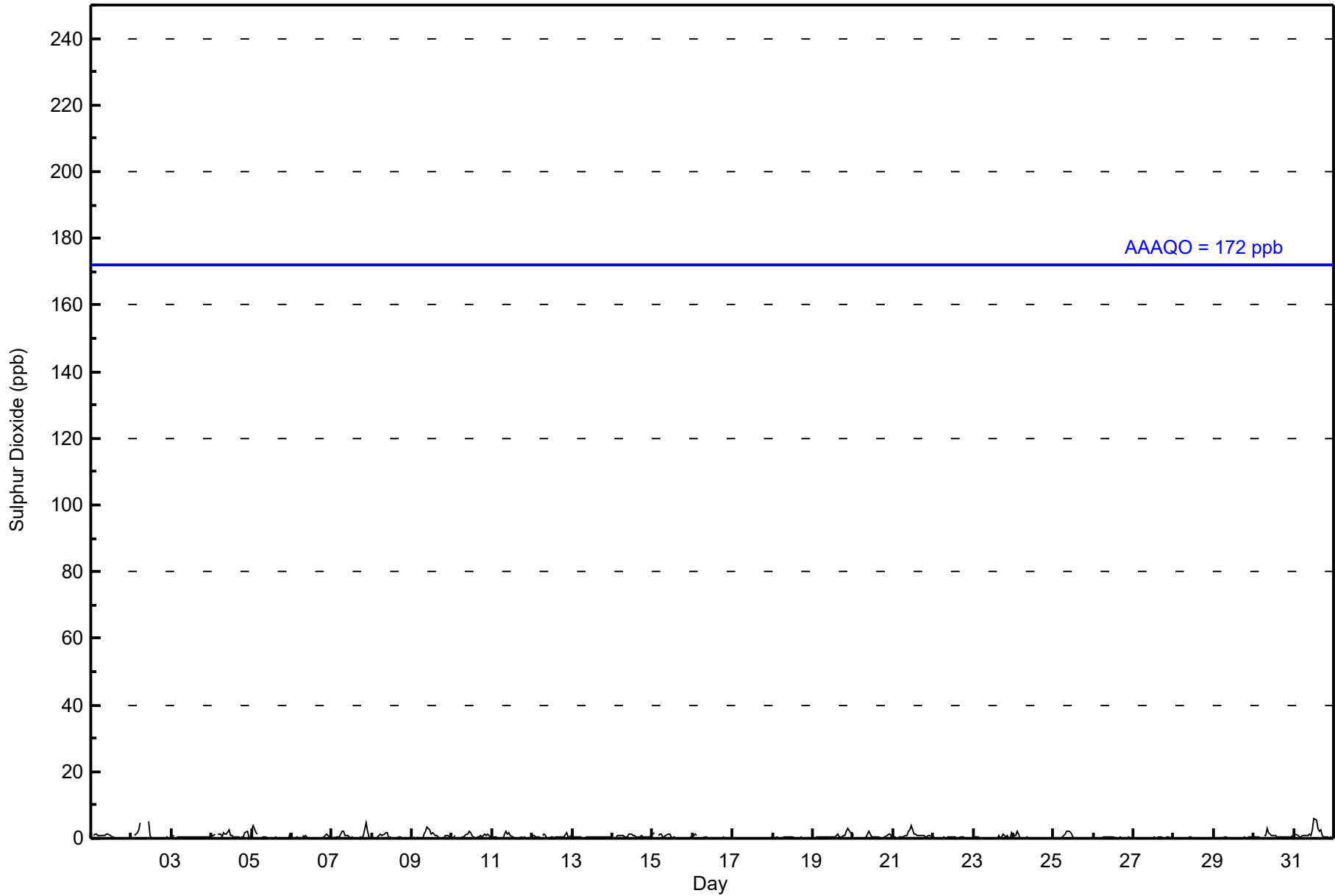
MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2(ppb) Average	709	0.5	0.7	-	0	0	0.1	0.3	0.6	1.2	5.8
TRS(ppb) Average	709	0.45	0.2	-	0.3	0.3	0.3	0.4	0.5	0.6	2.4
THC(ppm) Average	708	2.03	0	-	2	2	2	2	2	2.1	2.4
NMHC (ppm) Average	708	0.002	0.015	-	0	0	0	0	0	0	0.171
CH4(ppm) Average	708	2.03	0	-	2	2	2	2	2	2.1	2.2
NO2(ppb) Average	708	1.85	1.4	-	0.1	0.6	0.9	1.4	2.3	3.6	10.6
NO(ppb) Average	708	0.18	0.6	-	0	0	0	0.1	0.1	0.3	8.3
NOX(ppb) Average	708	2.04	1.7	-	0.1	0.6	1	1.6	2.6	3.9	16.5
O3(ppb) Average	710	38.48	11.3	-	5.5	23.2	32.2	38.5	46.4	52.6	66.1
PM2.5(ug/m3) Average	743	44.37	78.1	-	1	4	5.8	15.5	34.6	142.8	601.6
Temperature 2 m (C) Average	744	15.8	6.5	-	-0.6	7.1	10.5	15.5	21.1	24.6	31.1
Relative Humidity (%) Average	744	49.46	21.4	-	14.7	23.6	31.5	46	65	83.8	99.1
Wind Speed 20 m (km/h) Average	743	11.9	5	-	0	6	8	11	15	20	29
Wind Direction 20 m (deg) Average	743	181.3	-	-	-	-	-	-	-	-	-
Leaf Wetness (% of range) Average	744	0.52	2.7	-	0	0	0	0	0	0	36.2

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS14)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
THC/NMHC/CH4	11 May 2023 07:00	11 May 2023 07:00	1	Maintenance - replaced support gas cylinder
Wind Speed, Wind Direction	09 May 2023 06:00	09 May 2023 06:00	1	Flat line in sensor output signal





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Anzac - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	709	100.00	100.00
11 - 20	0	0.00	100.00
21 - 60	0	0.00	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Anzac - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	15	14	10	14	42	95	126	74	57	33	29	42	70	45	23	19	708
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	14	10	14	42	95	126	74	57	33	29	42	70	45	23	19	708

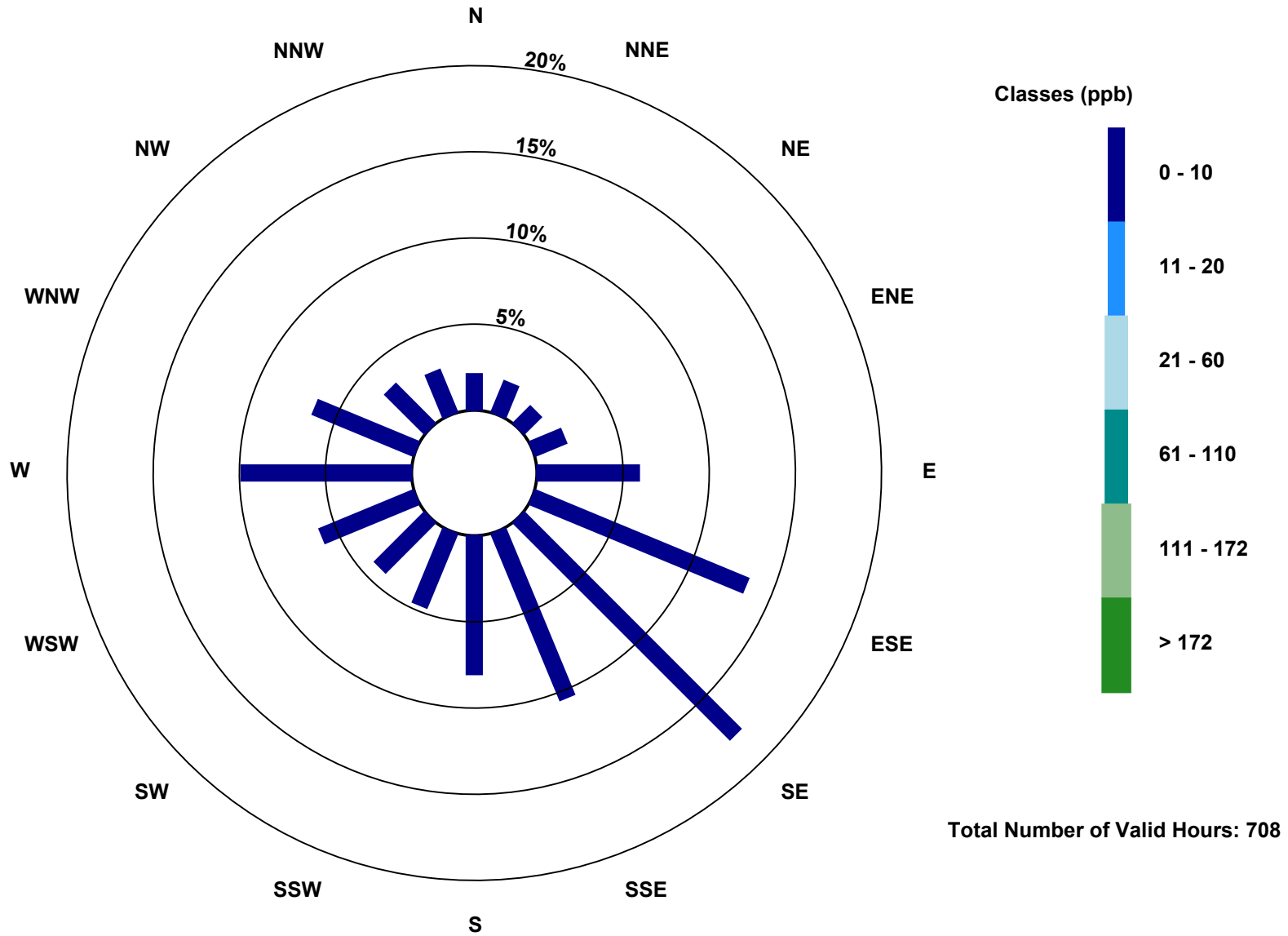
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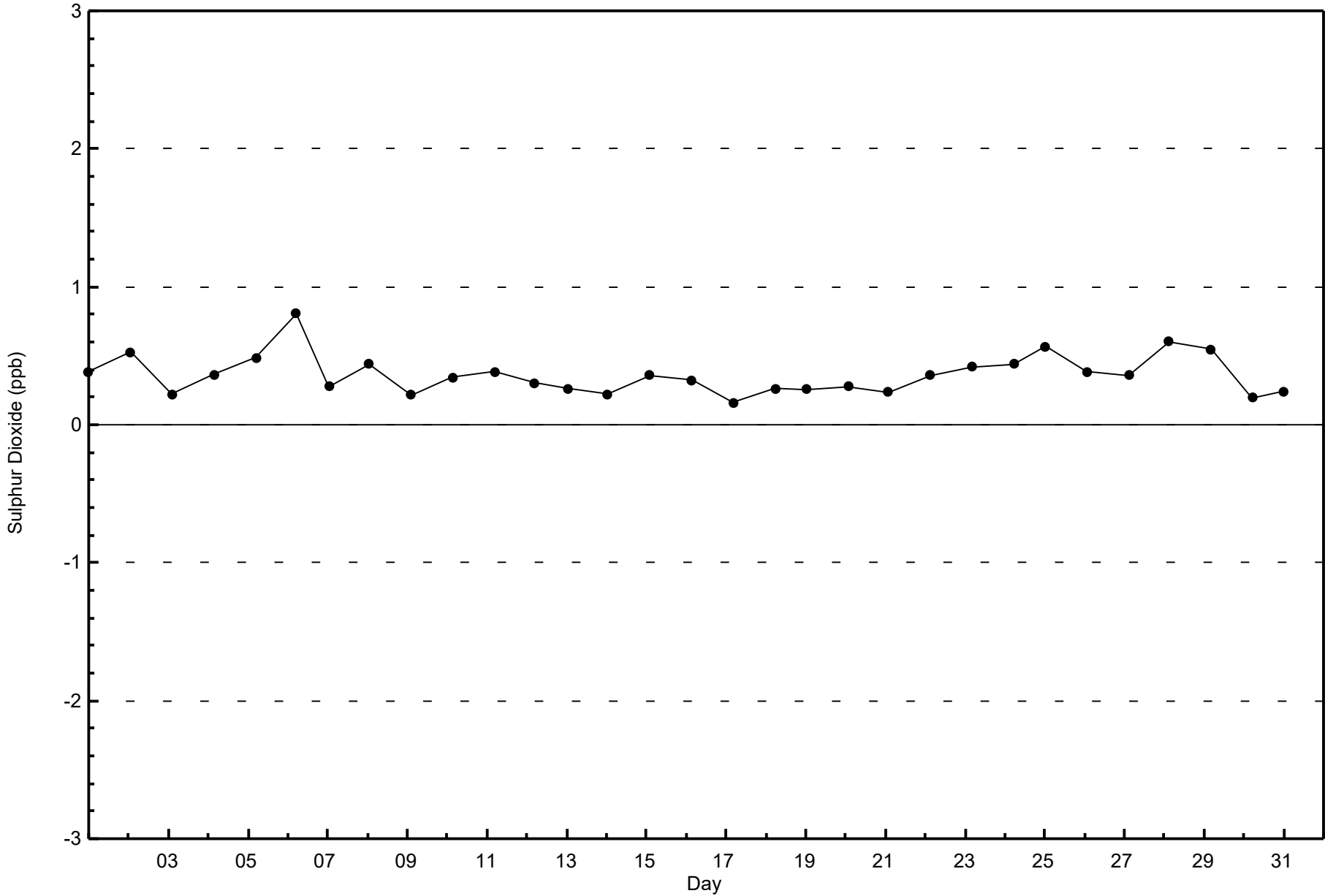
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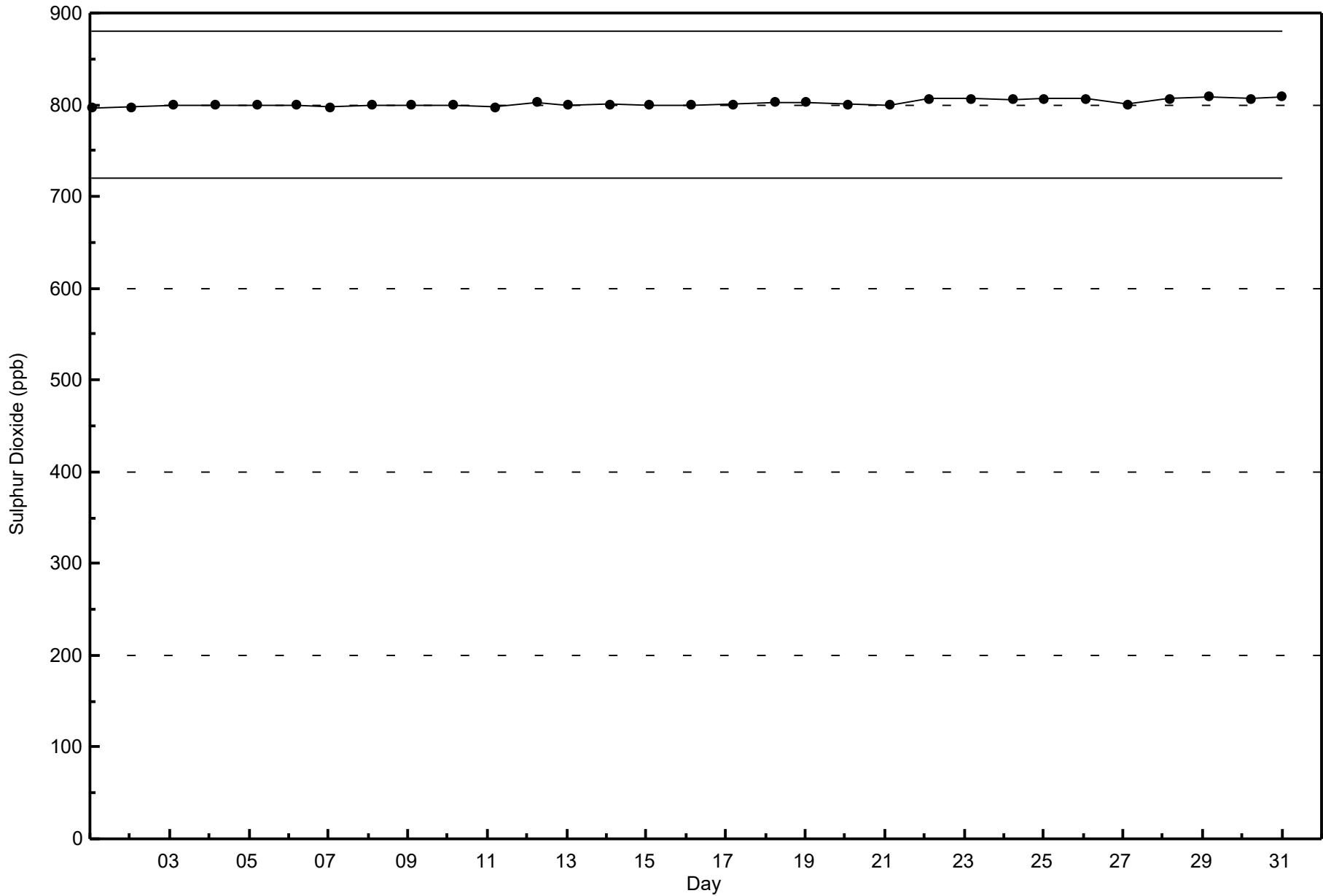


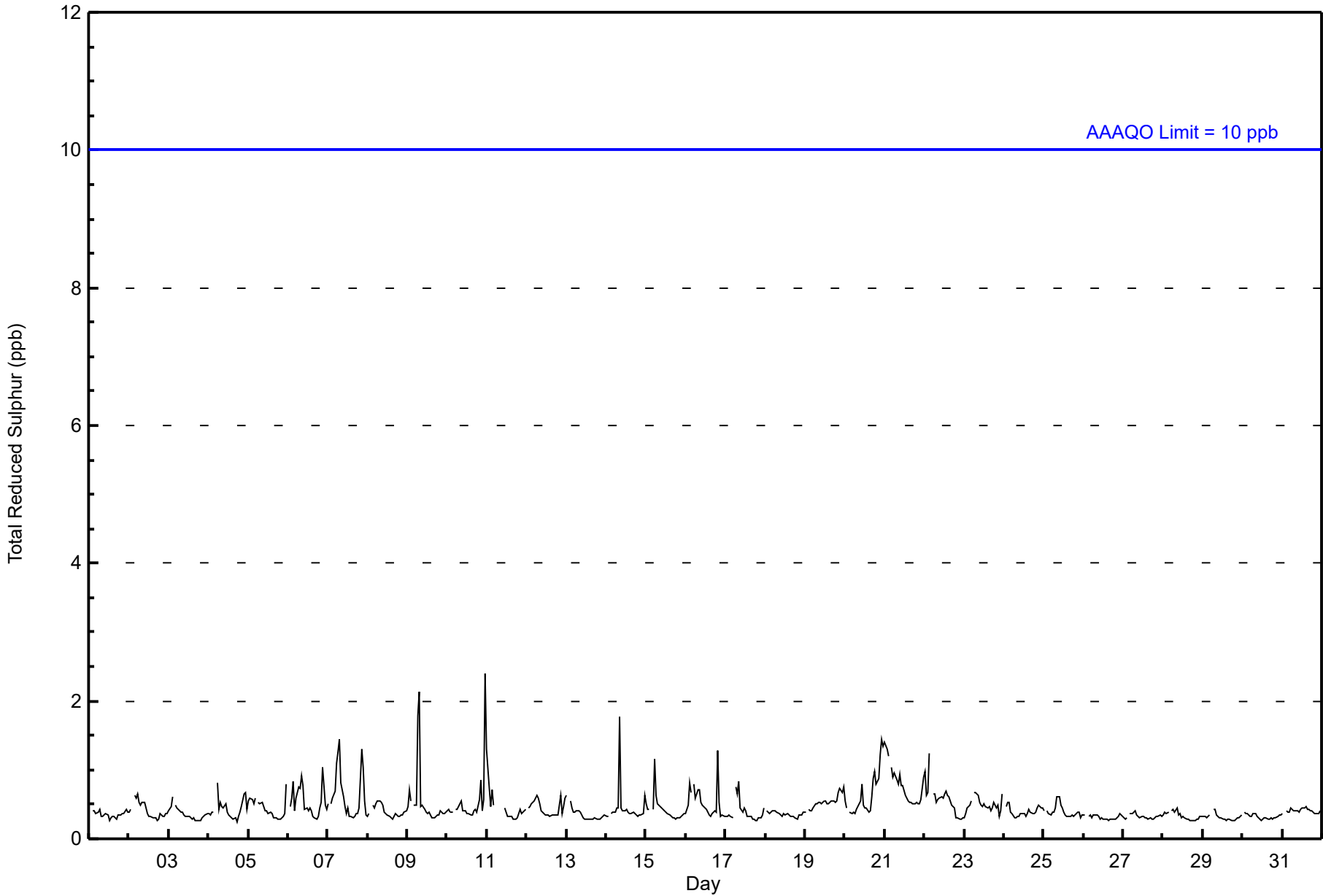
Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Anzac











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Anzac - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	709	100.00	100.00
3 - 4	0	0.00	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Anzac - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	15	13	10	14	42	95	124	71	60	32	29	43	73	44	23	20	708
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	13	10	14	42	95	124	71	60	32	29	43	73	44	23	20	708

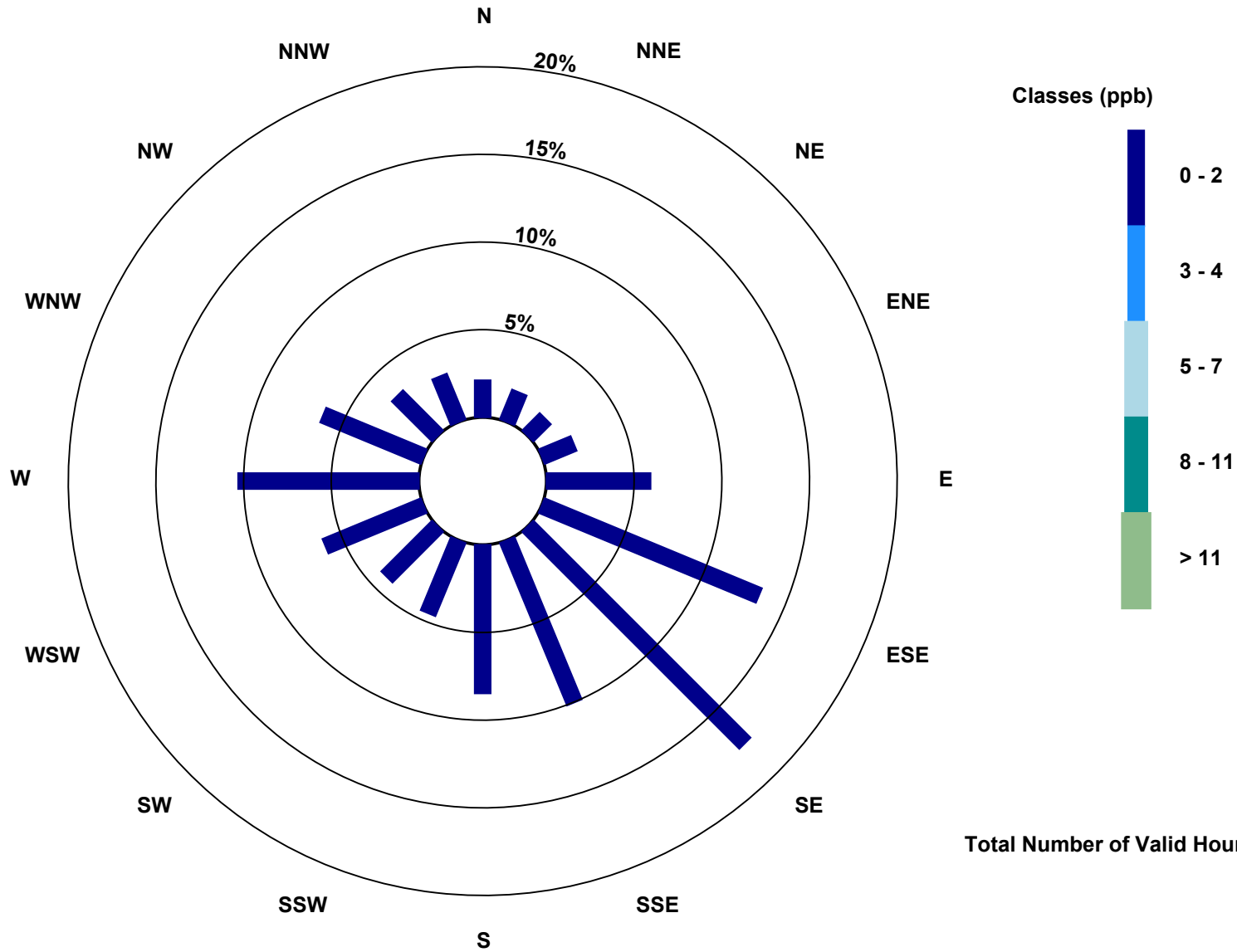
Total Number of Valid Hours: 708

Total Number of Hours: 744

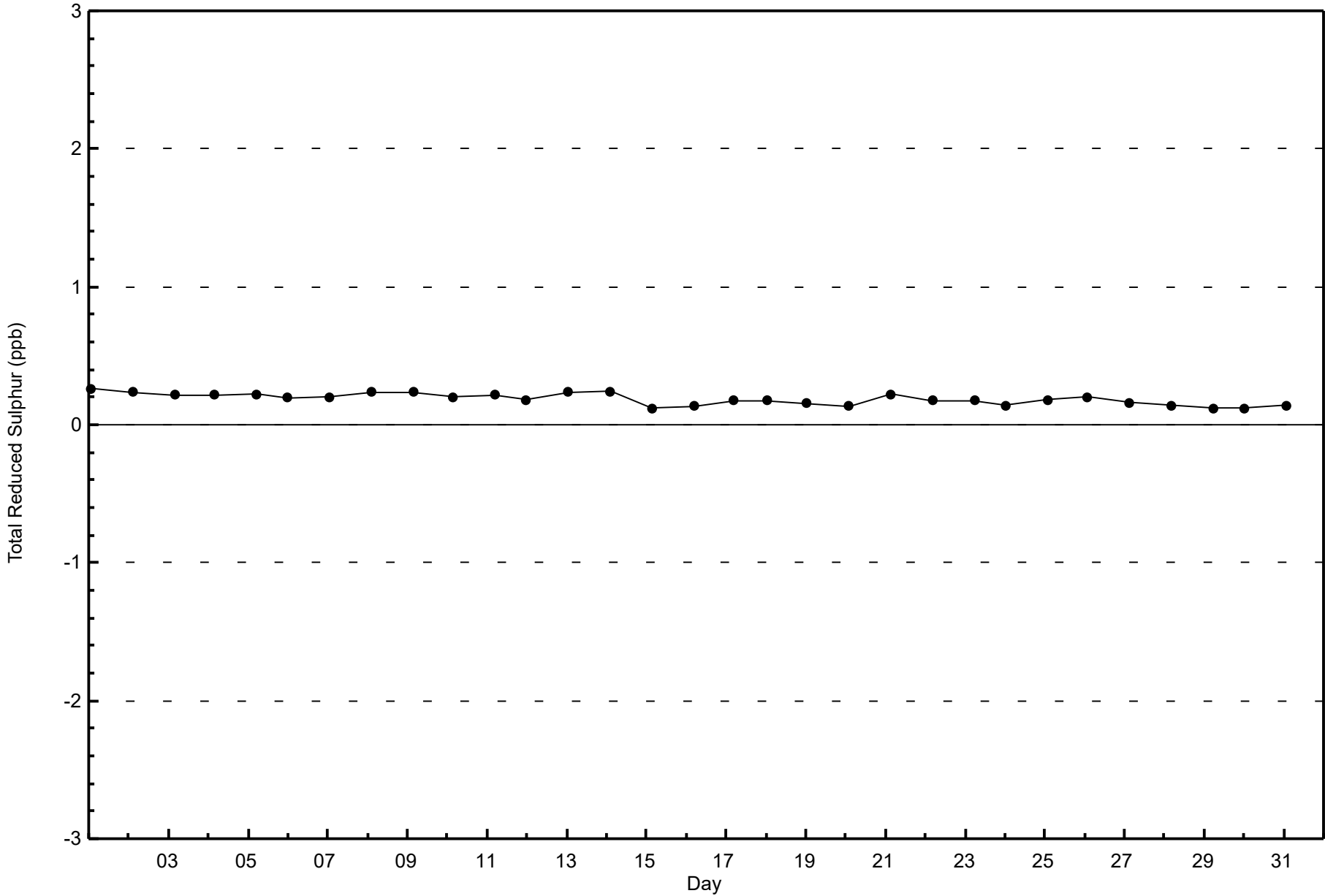


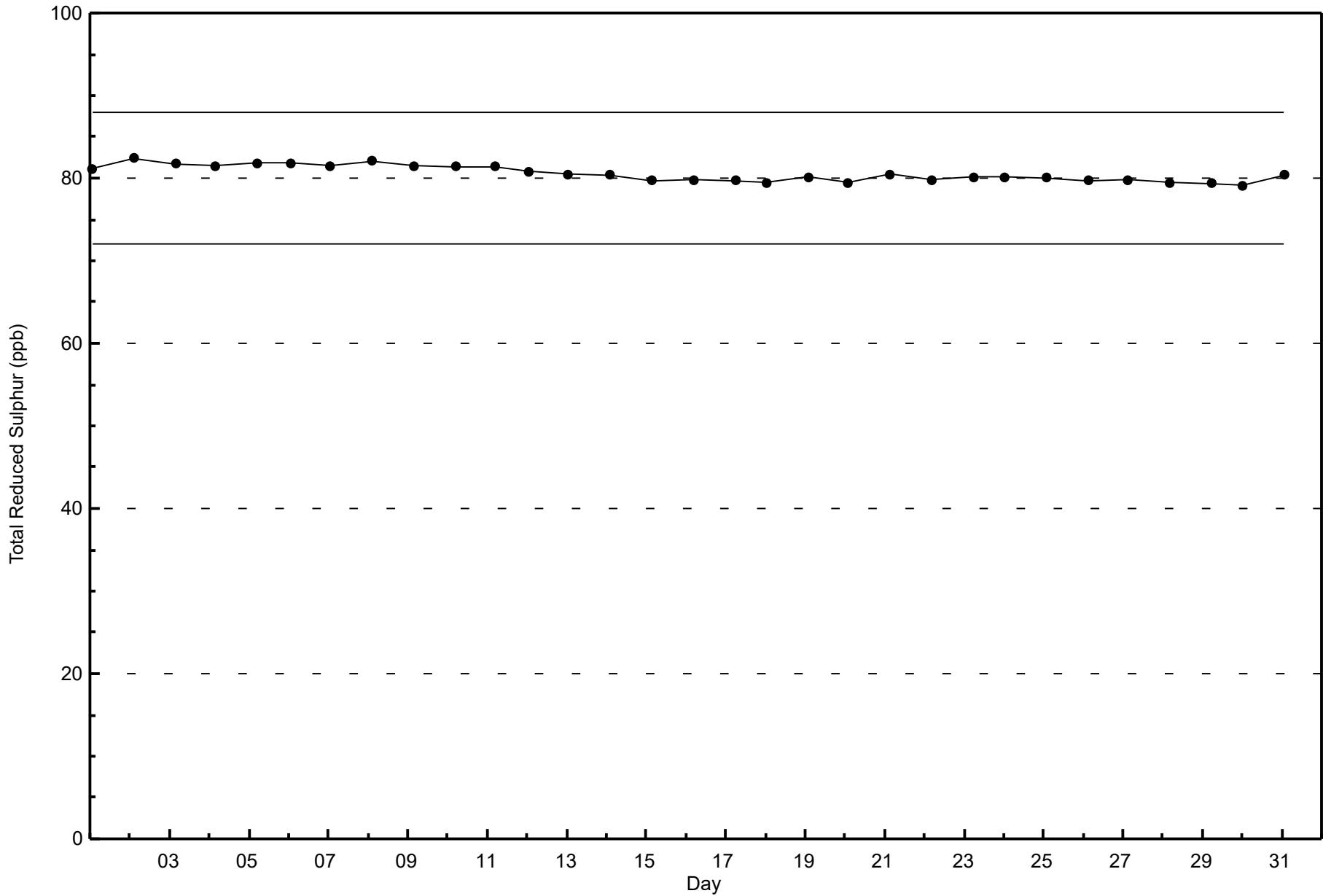
Wood Buffalo Environmental Association
Wind Rose May 2023

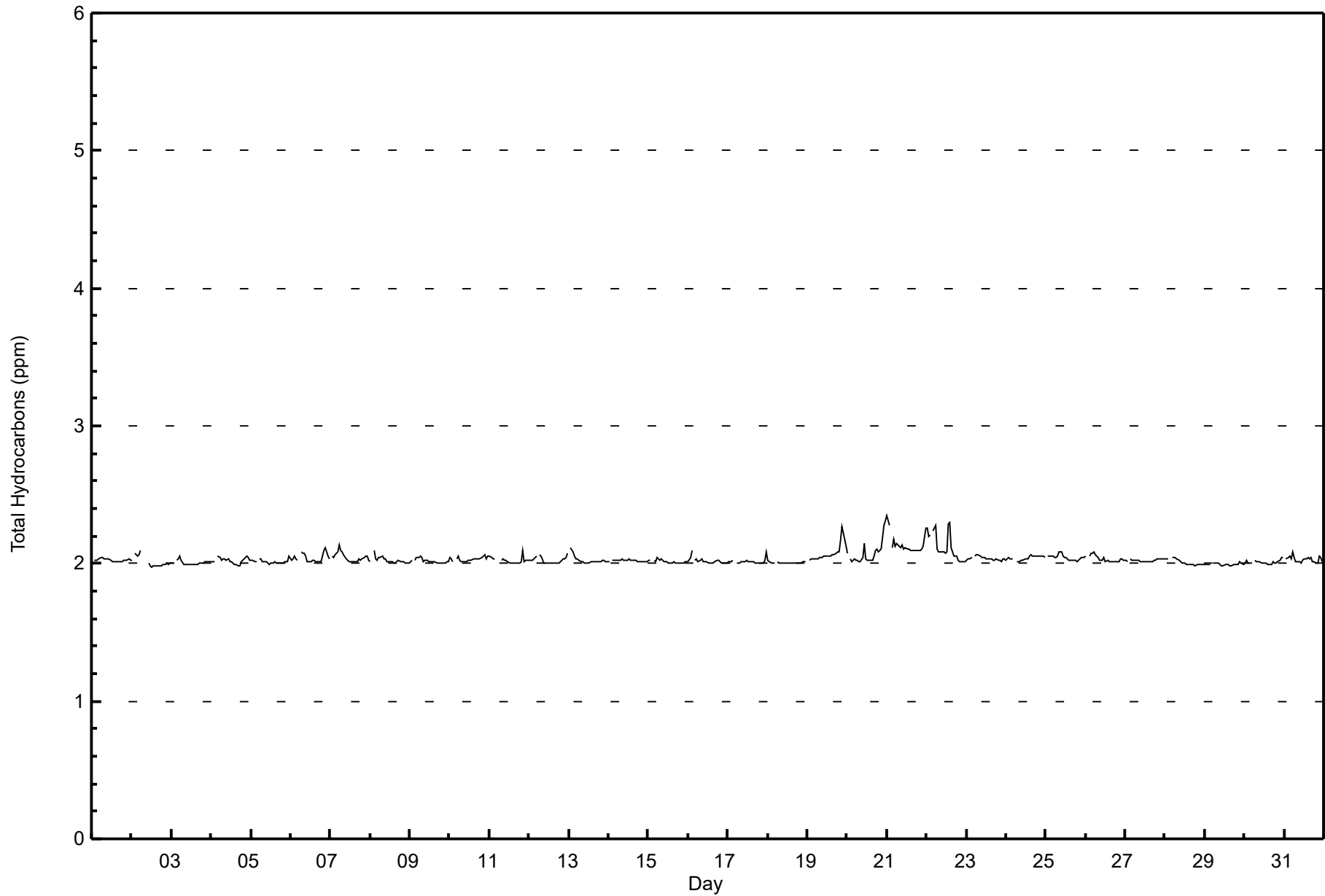
Total Reduced Sulphur (TRS) - ppb
Anzac



Total Number of Valid Hours: 708









Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Anzac - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	575	81.21	81.21
2.1 - 3.0	133	18.79	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Anzac - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	10	11	9	12	35	70	92	66	56	28	29	38	55	30	17	16	574
2.1 - 3.0	5	3	1	2	7	25	33	8	1	5	0	4	15	15	6	3	133
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	14	10	14	42	95	125	74	57	33	29	42	70	45	23	19	707

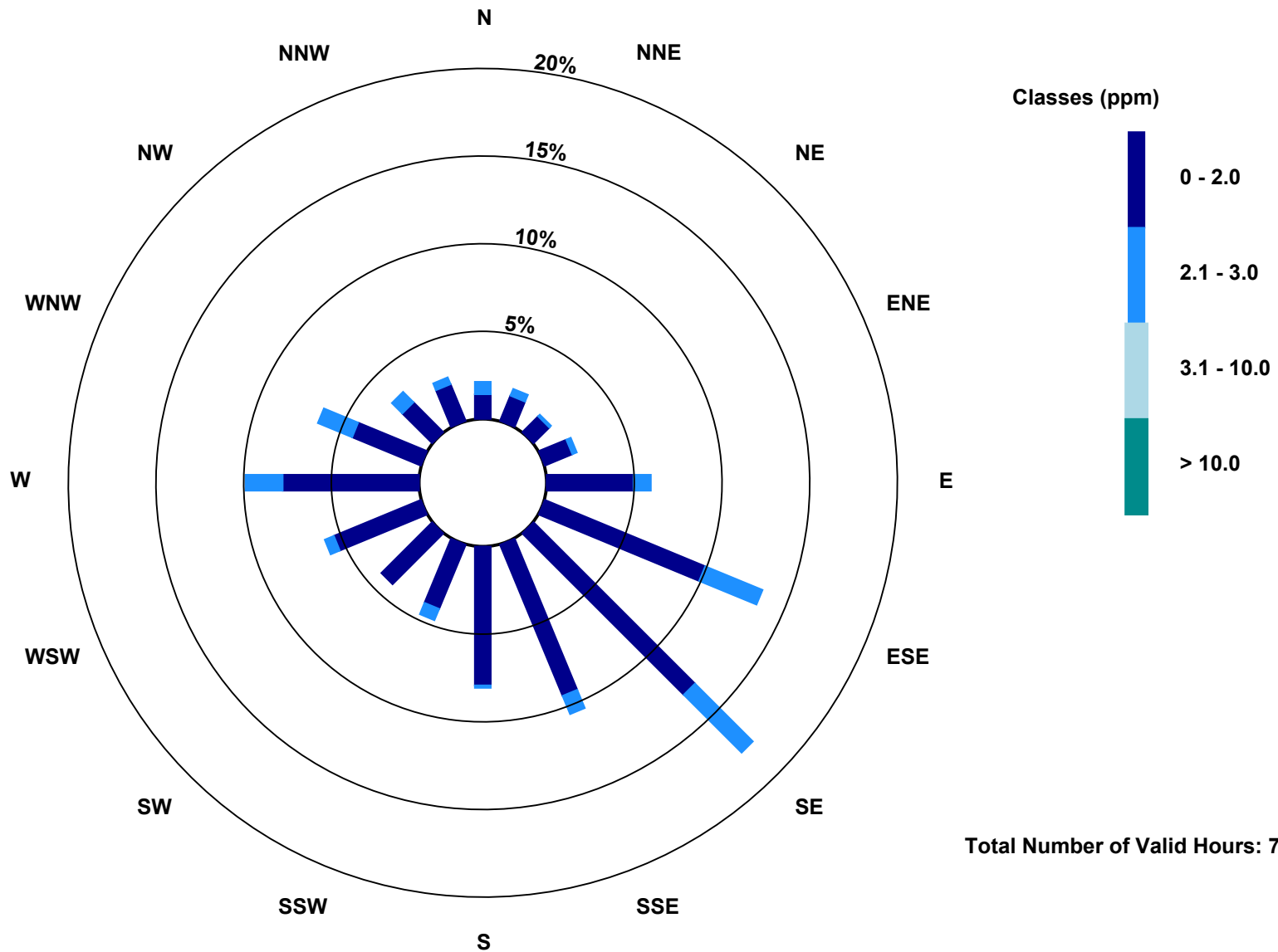
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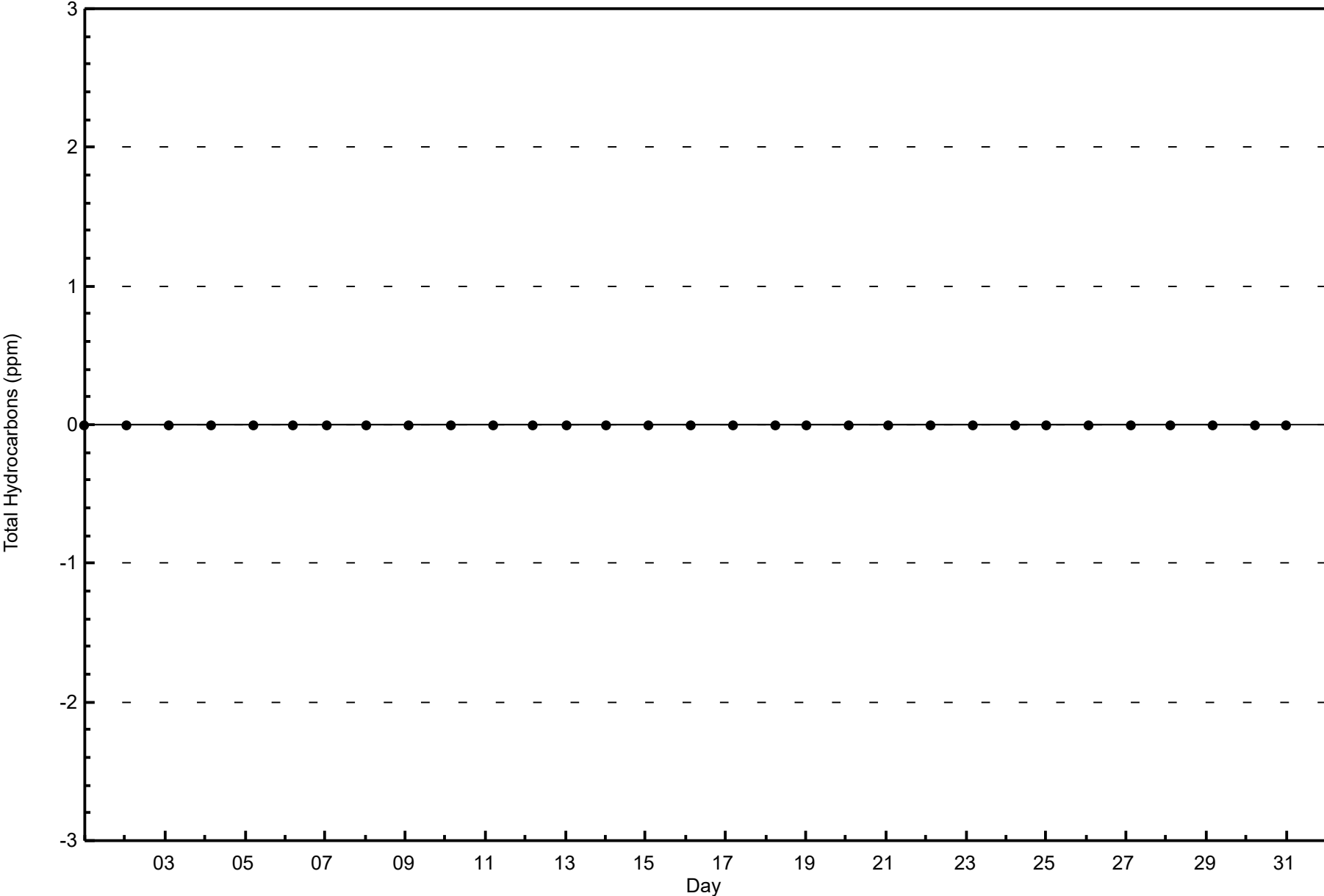
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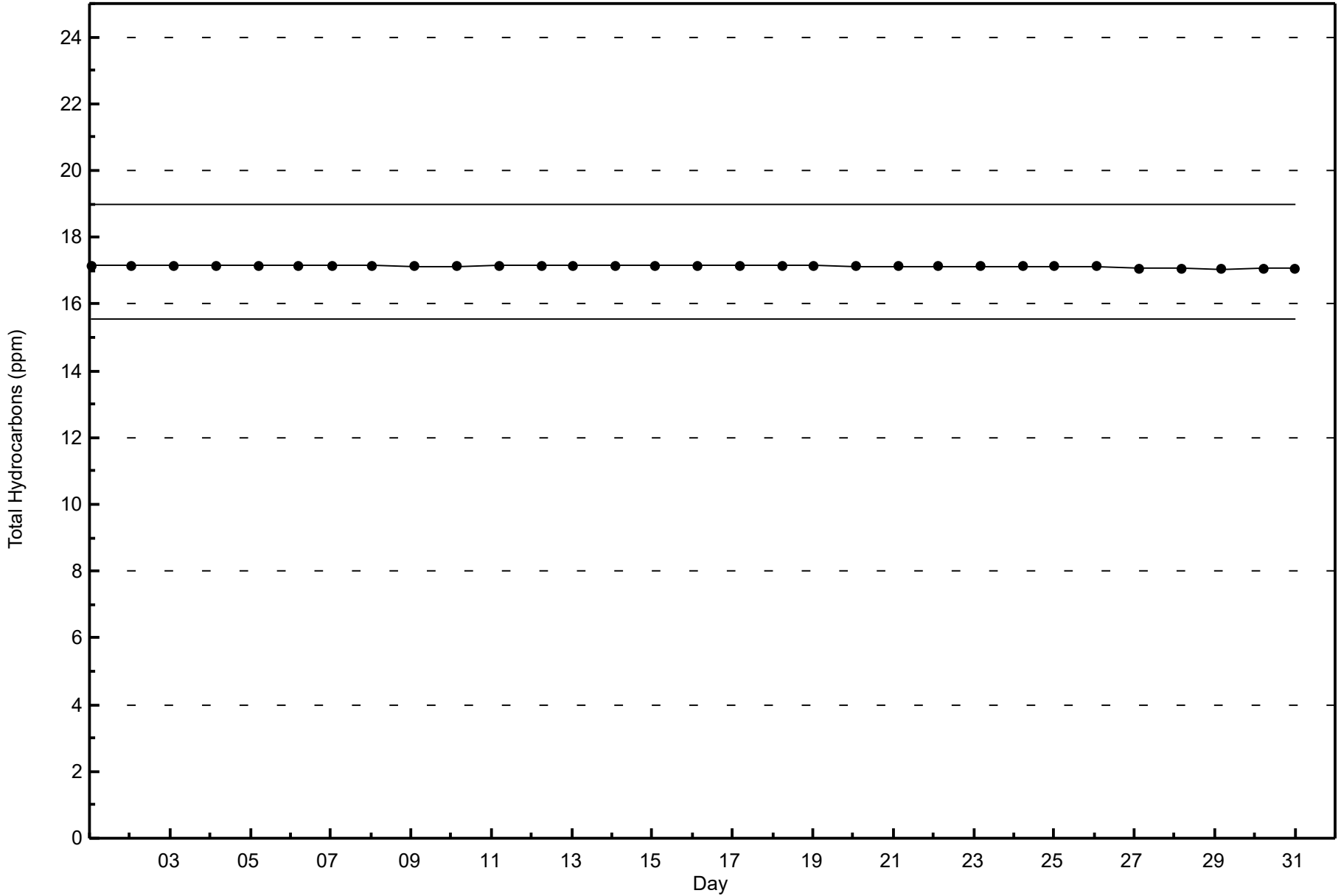


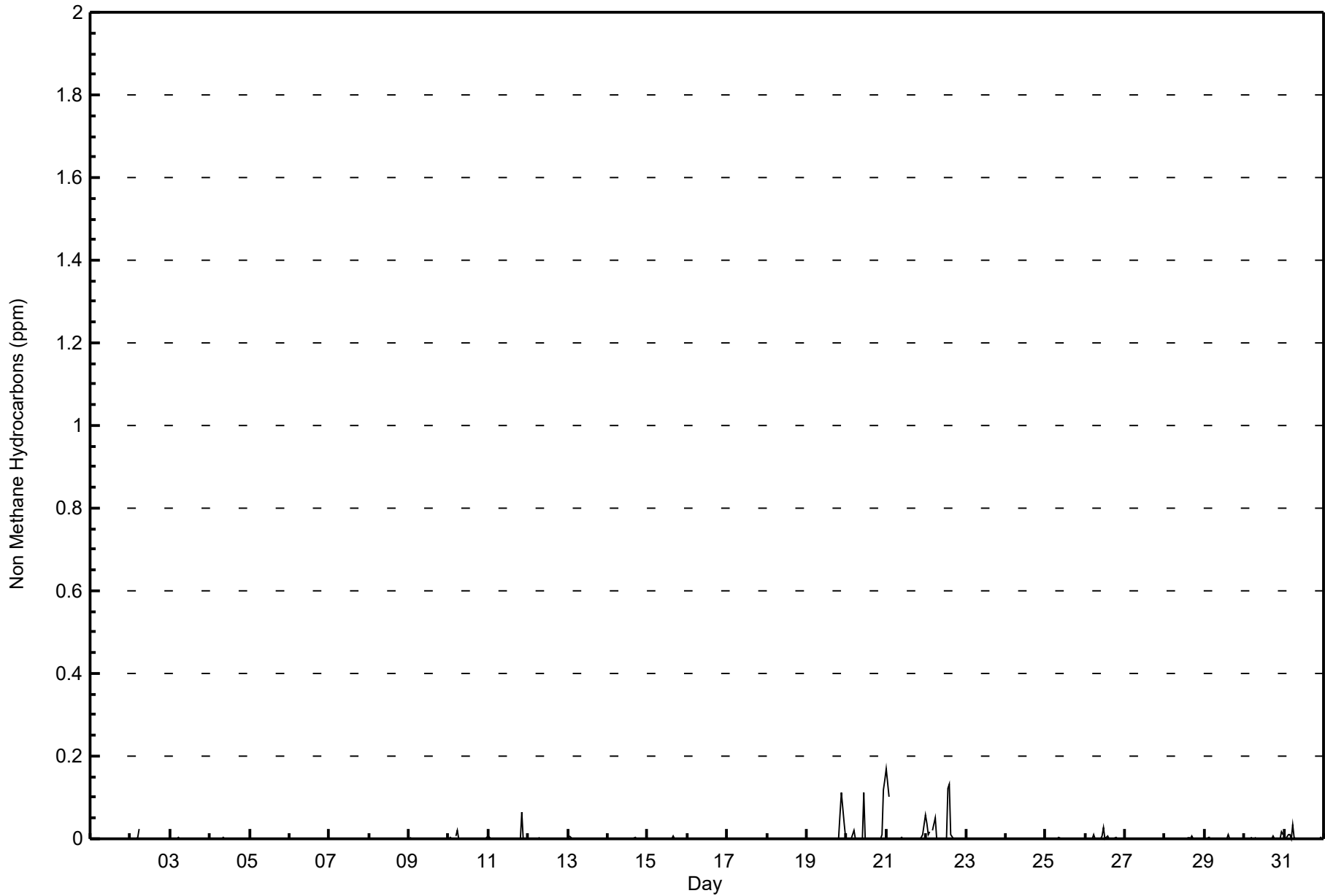
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Anzac











**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Anzac - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	671	94.77	94.77
0.006 - 0.05	26	3.67	98.45
0.06 - 0.1	10	1.41	99.86
> 0.1	1	0.14	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Anzac - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	15	11	10	14	41	92	118	72	55	32	28	37	64	40	23	18	670
0.006 - 0.05	0	3	0	0	0	2	3	2	2	0	1	5	4	3	0	1	26
0.06 - 0.1	0	0	0	0	1	1	3	0	0	1	0	0	2	2	0	0	10
> 0.1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Totals	15	14	10	14	42	95	125	74	57	33	29	42	70	45	23	19	707

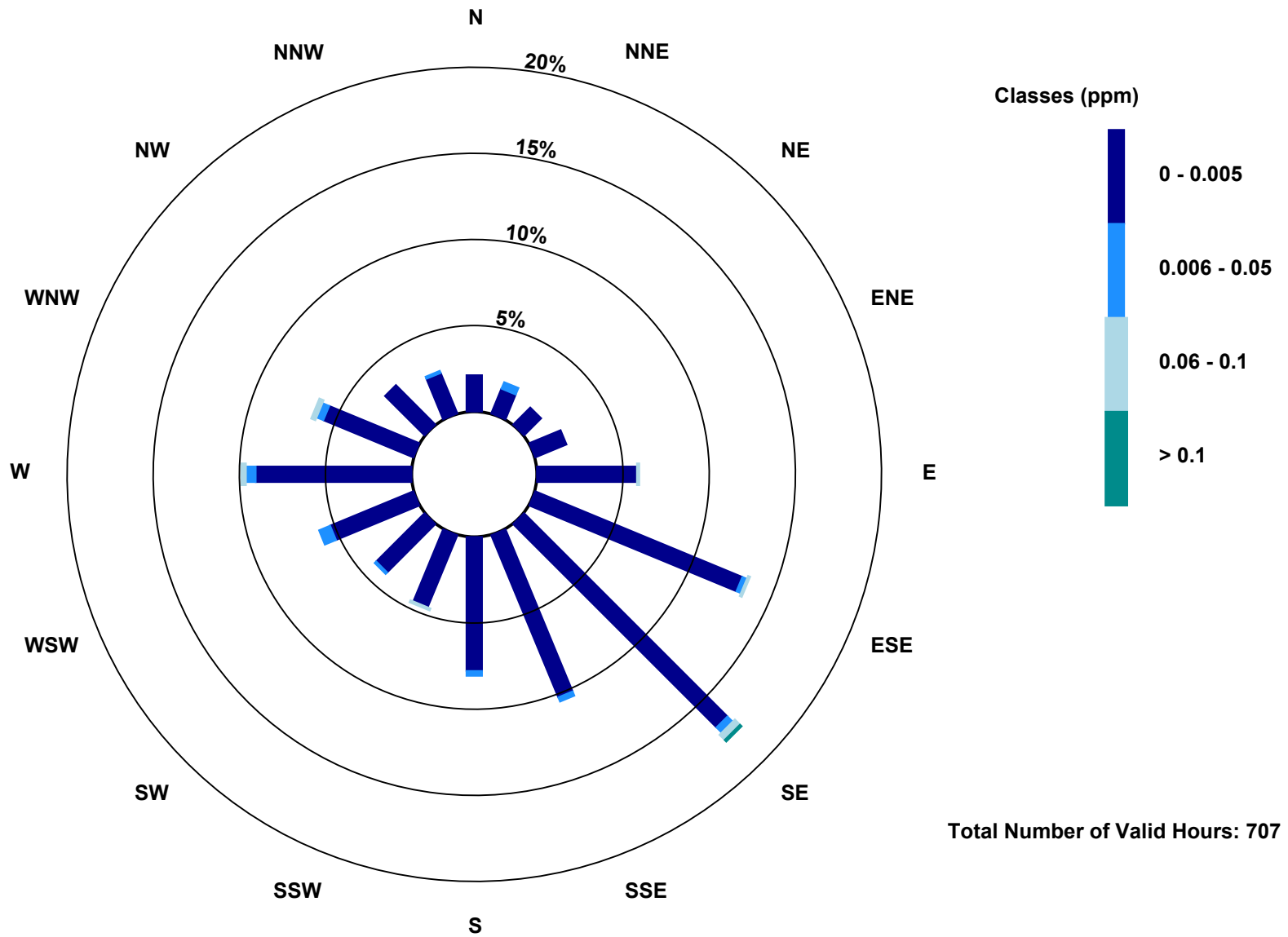
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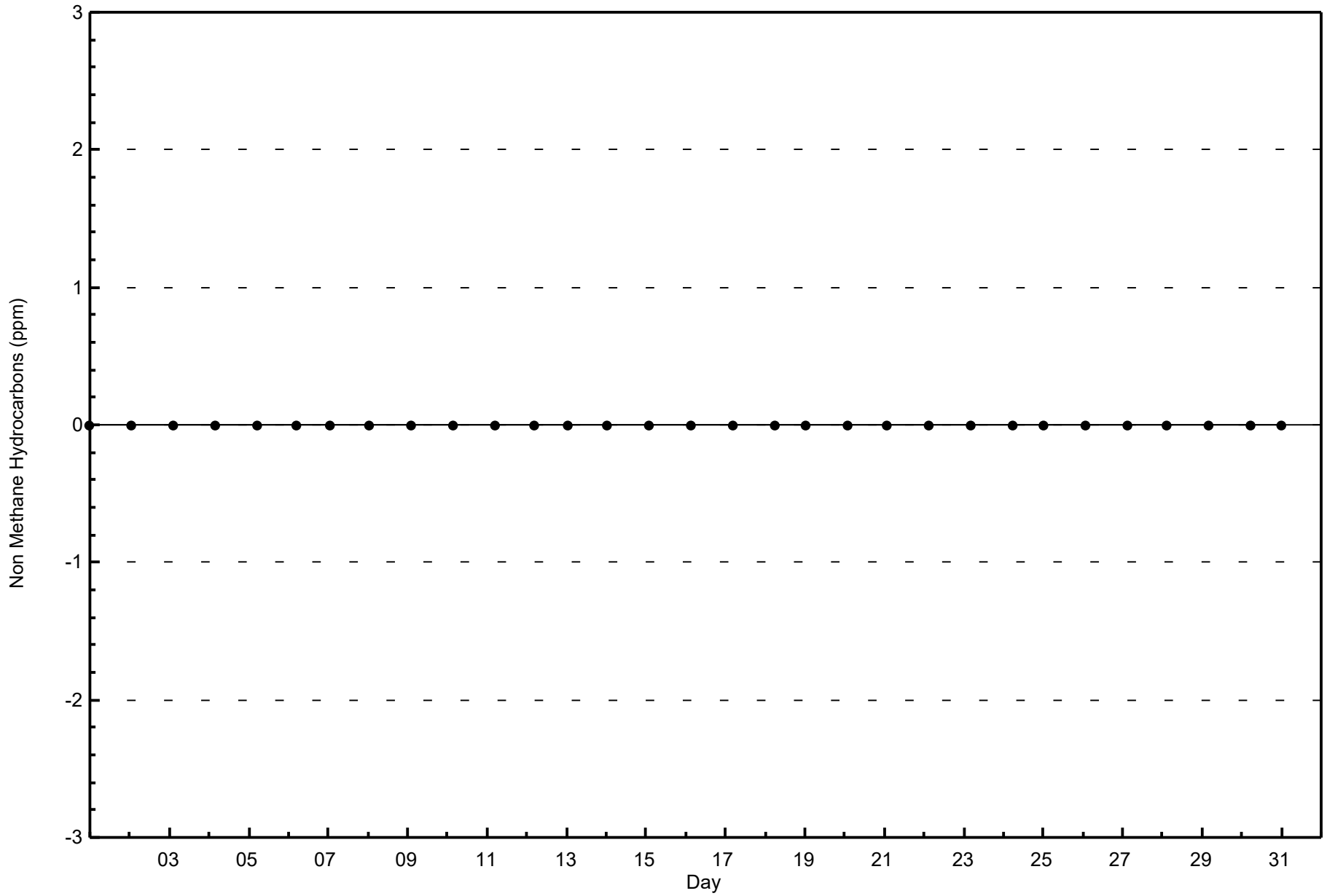
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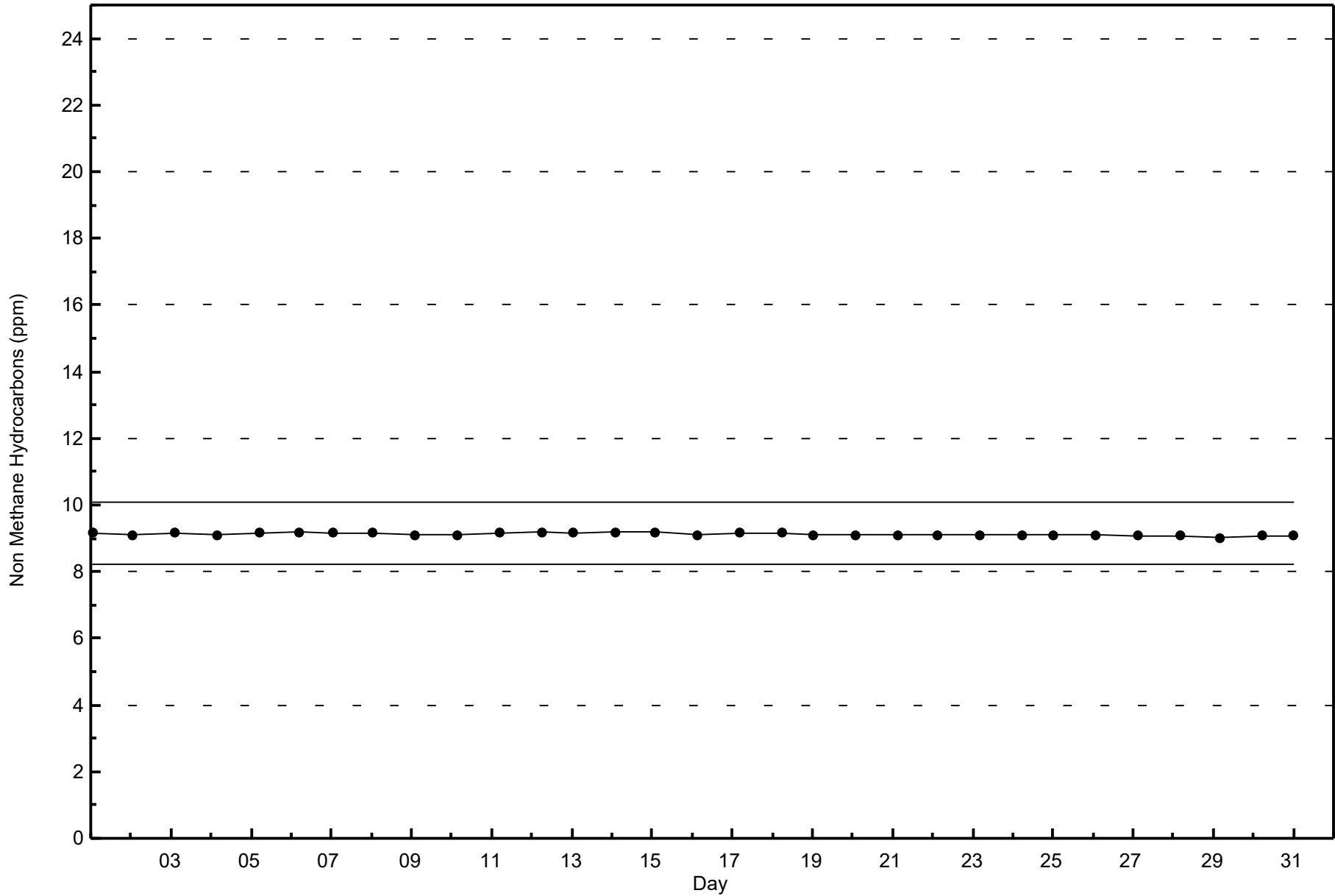


Wood Buffalo Environmental Association
Wind Rose May 2023

Non Methane Hydrocarbons (NMHC) - ppm
Anzac



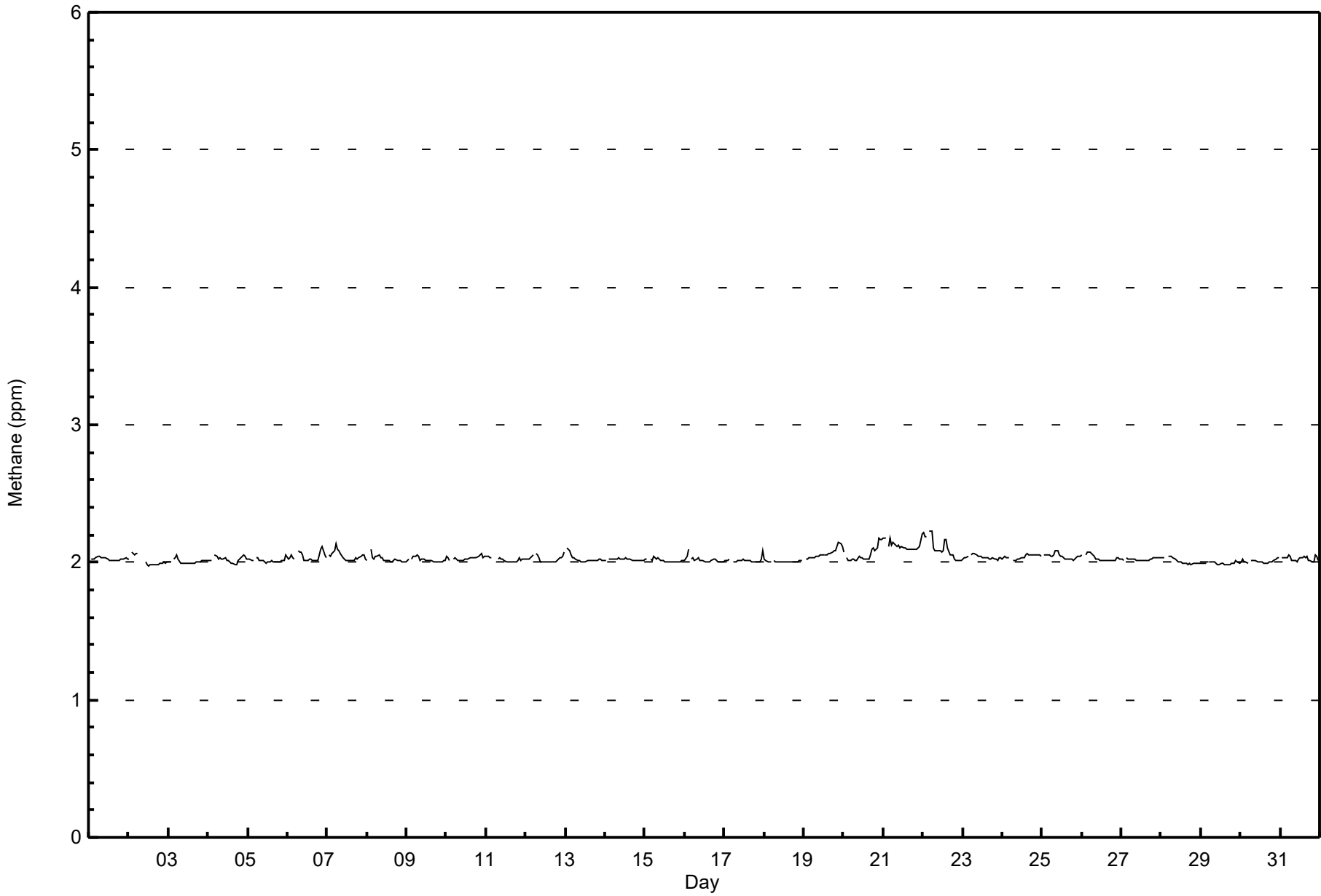






Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Anzac - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Anzac - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	580	81.92	81.92
2.1 - 3.0	128	18.08	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Methane (CH₄) - ppm
Anzac - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	10	11	9	12	36	70	92	66	56	30	29	38	56	31	17	16	579
2.1 - 3.0	5	3	1	2	6	25	33	8	1	3	0	4	14	14	6	3	128
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	14	10	14	42	95	125	74	57	33	29	42	70	45	23	19	707

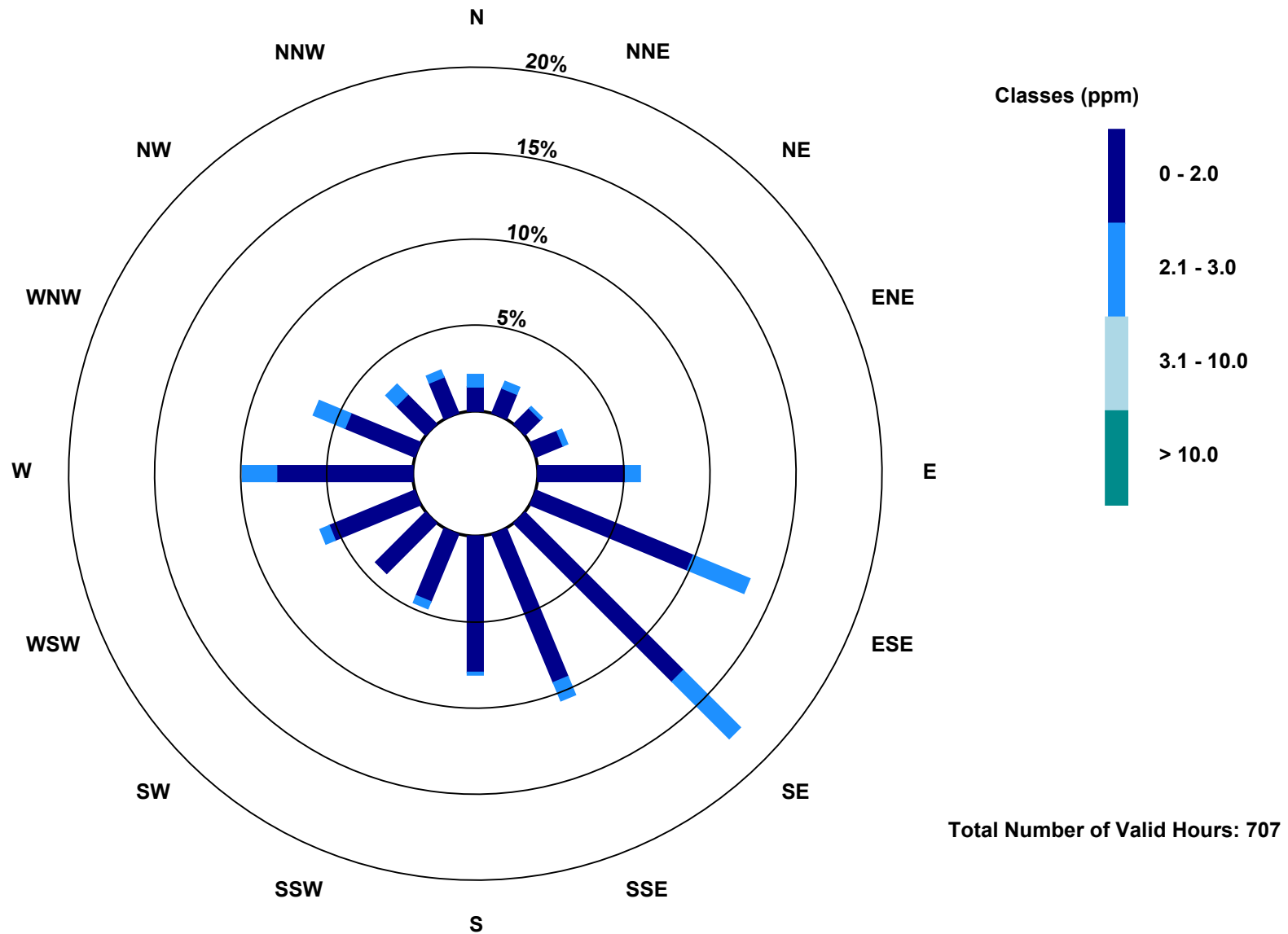
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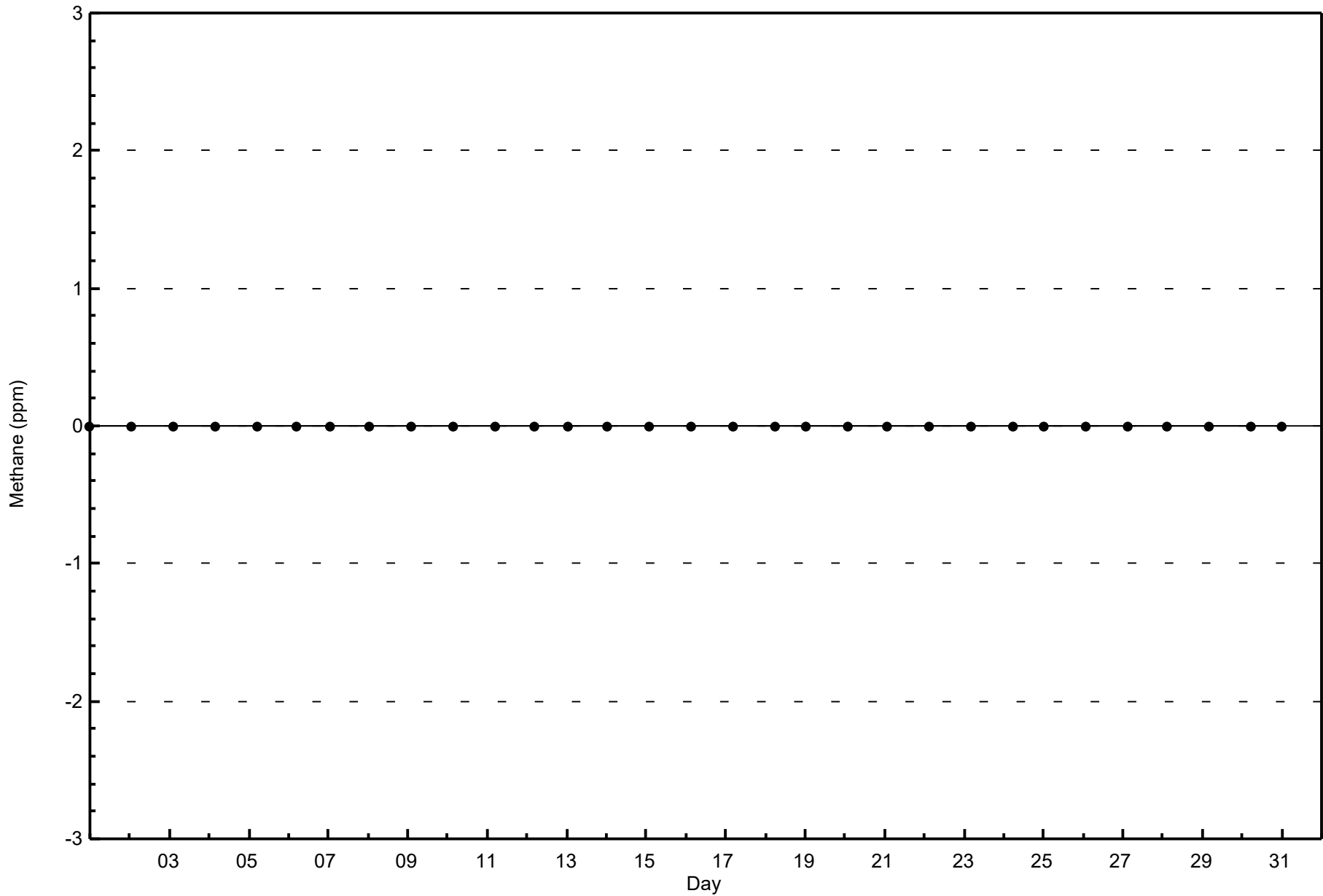
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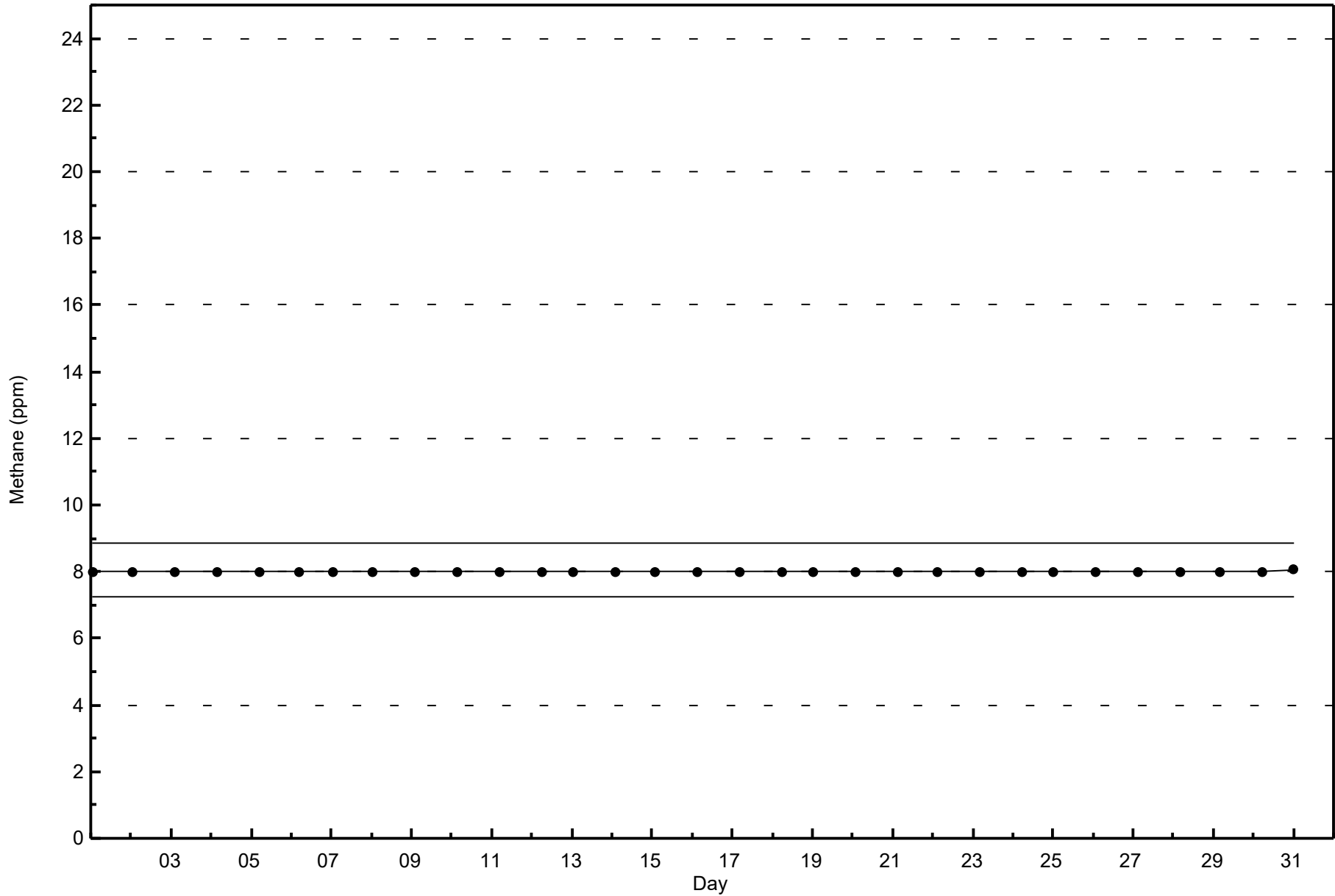


Wood Buffalo Environmental Association
Wind Rose May 2023

Methane (CH₄) - ppm
Anzac



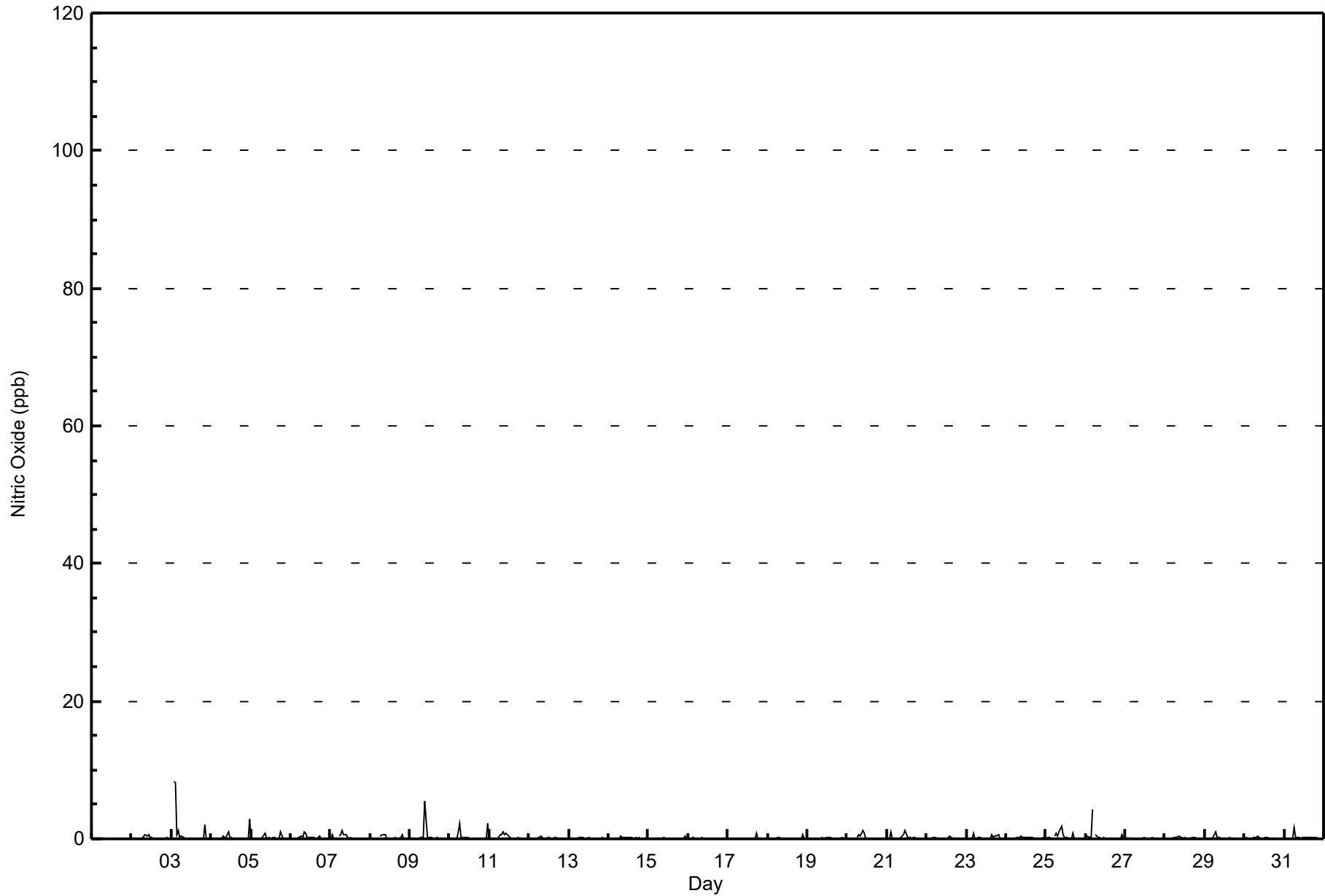






Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Anzac - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Anzac - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	708	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Anzac - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	15	14	10	13	42	96	124	71	57	35	28	42	73	45	22	20	707
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	14	10	13	42	96	124	71	57	35	28	42	73	45	22	20	707

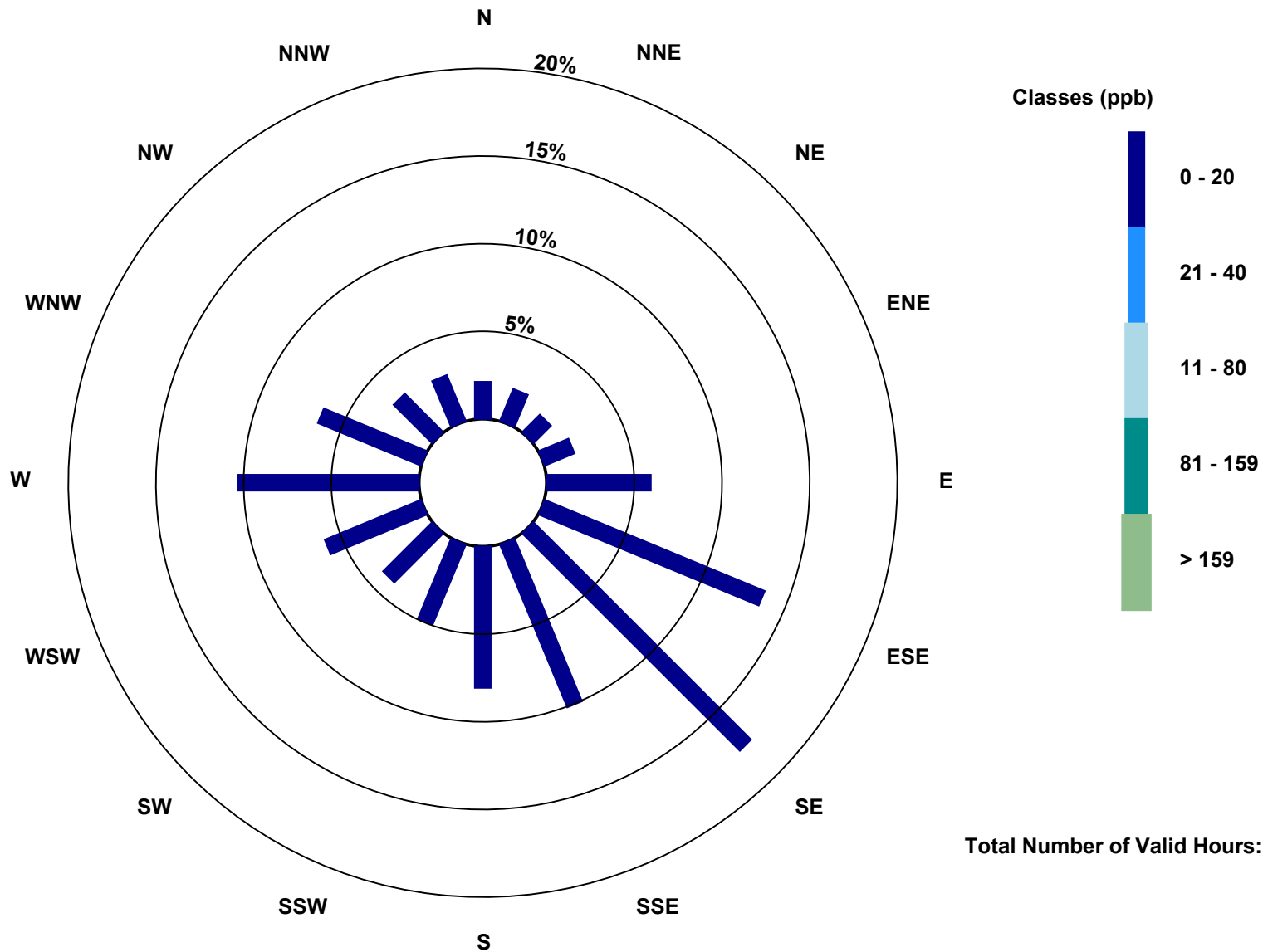
Total Number of Valid Hours: 707

Total Number of Hours: 744

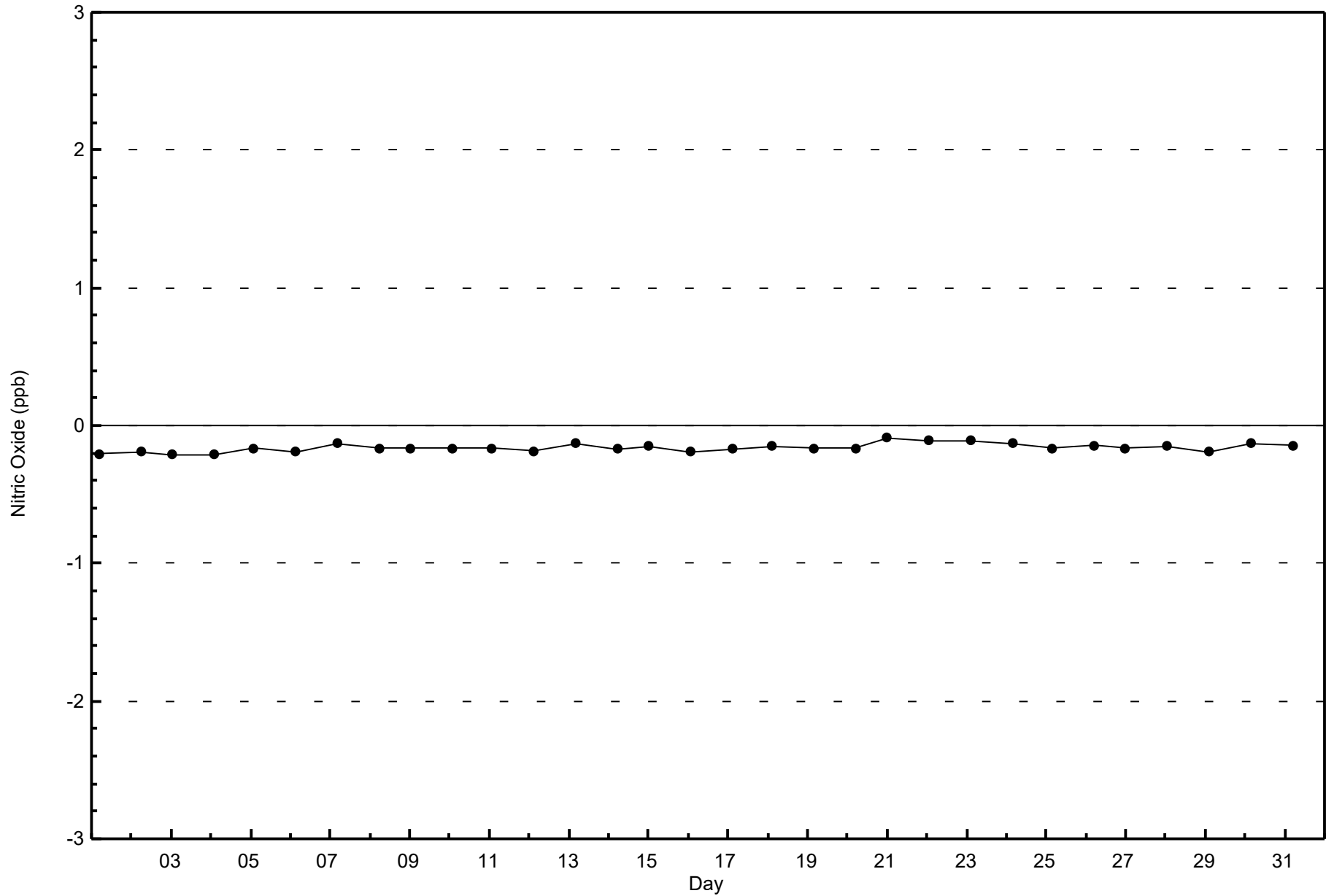


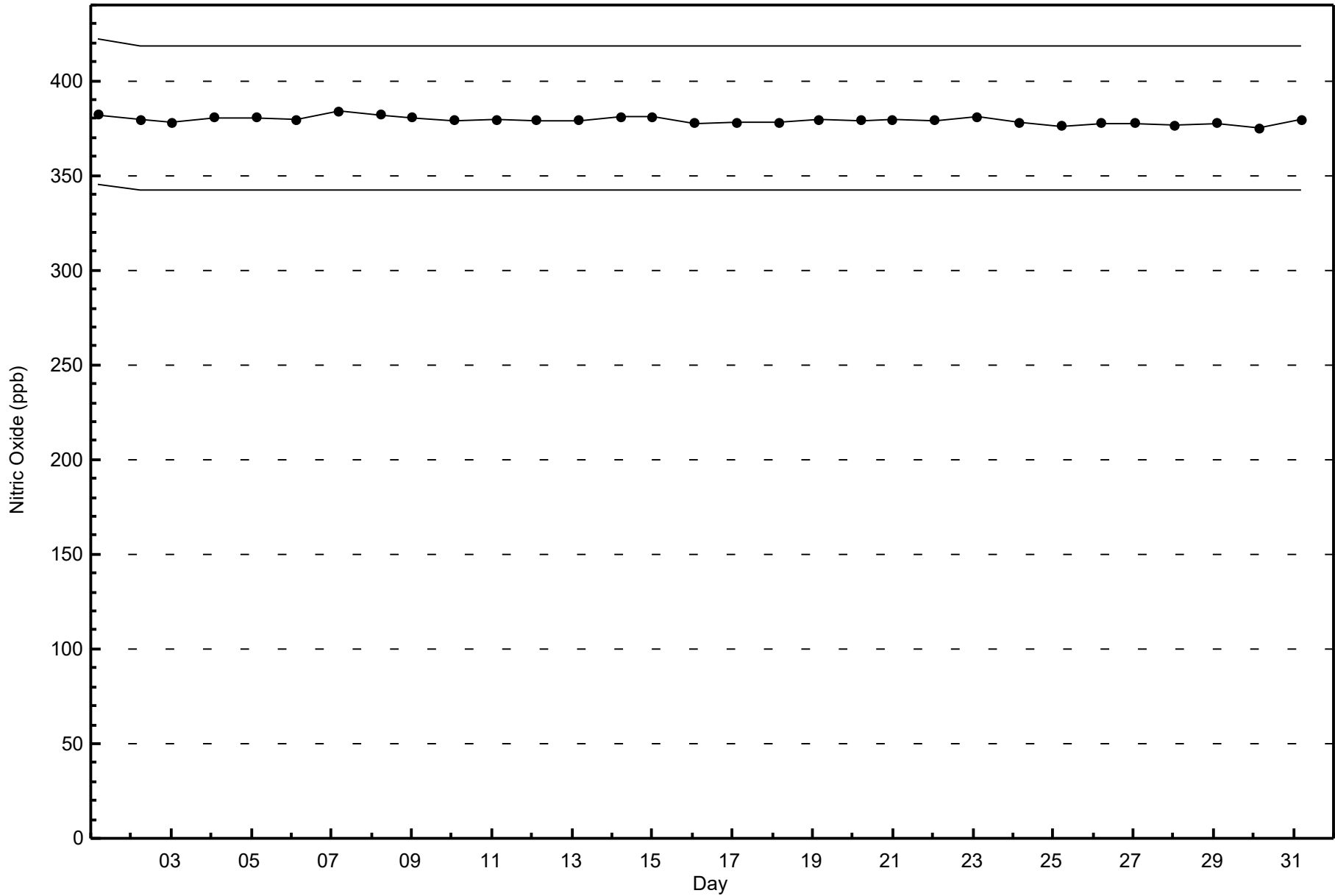
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Anzac



Total Number of Valid Hours: 707





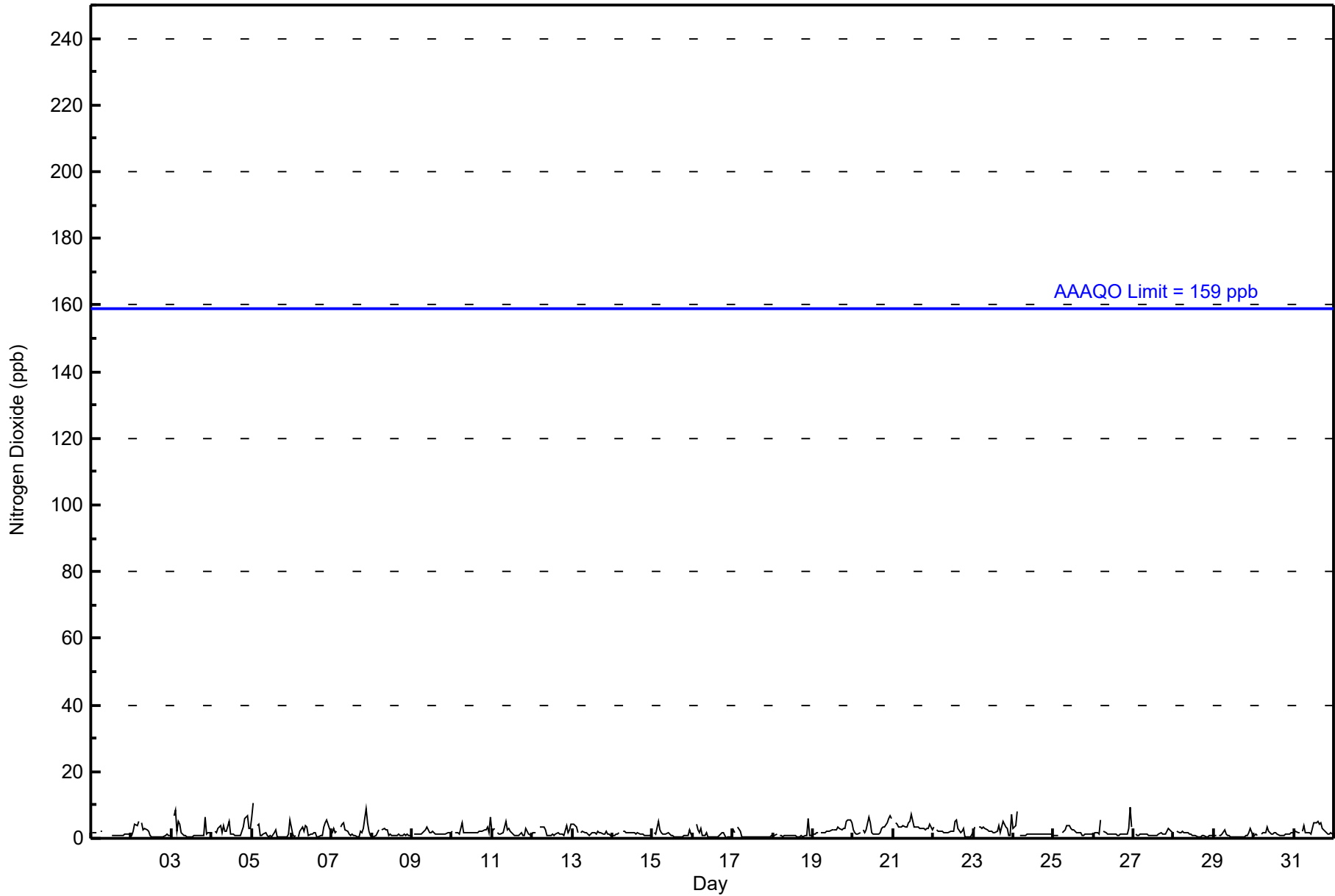


Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		744																		
Maximum Value: 10.6 ppb on May 5 02:00		Maximum Daily Average: 3.7 ppb on May 21		Hours of Data:		708		Hours of Missing Data:		36																
Minimum Value: 0.1 ppb on May 16 21:00		Minimum Daily Average: 0.8 ppb on May 17		Hours of Calibration:		36		Percent Operational Time:		100.0																
Maximum Diurnal Average: 2.4 ppb at hour 2		Minimum Diurnal Average: 1.3 ppb at hour 17		Monthly Average: 1.85 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.6 Q ₁ = 0.9 Median = 1.4 Q ₃ = 2.3 P ₉₀ = 3.6 P ₉₉ = 6.9																				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	1.5	1.6	1.8	1.8	Z	2.1	2.1	C	C	C	C	C	0.8	0.7	0.9	0.8	0.8	0.8	0.8	0.8	1.2	1.1	1.1	0.8	1.2	2.1
2-May	1.0	2.3	4.4	3.9	5.2	Z	4.7	2.5	2.9	2.4	2.1	0.7	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.9	1.2	0.8	0.8	1.7	5.2
3-May	Z	6.9	8.3	2.0	5.2	4.2	1.8	0.8	0.8	0.6	0.5	0.5	0.6	0.8	0.7	0.7	0.8	0.8	0.8	0.7	6.2	1.1	1.9	1.8	2.1	8.3
4-May	1.6	Z	2.0	1.9	3.0	3.7	1.8	3.8	2.0	2.0	5.1	1.4	1.1	1.0	0.8	0.7	2.2	3.2	6.0	6.9	3.0	3.0	3.0	3.0	2.5	6.9
5-May	6.5	10.6	Z	3.9	4.4	0.7	0.8	1.3	1.9	0.9	0.5	0.7	0.6	1.9	2.4	0.5	0.3	0.3	0.6	0.3	0.3	0.3	1.4	5.4	2.0	10.6
6-May	1.1	0.5	0.9	Z	0.5	2.3	3.3	2.2	3.8	3.2	1.0	1.1	1.1	1.8	1.6	0.4	0.3	0.7	0.8	3.6	4.8	5.3	3.0	2.1	2.0	5.3
7-May	1.8	2.9	1.8	2.0	Z	3.5	4.4	4.8	2.5	2.3	1.4	0.8	1.4	0.9	0.8	0.5	0.6	2.1	1.8	3.0	9.1	4.5	2.0	1.0	2.4	9.1
8-May	0.5	0.5	0.7	1.5	2.6	Z	2.7	2.8	2.5	2.7	0.9	1.1	0.9	0.8	0.8	1.0	1.1	1.0	0.9	1.3	0.9	1.4	1.0	1.0	1.3	2.8
9-May	Z	1.3	1.3	1.2	1.2	1.4	1.8	2.0	2.4	3.2	1.7	1.6	2.1	1.9	1.2	1.1	1.3	1.2	1.1	1.1	1.3	1.7	1.6	1.5	1.6	3.2
10-May	2.0	Z	1.6	1.7	1.4	3.0	4.5	1.9	1.7	1.7	1.9	1.8	1.5	1.6	1.6	1.8	2.2	2.2	2.2	2.5	2.6	3.4	1.8	6.2	2.3	6.2
11-May	2.3	3.0	Z	1.5	1.1	1.1	1.7	3.3	5.0	2.6	3.0	2.2	1.2	1.0	0.7	0.7	0.9	1.5	0.7	1.0	3.1	2.0	1.3	0.8	1.8	5.0
12-May	1.9	1.9	1.7	Z	3.2	3.2	3.5	3.6	2.4	0.8	0.8	1.0	1.3	1.0	1.1	1.5	1.3	1.2	1.3	0.9	3.7	1.6	2.6	4.3	2.0	4.3
13-May	4.3	4.2	3.3	1.9	Z	1.5	2.0	1.8	1.6	1.2	1.0	1.2	1.7	1.5	1.3	2.0	1.5	1.5	1.3	1.3	2.0	1.1	1.1	1.0	1.8	4.3
14-May	0.9	0.9	1.1	1.4	1.7	Z	2.2	2.3	1.9	1.7	1.7	1.8	1.7	1.5	1.4	1.5	1.2	1.1	1.4	1.0	0.8	0.9	1.0	1.1	1.4	2.3
15-May	Z	1.7	1.3	5.0	2.7	1.5	1.4	1.3	1.3	1.6	1.1	0.8	0.7	0.6	0.5	0.6	0.5	0.4	0.5	0.7	0.7	0.8	2.7	1.2	1.3	5.0
16-May	0.9	Z	4.1	2.5	1.6	2.8	0.8	1.0	1.6	0.5	0.5	0.4	0.4	0.4	0.3	0.6	1.0	1.6	1.8	0.7	0.1	0.3	0.5	0.4	1.1	4.1
17-May	2.5	1.8	Z	3.3	2.1	0.6	0.5	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.6	0.3	0.3	0.3	0.3	0.4	1.0	0.8	3.3
18-May	0.5	0.7	1.1	Z	1.0	0.7	0.6	1.0	0.7	0.7	0.7	0.8	0.7	0.7	0.6	0.6	0.6	0.7	0.5	0.8	0.8	5.8	0.8	0.9	1.0	5.8
19-May	1.1	1.3	1.6	1.7	Z	1.7	1.7	1.9	2.0	2.1	2.2	2.5	2.6	2.6	2.7	3.2	2.9	2.6	2.8	2.8	5.1	5.7	5.5	4.5	2.7	5.7
20-May	2.5	1.5	1.4	1.1	1.5	Z	2.7	1.8	2.4	6.2	4.5	1.7	1.1	1.1	1.3	1.1	1.9	2.8	3.3	3.3	4.7	5.9	6.6	5.8	2.9	6.6
21-May	Z	4.6	4.3	3.2	3.5	3.6	3.7	3.6	3.5	4.6	5.1	7.3	3.6	3.5	3.3	3.2	3.1	3.1	2.9	2.7	2.8	2.9	4.1	2.7	3.7	7.3
22-May	3.2	Z	2.4	2.3	2.0	2.2	1.7	1.8	1.9	1.9	2.0	2.1	2.2	5.2	5.3	2.9	1.6	2.0	2.9	0.6	0.4	0.5	0.6	1.2	2.1	5.3
23-May	2.0	3.2	Z	3.4	3.5	3.0	3.2	3.0	2.5	2.1	2.1	2.1	1.9	1.9	2.1	3.9	1.5	3.2	4.9	3.2	3.0	0.7	0.9	7.2	2.8	7.2
24-May	2.9	3.8	7.9	Z	0.9	1.0	0.8	0.9	1.4	1.4	1.4	1.3	1.2	1.3	1.4	1.4	1.2	1.1	1.1	1.1	1.1	1.2	1.1	1.0	1.6	7.9
25-May	1.0	1.0	1.0	1.0	Z	1.6	2.2	2.5	3.9	3.7	2.9	2.6	2.5	2.0	1.6	1.5	1.6	1.0	1.0	1.1	1.2	1.3	1.1	1.2	1.8	3.9
26-May	1.4	1.8	1.5	1.4	5.3	Z	2.1	1.5	1.4	1.2	1.1	1.3	1.1	1.1	1.0	1.0	1.3	1.1	1.1	1.2	1.4	3.0	9.5	3.2	2.0	9.5
27-May	Z	1.4	1.0	0.9	1.1	1.1	1.2	1.2	1.1	1.0	0.8	0.9	1.0	1.0	1.0	1.3	1.7	1.3	1.3	1.3	2.2	3.1	2.0	1.5	1.3	3.1
28-May	1.6	Z	2.0	1.8	1.9	2.0	1.8	1.6	1.5	1.2	1.1	0.8	0.8	0.7	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.7	0.7	0.7	1.1	2.0
29-May	0.8	0.7	Z	0.9	0.9	1.2	2.6	1.4	0.9	0.7	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.7	1.0	1.6	3.0	1.0	1.0	3.0
30-May	0.8	1.4	0.9	Z	1.3	1.6	1.6	1.5	3.4	2.0	1.1	1.1	1.6	1.7	1.3	0.9	0.9	1.0	0.8	1.3	1.1	1.4	1.5	1.9	1.4	3.4
31-May	1.8	2.0	1.8	1.6	Z	2.2	4.0	1.6	1.7	1.9	1.4	3.1	4.6	4.8	5.2	4.3	4.5	3.0	2.7	1.8	1.4	1.2	1.7	1.3	2.6	5.2
																								Diurnal Average		
																								Diurnal Maximum		
																								1.9 2.4 2.4 2.1 2.4 2.1 2.3 2.0 2.1 2.0 1.7 1.5 1.4 1.5 1.5 1.4 1.3 1.4 1.5 1.5 2.3 2.2 2.1 2.2 2.6 6.5 10.6 8.3 5.0 5.3 4.2 4.7 4.8 5.0 6.2 5.1 7.3 4.6 5.2 5.3 4.3 4.5 3.2 4.9 3.6 9.1 6.9 9.5 7.2		
Z - zerospan C - Calibration																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																										



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Anzac - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Anzac - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	708	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Anzac - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	15	14	10	13	42	96	124	71	57	35	28	42	73	45	22	20	707
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	14	10	13	42	96	124	71	57	35	28	42	73	45	22	20	707

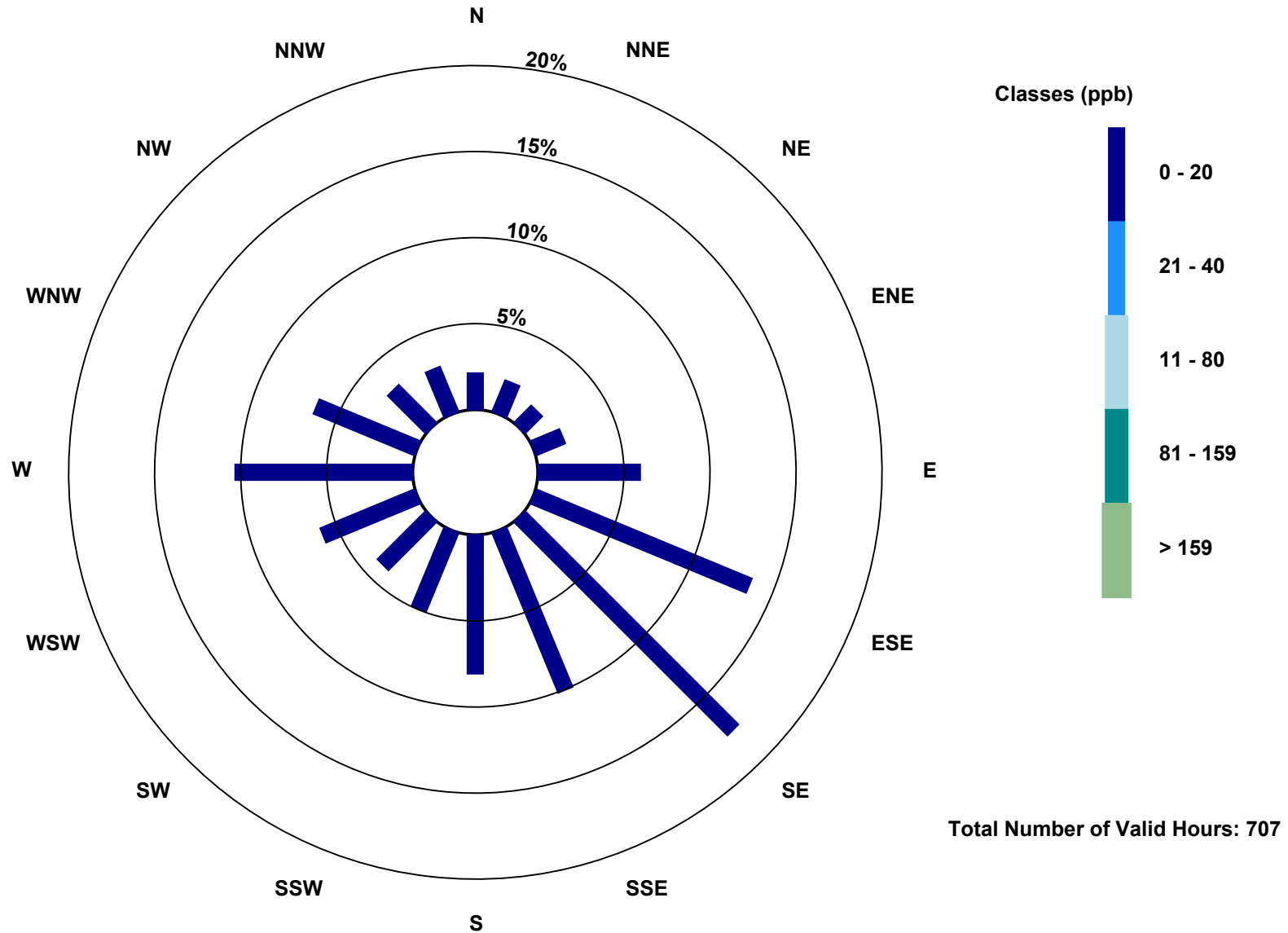
Total Number of Valid Hours: 707

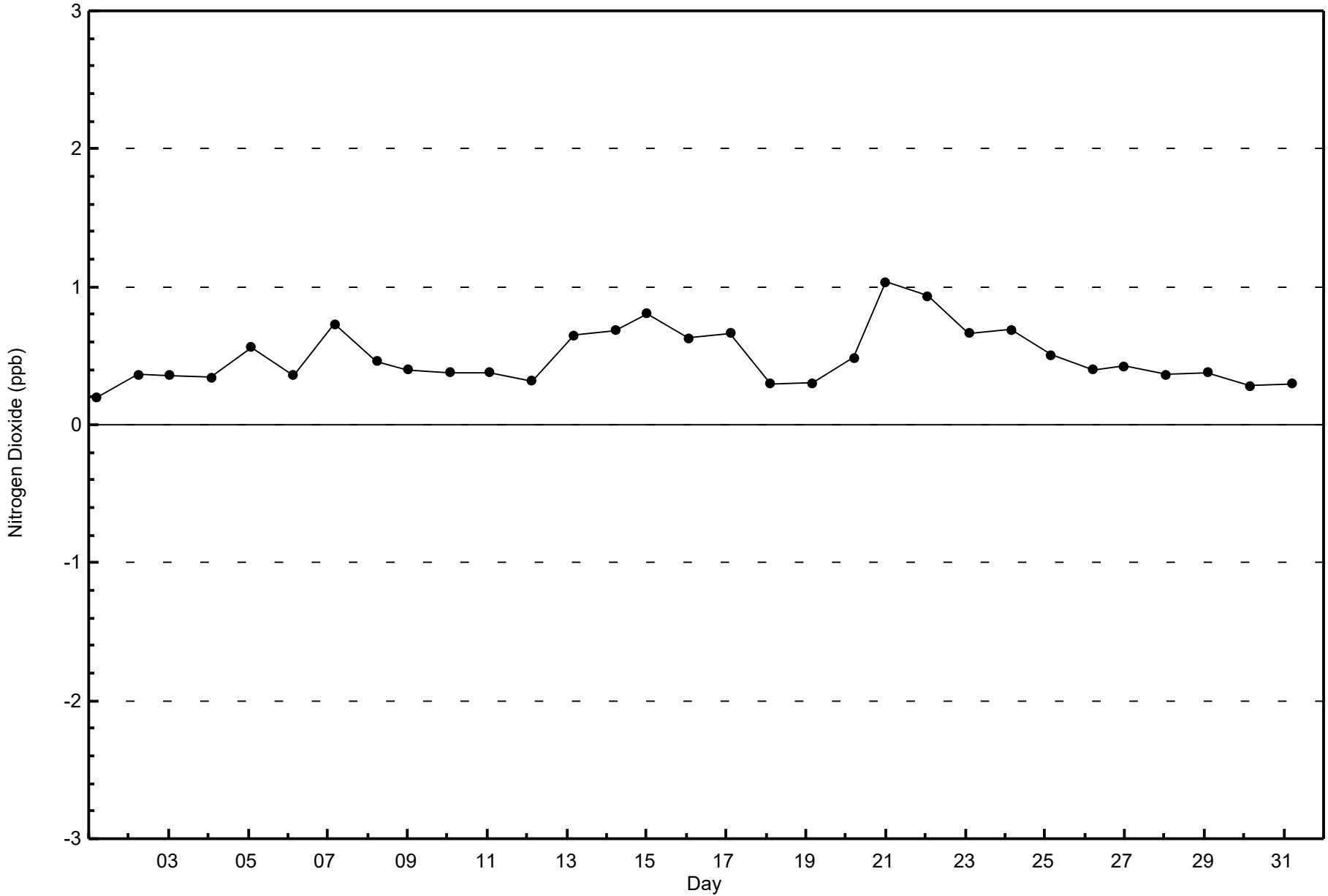
Total Number of Hours: 744

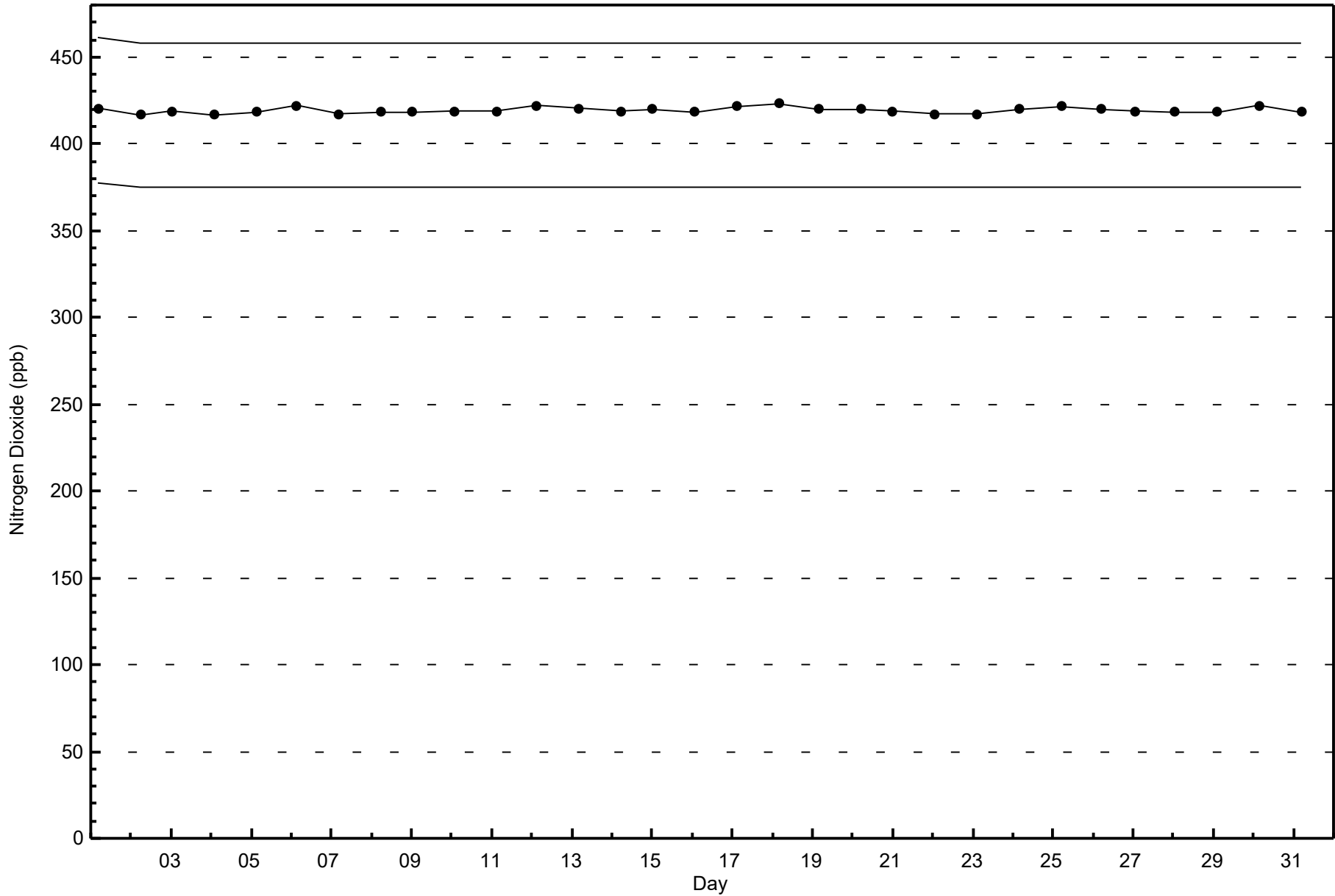


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Anzac



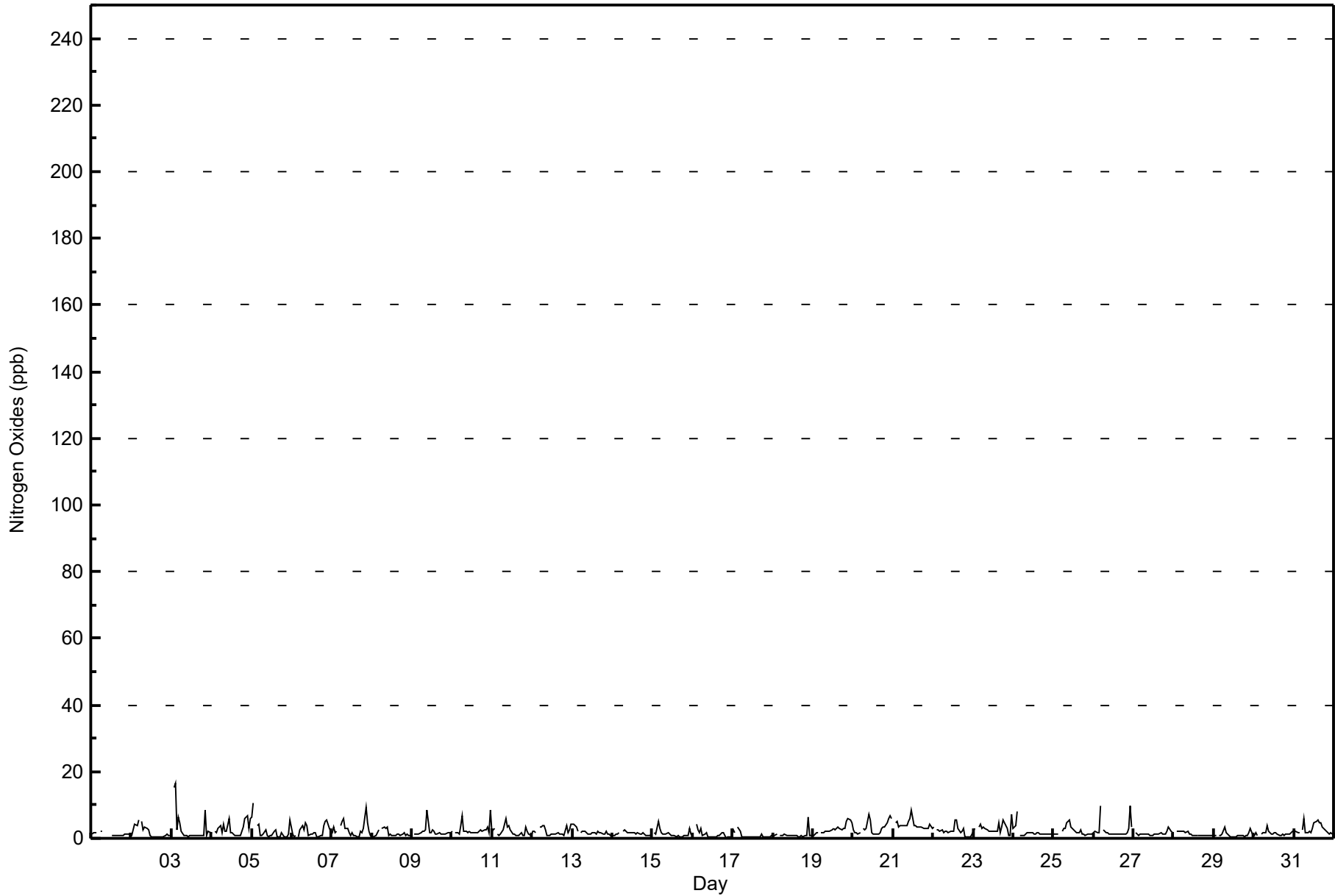






Maximum Value: 16.5 ppb on May 3 03:00		Maximum Daily Average: 3.9 ppb on May 21		Hours in Service: 744																						
Minimum Value: 0.1 ppb on May 16 21:00		Minimum Daily Average: 0.8 ppb on May 17		Hours of Data: 708																						
Maximum Diurnal Average: 2.8 ppb at hour 2		Minimum Diurnal Average: 1.4 ppb at hour 17		Hours of Missing Data: 36																						
Monthly Average: 2.04 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.6 Q ₁ = 1.0 Median = 1.6 Q ₃ = 2.6 P ₉₀ = 3.9 P ₉₉ = 8.5		Hours of Calibration: 36																						
				Percent Operational Time: 100.0																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	1.5	1.6	1.8	1.8	Z	2.2	2.3	C	C	C	C	C	0.8	0.7	1.0	0.8	0.8	0.8	0.8	0.8	1.2	1.1	1.1	0.8	1.2	2.3
2-May	1.0	2.3	4.4	3.9	5.3	Z	4.9	2.7	3.5	2.9	2.7	0.8	0.6	0.5	0.4	0.5	0.4	0.4	0.4	0.4	1.0	1.4	0.8	0.8	1.8	5.3
3-May	Z	15.2	16.5	2.6	6.4	4.5	2.3	0.9	0.9	0.7	0.6	0.6	0.7	0.9	0.8	0.8	0.9	0.9	0.9	0.7	8.3	1.1	1.9	1.8	3.1	16.5
4-May	1.6	Z	2.0	1.9	3.0	3.8	1.9	4.3	2.2	2.3	6.0	1.5	1.6	1.2	1.0	1.0	0.8	0.7	2.2	3.2	6.1	7.0	3.1	5.9	2.8	7.0
5-May	6.5	10.6	Z	3.9	4.4	0.7	0.8	1.4	2.6	1.0	0.5	0.9	0.7	2.1	2.5	0.5	0.3	0.3	1.7	0.3	0.3	1.4	5.5	2.1	10.6	
6-May	1.1	0.5	0.9	Z	0.5	2.5	3.6	2.4	4.7	3.9	1.1	1.4	1.3	1.9	1.8	0.4	0.3	1.0	0.9	3.7	4.9	5.4	3.0	2.1	2.1	5.4
7-May	1.8	3.5	1.8	2.0	Z	3.8	5.1	6.0	3.1	2.8	1.6	0.8	1.7	0.9	0.8	0.5	0.6	2.1	1.8	3.0	9.2	4.5	2.0	1.0	2.6	9.2
8-May	0.5	0.5	0.7	1.5	2.6	Z	3.0	3.4	3.1	3.3	1.0	1.2	1.0	0.8	0.8	1.2	1.2	1.0	1.1	1.9	0.9	1.5	1.0	1.0	1.5	3.4
9-May	Z	1.4	1.4	1.3	1.3	1.5	2.0	2.3	2.7	8.6	1.8	1.7	2.4	2.1	1.3	1.1	1.6	1.2	1.2	1.1	1.3	1.7	1.6	1.5	1.9	8.6
10-May	2.1	Z	1.7	1.7	1.5	3.9	6.8	2.2	1.9	1.9	2.1	1.9	1.6	1.7	1.6	1.8	2.3	2.3	2.2	2.5	2.6	3.4	1.8	8.4	2.6	8.4
11-May	2.3	3.0	Z	1.5	1.1	1.1	2.4	4.0	6.0	3.2	3.8	2.7	1.4	1.1	0.7	0.7	1.0	1.6	0.7	1.0	3.2	2.0	1.3	0.8	2.0	6.0
12-May	1.9	1.9	1.7	Z	3.3	3.3	3.7	3.9	2.6	0.9	0.9	1.1	1.4	1.1	1.2	1.6	1.4	1.3	1.4	0.9	3.8	1.6	2.7	4.4	2.1	4.4
13-May	4.4	4.3	3.4	2.0	Z	1.6	2.1	2.0	1.7	1.3	1.1	1.3	1.8	1.6	1.4	2.1	1.6	1.5	1.3	1.3	2.2	1.1	1.1	1.0	1.9	4.4
14-May	0.9	0.9	1.1	1.4	1.7	Z	2.3	2.7	2.1	1.8	1.8	1.9	1.8	1.6	1.5	1.6	1.3	1.2	1.5	1.1	0.9	0.9	1.0	1.1	1.5	2.7
15-May	Z	1.8	1.3	5.0	2.8	1.6	1.5	1.4	1.4	1.7	1.2	0.9	0.8	0.7	0.5	0.7	0.6	0.5	0.6	0.8	0.8	0.9	3.2	1.3	1.4	5.0
16-May	1.0	Z	4.2	2.6	1.7	2.9	0.9	1.1	1.7	0.6	0.6	0.5	0.5	0.4	0.4	0.7	1.0	1.7	1.9	0.7	0.1	0.3	0.5	0.4	1.1	4.2
17-May	2.5	1.8	Z	3.3	2.1	0.6	0.5	0.3	0.3	0.5	0.5	0.5	0.6	0.5	0.4	0.3	0.3	1.4	0.3	0.3	0.3	0.3	0.4	1.0	0.8	3.3
18-May	0.5	0.7	1.1	Z	1.0	0.7	0.8	1.2	0.8	0.7	0.7	0.8	0.7	0.7	0.6	0.6	0.6	0.8	0.5	0.9	0.8	6.3	0.8	0.9	1.0	6.3
19-May	1.1	1.3	1.6	1.7	Z	1.8	1.7	2.0	2.1	2.2	2.3	2.6	2.8	2.7	2.8	3.3	3.0	2.7	2.9	2.9	5.2	5.8	5.6	4.6	2.8	5.8
20-May	2.6	1.6	1.5	1.2	1.6	Z	3.0	2.4	2.8	7.4	5.4	1.8	1.2	1.2	1.3	1.1	1.9	2.9	3.4	3.4	4.8	6.0	6.7	5.9	3.1	7.4
21-May	Z	4.7	5.3	3.3	3.6	3.7	3.8	3.7	3.6	5.0	5.8	8.5	3.8	3.7	3.4	3.3	3.2	3.2	3.0	2.8	2.8	2.9	4.1	2.8	3.9	8.5
22-May	3.4	Z	2.5	2.4	2.1	2.4	1.8	1.9	2.0	1.9	2.0	2.2	2.2	5.5	5.7	3.1	1.6	2.0	2.9	0.6	0.4	0.5	0.6	1.2	2.2	5.7
23-May	2.0	3.2	Z	3.4	4.3	3.1	3.3	3.1	2.6	2.2	2.2	2.0	2.0	2.2	4.5	1.6	3.5	5.4	3.8	3.1	0.7	0.9	7.3	3.0	7.3	
24-May	2.9	3.9	8.0	Z	1.0	1.0	1.0	1.2	1.6	1.7	1.6	1.4	1.4	1.5	1.5	1.3	1.2	1.2	1.2	1.2	1.3	1.2	1.1	1.8	1.8	8.0
25-May	1.1	1.1	1.1	1.2	Z	2.1	3.1	3.0	4.9	5.5	3.6	2.8	2.7	2.2	1.7	1.6	2.4	1.1	1.1	1.1	1.2	1.3	1.2	1.3	2.1	5.5
26-May	1.5	2.2	1.6	1.6	9.7	Z	2.6	1.7	1.5	1.3	1.2	1.5	1.2	1.2	1.1	1.1	1.4	1.2	1.2	1.3	1.5	3.1	10.0	3.3	2.3	10.0
27-May	Z	1.5	1.1	1.0	1.2	1.2	1.3	1.3	1.2	1.1	0.9	1.0	1.1	1.1	1.1	1.4	1.8	1.4	1.4	1.4	2.3	3.2	2.0	1.5	1.4	3.2
28-May	1.6	Z	2.1	1.9	2.0	2.1	1.9	1.8	1.9	1.3	1.2	0.9	1.0	0.8	0.7	0.7	0.7	0.8	0.8	0.7	0.7	0.8	0.8	0.8	1.2	2.1
29-May	0.9	0.8	Z	1.0	1.0	1.4	3.5	1.7	1.1	0.8	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.6	0.7	1.0	1.6	3.1	1.0	1.1	3.5
30-May	0.8	1.5	0.9	Z	1.3	1.8	1.8	1.7	3.8	2.1	1.2	1.2	1.8	1.8	1.4	1.0	1.0	1.1	0.9	1.3	1.1	1.4	1.6	2.0	1.5	3.8
31-May	1.9	2.1	1.9	1.7	Z	2.4	5.7	1.7	1.8	2.1	1.5	3.2	4.8	4.9	5.5	4.5	4.6	3.2	2.9	2.0	1.5	1.3	1.8	1.4	2.8	5.7
																								Diurnal Average		
																								Diurnal Maximum		
																								Diurnal Average		
																								Diurnal Maximum		

Z - zerospan C - Calibration





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Anzac - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	708	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Anzac - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	15	14	10	13	42	96	124	71	57	35	28	42	73	45	22	20	707
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	14	10	13	42	96	124	71	57	35	28	42	73	45	22	20	707

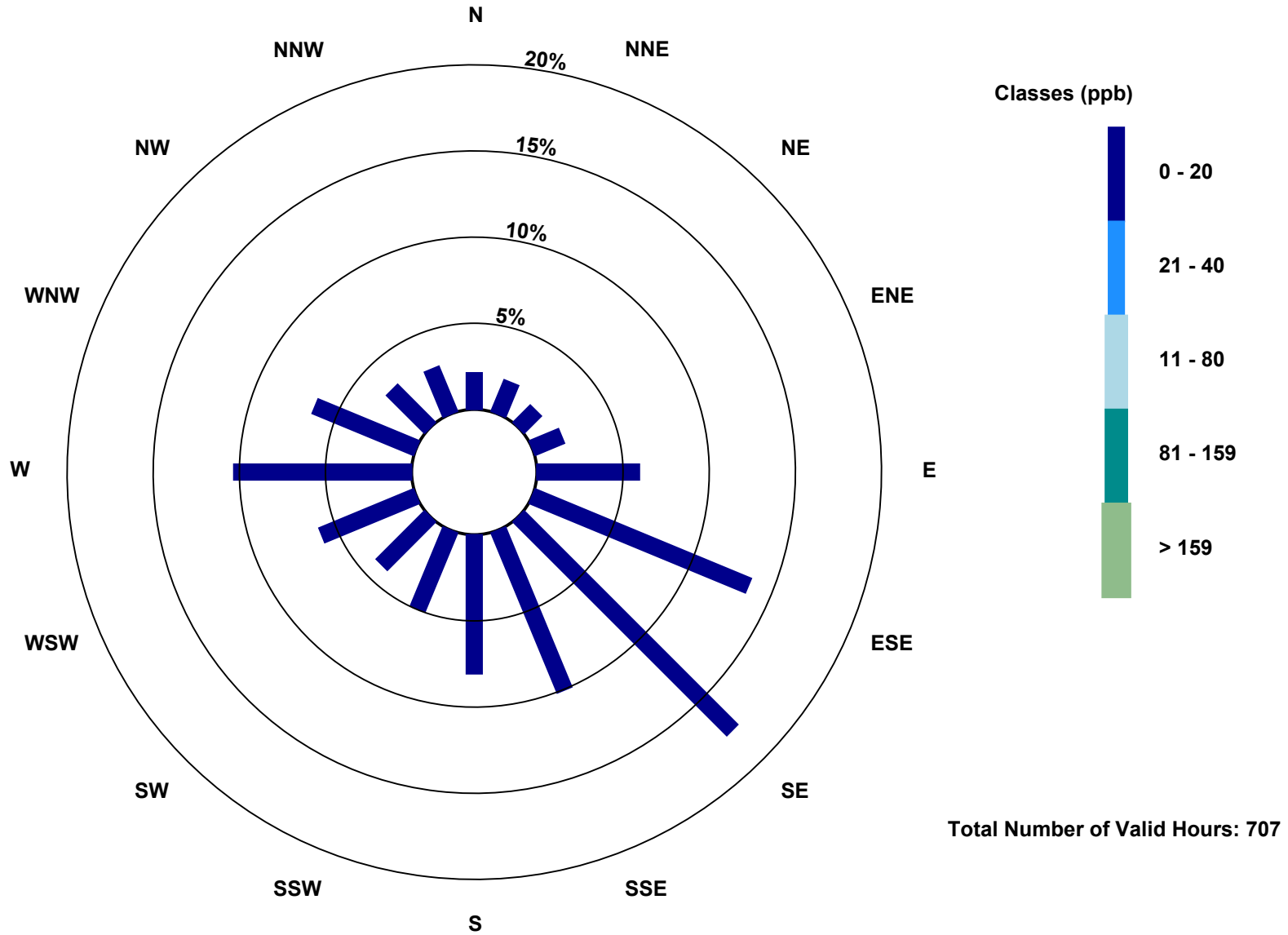
Total Number of Valid Hours: 707

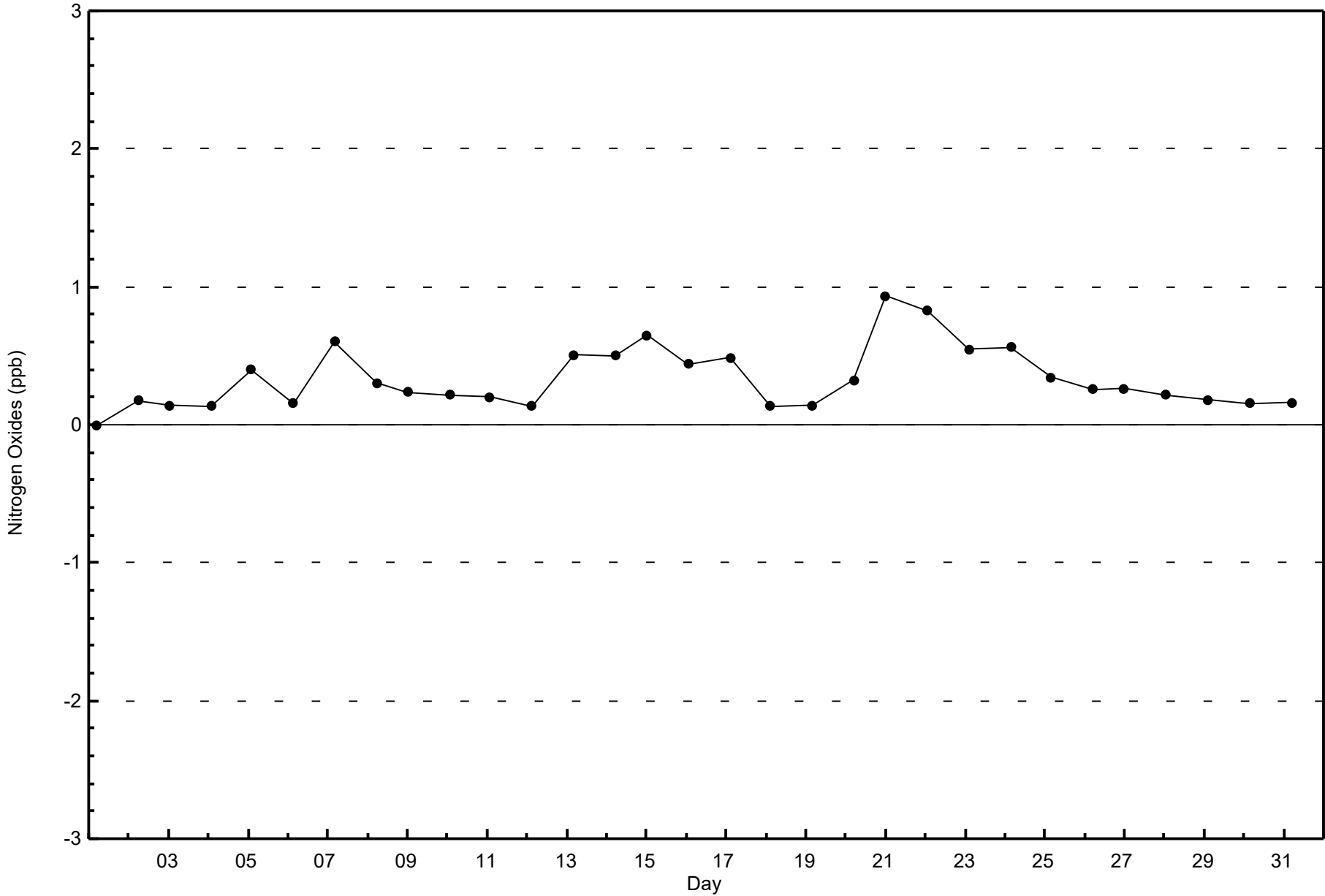
Total Number of Hours: 744

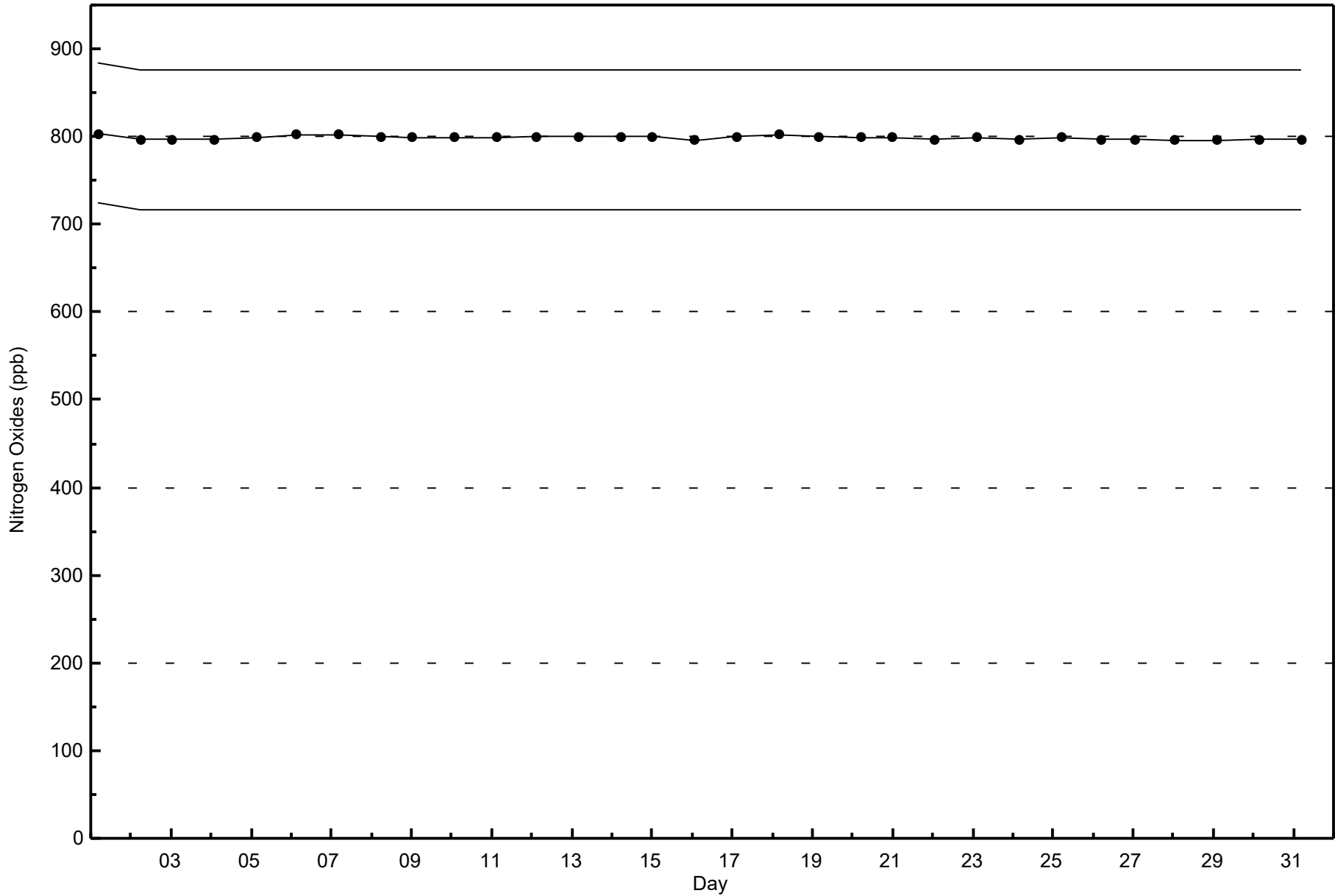


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Anzac









Wood Buffalo Environmental Association
Summary of Hour Averages

Ozone (O₃) - ppb
Anzac - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 66.1 ppb on May 31 14:00	Maximum Daily Average: 53.7 ppb on May 15		Hours of Data:	710
Minimum Value: 5.5 ppb on May 26 05:00	Minimum Daily Average: 19.8 ppb on May 24		Hours of Missing Data:	34
Maximum Diurnal Average: 45.6 ppb at hour 17	Minimum Diurnal Average: 29.8 ppb at hour 5		Hours of Calibration:	34
Monthly Average: 38.48 ppb	Percentiles: P ₁ = 9.8 P ₁₀ = 23.2 Q ₁ = 32.2 Median = 38.5 Q ₃ = 46.4 P ₉₀ = 52.6 P ₉₉ = 61.6		Percent Operational Time:	100.0

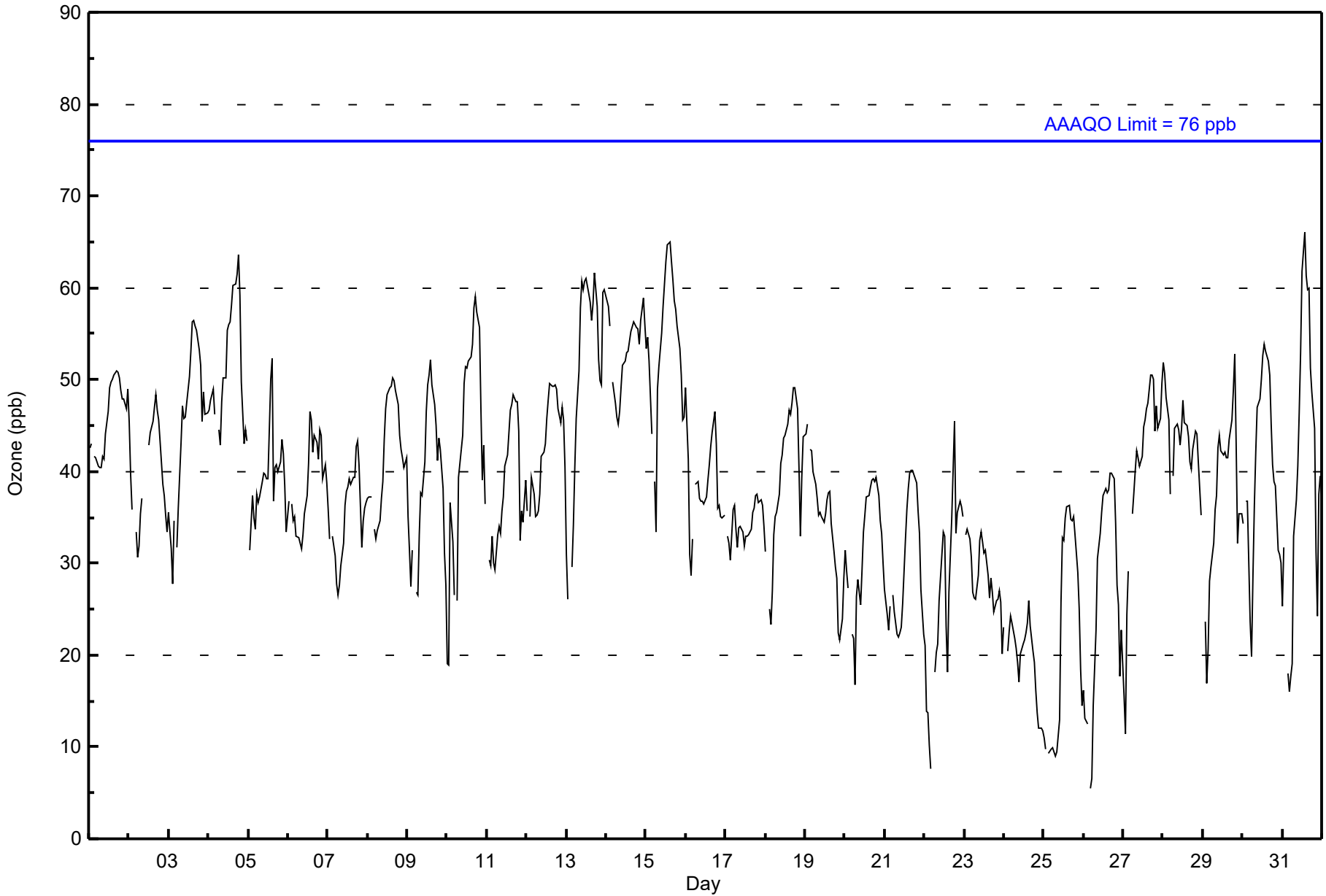
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	42.6	43.0	Z	41.7	41.4	40.5	40.5	40.4	41.7	41.4	44.2	46.6	49.2	49.8	50.1	50.5	50.9	50.8	50.2	48.8	47.9	47.9	46.8	49.0	45.9	50.9																							
2-May	45.2	39.7	35.9	Z	33.4	30.7	31.8	35.4	37.0	C	C	C	42.9	44.2	45.5	47.1	48.4	46.7	45.6	43.4	38.6	37.4	35.2	33.5	39.9	48.4																							
3-May	35.5	31.6	27.8	34.6	Z	31.8	36.0	43.2	47.1	45.8	45.9	47.5	50.4	53.1	56.3	56.4	55.8	55.4	53.2	51.5	45.5	48.7	46.2	46.3	45.5	56.4																							
4-May	46.7	47.7	48.4	49.0	46.3	Z	44.6	42.8	47.6	50.1	50.2	55.4	56.0	56.3	58.1	60.3	60.3	61.4	63.7	59.2	49.7	43.0	44.5	43.3	51.5	63.7																							
5-May	Z	31.4	37.4	34.9	33.8	Z	37.6	36.6	37.2	38.9	39.9	39.7	39.2	39.1	50.0	52.3	36.8	40.5	40.7	39.9	41.1	43.4	42.0	38.4	33.5	39.3	52.3																						
6-May	36.8	Z	36.4	34.7	35.1	32.9	32.8	32.2	31.5	33.1	35.4	37.4	40.8	46.5	45.6	42.1	44.0	43.2	41.3	44.5	43.9	39.2	40.7	38.7	38.7	46.5																							
7-May	35.8	32.7	Z	32.9	30.9	27.7	26.5	27.6	29.8	32.2	36.2	37.8	38.3	39.3	38.6	39.4	39.4	42.8	43.4	40.7	31.8	34.7	36.1	36.6	35.3	43.4																							
8-May	37.1	37.2	37.1	Z	33.7	32.7	33.6	34.7	37.1	38.9	43.5	46.8	48.4	49.1	49.3	50.1	49.9	48.9	47.3	43.9	42.4	41.4	40.4	41.4	42.0	50.1																							
9-May	35.1	31.5	27.5	31.4	Z	26.9	26.5	33.1	37.7	37.3	41.0	46.6	49.5	50.5	52.2	49.4	47.3	45.0	41.2	43.7	42.3	38.2	31.1	27.6	38.8	52.2																							
10-May	19.1	18.9	36.5	32.3	26.6	Z	25.9	39.3	42.5	43.9	49.6	51.4	51.3	52.0	52.5	53.8	57.8	59.0	57.3	55.7	46.8	39.0	42.9	36.4	43.1	59.0																							
11-May	Z	30.4	29.7	33.0	30.1	29.2	33.0	34.0	33.2	35.8	37.2	40.6	41.9	44.2	46.7	47.3	48.4	47.6	47.6	44.4	32.4	35.7	34.4	39.1	38.1	48.4																							
12-May	35.7	Z	35.1	39.3	37.5	35.0	35.2	35.8	37.6	41.6	42.1	42.9	45.7	47.7	49.5	49.3	49.3	49.4	48.9	46.8	45.3	47.0	45.6	40.4	42.7	49.5																							
13-May	30.9	26.2	Z	29.6	34.2	40.4	45.7	51.0	57.9	60.7	59.7	60.6	61.1	59.4	58.4	56.5	58.2	61.6	58.0	52.2	49.9	49.4	59.6	59.8	51.3	61.6																							
14-May	58.6	58.0	55.8	Z	49.7	47.4	46.0	45.2	46.5	49.1	51.6	52.1	52.9	53.1	54.1	55.2	56.3	56.0	55.7	55.5	53.9	56.5	58.8	56.0	53.2	58.8																							
15-May	53.4	54.7	52.1	44.1	Z	38.9	33.4	48.9	51.4	55.0	57.9	60.4	62.9	64.7	65.0	62.9	60.8	58.6	57.6	55.9	53.4	50.5	45.6	46.0	53.7	65.0																							
16-May	49.2	41.3	31.0	28.7	32.6	Z	38.6	38.9	37.1	36.8	36.7	36.4	37.3	39.1	40.8	42.7	44.2	46.5	43.0	36.1	36.2	35.1	35.0	35.2	38.2	49.2																							
17-May	Z	33.0	32.2	30.3	35.9	36.3	33.7	31.8	33.9	34.0	33.3	31.9	32.9	33.0	33.1	33.7	35.6	36.0	37.3	37.5	36.6	36.9	36.4	34.1	34.3	37.5																							
18-May	31.3	Z	25.0	23.4	27.0	33.1	35.0	35.5	37.6	40.8	41.8	43.6	44.0	45.1	46.7	46.3	47.4	49.1	49.1	46.9	40.4	32.9	39.4	43.7	39.4	49.1																							
19-May	44.0	45.1	Z	42.4	42.2	40.0	38.6	37.0	35.3	35.5	35.1	34.5	35.4	37.0	37.7	37.9	34.3	31.2	29.6	28.3	22.4	21.6	24.0	28.4	34.7	45.1																							
20-May	31.5	29.1	27.3	Z	22.3	21.9	16.8	26.5	28.2	25.5	29.4	33.4	35.2	37.2	37.4	38.2	39.0	39.2	38.9	39.4	37.4	34.6	33.3	30.1	31.8	39.4																							
21-May	27.1	24.4	22.7	25.3	Z	26.5	24.7	22.2	22.0	22.4	23.1	25.6	32.7	35.9	38.2	39.8	40.2	40.1	39.2	38.8	35.6	33.2	27.2	22.3	30.0	40.2																							
22-May	21.0	13.9	13.8	10.2	7.7	Z	18.1	20.3	21.2	25.9	30.9	33.4	33.0	23.2	18.2	26.8	34.8	40.1	45.5	33.2	35.6	36.8	36.2	35.1	26.7	45.5																							
23-May	Z	33.1	33.7	32.6	30.7	26.9	26.3	26.0	28.7	32.5	33.4	32.3	31.0	31.4	28.7	26.2	28.3	26.8	24.7	25.9	26.0	27.0	25.8	20.2	28.6	33.7																							
24-May	23.0	Z	20.5	22.5	24.3	23.6	21.8	20.8	19.2	17.2	20.2	21.2	21.6	22.5	23.5	26.0	23.1	20.4	19.3	16.2	13.8	12.0	12.1	11.7	19.8	26.0																							
25-May	10.9	9.8	Z	9.4	9.8	9.9	9.4	9.0	9.4	13.0	25.8	32.8	32.6	34.9	36.2	36.3	34.8	34.6	35.2	33.2	28.9	25.1	18.4	14.5	22.3	36.3																							
26-May	16.1	13.1	12.5	Z	5.5	6.6	14.5	22.7	30.4	31.8	33.3	35.6	37.4	38.1	37.7	38.0	39.8	39.9	39.2	34.4	27.6	25.5	17.7	22.7	27.0	39.9																							
27-May	15.5	11.4	24.4	29.1	Z	35.4	37.6	40.1	42.2	41.6	40.6	41.6	44.8	45.7	46.8	47.4	50.5	50.6	50.0	44.4	47.2	44.7	45.7	49.6	40.3	50.6																							
28-May	51.9	50.6	48.1	45.6	37.6	Z	39.5	44.8	45.2	44.5	42.9	44.5	47.7	45.2	45.1	43.8	41.0	40.3	42.4	44.3	44.1	41.0	38.2	35.2	43.6	51.9																							
29-May	Z	23.7	17.0	20.5	28.1	29.5	32.1	35.9	37.4	42.5	43.9	42.3	41.8	42.1	41.5	41.5	43.5	45.7	48.9	52.9	43.1	32.3	35.5	35.4	37.3	52.9																							
30-May	34.3	Z	36.8	36.8	23.7	19.8	28.8	36.3	42.1	47.0	47.9	50.0	52.6	53.9	53.1	52.0	50.6	45.1	40.7	38.9	38.5	31.4	31.0	30.0	40.1	53.9																							
31-May	25.3	31.8	Z	18.0	16.0	17.7	19.1	33.0	36.9	40.6	46.4	53.0	61.7	66.1	61.3	59.8	59.9	51.2	48.6	44.7	31.2	24.2	37.5	39.5	40.2	66.1																							
																								34.4	32.4	32.2	31.2	29.8	30.0	31.1	34.2	36.3	37.9	40.0	41.9	43.6	44.8	45.2	45.0	45.6	45.3	44.6	42.6	39.1	36.9	36.8	36.0	Diurnal Average	
																								58.6	58.0	55.8	49.0	49.7	47.4	46.0	51.0	57.9	60.7	59.7	60.6	62.9	66.1	65.0	62.9	60.8	61.6	63.7	59.2	53.9	56.5	59.6	59.8	Diurnal Maximum	

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Anzac - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Anzac - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	48	6.76	6.76
21 - 50	567	79.86	86.62
51 - 82	95	13.38	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 710

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Anzac - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	0	2	0	0	0	2	4	9	4	1	3	2	12	7	1	1	48
21 - 50	13	9	9	13	37	89	117	54	42	18	14	30	49	34	21	17	566
51 - 82	2	3	1	0	5	4	10	9	12	14	12	8	10	1	1	3	95
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	14	10	13	42	95	131	72	58	33	29	40	71	42	23	21	709

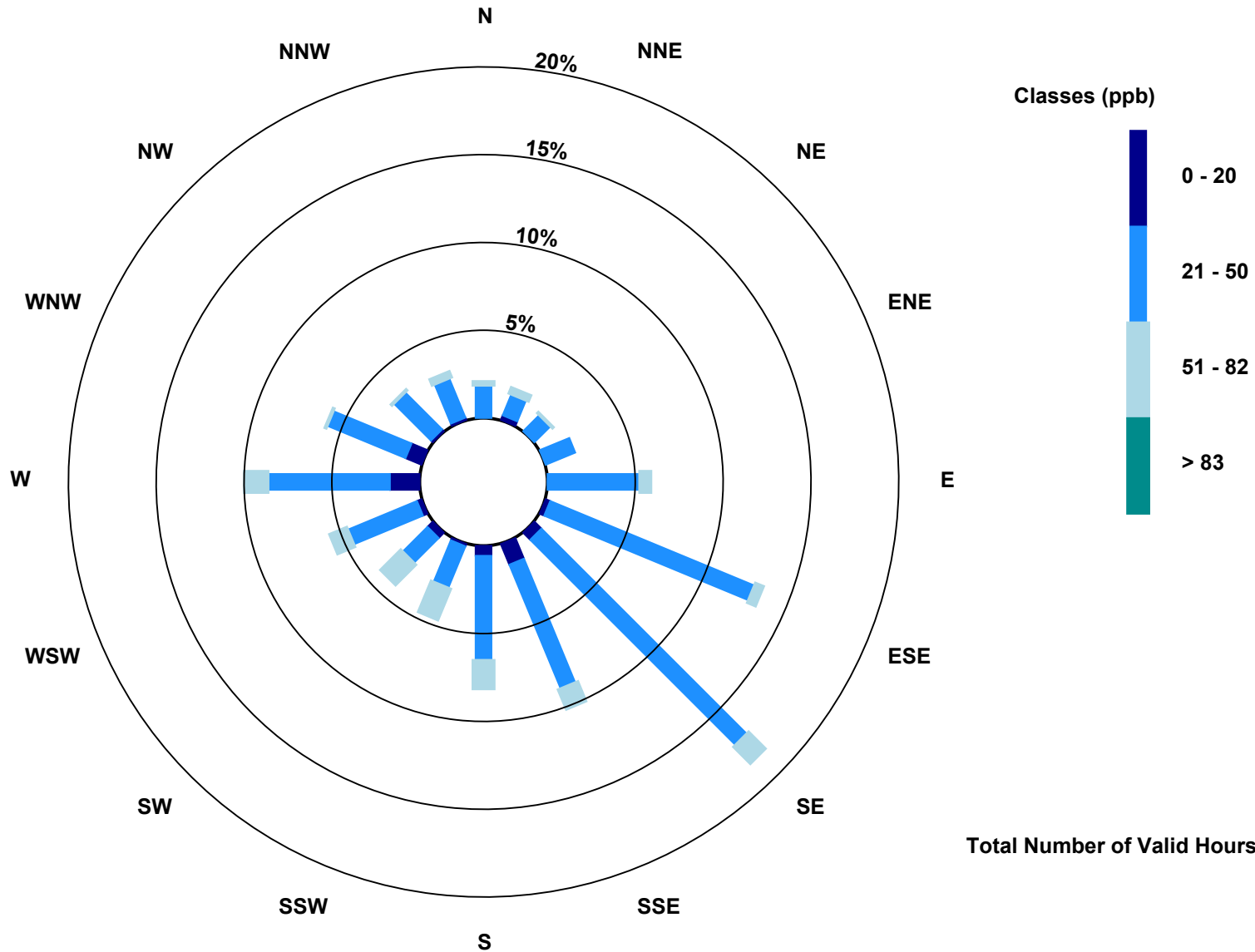
Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Ozone (O₃) - ppb
Anzac

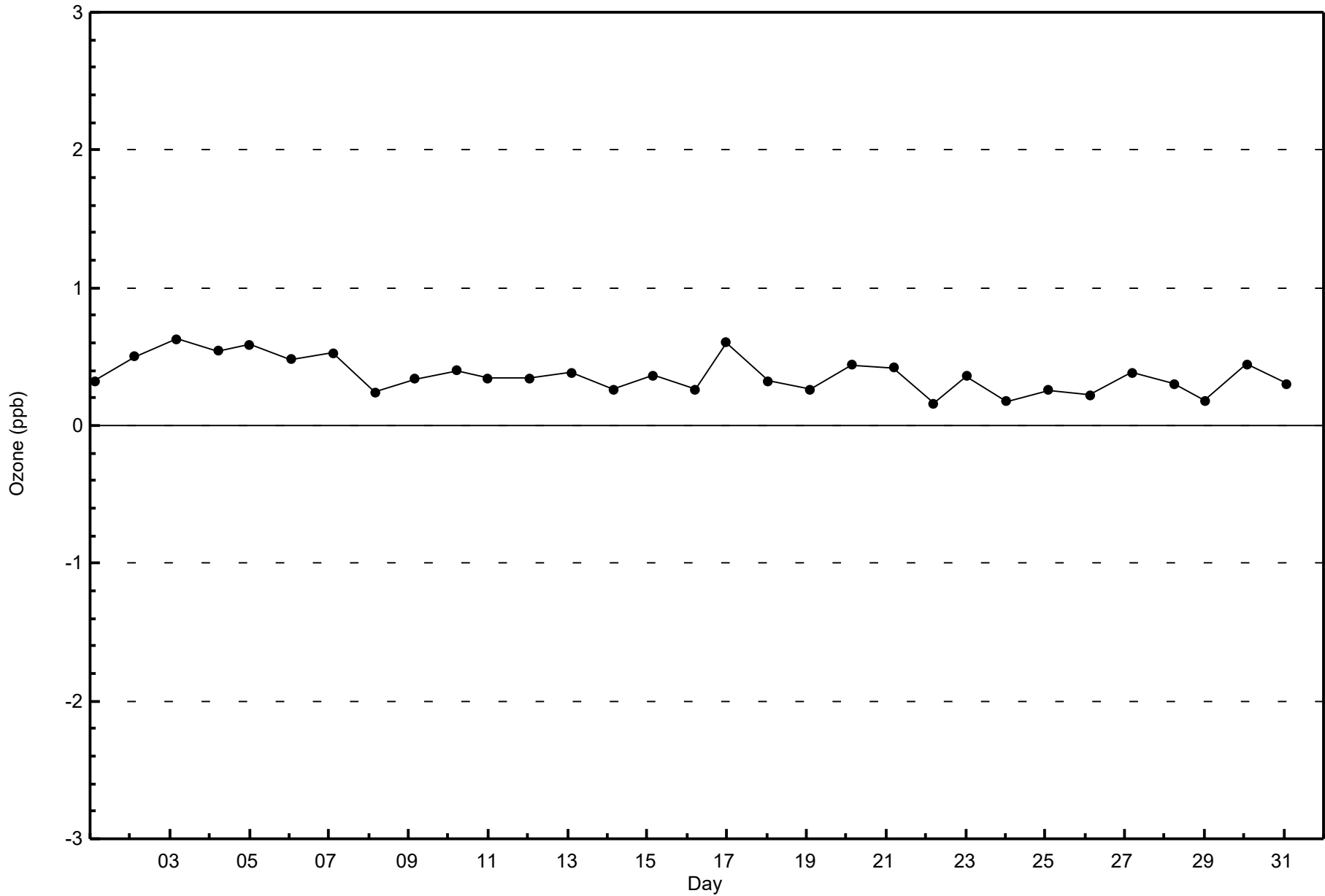


Total Number of Valid Hours: 709



Wood Buffalo Environmental Association
Zero Responses

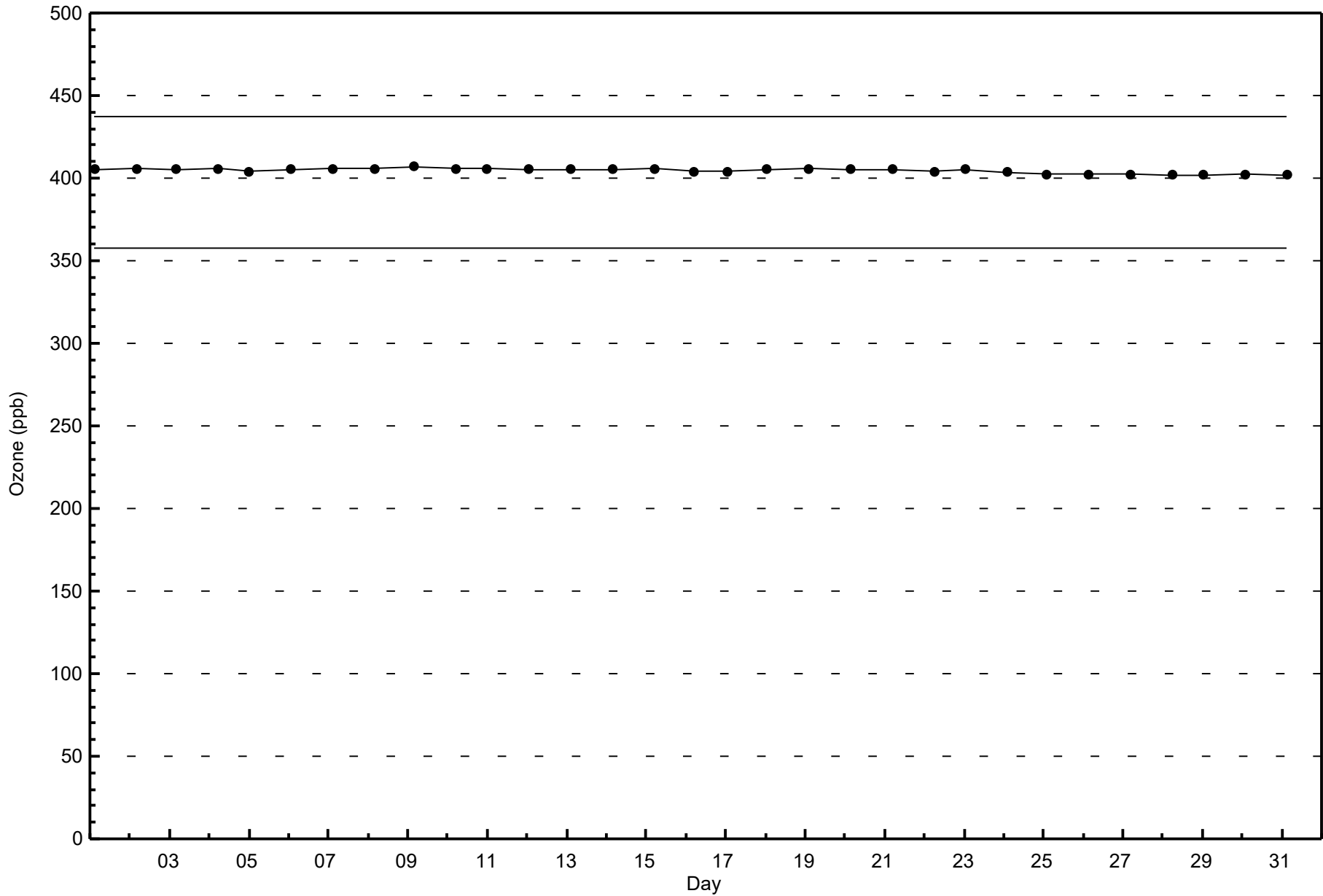
Ozone (O₃) - ppb
Anzac - May 2023





Wood Buffalo Environmental Association
Span Responses

Ozone (O₃) - ppb
Anzac - May 2023

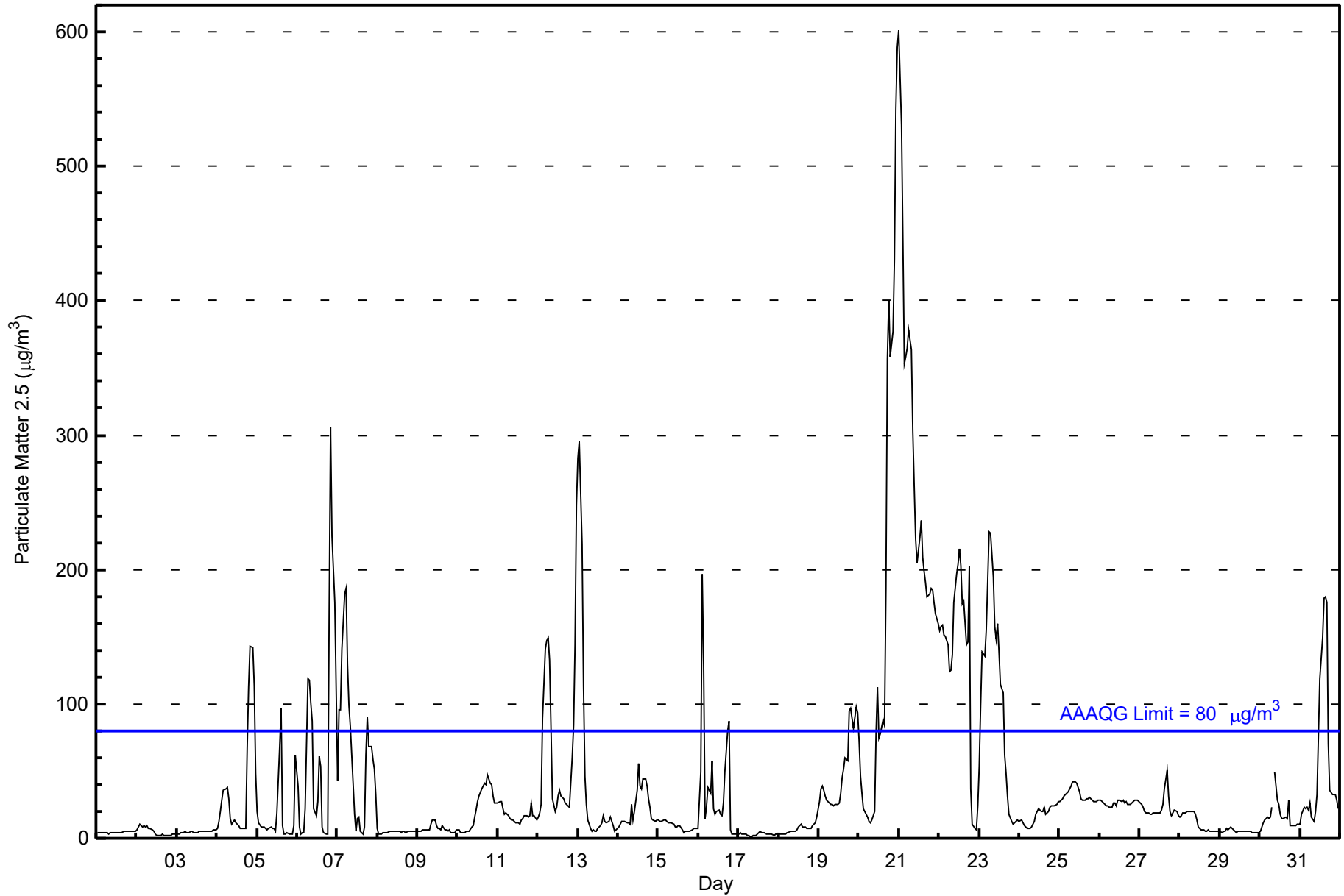




Summary of Hour Averages

Anzac - May 2023

Number of Exceedences (AAAQO):		1-hr: 118		24-hr: 13		Hours in Service:		744																		
Maximum Value: 601.6 µg/m ³ on May 21 01:00		Maximum Daily Average: 278.3 µg/m ³ on May 21				Hours of Data:		743																		
Minimum Value: 1.0 µg/m ³ on May 17 08:00		Minimum Daily Average: 3.0 µg/m ³ on May 17				Hours of Missing Data:		1																		
Maximum Diurnal Average: 52.8 µg/m ³ at hour 24		Minimum Diurnal Average: 33.9 µg/m ³ at hour 11				Hours of Calibration:		1																		
Monthly Average: 44.37 µg/m ³		Percentiles: P ₁ = 2.3 P ₁₀ = 4.0 Q ₁ = 5.8 Median = 15.5 Q ₃ = 34.6 P ₉₀ = 142.8 P ₉₉ = 377.9				Percent Operational Time:		100.0																		
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	4.5	4.3	4.3	4.2	4.0	3.7	3.8	3.6	3.9	4.0	4.1	4.4	3.9	4.3	4.6	4.6	5.0	5.1	5.3	5.2	5.1	5.2	5.4	5.4	4.5	5.4
2-May	6.3	8.6	10.2	8.9	9.1	8.7	9.1	7.7	7.0	6.8	4.9	3.1	2.3	2.4	2.4	2.7	2.4	2.2	2.3	2.3	2.5	2.6	2.8	2.8	5.0	10.2
3-May	2.9	3.5	3.9	4.0	4.4	5.0	4.6	4.6	5.2	4.8	4.2	4.2	4.6	5.1	5.6	5.4	5.6	5.5	5.3	4.8	5.6	5.7	5.9	6.4	4.9	6.4
4-May	7.3	12.5	20.2	28.5	35.2	36.3	38.2	29.5	14.5	10.6	13.6	11.2	10.9	8.9	7.3	7.3	7.1	7.1	67.7	112.5	143.0	141.9	113.8	48.6	38.9	143.0
5-May	19.5	11.3	8.2	7.9	8.0	7.0	6.2	7.7	8.8	7.3	7.4	5.2	18.4	68.7	96.6	9.3	3.5	3.2	3.9	3.5	3.3	3.0	9.3	62.1	16.2	96.6
6-May	39.1	8.3	3.6	3.8	3.9	22.1	118.7	117.3	100.8	87.5	21.6	16.4	27.2	61.0	54.0	8.5	4.7	3.2	2.9	168.5	305.4	225.1	175.3	108.3	70.3	305.4
7-May	43.5	95.9	95.5	140.8	181.9	186.4	129.4	98.9	83.0	39.6	18.2	5.7	14.7	15.5	5.1	3.5	8.9	61.9	90.6	68.3	68.8	59.0	51.3	32.9	66.6	186.4
8-May	6.9	3.6	3.5	3.9	3.7	4.1	4.5	4.7	5.1	5.4	5.5	5.5	5.4	4.9	4.6	5.0	5.2	4.7	5.0	5.3	5.4	5.3	5.2	5.0	4.9	6.9
9-May	4.9	5.1	5.4	6.0	6.1	6.4	6.8	6.6	10.5	14.1	13.6	9.2	7.6	7.2	6.6	9.7	5.8	5.9	5.4	6.0	4.5	4.0	4.4	5.9	7.0	14.1
10-May	6.2	5.8	4.0	4.0	4.3	4.9	4.7	5.0	8.5	9.9	16.1	20.6	27.5	31.6	36.9	39.3	41.4	40.4	46.9	41.5	39.8	31.9	26.5	26.3	21.8	46.9
11-May	26.1	27.0	27.6	21.6	17.6	18.8	17.0	14.7	13.6	13.4	12.9	11.4	11.3	10.2	13.8	14.3	16.9	17.2	16.3	16.9	26.4	17.0	17.2	13.9	17.2	27.6
12-May	16.1	18.6	25.5	89.2	140.8	146.8	149.2	132.7	82.3	29.2	19.5	23.3	31.4	35.5	31.3	29.5	26.7	25.2	24.1	23.5	60.0	83.8	143.9	248.1	68.2	248.1
13-May	282.7	295.4	218.8	113.8	46.7	25.1	13.7	7.5	5.2	6.2	5.4	5.6	7.5	9.4	11.7	16.5	12.8	11.6	12.3	15.4	12.7	9.0	5.8	6.6	48.2	295.4
14-May	8.5	10.5	12.6	12.8	12.4	11.4	11.0	10.7	25.1	14.0	20.4	35.8	56.0	39.0	37.1	44.0	44.2	38.5	29.2	23.0	14.9	13.5	12.7	13.7	23.0	56.0
15-May	13.3	13.1	13.1	13.4	13.2	13.0	11.7	11.9	11.6	10.2	8.3	8.4	9.6	9.1	6.6	4.5	4.8	4.8	4.9	5.4	6.1	6.9	7.6	7.7	9.1	13.4
16-May	7.4	49.3	196.1	128.9	15.1	23.1	37.6	33.4	57.7	21.8	17.7	20.0	21.3	17.6	17.2	26.2	49.1	79.9	87.4	6.7	3.2	3.2	3.4	3.2	38.6	196.1
17-May	3.6	3.8	3.4	3.3	2.7	2.5	1.9	1.0	1.3	1.8	2.2	3.5	4.3	5.1	4.7	3.8	3.2	3.2	3.2	3.0	2.8	2.5	2.7	2.9	3.0	5.1
18-May	3.0	3.2	3.2	3.2	3.4	4.0	4.7	5.0	5.1	5.0	5.0	5.9	8.3	10.0	8.9	8.5	7.9	7.3	7.5	7.6	9.1	10.4	11.6	15.3	6.8	15.3
19-May	26.9	36.9	39.2	36.0	31.3	28.2	26.0	25.0	24.8	24.6	25.1	25.0	26.1	33.3	45.5	51.9	59.9	58.1	94.8	96.8	89.3	82.1	97.3	94.0	49.1	97.3
20-May	72.9	46.5	33.2	21.7	17.8	15.5	12.3	11.7	13.6	19.8	78.2	112.0	74.8	78.1	88.0	83.7	185.9	356.6	400.7	357.9	377.2	431.2	542.3	588.0	167.5	588.0
21-May	601.6	530.5	442.7	353.2	358.8	364.9	378.5	364.0	302.2	262.1	222.9	204.9	223.7	236.2	209.2	198.6	190.1	179.3	181.3	186.2	184.6	175.9	167.1	160.2	278.3	601.6
22-May	154.3	157.9	158.6	151.0	150.7	143.6	124.1	125.2	136.8	175.6	196.2	203.5	215.3	202.7	174.9	177.0	143.9	145.8	202.9	37.0	10.3	7.2	5.8	24.6	134.4	215.3
23-May	53.1	98.8	138.2	136.0	155.7	191.7	227.7	226.6	194.0	157.2	148.0	160.2	138.3	114.7	108.5	61.6	47.9	31.2	18.1	12.8	10.6	11.3	12.8	13.7	102.9	227.7
24-May	12.3	13.7	11.2	9.4	8.0	7.3	7.6	8.5	10.3	13.0	18.0	21.9	20.9	19.7	19.9	23.0	18.3	20.1	23.1	24.4	23.8	24.6	25.6	27.3	17.2	27.3
25-May	27.5	28.8	29.9	32.0	33.1	35.0	36.3	38.9	42.1	41.6	40.6	37.8	34.2	29.2	27.9	28.3	29.8	29.9	30.2	29.0	27.2	27.1	27.8	28.1	32.2	42.1
26-May	28.5	28.3	26.8	25.0	23.7	24.2	23.5	23.2	26.3	26.8	24.4	28.4	27.9	27.1	27.9	26.4	27.1	25.3	25.6	26.4	27.0	28.0	28.1	28.3	26.4	28.5
27-May	25.9	25.5	22.8	20.5	18.8	18.6	17.8	18.2	18.4	19.3	19.0	18.5	19.2	20.9	25.4	36.6	50.3	31.4	20.3	17.3	19.0	21.3	20.3	16.6	22.6	50.3
28-May	15.4	16.5	18.5	19.4	19.7	19.8	19.9	20.4	19.7	17.5	13.3	8.6	7.1	6.4	5.8	5.7	5.3	5.9	5.0	5.7	5.8	5.8	5.5	5.4	11.6	20.4
29-May	4.8	4.7	4.8	5.7	7.0	6.6	8.0	7.8	6.4	5.3	4.6	4.7	4.9	5.0	5.2	5.1	5.4	5.6	4.7	3.9	3.8	4.2	4.1	4.3	5.3	8.0
30-May	5.1	8.0	11.1	13.7	16.2	14.4	15.5	23.1	C	49.7	27.8	25.0	18.0	14.2	14.7	16.0	14.9	28.3	10.0	9.2	9.2	9.6	10.8	10.9	16.3	49.7
31-May	10.8	17.3	23.4	21.7	22.8	21.0	26.5	16.3	12.3	20.1	32.8	75.4	118.5	149.2	178.5	179.9	175.7	70.3	36.1	32.4	33.0	32.9	28.6	22.1	56.6	179.9
49.7 51.4 52.2 46.6 44.4 45.8 48.3 45.5 41.9 36.3 33.9 36.3 38.7 41.4 41.5 36.7 39.0 42.4 47.5 43.8 49.6 48.1 51.0 52.8																								Diurnal Average		
601.6 530.5 442.7 353.2 358.8 364.9 378.5 364.0 302.2 262.1 222.9 204.9 223.7 236.2 209.2 198.6 190.1 356.6 400.7 357.9 377.2 431.2 542.3 588.0																								Diurnal Maximum		
C - Calibration																										
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Anzac - May 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	172	23.15	23.15
6 - 15	199	26.78	49.93
16 - 25	110	14.80	64.74
26 - 80	144	19.38	84.12
> 81.0	118	15.88	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - µg/m³
Anzac - May 2023

Concentration Ranges (µg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	6	1	2	1	10	19	21	29	15	8	4	11	21	6	6	12	172
6 - 15	1	4	3	4	7	16	39	10	23	18	19	19	20	9	4	2	198
16 - 25	0	1	0	2	2	13	16	21	18	3	3	5	15	8	3	0	110
26 - 80	4	5	3	5	6	22	19	13	5	4	4	9	15	19	7	4	144
> 81.0	4	3	2	2	18	29	39	3	0	2	0	0	4	5	4	3	118
Totals	15	14	10	14	43	99	134	76	61	35	30	44	75	47	24	21	742

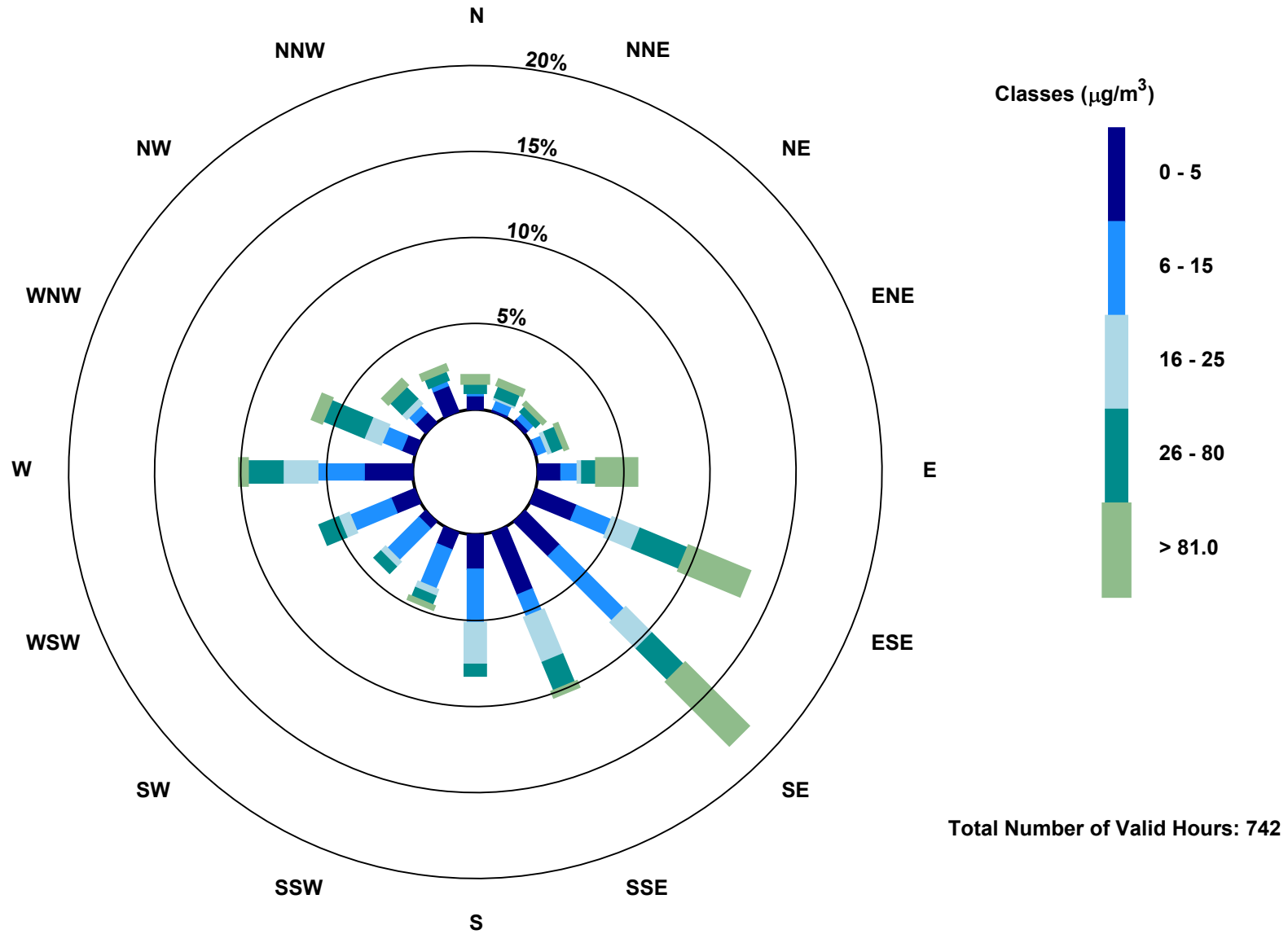
Total Number of Valid Hours: 742

Total Number of Hours: 744



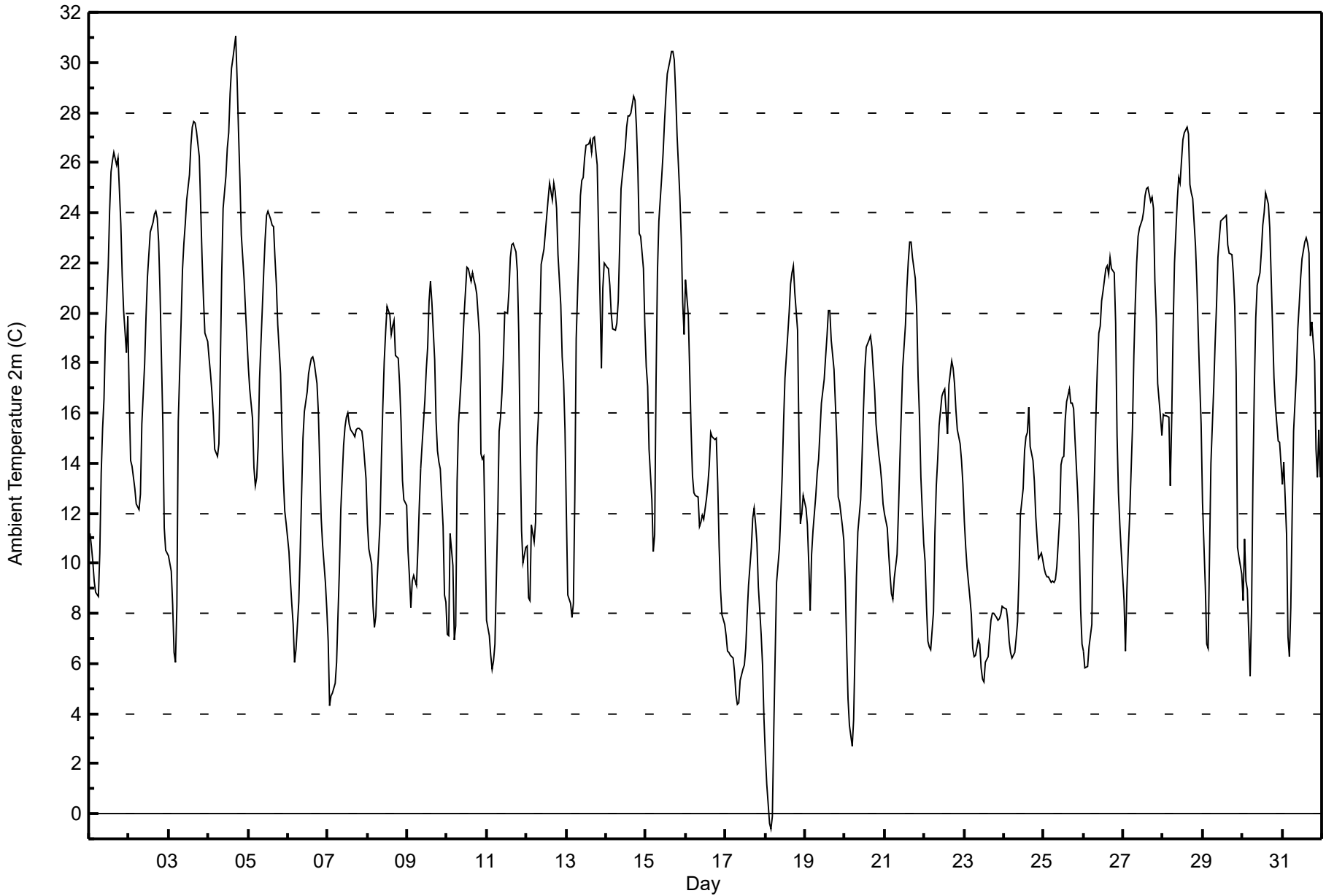
Wood Buffalo Environmental Association
Wind Rose May 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Anzac





Maximum Value: 31.1 C on May 4 17:00																				Maximum Daily Average: 23.8 C on May 14					Hours in Service: 744																							
Minimum Value: -0.6 C on May 18 04:00																				Minimum Daily Average: 7.3 C on May 17					Hours of Data: 744																							
Maximum Diurnal Average: 21.6 C at hour 16																				Minimum Diurnal Average: 8.7 C at hour 5					Hours of Missing Data: 0																							
Monthly Average: 15.80 C																				Percentiles: P ₁ = 3.6 P ₁₀ = 7.1 Q ₁ = 10.5 Median = 15.5 Q ₃ = 21.1 P ₉₀ = 24.6 P ₉₉ = 29.5					Hours of Calibration: 0																							
																									Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	11.2	10.7	10.1	9.3	8.8	8.7	10.4	13.6	15.4	16.6	19.1	21.8	24.1	25.6	26.1	26.4	25.9	26.2	24.9	23.5	21.5	20.1	18.4	19.8	18.3	26.4																						
2-May	16.6	14.1	13.9	13.0	12.4	12.3	12.2	12.8	15.5	18.0	19.9	21.4	22.3	23.2	23.6	24.0	24.0	23.8	22.8	20.8	15.6	11.4	10.5	10.4	17.3	24.0																						
3-May	10.3	9.7	8.3	6.5	6.0	8.3	15.7	19.6	21.7	22.8	23.5	24.5	25.5	26.7	27.4	27.6	27.6	27.3	26.2	24.2	22.2	20.5	19.2	18.9	19.6	27.6																						
4-May	18.2	17.6	16.9	15.9	14.6	14.3	14.8	17.8	21.6	24.1	25.5	26.6	27.2	28.8	29.7	30.1	31.1	29.3	27.3	25.4	23.1	21.3	20.1	19.0	22.5	31.1																						
5-May	17.8	17.0	15.8	13.8	13.1	13.4	14.6	17.3	20.2	21.6	22.9	23.9	24.0	23.7	23.5	23.4	22.2	21.1	19.6	17.6	15.3	13.4	12.1	11.6	18.3	24.0																						
6-May	10.5	9.4	8.4	7.5	6.0	6.6	8.5	10.4	12.7	15.0	16.0	16.8	17.6	17.9	18.2	18.3	18.0	17.2	16.0	13.9	11.8	10.7	9.2	8.2	12.7	18.3																						
7-May	6.9	4.3	4.7	4.8	5.2	6.0	7.9	9.8	12.1	14.7	15.4	15.9	16.0	15.5	15.3	15.2	15.1	15.3	15.4	15.4	15.3	14.9	14.1	13.4	12.0	16.0																						
8-May	11.6	10.6	9.9	8.3	7.4	7.9	9.4	11.6	14.2	16.3	18.0	19.3	20.3	19.9	19.1	19.5	19.7	18.3	18.2	17.1	15.6	13.3	12.5	12.3	14.6	20.3																						
9-May	10.5	9.5	8.3	9.3	9.5	9.1	10.5	12.3	13.8	14.7	16.5	17.8	18.6	20.5	21.2	20.4	18.2	15.7	14.5	14.0	13.8	11.5	8.7	8.4	13.6	21.2																						
10-May	7.2	7.1	11.2	9.9	6.9	7.5	13.3	15.6	17.4	18.7	19.9	20.9	21.8	21.8	21.2	21.6	21.3	21.1	20.8	19.1	14.4	14.2	14.3	11.0	15.8	21.8																						
11-May	7.7	7.1	6.3	5.8	6.1	6.8	11.9	15.3	15.9	16.8	18.1	20.0	20.0	20.9	22.2	22.7	22.8	22.4	21.6	19.2	14.8	11.3	10.0	10.6	14.8	22.8																						
12-May	10.7	8.6	8.5	11.5	10.8	11.6	14.6	15.8	19.5	21.9	22.5	23.2	23.9	24.6	25.2	24.5	25.2	24.9	24.2	22.3	20.3	18.2	17.3	15.4	18.6	25.2																						
13-May	11.9	8.7	8.4	7.8	8.4	12.6	18.9	22.6	24.7	25.3	25.4	26.2	26.7	26.7	26.9	26.4	26.9	27.0	25.9	23.2	20.6	17.8	21.0	22.0	20.5	27.0																						
14-May	21.8	21.8	21.1	20.0	19.4	19.3	19.6	20.5	22.6	25.0	25.5	26.6	27.4	27.8	27.9	28.0	28.7	28.5	27.4	25.8	23.2	23.1	21.8	19.5	23.8	28.7																						
15-May	17.8	17.1	14.6	12.5	10.5	11.1	17.3	21.7	23.7	25.4	26.3	27.6	28.7	29.6	30.1	30.4	30.5	30.1	28.7	27.1	24.6	22.9	20.4	19.1	22.8	30.5																						
16-May	21.3	19.9	17.7	15.3	13.5	12.8	12.7	12.6	11.5	11.6	11.9	11.7	12.6	13.2	13.9	15.2	15.0	15.0	15.0	13.2	10.7	8.9	7.9	7.5	13.4	21.3																						
17-May	7.1	6.5	6.4	6.3	6.2	5.7	4.8	4.4	4.4	5.3	5.7	5.9	6.6	7.9	9.1	10.6	11.8	12.2	11.6	10.8	9.1	7.1	6.0	3.8	7.3	12.2																						
18-May	2.4	1.2	-0.4	-0.6	-0.1	3.3	6.3	9.3	10.6	12.0	13.5	15.6	17.4	19.1	20.0	21.1	21.6	21.9	20.8	19.3	15.1	11.6	12.0	12.7	11.9	21.9																						
19-May	12.2	11.5	10.0	8.1	10.4	11.3	12.7	13.6	14.1	15.3	16.4	17.3	18.2	19.1	20.1	20.1	18.9	17.7	16.3	15.0	12.6	12.4	11.5	10.9	14.4	20.1																						
20-May	9.3	6.7	4.6	3.5	2.7	3.8	6.5	9.5	11.3	12.5	14.2	16.1	17.7	18.6	18.9	19.1	18.6	17.7	16.9	15.5	14.3	13.9	13.3	12.4	12.4	19.1																						
21-May	12.0	11.4	10.4	9.5	8.8	8.5	9.4	10.3	12.1	14.1	16.0	17.8	19.5	21.0	22.1	22.8	22.8	22.2	21.4	20.1	17.5	15.8	13.5	10.8	15.4	22.8																						
22-May	10.1	8.3	6.9	6.6	6.6	8.1	11.2	13.1	14.2	15.5	16.7	16.9	16.9	16.0	15.1	17.1	18.1	17.8	17.2	16.1	15.3	14.8	14.1	13.2	13.6	18.1																						
23-May	11.7	10.7	9.8	8.6	7.9	6.6	6.3	6.3	6.9	6.8	5.8	5.4	5.2	6.0	6.3	7.0	7.7	8.0	8.0	7.9	7.7	7.8	7.9	8.3	7.5	11.7																						
24-May	8.3	8.2	7.7	6.9	6.4	6.2	6.4	7.0	7.7	9.5	11.9	13.0	14.5	15.1	15.2	16.2	14.7	14.1	13.3	11.9	10.9	10.2	10.4	10.1	10.7	16.2																						
25-May	9.8	9.6	9.5	9.5	9.2	9.3	9.2	9.3	9.9	11.7	14.0	14.2	14.3	15.7	16.4	16.9	16.4	16.4	16.2	14.9	12.7	10.9	8.2	6.8	12.1	16.9																						
26-May	6.5	5.8	5.9	6.7	7.1	7.5	11.4	16.1	17.9	19.2	19.5	20.5	20.9	21.8	21.9	21.6	22.2	21.8	21.6	19.6	15.1	12.8	11.5	10.5	15.2	22.2																						
27-May	8.5	6.5	8.9	10.5	11.9	15.4	18.3	20.4	22.0	23.1	23.4	23.7	24.1	24.7	25.0	25.0	24.4	24.6	24.2	21.3	19.7	17.2	15.8	15.1	18.9	25.0																						
28-May	15.9	15.9	15.9	15.9	13.1	15.7	19.3	22.0	24.5	25.4	25.2	26.1	26.9	27.2	27.4	27.2	25.1	24.8	24.5	22.6	21.2	19.1	17.2	15.5	21.4	27.4																						
29-May	12.4	9.1	6.8	6.6	10.3	14.0	17.0	18.8	20.3	22.2	23.0	23.7	23.8	23.8	23.9	22.7	22.4	22.3	21.5	20.3	17.5	10.6	10.2	9.6	17.2	23.9																						
30-May	8.5	11.0	9.3	9.0	5.5	8.1	13.4	17.1	19.8	21.1	21.6	22.4	23.5	24.0	24.8	24.3	23.4	21.4	19.4	17.4	16.3	14.9	14.9	14.0	16.9	24.8																						
31-May	13.2	14.1	11.2	7.0	6.3	8.3	12.0	15.3	17.6	19.3	20.3	21.4	22.2	22.8	23.0	22.8	22.4	19.1	19.6	18.1	14.6	13.4	15.3	13.4	16.4	23.0																						
																								11.6	10.6	9.9	9.2	8.7	9.7	12.1	14.2	16.0	17.5	18.5	19.5	20.3	20.9	21.3	21.6	21.4	20.8	20.0	18.5	16.2	14.4	13.5	12.7	Diurnal Average
																								21.8	21.8	21.1	20.0	19.4	19.3	19.6	22.6	24.7	25.4	26.3	27.6	28.7	29.6	30.1	30.4	31.1	30.1	28.7	27.1	24.6	23.1	21.8	22.0	Diurnal Maximum





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 2m (AT 2m) - C
Anzac - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	3	0.40	0.40
0 - 10	163	21.91	22.31
10 - 20	359	48.25	70.56
> 20	219	29.44	100.00

Total Number of Valid Hours: 744

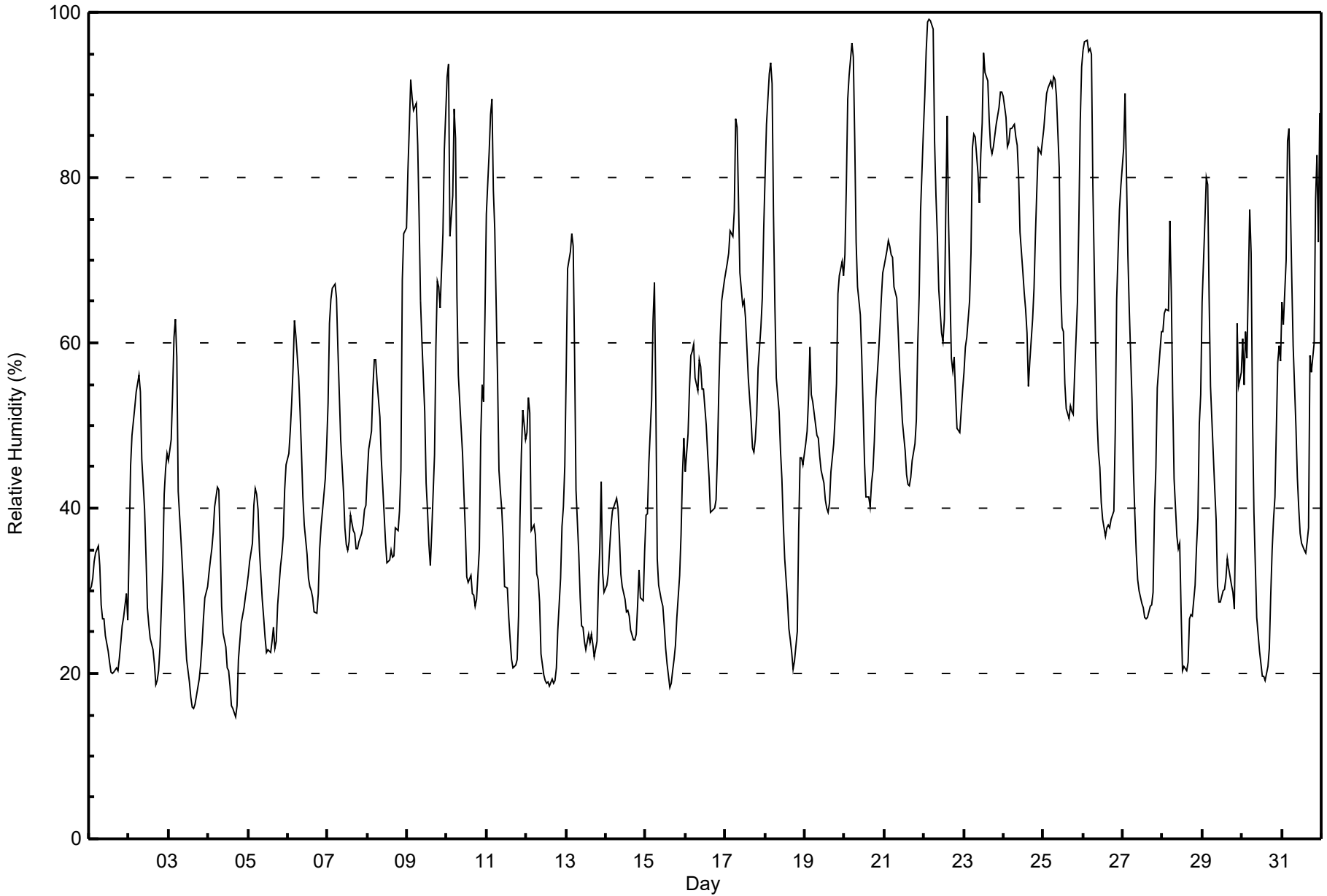
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Anzac - May 2023

Maximum Value: 99.1 % on May 22 04:00 Maximum Daily Average: 81.4 % on May 23 Minimum Value: 14.7 % on May 4 17:00 Minimum Daily Average: 26.4 % on May 1 Maximum Diurnal Average: 69.1 % at hour 5 Minimum Diurnal Average: 34.0 % at hour 17 Monthly Average: 49.46 % Percentiles: P ₁ = 17.2 P ₁₀ = 23.6 Q ₁ = 31.5 Median = 46.0 Q ₃ = 65.0 P ₉₀ = 83.8 P ₉₉ = 95.6																								Hours in Service:	744																							
																								Hours of Data:	744																							
																								Hours of Missing Data:	0																							
																								Hours of Calibration:	0																							
																								Percent Operational Time:	100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	30.1	30.6	31.6	33.5	34.5	35.5	33.1	28.3	26.6	26.7	24.6	22.7	21.4	20.2	20.0	20.1	20.6	20.3	21.8	23.8	25.8	26.9	29.6	26.4	26.4	35.5																						
2-May	35.7	45.0	48.9	52.1	54.0	55.1	56.2	54.1	46.0	39.9	34.2	27.9	25.9	24.3	22.8	21.1	18.7	19.2	20.4	23.2	33.0	41.7	44.8	46.6	37.1	56.2																						
3-May	45.7	48.3	53.8	60.8	62.9	58.4	42.1	36.0	32.9	29.4	24.8	21.6	19.0	17.1	16.0	15.7	16.2	17.4	19.4	21.0	23.5	26.5	29.1	30.5	32.0	62.9																						
4-May	32.1	33.7	35.1	37.1	40.1	42.6	42.2	35.6	28.2	24.9	23.3	20.7	20.4	18.5	16.1	15.7	14.7	16.1	21.7	23.9	26.2	28.0	29.4	30.5	27.4	42.6																						
5-May	31.9	33.5	35.8	40.4	42.3	41.7	39.9	34.9	29.0	26.8	24.3	22.5	22.9	22.6	23.9	25.5	23.0	23.9	28.3	32.9	34.5	36.6	42.1	45.3	31.9	45.3																						
6-May	46.6	49.4	52.7	57.0	62.6	60.8	56.0	51.7	46.7	41.3	37.9	34.5	31.5	30.6	30.0	29.2	27.5	27.3	29.7	35.2	37.9	39.7	43.6	47.6	42.0	62.6																						
7-May	52.8	62.3	65.2	66.6	67.2	65.4	59.3	53.8	48.4	42.1	37.7	35.5	34.9	36.0	39.2	37.2	37.0	35.0	35.1	36.0	37.0	38.0	39.8	40.4	45.9	67.2																						
8-May	44.1	47.2	49.2	54.6	57.9	58.0	55.3	51.0	46.0	42.7	39.3	36.0	33.5	33.7	34.9	34.1	34.3	37.6	37.3	39.6	44.6	67.6	73.3	74.0	46.9	74.0																						
9-May	80.9	86.1	91.8	89.7	88.1	89.0	83.8	75.2	65.0	60.1	51.7	43.0	39.7	35.6	33.1	37.2	46.4	59.7	67.5	66.8	64.2	73.2	83.5	87.8	66.6	91.8																						
10-May	92.2	93.8	73.0	77.8	88.3	84.8	65.5	56.1	49.7	46.6	41.6	37.4	31.6	31.0	31.8	29.6	29.5	28.2	29.0	35.0	48.7	55.0	52.9	63.1	53.0	93.8																						
11-May	75.6	83.0	87.7	89.5	78.4	73.8	55.8	44.5	42.0	39.9	36.3	30.5	30.4	26.8	24.0	21.7	20.7	21.1	21.7	26.9	38.8	46.7	51.8	48.3	46.5	89.5																						
12-May	49.1	53.3	51.6	37.3	38.0	36.8	32.0	31.4	28.6	22.4	19.8	19.1	18.8	19.0	18.4	19.2	18.8	19.1	20.7	25.3	31.5	37.9	40.1	45.2	30.6	53.3																						
13-May	56.4	68.9	71.0	73.2	71.8	58.4	42.3	34.4	29.2	25.8	25.6	23.9	22.9	24.8	23.8	24.8	23.6	22.1	23.8	30.6	35.3	43.3	32.3	29.9	38.2	73.2																						
14-May	30.7	32.1	35.1	37.8	39.7	40.6	41.1	40.0	36.4	32.0	30.5	29.0	27.4	27.6	27.0	25.3	24.0	24.1	24.7	28.3	32.5	29.1	28.8	34.8	31.6	41.1																						
15-May	39.2	39.3	45.4	53.1	62.8	67.3	53.0	33.9	30.7	28.8	28.1	25.8	23.0	21.2	18.3	18.9	20.3	21.7	23.5	26.8	31.8	36.7	44.1	48.6	35.1	67.3																						
16-May	44.5	48.9	54.5	58.5	59.1	59.8	55.7	54.3	58.0	57.2	54.4	54.4	50.0	46.6	43.8	39.5	39.7	40.0	41.1	46.7	54.6	60.7	65.0	67.6	52.3	67.6																						
17-May	68.6	69.6	70.8	73.5	73.0	75.9	87.2	86.1	77.3	68.5	64.6	65.1	63.1	59.4	55.7	50.7	47.3	46.8	48.4	51.2	56.9	61.8	65.4	73.7	65.0	87.2																						
18-May	80.2	86.5	92.6	93.9	91.4	75.5	64.4	55.8	51.8	47.0	43.5	38.1	34.0	28.8	25.4	24.1	22.6	20.6	21.5	25.2	37.4	46.1	46.2	45.3	49.9	93.9																						
19-May	47.8	49.3	53.2	59.4	53.7	52.9	50.2	48.8	48.5	46.3	44.6	43.1	41.0	40.0	39.5	40.7	44.3	47.8	51.0	55.1	65.9	68.1	69.9	68.1	51.2	69.9																						
20-May	70.8	79.0	89.5	92.4	96.2	94.6	84.6	72.3	66.7	63.4	58.3	52.0	45.5	41.3	41.3	40.2	43.1	44.5	48.1	53.3	58.6	61.9	65.4	68.5	63.8	96.2																						
21-May	69.4	71.1	72.4	71.7	70.6	70.3	66.8	65.4	61.6	57.2	53.9	50.6	46.9	44.1	43.0	42.7	43.7	45.8	47.7	50.7	59.9	65.8	76.0	85.6	59.7	85.6																						
22-May	89.8	95.2	98.8	99.1	99.0	97.9	84.5	77.8	72.9	66.4	61.1	60.2	62.9	76.0	87.4	74.5	58.1	56.5	58.4	53.8	49.6	49.2	51.7	54.3	72.3	99.1																						
23-May	56.5	59.5	60.6	65.1	70.8	83.6	85.3	84.9	80.4	77.0	82.8	86.6	95.0	92.7	91.7	86.9	83.7	82.8	83.7	86.4	87.5	88.5	90.3	90.4	81.4	95.0																						
24-May	89.9	87.4	83.7	84.3	85.9	85.9	86.4	85.0	84.0	80.2	73.4	68.7	66.0	64.1	61.2	54.8	57.9	62.9	66.6	73.0	78.4	83.5	82.9	84.4	76.3	89.9																						
25-May	85.9	88.1	90.2	90.9	91.7	91.1	92.3	91.9	89.9	81.2	66.9	61.9	61.4	55.1	52.1	50.9	52.4	51.6	51.3	56.2	65.0	74.6	86.8	93.3	73.9	93.3																						
26-May	95.5	96.5	96.6	95.3	95.6	94.9	79.1	59.1	50.8	46.8	44.9	40.7	38.6	36.6	37.6	38.0	37.6	38.6	39.6	49.4	65.3	70.9	76.2	79.0	62.6	96.6																						
27-May	83.5	90.1	80.3	70.6	64.0	52.8	44.4	39.1	34.5	31.3	30.0	28.4	27.9	26.8	26.6	26.7	28.1	28.2	29.8	39.6	44.9	54.6	59.1	61.4	46.0	90.1																						
28-May	61.3	63.5	64.1	63.9	74.8	66.1	53.5	43.6	36.6	35.1	35.8	27.6	20.3	20.9	20.3	21.3	26.5	27.1	27.0	30.7	35.2	38.9	50.2	53.7	41.6	74.8																						
29-May	64.9	74.7	80.1	79.1	65.7	54.7	46.4	42.3	38.6	30.8	28.6	28.7	29.9	30.2	31.5	33.9	32.7	30.6	29.8	27.8	39.3	62.3	54.8	56.4	45.6	80.1																						
30-May	60.5	54.9	61.3	58.1	76.1	70.9	51.0	39.5	33.0	26.8	22.7	21.1	19.6	19.7	19.2	20.8	23.1	29.6	34.8	38.7	41.4	57.6	59.7	57.7	41.6	76.1																						
31-May	65.0	62.2	70.0	84.4	86.0	77.4	68.0	59.7	49.9	43.8	40.0	36.9	35.7	35.0	34.5	35.9	37.6	58.6	56.4	60.0	77.2	82.6	72.3	87.8	59.0	87.8																						
																								60.6	64.0	66.0	67.8	69.1	66.9	59.9	53.8	49.0	44.8	41.5	38.5	36.8	35.7	35.2	34.1	34.0	35.6	37.4	41.1	47.2	53.4	56.0	58.9	Diurnal Average
																								95.5	96.5	98.8	99.1	99.0	97.9	92.3	91.9	89.9	81.2	62.8	86.6	95.0	92.7	91.7	86.9	83.7	82.8	83.7	86.4	87.5	88.5	90.3	93.3	Diurnal Maximum





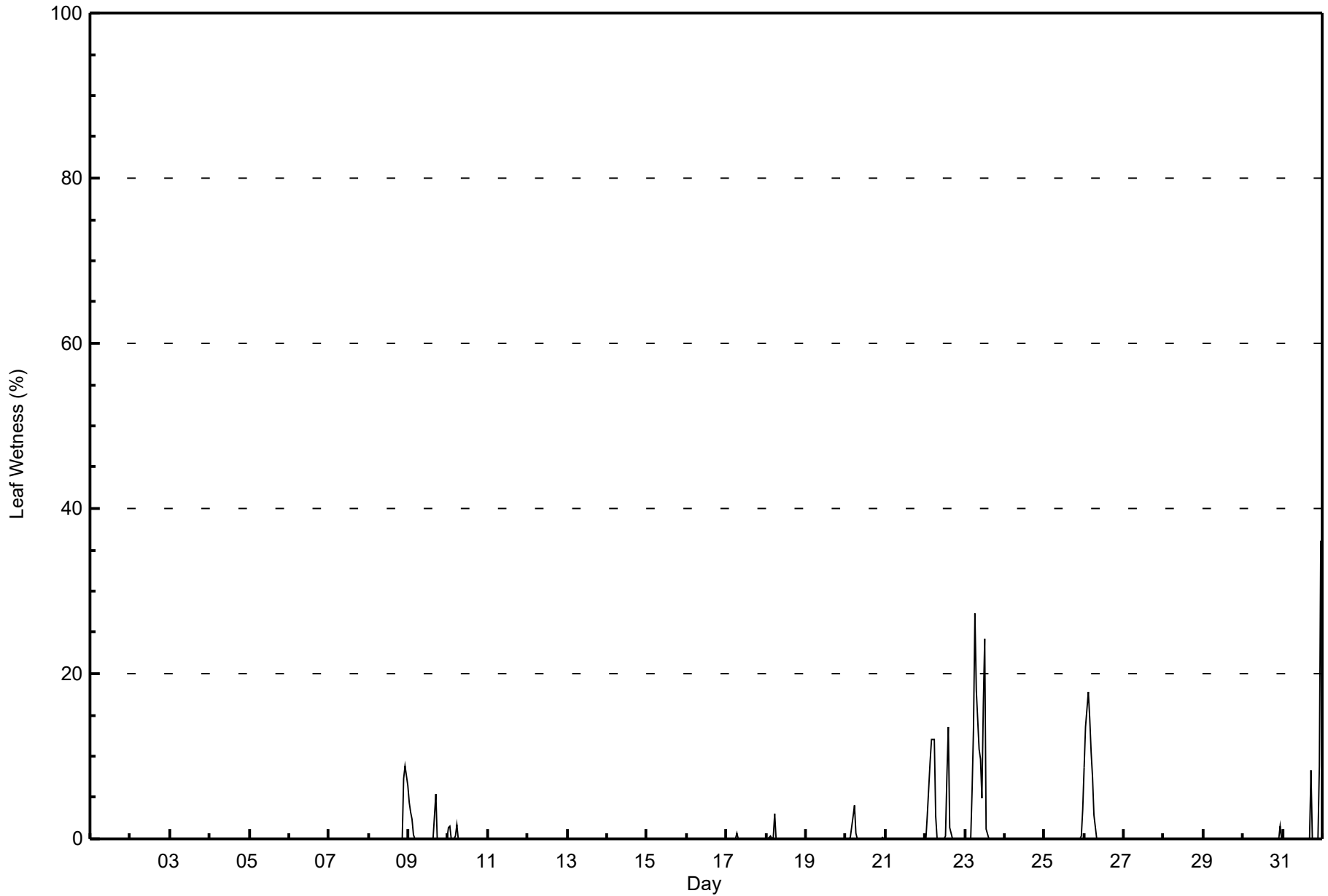
Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Anzac - May 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	27	3.63	3.63
20 - 40	281	37.77	41.40
40 - 60	212	28.49	69.89
60 - 80	130	17.47	87.37
80 - 100	94	12.63	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Leaf Wetness (LW) - %
Anzac - May 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 0.3	696	93.55	93.55
0.4 - 0.5	2	0.27	93.82
0.6 - 0.7	2	0.27	94.09
0.8 - 1.4	3	0.40	94.49
1.5 - 10	27	3.63	98.12
> 10	14	1.88	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Anzac - May 2023

Maximum Speed: 29 km/h on May 16 16:00	Maximum Daily Speed Average: 21.1 km/h on May 23	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 15 09:00	Minimum Daily Speed Average: 0.7 km/h on May 9	Hours of Data: 743
Maximum Diurnal Speed Average: 5.2 km/h at hour 24	Minimum Diurnal Speed Average: 3.6 km/h at hour 20	Hours of Missing Data: 1
Monthly Average Velocity: 4.4 km/h 155.7 deg	Percentiles: P ₁ = 2 P ₁₀ = 6 Q ₁ = 8 Median = 11 Q ₃ = 15 P ₉₀ = 20 P ₉₉ = 25	Percent Operational Time: 99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SE17	SE17	SE16	SE18	SE19	SE17	SE17	SSE22	SE24	SE21	SE23	SSE21	SSE22	S21	S21	S18	S17	SSW20	SSW15	SSE12	SSE16	SSE16	SSE15	SSW19	SSE17.1	SE24
2-May	W15	W15	WNW14	W10	WNW12	WSW7	WSW9	W8	WSW6	W10	WSW11	WSW11	WSW11	W8	W11	W12	W13	W11	WNW7	N4	ESE5	SSE6	SSE8	SSE9	W7.6	W15
3-May	SSE10	SSE9	SSE9	SSE9	SSE9	SSW8	S7	S13	S15	S16	S18	SSE20	SSE21	SSE20	SSE20	SSE22	SSE19	SE18	SE15	SE14	SE14	SE14	SE13	SE14	SSE14.0	SSE22
4-May	SE15	SE16	SE17	SE15	ESE10	ENE5	E10	ESE10	SE13	SE10	SE14	SE17	SE13	SE7	SSE12	S7	SSE13	ESE6	E14	E13	ESE11	ESE12	SE13	SE14	SE11.2	SE17
5-May	ESE14	ESE15	ESE17	ESE13	ESE14	SE16	SE17	SE20	SE16	SE19	SE20	ESE20	ESE23	ESE24	ESE22	E23	E24	E24	E23	E20	E21	ESE18	ESE16	ESE18	ESE18.3	E24
6-May	SE15	ESE13	ESE13	ESE11	ESE9	ESE10	ESE14	ESE14	ESE15	ESE18	ESE19	ESE20	ESE19	ESE19	ESE19	E21	E22	E23	ESE21	SE18	ESE11	ESE10	E10	ESE8	ESE15.5	E23
7-May	SE8	SSE8	SE9	SE10	SE11	ESE11	ESE11	ESE13	SE15	SE17	ESE21	SE20	ESE22	SE22	SSE21	SE17	SE15	ESE15	E12	ESE13	ESE16	SE18	SE18	SE17	SE14.7	ESE22
8-May	SE12	ESE12	ESE11	ESE12	ESE14	ESE11	ESE11	ESE13	ESE15	ESE15	SE17	SSE18	SSE19	ESE19	SE16	SE14	SE14	SE16	ESE13	SE11	S6	W12	WNW9	WNW8	SE10.5	SSE19
9-May	NNW3	E3	SE5	SE9	SSE9	UO	NNW4	N5	NNE7	NE6	NNE7	NNE9	NNE8	SW1	WNW8	NE7	S10	SW12	WSW11	W8	WNW9	WSW5	SSE5	S6	WNW0.7	SW12
10-May	SW7	W6	W10	W8	W6	W6	W6	WNW5	WNW3	W7	W8	W8	W8	N5	NNE19	NNE13	NNW11	NNW9	N7	NNW6	NW6	W9	NW9	NNW5	NW5.1	NNE19
11-May	WNW4	SW2	ENE4	ENE6	ESE5	SE5	SE8	SE9	SE10	SE10	SE7	SSE8	S6	E7	E11	E10	ESE8	ESE9	ESE6	ESE6	SSW4	ESE3	SE8	SE10	SE5.6	E11
12-May	SSE9	SSE8	SSE11	SE12	SE11	SE10	SE11	SE14	SE16	SE18	SE19	SE17	SE12	E10	SE8	ESE10	ESE11	ESE11	SE8	SE6	SE11	SE10	SE12	SE12	SE11.3	SE19
13-May	SE9	SSE7	S9	SSW9	S9	SSW9	SSW10	SSW10	SW13	SW21	SSW18	SSW17	SW18	WSW14	WSW12	W10	WSW9	SW14	SW8	S7	S8	S7	SSW12	SSW16	SSW10.4	SW21
14-May	SW17	SSW21	SW20	SW17	SW17	SW17	SW13	SW12	WSW6	W5	W8	W11	W14	W16	W14	WSW13	WSW13	WSW14	SW12	SSW10	SSW10	SW13	SW10	NW8	SW11.9	SSW21
15-May	WSW9	SW9	S7	SSW7	SSW6	S3	S4	NE3	SSE0	WSW6	W7	SW5	S9	S13	S14	S15	SSW14	SSW13	SSW11	SSW11	S11	S9	S10	SSW7.6	S15	
16-May	WSW10	WNW14	WNW14	NW15	NW15	WNW19	WNW19	NW27	NW27	NW24	NW24	WNW25	WNW24	WNW27	WNW27	WNW29	WNW25	WNW21	NW17	NNW17	NNW14	NNW13	NW13	NW15	NW19.0	WNW29
17-May	NW18	NW15	NW14	NW16	NNW22	NNW17	N15	NNW15	NNW20	NNW20	NNW17	NNW16	NNW15	N15	N13	N12	N12	NE12	NNE13	NE10	ENE8	E9	ESE10	SE8	N10.9	NNW22
18-May	SE9	SSE9	SSE8	SSE9	SSE9	SSE9	SSE7	S5	WNW6	NNW2	E6	SE6	SE9	S8	SSW6	SSW5	S8	SSW8	S9	SSW8	SSW8	S9	SSW9	S13	S6.4	S13
19-May	SSW14	SSW15	S11	SSE13	S15	S13	S11	S9	SE6	SE7	SSE6	SSE6	SSW4	WNW6	WNW8	WNW11	NW11	NW13	NW10	WNW8	WNW9	W9	NW11	NNW10	SW4.1	SSW15
20-May	NW10	WNW8	WNW8	WNW6	WNW5	NW7	WNW3	ENE3	E9	E7	E7	E9	ESE10	ESE11	E12	E11	E13	E12	E13	ESE12	ESE11	ESE12	SE16	SE9	E5.4	SE16
21-May	SE13	SE13	SE14	ESE9	SE13	SE14	SE12	SE11	SE10	SE11	SE10	ESE11	ESE15	ESE15	SE14	SE14	SE13	SE12	SE11	SE11	SE9	SE11	ESE7	ESE7	SE11.5	ESE15
22-May	SE6	SSE5	NNE4	NNW4	NNE1	WNW6	NW6	W5	W3	N8	N11	N12	N8	W5	W3	NNE6	NE18	ENE19	ENE19	ENE21	ENE19	ENE22	ENE24	ENE24	NE7.4	ENE24
23-May	E22	E19	E25	E21	E22	E20	E22	ESE18	ESE20	ESE25	E28	ESE24	E23	ESE22	ESE18	ESE21	ESE24	ESE24	SE26	ESE25	SE22	SE17	ESE17	ESE19	ESE21.1	E28
24-May	ESE14	ESE12	ESE12	SE18	ESE14	SE16	SE13	SE15	SE15	SSE12	SSW10	SSE8	SSE7	W5	W10	W20	WSW17	W15	W16	W16	W13	W11	W13	W13	SSW4.9	W20
25-May	WNW13	WNW10	WNW9	W8	WNW9	WNW9	WNW9	WNW8	W8	WSW7	WSW8	WSW5	NNE5	NE7	ENE7	E9	ESE11	ESE9	ESE7	ESE8	SE9	SE8	SSE7	W0.9	WNW13	
26-May	SSE8	SSE8	SSE8	SSE7	SSE7	SE5	SE5	SSE5	W7	W6	WSW6	W7	W6	W6	SSE11	SE5	SSE11	SE6	SSE7	SSE6	SE6	SE7	SSE8	SSE9	S4.8	SSE11
27-May	SSE8	S8	S10	S10	S9	S9	S11	S13	S15	S17	SSE18	SSE18	SSE16	SSE16	SSE18	SE19	SE18	SE14	SSE12	S6	SSE15	SSE14	SSE14	SSE14	SSE12.9	SE19
28-May	SSE13	S13	S11	S10	SSE7	S7	S7	SW6	S7	W9	W15	WSW15	WSW18	WSW19	WSW22	WSW21	W20	WSW18	SW17	W14	W13	W11	W11	W9	WSW10.7	WSW22
29-May	WSW7	S7	S6	SW7	SW10	SSW8	WSW9	W12	W12	W14	W18	W19	W16	WSW18	WSW20	W20	W20	WSW15	W16	W12	WSW6	WSW7	SW7	SW8	WSW11.4	W20
30-May	WSW8	W9	WNW10	W8	W4	S3	S1	SSE2	SSE3	NNE5	NE7	NNE4	E3	E7	ESE12	SE13	SSE11	WSW11	W10	NW9	WNW7	WSW7	SE1	W3	WSW1.7	SE13
31-May	W6	W9	WSW4	SW3	SW4	S6	WSW5	WNW9	WNW7	NW8	N9	NNE7	NE7	E7	SE9	SE9	ESE7	SW3	WSW7	WNW3	NE3	N4	SW8	WSW7	WSW1.7	WNW9

SSE4.7	S4.9	SSE4.6	SSE4.5	SSE4.5	SSE4.2	SSE4.0	SSE4.1	SSE4.1	SSE3.9	SSE4.2	SSE4.8	SSE5.1	SSE4.1	SSE4.7	SSE3.7	SSE4.6	SSE4.3	SSE3.8	SE3.6	SE4.3	SSE4.7	SSE5.1	SSE5.2	Diurnal Average	
E22	SSW21	E25	E21	NNW22	E20	E22	NW27	NW27	ESE25	E28	WNW25	WNW24	WNW27	WNW27	WNW29	WNW25	E24	SE26	ESE25	SE22	ENE22	ENE24	ENE24	Diurnal Maximum	

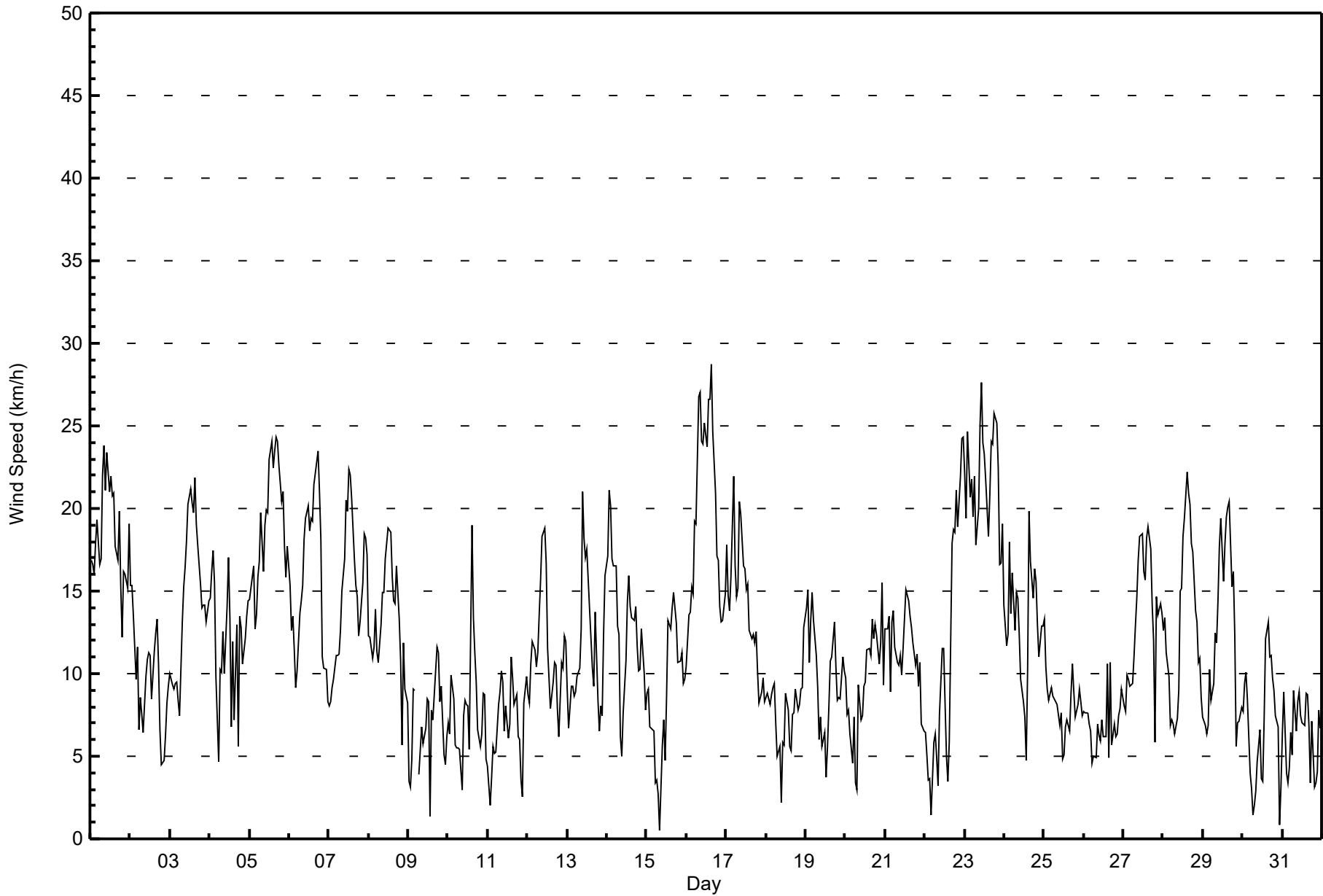
UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Anzac - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 8 km/h on May 16 15:00														Hours in Service: 744 Hours of Data: 743 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9											
Minimum Value: 1 km/h on May 9 01:00																									
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 6 P ₉₉ = 7																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	3	3	3	3	3	3	3	4	5	5	5	5	6	6	6	6	5	6	5	3	3	2	4	5	6
2-May	4	3	3	3	2	2	2	1	2	3	3	4	4	3	4	4	4	3	2	2	1	1	1	1	4
3-May	1	1	2	1	1	2	3	4	5	5	6	6	6	6	6	6	5	4	3	3	2	2	2	3	6
4-May	3	3	3	3	4	2	2	3	3	2	4	4	5	3	4	7	6	6	4	3	2	3	2	3	7
5-May	3	3	4	3	3	3	4	4	4	5	5	6	6	6	6	7	6	6	6	6	5	5	5	4	7
6-May	3	3	3	3	2	2	3	3	4	5	6	6	5	6	5	5	6	6	6	6	2	2	2	2	6
7-May	2	1	1	2	2	2	3	3	3	4	6	6	6	6	7	4	4	4	3	4	4	4	4	4	7
8-May	3	2	2	2	2	2	2	3	3	4	4	5	5	5	4	4	4	4	4	2	3	3	2	2	5
9-May	1	2	2	1	2	UO	3	1	2	1	2	2	3	3	3	3	3	3	3	2	2	1	2	1	3
10-May	2	2	2	1	1	1	1	2	2	2	2	3	3	5	5	3	3	3	2	1	2	1	3	1	5
11-May	1	2	3	1	1	1	2	3	2	2	3	3	2	3	4	4	4	3	2	1	2	3	2	1	4
12-May	2	2	1	2	2	2	3	3	3	4	5	5	5	4	5	4	3	3	2	1	2	2	2	2	5
13-May	2	1	2	2	2	2	2	4	4	6	5	5	6	4	4	3	4	4	2	1	2	2	3	4	6
14-May	4	6	6	5	5	5	4	4	2	2	2	3	4	4	4	4	4	4	4	3	3	3	3	4	6
15-May	2	2	1	1	1	1	2	2	1	2	2	3	4	5	5	5	5	5	4	3	2	3	2	2	5
16-May	4	3	3	3	4	5	5	7	7	6	7	6	7	8	8	8	6	6	4	4	4	3	2	3	8
17-May	4	3	3	4	5	5	4	4	5	5	5	4	3	4	4	4	3	4	4	3	2	2	2	2	5
18-May	1	1	1	1	1	1	1	2	3	3	3	4	4	4	4	3	3	3	3	2	2	2	2	3	4
19-May	3	4	2	3	4	4	4	4	2	2	2	2	3	2	2	3	2	3	2	2	2	2	2	2	4
20-May	1	1	1	1	1	2	1	3	2	2	2	3	3	4	3	3	3	3	3	3	3	3	4	4	4
21-May	2	3	3	3	2	3	3	2	3	2	2	3	4	4	3	3	3	3	2	2	2	2	2	2	4
22-May	2	2	2	2	1	2	3	1	1	2	4	4	2	1	1	4	4	6	5	6	5	6	6	7	7
23-May	7	6	7	6	6	5	6	5	6	7	7	7	7	6	5	6	6	6	6	6	6	4	4	5	7
24-May	4	3	3	4	4	3	3	4	3	3	3	3	3	3	4	5	5	4	4	4	4	3	3	3	5
25-May	3	3	2	2	2	2	2	2	2	2	3	3	2	3	3	3	3	3	2	2	2	1	1	1	3
26-May	1	1	1	1	1	1	1	2	2	2	2	3	3	3	4	3	3	2	2	2	1	1	1	1	4
27-May	1	1	2	2	2	2	3	4	5	5	5	6	6	6	5	5	5	4	5	2	3	2	2	2	6
28-May	3	3	3	3	2	2	3	3	2	3	4	5	5	5	6	6	6	6	6	4	4	3	3	2	6
29-May	1	2	1	1	3	3	4	3	3	4	5	5	5	5	6	6	6	6	5	4	2	2	1	2	6
30-May	2	2	2	2	1	2	1	2	1	3	3	3	3	4	4	4	3	4	3	2	2	1	3	2	4
31-May	1	2	2	2	2	2	1	2	2	3	3	3	2	3	2	3	2	3	2	2	2	1	2	2	3
Diurnal Maximum																									
7 6 7 6 6 5 6 7 7 7 7 7 7 8 8 8 6 6 6 6 6 6 6 6 7																									
UO - Unstable Operation																									





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed (WS) - km/h
Anzac - May 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	68	9.15	9.15
6 - 11	330	44.41	53.57
12 - 19	263	35.40	88.96
20 - 28	81	10.90	99.87
29 - 38	1	0.13	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Anzac - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	4	5	2	3	2	3	6	6	5	3	6	4	8	6	0	5	68
6 - 11	5	6	6	4	16	35	47	40	37	19	10	25	38	27	10	5	330
12 - 19	6	3	2	3	8	45	72	22	17	11	12	12	25	7	10	8	263
20 - 28	0	0	0	4	17	16	9	9	2	2	2	3	4	6	4	3	81
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	14	10	14	43	99	134	77	61	35	30	44	75	47	24	21	743

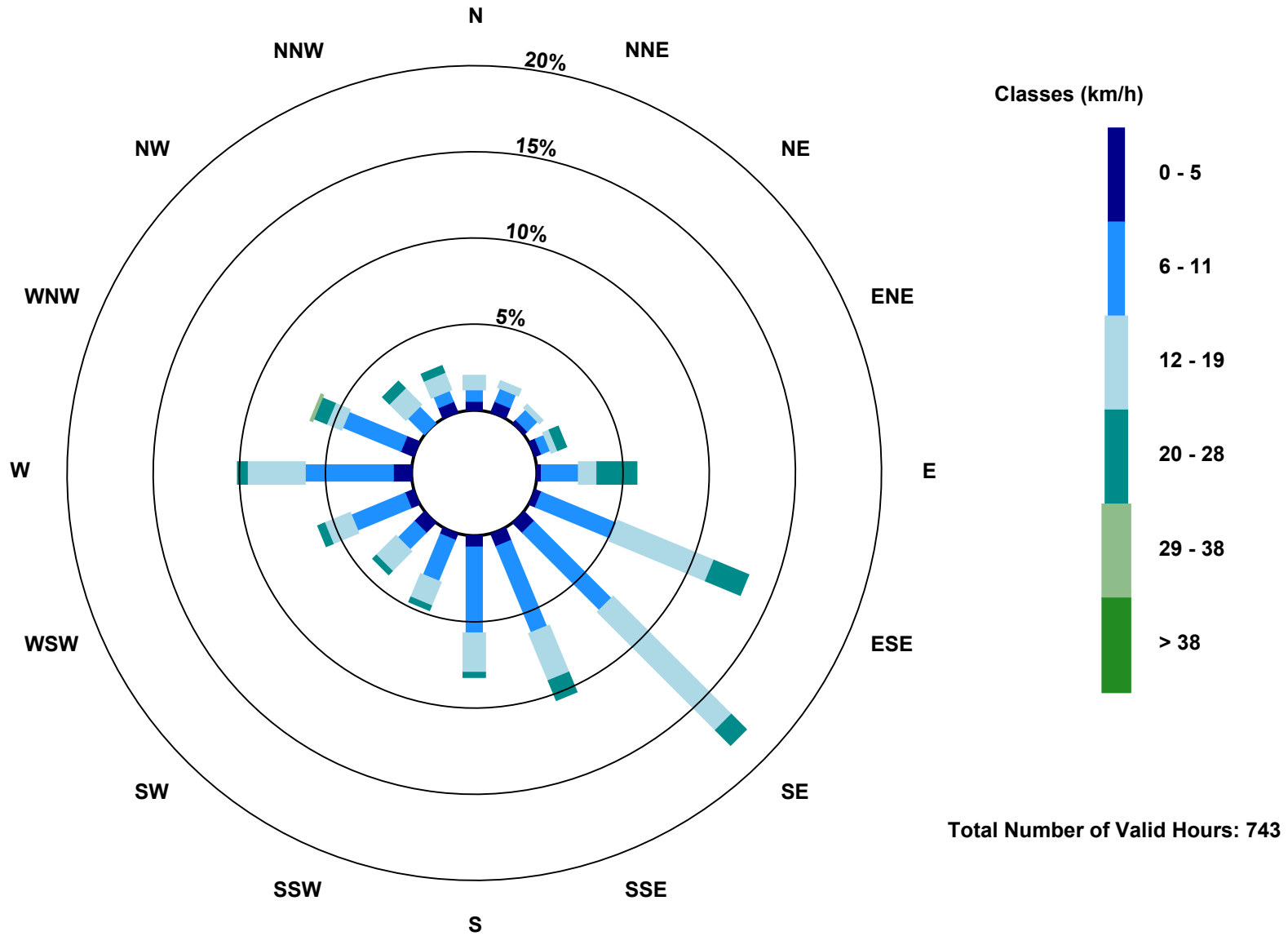
Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Anzac





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Anzac - May 2023

Direction of Maximum Speed: 301 deg on May 16 16:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 105.6 deg on May 23	Hours of Data: 743
Direction of Minimum Speed: 158 deg on May 15 09:00	Hours of Missing Data: 1
Direction of Minimum Daily Speed Average: 0.7 deg on May 9	Percent Operational Time: 99.9
Monthly Average Direction: 155.7 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	141	143	143	138	133	128	130	148	142	136	145	147	166	170	189	177	184	197	192	168	163	151	166	208	157.9
2-May	259	275	294	269	285	256	251	268	246	267	254	250	247	271	272	267	273	270	294	7	115	154	157	156	261.2
3-May	158	162	163	164	161	202	185	191	189	191	175	157	154	154	159	155	152	143	140	140	143	145	142	129	158.7
4-May	127	132	129	129	112	60	95	107	134	128	130	132	142	140	151	181	150	113	82	91	111	122	126	124	124.5
5-May	114	120	117	103	119	125	130	140	129	133	128	120	104	103	121	96	87	88	92	100	97	102	107	120	111.1
6-May	125	121	117	119	114	105	117	117	116	123	114	115	119	114	113	92	98	96	110	129	123	113	96	109	112.6
7-May	128	147	135	132	126	117	116	120	124	124	122	133	123	133	149	142	137	110	100	110	122	125	129	132	127.0
8-May	128	122	110	105	104	110	116	120	116	117	133	155	148	122	129	142	138	125	122	127	183	270	282	290	129.7
9-May	343	82	139	141	154	UO	335	1	32	40	32	27	15	218	302	35	188	223	253	281	300	257	162	185	298.0
10-May	226	273	272	265	270	262	272	282	285	259	263	269	265	358	32	21	346	340	10	333	313	266	325	340	306.6
11-May	291	231	58	68	116	132	134	136	140	131	126	168	177	93	79	97	117	114	104	117	196	112	136	146	123.8
12-May	153	153	148	142	145	137	144	141	141	137	131	135	133	101	126	117	123	118	128	132	126	130	131	139	134.1
13-May	144	166	191	192	187	192	192	204	215	215	205	205	217	249	255	263	246	224	218	180	177	189	209	210	209.6
14-May	214	213	215	221	224	222	233	226	238	265	279	268	262	261	260	248	249	245	214	206	202	216	235	316	234.3
15-May	256	227	186	203	201	176	191	49	158	257	279	229	170	173	180	182	189	194	204	205	195	188	171	171	195.9
16-May	245	283	295	318	317	302	294	308	314	308	310	297	295	300	298	301	302	301	310	347	333	331	326	317	306.2
17-May	313	307	316	321	328	340	354	339	347	337	328	339	345	358	6	359	9	34	30	49	67	100	120	136	350.0
18-May	144	152	151	155	158	156	153	185	300	344	90	142	142	178	204	207	175	199	180	192	193	180	205	191	172.4
19-May	193	195	173	165	175	178	188	183	145	145	147	166	193	291	282	290	310	321	307	293	293	281	326	348	226.8
20-May	322	303	303	299	282	324	299	64	100	101	99	79	104	115	92	91	93	93	100	105	112	123	128	142	96.9
21-May	128	128	130	123	125	127	127	132	124	127	124	123	121	122	127	133	124	128	125	134	136	139	116	120	126.9
22-May	139	153	21	339	22	292	321	266	265	349	4	7	355	268	261	15	48	68	65	70	65	62	65	75	48.3
23-May	80	81	87	87	96	94	99	104	107	103	100	102	99	102	107	115	115	120	124	122	126	128	121	119	105.6
24-May	111	114	118	127	121	130	129	141	144	151	200	167	147	271	267	265	256	266	273	276	277	271	266	276	198.6
25-May	290	288	286	280	295	295	290	287	280	253	244	250	31	40	61	74	85	104	119	111	117	136	144	153	273.3
26-May	157	155	156	158	155	145	142	162	275	278	248	268	266	262	149	140	157	144	151	148	128	143	160	160	168.8
27-May	166	180	182	180	181	183	186	186	183	178	165	163	162	153	152	144	141	141	158	186	159	153	156	160	163.9
28-May	167	173	175	184	168	178	187	219	182	273	262	247	242	256	244	250	261	243	233	280	272	281	267	260	238.0
29-May	245	179	181	217	217	208	239	260	266	260	263	264	260	254	256	277	261	237	276	268	255	242	230	230	251.7
30-May	248	262	283	275	263	187	190	163	162	32	51	30	88	88	119	133	160	251	275	311	296	258	140	266	241.5
31-May	259	268	239	233	228	175	246	283	287	309	358	16	47	95	137	128	123	234	243	295	40	355	232	239	257.8

167.4 172.9 159.4 157.8 155.5 156.7 157.1 166.4 153.9 159.3 153.3 159.0 155.6 152.6 161.8 155.9 152.9 153.9 147.4 130.2 140.8 151.1 149.6 156.9
 Diurnal Average

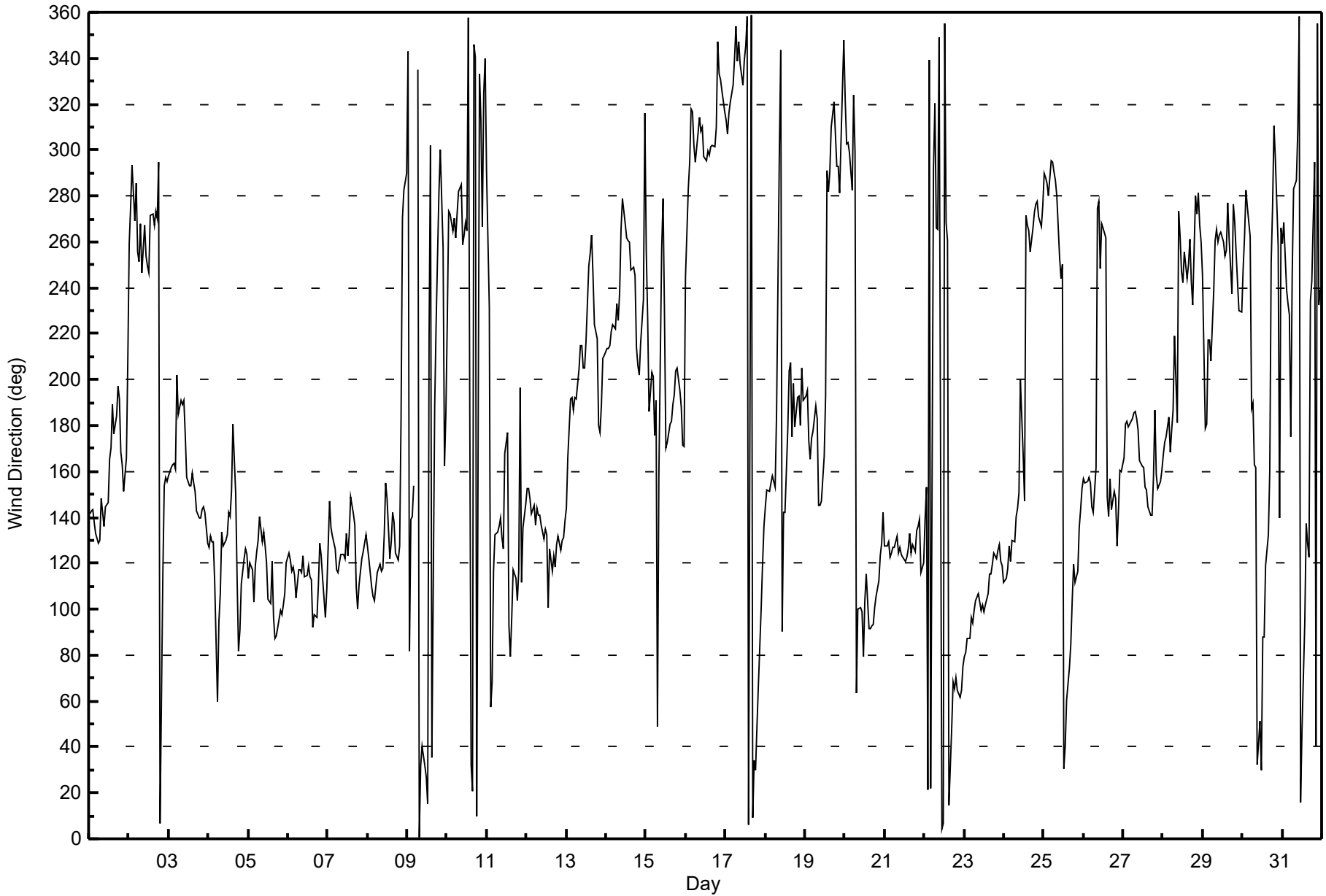
UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Anzac - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 94 deg on May 9 14:00 Minimum Value: 4 deg on May 2 23:00 Percentiles: P ₁ = 6 P ₁₀ = 11 Q ₁ = 14 Median = 18 Q ₃ = 24 P ₉₀ = 38 P ₉₉ = 78																	Hours in Service: 744 Hours of Data: 743 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9								
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	11	11	11	10	10	12	13	11	13	15	14	20	22	21	22	25	18	19	17	14	10	10	17	19	25
2-May	17	12	18	19	18	31	15	13	18	20	24	27	32	52	32	22	21	24	33	27	23	6	4	5	52
3-May	5	6	12	10	7	12	15	19	22	23	26	23	20	18	21	18	19	18	15	12	11	9	10	13	26
4-May	12	12	11	13	21	55	21	20	17	26	21	18	27	48	23	73	27	71	22	14	16	12	11	12	73
5-May	12	13	13	15	13	13	13	12	18	18	18	23	19	20	20	21	17	17	15	15	14	14	14	16	23
6-May	14	13	14	14	12	13	15	16	19	20	21	20	25	22	25	22	20	18	17	16	13	18	12	15	25
7-May	19	9	9	10	11	13	16	18	19	22	20	20	18	15	18	16	16	17	15	16	15	14	13	14	22
8-May	14	13	15	12	10	12	14	15	16	17	22	25	24	18	16	20	28	15	15	13	48	17	19	14	48
9-May	27	52	26	11	13	UO	63	27	17	25	29	23	42	94	45	53	35	20	18	38	22	44	21	24	94
10-May	10	31	12	11	16	12	15	24	69	13	20	38	48	79	15	21	22	23	20	16	33	9	27	19	79
11-May	35	70	46	13	23	17	14	20	16	18	44	37	30	42	27	31	38	32	22	13	55	92	12	9	92
12-May	10	7	8	9	9	11	13	13	14	19	22	22	45	45	64	37	28	21	18	17	13	11	10	9	64
13-May	8	14	11	11	13	14	17	26	23	21	21	24	22	24	25	19	28	20	19	15	14	15	14	15	28
14-May	16	16	17	18	17	19	17	16	25	34	22	19	19	19	19	20	17	18	17	17	15	17	17	41	41
15-May	24	24	8	7	15	33	24	58	87	49	30	62	44	33	32	26	27	23	19	16	16	15	15	13	87
16-May	40	14	21	12	13	13	16	15	15	14	16	17	17	16	17	15	15	15	17	12	10	11	15	40	
17-May	13	13	14	14	13	15	16	18	17	18	21	21	23	23	26	26	26	27	16	16	18	15	13	12	27
18-May	10	7	7	6	6	9	16	61	54	82	53	75	55	60	78	73	45	37	22	18	13	15	15	18	82
19-May	18	16	16	12	16	21	23	27	22	27	36	33	79	31	20	20	17	14	10	15	16	19	15	14	79
20-May	12	15	9	11	12	13	27	61	19	22	32	31	36	24	25	20	17	15	14	14	14	15	15	31	61
21-May	11	12	13	19	12	12	14	15	16	16	21	22	18	17	20	16	17	15	13	11	10	11	21	28	28
22-May	14	18	47	35	72	32	32	23	40	16	18	17	22	32	34	32	15	18	16	16	15	15	15	17	72
23-May	17	17	16	16	16	15	14	16	16	15	16	16	15	15	16	16	15	16	14	15	16	16	16	15	17
24-May	16	18	16	14	16	14	14	13	13	16	28	26	38	69	25	19	18	19	16	17	20	19	19	17	69
25-May	16	17	16	20	16	18	18	17	17	28	28	65	58	46	38	53	24	22	25	13	12	11	8	8	65
26-May	7	7	6	8	9	16	17	40	30	34	48	48	42	63	31	49	22	36	25	10	12	13	6	6	63
27-May	9	11	12	14	15	17	19	21	24	24	24	25	27	26	27	18	17	18	26	27	12	8	9	9	27
28-May	14	16	18	20	18	17	29	45	36	24	20	24	21	19	21	18	18	19	21	18	18	15	15	16	45
29-May	12	22	12	15	17	21	24	19	22	20	20	18	24	20	19	18	20	24	19	17	15	10	10	9	24
30-May	17	14	17	14	26	30	62	69	47	82	52	75	70	50	25	23	19	47	23	13	18	17	93	72	93
31-May	24	12	38	32	43	21	28	15	25	36	32	35	38	36	22	19	24	64	21	46	17	36	27	42	64
Diurnal Maximum																									
UO - Unstable Operation																									





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS17
WAPASU
MAY 2023**

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WAPASU (AMS17)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	709	34	35	99.87	15.2	0	2.8	0
H2S (ppb) Average	708	36	36	100	1	0	0.3	0
THC (ppm) Average	709	34	35	99.87	2.7	-	2.4	-
O3 (ppb) Average	709	34	35	99.87	69.6	0	55	-
NO2 (ppb) Average	707	36	37	99.87	18	0	4.3	-
NO (ppb) Average	707	36	37	99.87	14.1	-	1.3	-
NOX (ppb) Average	707	36	37	99.87	23.7	-	4.3	-
PM2.5 (ug/m3) Average	743	1	1	100	478.5	112	255.6	12
Temperature 2 m (C) Average	744	0	0	100	30.2	-	22.3	-
Relative Humidity (%) Average	744	0	0	100	99.7	-	80.3	-
Wind Speed 10 m (km/h) Average	744	0	0	100	26	-	18	-
Wind Direction 10 m (deg) Average	744	0	0	100	-	-	-	-
Precipitation (mm) Total	742	2	2	100	1.2	-	1.6	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WAPASU (AMS17)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	709	0.53	1.6	-	0	0	0	0.1	0.3	1.2	15.2
H2S (ppb) Average	708	0.1	0.1	-	0	0	0	0	0.1	0.3	1
THC (ppm) Average	709	2.24	0.1	-	2.1	2.2	2.2	2.2	2.3	2.4	2.7
O3 (ppb) Average	709	43.14	11.4	-	2.7	28.9	38.2	43.6	50.9	55.5	69.6
NO2 (ppb) Average	707	1.64	2.2	-	0	0	0	0.9	2.3	4.2	18
NO (ppb) Average	707	0.11	0.6	-	0	0	0	0	0.1	0.3	14.1
NOX (ppb) Average	707	1.75	2.4	-	0	0	0.2	0.9	2.4	4.4	23.7
PM2.5 (ug/m3) Average	743	44.59	71.9	-	0.8	3.9	8	17.1	38.6	144.3	478.5
Temperature 2 m (C) Average	744	15.97	6.1	-	1.7	8.1	11.2	16	20.4	24.3	30.2
Relative Humidity (%) Average	744	46.98	19.7	-	15.6	23.6	30.7	43.8	60.1	77.4	99.7
Wind Speed 10 m (km/h) Average	744	10.4	5	-	1	5	7	10	14	17	26
Wind Direction 10 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	742	-	-	2.57	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WAPASU (AMS17)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
SO2, THC, O3, NO2	23 May 2023 14:00	23 May 2023 14:00	1	Maintenance - sample manifold cleaned



Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 15.2 ppb on May 9 09:00	Maximum Daily Average: 2.8 ppb on May 14		Hours of Data:	709
Minimum Value: 0.0 ppb on May 1 01:00	Minimum Daily Average: 0.0 ppb on May 25		Hours of Missing Data:	35
Maximum Diurnal Average: 1.3 ppb at hour 10	Minimum Diurnal Average: 0.1 ppb at hour 23		Hours of Calibration:	34
Monthly Average: 0.53 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.3 P ₉₀ = 1.2 P ₉₉ = 10.1		Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.0	Z	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.4	1.2	0.7	0.8	0.0	1.3	0.5	0.0	0.5	0.4	0.4	1.3	
2-May	0.3	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
3-May	0.0	1.2	1.2	Z	1.0	0.7	0.4	0.1	0.2	0.2	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.3	1.2
4-May	0.1	0.1	0.2	0.3	Z	0.4	0.3	0.4	0.5	0.7	0.5	0.4	0.4	0.3	0.8	0.7	0.4	0.4	0.3	0.3	0.4	0.3	0.1	0.1	0.1	0.4	0.8
5-May	0.1	0.4	0.2	0.2	0.1	Z	0.2	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
6-May	Z	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
7-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1
8-May	0.1	0.1	Z	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.4
9-May	1.0	0.8	0.2	Z	0.1	0.0	0.1	0.0	15.2	8.0	0.3	4.3	4.1	3.9	1.5	1.3	1.9	2.4	1.6	1.3	0.3	0.2	0.9	0.0	2.1	15.2	
10-May	0.0	0.0	0.0	0.0	Z	0.0	0.1	2.5	2.4	1.8	4.8	1.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	4.8	
11-May	0.0	0.0	1.8	0.3	0.0	Z	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.2	0.3	0.3	0.2	0.3	0.1	0.0	0.1	0.1	0.0	0.0	0.2	1.8	
12-May	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.2	
13-May	0.3	Z	0.5	0.4	0.4	0.3	0.4	0.4	0.2	0.2	1.1	1.4	1.4	0.9	1.5	1.5	2.1	3.3	0.2	0.0	0.0	0.0	0.0	0.2	0.7	3.3	
14-May	0.0	0.1	Z	0.1	0.9	1.5	2.2	7.7	11.2	11.4	11.3	4.5	0.5	1.4	2.3	2.5	2.1	2.7	2.1	0.7	0.0	0.0	0.1	0.1	2.8	11.4	
15-May	0.0	0.3	0.9	Z	0.0	0.0	0.7	0.0	0.0	0.1	C	C	C	0.9	0.3	0.2	0.3	0.2	0.0	0.1	0.4	0.7	0.5	0.8	0.3	0.9	
16-May	0.4	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	
17-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
18-May	Z	0.0	0.1	0.0	0.1	0.1	0.1	0.3	0.9	0.7	0.4	0.3	0.3	0.2	0.4	0.3	0.8	1.1	0.6	0.2	0.0	0.1	0.1	0.0	0.3	1.1	
19-May	0.0	Z	0.2	0.4	0.4	0.2	0.1	0.3	0.5	0.5	0.5	0.5	0.7	1.2	0.6	1.9	14.7	14.6	10.2	2.8	0.0	0.0	0.0	0.0	2.2	14.7	
20-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.7	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.7	
21-May	0.1	0.2	0.1	Z	0.3	0.3	0.2	0.4	0.3	0.4	0.5	0.6	0.5	0.5	0.5	0.6	0.5	0.6	0.4	0.2	0.0	0.0	0.1	0.0	0.3	0.6	
22-May	0.0	0.0	0.2	0.6	Z	0.5	0.4	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.6	
23-May	0.0	0.4	0.7	0.8	0.2	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.0	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	
24-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.9	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.0	
25-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
26-May	0.0	0.0	Z	0.0	0.0	0.2	0.3	0.5	0.3	0.4	0.1	0.2	1.6	5.6	3.6	2.7	2.5	3.0	2.8	2.2	0.6	0.1	0.2	0.2	1.2	5.6	
27-May	0.1	0.2	0.2	Z	0.5	0.5	0.4	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.4	0.2	0.5	
28-May	0.2	0.2	0.1	0.0	Z	0.1	0.3	3.3	0.2	0.8	1.7	1.5	2.0	2.6	1.8	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.0	0.7	3.3	
29-May	0.0	0.0	0.0	0.0	0.0	Z	0.7	1.1	2.7	14.3	8.1	0.2	0.0	0.3	0.5	1.4	4.9	0.1	1.8	4.0	1.0	0.3	0.1	0.2	1.8	14.3	
30-May	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.6	4.3	4.8	3.5	1.2	0.0	0.0	0.0	0.1	0.1	0.1	0.7	4.8	
31-May	0.2	Z	0.0	0.0	0.0	0.0	0.4	1.7	1.2	0.0	0.0	0.0	0.1	0.2	0.2	1.0	1.1	1.9	0.3	0.3	0.6	1.5	0.3	0.2	0.5	1.9	

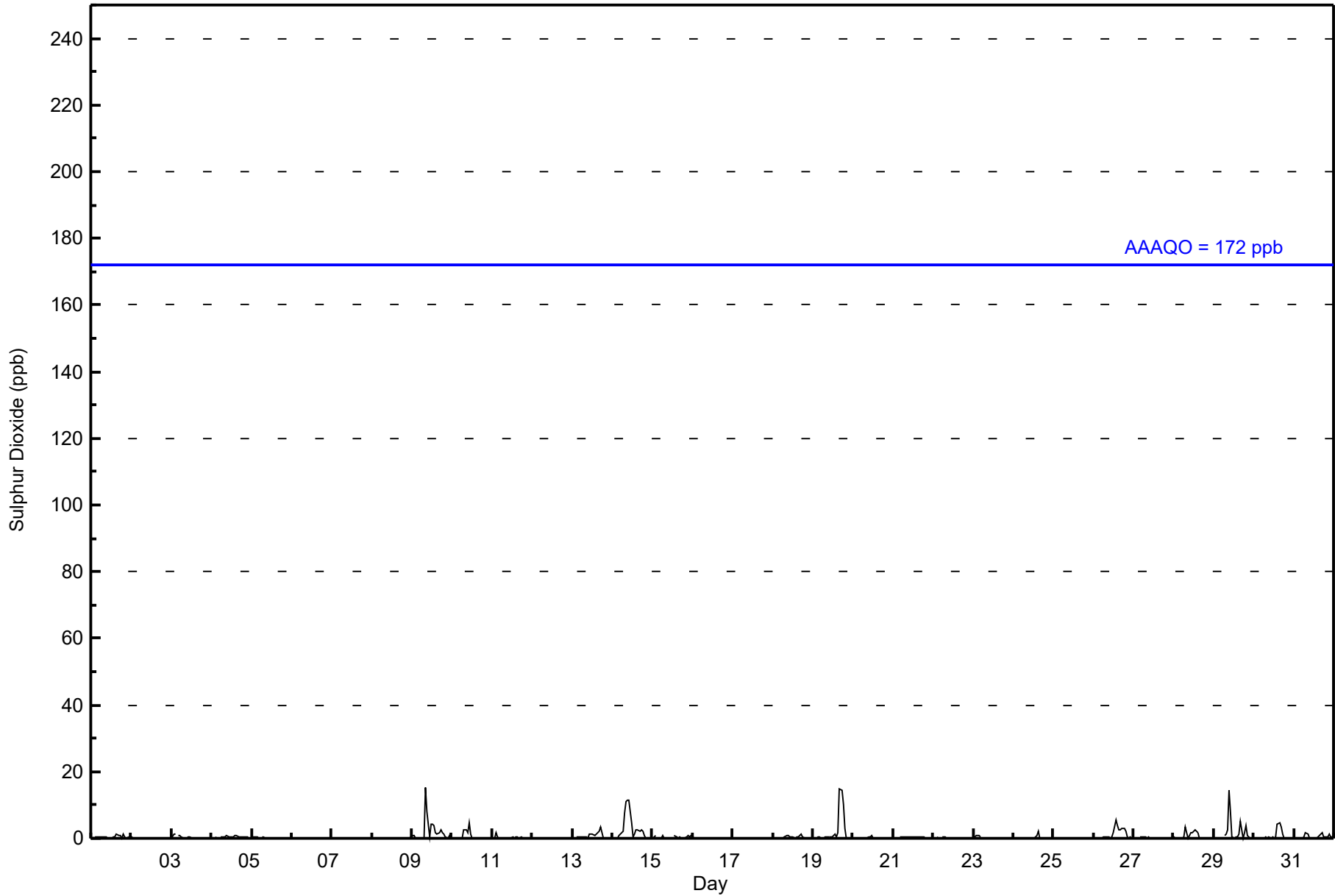
0.1	0.2	0.3	0.2	0.2	0.2	0.3	0.7	1.2	1.3	1.0	0.6	0.4	0.6	0.7	0.7	1.2	1.1	0.7	0.4	0.1	0.1	0.1	0.1	0.1	0.1	Diurnal Average
1.0	1.2	1.8	0.8	1.0	1.5	2.2	7.7	15.2	14.3	11.3	4.5	4.1	5.6	4.3	4.8	14.7	14.6	10.2	4.0	1.0	1.5	0.9	0.8	0.8	0.8	Diurnal Maximum

Z - zerospan C - Calibration M - Maintenance
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Wapasu - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Wapasu - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	702	99.01	99.01
11 - 20	7	0.99	100.00
21 - 60	0	0.00	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Wapasu - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	30	31	22	18	12	40	123	155	84	57	28	30	13	12	17	30	702
11 - 20	1	0	0	0	0	0	0	0	0	4	0	1	0	0	0	1	7
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	31	31	22	18	12	40	123	155	84	61	28	31	13	12	17	31	709

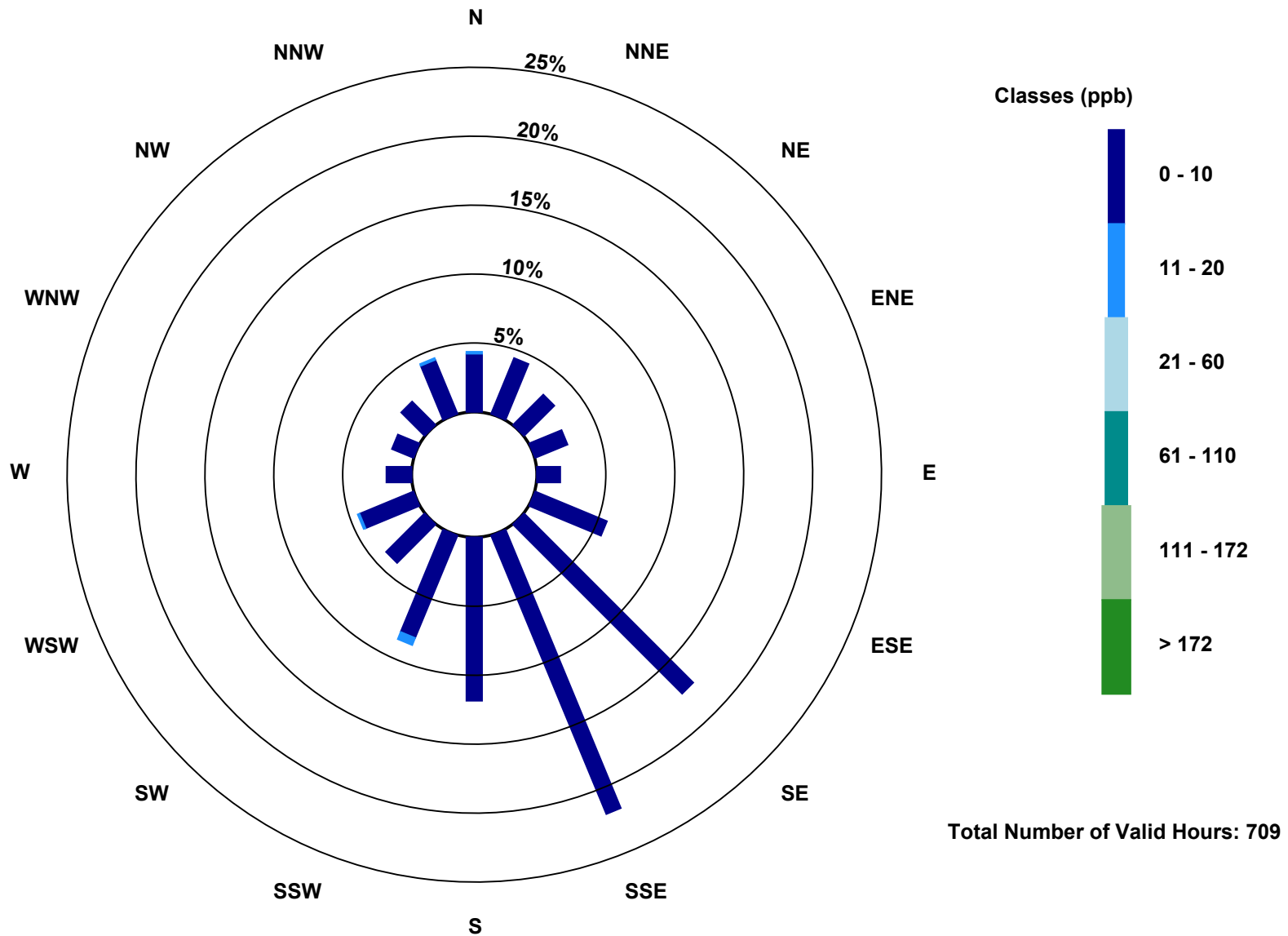
Total Number of Valid Hours: 709

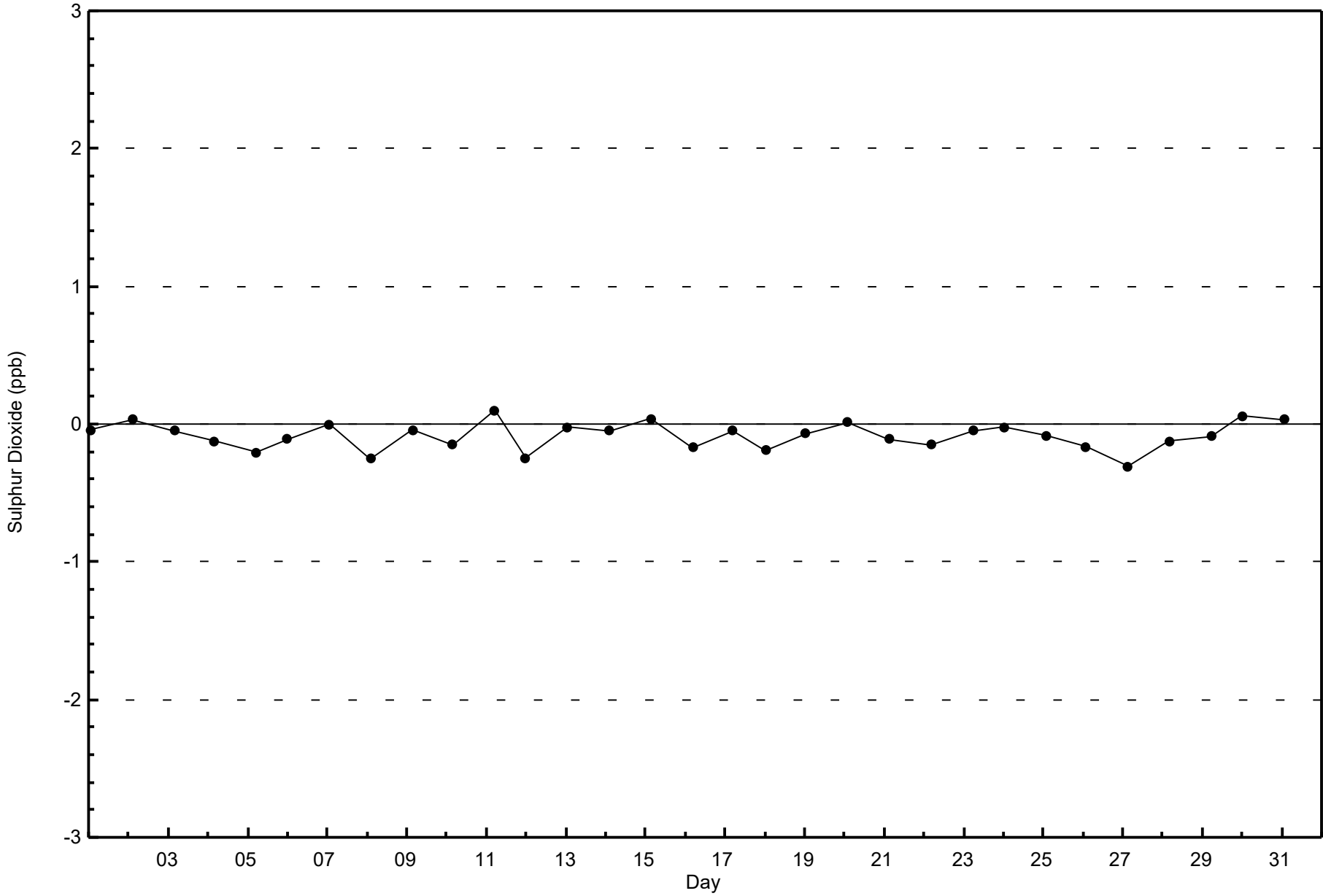
Total Number of Hours: 744

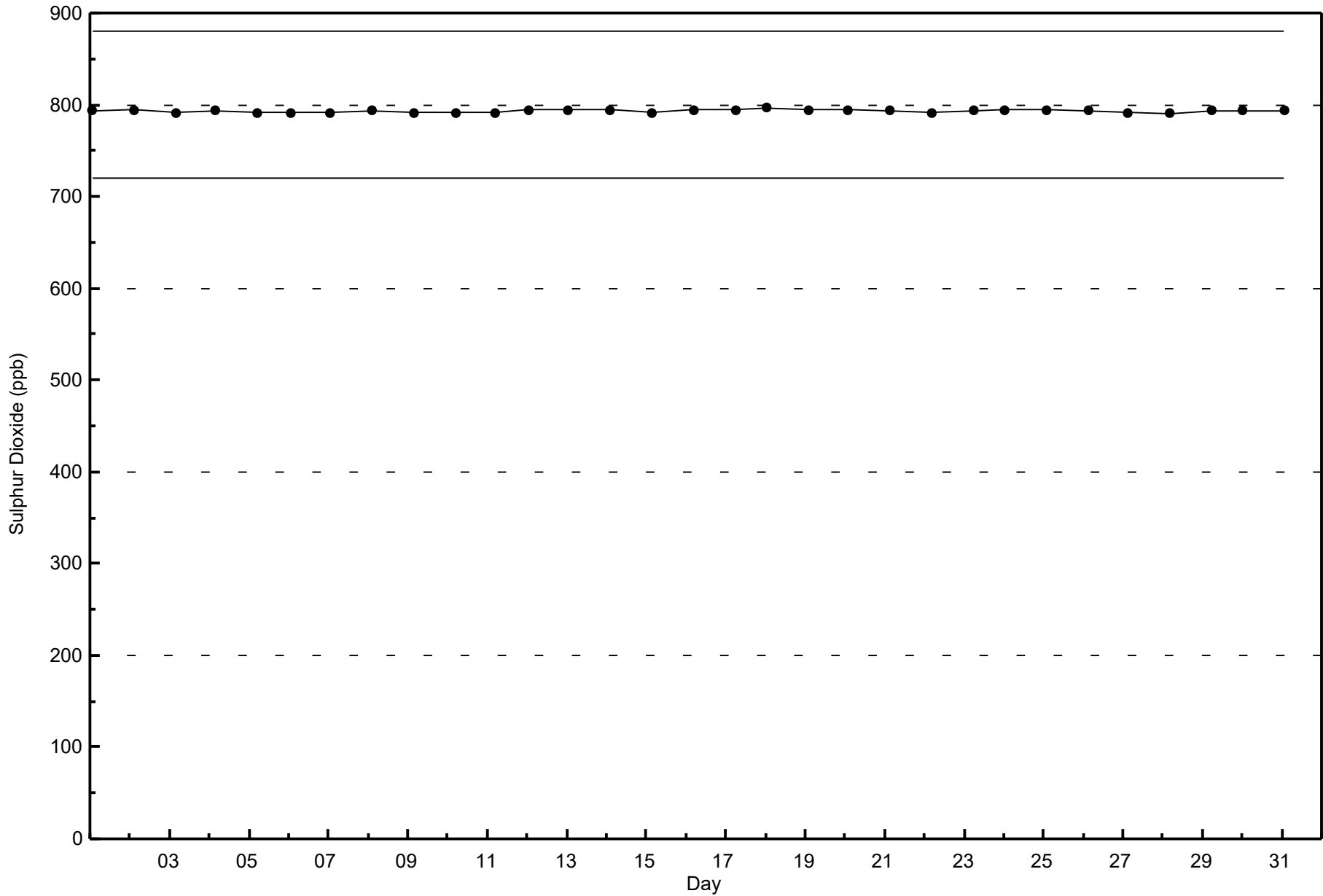


Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Wapasu









Wood Buffalo Environmental Association

Summary of Hour Averages

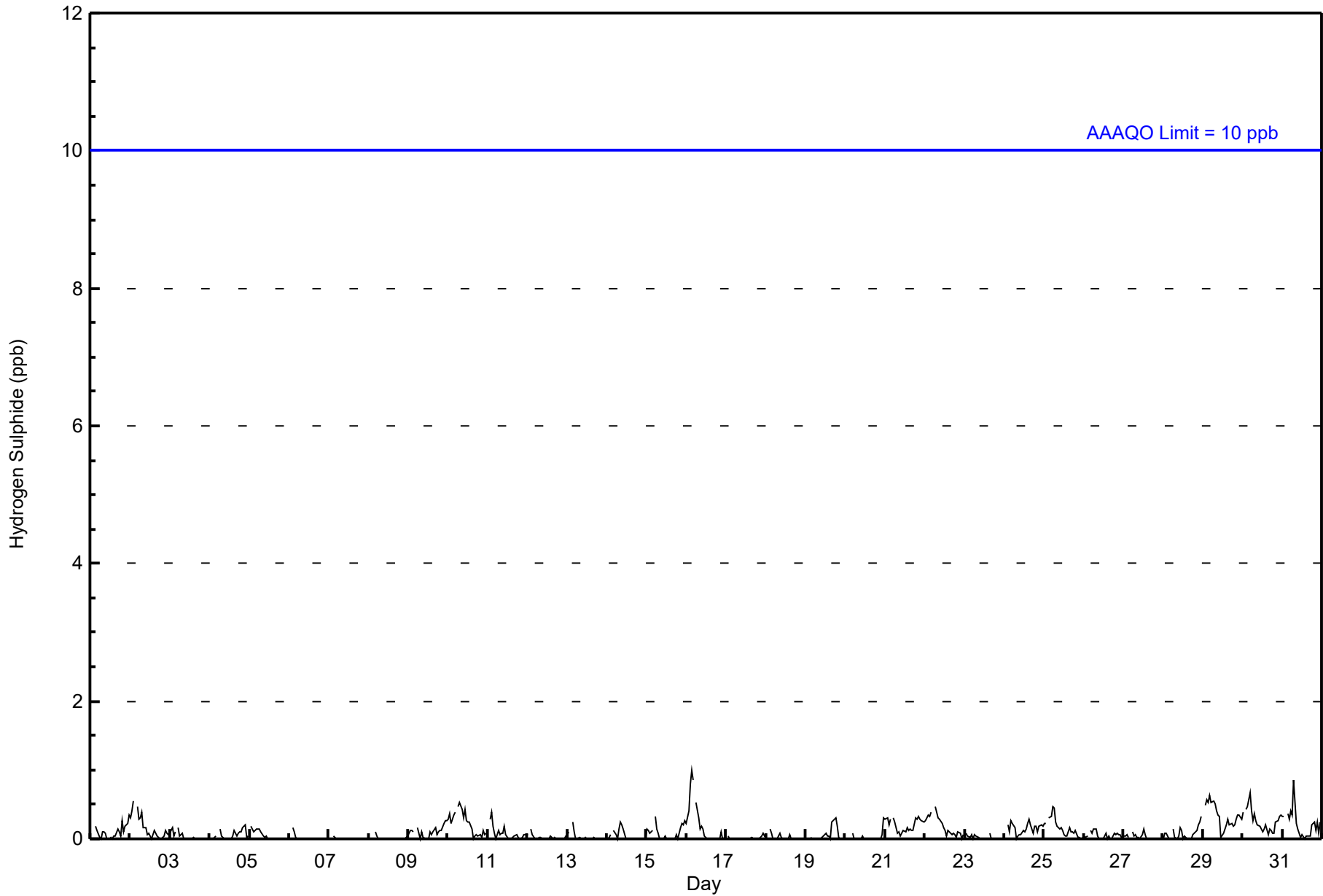
Hydrogen Sulphide (H₂S) - ppb

Wapasu - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 1.0 ppb on May 16 04:00	Maximum Daily Average: 0.3 ppb on May 29		Hours of Data:	708
Minimum Value: 0.0 ppb on May 1 01:00	Minimum Daily Average: 0.0 ppb on May 7		Hours of Missing Data:	36
Maximum Diurnal Average: 0.2 ppb at hour 5	Minimum Diurnal Average: 0.0 ppb at hour 13		Hours of Calibration:	36
Monthly Average: 0.10 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.1 P ₉₀ = 0.3 P ₉₉ = 0.6		Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																											
1-May	0.0	0.0	Z	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.3	0.1	0.2	0.2	0.3	0.1	0.3																									
2-May	0.3	0.4	0.5	Z	0.5	0.3	0.3	0.4	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.5																								
3-May	0.1	0.2	0.0	0.1	Z	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2																								
4-May	0.0	0.0	0.0	0.0	0.0	Z	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.1	0.2	0.2																								
5-May	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2																								
6-May	0.0	Z	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2																								
7-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																								
8-May	0.0	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1																								
9-May	0.1	0.1	0.1	0.1	Z	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.1	0.3	0.3																								
10-May	0.3	0.4	0.2	0.3	0.4	Z	0.5	0.5	0.4	0.3	0.4	0.3	0.2	0.2	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.5	0.5																								
11-May	Z	0.3	0.4	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.4	0.4																								
12-May	0.1	Z	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2																								
13-May	0.0	0.1	Z	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2																								
14-May	0.0	0.0	0.1	Z	0.1	0.1	0.0	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2																								
15-May	0.2	0.1	0.1	0.1	Z	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.2	0.2	0.3	0.1	0.3	0.3																								
16-May	0.2	0.4	0.8	1.0	0.9	Z	0.5	0.3	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	1.0	1.0																								
17-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1																								
18-May	0.1	Z	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1																								
19-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2	0.3	0.3	0.2	0.0	0.0	0.0	0.0	0.1	0.3	0.3																								
20-May	0.0	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.3	0.3																								
21-May	0.3	0.3	0.2	0.3	Z	0.3	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3																								
22-May	0.3	0.3	0.3	0.3	0.4	Z	0.5	0.4	0.3	0.3	0.2	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.2	0.5	0.5																								
23-May	Z	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	C	C	C	C	C	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1																								
24-May	0.0	Z	0.2	0.1	0.3	0.2	0.2	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.3	0.3																								
25-May	0.2	0.2	Z	0.3	0.3	0.5	0.4	0.2	0.2	0.1	0.2	0.1	0.1	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.5	0.5																								
26-May	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1																								
27-May	0.0	0.0	0.1	0.0	Z	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1																								
28-May	0.0	0.1	0.1	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.1	0.3	0.3																								
29-May	Z	0.5	0.6	0.5	0.6	0.5	0.6	0.5	0.4	0.3	0.3	0.0	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.6																								
30-May	0.4	Z	0.4	0.5	0.7	0.4	0.3	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.7																								
31-May	0.3	0.3	Z	0.4	0.3	0.4	0.3	0.9	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.1	0.3	0.1	0.3	0.2	0.9	0.9																								
																								0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	Diurnal Average	
																								0.4	0.5	0.8	1.0	0.9	0.5	0.6	0.9	0.4	0.3	0.4	0.3	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	Diurnal Maximum

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Wapasu - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	708	100.00	100.00
3 - 4	0	0.00	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Wapasu - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	30	32	22	18	11	37	122	156	87	61	28	31	13	12	16	32	708
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	30	32	22	18	11	37	122	156	87	61	28	31	13	12	16	32	708

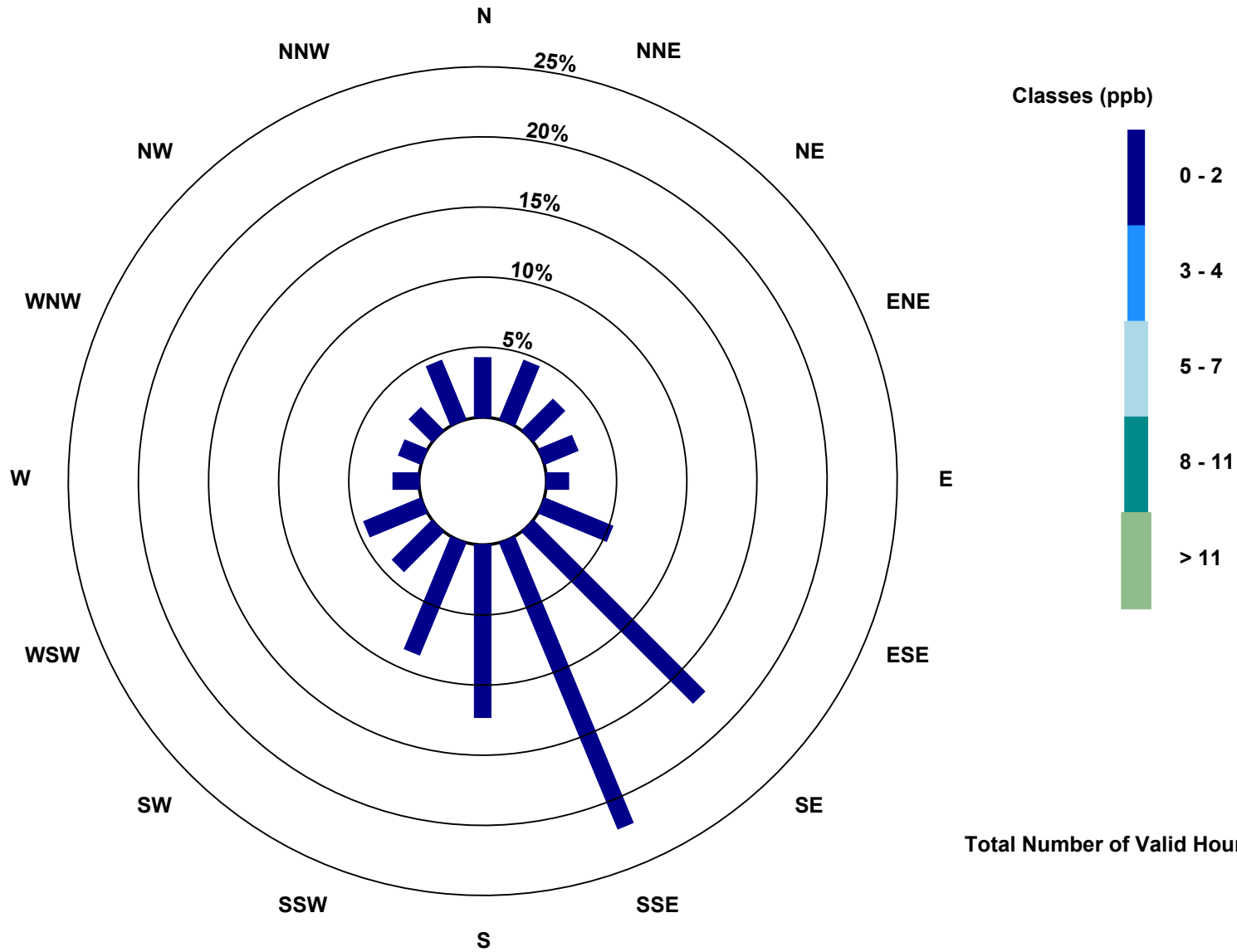
Total Number of Valid Hours: 708

Total Number of Hours: 744

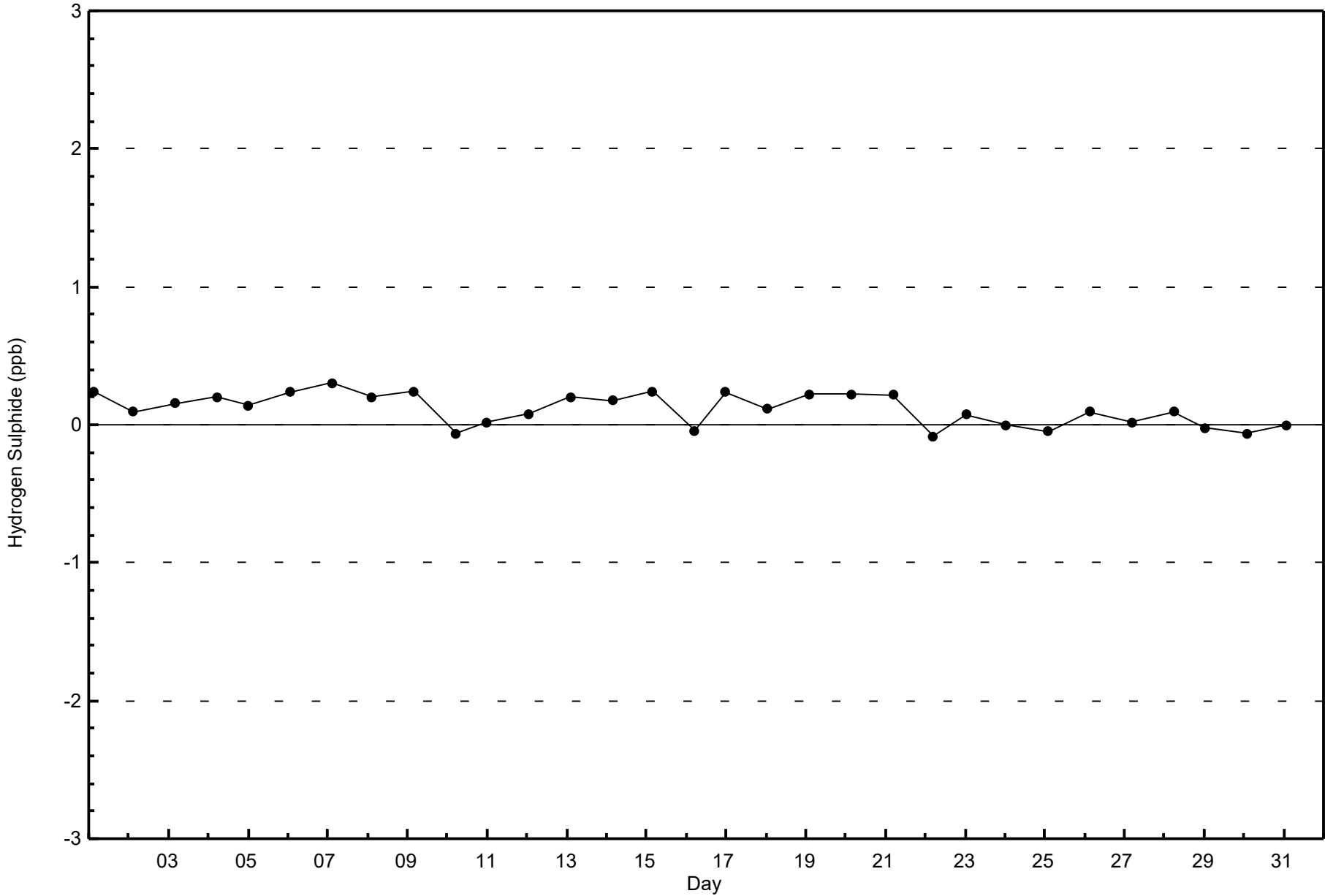


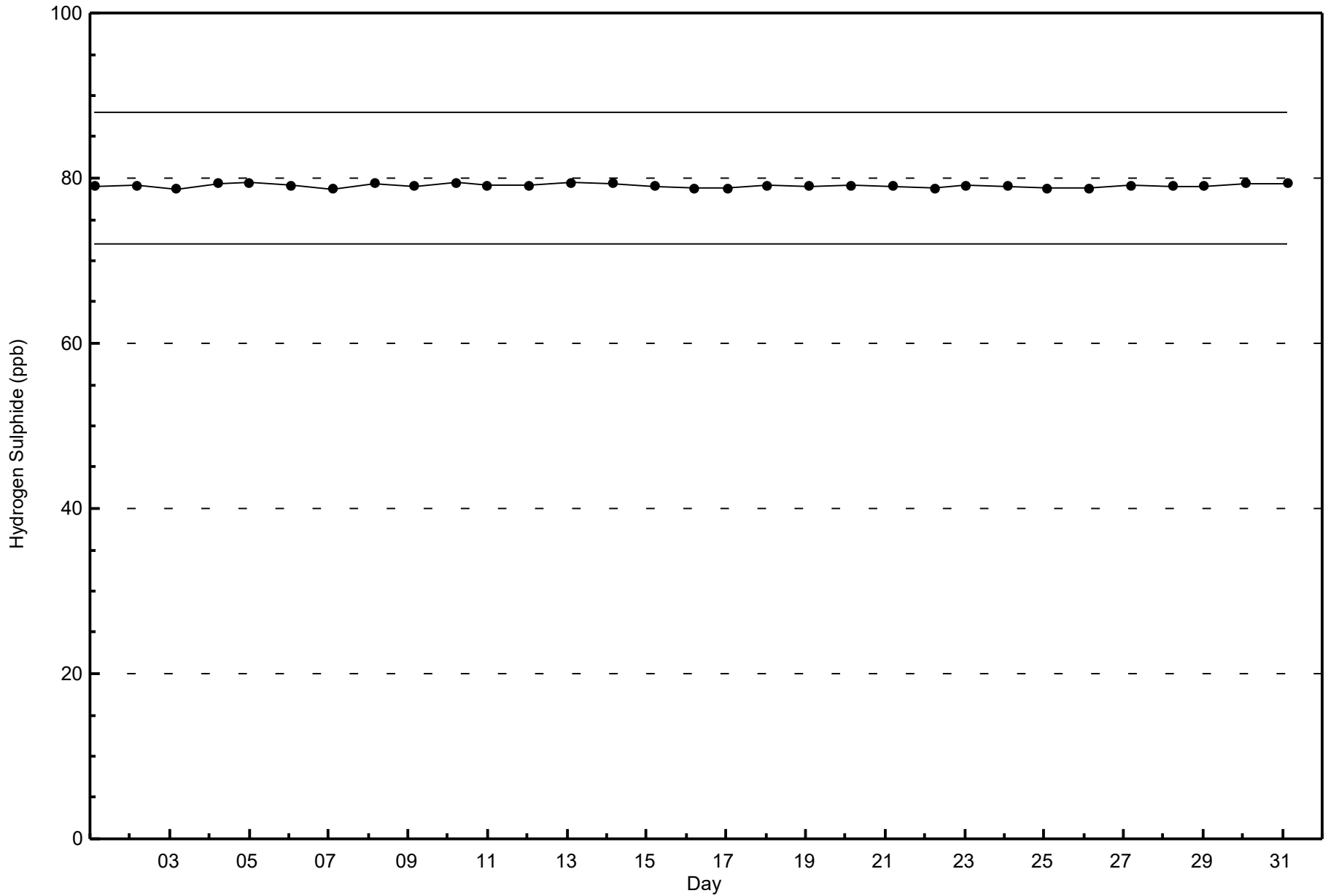
Wood Buffalo Environmental Association
Wind Rose May 2023

Hydrogen Sulphide (H₂S) - ppb
Wapasu



Total Number of Valid Hours: 708



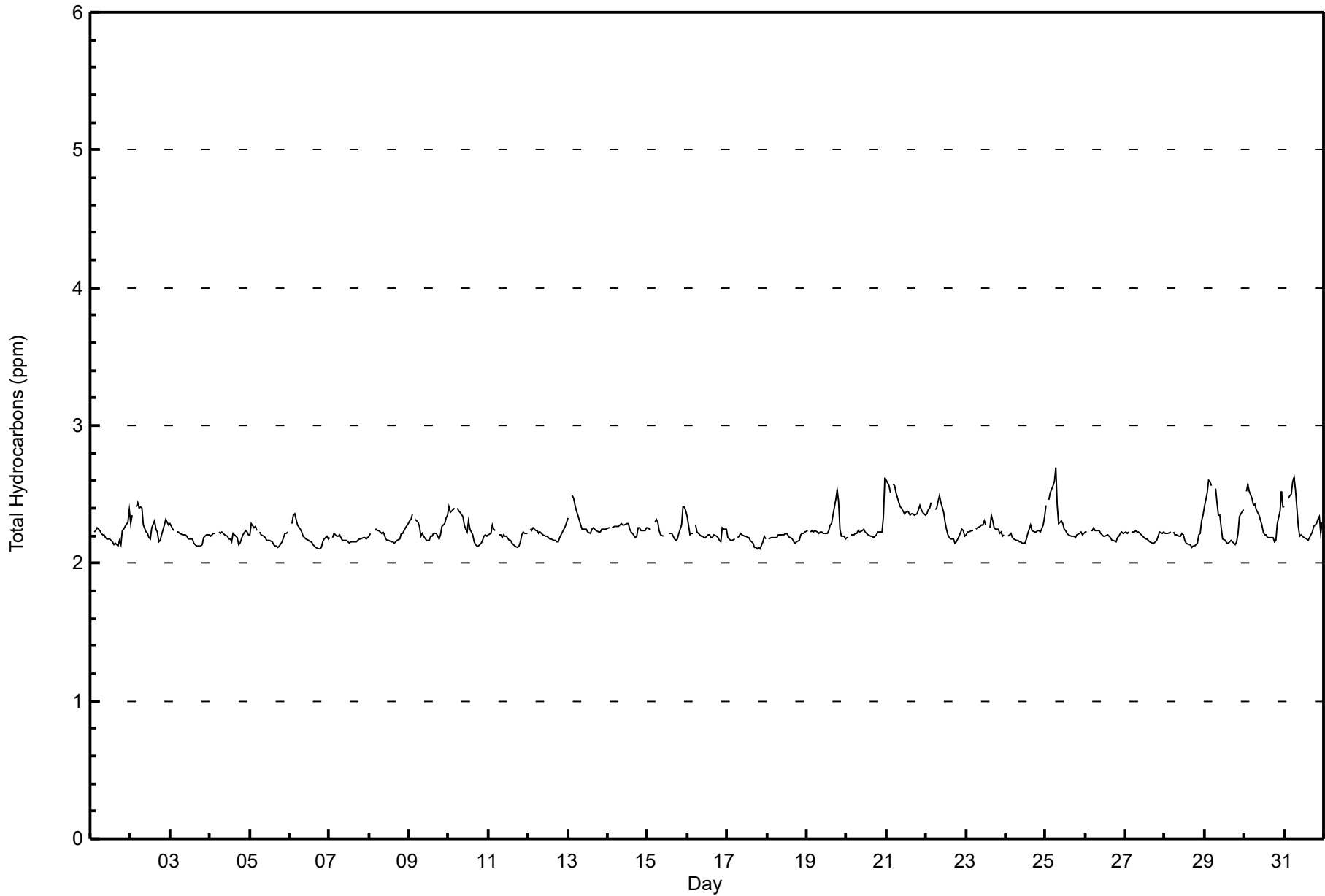




Wood Buffalo Environmental Association
Summary of Hour Averages

Total Hydrocarbons (THC) - ppm
Wapasu - May 2023

Maximum Value: 2.7 ppm on May 25 07:00		Maximum Daily Average: 2.4 ppm on May 21		Hours in Service: 744																						
Minimum Value: 2.1 ppm on May 6 19:00		Minimum Daily Average: 2.2 ppm on May 17		Hours of Data: 709																						
Maximum Diurnal Average: 2.3 ppm at hour 3		Minimum Diurnal Average: 2.2 ppm at hour 18		Hours of Missing Data: 35																						
Monthly Average: 2.24 ppm		Percentiles: P ₁ = 2.1 P ₁₀ = 2.2 Q ₁ = 2.2 Median = 2.2 Q ₃ = 2.3 P ₉₀ = 2.4 P ₉₉ = 2.6		Hours of Calibration: 34																						
				Percent Operational Time: 99.9																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	2.2	Z	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.2	2.1	2.2	2.3	2.3	2.3	2.4	2.2	2.4	
2-May	2.3	2.3	Z	2.4	2.4	2.4	2.4	2.4	2.3	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.4	
3-May	2.3	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	
4-May	2.2	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
5-May	2.2	2.3	2.3	2.3	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	
6-May	Z	2.3	2.3	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.4	
7-May	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
8-May	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	
9-May	2.3	2.3	2.4	Z	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4	
10-May	2.4	2.4	2.4	2.4	Z	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.4	
11-May	2.2	2.2	2.3	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	
12-May	Z	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	
13-May	2.3	Z	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.5	
14-May	2.3	2.3	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.3	2.3	
15-May	2.3	2.3	2.2	Z	2.3	2.3	2.3	2.2	2.2	2.2	C	C	C	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.4	2.4	2.4	
16-May	2.3	2.2	2.2	2.2	Z	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.3	
17-May	2.2	2.2	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	
18-May	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
19-May	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.4	2.5	2.5	2.5	2.2	2.2	2.2	2.2	2.5	
20-May	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.6	2.6	
21-May	2.6	2.6	2.5	Z	2.6	2.6	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.4	2.4	2.4	2.4	2.4	2.3	2.6	
22-May	2.4	2.4	2.4	2.4	Z	2.4	2.4	2.5	2.5	2.4	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.5	
23-May	2.2	2.2	2.2	2.2	2.2	Z	2.2	2.3	2.3	2.3	2.3	2.3	2.3	M	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	
24-May	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	
25-May	2.4	Z	2.5	2.5	2.6	2.6	2.7	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.7	
26-May	2.2	2.2	Z	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	
27-May	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
28-May	2.2	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.4	
29-May	2.4	2.5	2.6	2.6	2.6	Z	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.2	2.2	2.1	2.1	2.2	2.2	2.3	2.4	2.4	2.6	
30-May	Z	2.5	2.6	2.5	2.5	2.4	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.5	2.4	2.6	
31-May	2.4	Z	2.5	2.5	2.5	2.6	2.6	2.5	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.3	2.6	
		2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	Diurnal Average	
		2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.4	2.4	2.5	2.6	Diurnal Maximum	
Z - zerospan		C - Calibration				M - Maintenance																				





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Wapasu - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	0	0.00	0.00
2.1 - 3.0	709	100.00	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Wapasu - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1 - 3.0	31	31	22	18	12	40	123	155	84	61	28	31	13	12	17	31	709
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	31	31	22	18	12	40	123	155	84	61	28	31	13	12	17	31	709

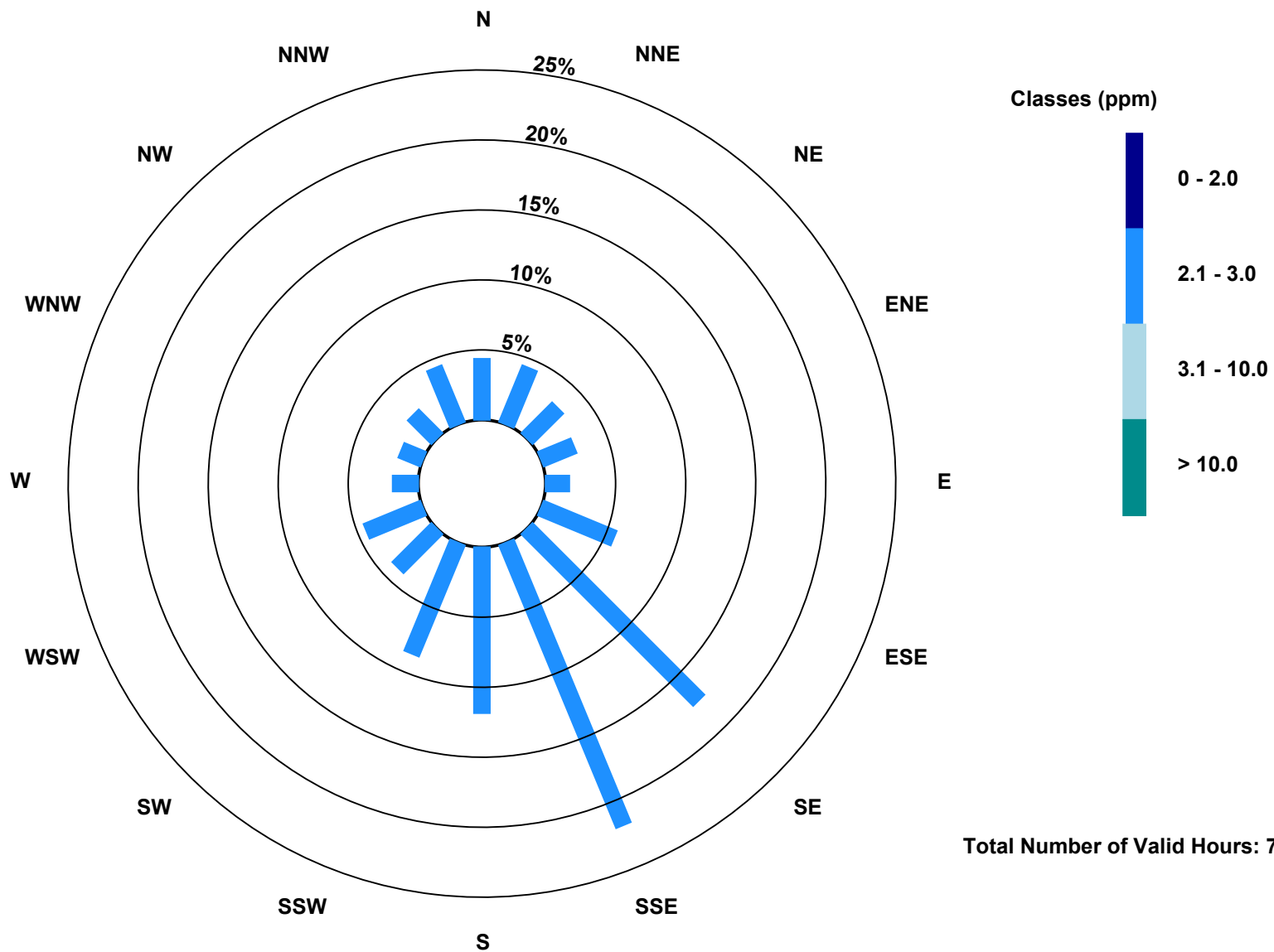
Total Number of Valid Hours: 709

Total Number of Hours: 744

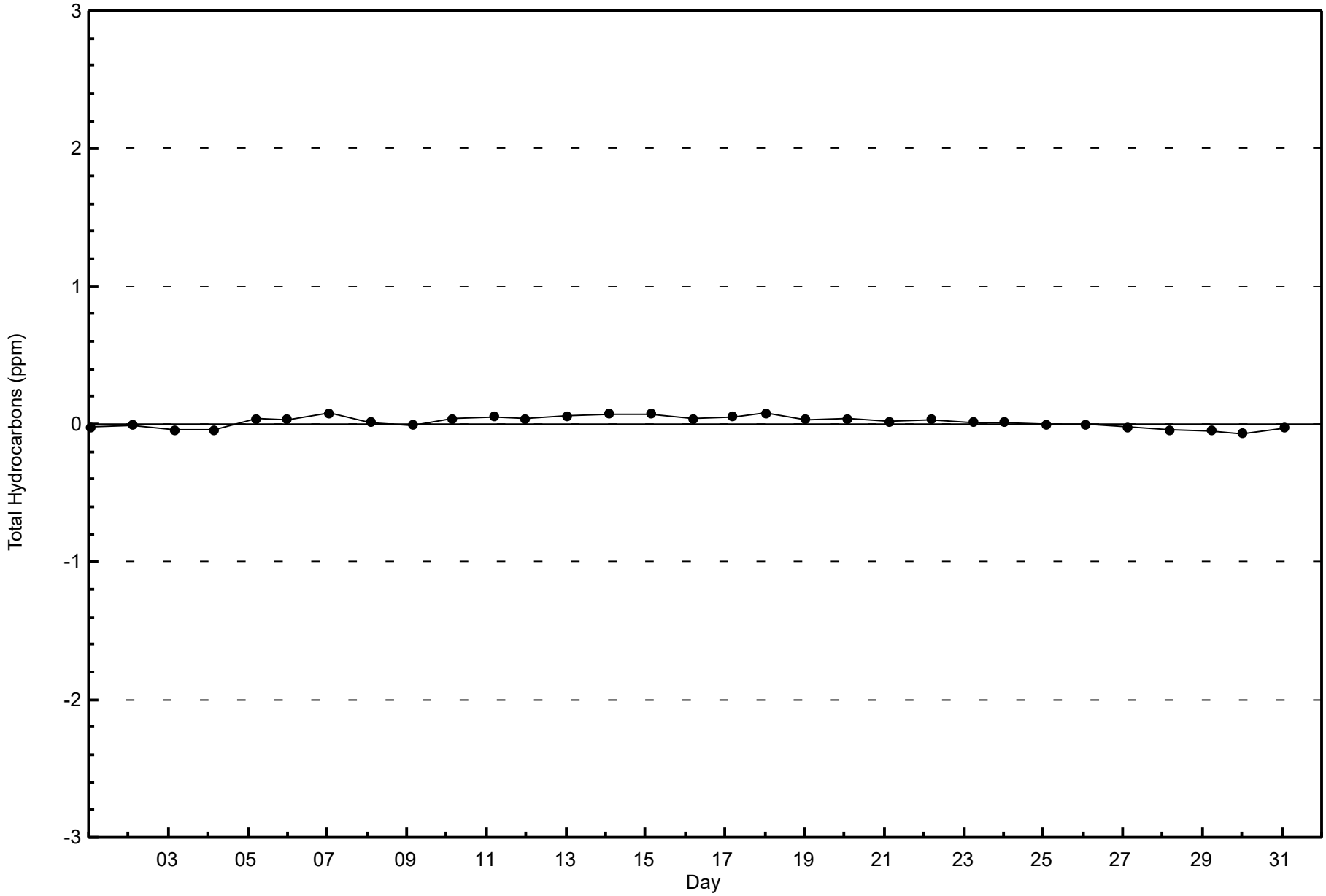


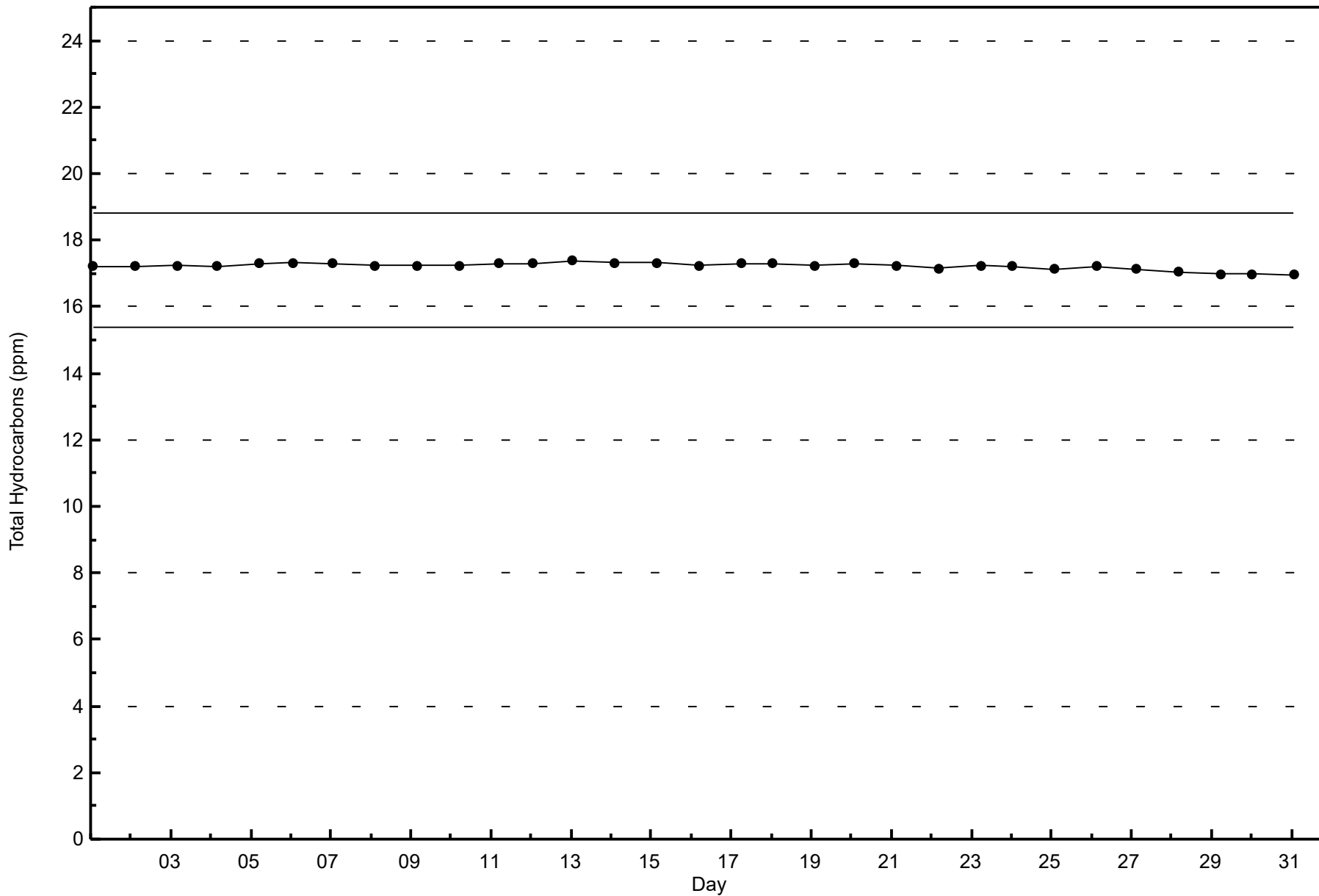
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Wapasu



Total Number of Valid Hours: 709







Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Wapasu - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 69.6 ppb on May 31 18:00	Maximum Daily Average: 55.0 ppb on May 4		Hours of Data:	709
Minimum Value: 2.7 ppb on May 25 03:00	Minimum Daily Average: 23.8 ppb on May 24		Hours of Missing Data:	35
Maximum Diurnal Average: 50.3 ppb at hour 16	Minimum Diurnal Average: 35.5 ppb at hour 6		Hours of Calibration:	34
Monthly Average: 43.14 ppb	Percentiles: P ₁ = 7.8 P ₁₀ = 28.9 Q ₁ = 38.2 Median = 43.6 Q ₃ = 50.9 P ₉₀ = 55.5 P ₉₉ = 66.4		Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	47.6	47.7	47.7	Z	46.7	46.2	46.5	46.5	47.4	48.3	48.9	49.0	51.4	53.6	54.8	55.3	55.3	54.1	52.7	47.6	44.4	42.6	41.7	40.2	48.5	55.3
2-May	45.6	36.8	23.7	25.0	Z	14.3	13.2	23.7	37.5	41.0	43.6	48.1	48.1	49.8	51.2	51.0	50.4	49.3	47.0	38.8	26.4	19.1	31.7	38.0	37.1	51.2
3-May	43.4	47.6	48.9	48.7	47.5	Z	45.6	46.4	47.6	48.9	50.7	51.7	52.3	53.6	56.3	60.1	60.6	60.0	58.1	55.7	53.4	52.9	52.5	50.7	51.9	60.6
4-May	Z	52.7	55.7	57.0	56.5	53.6	50.9	49.3	50.9	54.7	57.7	60.9	62.2	62.6	67.8	61.8	54.9	54.7	52.2	49.4	48.5	46.0	52.5	53.1	55.0	67.8
5-May	50.0	Z	42.1	39.6	40.9	41.3	40.6	40.6	41.1	43.0	C	C	C	41.2	41.8	41.9	38.3	41.6	46.0	46.4	48.0	47.4	44.9	43.1	43.0	50.0
6-May	42.3	41.9	Z	41.2	40.5	39.9	39.3	39.4	39.8	40.8	41.5	42.4	44.2	46.0	45.9	45.9	46.2	47.3	47.0	45.6	43.1	41.9	42.4	43.4	42.9	47.3
7-May	43.9	43.9	43.5	Z	40.7	40.1	39.5	39.9	39.9	41.8	42.8	43.0	42.1	42.1	42.9	44.2	45.8	46.9	46.7	44.9	44.2	42.3	41.7	41.5	42.8	46.9
8-May	42.7	43.2	43.2	43.3	Z	42.5	42.7	45.0	45.3	46.5	48.8	51.7	51.5	50.9	51.4	51.9	51.8	50.1	48.4	48.5	47.0	40.6	34.5	36.3	46.0	51.9
9-May	32.8	26.6	20.7	22.4	25.2	Z	31.5	41.6	41.8	48.5	52.9	52.9	53.9	51.7	48.0	52.5	51.4	56.9	58.4	46.7	27.7	25.0	32.4	19.8	40.1	58.4
10-May	Z	10.0	7.8	11.1	18.4	14.3	20.1	31.8	37.2	45.0	46.5	52.4	52.1	55.7	54.7	51.0	48.3	47.8	47.2	46.2	43.3	40.0	39.0	42.9	37.5	55.7
11-May	45.5	Z	36.6	36.6	40.4	42.4	39.4	44.3	45.1	40.6	30.1	41.5	52.3	53.8	52.5	54.7	55.3	52.9	50.7	45.8	39.3	42.1	44.6	46.4	44.9	55.3
12-May	46.5	46.4	Z	47.8	48.2	48.4	47.3	46.6	46.8	47.9	47.8	48.1	49.5	50.4	50.9	51.5	52.5	52.9	52.4	49.1	46.6	48.2	50.8	54.0	49.2	54.0
13-May	54.7	50.5	45.9	Z	46.0	47.5	49.5	55.2	54.5	55.2	58.7	61.1	62.3	61.5	58.0	56.5	56.0	55.1	55.4	53.0	50.4	53.8	56.0	54.2	54.4	62.3
14-May	53.2	52.6	52.7	53.2	Z	49.5	48.6	46.0	45.1	45.5	47.3	55.5	63.6	60.5	58.5	57.6	50.7	49.5	67.3	64.1	46.6	40.6	39.2	41.5	51.7	67.3
15-May	39.0	42.4	39.6	33.6	32.8	Z	37.2	38.8	37.3	40.5	45.0	59.9	62.0	66.4	66.4	66.1	68.2	69.3	65.7	55.4	60.7	62.0	57.1	52.5	52.1	69.3
16-May	Z	41.7	44.2	41.4	38.2	39.5	43.0	42.5	41.3	42.5	41.7	43.9	43.8	43.4	41.0	41.7	40.0	43.2	42.0	42.3	40.3	31.7	31.6	32.5	40.6	44.2
17-May	38.2	Z	39.6	35.7	34.3	33.9	34.2	36.9	38.4	38.6	38.3	38.2	38.9	40.3	41.6	43.6	44.3	45.8	46.8	47.1	38.7	29.6	33.9	39.3	39.0	47.1
18-May	41.7	42.7	Z	41.5	40.2	41.1	42.5	40.6	38.8	42.3	46.7	51.0	54.4	58.0	61.9	62.1	61.3	59.5	58.0	54.4	44.8	42.7	44.9	43.8	48.5	62.1
19-May	41.9	42.1	42.8	Z	46.0	45.5	44.4	43.0	41.3	41.2	40.5	41.4	40.5	36.8	35.9	37.9	36.1	37.3	34.9	39.5	46.6	45.9	43.6	41.2	41.1	46.6
20-May	38.5	37.0	34.7	32.2	Z	27.1	24.0	23.9	23.2	22.6	28.7	35.5	39.0	38.3	37.2	38.5	38.6	39.0	38.9	36.5	36.4	34.0	40.9	46.1	34.4	46.1
21-May	40.4	36.7	36.2	37.2	37.4	Z	34.0	32.7	32.6	32.7	33.8	34.7	36.8	41.3	44.7	46.8	48.9	52.4	48.7	36.6	29.0	30.8	32.9	32.8	37.8	52.4
22-May	Z	23.9	25.7	34.9	33.6	34.2	32.2	30.8	28.2	29.8	30.0	32.7	34.2	34.9	34.7	35.0	35.4	39.1	42.5	43.9	48.1	52.5	47.5	44.4	36.0	52.5
23-May	42.0	Z	42.0	41.8	42.8	42.0	42.6	44.7	46.3	46.7	46.5	48.0	45.1	M	46.0	47.6	45.0	44.1	44.0	42.0	40.6	39.2	37.9	36.8	43.4	48.0
24-May	36.4	35.9	Z	34.6	33.7	33.2	32.7	30.9	30.0	28.3	27.3	26.3	27.2	25.7	23.5	21.3	18.4	16.5	14.1	12.6	12.3	11.1	8.4	6.1	23.8	36.4
25-May	3.3	3.1	2.7	Z	2.8	3.4	4.5	14.1	23.6	26.0	30.9	39.3	40.6	40.3	40.9	37.9	38.7	40.6	38.3	35.1	33.5	32.1	31.8	32.0	25.9	40.9
26-May	29.5	27.6	27.5	28.6	Z	27.6	27.9	31.2	32.5	36.6	37.9	41.7	47.2	51.9	55.6	56.5	57.0	57.2	57.6	52.8	42.6	38.6	39.4	40.1	41.1	57.6
27-May	39.6	39.1	38.6	38.5	38.4	Z	41.8	43.5	47.3	53.1	51.3	51.3	49.7	49.1	49.7	51.4	51.8	53.5	56.0	55.1	51.7	48.1	48.4	52.5	47.8	56.0
28-May	Z	54.0	53.4	53.0	52.7	50.3	48.8	48.6	49.8	50.7	52.2	51.7	53.3	56.2	53.7	52.1	53.0	51.3	51.0	49.0	42.8	40.3	35.6	24.3	49.0	56.2
29-May	21.9	Z	11.6	12.5	19.9	19.6	23.8	36.0	43.4	48.0	52.2	49.6	48.6	47.4	50.6	54.9	54.3	57.5	55.4	51.4	48.2	43.2	40.3	41.6	40.5	57.5
30-May	36.2	31.5	Z	20.0	20.5	32.6	34.7	37.1	44.0	48.2	52.2	53.2	59.0	63.1	65.0	64.6	62.8	52.9	49.4	47.2	39.5	39.2	33.4	37.7	44.5	65.0
31-May	42.0	31.2	27.4	Z	9.2	14.1	22.0	35.0	48.6	55.0	56.7	59.8	63.0	62.5	62.2	64.7	66.9	69.6	61.9	54.0	45.0	43.1	46.9	38.9	46.9	69.6

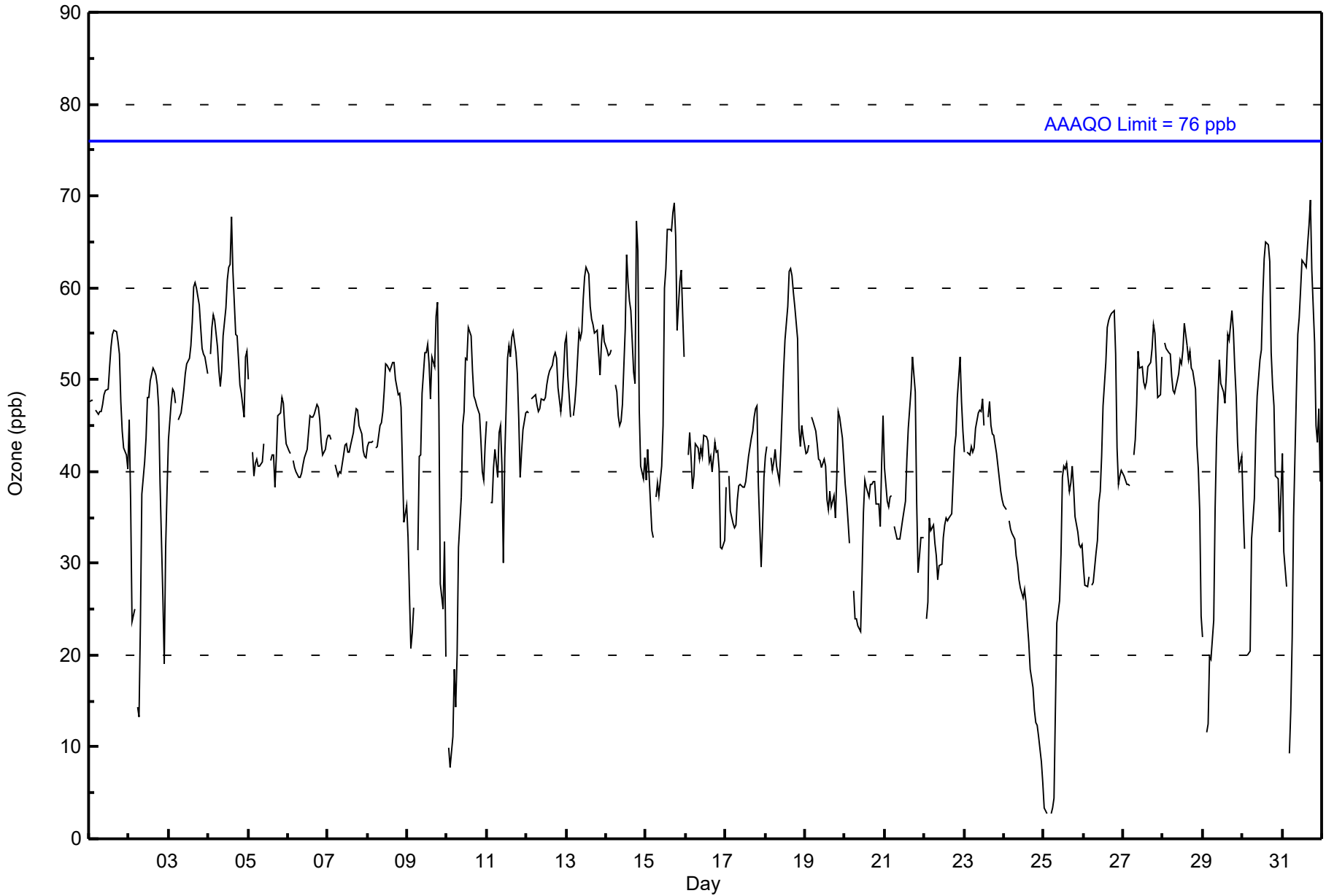
40.0	38.0	35.9	36.5	35.9	35.5	36.3	38.9	40.9	42.9	44.3	47.2	49.0	49.6	49.8	50.3	49.6	49.9	49.5	46.3	42.2	40.2	40.6	40.2	Diurnal Average	
54.7	54.0	55.7	57.0	56.5	53.6	50.9	55.2	54.5	55.2	58.7	61.1	63.6	66.4	67.8	66.1	68.2	69.6	67.3	64.1	60.7	62.0	57.1	54.2	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Wapasu - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Wapasu - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	32	4.51	4.51
21 - 50	491	69.25	73.77
51 - 82	186	26.23	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Wapasu - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	0	0	1	0	0	3	7	8	2	0	1	9	1	0	0	0	32
21 - 50	26	28	19	16	13	26	109	106	46	26	8	13	5	7	16	27	491
51 - 82	3	4	2	2	0	8	6	37	41	35	19	10	7	5	1	6	186
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	29	32	22	18	13	37	122	151	89	61	28	32	13	12	17	33	709

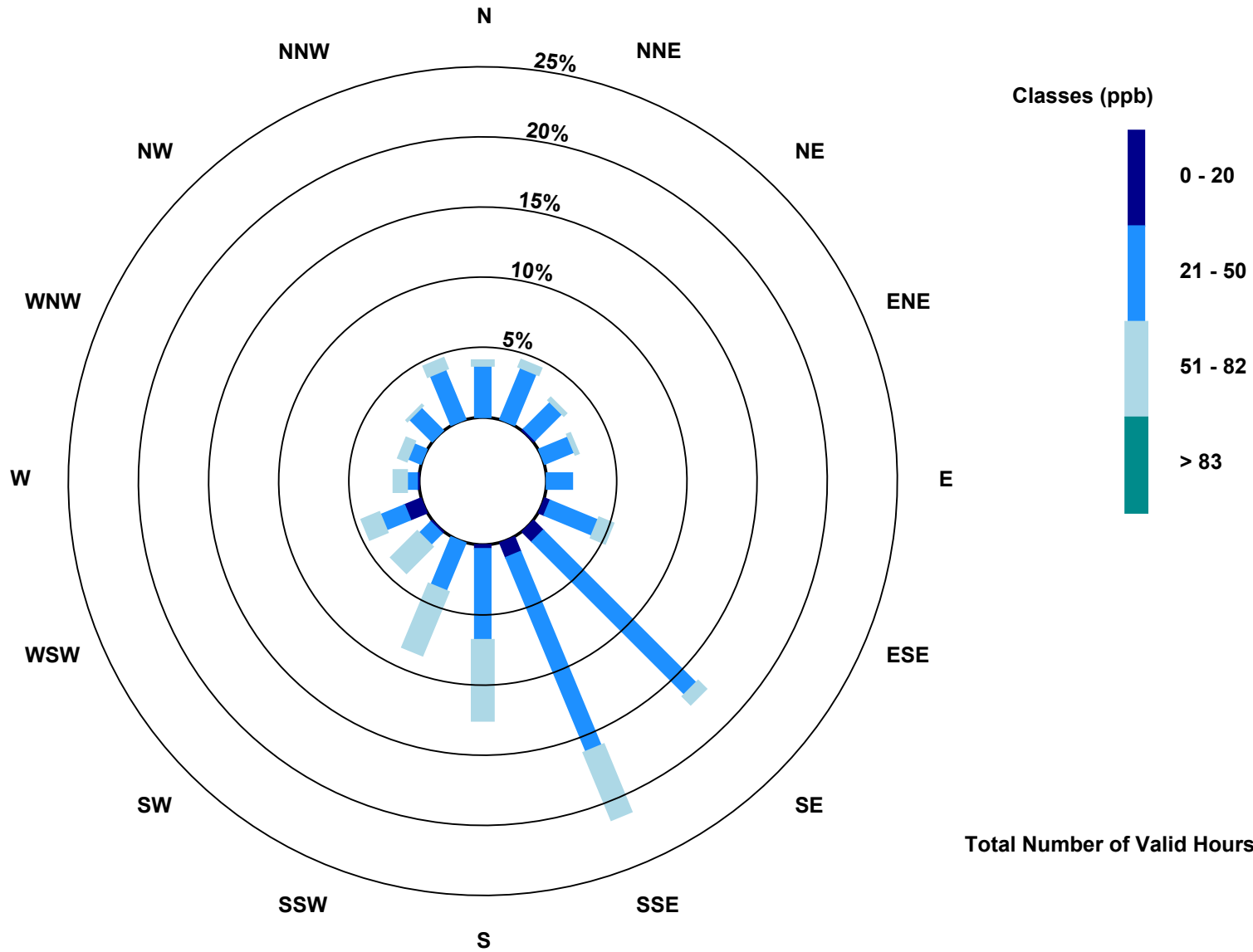
Total Number of Valid Hours: 709

Total Number of Hours: 744

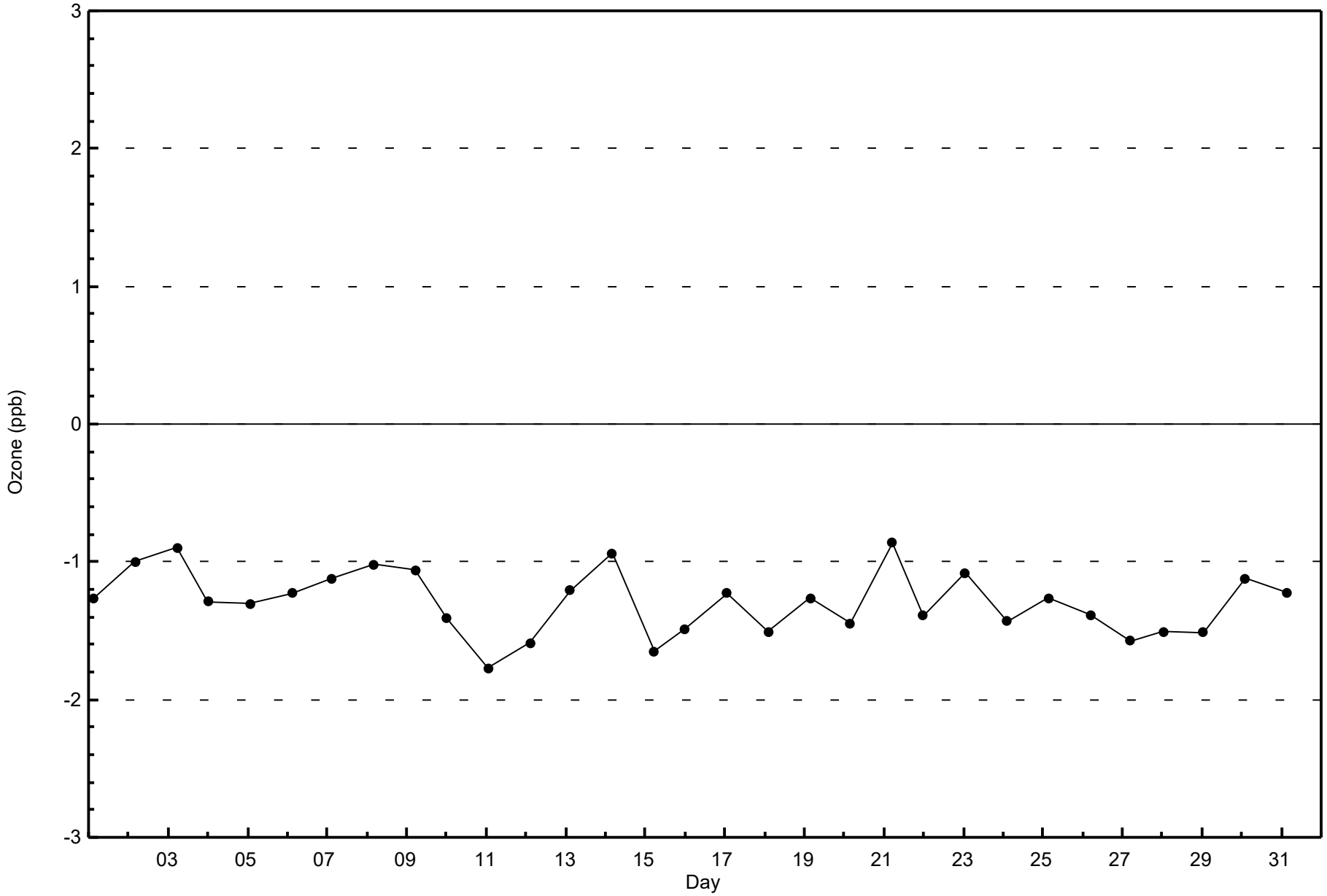


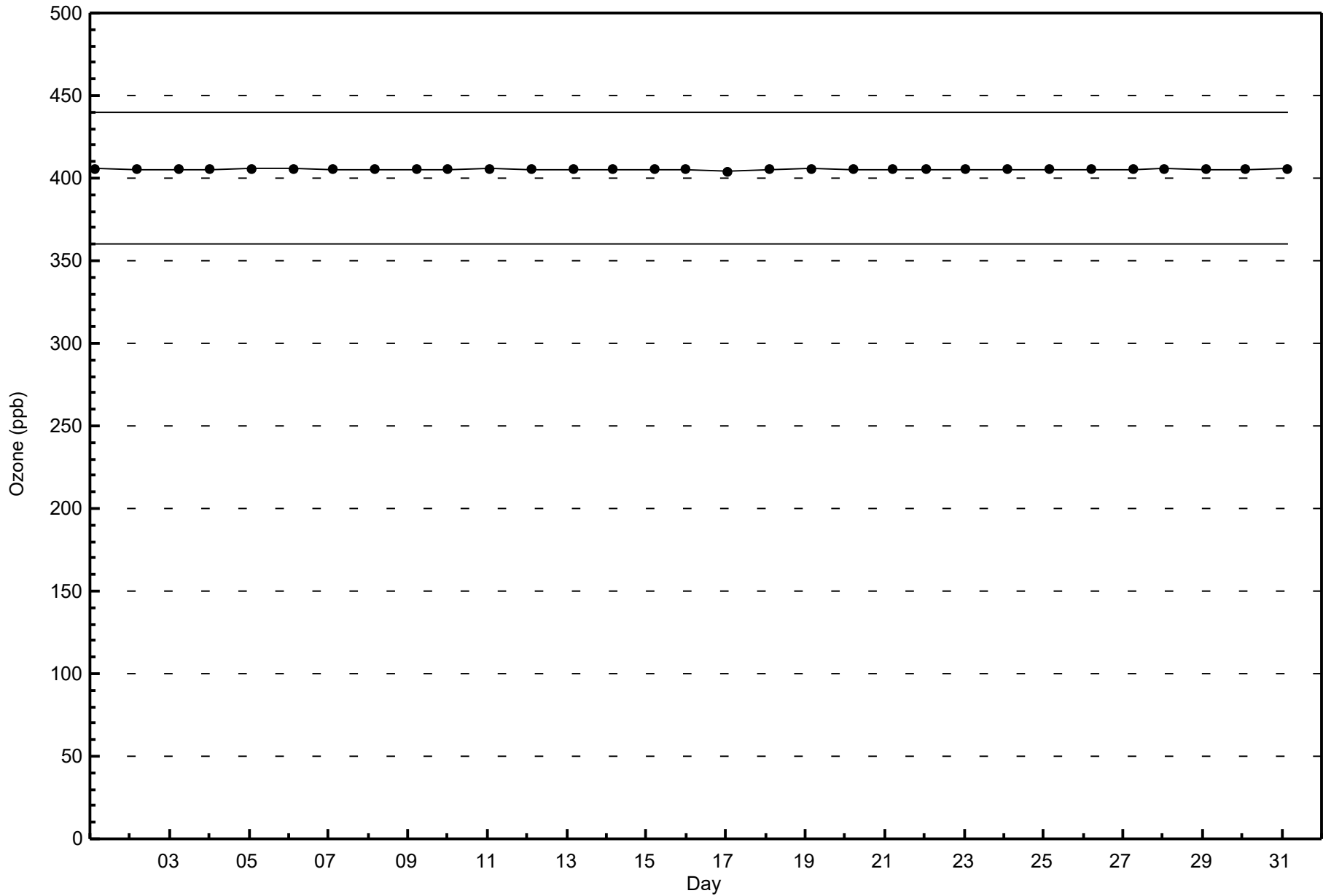
Wood Buffalo Environmental Association
Wind Rose May 2023

Ozone (O₃) - ppb
Wapasu



Total Number of Valid Hours: 709







Wood Buffalo Environmental Association
Summary of Hour Averages

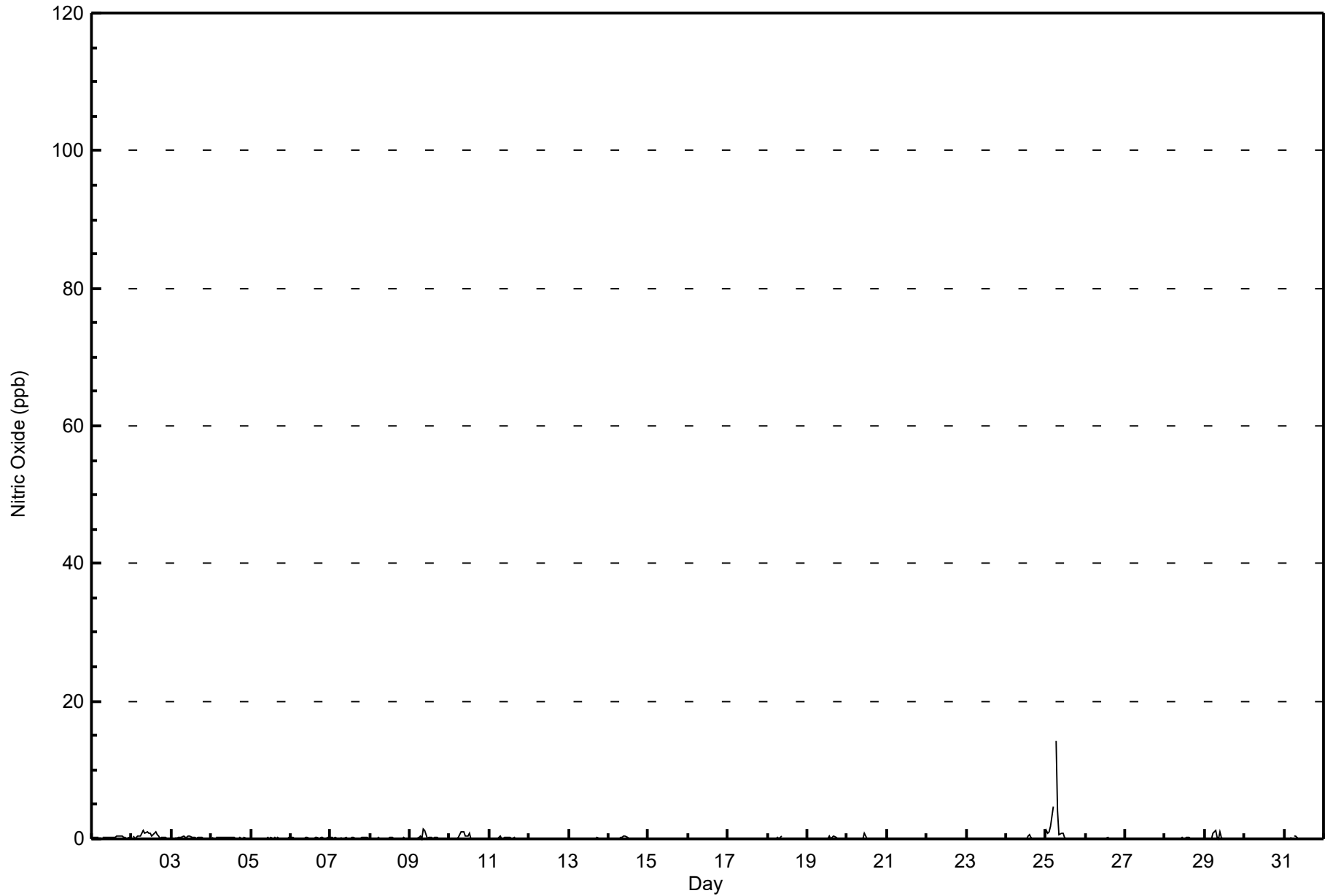
Nitric Oxide (NO) - ppb
Wapasu - May 2023

Maximum Value: 14.1 ppb on May 25 07:00		Maximum Daily Average: 1.3 ppb on May 25		Hours in Service: 744																							
Minimum Value: 0.0 ppb on May 2 22:00		Minimum Daily Average: 0.0 ppb on May 15		Hours of Data: 707																							
Maximum Diurnal Average: 0.6 ppb at hour 7		Minimum Diurnal Average: 0.0 ppb at hour 22		Hours of Missing Data: 37																							
Monthly Average: 0.11 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.1 P ₉₀ = 0.3 P ₉₉ = 1.1		Hours of Calibration: 36																							
				Percent Operational Time: 99.9																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.1	0.2	0.2	0.2	0.2	Z	0.3	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.3	0.5	0.4	0.3	0.4	0.3	0.1	0.1	0.1	0.2	0.2	0.5	0.5
2-May	Z	0.4	0.1	0.3	0.3	0.5	0.9	1.1	0.9	1.1	0.8	0.8	0.4	0.6	1.0	0.5	0.5	0.1	0.3	0.3	0.2	0.0	0.0	0.0	0.0	0.5	1.1
3-May	0.1	Z	0.2	0.1	0.1	0.2	0.2	0.3	0.2	0.2	0.4	0.3	0.1	0.2	0.2	0.1	0.2	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.4
4-May	0.1	0.2	Z	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.1	0.3	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.3
5-May	0.1	0.0	0.0	Z	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.1	0.2	0.2
6-May	0.1	0.1	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.0	0.2	0.2	0.2	0.0	0.1	0.1	0.1	0.1	0.2	0.2
7-May	0.1	0.1	0.0	0.1	0.1	Z	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.1	0.2	0.2
8-May	Z	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2
9-May	0.0	Z	0.0	0.0	0.0	0.2	0.4	0.1	1.4	1.1	0.1	0.3	0.3	0.3	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.4
10-May	0.0	0.0	Z	0.0	0.1	0.3	0.7	1.0	1.0	0.4	0.4	0.3	0.9	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0
11-May	0.0	0.0	0.0	Z	0.0	0.0	0.4	0.0	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
12-May	0.0	0.0	0.0	0.1	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
13-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
14-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.4	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
15-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18-May	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.0	0.5	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
19-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.1	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
20-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.9
21-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
25-May	1.1	0.9	1.0	1.9	4.7	Z	14.1	4.0	0.6	0.9	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	14.1
26-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
27-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
29-May	0.0	0.0	0.0	Z	0.0	0.8	1.1	0.1	0.0	1.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.1
30-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31-May	0.0	0.0	0.0	0.0	0.2	Z	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
																								Diurnal Average			
																								Diurnal Maximum			
Z - zerospan C - Calibration M - Maintenance																											



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Wapasu - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Wapasu - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	707	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Wapasu - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	29	30	23	18	13	40	120	157	86	58	26	32	13	12	17	33	707
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	29	30	23	18	13	40	120	157	86	58	26	32	13	12	17	33	707

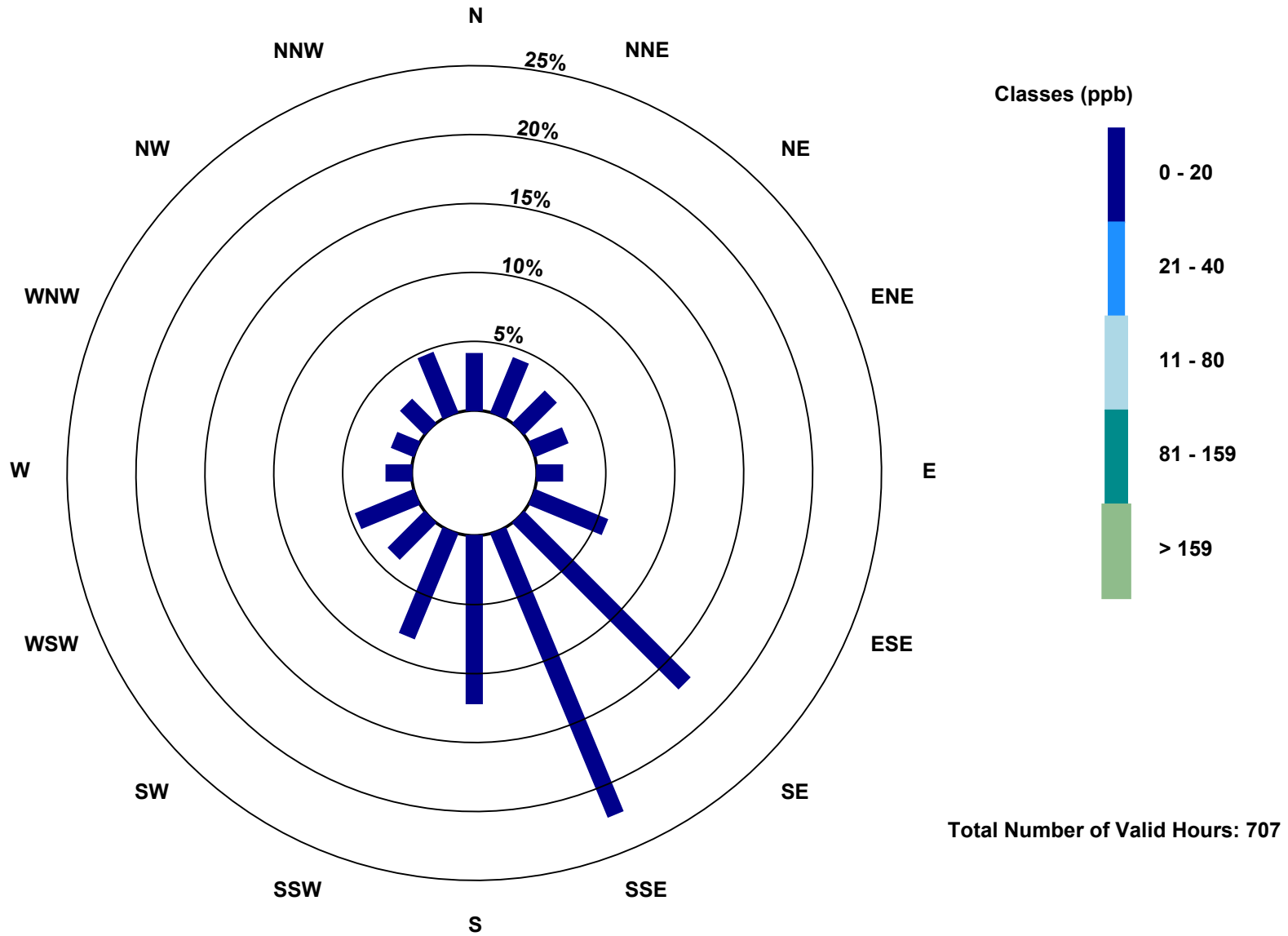
Total Number of Valid Hours: 707

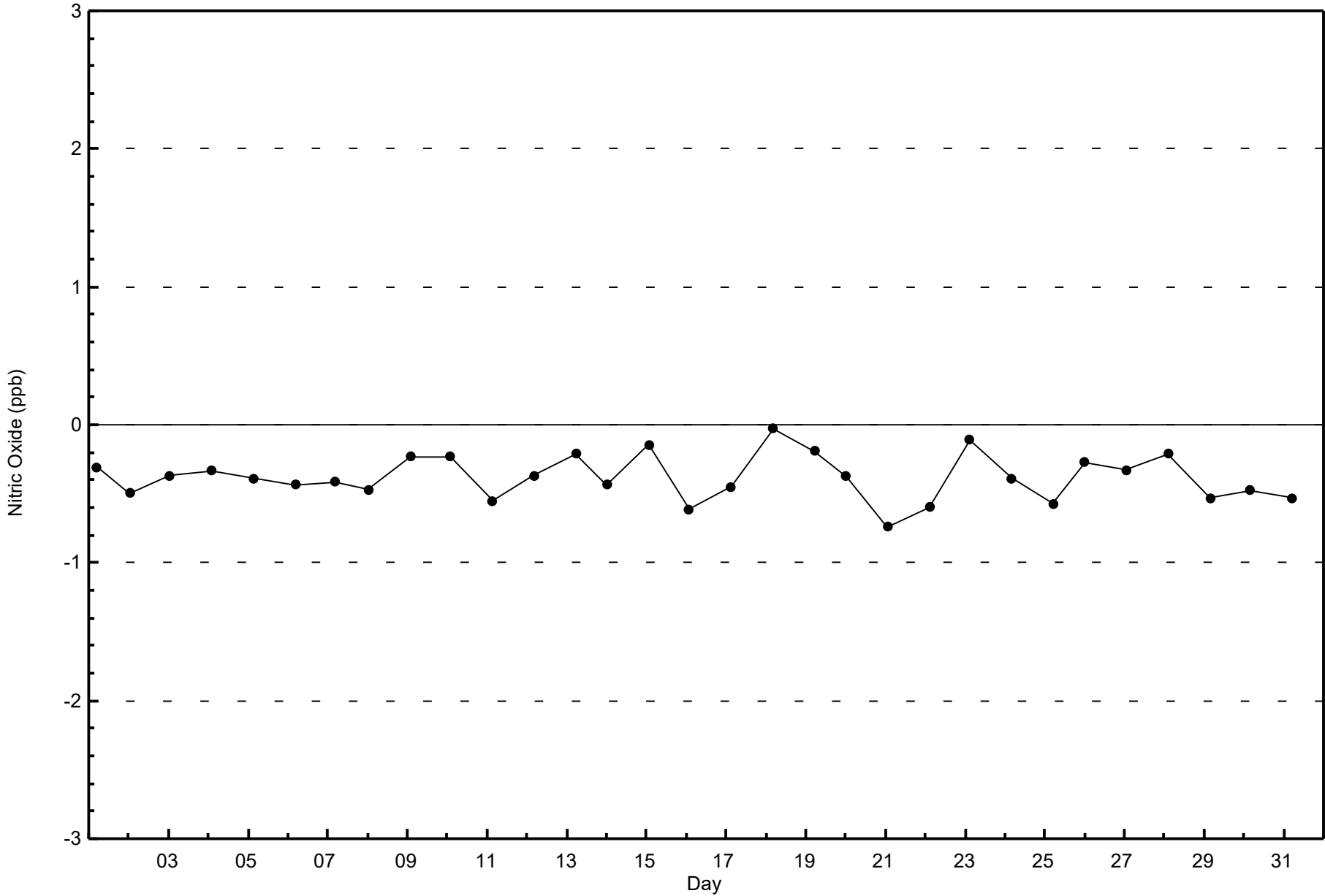
Total Number of Hours: 744

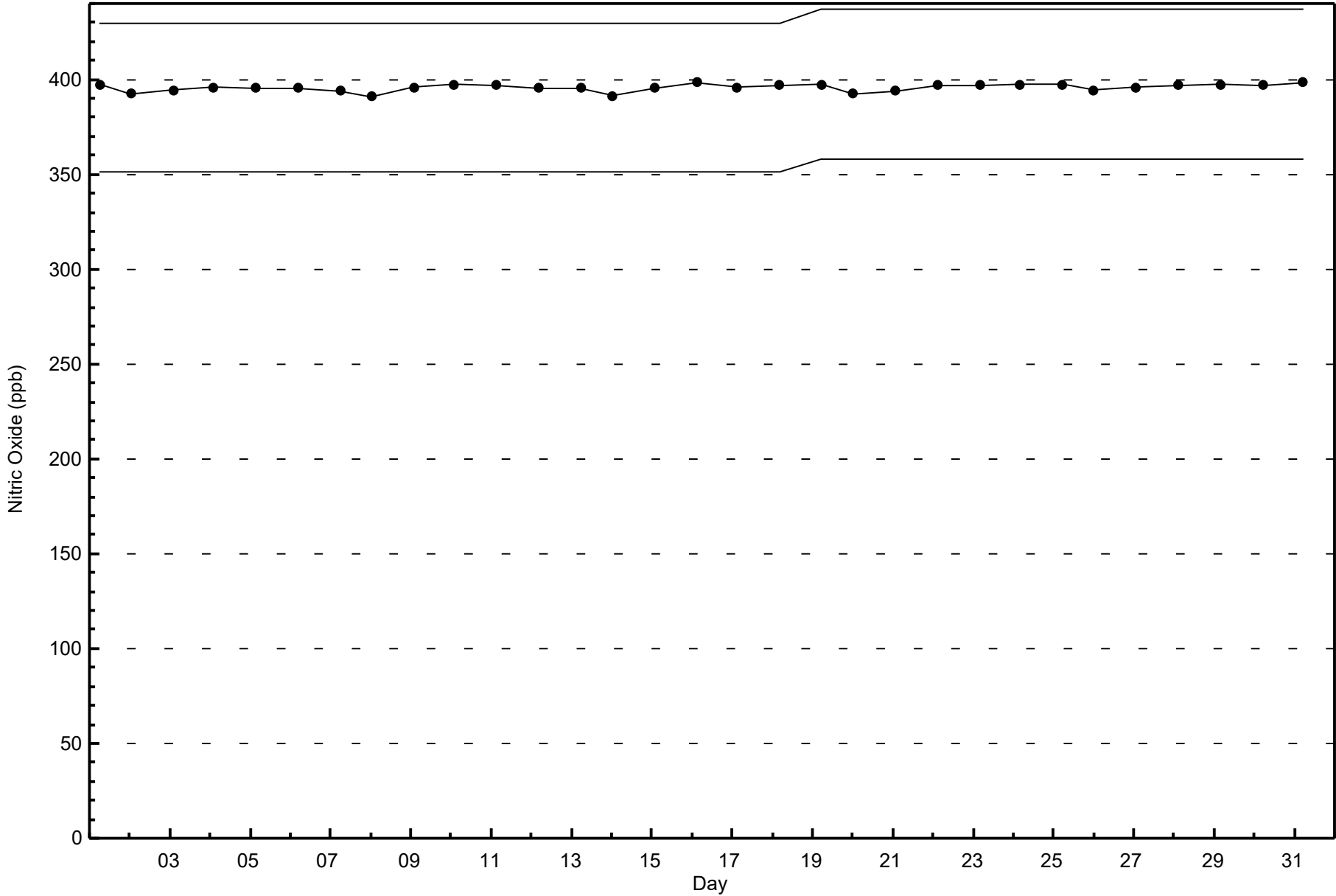


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Wapasu









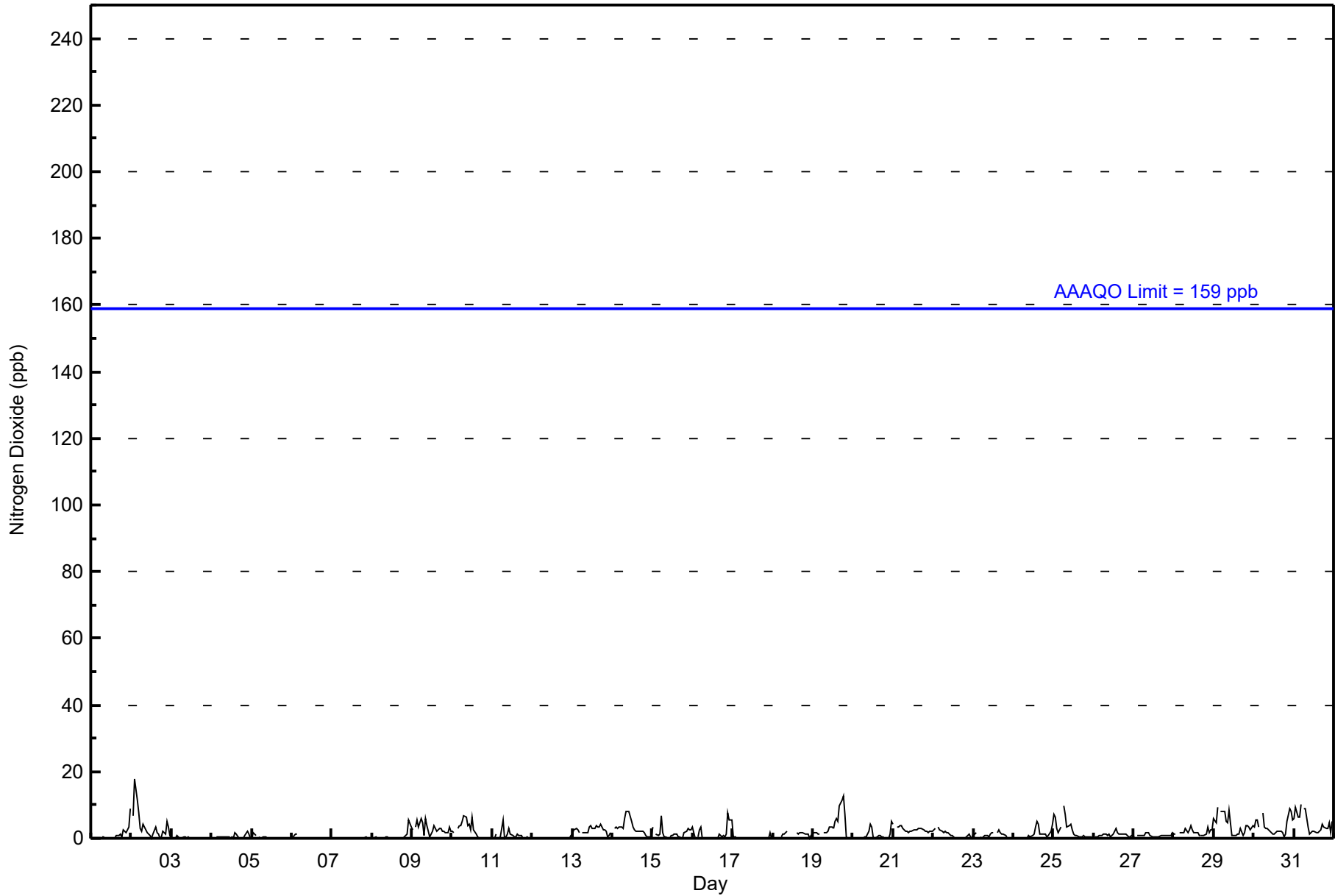
Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

Wapasu - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service: 744														744																													
Maximum Value: 18.0 ppb on May 2 03:00		Maximum Daily Average: 4.3 ppb on May 31		Hours of Data: 707														707																															
Minimum Value: 0.0 ppb on May 1 01:00		Minimum Daily Average: 0.0 ppb on May 7		Hours of Missing Data: 37														37																															
Maximum Diurnal Average: 2.5 ppb at hour 3		Minimum Diurnal Average: 1.2 ppb at hour 21		Hours of Calibration: 36														36																															
Monthly Average: 1.64 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.9 Q ₃ = 2.3 P ₉₀ = 4.2 P ₉₉ = 9.3		Percent Operational Time: 99.9														99.9																															
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	0.0	0.0	0.0	0.2	0.2	Z	0.4	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	1.0	0.8	1.4	0.5	2.5	2.3	1.6	3.4	8.7	1.0	8.7																							
2-May	Z	6.8	18.0	11.6	7.6	3.1	2.0	4.4	3.3	1.9	1.2	0.9	0.1	1.2	3.2	1.8	1.3	0.0	0.5	2.0	1.1	5.2	3.3	1.0	3.5	18.0																							
3-May	0.2	Z	0.1	0.7	0.6	0.1	0.2	0.3	0.5	0.2	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7																							
4-May	0.0	0.0	Z	0.3	0.4	0.4	0.4	0.6	0.4	0.3	0.3	0.2	0.3	0.2	1.7	1.1	0.2	0.2	0.0	0.2	0.9	2.0	1.2	0.0	0.5	2.0																							
5-May	0.2	1.9	1.0	Z	0.4	0.2	0.2	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.9																							
6-May	0.0	0.7	1.3	1.2	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.3																							
7-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.4																							
8-May	Z	0.2	0.3	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.6	0.7	1.1	5.3	3.3	0.6	5.3																							
9-May	2.6	Z	3.5	5.4	3.2	5.8	4.5	0.7	6.0	3.8	0.6	1.4	2.0	3.9	3.0	2.2	2.9	3.0	2.3	2.1	1.7	1.9	3.2	2.3	3.0	6.0																							
10-May	2.1	1.7	Z	3.0	3.8	4.0	5.0	6.6	6.4	3.9	4.3	2.6	6.3	2.4	1.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	6.6																							
11-May	0.0	0.0	1.1	Z	0.0	0.6	5.4	0.1	0.3	1.2	2.8	1.1	0.7	0.5	0.6	1.1	0.9	0.7	0.1	0.0	0.2	0.3	0.0	0.0	0.8	5.4																							
12-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	1.0	0.1	1.0																							
13-May	1.4	2.7	2.8	2.4	1.5	Z	1.5	1.6	1.6	1.6	3.6	3.7	3.1	2.8	4.0	3.3	3.4	4.2	2.4	2.5	2.1	0.6	0.7	1.6	2.4	4.2																							
14-May	Z	2.9	3.4	2.9	3.2	3.4	3.1	6.1	8.0	8.2	8.2	5.2	3.5	2.6	2.0	2.0	2.0	2.0	1.7	0.7	0.5	0.4	0.5	0.5	3.2	8.2																							
15-May	3.3	Z	1.3	0.7	1.3	6.6	1.6	0.3	0.5	0.0	0.2	0.7	0.7	1.4	1.1	0.3	0.4	0.1	0.0	1.8	2.3	2.8	2.6	2.5	1.4	6.6																							
16-May	3.2	0.0	Z	0.4	2.7	3.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.3	1.0	0.3	1.2	7.5	5.7	5.3	1.4	7.5																							
17-May	0.3	0.3	0.5	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.6	0.0	0.1	1.6																							
18-May	0.0	0.0	0.0	0.0	Z	0.4	1.4	1.1	2.2	C	C	C	C	C	1.5	1.3	1.5	1.9	1.6	1.4	1.2	1.1	0.0	0.9	1.0	2.2																							
19-May	1.7	1.7	1.5	1.2	1.1	Z	1.5	1.7	1.7	2.0	3.4	3.3	2.8	5.0	5.9	4.9	9.7	11.6	12.8	7.1	0.6	0.0	0.0	0.0	3.5	12.8																							
20-May	Z	0.2	0.1	0.0	0.0	0.0	0.0	0.4	0.3	2.0	4.2	3.2	0.6	0.1	0.3	0.8	0.9	0.4	0.3	0.2	0.1	0.0	1.4	4.9	0.9	4.9																							
21-May	4.2	Z	3.2	3.5	3.9	3.7	2.9	2.2	2.0	1.8	2.0	2.3	2.6	2.4	2.4	2.8	2.9	2.9	2.6	2.1	2.1	1.8	2.1	2.3	2.6	4.2																							
22-May	2.6	2.8	Z	3.4	2.6	2.2	1.9	2.0	1.9	1.5	0.8	0.8	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.3	0.5	0.0	1.1	3.4																							
23-May	1.8	1.2	1.7	Z	0.3	0.2	0.5	1.0	1.0	0.6	1.1	1.6	1.7	M	1.7	2.6	1.8	1.1	1.1	0.7	0.1	0.1	0.0	0.0	1.0	2.6																							
24-May	0.0	0.0	0.1	0.0	Z	0.2	0.0	0.1	0.2	0.7	0.5	0.8	1.2	3.3	5.0	4.3	1.2	1.1	1.4	1.4	0.4	0.7	2.3	4.2	1.3	5.0																							
25-May	7.3	6.3	3.1	1.7	3.2	Z	9.6	7.0	3.5	4.0	4.4	2.6	1.4	0.9	0.7	0.4	0.6	0.6	0.7	0.5	0.4	0.3	0.3	0.3	2.6	9.6																							
26-May	Z	0.4	0.5	0.7	0.9	0.8	1.1	1.1	1.0	1.1	0.3	0.8	1.4	2.9	1.9	1.2	1.1	1.3	1.3	1.4	0.9	0.6	0.6	0.7	1.0	2.9																							
27-May	0.6	Z	0.7	0.9	0.8	0.8	0.9	1.6	1.6	1.6	1.0	0.6	0.6	0.4	0.5	0.6	0.9	0.8	1.0	0.9	0.9	0.8	0.9	1.9	0.9	1.9																							
28-May	1.3	1.3	Z	1.5	1.6	1.8	1.8	2.8	1.9	2.4	3.7	2.7	1.9	1.8	1.9	0.8	0.7	0.9	0.8	1.1	3.3	1.8	2.7	2.6	1.9	3.7																							
29-May	5.9	4.8	9.2	Z	7.9	8.1	8.1	4.9	4.5	8.4	4.6	1.0	0.8	0.7	1.1	1.4	2.8	1.0	1.9	4.0	3.7	3.3	2.4	3.7	4.1	9.2																							
30-May	3.4	5.3	5.7	3.4	Z	7.5	3.3	3.1	2.8	2.7	1.6	1.2	1.4	1.5	2.0	2.3	2.3	1.8	0.4	1.2	5.2	9.0	8.0	5.5	3.5	9.0																							
31-May	6.1	9.3	6.4	6.2	10.0	Z	8.8	8.8	3.3	1.1	1.5	2.0	2.3	1.8	1.5	2.2	2.7	4.2	3.3	3.0	3.0	4.7	1.5	4.9	4.3	10.0																							
																								1.9	1.9	2.5	2.0	2.2	2.1	2.1	1.9	1.8	1.7	1.7	1.3	1.2	1.2	1.4	1.2	1.4	1.3	1.2	1.2	1.6	1.6	1.9	Diurnal Average		
																								7.3	9.3	18.0	11.6	10.0	8.1	9.6	8.8	8.0	8.4	8.2	5.2	6.3	5.0	5.9	4.9	9.7	11.6	12.8	7.1	5.2	9.0	8.0	8.7	Diurnal Maximum	
Z - zerospan C - Calibration M - Maintenance																																																	
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																																																	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Wapasu - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	707	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Wapasu - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	29	30	23	18	13	40	120	157	86	58	26	32	13	12	17	33	707
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	29	30	23	18	13	40	120	157	86	58	26	32	13	12	17	33	707

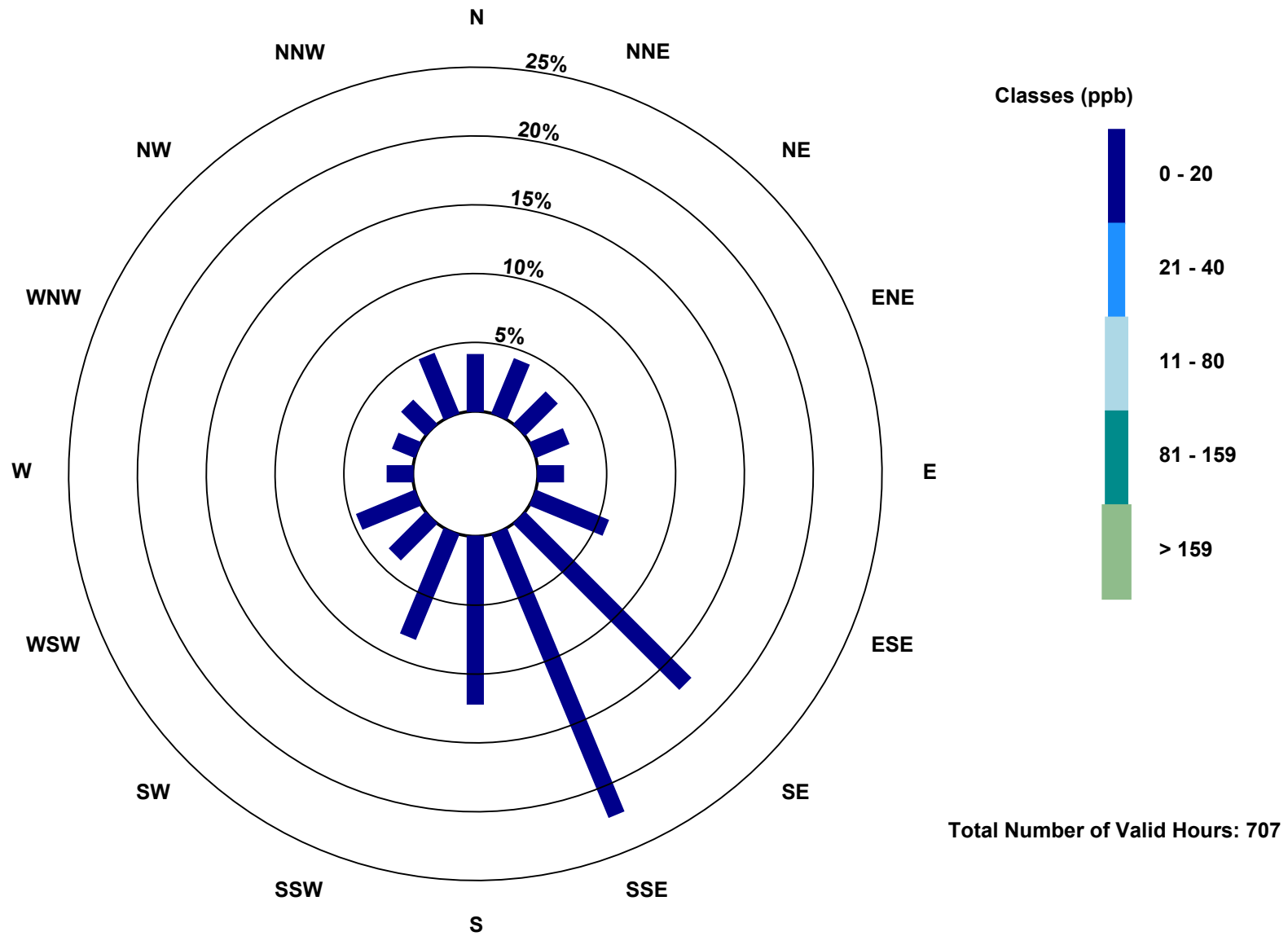
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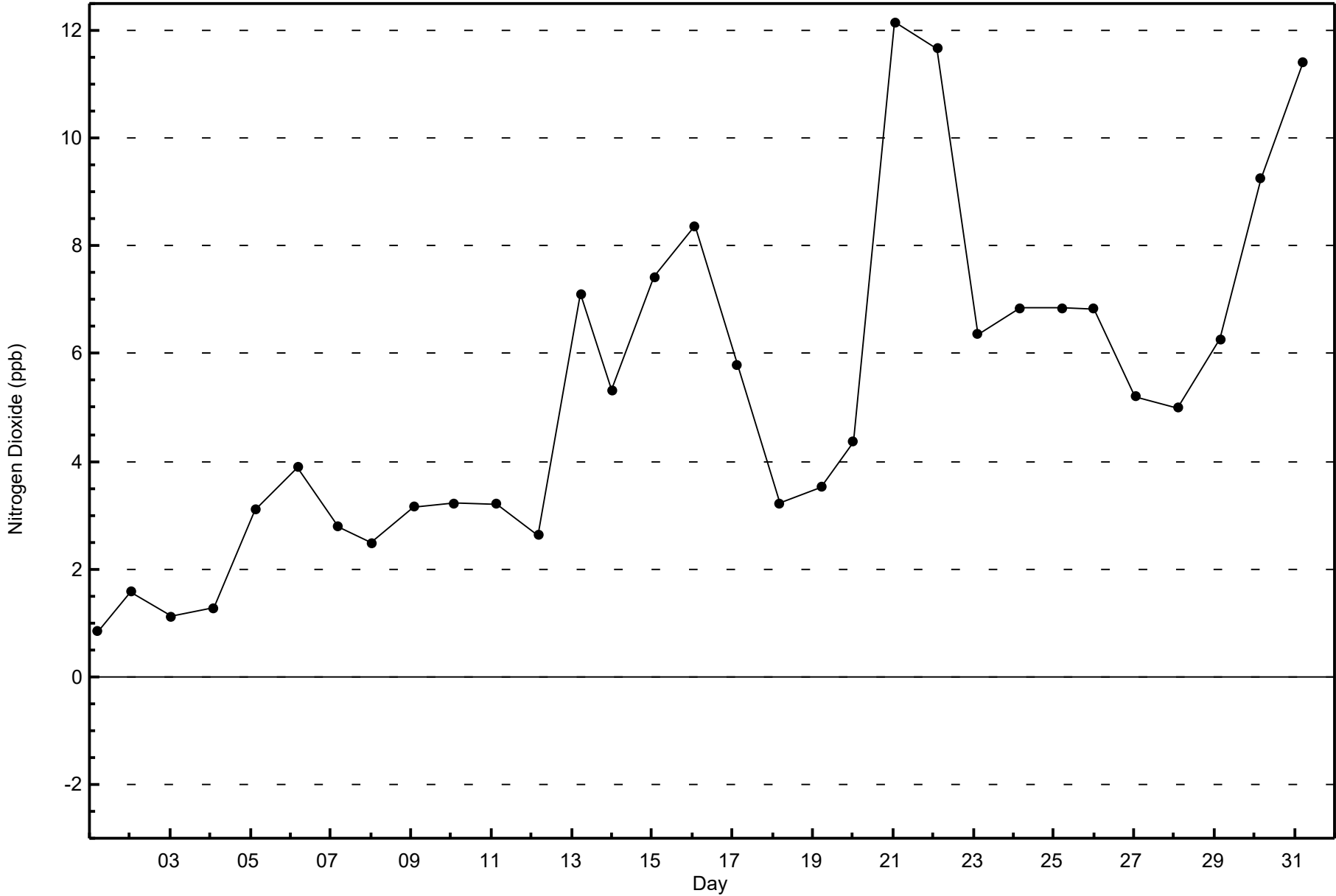
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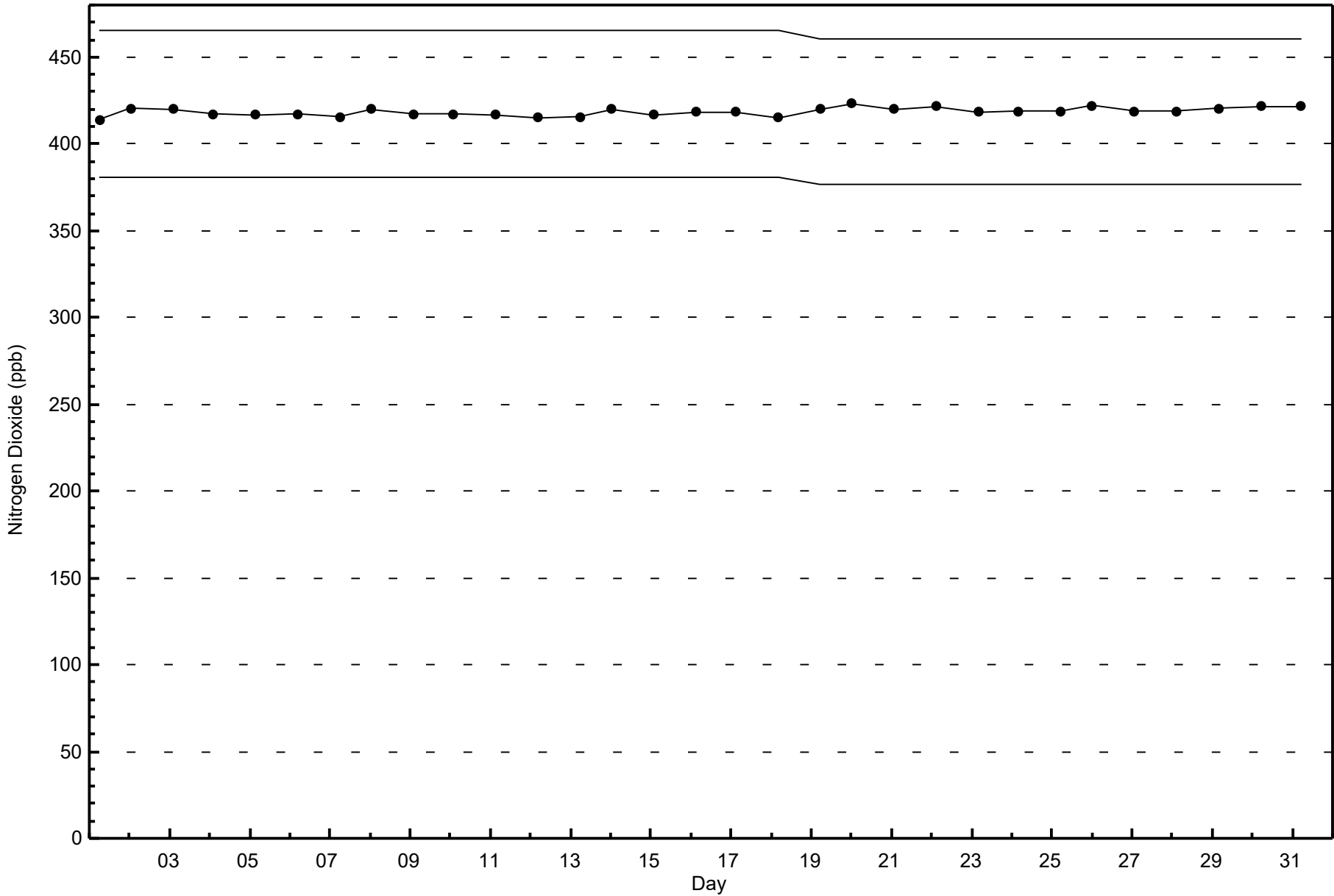


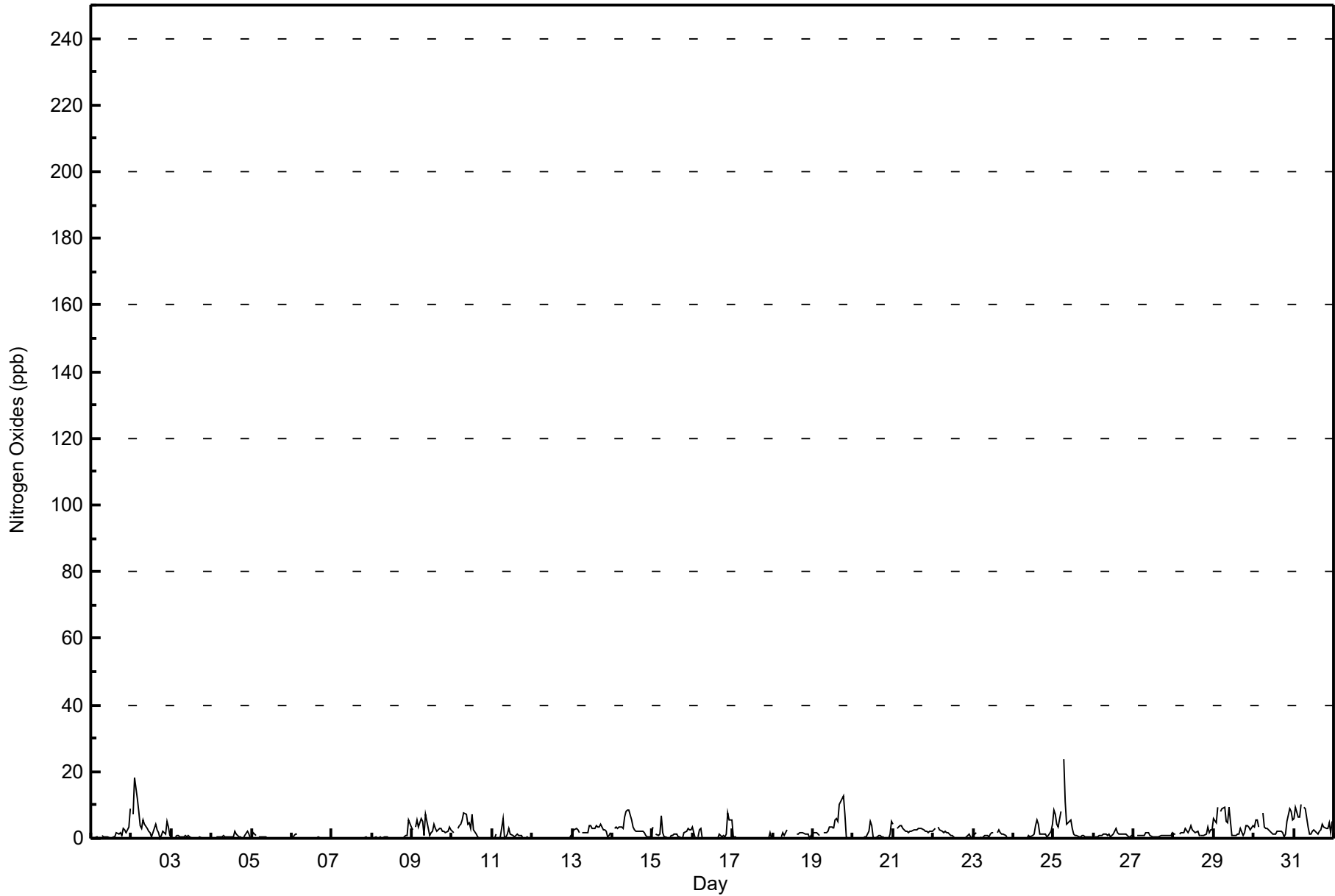
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Wapasu











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Wapasu - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	706	99.86	99.86
21 - 40	1	0.14	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Wapasu - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	29	30	23	18	13	40	120	157	86	58	25	32	13	12	17	33	706
21 - 40	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	29	30	23	18	13	40	120	157	86	58	26	32	13	12	17	33	707

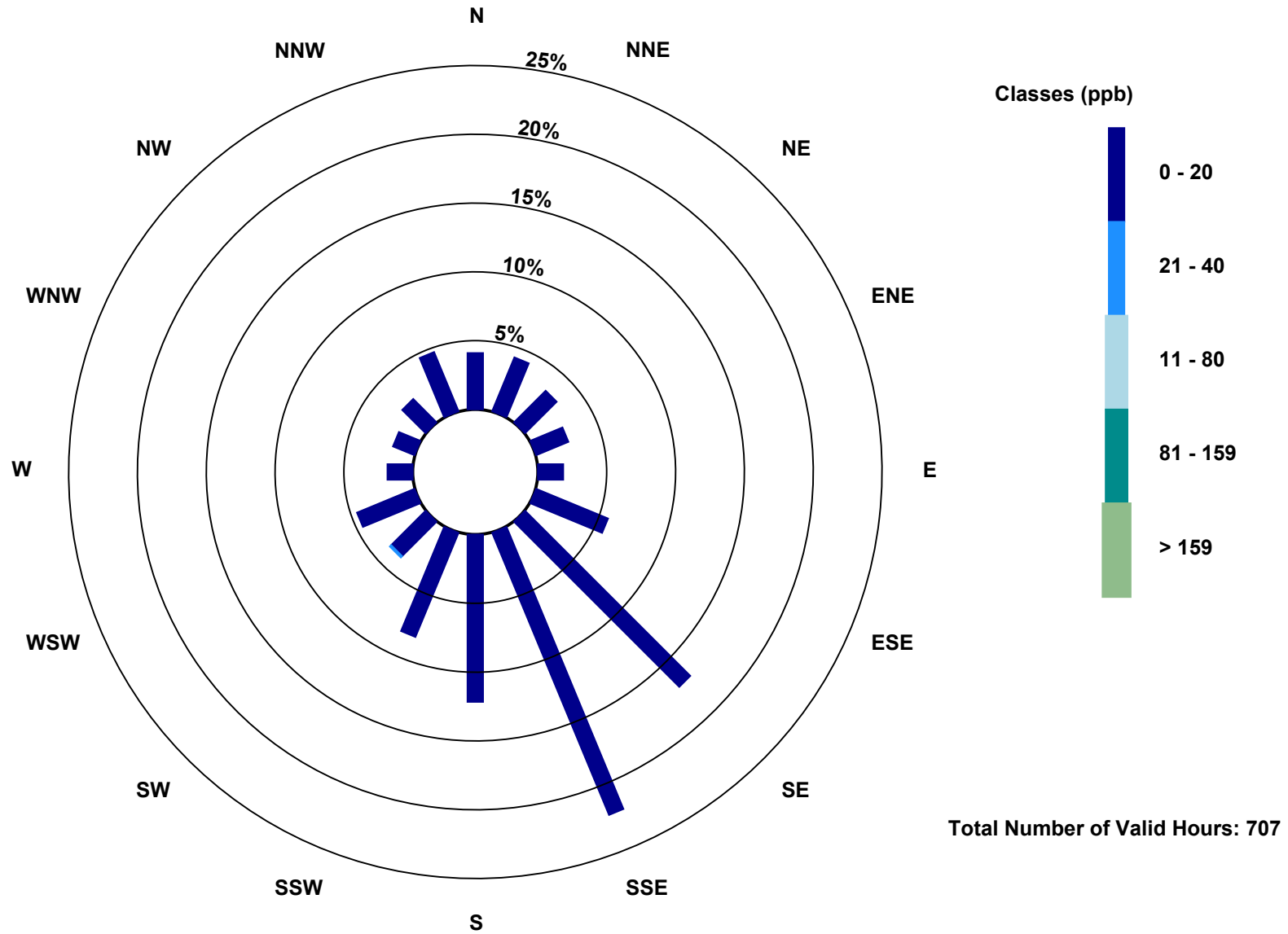
Total Number of Valid Hours: 707

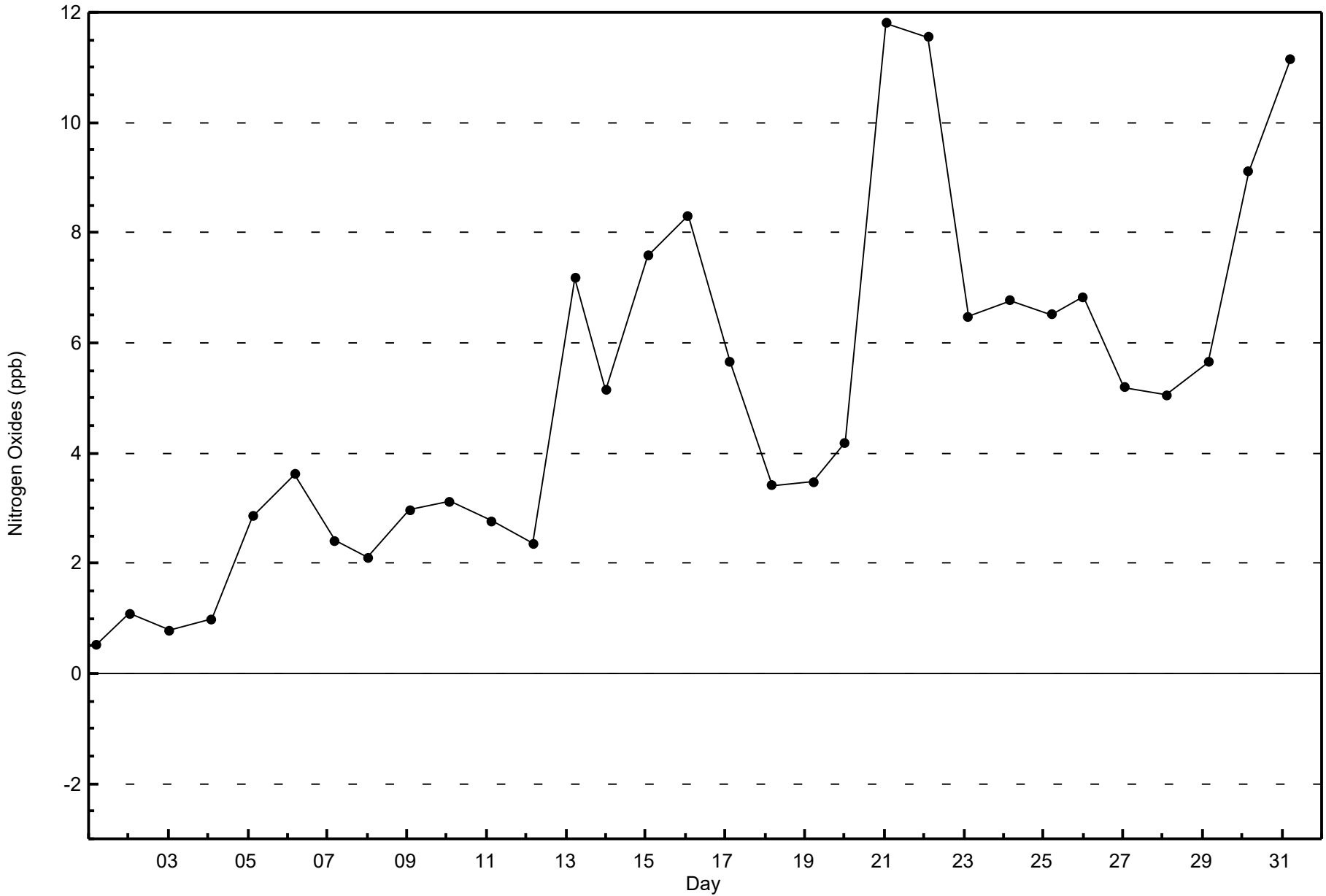
Total Number of Hours: 744

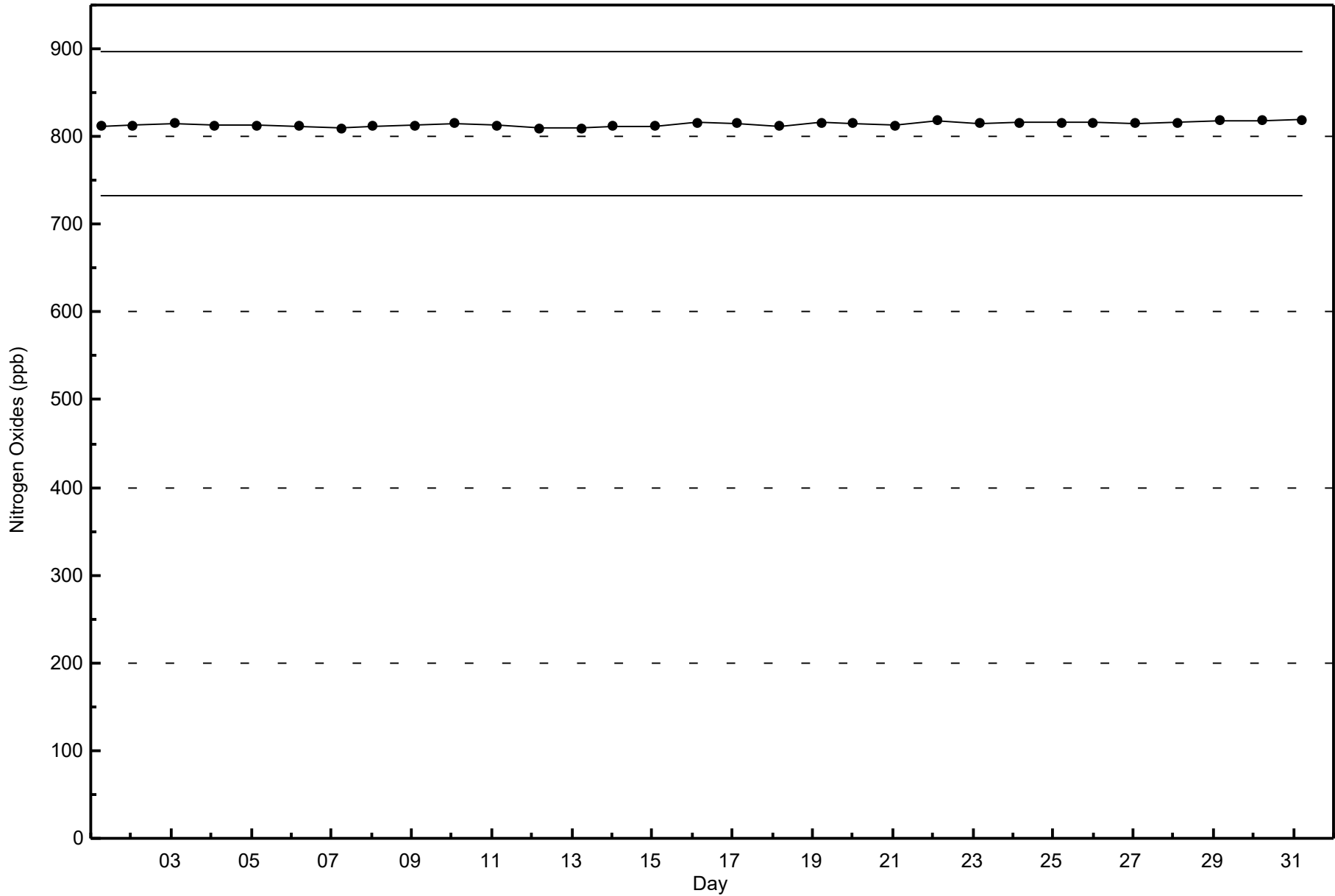


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Wapasu









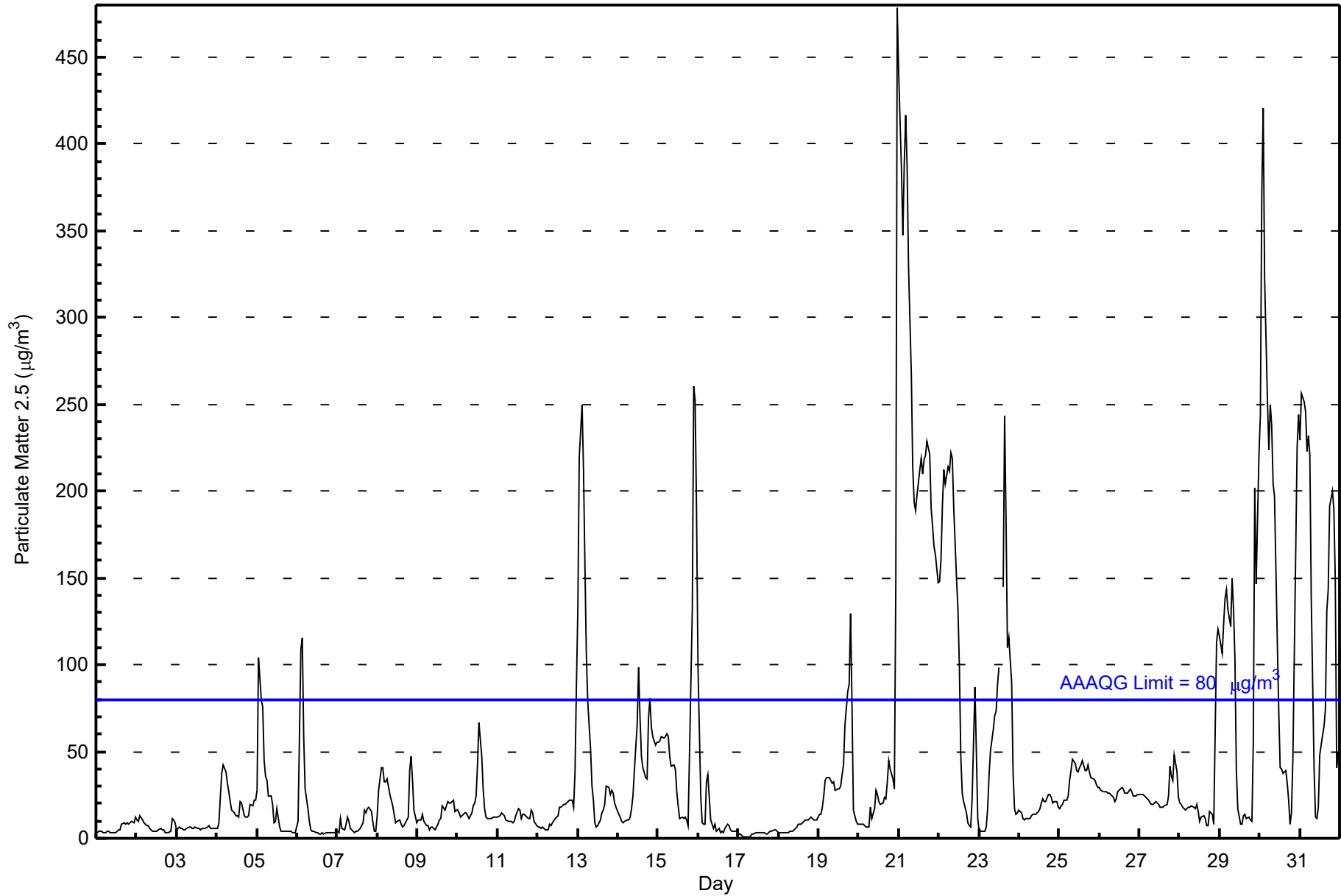
Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM_{2.5}) - µg/m³

Wapasu - May 2023

Number of Exceedences (AAAQO):		1-hr: 112	24-hr: 12	Hours in Service: 744																	Hours of Data: 743						
Maximum Value: 478.5 µg/m ³ on May 21 00:00		Maximum Daily Average: 255.6 µg/m ³ on May 21																	Hours of Missing Data: 1								
Minimum Value: 0.8 µg/m ³ on May 17 06:00		Minimum Daily Average: 2.7 µg/m ³ on May 17																	Hours of Calibration: 1								
Maximum Diurnal Average: 68.6 µg/m ³ at hour 3		Minimum Diurnal Average: 27.1 µg/m ³ at hour 14																	Percent Operational Time: 100.0								
Monthly Average: 44.59 µg/m ³		Percentiles: P ₁ = 2.1 P ₁₀ = 3.9 Q ₁ = 8.0 Median = 17.1 Q ₃ = 38.6 P ₉₀ = 144.3 P ₉₉ = 361.7																									
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	3.6	3.8	4.0	3.8	3.7	3.6	3.7	3.8	3.5	3.4	3.4	3.3	3.7	4.6	5.2	8.1	8.6	8.0	8.9	8.5	8.7	9.5	8.7	12.6	5.8	12.6	
2-May	10.2	10.1	13.1	10.2	9.2	7.9	7.6	7.7	5.4	4.4	4.3	4.0	3.9	5.1	6.0	5.0	4.7	3.5	3.4	3.6	3.8	11.6	10.8	9.0	6.8	13.1	
3-May	4.9	6.1	5.9	5.7	4.8	4.9	5.3	6.8	6.7	5.7	5.9	6.3	5.8	5.9	5.1	5.9	6.0	6.1	6.4	7.2	6.0	5.9	5.8	5.9	5.9	7.2	
4-May	5.6	8.9	23.3	37.7	42.0	37.9	31.7	27.2	20.8	16.0	14.3	13.2	13.1	12.1	20.9	20.5	12.9	12.2	12.1	13.1	19.7	18.4	21.6	21.9	19.9	42.0	
5-May	28.0	104.1	80.1	75.6	44.7	35.6	33.1	24.5	24.7	19.7	9.2	9.8	17.4	6.3	4.4	4.3	4.2	3.8	3.8	3.9	3.4	3.3	3.5	23.0	104.1		
6-May	9.5	58.8	108.7	115.6	58.9	28.8	17.1	9.5	4.9	4.5	4.5	3.5	3.2	2.6	2.8	3.0	2.8	3.0	2.9	2.9	3.6	3.6	3.2	3.5	19.2	115.6	
7-May	4.0	3.4	11.1	5.8	4.8	7.9	12.3	9.4	5.5	4.4	3.4	3.7	4.2	5.0	5.8	8.8	16.0	14.7	17.2	18.0	15.3	8.6	3.8	4.4	8.2	18.0	
8-May	12.7	27.3	40.9	40.9	32.4	32.6	34.2	25.1	22.2	19.0	13.9	8.9	9.4	10.2	8.1	6.6	7.6	8.9	11.9	39.0	46.8	33.1	16.1	9.4	21.5	46.8	
9-May	10.2	10.3	10.8	13.7	9.6	7.2	7.0	5.0	6.2	6.9	5.0	6.3	7.8	10.3	11.7	18.8	16.3	18.3	20.9	20.4	20.3	22.4	15.2	16.3	12.4	22.4	
10-May	15.9	14.3	12.5	13.7	15.0	14.4	13.2	11.1	14.6	19.1	20.6	24.5	42.5	67.0	46.9	28.9	17.3	12.0	11.0	11.2	11.8	12.4	11.9	11.9	19.7	67.0	
11-May	12.1	12.8	14.2	14.1	12.9	10.4	9.8	9.8	10.1	9.0	9.8	13.1	17.4	16.3	11.3	13.5	14.0	12.2	11.5	11.1	16.0	14.8	9.7	7.2	12.2	17.4	
12-May	6.7	6.7	6.1	6.2	5.0	4.7	4.9	8.5	7.4	8.9	11.6	11.9	13.4	17.8	18.2	19.9	19.6	20.4	21.2	21.6	22.1	18.1	38.4	88.4	17.0	88.4	
13-May	131.8	219.6	249.8	212.3	158.0	106.6	79.1	51.1	30.0	22.0	9.1	6.9	7.6	10.2	14.7	16.6	19.7	30.4	29.0	25.1	27.3	25.9	20.6	17.9	63.4	249.8	
14-May	14.1	12.0	9.7	8.7	9.6	10.4	10.8	12.2	17.2	24.5	39.5	65.7	98.8	69.1	46.9	40.7	35.1	34.3	68.8	80.5	64.2	58.6	53.5	55.3	39.2	98.8	
15-May	55.3	56.1	59.0	57.8	58.5	59.9	58.9	46.9	41.4	42.1	39.9	27.1	18.4	11.4	12.4	11.8	12.0	10.8	7.4	48.0	131.5	260.2	252.3	187.3	65.3	260.2	
16-May	99.7	23.8	8.6	7.9	8.3	32.5	36.3	10.8	8.0	5.8	8.5	3.8	5.7	3.3	3.7	3.5	5.5	8.4	7.1	4.8	4.0	4.2	4.2	3.7	13.0	99.7	
17-May	2.4	2.1	1.9	0.9	1.2	0.8	1.1	1.1	2.0	2.2	3.5	3.7	3.5	3.2	3.2	3.0	2.8	2.8	3.2	3.7	3.7	4.6	4.9	3.7	2.7	4.9	
18-May	3.4	3.3	3.3	3.2	3.1	2.9	3.4	3.8	4.2	4.6	5.5	6.5	8.0	8.4	9.2	10.2	10.4	10.5	11.0	12.2	11.7	10.6	10.3	10.8	7.1	12.2	
19-May	13.6	14.1	17.6	24.6	33.5	35.3	34.9	33.5	31.5	32.3	27.7	28.8	28.8	30.5	36.4	42.3	65.0	85.0	88.7	129.1	76.5	15.9	9.6	8.4	39.3	129.1	
20-May	8.4	8.3	8.5	7.9	6.8	6.2	6.6	18.2	11.5	17.0	27.5	25.6	21.5	19.1	20.7	23.4	22.4	32.4	45.0	39.5	33.9	28.3	145.4	478.5	44.3	478.5	
21-May	441.4	386.0	347.1	388.6	416.5	387.0	329.2	266.5	213.2	193.3	189.1	197.6	212.1	218.7	210.0	218.3	220.7	228.7	221.3	190.7	179.8	168.7	163.7	147.1	255.6	441.4	
22-May	148.3	161.5	191.7	212.3	204.4	214.1	211.5	222.4	218.8	190.8	148.7	131.4	98.6	47.1	26.2	21.1	15.0	9.1	7.3	6.3	22.7	86.7	50.4	11.2	110.7	222.4	
23-May	4.3	4.2	3.9	4.1	6.1	17.2	36.6	50.8	62.5	70.8	72.8	88.4	98.4	C	144.6	243.0	184.7	109.8	115.8	89.8	37.3	16.9	13.8	14.4	64.8	243.0	
24-May	15.9	14.7	11.5	10.5	11.6	11.8	11.2	13.3	14.0	14.1	13.8	15.6	17.0	20.6	23.1	21.2	21.2	25.3	24.8	23.9	20.2	21.4	20.9	17.7	17.3	25.3	
25-May	16.9	18.9	19.4	21.9	22.3	24.0	33.4	39.1	45.7	43.4	39.4	38.6	40.9	41.9	44.9	38.7	39.4	42.5	38.1	35.1	34.2	33.6	31.1	29.1	33.8	45.7	
26-May	29.1	27.4	27.1	26.7	26.5	25.7	25.7	24.6	24.0	20.8	22.5	27.0	27.4	29.4	28.3	26.4	25.8	26.0	28.1	26.7	24.6	24.5	24.7	25.4	26.0	29.4	
27-May	25.1	25.6	25.3	24.2	23.8	22.4	20.6	19.8	19.4	20.5	21.3	19.3	18.3	18.1	18.0	18.4	19.2	24.1	41.4	35.4	33.5	47.8	38.2	24.0	25.2	47.8	
28-May	20.3	19.3	17.6	16.4	17.1	17.6	17.9	18.5	18.2	17.3	19.4	15.8	10.0	12.3	12.7	11.2	7.7	7.5	15.6	14.0	8.4	61.8	112.9	120.6	25.4	120.6	
29-May	116.5	106.9	123.6	138.4	143.3	132.0	122.0	149.8	131.7	102.3	38.9	16.7	8.0	8.3	13.3	14.1	11.2	12.4	10.8	9.8	55.8	202.0	146.1	221.5	84.8	221.5	
30-May	244.0	372.3	420.2	322.1	252.3	223.8	249.5	237.3	204.4	197.2	112.1	73.4	40.3	40.2	37.7	39.5	31.5	22.0	7.8	14.9	46.0	165.2	225.1	243.7	159.3	420.2	
31-May	229.5	256.1	251.5	246.1	223.0	232.2	220.3	138.6	40.3	12.0	11.4	18.0	48.3	59.3	64.1	73.9	131.4	142.8	190.9	199.9	189.7	148.6	41.0	49.3	134.1	256.1	
																								Diurnal Average			
																								Diurnal Maximum			
56.2 64.5 68.6 67.0 60.3 56.7 54.5 48.6 41.0 37.2 30.9 29.6 30.8 27.1 29.6 32.9 32.6 31.9 35.3 37.1 38.2 49.9 48.9 60.1																								Diurnal Average			
																								441.4 386.0 420.2 388.6 416.5 387.0 329.2 266.5 218.8 197.2 189.1 197.6 212.1 218.7 210.0 243.0 220.7 228.7 221.3 199.9 189.7 260.2 252.3 478.5		Diurnal Maximum	
C - Calibration																											
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																											





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Wapasu - May 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	123	16.55	16.55
6 - 15	228	30.69	47.24
16 - 25	132	17.77	65.01
26 - 80	149	20.05	85.06
> 81.0	111	14.94	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Wapasu - May 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	9	11	2	2	1	5	41	19	9	3	2	1	1	4	6	7	123
6 - 15	6	11	4	5	6	9	38	53	27	26	15	6	4	1	6	11	228
16 - 25	4	2	4	3	1	5	12	32	27	16	3	13	3	2	1	4	132
26 - 80	5	3	6	4	3	15	18	33	18	8	8	8	4	3	4	9	149
> 81.0	7	6	7	4	3	8	21	29	9	8	0	4	1	2	0	2	111
Totals	31	33	23	18	14	42	130	166	90	61	28	32	13	12	17	33	743

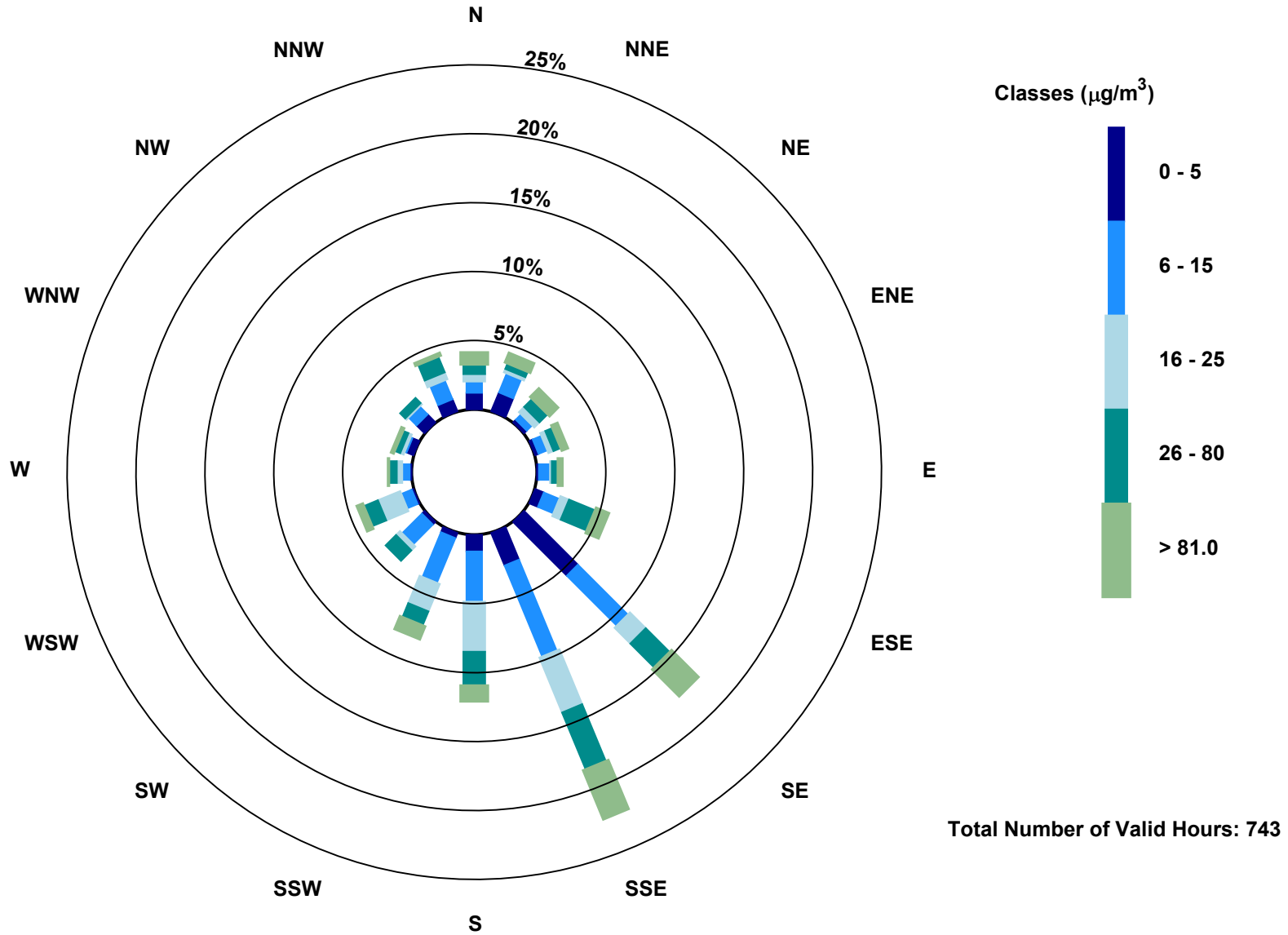
Total Number of Valid Hours: 743

Total Number of Hours: 744



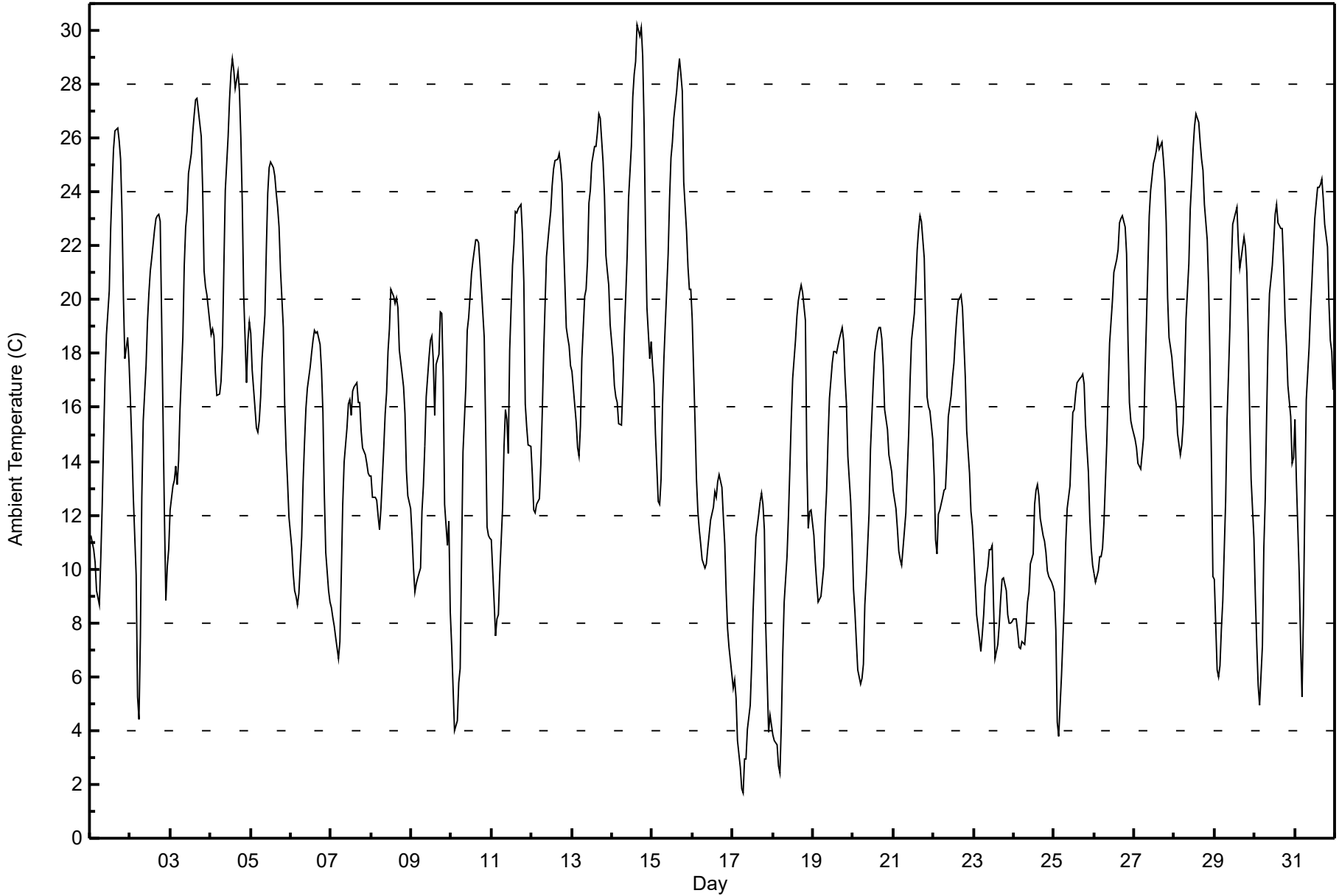
Wood Buffalo Environmental Association
Wind Rose May 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Wapasu





Maximum Value: 30.2 C on May 14 16:00		Maximum Daily Average: 22.3 C on May 4		Hours in Service: 744																							
Minimum Value: 1.7 C on May 17 07:00		Minimum Daily Average: 6.6 C on May 17		Hours of Data: 744																							
Maximum Diurnal Average: 21.5 C at hour 17		Minimum Diurnal Average: 9.6 C at hour 5		Hours of Missing Data: 0																							
Monthly Average: 15.97 C		Percentiles: P ₁ = 3.5 P ₁₀ = 8.1 Q ₁ = 11.2 Median = 16.0 Q ₃ = 20.4 P ₉₀ = 24.3 P ₉₉ = 28.5		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	11.3	11.0	10.7	10.3	9.2	8.7	10.4	12.4	14.8	17.2	18.7	20.3	22.6	24.2	25.6	26.3	26.4	25.9	25.2	23.2	20.1	17.8	18.6	17.7	17.8	26.4	
2-May	16.2	14.5	12.7	9.8	5.3	4.4	7.5	12.7	15.5	17.6	19.2	20.2	21.1	21.6	22.6	23.0	23.1	23.2	22.9	19.3	12.0	8.9	10.1	10.7	15.6	23.2	
3-May	12.2	13.1	13.3	13.8	13.1	14.0	15.9	18.6	21.3	22.7	23.3	24.7	25.4	26.2	26.8	27.4	27.5	27.0	26.0	24.1	21.1	20.5	20.2	19.2	20.7	27.5	
4-May	18.7	18.9	18.6	17.3	16.4	16.5	17.0	18.3	21.2	24.1	26.1	27.4	28.4	28.9	28.5	27.8	28.5	27.7	26.0	23.6	20.2	16.9	18.5	19.2	22.3	28.9	
5-May	18.7	17.4	16.0	15.2	15.1	15.5	16.4	17.8	19.5	21.9	24.0	24.9	25.1	24.9	24.6	24.0	23.4	22.7	21.1	19.0	16.1	14.4	13.3	11.9	19.3	25.1	
6-May	10.7	9.8	9.2	9.0	8.7	9.1	11.2	13.3	14.7	16.0	16.7	17.5	18.0	18.5	18.8	18.8	18.8	18.3	17.4	15.8	12.8	10.6	9.2	8.8	13.8	18.8	
7-May	8.6	8.2	7.9	7.5	6.7	7.3	9.8	12.4	14.0	15.3	16.1	16.3	15.7	16.6	16.8	16.9	16.2	16.2	15.1	14.5	14.2	13.9	13.6	13.4	13.1	16.9	
8-May	13.4	12.7	12.7	12.6	12.0	11.5	12.2	14.5	15.8	16.5	18.1	18.9	20.4	20.1	19.9	20.1	19.7	18.1	17.3	16.8	15.8	13.6	12.7	12.2	15.7	20.4	
9-May	11.3	10.0	9.2	9.4	9.6	10.1	12.1	13.1	14.6	16.4	17.9	18.5	18.7	17.8	15.7	17.6	18.0	19.5	19.5	17.1	12.4	10.9	11.8	8.4	14.1	19.5	
10-May	7.1	5.6	4.0	4.4	5.8	6.3	10.5	14.3	16.8	18.9	19.3	20.1	20.9	21.4	22.2	22.2	22.1	21.3	20.4	18.6	15.3	11.6	11.2	11.1	14.6	22.2	
11-May	11.1	8.8	7.5	8.1	8.3	9.8	12.3	14.5	15.9	15.5	14.3	18.1	21.3	22.1	23.3	23.2	23.4	23.5	22.4	20.6	16.1	15.3	14.6	14.5	16.0	23.5	
12-May	13.5	12.2	12.1	12.4	12.6	13.8	15.8	18.0	19.8	21.6	22.8	23.3	24.2	24.9	25.2	25.2	25.4	25.0	24.3	22.3	19.0	18.6	18.3	17.5	19.5	25.4	
13-May	17.3	16.7	15.4	14.5	14.2	15.3	17.8	20.1	20.4	21.4	23.6	24.1	25.0	25.7	25.7	26.2	26.9	26.8	25.1	23.9	21.6	21.1	20.6	19.0	21.2	26.9	
14-May	17.8	16.8	16.4	16.2	15.4	15.4	16.8	18.7	20.1	21.6	23.8	25.7	27.5	28.4	28.9	30.2	29.8	30.1	29.0	26.5	22.5	19.7	17.8	18.4	22.2	30.2	
15-May	17.5	16.9	15.0	12.5	12.4	13.4	16.1	17.8	19.1	21.7	23.8	25.3	25.9	26.8	27.7	28.4	29.0	28.3	27.7	24.4	22.5	21.2	20.4	20.4	21.4	29.0	
16-May	19.3	15.5	13.3	12.1	11.4	10.9	10.4	10.0	10.2	10.8	11.3	11.8	12.3	12.9	12.7	13.3	13.5	13.0	11.9	10.9	9.1	7.8	7.1	6.1	11.6	19.3	
17-May	5.6	5.9	5.2	3.6	2.6	1.9	1.7	2.9	2.9	4.0	4.9	6.4	8.4	9.8	11.2	12.0	12.5	12.8	12.4	11.4	7.8	3.9	4.6	4.2	6.6	12.8	
18-May	3.8	3.6	3.5	2.7	2.4	4.3	6.9	8.8	10.5	11.9	13.7	15.6	17.1	18.5	19.4	19.9	20.3	20.5	20.3	19.2	14.1	11.5	12.2	12.2	12.2	20.5	
19-May	11.2	10.2	9.4	8.8	8.9	9.0	10.1	11.8	12.9	14.8	16.3	17.7	18.1	18.1	18.0	18.3	18.5	19.0	18.5	17.1	16.1	14.2	12.5	11.1	14.2	19.0	
20-May	9.3	8.4	7.3	6.2	5.8	5.9	6.5	8.7	9.7	12.1	14.4	15.7	17.0	18.0	18.8	19.0	19.0	18.5	17.6	15.9	15.2	14.2	13.9	13.6	12.9	19.0	
21-May	12.9	12.3	11.5	10.6	10.3	10.1	10.7	12.1	13.6	15.0	17.0	18.5	19.5	20.6	21.8	22.6	23.1	22.9	21.5	19.1	16.4	16.0	15.9	14.8	16.2	23.1	
22-May	13.5	11.1	10.6	12.0	12.2	12.7	12.9	13.0	14.1	15.7	16.5	17.1	17.6	18.6	19.4	20.0	20.2	19.7	18.4	17.1	15.2	13.5	12.2	11.6	15.2	20.2	
23-May	10.7	9.5	8.3	7.4	7.0	7.6	8.3	9.4	10.1	10.7	10.7	10.9	8.6	6.7	7.2	7.9	8.9	9.6	9.7	9.2	8.3	8.0	8.0	8.0	8.8	10.9	
24-May	8.1	8.2	7.7	7.1	7.1	7.3	7.2	7.9	8.8	9.2	10.2	10.6	12.4	12.9	13.1	12.7	11.9	11.2	11.0	10.6	9.9	9.7	9.5	9.4	9.7	13.1	
25-May	9.1	7.7	4.3	3.8	6.0	7.4	8.9	11.0	12.3	13.1	14.5	15.8	15.9	16.5	16.9	17.1	17.1	17.2	16.9	15.4	13.6	11.9	10.8	10.2	12.2	17.2	
26-May	9.8	9.5	9.9	10.5	10.4	10.8	11.7	14.6	16.6	18.4	19.2	19.9	21.0	21.5	21.8	22.9	23.0	23.1	22.7	21.7	18.5	16.2	15.5	15.2	16.9	23.1	
27-May	14.8	14.5	13.9	13.8	13.7	14.9	17.2	19.1	21.1	23.1	24.0	25.1	25.3	25.5	26.0	25.6	25.9	25.2	24.4	22.8	20.1	18.6	17.9	17.2	20.4	26.0	
28-May	16.6	16.1	15.0	14.2	14.6	15.4	17.2	19.3	21.3	23.4	24.4	25.6	26.4	26.9	26.6	25.9	25.2	24.8	23.6	22.2	20.5	17.6	14.0	9.7	20.3	26.9	
29-May	9.6	6.2	6.0	6.4	7.8	8.8	12.5	15.6	17.2	19.0	21.3	22.8	23.2	23.4	22.1	21.2	21.6	22.3	22.0	21.0	18.7	15.7	13.3	11.1	16.2	23.4	
30-May	9.0	7.2	5.7	4.9	7.1	10.8	12.6	15.7	18.5	20.3	21.3	22.2	23.2	23.5	22.8	22.7	22.6	21.2	19.3	18.3	16.8	15.6	13.9	14.1	16.2	23.5	
31-May	15.5	13.3	9.8	7.2	5.3	8.4	12.5	16.3	18.2	19.6	20.7	21.9	23.0	24.2	24.1	24.3	24.5	23.7	22.8	22.0	19.9	18.5	18.1	16.7	17.9	24.5	
		12.4	11.4	10.4	9.8	9.6	10.2	11.9	14.0	15.5	17.1	18.3	19.4	20.3	20.8	21.1	21.4	21.5	21.3	20.4	18.8	16.2	14.5	13.9	13.2	Diurnal Average	
		19.3	18.9	18.6	17.3	16.4	16.5	17.8	20.1	21.3	24.1	26.1	27.4	28.4	28.9	28.9	30.2	29.8	30.1	29.0	26.5	22.5	21.2	20.6	20.4	Diurnal Maximum	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Wapasu - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	138	18.55	18.55
10 - 20	403	54.17	72.72
> 20	203	27.28	100.00

Total Number of Valid Hours: 744

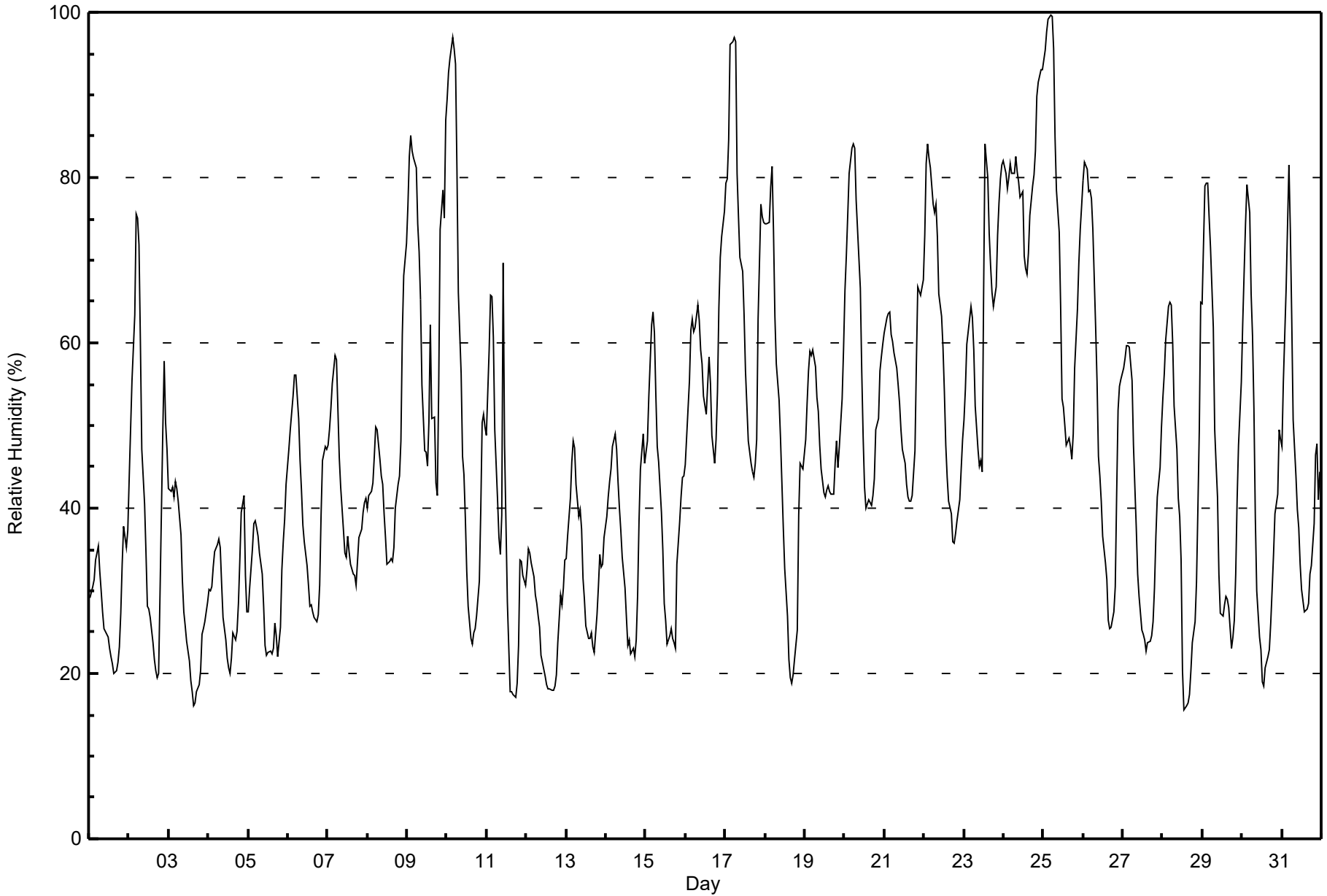
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Wapasu - May 2023

Maximum Value: 99.7 % on May 25 05:00 Maximum Daily Average: 80.3 % on May 24 Minimum Value: 15.6 % on May 28 14:00 Minimum Daily Average: 25.6 % on May 12 Maximum Diurnal Average: 65.2 % at hour 5 Minimum Diurnal Average: 31.9 % at hour 18 Monthly Average: 46.98 % Percentiles: P ₁ = 17.6 P ₁₀ = 23.6 Q ₁ = 30.7 Median = 43.8 Q ₃ = 60.1 P ₉₀ = 77.4 P ₉₉ = 96.3																								Hours in Service:	744																							
																								Hours of Data:	744																							
																								Hours of Missing Data:	0																							
																								Hours of Calibration:	0																							
																								Percent Operational Time:	100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	29.2	29.9	30.5	31.4	33.8	35.3	32.4	29.9	27.4	25.4	25.1	24.5	23.0	22.0	21.2	20.1	20.3	21.4	23.2	27.2	33.3	37.8	35.3	37.3	28.2	37.8																						
2-May	43.6	49.5	55.4	63.5	75.5	75.1	71.9	60.2	47.2	40.5	34.6	28.1	27.7	26.7	23.8	21.7	20.3	19.4	20.0	29.6	49.3	57.7	50.4	47.0	43.3	75.5																						
3-May	42.3	42.0	42.5	41.4	43.3	42.4	40.8	36.7	31.2	27.5	25.7	24.0	21.6	19.2	17.7	16.1	16.5	17.9	18.6	20.4	24.7	25.5	26.4	28.6	28.9	43.3																						
4-May	30.1	30.0	30.5	32.8	34.7	35.6	36.2	35.3	30.9	26.8	24.1	21.8	20.7	20.1	21.9	24.9	24.1	25.1	28.5	33.7	39.6	41.5	31.8	27.5	29.5	41.5																						
5-May	27.4	30.4	35.0	38.1	38.5	37.6	36.5	34.6	32.0	28.1	23.3	22.2	22.5	22.8	22.3	23.0	26.2	24.5	22.1	25.7	32.6	35.9	38.6	42.9	30.1	42.9																						
6-May	47.1	49.6	51.5	53.6	56.1	56.1	50.8	45.8	42.1	38.0	35.9	33.1	30.6	28.1	28.3	27.5	26.8	26.2	27.1	30.8	39.1	45.7	47.5	47.0	40.2	56.1																						
7-May	47.6	49.5	52.1	55.1	58.5	57.9	52.1	46.1	42.5	37.2	34.5	34.1	36.6	34.8	33.3	31.9	31.9	30.7	33.5	36.4	37.5	39.4	40.7	41.3	41.5	58.5																						
8-May	40.0	41.4	42.0	43.0	46.3	49.8	49.5	45.9	43.9	42.9	39.3	36.5	33.2	33.5	33.9	33.5	35.2	40.0	42.9	43.8	48.1	61.0	68.1	72.0	44.4	72.0																						
9-May	76.7	82.5	85.2	83.3	82.4	81.3	74.3	71.0	65.2	55.0	47.0	46.8	45.2	50.5	62.1	50.8	51.1	43.0	41.5	55.0	73.7	78.4	75.0	87.0	65.2	87.0																						
10-May	89.5	92.7	94.5	96.9	95.7	93.7	81.0	66.1	56.2	46.2	44.1	38.8	32.4	28.1	24.3	23.6	25.0	25.4	27.0	31.3	39.7	50.4	51.4	49.8	54.3	96.9																						
11-May	48.7	59.1	65.8	65.6	60.7	49.5	41.0	36.4	34.4	39.2	69.6	47.6	28.6	23.2	17.9	17.8	17.4	17.1	18.9	23.4	33.8	33.6	31.9	30.7	38.0	69.6																						
12-May	32.5	35.1	34.6	33.4	31.7	29.5	28.5	27.0	25.6	22.2	20.6	19.6	18.6	18.1	18.1	18.0	17.9	18.5	19.8	23.8	29.4	28.3	30.4	33.7	25.6	35.1																						
13-May	33.9	36.5	41.2	45.5	48.1	47.4	42.9	39.0	39.9	37.4	31.5	28.9	25.8	24.2	24.2	24.9	23.3	22.5	27.1	30.5	34.4	32.8	33.2	36.5	33.8	48.1																						
14-May	38.9	41.3	43.2	44.7	47.5	49.0	47.1	43.3	40.0	37.3	34.1	30.4	26.8	23.4	24.1	22.4	23.1	22.1	24.1	29.4	38.5	44.7	49.1	45.4	36.2	49.1																						
15-May	46.7	48.1	53.6	62.1	63.7	61.2	53.7	47.4	45.5	39.5	34.9	28.5	26.4	23.6	24.6	25.4	24.2	23.7	23.1	33.2	38.2	41.3	43.7	43.8	39.8	63.7																						
16-May	45.3	52.0	55.5	61.6	62.9	61.3	61.9	64.6	62.7	59.2	57.5	53.6	51.4	54.9	58.4	55.1	48.8	45.4	48.3	54.0	64.2	70.3	72.9	75.9	58.2	75.9																						
17-May	79.2	79.7	84.5	96.1	96.5	97.0	96.5	80.5	75.3	70.4	68.6	63.3	56.5	52.3	48.2	45.4	44.4	43.7	45.5	48.4	62.9	76.7	75.3	74.6	69.2	97.0																						
18-May	74.3	74.4	74.6	78.9	81.4	73.6	63.1	57.5	53.0	48.5	43.0	37.6	32.6	27.0	21.8	19.4	18.9	19.8	21.7	25.2	39.1	45.5	45.1	44.7	46.7	81.4																						
19-May	48.3	52.7	56.6	59.0	58.5	59.2	57.1	53.5	51.8	47.7	44.7	41.9	41.4	42.2	42.8	42.0	41.6	41.8	45.3	48.2	44.9	47.5	53.3	59.2	49.2	59.2																						
20-May	66.3	70.4	75.4	80.6	83.5	84.0	83.6	77.3	73.7	66.7	56.6	48.7	42.6	40.1	41.0	40.7	40.4	41.5	43.6	49.6	50.9	56.6	58.4	59.8	59.7	84.0																						
21-May	61.2	63.0	63.5	63.8	61.1	60.1	58.8	57.0	54.9	52.8	49.4	47.2	45.5	42.9	41.3	40.8	40.9	41.6	46.9	57.4	66.9	66.2	65.8	67.6	54.9	67.6																						
22-May	73.0	81.8	84.1	82.3	81.2	76.7	75.7	76.7	72.9	65.9	63.2	59.4	54.0	47.6	43.7	40.8	39.2	35.9	35.8	36.9	38.4	41.1	44.8	48.3	58.3	84.1																						
23-May	50.7	54.4	59.8	62.8	64.4	63.1	59.1	52.4	47.1	45.1	45.7	44.4	65.8	84.1	80.0	73.3	69.4	66.2	64.3	66.7	73.0	77.0	79.9	81.6	63.8	84.1																						
24-May	82.1	80.4	78.6	80.0	81.6	80.5	80.6	82.5	80.7	79.6	77.6	78.2	70.5	68.9	68.3	70.8	75.5	79.1	80.4	83.2	89.8	91.5	93.0	93.0	80.3	93.0																						
25-May	94.2	95.5	97.6	99.2	99.7	99.5	95.5	84.9	78.5	73.3	64.5	53.2	52.2	50.0	47.7	48.5	47.5	46.0	48.9	57.0	64.1	69.7	73.7	76.6	71.6	99.7																						
26-May	79.7	81.9	81.1	78.3	78.5	77.4	73.8	61.9	55.3	46.2	43.9	40.9	36.6	33.5	31.3	26.5	25.4	25.6	27.4	30.5	41.6	51.8	54.8	55.5	51.6	81.9																						
27-May	56.9	58.1	59.7	59.7	59.5	55.4	47.6	42.6	37.7	32.1	29.3	25.3	24.8	24.1	22.8	23.8	23.8	24.5	26.3	30.3	36.6	41.3	45.0	49.8	39.0	59.7																						
28-May	53.4	56.3	60.3	64.4	64.8	64.5	60.0	52.4	47.1	41.1	39.0	33.7	20.4	15.6	16.0	16.5	17.5	20.3	23.7	26.3	31.0	40.0	49.5	64.8	40.8	64.8																						
29-May	64.8	79.0	79.4	79.3	75.3	71.6	61.9	49.5	45.3	41.3	32.0	27.3	27.0	28.4	29.3	29.0	28.0	23.0	24.4	26.5	32.0	41.1	47.6	55.3	45.8	79.4																						
30-May	62.4	68.5	74.4	79.2	75.8	65.9	60.9	52.0	38.8	29.9	24.4	22.8	19.0	18.4	20.6	22.0	22.9	26.2	30.2	34.4	39.3	41.8	49.5	48.3	42.8	79.2																						
31-May	47.5	55.2	66.6	74.2	81.5	73.6	62.9	50.7	44.0	39.9	37.7	33.1	30.1	27.5	27.7	27.8	28.5	32.0	33.0	38.1	46.4	47.9	41.0	44.3	45.5	81.5																						
																								55.3	58.7	61.6	64.2	65.2	63.4	59.3	53.6	49.1	44.6	42.0	37.9	35.2	34.1	33.5	32.4	32.1	31.9	33.6	38.3	45.6	50.3	51.7	53.9	Diurnal Average
																								94.2	95.5	97.6	99.2	99.7	99.5	96.5	84.9	80.7	79.6	77.6	78.2	70.5	84.1	80.0	73.3	75.5	79.1	80.4	83.2	89.8	91.5	93.0	93.0	Diurnal Maximum





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Wapasu - May 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	29	3.90	3.90
20 - 40	277	37.23	41.13
40 - 60	250	33.60	74.73
60 - 80	134	18.01	92.74
80 - 100	54	7.26	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744

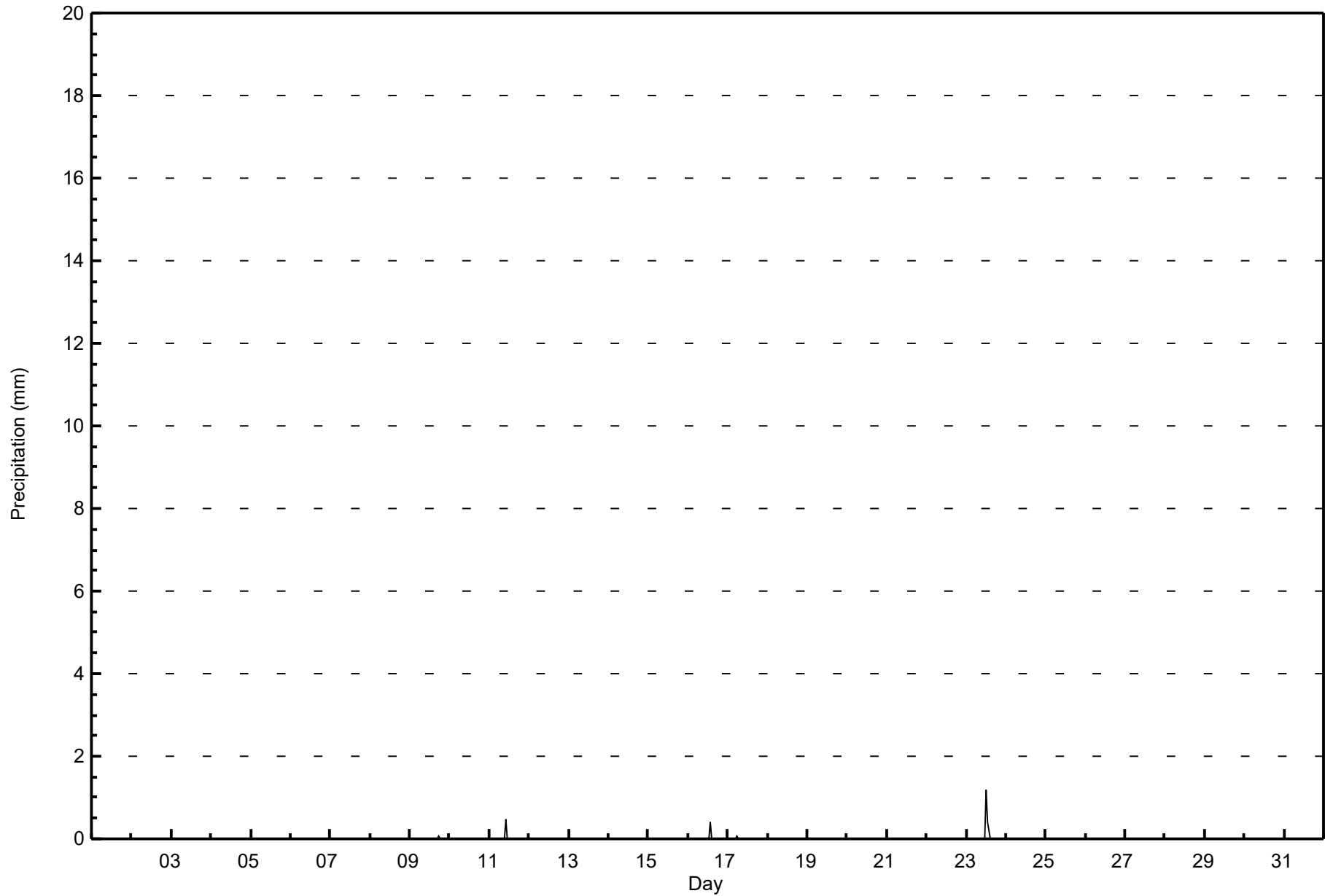


Maximum Value: 1.2 mm on May 23 13:00		Maximum Daily Total: 1.6 mm on May 23		Hours in Service: 744																														
Minimum Value: 0.0 mm on May 1 01:00		Minimum Daily Total: 0.0 mm on May 1		Hours of Data: 742																														
Maximum Diurnal Total: 1.2 mm at hour 13		Minimum Diurnal Total: 0.0 mm at hour 1		Hours of Missing Data: 2																														
Monthly Total: 2.57 mm		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.0		Hours of Calibration: 2																														
				Percent Operational Time: 100.0																														
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24										
1-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
3-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
4-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
6-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
8-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
9-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
10-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
12-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
17-May	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
18-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.2
24-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.5	0.0	1.2	0.8	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Diurnal Average
		0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.5	0.0	1.2	0.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Diurnal Maximum
C - Calibration																																		



Wood Buffalo Environmental Association
Hourly Averages

Precipitation (PC) - mm
Wapasu - May 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Wapasu - May 2023

Maximum Speed: 26 km/h on May 29 15:00	Maximum Daily Speed Average: 17.5 km/h on May 23	Hours in Service: 744
Minimum Speed Value: 1 km/h on May 2 08:00	Minimum Daily Speed Average: 1.7 km/h on May 25	Hours of Data: 744
Maximum Diurnal Speed Average: 7.6 km/h at hour 5	Minimum Diurnal Speed Average: 2.9 km/h at hour 19	Hours of Missing Data: 0
Monthly Average Velocity: 5.2 km/h 157.7 deg	Percentiles: $P_1 = 2$ $P_{10} = 5$ $Q_1 = 7$ Median = 10 $Q_3 = 14$ $P_{90} = 17$ $P_{99} = 22$	Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SSE17	SSE16	SSE16	SSE16	SSE16	SSE16	SSE15	SSE15	SSE13	SSE14	SSE16	S16	S17	S17	S16	SSW17	SSW13	SSW13	SSW10	SSW8	S6	SSE7	NW5	NNW11	S11.4	SSW17
2-May	N10	NNW9	NNW6	N2	ESE3	ESE3	SE2	SSE1	N5	NW6	NW7	NNW7	WNW7	WNW10	W10	WNW12	W10	WNW9	NNW6	ENE3	SE4	SE6	SE8	SE8	NW2.7	WNW12
3-May	SE10	SE11	SSE12	SSE11	SSE10	SSE10	S9	S8	SSW12	SSW14	SSW17	S15	S16	S16	S16	S15	S15	SSE14	SSE14	SSE12	SE11	SSE14	SSE13	SSE14	S12.1	SSW17
4-May	SSE15	SSE16	SSE15	SSE14	SSE15	SSE13	SSE9	SSE5	SSE12	S8	SSW5	SSE5	SSW5	S7	NNE2	NNW12	N12	NNE11	NE11	ENE8	ENE5	NE4	ESE12	SE15	SE5.8	SSE16
5-May	SE14	SE14	SE12	SE14	SE14	SSE16	SSE15	SSE14	SSE15	SSE16	SSE17	SSE17	SSE18	SE19	SE19	SE20	SE18	SE18	SE18	SE16	SE13	SE17	SE20	SE19	SE16.1	SE20
6-May	SE15	SE14	SE13	SSE13	SSE13	SSE14	SSE14	SSE15	SE17	SE17	SE17	SE17	SE16	SE17	ESE17	SE17	SE16	SE18	SE17	SE12	SSE9	SE8	SE9	SE10	SE14.3	SE18
7-May	SE10	SE11	SE12	SE12	SE12	SE12	SE13	SE15	SE17	SE19	SE18	SE17	SSE17	SE15	SSE16	SSE16	SSE16	SSE14	SE10	ESE8	SE12	SE14	SE17	SE16	SE14.0	SE19
8-May	SE18	SE19	SSE19	SSE18	SSE16	SSE16	SSE14	SSE15	SSE15	SSE14	SSE12	SSE16	S14	SSE14	SSE13	SSE12	S10	SSE9	SSE7	SSE9	SSE8	S5	S6	SSW5	SSE12.3	SSE19
9-May	SSE4	SE4	SE5	SE5	SE3	ESE4	SSE5	SSW5	SSW6	SSW9	WSW7	NW8	W4	WSW4	SSE8	SSE6	SSE4	ESE2	NE3	SSE2	E3	SSE4	S5	SSE5	S2.7	SSW9
10-May	SE5	SE6	SE5	SSE7	SE7	SSE6	SSE5	SSW4	SW4	NW6	NNW7	NNW8	NNW9	N8	NNW11	NNW13	N11	N12	NNE11	NNE8	NE6	E5	E6	E7	NNE2.8	NNW13
11-May	E7	ESE5	ESE6	SE8	SE9	SE8	SE8	SE8	SE7	N2	E2	NE4	ENE7	NNE5	ESE6	SE5	S6	SE5	SE5	SE5	SE6	SE8	SE11	SSE11	SE5.5	SSE11
12-May	SSE9	SSE8	SSE9	SSE11	SE13	SSE13	SSE12	S11	SSE12	S12	S13	S12	S12	SSE13	S11	S12	S9	SSE11	SSE8	SE8	SE9	SE13	SSE15	SSE15	SSE10.9	SSE15
13-May	SSE14	SSE14	SSE11	SSE10	SSE8	SSE8	S8	S9	S8	S9	SSW13	SSW16	SSW18	SSW14	SSW16	SSW15	SSW15	SSW14	S8	S8	S7	S8	S8	S7	S10.2	SSW18
14-May	S8	S8	S7	S8	SSE8	SSE7	S7	S8	SSW8	SSW9	SSW8	SSW8	SSW11	SW13	SW10	SSW12	SW13	SW12	NNW10	NNE7	ENE4	NE5	E6	ESE7	SE5.5	SW13
15-May	ESE6	E6	ESE5	E5	ESE6	ESE5	ESE9	ESE12	SE12	SE15	SE13	S10	S9	SSW9	SSW10	S11	SE12	SSE10	SSE5	ESE7	SE11	SE13	SSE11	W4	SE7.8	SE15
16-May	N14	N14	N13	NNW10	NNW11	NW13	NNW21	NNW21	NNW21	NNW23	NW19	NW22	NW20	NW21	NW16	NW15	NNW21	NNW23	NNW23	NNW19	NNW14	NNW10	NNW11	N9	NNW16.4	NNW23
17-May	N10	N9	NNE11	NNE10	NNE11	NNE11	N11	NNE13	N13	N15	N12	N13	NNE12	NNE12	NNE12	NNE12	NNE11	NNE10	NE10	NE7	ENE4	ESE5	SE8	SE10	NNE9.0	N15
18-May	SE12	SE12	SSE10	SSE9	S8	S9	S10	SSW11	SW12	SW11	SSW10	SSW10	SW10	SSW10	SW11	SW10	SW10	SSW9	SSW8	S5	SSE6	SE8	SSE10	S9	S8.4	SE12
19-May	S8	S9	S9	SSE9	S9	S8	S9	S10	S10	SSW11	S10	SSW10	SSW11	SW10	WSW9	W7	NNW7	N6	NNW5	N5	NNE11	NE11	NE9	NNE6	S3.4	SSW11
20-May	NNE6	NNE6	NNE6	NNE6	NNE5	NNE4	NNE3	NNW3	N5	N5	ENE5	SE5	SE5	S3	WSW5	WNW7	W5	S7	S7	SE7	SE9	SE9	SE13	SSE15	ESE1.8	SSE15
21-May	SSE15	SSE14	SSE14	SE13	SE14	SE14	SSE12	SSE11	SSE10	SSE9	S8	SSW8	SSW9	S10	S10	S9	S8	S7	SSE5	SSE4	SE3	ESE3	ESE5	ESE4	SSE8.4	SSE15
22-May	NE4	ENE3	NNE5	NNE7	NE8	NE8	NNE7	N8	N9	N12	N14	NNE14	NNE15	NE15	NE15	NE14	ENE16	ENE17	ENE15	ENE18	ENE14	ENE12	ENE11	E17	NE10.6	ENE18
23-May	E18	ESE16	ESE15	ESE16	ESE16	ESE16	ESE17	ESE21	ESE20	ESE21	ESE21	ESE22	ESE18	ESE20	SE23	SE19	SE22	SE21	SE22	SSE17	SSE11	SSE14	SSE16	SSE16	SE17.5	SE23
24-May	SSE16	SSE15	SE14	SE16	SE17	SE19	SE19	SE15	SSE13	SSE10	SSE10	SSW9	SSW10	SW11	SW10	WSW11	W12	WSW11	WSW9	WSW9	WSW7	WSW7	WSW6	WSW5	S8.4	SE19
25-May	WSW4	WSW2	ESE2	SE3	SSE3	S3	SW3	NE2	NNE6	NNW4	NNW7	N8	N8	NNE5	N7	ENE6	NE5	NE4	SSE5	SE8	SE8	SE8	SE9	SSE9	E1.7	SSE9
26-May	SSE9	SSE8	SSE8	SSE9	SSE9	SSE7	SSE7	SSW9	SSW8	SW6	W6	WSW8	WSW8	WNW9	WSW7	WNW7	W5	SW7	SSE5	SSE4	SE7	SE9	SE10	SSE10	S4.9	SSE10
27-May	SSE11	SSE10	SSE10	SSE10	SSE10	S10	S13	SSW13	SSW14	SSW15	SSW17	S15	S16	S15	S15	S15	S13	SSW13	S13	SSE9	SE9	SE11	SSE13	SSE13	S12.1	SSW17
28-May	SSE12	S11	SSE10	SSE11	S10	S10	S9	S10	S12	SSW15	SSW17	SSW18	SW21	SW24	SW22	SW22	WSW19	WSW15	WSW14	W12	WNW7	NW6	WNW3	SSW3	SW10.7	SW24
29-May	WSW4	SSE4	SSE5	SSE5	S6	SSE6	SE4	WNW4	WSW6	WSW10	WSW14	WSW16	WSW17	WSW18	SW26	SW25	SW20	SW15	SW13	SW10	NW2	NE6	NE6	ENE4	SW7.8	SW26
30-May	E5	E5	E5	ESE5	ESE7	SE8	SSE7	SSE9	SSE12	SSE11	SSW9	S7	SW9	W11	W8	W4	WSW6	WNW11	NW11	NW6	NNW5	NE4	SE2	NE4	S1.7	SSE12
31-May	WSW4	S4	SE5	SE4	SE5	SE5	SSE5	SSW5	WSW7	WSW6	W6	N5	WNW4	ESE2	ESE3	SSW7	SSW10	SSW7	S5	ESE1	ENE3	NNW5	N6	NW5	SSW1.9	SSW10

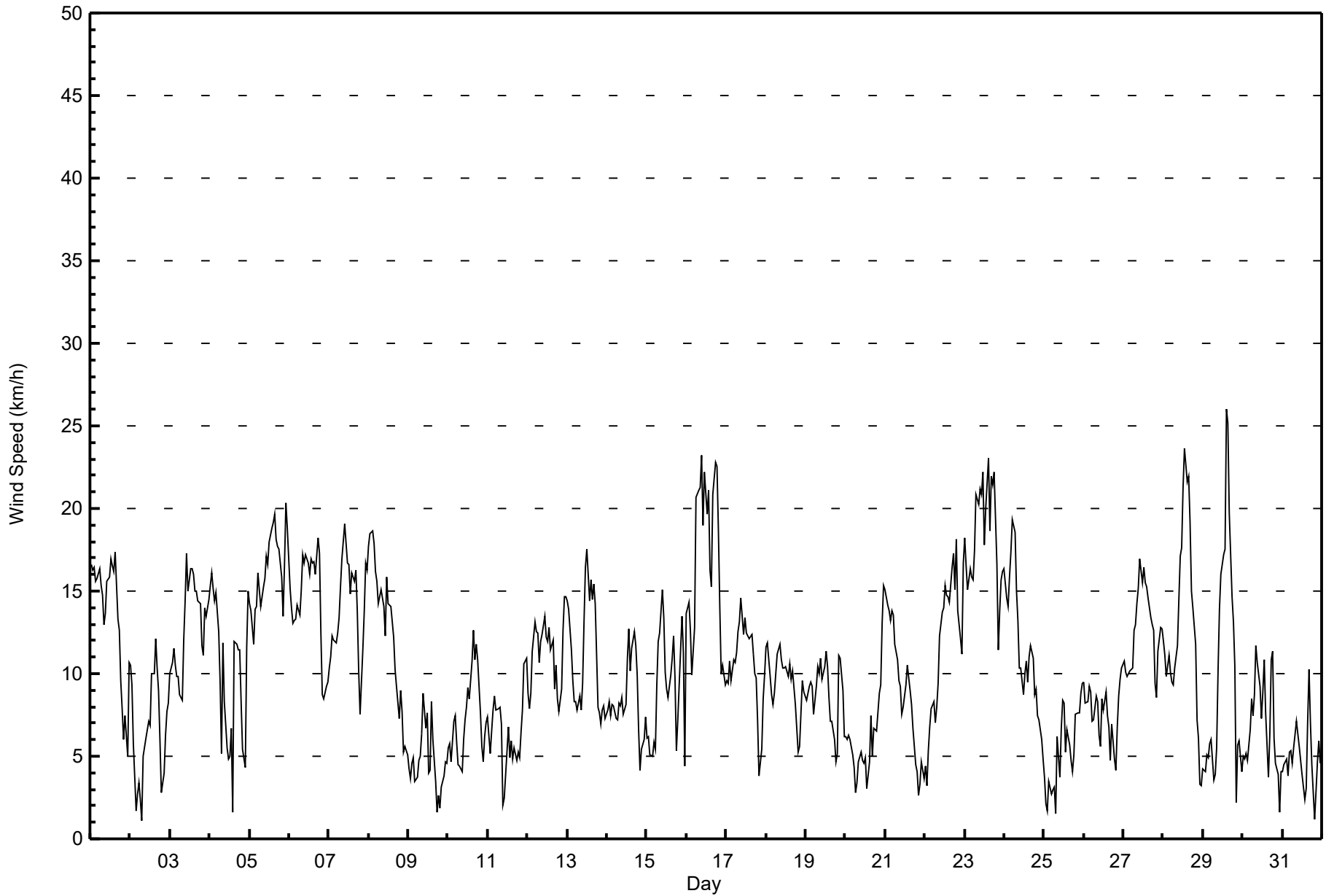
SE6.7 SE7.0 SE6.9 SE7.4 SE7.6 SE7.4 SSE6.8 SSE6.1 SSE6.0 S5.3 S5.3 S4.8 SSW5.8 SSW5.2 SSW5.6 SSW5.2 SSW4.6 S3.6 SSE2.9 SE3.5 SE4.1 SE5.2 SE6.3 SE6.3	Diurnal Average
E18 SE19 SSE19 SSE18 SE17 SE19 NNW21 NNW21 NNW21 NNW23 ESE21 NW22 SW21 SW24 SW26 SW25 SE22 NNW23 NNW23 NNW19 NNW14 SE17 SE20 SE19	Diurnal Maximum

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Wapasu - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Wapasu - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	137	18.41	18.41
6 - 11	321	43.15	61.56
12 - 19	257	34.54	96.10
20 - 28	29	3.90	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Wapasu - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	6	7	10	8	7	17	21	21	7	7	2	8	4	3	3	6	137
6 - 11	14	19	10	4	5	10	40	62	59	30	13	17	7	8	7	16	321
12 - 19	11	7	3	6	2	10	63	83	24	24	6	7	2	1	4	4	257
20 - 28	0	0	0	0	0	6	6	0	0	0	7	0	0	0	3	7	29
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	31	33	23	18	14	43	130	166	90	61	28	32	13	12	17	33	744

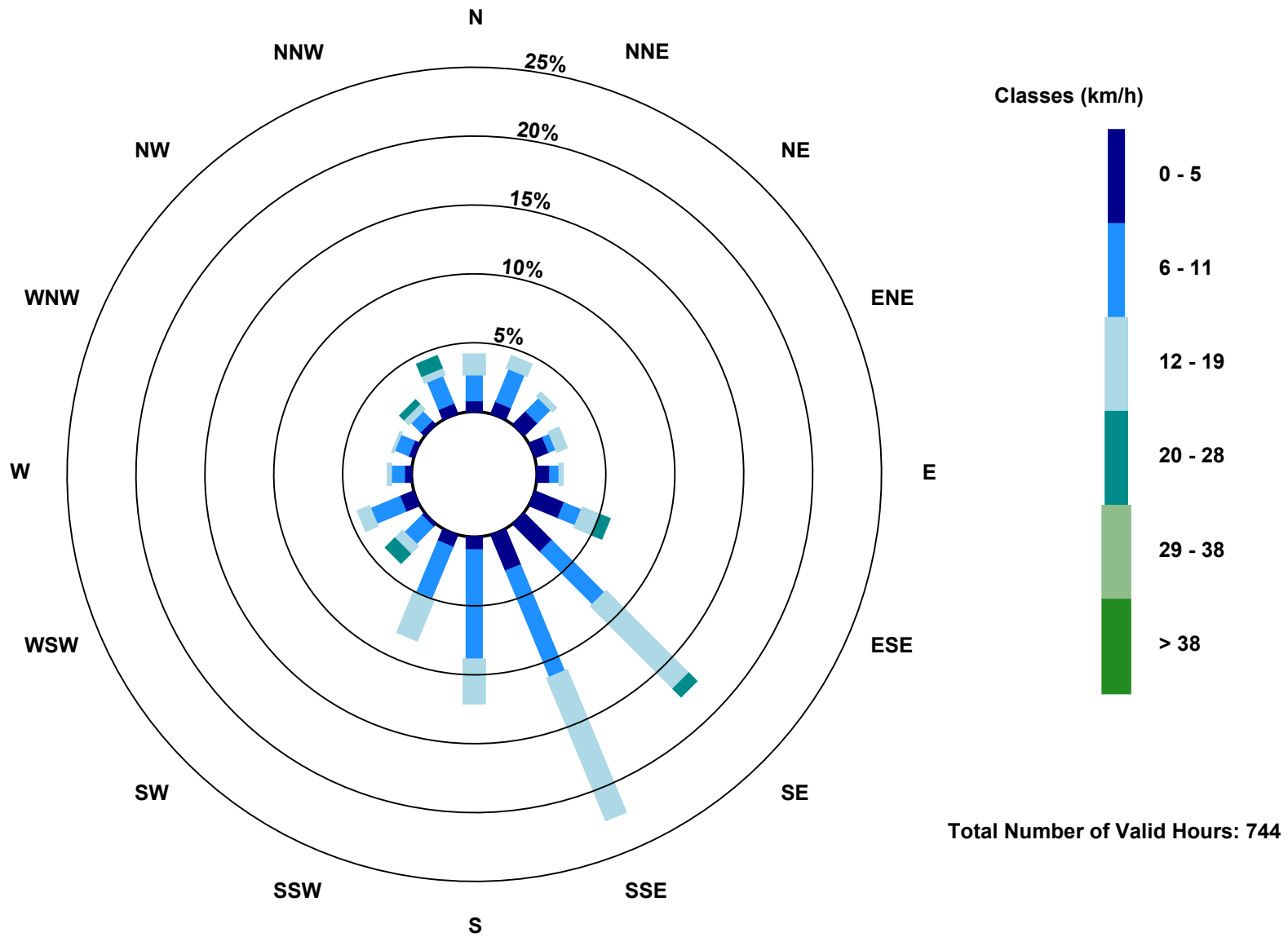
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Wapasu





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Wapasu - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 8 km/h on May 23 18:00														Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0											
Minimum Value: 1 km/h on May 29 03:00																									
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7																									
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	4	4	5	4	4	4	5	4	4	5	5	5	6	6	6	5	5	4	3	2	1	1	3	4	6
2-May	3	3	1	2	1	1	2	1	2	3	3	4	4	5	4	4	3	3	3	1	1	1	1	1	5
3-May	2	2	2	3	2	3	3	3	4	5	5	6	6	6	5	5	5	5	4	3	2	3	3	3	6
4-May	4	4	4	3	4	3	4	3	4	3	3	3	3	3	4	3	3	4	4	3	1	1	4	4	4
5-May	4	3	3	4	3	4	4	4	4	5	6	5	6	6	6	6	5	6	6	5	4	5	5	5	6
6-May	4	4	3	4	3	4	4	4	5	5	6	5	5	6	6	6	5	6	5	4	2	2	2	2	6
7-May	2	3	3	3	3	3	4	5	5	6	6	6	6	5	5	5	5	4	3	2	3	4	4	4	6
8-May	5	5	5	6	4	4	4	4	4	4	4	5	5	5	5	5	4	4	3	3	3	2	2	1	6
9-May	1	1	1	1	1	1	2	2	3	3	3	3	3	2	2	2	2	2	1	1	1	1	2	1	3
10-May	1	1	1	1	1	1	1	1	2	2	2	3	3	4	4	4	4	4	4	3	2	1	1	1	4
11-May	1	1	1	1	2	2	2	2	2	1	2	2	3	3	3	3	3	3	2	1	1	1	2	2	3
12-May	2	2	2	3	3	3	4	4	4	5	5	4	4	5	4	5	4	4	3	2	2	3	4	3	5
13-May	4	3	3	2	2	2	3	3	2	3	4	5	5	5	5	5	5	4	3	2	2	2	2	2	5
14-May	2	2	2	3	2	2	2	3	2	3	3	3	4	4	4	5	4	4	4	2	1	1	1	2	5
15-May	2	1	1	1	2	1	3	4	4	5	4	3	3	4	4	4	4	4	2	3	4	3	3	3	5
16-May	5	5	4	3	3	4	5	6	6	7	6	7	7	7	5	6	6	6	6	6	4	2	3	3	7
17-May	3	3	4	3	4	4	4	5	5	5	4	4	5	5	5	4	4	3	3	2	1	2	2	2	5
18-May	2	3	3	2	2	3	4	4	4	3	4	4	4	4	4	4	3	3	3	2	1	1	2	2	4
19-May	2	2	3	3	3	2	3	3	3	3	3	3	4	3	3	2	2	2	1	2	4	3	3	2	4
20-May	2	2	2	2	1	1	1	2	1	2	2	3	3	2	3	3	3	3	2	2	2	2	4	4	4
21-May	4	4	3	3	3	3	3	3	3	3	2	3	3	4	3	3	2	3	1	1	1	1	1	2	4
22-May	1	1	1	2	2	2	2	3	3	4	5	5	5	5	5	5	6	6	5	6	4	4	3	6	6
23-May	6	6	5	5	5	5	6	7	7	7	7	8	6	6	7	6	7	8	7	6	4	5	5	5	8
24-May	5	4	4	4	5	6	5	4	4	4	4	3	3	3	3	4	3	3	3	2	2	2	2	2	6
25-May	1	1	1	1	2	1	1	3	2	2	2	3	4	3	3	2	2	1	2	2	2	1	2	2	4
26-May	2	2	2	3	2	2	2	3	3	3	3	3	4	4	3	3	3	3	2	1	1	2	2	2	4
27-May	2	2	2	3	3	3	5	5	5	5	6	5	6	6	6	5	5	5	5	3	2	3	3	4	6
28-May	4	3	3	3	3	3	3	3	4	5	5	6	6	7	6	6	6	5	5	5	3	3	2	1	7
29-May	1	1	1	1	1	1	1	2	3	3	5	6	5	6	7	7	6	4	4	4	2	1	1	1	7
30-May	1	1	1	1	1	1	1	2	4	4	3	4	5	5	3	2	2	4	3	2	2	2	1	2	5
31-May	3	3	1	1	1	1	1	2	2	3	3	3	3	2	2	3	4	3	2	1	1	4	2	2	4
														Diurnal Maximum											



Wood Buffalo Environmental Association
Summary of Hour Averages

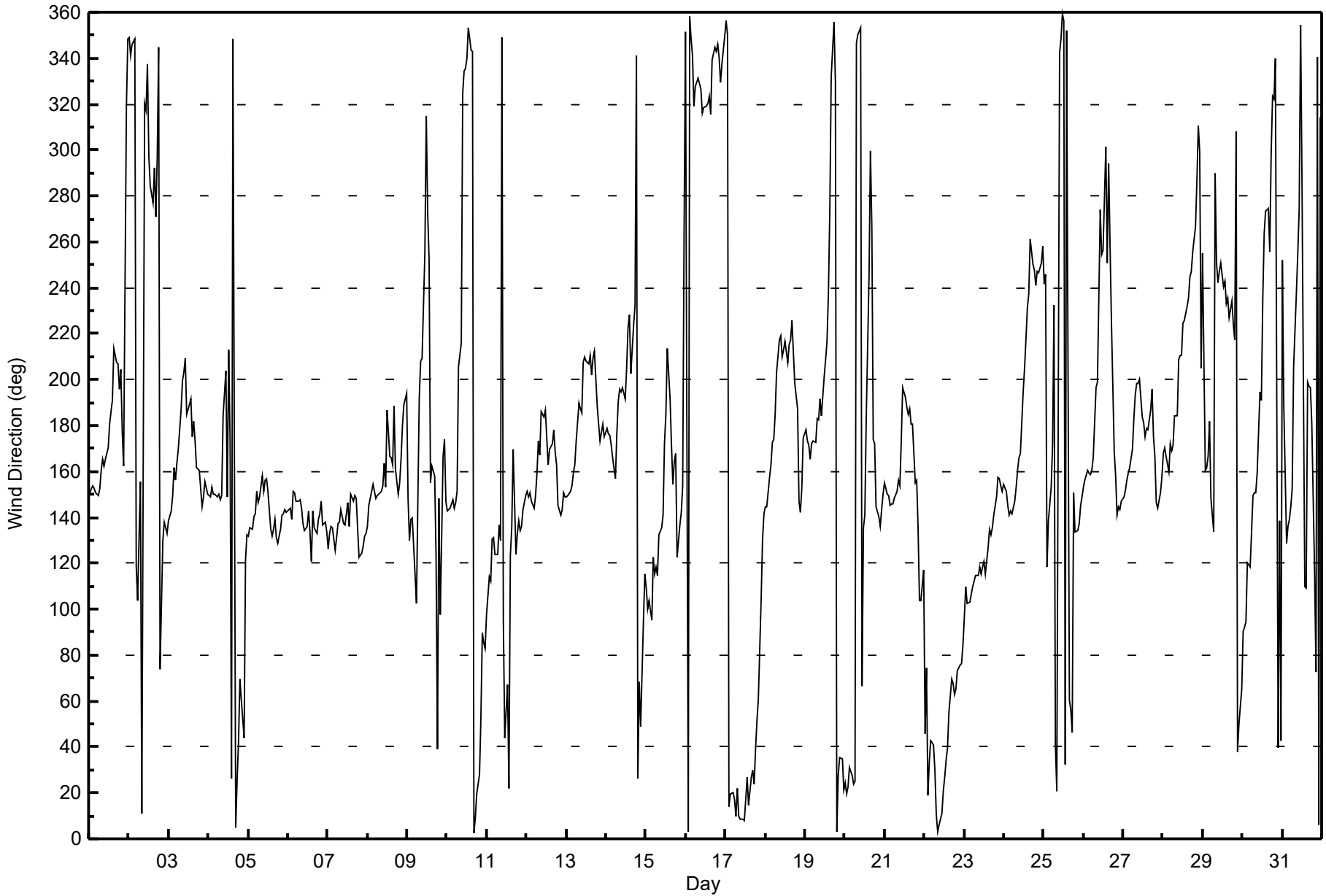
Wind Direction (WD) - deg
Wapasu - May 2023

Direction of Maximum Speed: 233 deg on May 29 15:00		Hours in Service: 744
Direction of Maximum Daily Speed Average: 124.1 deg on May 23		Hours of Data: 744
Direction of Minimum Speed: 155 deg on May 2 08:00	Direction of Minimum Daily Speed Average: 1.7 deg on May 25	Hours of Missing Data: 0
Monthly Average Direction: 157.7 deg		Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	151	152	154	153	151	150	153	160	166	162	165	170	181	186	191	213	207	207	196	204	178	162	319	348	172.3
2-May	349	341	346	349	119	104	131	155	11	320	317	337	297	284	277	292	271	297	345	74	130	138	136	133	316.4
3-May	139	143	150	162	156	163	169	187	199	203	209	185	189	191	175	182	173	162	160	153	144	149	155	150	170.5
4-May	149	149	153	150	150	149	150	148	150	184	204	149	213	174	27	348	5	26	42	70	60	44	121	132	131.4
5-May	132	136	135	140	142	151	147	149	158	151	156	157	151	135	132	135	139	131	129	135	141	142	143	142	141.9
6-May	143	144	139	151	151	147	147	148	144	137	134	136	143	133	121	143	136	133	139	141	147	137	138	133	140.0
7-May	127	133	136	135	126	131	137	138	143	138	137	142	147	136	150	147	150	148	135	122	124	127	132	133	137.4
8-May	136	145	151	155	152	148	149	151	151	154	163	153	186	166	166	163	189	161	150	155	165	180	189	194	157.9
9-May	148	130	139	140	127	103	147	192	208	209	255	315	273	253	155	162	158	123	39	148	98	166	174	147	171.4
10-May	143	143	144	148	144	147	151	206	216	325	334	336	340	354	344	343	3	9	19	28	53	90	86	83	25.9
11-May	97	114	112	131	131	124	124	137	130	349	95	44	67	22	123	135	170	124	133	139	134	136	143	150	123.9
12-May	151	149	151	147	144	150	159	173	167	186	183	187	174	163	170	172	178	168	163	145	141	144	150	149	161.5
13-May	149	149	151	154	159	163	173	190	187	185	207	210	208	207	210	202	209	212	189	181	173	177	181	175	187.0
14-May	179	177	176	172	166	157	177	190	196	194	196	192	205	223	228	203	224	233	341	26	68	49	95	115	190.9
15-May	109	100	104	95	123	115	118	114	132	136	141	172	185	213	192	171	155	164	168	123	137	142	154	263	145.6
16-May	352	3	358	348	341	319	328	331	329	327	316	319	319	320	323	316	340	345	343	346	340	330	337	350	333.5
17-May	357	350	14	19	20	17	10	22	10	8	9	8	17	27	14	27	30	24	39	51	61	105	130	142	23.3
18-May	145	145	157	163	173	174	185	203	217	219	210	213	217	208	215	218	226	212	198	188	147	142	153	175	189.6
19-May	178	173	171	165	172	173	173	183	182	192	184	202	208	217	237	274	332	356	329	3	27	36	35	21	188.7
20-May	25	19	23	31	27	24	25	347	350	353	66	136	141	183	245	299	267	174	172	144	140	136	143	150	111.5
21-May	155	150	149	145	146	146	148	152	156	154	173	197	192	188	185	187	181	181	155	156	136	104	104	117	159.2
22-May	46	75	19	33	43	41	30	10	3	6	11	21	27	34	39	55	70	68	63	65	73	76	77	84	47.3
23-May	96	110	102	103	107	110	112	115	115	118	116	118	121	115	127	135	132	136	141	149	158	157	153	151	124.1
24-May	154	151	145	141	143	142	147	153	160	166	168	195	205	218	231	237	261	250	248	241	247	247	251	258	183.1
25-May	242	246	118	139	153	172	232	41	21	342	348	359	356	33	352	61	56	46	151	133	134	137	145	149	84.8
26-May	153	156	160	159	159	160	166	196	199	235	274	254	256	302	251	294	259	225	168	158	141	145	144	147	188.6
27-May	149	152	156	159	162	170	183	193	198	198	200	184	181	175	178	178	187	196	175	167	146	144	151	157	175.0
28-May	168	170	167	160	172	169	171	184	185	209	211	210	225	226	232	235	245	247	255	267	287	311	299	205	216.0
29-May	255	160	162	166	182	148	134	290	251	243	247	251	241	243	233	236	227	234	224	217	308	38	50	65	230.7
30-May	90	92	95	120	119	134	150	151	151	159	195	191	235	263	273	275	256	299	323	322	340	40	139	43	188.1
31-May	252	188	129	136	139	145	153	205	238	255	275	354	286	110	109	199	197	196	181	115	73	341	6	314	200.5

138.0	139.7	138.1	140.9	141.3	142.3	148.7	159.5	165.5	177.5	185.1	185.1	196.3	193.8	192.1	197.4	193.1	180.5	150.5	136.2	126.8	130.0	136.3	137.6
Diurnal Average																							

All monthly, daily, and diurnal averages have been calculated using vector methods





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Wapasu - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 99 deg on May 25 08:00 Minimum Value: 5 deg on May 10 05:00 Percentiles: P ₁ = 6 P ₁₀ = 16 Q ₁ = 20 Median = 25 Q ₃ = 31 P ₉₀ = 46 P ₉₉ = 81																			Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0						
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	18	19	20	20	18	18	21	24	27	28	29	30	31	30	32	24	29	24	26	19	17	11	69	24	69
2-May	24	18	29	80	27	23	61	70	39	43	57	56	68	44	45	36	34	39	30	29	21	5	5	6	80
3-May	11	15	16	23	19	22	27	30	28	27	24	31	34	31	31	32	29	30	23	20	15	17	21	18	34
4-May	17	18	19	17	17	18	28	44	24	33	68	79	79	52	98	27	33	31	24	25	24	32	18	18	98
5-May	18	17	16	16	17	18	19	22	23	25	28	28	26	25	24	25	33	23	21	20	18	18	18	19	28
6-May	19	19	19	20	20	19	20	23	21	28	27	29	31	26	29	27	24	24	21	18	15	15	16	16	31
7-May	17	17	17	18	17	18	19	22	24	24	29	28	24	28	25	28	24	23	18	18	19	19	18	18	29
8-May	20	19	20	22	20	19	19	20	24	24	32	28	31	30	30	30	31	26	24	19	25	36	29	32	36
9-May	14	10	11	9	24	26	32	28	34	44	65	48	73	56	21	28	53	84	58	58	17	38	25	9	84
10-May	6	5	8	6	5	6	16	31	49	46	40	40	34	50	41	29	37	32	33	25	19	18	16	14	50
11-May	13	22	15	14	13	15	20	20	28	71	60	77	50	90	71	78	66	59	29	11	9	13	13	16	90
12-May	16	13	15	15	17	17	24	30	29	32	32	33	35	39	33	34	38	30	24	15	12	16	19	17	39
13-May	18	17	17	17	19	21	28	28	27	30	28	23	23	25	23	25	24	22	26	26	21	25	27	20	30
14-May	22	21	24	26	21	18	28	27	27	28	32	35	31	25	29	34	26	26	31	26	41	24	23	15	41
15-May	18	24	21	17	28	18	22	21	20	22	24	34	38	41	37	32	27	29	22	23	20	17	24	62	62
16-May	29	32	29	22	19	22	19	19	20	21	23	23	23	24	20	25	21	22	23	24	19	15	16	25	32
17-May	28	23	33	32	29	32	32	35	30	32	32	31	38	37	40	38	36	37	28	22	13	18	14	15	40
18-May	15	17	20	20	26	27	28	27	27	32	35	35	41	39	38	41	31	29	30	27	12	8	17	23	41
19-May	25	23	24	23	27	24	23	27	28	28	33	29	24	27	28	35	32	30	19	35	28	25	27	26	35
20-May	22	23	23	27	27	26	34	68	21	42	61	73	64	89	67	45	56	28	28	18	20	16	17	18	89
21-May	19	19	17	18	18	17	19	20	25	25	32	34	32	31	31	30	31	28	20	26	39	48	30	52	52
22-May	30	23	21	21	21	22	31	32	28	31	33	32	31	30	30	30	26	25	24	24	24	26	24	25	33
23-May	27	25	26	25	26	26	25	23	24	24	23	23	21	21	22	22	24	24	21	23	30	25	23	22	30
24-May	23	21	20	19	19	19	19	22	26	29	28	28	28	25	22	25	27	24	24	22	24	22	27	27	29
25-May	27	53	45	23	44	34	31	99	45	63	35	42	43	61	52	43	53	43	28	19	14	13	16	16	99
26-May	18	19	20	22	22	23	26	27	28	54	71	46	48	45	43	53	66	40	37	17	9	13	14	16	71
27-May	16	17	19	22	22	26	28	30	28	29	28	32	34	31	31	32	33	30	29	25	15	16	18	21	34
28-May	26	25	25	22	26	24	26	29	28	24	24	28	23	23	22	22	24	29	29	30	31	26	33	29	33
29-May	27	37	6	13	19	11	20	63	46	31	30	30	27	29	20	20	20	25	19	22	76	25	13	17	76
30-May	12	12	10	13	12	12	13	17	24	33	38	53	53	50	42	73	40	31	21	21	38	48	73	56	73
31-May	82	50	18	18	8	9	14	30	36	48	57	69	87	95	66	39	29	30	27	68	47	69	29	44	95
Diurnal Maximum																									



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS18 STONY MOUNTAIN MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - STONY MOUNTAIN (AMS18)
MAY 2023

MONTHLY SUMMARY for
AMD SECTION III.B.1(c)

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2(ppb) Average	709	35	35	100	3.9	0	1.1	0
TRS(ppb) Average	707	37	37	100	1	0	0.5	0
THC(ppm) Average	687	35	57	97.04	2.3	-	2.1	-
NMHC(ppm) Average	687	35	57	97.04	0.115	-	0.012	-
CH4(ppm) Average	687	35	57	97.04	2.2	-	2.1	-
O3 (ppb) Average	709	35	35	100	61.3	0	53.9	-
NO2 (ppb) Average	686	36	58	97.04	15.2	0	4.1	-
NO (ppb) Average	686	36	58	97.04	0.5	-	0.2	-
NOX (ppb) Average	686	36	58	97.04	15.4	-	4.3	-
PM2.5 (ug/m3) Average	743	1	1	100	758.5	114	274.9	10
CO(ppm) Average	688	34	56	97.04	3.3	0	1.4	0
CO2(ppm) Average	707	35	37	99.73	465.8	0	446.6	0
Temperature 2 m (C) Average	744	0	0	100	30.1	-	22.9	-
Relative Humidity (%) Average	744	0	0	100	98.9	-	93.9	-
Wind Speed 20 m (km/h) Average	744	0	0	100	25	-	20	-
Wind Direction 20 m (deg) Average	744	0	0	100	-	-	-	-
Precipitation (mm) Total	744	0	0	100	2.2	-	5.8	-
Leaf Wetness (% of range) Average	744	0	0	100	26.9	-	9	-
Global Solar Radiation (W/m2) Average	744	0	0	100	935.2	-	308.1	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - STONY MOUNTAIN (AMS18)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	709	0.42	0.5	-	0	0	0.1	0.3	0.5	1	3.9
TRS (ppb) Average	707	0.19	0.1	-	0.1	0.1	0.1	0.2	0.2	0.3	1
THC (ppm) Average	687	2.05	0	-	2	2	2	2	2.1	2.1	2.3
NMHC(ppm) Average	687	0.001	0.006	-	0	0	0	0	0	0	0.115
CH4(ppm) Average	687	2.05	0	-	2	2	2	2	2.1	2.1	2.2
O3 (ppb) Average	709	39.84	10.2	-	14	24.7	33.6	40.5	47.5	52.4	61.3
NO2 (ppb) Average	686	1.45	1.4	-	0.2	0.4	0.6	1	1.7	2.9	15.2
NO (ppb) Average	686	0.09	0.1	-	0	0	0.1	0.1	0.1	0.2	0.5
NOX (ppb) Average	686	1.54	1.4	-	0.2	0.5	0.7	1.1	1.8	3	15.4
PM2.5 (ug/m3) Average	743	44.92	90.3	-	2.8	4	5.7	12.8	28.3	138.2	758.5
CO(ppm) Average	688	0.36	0.4	-	0.1	0.2	0.2	0.2	0.4	0.7	3.3
CO2(ppm) Average	707	432	9.9	-	412	418.5	422.8	432.9	439.2	444.7	465.8
Temperature 2 m (C) Average	744	15.24	6	-	0.2	7.4	10.9	15.2	19.5	23.5	30.1
Relative Humidity (%) Average	744	51.43	21.3	-	13.5	25.6	34.3	47.5	66.4	84.6	98.9
Wind Speed 10 m (km/h) Average	744	11.7	5	-	1	6	8	11	15	18	25
Wind Direction 10 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	744	-	-	13.82	-	-	-	-	-	-	-
Surface Wetness (% of range) Average	744	1.92	4	-	0	0.3	0.6	0.9	1.3	2.7	26.9
Global Solar Radiation (W/m2) Average	744	216.02	259.6	-	0	0	0.3	79.6	401.6	642.4	935.2

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - STONY MOUNTAIN (AMS18)
MAY 2023

MONTHLY SUMMARY

Parameter	Period Start	Period End	Duration (Hours)	Notes
THC/NMHC/CH4	04 May 2023 17:00	04 May 2023 22:00	6	Unstable Operation - station temperature fluctuation
THC/NMHC/CH4	13 May 2023 04:00	13 May 2023 11:00	8	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	13 May 2023 12:00	13 May 2023 15:00	4	Maintenance - retention timing adjusted
THC/NMHC/CH4	25 May 2023 11:00	25 May 2023 12:00	2	Maintenance - replaced support gas cylinder
THC/NMHC/CH4	31 May 2023 11:00	31 May 2023 12:00	2	Maintenance - replaced support gas cylinder
NO2	04 May 2023 14:00	05 May 2023 11:00	22	Unstable Operation - station temperature fluctuation
CO	04 May 2023 14:00	05 May 2023 11:00	22	Unstable Operation - station temperature fluctuation
CO2	04 May 2023 15:00	04 May 2023 15:00	1	Unstable Operation - station temperature fluctuation
CO2	11 May 2023 13:00	11 May 2023 13:00	1	Maintenance - reinitiated daily QA check

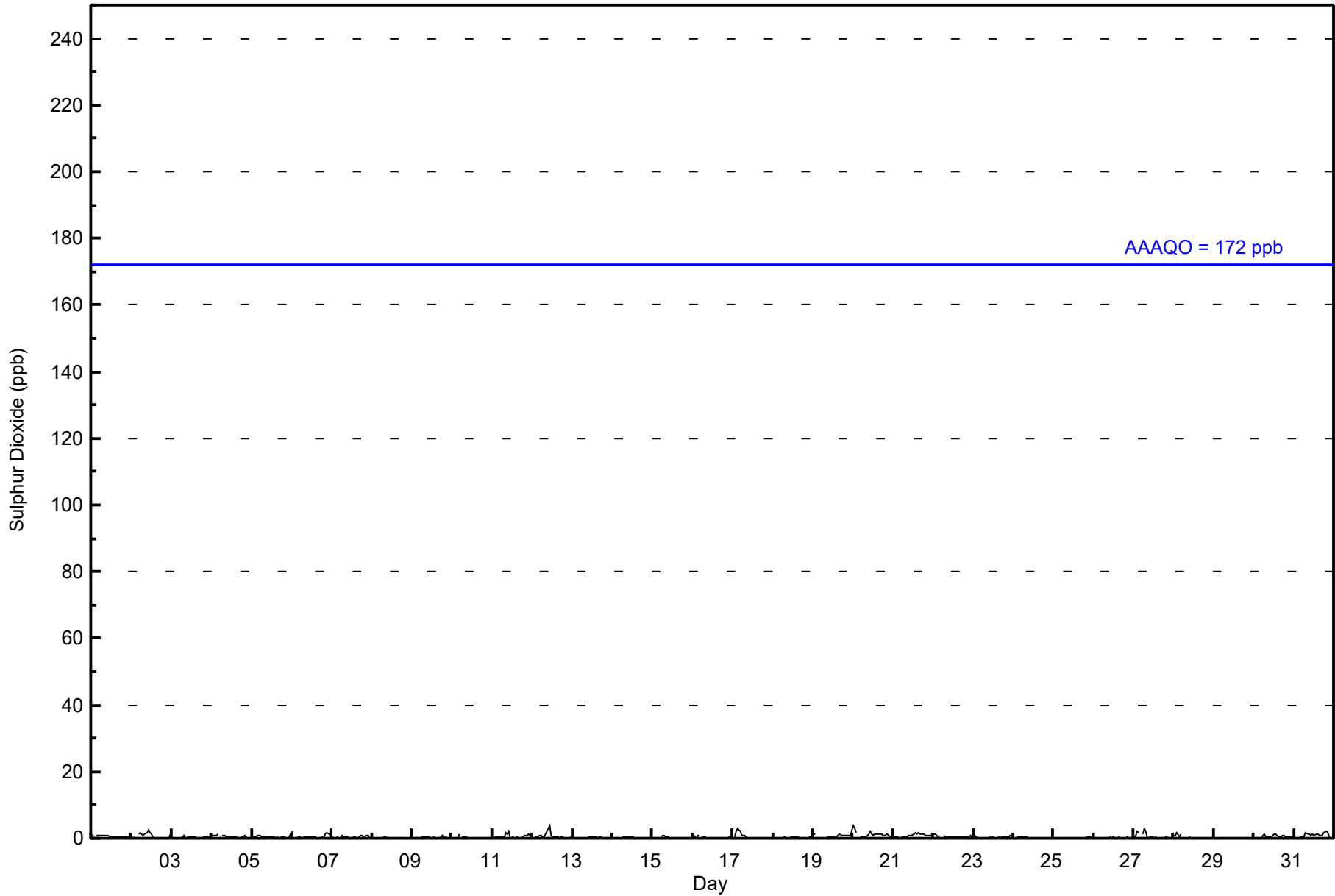


Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744																										
Maximum Value: 3.9 ppb on May 12 11:00		Maximum Daily Average: 1.1 ppb on May 20																	Hours of Data:	709																												
Minimum Value: 0.0 ppb on May 3 04:00		Minimum Daily Average: 0.0 ppb on May 29																	Hours of Missing Data:	35																												
Maximum Diurnal Average: 0.6 ppb at hour 11		Minimum Diurnal Average: 0.3 ppb at hour 17																	Hours of Calibration:	35																												
Monthly Average: 0.42 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.3 Q ₃ = 0.5 P ₉₀ = 1.0 P ₉₉ = 2.3																	Percent Operational Time:	100.0																												
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	0.9	0.8	Z	0.6	0.7	0.7	0.6	0.8	0.7	0.7	0.7	0.4	0.5	0.5	0.5	0.3	0.3	0.4	0.5	0.3	0.3	0.3	0.5	1.2	0.6	1.2																						
2-May	0.3	0.2	0.3	Z	1.3	1.5	1.2	0.9	1.1	1.7	2.6	1.7	1.2	0.3	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.9	0.7	2.6																						
3-May	0.3	0.0	0.0	0.0	Z	0.0	0.2	0.7	0.1	0.1	0.2	0.3	0.4	0.5	0.3	0.1	0.1	0.2	0.2	0.2	0.2	0.4	0.4	0.6	0.2	0.7																						
4-May	0.7	0.7	0.7	0.8	1.1	Z	0.8	0.8	0.7	0.6	0.5	0.6	0.6	0.5	0.3	0.2	0.1	0.4	0.2	1.0	0.1	0.1	0.2	0.5	1.1	0.5	1.1																					
5-May	Z	0.6	0.6	0.8	0.9	0.8	0.4	0.3	0.3	0.5	0.5	0.3	0.5	0.3	0.2	0.3	0.2	0.2	0.4	0.5	0.2	0.0	0.0	0.9	0.4	0.9																						
6-May	2.2	Z	0.2	0.1	0.5	0.5	0.2	0.4	0.2	0.5	0.3	0.2	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.2	1.1	1.8	1.3	0.5	0.5	2.2																						
7-May	0.3	0.1	Z	0.4	0.1	0.1	0.8	0.6	0.4	0.3	0.2	0.1	0.1	0.4	0.2	0.2	0.3	0.8	0.9	0.5	1.0	0.9	0.3	0.1	0.4	1.0																						
8-May	0.2	0.1	0.1	Z	0.0	0.0	0.1	0.3	0.3	0.1	C	C	C	C	0.0	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.1	0.1	0.3	0.7																					
9-May	0.0	0.1	0.2	0.2	Z	0.6	0.3	0.6	0.5	0.4	0.4	0.1	0.2	0.3	0.1	0.1	0.1	0.3	0.7	0.2	0.4	0.2	0.0	0.1	0.3	0.7																						
10-May	0.1	0.1	0.1	0.2	1.4	Z	0.3	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.2	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.2	1.4																						
11-May	Z	0.5	0.5	0.4	0.4	0.3	0.3	0.4	1.8	1.2	2.1	0.1	0.3	0.1	0.2	0.3	0.1	0.1	0.5	0.9	0.8	0.7	1.3	0.6	0.6	2.1																						
12-May	0.7	Z	0.4	0.3	0.7	0.7	0.6	0.4	1.1	2.2	3.9	0.6	0.3	0.3	0.3	0.3	0.2	0.4	0.5	0.1	0.1	0.1	0.1	0.3	0.6	3.9																						
13-May	0.3	0.1	Z	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.4																						
14-May	0.1	0.1	0.1	Z	0.2	0.2	0.2	0.4	0.3	0.4	0.4	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.5																						
15-May	0.0	0.0	0.0	0.1	Z	0.2	0.7	0.7	0.5	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.7																						
16-May	1.4	0.2	0.0	0.6	0.7	Z	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.4	0.3	1.4																						
17-May	Z	0.5	2.0	2.8	2.0	1.0	0.7	0.8	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	2.8																						
18-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.2	0.1	0.4	0.5	0.4	0.3	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.5	0.4	0.2	0.5																						
19-May	1.1	1.1	Z	0.1	0.1	0.1	0.0	0.0	0.1	0.3	0.4	0.4	0.4	0.4	0.5	0.8	1.1	0.8	1.0	0.8	0.8	0.7	1.0	2.6	0.6	2.6																						
20-May	3.7	3.1	1.5	Z	0.5	0.4	0.4	0.3	0.3	1.3	2.2	1.3	0.9	1.1	1.1	1.1	1.2	0.8	0.7	1.2	0.9	0.5	0.2	1.1	3.7	3.7																						
21-May	0.2	0.3	0.4	0.3	Z	0.3	0.3	0.4	0.5	0.7	0.9	0.9	1.1	1.7	1.2	1.6	1.2	1.2	1.1	0.9	0.9	0.8	0.9	1.0	0.8	1.7																						
22-May	1.1	1.1	0.8	0.4	0.8	Z	0.9	0.5	0.5	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.6	0.6	0.6	0.5	1.1																						
23-May	Z	0.7	0.4	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.3	0.3	0.5	0.6	0.6	0.7	0.7	0.3	0.7																						
24-May	0.6	Z	0.3	0.5	0.3	0.5	0.3	0.3	0.5	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6																						
25-May	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.1	0.2	0.2	0.3	0.4	0.3	0.1	0.1	0.4																						
26-May	0.0	0.1	0.1	Z	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.3																						
27-May	0.5	0.9	2.3	1.9	Z	1.1	2.9	2.2	0.5	0.2	0.3	0.3	0.2	0.3	0.2	0.1	0.1	0.1	0.0	0.3	0.4	0.1	0.1	0.6	0.7	2.9																						
28-May	0.7	1.0	1.7	0.3	1.1	Z	0.2	0.2	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.2	0.2	0.3	1.7																						
29-May	Z	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1																						
30-May	0.1	Z	0.1	0.1	0.2	0.9	1.2	0.5	0.3	0.3	0.2	0.8	1.3	1.1	0.7	0.6	0.6	0.8	0.7	0.5	0.4	0.4	0.3	0.4	0.5	1.3																						
31-May	0.4	0.5	Z	0.4	0.5	0.4	0.5	1.7	1.3	1.2	1.0	1.2	0.9	1.1	1.2	1.0	0.7	0.8	1.6	2.3	1.9	0.5	0.1	0.1	0.9	2.3																						
																								0.6	0.5	0.5	0.4	0.5	0.4	0.5	0.5	0.4	0.5	0.6	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.4	0.3	0.4	Diurnal Average
																								3.7	3.1	2.3	2.8	2.0	1.5	2.9	2.2	1.8	2.2	3.9	1.7	1.3	1.7	1.2	1.6	1.2	1.2	1.6	2.3	1.9	1.8	1.3	2.6	Diurnal Maximum
Z - zerospan C - Calibration																																																
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb																																																



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Stony Mountain - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Stony Mountain - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	709	100.00	100.00
11 - 20	0	0.00	100.00
21 - 60	0	0.00	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Stony Mountain - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	23	23	24	27	38	66	59	65	67	93	73	26	20	14	38	53	709
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	23	23	24	27	38	66	59	65	67	93	73	26	20	14	38	53	709

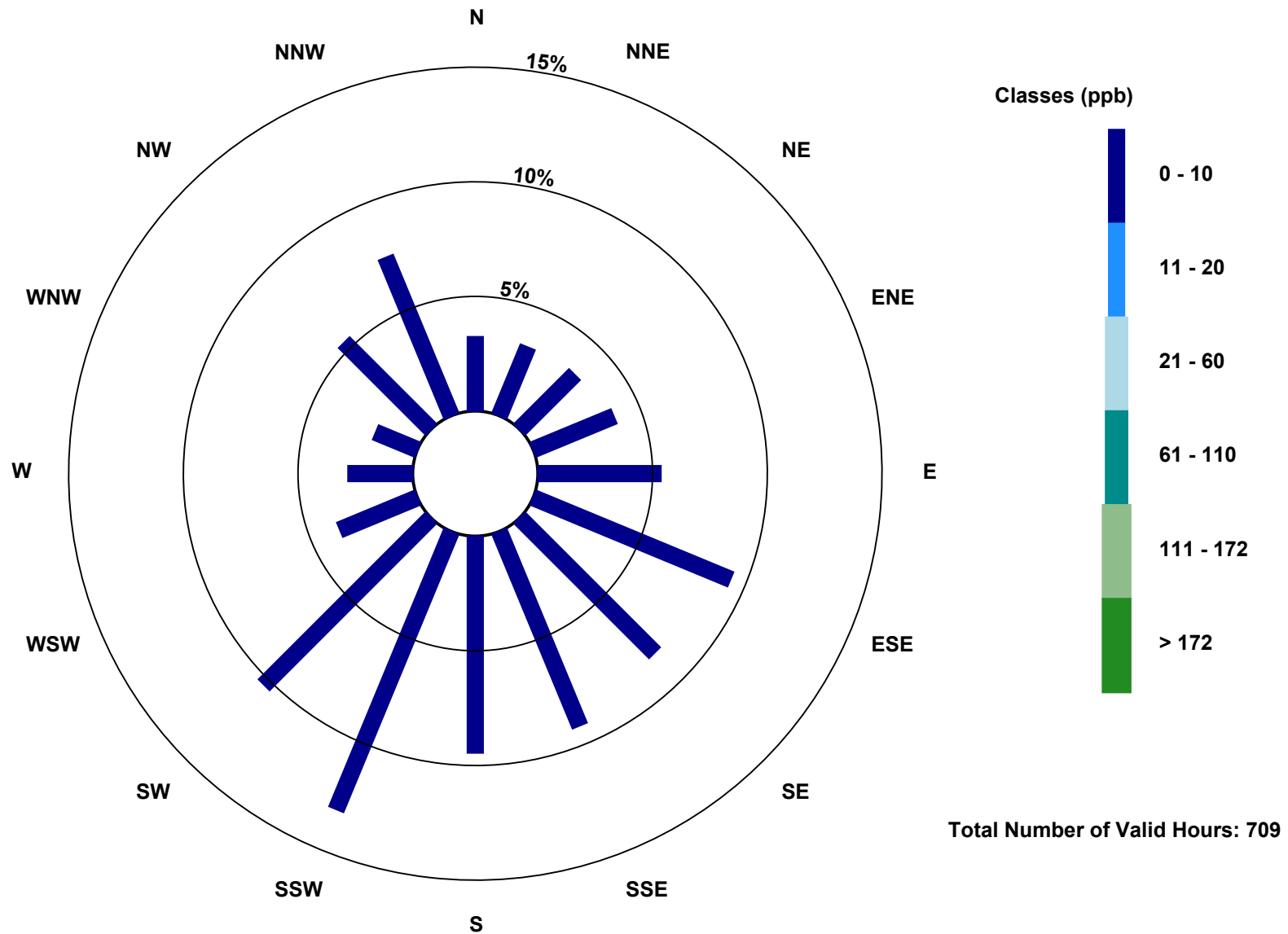
Total Number of Valid Hours: 709

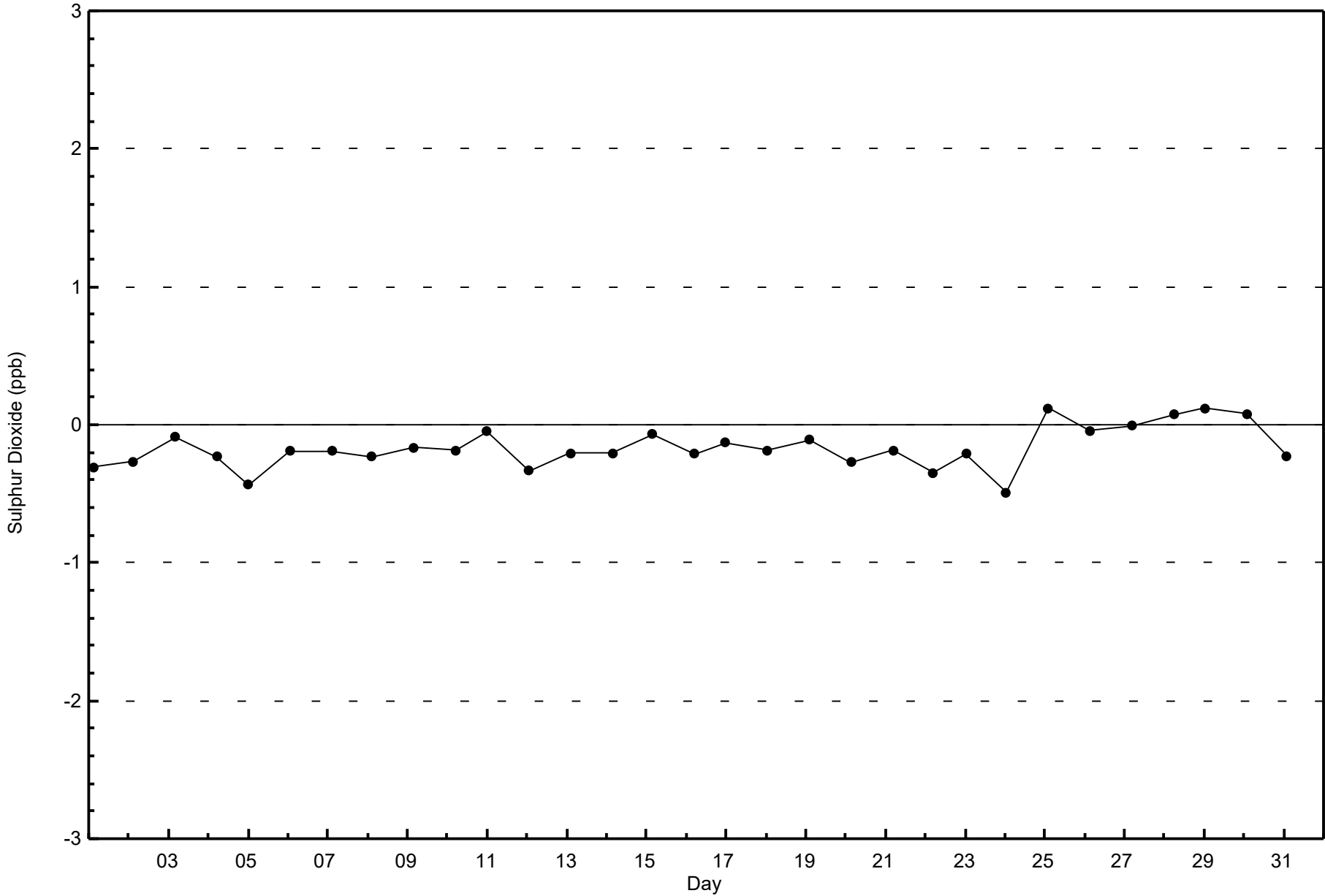
Total Number of Hours: 744

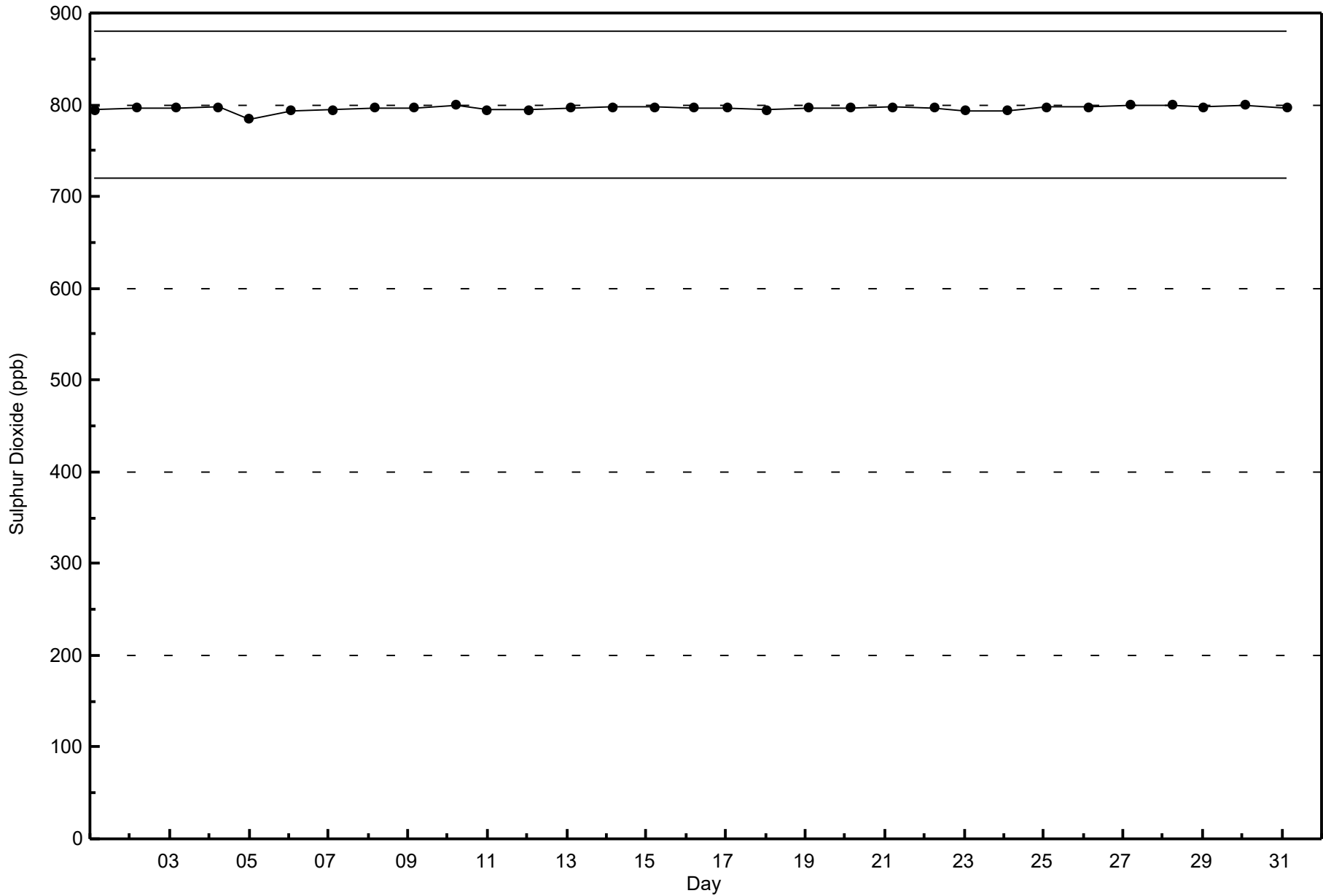


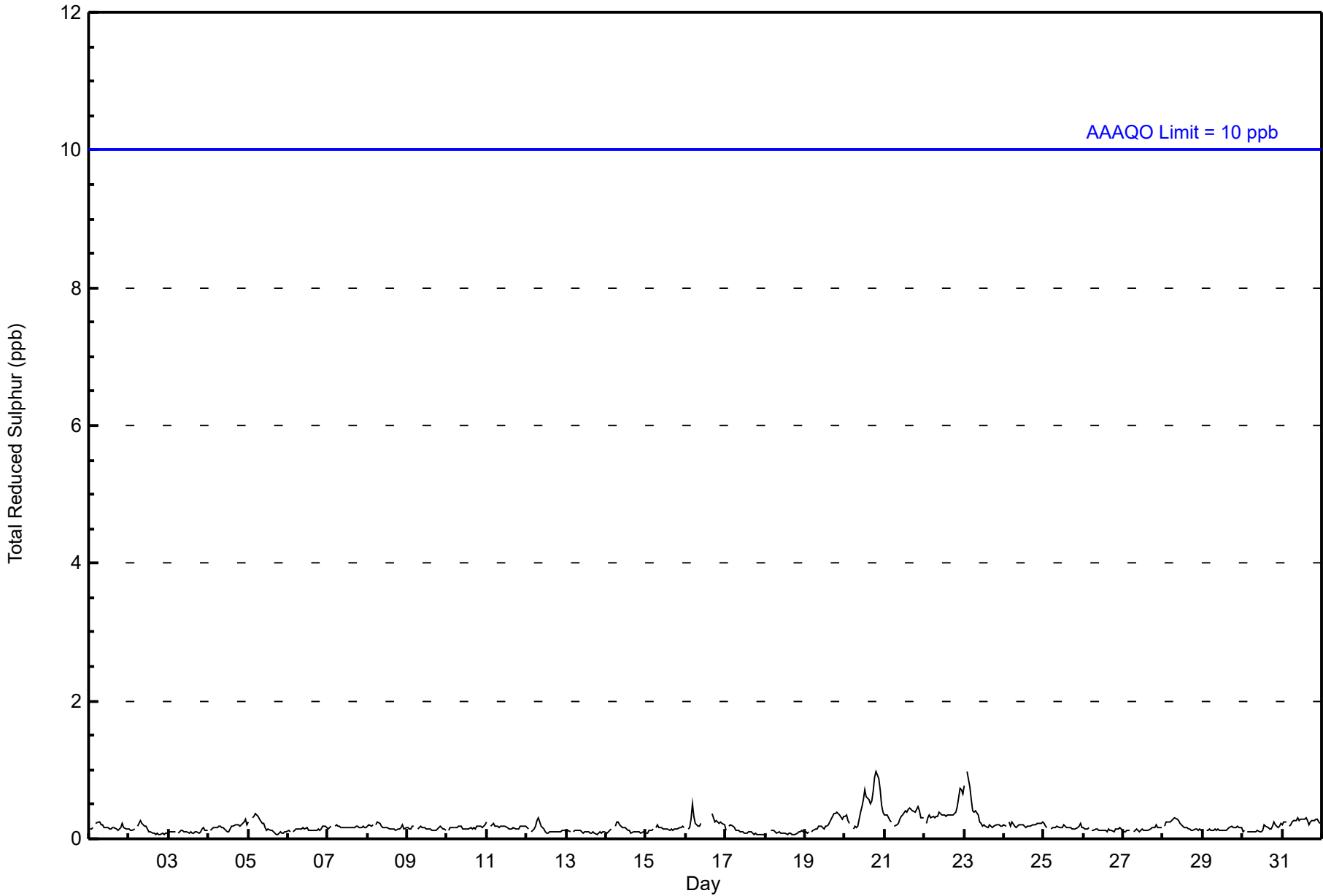
Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Stony Mountain











**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Stony Mountain - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	707	100.00	100.00
3 - 4	0	0.00	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Stony Mountain - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	22	23	24	28	38	66	61	65	69	89	74	27	18	15	38	50	707
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	22	23	24	28	38	66	61	65	69	89	74	27	18	15	38	50	707

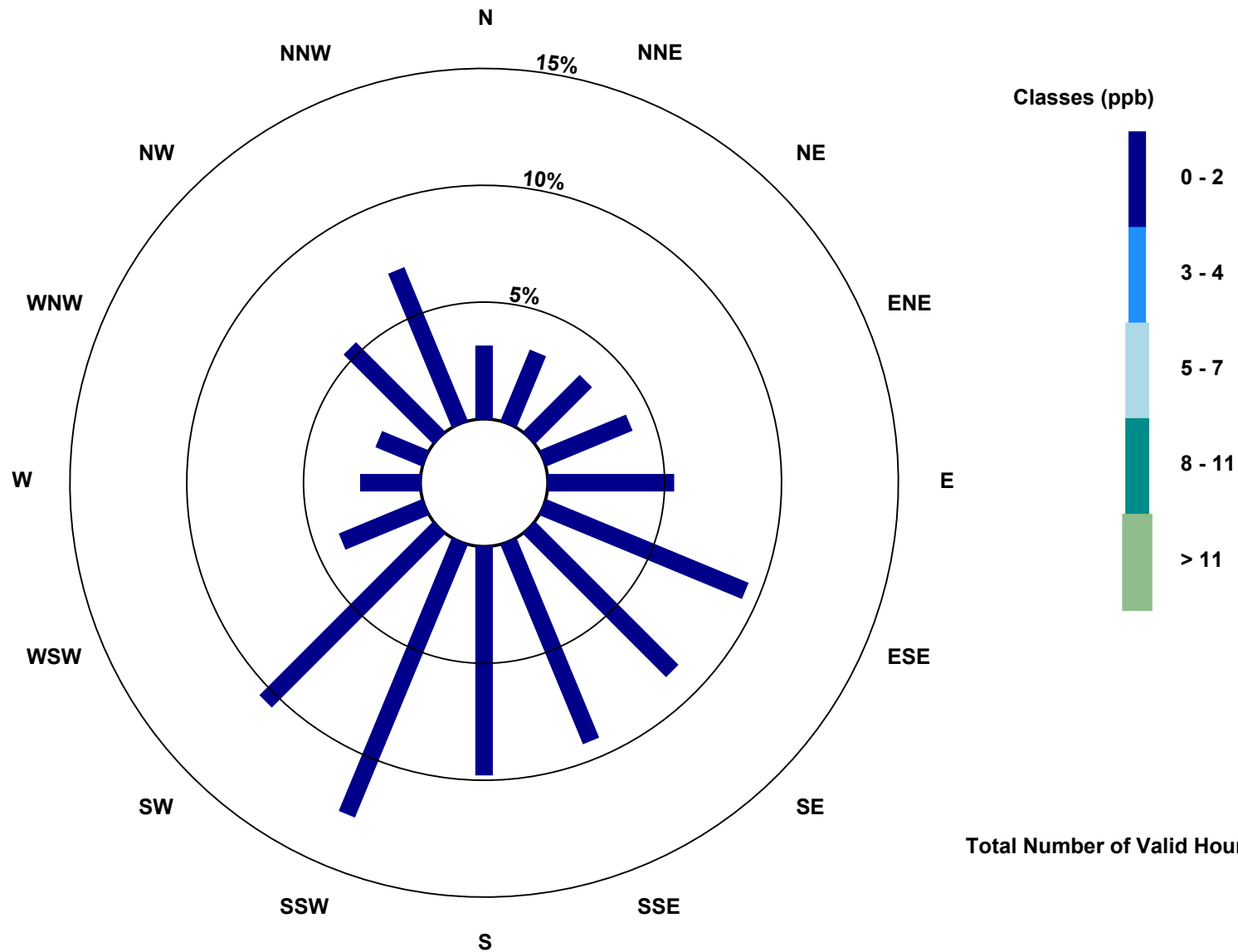
Total Number of Valid Hours: 707

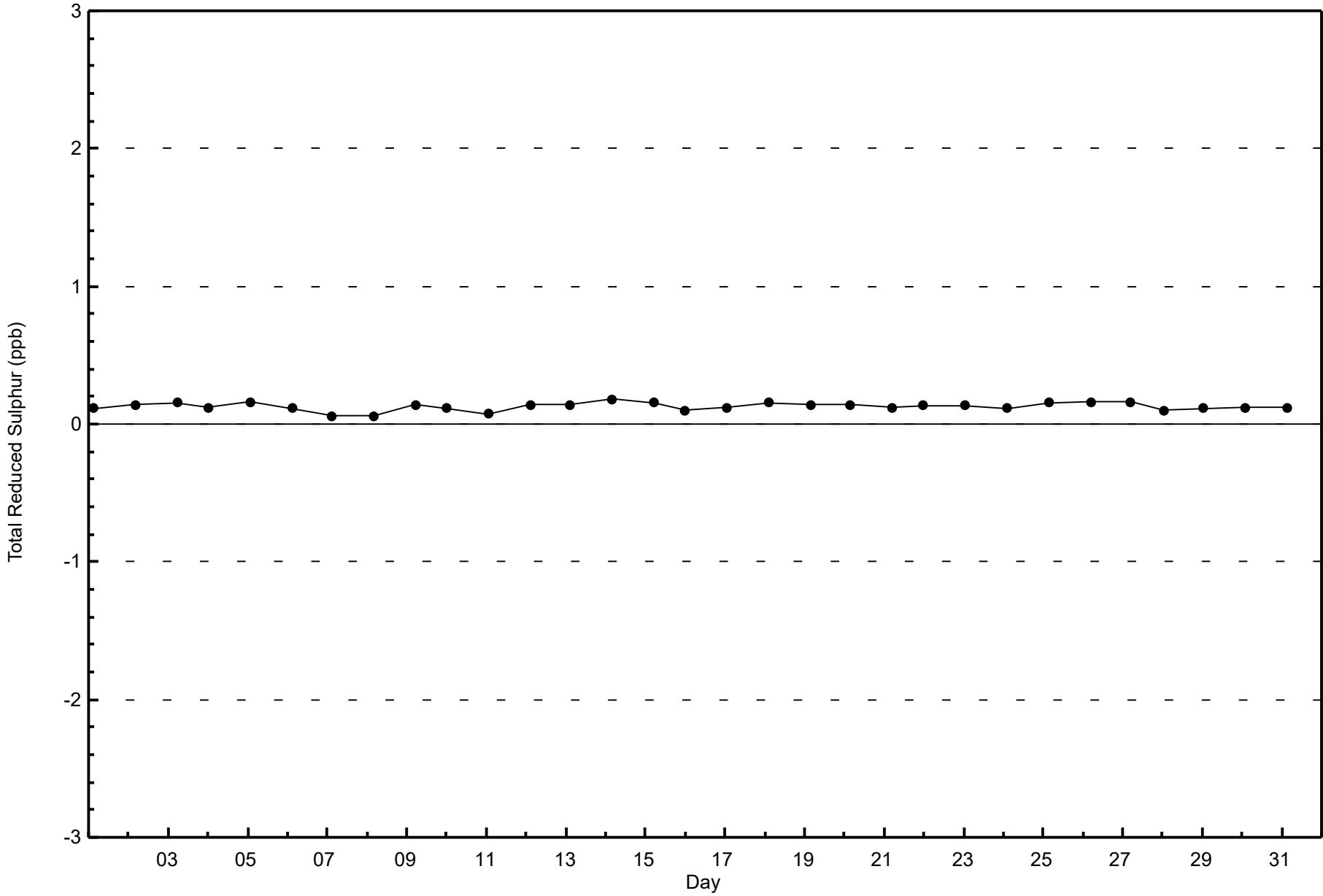
Total Number of Hours: 744

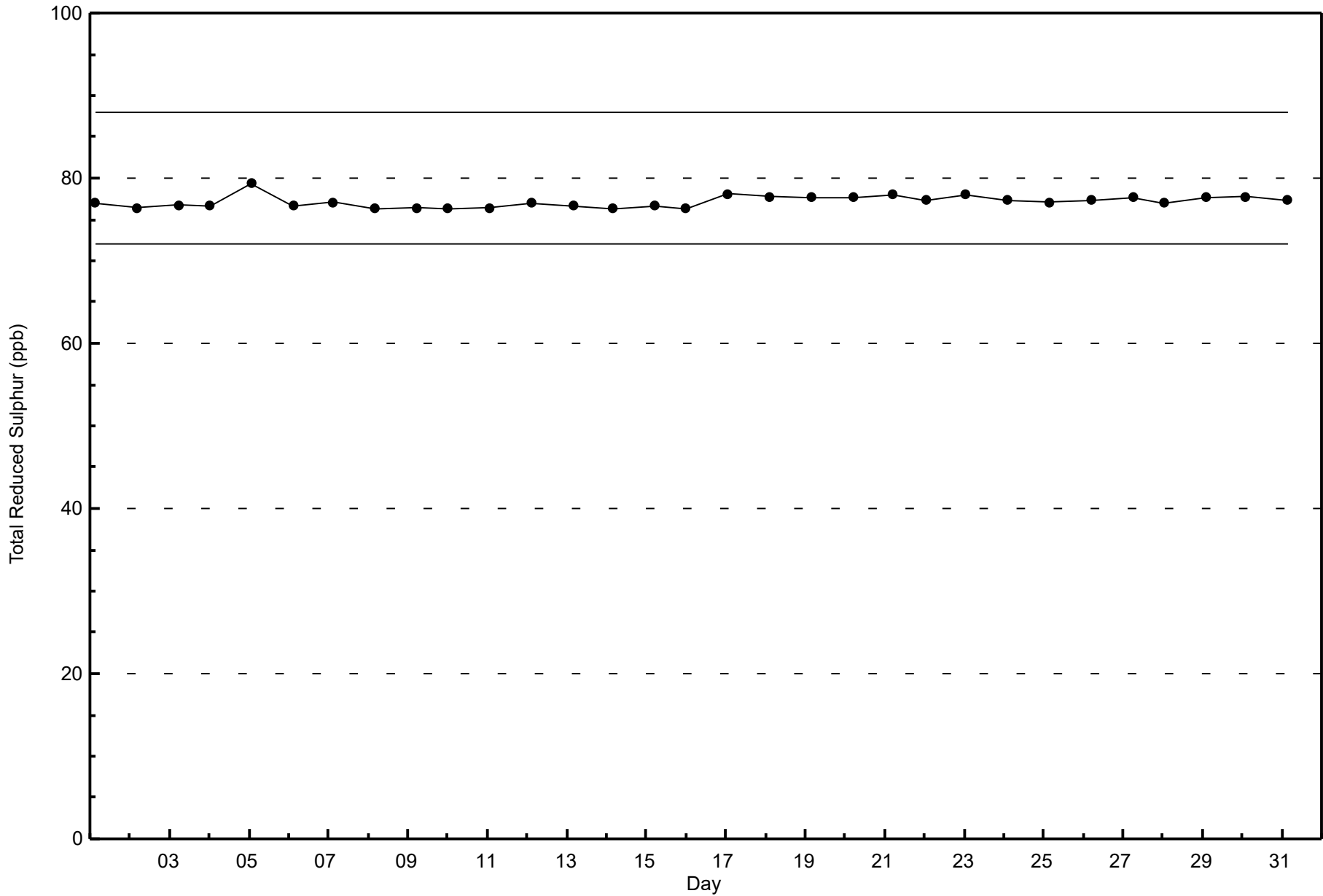


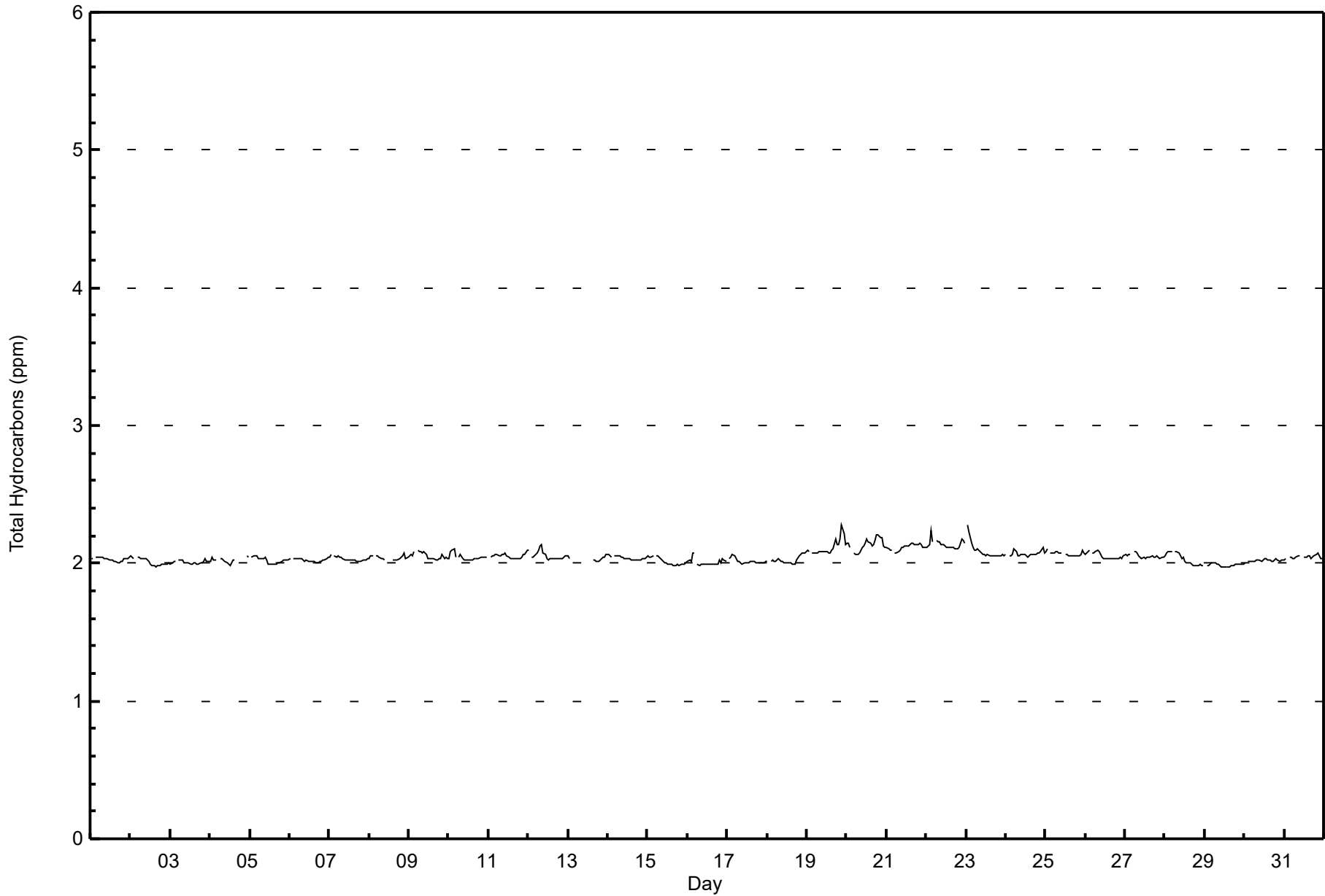
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Reduced Sulphur (TRS) - ppb
Stony Mountain











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Stony Mountain - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	424	61.72	61.72
2.1 - 3.0	263	38.28	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Stony Mountain - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	12	13	2	8	10	42	38	42	53	47	46	20	18	13	27	33	424
2.1 - 3.0	11	10	20	17	28	24	16	22	14	43	18	6	2	1	11	20	263
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	23	23	22	25	38	66	54	64	67	90	64	26	20	14	38	53	687

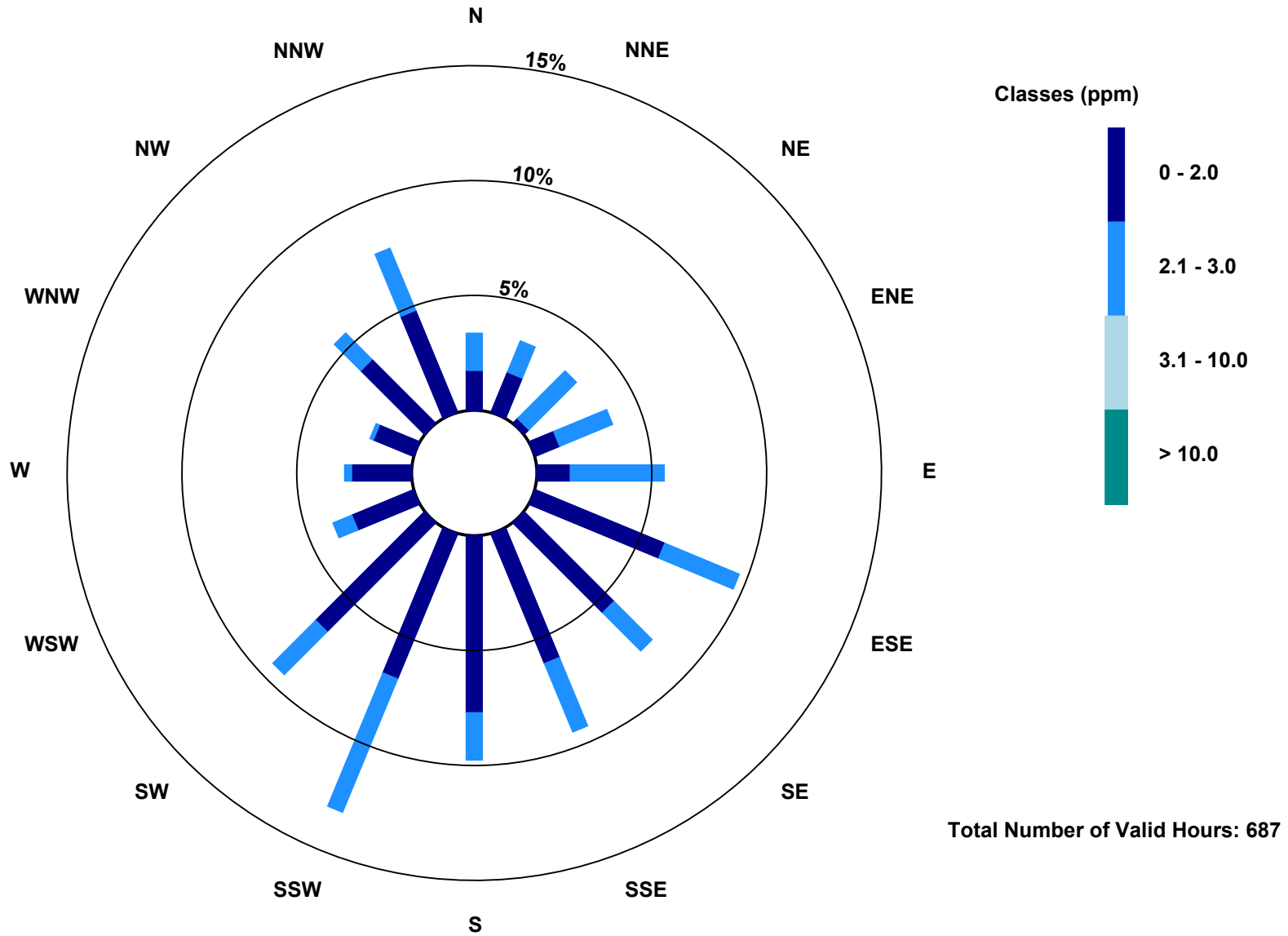
Total Number of Valid Hours: 687

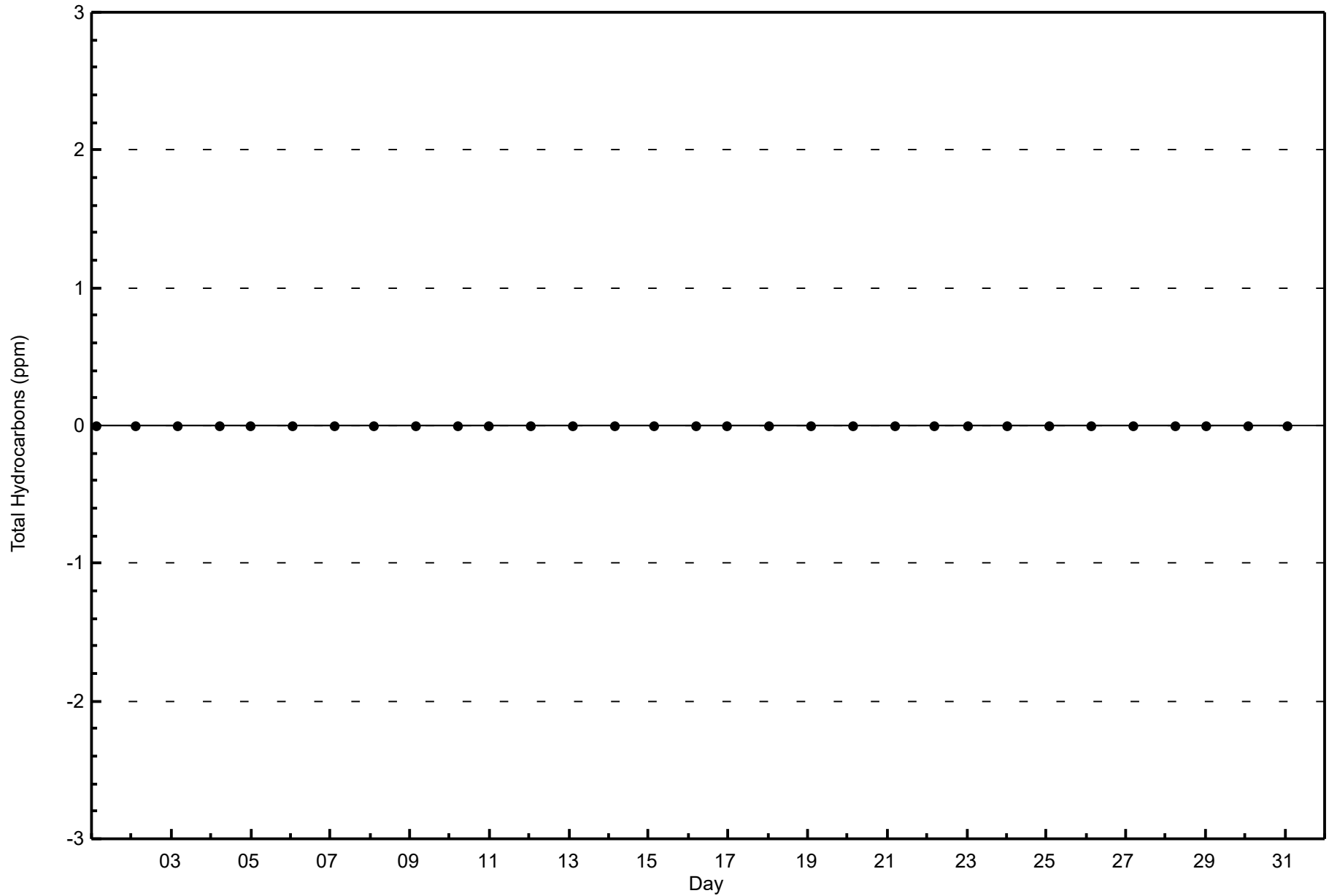
Total Number of Hours: 744

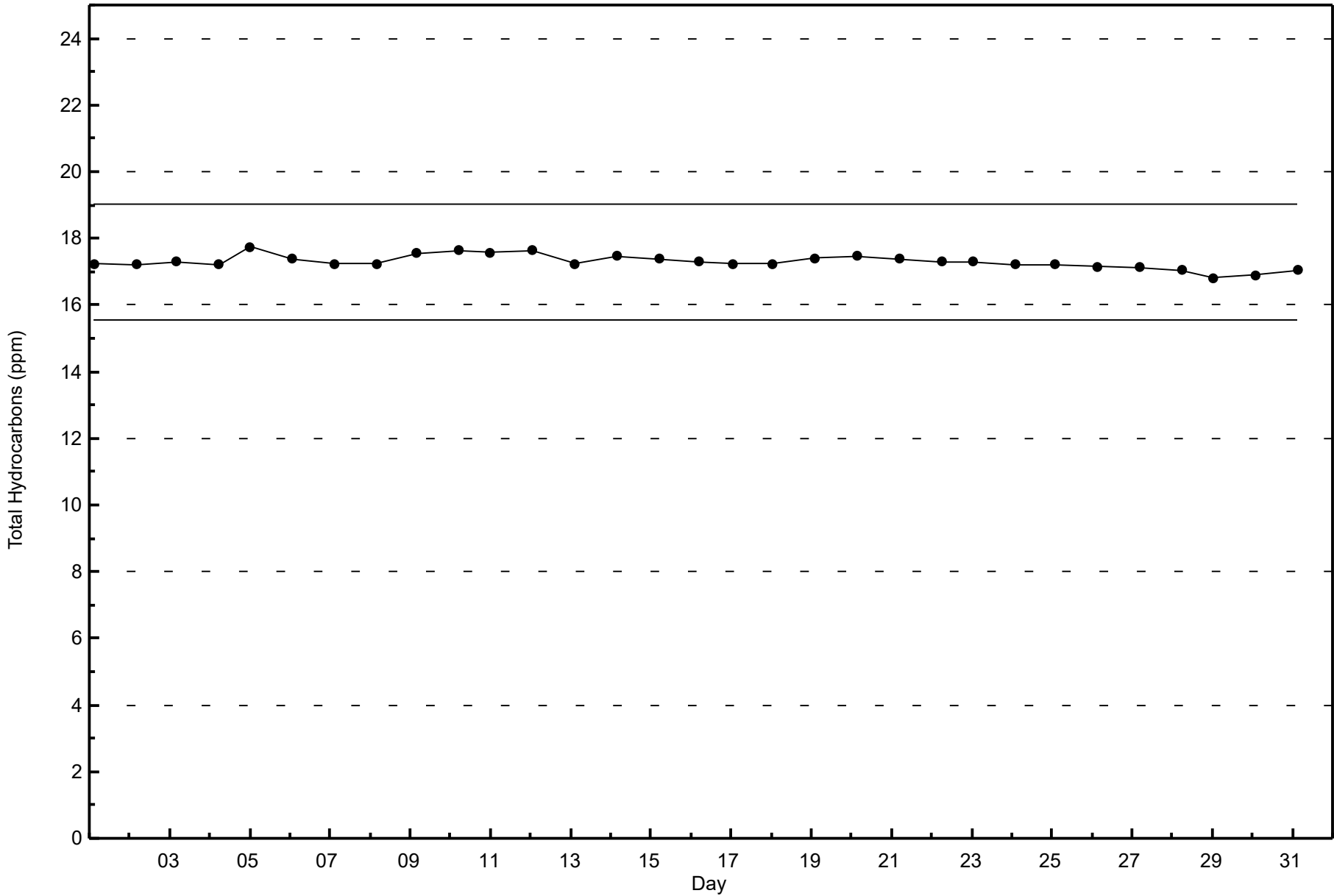


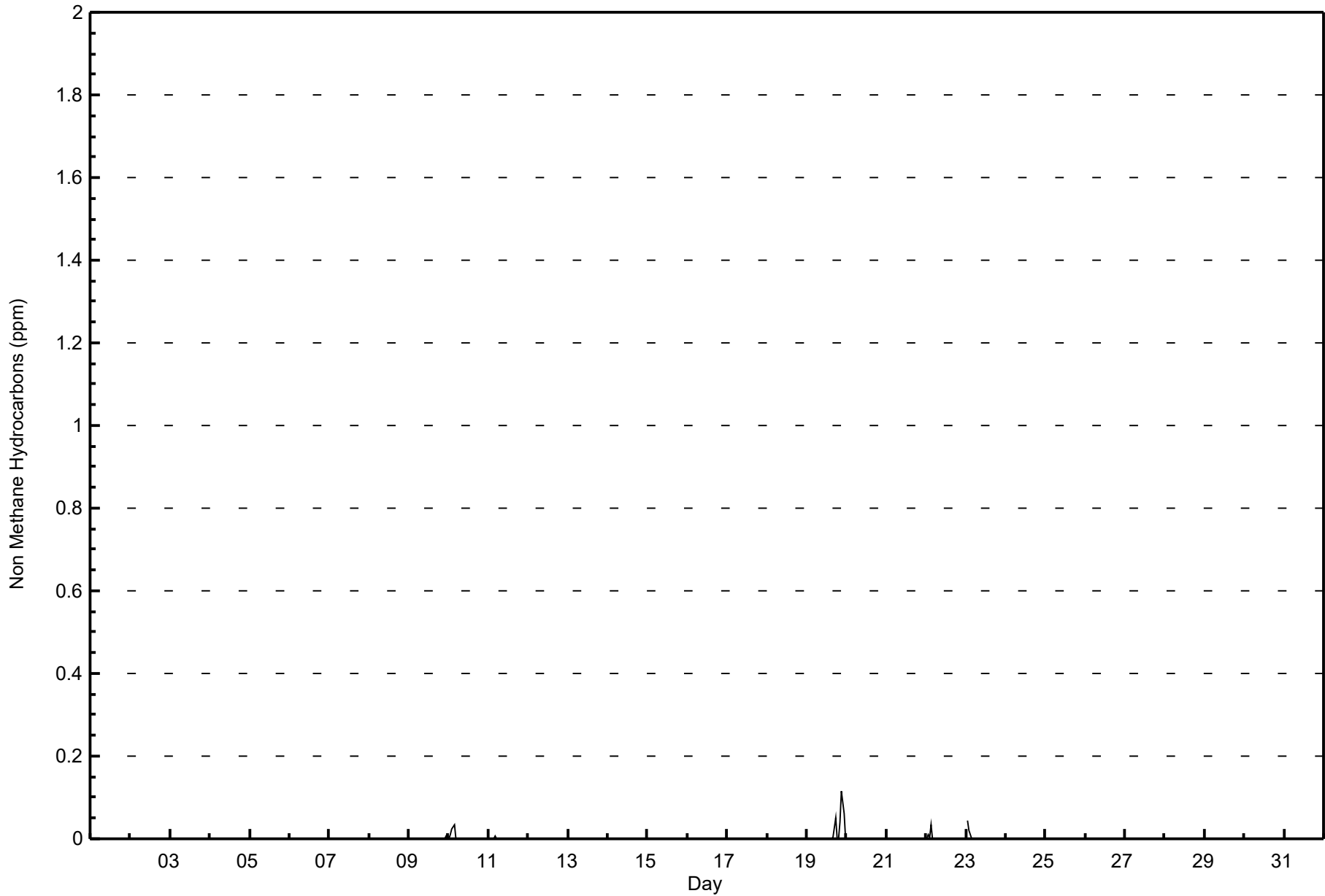
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Stony Mountain











**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Stony Mountain - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	674	98.11	98.11
0.006 - 0.05	11	1.60	99.71
0.06 - 0.1	2	0.29	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Stony Mountain - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	21	23	21	25	36	66	54	63	67	90	64	26	20	13	37	48	674
0.006 - 0.05	2	0	1	0	2	0	0	1	0	0	0	0	0	1	1	3	11
0.06 - 0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
> 0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	23	23	22	25	38	66	54	64	67	90	64	26	20	14	38	53	687

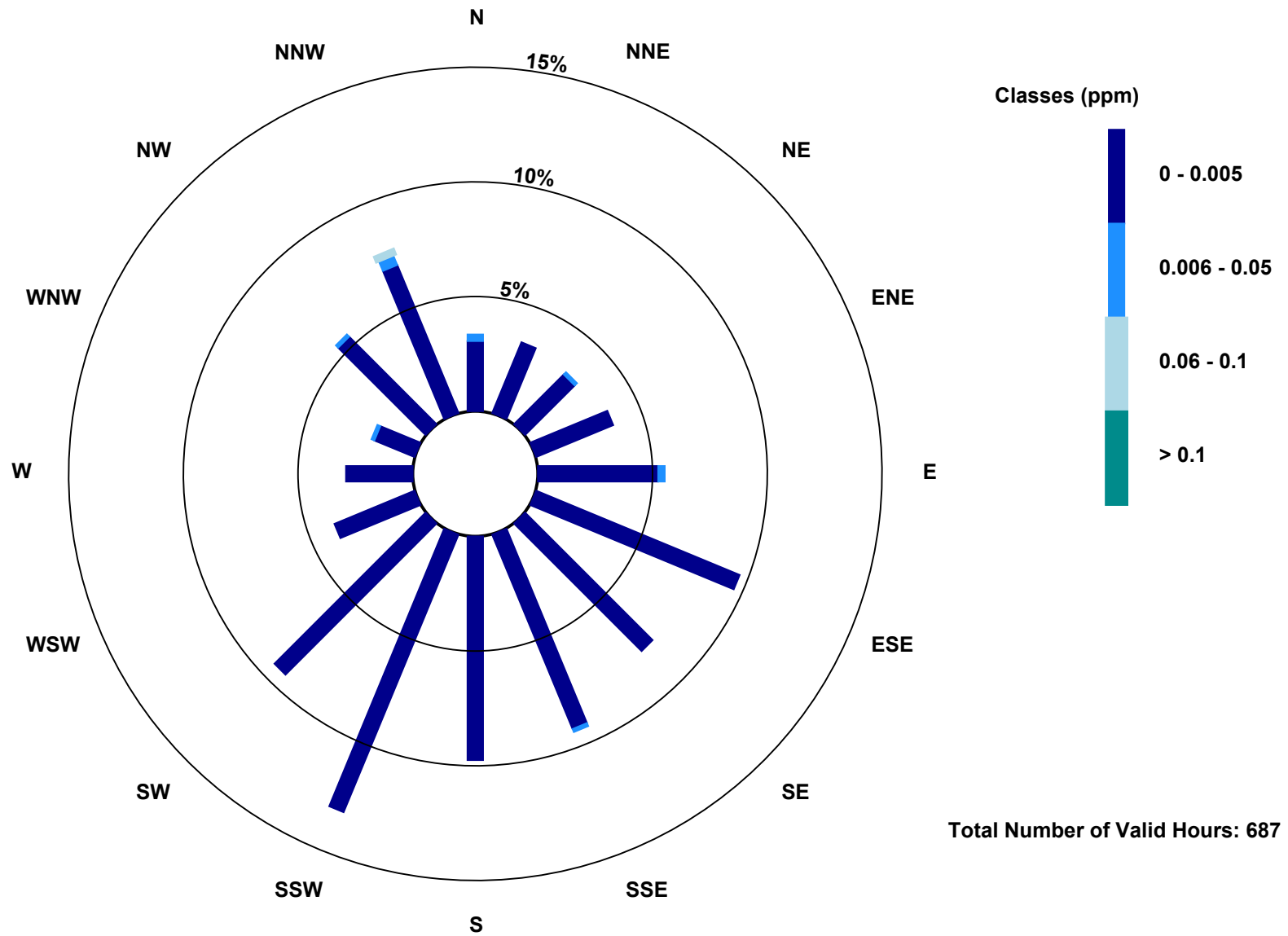
Total Number of Valid Hours: 687

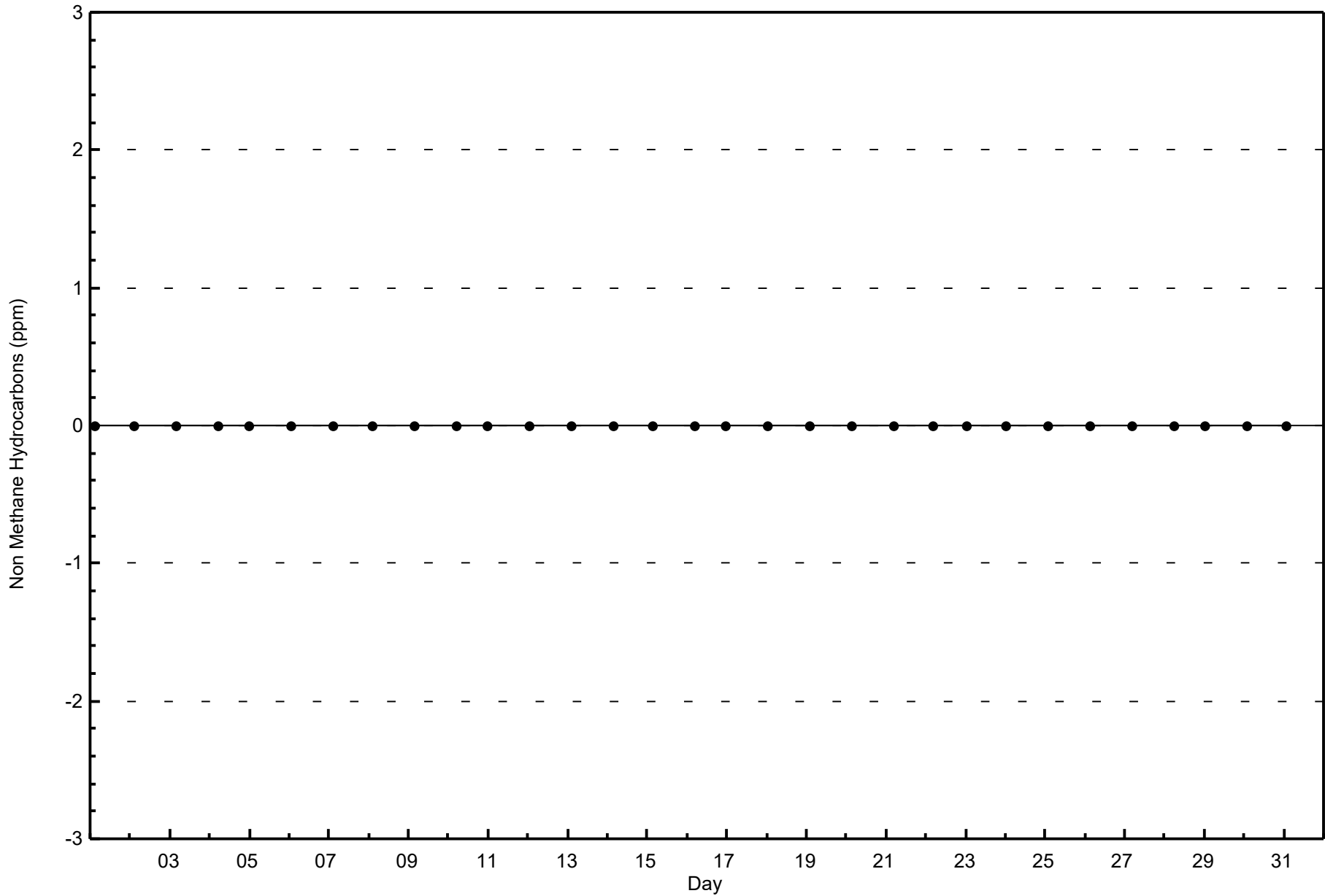
Total Number of Hours: 744

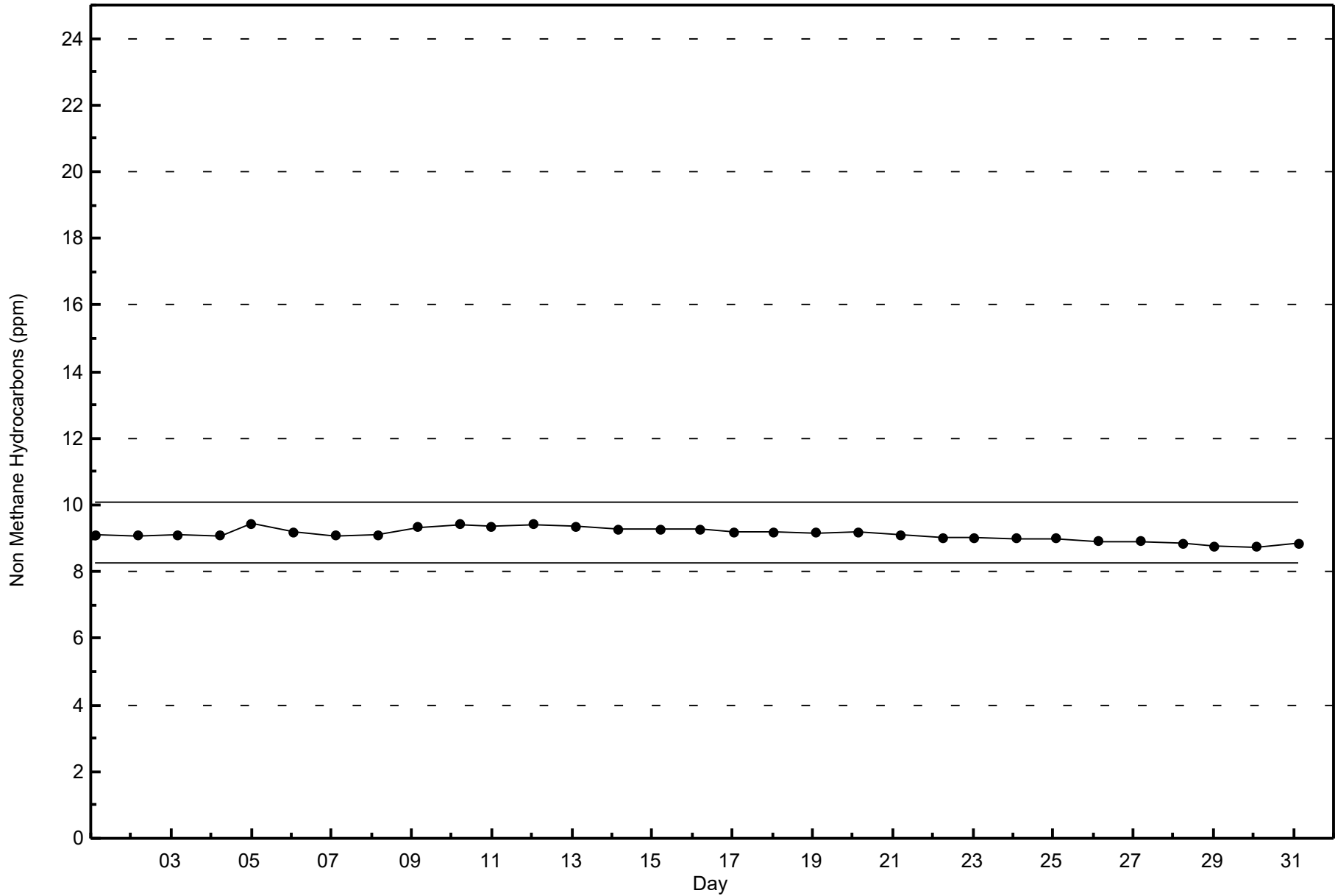


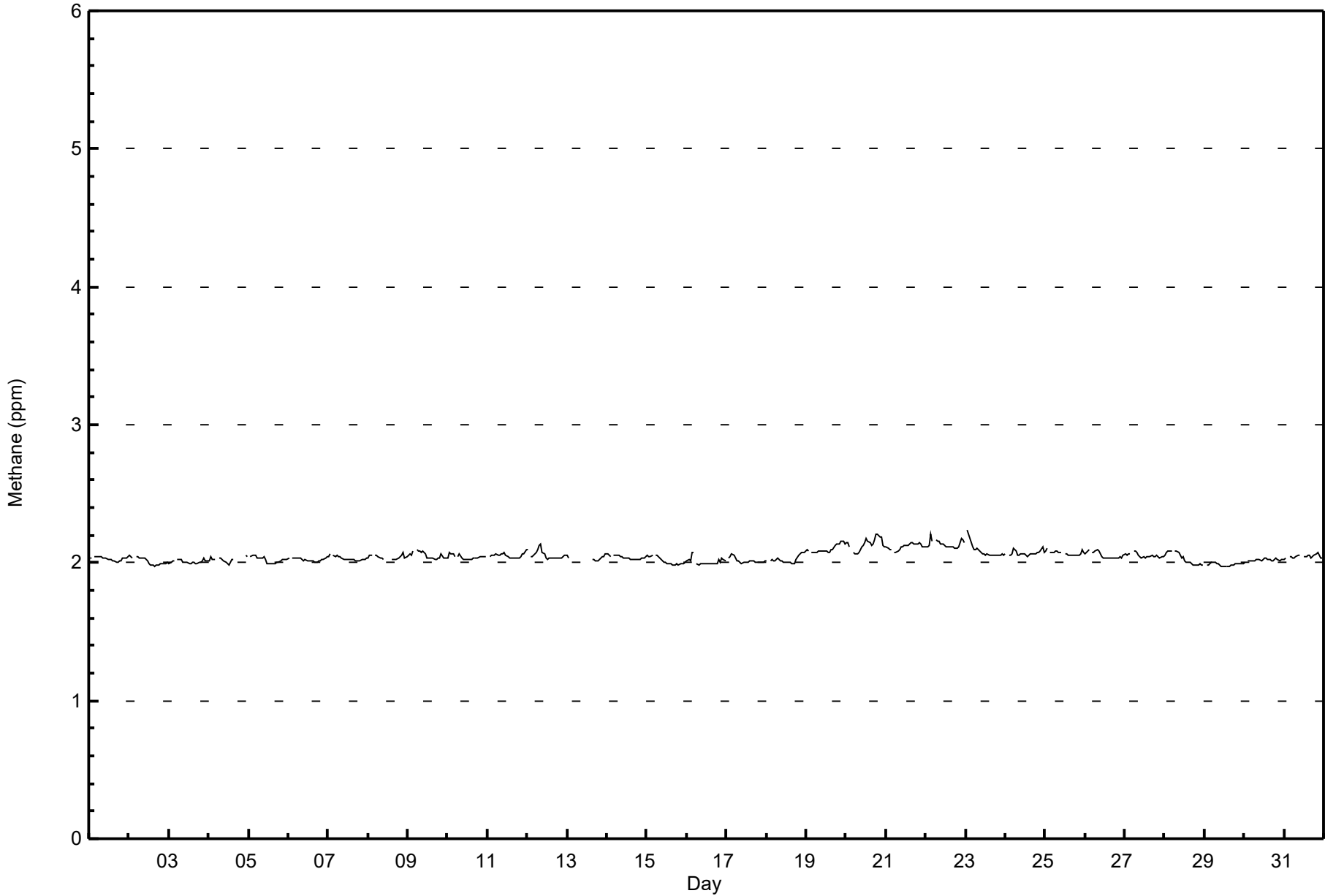
Wood Buffalo Environmental Association
Wind Rose May 2023

Non Methane Hydrocarbons (NMHC) - ppm
Stony Mountain











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Stony Mountain - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	424	61.72	61.72
2.1 - 3.0	263	38.28	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Stony Mountain - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	12	13	2	8	10	42	38	42	53	47	46	20	18	13	27	33	424
2.1 - 3.0	11	10	20	17	28	24	16	22	14	43	18	6	2	1	11	20	263
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	23	23	22	25	38	66	54	64	67	90	64	26	20	14	38	53	687

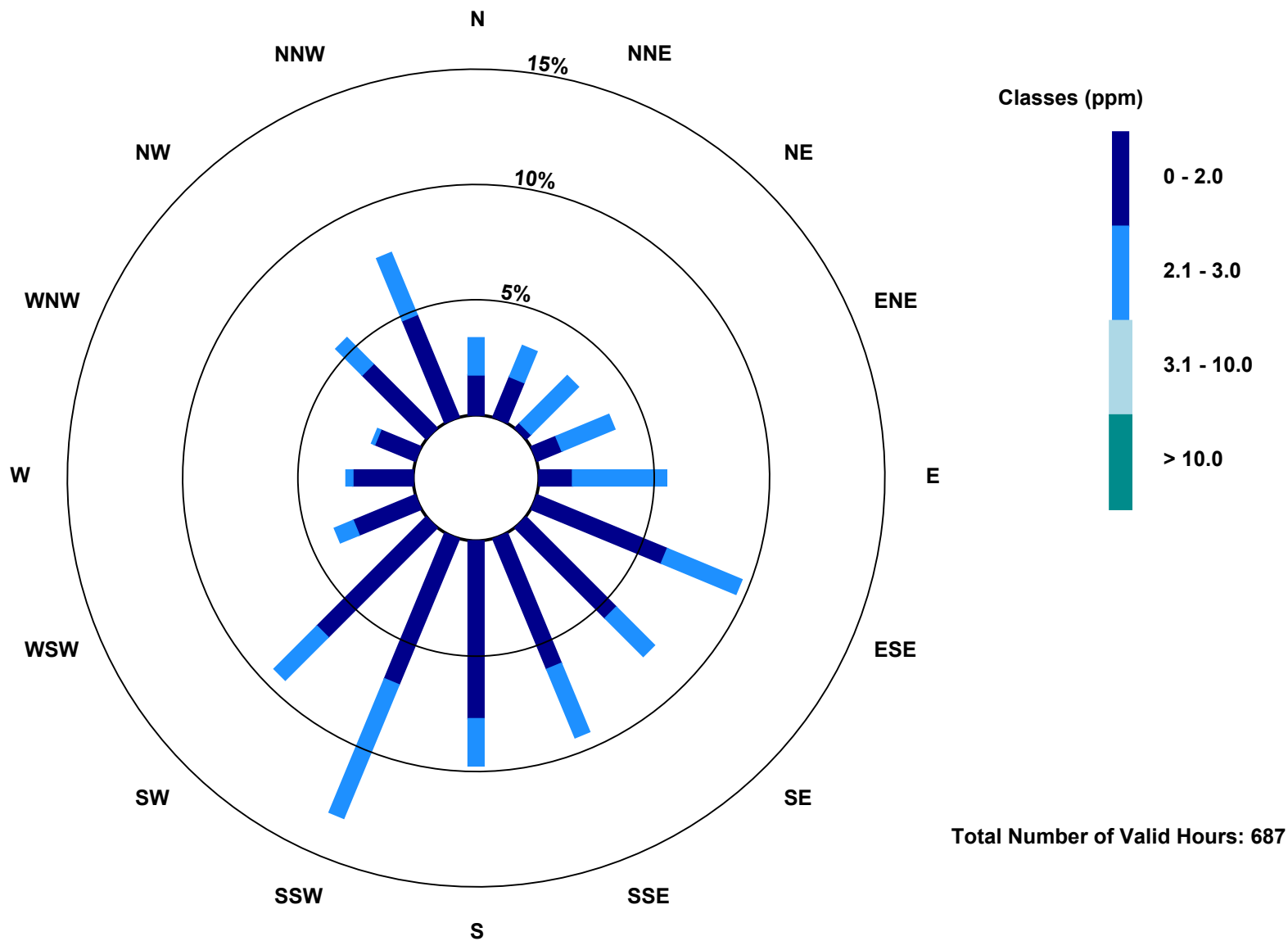
Total Number of Valid Hours: 687

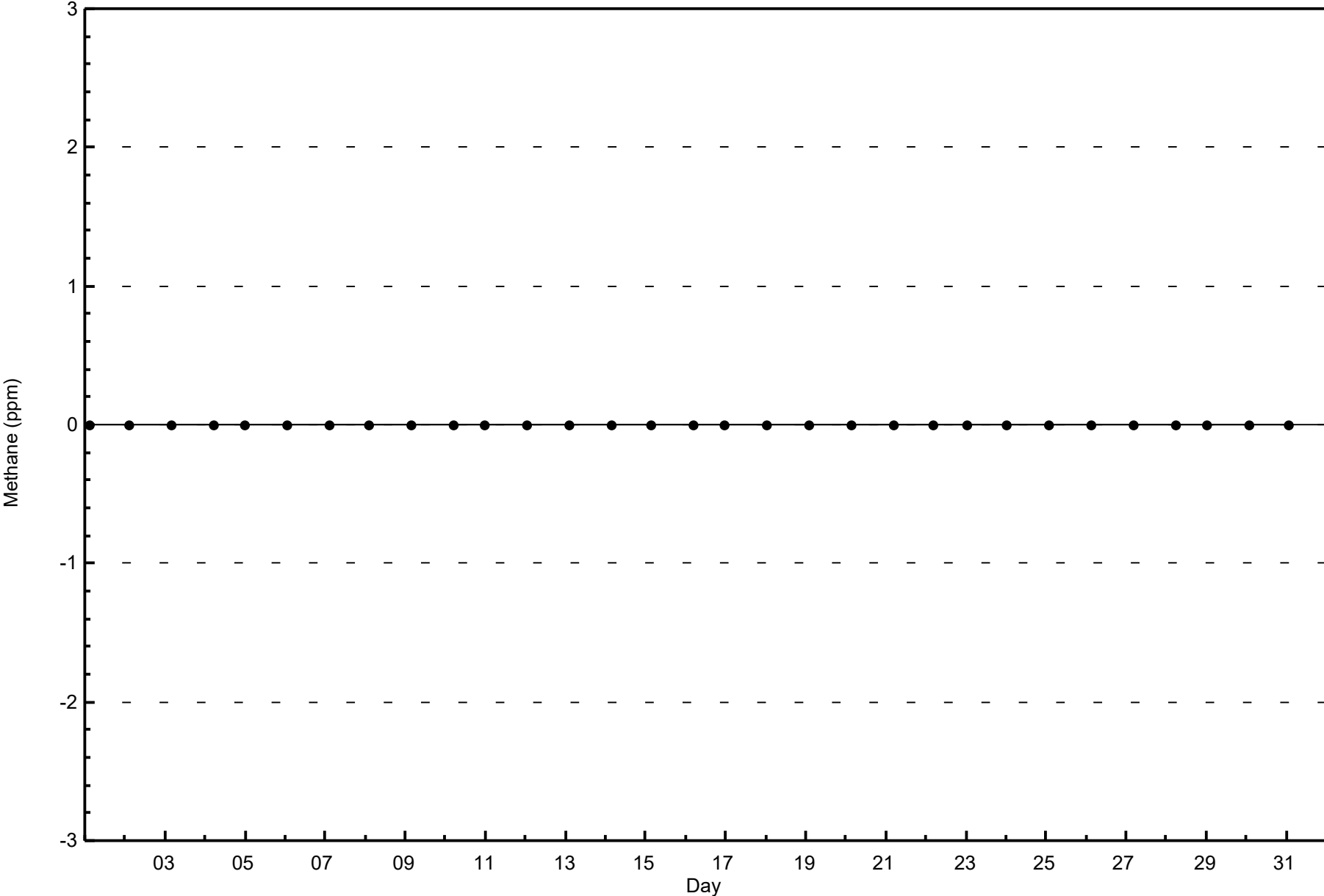
Total Number of Hours: 744

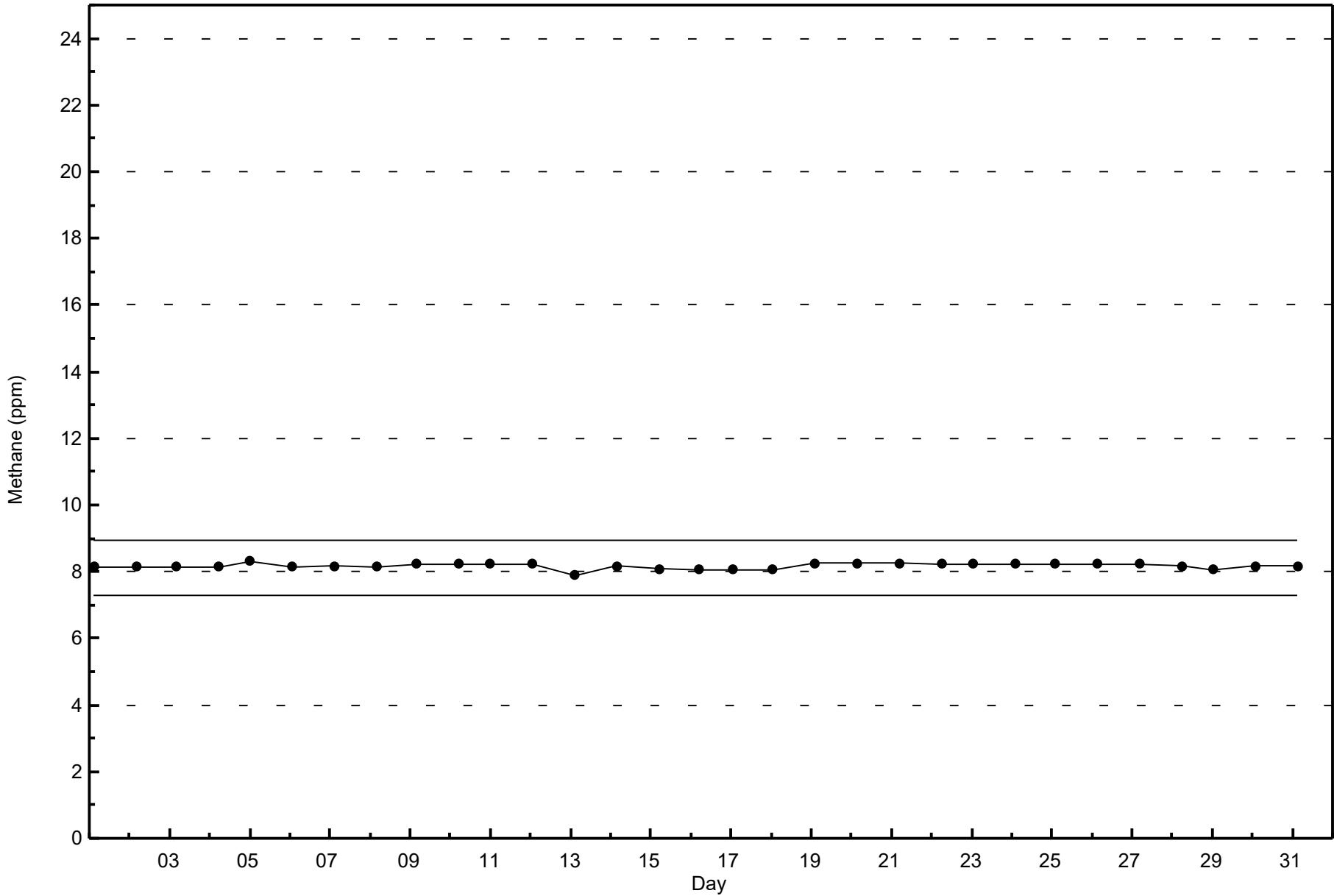


Wood Buffalo Environmental Association
Wind Rose May 2023

Methane (CH₄) - ppm
Stony Mountain





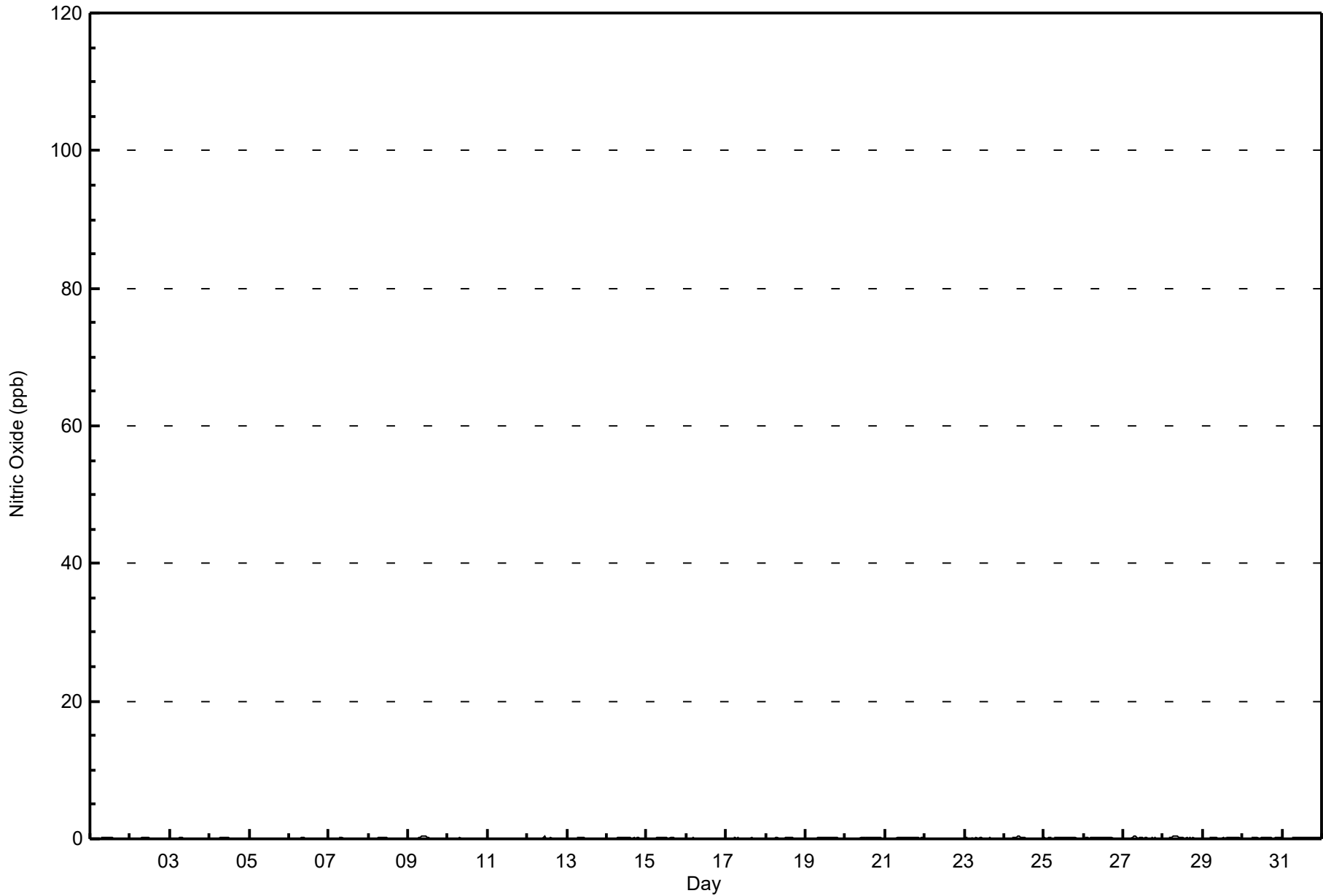




Wood Buffalo Environmental Association
Summary of Hour Averages

Nitric Oxide (NO) - ppb
Stony Mountain - May 2023

Maximum Value: 0.5 ppb on May 12 11:00		Maximum Daily Average: 0.2 ppb on May 28		Hours in Service: 744																						
Minimum Value: 0.0 ppb on May 2 19:00		Minimum Daily Average: 0.0 ppb on May 11		Hours of Data: 686																						
Maximum Diurnal Average: 0.2 ppb at hour 8		Minimum Diurnal Average: 0.1 ppb at hour 4		Hours of Missing Data: 58																						
Monthly Average: 0.09 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.1 Q ₃ = 0.1 P ₉₀ = 0.2 P ₉₉ = 0.4		Hours of Calibration: 36																						
				Percent Operational Time: 97.0																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.0	0.0	0.0	0.0	0.0	Z	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
2-May	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
3-May	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
4-May	0.1	0.0	Z	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	0.2
5-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
6-May	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
7-May	0.0	0.0	0.0	0.0	0.0	Z	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3
8-May	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.3
9-May	0.1	Z	0.1	0.0	0.1	0.1	0.2	0.3	0.3	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.4
10-May	0.0	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	C	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
11-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
12-May	0.1	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.1	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
13-May	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
14-May	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
15-May	0.1	Z	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
16-May	0.1	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.1
17-May	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
18-May	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1
19-May	0.1	0.1	0.1	0.0	0.0	Z	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
20-May	Z	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
21-May	0.1	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2
22-May	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
23-May	0.1	0.2	0.2	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
24-May	0.1	0.1	0.1	0.1	Z	0.2	0.2	0.3	0.4	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4
25-May	0.1	0.1	0.1	0.1	0.1	Z	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
26-May	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
27-May	0.1	Z	0.1	0.1	0.1	0.2	0.4	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4
28-May	0.1	0.1	Z	0.1	0.2	0.2	0.3	0.4	0.4	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4
29-May	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2
30-May	0.1	0.0	0.1	0.0	Z	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
31-May	0.1	0.1	0.1	0.1	0.1	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration UO - Unstable Operation																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitric Oxide (NO) - ppb
Stony Mountain - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	686	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Stony Mountain - May 2023**

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Totals
0 - 20	20	22	23	28	38	65	55	55	64	90	70	27	19	16	37	57	686
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	20	22	23	28	38	65	55	55	64	90	70	27	19	16	37	57	686

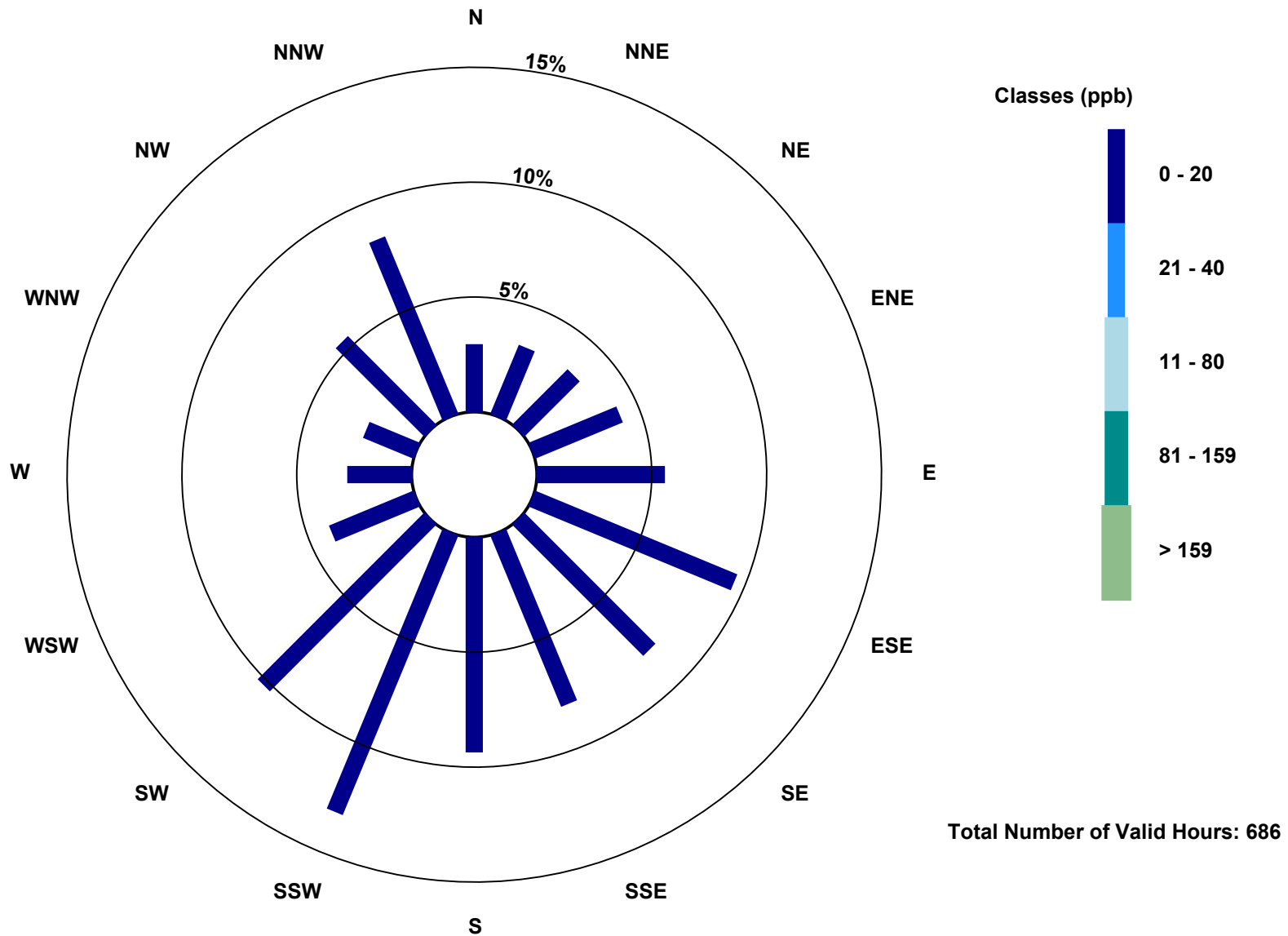
Total Number of Valid Hours: 686

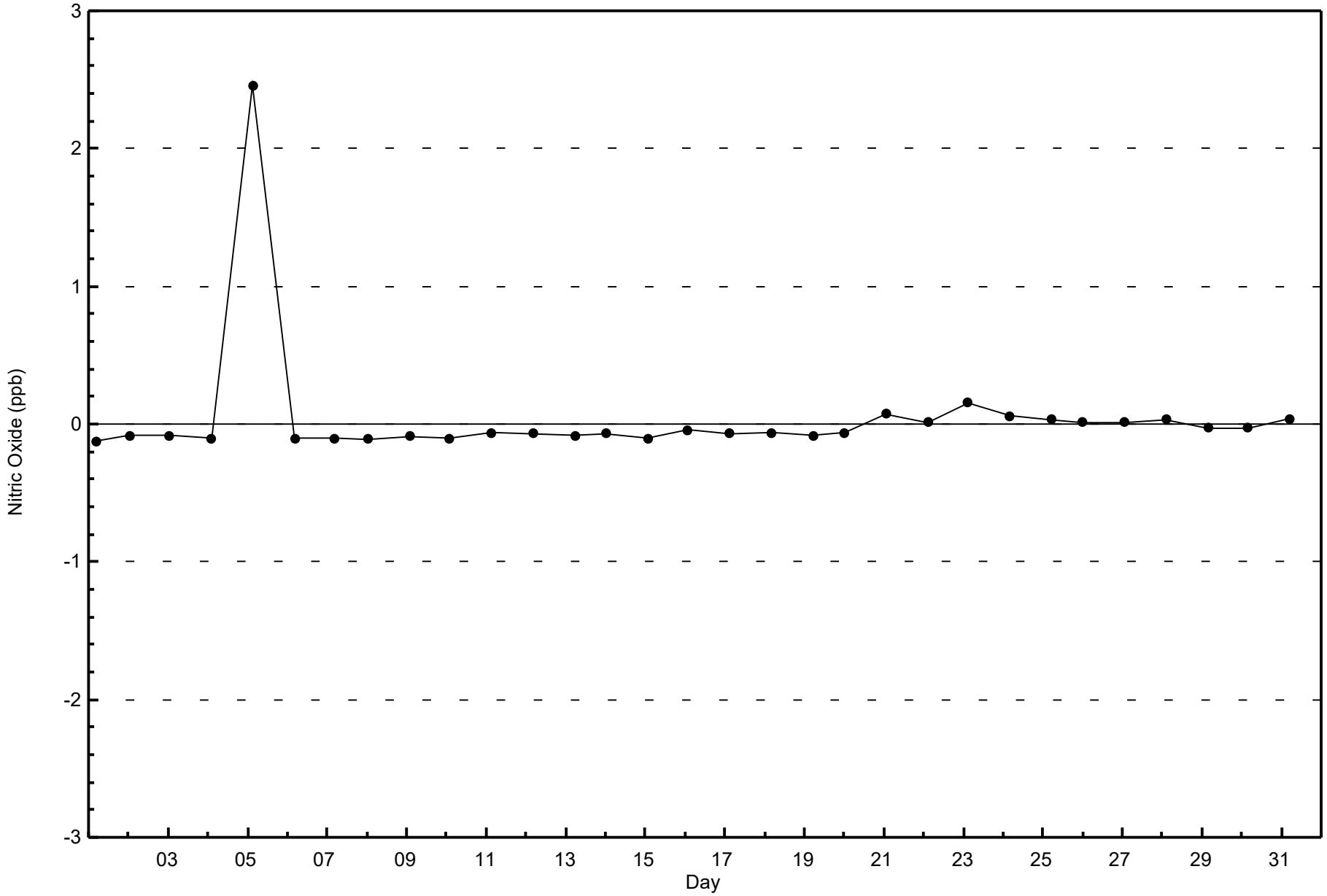
Total Number of Hours: 744

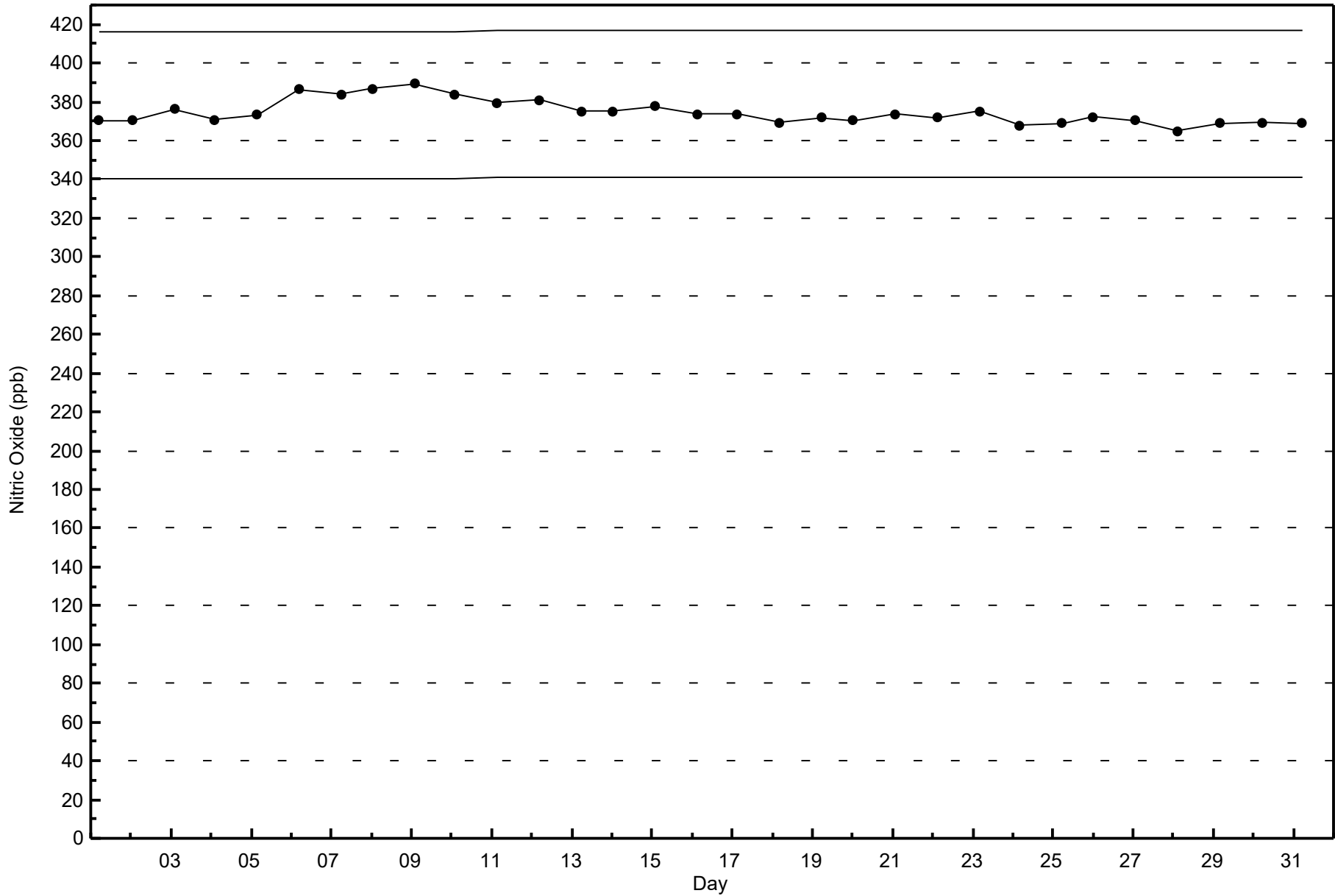


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Stony Mountain

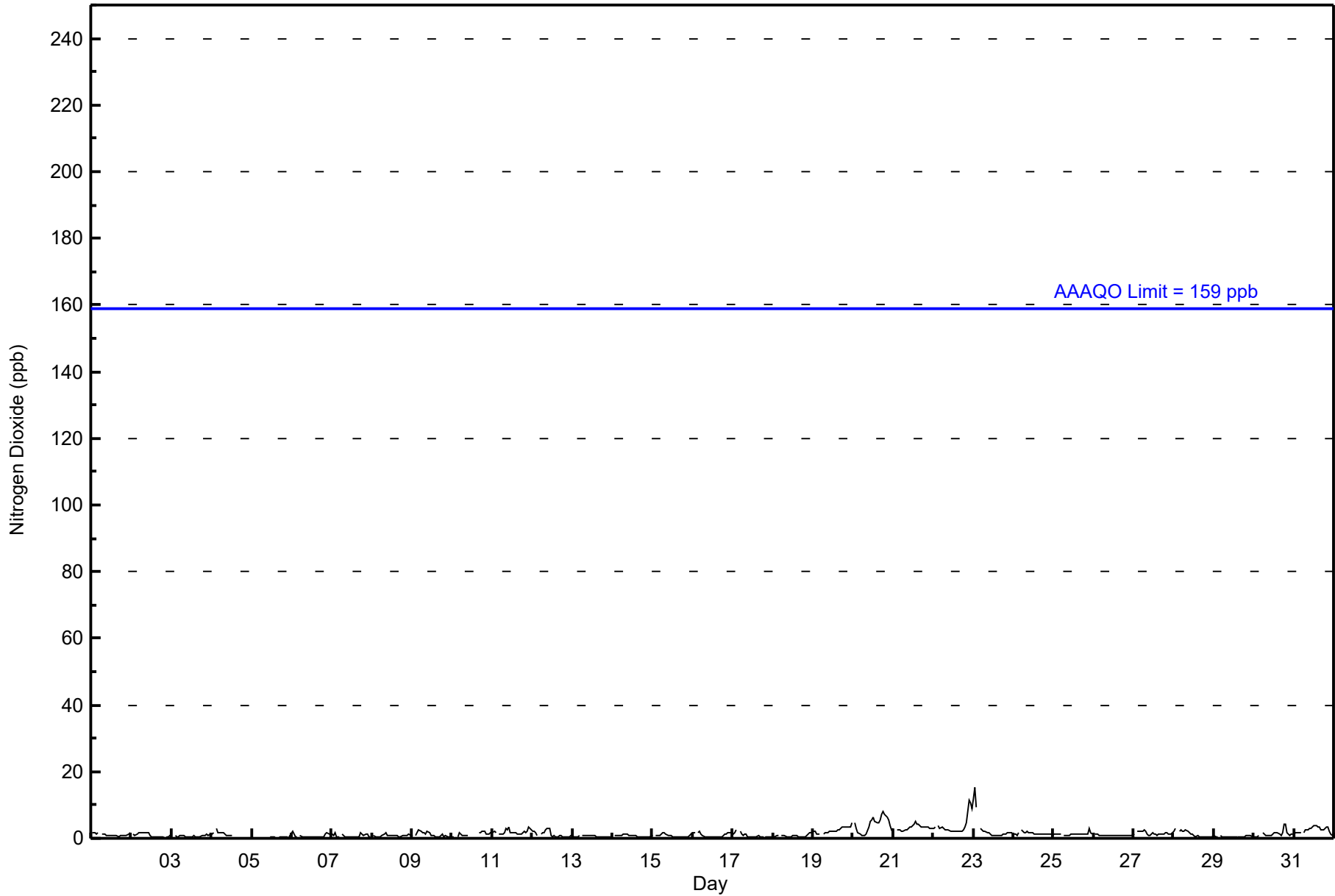








Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 744																	Daily Average		Daily Maximum				
Maximum Value: 15.2 ppb on May 23 02:00		Maximum Daily Average: 4.1 ppb on May 20		Hours of Data: 686																	Hours of Missing Data: 58		Hours of Calibration: 36				
Minimum Value: 0.2 ppb on May 5 15:00		Minimum Daily Average: 0.6 ppb on May 29		Hours of Calibration: 36																	Percent Operational Time: 97.0						
Maximum Diurnal Average: 2.1 ppb at hour 2		Minimum Diurnal Average: 1.2 ppb at hour 17		Percentiles: P ₁ = 0.3 P ₁₀ = 0.4 Q ₁ = 0.6 Median = 1.0 Q ₃ = 1.7 P ₉₀ = 2.9 P ₉₉ = 7.4																							
Monthly Average: 1.45 ppb																											
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	1.9	1.6	1.6	1.4	1.5	Z	1.4	1.3	1.1	0.9	0.9	0.7	0.7	0.7	0.7	0.6	0.7	0.8	0.9	1.0	1.0	1.2	1.7	1.1	1.9		
2-May	Z	1.1	0.7	1.2	1.5	1.6	1.7	1.8	1.6	1.5	1.5	1.0	0.6	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.8	0.9	1.8		
3-May	0.4	Z	0.7	0.6	0.5	0.8	1.0	0.9	0.5	0.4	0.4	0.5	0.5	0.7	0.5	0.5	0.5	0.6	0.7	0.9	1.1	0.8	1.2	0.7	1.2		
4-May	1.3	1.5	Z	2.9	1.9	1.7	1.7	1.6	1.4	1.0	0.9	0.9	0.7	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	2.9		
5-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	0.3	0.4	0.3	0.2	0.2	0.2	0.3	0.5	0.6	0.5	0.4	0.2	0.8		
6-May	2.0	1.1	0.3	0.3	Z	0.8	0.5	0.6	0.6	0.6	0.6	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	1.1	1.5	1.1	1.4	0.7	2.0		
7-May	1.4	0.7	1.5	0.6	0.4	Z	1.2	0.9	0.6	0.5	0.4	0.5	0.5	0.6	0.4	0.4	0.5	1.6	1.2	0.8	1.4	1.1	0.4	0.4	0.8	1.6	
8-May	Z	0.7	0.6	0.5	0.5	0.6	0.8	1.4	1.6	1.0	0.9	0.9	0.8	0.7	0.7	0.7	0.6	0.5	0.7	0.9	0.7	0.7	1.2	0.9	0.8	1.6	
9-May	0.8	Z	0.9	1.5	2.4	2.0	1.5	1.5	1.4	2.0	1.6	1.0	0.9	0.9	0.6	0.6	0.6	0.8	1.2	0.6	0.7	0.5	0.6	0.5	1.1	2.4	
10-May	0.6	0.5	Z	0.6	1.7	1.1	0.9	0.9	0.7	0.7	C	C	C	C	C	C	1.8	1.9	2.3	2.3	1.3	1.3	1.4	1.8	--	2.3	
11-May	1.6	2.1	1.8	Z	1.3	1.3	1.4	1.5	3.1	2.6	3.5	1.9	1.9	1.8	1.7	1.4	1.1	1.3	1.7	2.3	1.8	2.2	3.3	2.6	2.0	3.5	
12-May	2.2	2.1	1.5	1.0	Z	1.3	1.6	1.8	2.5	3.0	3.1	0.7	0.6	0.7	0.6	0.6	0.7	0.7	0.6	0.4	0.4	0.4	0.4	0.8	1.2	3.1	
13-May	0.8	0.6	0.5	0.6	0.7	Z	0.9	1.0	0.7	0.7	0.9	0.9	0.8	0.8	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	1.0	
14-May	Z	0.8	0.9	0.9	1.0	1.0	1.2	1.3	1.2	1.1	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.8	1.3	
15-May	0.8	Z	1.0	1.0	1.0	1.2	1.6	1.9	1.4	0.9	0.8	0.7	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.6	0.7	1.1	0.8	1.9	
16-May	1.6	1.5	Z	1.5	2.3	1.2	0.8	0.4	0.3	0.4	0.5	0.4	0.4	0.3	0.4	0.4	0.6	0.5	0.9	1.1	1.3	1.5	1.9	1.7	1.0	2.3	
17-May	1.3	1.6	2.5	Z	2.3	1.2	1.0	1.3	1.1	0.6	0.4	0.4	0.5	0.4	0.5	0.8	0.4	0.3	0.3	0.2	0.4	0.3	0.4	0.5	0.8	2.5	
18-May	0.6	0.6	0.7	0.9	Z	0.8	1.0	0.9	0.5	0.5	0.5	0.6	0.8	0.8	0.7	0.6	0.6	0.5	0.5	0.6	0.9	1.1	1.5	1.7	0.8	1.7	
19-May	2.0	2.0	1.4	1.4	1.4	Z	1.4	1.5	1.6	1.8	2.2	2.3	2.3	2.2	2.3	2.7	2.7	3.3	3.6	3.6	3.5	3.3	3.2	4.5	2.4	4.5	
20-May	Z	4.8	2.9	1.9	1.2	0.9	0.8	0.9	1.1	3.6	4.9	5.4	6.3	5.1	4.5	4.6	5.7	7.1	7.9	7.3	6.5	5.5	3.7	2.6	4.1	7.9	
21-May	2.8	Z	2.7	2.5	2.4	2.3	2.2	2.6	2.6	2.9	3.3	3.5	4.2	4.9	4.3	4.2	3.8	3.5	3.3	3.4	3.5	3.2	3.1	3.1	3.2	4.9	
22-May	2.9	3.2	Z	3.7	3.0	3.4	3.0	2.6	2.5	2.5	2.1	2.1	2.2	2.2	2.3	2.3	2.1	2.0	2.5	3.6	4.7	11.3	10.8	9.1	3.7	11.3	
23-May	11.7	15.2	9.5	Z	3.1	2.4	2.1	2.2	1.9	1.5	1.4	1.0	0.9	0.9	0.7	0.9	0.8	1.0	1.1	1.4	1.6	1.6	1.9	1.6	2.9	15.2	
24-May	1.4	1.2	1.0	1.7	Z	2.4	1.8	1.8	2.1	1.7	1.7	1.5	1.3	1.1	1.1	1.2	1.3	1.4	1.2	1.2	1.1	1.2	1.3	1.0	1.4	2.4	
25-May	1.2	1.2	1.2	1.2	1.1	Z	1.0	0.9	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.4	1.4	1.1	1.1	1.4	2.8	1.8	1.1	1.3	2.8	
26-May	Z	1.2	1.3	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	0.9	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.8	0.9	1.3	
27-May	1.1	Z	2.1	2.2	2.1	2.0	2.4	2.0	1.1	0.9	1.0	1.7	1.3	1.1	1.0	1.1	1.1	1.1	1.3	1.5	1.7	1.3	1.3	1.9	1.5	2.4	
28-May	2.2	3.1	Z	2.1	2.6	2.2	2.3	2.5	2.1	1.7	1.2	1.2	0.9	0.6	0.7	0.6	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.6	1.3	3.1	
29-May	0.7	0.6	0.6	Z	0.7	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.8	0.7	0.7	0.6	0.6	0.8	
30-May	0.5	0.6	0.6	0.8	Z	1.5	1.3	0.9	1.0	0.8	0.7	1.1	1.6	1.7	1.8	1.4	1.0	1.6	4.2	4.3	1.9	0.9	1.3	1.3	1.4	4.3	
31-May	1.3	1.9	1.8	1.9	1.7	Z	1.7	2.4	2.6	2.8	2.9	3.2	3.8	3.8	3.4	3.2	2.4	2.5	2.7	3.2	3.4	2.2	1.1	1.0	2.5	3.8	
																								Diurnal Average		Diurnal Maximum	
1.8 2.1 1.6 1.4 1.6 1.5 1.4 1.4 1.4 1.4 1.4 1.3 1.3 1.3 1.2 1.2 1.2 1.3 1.5 1.5 1.5 1.7 1.6 1.6																								11.7 15.2 9.5 3.7 3.1 3.4 3.0 2.6 3.1 3.6 4.9 5.4 6.3 5.1 4.5 4.6 5.7 7.1 7.9 7.3 6.5 11.3 10.8 9.1			
Z - zerospan C - Calibration UO - Unstable Operation																											
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																											





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Stony Mountain - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	686	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Stony Mountain - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	20	22	23	28	38	65	55	55	64	90	70	27	19	16	37	57	686
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	20	22	23	28	38	65	55	55	64	90	70	27	19	16	37	57	686

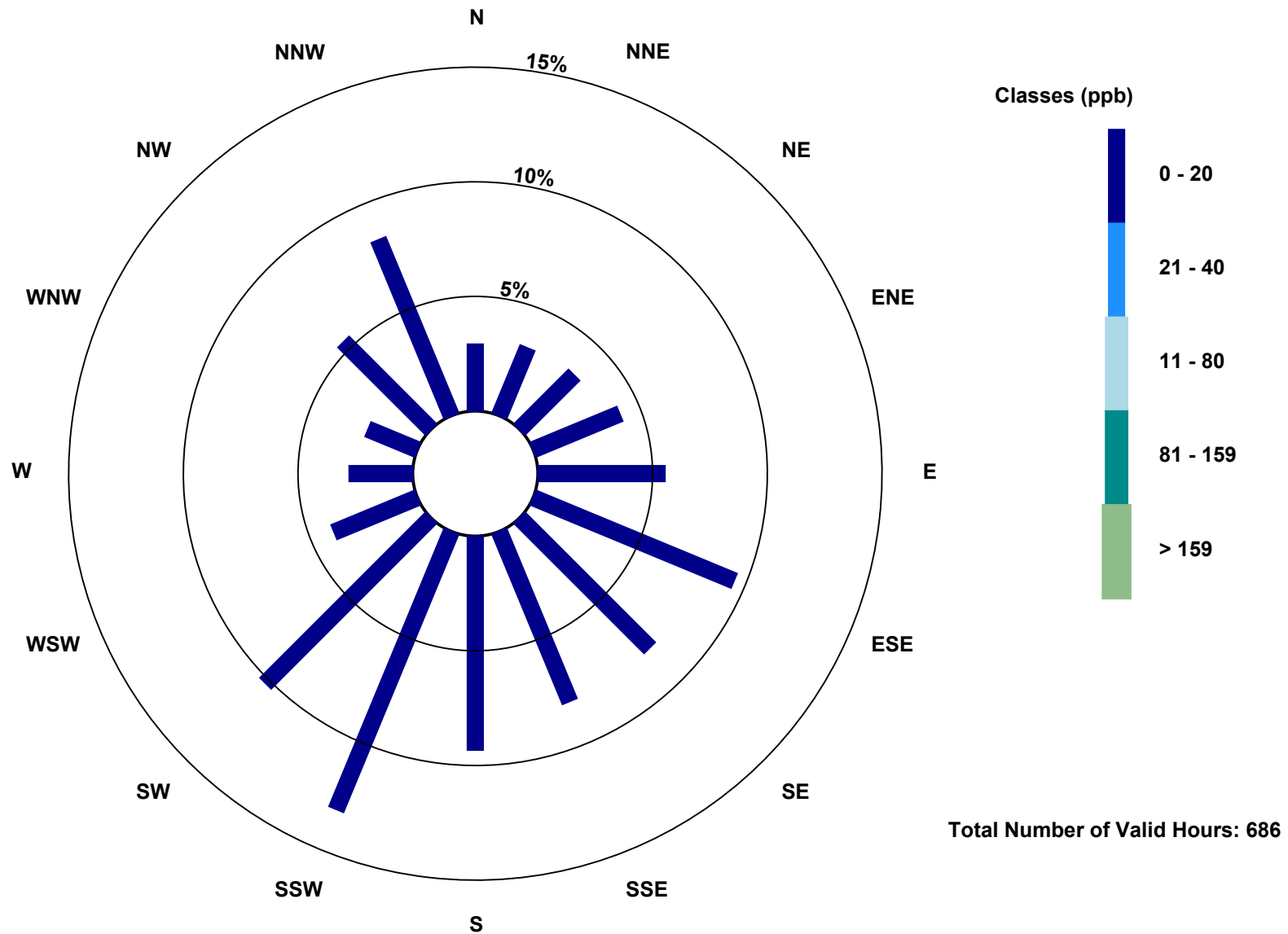
Total Number of Valid Hours: 686

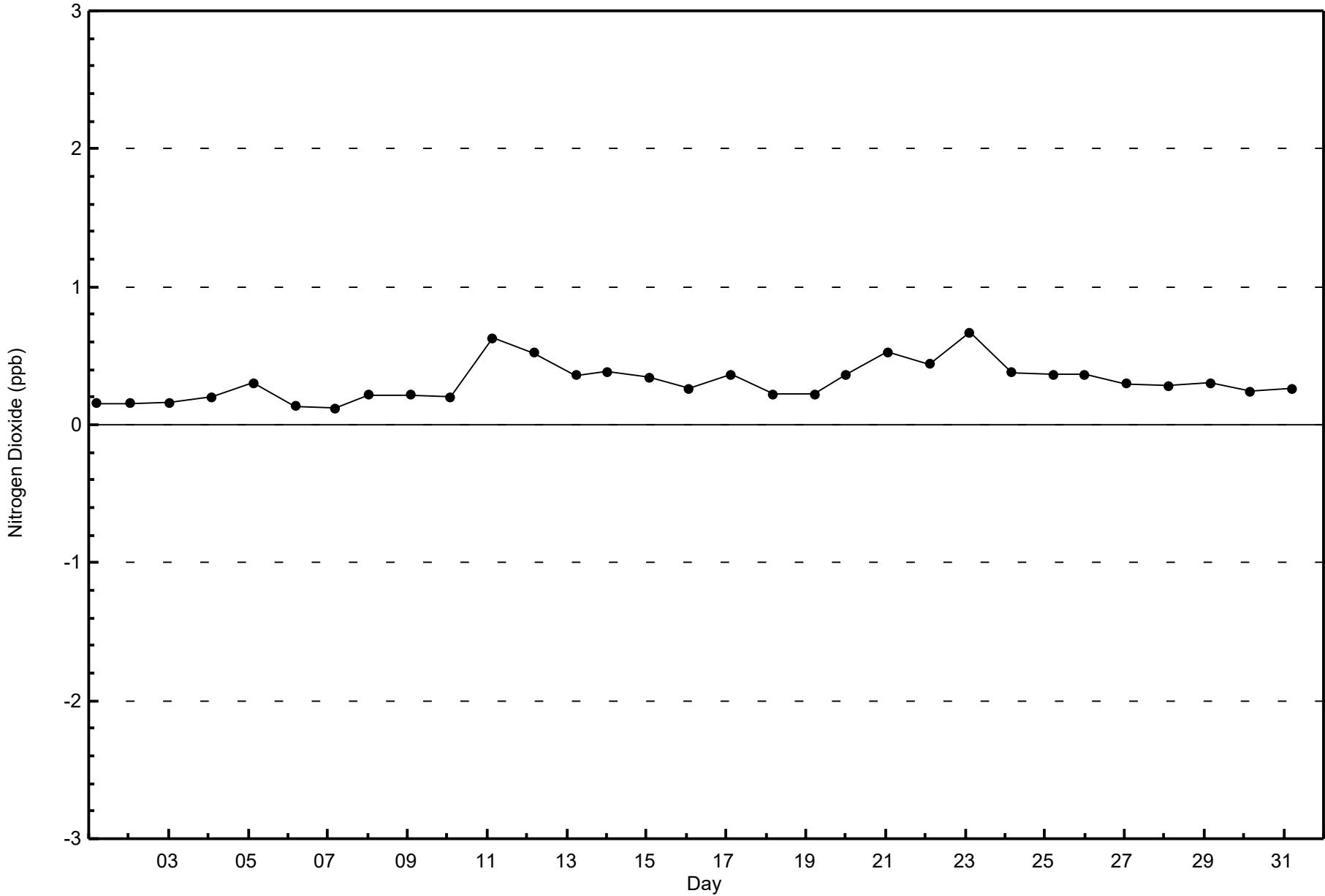
Total Number of Hours: 744

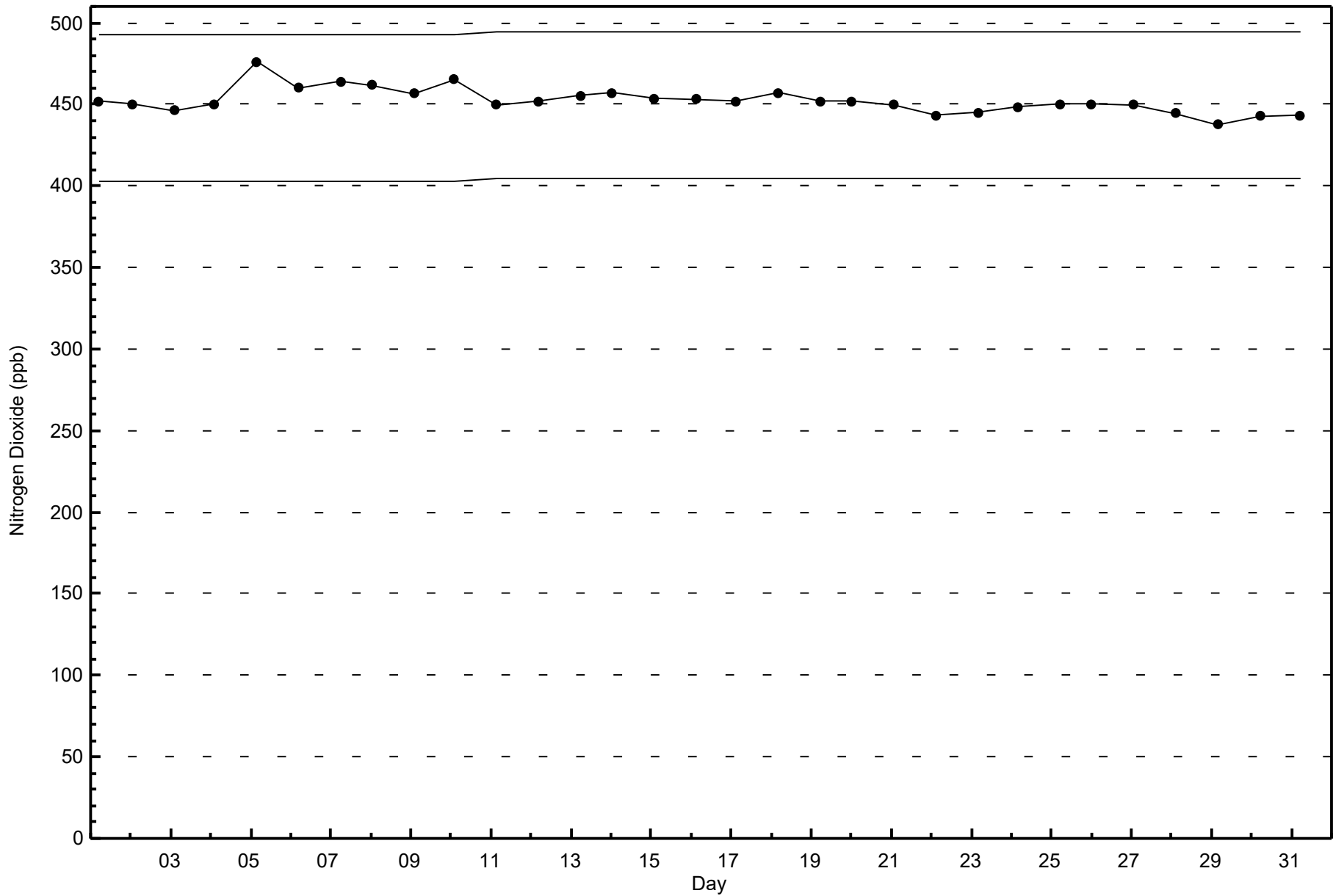


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Stony Mountain









Wood Buffalo Environmental Association
Summary of Hour Averages

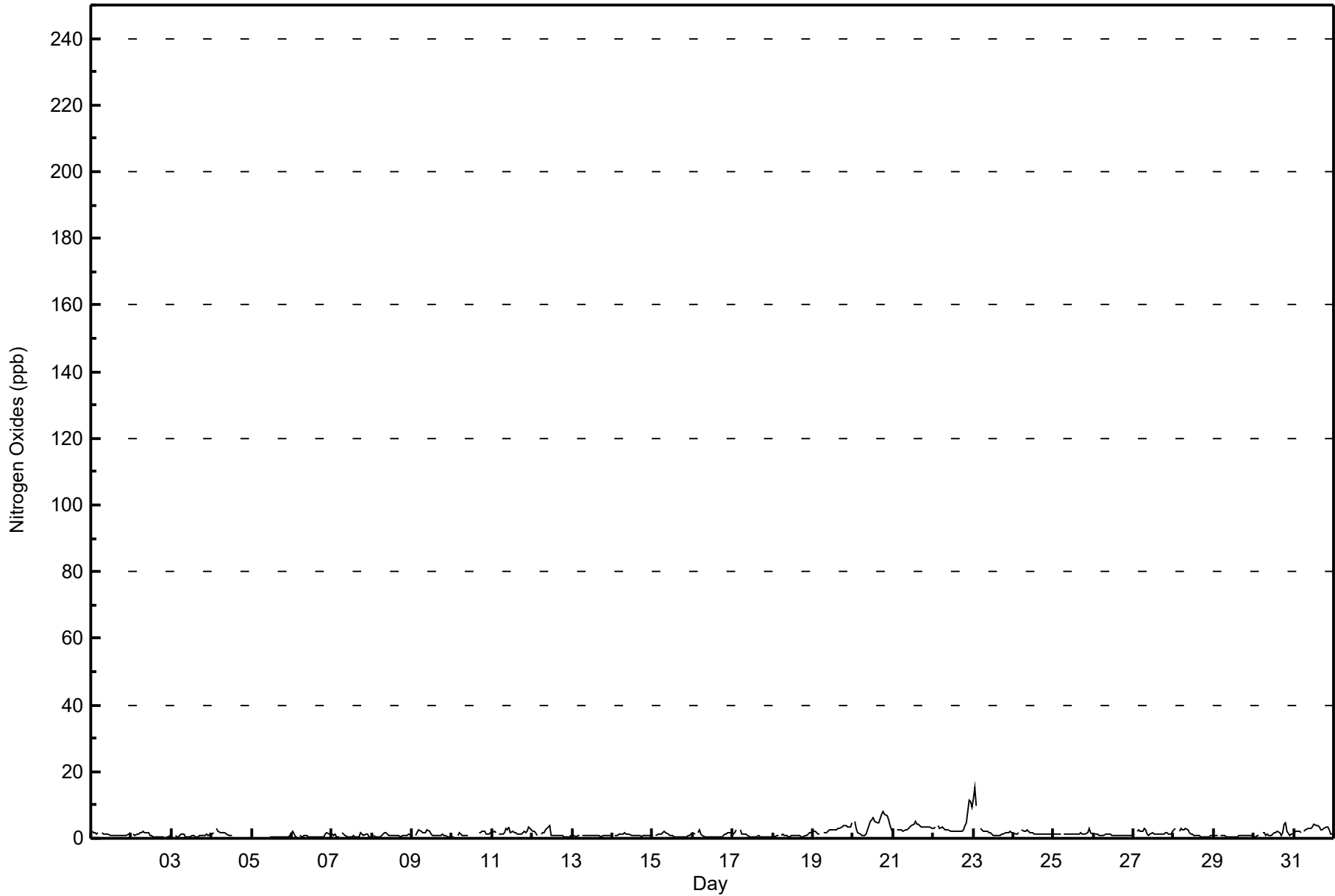
Nitrogen Oxides (NO_x) - ppb
Stony Mountain - May 2023

Maximum Value: 15.4 ppb on May 23 02:00		Maximum Daily Average: 4.3 ppb on May 20		Hours in Service: 744																						
Minimum Value: 0.2 ppb on May 2 21:00		Minimum Daily Average: 0.7 ppb on May 29		Hours of Data: 686																						
Maximum Diurnal Average: 2.1 ppb at hour 2		Minimum Diurnal Average: 1.2 ppb at hour 17		Hours of Missing Data: 58																						
Monthly Average: 1.54 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.5 Q ₁ = 0.7 Median = 1.1 Q ₃ = 1.8 P ₉₀ = 3.0 P ₉₉ = 7.5		Hours of Calibration: 36																						
				Percent Operational Time: 97.0																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	1.9	1.6	1.6	1.4	1.5	Z	1.6	1.5	1.3	1.1	1.1	0.8	0.8	0.8	0.8	0.7	0.8	0.8	0.9	1.0	1.0	1.2	1.7	1.2	1.9	
2-May	Z	1.1	0.7	1.2	1.5	1.6	1.8	2.0	1.8	1.8	1.1	0.7	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.8	0.9	2.0	
3-May	0.4	Z	0.7	0.6	0.5	0.9	1.1	1.1	0.6	0.5	0.5	0.6	0.6	0.8	0.6	0.6	0.6	0.7	0.8	0.8	1.0	1.2	0.9	1.3	0.8	1.3
4-May	1.4	1.5	Z	3.0	1.9	1.8	1.8	1.8	1.6	1.2	1.0	1.0	0.8	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	3.0
5-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	0.4	0.5	0.4	0.3	0.3	0.3	0.3	0.6	0.6	0.5	0.4	0.2	0.8	--	0.8
6-May	2.0	1.1	0.3	0.3	Z	0.9	0.6	0.7	0.7	0.7	0.6	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3	1.1	1.5	1.1	1.4	0.7	2.0
7-May	1.4	0.7	1.5	0.6	0.4	Z	1.5	1.1	0.7	0.6	0.5	0.5	0.6	0.7	0.5	0.4	0.6	1.7	1.3	0.8	1.4	1.1	0.4	0.4	0.8	1.7
8-May	Z	0.7	0.6	0.5	0.5	0.6	0.9	1.7	1.8	1.1	1.0	1.0	0.9	0.8	0.8	0.8	0.7	0.6	0.8	0.9	0.7	0.7	1.3	1.0	0.9	1.8
9-May	0.9	Z	1.0	1.5	2.5	2.1	1.7	1.8	1.7	2.4	1.9	1.1	1.0	1.0	0.7	0.7	0.7	0.9	1.3	0.7	0.8	0.6	0.6	0.6	1.2	2.5
10-May	0.6	0.6	Z	0.7	1.8	1.2	1.0	1.0	0.8	0.8	C	C	C	C	C	C	1.8	1.9	2.3	2.3	1.3	1.3	1.4	1.8	--	2.3
11-May	1.6	2.1	1.8	Z	1.3	1.3	1.4	1.5	3.2	2.7	3.6	1.9	2.0	1.8	1.7	1.4	1.1	1.3	1.7	2.3	1.8	2.2	3.3	2.6	2.0	3.6
12-May	2.3	2.1	1.5	1.0	Z	1.3	1.6	1.9	2.6	3.1	3.6	0.8	0.7	0.8	0.7	0.7	0.8	0.8	0.7	0.5	0.5	0.5	0.5	0.9	1.3	3.6
13-May	0.9	0.7	0.6	0.7	0.8	Z	1.0	1.1	0.8	0.8	1.0	1.0	0.9	0.9	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.8	1.1
14-May	Z	0.9	1.0	1.0	1.1	1.1	1.3	1.5	1.4	1.3	1.1	1.0	0.9	0.8	0.8	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.9	1.5
15-May	0.9	Z	1.1	1.1	1.1	1.3	1.8	2.1	1.6	1.1	0.9	0.8	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.6	0.6	0.7	0.8	1.2	0.9	2.1
16-May	1.7	1.5	Z	1.6	2.4	1.3	0.9	0.5	0.4	0.4	0.5	0.5	0.5	0.4	0.5	0.4	0.6	0.5	0.9	1.2	1.3	1.6	1.9	1.8	1.0	2.4
17-May	1.4	1.7	2.6	Z	2.4	1.3	1.1	1.4	1.2	0.7	0.4	0.4	0.5	0.5	0.6	0.9	0.5	0.3	0.3	0.2	0.4	0.3	0.4	0.5	0.9	2.6
18-May	0.6	0.6	0.7	0.9	Z	0.9	1.1	1.0	0.6	0.6	0.6	0.7	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.7	1.0	1.2	1.6	1.7	0.9	1.7
19-May	2.1	2.1	1.5	1.4	1.4	Z	1.5	1.6	1.7	2.0	2.4	2.4	2.4	2.4	2.5	2.8	2.9	3.5	3.7	3.7	3.6	3.4	3.3	4.6	2.6	4.6
20-May	Z	4.9	3.0	1.9	1.2	0.9	0.8	0.9	1.2	3.8	5.1	5.6	6.5	5.3	4.7	4.8	5.9	7.2	8.0	7.4	6.6	5.6	3.8	2.7	4.3	8.0
21-May	2.9	Z	2.7	2.5	2.4	2.3	2.3	2.7	2.7	3.1	3.5	3.7	4.4	5.1	4.4	4.3	3.9	3.6	3.5	3.5	3.6	3.3	3.2	3.2	3.3	5.1
22-May	3.0	3.3	Z	3.8	3.1	3.5	3.1	2.7	2.6	2.6	2.1	2.1	2.2	2.2	2.3	2.3	2.1	2.0	2.5	3.6	4.7	11.4	10.9	9.2	3.8	11.4
23-May	11.8	15.4	9.7	Z	3.2	2.5	2.2	2.3	2.0	1.6	1.5	1.1	1.0	1.0	0.8	1.0	0.9	1.1	1.2	1.5	1.7	1.7	2.0	1.7	3.0	15.4
24-May	1.5	1.3	1.1	1.8	Z	2.6	2.0	2.1	2.5	2.1	1.9	1.6	1.4	1.2	1.2	1.3	1.4	1.5	1.3	1.3	1.2	1.3	1.4	1.1	1.6	2.6
25-May	1.3	1.3	1.3	1.3	1.2	Z	1.2	1.1	1.2	1.1	1.2	1.3	1.2	1.2	1.3	1.5	1.5	1.5	1.2	1.2	1.5	2.9	1.9	1.2	1.4	2.9
26-May	Z	1.3	1.4	1.0	1.0	1.0	1.1	1.2	1.2	1.1	1.0	0.9	0.9	1.0	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.9	1.0	1.4
27-May	1.2	Z	2.2	2.3	2.2	2.2	2.8	2.4	1.3	1.0	1.1	1.8	1.4	1.2	1.1	1.2	1.2	1.2	1.4	1.6	1.8	1.4	1.4	2.0	1.6	2.8
28-May	2.3	3.2	Z	2.2	2.8	2.4	2.6	2.9	2.5	1.9	1.4	1.4	1.0	0.7	0.8	0.7	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.7	1.5	3.2
29-May	0.8	0.7	0.7	Z	0.8	0.7	0.7	0.6	0.5	0.5	0.4	0.4	0.4	0.5	0.6	0.6	0.8	0.8	0.8	0.9	0.9	0.9	0.8	0.7	0.7	0.9
30-May	0.6	0.6	0.7	0.8	Z	1.6	1.5	1.0	1.2	0.9	0.8	1.2	1.8	1.8	1.9	1.5	1.1	1.7	4.3	4.4	2.0	1.0	1.4	1.4	1.5	4.4
31-May	1.4	2.0	1.9	2.0	1.8	Z	1.9	2.6	2.8	3.0	3.1	3.4	4.0	4.0	3.6	3.4	2.6	2.6	2.8	3.3	3.5	2.4	1.3	1.1	2.6	4.0
																								Diurnal Average		
																								Diurnal Maximum		
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan																										
C - Calibration																										
UO - Unstable Operation																										



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Stony Mountain - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Stony Mountain - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	686	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Stony Mountain - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	20	22	23	28	38	65	55	55	64	90	70	27	19	16	37	57	686
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	20	22	23	28	38	65	55	55	64	90	70	27	19	16	37	57	686

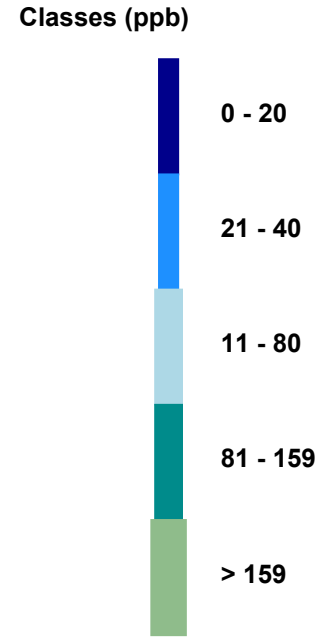
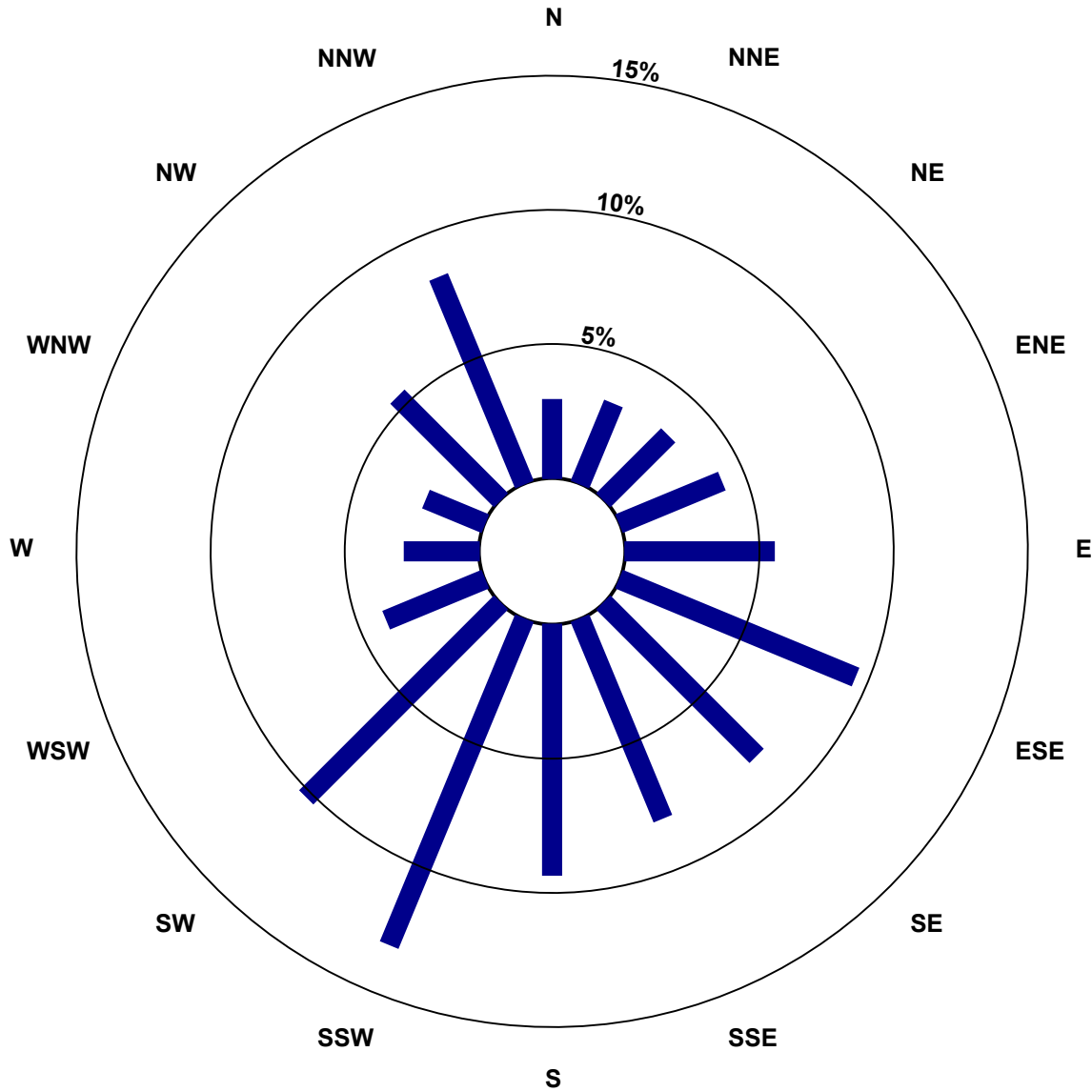
Total Number of Valid Hours: 686

Total Number of Hours: 744

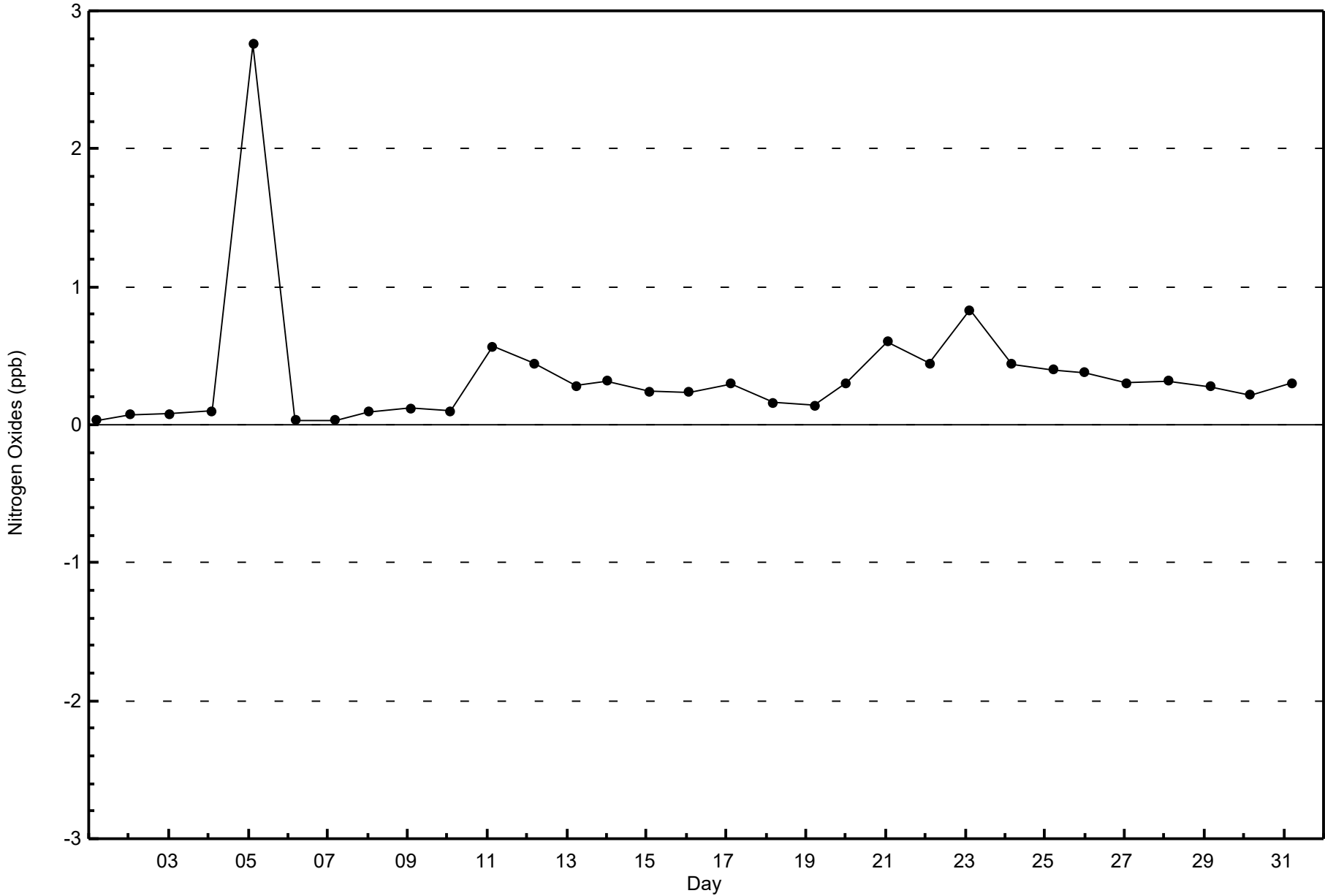


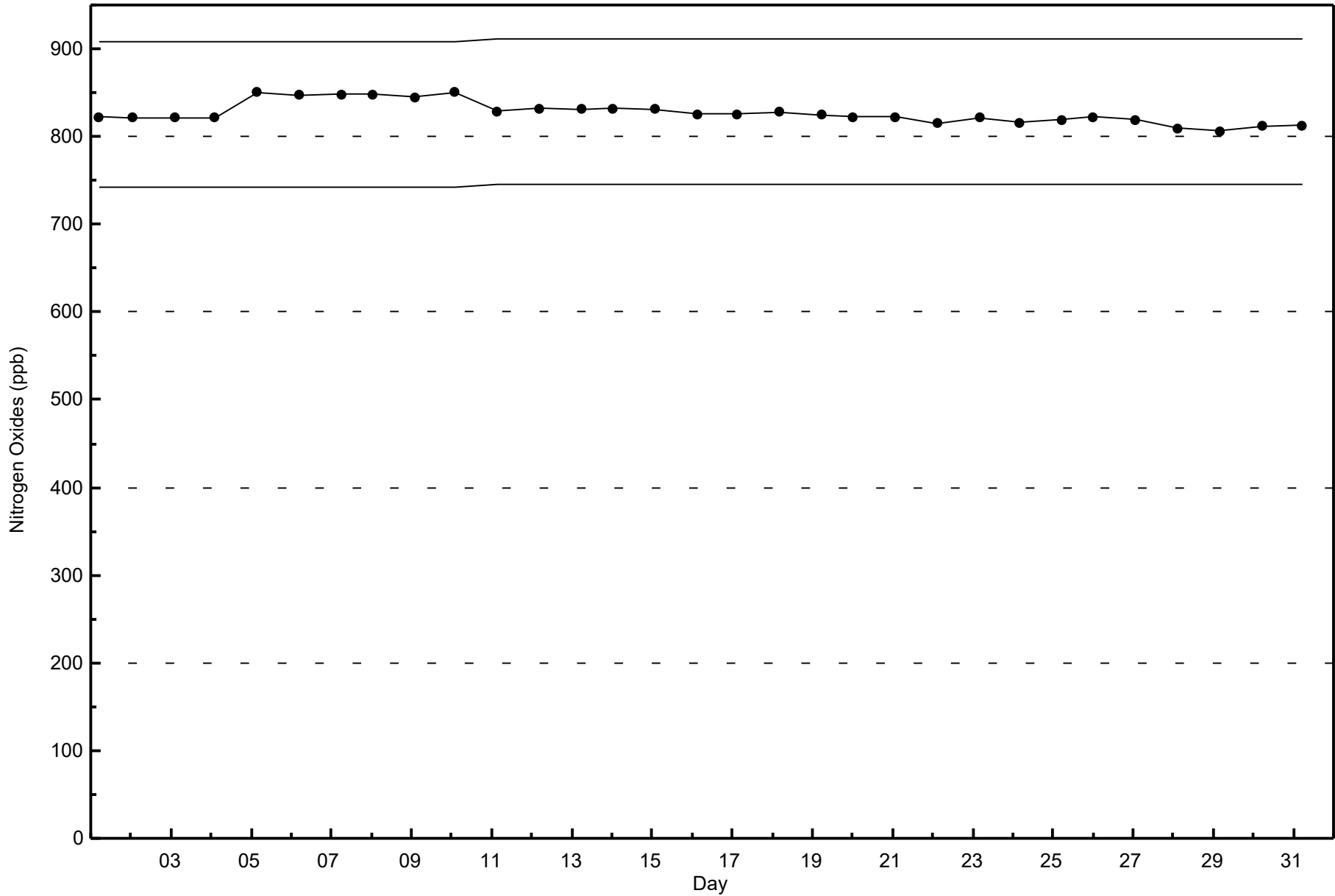
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Stony Mountain



Total Number of Valid Hours: 686







Wood Buffalo Environmental Association

Summary of Hour Averages

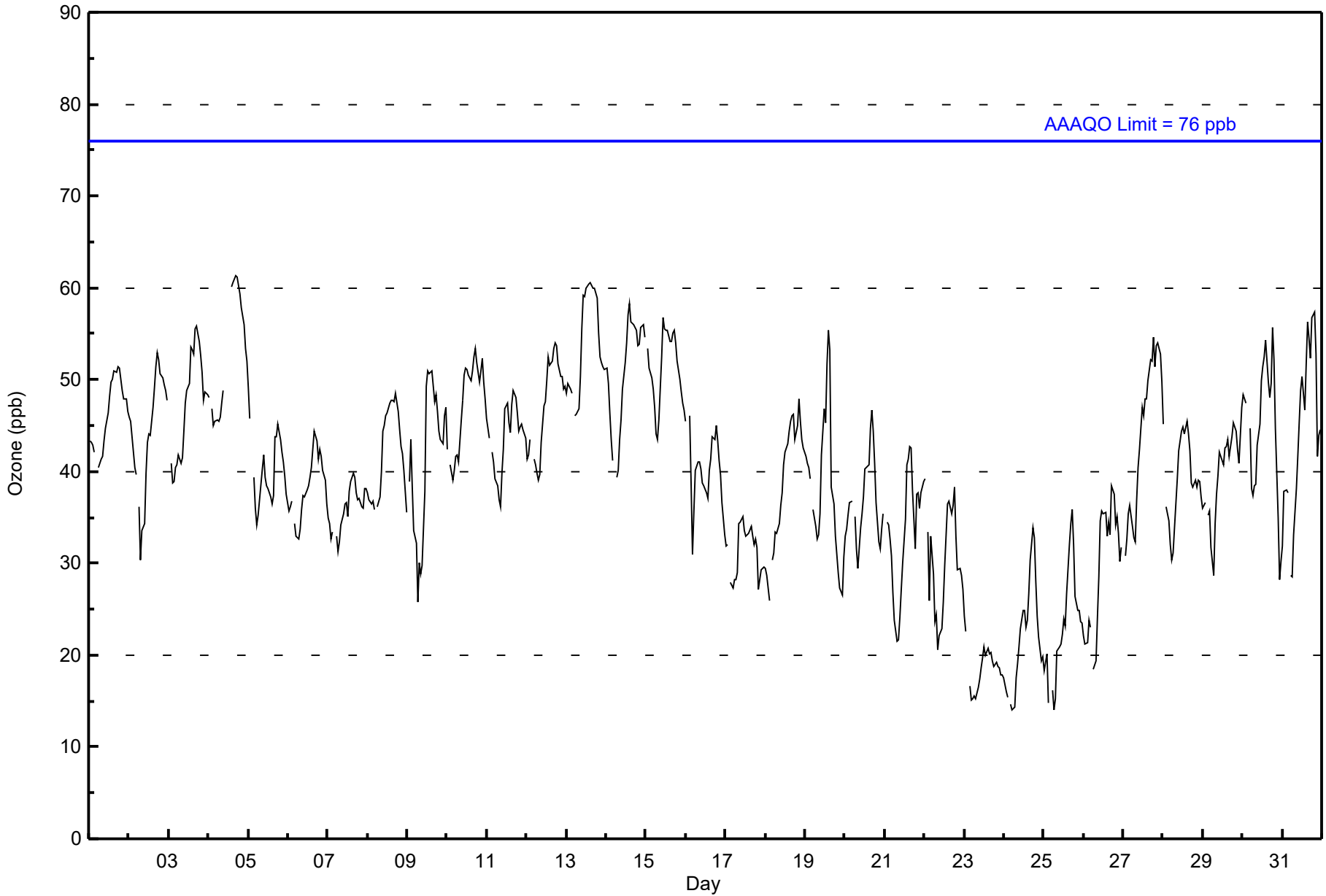
Ozone (O₃) - ppb

Stony Mountain - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 61.3 ppb on May 4 17:00	Maximum Daily Average: 53.9 ppb on May 13		Hours of Data:	709
Minimum Value: 14.0 ppb on May 24 06:00	Minimum Daily Average: 18.7 ppb on May 23		Hours of Missing Data:	35
Maximum Diurnal Average: 45.5 ppb at hour 18	Minimum Diurnal Average: 32.7 ppb at hour 7		Hours of Calibration:	35
Monthly Average: 39.84 ppb	Percentiles: P ₁ = 15.3 P ₁₀ = 24.7 Q ₁ = 33.6 Median = 40.5 Q ₃ = 47.5 P ₉₀ = 52.4 P ₉₉ = 60.2		Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	43.3	43.1	42.8	42.1	Z	40.5	40.9	41.3	41.7	43.3	44.6	46.4	48.2	49.7	50.1	51.0	50.8	51.5	51.3	50.0	48.8	47.9	47.9	46.6	46.2	51.5																						
2-May	45.9	45.4	43.7	40.5	39.6	Z	36.1	30.4	33.5	34.4	39.8	43.2	44.1	44.0	46.9	49.1	51.5	53.0	52.1	50.7	50.2	49.5	48.8	47.8	44.4	53.0																						
3-May	Z	40.9	38.8	39.0	40.3	40.7	41.8	40.9	41.5	44.4	47.4	48.9	49.6	53.6	53.2	52.7	55.5	55.8	54.1	52.6	50.8	47.7	48.7	48.4	47.3	55.8																						
4-May	48.0	Z	46.9	45.0	45.4	45.5	45.5	46.0	47.5	48.9	C	C	C	C	60.2	60.6	61.3	61.2	60.2	59.3	57.8	56.0	53.3	52.1	52.7	61.3																						
5-May	49.1	45.7	Z	39.4	36.0	34.1	35.3	36.9	40.2	41.7	39.4	38.5	38.1	37.3	36.5	37.4	43.7	43.8	45.1	43.5	42.1	41.0	39.5	37.5	40.1	49.1																						
6-May	35.7	36.2	36.7	Z	34.3	33.0	32.6	33.7	35.9	37.3	37.2	38.0	38.4	39.3	40.4	42.4	44.3	43.3	41.3	42.4	41.7	40.0	39.1	36.5	38.3	44.3																						
7-May	35.0	34.3	32.7	33.5	Z	32.9	31.3	32.3	34.2	35.3	36.5	36.7	35.1	37.8	38.9	39.9	39.4	37.6	36.8	37.0	36.1	36.0	38.1	38.2	35.9	39.9																						
8-May	37.7	36.9	36.4	36.7	35.9	Z	36.1	37.2	40.0	44.5	45.0	46.1	46.3	47.4	47.8	47.8	47.6	48.5	46.5	44.6	42.7	41.9	40.1	35.5	42.1	48.5																						
9-May	Z	38.9	43.5	38.3	33.6	32.2	25.7	30.0	28.9	29.7	37.9	49.3	50.9	50.6	50.7	50.9	47.7	48.3	46.5	44.4	43.5	43.0	46.0	47.0	41.6	50.9																						
10-May	42.4	Z	40.7	39.0	40.1	41.6	41.8	41.0	45.7	47.8	50.5	51.2	51.1	50.5	50.0	51.0	52.5	53.4	51.8	49.8	51.0	52.4	49.7	47.9	47.5	53.4																						
11-May	45.7	43.6	Z	42.1	41.1	39.3	38.4	36.9	36.2	39.8	42.3	46.9	47.5	45.3	44.2	47.3	48.8	48.0	46.4	44.4	44.9	45.2	44.5	43.6	43.6	48.8																						
12-May	41.4	41.8	43.5	Z	41.3	40.7	39.7	39.0	39.6	43.2	47.2	47.7	49.8	52.5	51.6	52.0	53.4	54.1	53.7	51.7	50.4	50.3	49.0	49.3	47.1	54.1																						
13-May	48.5	49.5	48.9	48.4	Z	46.1	46.2	46.8	50.4	55.5	59.2	59.1	60.0	60.5	60.6	60.2	60.0	60.0	58.9	55.0	52.4	51.9	51.4	51.0	53.9	60.6																						
14-May	51.3	49.5	46.4	43.5	41.2	Z	39.3	40.2	43.5	45.5	48.9	51.8	54.0	57.0	58.3	56.3	56.0	55.6	55.3	53.7	53.9	55.7	55.9	54.7	50.8	58.3																						
15-May	Z	53.4	51.3	50.2	49.0	46.9	44.1	43.4	45.6	52.4	56.7	55.5	55.4	55.4	54.2	54.2	55.1	55.4	54.0	52.0	50.0	48.6	47.4	46.7	51.2	56.7																						
16-May	45.5	Z	46.0	38.8	30.9	35.6	40.1	41.1	41.0	40.3	38.7	38.5	37.6	37.0	40.1	41.4	43.8	43.5	45.0	43.3	41.2	39.6	36.6	33.1	39.9	46.0																						
17-May	31.9	32.0	Z	27.8	27.3	28.3	28.2	29.0	34.3	34.5	35.1	33.5	33.0	33.1	33.2	34.0	32.9	32.0	32.7	31.7	27.2	29.3	29.4	29.6	31.3	35.1																						
18-May	29.4	28.7	25.9	Z	30.4	31.1	33.4	33.2	34.3	36.3	37.6	40.7	42.1	43.0	44.3	45.5	46.1	46.2	43.4	45.0	47.8	45.4	43.4	42.6	39.0	47.8																						
19-May	41.6	40.9	40.5	39.2	Z	35.9	34.0	32.6	33.1	35.4	41.8	46.9	45.4	51.6	55.4	53.2	38.2	36.4	33.0	30.9	29.0	27.3	26.6	30.7	38.3	55.4																						
20-May	33.0	33.7	35.2	36.6	36.8	Z	35.0	31.6	29.5	33.9	35.4	37.2	40.3	40.4	40.7	44.7	46.6	44.4	40.9	36.6	32.3	31.5	33.8	35.4	36.8	46.6																						
21-May	Z	34.5	34.2	32.6	30.8	26.8	23.7	21.5	21.6	24.1	27.1	30.0	34.8	40.7	41.4	42.7	42.6	38.0	31.5	37.6	37.7	35.9	37.6	38.9	33.3	42.7																						
22-May	39.1	Z	33.4	25.9	33.0	28.8	23.7	24.4	20.6	22.2	22.9	25.8	29.8	33.1	36.4	36.7	35.4	36.3	38.3	33.0	29.3	29.4	28.7	27.2	30.1	39.1																						
23-May	24.3	22.6	Z	16.7	15.1	15.3	15.5	15.3	16.4	17.4	18.7	19.7	20.8	20.0	20.7	20.1	20.3	19.3	18.8	19.2	18.8	18.5	17.9	17.9	18.7	24.3																						
24-May	17.6	16.0	15.4	Z	14.7	14.0	14.4	17.5	19.1	20.9	22.9	24.9	24.9	23.1	23.8	26.7	30.4	33.9	32.8	28.1	24.3	22.0	19.4	19.8	22.0	33.9																						
25-May	18.3	19.2	20.1	14.8	Z	16.1	14.0	15.3	20.4	20.9	21.2	22.3	23.9	23.1	26.7	32.0	34.4	35.8	32.1	26.5	24.9	24.8	23.6	23.4	23.2	35.8																						
26-May	22.2	21.2	21.4	23.8	23.0	Z	18.5	19.4	24.2	28.5	34.7	35.7	35.4	35.6	32.9	34.4	33.1	38.5	37.6	34.1	35.0	33.3	30.3	31.8	29.8	38.5																						
27-May	Z	30.8	32.7	35.3	36.3	34.0	32.9	32.4	36.8	40.4	42.4	47.0	46.1	47.9	47.9	49.9	52.2	52.0	54.6	51.4	53.7	53.9	52.7	49.8	44.0	54.6																						
28-May	45.1	Z	36.2	34.6	32.1	30.3	31.2	33.9	39.2	42.2	43.3	44.3	44.8	44.1	45.4	44.1	42.2	38.7	38.4	39.0	38.2	39.1	39.0	37.3	39.2	45.4																						
29-May	36.0	36.6	Z	35.2	35.7	31.8	28.7	34.4	37.6	39.5	42.1	41.7	40.8	42.6	42.8	43.5	41.7	43.9	45.3	44.8	44.4	42.5	40.9	47.0	40.0	47.0																						
30-May	48.3	47.9	47.5	Z	44.7	38.2	37.3	38.5	38.6	42.9	45.1	49.9	51.5	52.5	54.3	49.7	48.0	49.6	55.8	52.1	44.7	34.9	28.2	30.2	44.8	55.8																						
31-May	31.9	37.9	37.9	37.8	Z	28.6	28.5	33.0	38.1	41.6	45.3	48.9	50.3	46.7	51.7	56.3	54.4	52.4	56.8	57.4	52.8	41.7	43.9	44.6	44.3	57.4																						
																								38.0	37.0	37.6	36.0	34.7	33.4	32.7	33.2	35.1	37.6	39.6	41.5	42.3	43.2	44.6	45.4	45.5	45.5	44.9	43.3	41.9	40.5	39.7	39.4	Diurnal Average
																								51.3	53.4	51.3	50.2	49.0	46.9	46.2	46.8	50.4	55.5	59.2	59.1	60.0	60.5	60.6	60.6	61.3	61.2	60.2	59.3	57.8	56.0	55.9	54.7	Diurnal Maximum

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ozone (O₃) - ppb
Stony Mountain - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	39	5.50	5.50
21 - 50	560	78.98	84.49
51 - 82	110	15.51	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Stony Mountain - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	0	1	0	1	8	13	2	2	1	1	1	0	0	0	2	7	39
21 - 50	21	19	22	23	29	54	48	46	55	69	43	24	19	15	28	45	560
51 - 82	3	4	1	4	1	0	10	12	13	22	28	2	1	1	5	3	110
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	24	23	28	38	67	60	60	69	92	72	26	20	16	35	55	709

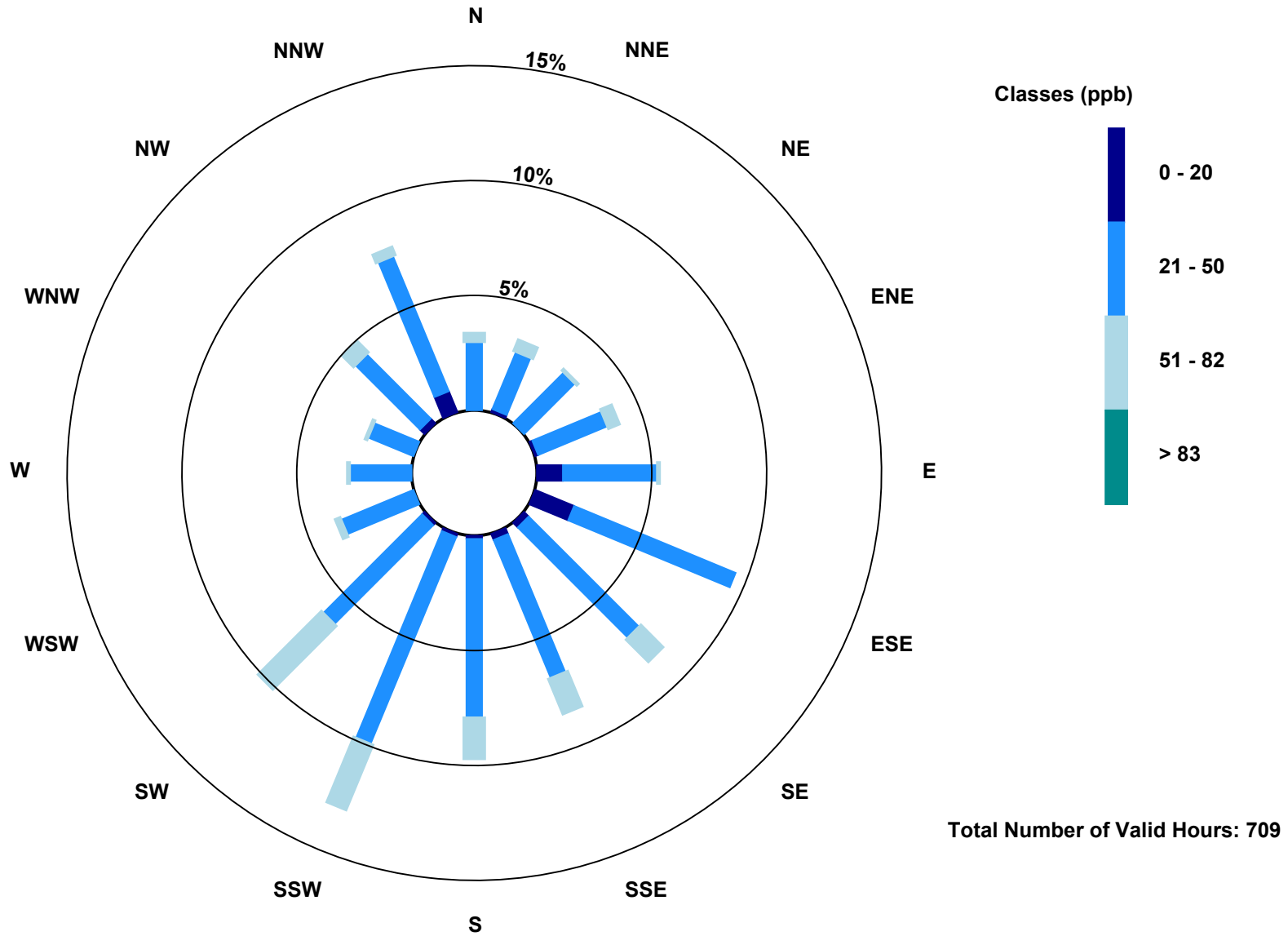
Total Number of Valid Hours: 709

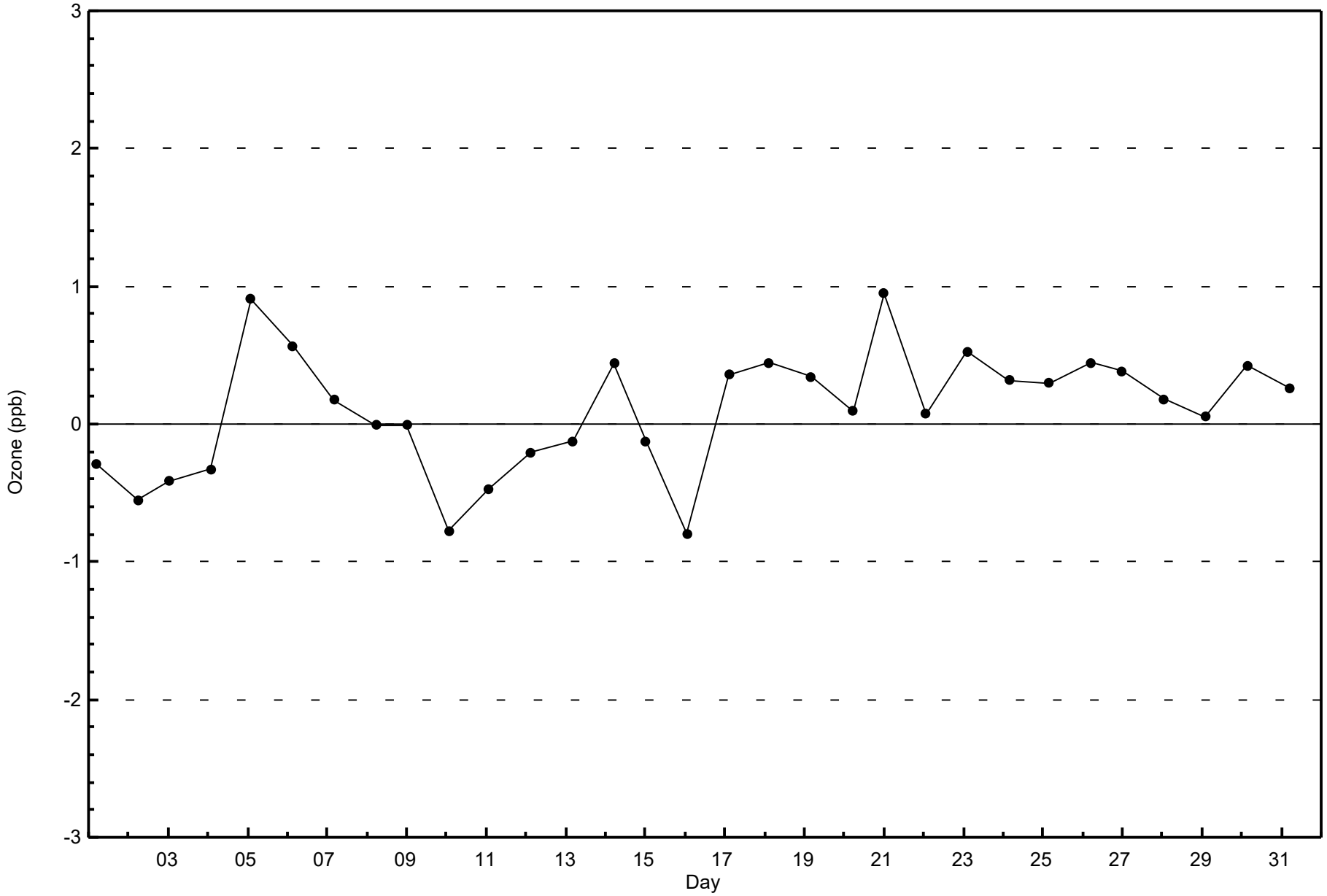
Total Number of Hours: 744

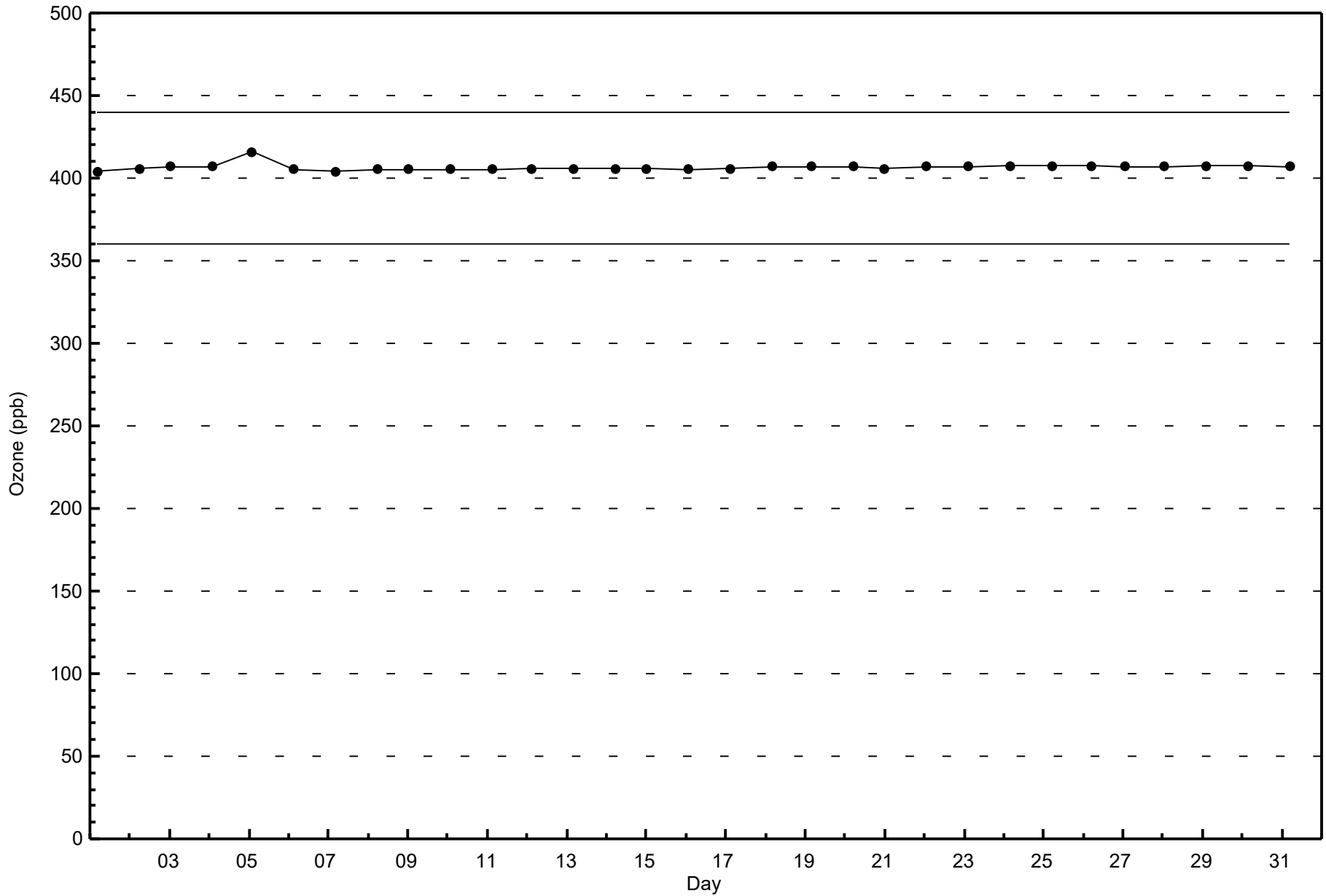


Wood Buffalo Environmental Association
Wind Rose May 2023

Ozone (O₃) - ppb
Stony Mountain





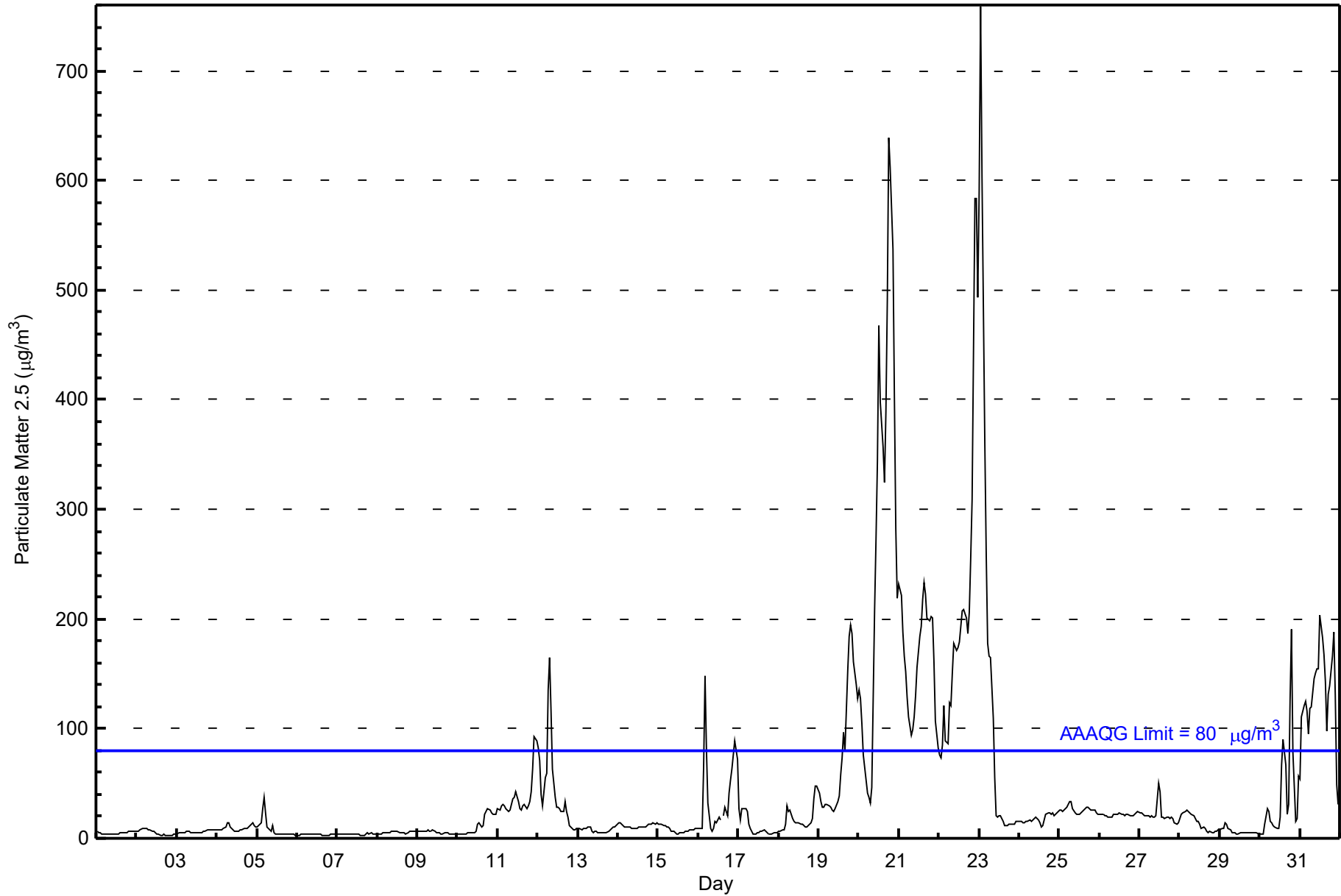




Summary of Hour Averages

Stony Mountain - May 2023

Number of Exceedences (AAAQO):		1-hr: 114	24-hr: 10	Hours in Service:																	744					
Maximum Value: 758.5 µg/m ³ on May 23 02:00		Maximum Daily Average: 274.9 µg/m ³ on May 20																	Hours of Data:	743						
Minimum Value: 2.8 µg/m ³ on May 2 15:00		Minimum Daily Average: 3.6 µg/m ³ on May 6																	Hours of Missing Data:	1						
Maximum Diurnal Average: 62.8 µg/m ³ at hour 20		Minimum Diurnal Average: 31.0 µg/m ³ at hour 9																	Hours of Calibration:	1						
Monthly Average: 44.92 µg/m ³		Percentiles: P ₁ = 3.0 P ₁₀ = 4.0 Q ₁ = 5.7 Median = 12.8 Q ₃ = 28.3 P ₉₀ = 138.2 P ₉₉ = 518.5																	Percent Operational Time:	100.0						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	6.1	5.8	4.6	4.0	3.6	4.3	4.4	3.5	3.6	3.6	3.9	3.7	4.0	4.4	4.8	4.9	5.1	5.2	5.5	5.8	6.4	6.1	6.0	6.0	4.8	6.4
2-May	6.2	6.3	7.7	8.7	9.6	9.4	8.8	8.3	7.5	7.1	6.4	5.5	4.1	3.5	2.8	3.2	3.4	3.1	3.2	3.0	2.9	3.0	3.6	4.2	5.5	9.6
3-May	4.1	4.9	5.3	5.3	5.5	5.8	5.9	5.8	4.7	5.6	5.5	5.5	4.8	5.6	5.3	5.5	6.2	7.0	7.6	7.6	8.4	7.8	7.4	7.9	6.0	8.4
4-May	8.3	8.3	7.9	7.8	8.5	10.3	14.5	13.8	10.5	8.9	7.1	6.4	6.1	6.7	7.3	8.0	8.9	8.9	9.4	10.5	12.1	13.7	11.7	10.9	9.4	14.5
5-May	10.2	11.1	14.2	27.3	36.9	22.7	10.4	9.2	7.0	11.3	5.1	4.2	4.2	4.3	4.2	4.1	3.7	3.7	3.5	3.4	3.6	3.4	3.6	3.1	8.9	36.9
6-May	2.9	3.1	3.5	3.7	4.2	4.2	4.2	4.1	4.2	4.2	4.2	3.6	3.4	3.3	3.3	3.2	3.0	3.1	3.0	3.2	3.8	3.9	3.6	3.5	3.6	4.2
7-May	3.4	3.5	3.6	3.7	3.7	3.6	4.2	3.8	3.7	3.8	3.9	3.9	3.8	3.3	3.1	2.9	3.0	3.9	4.7	3.7	5.0	4.2	3.7	3.9	3.7	5.0
8-May	3.9	4.0	4.2	4.6	4.7	5.0	5.2	5.7	5.9	6.0	6.0	6.2	6.1	5.6	5.6	5.5	4.9	4.2	5.6	5.8	6.0	5.9	6.5	6.4	5.4	6.5
9-May	6.2	6.3	6.0	6.4	6.8	6.6	7.6	6.9	6.7	7.6	7.0	4.8	4.7	5.2	3.9	4.3	5.4	5.3	5.4	3.9	4.0	4.1	4.0	3.7	5.5	7.6
10-May	3.9	4.3	4.3	4.3	4.4	4.4	4.6	5.0	5.1	5.6	5.3	6.7	13.1	14.4	10.5	12.0	21.7	25.1	27.1	25.2	22.8	22.5	21.3	22.1	12.3	27.1
11-May	26.8	26.2	29.5	30.6	29.4	27.5	24.6	25.7	31.0	35.7	37.7	42.3	34.0	26.6	25.1	29.6	31.4	27.6	29.2	33.2	42.4	63.5	92.7	88.3	37.1	92.7
12-May	82.0	71.2	39.4	29.7	54.9	59.9	135.7	165.4	117.8	63.1	36.9	28.6	28.8	27.5	24.4	23.9	33.2	24.4	19.4	11.3	9.0	7.9	8.2	9.3	46.3	165.4
13-May	9.4	8.7	8.3	8.7	8.7	9.1	10.1	9.8	7.0	5.4	6.3	6.7	5.6	5.5	5.6	5.0	5.6	5.5	6.3	7.6	8.8	9.7	10.7	12.1	7.8	12.1
14-May	14.4	14.7	13.2	11.8	10.6	9.8	10.1	9.9	9.2	9.0	8.9	9.3	9.7	10.1	9.9	10.1	10.9	11.5	12.6	13.1	13.3	13.7	13.5	13.7	11.4	14.7
15-May	13.4	12.8	12.3	11.6	11.3	10.8	9.9	8.5	6.7	6.0	5.1	3.8	4.0	4.6	4.9	5.4	5.9	6.0	7.1	7.3	7.8	8.3	8.9	9.6	8.0	13.4
16-May	9.0	9.0	9.5	63.9	148.5	81.7	32.0	8.5	6.2	9.1	15.8	13.8	19.7	16.2	C	20.0	28.1	20.4	40.8	53.0	63.3	76.2	88.5	71.7	39.3	148.5
17-May	26.6	17.0	27.5	27.7	27.7	24.8	13.4	8.7	6.9	3.3	3.7	4.9	5.6	6.3	6.5	7.4	5.8	4.6	4.2	3.7	4.1	4.6	5.5	5.4	10.7	27.7
18-May	6.8	6.4	7.2	7.2	12.9	29.5	24.4	26.3	18.6	15.9	13.8	13.6	13.9	13.1	12.8	11.7	10.5	10.0	11.5	13.7	18.4	35.9	47.5	47.3	17.9	47.5
19-May	41.0	33.9	28.4	28.9	30.6	30.6	30.0	28.3	25.7	25.0	26.9	33.4	38.0	58.1	73.0	96.9	79.6	153.6	184.4	194.3	186.9	161.6	140.1	127.4	77.4	194.3
20-May	134.9	127.7	104.6	75.6	52.2	41.4	36.8	32.6	46.4	208.4	273.6	343.9	467.6	397.4	356.7	324.5	389.5	490.9	638.8	612.2	536.7	403.0	282.2	219.5	274.9	638.8
21-May	232.2	221.6	188.0	166.1	151.9	129.3	110.8	93.5	99.5	110.2	130.6	156.3	184.0	193.0	218.1	233.2	222.2	200.7	198.3	202.7	200.6	160.7	107.5	82.6	166.4	233.2
22-May	75.7	73.5	85.5	121.2	88.7	86.9	123.3	121.1	150.5	178.0	171.5	174.2	179.6	193.1	207.2	208.5	201.3	186.2	206.0	255.2	308.6	583.2	583.6	493.4	210.7	583.6
23-May	591.7	758.5	603.0	359.0	258.0	177.4	166.5	165.5	109.0	55.8	20.1	19.0	20.6	21.0	15.3	11.4	11.0	11.4	12.8	12.5	12.7	13.4	14.9	15.7	144.0	758.5
24-May	15.3	14.9	14.5	14.6	15.2	15.9	16.4	15.9	16.7	18.7	19.2	17.2	13.8	10.2	11.6	16.4	21.9	23.3	23.3	22.3	22.9	20.9	23.0	25.1	17.9	25.1
25-May	25.5	26.1	24.1	25.5	28.3	30.8	33.4	33.1	26.6	22.6	22.1	22.4	22.0	22.8	23.9	26.5	28.4	27.8	26.8	26.1	25.4	25.8	23.5	21.5	25.9	33.4
26-May	22.0	21.6	22.0	21.0	20.6	19.7	19.9	19.6	21.6	22.3	21.8	22.0	23.8	22.2	21.5	21.2	21.6	21.3	21.0	20.9	21.3	22.4	23.0	23.8	21.6	23.8
27-May	23.7	23.0	22.2	21.2	21.0	20.7	19.8	20.4	19.8	19.3	20.3	50.7	42.3	19.4	19.4	18.6	19.3	19.2	18.0	19.3	18.6	13.9	12.3	14.4	21.5	50.7
28-May	18.3	21.7	23.8	24.7	25.2	24.4	23.1	21.6	20.7	18.3	15.2	15.8	12.4	9.3	10.6	8.8	6.9	5.7	5.9	5.7	5.8	6.4	6.3	7.8	14.4	25.2
29-May	8.3	8.5	8.5	14.8	13.5	8.9	7.3	5.5	4.6	4.5	4.3	4.3	4.6	5.1	5.7	5.6	4.8	4.9	4.7	5.2	5.0	5.4	5.7	4.5	6.4	14.8
30-May	4.1	4.0	4.4	13.4	27.1	24.6	16.1	13.9	11.0	9.7	9.3	8.7	19.6	66.9	89.9	67.4	21.9	31.1	124.9	190.5	78.8	15.4	18.0	57.3	38.7	190.5
31-May	54.0	110.3	121.1	125.2	116.1	95.6	118.0	119.2	146.2	151.0	154.5	154.3	203.2	183.0	167.6	142.8	98.3	131.6	138.9	165.8	187.9	130.3	48.4	31.2	128.9	203.2
48.1 53.8 47.0 41.2 40.0 33.4 33.9 32.9 31.0 34.0 34.6 38.6 45.4 44.1 45.4 43.5 42.7 48.0 58.4 62.8 59.8 59.9 52.8 46.9																								Diurnal Average		
591.7 758.5 603.0 359.0 258.0 177.4 166.5 165.5 150.5 208.4 273.6 343.9 467.6 397.4 356.7 324.5 389.5 490.9 638.8 612.2 536.7 583.2 583.6 493.4																								Diurnal Maximum		
C - Calibration																										
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Stony Mountain - May 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	170	22.88	22.88
6 - 15	243	32.71	55.59
16 - 25	117	15.75	71.33
26 - 80	99	13.32	84.66
> 81.0	114	15.34	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



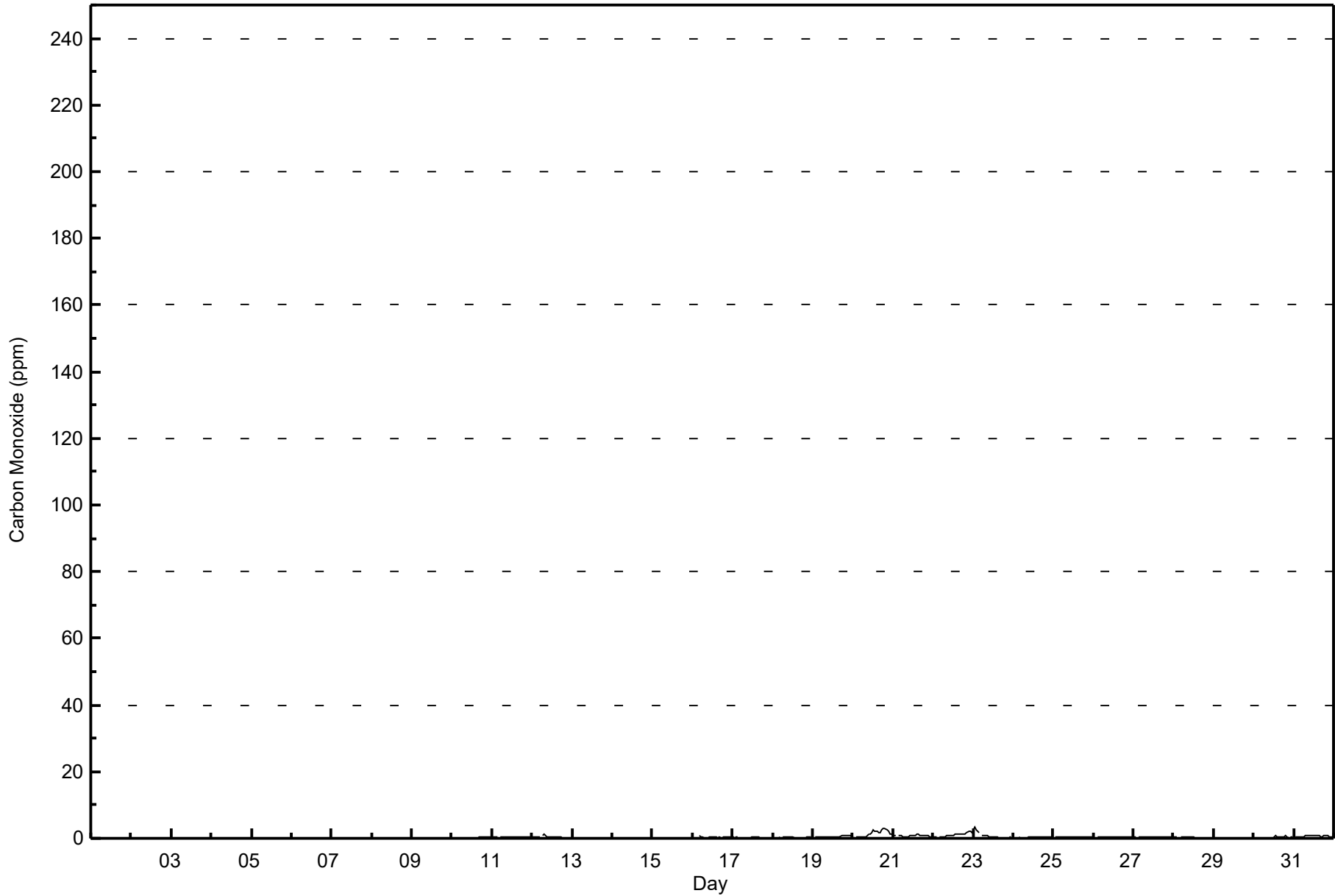
Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Stony Mountain - May 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	6	3	1	4	5	35	30	10	20	9	10	6	5	7	10	9	170
6 - 15	3	7	2	1	5	15	15	32	28	41	51	8	12	6	7	10	243
16 - 25	1	2	5	4	1	7	3	9	11	28	12	9	2	0	11	12	117
26 - 80	4	3	4	4	10	6	6	7	5	15	4	2	0	2	10	17	99
> 81.0	10	9	12	15	18	4	10	10	8	4	0	2	1	1	1	9	114
Totals	24	24	24	28	39	67	64	68	72	97	77	27	20	16	39	57	743

Total Number of Valid Hours: 743

Total Number of Hours: 744





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Carbon Monoxide (CO) - ppm
Stony Mountain - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.3	516	75.00	75.00
0.4 - 0.5	77	11.19	86.19
0.6 - 0.7	28	4.07	90.26
0.8 - 1.4	48	6.98	97.24
1.5 - 10	18	2.62	99.85
> 10	0	0.00	99.85

Total Number of Valid Hours: 688

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Carbon Monoxide (CO) - ppm
Stony Mountain - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	12	12	8	7	16	59	42	44	55	82	66	22	15	13	25	38	516
0.4 - 0.5	5	4	5	7	3	3	3	2	6	6	7	1	3	3	8	11	77
0.6 - 0.7	3	6	2	1	1	0	4	1	2	0	0	2	1	0	2	3	28
0.8 - 1.4	2	2	8	6	8	1	4	7	3	3	0	0	0	0	0	4	48
1.5 - 10	0	0	0	4	10	3	1	0	0	0	0	0	0	0	0	0	18
> 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	22	24	23	25	38	66	54	54	66	91	73	25	19	16	35	56	687

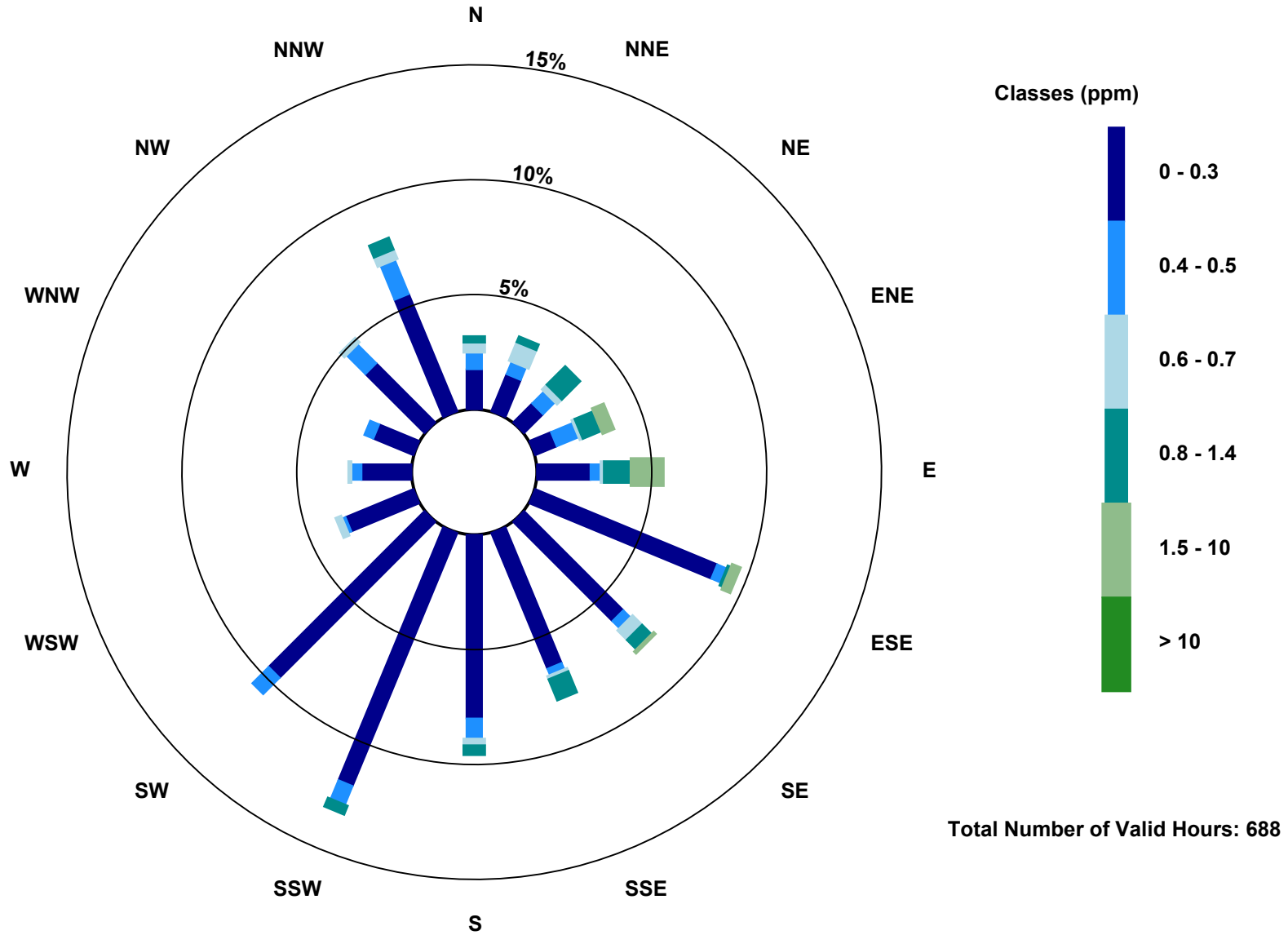
Total Number of Valid Hours: 688

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Carbon Monoxide (CO) - ppm
Stony Mountain





Wood Buffalo Environmental Association
Summary of Hour Averages

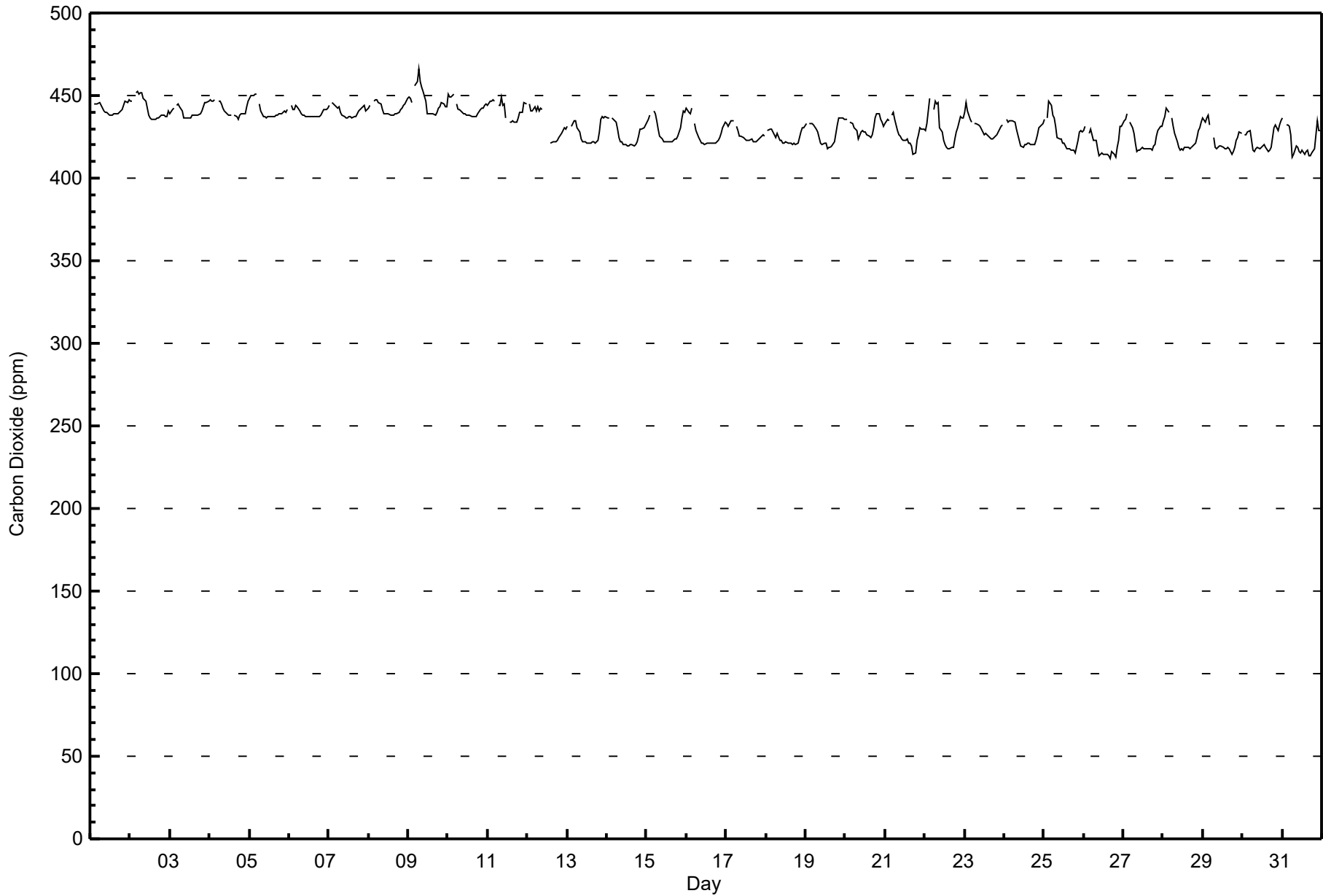
Carbon Dioxide (CO₂) - ppm
Stony Mountain - May 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service:																	744					
Maximum Value: 465.8 ppm on May 9 07:00		Maximum Daily Average: 446.6 ppm on May 9																	Hours of Data:	707						
Minimum Value: 412.0 ppm on May 26 17:00		Minimum Daily Average: 420.2 ppm on May 26																	Hours of Missing Data:	37						
Maximum Diurnal Average: 440.0 ppm at hour 4		Minimum Diurnal Average: 425.7 ppm at hour 15																	Hours of Calibration:	35						
Monthly Average: 432.00 ppm		Percentiles: P ₁ = 414.1 P ₁₀ = 418.5 Q ₁ = 422.8 Median = 432.9 Q ₃ = 439.2 P ₉₀ = 444.7 P ₉₉ = 451.8																	Percent Operational Time:	99.7						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	446.1	Z	445.2	444.9	444.8	445.4	443.8	442.6	441.1	439.9	439.5	438.3	438.0	438.3	438.7	438.6	438.8	439.5	440.4	441.7	444.5	446.3	445.5	447.4	442.1	447.4
2-May	447.0	447.0	Z	451.8	452.2	450.5	451.8	451.8	448.5	446.5	442.2	438.5	436.2	435.3	435.2	435.8	436.4	436.6	437.2	438.4	438.1	437.7	437.4	440.3	442.3	452.2
3-May	438.7	441.6	442.6	Z	443.8	444.5	443.0	440.6	436.7	436.6	436.6	436.5	436.8	437.9	438.5	438.1	437.8	438.2	438.8	440.8	443.0	445.6	445.5	446.8	440.4	446.8
4-May	447.7	446.9	446.6	447.1	Z	447.0	446.2	444.7	442.5	440.3	438.7	438.5	438.3	438.1	UO	438.4	437.0	435.7	438.1	438.7	438.9	438.8	443.4	446.3	441.7	447.7
5-May	448.3	450.4	449.7	451.0	451.0	Z	444.9	440.6	437.3	437.1	436.7	437.0	437.4	437.3	444.9	437.5	438.1	438.4	438.8	439.2	440.1	440.4	439.8	441.2	441.3	451.0
6-May	Z	443.7	441.6	441.8	443.9	443.5	441.0	439.3	438.3	438.0	437.5	437.5	437.5	437.2	437.2	437.5	437.3	437.1	437.3	438.1	439.9	441.6	441.3	442.2	439.6	443.9
7-May	443.8	Z	445.9	444.8	443.2	442.7	443.6	440.0	437.8	437.1	436.6	436.5	436.9	437.1	436.8	437.2	437.3	438.9	440.8	441.9	443.1	443.8	441.0	441.3	440.4	445.9
8-May	442.3	444.0	Z	446.3	447.6	447.5	445.9	444.7	441.4	439.1	438.9	438.9	439.2	438.2	438.2	438.1	438.9	439.2	439.9	441.3	442.6	444.4	444.7	448.6	442.2	448.6
9-May	449.1	448.6	445.4	Z	455.7	458.4	465.8	458.6	454.7	452.8	446.6	439.3	439.1	439.1	439.1	438.6	438.2	440.0	442.2	443.4	445.8	444.6	443.1	443.5	446.6	465.8
10-May	450.5	449.1	449.5	451.2	Z	445.3	441.9	441.5	439.4	439.2	438.6	438.3	438.2	438.1	437.4	437.1	437.5	437.3	439.0	441.5	442.0	442.0	443.8	444.6	441.9	451.2
11-May	444.3	446.4	446.7	447.4	446.7	Z	444.3	443.9	449.2	444.0	445.2	436.7	M	433.8	434.1	434.4	433.9	434.2	436.0	439.7	439.8	439.9	446.0	444.8	441.4	449.2
12-May	Z	445.1	440.7	440.5	443.5	440.9	443.3	440.3	442.4	441.8	C	C	C	C	421.5	421.7	422.4	422.4	423.0	424.5	427.4	428.7	430.3	429.9	433.2	445.1
13-May	431.7	Z	431.6	432.9	434.6	434.3	430.9	428.1	424.0	421.8	421.7	421.7	421.2	421.1	421.1	421.9	422.2	421.1	422.5	427.6	435.8	437.3	436.7	437.1	427.8	437.3
14-May	436.3	436.7	Z	436.3	435.8	433.7	429.6	424.8	422.3	421.7	420.6	420.0	419.4	419.9	420.2	420.0	419.7	420.1	421.7	425.4	429.5	429.6	430.5	431.9	426.3	436.7
15-May	433.8	435.3	438.4	Z	440.4	439.2	434.8	429.5	425.2	423.4	422.4	422.4	422.3	422.2	422.1	422.3	422.9	423.6	423.8	425.7	430.8	436.3	440.9	440.0	429.5	440.9
16-May	442.3	440.1	439.2	442.7	Z	432.7	428.8	424.5	422.5	421.4	421.2	420.5	421.0	420.9	421.3	421.5	421.3	421.3	421.9	422.6	424.7	427.0	430.7	433.5	427.1	442.7
17-May	433.0	431.2	433.4	435.0	435.0	Z	431.3	428.7	425.7	425.3	424.4	423.6	423.3	423.1	423.0	423.7	422.0	421.6	421.7	422.6	424.1	425.5	426.0	425.7	426.5	435.0
18-May	Z	428.5	429.7	429.5	427.9	426.1	424.5	427.0	423.1	422.5	421.3	421.5	421.6	421.0	420.9	420.9	420.8	420.9	420.5	421.6	424.9	427.9	430.5	430.5	424.5	430.5
19-May	432.6	Z	433.3	433.1	432.8	431.8	430.0	428.0	424.3	421.3	420.1	421.3	421.0	418.1	418.3	418.6	419.3	422.4	427.1	431.8	436.7	436.2	436.6	435.9	427.4	436.7
20-May	435.7	435.4	Z	433.5	432.8	430.8	429.4	428.9	423.8	427.9	429.1	427.6	427.9	426.5	425.3	424.5	426.2	430.4	436.6	438.8	439.2	435.7	433.7	431.6	430.9	439.2
21-May	433.0	435.8	434.4	Z	438.2	439.7	435.2	428.8	426.5	425.6	423.9	422.9	423.2	423.8	421.2	421.3	419.4	414.6	415.1	422.7	426.2	430.5	429.9	429.6	427.0	439.7
22-May	429.0	432.8	440.7	448.2	Z	441.6	447.0	444.5	446.0	430.6	427.6	422.8	419.9	418.3	417.6	417.8	418.3	418.5	424.1	427.7	430.2	437.3	436.8	436.1	431.0	448.2
23-May	440.2	445.8	440.7	435.7	434.0	Z	432.8	432.9	432.4	431.3	429.8	427.6	426.3	427.2	425.6	424.8	424.0	424.1	424.6	425.9	428.0	429.3	431.3	432.1	430.7	445.8
24-May	Z	435.3	433.9	435.0	435.0	434.6	434.3	429.4	426.3	422.8	419.6	419.0	420.0	420.1	420.9	421.0	420.7	420.0	420.1	422.9	426.6	430.4	432.3	432.7	426.6	435.3
25-May	435.6	Z	436.2	446.6	443.7	438.2	436.7	431.0	424.7	423.5	423.9	421.4	420.9	419.2	418.0	417.7	417.0	417.2	416.7	415.4	423.1	427.7	429.0	428.2	426.6	446.6
26-May	428.6	431.4	Z	427.1	429.6	426.4	422.8	423.2	417.9	413.7	414.2	414.9	414.4	414.6	414.6	413.4	412.0	415.8	414.1	412.9	418.6	423.1	431.1	431.3	420.2	431.4
27-May	434.5	435.4	438.6	Z	433.6	430.3	426.8	421.5	416.1	417.1	417.1	418.2	418.0	418.0	417.5	417.9	417.8	416.8	419.7	420.8	425.3	428.7	431.0	431.6	424.0	438.6
28-May	434.5	437.0	442.3	440.2	Z	436.5	431.2	426.8	421.8	418.4	417.3	417.9	417.4	418.4	418.6	419.0	418.2	418.6	419.6	421.3	424.5	428.9	430.6	434.2	425.8	442.3
29-May	436.5	433.9	436.1	438.0	432.0	Z	424.3	418.7	417.7	418.3	419.2	419.2	418.3	417.8	417.8	418.9	418.1	414.8	416.0	418.4	422.5	424.3	428.1	427.5	423.3	438.0
30-May	Z	426.2	426.1	428.3	428.6	423.2	416.5	416.2	417.6	418.4	417.6	418.9	419.3	420.3	418.5	416.5	417.1	418.9	424.3	430.8	432.1	428.5	432.5	435.1	423.1	435.1
31-May	436.0	Z	432.4	431.8	431.8	426.5	412.4	414.7	419.3	418.3	416.4	415.4	417.0	414.5	415.9	417.2	413.7	413.3	415.4	417.9	425.9	435.1	428.7	428.5	421.7	436.0
438.9 439.3 439.3 440.0 439.2 438.1 436.0 433.4 431.2 429.5 428.1 427.1 426.5 426.5 425.7 426.2 425.9 426.2 427.6 429.7 432.7 434.6 435.8 436.5																								Diurnal Average		
450.5 450.4 449.7 451.8 455.7 458.4 465.8 458.6 454.7 452.8 446.6 439.3 439.2 439.1 439.1 438.6 438.9 440.0 442.2 443.4 445.8 446.3 446.0 448.6																								Diurnal Maximum		
Z - zerospan		C - Calibration					M - Maintenance					UO - Unstable Operation														



Wood Buffalo Environmental Association
Hourly Averages

Carbon Dioxide (CO₂) - ppm
Stony Mountain - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Carbon Dioxide (CO₂) - ppm
Stony Mountain - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
400 - 420	109	15.42	15.42
420 - 440	450	63.65	79.07
440 - 460	147	20.79	99.86
460 - 480	1	0.14	100.00
480 - 500	0	0.00	100.00
> 500	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Carbon Dioxide (CO₂) - ppm
Stony Mountain - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
400 - 420	2	5	10	7	5	4	5	5	8	9	13	15	12	3	3	3	109
420 - 440	14	13	9	19	24	48	37	32	36	75	55	8	7	8	24	41	450
440 - 460	4	6	5	1	6	11	21	25	25	10	4	3	1	4	10	11	147
460 - 480	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
480 - 500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	21	24	24	27	35	63	63	62	69	94	72	26	20	15	37	55	707

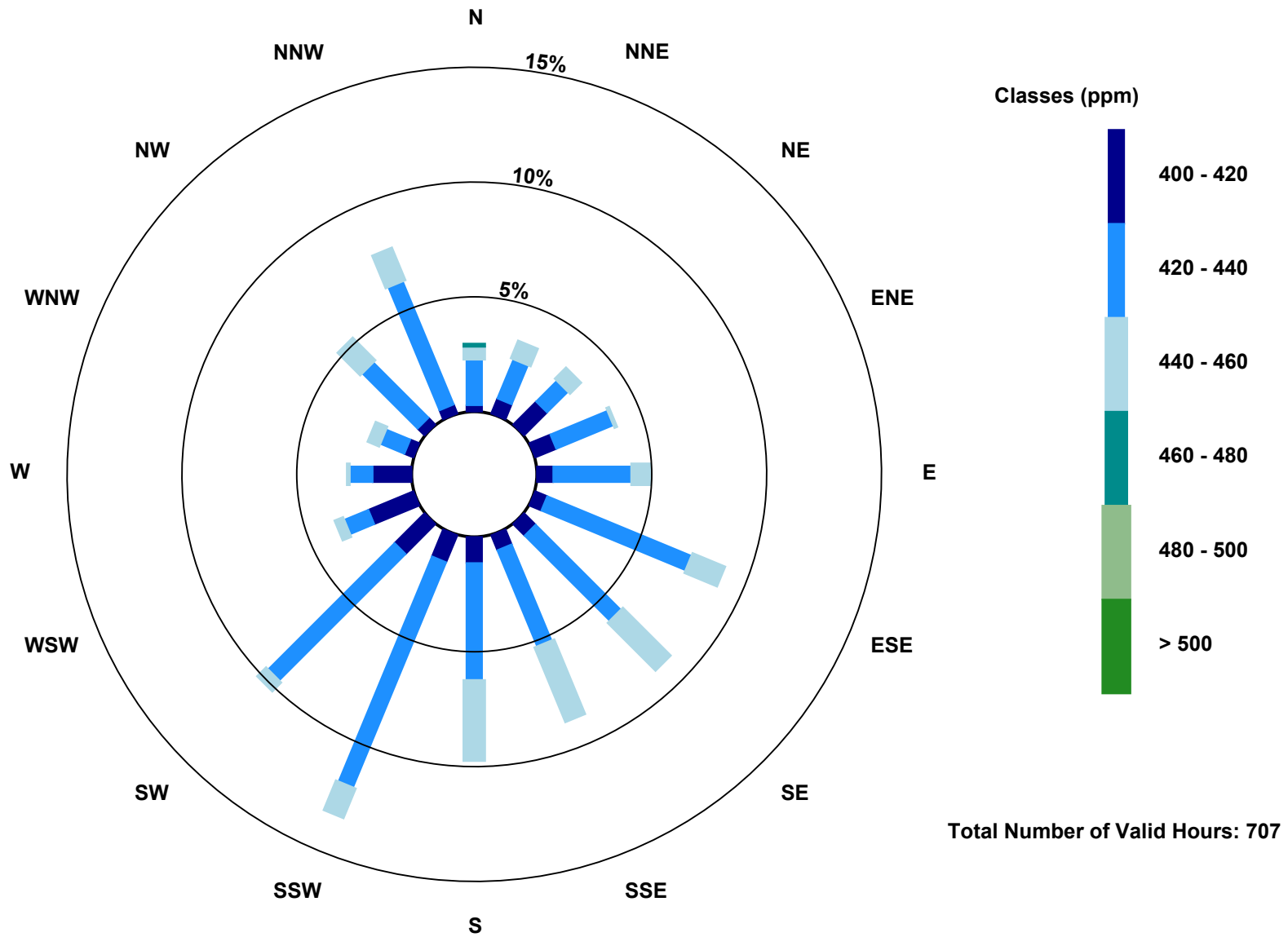
Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Carbon Dioxide (CO₂) - ppm
Stony Mountain

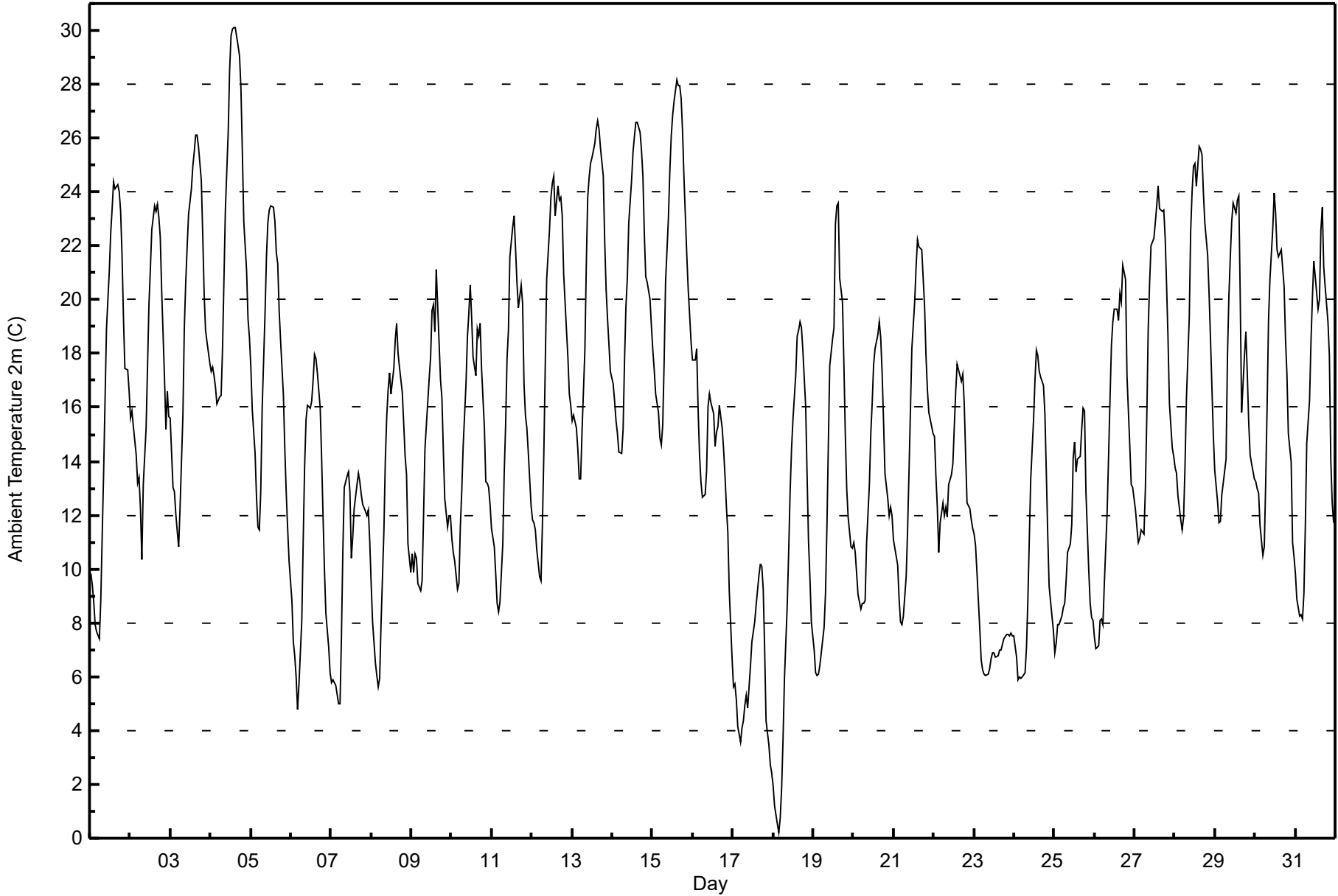




Wood Buffalo Environmental Association
Summary of Hour Averages

Ambient Temperature 2m (AT 2m) - C
Stony Mountain - May 2023

Maximum Value: 30.1 C on May 4 16:00 Maximum Daily Average: 22.9 C on May 4																						Hours in Service: 744 Hours of Data: 744				
Minimum Value: 0.2 C on May 18 04:00 Minimum Daily Average: 6.0 C on May 17 Maximum Diurnal Average: 20.6 C at hour 16 Minimum Diurnal Average: 9.4 C at hour 5 Monthly Average: 15.24 C Percentiles: P ₁ = 3.0 P ₁₀ = 7.4 Q ₁ = 10.9 Median = 15.2 Q ₃ = 19.5 P ₉₀ = 23.5 P ₉₉ = 28.1																						Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	9.8	9.4	8.8	7.9	7.7	7.4	8.9	11.3	13.6	16.3	18.9	21.1	22.5	23.4	24.4	24.1	24.3	24.0	23.3	21.6	19.3	17.4	17.4	16.6	16.6	24.4
2-May	15.6	15.9	15.3	14.3	13.2	13.4	12.2	10.3	13.1	15.2	17.5	19.8	21.1	22.6	23.5	23.3	23.5	23.1	22.3	20.3	17.1	15.2	16.6	15.7	17.5	23.5
3-May	15.6	13.0	12.9	12.0	11.4	10.8	12.3	15.7	19.0	20.7	22.0	23.2	24.1	25.0	25.5	26.1	26.1	25.7	24.5	22.5	20.2	18.9	18.5	17.6	19.3	26.1
4-May	17.4	17.5	17.2	16.8	16.1	16.4	16.4	18.2	20.7	23.4	26.2	28.5	29.8	30.0	30.1	30.1	29.4	29.1	27.9	25.5	22.9	21.1	19.3	18.6	22.9	30.1
5-May	17.5	15.9	14.3	12.7	11.6	11.4	12.9	16.0	19.4	21.6	22.9	23.3	23.5	23.4	22.9	21.7	21.3	19.6	18.5	16.4	14.5	12.8	11.5	10.3	17.3	23.5
6-May	8.8	7.3	6.8	6.0	4.8	5.7	8.1	11.1	13.8	15.5	16.1	16.0	16.3	17.0	18.0	17.8	17.3	16.0	14.1	12.0	10.0	8.3	7.1	6.1	11.7	18.0
7-May	5.8	5.9	5.8	5.7	5.0	5.0	7.5	10.7	13.0	13.4	13.6	12.9	10.4	11.2	12.2	13.2	13.6	13.2	12.8	12.4	12.2	12.0	12.2	11.0	10.4	13.6
8-May	9.5	8.1	6.5	6.1	5.6	5.9	8.0	11.4	14.0	15.6	16.7	17.3	16.5	17.4	18.5	19.1	18.0	17.5	16.5	15.4	14.2	13.5	10.9	9.9	13.0	19.1
9-May	10.5	9.9	10.6	10.4	9.5	9.2	9.6	11.9	14.4	15.4	17.1	17.9	19.6	19.8	18.8	21.1	18.4	17.0	16.3	14.4	12.6	11.5	12.0	12.0	14.2	21.1
10-May	11.2	10.6	10.3	9.2	9.5	11.5	12.9	14.5	16.9	18.6	19.5	20.5	19.3	17.9	17.2	18.9	18.6	19.1	17.5	15.3	13.2	13.2	13.0	12.4	15.0	20.5
11-May	11.5	10.8	9.8	8.7	8.4	8.8	10.9	13.6	15.3	17.8	18.9	21.6	22.7	23.1	21.9	20.6	19.7	20.5	19.8	16.9	15.7	15.2	14.4	12.4	15.8	23.1
12-May	11.8	11.7	11.5	10.7	9.7	9.5	11.7	14.3	17.5	20.7	22.6	23.8	24.3	24.6	23.1	24.2	23.7	23.8	23.1	21.0	18.8	17.9	16.5	16.1	18.0	24.6
13-May	15.5	15.7	15.2	14.4	13.3	13.3	15.1	18.1	21.3	23.8	24.5	25.0	25.3	25.8	26.3	26.6	26.3	25.7	24.6	22.2	20.4	19.3	18.3	17.3	20.6	26.6
14-May	16.9	16.2	15.5	15.0	14.4	14.3	15.2	17.7	19.7	20.8	22.9	24.4	25.5	26.0	26.6	26.6	26.2	25.5	24.6	22.4	20.9	20.7	20.0	19.0	20.7	26.6
15-May	18.1	17.4	16.5	15.8	14.9	14.6	15.3	17.7	20.6	23.0	24.8	26.1	26.9	27.4	28.2	27.9	27.9	27.5	26.3	24.6	21.6	20.4	19.4	18.5	21.7	28.2
16-May	17.8	17.8	18.2	15.9	14.3	13.2	12.6	12.8	13.7	16.0	16.5	16.2	15.7	14.6	15.1	15.3	16.1	15.2	14.5	13.4	12.3	11.4	9.2	6.7	14.3	18.2
17-May	5.6	5.7	5.1	4.1	3.6	4.1	4.3	4.9	5.3	4.9	6.4	7.3	7.7	8.1	8.7	9.8	10.2	10.1	9.2	7.0	4.4	3.4	2.7	2.4	6.0	10.2
18-May	1.9	1.2	0.5	0.2	0.7	1.8	3.7	5.9	8.7	10.7	12.9	14.5	15.6	17.2	18.7	18.9	19.2	19.0	18.1	16.0	13.5	11.0	9.7	8.0	10.3	19.2
19-May	7.0	6.2	6.0	6.1	6.4	6.9	7.8	9.1	11.6	14.6	17.5	18.5	19.0	22.8	23.5	23.6	20.8	19.9	17.6	15.0	13.0	11.9	10.8	10.8	13.6	23.6
20-May	11.0	10.6	9.8	9.0	8.5	8.7	8.7	8.8	10.9	13.1	15.0	16.2	17.6	18.2	18.7	19.2	18.6	17.3	15.5	13.6	12.6	12.0	12.3	12.0	13.2	19.2
21-May	11.1	10.5	10.1	8.9	8.1	7.9	8.2	9.7	11.4	13.6	15.9	18.2	19.9	21.2	22.2	22.0	21.9	21.9	19.8	17.9	16.7	15.8	15.6	15.0	15.1	22.2
22-May	14.9	13.4	12.3	10.6	11.7	12.5	12.0	12.3	11.9	13.1	13.5	13.9	15.3	16.6	17.6	17.4	17.0	17.2	16.2	14.2	12.4	12.3	11.8	11.5	13.8	17.6
23-May	11.3	10.9	9.9	7.8	6.6	6.2	6.1	6.1	6.1	6.3	6.7	6.9	6.9	6.7	6.8	7.0	7.0	7.2	7.4	7.6	7.6	7.5	7.6	7.5	7.4	11.3
24-May	7.5	6.7	5.9	6.0	5.9	6.0	6.1	7.1	8.9	11.2	13.3	15.6	17.0	18.1	17.9	17.3	17.2	16.8	15.7	13.6	11.3	9.4	8.3	7.7	11.3	18.1
25-May	6.9	7.3	8.0	7.9	8.2	8.5	8.7	9.6	10.6	10.9	11.7	14.1	14.7	13.6	14.1	14.2	15.2	16.0	15.8	12.9	9.9	8.7	8.2	8.1	11.0	16.0
26-May	7.5	7.0	7.2	8.1	8.1	7.9	9.5	12.2	14.2	16.3	18.3	19.2	19.6	19.7	19.2	20.3	19.9	21.3	20.7	17.2	15.9	14.5	13.1	13.0	14.6	21.3
27-May	12.2	11.6	11.0	11.1	11.5	11.3	13.0	15.6	18.9	20.6	22.0	22.3	22.9	23.5	24.2	23.4	23.3	23.3	22.3	20.5	18.5	16.1	14.5	14.2	17.8	24.2
28-May	13.8	13.5	12.7	11.8	11.4	11.9	13.8	16.3	19.4	22.5	24.0	25.0	25.1	24.2	25.7	25.6	25.4	24.0	22.8	21.6	20.2	18.5	16.8	15.0	19.2	25.7
29-May	13.6	12.5	11.7	11.7	12.8	13.2	14.1	17.9	20.1	21.6	22.9	23.6	23.2	23.7	23.9	20.1	15.8	17.9	18.8	17.2	15.4	14.3	13.9	13.3	17.2	23.9
30-May	13.2	13.0	12.8	11.6	10.5	10.8	13.2	16.0	19.2	20.8	22.6	24.0	23.2	21.9	21.6	21.9	21.2	20.5	18.6	17.2	15.0	14.0	11.0	10.4	16.8	24.0
31-May	9.8	8.9	8.2	8.3	8.1	9.1	11.6	14.7	16.3	18.4	20.1	21.5	20.8	19.7	20.0	22.6	23.5	21.3	20.5	19.2	17.9	14.0	12.5	11.7	15.8	23.5
																								Diurnal Average		
																								Diurnal Maximum		





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 2m (AT 2m) - C
Stony Mountain - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	158	21.24	21.24
10 - 20	415	55.78	77.02
> 20	171	22.98	100.00

Total Number of Valid Hours: 744

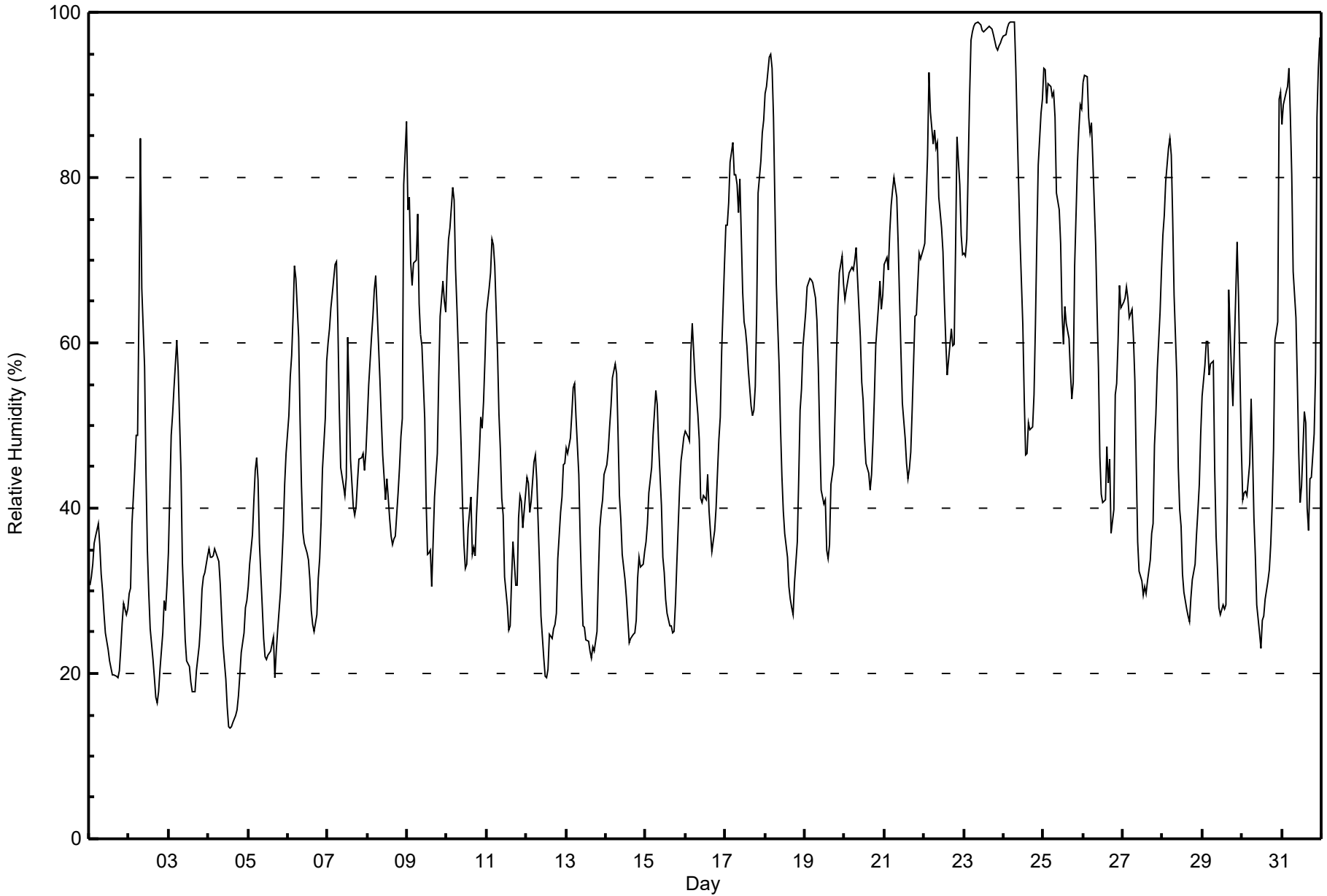
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

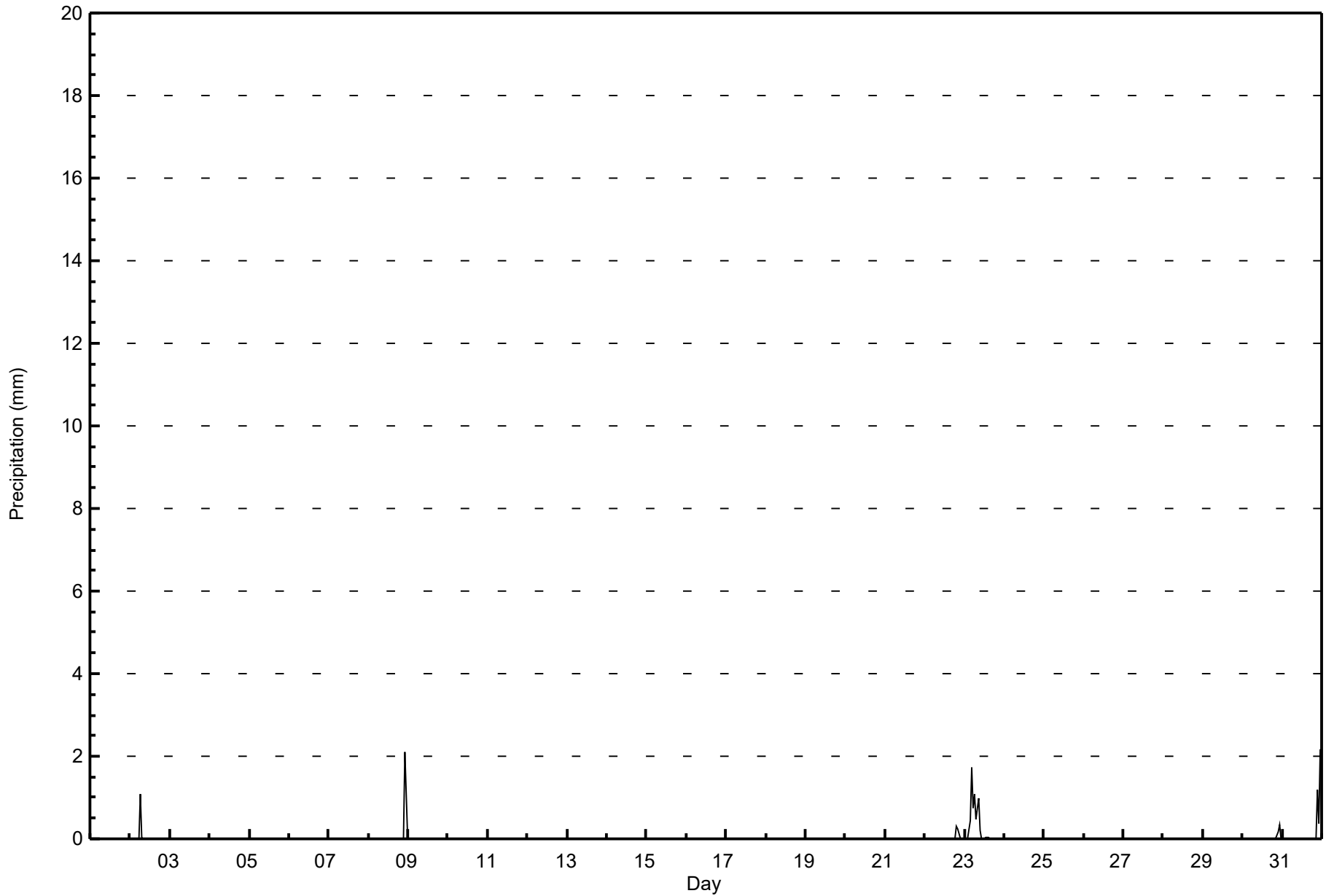
Relative Humidity (RH) - %
Stony Mountain - May 2023

Maximum Value: 98.9 % on May 24 06:00																						Hours in Service: 744				
Maximum Daily Average: 93.9 % on May 23																						Hours of Data: 744				
Minimum Value: 13.5 % on May 4 14:00																						Hours of Missing Data: 0				
Minimum Daily Average: 24.3 % on May 4																						Hours of Calibration: 0				
Maximum Diurnal Average: 68.0 % at hour 5																						Percent Operational Time: 100.0				
Minimum Diurnal Average: 35.8 % at hour 16																										
Monthly Average: 51.43 %																										
Percentiles: P ₁ = 16.7 P ₁₀ = 25.6 Q ₁ = 34.3 Median = 47.5 Q ₃ = 66.4 P ₉₀ = 84.6 P ₉₉ = 98.4																										
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	30.6	31.6	33.3	35.8	36.7	38.2	35.7	32.1	29.9	27.2	24.8	22.9	21.5	20.6	19.8	19.7	19.7	19.6	20.4	23.0	26.1	28.5	27.2	27.8	27.2	38.2
2-May	29.6	30.3	38.2	44.8	48.7	48.8	64.4	84.8	66.5	57.1	44.2	34.8	29.7	25.4	21.6	19.4	17.1	16.4	17.7	20.5	24.9	28.8	27.6	30.7	36.3	84.8
3-May	34.6	48.8	51.4	54.6	57.5	60.3	56.6	44.4	33.3	28.9	24.0	21.5	20.8	18.9	17.9	17.7	17.8	20.4	23.5	26.0	30.2	31.6	32.2	34.3	33.6	60.3
4-May	35.0	34.1	34.0	34.3	35.0	34.1	33.6	30.8	26.9	23.3	19.3	16.0	13.6	13.5	13.5	14.0	14.8	15.6	17.2	19.8	22.5	24.9	27.9	28.9	24.3	35.0
5-May	30.5	33.3	36.8	40.9	44.5	46.1	43.3	35.8	28.1	24.3	22.1	21.7	22.3	22.8	23.5	24.4	19.4	22.7	25.2	29.8	33.4	37.3	42.8	46.6	31.6	46.6
6-May	51.2	56.0	58.5	63.2	69.3	67.8	60.7	50.7	42.7	37.2	35.8	34.6	33.7	31.4	27.7	26.0	25.1	27.1	31.5	33.9	38.3	44.8	50.9	57.8	44.0	69.3
7-May	60.0	61.7	64.2	65.9	69.5	69.9	62.3	52.1	45.0	42.8	41.6	43.6	60.7	53.8	45.9	40.2	39.1	40.1	43.2	46.0	46.1	46.6	44.6	46.8	51.3	69.9
8-May	50.7	55.0	60.7	63.2	66.4	68.2	64.0	55.6	50.8	46.4	43.7	41.0	43.5	38.7	36.6	35.5	36.4	36.7	41.9	44.9	48.7	50.8	79.2	86.7	51.9	86.7
9-May	76.1	77.6	69.7	67.0	69.6	70.1	75.6	64.7	61.1	59.6	50.8	40.9	34.4	34.6	35.0	30.6	41.3	44.0	46.7	55.7	63.2	67.5	65.1	63.8	56.9	77.6
10-May	69.0	72.6	74.0	78.9	77.3	69.0	64.3	58.9	47.4	40.6	35.6	32.7	33.2	37.6	41.4	34.4	35.3	34.3	39.3	46.6	51.0	49.6	52.8	58.0	51.4	78.9
11-May	63.5	66.7	68.4	72.6	71.9	69.3	58.6	51.4	47.2	41.3	39.2	31.7	28.1	25.2	25.7	31.4	35.9	30.7	30.7	38.8	41.5	40.8	37.6	41.7	45.4	72.6
12-May	43.7	43.0	39.6	40.8	45.6	46.4	43.4	38.1	33.0	27.0	21.9	19.7	19.5	20.5	24.8	24.2	25.4	25.9	27.4	33.9	39.5	41.4	45.2	45.4	34.0	46.4
13-May	47.2	46.6	48.4	51.3	54.6	55.1	50.9	44.0	36.4	30.3	25.7	25.6	24.1	23.9	22.7	21.9	23.3	22.7	25.1	32.1	37.6	39.7	41.1	44.1	36.4	55.1
14-May	45.2	46.9	49.9	52.4	55.7	57.4	56.2	49.1	41.6	38.6	34.4	31.3	29.1	26.4	23.7	24.2	24.7	24.9	26.5	31.6	34.1	33.0	33.3	34.8	37.7	57.4
15-May	36.0	38.1	41.9	45.0	48.8	51.5	54.2	52.5	47.6	40.4	34.0	32.1	29.1	27.3	25.7	25.0	25.1	28.5	33.4	42.5	45.8	47.1	48.7	38.6	54.2	
16-May	49.4	48.6	48.2	58.8	62.3	59.1	55.5	51.4	48.2	41.2	40.7	41.5	41.0	44.1	39.7	37.1	34.8	37.2	40.0	44.2	48.3	51.0	59.0	69.5	48.0	69.5
17-May	74.2	74.2	76.9	81.8	84.2	80.3	80.3	79.1	75.7	79.9	66.1	62.6	61.6	59.6	56.7	52.3	51.1	51.8	54.7	63.6	78.1	82.0	85.4	87.0	70.8	87.0
18-May	90.1	91.1	94.7	94.9	93.2	87.3	77.0	67.2	57.2	49.8	43.8	39.6	37.0	34.0	30.4	29.0	27.9	27.1	30.9	35.9	43.5	51.9	54.4	59.6	56.1	94.9
19-May	63.7	66.8	67.4	67.8	67.5	67.2	65.4	62.7	56.9	48.9	42.2	40.4	41.0	34.9	33.9	35.6	42.9	45.2	51.9	58.6	64.5	68.4	70.6	67.2	55.5	70.6
20-May	65.2	66.5	67.5	68.4	69.2	68.9	70.0	71.5	67.9	60.7	55.3	53.1	48.5	45.5	44.2	42.1	44.1	48.2	53.3	59.7	64.6	67.4	64.1	65.8	59.6	71.5
21-May	69.5	70.3	68.8	73.4	76.6	78.4	80.0	77.7	72.0	65.2	58.7	52.7	48.5	45.5	43.6	44.8	46.7	51.9	63.2	63.5	67.0	70.8	70.1	71.4	63.8	80.0
22-May	72.0	77.3	82.7	92.7	87.9	84.0	85.8	83.5	84.3	77.6	74.0	71.0	65.1	60.2	56.1	58.0	61.8	59.6	59.9	71.5	85.0	79.1	73.1	70.7	73.9	92.7
23-May	70.8	70.5	72.5	89.8	96.6	97.7	98.3	98.7	98.8	98.6	98.4	97.9	97.6	97.7	98.2	98.3	98.2	98.0	97.3	95.8	95.4	95.9	96.3	96.8	93.9	98.8
24-May	97.2	97.4	98.1	98.6	98.8	98.9	98.8	93.2	86.2	79.1	72.5	62.3	53.4	46.4	46.6	50.3	49.4	49.9	53.7	62.1	72.3	81.6	87.8	89.5	76.0	98.9
25-May	93.3	93.0	88.9	91.4	91.0	89.9	90.3	87.2	78.2	76.1	72.0	63.6	59.8	64.4	62.3	60.5	56.5	53.2	55.2	69.3	81.7	85.8	88.8	88.3	76.7	93.3
26-May	91.5	92.4	92.3	87.3	85.5	86.7	82.0	71.9	64.0	56.9	46.3	41.7	40.7	41.0	47.4	43.1	45.9	37.0	39.9	53.7	55.0	60.2	66.9	64.3	62.2	92.4
27-May	65.0	65.5	66.8	65.4	63.1	64.0	60.5	55.4	45.0	35.9	32.3	31.2	29.5	30.5	29.7	31.3	33.8	36.9	38.1	47.7	51.4	56.8	63.7	68.9	48.7	68.9
28-May	73.1	75.4	79.5	83.6	84.8	82.6	75.1	65.7	55.6	45.0	39.9	37.8	32.0	29.8	27.8	27.0	26.3	29.2	31.4	33.3	36.8	39.7	42.9	49.0	50.1	84.8
29-May	53.6	57.3	60.1	60.2	56.1	57.5	57.9	44.6	36.6	32.6	28.0	27.1	28.3	27.9	28.3	41.2	66.5	56.3	52.3	59.4	65.7	72.1	65.6	47.4	49.3	72.1
30-May	41.0	41.9	42.0	41.5	45.4	53.3	46.9	38.9	34.3	28.3	25.0	23.0	26.4	26.9	29.0	31.2	32.6	35.6	40.4	47.2	60.3	62.6	89.5	90.3	43.1	90.3
31-May	86.4	88.8	90.4	90.9	93.3	87.4	80.3	68.7	63.0	55.2	46.6	40.6	42.7	51.6	50.3	40.0	37.3	43.6	43.7	49.0	56.4	87.3	93.2	96.9	66.0	96.9
	60.0	61.9	63.4	66.4	68.0	67.6	65.4	60.1	53.6	48.3	43.2	39.9	38.6	37.4	36.4	35.8	37.3	37.6	40.3	46.1	51.8	55.6	58.9	60.6		Diurnal Average
	97.2	97.4	98.1	98.6	98.8	98.9	98.8	98.7	98.8	98.6	98.4	97.9	97.6	97.7	98.2	98.3	98.2	98.0	97.3	95.8	95.4	95.9	96.3	96.9		Diurnal Maximum





Maximum Value: 2.2 mm on Jun 1 00:00		Maximum Daily Total: 5.8 mm on May 23		Hours in Service: 744																																
Minimum Value: 0.0 mm on May 1 01:00		Minimum Daily Total: 0.0 mm on May 1		Hours of Data: 744																																
Maximum Diurnal Total: 2.8 mm at hour 23		Minimum Diurnal Total: 0.0 mm at hour 1		Hours of Missing Data: 0																																
Monthly Total: 13.82 mm		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.6		Hours of Calibration: 0																																
				Percent Operational Time: 100.0																																
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24												
1-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2-May	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.1
3-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	2.1	2.1
9-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23-May	0.0	0.0	0.0	0.5	1.7	0.7	1.1	0.5	1.0	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.5	1.7	0.7	2.2	0.5	1.0	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.2	1.4	2.8	2.2			Diurnal Average								
		0.0	0.0	0.0	0.5	1.7	0.7	1.1	0.5	1.0	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.3	0.2	1.2	2.1	2.2			Diurnal Maximum									





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Precipitation (PC) - mm
Stony Mountain - May 2023**

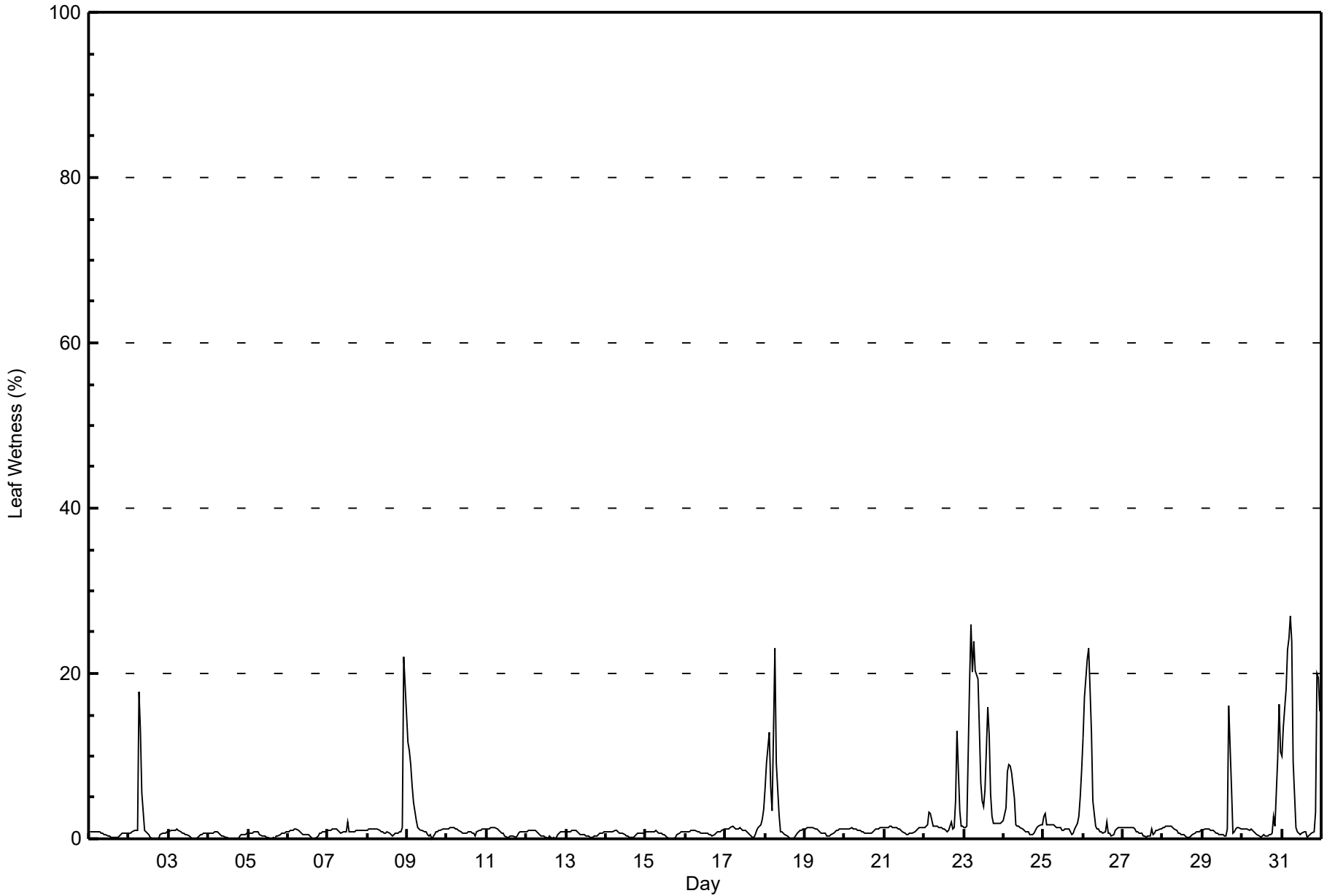
Concentration Ranges (mm)	Number of Hours	%	Cumulative %
0 - 0.3	733	98.52	98.52
0.4 - 0.5	3	0.40	98.92
0.6 - 0.7	1	0.13	99.06
0.8 - 1.4	4	0.54	99.60
1.5 - 10	3	0.40	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Maximum Value: 26.9 % on May 31 06:00		Maximum Daily Average: 9.0 % on May 31		Hours in Service: 744																							
Minimum Value: 0.0 % on May 2 16:00		Minimum Daily Average: 0.4 % on May 4		Hours of Data: 744																							
Maximum Diurnal Average: 4.1 % at hour 7		Minimum Diurnal Average: 0.6 % at hour 19		Hours of Missing Data: 0																							
Monthly Average: 1.92 %		Percentiles: P ₁ = 0.0 P ₁₀ = 0.3 Q ₁ = 0.6 Median = 0.9 Q ₃ = 1.3 P ₉₀ = 2.7 P ₉₉ = 22.5		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.7	0.6	0.6	0.5	0.4	0.3	0.2	0.1	0.2	0.2	0.2	0.2	0.3	0.5	0.6	0.7	0.7	0.7	0.6	0.9
2-May	0.7	0.7	0.8	1.0	1.0	1.0	17.8	13.3	5.5	1.0	0.9	0.6	0.5	0.3	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.7	0.7	0.8	2.0	17.8	
3-May	0.8	0.9	1.0	1.0	1.1	1.1	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.1	0.1	0.0	0.0	0.0	0.3	0.5	0.6	0.7	0.7	0.7	0.6	1.1	
4-May	0.7	0.7	0.7	0.7	0.8	0.8	0.7	0.5	0.4	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.5	0.6	0.6	0.6	0.4	0.8	
5-May	0.6	0.6	0.7	0.8	0.8	0.9	0.8	0.6	0.4	0.3	0.3	0.2	0.2	0.0	0.0	0.1	0.0	0.3	0.3	0.5	0.7	0.7	0.8	0.8	0.5	0.9	
6-May	0.9	0.9	1.0	1.0	1.1	1.1	1.0	0.8	0.6	0.6	0.5	0.6	0.5	0.3	0.1	0.0	0.0	0.2	0.4	0.7	0.8	0.8	0.9	1.0	0.7	1.1	
7-May	1.0	1.0	1.1	1.1	1.2	1.2	1.1	0.8	0.7	0.8	0.8	0.9	2.0	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	
8-May	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.0	0.9	0.9	0.7	0.7	0.9	0.7	0.5	0.3	0.6	0.6	0.8	0.8	0.9	1.3	22.0	15.0	2.4	22.0	
9-May	11.7	10.6	9.0	6.5	4.4	2.2	1.4	1.2	1.1	0.9	0.8	0.8	0.6	0.4	0.5	0.1	0.5	0.8	0.8	0.9	1.1	1.2	1.2	1.2	2.5	11.7	
10-May	1.2	1.3	1.3	1.4	1.4	1.3	1.2	1.0	0.8	0.7	0.7	0.6	0.7	0.8	0.9	0.6	0.7	0.4	0.8	1.0	1.1	1.1	1.1	1.1	1.0	1.4	
11-May	1.2	1.3	1.4	1.4	1.3	1.3	1.2	1.0	0.8	0.7	0.6	0.4	0.2	0.1	0.3	0.3	0.3	0.2	0.4	0.7	0.8	0.8	0.8	0.9	0.8	1.4	
12-May	0.9	1.0	1.0	1.0	1.0	1.0	0.9	0.7	0.5	0.4	0.3	0.2	0.1	0.1	0.3	0.0	0.2	0.0	0.2	0.6	0.8	0.8	0.9	0.9	0.6	1.0	
13-May	0.9	0.9	0.9	0.9	1.0	1.0	0.9	0.7	0.6	0.5	0.5	0.4	0.4	0.3	0.1	0.1	0.2	0.3	0.4	0.5	0.7	0.7	0.8	0.8	0.6	1.0	
14-May	0.8	0.8	0.8	0.9	0.9	1.0	0.9	0.8	0.7	0.7	0.6	0.5	0.4	0.3	0.2	0.2	0.2	0.3	0.5	0.6	0.7	0.7	0.7	0.7	0.6	1.0	
15-May	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.8	0.7	0.6	0.6	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.2	0.5	0.8	0.9	0.9	0.9	0.6	0.9	
16-May	0.9	0.9	0.9	1.0	1.0	1.0	1.0	0.9	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.4	0.6	0.7	0.8	0.9	0.9	1.0	1.1	0.8	1.1	
17-May	1.2	1.2	1.3	1.4	1.4	1.3	1.3	1.3	1.2	1.4	1.1	1.0	1.0	0.9	0.7	0.3	0.3	0.2	0.5	1.0	1.3	1.7	2.4	3.6	1.2	3.6	
18-May	6.1	9.2	12.9	6.2	3.4	12.9	23.1	9.1	2.9	0.9	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.2	0.6	0.8	1.0	1.0	1.1	3.9	23.1	
19-May	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.1	0.9	0.8	0.7	0.7	0.4	0.3	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.2	1.2	1.0	1.3	
20-May	1.2	1.2	1.2	1.3	1.3	1.3	1.2	1.2	1.1	1.0	0.8	0.8	0.7	0.7	0.7	0.6	0.7	0.8	1.0	1.1	1.2	1.3	1.3	1.3	1.0	1.3	
21-May	1.3	1.4	1.4	1.5	1.5	1.4	1.4	1.3	1.2	1.1	1.0	0.8	0.6	0.6	0.5	0.6	0.7	0.7	0.9	1.1	1.2	1.4	1.4	1.4	1.1	1.5	
22-May	1.4	1.5	1.7	3.2	3.0	1.6	1.6	1.5	1.5	1.4	1.3	1.3	1.1	1.0	0.8	1.0	2.0	1.1	1.3	4.6	13.1	3.3	1.5	1.4	2.2	13.1	
23-May	1.4	1.4	1.5	19.0	26.0	20.2	23.8	20.3	19.4	13.2	6.8	4.6	3.9	5.9	15.9	12.5	5.4	2.8	1.8	1.8	1.8	1.8	1.9	2.0	9.0	26.0	
24-May	2.1	3.8	8.1	9.0	8.9	8.0	5.0	1.7	1.6	1.4	1.3	1.2	1.0	0.8	0.8	0.6	0.6	0.7	1.1	1.3	1.5	1.6	1.8	2.7	9.0		
25-May	2.8	3.1	1.6	1.7	1.7	1.7	1.6	1.6	1.4	1.4	1.3	1.0	1.0	1.2	1.2	1.2	0.8	0.6	0.6	1.2	1.8	2.7	5.1	8.2	1.9	8.2	
26-May	12.2	17.2	21.7	23.1	18.2	13.0	4.5	1.5	1.3	1.2	0.9	0.8	0.8	0.8	2.1	0.7	0.7	0.4	0.5	0.9	1.2	1.3	1.4	1.4	5.3	23.1	
27-May	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.1	0.9	0.8	0.7	0.6	0.4	0.3	0.1	0.3	0.4	1.1	0.4	0.7	1.0	1.1	1.2	1.2	0.9	1.4	
28-May	1.3	1.3	1.5	1.5	1.5	1.5	1.4	1.2	0.9	0.7	0.6	0.5	0.6	0.6	0.1	0.1	0.1	0.4	0.5	0.7	0.8	0.8	0.9	0.9	0.9	1.5	
29-May	1.0	1.1	1.2	1.2	1.1	1.1	1.1	0.9	0.6	0.6	0.5	0.5	0.5	0.3	0.3	1.3	16.1	6.1	0.6	0.9	1.2	1.3	1.3	1.3	1.8	16.1	
30-May	1.2	1.1	1.1	1.1	1.1	1.1	1.1	0.9	0.6	0.5	0.3	0.2	0.3	0.4	0.4	0.4	0.4	0.5	0.7	2.7	1.4	9.8	16.3	10.5	2.3	16.3	
31-May	10.0	13.5	18.2	22.9	24.2	26.9	23.8	9.3	1.3	0.9	0.7	0.6	0.7	0.9	0.9	0.2	0.4	0.5	0.6	0.9	3.3	20.1	19.5	15.5	9.0	26.9	
																								Diurnal Average			
																								Diurnal Maximum			





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Leaf Wetness (LW) - %
Stony Mountain - May 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 0.3	102	13.71	13.71
0.4 - 0.5	63	8.47	22.18
0.6 - 0.7	118	15.86	38.04
0.8 - 1.4	345	46.37	84.41
1.5 - 10	71	9.54	93.95
> 10	37	4.97	98.92

Total Number of Valid Hours: 744

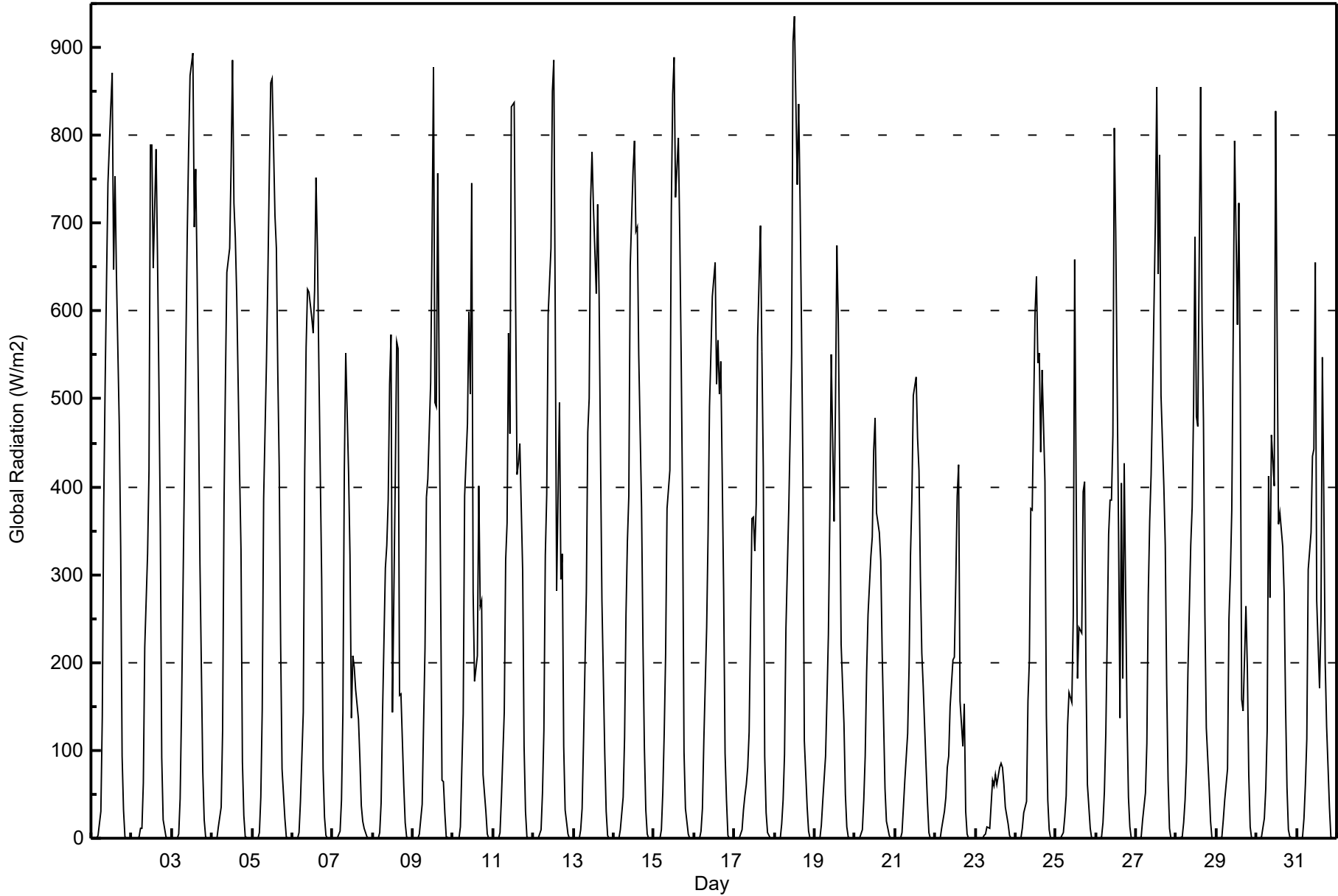
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Global Radiation (GR) - W/m2
Stony Mountain - May 2023

Maximum Value: 935.2 W/m2 on May 18 13:00 Maximum Daily Average: 308.1 W/m2 on May 3																						Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0																										
Minimum Value: 0.0 W/m2 on May 2 02:00 Minimum Daily Average: 29.0 W/m2 on May 23 Maximum Diurnal Average: 648.7 W/m2 at hour 12 Minimum Diurnal Average: 0.1 W/m2 at hour 23 Monthly Average: 216.02 W/m2 Percentiles: P₁ = 0.0 P₁₀ = 0.0 Q₁ = 0.3 Median = 79.6 Q₃ = 401.6 P₉₀ = 642.4 P₉₉ = 869.6																																																
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	0.2	0.3	0.3	0.2	3.2	31.2	139.0	376.3	514.8	634.9	745.0	833.2	870.3	648.0	753.2	640.9	469.7	329.6	93.0	32.6	1.3	0.5	0.4	0.3	296.6	870.3																						
2-May	0.2	0.0	0.0	0.0	1.4	10.9	10.7	63.5	217.4	323.2	418.1	789.7	789.2	648.5	783.7	663.6	518.3	353.9	92.0	21.1	1.6	0.1	0.0	0.4	237.8	789.7																						
3-May	0.6	0.5	0.5	0.5	5.1	45.5	147.4	413.0	551.2	684.8	783.5	868.7	894.3	696.1	761.5	641.0	490.0	312.4	75.5	20.4	1.6	0.0	0.3	0.4	308.1	894.3																						
4-May	0.3	0.3	0.2	0.1	12.1	34.9	123.0	379.3	519.4	644.1	670.9	764.4	884.9	722.7	683.2	615.9	416.9	328.2	86.9	25.8	1.6	0.1	0.1	0.1	288.1	884.9																						
5-May	0.1	0.4	0.1	0.0	6.3	46.0	146.5	386.6	542.2	643.1	754.5	860.5	864.1	707.8	671.1	530.0	421.5	222.6	79.4	21.9	2.2	0.1	0.0	0.0	287.8	864.1																						
6-May	0.0	0.0	0.0	0.1	7.0	42.7	143.6	417.3	558.8	624.2	620.9	592.6	574.6	622.4	752.5	670.1	540.0	295.0	79.6	24.2	2.6	0.2	0.1	0.1	273.7	752.5																						
7-May	0.0	0.0	0.0	0.1	7.7	42.7	142.8	418.4	551.8	416.9	322.2	136.2	207.8	194.8	168.3	135.0	89.9	36.4	19.6	11.9	1.1	0.0	0.0	0.0	121.0	551.8																						
8-May	0.0	0.0	0.1	0.0	6.8	40.9	141.1	308.2	332.6	384.4	516.8	573.3	144.1	410.2	565.9	556.4	163.3	163.5	59.1	18.4	1.8	0.0	0.0	0.1	182.8	573.3																						
9-May	0.4	0.2	0.3	0.1	4.3	39.3	130.6	216.5	387.4	408.6	518.3	686.6	876.8	496.4	491.1	757.1	292.6	66.2	64.3	28.6	2.4	0.0	0.0	0.0	227.8	876.8																						
10-May	0.0	0.0	0.0	0.0	13.4	79.4	142.3	389.2	471.9	599.7	504.8	746.2	279.8	179.0	208.4	401.7	263.8	270.1	72.7	31.3	4.1	0.1	0.0	0.0	194.1	746.2																						
11-May	0.0	0.0	0.0	0.0	7.1	46.8	142.6	317.1	358.6	575.6	461.1	832.2	837.8	614.8	413.2	427.3	449.5	304.2	105.0	30.7	2.1	0.0	0.1	0.1	246.9	837.8																						
12-May	0.0	0.3	0.3	0.4	9.4	51.9	122.0	321.6	390.7	595.4	671.4	849.6	886.1	598.2	282.3	495.5	294.3	324.3	104.6	32.3	4.2	0.2	0.2	0.3	251.5	886.1																						
13-May	0.2	0.2	0.3	0.3	10.1	33.4	109.7	280.2	462.0	500.0	726.6	780.4	718.1	619.8	721.1	616.2	436.2	270.9	96.0	30.5	2.9	0.1	0.2	0.2	267.3	780.4																						
14-May	0.2	0.1	0.2	0.2	8.9	46.5	114.4	255.1	337.8	389.5	651.3	760.1	794.4	691.3	696.2	550.6	377.5	221.1	102.3	32.7	5.6	0.2	0.1	0.1	251.5	794.4																						
15-May	0.1	0.2	0.1	0.3	10.4	51.8	118.8	209.4	374.8	418.3	711.3	847.7	888.3	729.2	797.3	685.7	545.2	377.6	97.7	34.0	5.4	0.1	0.1	0.1	287.7	888.3																						
16-May	0.1	0.1	0.0	0.0	7.3	33.2	110.8	239.3	346.8	490.3	552.5	616.1	655.5	516.3	566.7	505.6	543.0	280.1	97.2	43.1	3.5	0.0	0.0	0.1	233.6	655.5																						
17-May	0.1	0.1	0.0	0.2	9.6	32.4	47.7	60.5	81.2	120.3	363.2	364.8	327.1	380.0	569.9	697.9	554.5	421.1	93.1	28.8	6.6	0.2	0.1	0.1	173.3	697.9																						
18-May	0.2	0.5	0.2	0.8	16.1	43.0	95.2	238.4	374.6	459.8	552.0	906.8	935.2	744.0	835.0	725.3	581.2	420.5	111.7	35.7	8.8	0.3	0.2	0.1	295.2	935.2																						
19-May	0.1	0.2	0.2	0.6	13.9	41.7	94.1	159.2	232.6	365.1	550.1	360.2	492.0	674.1	588.2	418.5	220.8	130.3	49.8	13.0	1.1	0.0	0.0	0.0	183.6	674.1																						
20-May	0.0	0.0	0.0	0.1	9.8	43.2	93.2	188.3	254.7	320.4	342.7	441.4	478.0	369.8	347.5	315.1	211.5	133.3	56.5	19.0	2.8	0.0	0.0	0.0	151.1	478.0																						
21-May	0.0	0.0	0.0	0.1	6.2	35.6	65.4	119.4	194.3	321.5	387.5	504.6	525.6	456.4	418.6	298.2	210.3	172.9	82.9	40.1	6.6	0.0	0.0	0.0	160.3	525.6																						
22-May	0.1	0.1	0.0	0.4	11.6	31.3	46.9	80.1	93.4	149.9	202.7	205.4	292.0	389.3	425.8	156.5	104.8	152.4	30.9	5.0	0.6	0.0	0.0	0.0	99.1	425.8																						
23-May	0.0	0.0	0.0	0.0	0.8	3.5	5.1	12.5	11.4	39.1	66.1	60.3	72.0	61.8	81.0	85.5	79.9	61.9	36.1	15.6	3.2	0.0	0.0	0.0	29.0	85.5																						
24-May	0.0	0.1	0.0	0.3	10.5	29.1	41.9	156.8	203.2	375.8	374.2	597.4	639.4	541.7	552.1	439.4	532.7	405.8	140.2	43.7	9.9	0.2	0.0	0.0	212.3	639.4																						
25-May	0.0	0.0	0.0	0.5	7.1	23.4	48.0	128.7	165.2	155.0	252.9	658.9	410.1	182.4	239.5	233.5	394.0	405.4	185.9	61.5	11.3	0.6	0.3	0.3	148.5	658.9																						
26-May	0.1	0.0	0.1	1.0	17.8	52.8	118.9	346.9	384.7	384.4	458.9	808.2	690.1	349.9	136.5	403.4	182.0	427.4	135.0	46.4	12.8	0.4	0.0	0.0	206.6	808.2																						
27-May	0.0	0.0	0.0	1.5	20.3	51.6	107.4	276.8	360.0	413.7	501.1	702.4	854.7	643.1	778.1	503.8	401.2	334.0	176.1	65.6	11.4	0.3	0.0	0.0	258.5	854.7																						
28-May	0.0	0.0	0.0	1.3	18.4	43.7	87.4	189.0	333.9	376.0	490.1	684.3	480.4	468.3	854.7	589.1	474.7	256.4	125.3	57.8	20.0	0.4	0.0	0.0	231.3	854.7																						
29-May	0.0	0.0	0.0	1.5	21.7	43.5	79.6	249.4	301.1	374.1	573.3	794.4	585.3	723.6	511.7	158.1	145.4	264.6	193.9	73.1	12.9	0.6	0.0	0.1	212.8	794.4																						
30-May	0.0	0.1	0.0	1.6	22.2	56.3	122.4	411.8	273.7	459.4	401.6	827.2	582.1	356.9	370.0	331.8	278.2	151.5	58.1	9.6	2.0	0.0	0.0	0.0	196.5	827.2																						
31-May	0.0	0.0	0.1	1.4	21.9	61.0	113.2	305.5	348.5	435.3	442.9	655.4	270.3	170.7	247.4	547.1	390.1	199.0	126.7	36.0	1.1	0.0	0.0	0.0	182.2	655.4																						
																								0.1	0.1	0.1	0.4	10.6	40.9	101.7	255.3	339.7	422.0	502.9	648.7	606.5	503.5	524.9	477.3	357.2	261.0	94.4	31.9	5.0	0.2	0.1	0.1	Diurnal Average
																								0.6	0.5	0.5	1.6	22.2	79.4	147.4	418.4	558.8	684.8	783.5	906.8	935.2	744.0	854.7	757.1	581.2	427.4	193.9	73.1	20.0	0.6	0.4	0.4	Diurnal Maximum





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Global Radiation (GR) - W/m2
Stony Mountain - May 2023

Concentration Ranges (W/m2)	Number of Hours	%	Cumulative %
0 - 20	291	39.11	39.11
21 - 100	101	13.58	52.69
101 - 300	104	13.98	66.67
301 - 600	161	21.64	88.31
601 - 900	85	11.42	99.73
> 900	2	0.27	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Speed 20 m (WS20m) - km/h
Stony Mountain - May 2023

Maximum Speed: 25 km/h on May 22 15:00 Minimum Speed Value: 1 km/h on May 31 14:00 Maximum Diurnal Speed Average: 5.4 km/h at hour 1 Monthly Average Velocity: 3.9 km/h 170.3 deg		Maximum Daily Speed Average: 19.3 km/h on May 1 Minimum Daily Speed Average: 0.6 km/h on May 9 Minimum Diurnal Speed Average: 2.9 km/h at hour 17 Percentiles: P ₁ = 3 P ₁₀ = 6 Q ₁ = 8 Median = 11 Q ₃ = 15 P ₉₀ = 18 P ₉₉ = 22		Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Percent Operational Time: 100.0																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SSE18	S18	S22	S20	S24	S21	S21	S20	SSE21	S20	SSE20	S20	S21	S23	S21	SSW24	SSW20	S20	S15	S13	S15	S17	S19	SSW18	\$19.3	SSW24
2-May	SSW18	WSW14	NW13	NNW11	N6	NW8	WNW8	WSW6	WNW7	NNW11	NNW9	NNW9	N10	NNW9	NNW10	NNW12	NNW10	NW11	NW7	NW7	NW6	NNW5	ENE7	SSE7	NW6.5	SSW18
3-May	SW10	SW14	SW16	SW16	SW16	SSW18	SSW17	SSW16	S19	S20	S18	SSE18	SSE19	S18	S17	SSE17	S16	S15	SSE13	SE12	SSE16	S17	S17	S15.2	S20	
4-May	S17	S19	S20	S19	S20	S18	S16	SSE16	SSE14	S13	SSE12	SSE14	SSE17	SSE15	SSE15	SE13	SE13	SE15	SE15	SE13	SE14	SSE14	SSE15	SSE14.8	S20	
5-May	S14	S15	S15	S16	S15	SSE14	SSE15	SSE14	SSE15	SE15	SE18	ESE21	ESE20	E21	E21	ESE20	ESE19	ESE19	ESE21	ESE17	ESE11	ESE10	ESE9	ESE10	SE15.3	E21
6-May	SE13	SE11	SE13	SE13	ESE10	SE11	SE12	SE15	SE16	ESE17	ESE19	ESE19	ESE18	ESE18	ESE18	ESE17	ESE19	ESE21	ESE21	ESE17	ESE11	ESE10	ESE9	ESE10	ESE14.7	ESE21
7-May	ESE11	ESE11	SE10	SE10	SE10	SE10	ESE9	SE14	SE16	SE20	SE19	SE20	SSE18	SE16	ESE19	ESE18	SE11	ESE7	SE8	ESE9	ESE11	SE13	SE16	SE17	SE13.2	SE20
8-May	SE14	SE12	SSE9	SE10	SSE13	SSE13	SSE12	SSE11	SSE11	SSE13	SSE13	S14	SE12	SSE14	SSE16	SSE14	SE14	SE14	SE14	SE10	SE9	SSE8	SSE9	S8	SSE11.7	SSE16
9-May	SSW8	SSE7	SSE7	ESE8	SSE7	SSW4	N3	ESE3	ESE2	NE6	ENE4	SW12	W6	E8	NW11	NNW11	NNE13	ENE4	NNE1	NW5	WSW4	W6	WNW8	WNW5	NW0.6	NNE13
10-May	NNW7	NNW7	N5	NW6	NW8	NW7	NNW7	NNW7	N5	N4	NNE4	S4	NNE11	SW6	SW10	SW10	NNE7	ENE9	NNW4	NW5	NW2	SW3	NW7	NW7	NW3.8	NNE11
11-May	NNW6	NW7	NNW7	N5	N6	N6	NE7	E6	E5	NNE5	NE8	E13	E13	E14	ESE13	SSE14	S13	SE9	ESE6	ESE5	SE7	SE8	SE9	SSE9	E4.5	SSE14
12-May	S4	S9	SSE9	SE8	ESE9	SSE7	SSE6	SE6	E5	E9	E10	ESE12	SSE7	SSE7	SE8	ENE3	SW5	SSE9	SSW8	SSW8	SW9	SW10	SSW10	SW10	SSE5.7	ESE12
13-May	SW11	SW12	SW12	SW12	SW14	SW13	SW12	SW11	SW13	SW16	SW18	SW18	SSW20	SSW17	SSW20	SW17	SW15	SW14	SW10	SSW9	SSW10	SSW11	SSW13	SSW14	SW13.6	SSW20
14-May	SSW16	SSW17	SSW17	SSW18	SSW17	SSW18	SW19	SW19	SW20	SW20	SW20	SW18	SW17	SW17	SW14	SW15	SW13	SW13	SSW13	SSW13	SSW13	SSW13	SSW13	SSW13	SSW15.5	SW20
15-May	SW15	SW15	SW16	SW16	SW16	SW15	SW15	SW13	SW12	SW12	SW14	SW13	SSW10	S15	S16	S15	SSW16	SSW13	SSW13	SSW13	SSW13	SSW13	SSW13	SSW13	SSW12.8	SW16
16-May	SSW14	SW15	W12	NNW14	NNW17	NNW16	NNW15	NNW17	NNW19	NNW20	NNW20	NNW18	NNW20	N19	NNW19	NNW23	NNW21	NNW19	NNW18	NW17	NW14	NNW13	NNW9	NNW7	NNW14.2	NNW23
17-May	NNW9	NNW10	NNW10	NNW9	NW10	NNW12	NNW11	NNW9	N11	N13	N14	N13	NNE11	NNE13	NNE14	NNE14	NE13	NE14	ENE10	ENE8	E7	ESE6	ESE5	E8	NNE8.3	NNE14
18-May	ESE7	E7	SE7	SSE8	SSW8	SSW8	S9	SSW10	SW7	WSW5	S5	S9	SSW7	SW8	SSW7	SW7	SSW7	SSW9	SSW9	SSW9	SSW10	SSW11	SSW11	SSW11	SSW7.2	SSW11
19-May	SSW11	SSW12	SSW14	SSW16	SSW18	SSW18	SSW17	SSW17	SSW16	SSW13	SW13	SW13	WSW8	SW12	WSW13	WNW9	NNW10	NNW9	N9	NNW10	NNW9	NNW10	NNW10	N10	SW6.5	SSW18
20-May	N10	N11	N11	N10	NNE9	NE10	NE12	NE12	ENE8	E9	E9	E10	E11	E11	E10	E11	ESE9	E10	E10	E9	ESE9	SE10	SSE12	SSE12	ENE7.4	SSE12
21-May	SSE10	SSE12	SSE9	SSE9	SE10	SSE9	SE7	SE7	S6	S7	S6	SE5	SE7	S6	S7	SSW6	SSW6	SSE3	E6	ENE7	ESE8	S9	S9	SSW9	SSE6.5	SSE12
22-May	SSW8	SSE6	NE2	NE5	ENE5	NNE6	NNE9	NNE12	NNE14	NE14	NE15	NNE15	NE19	NE21	NE25	NE18	NE18	ENE23	ENE21	ENE20	ENE18	ENE20	ENE23	ENE20	NE13.2	NE25
23-May	ENE20	E20	E20	E19	ENE18	E19	E18	E17	E15	E14	E16	ESE18	ESE19	ESE15	E16	ESE15	ESE17	ESE16	ESE15	ESE13	ESE10	ESE11	ESE10	ESE9	E15.4	ENE20
24-May	E6	ESE8	ESE8	SE11	SE10	SE11	SSE11	SE9	S7	S7	S5	WSW8	WSW11	W12	W14	NW13	NW14	NW12	NW12	NW11	NW11	NNW10	NNW12	NNW12	W2.4	NW14
25-May	NNW10	NNW12	NNW8	NNW4	NW6	NW6	NW8	NNW7	NNE7	NNE6	NE6	ENE8	NE8	NE7	NE6	ENE10	ENE8	ENE8	E8	ESE6	ESE5	SE7	S7	SSW9	NNE3.5	NNW12
26-May	SSW9	SSW10	SW10	SW11	SW11	SW10	SW8	SSW8	SW8	W5	WSW7	WSW7	WSW5	SSW5	W4	SSW3	SSE2	WSW7	WSW5	S5	SSW7	SSW8	SSW10	SW11	SW6.9	SW11
27-May	SSW12	SSW13	SSW13	SW13	SSW13	SSW14	SSW11	SSW11	S11	S14	SSE15	S14	SSE14	S13	SSE13	SW12	SSW12	S5	S8	SSE10	SSE12	S13	S14	SSW16	S11.7	SSW16
28-May	SSW16	SSW16	SSW14	SSW15	SSW16	SSW16	SSW17	SSW14	SW9	WSW9	W9	WSW8	W10	W12	SW16	WSW12	W11	NW14	WNW12	WNW11	WNW10	NW11	NW11	NW9	WSW9.1	SSW17
29-May	WNW9	W7	WSW6	SW10	WSW13	WSW11	WSW10	W8	WSW11	W12	WNW13	W13	WSW12	WSW13	W11	W20	WSW8	SW9	SSW12	SSW12	SSW12	WSW12	W9	WNW10	WSW9.9	W20
30-May	WNW10	WNW10	WNW10	NW9	NW9	NW8	NNW7	NNE8	E7	SE7	ESE9	E10	SE9	SE12	SE11	ESE10	ESE11	E9	ENE7	WSW3	WNW7	W7	ENE7	WNW8	ENE1.2	SE12
31-May	NW7	N4	WSW2	W4	NW3	N5	NNE3	NNE3	NE8	ENE10	NE12	ENE10	SE6	SSW1	ENE5	NE7	N5	N7	NNE9	NNE10	N8	NNW8	NNW13	NW17	N4.6	NW17
SSW5.4SSW5.4SSW5.1 S4.8SSW4.9SSW4.7 S4.3 S4.3 S4.0 SSE3.7 SSE3.9 SSE4.6 SSE4.6 SSE4.8 SSE4.5 SSE3.0 SSE2.9 SE3.3 SE3.5 SE3.0 SSE3.1 S3.9 S4.0 S4.6																								Diurnal Average		
ENE20 E20 S22 S20 S24 S21 S21 S20 SSE21NNW20 SW20 ESE21 S21 S23 NE25 SSW24NNW21 ENE23 ESE21 ENE20 ENE18 ENE20 ENE23 ENE20																								Diurnal Maximum		

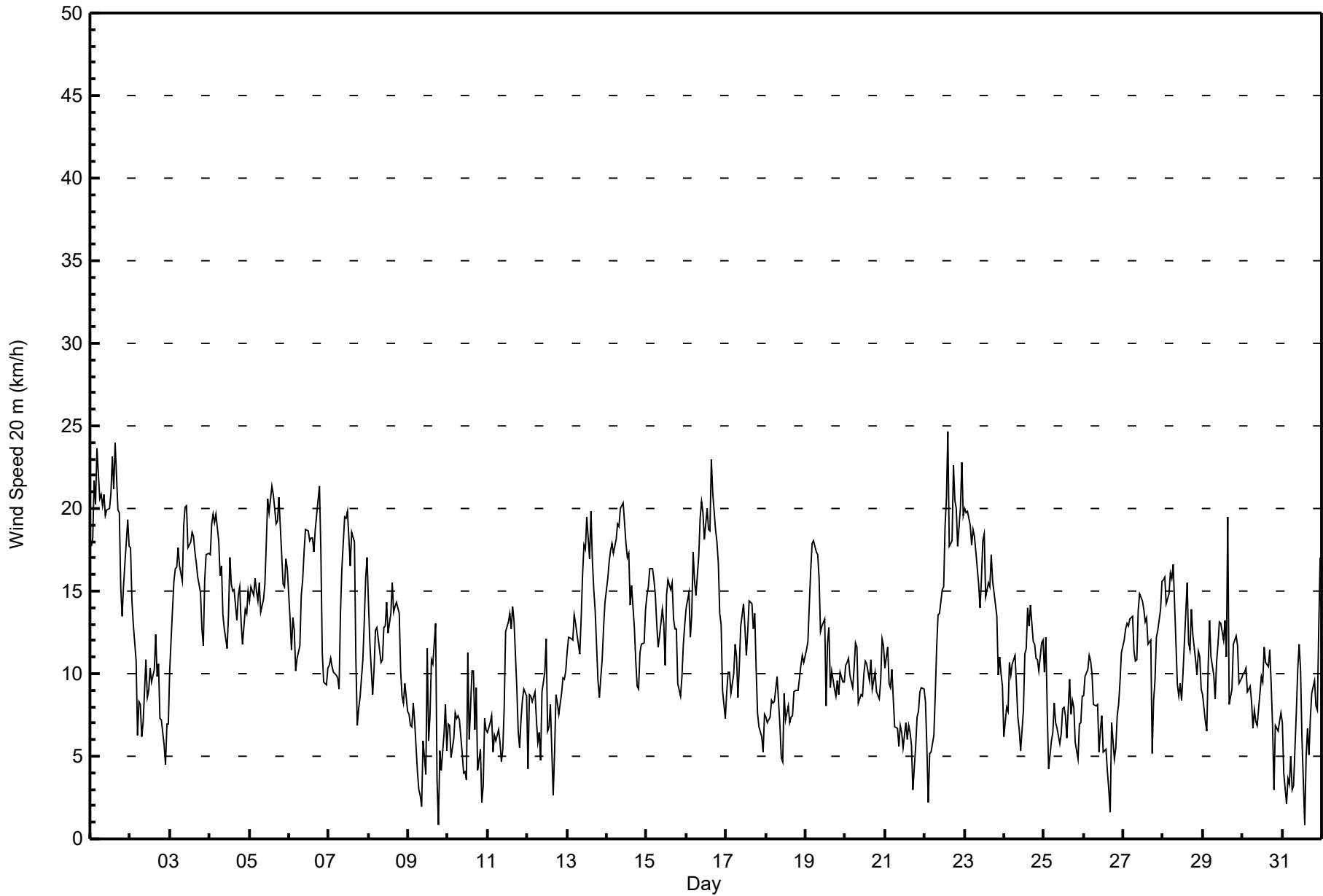
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed 20 m (WS20m) - km/h
Stony Mountain - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 9 km/h on May 29 16:00														Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0											
Minimum Value: 1 km/h on May 9 02:00																									
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 5 P ₉₀ = 6 P ₉₉ = 7																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	4	4	5	5	5	5	5	6	6	6	6	7	8	7	7	6	6	5	3	3	3	5	4	8	
2-May	4	4	3	4	1	2	3	3	3	4	3	4	5	4	5	4	4	4	3	1	1	1	3	2	5
3-May	2	3	3	3	3	4	4	4	6	6	6	7	6	6	6	6	5	5	4	3	2	4	4	7	
4-May	4	4	4	4	4	5	4	5	4	3	4	5	6	6	6	6	5	4	5	4	2	3	3	4	6
5-May	4	3	3	3	3	3	3	3	4	5	6	6	6	6	6	6	5	6	6	4	4	4	5	5	6
6-May	4	3	4	3	2	3	3	5	5	6	6	6	6	6	6	6	6	7	6	5	3	3	2	2	7
7-May	2	2	2	2	2	2	3	5	5	6	6	7	7	5	6	6	4	2	2	2	3	3	4	4	7
8-May	4	3	2	2	2	3	3	3	3	4	4	5	4	5	5	5	4	5	5	3	2	2	5	2	5
9-May	1	1	1	2	2	2	1	1	1	2	2	5	3	3	5	6	4	3	2	2	2	1	2	1	6
10-May	2	1	1	1	1	1	2	2	2	2	3	3	5	5	3	3	5	4	3	2	1	2	2	1	5
11-May	2	1	1	1	1	1	2	2	1	2	3	4	5	5	4	6	4	4	2	1	1	2	2	1	6
12-May	2	2	1	1	1	1	1	2	2	3	4	5	5	5	3	4	3	3	3	2	1	2	2	2	5
13-May	2	3	3	3	3	3	3	4	4	6	7	7	7	7	7	6	5	5	3	2	2	2	3	3	7
14-May	4	4	5	5	4	5	5	6	6	6	6	6	6	6	5	5	4	4	3	2	2	3	3	3	6
15-May	4	4	4	4	4	4	3	3	4	5	5	4	5	5	6	5	5	4	3	1	2	2	3	6	
16-May	3	4	5	4	6	5	5	6	7	8	7	7	8	8	7	9	8	7	7	5	4	4	3	2	9
17-May	3	3	3	3	3	4	4	3	4	4	5	5	4	5	5	5	5	4	3	3	1	1	2	1	5
18-May	1	1	1	1	1	2	3	3	3	3	3	4	3	4	3	4	3	3	3	2	2	2	2	2	4
19-May	2	2	3	4	4	4	4	5	5	4	5	5	3	5	5	4	3	3	2	3	2	2	2	2	5
20-May	2	3	3	2	2	2	3	3	2	3	3	3	3	3	3	3	3	3	2	2	2	2	3	3	3
21-May	2	3	3	2	2	1	1	1	2	2	3	2	3	3	3	2	1	2	1	1	1	1	1	2	3
22-May	1	2	1	2	1	1	3	3	4	4	5	4	5	7	7	6	6	7	7	7	5	6	7	6	7
23-May	6	6	6	6	5	5	6	6	5	5	5	6	6	5	5	4	5	4	4	4	3	3	2	2	6
24-May	2	2	2	2	2	2	3	3	2	2	2	4	4	5	5	6	5	4	4	4	3	3	3	3	6
25-May	3	3	4	1	1	2	2	3	2	2	2	3	3	2	2	3	3	3	2	1	1	1	1	1	4
26-May	1	1	2	2	2	2	2	2	3	2	3	4	3	3	2	3	2	3	2	1	1	1	2	2	4
27-May	2	2	3	3	3	3	3	3	4	5	6	6	5	5	5	5	4	3	4	4	4	3	3	4	6
28-May	4	4	3	3	4	3	4	4	3	3	4	4	4	5	5	5	5	5	4	4	3	3	4	2	5
29-May	2	1	2	2	3	2	2	3	4	4	5	5	5	5	4	9	5	3	4	3	3	3	2	2	9
30-May	2	2	3	2	2	1	1	3	2	3	4	4	4	5	5	4	4	3	2	4	3	3	5	2	5
31-May	1	1	1	1	2	1	1	2	3	3	4	3	3	2	3	3	3	2	3	3	2	4	5	5	5
Diurnal Maximum																									





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed 20 m (WS20m) - km/h
Stony Mountain - May 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	59	7.93	7.93
6 - 11	334	44.89	52.82
12 - 19	299	40.19	93.01
20 - 28	52	6.99	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h
Stony Mountain - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	8	5	2	5	2	5	1	2	6	4	2	6	3	1	4	3	59
6 - 11	12	12	10	14	22	30	32	25	16	40	25	14	10	13	26	33	334
12 - 19	4	7	10	2	11	26	29	39	35	48	47	7	6	2	9	17	299
20 - 28	0	0	2	7	4	6	2	2	15	5	3	0	1	0	0	5	52
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	24	24	28	39	67	64	68	72	97	77	27	20	16	39	58	744

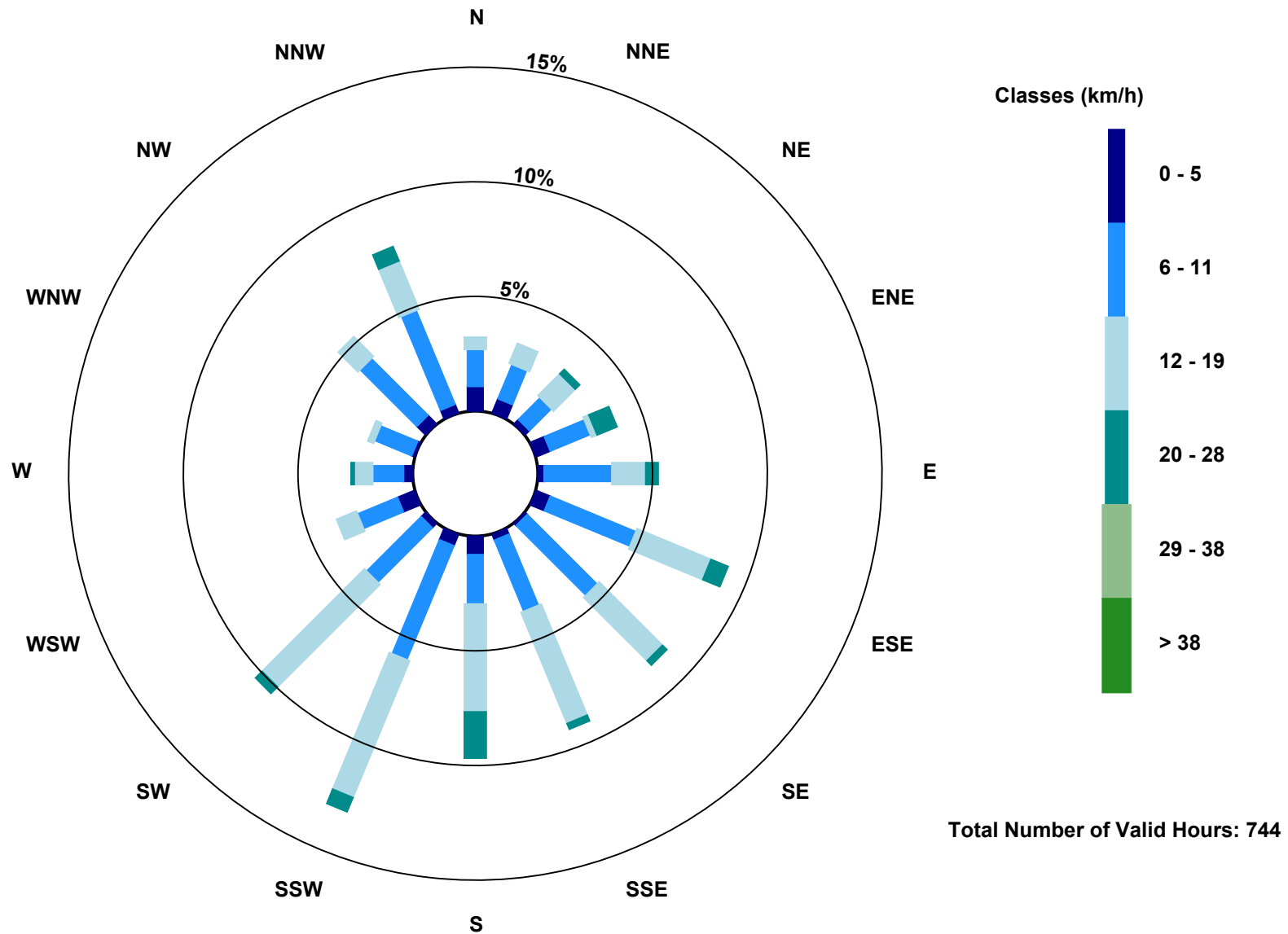
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed 20 m (WS20m) - km/h
Stony Mountain





Direction of Maximum Speed: 47 deg on May 22 15:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 180.5 deg on May 1	Hours of Data: 744
Direction of Minimum Speed: 196 deg on May 31 14:00	Hours of Missing Data: 0
Direction of Minimum Daily Speed Average: 0.6 deg on May 9	Percent Operational Time: 100.0
Monthly Average Direction: 170.3 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	168	174	179	174	178	179	178	173	168	171	167	170	176	186	189	204	201	191	184	170	171	185	189	199	180.5
2-May	212	258	317	344	350	316	301	257	293	334	330	327	1	326	336	347	342	325	324	311	319	335	67	167	318.3
3-May	225	220	217	216	215	211	207	195	185	174	177	170	160	161	175	171	167	170	170	162	145	154	169	180	182.3
4-May	181	186	183	181	181	178	176	165	158	170	162	160	164	158	157	147	144	141	132	129	148	144	153	160	162.5
5-May	172	183	178	176	174	156	152	153	149	127	129	111	105	96	99	111	111	111	112	117	123	126	123	130	130.6
6-May	129	133	139	133	117	138	131	134	130	112	107	109	103	110	110	114	117	107	110	114	115	114	113	119	117.5
7-May	123	121	127	135	139	139	123	130	131	138	139	146	149	127	117	118	130	121	132	111	113	132	140	143	131.5
8-May	146	142	148	145	150	152	153	154	151	164	159	178	143	161	153	158	140	140	140	136	144	155	166	180	152.2
9-May	200	149	151	117	150	213	350	115	122	35	78	234	263	83	322	346	17	57	31	319	255	259	292	301	308.1
10-May	329	332	354	317	307	324	329	338	359	350	22	187	33	236	225	236	14	66	335	304	316	230	308	317	324.1
11-May	333	321	331	349	359	2	40	92	94	33	49	87	90	90	106	149	188	144	117	110	124	133	144	149	98.2
12-May	186	188	162	132	123	148	156	140	97	92	94	115	161	163	135	65	221	167	197	199	214	219	211	218	161.6
13-May	217	218	220	217	215	214	214	218	220	222	227	236	207	212	201	226	224	232	226	199	206	207	208	209	216.8
14-May	211	211	211	209	207	211	214	223	231	229	227	221	226	220	219	217	219	216	209	217	221	226	226	223	218.6
15-May	225	229	229	228	227	225	228	228	226	215	218	211	189	188	184	192	198	195	192	195	200	200	198	196	209.6
16-May	204	215	279	331	342	343	337	336	341	339	343	340	336	351	343	345	342	333	333	326	321	328	343	339	332.5
17-May	336	330	330	330	326	334	338	344	11	8	10	10	13	15	26	32	43	54	60	70	85	111	102	85	15.7
18-May	103	99	140	167	193	195	186	202	227	242	188	188	197	214	198	215	204	201	207	206	201	200	201	194	193.5
19-May	194	194	197	199	203	202	199	197	197	202	217	230	248	232	252	301	348	341	351	348	341	343	342	358	230.4
20-May	10	7	8	9	21	38	45	51	68	88	84	87	92	90	90	92	103	98	97	101	114	136	150	148	76.8
21-May	151	160	167	147	145	155	142	146	176	178	170	143	140	169	170	207	211	152	94	75	115	182	191	198	159.1
22-May	193	164	41	51	68	30	17	14	20	44	45	32	38	43	47	55	53	58	75	68	62	68	73	74	54.1
23-May	75	82	83	79	73	80	88	88	88	95	101	106	108	104	100	104	104	108	106	109	111	111	111	108	94.9
24-May	96	104	115	127	130	130	153	162	185	179	172	243	256	262	274	307	310	313	321	326	320	331	332	328	280.5
25-May	336	338	344	334	317	310	318	343	14	26	35	58	49	52	50	64	73	72	92	104	115	143	187	206	30.6
26-May	204	210	220	229	228	222	214	209	223	264	240	248	253	212	269	204	167	255	255	184	197	212	211	214	222.5
27-May	210	209	208	215	210	208	209	199	183	176	167	172	165	171	164	219	200	178	187	161	168	179	190	197	189.5
28-May	193	192	199	200	201	203	206	210	216	239	264	240	261	268	216	247	273	304	303	299	301	309	311	304	240.8
29-May	288	280	245	226	247	243	239	269	258	276	288	276	257	251	267	277	245	223	206	200	213	244	281	287	254.1
30-May	286	293	296	316	326	325	336	14	89	129	110	86	141	146	128	118	117	97	71	256	293	280	64	291	58.5
31-May	306	351	251	265	306	351	32	17	40	66	51	65	134	196	68	48	1	7	18	17	353	327	327	319	8.6

191.7	194.9	196.8	189.2	192.9	194.3	188.3	177.6	170.1	159.7	149.6	157.5	151.0	157.2	153.9	162.3	146.7	129.6	130.4	132.8	157.5	173.7	172.5	188.4
Diurnal Average																							

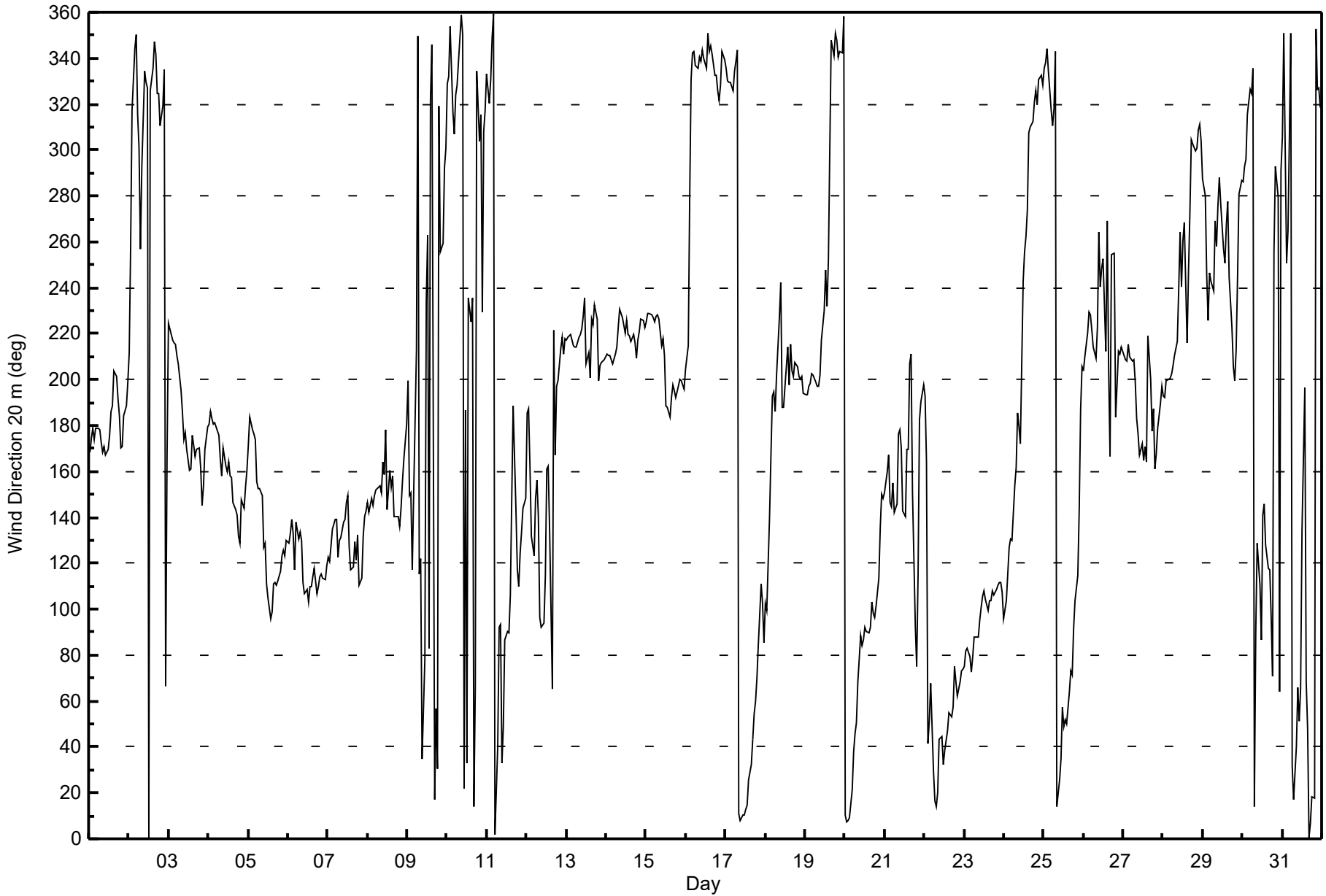
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction 20 m (WD20m) - deg
Stony Mountain - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 94 deg on May 9 19:00 Minimum Value: 8 deg on May 2 22:00 Percentiles: P ₁ = 11 P ₁₀ = 15 Q ₁ = 18 Median = 22 Q ₃ = 31 P ₉₀ = 42 P ₉₉ = 82		Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	17	18	18	17	18	18	19	20	22	22	27	27	30	27	28	25	28	24	25	19	17	15	19	18	30
2-May	20	34	19	17	14	19	45	60	45	21	30	43	40	50	40	34	35	28	34	18	11	8	36	49	60
3-May	13	16	17	17	17	19	20	24	26	27	29	32	32	29	29	29	28	29	22	18	15	16	18	18	32
4-May	16	18	18	18	18	20	20	19	25	30	33	35	32	33	38	32	31	23	20	18	16	16	17	20	38
5-May	20	18	16	15	15	15	14	19	27	27	28	23	25	24	22	23	22	21	19	17	18	18	19	21	28
6-May	18	19	20	18	16	19	20	25	26	27	24	25	25	26	29	26	24	21	19	18	16	15	12	15	29
7-May	15	15	17	15	15	18	21	27	26	25	22	31	24	20	20	19	24	17	22	17	17	18	18	18	31
8-May	18	18	19	15	14	14	16	21	25	30	31	32	28	32	31	32	25	27	24	20	16	17	27	31	32
9-May	15	11	11	14	16	59	42	50	71	28	56	30	81	44	49	49	23	88	94	17	49	30	13	22	94
10-May	24	16	15	25	13	20	20	26	42	70	84	86	28	80	26	30	67	34	74	23	38	53	21	15	86
11-May	24	12	12	15	16	21	20	30	32	43	34	28	30	30	25	46	32	29	22	17	10	14	16	14	46
12-May	72	16	12	13	9	15	17	24	38	29	40	34	77	73	28	88	49	37	35	18	14	16	16	15	88
13-May	19	20	21	20	22	21	24	27	27	33	37	36	31	36	33	35	34	35	27	15	16	18	19	19	37
14-May	21	22	22	21	21	21	23	27	27	29	28	32	32	33	38	32	35	31	23	16	18	20	20	21	38
15-May	21	22	23	21	21	20	21	27	25	34	38	48	38	33	35	32	35	34	29	22	13	16	17	19	48
16-May	18	28	38	21	21	22	21	25	24	25	27	27	28	28	27	26	26	24	23	23	24	23	19	16	38
17-May	18	21	22	22	22	23	23	27	23	23	26	25	29	27	27	27	27	25	22	20	9	16	26	13	29
18-May	11	12	19	12	15	18	23	28	54	70	80	50	59	52	57	60	53	36	27	22	18	17	18	15	80
19-May	15	15	17	19	19	20	22	24	26	33	38	30	45	42	35	48	22	21	18	19	16	16	15	15	48
20-May	15	17	17	14	18	17	17	19	21	22	25	25	26	22	23	21	21	20	16	15	15	16	19	19	26
21-May	16	19	21	14	12	14	14	15	33	39	40	50	38	48	41	33	24	52	11	10	23	17	16	14	52
22-May	14	33	79	37	26	30	19	17	18	19	19	20	20	20	19	21	19	19	21	21	18	19	18	20	79
23-May	19	19	20	19	18	20	19	20	20	21	21	20	20	20	21	18	19	19	20	20	19	16	15	15	21
24-May	16	14	16	18	18	17	21	26	31	39	58	59	40	40	35	33	30	29	27	24	23	20	21	19	59
25-May	21	20	21	19	17	20	24	28	27	33	23	36	36	21	28	23	35	29	20	15	8	21	14	12	36
26-May	14	12	15	16	18	16	21	34	30	56	58	52	68	54	46	83	80	45	31	16	14	15	13	16	83
27-May	16	17	17	18	19	20	22	25	35	36	35	40	38	43	42	35	39	59	32	26	25	21	19	19	59
28-May	20	20	20	17	19	19	22	26	34	39	41	58	39	39	34	43	42	30	26	27	26	23	22	19	58
29-May	19	13	29	14	20	19	20	32	36	38	37	37	40	37	34	30	58	26	29	25	21	24	22	16	58
30-May	16	17	18	18	15	14	16	19	31	45	43	40	34	30	31	31	26	24	15	90	28	53	44	17	90
31-May	15	23	66	35	61	26	26	45	32	29	26	35	44	92	77	34	33	25	18	16	29	43	38	25	92
Diurnal Maximum																									





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS19
FIREBAG
MAY 2023**

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FIREBAG (AMS19)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	707	35	37	99.73	18.8	0	3.7	0
H2S (ppb) Average	708	36	36	100	4.9	0	0.4	0
THC (ppm) Average	686	34	58	96.77	2.7	-	2.5	-
NO2 (ppb) Average	706	36	38	99.73	15.5	0	5.2	-
NO (ppb) Average	706	36	38	99.73	14.8	-	2.5	-
NOX (ppb) Average	706	36	38	99.73	26.1	-	6.3	-
Temperature 2 m (C) Average	744	0	0	100	28.8	-	22	-
Relative Humidity (%) Average	744	0	0	100	100	-	82.1	-
Wind Speed 10 m (km/h) Average	657	0	87	88.31	35	-	31	-
Wind Direction 10 m (deg) Average	657	0	87	88.31	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FIREBAG (AMS19)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	707	0.6	1.6	-	0	0	0.1	0.2	0.5	1.2	18.8
H2S (ppb) Average	708	0.15	0.3	-	0	0	0	0.1	0.2	0.3	4.9
THC (ppm) Average	686	2.28	0.1	-	2	2.2	2.2	2.3	2.3	2.4	2.7
NO2 (ppb) Average	706	2.09	2.1	-	0.2	0.4	0.8	1.5	2.6	4.4	15.5
NO (ppb) Average	706	0.23	0.9	-	0	0	0	0.1	0.1	0.3	14.8
NOX (ppb) Average	706	2.33	2.7	-	0.3	0.5	0.9	1.6	2.7	4.5	26.1
Temperature 2 m (C) Average	744	15.31	5.7	-	1	7.9	11	15.3	19.6	22.9	28.8
Relative Humidity (%) Average	744	47.06	19	-	16	24.5	31.8	44.6	59.3	75.8	100
Wind Speed 10 m (km/h) Average	657	15	7	-	1	6	10	14	20	25	35
Wind Direction 10 m (deg) Average	657	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FIREBAG (AMS19)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
NO2, SO2, THC	02 May 2023 12:00	02 May 2023 13:00	2	Maintenance - sample manifold cleaned
THC	24 May 2023 11:00	24 May 2023 13:00	3	Maintenance - replaced support gas cylinder
THC	25 May 2023 17:00	26 May 2023 10:00	18	Analyzer Failure - inconsistent response
THC	26 May 2023 11:00	26 May 2023 11:00	1	Maintenance - reinitiate the analyzer
Wind Speed, Wind Direction	01 May 2023 01:00	04 May 2023 14:00	86	Unstable Operation - tower misaligned
Wind Speed, Wind Direction	04 May 2023 15:00	04 May 2023 15:00	1	Maintenance - to bring tower down



Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 18.8 ppb on May 9 09:00	Maximum Daily Average: 3.7 ppb on May 29		Hours of Data:	707
Minimum Value: 0.0 ppb on May 2 21:00	Minimum Daily Average: 0.0 ppb on May 16		Hours of Missing Data:	37
Maximum Diurnal Average: 1.6 ppb at hour 9	Minimum Diurnal Average: 0.2 ppb at hour 24		Hours of Calibration:	35
Monthly Average: 0.60 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.5 P ₉₀ = 1.2 P ₉₉ = 7.6		Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.1	Z	0.2	0.2	0.3	0.4	0.4	0.4	0.3	0.3	C	C	C	C	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.4	0.6	0.2	0.6
2-May	0.5	0.3	Z	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.0	M	M	0.1	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.5
3-May	0.1	0.6	0.6	Z	0.9	0.7	0.4	0.2	0.2	0.1	0.2	0.2	0.3	0.2	0.3	0.3	0.4	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.3	0.9
4-May	0.1	0.1	0.3	0.3	Z	0.5	0.5	0.5	0.6	0.6	0.5	0.5	0.4	0.4	0.3	0.3	0.5	0.5	0.6	1.5	1.4	1.9	0.3	0.2	0.6	1.9
5-May	0.2	0.2	0.2	0.2	0.2	Z	0.2	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.3
6-May	0.1	Z	0.3	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.3
7-May	0.1	0.2	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2
8-May	0.1	0.1	0.1	Z	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.2	0.2	0.1	0.7	0.1	0.7
9-May	5.6	2.9	1.0	1.2	Z	1.4	0.6	2.5	18.8	2.0	0.3	0.2	0.8	0.6	0.4	0.6	1.1	2.2	1.6	1.0	0.7	0.4	0.4	0.5	2.0	18.8
10-May	1.0	0.7	0.3	0.4	0.4	Z	0.5	0.6	0.5	0.4	0.5	1.5	0.5	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.4	1.5
11-May	Z	0.4	0.7	0.5	0.1	0.1	0.0	0.0	0.8	1.1	0.9	0.5	1.3	0.4	1.0	0.5	0.5	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.4	1.3
12-May	0.0	Z	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2
13-May	0.3	0.5	Z	0.5	0.4	0.4	0.4	0.5	0.4	0.3	0.6	0.7	0.7	0.5	0.2	0.2	0.1	0.2	0.0	0.1	0.1	0.1	0.4	0.6	0.4	0.7
14-May	0.3	0.2	0.2	Z	0.4	0.8	1.9	7.6	7.5	7.0	2.0	1.2	0.5	0.3	1.8	1.6	1.9	2.0	2.9	1.4	0.2	0.2	0.2	0.2	1.8	7.6
15-May	0.1	0.1	0.2	0.1	Z	0.3	1.3	0.1	0.1	0.0	0.1	0.4	0.5	0.2	0.3	0.3	0.5	0.3	0.2	0.4	0.7	0.9	0.8	0.6	0.4	1.3
16-May	0.5	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
17-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.0	0.0	0.0	0.3
18-May	0.1	Z	0.1	0.0	0.1	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.3
19-May	0.1	0.1	Z	0.6	0.5	0.3	0.3	0.4	0.6	0.6	0.8	0.8	0.8	0.7	0.8	1.0	5.7	11.5	9.4	3.9	0.3	0.1	0.2	0.1	1.7	11.5
20-May	0.1	0.1	0.1	Z	0.1	0.1	1.8	0.4	0.3	1.8	1.8	1.4	0.7	0.8	0.2	0.4	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.3	0.5	1.8
21-May	0.3	0.3	0.3	0.3	Z	0.4	0.3	0.4	0.4	0.5	0.7	0.8	0.7	0.7	0.7	0.7	0.8	0.7	0.6	0.4	0.3	0.4	0.3	0.3	0.5	0.8
22-May	0.2	0.6	1.3	1.2	0.7	Z	0.7	0.7	0.7	0.6	0.5	0.4	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.3	0.6	0.6	0.3	0.4	1.3
23-May	Z	2.7	2.0	3.5	3.8	2.9	2.3	0.6	0.3	0.2	0.2	0.3	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.9	3.8
24-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.8	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.8
25-May	0.1	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1
26-May	0.0	0.0	0.0	Z	0.1	0.1	0.2	0.4	0.3	0.2	0.1	0.2	0.3	2.1	4.4	3.4	3.6	2.3	2.3	1.2	0.2	0.1	0.2	0.2	1.0	4.4
27-May	0.2	0.1	0.2	0.3	Z	0.6	0.4	0.3	0.3	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.2	0.6
28-May	0.2	0.1	0.1	0.2	0.2	Z	0.3	0.3	0.2	0.1	0.1	0.1	0.3	0.8	1.8	3.4	1.4	1.2	0.2	0.4	0.2	0.3	0.3	0.5	0.6	3.4
29-May	Z	0.4	0.3	0.2	0.2	0.2	7.5	15.2	11.1	16.9	8.1	1.3	0.5	3.1	3.2	4.2	1.5	2.6	1.9	3.7	1.1	0.5	0.2	0.3	3.7	16.9
30-May	0.4	Z	0.4	0.3	0.3	0.2	0.3	0.2	0.2	0.3	0.2	0.1	0.1	0.2	1.1	5.0	3.4	2.0	0.0	0.0	0.2	0.3	0.4	0.5	0.7	5.0
31-May	0.4	0.3	Z	0.2	0.2	0.4	0.4	2.0	6.0	1.4	0.3	0.2	0.6	0.7	0.9	0.7	1.1	0.9	0.5	0.6	0.5	0.5	1.9	0.6	0.9	6.0

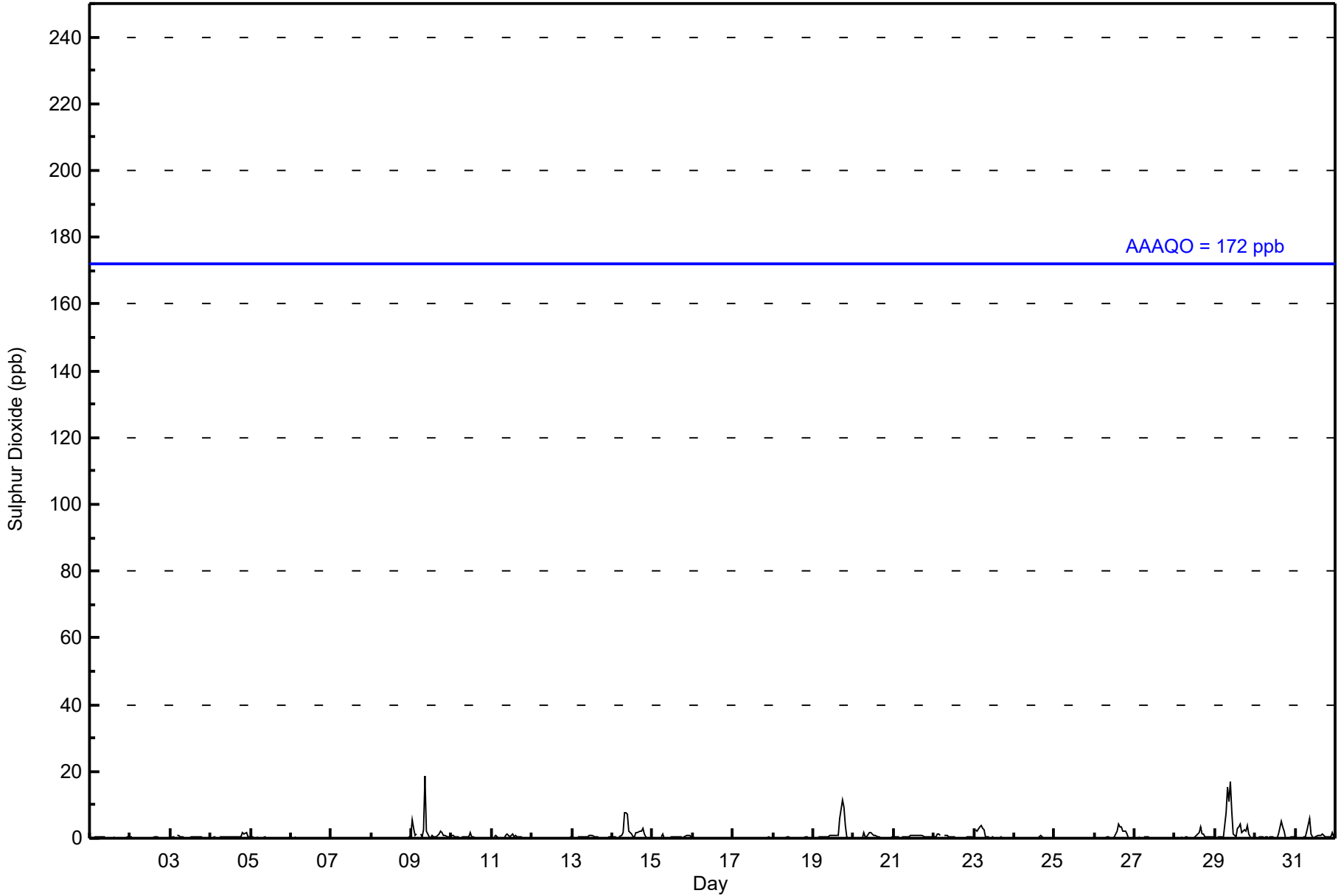
0.4	0.4	0.4	0.4	0.4	0.4	0.7	1.1	1.6	1.1	0.6	0.4	0.4	0.4	0.6	0.8	0.8	0.9	0.7	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	Diurnal Average
5.6	2.9	2.0	3.5	3.8	2.9	7.5	15.2	18.8	16.9	8.1	1.5	1.3	3.1	4.4	5.0	5.7	11.5	9.4	3.9	1.4	1.9	1.9	0.7	0.7	0.7	0.7	Diurnal Maximum

Z - zerospan C - Calibration M - Maintenance
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Firebag - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Firebag - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	702	99.29	99.29
11 - 20	5	0.71	100.00
21 - 60	0	0.00	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Firebag - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	27	37	19	20	5	41	63	104	92	61	52	34	22	14	11	23	625
11 - 20	1	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	5
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	28	37	19	20	5	41	63	104	92	61	52	36	23	15	11	23	630

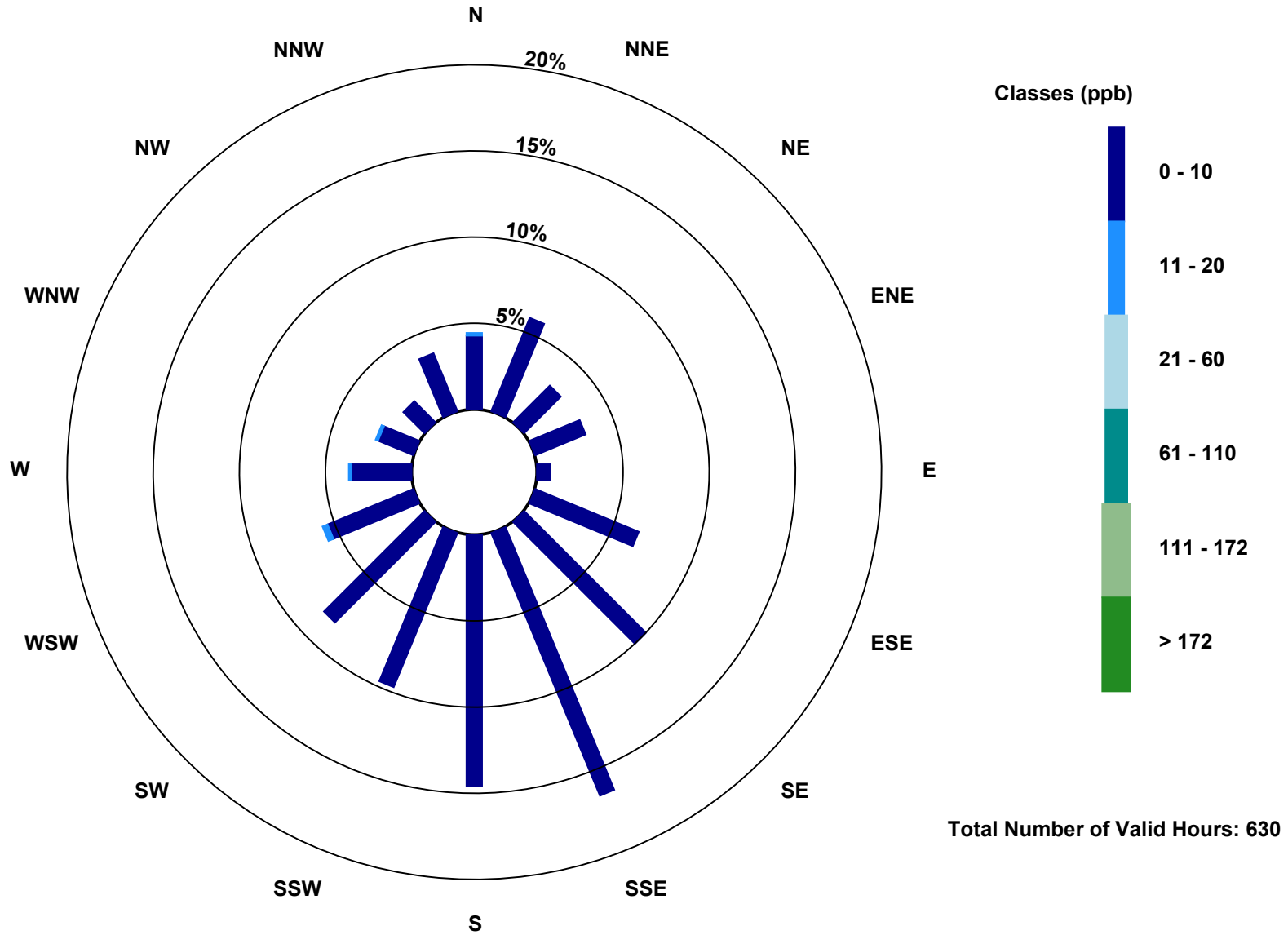
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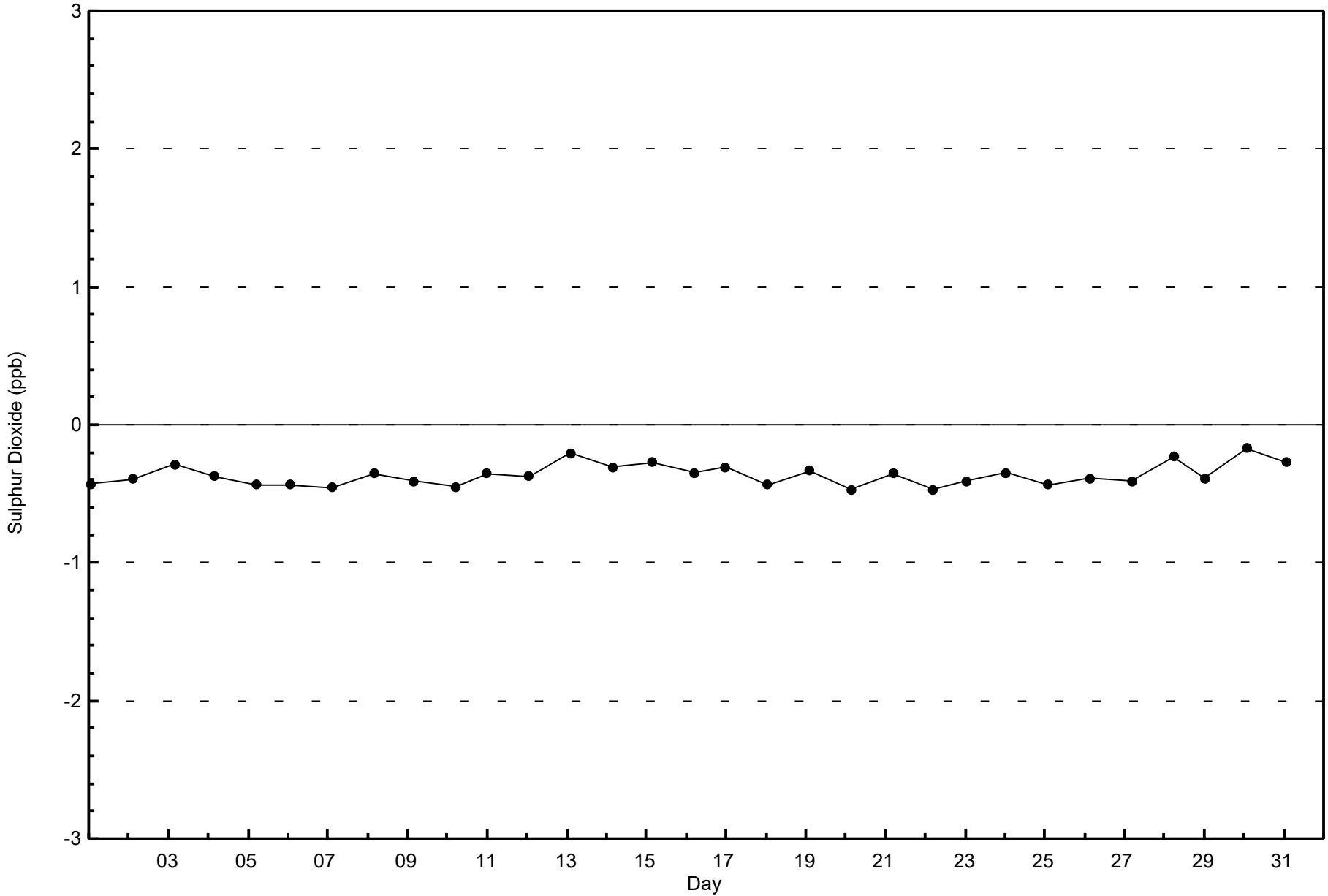
Total Number of Hours: 744

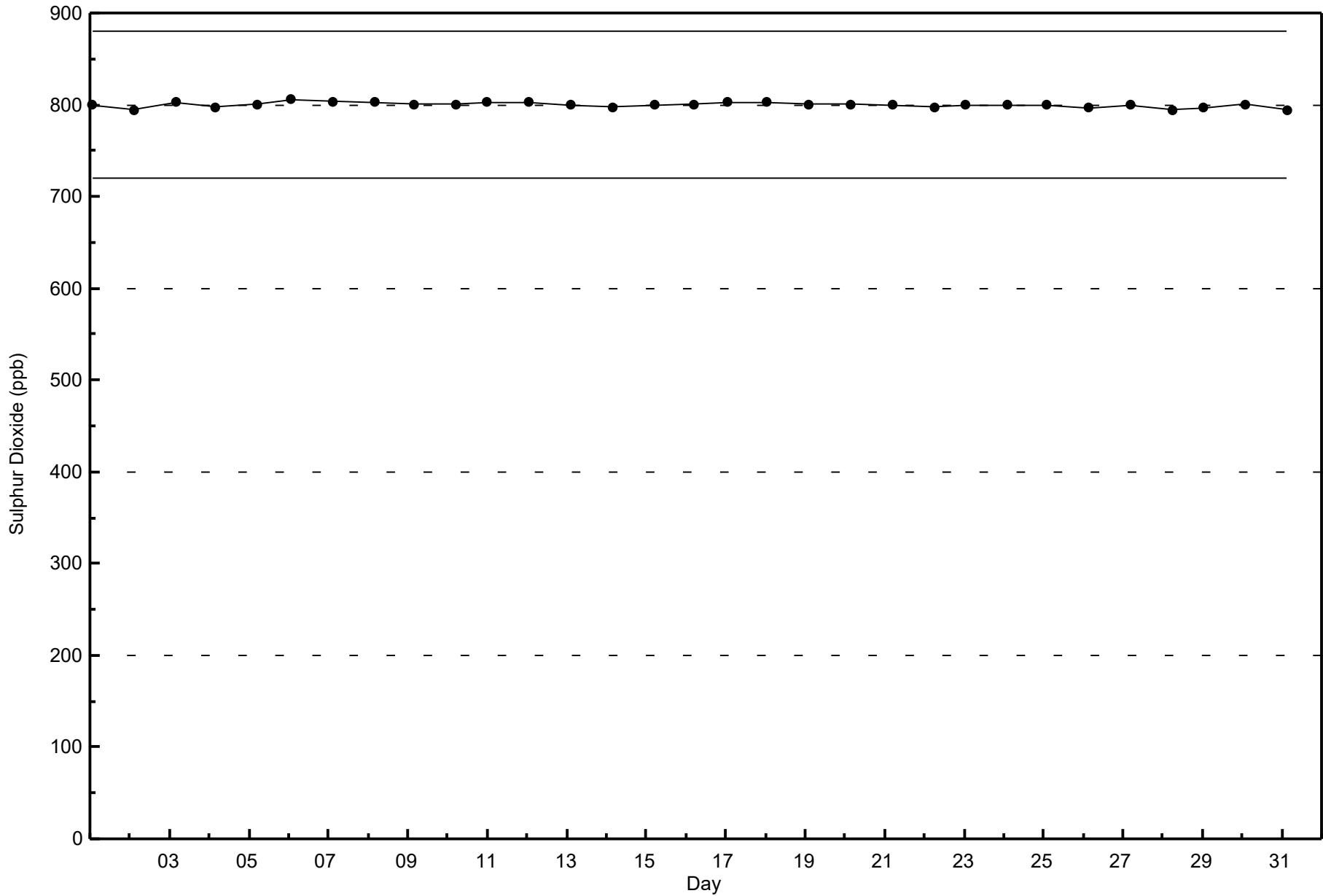


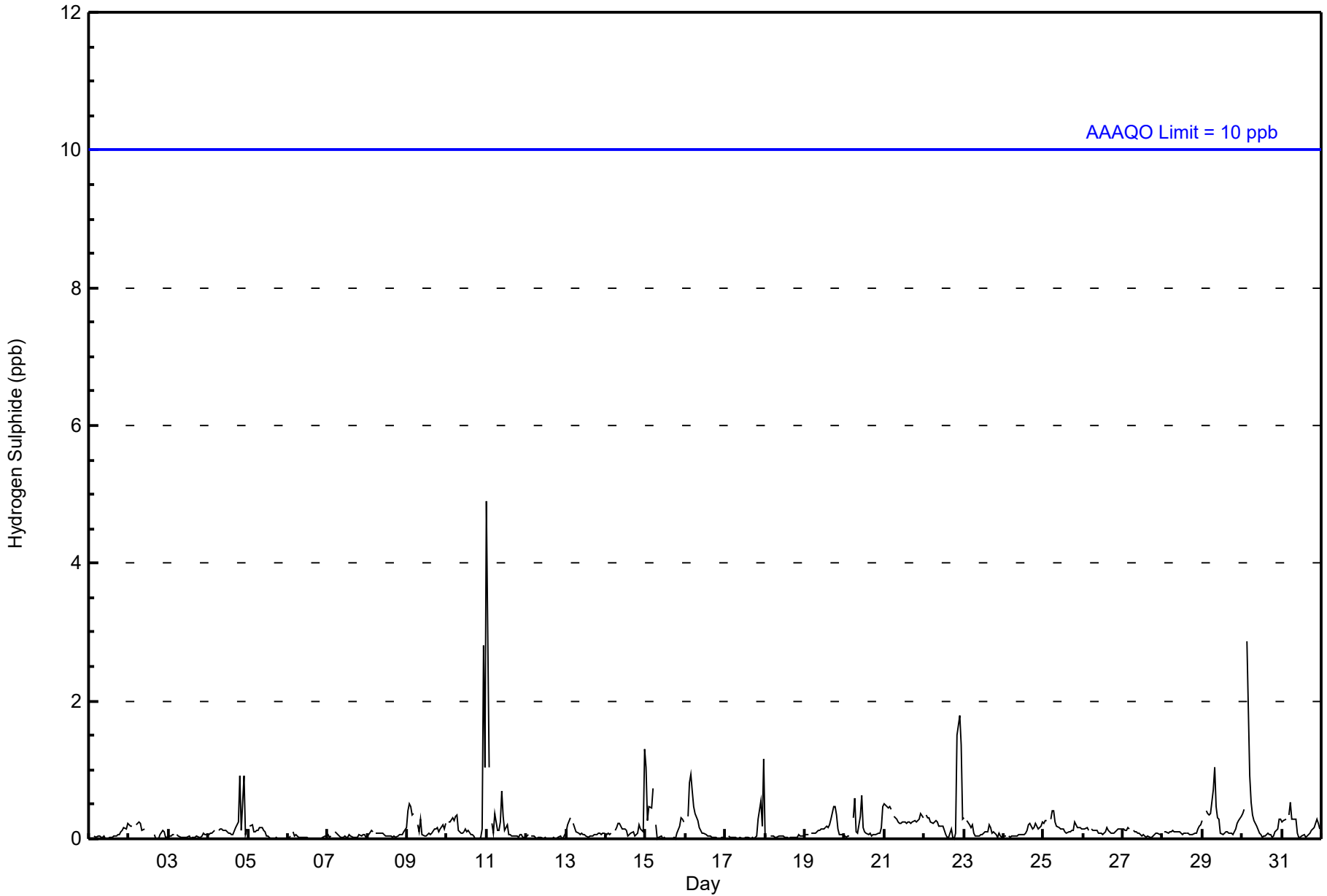
Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Firebag











**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Firebag - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	705	99.58	99.58
3 - 4	2	0.28	99.86
5 - 7	1	0.14	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Firebag - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	26	38	19	20	5	38	61	109	90	63	51	34	23	15	12	23	627
3 - 4	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
5 - 7	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	26	38	19	21	6	39	61	109	90	63	51	34	23	15	12	23	630

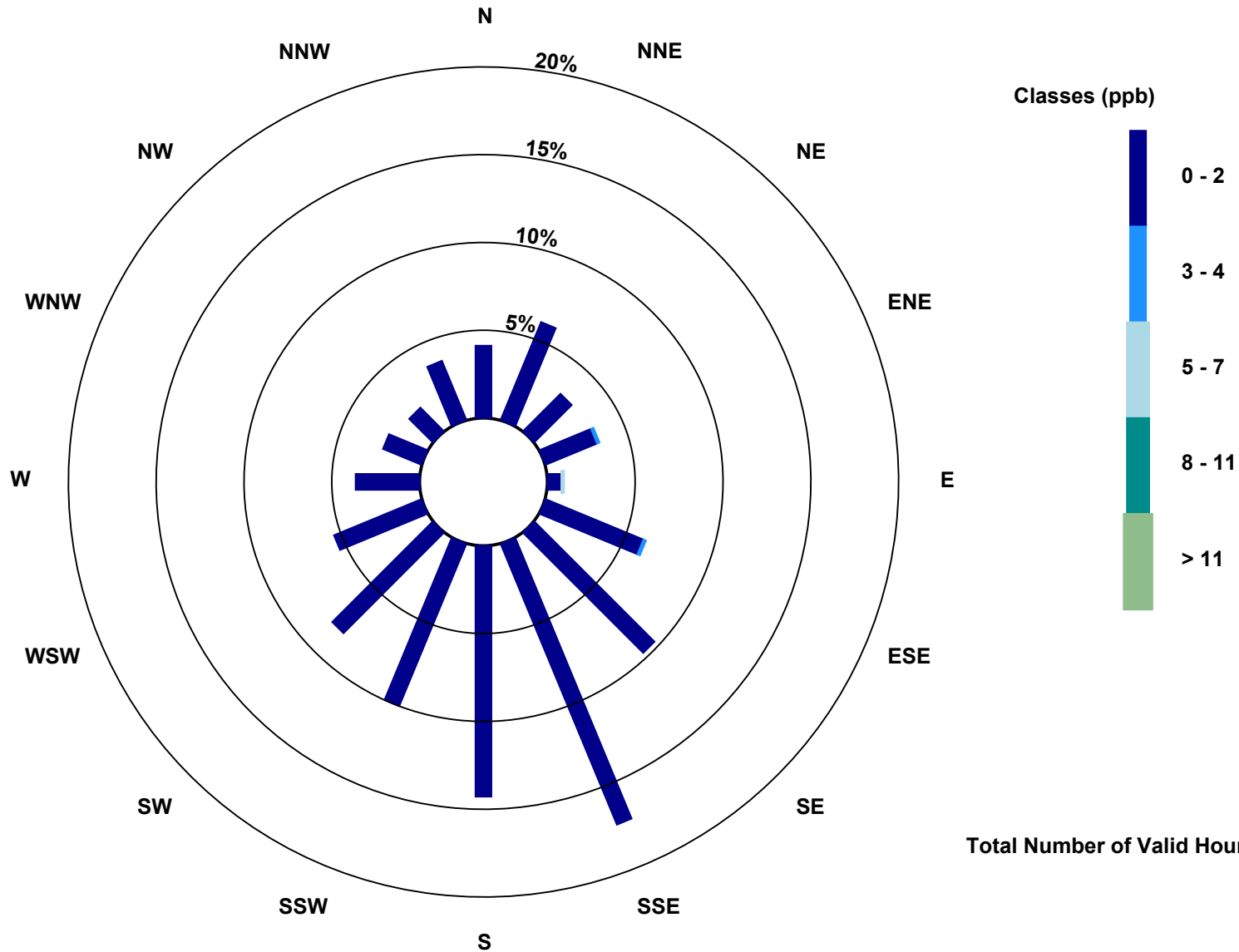
Total Number of Valid Hours: 630

Total Number of Hours: 744

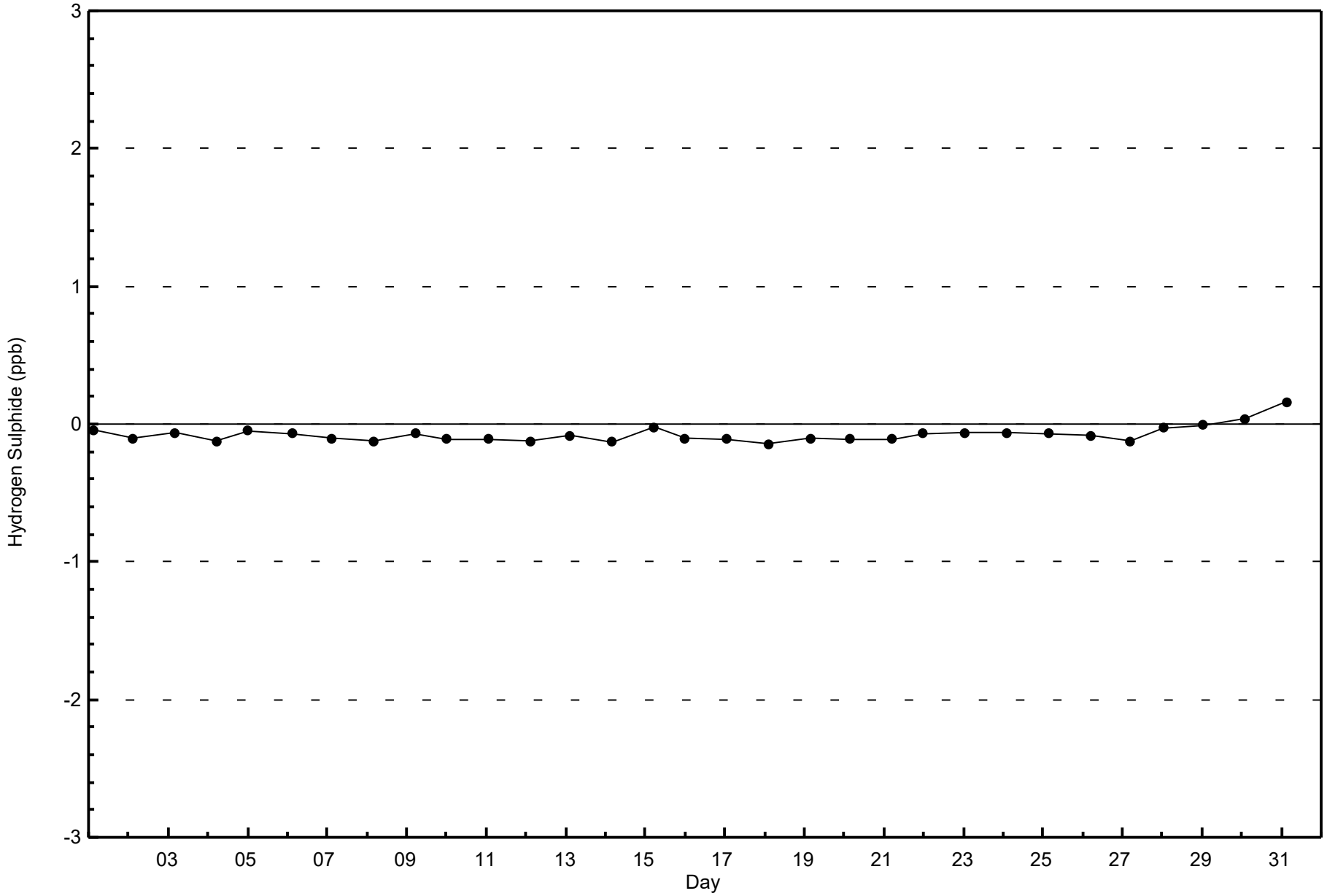


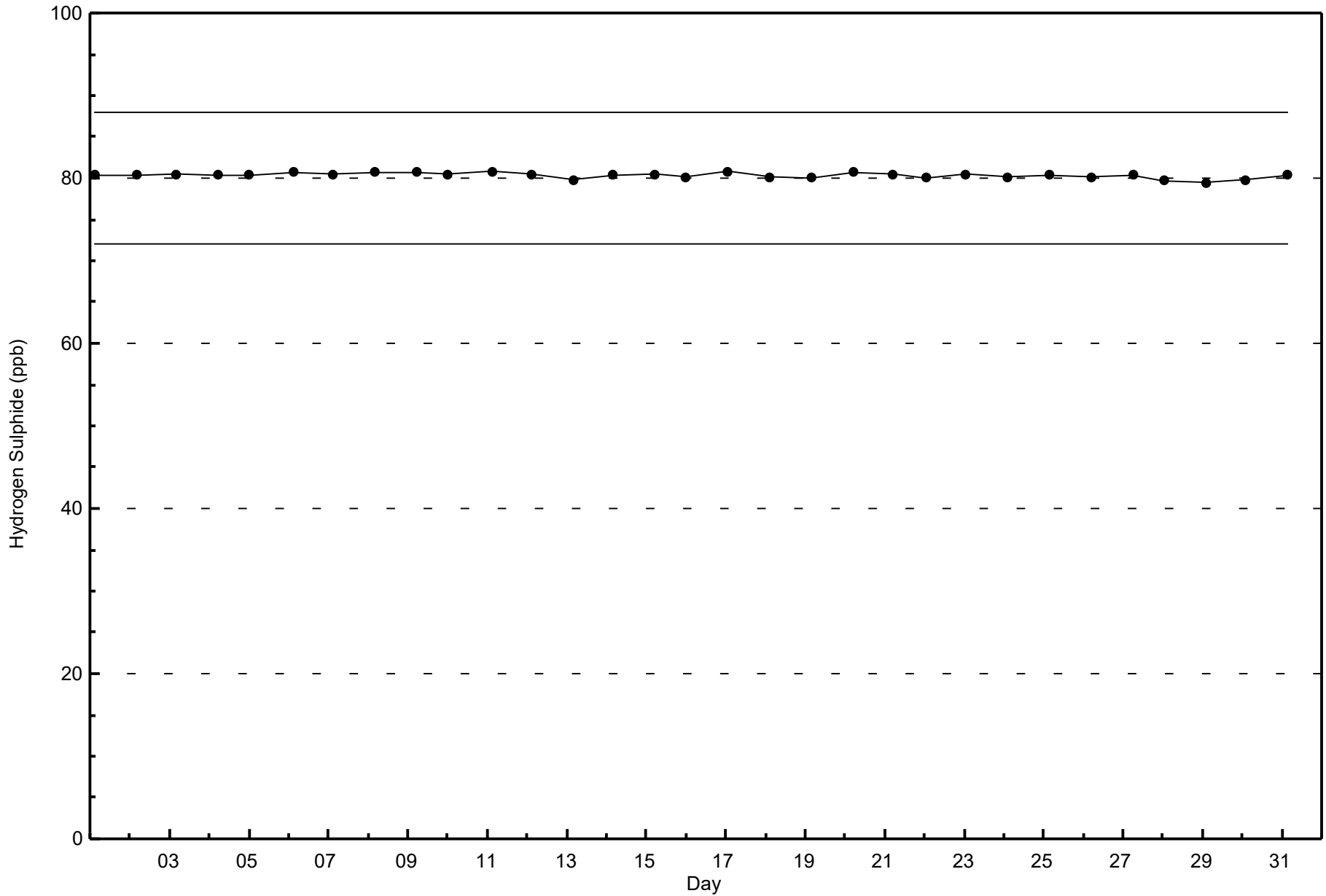
Wood Buffalo Environmental Association
Wind Rose May 2023

Hydrogen Sulphide (H₂S) - ppb
Firebag



Total Number of Valid Hours: 630



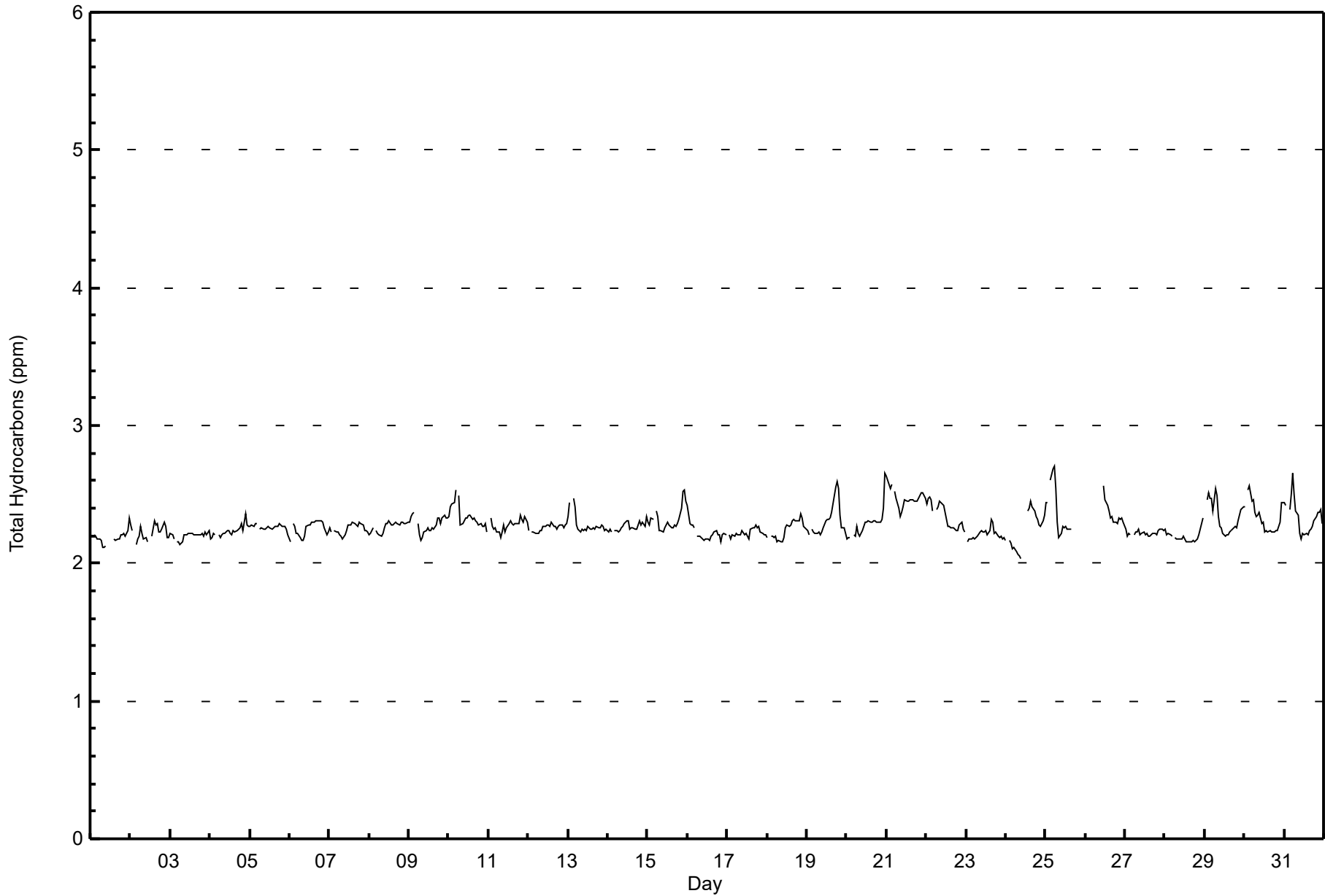




Wood Buffalo Environmental Association
Summary of Hour Averages

Total Hydrocarbons (THC) - ppm
Firebag - May 2023

Maximum Value: 2.7 ppm on May 25 06:00		Maximum Daily Average: 2.5 ppm on May 21		Hours in Service: 744																																													
Minimum Value: 2.0 ppm on May 24 10:00		Minimum Daily Average: 2.2 ppm on May 1		Hours of Data: 686																																													
Maximum Diurnal Average: 2.3 ppm at hour 4		Minimum Diurnal Average: 2.2 ppm at hour 9		Hours of Missing Data: 58																																													
Monthly Average: 2.28 ppm		Percentiles: P ₁ = 2.1 P ₁₀ = 2.2 Q ₁ = 2.2 Median = 2.3 Q ₃ = 2.3 P ₉₀ = 2.4 P ₉₉ = 2.6		Hours of Calibration: 34																																													
				Percent Operational Time: 96.8																																													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	C	C	C	C	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.3																							
2-May	2.3	2.2	Z	2.1	2.2	2.2	2.3	2.2	2.2	2.2	2.2	M	M	2.2	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.3																						
3-May	2.2	2.2	2.2	Z	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2																						
4-May	2.2	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.4	2.3	2.3	2.2	2.4																						
5-May	2.3	2.3	2.3	2.3	2.3	Z	2.2	2.3	2.2	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3																						
6-May	2.2	Z	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3																						
7-May	2.3	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2																						
8-May	2.2	2.2	2.3	Z	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3																						
9-May	2.3	2.3	2.4	2.4	Z	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3																						
10-May	2.3	2.4	2.4	2.4	2.5	Z	2.5	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.5																						
11-May	Z	2.3	2.3	2.2	2.3	2.2	2.2	2.2	2.2	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3																						
12-May	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3																						
13-May	2.3	2.4	Z	2.5	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3																						
14-May	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3																						
15-May	2.3	2.3	2.3	2.3	Z	2.4	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.5	2.5	2.5	2.3	2.5																						
16-May	2.4	2.3	2.3	2.3	2.3	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2																						
17-May	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2																						
18-May	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.2	2.4																						
19-May	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.6	2.6	2.5	2.3	2.3	2.3	2.2	2.2	2.3	2.6																						
20-May	2.2	2.2	2.2	Z	2.2	2.2	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.7	2.3	2.7																						
21-May	2.6	2.6	2.5	2.6	Z	2.5	2.5	2.4	2.3	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5																						
22-May	2.4	2.5	2.5	2.5	2.4	Z	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.3	2.5																						
23-May	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3																						
24-May	2.2	Z	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	M	M	M	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.2	2.4	2.2																						
25-May	2.4	2.4	Z	2.6	2.7	2.7	2.5	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.2	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	2.7																						
26-May	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	M	2.6	2.5	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.6																						
27-May	2.2	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3																						
28-May	2.2	2.2	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.2	2.3																						
29-May	Z	2.5	2.5	2.5	2.5	2.4	2.5	2.5	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.3	2.5																						
30-May	2.4	Z	2.5	2.6	2.5	2.5	2.4	2.3	2.3	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.4	2.4	2.3	2.6																						
31-May	2.4	2.4	Z	2.4	2.5	2.7	2.5	2.4	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.7																						
																								2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	Diurnal Average
																								2.6	2.6	2.5	2.6	2.7	2.7	2.5	2.5	2.4	2.4	2.4	2.6	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.7	Diurnal Maximum
Z - zerospan																								C - Calibration				M - Maintenance				AF - Analyzer Failure																	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Firebag - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	1	0.15	0.15
2.1 - 3.0	685	99.85	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Firebag - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
2.1 - 3.0	28	37	19	19	5	41	58	103	83	57	51	35	23	15	11	23	608
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	28	37	19	19	5	41	58	103	84	57	51	35	23	15	11	23	609

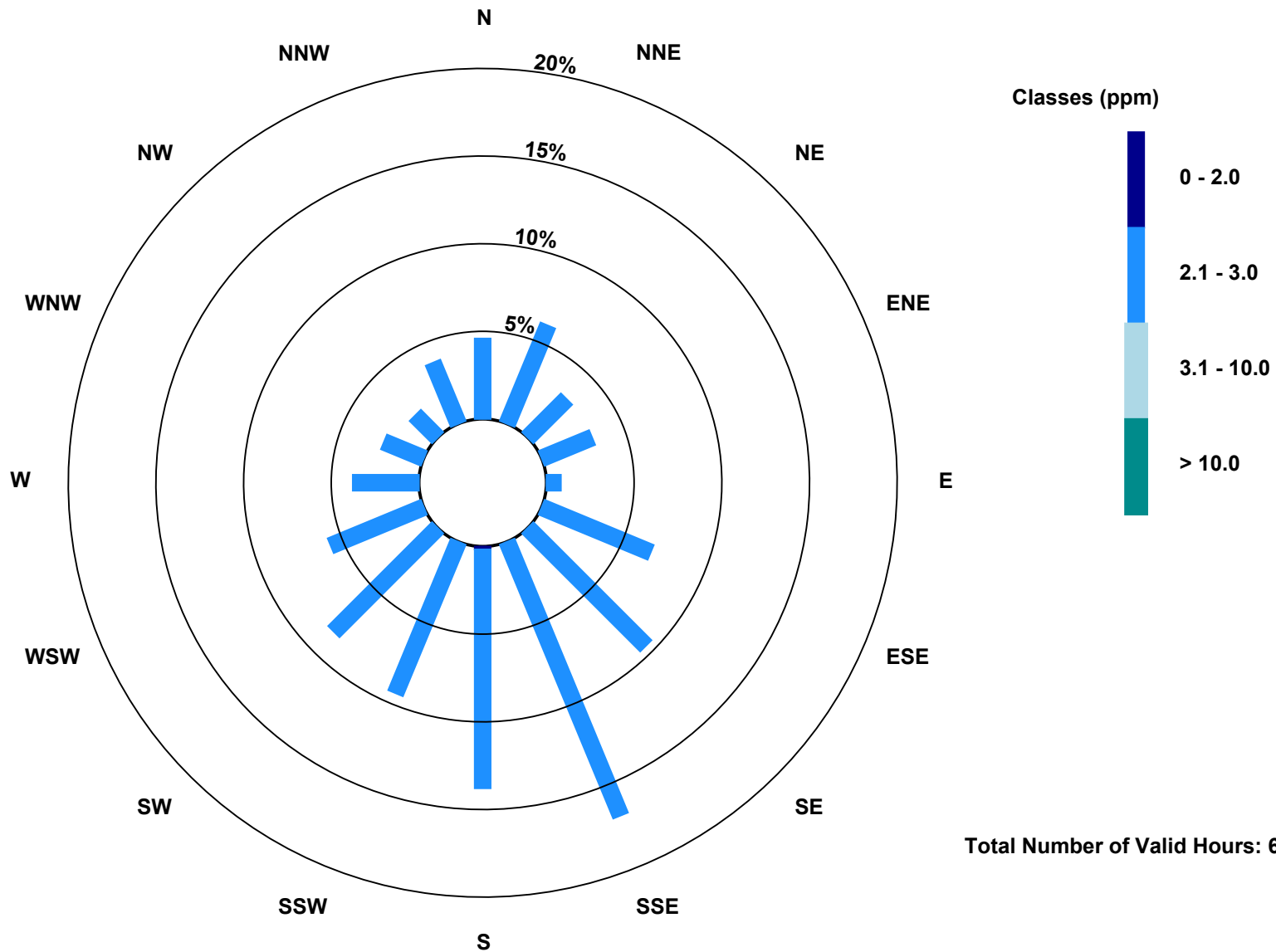
Total Number of Valid Hours: 609

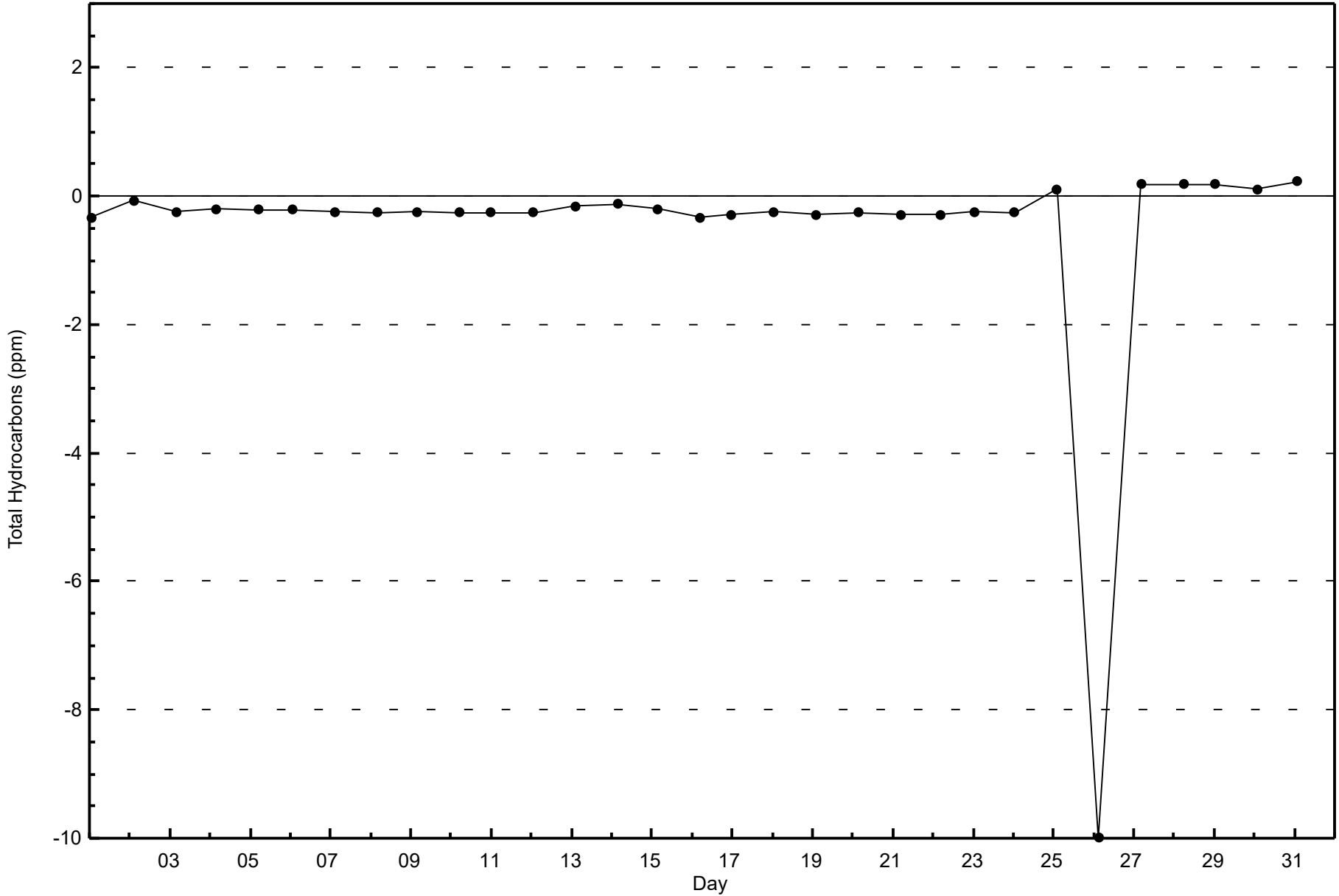
Total Number of Hours: 744

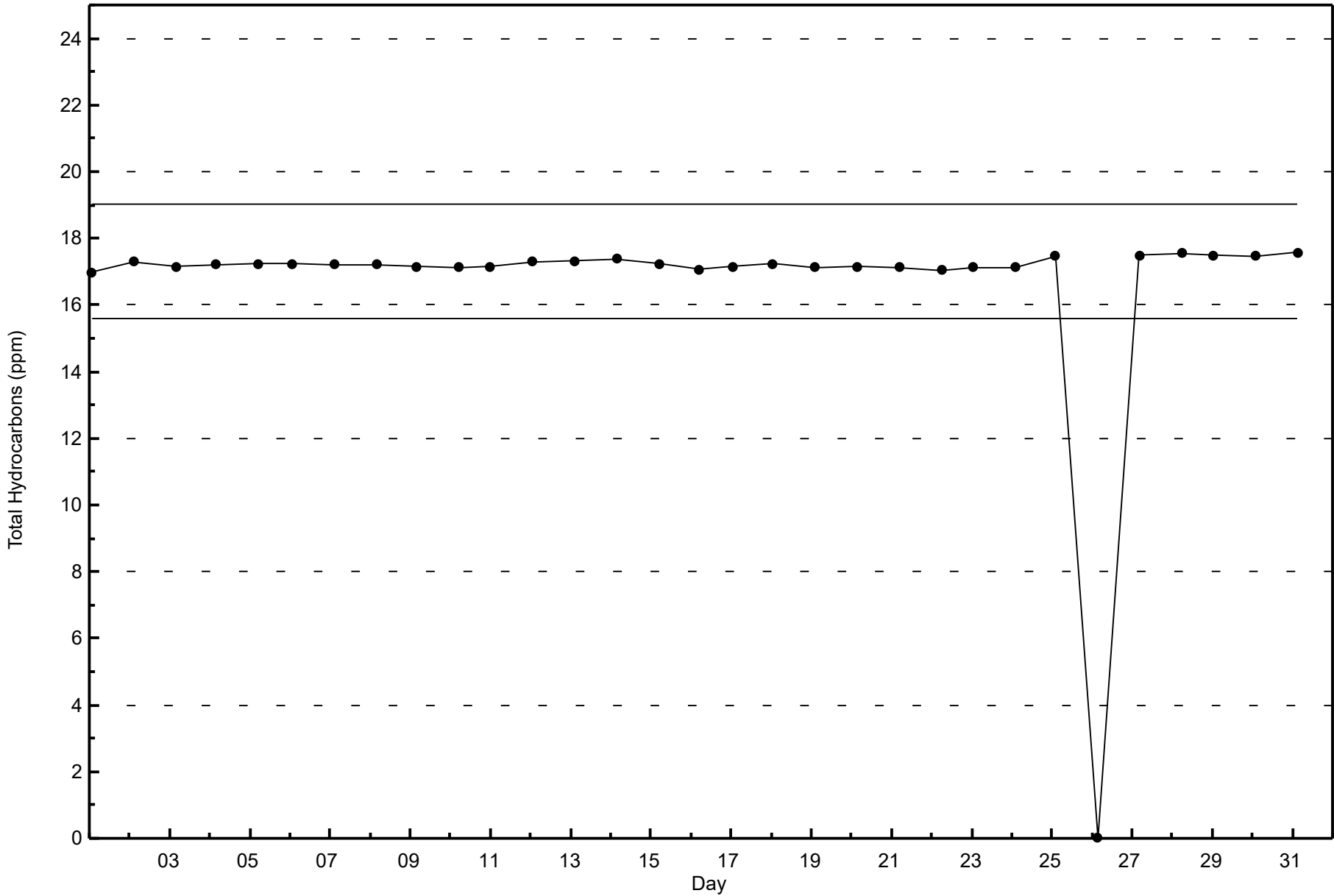


Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Firebag









Wood Buffalo Environmental Association
Summary of Hour Averages

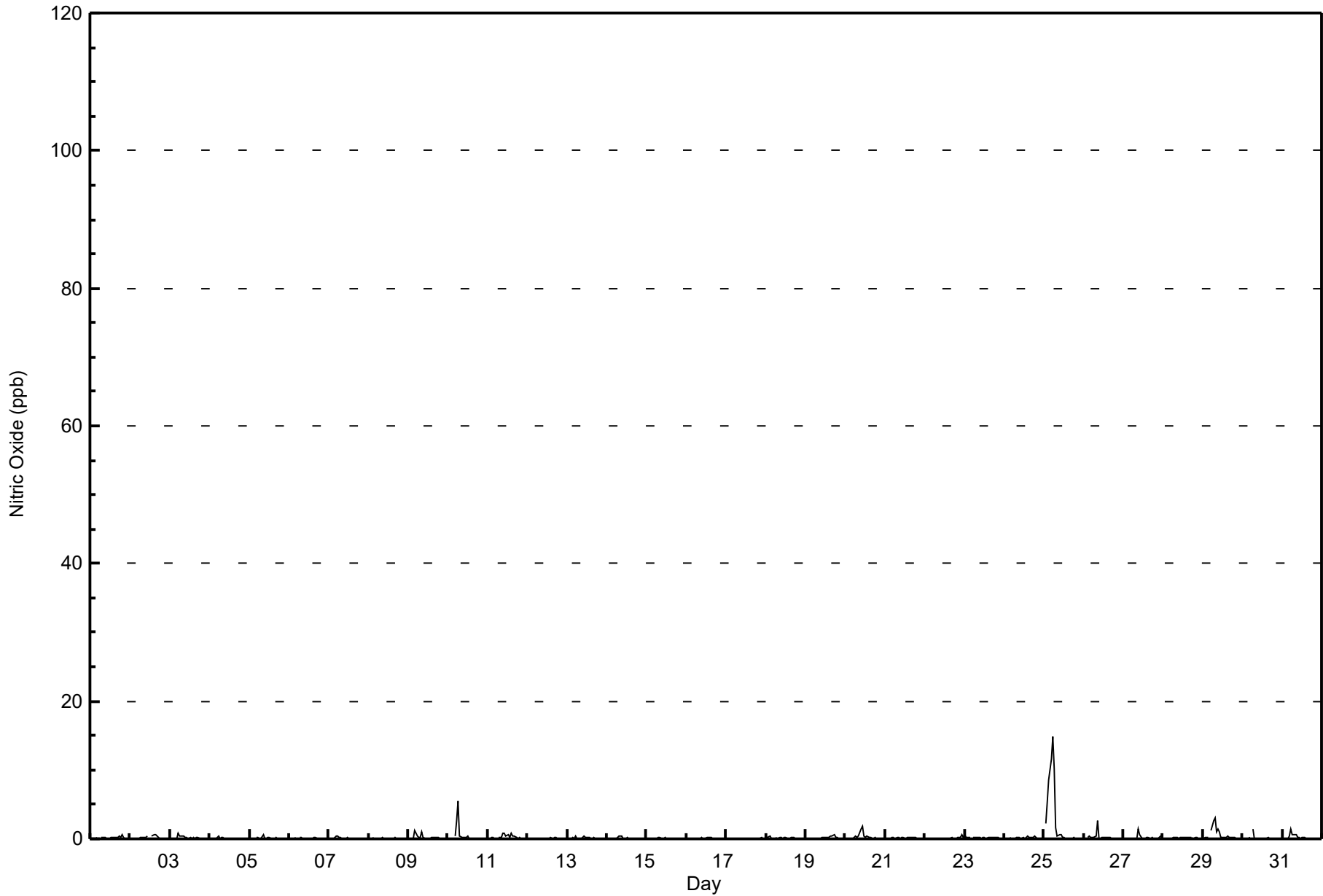
Nitric Oxide (NO) - ppb
Firebag - May 2023

Maximum Value: 14.8 ppb on May 25 06:00		Maximum Daily Average: 2.5 ppb on May 25		Hours in Service: 744																																													
Minimum Value: 0.0 ppb on May 1 23:00		Minimum Daily Average: 0.0 ppb on May 17		Hours of Data: 706																																													
Maximum Diurnal Average: 1.0 ppb at hour 6		Minimum Diurnal Average: 0.0 ppb at hour 22		Hours of Missing Data: 38																																													
Monthly Average: 0.23 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.1 P ₉₀ = 0.3 P ₉₉ = 2.7		Hours of Calibration: 36																																													
				Percent Operational Time: 99.7																																													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	0.1	0.0	0.0	0.0	0.3	Z	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.4	0.3	0.6	0.2	0.0	0.0	0.0	0.2	0.6																							
2-May	Z	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.2	0.3	0.3	M	M	0.3	0.7	0.5	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.7																							
3-May	0.0	Z	0.0	0.0	0.1	0.8	0.3	0.4	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.8																							
4-May	0.0	0.0	Z	0.0	0.1	0.5	0.1	0.2	0.1	0.1	0.1	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5																							
5-May	0.0	0.0	0.1	Z	0.1	0.1	0.1	0.1	0.7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.7																							
6-May	0.0	0.0	0.0	0.1	0.2	Z	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.2																							
7-May	Z	0.0	0.0	0.1	0.4	0.4	0.2	0.2	0.0	0.0	0.1	0.2	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.4																							
8-May	0.0	Z	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2																							
9-May	0.0	0.0	Z	0.1	1.2	0.4	0.1	0.2	1.0	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.0	0.2	1.2																							
10-May	0.0	0.0	0.0	Z	0.4	2.6	5.4	0.4	0.2	0.1	0.2	0.3	0.4	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.5	5.4																							
11-May	0.0	0.0	0.2	0.2	0.1	Z	0.1	0.1	0.2	0.7	0.9	0.4	0.6	0.2	0.8	0.5	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.9																							
12-May	0.1	0.0	0.0	0.0	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1																							
13-May	Z	0.1	0.1	0.3	0.1	0.4	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4																							
14-May	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.4	0.5	0.5	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.5																							
15-May	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.3																							
16-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1																							
17-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1																							
18-May	0.0	0.1	0.4	0.0	0.0	Z	0.2	0.0	0.1	0.2	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.4																							
19-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.2	0.2	0.5	0.4	0.7	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.7																							
20-May	0.0	Z	0.0	0.0	0.0	0.1	0.3	0.3	0.5	1.4	1.7	0.4	0.3	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.3	1.7																							
21-May	0.1	0.1	Z	0.1	0.2	0.2	0.0	0.2	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2																							
22-May	0.1	0.1	0.1	Z	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.2	0.0	0.0	0.1	0.3	0.3	0.6	0.1	0.1	0.6																							
23-May	0.5	0.2	0.2	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.5																							
24-May	0.0	0.0	0.0	0.1	0.2	Z	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.3	0.3	0.1	0.0	0.0	0.1	0.3	0.1	0.3																							
25-May	Z	2.2	5.2	8.5	11.5	14.8	10.1	1.7	0.5	0.5	0.6	0.2	0.2	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	2.5	14.8																							
26-May	0.0	Z	0.3	0.4	0.2	0.3	0.2	0.4	2.6	0.1	0.1	0.2	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.3	2.6																							
27-May	0.1	0.0	Z	0.0	0.0	0.1	0.1	0.1	0.1	1.4	0.6	0.1	0.1	0.1	0.3	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.3	0.3	0.2	1.4																							
28-May	0.0	0.0	0.0	Z	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3																							
29-May	0.1	0.1	0.1	0.2	Z	1.2	2.7	3.0	1.0	1.4	1.0	0.2	0.1	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.6	3.0																							
30-May	0.0	0.1	0.0	0.1	0.2	Z	1.5	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.5																							
31-May	Z	0.0	0.0	0.0	0.4	1.4	0.6	0.7	0.6	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.2	1.4																							
																								0.1	0.1	0.3	0.4	0.6	1.0	0.8	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	Diurnal Average		
																								0.5	2.2	5.2	8.5	11.5	14.8	10.1	3.0	2.6	1.4	1.7	0.4	0.6	0.4	0.8	0.5	0.4	0.7	0.3	0.6	0.3	0.3	0.6	0.3	Diurnal Maximum	
Z - zerospan		C - Calibration				M - Maintenance																																											



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Firebag - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Firebag - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	706	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Firebag - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	36	20	21	7	40	60	107	91	62	49	36	23	16	12	23	630
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	36	20	21	7	40	60	107	91	62	49	36	23	16	12	23	630

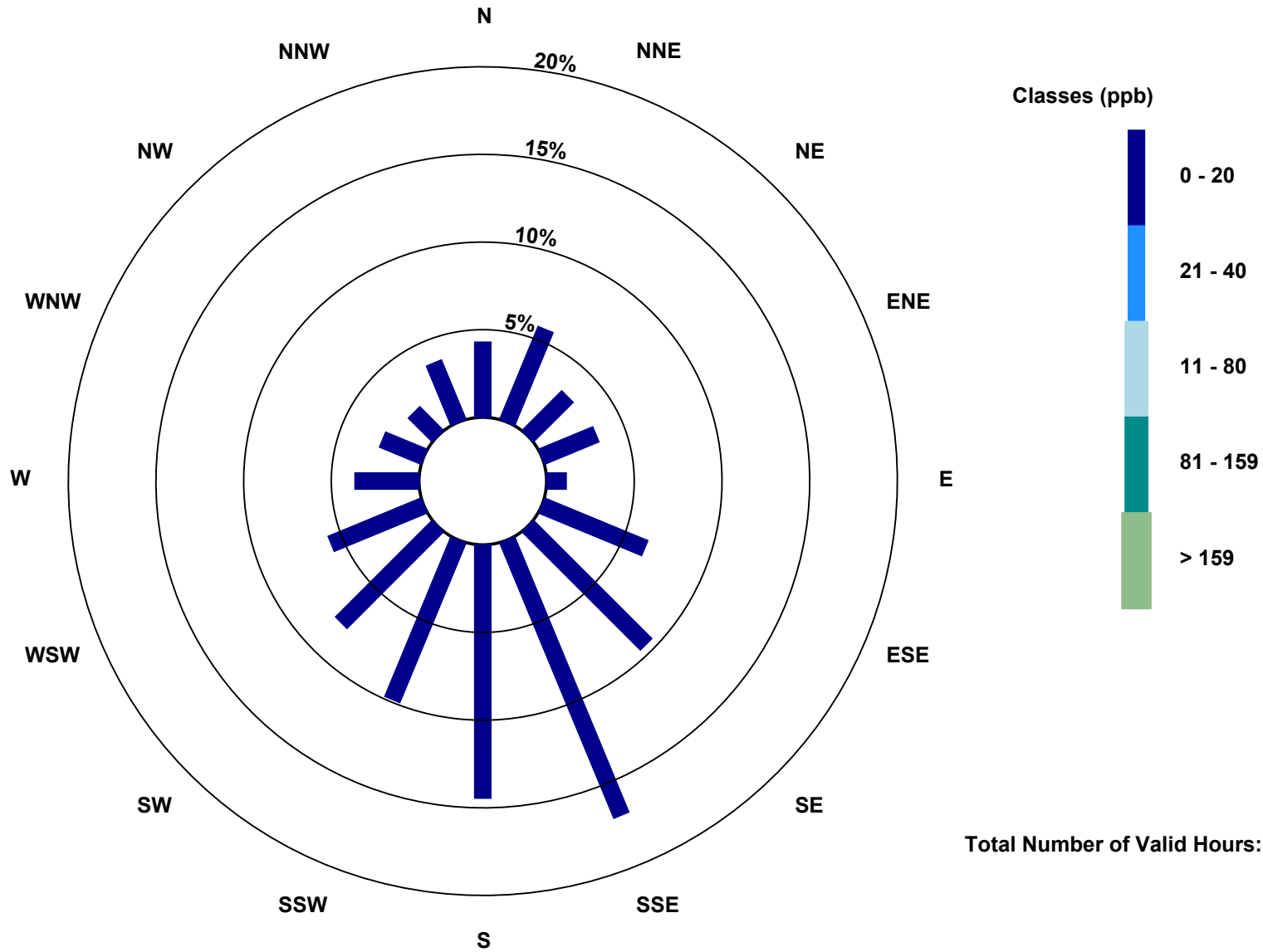
Total Number of Valid Hours: 630

Total Number of Hours: 744

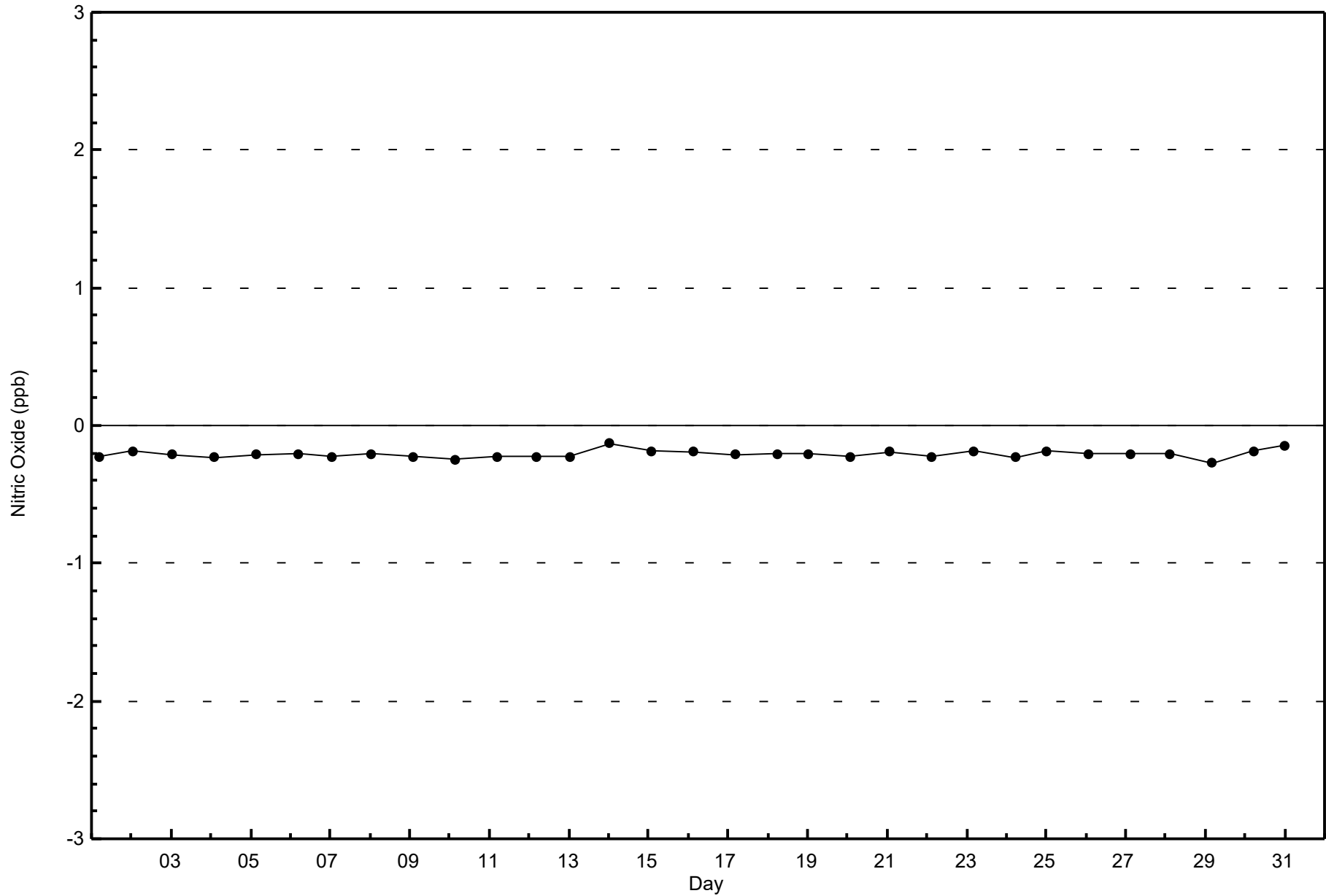


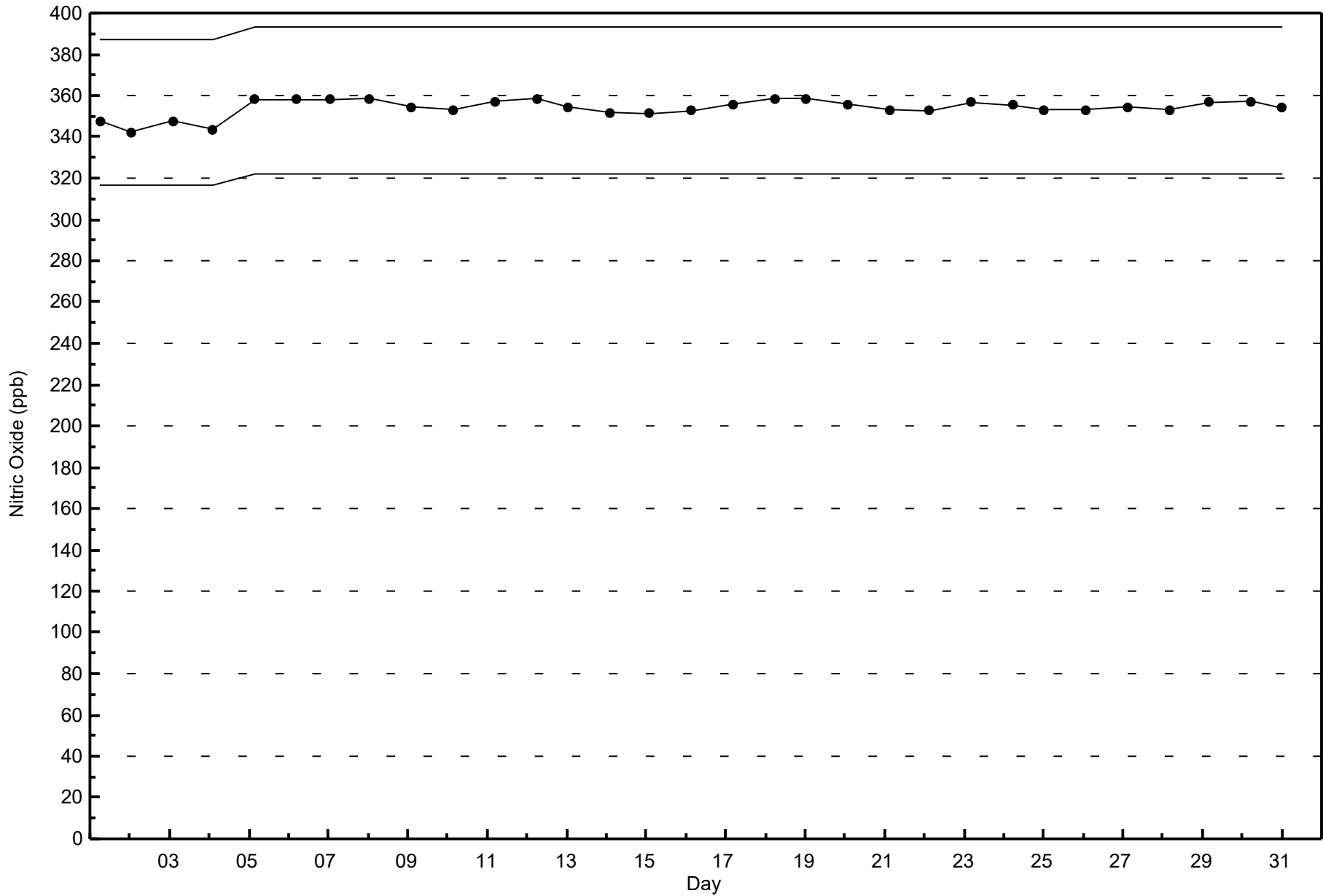
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Firebag



Total Number of Valid Hours: 630







Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

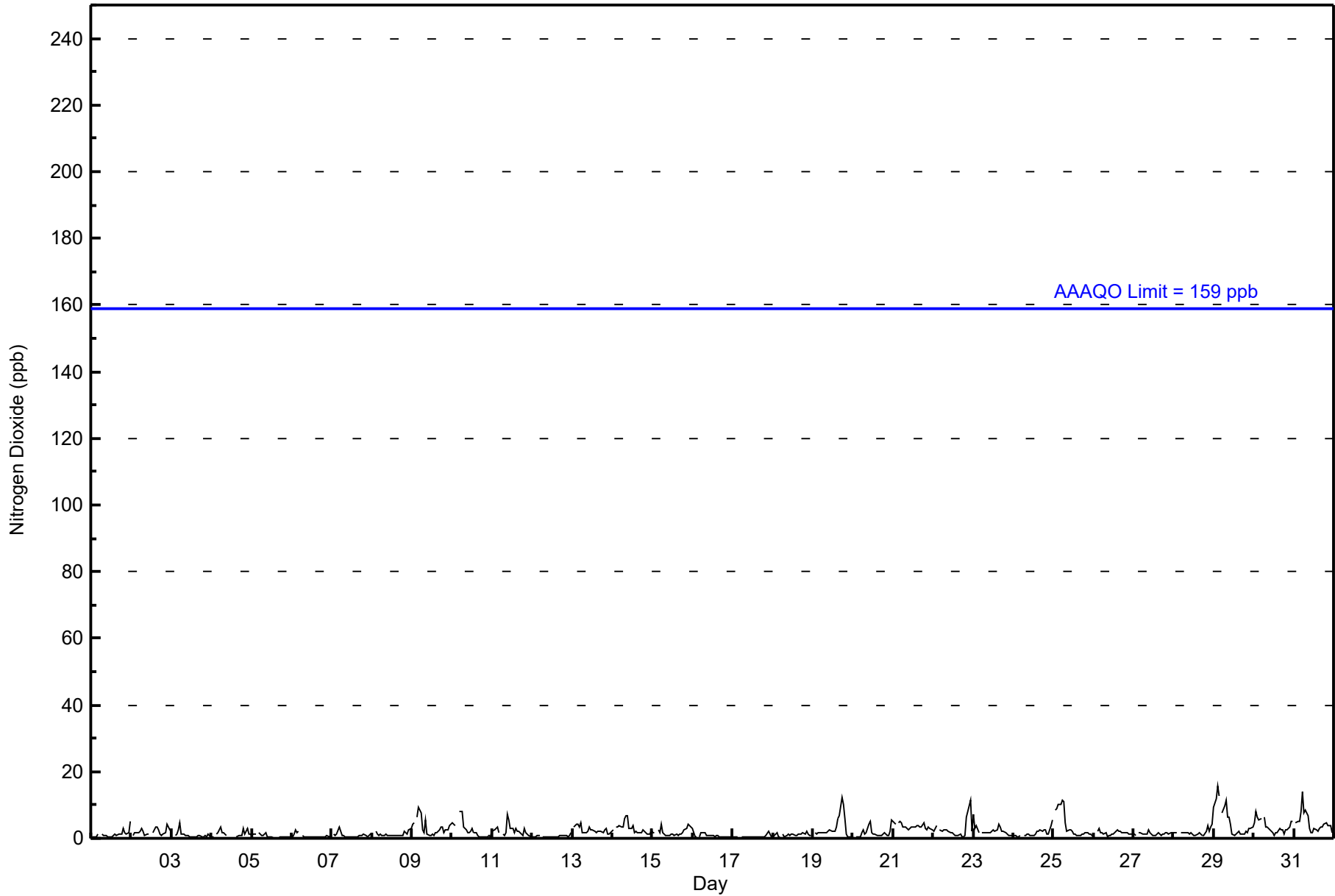
Firebag - May 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 744																	Daily Average		Daily Maximum								
Maximum Value: 15.5 ppb on May 29 03:00		Maximum Daily Average: 5.2 ppb on May 29		Hours of Data: 706																	Hours of Missing Data: 38		Hours of Calibration: 36		Percent Operational Time: 99.7						
Minimum Value: 0.2 ppb on May 5 14:00		Minimum Daily Average: 0.5 ppb on May 17		Hours of Calibration: 36																	Hours of Calibration: 36		Percent Operational Time: 99.7								
Maximum Diurnal Average: 3.9 ppb at hour 6		Minimum Diurnal Average: 1.3 ppb at hour 14		Percentiles: P ₁ = 0.3 P ₁₀ = 0.4 Q ₁ = 0.8 Median = 1.5 Q ₃ = 2.6 P ₉₀ = 4.4 P ₉₉ = 11.3																											
Monthly Average: 2.09 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.4 Q ₁ = 0.8 Median = 1.5 Q ₃ = 2.6 P ₉₀ = 4.4 P ₉₉ = 11.3																													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24							
1-May	0.4	0.3	0.5	0.5	1.3	Z	1.2	1.0	0.8	0.7	0.6	0.5	0.6	0.8	1.1	1.0	1.1	1.4	1.4	2.8	1.7	1.4	1.7	5.2	1.2	5.2					
2-May	Z	1.0	1.6	1.8	1.8	2.0	3.1	2.0	0.9	1.1	1.3	M	M	1.7	3.5	3.2	2.7	1.1	1.0	1.3	1.6	4.3	3.6	2.7	2.1	4.3					
3-May	2.1	Z	1.0	1.4	2.7	4.5	1.3	1.4	1.0	1.0	0.8	0.4	0.6	0.6	0.6	0.6	1.0	0.9	0.5	0.5	0.7	0.6	1.1	0.4	1.1	4.5					
4-May	0.4	0.4	Z	1.3	1.6	3.3	1.5	1.9	1.4	1.0	C	C	C	C	C	0.6	0.8	0.7	0.7	2.8	1.2	2.9	1.4	1.3	1.4	3.3					
5-May	1.0	1.2	1.2	Z	1.9	1.2	0.9	0.8	1.8	0.6	0.4	0.5	0.5	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.7	1.9					
6-May	0.4	1.4	2.7	1.6	2.1	Z	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.8	0.6	0.9	0.7	2.7					
7-May	Z	1.2	0.9	1.3	3.6	2.1	1.0	0.7	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.6	0.7	0.7	0.8	1.3	0.9	0.6	0.8	1.1	0.9	3.6					
8-May	1.1	Z	2.3	1.4	1.0	1.2	1.0	0.9	1.1	0.8	0.8	0.7	0.8	0.8	0.7	0.7	1.0	0.8	1.0	2.1	1.6	1.3	2.4	2.8	1.2	2.8					
9-May	4.3	4.6	Z	6.5	9.2	7.5	2.6	1.9	5.3	1.2	0.8	0.7	1.1	1.0	1.6	1.7	2.5	3.2	3.2	1.9	2.6	2.5	4.0	4.2	3.2	9.2					
10-May	4.6	4.4	3.9	Z	8.1	7.9	8.2	3.4	2.4	1.9	1.8	2.2	2.9	1.7	1.7	0.9	0.6	0.4	0.4	0.4	0.4	0.4	0.8	0.4	2.6	8.2					
11-May	2.0	2.4	2.8	3.4	1.9	Z	1.3	0.8	1.7	7.1	5.3	2.8	2.8	1.5	2.9	2.1	2.1	1.1	0.8	2.8	1.6	1.4	1.0	0.6	2.3	7.1					
12-May	0.5	0.4	0.4	1.0	0.7	Z	0.4	0.3	0.4	0.4	0.3	0.3	0.4	0.5	0.6	0.6	0.7	0.8	0.7	1.0	1.0	0.5	0.8	1.9	0.6	1.9					
13-May	Z	3.5	4.1	4.4	3.4	4.8	1.9	1.8	1.7	2.2	3.3	2.4	2.4	2.3	1.7	2.3	2.2	2.1	1.9	2.5	2.8	1.3	1.4	1.6	2.5	4.8					
14-May	2.4	Z	3.4	3.4	3.7	3.5	3.5	6.1	6.7	6.6	3.0	3.0	3.8	1.8	2.0	1.7	1.8	1.5	2.6	2.3	1.9	1.2	1.1	2.7	3.0	6.7					
15-May	1.7	1.5	Z	2.4	1.7	4.1	1.5	1.2	0.9	0.7	0.7	1.2	1.2	1.0	1.2	1.0	1.1	1.2	1.5	2.4	3.1	4.4	3.9	3.2	1.9	4.4					
16-May	2.9	0.4	0.3	Z	0.4	1.6	1.6	1.7	0.8	0.9	0.7	0.7	0.9	0.6	0.8	0.9	0.4	0.3	0.3	0.3	0.3	0.5	0.3	0.3	0.8	2.9					
17-May	0.3	0.3	0.3	0.3	Z	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.9	2.3	1.1	0.5	0.5	2.3					
18-May	0.4	0.9	1.7	0.6	0.4	Z	1.1	0.6	0.7	1.1	0.7	1.1	1.1	0.9	1.0	1.3	1.3	1.4	1.5	1.4	2.0	1.2	0.8	0.9	1.0	2.0					
19-May	Z	1.5	1.3	1.5	1.5	1.6	1.5	1.7	1.9	2.0	2.6	2.1	2.1	2.3	3.6	6.1	6.8	12.4	10.3	5.9	1.1	0.6	0.5	0.4	3.1	12.4					
20-May	0.4	Z	0.5	0.4	0.4	1.6	2.5	1.4	1.6	4.1	5.2	1.8	1.2	1.4	0.8	0.9	0.7	0.8	1.4	1.6	0.8	0.8	2.0	5.5	1.6	5.5					
21-May	4.9	4.2	Z	4.7	5.2	4.7	3.6	3.4	3.0	2.7	3.0	3.3	3.4	3.5	3.7	3.7	3.5	3.5	4.5	2.8	2.6	3.3	2.9	2.6	3.6	5.2					
22-May	2.0	2.9	4.0	Z	2.7	2.3	2.5	2.5	2.4	2.1	1.9	1.7	1.3	0.8	0.7	0.7	1.1	0.6	0.6	0.7	6.3	9.9	11.4	2.0	2.7	11.4					
23-May	7.2	3.0	3.9	1.9	Z	1.7	1.7	1.6	1.8	1.8	1.7	2.1	2.4	2.2	2.5	4.4	3.3	2.1	2.2	1.6	1.1	0.7	0.7	0.7	2.3	7.2					
24-May	0.7	0.7	0.6	0.6	0.9	Z	0.8	0.9	1.1	1.2	0.8	1.0	1.0	1.2	2.0	2.2	2.4	2.0	2.5	2.5	1.1	1.3	4.0	5.7	1.6	5.7					
25-May	Z	8.4	9.1	10.1	10.3	11.3	11.0	4.7	2.2	2.6	2.6	2.0	1.4	1.1	1.0	0.9	1.0	1.1	1.3	1.5	1.5	1.2	1.1	0.9	3.8	11.3					
26-May	0.8	Z	2.1	3.0	1.8	1.9	1.4	1.7	0.6	0.9	0.9	1.1	1.2	2.1	2.7	2.1	2.1	1.7	1.7	1.5	1.5	1.4	1.3	1.3	1.6	3.0					
27-May	1.2	0.9	Z	1.7	1.6	1.3	1.2	1.3	1.2	2.7	1.5	0.9	0.7	0.8	1.4	1.5	0.8	1.2	1.3	1.7	1.6	1.4	1.7	1.7	1.4	2.7					
28-May	1.9	1.8	1.7	Z	1.8	1.7	1.8	1.7	1.5	1.2	1.5	1.4	0.9	1.0	1.1	1.8	1.1	0.9	0.9	2.0	3.9	2.0	3.3	4.4	1.8	4.4					
29-May	9.2	11.7	15.5	12.7	Z	7.8	9.8	11.6	6.5	6.4	4.3	1.1	0.9	1.3	1.6	2.0	1.1	1.4	1.4	2.3	1.9	2.9	2.9	3.6	5.2	15.5					
30-May	4.7	8.1	6.2	5.6	5.9	Z	6.5	3.5	3.2	3.1	2.0	1.5	1.0	1.5	1.7	2.9	2.5	2.5	1.2	2.7	2.6	3.4	4.9	4.9	3.6	8.1					
31-May	Z	4.8	5.0	5.0	8.2	14.0	7.6	8.4	6.6	2.9	1.6	1.5	2.8	2.7	2.3	2.9	3.6	3.3	4.1	4.5	4.0	3.7	3.9	1.9	4.6	14.0					
		2.3	2.8	3.0	3.0	3.1	3.9	2.7	2.3	2.0	2.0	1.7	1.4	1.4	1.3	1.5	1.7	1.6	1.7	1.7	1.9	1.8	2.0	2.2	2.1	Diurnal Average					
		9.2	11.7	15.5	12.7	10.3	14.0	11.0	11.6	6.7	7.1	5.3	3.3	3.8	3.5	3.7	6.1	6.8	12.4	10.3	5.9	6.3	9.9	11.4	5.7	Diurnal Maximum					
Z - zerospan		C - Calibration		M - Maintenance																											
Alberta Ambient Air Quality Objectives (AAAQO):		1-hr		159 ppb																											



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Firebag - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Firebag - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	706	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Firebag - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	36	20	21	7	40	60	107	91	62	49	36	23	16	12	23	630
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	36	20	21	7	40	60	107	91	62	49	36	23	16	12	23	630

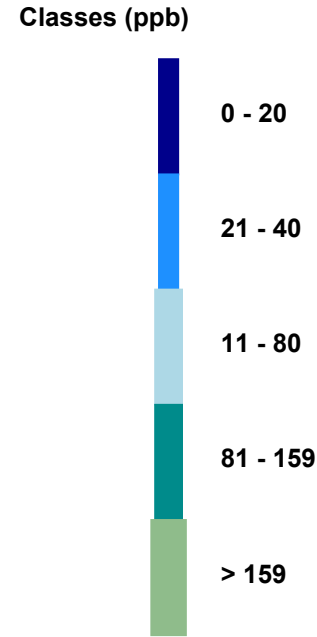
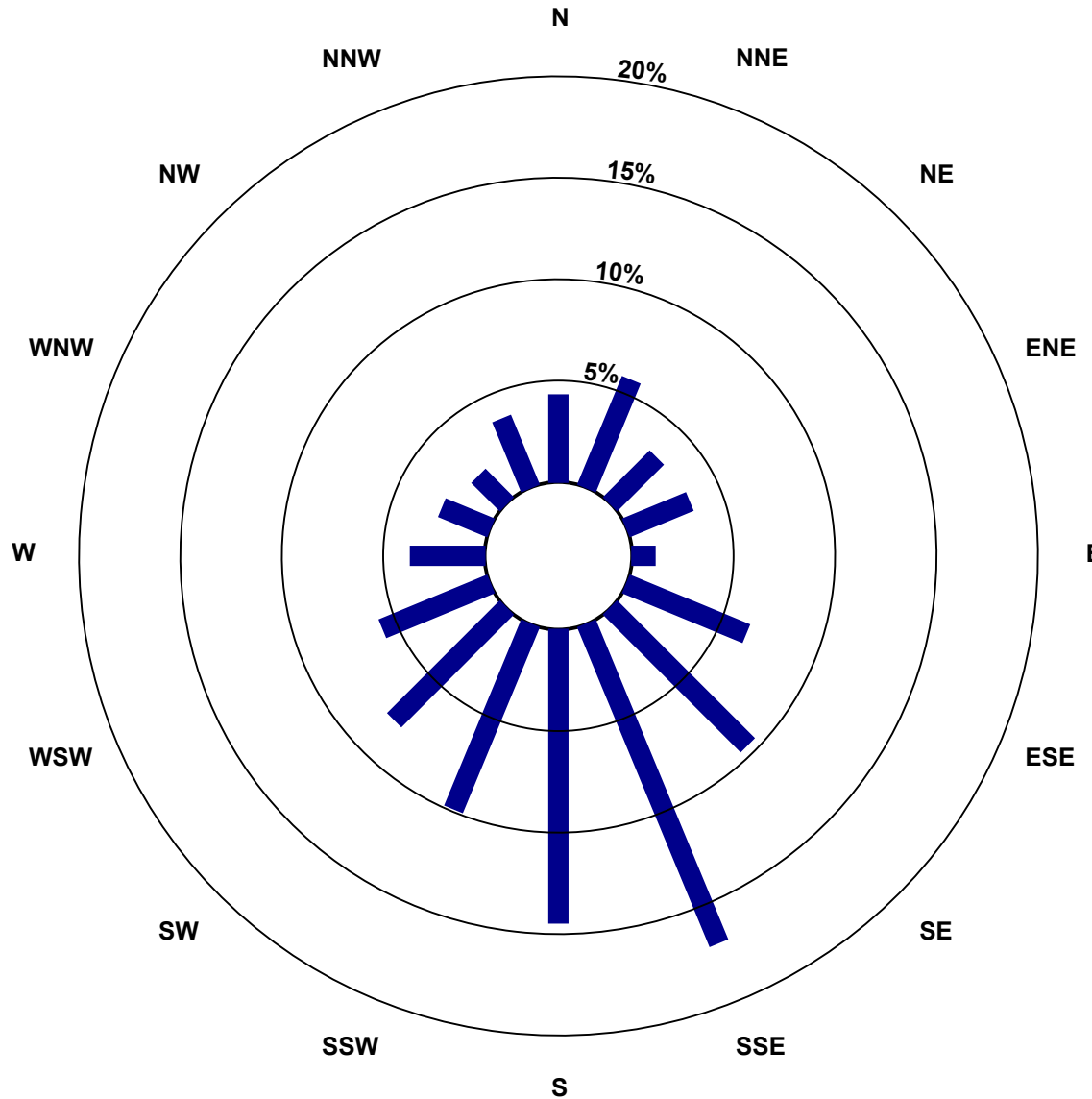
Total Number of Valid Hours: 630

Total Number of Hours: 744

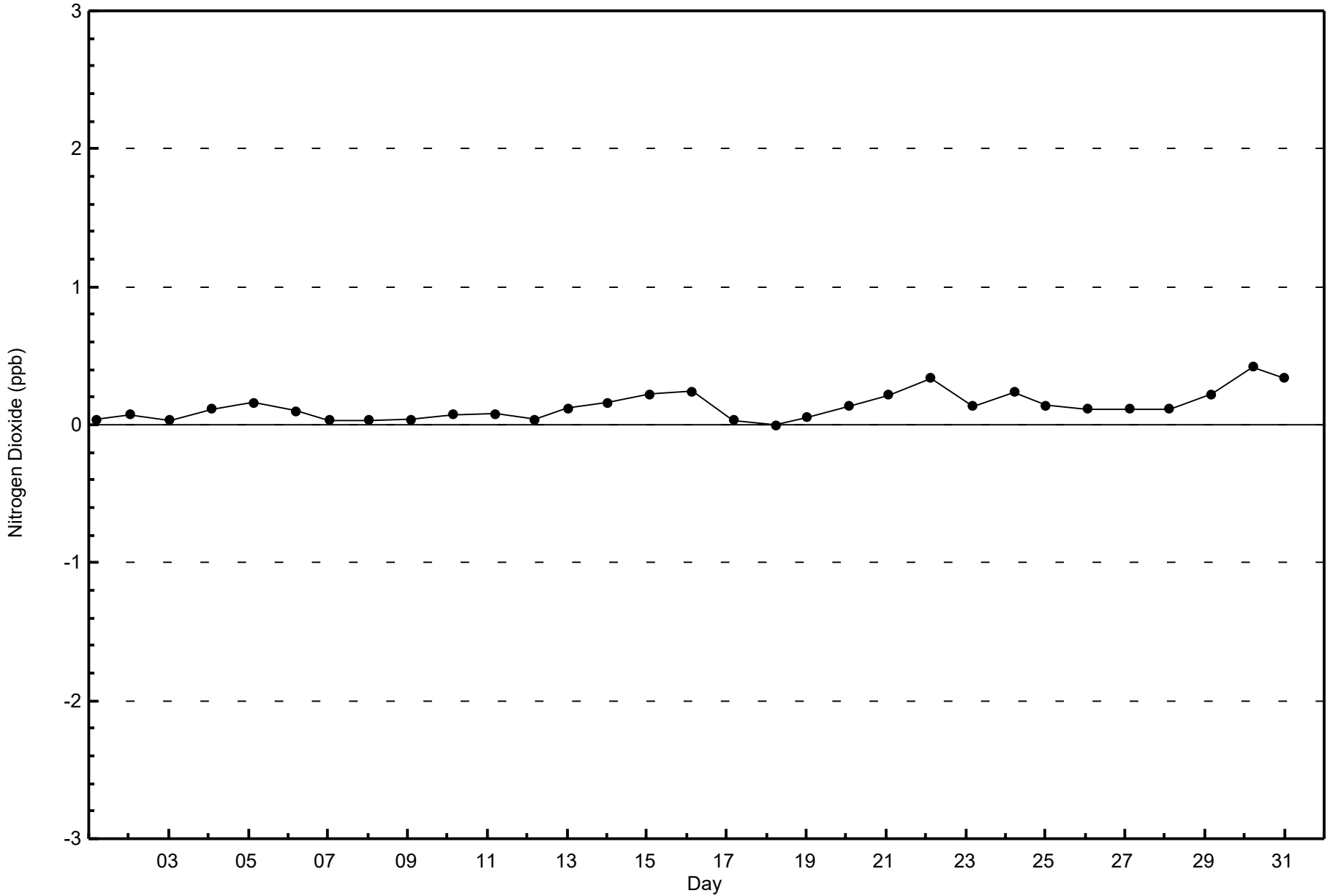


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Firebag



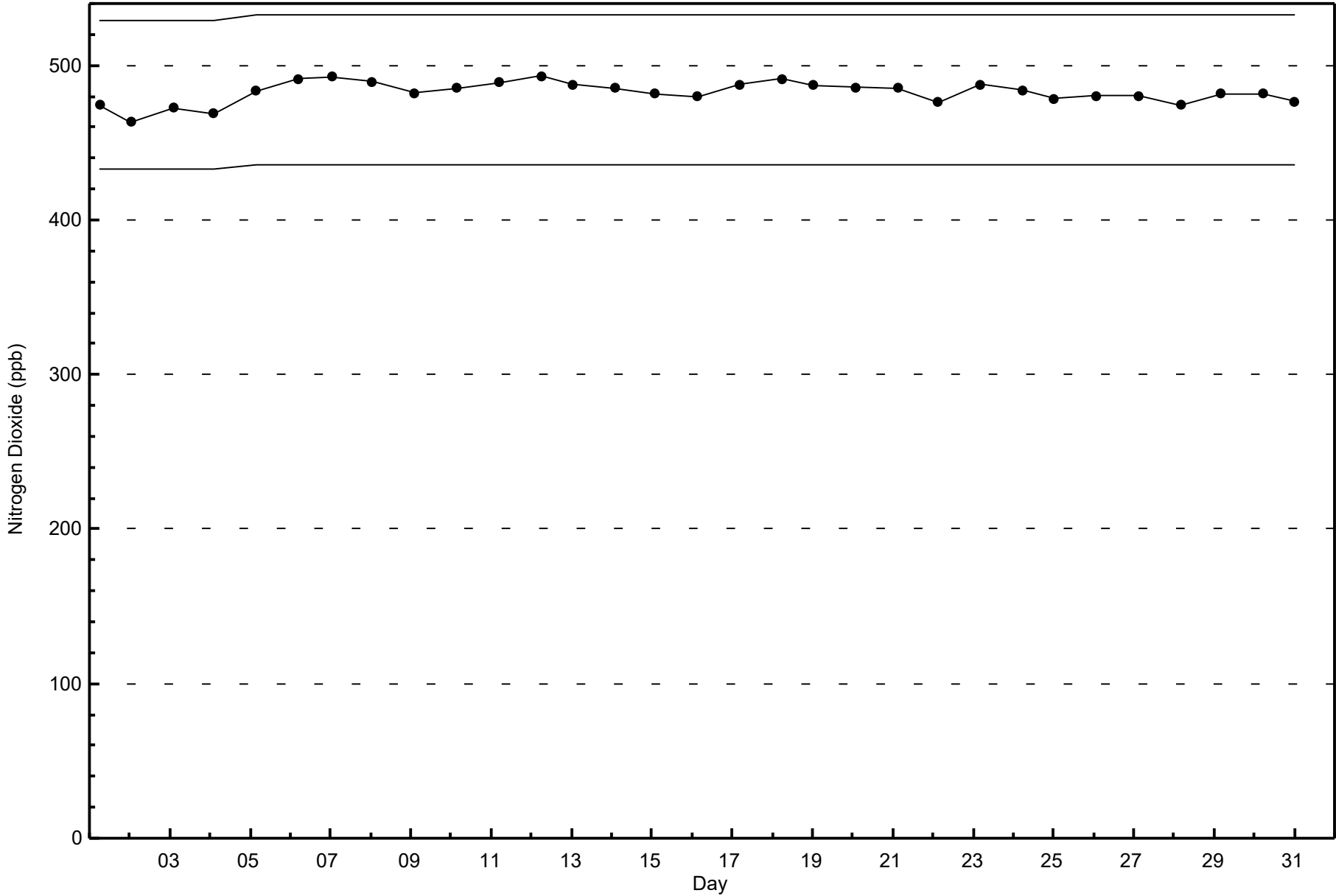
Total Number of Valid Hours: 630





Wood Buffalo Environmental Association
Span Responses

Nitrogen Dioxide (NO₂) - ppb
Firebag - May 2023





Wood Buffalo Environmental Association
Summary of Hour Averages

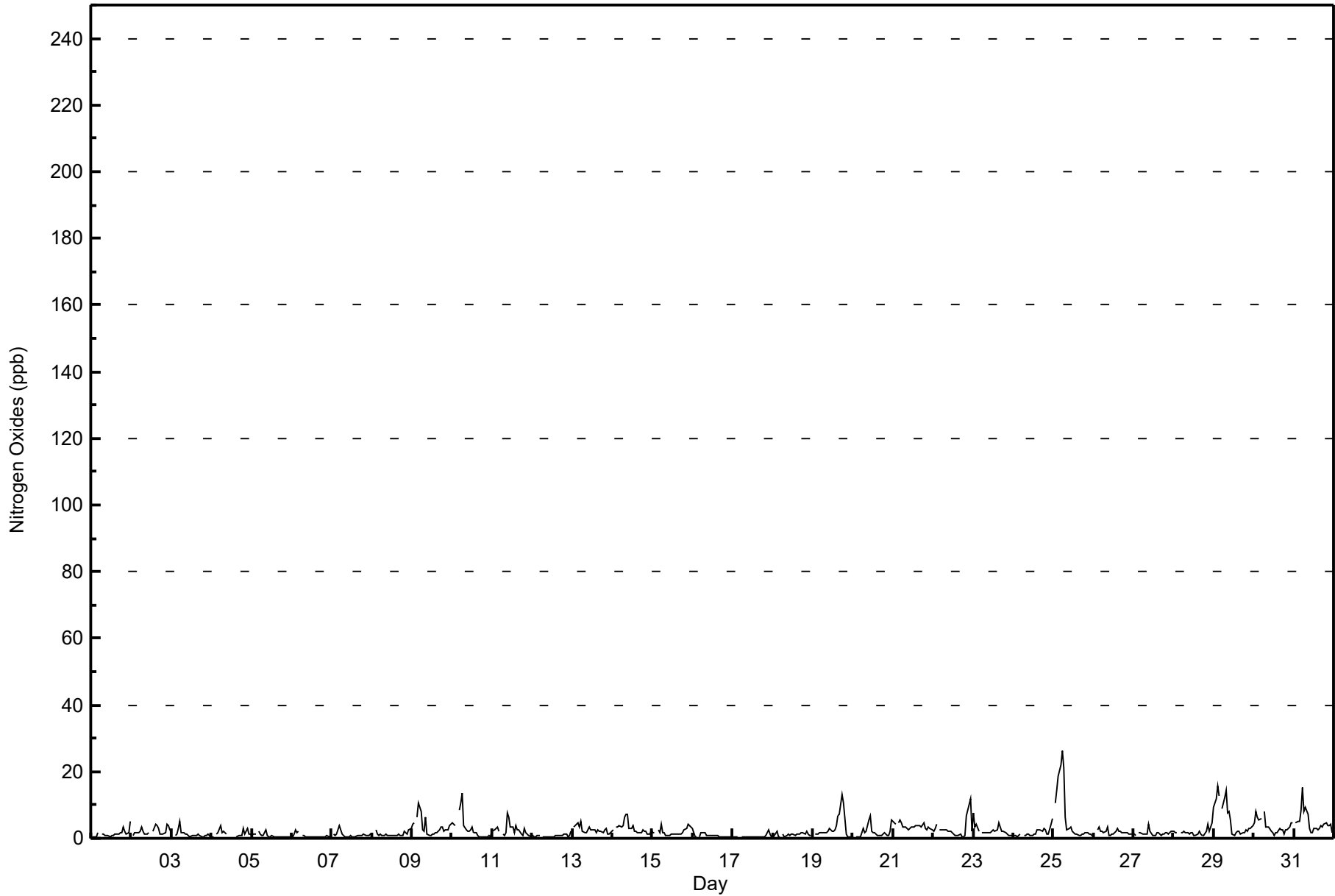
Nitrogen Oxides (NO_x) - ppb
Firebag - May 2023

Maximum Value: 26.1 ppb on May 25 06:00		Maximum Daily Average: 6.3 ppb on May 25		Hours in Service: 744																							
Minimum Value: 0.3 ppb on May 16 03:00		Minimum Daily Average: 0.5 ppb on May 17		Hours of Data: 706																							
Maximum Diurnal Average: 4.9 ppb at hour 6		Minimum Diurnal Average: 1.4 ppb at hour 14		Hours of Missing Data: 38																							
Monthly Average: 2.33 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.5 Q ₁ = 0.9 Median = 1.6 Q ₃ = 2.7 P ₉₀ = 4.5 P ₉₉ = 14.3		Hours of Calibration: 36																							
				Percent Operational Time: 99.7																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.5	0.3	0.5	0.5	1.6	Z	1.4	1.2	1.0	0.8	0.7	0.6	0.7	0.9	1.4	1.2	1.3	1.8	1.7	3.4	1.9	1.4	1.7	5.2	1.4	5.2	
2-May	Z	1.0	1.6	1.8	1.8	2.1	3.4	2.2	1.1	1.4	1.6	M	M	2.0	4.2	3.7	3.1	1.2	1.1	1.3	1.6	4.3	3.6	2.7	2.2	4.3	
3-May	2.1	Z	1.0	1.4	2.8	5.3	1.6	1.8	1.3	1.3	1.0	0.5	0.7	0.7	0.7	1.2	1.0	0.6	0.6	0.8	0.7	1.2	0.5	1.3	5.3	1.3	
4-May	0.4	0.4	Z	1.3	1.7	3.8	1.6	2.1	1.5	1.1	C	C	C	C	C	0.6	0.8	0.7	0.7	2.8	1.2	2.9	1.4	1.3	1.5	3.8	
5-May	1.0	1.2	1.3	Z	2.0	1.3	1.0	0.9	2.5	0.7	0.5	0.6	0.6	0.3	0.3	0.3	0.3	0.4	0.5	0.4	0.3	0.3	0.3	0.3	0.8	2.5	
6-May	0.4	1.4	2.7	1.7	2.3	Z	0.8	0.7	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.5	0.5	0.5	0.5	0.6	0.9	0.6	0.9	0.8	2.7	
7-May	Z	1.2	0.9	1.4	4.0	2.5	1.2	0.9	0.4	0.4	0.5	0.8	0.4	0.5	0.5	0.7	0.8	0.7	0.9	1.4	1.0	0.7	0.8	1.1	1.0	4.0	
8-May	1.1	Z	2.5	1.4	1.0	1.3	1.0	0.9	1.2	0.9	0.8	0.8	0.8	0.8	0.7	0.7	1.2	0.9	1.0	2.1	1.6	1.3	2.4	2.8	1.3	2.8	
9-May	4.3	4.6	Z	6.6	10.4	7.9	2.7	2.1	6.3	1.4	0.9	0.8	1.2	1.1	1.8	1.9	2.7	3.4	3.4	2.0	2.6	2.6	4.0	4.3	3.4	10.4	
10-May	4.6	4.4	3.9	Z	8.5	10.5	13.6	3.8	2.6	2.0	2.0	2.5	3.3	1.8	1.8	1.0	0.6	0.5	0.4	0.4	0.4	0.4	0.8	0.4	3.1	13.6	
11-May	2.0	2.4	3.0	3.6	2.0	Z	1.4	0.9	1.9	7.8	6.2	3.2	3.4	1.7	3.7	2.6	2.5	1.2	0.9	2.9	1.7	1.5	1.1	0.6	2.5	7.8	
12-May	0.6	0.4	0.4	1.0	0.8	Z	0.5	0.4	0.5	0.5	0.4	0.4	0.5	0.6	0.7	0.7	0.8	0.9	0.8	1.1	1.1	0.6	0.9	2.0	0.7	2.0	
13-May	Z	3.6	4.2	4.7	3.5	5.2	2.0	1.9	1.8	2.3	3.6	2.6	2.6	2.5	1.8	2.4	2.3	2.2	1.9	2.5	2.8	1.3	1.4	1.6	2.6	5.2	
14-May	2.4	Z	3.4	3.4	3.7	3.5	3.6	6.5	7.2	7.1	3.1	3.1	4.0	1.9	2.1	1.8	1.9	1.6	2.6	2.3	1.9	1.2	1.1	2.7	3.1	7.2	
15-May	1.7	1.5	Z	2.4	1.7	4.2	1.6	1.5	1.0	0.8	0.8	1.3	1.2	1.1	1.3	1.1	1.2	1.3	1.6	2.5	3.1	4.4	3.9	3.2	1.9	4.4	
16-May	2.9	0.4	0.3	Z	0.4	1.6	1.6	1.8	0.9	1.0	0.8	0.8	1.0	0.7	0.9	1.0	0.4	0.3	0.3	0.3	0.3	0.5	0.3	0.3	0.8	2.9	
17-May	0.3	0.3	0.3	0.3	Z	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	1.0	2.4	1.2	0.5	0.5	0.5	2.4	
18-May	0.4	1.0	2.1	0.6	0.4	Z	1.3	0.6	0.8	1.3	0.7	1.2	1.2	1.0	1.1	1.4	1.4	1.5	1.6	1.4	2.0	1.2	0.8	0.9	1.1	2.1	
19-May	Z	1.5	1.3	1.5	1.5	1.6	1.5	1.7	1.9	2.1	2.8	2.2	2.3	2.5	3.8	6.6	7.2	13.1	10.6	6.0	1.1	0.6	0.5	0.4	3.2	13.1	
20-May	0.4	Z	0.5	0.4	0.4	1.7	2.8	1.7	2.1	5.5	6.9	2.2	1.5	1.8	0.9	1.0	0.8	0.9	1.5	1.7	0.9	0.8	2.0	5.6	1.9	6.9	
21-May	5.0	4.3	Z	4.8	5.4	4.9	3.6	3.6	3.1	2.7	3.1	3.4	3.5	3.7	3.8	3.8	3.6	3.6	4.7	2.9	2.7	3.4	3.0	2.7	3.7	5.4	
22-May	2.1	3.0	4.1	Z	2.7	2.4	2.6	2.6	2.5	2.2	2.0	1.8	1.4	0.9	0.8	0.7	1.3	0.6	0.6	0.8	6.6	10.2	12.0	2.1	2.9	12.0	
23-May	7.7	3.2	4.1	2.0	Z	1.8	1.8	1.7	1.9	1.9	1.8	2.2	2.5	2.3	2.6	4.6	3.5	2.2	2.3	1.7	1.2	0.7	0.7	0.7	2.4	7.7	
24-May	0.7	0.7	0.6	0.7	1.1	Z	0.9	1.0	1.4	0.9	1.1	1.1	1.3	2.3	2.4	2.6	2.3	2.8	2.6	1.1	1.3	4.1	6.0	1.8	1.8	6.0	
25-May	Z	10.6	14.3	18.6	21.8	26.1	21.1	6.4	2.7	3.1	3.2	2.2	1.6	1.1	1.1	1.0	1.0	1.2	1.4	1.6	1.6	1.3	1.1	0.9	6.3	26.1	
26-May	0.8	Z	2.4	3.4	2.0	2.2	1.6	2.1	3.2	1.0	1.0	1.3	1.3	2.3	3.0	2.2	2.2	1.8	1.8	1.6	1.6	1.4	1.3	1.4	1.9	3.4	
27-May	1.3	0.9	Z	1.7	1.6	1.4	1.3	1.4	1.3	4.1	2.1	1.0	0.8	0.9	1.7	1.8	0.9	1.3	1.4	1.8	1.6	1.4	2.0	2.0	1.5	4.1	
28-May	1.9	1.8	1.7	Z	1.8	1.8	1.9	1.8	1.6	1.3	1.6	1.5	1.0	1.1	1.3	2.1	1.3	1.0	1.0	2.1	4.0	2.1	3.4	4.5	1.9	4.5	
29-May	9.3	11.8	15.6	12.9	Z	8.9	12.5	14.6	7.5	7.8	5.3	1.3	1.0	1.6	1.9	2.3	1.3	1.6	1.5	2.4	2.0	3.0	2.9	3.7	5.8	15.6	
30-May	4.7	8.2	6.2	5.7	6.1	Z	8.0	3.6	3.3	3.2	2.1	1.6	1.0	1.5	1.8	3.0	2.6	2.6	1.2	2.7	2.6	3.4	4.9	4.9	3.7	8.2	
31-May	Z	4.8	5.0	5.0	8.6	15.4	8.2	9.1	7.2	3.2	1.7	1.6	2.9	2.8	2.4	3.0	3.7	3.4	4.1	4.6	4.0	3.8	4.0	1.9	4.8	15.4	
		2.3	2.9	3.2	3.4	3.6	4.9	3.5	2.6	2.3	2.3	2.0	1.5	1.5	1.4	1.7	1.8	1.8	1.8	2.0	1.8	2.0	2.2	2.2	Diurnal Average		
		9.3	11.8	15.6	18.6	21.8	26.1	21.1	14.6	7.5	7.8	6.9	3.4	4.0	3.7	4.2	6.6	7.2	13.1	10.6	6.0	6.6	10.2	12.0	6.0	Diurnal Maximum	
Z - zerospan		C - Calibration				M - Maintenance																					



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Firebag - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Firebag - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	703	99.58	99.58
21 - 40	3	0.42	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Firebag - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	36	20	21	7	40	60	107	91	62	49	36	23	13	12	23	627
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	36	20	21	7	40	60	107	91	62	49	36	23	16	12	23	630

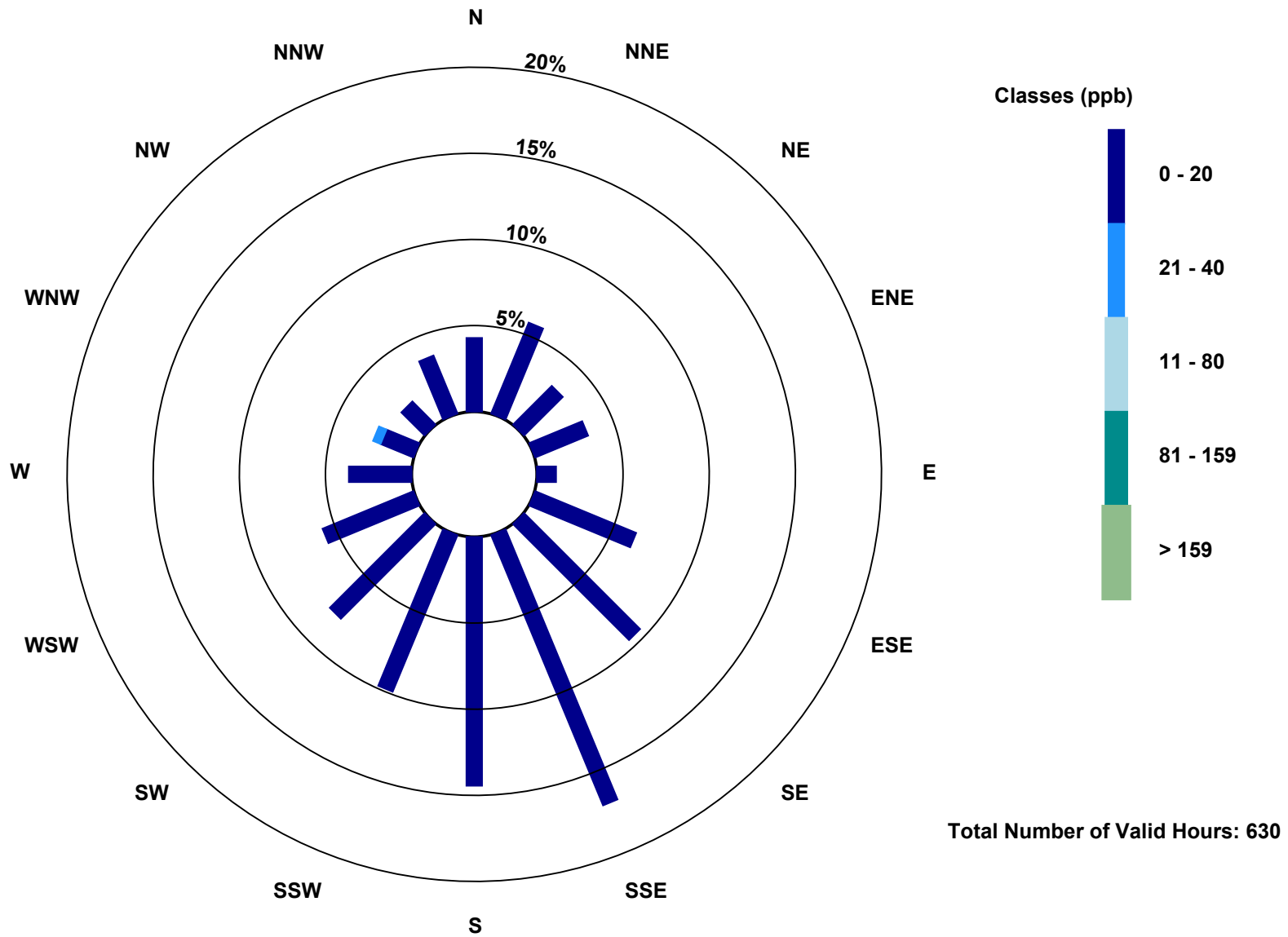
Total Number of Valid Hours: 630

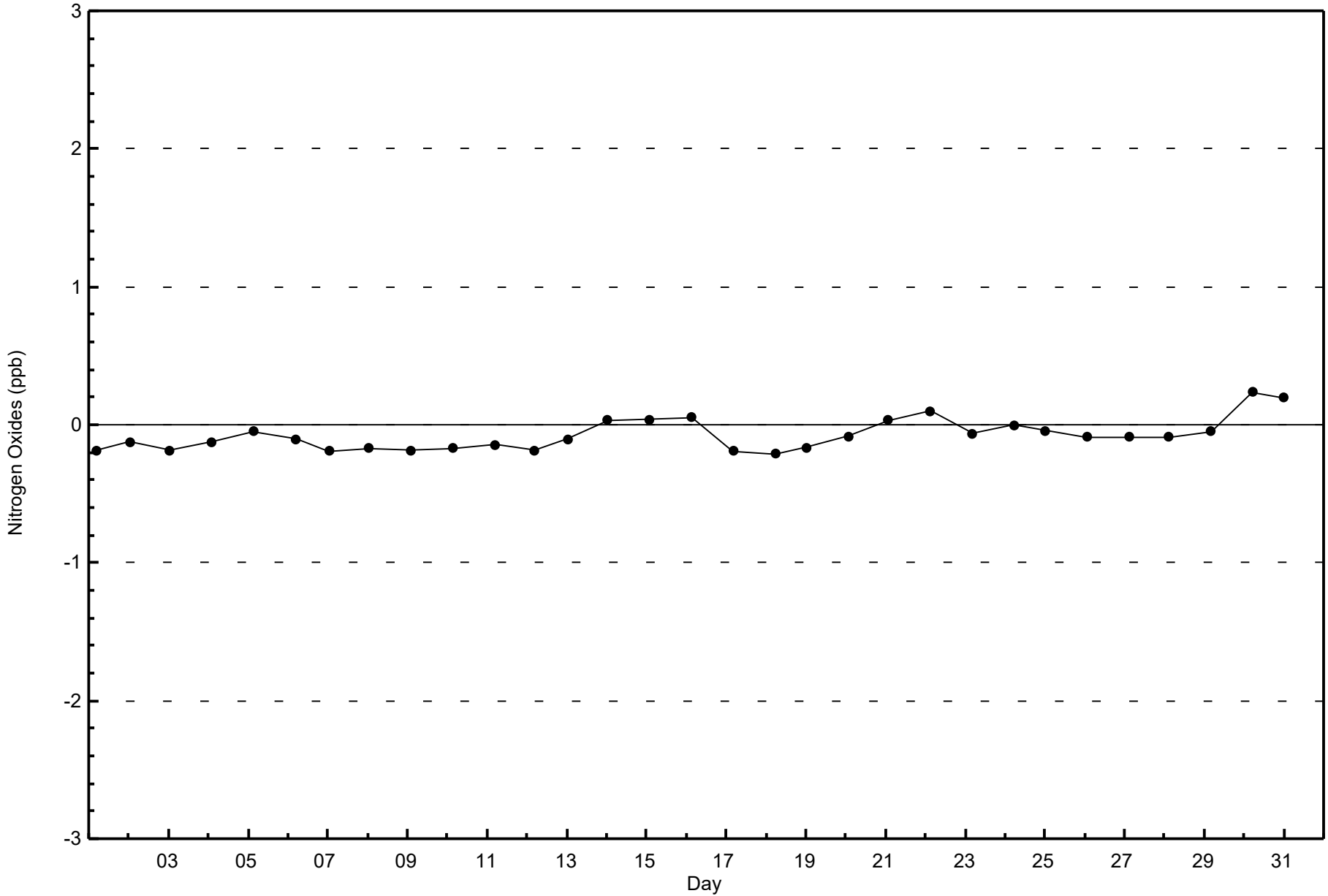
Total Number of Hours: 744

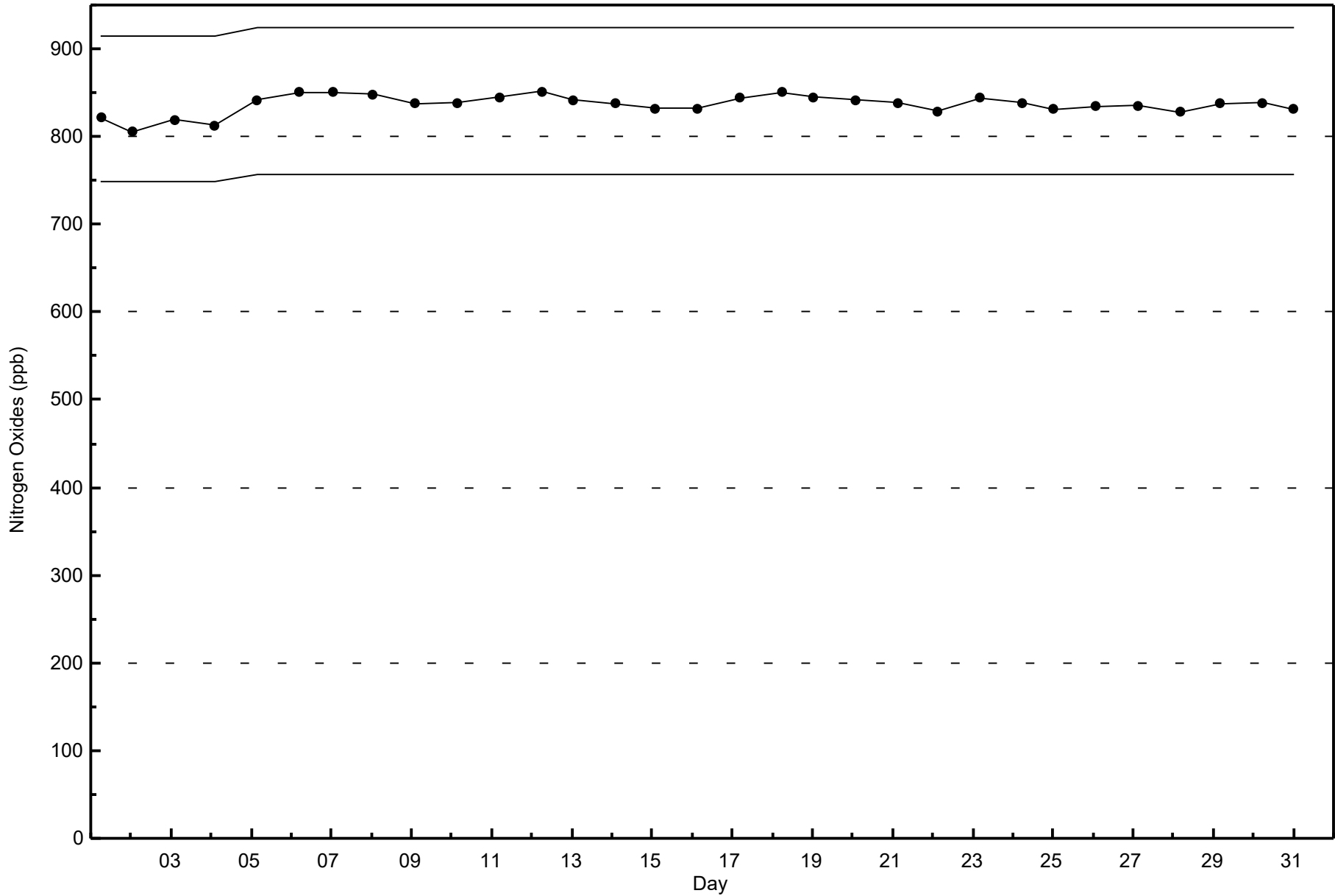


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Firebag

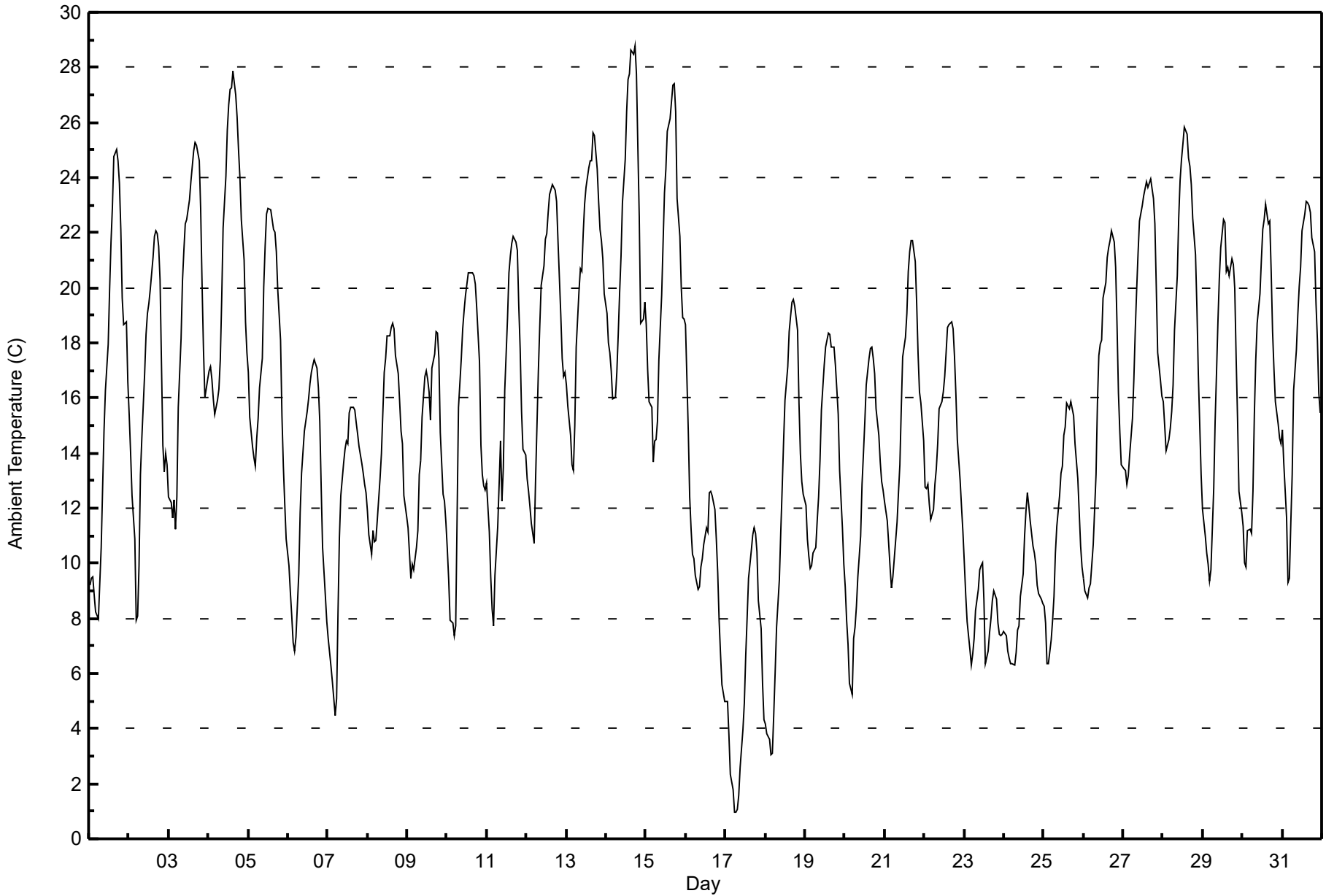








Maximum Value: 28.8 C on May 14 18:00		Maximum Daily Average: 22.0 C on May 14		Hours in Service: 744																							
Minimum Value: 1.0 C on May 17 06:00		Minimum Daily Average: 5.8 C on May 17		Hours of Data: 744																							
Maximum Diurnal Average: 20.3 C at hour 17		Minimum Diurnal Average: 9.6 C at hour 5		Hours of Missing Data: 0																							
Monthly Average: 15.31 C		Percentiles: P ₁ = 3.1 P ₁₀ = 7.9 Q ₁ = 11.0 Median = 15.3 Q ₃ = 19.6 P ₉₀ = 22.9 P ₉₉ = 27.4		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	9.2	9.5	9.5	8.9	8.2	8.0	9.3	10.6	12.7	14.8	16.3	17.9	19.9	21.7	22.9	24.8	25.0	24.6	23.8	22.1	19.6	18.6	18.8	16.6	16.4	25.0	
2-May	15.4	14.0	12.4	10.9	8.0	8.1	9.9	13.2	14.5	16.9	18.3	19.1	19.4	19.9	21.1	21.8	22.1	22.0	21.5	20.3	14.3	13.3	14.0	13.6	16.0	22.1	
3-May	12.4	12.2	11.7	12.3	11.2	12.4	15.7	18.1	20.2	21.3	22.3	22.5	23.2	23.8	24.4	25.0	25.3	25.2	24.6	22.8	20.1	17.7	16.0	16.7	19.0	25.3	
4-May	17.0	17.2	16.7	16.0	15.4	15.9	16.3	17.4	19.6	22.2	24.1	25.7	26.6	27.2	27.2	27.9	27.0	26.2	25.0	24.0	22.5	21.0	18.8	17.6	21.4	27.9	
5-May	16.9	15.3	14.2	13.8	13.5	14.5	15.3	16.4	17.5	20.0	21.5	22.7	22.9	22.8	22.5	22.1	22.0	21.3	19.9	18.1	15.4	13.5	12.1	10.9	17.7	22.9	
6-May	9.9	9.0	8.1	7.1	6.8	7.3	9.6	11.8	13.3	14.0	14.8	15.5	16.0	16.5	16.9	17.2	17.4	17.1	16.4	15.2	12.8	10.6	8.8	7.9	12.5	17.4	
7-May	7.3	6.8	6.3	5.7	4.5	5.1	8.2	10.9	12.4	13.6	14.1	14.5	14.3	15.4	15.6	15.7	15.6	15.1	14.7	14.2	13.6	13.3	12.8	12.6	11.8	15.7	
8-May	11.9	11.0	10.3	11.2	10.8	10.8	11.5	13.1	14.0	15.5	16.9	17.5	18.2	18.3	18.6	18.7	18.5	17.6	16.9	15.9	14.8	14.3	12.4	11.7	14.6	18.7	
9-May	11.3	10.4	9.5	10.0	9.8	10.6	11.2	13.2	13.7	15.3	16.8	17.0	16.7	16.2	15.2	17.1	17.6	18.4	18.4	17.4	14.7	12.5	12.2	11.5	14.0	18.4	
10-May	10.5	9.4	7.9	7.8	7.4	7.8	11.7	15.7	17.4	18.5	19.1	19.7	20.1	20.5	20.5	20.5	20.4	20.1	19.3	17.3	14.3	13.2	12.8	12.6	15.2	20.5	
11-May	12.9	11.2	9.5	8.3	7.7	9.6	11.4	12.9	14.5	12.3	13.5	16.3	18.9	20.5	21.2	21.6	21.9	21.7	21.4	19.4	17.8	15.5	14.1	14.0	15.3	21.9	
12-May	13.1	12.6	12.0	11.4	10.7	13.0	15.0	17.0	18.6	20.1	20.8	21.7	22.0	22.7	23.4	23.7	23.6	23.5	23.1	21.7	19.0	17.4	16.8	16.9	18.3	23.7	
13-May	16.5	15.7	14.7	13.6	13.4	15.0	17.8	19.9	20.7	20.6	22.0	23.1	23.6	24.4	24.6	24.6	25.6	25.5	24.3	23.1	22.1	21.7	21.0	19.8	20.6	25.6	
14-May	19.1	18.0	17.6	17.0	16.0	16.0	17.0	18.3	19.8	21.1	23.1	24.6	26.4	27.6	27.8	28.6	28.5	28.8	27.7	25.1	22.6	18.7	18.9	19.5	22.0	28.8	
15-May	18.6	17.1	15.9	15.6	13.7	14.5	14.5	15.2	17.4	19.7	21.6	23.4	24.3	25.7	26.1	26.8	27.4	27.4	26.4	23.2	21.9	20.0	18.9	18.8	20.6	27.4	
16-May	18.6	14.8	12.4	11.2	10.3	10.2	9.6	9.1	9.2	9.9	10.2	10.7	11.3	11.1	12.6	12.6	12.5	11.9	10.9	9.7	7.9	6.7	5.6	5.0	10.6	18.6	
17-May	5.0	5.0	3.8	2.3	1.8	1.0	1.0	1.1	1.6	2.6	4.0	4.9	6.6	8.0	9.4	10.5	11.1	11.3	11.1	10.4	8.6	7.6	5.6	4.3	5.8	11.3	
18-May	4.2	3.8	3.6	3.0	3.1	4.5	6.1	7.7	9.4	11.1	12.7	14.4	15.9	17.1	18.4	18.9	19.5	19.6	19.3	18.5	15.8	14.0	12.9	12.5	11.9	19.6	
19-May	12.1	10.9	10.3	9.8	9.9	10.4	10.6	11.6	12.4	13.7	15.6	17.2	17.8	18.1	18.4	18.3	17.9	17.9	17.2	16.3	15.4	13.4	11.3	10.0	14.0	18.4	
20-May	9.2	7.9	7.1	5.6	5.3	7.3	7.7	8.4	9.5	11.0	12.9	14.0	15.2	16.5	17.4	17.8	17.9	17.4	16.9	15.6	14.7	13.7	13.0	12.6	12.3	17.9	
21-May	12.2	11.5	10.7	9.9	9.1	9.5	10.2	11.5	12.5	13.6	15.6	17.5	18.2	19.1	20.6	21.3	21.7	21.7	20.9	19.4	17.6	16.2	15.8	14.5	15.5	21.7	
22-May	12.8	12.7	12.9	12.1	11.6	12.0	12.9	13.4	14.3	15.6	15.9	16.2	16.8	17.7	18.5	18.7	18.8	18.5	17.5	16.1	14.5	13.0	12.0	11.1	14.8	18.8	
23-May	10.0	8.8	7.9	6.8	6.3	6.7	7.3	8.3	9.0	9.8	9.9	10.0	8.6	6.4	6.8	7.5	8.0	8.7	9.0	8.7	7.8	7.4	7.4	7.4	8.1	10.0	
24-May	7.5	7.4	6.8	6.5	6.4	6.3	6.3	6.7	7.6	7.7	8.8	9.6	11.0	11.9	12.6	12.1	11.5	10.6	10.4	9.9	9.2	8.9	8.7	8.6	8.9	12.6	
25-May	8.4	7.9	6.4	6.3	7.2	7.9	8.8	10.4	11.3	12.5	13.3	13.6	14.6	15.0	15.8	15.6	15.8	15.6	15.4	14.3	13.1	11.9	10.6	9.8	11.7	15.8	
26-May	9.4	9.0	8.8	9.1	9.2	9.9	10.7	13.2	15.8	17.5	17.9	18.1	19.6	20.2	21.1	21.5	21.7	22.1	21.7	20.7	18.6	16.2	14.7	13.6	15.9	22.1	
27-May	13.4	13.3	12.8	13.2	13.9	15.3	16.7	18.4	19.9	21.3	22.4	23.0	23.3	23.6	23.9	23.6	24.0	23.6	23.2	22.3	20.0	17.6	16.6	16.1	19.2	24.0	
28-May	15.9	15.0	14.1	14.5	14.9	15.5	16.5	18.4	20.4	22.5	23.9	24.7	25.2	25.8	25.6	24.7	24.4	23.8	22.5	21.2	19.2	16.9	15.1	13.2	19.7	25.8	
29-May	11.9	11.0	10.3	10.0	9.4	9.8	12.7	15.1	16.9	18.8	20.4	21.5	22.5	22.4	20.6	20.7	20.4	21.1	20.8	20.0	17.4	15.2	12.6	11.9	16.4	22.5	
30-May	11.3	10.0	9.9	11.2	11.2	11.1	12.6	15.4	17.4	18.7	19.8	21.0	22.1	22.5	23.0	22.3	22.4	20.6	18.4	17.0	15.8	15.1	14.5	14.3	16.6	23.0	
31-May	14.9	13.6	11.6	9.3	9.5	11.4	13.2	16.3	17.7	19.0	20.0	20.8	22.1	22.7	23.2	23.1	23.0	22.7	21.8	21.3	19.4	18.1	16.2	15.5	17.8	23.2	
		12.2	11.4	10.5	10.0	9.6	10.2	11.5	13.2	14.6	15.8	17.0	18.0	18.8	19.4	19.9	20.2	20.3	20.1	19.4	18.1	16.2	14.6	13.6	12.9	Diurnal Average	
		19.1	18.0	17.6	17.0	16.0	16.0	17.8	19.9	20.7	22.5	24.1	25.7	26.6	27.6	27.8	28.6	28.5	28.8	27.7	25.1	22.6	21.7	21.0	19.8	Diurnal Maximum	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Firebag - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	149	20.03	20.03
10 - 20	424	56.99	77.02
> 20	171	22.98	100.00

Total Number of Valid Hours: 744

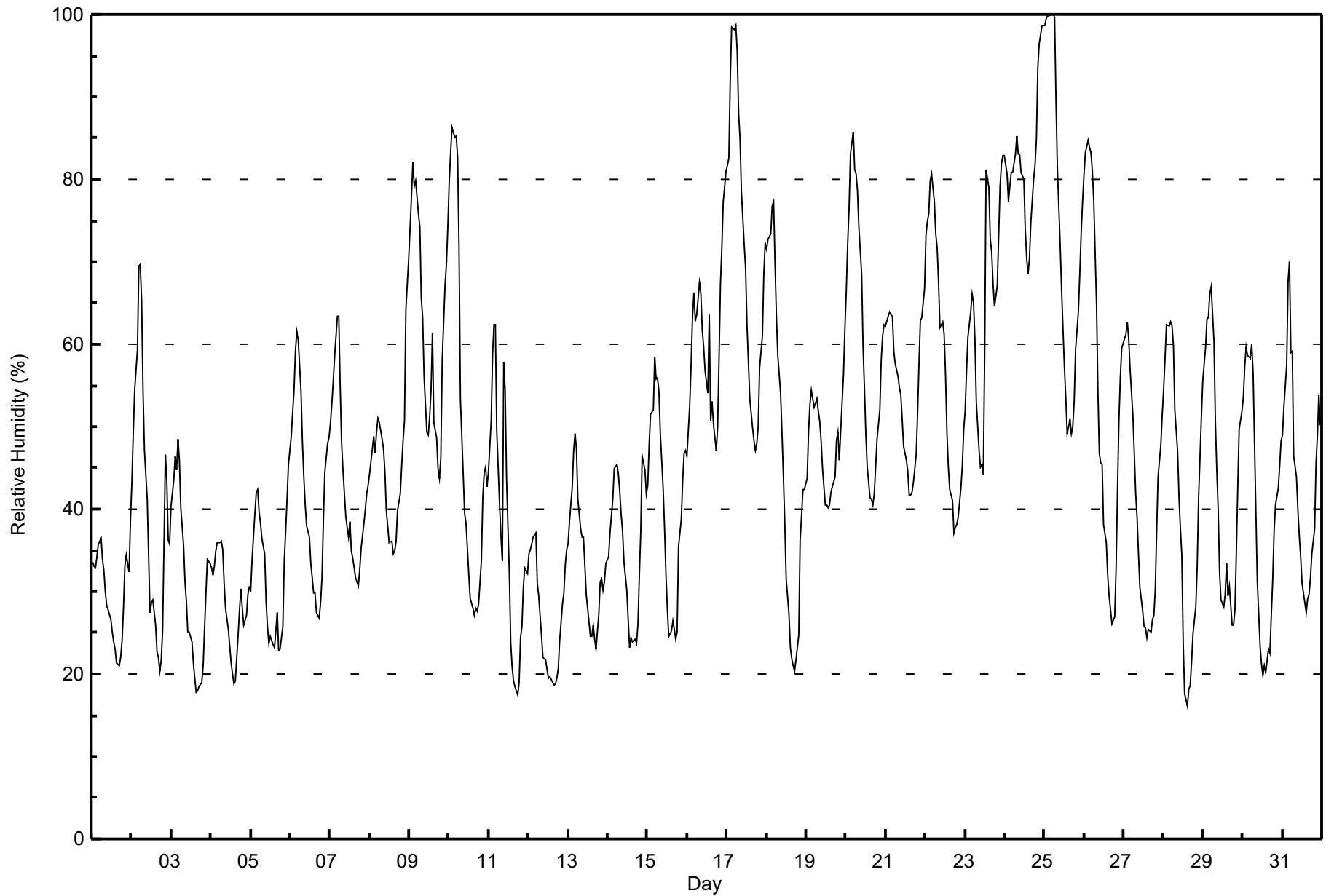
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Firebag - May 2023

Maximum Value: 100.0 % on May 25 05:00 Maximum Daily Average: 82.1 % on May 24																						Hours in Service:	744																									
Minimum Value: 16.0 % on May 28 15:00 Minimum Daily Average: 26.8 % on May 12																						Hours of Data:	744																									
Maximum Diurnal Average: 64.3 % at hour 5 Minimum Diurnal Average: 33.1 % at hour 18																						Hours of Missing Data:	0																									
Monthly Average: 47.06 % Percentiles: P ₁ = 18.5 P ₁₀ = 24.5 Q ₁ = 31.8 Median = 44.6 Q ₃ = 59.3 P ₉₀ = 75.8 P ₉₉ = 98.6																						Hours of Calibration:	0																									
																						Percent Operational Time:	100.0																									
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	33.6	33.1	32.8	34.3	35.7	36.5	34.0	32.6	30.0	28.3	27.8	26.6	25.1	23.9	23.0	21.4	21.1	22.0	24.1	27.9	33.0	34.4	32.4	38.6	29.7	38.6																						
2-May	43.2	49.1	54.4	59.3	69.4	69.6	65.2	54.2	47.1	41.2	34.3	27.4	28.7	28.9	25.9	22.7	22.0	20.4	21.7	25.3	46.6	43.4	36.2	35.8	40.5	69.6																						
3-May	40.3	43.6	46.4	44.7	48.5	45.9	40.2	35.7	31.2	28.8	25.2	25.0	24.0	21.4	19.4	17.8	17.9	18.5	18.9	21.1	25.6	29.8	34.0	33.5	30.7	48.5																						
4-May	32.9	32.1	33.0	34.9	36.0	35.9	36.1	35.1	31.0	27.9	25.4	23.4	21.3	20.0	18.9	19.2	24.8	27.8	30.3	27.9	25.9	27.1	29.7	30.5	28.6	36.1																						
5-May	30.1	33.9	39.6	42.0	42.4	39.6	38.4	36.4	34.6	28.8	25.8	23.8	24.6	23.6	23.3	25.2	27.5	22.8	23.0	25.7	33.8	37.3	41.3	45.5	32.0	45.5																						
6-May	48.9	51.7	54.4	59.2	61.5	60.6	54.3	48.1	44.0	40.5	37.9	36.7	33.4	31.7	29.8	29.8	27.5	26.7	28.6	31.7	38.7	44.5	47.9	48.7	42.4	61.5																						
7-May	50.3	52.7	55.4	58.5	63.4	63.3	54.9	48.1	44.7	39.2	37.8	36.6	38.5	34.9	34.0	31.7	31.2	30.6	32.8	35.3	38.2	40.0	41.8	42.9	43.2	63.4																						
8-May	44.2	45.8	48.8	46.8	49.3	51.0	50.6	48.4	47.3	44.7	39.9	38.0	36.0	36.0	34.6	35.0	36.1	39.8	41.8	45.3	48.3	50.7	64.2	70.4	45.5	70.4																						
9-May	74.1	78.0	82.1	79.2	79.8	75.8	74.2	65.5	63.3	56.2	49.4	49.0	51.3	54.4	61.3	50.6	48.6	44.8	43.7	46.3	58.2	67.1	69.7	74.3	62.4	82.1																						
10-May	79.6	83.3	86.3	85.1	85.3	82.7	71.9	53.4	44.3	39.6	38.3	35.2	32.1	29.2	28.1	27.2	27.9	27.7	28.5	33.7	41.3	44.4	45.1	42.7	49.7	86.3																						
11-May	44.4	50.6	58.7	62.5	62.3	49.6	40.7	36.9	33.8	57.8	54.4	43.7	32.2	23.8	20.9	19.2	18.5	17.4	19.0	24.5	25.8	30.5	32.8	32.2	37.2	62.5																						
12-May	34.5	35.1	35.7	36.6	37.1	31.0	29.4	27.2	24.7	22.1	21.6	20.5	19.6	19.7	19.3	18.7	18.9	19.6	20.7	24.0	28.6	29.8	33.2	35.2	26.8	37.1																						
13-May	35.8	38.5	42.8	47.1	49.2	47.3	41.1	37.7	36.7	36.6	33.2	29.7	28.0	24.5	24.5	25.8	24.2	23.0	27.2	31.1	31.5	30.2	31.2	33.4	33.8	49.2																						
14-May	34.2	37.1	39.1	41.2	44.8	45.5	44.3	42.0	39.4	37.4	33.5	30.2	28.6	23.3	24.4	23.8	24.3	23.8	26.1	32.1	37.3	46.4	44.7	41.8	35.1	46.4																						
15-May	42.9	47.8	51.5	52.1	58.6	55.8	56.0	54.2	49.1	42.5	37.7	32.2	28.0	24.6	25.3	26.5	25.4	24.3	25.0	35.4	38.9	43.5	46.8	47.2	40.5	58.6																						
16-May	46.4	52.6	57.4	63.2	66.3	62.9	63.6	67.5	66.0	61.6	59.7	56.7	54.1	63.5	50.7	53.0	50.3	47.1	50.0	58.4	67.2	71.8	77.3	81.0	60.3	81.0																						
17-May	81.6	82.5	92.0	98.5	98.1	98.7	95.4	88.0	84.8	78.5	72.1	69.1	62.2	57.8	53.5	49.9	48.3	47.2	48.0	49.9	57.2	61.0	68.5	72.2	71.5	98.7																						
18-May	71.6	72.8	73.4	76.8	77.4	70.0	63.5	58.6	54.1	49.3	44.1	38.4	31.6	27.3	23.3	21.9	20.9	20.3	21.7	24.8	36.4	39.1	42.4	42.4	45.9	77.4																						
19-May	43.7	49.3	52.7	54.5	53.5	52.4	53.3	51.9	50.6	48.3	44.9	40.5	40.5	40.1	40.5	42.0	42.7	43.9	48.3	49.4	46.0	49.4	56.2	61.8	48.2	61.8																						
20-May	66.5	72.2	76.6	83.0	85.7	81.2	80.7	78.6	74.2	68.4	59.7	54.5	48.9	45.0	41.3	41.2	40.5	41.9	45.1	48.4	52.0	58.1	61.1	62.4	61.1	85.7																						
21-May	62.2	63.4	63.8	63.6	63.4	59.2	57.7	56.0	54.8	53.9	50.9	47.7	45.9	44.6	41.8	41.6	42.0	43.3	46.6	51.4	57.6	62.9	63.3	66.7	54.3	66.7																						
22-May	73.2	75.0	75.7	79.9	80.6	77.3	73.4	71.6	67.4	62.1	62.7	61.2	56.2	49.4	45.1	42.4	41.1	37.2	37.8	38.2	39.0	42.6	45.2	49.6	57.7	80.6																						
23-May	51.9	56.6	60.9	63.9	66.1	65.1	60.8	53.0	47.1	45.0	45.4	44.2	59.0	81.2	79.1	72.7	71.2	67.3	64.5	67.1	73.2	79.1	81.8	82.9	64.1	82.9																						
24-May	82.9	80.7	77.4	79.1	80.8	80.8	83.0	85.2	83.1	83.1	80.9	80.0	74.0	70.5	68.5	70.3	74.8	80.1	81.7	84.9	93.5	96.5	98.6	98.7	82.1	98.7																						
25-May	98.6	99.4	99.9	99.9	100.0	100.0	99.7	89.6	81.3	72.0	66.6	61.9	57.2	53.5	49.1	50.8	49.1	49.9	53.1	59.3	63.9	68.4	73.3	77.3	73.9	100.0																						
26-May	80.5	83.3	84.7	84.0	83.3	81.1	77.5	64.8	54.3	46.9	45.6	45.5	38.1	35.9	31.8	29.4	27.8	26.0	26.9	32.9	42.4	50.6	55.9	59.5	53.7	84.7																						
27-May	60.7	61.2	62.7	60.8	56.9	51.3	46.7	41.9	39.0	34.6	30.6	27.5	25.8	25.6	24.4	25.4	25.1	26.6	27.2	30.1	37.2	43.9	47.8	51.5	40.2	62.7																						
28-May	54.6	58.2	62.3	62.2	62.6	62.2	59.8	52.0	46.9	41.4	37.7	34.4	23.8	17.7	16.0	18.2	18.6	21.5	25.0	28.2	33.0	41.3	46.3	51.1	40.6	62.6																						
29-May	55.7	59.7	63.0	63.3	66.1	67.0	60.3	50.7	44.8	40.0	32.4	29.0	28.2	29.6	33.4	29.5	30.6	25.9	26.0	27.7	34.7	42.6	49.6	51.9	43.4	67.0																						
30-May	53.6	57.4	59.7	58.7	58.3	60.0	56.5	47.9	39.5	31.1	23.4	21.2	19.8	20.9	20.2	23.0	22.5	27.1	31.4	37.2	40.5	42.5	45.2	48.2	39.4	60.0																						
31-May	48.9	52.4	57.5	67.6	69.9	59.0	59.2	46.4	43.9	40.0	36.7	34.3	31.0	28.6	27.4	29.1	29.7	31.7	34.5	37.7	45.6	49.0	53.9	50.2	44.3	69.9																						
																								54.9	57.7	60.7	62.7	64.3	61.9	58.8	53.5	49.5	46.1	42.4	39.5	37.0	35.8	34.2	33.4	33.3	33.1	34.8	38.5	44.2	48.3	51.5	53.6	Diurnal Average
																								98.6	99.4	99.9	99.9	100.0	100.0	99.7	89.6	84.8	83.1	80.9	80.0	74.0	81.2	79.1	72.7	74.8	80.1	81.7	84.9	93.5	96.5	98.6	98.7	Diurnal Maximum





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Firebag - May 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	23	3.09	3.09
20 - 40	280	37.63	40.73
40 - 60	262	35.22	75.94
60 - 80	123	16.53	92.47
80 - 100	54	7.26	99.73

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

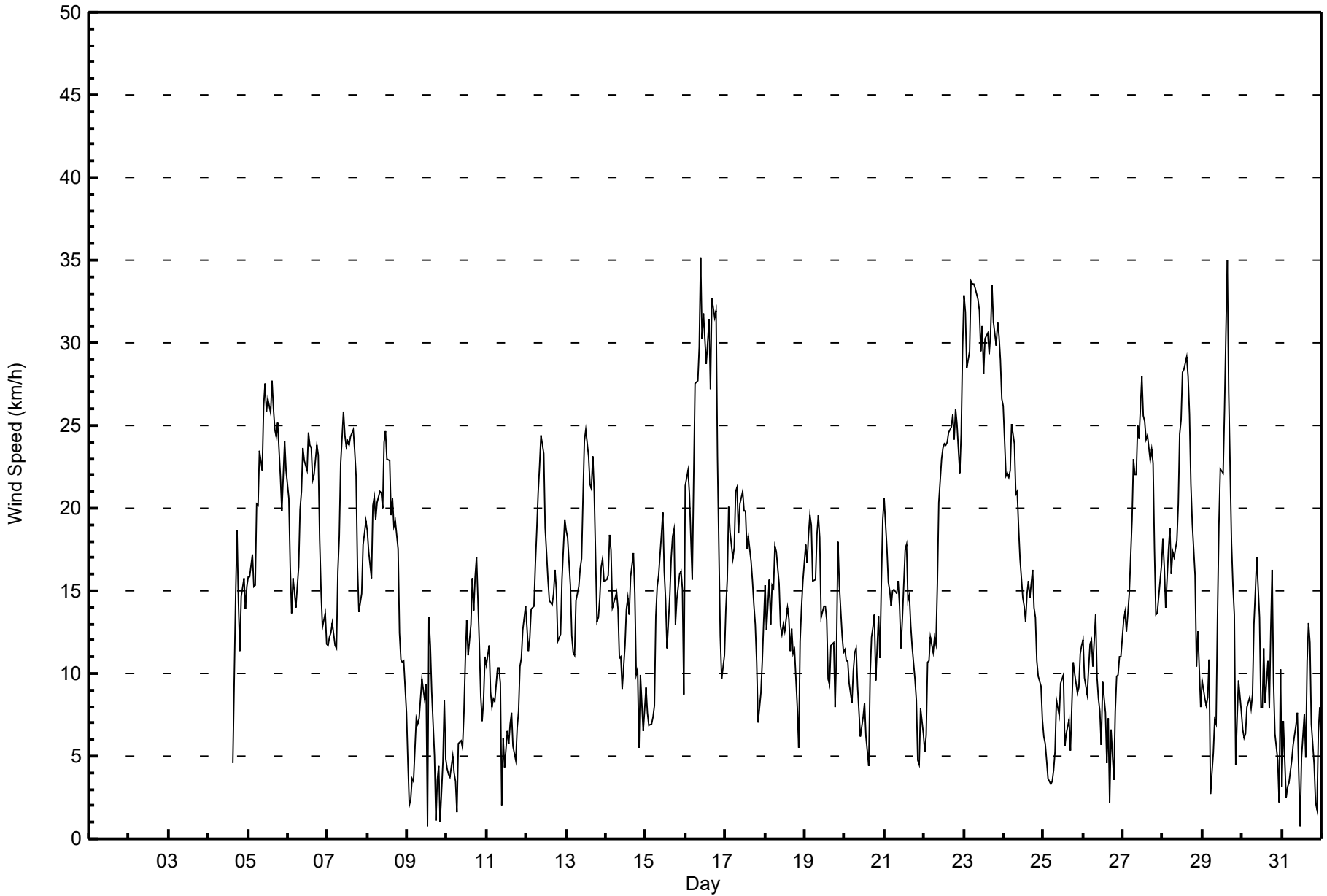
Wind Speed (WS) - km/h
Firebag - May 2023

Maximum Speed: 35 km/h on May 16 10:00	Maximum Daily Speed Average: 29.3 km/h on May 23	Hours in Service: 744
Minimum Speed Value: 1 km/h on May 31 12:00	Minimum Daily Speed Average: 1.4 km/h on May 25	Hours of Data: 657
Maximum Diurnal Speed Average: 8.0 km/h at hour 8	Minimum Diurnal Speed Average: 3.8 km/h at hour 19	Hours of Missing Data: 87
Monthly Average Velocity: 6.4 km/h 170.0 deg	Percentiles: P ₁ = 2 P ₁₀ = 6 Q ₁ = 10 Median = 14 Q ₃ = 20 P ₉₀ = 25 P ₉₉ = 33	Percent Operational Time: 88.3

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
2-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
3-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
4-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
5-May	SE16	SE16	SE17	SE15	SSE15	S20	SSE20	SSE23	S22	SSE26	S28	SSE26	SSE27	SE26	SE28	SSE26	SE25	SE24	SE25	SE22	SSE20	SSE22	SSE24	SSE22	SSE21.7	NNE19
6-May	SSE21	SSE16	SE14	SSE16	SSE15	SE14	SSE16	SSE20	SSE21	SE24	SSE23	SSE22	SSE25	SSE24	SSE24	SE22	SE22	SE24	SE23	SE18	SSE15	SSE13	SSE14	SE12	SSE18.9	SSE25
7-May	SE12	SE12	SE12	SE13	SE12	ESE12	SE16	SE18	SSE23	SSE26	SSE24	SSE24	SSE24	SSE24	SSE24	SSE25	SSE23	SSE22	SSE16	SE14	SE15	SE18	SE18	SE19	SSE18.2	SSE26
8-May	SE19	SE17	SE16	SSE20	S21	SSE19	SSE20	SSE21	SSE21	SSE20	SSE24	S25	S23	S23	SSW20	S21	S19	S19	S18	SSE12	S11	SSW11	WSW11	SW8	S17.1	S25
9-May	SSW5	S2	SSE2	SE4	SE3	SE7	S7	SSW7	WSW8	SW10	SSW8	WSW9	W1	S13	S12	S9	SSE5	ENE1	ENE4	ENE4	S1	SSW5	SW8	WSW5	SSW4.3	S13
10-May	WSW4	SW4	WSW4	SW5	S4	SSE3	NE2	NE6	NE6	N5	NNW8	NNW11	NNW13	N11	NNE13	N16	NNE14	N16	NNE17	NNE12	NE9	ENE7	ENE8	ENE11	NNE6.0	NNE17
11-May	E10	ESE12	ESE9	SE8	SSE9	SE8	SE10	SE10	ESE9	N2	N6	NE4	SE7	SSW6	SE7	SSE8	E6	SSE5	SSE7	SSE8	SE10	SSE11	SSE13	S14	SE6.6	S14
12-May	S13	S11	S12	SSE14	S14	S17	S19	S21	S23	S24	S23	S19	S17	S16	S14	SSW14	S15	S16	SSE15	SSE12	SSE12	SSE16	SSE18	S19	S16.1	S24
13-May	S19	S18	S15	S12	S11	SSW11	SSW14	SW15	SW16	SSW17	SW21	SW24	SW25	SW23	SW21	SW21	SW23	SW21	SSW13	SSW13	SSW15	SSW16	SSW17	SSW16	SSW16.7	SW25
14-May	SW16	SW16	SW18	SW17	SW14	SW15	SW15	SW14	SW11	SW11	SW9	SSW12	SW14	WSW15	WSW14	WSW16	SW17	WSW15	NW10	NNE10	ENE6	NNE10	ENE7	ESE8	SW9.1	SW18
15-May	ESE9	ESE8	ESE7	SE7	ESE7	ESE8	ESE14	ESE15	ESE16	SE18	SE20	SSE16	SSW14	SW12	S15	S17	SSE18	S19	SSE13	SE14	SE16	SE16	SSE15	WSW9	SSE11.5	SE20
16-May	N21	N22	N21	N18	NNW16	NW22	NNW28	NNW28	NNW30	NNW35	NW30	NW32	NW29	NNW30	NNW31	NNW27	NNW33	NNW32	NNW32	N23	NNW18	NNW12	N10	N11	NNW24.0	NNW35
17-May	N14	N16	NNE20	N19	N17	NNE18	NNE21	NNE21	NNE18	N20	NNE21	NNE20	NNE20	NNE18	NE18	NNE17	NE16	NNE14	NE13	NE11	ENE7	ESE9	SE11	SSE13	NNE13.7	NNE21
18-May	S15	S13	S16	S13	SSW15	SSW15	SSW18	SW17	SW15	SW13	SSW12	SSW13	SSW13	SW14	WSW13	SW11	WSW13	WSW11	SW11	SW8	S5	S12	S14	SSW16	SSW12.2	SSW18
19-May	SSW18	SSW17	SSW18	SSW20	SSW19	SSW16	SSW16	SSW18	SSW20	SSW18	SSW13	SSW14	SW14	SW13	WSW10	WNW9	NNW12	N12	NNW8	N11	NNE18	NNE15	NNE12	NNE11	SW6.5	SSW20
20-May	NNE11	NNE11	NNE11	NE9	NE8	E10	ESE11	ESE12	ESE9	ESE6	ESE7	SE7	ESE8	SE6	SSE4	SE10	SSE12	S13	S14	SSE10	SSE13	SSE11	SSE15	SSE19	SE6.9	SSE19
21-May	S21	S18	S16	SSE15	SSE14	SSE15	S15	S15	S16	SSE14	S12	S13	S17	S18	S14	SSW15	SSW13	S12	SSE10	S8	SSW5	SSE5	SE8	SSE6	S12.7	S21
22-May	N5	NNE6	NNE11	NNE11	NE12	NNE11	NE12	NE12	NNE15	NNE20	NNE23	NNE24	NNE24	NE24	NE24	ENE25	ENE25	ENE26	ENE24	ENE26	ENE25	ENE22	E25	E30	NE17.7	E30
23-May	E33	ESE32	ESE28	ESE30	ESE34	ESE34	ESE34	ESE33	ESE33	ESE32	ESE29	ESE31	ESE28	ESE30	ESE31	SE29	SE31	SE33	SE31	SSE30	SSE31	SSE30	SSE29	SSE27	SE29.3	ESE34
24-May	SSE26	SSE22	SSE22	SSE22	SSE22	SSE25	SSE24	S21	S21	S19	S17	SSW15	SSW14	SW13	SW15	WSW16	W15	W16	W14	WSW13	W11	W10	W9	W7	SSW12.3	SSE26
25-May	W6	WNW6	WNW5	WNW4	WNW3	WNW4	WNW4	N5	N8	N7	N9	N10	ENE10	NNE6	NE6	NE7	ENE5	SE8	SE11	SE10	SE9	SE9	SSE11	S12	ENE1.4	S12
26-May	S12	S10	S9	S10	S12	S12	S10	SSW14	SSW10	SW9	WSW8	W6	W10	W8	NW5	W7	NW2	WNW7	SW4	S8	SSE10	SSE10	SSE11	SSE11	SSW6.4	SSW14
27-May	S13	S14	S13	S14	SSW15	SSW19	SSW23	SSW22	SSW22	SSW25	SSW24	S28	SSW26	SSW25	S24	S24	SSW23	SSW24	S23	S18	SSE14	SSE14	S16	S17	SSW19.3	S28
28-May	S18	S16	S14	SSW17	SSW19	SSW16	SSW17	SSW17	SW18	SW20	SW24	SW25	SW28	SW28	WSW29	WSW28	WSW26	WSW21	W19	W16	WNW10	NW13	NW10	WNW8	SW16.4	WSW29
29-May	W10	W8	SW8	WSW9	SW11	WSW3	W5	NW7	WSW7	W13	W19	W22	W22	WSW26	WSW31	WSW35	WSW27	WSW18	WSW15	SW14	W5	NNE7	NNE10	NE8	WSW12.0	WSW35
30-May	ENE7	ENE6	E6	ESE8	SE9	SSE8	SSE9	SSE13	SSE15	SSE17	S13	S8	WSW8	W12	WNW8	WNW11	WNW8	WNW13	NW16	NNW10	NNW6	N5	NW2	N10	SW1.5	SSE17
31-May	S3	SW7	SSE2	WSW3	SSW3	S4	WSW5	WSW6	W7	WNW8	NNW4	ENE1	SW5	ESE8	SSE5	SE11	S13	SW12	SSW7	SSE5	N2	ESE2	NNW6	NW8	SSW2.6	S13

SSE7.1 SSE6.5 SSE6.2 SSE7.0 SSE7.5 SSE7.6 SSE7.8 S8.0 S8.0 S7.7 S7.2 S7.2 SSW7.6 SSW7.6 SSW6.6 SSW6.6 S5.3 S4.7 SSE3.8 SE4.8 SE5.8 SE6.6 SSE7.3 SSE6.9	Diurnal Average
E33 ESE32 ESE28 ESE30 ESE34 ESE34 ESE34 ESE33 ESE33 ESE32 ESE29 ESE31 ESE28 ESE30 ESE31 SE29 SE31 SE33 SE31 SSE30 SSE31 SSE30 SSE29 SSE27	Diurnal Maximum

M - Maintenance UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Firebag - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	58	8.83	8.83
6 - 11	173	26.33	35.16
12 - 19	255	38.81	73.97
20 - 28	136	20.70	94.67
29 - 38	35	5.33	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 657

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Firebag - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	6	0	2	5	0	1	2	9	6	4	4	7	2	5	3	2	58
6 - 11	10	13	9	9	4	18	20	17	11	7	13	11	12	10	3	6	173
12 - 19	8	15	7	0	0	9	28	37	61	42	22	10	8	1	2	5	255
20 - 28	5	10	2	7	1	2	12	43	18	12	13	5	2	0	1	3	136
29 - 38	0	0	0	0	2	12	3	5	0	0	0	3	0	0	3	7	35
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	29	38	20	21	7	42	65	111	96	65	52	36	24	16	12	23	657

Total Number of Valid Hours: 657

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Firebag - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 9 km/h on May 16 11:00	Hours in Service: 744 Hours of Data: 657 Hours of Missing Data: 87 Hours of Calibration: 0 Percent Operational Time: 88.3
Minimum Value: 1 km/h on May 10 05:00	
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 6 P ₉₉ = 8	

Day	Hourly Period Ending At (MST)																								Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	
2-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	
3-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	
4-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	4	5	3	4	3	3	3	3	2	2	5
5-May	3	3	3	3	3	3	4	4	4	5	4	5	5	5	5	5	5	5	6	5	4	4	4	4	6	
6-May	3	3	2	3	2	2	3	4	4	4	5	5	6	5	6	5	5	6	5	4	2	2	2	2	6	
7-May	2	2	2	2	2	2	3	3	4	5	6	5	5	5	6	5	5	5	3	3	3	3	4	3	6	
8-May	4	3	2	4	3	3	3	3	3	4	6	5	5	5	4	4	4	4	3	3	2	3	2	1	6	
9-May	1	1	2	1	2	2	3	3	2	3	3	3	3	6	2	3	2	2	2	1	1	4	2	1	6	
10-May	1	1	1	1	1	1	2	2	2	3	3	3	3	4	5	4	5	4	4	3	1	1	1	1	5	
11-May	2	2	2	2	2	2	3	2	3	4	3	2	3	3	4	4	4	3	3	2	1	2	2	2	4	
12-May	1	1	2	2	2	2	3	3	4	4	4	4	5	5	5	6	5	3	3	2	2	2	2	3	6	
13-May	3	2	2	1	1	2	2	3	3	3	4	5	5	4	4	4	4	4	4	2	2	2	2	2	5	
14-May	2	2	3	3	3	2	2	3	2	2	2	3	4	4	4	5	4	4	3	2	1	1	1	2	5	
15-May	2	2	2	2	1	4	3	2	3	4	4	4	4	4	4	5	5	4	3	3	3	3	2	4	5	
16-May	7	5	5	4	4	6	7	7	8	8	9	7	7	7	8	7	8	8	7	7	4	3	3	3	9	
17-May	4	4	5	4	4	4	5	5	4	5	5	5	5	5	5	4	4	4	3	3	1	2	2	2	5	
18-May	2	2	2	2	3	3	3	3	3	3	4	4	5	5	5	4	4	3	3	2	1	2	2	3	5	
19-May	3	3	3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	3	1	2	4	3	2	2	4	
20-May	2	2	2	1	1	2	2	2	2	2	2	3	3	4	3	3	3	2	2	2	3	2	3	3	4	
21-May	3	3	2	2	2	2	2	2	3	2	2	3	3	3	3	3	3	2	2	1	3	1	2	2	3	
22-May	4	1	1	2	2	2	2	3	4	5	5	5	5	5	5	5	6	6	5	6	6	5	6	7	7	
23-May	6	6	6	6	6	6	7	7	6	7	6	7	6	6	6	6	7	8	7	6	6	6	6	5	8	
24-May	5	5	4	4	4	4	5	3	3	3	3	2	3	3	3	3	4	4	4	3	3	3	2	2	5	
25-May	2	1	1	1	1	1	1	3	3	2	3	4	4	3	3	3	3	3	3	2	2	1	2	1	4	
26-May	2	2	1	2	2	2	1	2	3	3	4	3	4	3	3	3	2	3	2	2	1	1	1	1	4	
27-May	2	2	1	1	2	3	4	4	4	4	5	6	5	6	5	5	5	4	4	4	2	2	2	2	6	
28-May	2	2	2	2	3	3	3	4	3	4	6	6	6	8	7	6	7	5	6	5	3	2	3	1	8	
29-May	1	1	1	1	2	2	2	2	3	4	5	6	6	7	9	8	6	5	4	3	2	3	1	1	9	
30-May	1	1	1	2	2	2	2	2	3	4	5	4	4	5	4	4	3	5	4	2	1	1	2	3	5	
31-May	3	4	2	2	2	1	1	2	2	3	3	2	2	4	4	4	3	3	2	1	2	1	3	2	4	
Diurnal Maximum																										

M - Maintenance UO - Unstable Operation



Wood Buffalo Environmental Association

Summary of Hour Averages

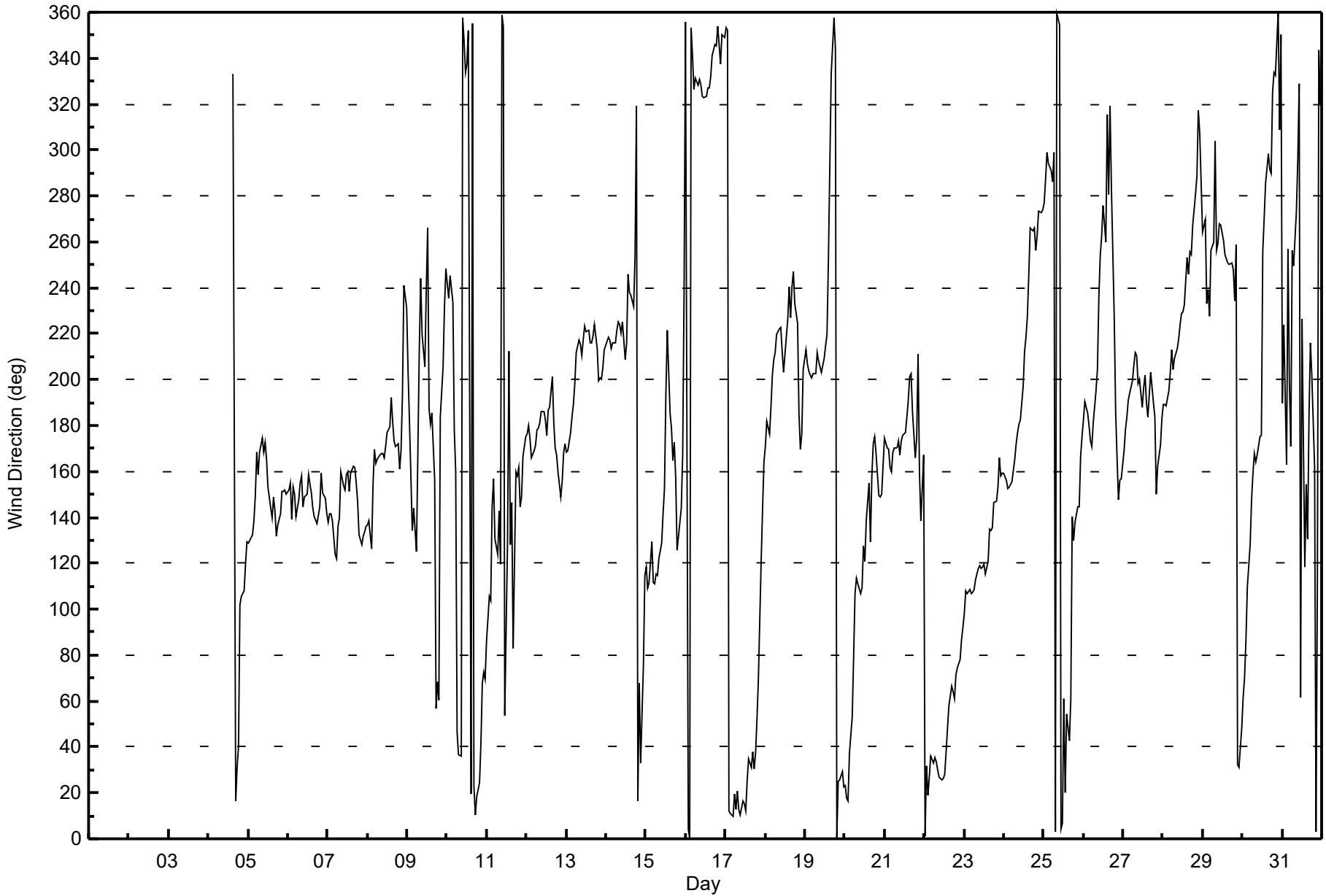
Wind Direction (WD) - deg
Firebag - May 2023

Direction of Maximum Speed: 328 deg on May 16 10:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 125.1 deg on May 23	Hours of Data: 657
Direction of Minimum Speed: 61 deg on May 31 12:00	Hours of Missing Data: 87
Direction of Minimum Daily Speed Average: 1.4 deg on May 25	Percent Operational Time: 88.3
Monthly Average Direction: 170.0 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
2-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
3-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
4-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
5-May	129	130	133	138	149	169	159	168	174	168	172	165	153	144	140	333	16	31	40	102	106	108	120	129	150.8
6-May	152	155	139	153	150	140	147	155	158	144	149	150	159	155	151	144	140	138	141	145	159	151	148	142	148.6
7-May	138	142	141	138	124	122	136	140	160	154	152	159	160	151	159	162	162	155	147	133	128	132	134	136	147.2
8-May	137	139	126	154	169	163	165	167	168	168	166	171	177	180	192	182	173	171	172	161	169	193	241	231	169.4
9-May	204	182	159	134	144	125	169	212	244	220	206	239	266	187	181	185	156	57	68	61	184	206	232	248	193.9
10-May	242	236	245	233	178	160	47	36	36	357	347	334	337	352	20	355	23	10	19	24	41	68	72	70	13.8
11-May	86	106	104	145	157	131	124	143	119	359	354	54	130	212	128	147	83	160	158	162	144	149	167	175	136.0
12-May	176	180	175	166	169	172	178	179	181	186	186	182	175	186	188	201	181	171	167	160	149	156	168	172	176.0
13-May	169	169	177	184	189	198	212	217	215	211	217	224	221	222	216	216	219	224	213	199	201	200	205	213	207.5
14-May	217	219	217	214	216	216	221	225	224	220	225	208	216	246	238	237	232	254	319	16	68	33	76	115	225.7
15-May	119	109	112	129	112	111	116	115	122	129	142	152	193	221	185	179	165	173	157	126	138	144	167	239	148.8
16-May	356	5	0	353	341	326	332	328	331	328	323	323	323	327	327	332	341	346	345	354	346	337	350	349	337.3
17-May	353	352	12	11	10	19	13	20	13	10	17	15	12	25	35	31	38	30	37	52	69	121	144	164	23.6
18-May	171	182	176	188	202	209	212	220	222	222	213	203	211	226	241	227	241	247	233	224	185	170	177	205	208.3
19-May	213	207	204	202	201	203	203	212	208	206	203	209	215	220	252	293	333	357	344	0	25	25	29	23	223.4
20-May	23	18	17	37	53	79	107	113	111	107	109	128	121	138	155	129	158	172	175	168	149	149	150	162	124.0
21-May	174	170	169	162	160	168	170	170	174	167	173	176	177	183	191	201	203	186	166	174	211	159	139	167	174.9
22-May	2	32	19	27	36	33	35	34	30	27	25	26	28	38	48	58	67	64	61	71	74	78	87	92	51.4
23-May	98	108	107	109	107	107	108	113	118	119	118	119	119	116	121	135	134	136	146	147	153	166	158	159	125.1
24-May	159	156	152	153	154	156	165	172	177	180	182	197	213	219	227	245	266	265	266	256	263	273	272	274	194.2
25-May	277	288	299	294	291	286	299	3	359	354	4	7	61	20	55	42	61	140	130	138	145	145	167	175	65.2
26-May	182	190	185	180	173	171	181	195	204	236	254	263	276	260	316	280	319	283	227	186	166	148	156	157	199.0
27-May	169	178	184	191	194	199	206	211	211	198	200	188	197	202	190	184	203	196	190	183	150	162	172	183	191.6
28-May	189	189	188	195	203	213	205	209	214	218	224	229	230	232	253	246	256	255	267	281	289	317	308	286	233.1
29-May	264	270	233	239	228	257	260	304	256	259	268	267	261	254	253	251	250	251	248	234	259	32	31	48	257.5
30-May	62	70	87	110	128	147	159	168	164	167	175	176	256	270	285	298	291	290	325	334	332	360	308	350	223.1
31-May	190	224	163	257	199	171	256	250	273	296	329	61	227	118	155	130	184	216	202	162	3	115	344	320	213.3

156.2	156.6	150.4	159.0	161.5	160.8	167.4	173.6	178.5	181.5	184.5	188.4	194.4	198.6	194.3	196.4	187.8	183.0	163.1	142.9	137.0	140.1	151.3	157.9
Diurnal Average																							

M - Maintenance UO - Unstable Operation
All monthly, daily, and diurnal averages have been calculated using vector methods





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Firebag - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 744
Maximum Value: 101 deg on May 31 12:00	Hours of Data: 657
Minimum Value: 6 deg on May 29 04:00	Hours of Missing Data: 87
Percentiles: P ₁ = 7 P ₁₀ = 9 Q ₁ = 11 Median = 14 Q ₃ = 20 P ₉₀ = 38 P ₉₉ = 81	Hours of Calibration: 0
	Percent Operational Time: 88.3

Day	Hourly Period Ending At (MST)																								Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	
2-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	
3-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	
4-May	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	68	
5-May	12	12	11	11	12	9	9	9	9	12	11	15	16	18	17	18	17	16	14	20	13	11	10	11	11	18
6-May	11	11	12	11	12	13	11	13	16	15	17	19	18	18	18	22	19	17	15	13	10	11	10	12	22	
7-May	11	11	11	11	12	12	12	14	15	15	17	15	14	18	18	17	20	12	12	15	12	12	12	12	20	
8-May	11	13	12	14	9	10	9	10	13	14	16	17	16	19	18	19	16	9	9	9	8	19	12	14	19	
9-May	16	15	51	32	27	13	42	17	27	37	47	32	88	34	16	27	32	91	84	20	64	32	10	10	91	
10-May	11	10	10	20	14	14	49	18	33	62	38	28	24	36	28	19	24	19	14	11	8	13	15	9	62	
11-May	10	10	12	25	13	12	14	15	29	82	44	40	51	51	54	54	56	40	32	12	10	11	12	7	82	
12-May	7	7	7	9	9	8	9	9	9	12	14	23	25	26	32	31	26	21	11	9	9	9	8	8	32	
13-May	8	8	8	7	6	7	10	11	11	10	11	13	13	13	12	12	14	11	12	7	7	7	8	9	14	
14-May	9	8	8	8	11	8	9	11	15	15	19	16	23	22	19	23	19	16	44	14	39	10	15	17	44	
15-May	22	18	20	21	18	20	12	11	13	16	16	22	21	28	22	24	17	13	29	13	13	13	11	46	46	
16-May	22	16	17	16	13	12	14	13	13	13	14	14	14	15	16	14	14	16	14	18	14	16	14	13	22	
17-May	15	15	16	14	15	13	16	15	17	16	18	18	21	20	20	23	23	19	19	14	23	17	16	9	23	
18-May	8	9	8	7	8	9	10	14	15	23	25	21	25	26	27	33	25	26	18	12	19	7	7	14	33	
19-May	9	9	9	7	8	9	9	10	10	10	16	13	16	16	22	24	19	15	16	17	12	12	9	11	24	
20-May	11	12	11	13	12	17	15	12	15	25	36	43	41	55	86	32	21	14	11	15	16	12	11	10	86	
21-May	9	9	9	9	9	9	9	10	9	12	14	15	11	13	16	14	14	13	13	7	36	17	20	21	36	
22-May	44	8	8	9	10	10	12	14	15	16	14	14	13	17	14	15	15	14	13	12	11	12	12	11	44	
23-May	11	11	11	10	10	10	11	12	13	13	13	14	13	12	13	14	13	15	13	13	12	10	12	12	15	
24-May	11	12	11	11	11	10	10	9	9	9	12	13	16	17	16	13	19	16	17	14	15	18	17	17	19	
25-May	21	15	15	39	41	25	25	40	32	30	27	29	33	52	62	37	59	23	20	12	12	12	10	8	62	
26-May	8	8	8	8	8	8	7	11	21	43	47	51	42	56	68	49	87	45	61	30	7	8	10	9	87	
27-May	8	7	8	6	7	8	11	11	12	11	14	13	18	15	20	15	15	12	13	11	13	9	8	8	20	
28-May	7	7	8	7	9	9	9	10	15	18	14	16	17	18	16	14	17	16	21	19	20	10	13	13	21	
29-May	11	12	7	6	13	63	26	27	41	24	23	21	20	17	15	14	15	18	16	13	69	16	7	11	69	
30-May	11	8	9	11	13	19	12	10	14	15	35	54	49	34	71	25	33	24	12	15	16	40	74	11	74	
31-May	80	38	55	38	45	19	29	17	31	37	80	101	56	58	60	26	24	15	14	41	68	58	52	22	101	
80 38 55 39 45 63 49 40 41 82 80 101 88 58 86 68 87 91 84 41 69 58 74 46																										
Diurnal Maximum																										

M - Maintenance UO - Unstable Operation



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS20 MACKAY RIVER MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MACKAY RIVER (AMS20)

MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	708	34	36	99.73	16.3	0	6.1	0
H2S (ppb) Average	686	36	58	97.04	3.8	0	0.8	0
THC (ppm) Average	708	34	36	99.73	3.4	-	2.5	-
NO2 (ppb) Average	707	36	37	99.87	27.2	0	6.6	-
NO (ppb) Average	707	36	37	99.87	3.6	-	0.6	-
NOX (ppb) Average	707	36	37	99.87	27.5	-	6.9	-
Temperature 2 m (C) Average	744	0	0	100	30.5	-	22.1	-
Relative Humidity (%) Average	744	0	0	100	99.5	-	84.2	-
Wind Speed 10 m (km/h) Average	744	0	0	100	21	-	14	-
Wind Direction 10 m (deg) Average	744	0	0	100	-	-	-	-
Precipitation (mm) Total	744	0	0	100	1.2	-	3.6	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MACKAY RIVER (AMS20)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	708	0.59	1.5	-	0	0	0	0.2	0.4	1.2	16.3
H2S (ppb) Average	686	0.28	0.3	-	0	0.1	0.1	0.2	0.3	0.5	3.8
THC (ppm) Average	708	2.28	0.1	-	2.1	2.2	2.2	2.2	2.3	2.4	3.4
NO2 (ppb) Average	707	1.46	2	-	0.1	0.4	0.6	0.9	1.5	3.2	27.2
NO (ppb) Average	707	0.08	0.2	-	0	0	0	0	0.1	0.1	3.6
NOX (ppb) Average	707	1.53	2.1	-	0.1	0.4	0.6	0.9	1.6	3.3	27.5
Temperature 2 m (C) Average	744	15.14	6.7	-	0.1	6.5	9.8	14.9	20.4	24.5	30.5
Relative Humidity (%) Average	744	51.67	21.9	-	15.7	23.6	33.4	48.3	68.6	84.2	99.5
Wind Speed 10 m (km/h) Average	744	7.5	4	-	0	2	4	7	10	13	21
Wind Direction 10 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	744	-	-	10.13	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION -MACKAY RIVER (AMS20)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
SO2, NO2, THC	24 May 2023 14:00	24 May 2023 14:00	1	Maintenance - sample manifold cleaned
SO2, THC	25 May 2023 11:00	25 May 2023 11:00	1	Maintenance - verify daily QA response
H2S	24 May 2023 13:00	25 May 2023 10:00	22	Maintenance - to repalced instrument



Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 16.3 ppb on May 16 19:00	Maximum Daily Average: 6.1 ppb on May 16		Hours of Data:	708
Minimum Value: 0.0 ppb on May 1 09:00	Minimum Daily Average: 0.0 ppb on May 24		Hours of Missing Data:	36
Maximum Diurnal Average: 1.2 ppb at hour 19	Minimum Diurnal Average: 0.2 ppb at hour 5		Hours of Calibration:	34
Monthly Average: 0.59 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.2 Q ₃ = 0.4 P ₉₀ = 1.2 P ₉₉ = 8.2		Percent Operational Time:	99.7

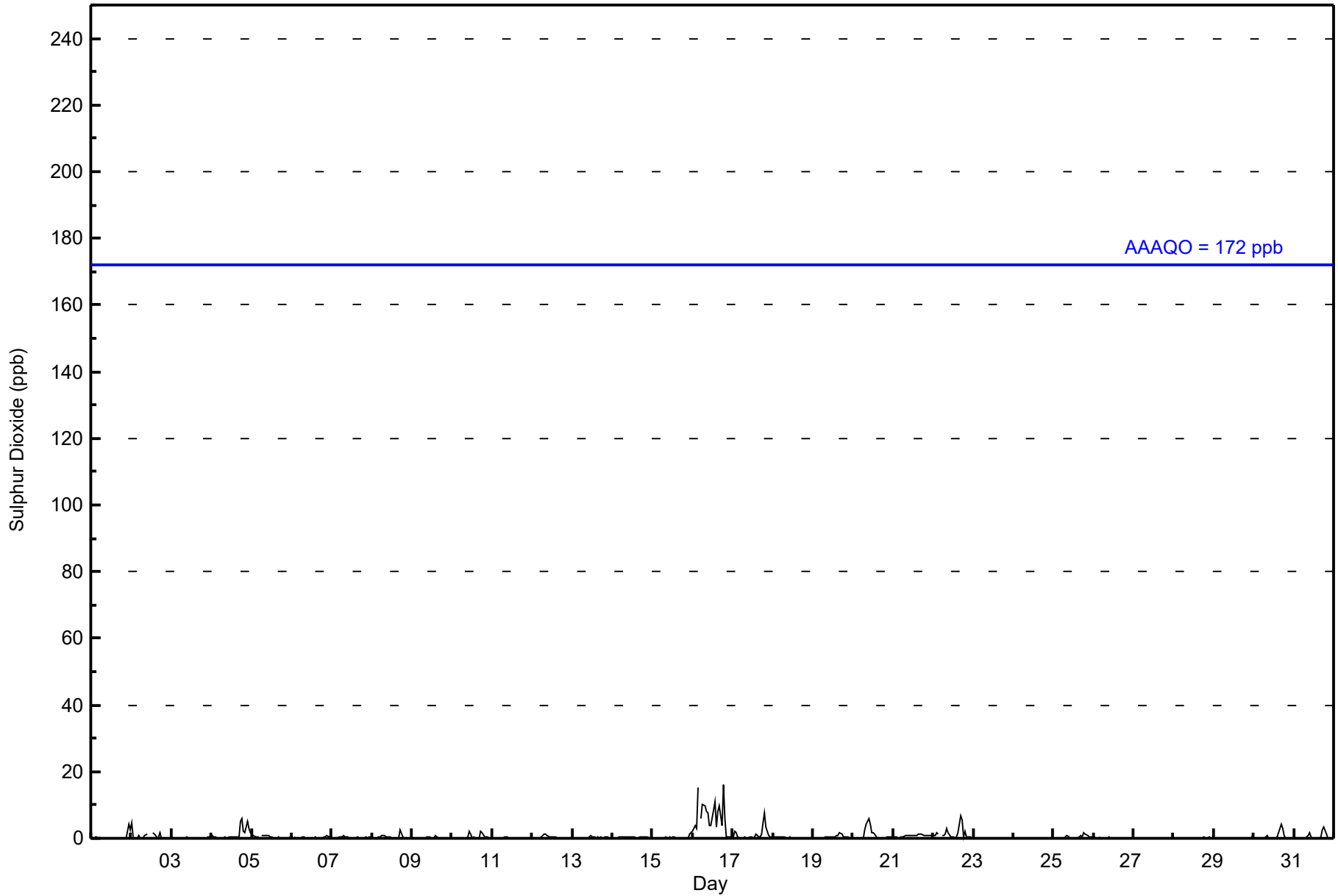
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	0.6	Z	0.6	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	2.6	0.4	4.4																							
2-May	4.8	0.5	Z	0.2	0.7	0.1	0.1	0.0	1.0	1.4	C	C	C	1.7	0.7	0.1	0.6	1.8	0.0	0.0	0.0	0.0	0.0	0.1	0.7	4.8																							
3-May	0.0	0.0	0.0	Z	0.0	0.1	0.0	0.0	0.1	0.3	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.5	0.1	0.5																							
4-May	0.8	0.4	0.3	0.3	Z	0.1	0.1	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	5.2	5.8	2.1	1.8	5.0	2.9	1.8	1.3	5.8																							
5-May	1.4	0.8	0.6	0.6	0.5	Z	0.8	0.8	0.8	0.7	0.6	0.6	0.3	0.2	0.1	0.2	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	1.4																							
6-May	Z	0.3	0.2	0.1	0.2	0.1	0.2	0.3	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.4	0.6	0.5	0.4	0.2	0.6																							
7-May	0.4	Z	0.2	0.2	0.2	0.4	0.5	0.8	0.6	0.3	0.2	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.3	0.4	0.3	0.8																							
8-May	0.3	0.1	Z	0.4	0.6	0.6	0.9	0.8	0.6	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.2	2.6	0.3	0.1	0.1	0.0	0.0	0.0	0.4	2.6																							
9-May	0.0	0.0	0.1	Z	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.1	0.0	0.1	1.0	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	1.0																							
10-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.2	2.0	1.1	0.1	0.2	0.1	0.1	0.1	2.0	1.5	0.3	0.2	0.2	0.2	0.1	0.4	2.0																							
11-May	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.3	0.2	0.5	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.5																							
12-May	Z	0.0	0.0	0.0	0.0	0.3	0.7	1.1	1.1	0.8	0.5	0.4	0.4	0.4	0.3	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.3	1.1																							
13-May	0.1	Z	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.3	0.7	0.5	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.7																							
14-May	0.1	0.1	Z	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.4	0.5	0.4	0.4	0.2	0.3	0.1	0.1	0.3	0.5																							
15-May	0.1	0.1	0.0	Z	0.1	0.1	0.1	0.1	0.3	0.2	0.3	0.2	0.3	0.3	0.1	0.1	0.2	0.2	0.2	0.0	0.1	0.0	1.3	1.6	0.3	1.6																							
16-May	2.3	3.6	2.9	15.1	Z	6.0	10.2	9.5	8.2	7.8	3.6	3.9	8.7	10.8	3.2	8.0	9.9	3.8	16.3	5.9	0.5	0.3	0.5	0.4	6.1	16.3																							
17-May	0.2	2.1	1.5	0.3	0.2	Z	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	1.1	0.6	0.5	1.5	4.5	7.5	3.4	1.0	0.3	0.3	1.2	7.5																							
18-May	Z	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.2	0.1	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.3																							
19-May	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.7	1.6	1.4	0.5	0.5	0.4	0.2	0.1	0.0	0.4	1.6																							
20-May	0.0	0.0	Z	0.0	0.0	0.0	0.1	2.8	4.4	6.0	4.0	1.5	1.5	1.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	1.0	6.0																							
21-May	0.4	0.5	0.4	Z	0.2	0.3	0.5	0.7	0.8	0.7	0.7	0.7	0.9	0.9	1.0	1.1	1.1	1.1	1.0	1.0	0.9	0.9	0.9	0.7	0.8	1.1																							
22-May	0.7	0.9	1.8	1.2	Z	0.9	1.0	1.2	2.9	1.5	0.5	0.4	0.3	0.2	0.3	1.6	6.9	5.5	0.5	2.2	0.3	0.5	0.3	0.1	1.4	6.9																							
23-May	0.1	0.1	0.1	0.0	0.1	Z	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2																							
24-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																							
25-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.4	1.0	0.6	M	0.1	0.0	0.1	0.1	0.1	0.5	0.9	0.4	1.8	1.4	0.6	0.4	0.3	0.2	0.4	1.8																						
26-May	0.3	0.3	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.3																							
27-May	0.2	0.1	0.2	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.2																							
28-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.1	0.1	0.4	0.1	0.1	0.1	0.4																							
29-May	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	0.6																							
30-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.8	0.2	0.0	0.0	0.1	0.1	0.6	2.8	4.2	3.2	0.8	0.0	0.0	0.0	0.0	0.0	0.6	4.2																							
31-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.5	0.3	0.0	0.0	0.1	0.1	0.2	0.5	2.3	3.4	1.5	0.0	0.0	0.0	0.2	0.5	3.4																							
																								0.5	0.4	0.4	0.8	0.2	0.4	0.5	0.7	0.8	0.8	0.6	0.4	0.5	0.6	1.0	1.1	1.2	0.8	0.3	0.4	0.4	0.4	0.4	Diurnal Average		
																								4.8	3.6	2.9	15.1	0.7	6.0	10.2	9.5	8.2	7.8	4.0	3.9	8.7	10.8	3.2	8.0	9.9	5.5	16.3	7.5	3.4	5.0	4.4	2.6	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Mackay River - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Mackay River - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	705	99.58	99.58
11 - 20	3	0.42	100.00
21 - 60	0	0.00	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Mackay River - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	6	33	24	17	27	104	101	71	130	45	27	40	19	18	31	12	705
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	6	33	24	17	27	104	101	71	130	45	27	40	19	20	32	12	708

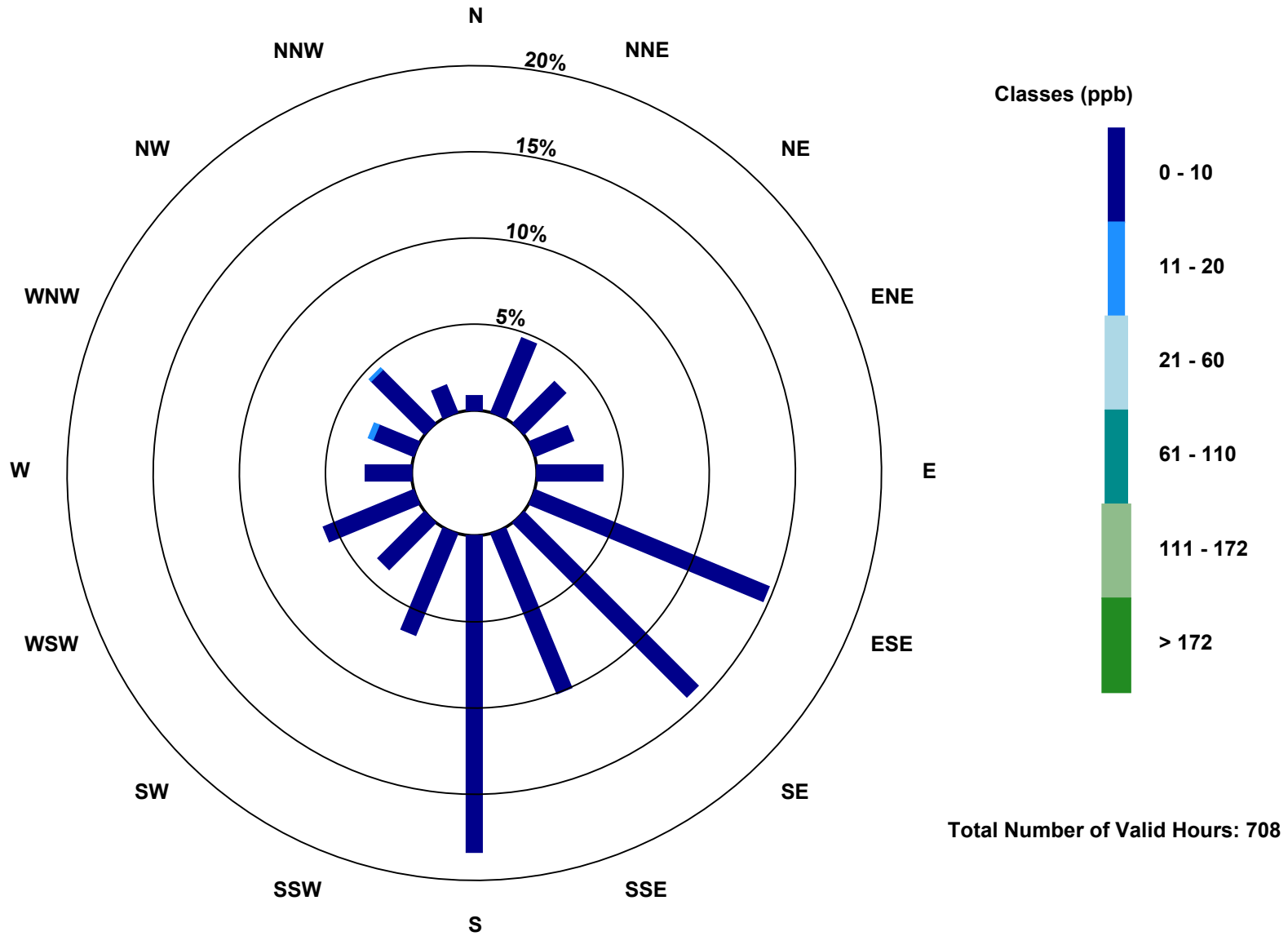
Total Number of Valid Hours: 708

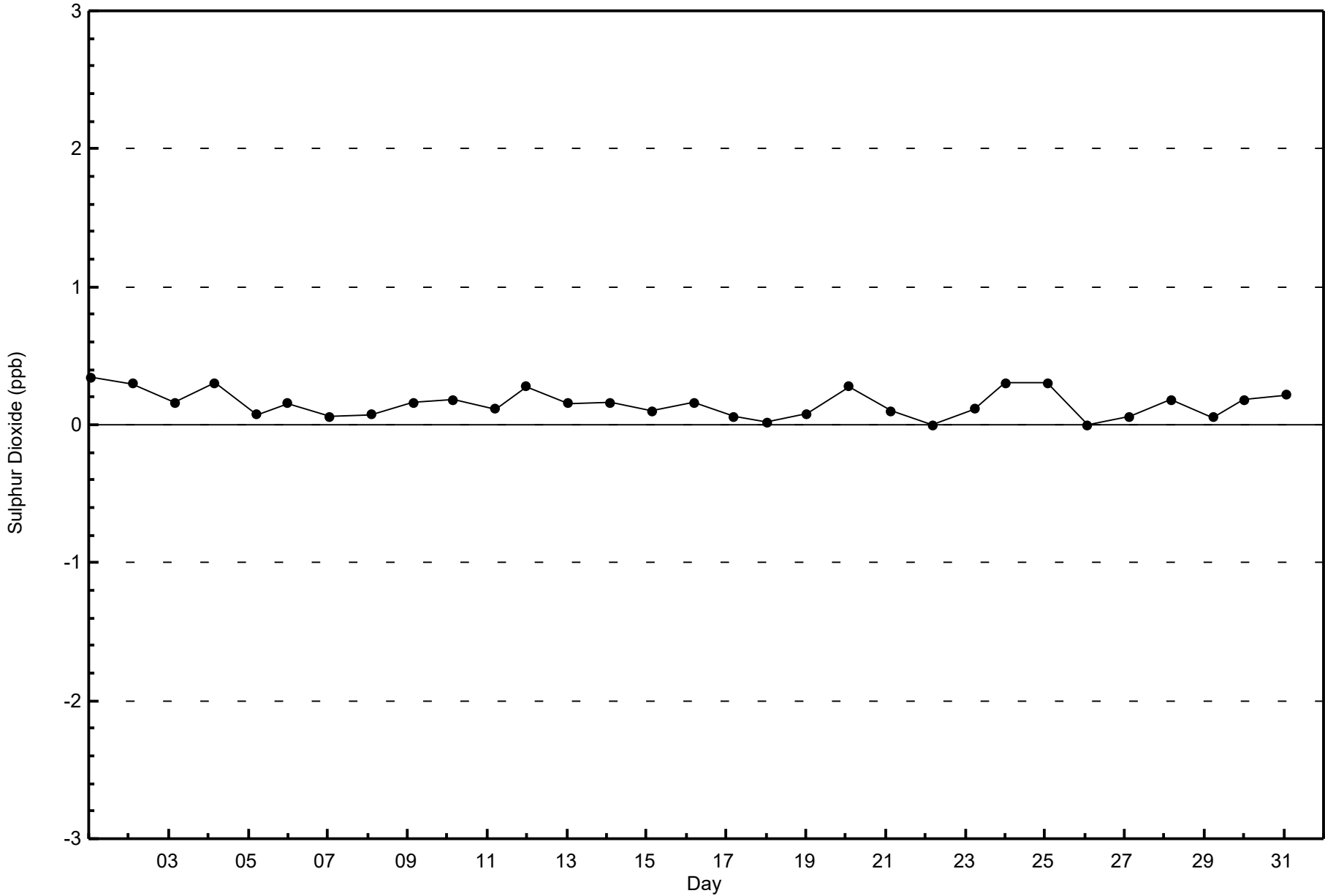
Total Number of Hours: 744

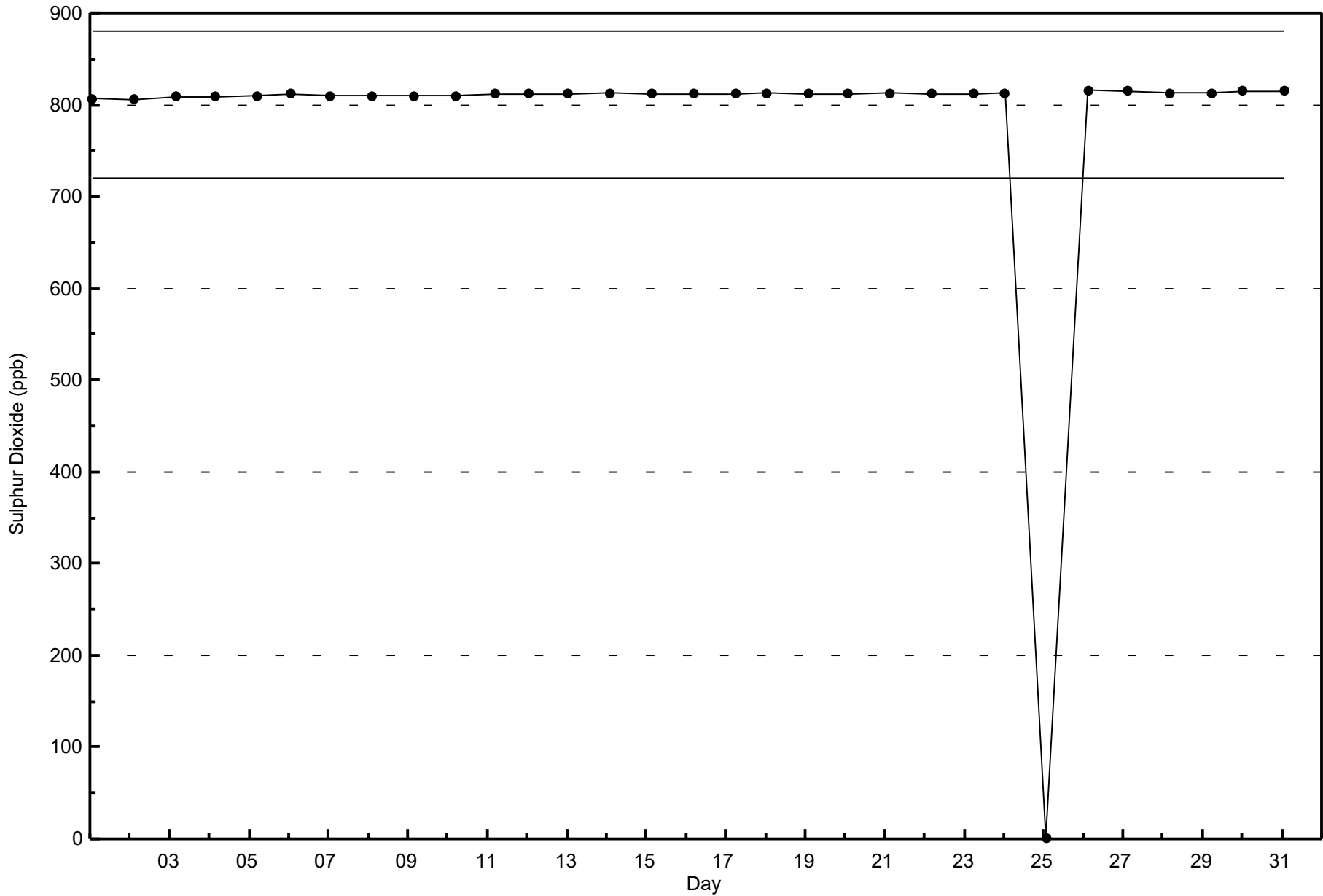


Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Mackay River









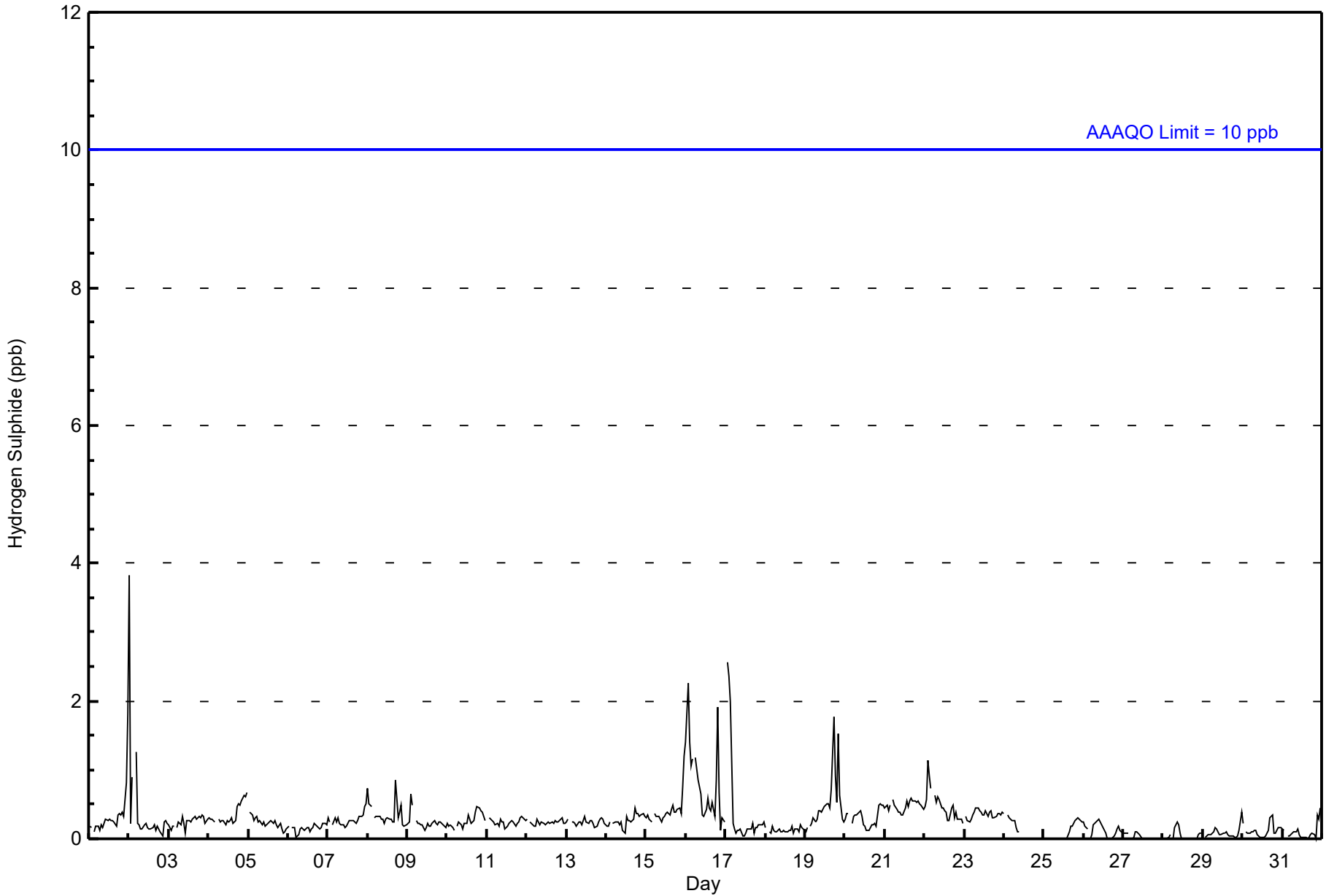
Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H₂S) - ppb

Mackay River - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		744																																									
Maximum Value: 3.8 ppb on May 2 01:00		Maximum Daily Average: 0.8 ppb on May 16		Minimum Value: 0.0 ppb on May 25 15:00		Minimum Daily Average: 0.0 ppb on May 27		Hours of Data: 686																																									
Maximum Diurnal Average: 0.4 ppb at hour 1		Minimum Diurnal Average: 0.2 ppb at hour 11		Hours of Missing Data: 58		Hours of Calibration: 36		Percent Operational Time: 97.0																																									
Monthly Average: 0.28 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.1 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.3 P ₉₀ = 0.5 P ₉₉ = 1.8																																															
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	0.2	0.2	Z	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.4	0.3	0.4	0.3	0.8	1.8	0.3	1.8																								
2-May	3.8	0.2	0.9	Z	1.3	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.0	0.2	0.3	0.2	0.4	3.8																								
3-May	0.2	0.1	0.2	0.2	Z	0.2	0.3	0.2	0.3	0.2	0.1	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.3																								
4-May	0.3	0.3	0.3	0.3	0.3	Z	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.3	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.4	0.7																								
5-May	Z	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.4																								
6-May	0.2	Z	0.2	0.2	0.2	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2																								
7-May	0.3	0.2	Z	0.2	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.5	0.5	0.3	0.5																							
8-May	0.7	0.5	0.5	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.8	0.3	0.4	0.5	0.2	0.2	0.2	0.3	0.8																							
9-May	0.2	0.2	0.7	0.5	Z	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.7																							
10-May	0.2	0.2	0.2	0.2	0.1	Z	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.4	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.5																							
11-May	Z	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.3																							
12-May	0.3	Z	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.3																							
13-May	0.2	0.3	Z	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3																							
14-May	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.3	0.3	0.3	0.2	0.3	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.3	0.4																							
15-May	0.3	0.3	0.3	0.2	Z	0.4	0.3	0.3	0.3	0.2	0.3	0.3	0.4	0.4	0.3	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.7	1.2	0.4	1.2																							
16-May	1.4	2.3	1.4	1.0	1.2	Z	1.2	0.9	0.7	0.7	0.3	0.3	0.4	0.6	0.4	0.4	0.5	0.3	0.9	1.9	0.7	0.1	0.3	0.2	0.8	2.3																							
17-May	Z	2.6	2.4	2.0	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.4	2.6																							
18-May	0.2	Z	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.2																							
19-May	0.1	0.2	Z	0.2	0.2	0.3	0.2	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.7	1.8	0.9	0.5	1.5	0.6	0.3	0.2	0.5	1.8																							
20-May	0.3	0.4	0.4	Z	0.2	0.3	0.3	0.4	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5	0.3	0.5																							
21-May	0.4	0.5	0.4	0.5	Z	0.6	0.5	0.4	0.4	0.4	0.3	0.4	0.4	0.6	0.5	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.5	0.6																							
22-May	0.5	0.6	1.1	0.9	0.7	Z	0.6	0.5	0.6	0.6	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.5	0.3	0.4	0.3	0.3	0.3	0.2	0.5	1.1																							
23-May	Z	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4																							
24-May	0.4	Z	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.1	C	C	M	M	M	M	M	M	M	M	M	M	M	M	--	0.4																							
25-May	M	M	M	M	M	M	M	M	M	M	C	C	C	C	0.0	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.2	--	0.3																								
26-May	0.2	0.2	0.1	Z	0.0	0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.3																							
27-May	0.1	0.1	0.1	0.1	Z	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1																							
28-May	0.0	0.0	0.0	0.0	0.1	Z	0.0	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.2																							
29-May	Z	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.1	0.4																							
30-May	0.2	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.3	0.1	0.1	0.2	0.2	0.2	0.1	0.3																							
31-May	0.1	0.1	Z	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.3	0.3	0.5	0.1	0.5																							
																								0.4	0.4	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	Diurnal Average		
																								3.8	2.6	2.4	2.0	1.3	0.6	1.2	0.9	0.7	0.7	0.4	0.5	0.5	0.6	0.5	0.6	0.7	1.8	0.9	1.9	1.5	0.6	0.8	1.8	Diurnal Maximum	
Z - zerospan C - Calibration M - Maintenance																																																	
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb																																																	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Mackay River - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	684	99.71	99.71
3 - 4	2	0.29	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Mackay River - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	6	32	24	16	28	105	100	71	129	45	24	28	16	20	30	10	684
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	6	32	24	16	28	105	100	71	129	45	24	28	16	20	32	10	686

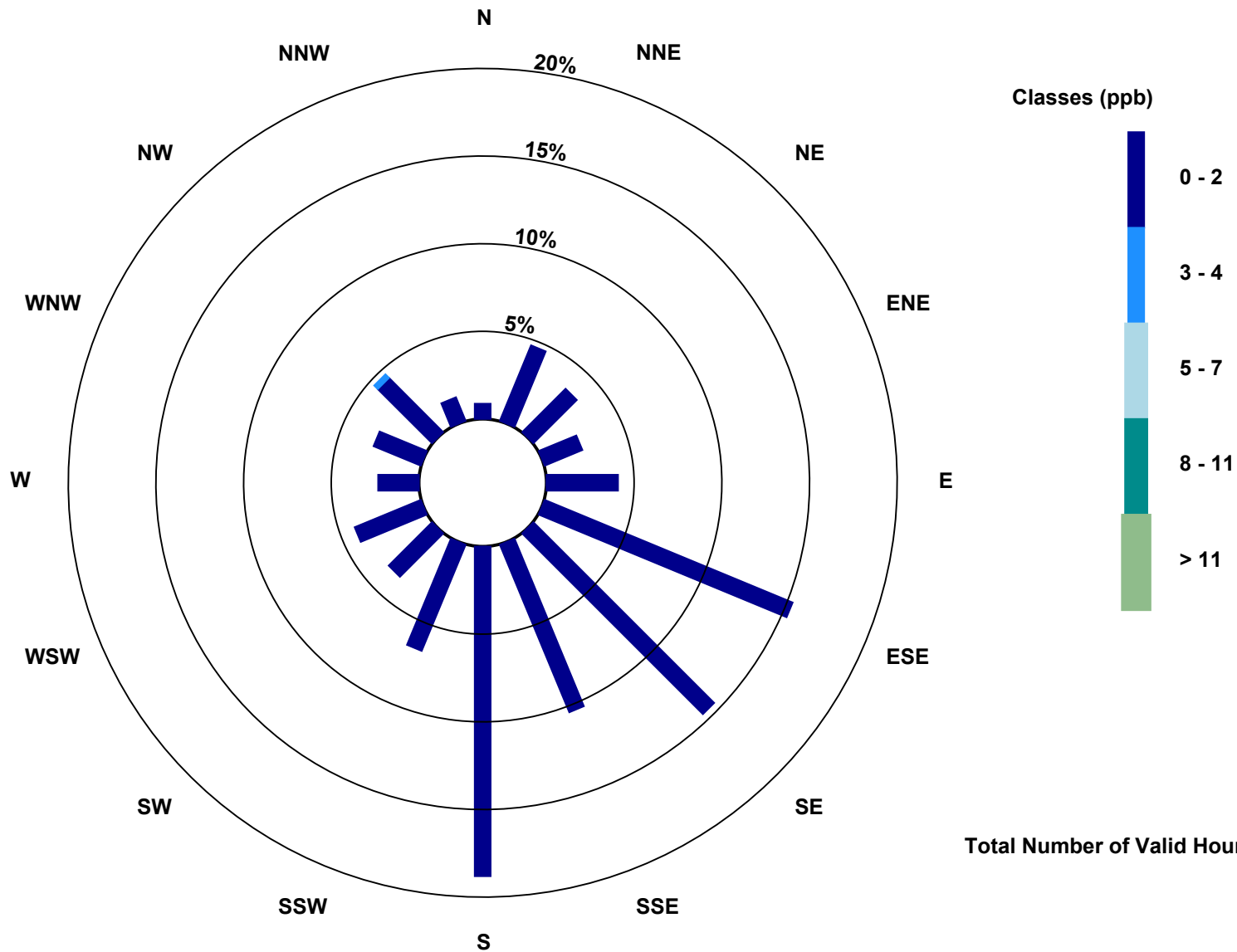
Total Number of Valid Hours: 686

Total Number of Hours: 744

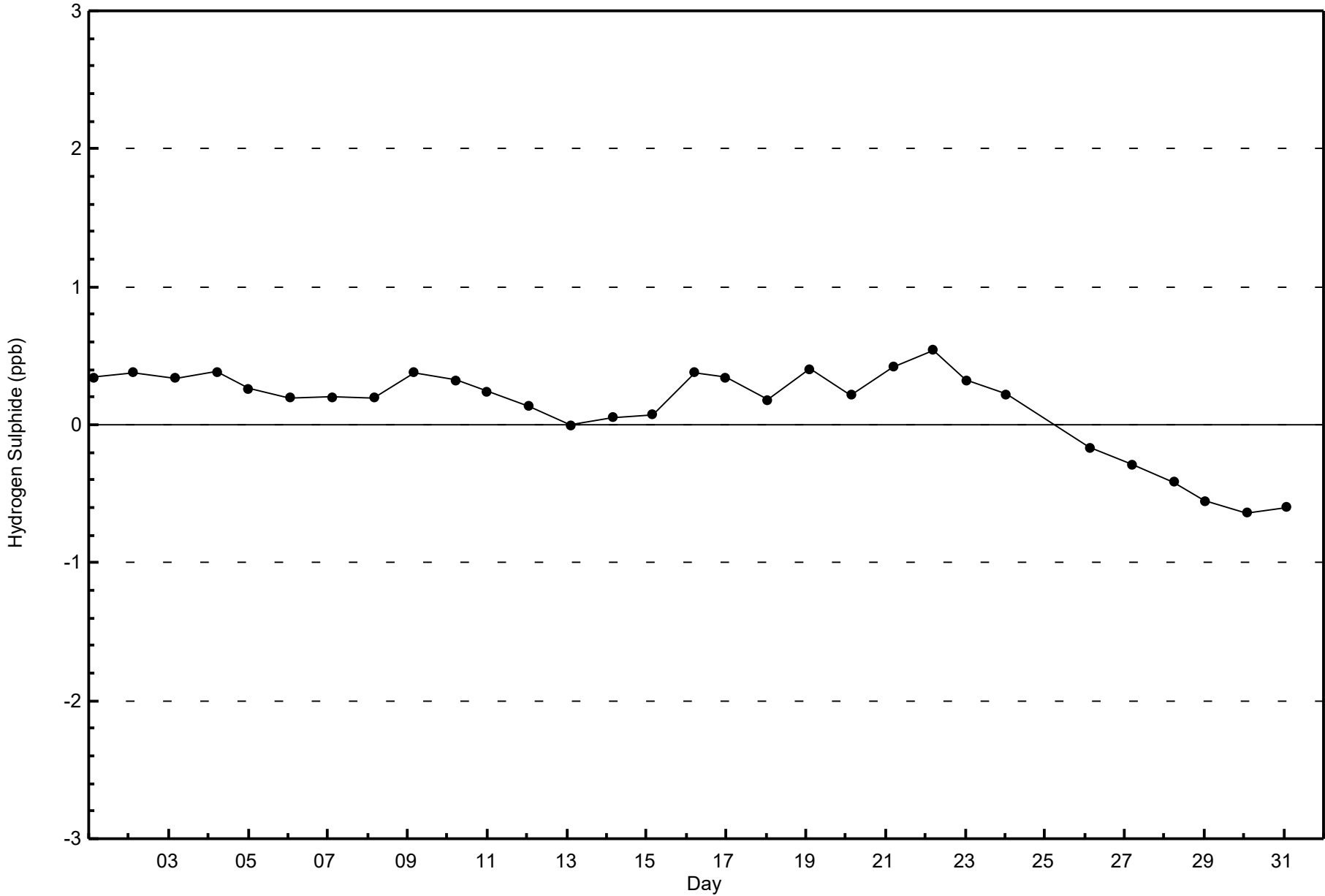


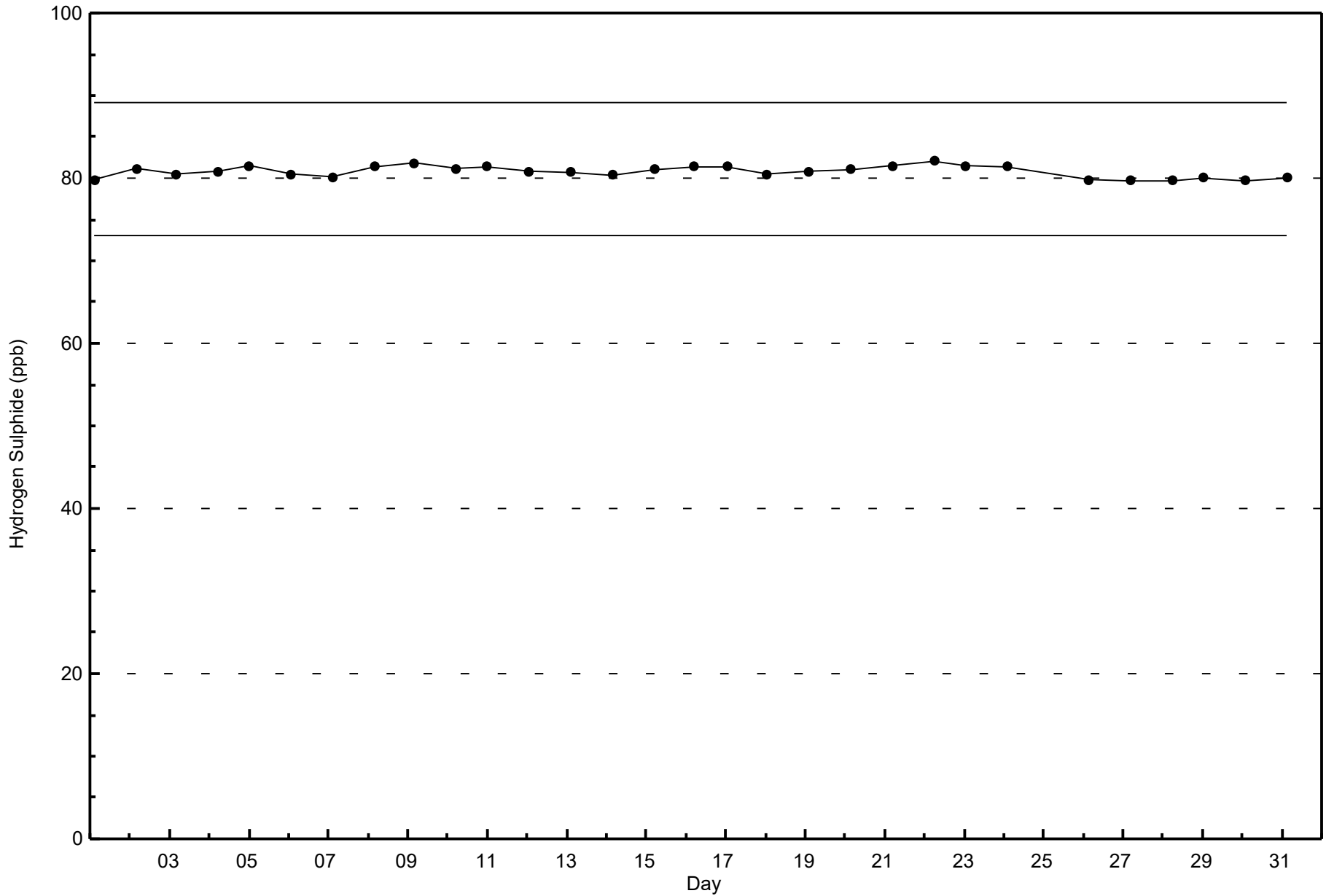
Wood Buffalo Environmental Association
Wind Rose May 2023

Hydrogen Sulphide (H₂S) - ppb
Mackay River



Total Number of Valid Hours: 686



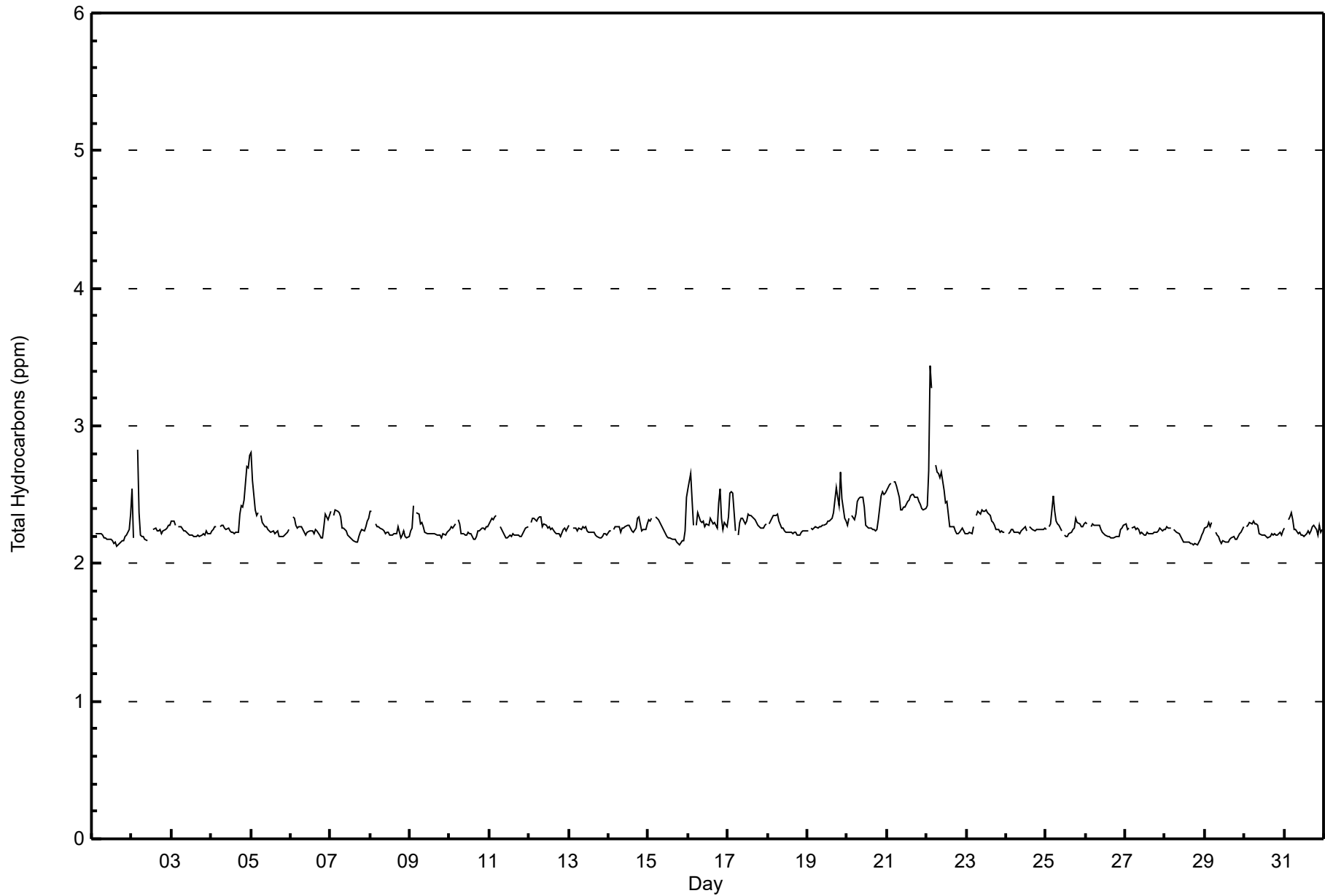




Wood Buffalo Environmental Association
Summary of Hour Averages

Total Hydrocarbons (THC) - ppm
Mackay River - May 2023

Maximum Value: 3.4 ppm on May 22 03:00		Maximum Daily Average: 2.5 ppm on May 22		Hours in Service: 744																						
Minimum Value: 2.1 ppm on May 1 16:00		Minimum Daily Average: 2.2 ppm on May 1		Hours of Data: 708																						
Maximum Diurnal Average: 2.4 ppm at hour 3		Minimum Diurnal Average: 2.2 ppm at hour 16		Hours of Missing Data: 36																						
Monthly Average: 2.28 ppm		Percentiles: P ₁ = 2.1 P ₁₀ = 2.2 Q ₁ = 2.2 Median = 2.2 Q ₃ = 2.3 P ₉₀ = 2.4 P ₉₉ = 2.7		Hours of Calibration: 34																						
				Percent Operational Time: 99.7																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.2	2.4	
2-May	2.5	2.2	Z	2.8	2.4	2.2	2.2	2.2	2.2	2.2	C	C	C	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.8
3-May	2.3	2.3	2.3	Z	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3
4-May	2.2	2.2	2.3	2.3	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.4	2.4	2.5	2.7	2.7	2.8	2.3	2.8
5-May	2.8	2.6	2.4	2.4	2.4	Z	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.8
6-May	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.3	2.3	2.3	2.4
7-May	2.4	Z	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4
8-May	2.4	2.4	Z	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4
9-May	2.2	2.3	2.4	Z	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4
10-May	2.2	2.3	2.3	2.3	Z	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.3	2.3	2.2	2.3
11-May	2.3	2.3	2.3	2.3	2.3	Z	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.3	2.3
12-May	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.3	2.3	2.3
13-May	2.3	Z	2.3	2.3	2.3	2.2	2.3	2.2	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3
14-May	2.2	2.2	Z	2.2	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.3
15-May	2.3	2.3	2.3	Z	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.5	2.2	2.5
16-May	2.5	2.7	2.5	2.3	Z	2.3	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.5	2.3	2.2	2.3	2.3	2.3	2.3	2.7
17-May	2.3	2.5	2.5	2.5	2.2	Z	2.2	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.5
18-May	Z	2.3	2.3	2.4	2.4	2.3	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4
19-May	2.2	Z	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.6	2.5	2.4	2.7	2.5	2.3	2.3	2.3	2.7
20-May	2.3	2.3	Z	2.4	2.3	2.4	2.5	2.5	2.5	2.5	2.4	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.5	2.5	2.5	2.5	2.4	2.5
21-May	2.5	2.6	2.6	Z	2.6	2.6	2.6	2.5	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.6
22-May	2.4	2.7	3.4	3.3	Z	2.7	2.7	2.7	2.6	2.7	2.5	2.4	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	3.4
23-May	2.2	2.2	2.2	2.2	2.3	Z	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.4
24-May	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	M	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.3
25-May	2.3	Z	2.3	2.3	2.5	2.4	2.3	2.3	2.3	2.2	M	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.5
26-May	2.3	2.3	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.2	2.3
27-May	2.3	2.2	2.3	Z	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.3
28-May	2.2	2.3	2.3	2.3	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3
29-May	2.3	2.3	2.3	2.3	2.3	Z	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.3
30-May	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3
31-May	2.3	Z	2.3	2.3	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.2	2.3	2.2	2.2	2.2	2.4
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration M - Maintenance																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Mackay River - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	0	0.00	0.00
2.1 - 3.0	706	99.72	99.72
3.1 - 10.0	2	0.28	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Mackay River - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1 - 3.0	6	31	24	17	27	104	101	71	130	45	27	40	19	20	32	12	706
3.1 - 10.0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	6	33	24	17	27	104	101	71	130	45	27	40	19	20	32	12	708

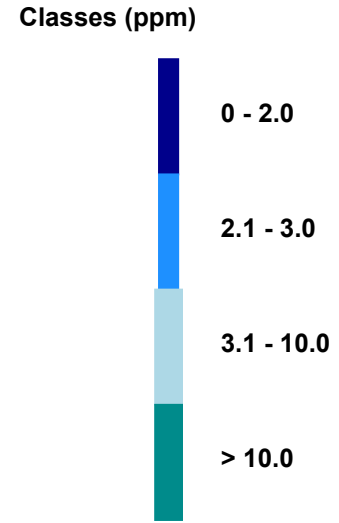
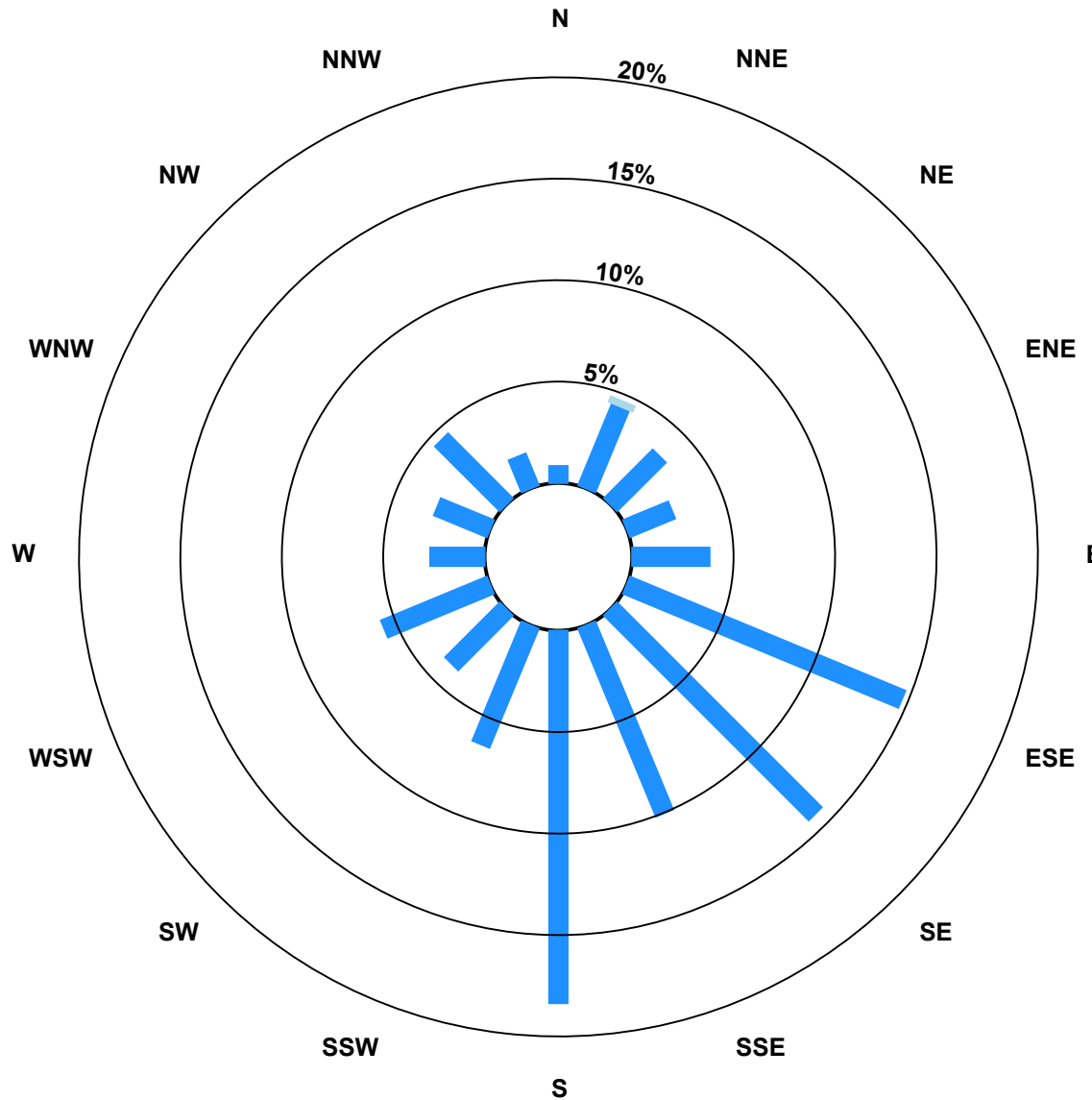
Total Number of Valid Hours: 708

Total Number of Hours: 744

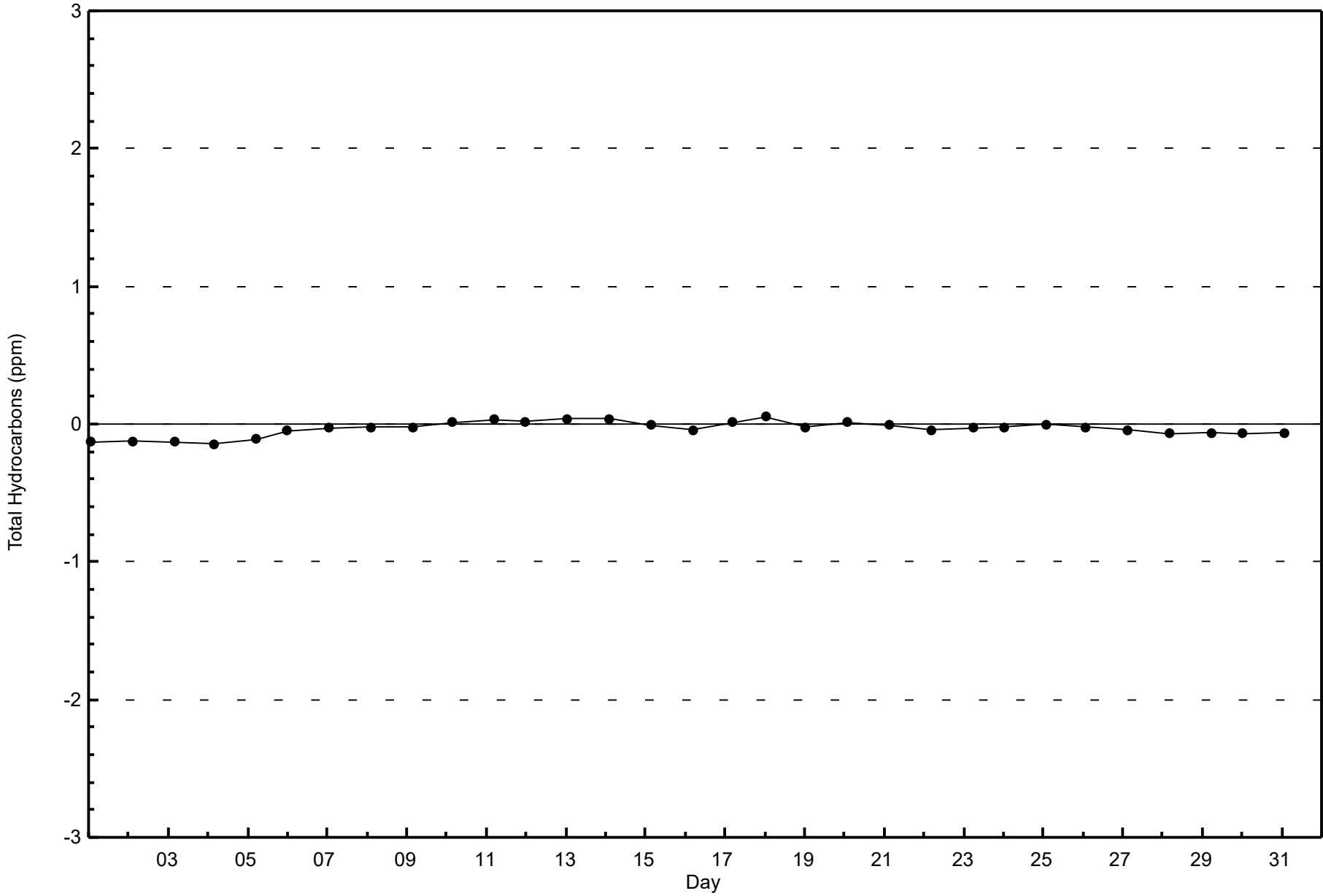


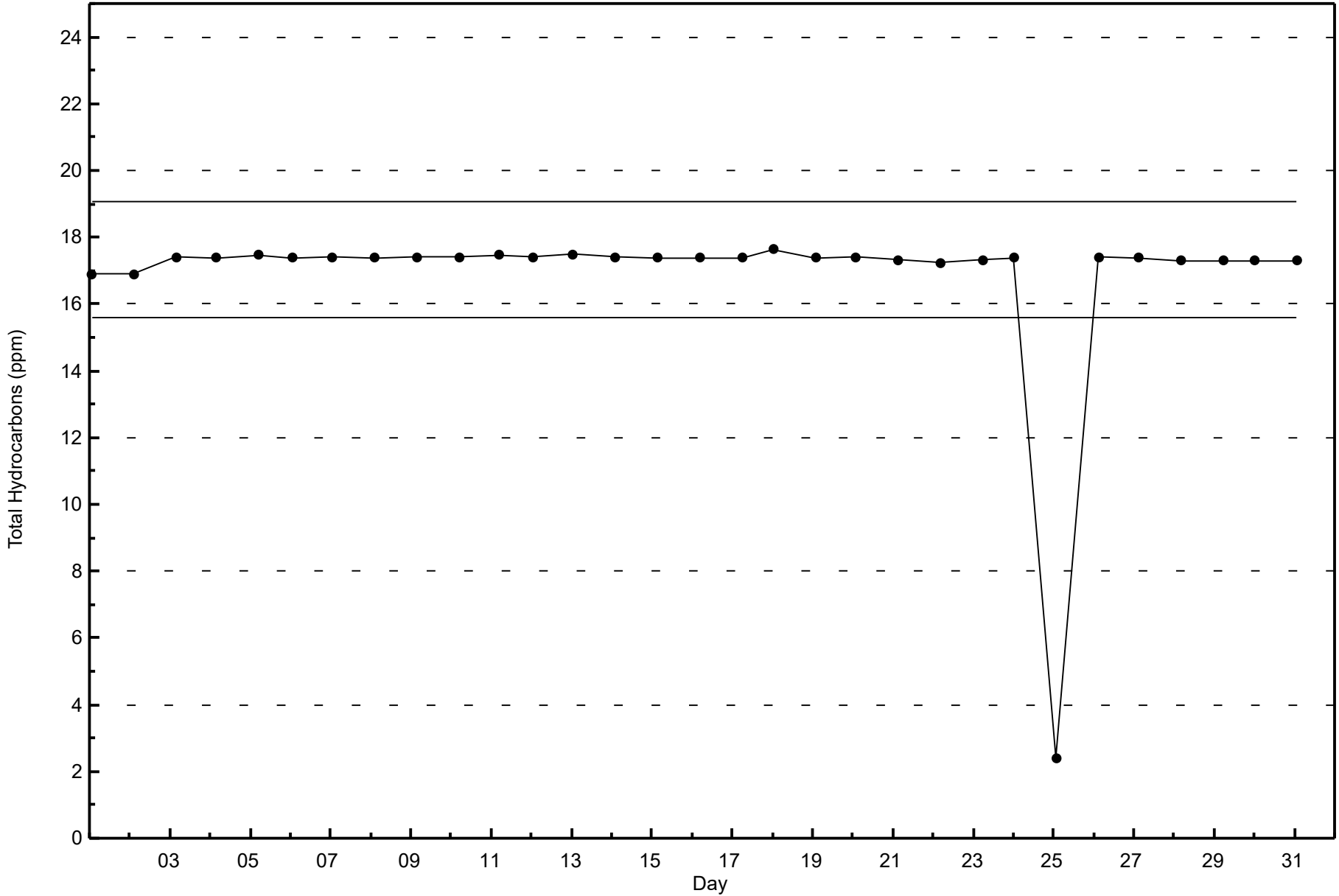
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Mackay River



Total Number of Valid Hours: 708







Wood Buffalo Environmental Association
Summary of Hour Averages

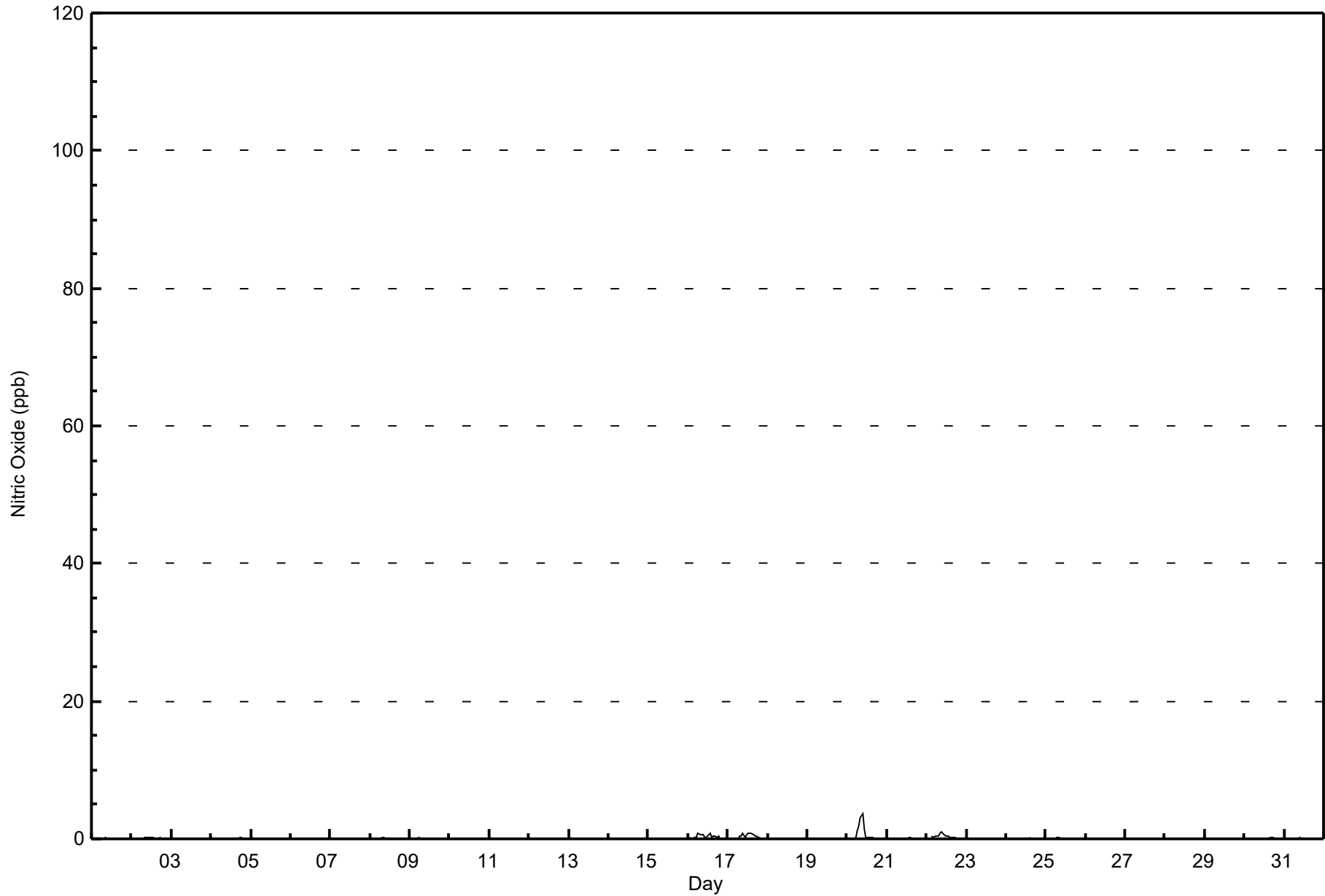
Nitric Oxide (NO) - ppb
Mackay River - May 2023

Maximum Value: 3.6 ppb on May 20 10:00		Maximum Daily Average: 0.6 ppb on May 20		Hours in Service: 744																								
Minimum Value: 0.0 ppb on May 5 19:00		Minimum Daily Average: 0.0 ppb on May 13		Hours of Data: 707																								
Maximum Diurnal Average: 0.2 ppb at hour 10		Minimum Diurnal Average: 0.0 ppb at hour 22		Hours of Missing Data: 37																								
Monthly Average: 0.08 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.1 P ₉₀ = 0.1 P ₉₉ = 0.8		Hours of Calibration: 36																								
				Percent Operational Time: 99.9																								
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
1-May	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	
2-May	Z	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
3-May	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
4-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
5-May	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
6-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7-May	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
8-May	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
9-May	0.0	Z	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
10-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
11-May	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.0	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
12-May	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
13-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
15-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
16-May	0.1	0.2	Z	0.2	0.2	0.2	0.8	0.7	0.6	0.6	0.3	0.3	0.7	0.8	0.2	0.5	0.4	0.2	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8
17-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.4	0.4	0.7	0.3	0.6	0.8	0.8	0.8	0.6	0.4	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.8
18-May	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
19-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
20-May	Z	0.0	0.0	0.0	0.1	0.3	1.1	1.8	3.0	3.6	1.5	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	3.6
21-May	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
22-May	0.0	0.1	Z	0.3	0.3	0.3	0.3	0.4	0.9	1.0	0.6	0.5	0.5	0.5	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0
23-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
24-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	M	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
25-May	0.0	0.0	0.0	0.0	0.0	Z	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
26-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
27-May	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
28-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
29-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
31-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
																								Diurnal Average				
																								Diurnal Maximum				
Z - zerospan C - Calibration M - Maintenance																												



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Mackay River - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Mackay River - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	707	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Mackay River - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	7	32	24	16	28	103	97	72	131	46	27	39	20	21	31	13	707
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	7	32	24	16	28	103	97	72	131	46	27	39	20	21	31	13	707

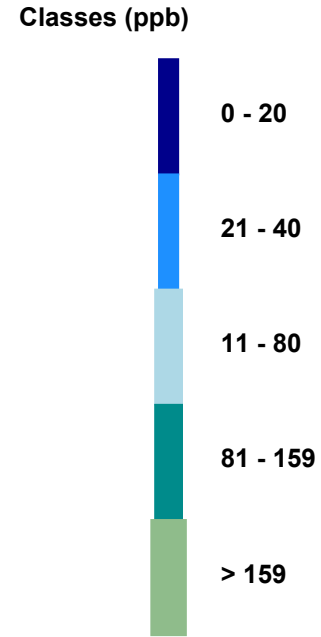
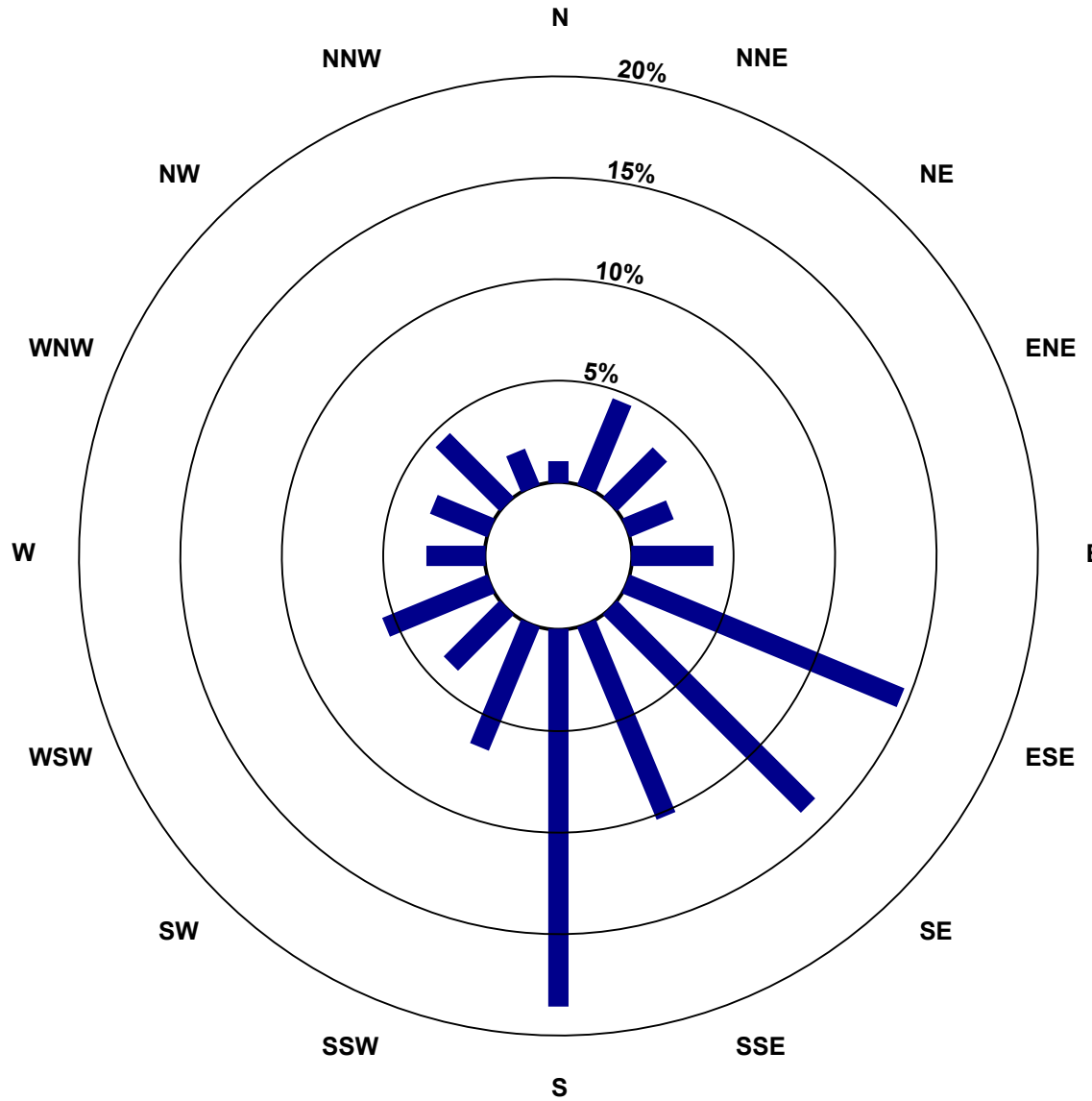
Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Mackay River

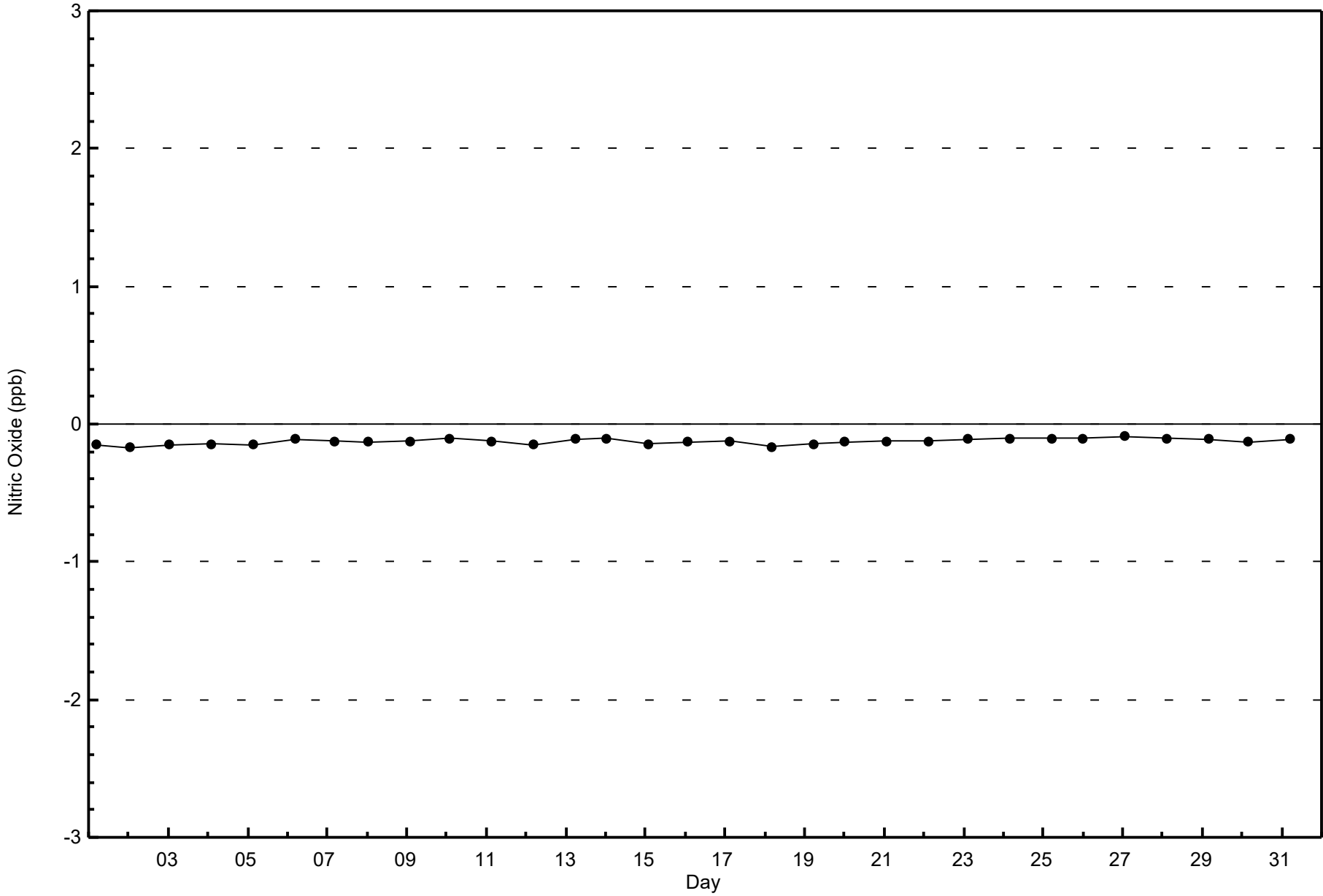


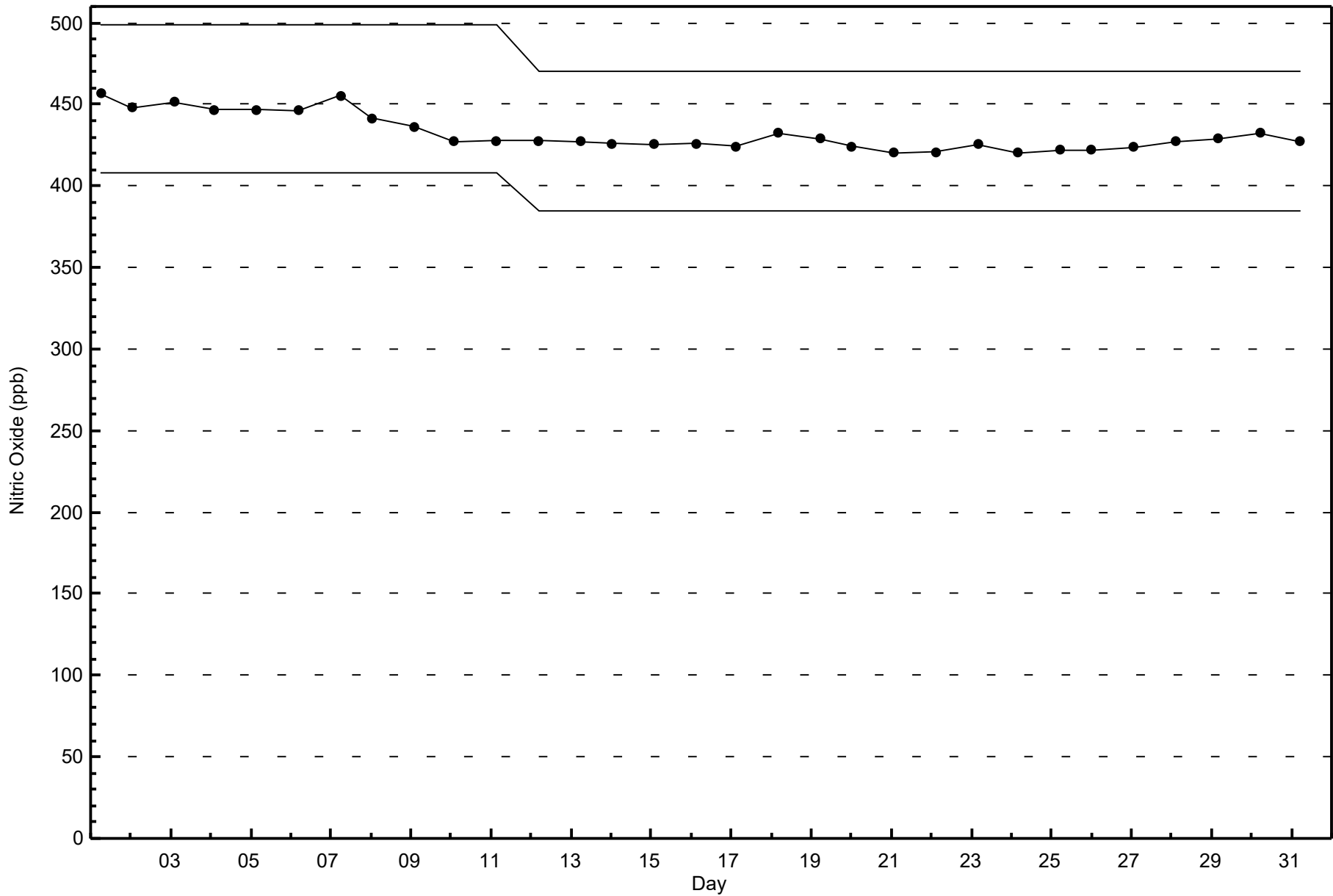
Total Number of Valid Hours: 707



Wood Buffalo Environmental Association
Zero Responses

Nitric Oxide (NO) - ppb
Mackay River - May 2023







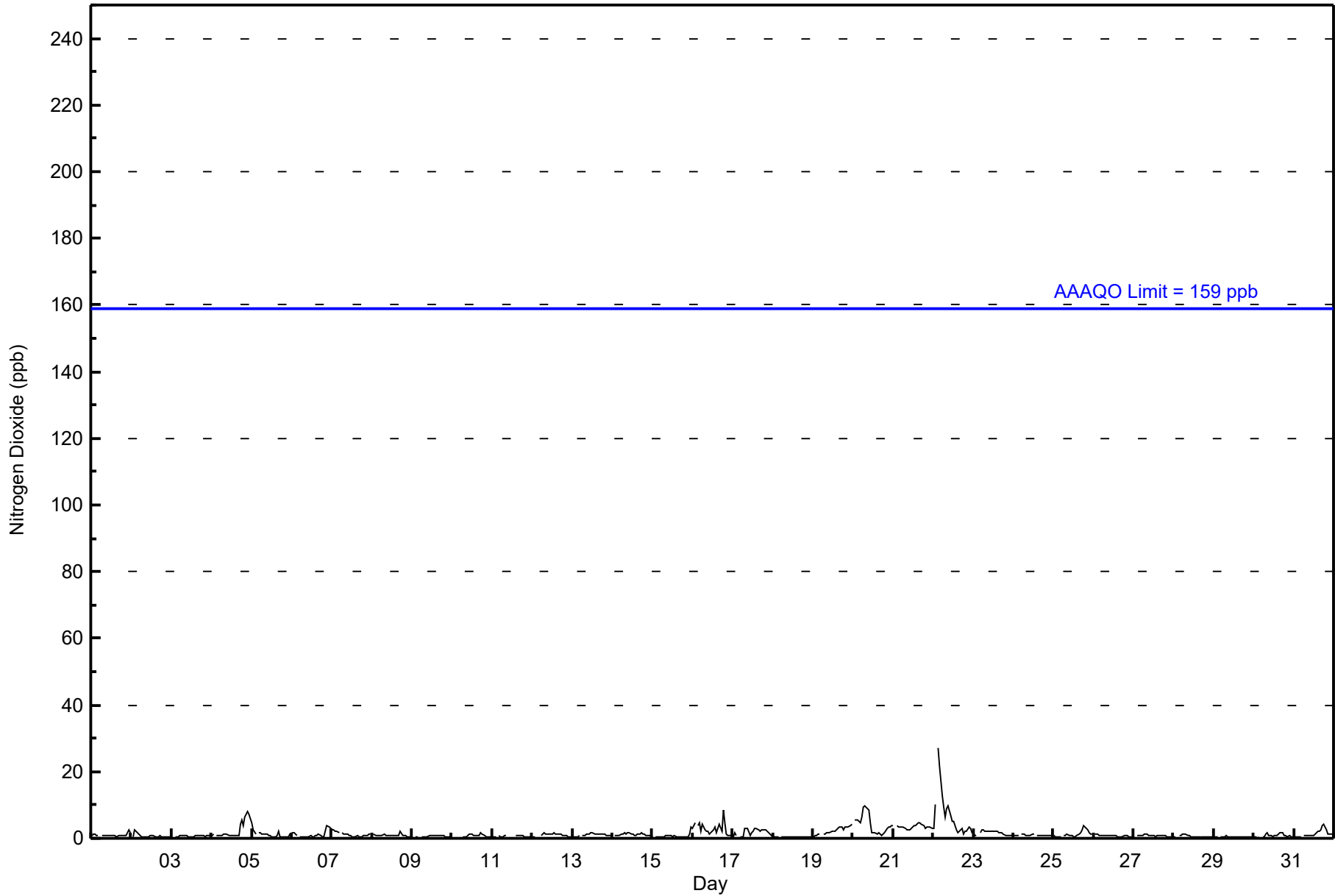
Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

Mackay River - May 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744																											
Maximum Value: 27.2 ppb on May 22 04:00		Maximum Daily Average: 6.6 ppb on May 22																			Hours of Data:	707																											
Minimum Value: 0.1 ppb on May 10 06:00		Minimum Daily Average: 0.4 ppb on May 29																			Hours of Missing Data:	37																											
Maximum Diurnal Average: 2.2 ppb at hour 4		Minimum Diurnal Average: 1.1 ppb at hour 3																			Hours of Calibration:	36																											
Monthly Average: 1.46 ppb		Percentiles: P ₁ = 0.2 P ₁₀ = 0.4 Q ₁ = 0.6 Median = 0.9 Q ₃ = 1.5 P ₉₀ = 3.2 P ₉₉ = 9.4																			Percent Operational Time:	99.9																											
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	1.0	1.2	1.2	1.0	0.9	Z	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.7	2.4	1.6	0.9	2.4																							
2-May	Z	0.6	2.4	1.6	1.3	0.7	0.3	0.3	0.5	0.6	0.6	0.7	0.7	0.7	0.5	0.3	0.4	0.8	0.3	0.3	0.3	0.3	0.4	0.4	0.7	2.4																							
3-May	0.3	Z	0.3	0.4	0.5	0.7	0.7	0.7	0.8	0.7	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.8	0.8	0.7	0.6	0.7	0.8	0.9	0.6	0.9																							
4-May	1.0	1.1	Z	1.0	0.9	0.9	1.0	1.1	1.2	1.1	1.0	0.9	0.9	0.9	1.0	0.9	4.3	5.4	4.0	6.2	8.0	7.2	6.1	2.5	8.0																								
5-May	4.7	2.6	1.4	Z	1.7	1.7	1.4	1.3	1.3	1.2	1.0	0.8	0.6	0.5	0.5	0.9	2.1	0.6	0.3	0.3	0.4	0.3	0.6	1.2	1.2	4.7																							
6-May	1.7	1.9	1.3	0.7	Z	0.6	0.5	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.7	1.0	1.3	0.7	0.4	0.6	2.1	3.9	3.4	2.8	1.2	3.9																							
7-May	2.7	2.4	2.2	2.0	1.9	Z	1.7	1.4	1.3	1.2	0.9	0.8	0.6	0.6	0.5	0.7	0.6	0.5	0.6	0.8	0.8	0.9	1.1	1.2	1.2	2.7																							
8-May	Z	1.1	0.9	0.8	0.8	0.9	1.0	1.1	1.0	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.7	2.0	0.8	0.7	0.7	0.6	0.5	0.5	0.8	2.0																							
9-May	0.4	Z	0.5	0.3	0.2	0.2	0.3	0.4	0.5	0.5	0.7	0.7	0.7	0.7	0.9	0.8	0.8	0.8	0.8	0.9	0.8	0.6	0.4	0.3	0.3	0.6	0.9																						
10-May	0.2	0.2	Z	0.2	0.2	0.1	0.2	0.5	0.6	0.8	1.4	1.3	1.1	1.0	0.8	0.9	0.9	1.5	1.4	0.7	0.6	0.6	0.5	0.5	0.7	1.5																							
11-May	0.4	0.5	0.5	Z	0.8	0.4	0.4	0.8	0.8	C	C	C	C	C	0.8	0.7	0.7	0.7	0.7	0.6	0.5	0.4	0.4	0.3	0.6	0.8																							
12-May	0.3	0.3	0.2	0.2	Z	0.8	1.4	1.5	1.2	1.4	1.3	1.2	1.4	1.6	1.4	1.1	1.1	1.1	0.9	0.8	0.7	0.6	0.6	0.5	0.9	1.6																							
13-May	0.5	0.5	0.5	0.6	0.7	Z	0.9	0.9	1.1	1.2	1.3	1.7	1.6	1.2	1.1	1.3	1.1	1.2	1.1	1.1	1.0	1.0	0.9	0.8	1.0	1.7																							
14-May	Z	0.9	0.8	0.9	1.0	1.1	1.3	1.5	1.4	1.5	1.5	1.4	1.4	1.0	0.8	1.1	1.3	1.6	1.4	1.2	0.9	0.9	0.8	0.6	1.1	1.6																							
15-May	0.5	Z	0.5	0.4	0.3	0.3	0.3	0.6	0.8	0.9	0.9	0.8	0.6	0.7	0.5	0.6	0.6	0.5	0.5	0.4	0.4	1.2	3.2	0.7	3.2																								
16-May	2.8	4.8	Z	3.7	4.7	2.1	4.3	2.5	2.2	2.2	1.1	1.5	2.7	3.6	1.8	3.0	4.3	2.0	8.5	4.5	1.4	0.7	0.8	0.7	2.9	8.5																							
17-May	0.4	1.6	1.0	Z	0.5	0.3	0.4	2.9	2.8	3.0	1.0	1.6	2.2	2.8	3.0	2.7	2.3	2.4	2.4	2.7	2.7	1.9	1.1	0.8	1.8	3.0																							
18-May	0.5	0.5	0.6	0.5	Z	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.6	0.6	0.5	0.6																						
19-May	0.6	0.7	0.9	1.1	1.2	Z	1.4	1.4	1.7	1.7	1.9	2.0	2.1	2.3	2.5	2.8	3.4	3.2	2.6	3.2	3.3	3.4	4.0	4.2	2.2	4.2																							
20-May	Z	5.7	5.3	5.7	4.6	6.3	9.3	9.8	9.5	8.6	4.5	1.6	1.6	1.6	1.2	1.5	1.1	0.9	1.2	1.5	2.9	3.3	3.4	3.7	4.1	9.8																							
21-May	3.8	Z	3.8	3.4	3.5	3.5	3.5	2.8	2.5	2.5	2.7	3.1	3.7	4.0	4.3	4.6	4.6	4.4	3.9	3.1	3.2	3.5	3.5	3.1	3.5	4.6																							
22-May	2.9	10.1	Z	27.2	21.8	12.8	9.4	6.3	9.0	9.7	6.7	5.1	4.9	3.9	2.5	1.8	2.6	2.8	1.2	2.0	2.1	3.4	2.9	1.7	6.6	27.2																							
23-May	1.5	0.7	0.8	Z	1.9	2.6	2.6	2.2	2.0	2.0	2.1	2.3	2.1	2.0	2.0	1.7	1.6	1.5	1.2	0.9	0.7	0.7	0.7	0.8	1.6	2.6																							
24-May	0.8	0.8	0.8	0.9	Z	1.2	1.1	0.7	0.8	0.8	1.0	1.1	1.1	M	1.0	0.9	0.9	1.0	0.9	0.8	0.8	0.8	0.7	0.7	0.9	1.2																							
25-May	0.7	0.6	0.6	0.6	0.6	Z	1.0	1.0	1.2	1.0	0.8	0.7	0.6	0.6	0.9	1.2	1.5	2.7	4.0	3.4	2.7	1.8	1.4	1.3	1.3	4.0																							
26-May	Z	1.1	1.1	0.9	0.8	0.8	0.9	0.8	0.9	0.8	0.9	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.6	0.8	1.1																							
27-May	0.6	Z	0.9	0.9	0.9	0.9	1.1	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.8	1.2																							
28-May	0.6	0.6	Z	0.9	1.0	1.1	1.2	1.1	1.0	1.0	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	1.2																						
29-May	0.4	0.4	0.3	Z	0.3	0.4	0.5	0.7	0.6	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.6	0.4	0.7																							
30-May	0.4	0.3	0.2	0.4	Z	0.4	0.5	1.4	1.5	0.9	0.7	0.6	0.7	0.9	0.9	1.6	1.9	1.6	0.9	0.8	0.5	0.7	0.6	0.5	0.8	1.9																							
31-May	0.5	0.4	0.4	0.3	0.3	Z	0.7	0.7	0.9	1.0	0.8	0.7	0.7	1.5	2.1	2.1	2.5	3.7	4.1	2.5	1.4	1.1	1.1	1.1	1.3	4.1																							
																								1.2	1.6	1.1	2.2	2.1	1.7	1.6	1.6	1.7	1.7	1.3	1.2	1.2	1.3	1.2	1.3	1.4	1.5	1.6	1.4	1.3	1.4	1.4	1.4	Diurnal Average	
																								4.7	10.1	5.3	27.2	21.8	12.8	9.4	9.8	9.5	9.7	6.7	5.1	4.9	4.0	4.3	4.6	4.6	4.4	8.5	4.5	6.2	8.0	7.2	6.1	Diurnal Maximum	
Z - zerospan C - Calibration M - Maintenance																																																	
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																																																	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Mackay River - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	705	99.72	99.72
21 - 40	2	0.28	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Mackay River - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	7	30	24	16	28	103	97	72	131	46	27	39	20	21	31	13	705
21 - 40	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	7	32	24	16	28	103	97	72	131	46	27	39	20	21	31	13	707

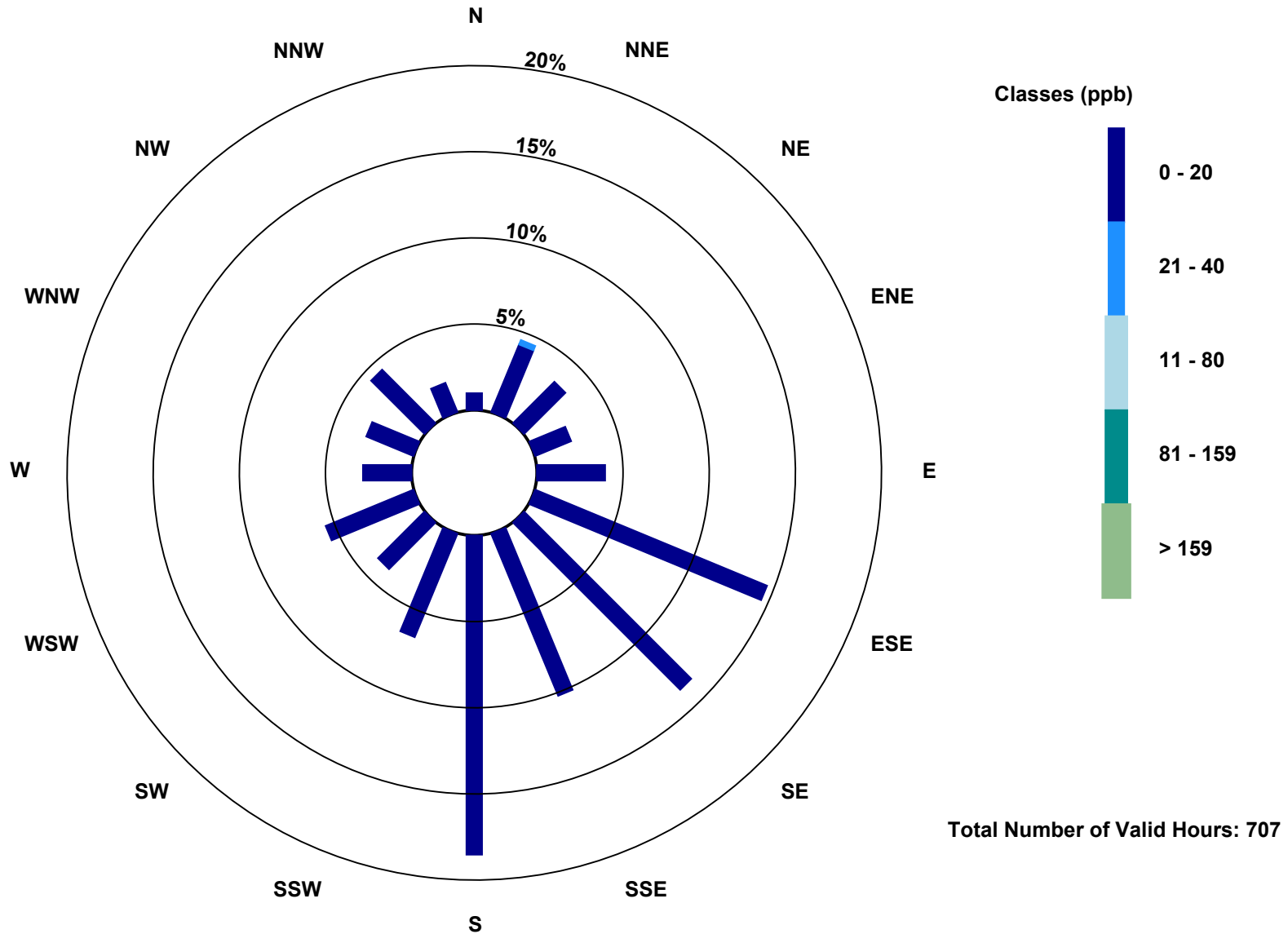
Total Number of Valid Hours: 707

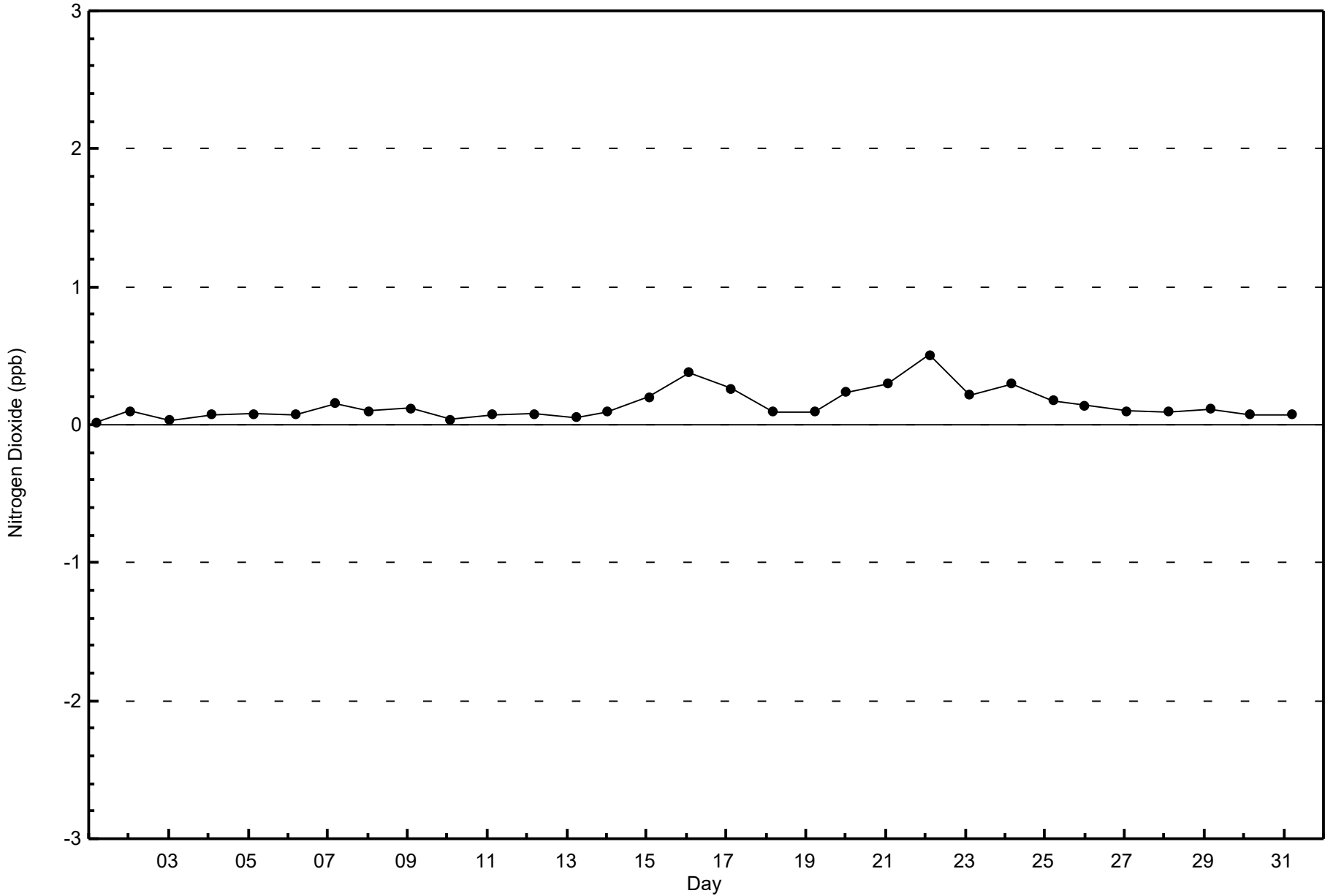
Total Number of Hours: 744

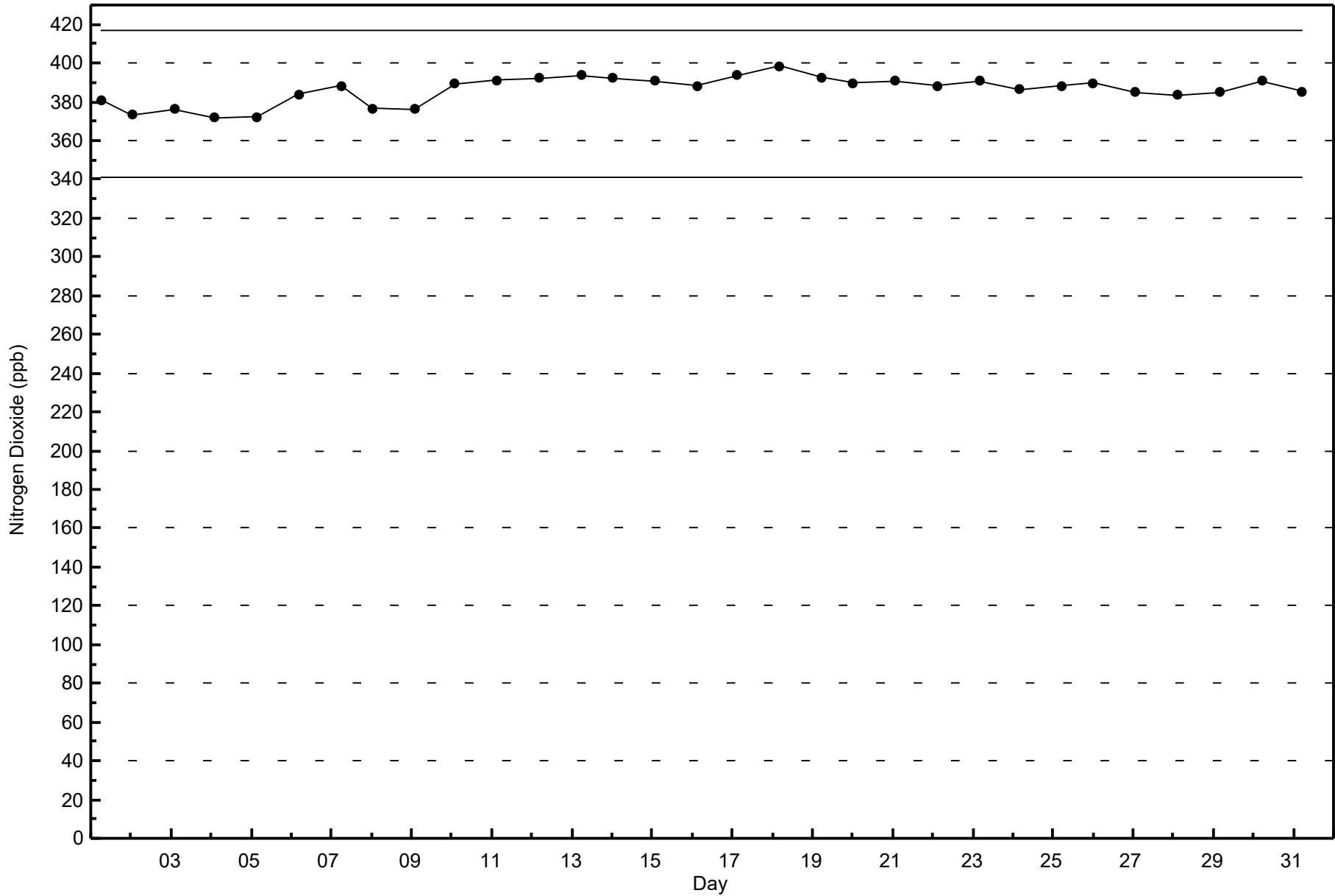


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Mackay River









Wood Buffalo Environmental Association
Summary of Hour Averages

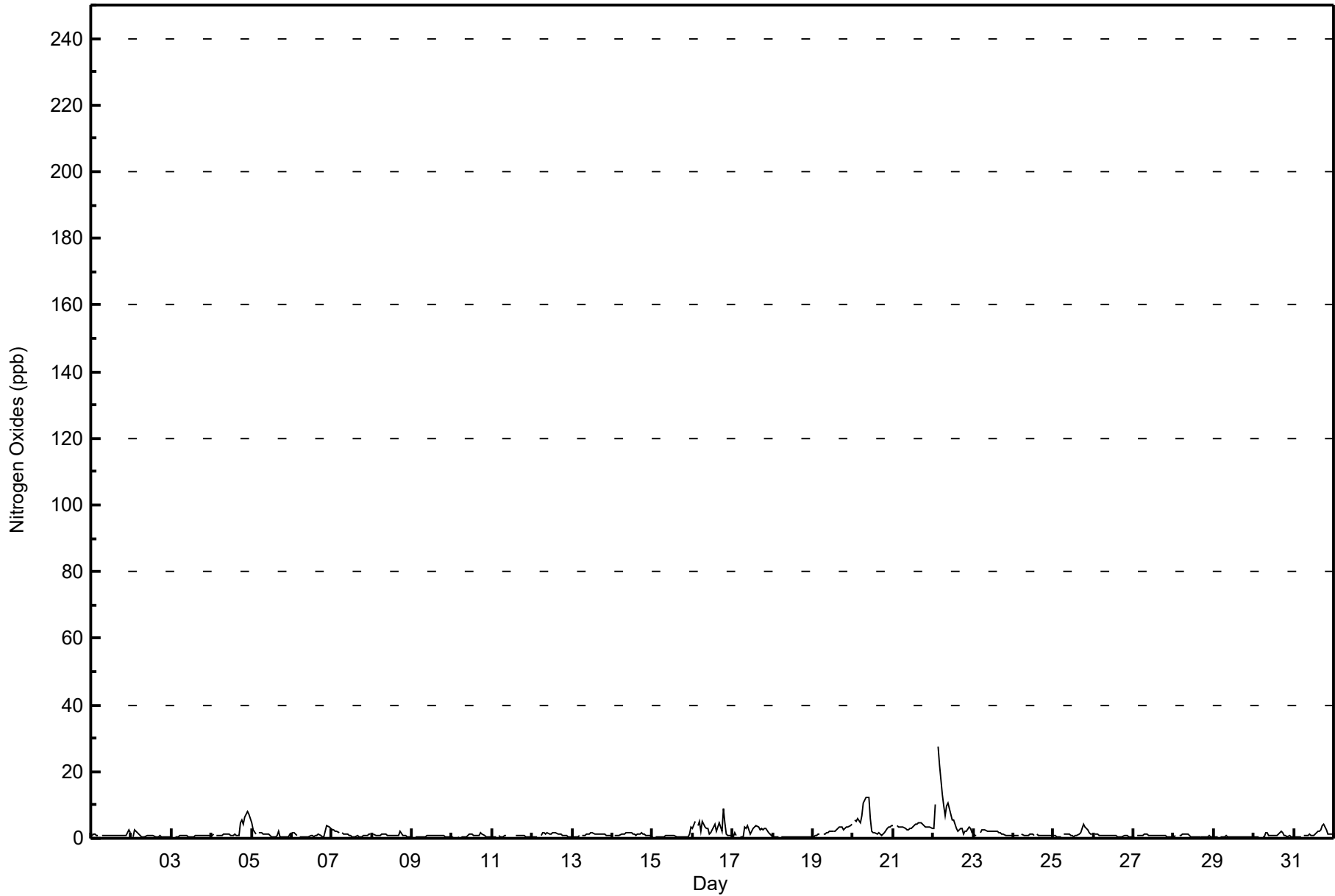
Nitrogen Oxides (NO_x) - ppb
Mackay River - May 2023

Maximum Value: 27.5 ppb on May 22 04:00		Maximum Daily Average: 6.9 ppb on May 22		Hours in Service: 744																																													
Minimum Value: 0.1 ppb on May 10 06:00		Minimum Daily Average: 0.4 ppb on May 29		Hours of Data: 707																																													
Maximum Diurnal Average: 2.2 ppb at hour 4		Minimum Diurnal Average: 1.1 ppb at hour 3		Hours of Missing Data: 37																																													
Monthly Average: 1.53 ppb		Percentiles: P ₁ = 0.2 P ₁₀ = 0.4 Q ₁ = 0.6 Median = 0.9 Q ₃ = 1.6 P ₉₀ = 3.3 P ₉₉ = 10.4		Hours of Calibration: 36																																													
				Percent Operational Time: 99.9																																													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	1.0	1.2	1.2	1.0	0.9	Z	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.8	0.7	0.7	0.7	2.5	1.6	1.0	2.5																							
2-May	Z	0.6	2.5	1.6	1.3	0.7	0.3	0.3	0.6	0.7	0.7	0.9	0.9	0.9	0.6	0.4	0.5	0.9	0.3	0.3	0.3	0.3	0.4	0.4	0.7	2.5																							
3-May	0.3	Z	0.3	0.4	0.5	0.7	0.8	0.8	0.9	0.7	0.5	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.7	0.6	0.7	0.8	0.9	0.6	0.9	0.6	0.9																						
4-May	1.0	1.1	Z	1.0	0.9	0.9	1.0	1.2	1.3	1.2	1.1	1.0	1.0	1.1	1.0	0.9	4.5	5.7	4.1	6.2	8.0	7.2	6.1	2.5	8.0	2.5	8.0																						
5-May	4.7	2.6	1.4	Z	1.7	1.7	1.5	1.4	1.4	1.3	1.1	0.9	0.6	0.5	0.5	0.9	2.2	0.6	0.3	0.3	0.4	0.3	0.6	1.2	1.2	4.7	1.2																						
6-May	1.7	1.9	1.3	0.7	Z	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	1.0	1.3	0.7	0.4	0.6	2.1	3.9	3.4	2.8	1.2	3.9	1.2	3.9																						
7-May	2.7	2.4	2.2	2.0	1.9	Z	1.8	1.5	1.4	1.2	0.9	0.8	0.6	0.6	0.5	0.7	0.6	0.5	0.6	0.8	0.8	0.9	1.1	1.2	1.2	2.7	1.2	2.7																					
8-May	Z	1.1	0.9	0.8	0.8	0.9	1.1	1.2	1.1	1.0	0.9	0.8	0.7	0.7	0.7	0.7	0.7	2.1	0.8	0.7	0.7	0.6	0.5	0.5	0.9	2.1	0.9	2.1																					
9-May	0.4	Z	0.5	0.4	0.3	0.3	0.3	0.4	0.5	0.6	0.8	0.7	0.7	0.7	1.0	0.8	0.8	0.8	0.9	0.8	0.6	0.4	0.3	0.3	0.6	1.0	0.6	1.0																					
10-May	0.2	0.2	Z	0.2	0.2	0.1	0.2	0.5	0.6	0.8	1.5	1.3	1.1	1.0	0.8	0.9	0.9	1.6	1.4	0.7	0.6	0.6	0.5	0.5	0.7	1.6	0.7	1.6																					
11-May	0.4	0.5	0.5	Z	0.9	0.5	0.5	0.9	0.8	C	C	C	C	C	0.8	0.7	0.7	0.7	0.7	0.6	0.5	0.4	0.4	0.3	0.6	0.9	0.6	0.9																					
12-May	0.3	0.3	0.2	0.2	Z	0.9	1.5	1.6	1.3	1.5	1.4	1.3	1.5	1.7	1.5	1.1	1.1	1.1	0.9	0.8	0.7	0.6	0.6	0.5	1.0	1.7	1.0	1.7																					
13-May	0.5	0.5	0.5	0.6	0.7	Z	0.9	0.9	1.1	1.2	1.3	1.7	1.6	1.2	1.1	1.3	1.1	1.2	1.1	1.1	1.0	1.0	0.9	0.8	1.0	1.7	1.0	1.7																					
14-May	Z	0.9	0.8	0.9	1.0	1.1	1.3	1.5	1.5	1.6	1.6	1.5	1.5	1.1	0.9	1.1	1.3	1.6	1.4	1.2	0.9	0.9	0.8	0.6	1.2	1.6	1.2	1.6																					
15-May	0.5	Z	0.5	0.4	0.3	0.3	0.3	0.6	0.8	1.0	1.0	0.9	0.7	0.7	0.5	0.6	0.6	0.5	0.5	0.4	0.4	0.4	1.2	3.2	0.7	3.2	0.7	3.2																					
16-May	2.9	5.0	Z	3.9	4.9	2.3	5.1	3.2	2.8	2.8	1.4	1.8	3.4	4.4	2.0	3.5	4.7	2.2	8.9	4.6	1.4	0.7	0.8	0.7	3.2	8.9	3.2	8.9																					
17-May	0.4	1.6	1.0	Z	0.5	0.3	0.4	3.3	3.2	3.7	1.3	2.2	3.0	3.6	3.8	3.3	2.7	2.8	2.7	2.9	2.8	1.9	1.1	0.8	2.1	3.8	2.1	3.8																					
18-May	0.5	0.5	0.6	0.5	Z	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.6	0.6	0.5	0.6	0.5	0.6																					
19-May	0.6	0.7	0.9	1.1	1.2	Z	1.4	1.4	1.7	1.8	2.0	2.1	2.2	2.3	2.5	2.9	3.4	3.2	2.6	3.2	3.3	3.4	4.0	4.2	2.3	4.2	2.3	4.2																					
20-May	Z	5.7	5.3	5.7	4.7	6.6	10.4	11.6	12.5	12.2	6.0	1.9	1.9	1.8	1.3	1.6	1.1	0.9	1.2	1.5	2.9	3.3	3.4	3.7	4.7	12.5	4.7	12.5																					
21-May	3.8	Z	3.8	3.4	3.5	3.6	3.6	2.9	2.6	2.6	2.8	3.2	3.8	4.1	4.4	4.7	4.7	4.5	4.0	3.2	3.2	3.5	3.5	3.1	3.6	4.7	3.6	4.7																					
22-May	2.9	10.2	Z	27.5	22.1	13.1	9.7	6.7	9.9	10.7	7.3	5.6	5.4	4.4	2.8	2.0	2.8	2.9	1.2	2.0	2.1	3.4	2.9	1.7	6.9	27.5	6.9	27.5																					
23-May	1.5	0.7	0.8	Z	1.9	2.6	2.6	2.3	2.1	2.1	2.1	2.3	2.1	2.0	1.8	1.6	1.5	1.2	0.9	0.7	0.7	0.7	0.8	1.6	2.6	1.6	2.6																						
24-May	0.8	0.8	0.8	0.9	Z	1.2	1.1	0.8	0.9	0.9	1.1	1.2	1.1	M	1.1	0.9	0.9	1.0	0.9	0.8	0.8	0.8	0.7	0.7	0.9	1.2	0.9	1.2																					
25-May	0.7	0.6	0.6	0.6	0.6	Z	1.2	1.2	1.4	1.1	0.8	0.7	0.6	0.7	1.0	1.3	1.6	2.8	4.1	3.5	2.7	1.8	1.4	1.3	1.4	4.1	1.4	4.1																					
26-May	Z	1.1	1.1	0.9	0.8	0.8	0.9	0.9	1.0	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.6	0.8	1.1	0.8	1.1																					
27-May	0.6	Z	0.9	0.9	0.9	0.9	1.2	1.3	1.2	1.0	0.9	0.8	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.8	1.3	0.8	1.3																					
28-May	0.6	0.6	Z	0.9	1.0	1.1	1.2	1.1	1.1	1.0	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6	1.2	0.6	1.2																				
29-May	0.4	0.4	0.3	Z	0.3	0.4	0.5	0.7	0.6	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.6	0.4	0.7	0.4	0.7																					
30-May	0.4	0.3	0.2	0.4	Z	0.4	0.5	1.5	1.6	0.9	0.7	0.6	0.7	0.9	1.0	1.8	2.1	1.7	0.9	0.8	0.5	0.7	0.6	0.5	0.9	2.1	0.9	2.1																					
31-May	0.5	0.4	0.4	0.3	0.3	Z	0.7	0.7	1.0	1.1	0.8	0.7	0.7	1.5	2.1	2.1	2.5	3.7	4.1	2.5	1.4	1.1	1.1	1.1	1.3	4.1	1.3	4.1																					
																								1.2	1.6	1.1	2.2	2.1	1.7	1.7	1.8	1.9	1.9	1.5	1.3	1.3	1.4	1.2	1.3	1.5	1.6	1.7	1.4	1.3	1.4	1.4	1.4	Diurnal Average	
																								4.7	10.2	5.3	27.5	22.1	13.1	10.4	11.6	12.5	12.2	7.3	5.6	5.4	4.4	4.4	4.7	4.7	4.5	8.9	4.6	6.2	8.0	7.2	6.1	Diurnal Maximum	
Z - zerospan		C - Calibration				M - Maintenance																																											



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Mackay River - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Mackay River - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	705	99.72	99.72
21 - 40	2	0.28	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Mackay River - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	7	30	24	16	28	103	97	72	131	46	27	39	20	21	31	13	705
21 - 40	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	7	32	24	16	28	103	97	72	131	46	27	39	20	21	31	13	707

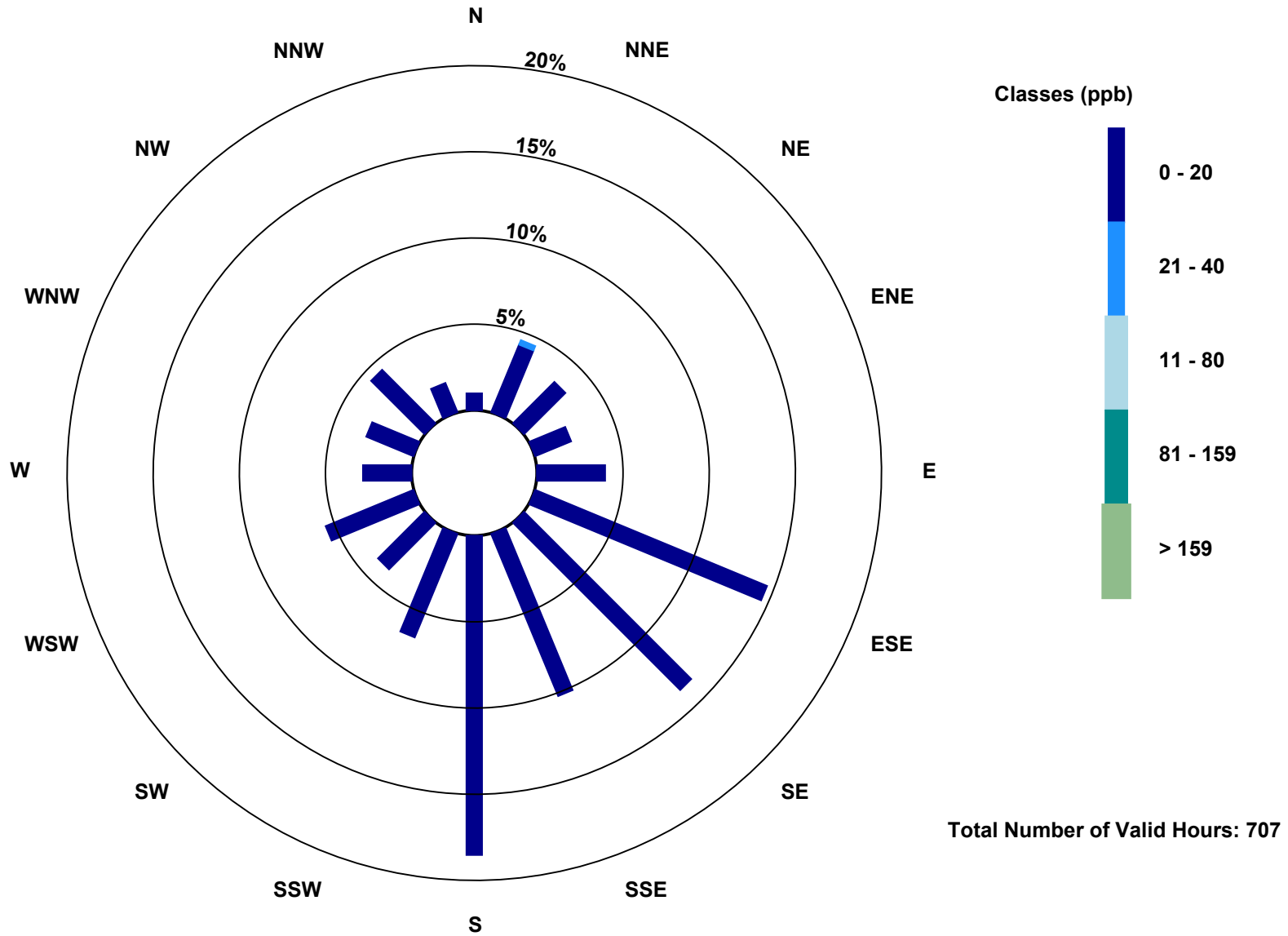
Total Number of Valid Hours: 707

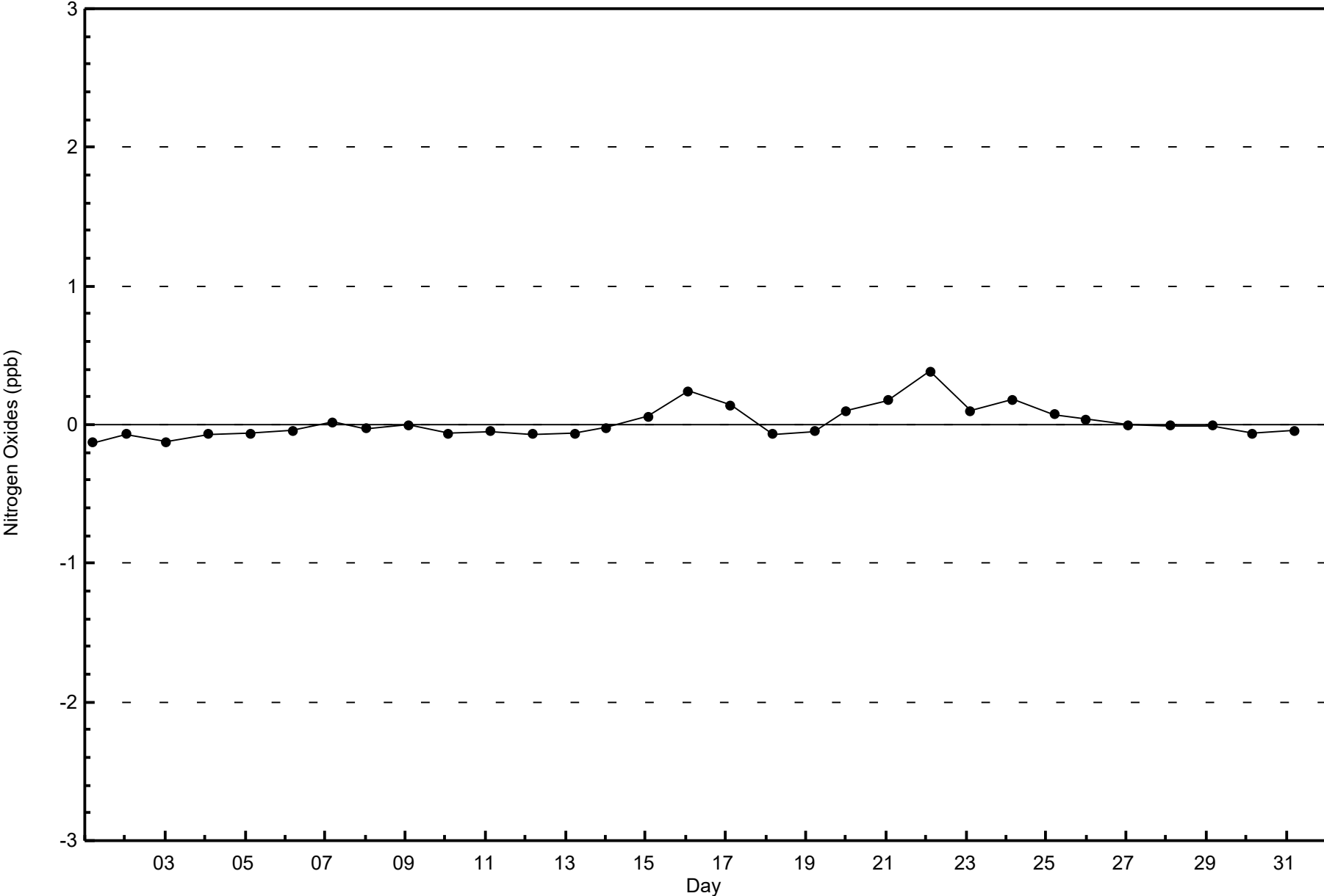
Total Number of Hours: 744

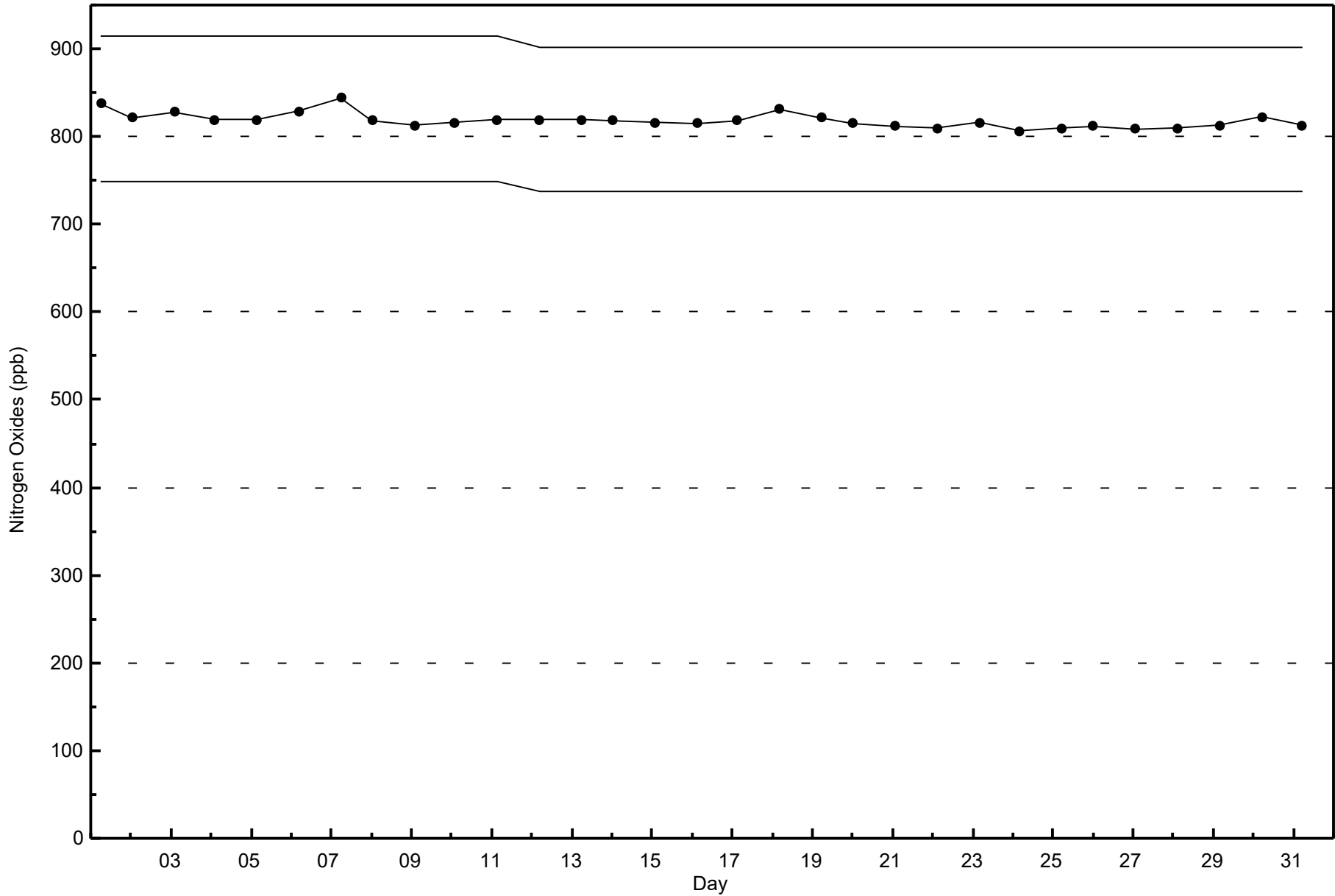


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Mackay River









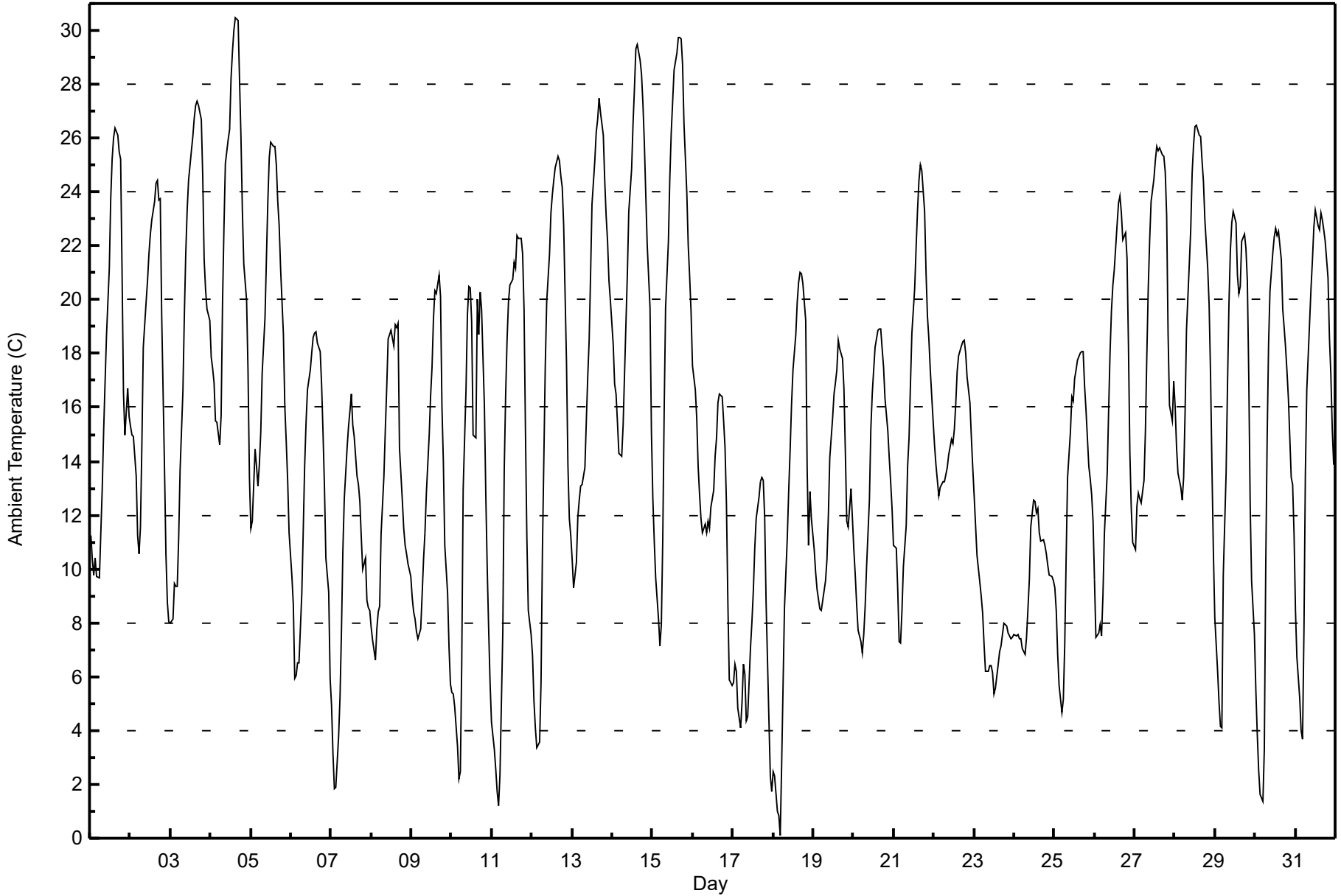
Wood Buffalo Environmental Association

Summary of Hour Averages

Ambient Temperature (AT) - C

Mackay River - May 2023

Maximum Value: 30.5 C on May 4 16:00 Maximum Daily Average: 22.1 C on May 4																				Hours in Service: 744 Hours of Data: 744						
Minimum Value: 0.1 C on May 18 05:00 Minimum Daily Average: 7.6 C on May 17 Maximum Diurnal Average: 21.5 C at hour 16 Minimum Diurnal Average: 7.8 C at hour 5 Monthly Average: 15.14 C Percentiles: P₁ = 1.8 P₁₀ = 6.5 Q₁ = 9.8 Median = 14.9 Q₃ = 20.4 P₉₀ = 24.5 P₉₉ = 29.3																				Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	11.3	10.4	9.8	10.4	9.7	9.7	11.4	13.0	15.1	16.9	18.6	21.2	23.8	25.2	26.0	26.4	26.1	25.5	25.2	21.0	16.5	15.0	16.7	15.7	17.5	26.4
2-May	15.3	14.9	14.9	13.4	11.2	10.6	11.5	14.6	18.2	19.9	20.7	21.7	22.4	22.9	23.7	24.3	24.4	23.7	23.8	19.4	13.7	10.6	8.8	8.0	17.2	24.4
3-May	8.0	8.1	9.4	9.3	9.4	11.1	13.7	16.6	19.4	21.7	23.3	24.4	25.5	26.1	26.7	27.2	27.4	27.2	26.7	24.6	21.5	20.4	19.7	19.2	19.4	27.4
4-May	17.9	17.5	16.9	15.5	15.4	14.6	15.7	19.9	22.7	25.1	26.0	26.3	28.2	29.2	30.0	30.5	30.4	28.1	26.1	23.3	21.4	20.0	17.4	13.4	22.1	30.5
5-May	11.5	11.8	14.4	13.8	13.1	13.9	15.1	17.3	19.4	21.5	23.6	25.3	25.8	25.7	25.7	25.0	23.7	22.8	21.2	18.7	16.0	14.7	13.3	11.4	18.5	25.8
6-May	9.7	8.7	5.9	6.0	6.5	6.5	9.1	11.4	13.8	15.5	16.7	17.4	18.0	18.6	18.8	18.8	18.4	18.1	16.8	15.0	13.0	10.4	9.1	5.9	12.8	18.8
7-May	5.0	3.2	1.9	1.9	3.8	5.3	7.7	10.7	12.6	14.5	15.3	15.8	16.5	15.4	14.9	13.5	13.2	12.5	11.2	10.0	10.4	8.8	8.6	8.5	10.0	16.5
8-May	7.8	7.3	6.6	7.8	8.4	8.6	11.3	13.4	15.2	16.8	18.6	18.7	18.8	18.3	19.1	19.0	19.1	14.5	12.5	11.5	10.9	10.6	10.2	9.7	13.1	19.1
9-May	8.9	8.4	8.1	7.7	7.4	7.8	9.0	10.3	11.4	12.8	15.0	16.4	17.5	19.3	20.3	20.2	20.9	20.1	16.0	14.0	10.9	9.1	7.1	5.7	12.7	20.9
10-May	5.4	5.4	4.9	3.4	2.2	2.5	6.6	13.0	16.7	19.4	20.5	20.5	19.2	15.0	14.9	20.0	18.7	20.3	19.7	16.0	12.7	10.0	7.8	5.8	12.5	20.5
11-May	4.3	3.3	2.6	1.7	1.2	2.4	7.7	13.6	16.4	18.5	19.9	20.5	20.7	21.4	21.2	22.4	22.3	22.3	21.7	19.6	15.1	11.1	8.4	7.6	13.6	22.4
12-May	6.8	5.1	4.1	3.3	3.6	5.8	10.7	14.2	17.6	19.9	21.7	23.2	23.9	24.4	24.9	25.3	25.1	24.6	24.2	22.7	17.6	13.9	11.9	11.3	16.1	25.3
13-May	10.4	9.3	10.2	11.9	12.5	13.1	13.2	13.8	15.5	17.1	18.5	20.9	23.5	25.2	26.2	26.7	27.5	27.0	26.1	24.4	23.1	22.2	20.7	19.9	19.1	27.5
14-May	18.3	16.9	16.5	15.4	14.3	14.2	15.3	17.2	19.1	21.0	23.3	24.8	26.5	27.8	29.3	29.5	28.9	28.4	27.3	25.8	23.9	22.1	19.7	15.1	21.7	29.5
15-May	12.6	11.0	9.6	8.2	7.2	7.9	11.1	15.9	19.7	22.2	24.5	26.2	27.4	28.5	29.2	29.7	29.8	29.7	28.7	26.5	23.9	22.0	20.8	19.6	20.5	29.8
16-May	17.5	16.7	15.6	13.8	12.8	11.9	11.4	11.6	11.4	11.8	11.5	12.3	12.9	14.2	14.9	16.2	16.5	16.4	15.5	14.5	12.4	8.8	5.9	5.7	13.0	17.5
17-May	5.8	6.4	6.2	4.8	4.1	5.0	6.4	6.1	4.4	4.5	7.1	8.0	9.2	10.8	11.9	12.7	13.2	13.4	13.3	11.9	8.8	4.4	2.3	1.8	7.6	13.4
18-May	2.5	2.3	1.0	0.8	0.1	2.7	5.7	8.6	11.2	12.9	14.5	16.1	17.4	18.7	19.9	20.7	21.0	21.0	20.6	19.2	13.8	10.9	12.9	11.9	11.9	21.0
19-May	10.7	9.9	9.2	8.9	8.5	8.5	9.2	9.6	10.3	12.0	14.1	15.6	16.5	16.9	17.4	18.5	18.2	17.8	16.7	14.3	11.8	11.5	13.0	11.9	13.0	18.5
20-May	10.7	9.8	8.7	7.7	7.3	6.9	7.5	8.6	10.1	12.6	15.2	16.5	17.4	18.2	18.9	18.9	18.9	18.2	17.5	16.4	15.2	14.1	13.2	12.2	13.4	18.9
21-May	10.9	10.8	9.3	7.3	7.3	8.5	10.1	11.6	13.8	14.9	16.9	18.8	20.4	22.0	23.3	24.4	25.0	24.8	23.3	21.0	19.4	18.5	17.4	15.5	16.5	25.0
22-May	14.6	13.9	13.3	12.7	13.0	13.2	13.2	13.5	13.8	14.3	14.8	14.7	15.2	16.1	17.3	17.9	18.3	18.5	18.5	18.0	17.1	16.2	14.9	13.8	15.3	18.5
23-May	12.7	11.6	10.5	9.5	9.0	8.4	7.2	6.2	6.2	6.4	6.4	6.1	5.4	5.6	6.4	6.9	7.2	7.6	8.0	7.9	7.6	7.5	7.4	7.5	7.7	12.7
24-May	7.5	7.5	7.6	7.4	7.4	7.0	6.9	7.5	8.5	9.6	11.6	12.6	12.5	12.1	12.2	11.4	11.0	11.1	10.9	10.6	10.2	9.8	9.7	9.6	9.7	12.6
25-May	9.3	8.5	6.8	5.7	4.7	5.1	7.2	10.5	13.4	15.1	16.4	16.2	17.1	17.4	17.8	18.0	18.1	18.1	16.8	15.9	13.8	13.4	12.8	11.8	12.9	18.1
26-May	9.6	7.5	7.6	7.9	7.5	9.0	11.3	13.5	15.9	18.0	19.6	20.6	21.1	22.8	23.6	23.8	23.2	22.2	22.5	21.6	18.3	14.3	12.3	11.0	16.0	23.8
27-May	10.7	12.4	12.8	12.6	12.5	13.3	15.1	17.9	20.4	22.2	23.7	24.5	25.2	25.7	25.5	25.6	25.4	25.3	24.8	23.1	18.7	16.1	15.5	17.0	19.4	25.7
28-May	16.0	14.5	13.5	13.0	12.6	13.4	15.7	18.8	21.3	22.6	24.7	25.8	26.4	26.5	26.1	26.1	25.2	24.4	23.0	21.2	19.8	17.2	13.8	10.7	19.7	26.5
29-May	8.2	6.2	5.1	4.1	4.1	9.8	13.6	16.9	19.8	21.8	22.8	23.3	22.8	20.9	20.2	20.5	22.2	22.4	21.9	20.7	17.2	12.4	9.6	7.6	15.6	23.3
30-May	5.5	3.9	2.5	1.6	1.4	3.3	10.1	14.9	18.3	20.3	21.7	22.3	22.6	22.4	22.5	21.5	19.7	19.0	18.3	17.4	16.3	13.4	13.1	11.3	14.3	22.6
31-May	8.5	6.7	5.2	4.0	3.7	7.7	13.6	16.7	19.2	20.4	21.5	22.7	23.3	22.8	22.6	23.2	23.0	22.6	22.2	20.8	18.6	17.2	15.2	13.9	16.5	23.3
																								Diurnal Average		
																								Diurnal Maximum		





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Mackay River - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	189	25.40	25.40
10 - 20	362	48.66	74.06
> 20	193	25.94	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

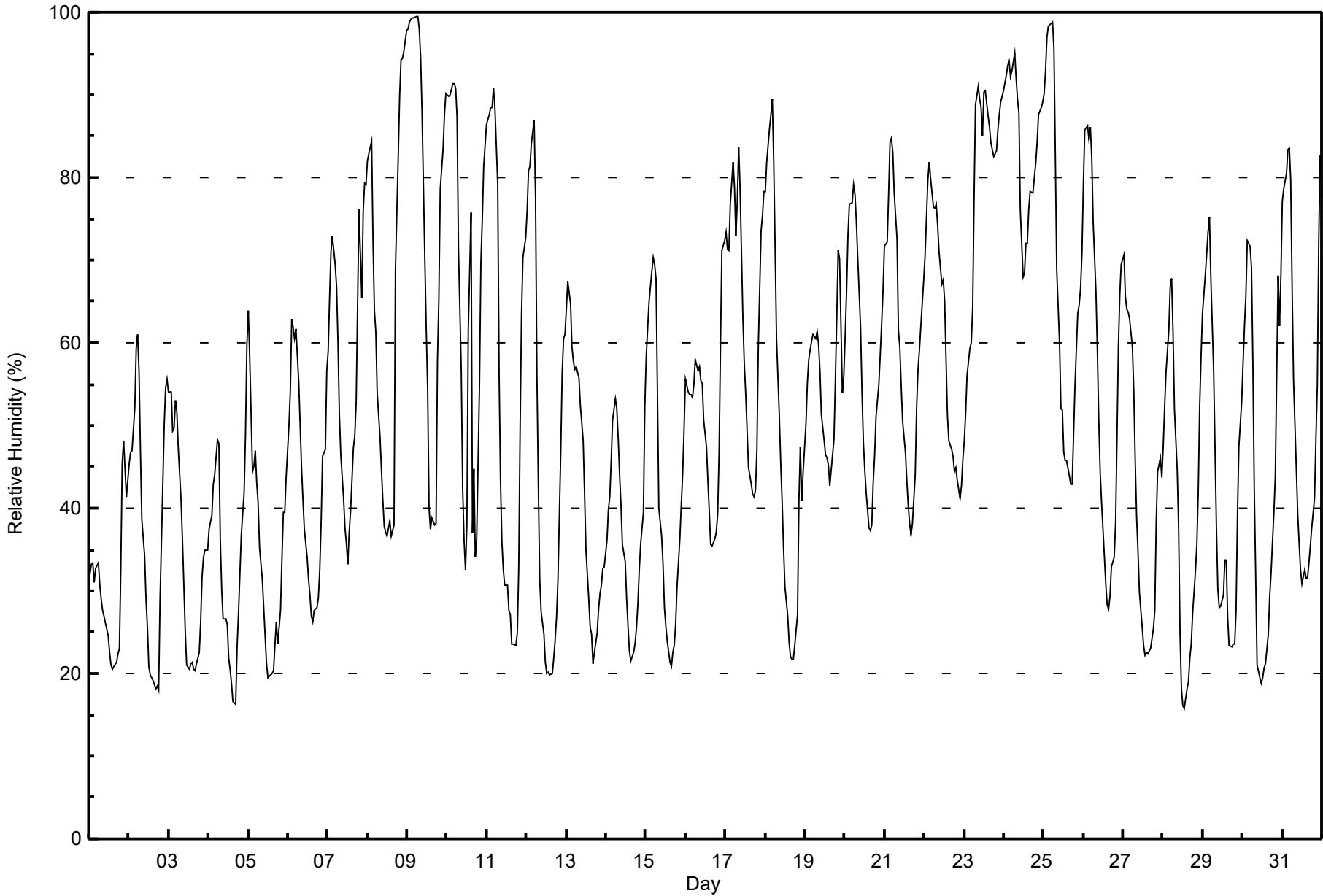
Relative Humidity (RH) - %
Mackay River - May 2023

Maximum Value: 99.5 % on May 9 07:00		Maximum Daily Average: 84.2 % on May 24		Hours in Service: 744																							
Minimum Value: 15.7 % on May 28 14:00		Minimum Daily Average: 30.2 % on May 1		Hours of Data: 744																							
Maximum Diurnal Average: 71.0 % at hour 5		Minimum Diurnal Average: 32.9 % at hour 16		Hours of Missing Data: 0																							
Monthly Average: 51.67 %		Percentiles: P ₁ = 18.3 P ₁₀ = 23.6 Q ₁ = 33.4 Median = 48.3 Q ₃ = 68.6 P ₉₀ = 84.2 P ₉₉ = 98.5		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	32.1	33.1	33.5	31.0	32.6	33.3	30.7	29.0	27.6	26.9	26.1	24.6	22.6	21.1	20.4	20.9	21.3	22.4	23.1	32.7	45.4	48.2	41.4	43.4	30.2	48.2	
2-May	45.5	46.9	47.0	52.2	59.3	61.0	56.6	47.0	38.6	34.2	28.9	25.5	20.9	19.8	19.1	18.6	18.1	18.5	17.9	29.0	43.0	50.2	54.6	55.5	37.8	61.0	
3-May	54.0	54.0	49.3	49.7	53.0	51.7	47.3	41.0	36.2	30.7	25.0	21.1	20.5	21.2	21.4	20.6	20.4	21.2	22.6	26.3	31.7	34.0	34.8	34.9	34.3	54.0	
4-May	37.5	38.2	39.2	42.8	44.0	48.4	47.7	36.3	30.2	26.6	26.6	25.9	21.8	20.4	18.9	16.5	16.3	23.3	27.3	32.0	36.7	41.8	49.1	59.8	33.6	59.8	
5-May	63.9	58.3	44.4	45.0	46.9	43.1	40.7	35.3	31.4	27.9	24.6	21.2	19.5	19.9	20.0	20.3	23.4	26.3	23.5	27.6	33.9	39.4	39.5	43.8	34.2	63.9	
6-May	50.0	54.2	62.8	61.8	60.5	61.7	55.2	49.9	45.0	41.0	37.4	34.0	31.4	29.5	27.0	26.3	27.7	28.0	29.2	32.6	38.4	46.2	47.1	56.6	43.1	62.8	
7-May	59.0	65.4	71.0	72.9	69.6	66.7	60.0	51.4	46.4	41.2	37.6	35.7	33.3	37.2	39.6	47.3	48.9	52.8	64.5	76.1	65.4	76.0	79.4	79.2	57.4	79.4	
8-May	82.0	83.0	84.4	72.3	64.0	61.3	53.8	48.6	44.7	41.1	37.8	37.1	36.7	38.5	36.6	37.4	37.9	68.9	82.6	89.8	94.3	94.4	95.3	97.8	63.3	97.8	
9-May	98.0	98.9	99.2	99.3	99.4	99.5	99.5	98.0	94.6	87.7	70.1	61.8	54.4	39.9	37.4	38.9	37.9	38.1	57.8	65.2	78.7	83.3	87.6	90.1	75.6	99.5	
10-May	90.0	89.8	90.1	91.4	91.3	90.8	87.4	71.3	56.7	42.3	36.1	32.6	37.9	61.5	75.8	36.9	44.7	34.0	36.3	54.9	69.7	74.9	81.3	83.9	65.1	91.4	
11-May	86.4	87.7	88.4	88.4	90.8	88.5	79.3	56.2	43.3	36.0	32.5	30.7	30.7	27.6	27.1	23.6	23.6	23.4	24.9	32.7	49.6	63.4	70.4	72.7	53.2	90.8	
12-May	76.0	80.9	81.4	84.1	86.9	77.6	56.0	42.8	31.3	27.4	24.8	21.4	19.9	20.3	19.8	20.0	21.9	24.1	26.9	31.3	46.7	56.3	60.5	60.9	45.8	86.9	
13-May	64.0	67.4	64.8	59.6	57.8	56.7	57.1	55.7	52.4	50.4	48.1	41.6	34.9	28.9	25.7	24.8	21.1	22.5	24.9	27.7	29.6	30.7	32.7	32.9	42.2	67.4	
14-May	36.0	39.8	41.3	45.7	50.7	53.2	52.0	48.5	44.1	40.3	35.6	33.5	29.2	25.8	22.7	21.6	22.5	23.6	25.4	28.3	32.4	35.7	39.5	52.4	36.7	53.2	
15-May	58.4	61.7	64.8	68.7	70.4	69.4	67.8	54.2	40.0	36.6	33.2	28.0	25.8	24.0	21.4	20.9	22.6	23.4	25.9	30.5	36.3	40.4	44.0	49.5	42.4	70.4	
16-May	55.7	54.1	53.8	53.8	53.5	54.9	58.0	56.7	57.1	55.4	55.0	50.7	47.5	43.3	39.6	35.6	35.4	36.2	37.1	39.3	46.6	59.5	71.2	72.4	50.9	72.4	
17-May	73.3	71.4	71.2	76.8	81.9	78.8	72.9	77.1	83.8	78.6	63.1	57.4	53.8	49.4	45.0	42.9	41.7	41.3	42.2	47.1	59.4	73.5	75.5	78.3	64.0	83.8	
18-May	78.4	81.8	86.0	87.6	89.5	82.1	71.6	60.5	51.1	45.3	40.8	35.3	30.4	27.0	23.8	22.1	21.8	21.8	23.4	27.0	41.1	47.5	40.8	44.4	49.2	89.5	
19-May	50.2	55.0	58.0	59.2	60.2	61.0	60.4	61.3	59.9	56.7	51.4	48.1	46.4	46.0	45.2	42.7	44.6	48.3	55.5	63.1	71.2	70.1	54.0	56.0	55.2	71.2	
20-May	60.9	66.3	73.1	76.9	76.9	79.1	77.9	74.6	70.2	61.9	54.0	47.9	44.6	41.9	37.6	37.3	38.0	43.1	46.3	51.0	55.0	58.5	62.3	66.3	58.4	79.1	
21-May	71.7	72.1	78.0	84.2	84.8	83.1	78.1	72.6	61.6	59.5	54.8	50.5	46.8	43.3	40.3	38.1	36.8	38.1	44.0	52.3	56.8	59.1	62.1	67.4	59.8	84.8	
22-May	70.5	75.0	79.6	81.8	79.9	76.4	76.3	76.7	74.3	70.9	67.1	67.6	65.0	58.0	51.3	48.2	47.1	46.3	44.5	45.0	43.4	41.3	42.6	45.9	61.4	81.8	
23-May	48.2	51.6	56.0	59.3	60.0	64.2	77.5	88.8	91.1	89.5	88.4	85.2	90.4	90.5	87.4	86.1	84.3	83.3	82.5	83.3	85.7	87.7	89.1	89.8	79.2	91.1	
24-May	90.5	92.3	93.6	94.0	92.2	92.9	95.1	92.1	89.5	87.8	76.0	67.9	68.6	72.1	72.1	76.0	78.3	78.1	80.0	81.7	84.2	87.7	88.4	89.1	84.2	95.1	
25-May	90.2	92.9	96.9	98.2	98.7	98.8	95.6	82.7	68.8	59.9	52.1	51.8	46.8	45.8	45.7	43.9	42.9	42.9	48.8	54.7	63.5	64.5	66.5	70.9	67.6	98.8	
26-May	79.1	85.7	86.3	84.6	86.1	82.4	74.6	66.1	58.9	50.6	44.5	40.7	37.4	30.9	28.4	27.7	29.4	32.8	34.0	38.2	48.5	59.4	65.7	69.4	55.9	86.3	
27-May	70.6	65.6	64.0	63.7	63.0	59.5	54.1	45.8	38.9	34.7	29.9	25.6	23.5	22.2	22.5	22.4	23.0	24.2	25.3	27.7	38.3	44.4	46.1	43.7	40.8	70.6	
28-May	47.4	52.3	56.4	61.6	66.8	67.8	61.3	52.0	44.6	37.6	25.0	18.2	16.1	15.7	18.2	19.0	21.9	23.6	27.2	32.4	35.6	41.9	52.2	58.4	39.7	67.8	
29-May	63.5	68.2	70.7	73.4	75.3	67.8	56.5	47.0	37.5	30.2	27.9	28.1	29.5	33.8	33.7	26.8	23.3	23.2	23.6	23.6	27.7	39.1	47.5	52.9	43.0	75.3	
30-May	57.7	62.1	65.8	72.3	71.7	69.2	57.6	42.1	31.9	21.0	19.5	18.9	19.5	20.7	21.1	24.7	29.4	32.2	36.0	39.4	43.9	68.1	62.1	68.1	43.9	72.3	
31-May	77.2	78.6	80.5	83.4	83.6	79.6	66.6	55.7	44.8	39.2	35.7	32.5	30.8	32.6	31.5	31.5	33.4	35.4	37.6	41.1	48.4	54.9	72.1	82.8	53.7	83.6	
		65.1	67.2	68.8	70.2	71.0	69.7	65.3	58.6	52.5	47.4	42.2	38.8	36.7	35.8	34.7	32.9	33.5	35.5	38.7	44.0	51.0	57.2	59.9	63.5	Diurnal Average	
		98.0	98.9	99.2	99.3	99.4	99.5	99.5	98.0	94.6	89.5	88.4	85.2	90.4	90.5	87.4	86.1	84.3	83.3	82.6	89.8	94.3	94.4	95.3	97.8	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Mackay River - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %
Mackay River - May 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	22	2.96	2.96
20 - 40	245	32.93	35.89
40 - 60	223	29.97	65.86
60 - 80	152	20.43	86.29
80 - 100	102	13.71	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744

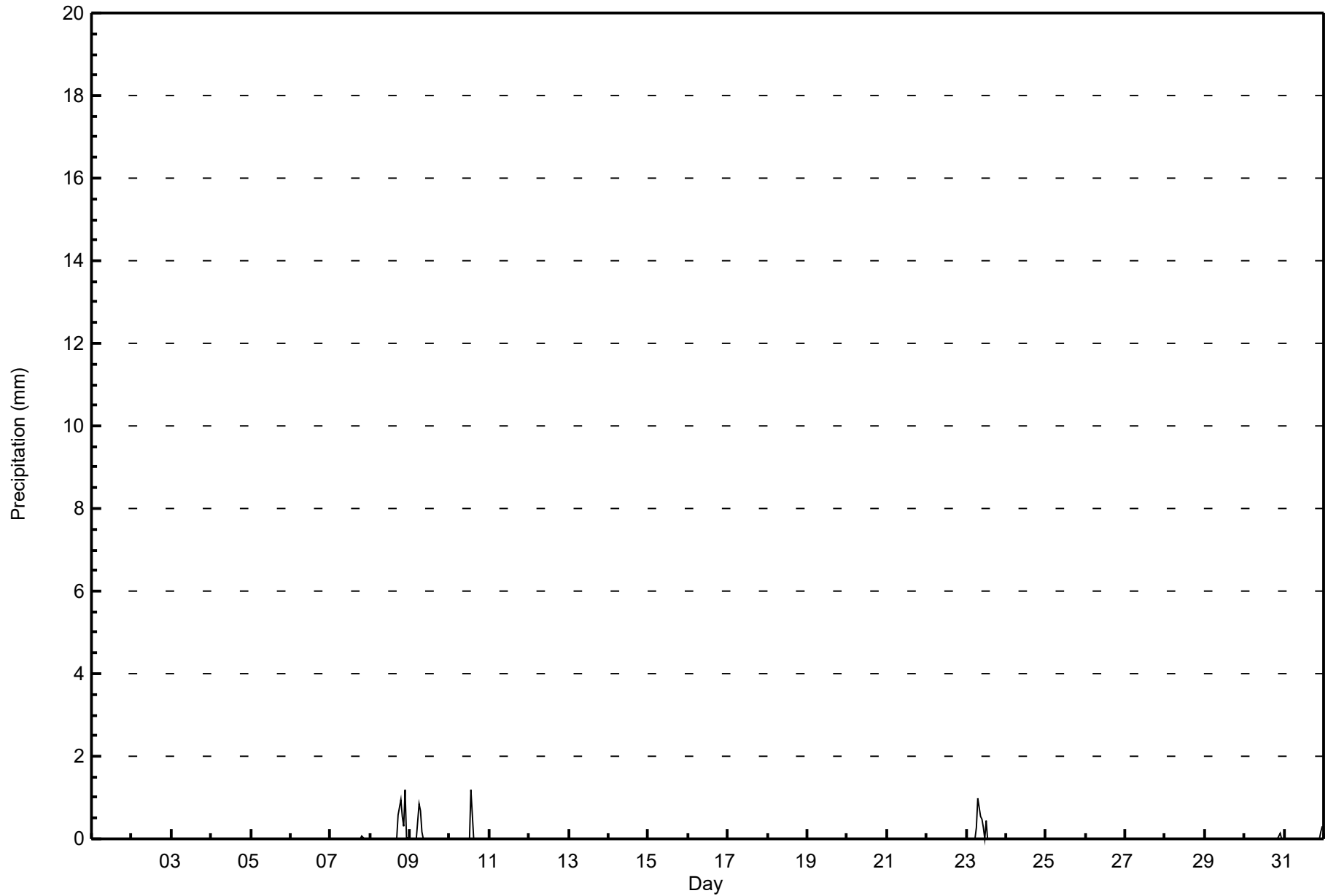


Maximum Value: 1.2 mm on May 8 22:00 Maximum Daily Total: 3.6 mm on May 8		Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0																																		
Minimum Value: 0.0 mm on May 1 01:00 Maximum Diurnal Total: 1.3 mm at hour 22 Monthly Total: 10.13 mm		Minimum Daily Total: 0.0 mm on May 1 Minimum Diurnal Total: 0.0 mm at hour 1 Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.5																																		
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24												
1-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
3-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
4-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
5-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
6-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
7-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
8-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.9	0.5	0.3	1.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	1.2	
9-May	0.0	0.0	0.0	0.0	0.0	0.8	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.8	
10-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	
11-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
12-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
13-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
14-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
15-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
16-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
17-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
18-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
19-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
20-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
21-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
22-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
23-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0	0.5	0.5	0.3	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	1.0	
24-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
25-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
26-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
27-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
28-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
29-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
30-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
31-May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.3
																								Diurnal Average												
																								Diurnal Maximum												



Wood Buffalo Environmental Association
Hourly Averages

Precipitation (PC) - mm
Mackay River - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Precipitation (PC) - mm
Mackay River - May 2023

Concentration Ranges (mm)	Number of Hours	%	Cumulative %
0 - 0.3	733	98.52	98.52
0.4 - 0.5	4	0.54	99.06
0.6 - 0.7	2	0.27	99.33
0.8 - 1.4	5	0.67	100.00
1.5 - 10	0	0.00	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Speed (WS) - km/h
Mackay River - May 2023

Maximum Speed: 21 km/h on May 16 17:00	Maximum Daily Speed Average: 14.1 km/h on May 16	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 9 13:00	Minimum Daily Speed Average: 1.2 km/h on May 25	Hours of Data: 744
Maximum Diurnal Speed Average: 4.3 km/h at hour 15	Minimum Diurnal Speed Average: 2.1 km/h at hour 20	Hours of Missing Data: 0
Monthly Average Velocity: 2.9 km/h 152.4 deg	Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 4 Median = 7 Q ₃ = 10 P ₉₀ = 13 P ₉₉ = 18	Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SE8	SE8	SE7	SE10	SE10	SE10	SSE11	S10	S12	S13	S12	S14	S14	S14	S13	S12	S14	SSW11	SSW9	S4	SSE4	SSW4	WNW8	WNW7	S8.4	S14
2-May	NW10	NNW6	NW7	NW5	W3	W3	WSW4	WSW5	W5	WNW8	NW9	NW8	WNW10	WNW11	WNW10	W6	NW8	NW8	N5	ESE1	SE3	SE4	SE4	SE4	WNW4.3	WNW11
3-May	SSE5	SSE5	SSE6	SSE6	S7	S9	S10	S11	S13	S14	S15	S15	S13	S14	SSE15	SSE14	S13	S13	S11	SE6	SE6	SE7	SE7	SE7	S9.8	S15
4-May	SE6	S6	SSE7	SSE6	SSE4	SSE4	SSE4	SSE7	S4	ENE4	ESE8	E8	E8	E7	E9	ESE8	ESE8	NE10	NE12	NE10	NE8	NNE4	ESE2	E4.5	NE12	
5-May	ESE3	ESE5	SE6	ESE4	ESE6	SE9	SE9	SE12	SE12	SE12	SE12	SE13	SE14	ESE18	ESE15	ESE19	ESE18	ESE18	ESE18	ESE13	ESE10	ESE13	ESE14	ESE10	ESE11.5	ESE19
6-May	ESE8	ESE7	ESE5	ESE7	ESE8	ESE8	ESE10	ESE10	ESE12	ESE13	E15	ESE16	ESE16	ESE14	ESE15	ESE14	ESE16	ESE14	ESE17	ESE13	ESE9	ESE6	ESE6	ESE4	ESE10.9	ESE17
7-May	ESE5	ESE5	ESE5	ESE5	ESE7	ESE8	ESE9	SE10	ESE10	ESE12	ESE13	ESE14	SE14	SE10	SSE14	SSE10	ESE7	E5	E2	ESE3	ENE2	NNW1	W3	NW1	ESE6.6	ESE14
8-May	NNE2	SE0	SE2	SE5	SE6	SE6	SE8	SSE10	S9	SSE9	S10	SSE11	S11	SSE9	S10	S8	E5	WNW6	W4	SSE1	SSE3	SSE6	SSE3	SE2	SSE4.9	S11
9-May	SE2	NW1	SE2	ESE2	SSE2	SE2	SE4	SE1	S2	SW2	S2	ESE4	NNE0	SE2	WNW2	NNW8	NNE9	SSE1	S14	S5	SSE1	SE3	SE3	ESE1	SSE1.2	S14
10-May	SSE3	SSE3	SE2	SE3	SSE3	SSE3	SSE3	WSW3	WSW2	SSE2	ENE2	NNE3	ESE10	NE3	SSE5	SW3	WSW3	S0	E3	ESE1	E2	SE2	SE2	ESE2	SE1.7	ESE10
11-May	SE2	E2	SE2	SE3	ESE1	ESE3	ESE4	ESE6	SE7	SE8	SE8	ESE8	ESE6	ESE6	ESE7	ESE9	SE8	SSE9	SE6	S5	S3	SE2	SE2	SE3	SE4.8	ESE9
12-May	SE5	SE2	SE3	SE4	SE4	SE6	SE5	SSE8	SSE9	S8	SSE10	S11	S11	S11	S10	S9	S10	S8	SSW5	S4	SE2	SE3	SSE4	SE5	SSE6.2	S11
13-May	SSE5	S6	S6	S8	S8	S9	S9	S9	S10	S8	S8	S8	S9	SSW10	SSW12	S11	S12	S10	S8	S7	S7	S8	S7	S8	S8.4	SSW12
14-May	S7	S7	S9	S9	S7	S7	S7	SSW8	SSW8	SSW7	SSW8	S9	SSW9	SSW10	SSW10	WSW8	WSW8	SSW7	SSW6	S6	SSW6	WSW4	SW4	SSE2	SSW7.0	SSW10
15-May	SE2	SE3	SE3	SE3	SE3	SE3	SSE3	SSE4	S2	SW3	SSW7	S10	S10	S11	S12	SSW12	SSW12	S10	SSW10	S6	S5	S6	W4	NW8	S5.3	S12
16-May	WNW8	NW12	NW12	WNW12	WNW12	NW14	NW17	NW20	NW21	NW19	WNW19	NW17	NW19	NW18	NW17	NW18	NW21	WNW18	WNW17	NW13	NW7	NNW3	NW2	NNW5	NW14.1	NW21
17-May	NW7	NW9	NW10	NW8	NNW7	NNW7	NNW10	NNE11	NE11	NE10	NNE14	NNE13	NE11	NNE11	NE11	NE12	NNE11	NE11	NE9	NE7	E2	SE1	SE3	SE6	NNE6.9	NNE14
18-May	SE6	SE5	SE4	SE5	SE4	SSE6	S8	SSW9	SSW8	SSW7	SSW7	S7	SSE7	SSE8	SSW7	S9	S7	S8	S8	S5	SSE3	S5	S8	S7	S6.2	SSW9
19-May	S7	S8	S8	S8	S9	S9	S7	S6	SSW9	SSW7	SSW6	SSW5	SSW5	SW5	SW6	W5	WNW5	NW4	NW4	NW4	NW4	N7	NNE9	NNE8	SSW2.8	NNE9
20-May	NNE7	NNE7	NNE7	NE7	NNE7	NNE6	NE6	NE8	NE6	ENE6	ENE7	E9	E8	E7	ESE9	ESE9	E9	E7	E6	ESE9	ESE7	ESE7	ESE7	SE6	ENE6.0	ESE9
21-May	ESE6	SE6	SE3	ESE5	SE4	SE5	SE7	SE7	SSE8	S6	S6	SSE7	SSE7	SSE7	SSE6	S6	SSE5	SE4	ESE5	ESE4	E4	ENE4	SE4	SE4	SE5.0	SSE8
22-May	ESE2	NNE5	NNE6	NNE7	NNE10	NNE11	NNE13	NNE12	NNE12	NNE11	N12	NNE13	NNE14	NNE15	NNE16	NNE18	NNE15	NE14	NE14	NE11	E13	ENE15	ENE14	ENE15	NE11.3	NNE18
23-May	ENE13	ENE11	ENE12	ENE12	E13	E13	E11	ENE9	ENE9	E9	E11	ESE16	E16	E15	ESE16	ESE16	ESE14	ESE14	ESE13	ESE10	ESE8	ESE10	ESE10	ESE8	E11.6	ESE16
24-May	ESE8	ESE8	ESE7	ESE7	ESE9	ESE9	ESE8	SE7	SSE6	SSW5	WSW7	SSW8	SW9	SW8	SW9	WSW9	WSW8	WSW9	WSW6	WSW5	WSW5	WSW5	W5	WSW4	SSW3.7	WSW9
25-May	WSW4	W5	WSW4	W4	NW3	WNW3	W2	SW2	WSW3	NNW3	N7	NNW7	NNW7	NNE6	NE7	NE5	ENE6	ENE5	E5	ESE5	ESE4	ESE5	SE6	SE5	NNE1.2	N7
26-May	SE4	SE4	SSE5	SSE6	S5	S6	S6	SSW5	S4	SSE5	S3	SW5	SSW2	W3	SW7	SW6	SSW7	S5	SE5	SSE5	SE4	SE3	SE4	SE4	S4.0	SW7
27-May	SSE5	SSE6	S7	S8	S9	S9	S10	S12	SSW12	S13	S13	S15	S14	SSE12	SSE12	S11	S9	S10	S9	S6	SSE4	S5	SSE5	S6	S9.0	S15
28-May	SSE6	S8	S8	S10	S8	S10	SSW8	SSW8	SW9	SW9	SW12	SW14	SW15	WSW14	WSW13	WSW12	WSW14	WSW13	W9	W9	W7	WNW7	W3	S2	SW8.2	SW15
29-May	SSE3	SE3	SE3	SSE3	SSE4	SSW6	SW5	SW7	WSW7	WSW10	WSW13	WSW13	SW13	WSW10	WSW12	SW13	WSW11	SW9	WSW9	WSW7	SW3	SSW4	SW2	S1	SW6.5	SW13
30-May	SSE2	SSE2	SE2	SW1	SSE2	SE2	SW2	S2	SSW4	SSW4	W6	WSW5	W7	WSW3	W6	WNW14	WNW13	NW9	NNW4	NE3	SSE3	SE2	SSE3	S2	W2.1	WNW14
31-May	WSW1	SSE2	SE2	SSE2	WSW1	WSW2	WSW3	WSW4	WNW4	N5	NNE5	NE3	E8	SE8	SSE8	ESE7	ESE9	ESE8	ESE7	NW3	N5	WNW4	N1	SSW3	ESE1.4	ESE9

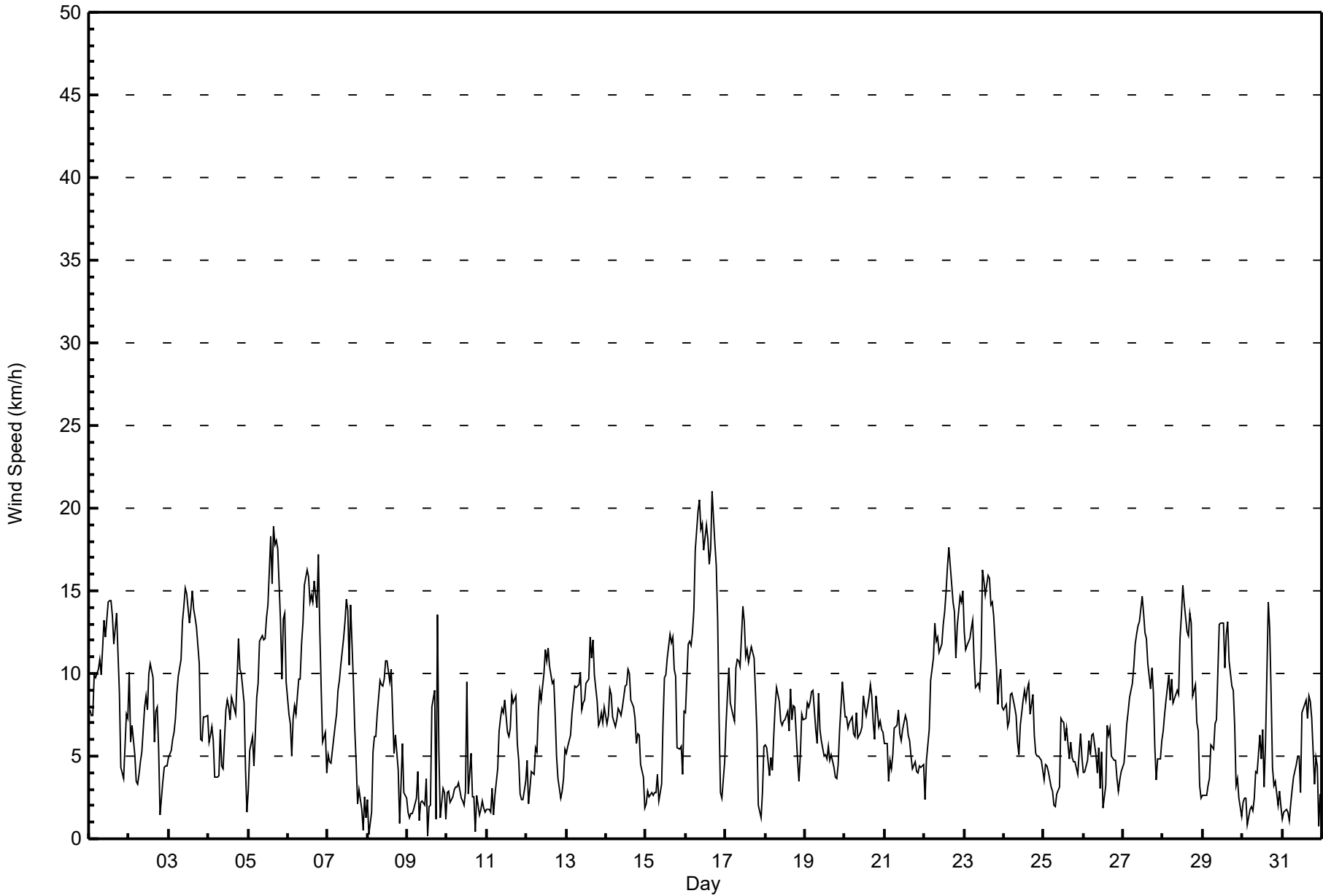
SE2.4 SE2.1 SE2.3 SE2.7 SE2.9 SSE3.3 SSE3.2 SSE3.4 S3.5 S3.1 S3.0 SSE4.1 SSE4.2 SSE3.8 SSE4.3 S3.2 SSE2.7 SSE2.6 SE2.6 SE2.1 SE2.3 SE2.4 SE2.3 SE2.3	Diurnal Average
ENE13 NW12 NW12 ENE12 E13 NW14 NW17 NW20 NW21 NW19	Diurnal Maximum

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Mackay River - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Mackay River - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	262	35.22	35.22
6 - 11	350	47.04	82.26
12 - 19	129	17.34	99.60
20 - 28	3	0.40	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Mackay River - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	4	6	4	5	9	28	66	43	20	12	12	20	13	6	8	6	262
6 - 11	2	18	16	6	14	52	34	29	90	30	11	12	7	9	13	7	350
12 - 19	1	11	4	6	5	30	7	5	25	4	5	8	0	7	11	0	129
20 - 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	7	35	24	17	28	110	107	77	135	46	28	40	20	22	35	13	744

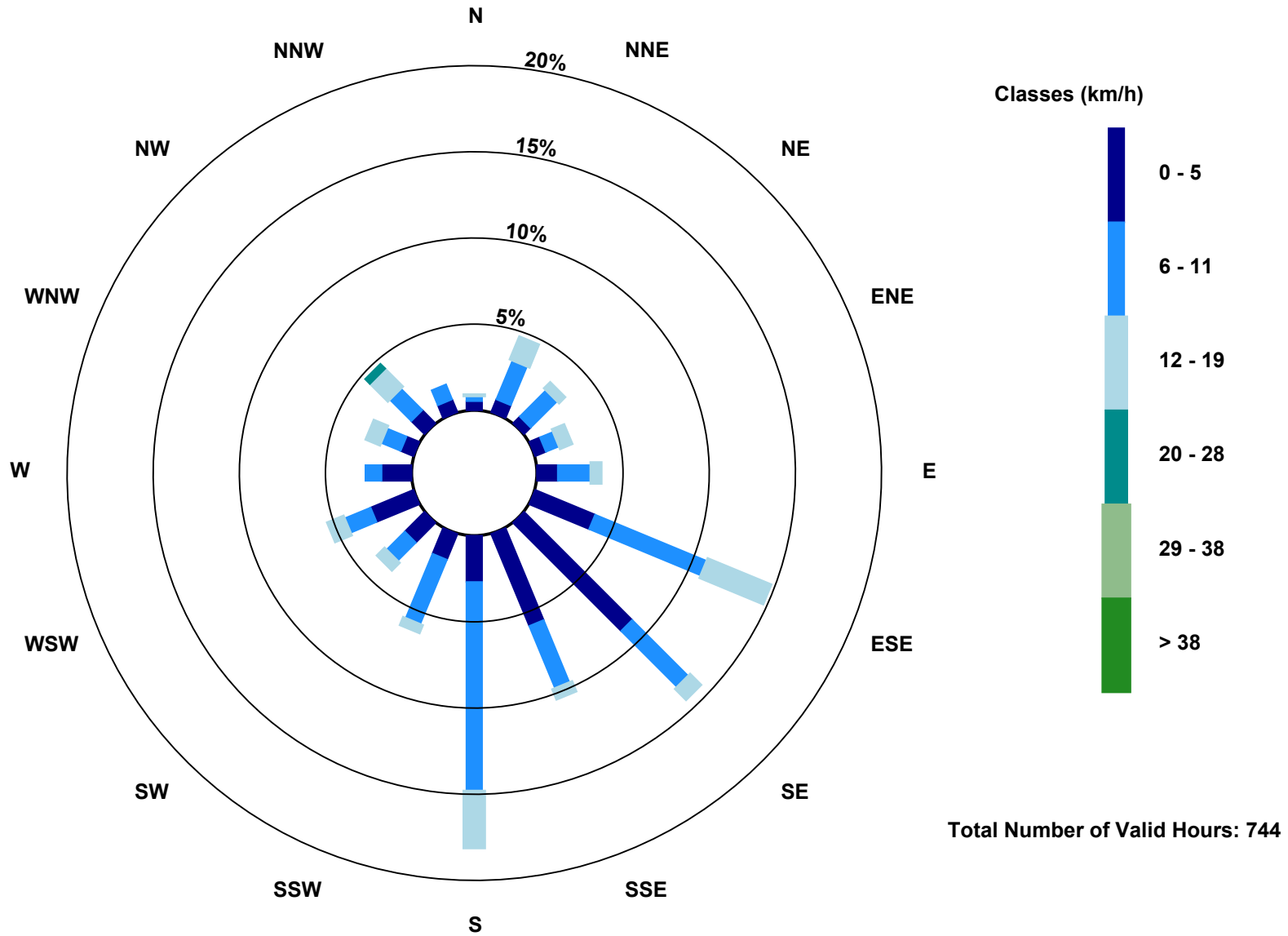
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Mackay River





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Mackay River - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 8 km/h on May 16 17:00																	Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0								
Minimum Value: 0 km/h on May 12 21:00																									
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 2 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 6																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	2	2	2	3	3	3	3	4	4	4	4	4	5	5	5	4	4	4	3	1	1	2	2	2	5
2-May	3	2	2	2	1	1	2	2	2	3	3	5	4	5	4	3	3	3	2	1	1	1	1	1	5
3-May	1	1	1	1	2	2	3	4	4	5	5	5	5	5	5	5	5	4	4	2	1	2	2	2	5
4-May	2	2	2	2	2	2	2	2	2	3	3	3	3	4	4	3	4	4	4	4	3	2	2	1	4
5-May	2	1	2	2	2	2	3	4	4	4	4	5	5	5	5	6	5	5	5	4	2	3	4	2	6
6-May	2	2	2	1	2	2	3	3	4	4	5	5	5	4	5	4	5	4	5	4	3	2	2	1	5
7-May	1	1	1	1	2	2	3	3	3	4	5	5	5	5	5	3	3	2	1	3	2	1	1	1	5
8-May	1	1	1	2	2	2	2	3	3	3	3	4	4	3	3	3	3	4	2	2	1	3	1	1	4
9-May	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	4	4	4	5	3	1	1	1	1	5
10-May	2	1	1	1	1	1	1	1	1	2	2	3	3	5	1	2	1	1	1	1	1	1	1	1	5
11-May	1	1	1	1	1	1	1	2	2	3	3	4	3	3	2	3	3	3	2	2	1	1	1	1	4
12-May	2	1	1	1	1	1	2	2	3	3	3	4	4	4	3	4	4	3	2	1	0	0	1	1	4
13-May	1	1	1	1	2	2	2	2	3	2	2	2	3	4	5	4	4	3	3	2	2	2	2	2	5
14-May	2	2	2	2	2	2	2	2	3	3	3	3	4	4	4	3	3	2	2	2	3	1	1	1	4
15-May	1	1	1	1	1	2	1	2	1	2	3	4	3	4	4	5	4	4	4	2	1	1	3	3	5
16-May	2	3	4	4	4	5	5	6	7	6	6	6	6	6	5	6	8	7	6	4	2	1	2	2	8
17-May	2	2	3	2	2	2	3	4	4	4	5	4	4	4	3	4	4	4	3	3	1	1	1	1	5
18-May	1	1	1	1	1	2	2	3	3	3	3	3	4	3	3	4	3	3	3	2	1	2	2	2	4
19-May	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	1	1	1	1	3	3	3
20-May	2	2	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	3	2	2	2	1	3
21-May	1	2	1	1	1	1	2	2	2	2	2	2	3	3	2	2	2	1	1	1	1	2	1	1	3
22-May	2	2	2	3	4	4	4	4	4	4	4	4	5	6	6	6	5	5	5	4	6	5	5	5	6
23-May	5	4	5	4	5	5	4	3	4	3	4	5	5	5	6	5	5	5	4	4	3	3	3	3	6
24-May	2	2	2	2	2	2	2	2	2	2	3	3	4	3	4	4	3	4	3	2	2	2	2	1	4
25-May	1	2	2	1	1	1	1	1	2	2	3	2	3	3	3	3	3	2	2	1	1	1	2	1	3
26-May	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	1	2	2	1	1	1	1	3
27-May	1	1	2	2	2	3	3	4	4	5	5	5	5	5	5	4	4	4	3	2	1	1	1	1	5
28-May	2	2	2	2	2	3	3	3	3	4	5	6	6	6	6	5	6	6	4	4	3	3	1	1	6
29-May	1	1	1	1	2	2	2	3	3	5	5	5	6	4	6	5	4	4	4	3	1	1	2	1	6
30-May	1	1	1	1	1	1	1	1	2	2	3	3	3	3	4	5	4	2	1	2	1	2	2	2	5
31-May	1	1	1	1	1	1	1	2	2	3	3	3	3	3	3	3	3	2	2	3	2	1	2	2	3
																	Diurnal Maximum								



Wood Buffalo Environmental Association
Summary of Hour Averages

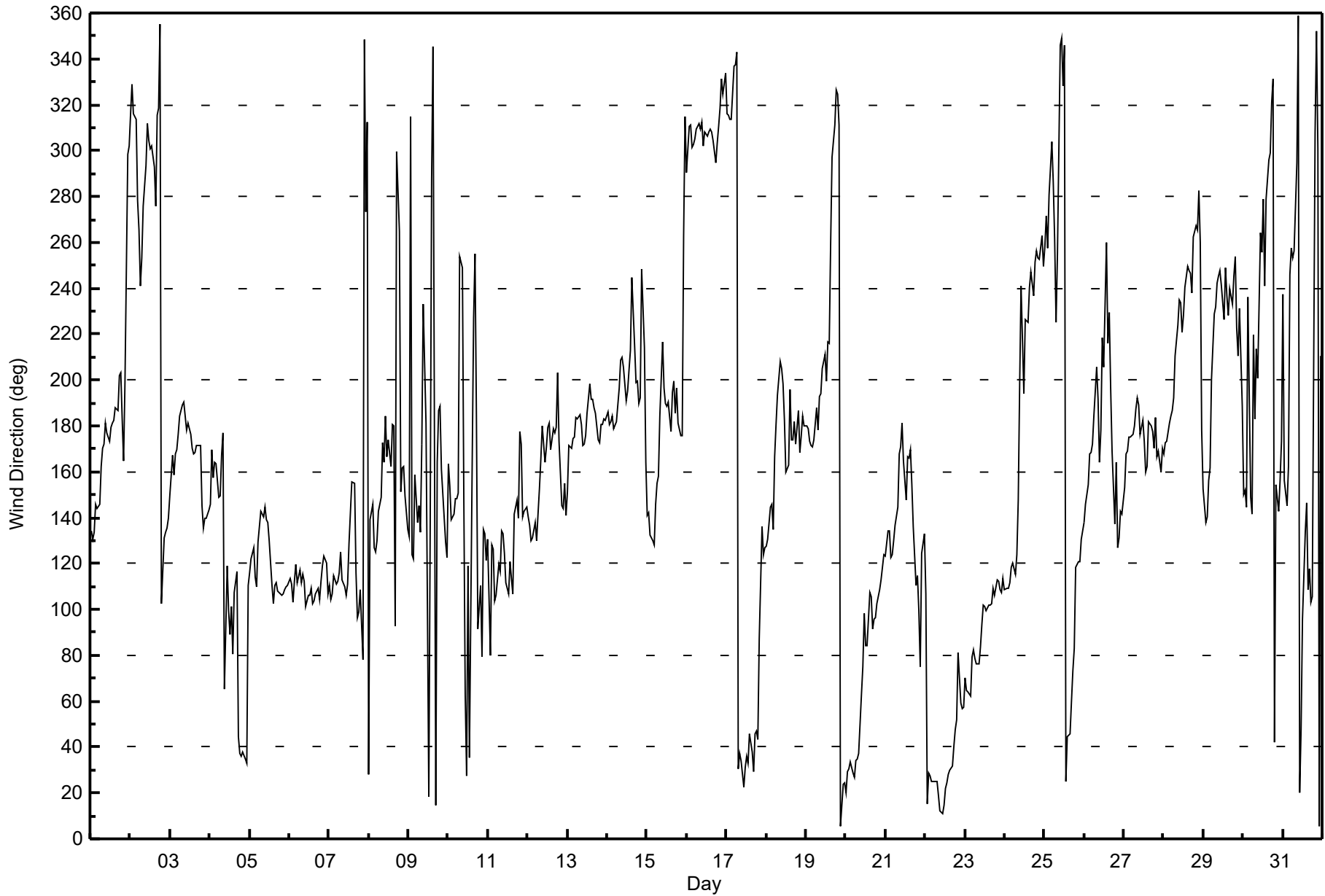
Wind Direction (WD) - deg
Mackay River - May 2023

Direction of Maximum Speed: 305 deg on May 16 17:00		Hours in Service:	744
Direction of Maximum Daily Speed Average: 307.4 deg on May 16		Hours of Data:	744
Direction of Minimum Speed: 18 deg on May 9 13:00		Hours of Missing Data:	0
Direction of Minimum Daily Speed Average: 1.2 deg on May 25		Percent Operational Time:	100.0
Monthly Average Direction: 152.4 deg			

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	134	131	134	146	144	146	163	170	172	181	177	173	180	181	182	188	187	202	203	183	165	199	298	302	175.0
2-May	316	329	316	314	278	265	241	253	276	294	312	305	301	302	293	276	315	318	355	102	131	134	135	140	300.1
3-May	149	167	159	168	170	176	184	189	190	184	178	181	176	170	168	168	172	172	171	145	136	140	140	144	170.3
4-May	146	170	158	164	163	149	149	167	177	65	119	99	89	101	80	108	117	45	37	36	38	35	33	111	95.6
5-May	116	122	127	114	110	129	136	143	140	144	139	138	130	111	102	110	112	108	108	106	107	109	110	110	118.9
6-May	113	111	103	112	120	112	117	112	115	112	101	106	106	109	103	104	107	109	104	112	119	123	120	107	109.6
7-May	110	105	107	114	111	112	116	125	113	110	106	111	129	142	156	155	116	96	99	109	78	348	273	312	120.4
8-May	28	139	146	127	125	130	143	149	173	164	184	167	174	163	181	180	93	300	265	151	162	163	149	135	161.6
9-May	132	315	124	122	158	138	145	134	172	233	181	102	18	137	287	345	14	164	186	188	161	140	130	123	152.6
10-May	164	154	139	142	148	148	150	254	249	149	63	27	119	35	165	227	255	185	91	110	79	135	133	122	140.7
11-May	131	80	128	126	104	106	120	116	134	133	125	112	107	121	114	107	142	148	140	178	172	140	143	145	127.8
12-May	140	137	130	131	138	130	142	152	165	180	164	171	179	181	169	179	177	179	203	173	145	144	155	141	164.7
13-May	151	172	170	175	175	184	183	185	181	171	172	176	185	198	192	191	188	186	174	173	181	180	183	182	181.0
14-May	186	181	182	185	179	182	189	196	209	210	205	191	196	205	213	244	215	199	199	190	192	248	214	164	199.0
15-May	141	142	133	130	128	146	155	158	184	217	196	190	188	190	178	195	199	186	196	181	176	176	263	315	186.7
16-May	290	310	311	301	303	305	309	312	309	312	302	308	307	308	310	308	305	295	303	311	319	331	325	334	307.4
17-May	316	315	314	314	337	338	343	30	37	34	23	31	36	33	46	38	29	46	47	44	87	136	124	127	20.7
18-May	128	131	145	146	135	166	180	194	208	205	199	182	160	163	196	174	174	182	172	186	168	176	184	180	175.4
19-May	180	179	173	171	171	174	188	178	193	194	205	211	199	217	216	260	297	311	326	325	311	6	24	25	201.2
20-May	20	29	30	34	29	27	34	35	37	63	75	98	84	84	107	105	91	96	97	102	109	113	118	124	74.6
21-May	123	134	134	123	124	130	136	145	168	171	181	165	148	166	166	169	155	136	110	115	99	75	124	133	142.9
22-May	107	15	29	27	25	25	25	25	19	12	11	15	22	25	28	30	32	41	47	52	81	59	57	58	34.5
23-May	70	65	64	62	79	82	79	76	76	84	94	102	101	100	102	102	103	109	106	113	112	108	107	114	92.6
24-May	109	109	109	112	118	120	115	124	148	197	241	194	226	226	225	240	247	237	251	256	253	252	263	249	193.0
25-May	258	271	258	281	304	286	261	225	255	346	349	328	346	25	45	46	60	73	83	118	121	121	131	134	20.6
26-May	138	146	155	168	169	172	184	205	191	164	178	219	206	260	216	229	196	169	137	164	127	131	143	142	176.8
27-May	153	168	169	175	175	177	180	187	192	189	177	182	173	160	162	182	180	177	170	184	167	169	160	170	175.8
28-May	168	173	173	181	184	186	192	211	224	235	234	221	228	241	250	248	246	238	262	267	266	282	260	178	226.1
29-May	153	138	140	156	162	200	229	232	242	245	247	242	227	249	237	228	240	233	245	254	223	210	231	188	230.9
30-May	150	152	145	236	149	142	219	183	213	201	264	256	279	241	279	296	299	321	331	42	155	143	156	173	263.3
31-May	237	156	145	163	246	257	253	256	295	359	20	48	96	134	147	108	117	103	105	308	352	301	6	211	108.4

132.6	135.1	138.9	143.5	138.5	146.5	155.7	163.7	176.6	171.7	170.9	160.5	159.4	160.9	165.0	169.6	160.8	156.1	140.1	135.1	129.3	128.7	129.1	130.4
Diurnal Average																							

All monthly, daily, and diurnal averages have been calculated using vector methods





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Mackay River - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 111 deg on May 9 18:00 Minimum Value: 7 deg on May 10 04:00 Percentiles: P ₁ = 10 P ₁₀ = 17 Q ₁ = 22 Median = 29 Q ₃ = 42 P ₉₀ = 56 P ₉₉ = 93																			Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0						
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	20	20	23	25	23	25	26	28	27	29	30	28	34	28	30	33	27	29	29	20	13	49	25	23	49
2-May	19	32	23	22	28	31	52	47	47	38	38	53	46	40	44	64	45	27	30	44	19	9	10	15	64
3-May	14	18	20	18	19	19	22	25	27	29	32	33	34	31	30	32	30	26	28	25	20	23	23	25	34
4-May	26	27	26	24	62	59	51	29	67	63	35	40	48	54	47	56	38	31	23	25	23	23	20	37	67
5-May	33	17	21	30	18	19	21	24	28	28	31	30	29	24	29	22	22	19	20	18	17	18	19	17	33
6-May	18	18	17	14	18	17	20	25	27	29	29	26	28	28	27	28	24	25	21	20	20	17	18	24	29
7-May	13	14	13	13	14	17	20	24	27	28	30	27	27	31	29	30	31	28	37	56	64	86	49	82	86
8-May	33	74	57	22	17	18	24	26	28	34	43	31	35	29	31	40	42	67	58	88	50	31	38	46	88
9-May	67	70	58	39	32	43	19	82	36	50	72	62	106	92	95	52	42	111	22	32	45	15	20	15	111
10-May	49	25	33	7	10	10	21	51	67	94	82	95	33	87	26	72	49	100	26	34	56	28	20	47	100
11-May	36	45	38	17	64	37	19	27	27	32	40	43	44	56	27	31	29	29	24	30	21	14	29	10	64
12-May	17	51	22	18	25	18	24	25	27	33	33	35	39	34	37	39	33	33	32	22	21	13	11	12	51
13-May	13	12	15	14	17	19	19	20	20	22	24	26	27	34	31	29	27	25	27	24	20	21	20	19	34
14-May	18	16	17	18	18	20	21	24	33	37	37	33	36	37	40	48	35	28	21	19	20	51	30	47	51
15-May	53	14	13	28	20	64	14	17	67	71	42	33	36	37	34	35	32	35	27	20	17	16	66	21	71
16-May	25	19	19	23	24	24	21	22	23	24	26	27	26	25	25	25	25	26	23	20	17	43	59	20	59
17-May	15	18	17	17	23	23	26	30	29	34	32	33	34	36	36	39	35	31	32	31	41	28	15	13	41
18-May	15	17	26	24	19	21	25	28	38	50	67	69	58	55	69	40	47	42	31	21	16	17	19	19	69
19-May	20	23	23	23	24	23	31	27	25	34	47	51	48	49	37	49	36	26	17	17	12	28	23	22	51
20-May	22	23	23	25	28	29	32	28	37	38	50	36	39	45	37	30	31	27	26	21	19	18	17	18	50
21-May	16	22	24	12	13	18	22	25	29	37	46	43	35	43	38	46	42	33	14	15	37	42	26	17	46
22-May	60	26	28	24	26	24	26	28	26	26	27	27	26	29	28	26	26	26	26	27	35	29	31	29	60
23-May	36	30	32	32	32	34	34	37	36	32	28	23	23	23	24	23	21	20	24	25	21	19	23	37	37
24-May	21	21	20	19	21	22	19	25	30	45	47	39	41	38	41	40	47	41	44	51	49	50	39	48	51
25-May	48	35	49	32	21	20	53	70	69	79	48	34	43	49	51	64	40	50	33	18	17	18	20	21	79
26-May	19	15	19	16	16	20	22	35	64	57	84	55	100	91	50	59	44	29	44	25	15	15	17	14	100
27-May	19	20	22	23	23	25	26	28	28	31	34	32	33	37	37	39	35	34	29	21	13	15	17	19	39
28-May	21	25	23	20	20	21	26	36	38	42	46	45	43	44	46	47	47	45	50	42	47	29	32	25	50
29-May	10	10	12	45	27	30	43	45	48	48	46	47	42	46	46	38	44	50	44	51	34	18	43	47	51
30-May	25	24	38	82	43	9	62	78	59	66	54	76	51	76	67	29	26	25	31	53	45	81	59	47	82
31-May	43	35	45	51	76	64	63	60	62	60	76	93	41	37	31	38	25	22	19	82	43	27	92	63	93
Diurnal Maximum																									



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS21
CONKLIN
MAY 2023**

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CONKLIN (AMS21)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2(ppb) Average	709	35	35	100	6.6	0	0.9	0
TRS(ppb) Average	707	37	37	100	1.6	0	0.9	0
THC(ppm) Average	707	35	37	99.73	2.7	-	2.2	-
NMHC(ppm) Average	707	35	37	99.73	0.105	-	0.008	-
CH4(ppm) Average	707	35	37	99.73	2.7	-	2.2	-
O3 (ppb) Average	709	35	35	100	65.2	0	50.3	-
NO2 (ppb) Average	708	36	36	100	16	0	4.7	-
NO (ppb) Average	708	36	36	100	13.4	-	1.6	-
NOX (ppb) Average	708	36	36	100	23.4	-	5.5	-
PM2.5 (ug/m3) Average	734	1	10	98.79	727.6	115	320	13
Temperature 2 m (C) Average	744	0	0	100	30.9	-	21.7	-
Relative Humidity (%) Average	744	0	0	100	98.1	-	89.1	-
Wind Speed 10 m (km/h) Average	742	0	2	99.73	23	-	12	-
Wind Direction 10 m (deg) Average	742	0	2	99.73	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CONKLIN (AMS21)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	709	0.39	0.5	-	0	0	0.1	0.2	0.5	1	6.6
TRS (ppb) Average	707	0.49	0.2	-	0.3	0.4	0.4	0.4	0.5	0.6	1.6
THC (ppm) Average	707	2.08	0.1	-	1.9	2	2	2	2.1	2.2	2.7
NMHC(ppm) Average	707	0.001	0.006	-	0	0	0	0	0	0	0.105
CH4(ppm) Average	707	2.08	0.1	-	1.9	2	2	2	2.1	2.2	2.7
O3 (ppb) Average	709	35.73	16.3	-	2.4	10	22.8	38.9	48.2	55.2	65.2
NO2 (ppb) Average	708	1.98	1.9	-	0	0.6	0.9	1.4	2.3	4	16
NO (ppb) Average	708	0.35	1.2	-	0	0	0	0.1	0.2	0.6	13.4
NOX (ppb) Average	708	2.33	2.6	-	0.1	0.7	0.9	1.5	2.5	4.6	23.4
PM2.5 (ug/m3) Average	734	52.28	96.2	-	1.9	6.1	8.5	16.5	37	167.2	727.6
Temperature 2 m (C) Average	744	14.19	7.4	-	-4.5	4.5	8.3	14.4	19.8	24	30.9
Relative Humidity (%) Average	744	56.04	24.9	-	13.4	24.9	34.6	52.1	79.3	93.4	98.1
Wind Speed 10 m (km/h) Average	742	7.2	5	-	0	1	3	7	11	14	23
Wind Direction 10 m (deg) Average	742	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CONKLIN (AMS 21)
MAY 2023

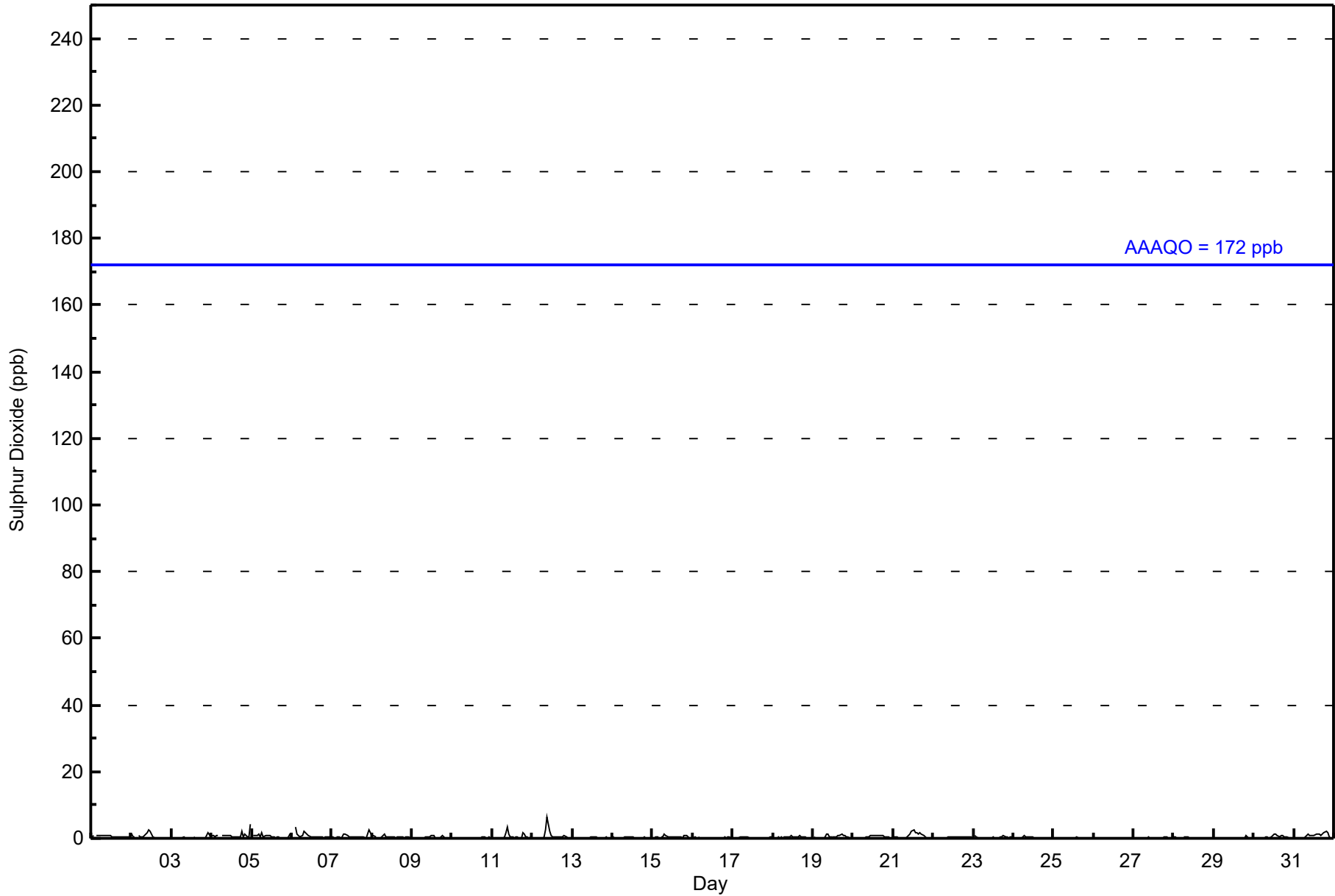
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
THC/NMHC/CH4	24 May 2023 11:00	24 May 2023 12:00	2	Maintenance - replaced support gas cylinder
PM2.5	23 May 2023 05:00	23 May 2023 09:00	5	Analyzer Failure - inconsistent response
PM2.5	23 May 2023 10:00	23 May 2023 12:00	3	Maintenance - analyzer replaced
PM2.5	24 May 2023 12:00	24 May 2023 12:00	1	Maintenance - verification check
Wind Speed, Wind Direction	10 May 2023 04:00	10 May 2023 04:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	30 May 2023 05:00	30 May 2023 05:00	1	Flat line in sensor output signal



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Conklin - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Conklin - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	709	100.00	100.00
11 - 20	0	0.00	100.00
21 - 60	0	0.00	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Conklin - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	27	13	18	19	24	80	72	101	86	84	54	22	8	25	36	38	707
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	13	18	19	24	80	72	101	86	84	54	22	8	25	36	38	707

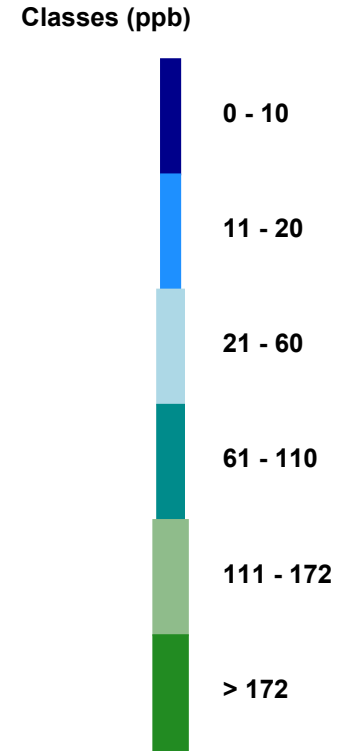
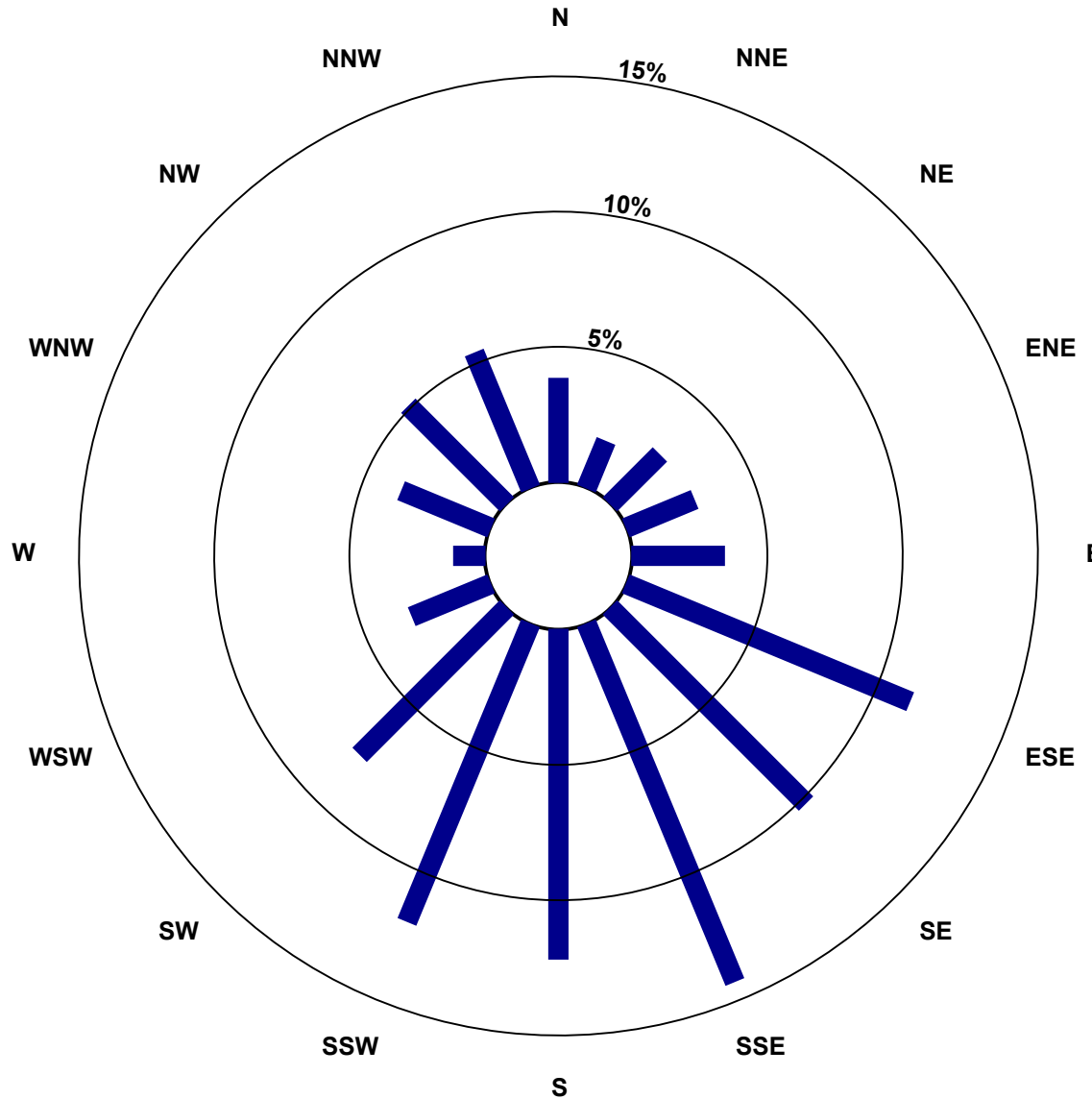
Total Number of Valid Hours: 707

Total Number of Hours: 744

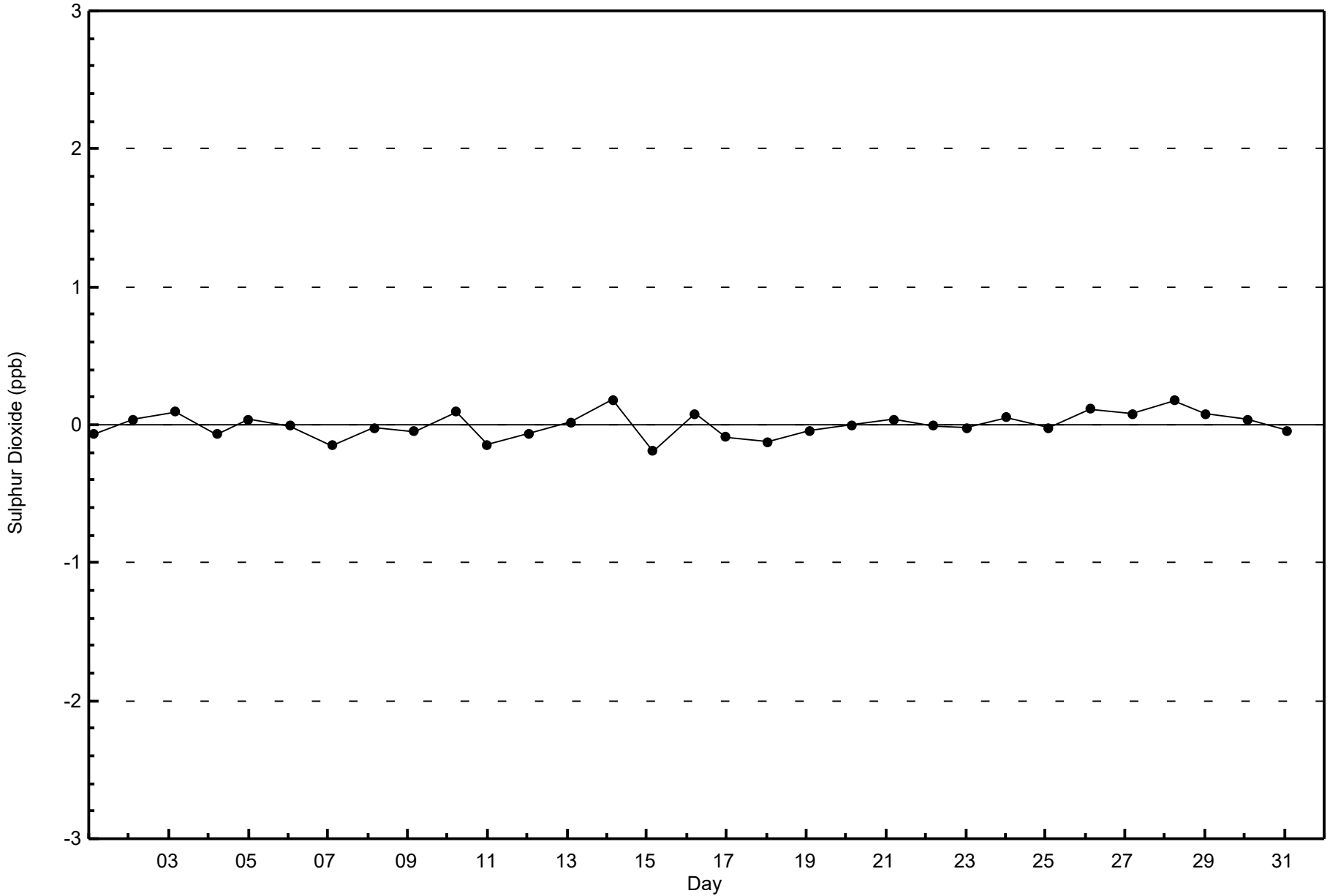


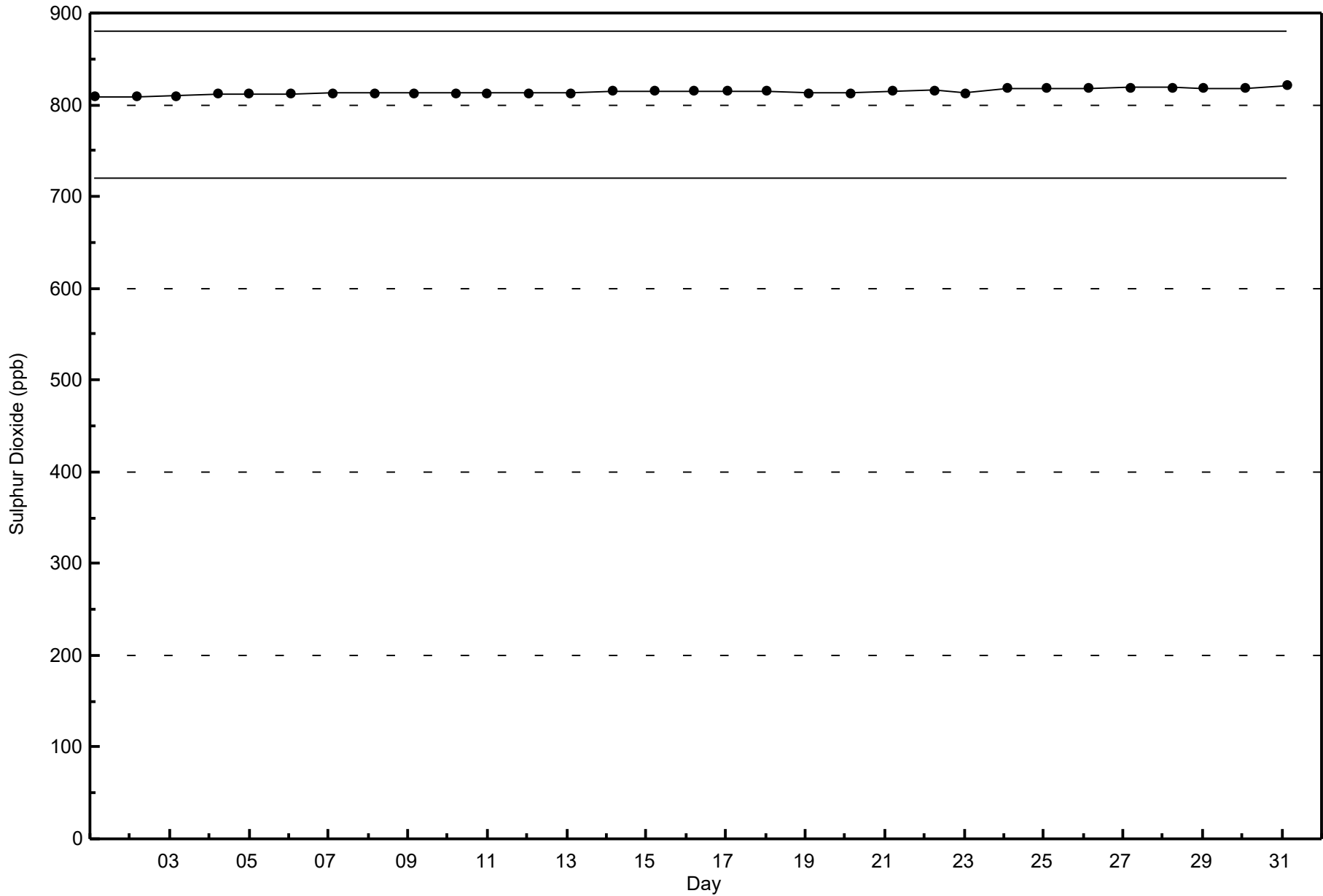
Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Conklin



Total Number of Valid Hours: 707







Wood Buffalo Environmental Association

Summary of Hour Averages

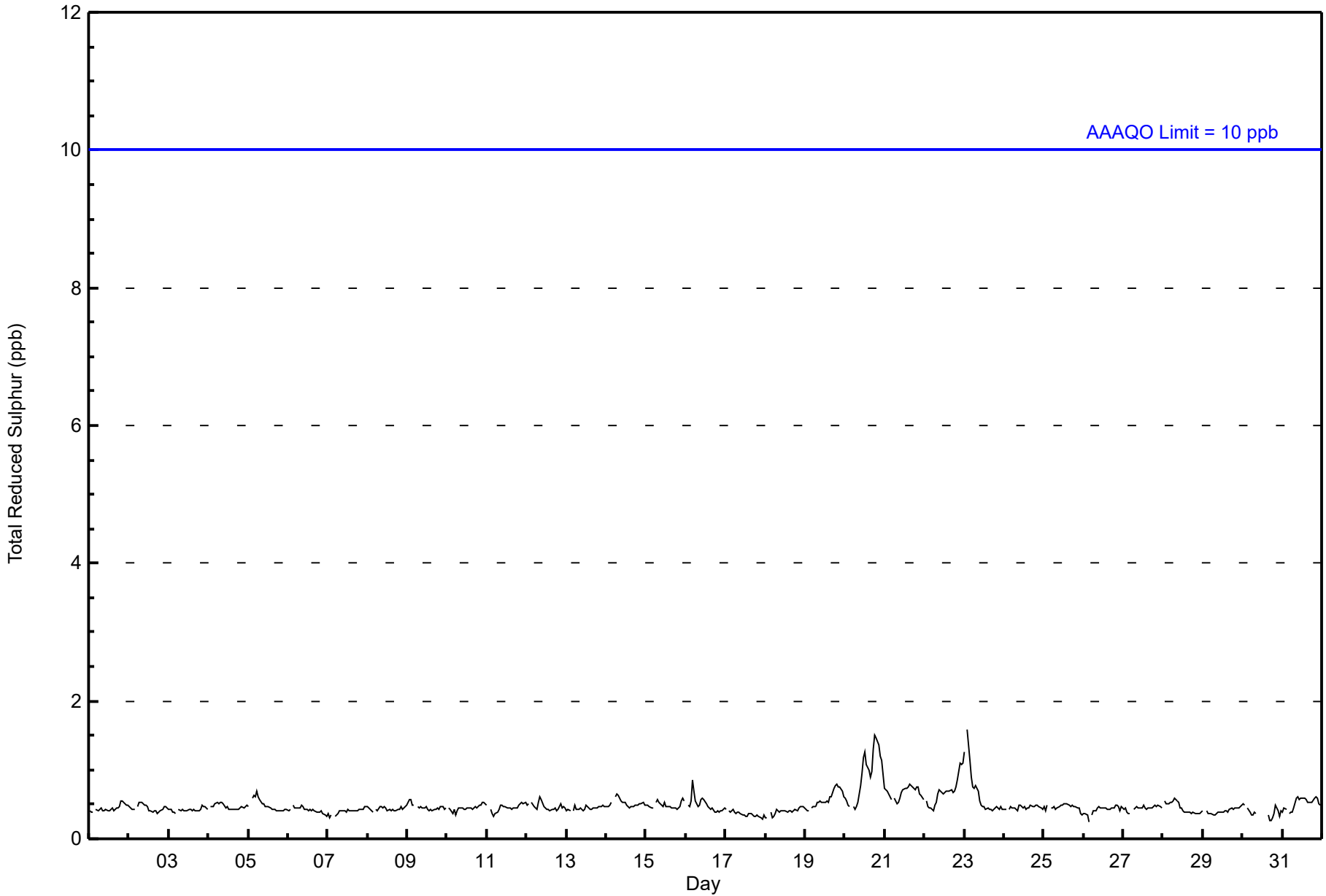
Total Reduced Sulphur (TRS) - ppb

Conklin - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 1.6 ppb on May 23 03:00	Maximum Daily Average: 0.9 ppb on May 20		Hours of Data:	707
Minimum Value: 0.3 ppb on May 26 04:00	Minimum Daily Average: 0.4 ppb on May 17		Hours of Missing Data:	37
Maximum Diurnal Average: 0.5 ppb at hour 21	Minimum Diurnal Average: 0.5 ppb at hour 2		Hours of Calibration:	37
Monthly Average: 0.49 ppb	Percentiles: P ₁ = 0.3 P ₁₀ = 0.4 Q ₁ = 0.4 Median = 0.4 Q ₃ = 0.5 P ₉₀ = 0.6 P ₉₉ = 1.2		Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5
2-May	0.5	0.5	0.4	0.4	Z	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.5
3-May	0.4	0.4	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.5
4-May	Z	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5
5-May	0.5	Z	0.6	0.6	0.6	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
6-May	0.4	0.4	Z	0.5	0.4	0.5	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.5
7-May	0.4	0.3	0.3	Z	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.5
8-May	0.5	0.5	0.4	0.4	Z	0.4	0.4	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.5	0.4	0.5
9-May	0.5	0.6	0.6	0.5	0.5	Z	0.5	0.4	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.4	0.5	0.5	0.6
10-May	Z	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5
11-May	0.5	Z	0.4	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
12-May	0.5	0.5	Z	0.5	0.5	0.4	0.4	0.5	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.5	0.6
13-May	0.4	0.4	0.4	Z	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
14-May	0.5	0.5	0.5	0.5	Z	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6
15-May	0.5	0.5	0.5	0.5	0.4	Z	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.4	0.5	0.6	0.6	0.6	0.5	0.6
16-May	Z	0.5	0.5	0.6	0.9	0.7	0.6	0.5	0.5	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
17-May	0.4	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4
18-May	0.3	0.3	Z	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.5
19-May	0.4	0.4	0.4	Z	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.8
20-May	0.6	0.5	0.5	0.5	Z	0.5	0.4	0.5	0.5	0.8	1.0	1.2	1.3	1.1	1.0	0.9	1.0	1.3	1.5	1.5	1.4	1.2	1.1	0.9	0.9	1.5
21-May	0.7	0.7	0.6	0.6	0.6	Z	0.6	0.5	0.5	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.7	0.8
22-May	Z	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.9	1.1	1.1	1.1	0.7	1.1
23-May	1.3	Z	1.6	1.1	0.9	0.8	0.7	0.8	0.7	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.5	0.4	0.6	1.6
24-May	0.4	0.4	Z	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5
25-May	0.5	0.4	0.5	Z	0.4	0.4	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.5	0.5
26-May	0.4	0.4	0.4	0.3	Z	0.3	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.4	0.5
27-May	0.4	0.4	0.4	0.4	0.4	Z	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.5
28-May	Z	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.6
29-May	0.4	Z	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.5
30-May	0.5	0.5	Z	0.5	0.4	0.3	0.4	0.4	0.4	C	C	C	C	C	C	0.4	0.3	0.3	0.3	0.4	0.5	0.4	0.3	0.4	--	0.5
31-May	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.5	0.5	0.6
																								Diurnal Average		
																								Diurnal Maximum		

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Conklin - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	707	100.00	100.00
3 - 4	0	0.00	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Conklin - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	28	13	18	20	23	81	68	99	91	82	52	21	7	24	38	40	705
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	28	13	18	20	23	81	68	99	91	82	52	21	7	24	38	40	705

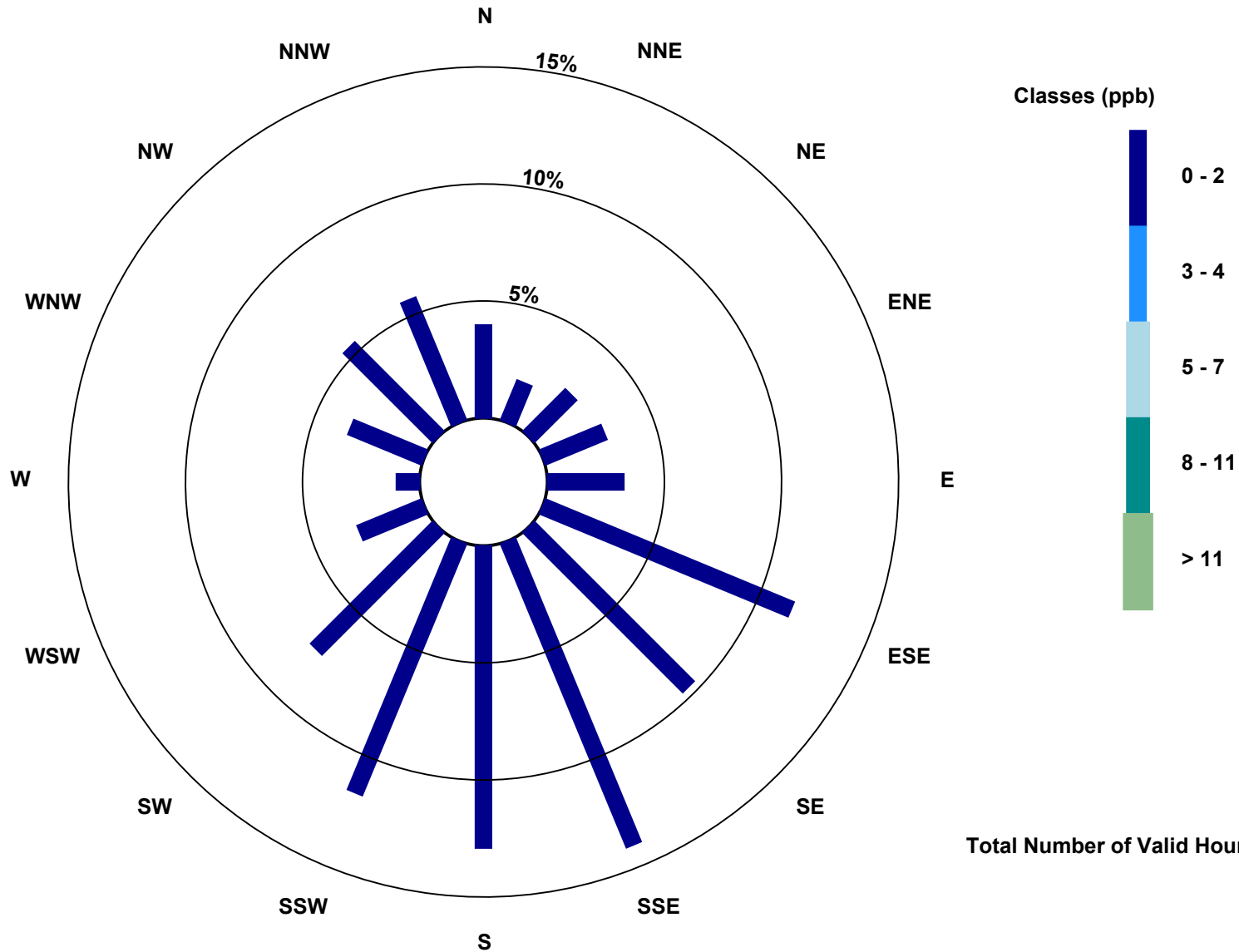
Total Number of Valid Hours: 705

Total Number of Hours: 744

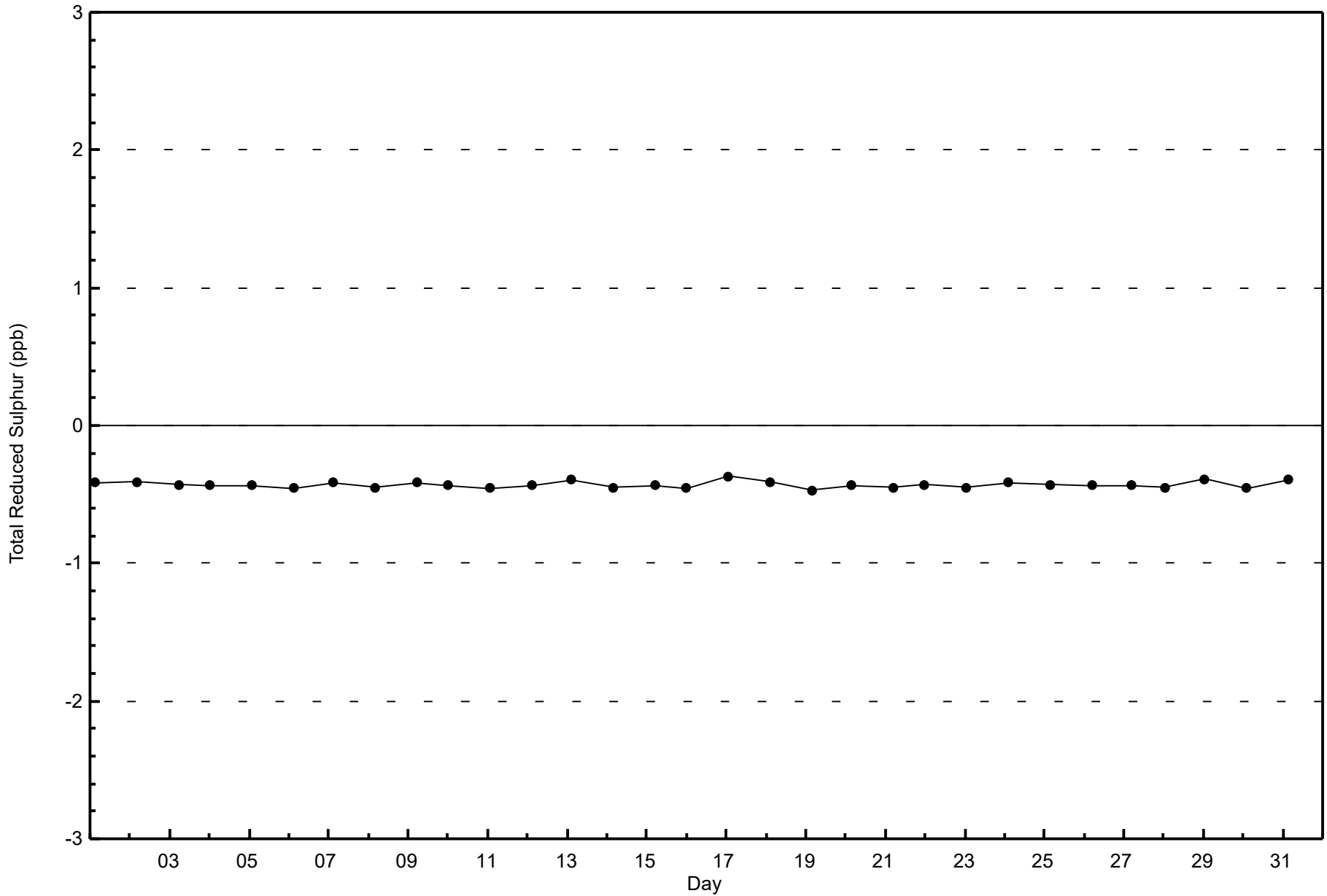


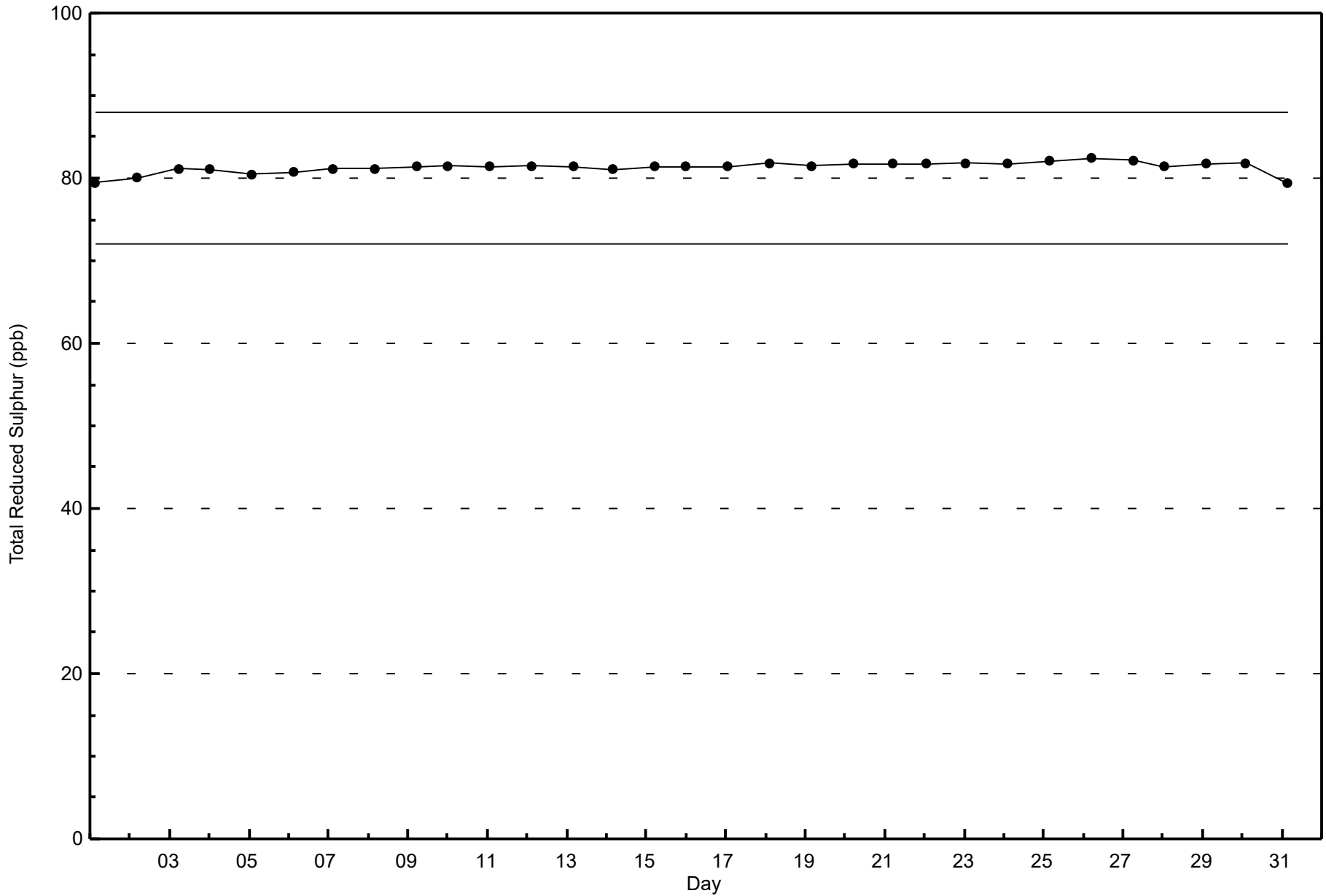
Wood Buffalo Environmental Association
Wind Rose May 2023

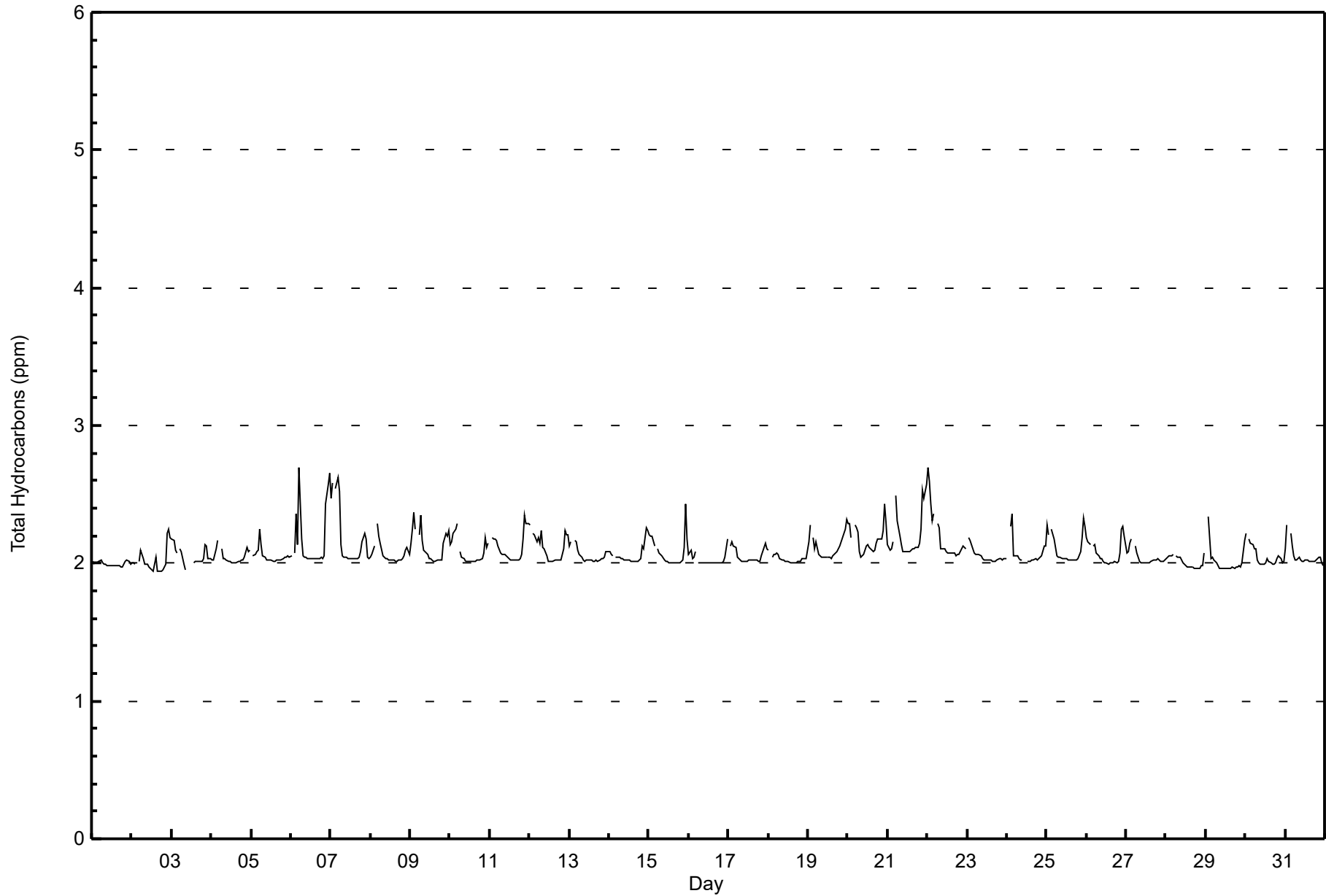
Total Reduced Sulphur (TRS) - ppb
Conklin



Total Number of Valid Hours: 705









Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Conklin - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	405	57.28	57.28
2.1 - 3.0	302	42.72	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Conklin - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	18	7	9	6	10	47	36	50	37	55	46	17	7	16	25	19	405
2.1 - 3.0	9	6	9	13	14	33	36	50	49	29	7	5	1	9	11	19	300
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	13	18	19	24	80	72	100	86	84	53	22	8	25	36	38	705

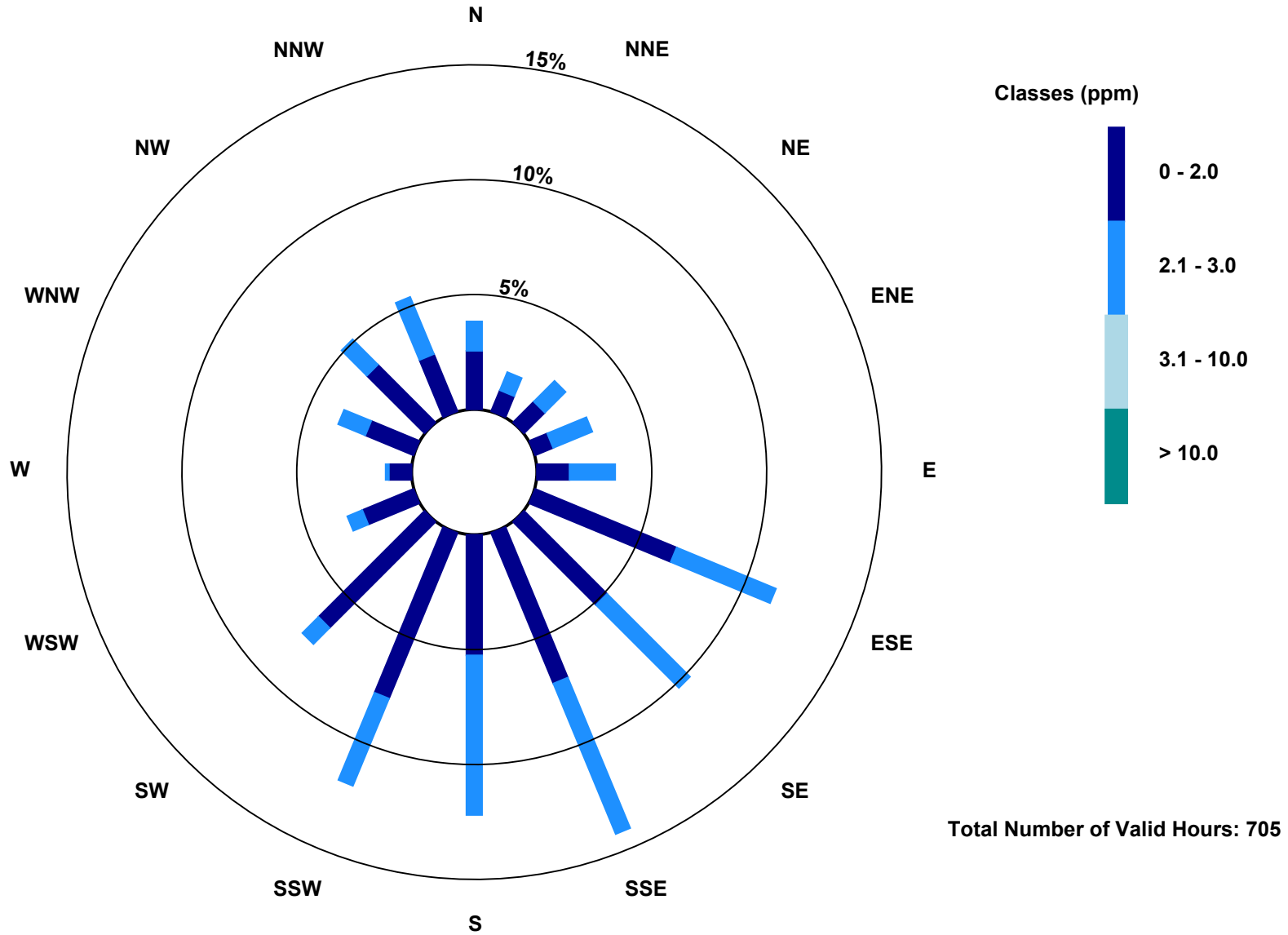
Total Number of Valid Hours: 705

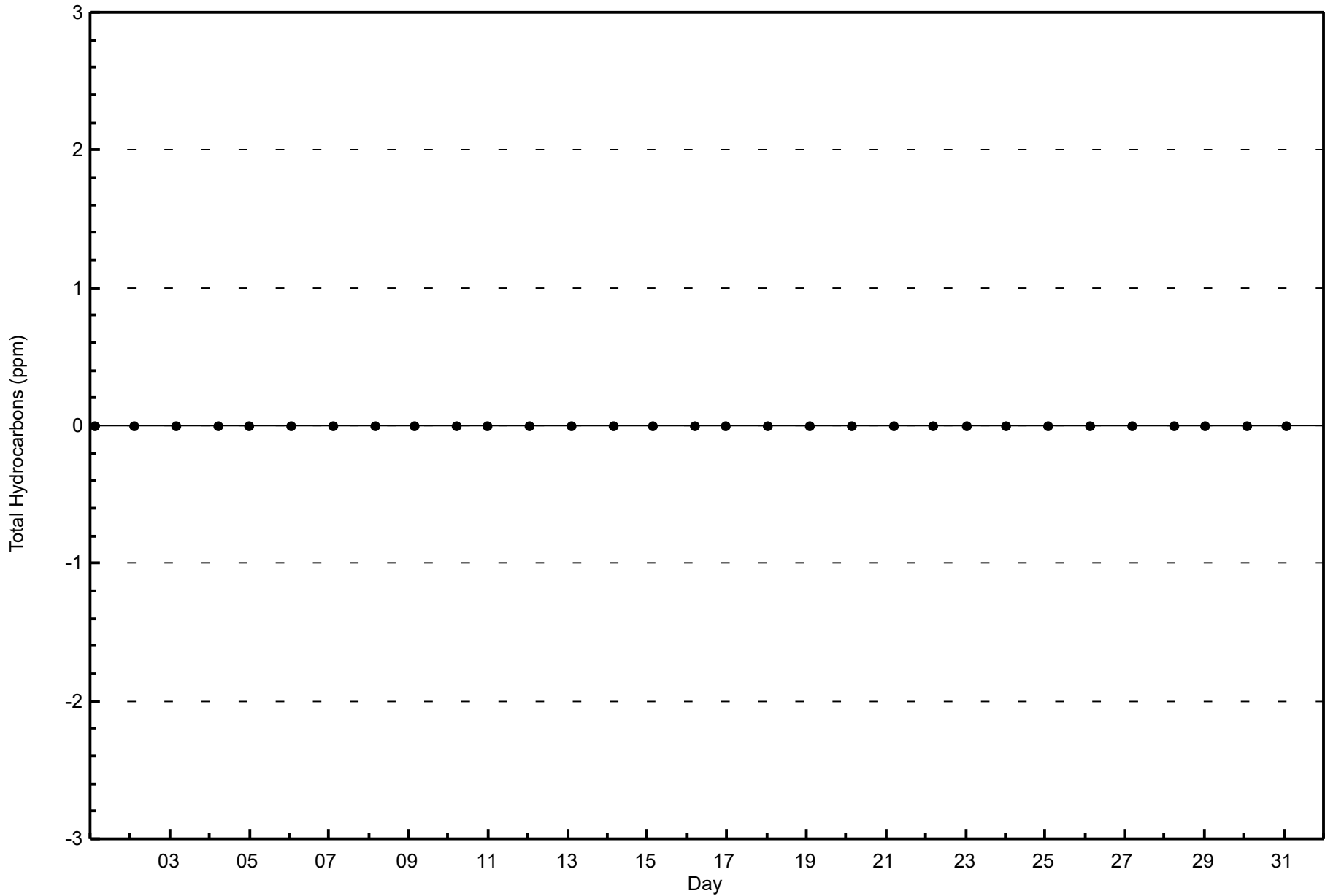
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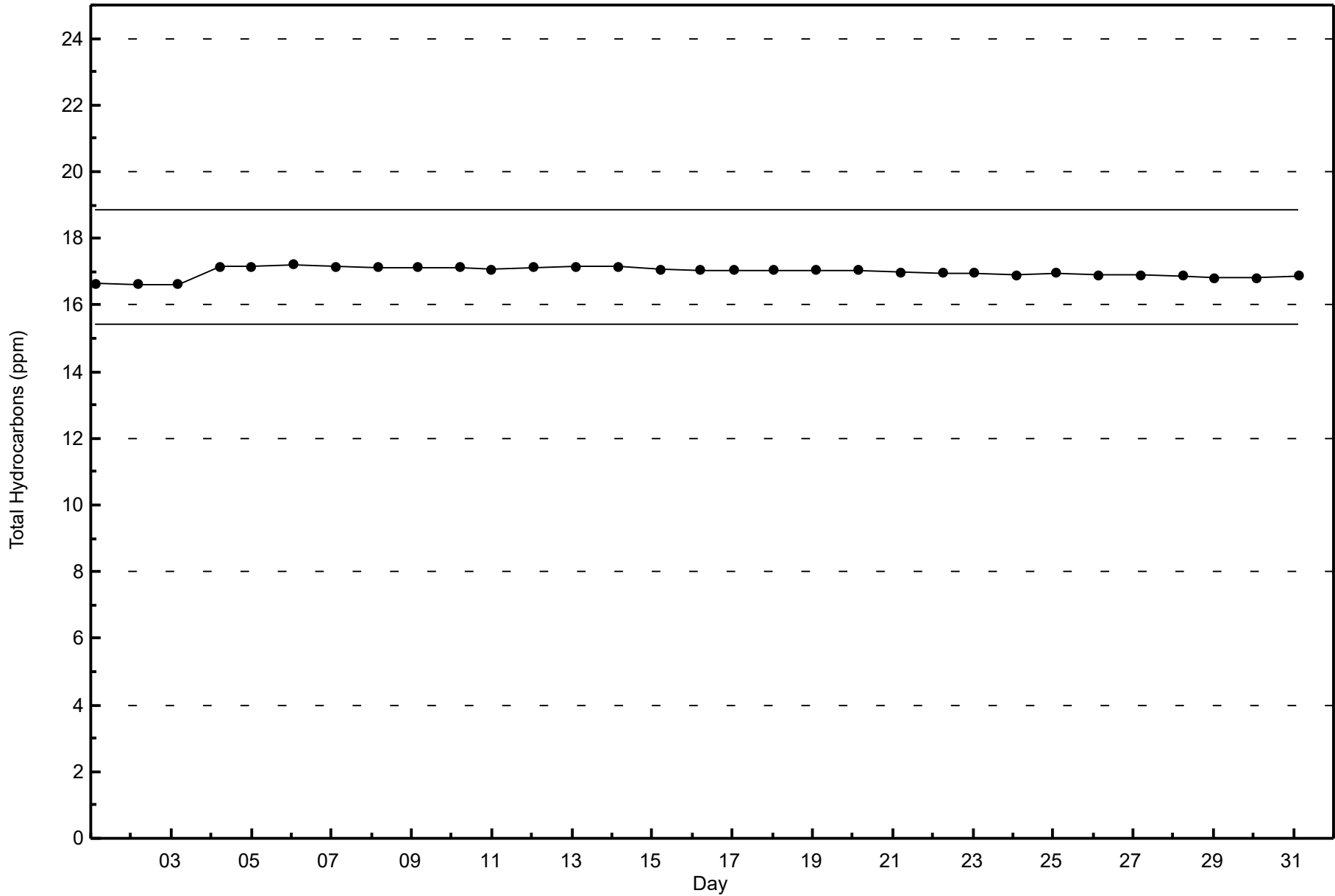


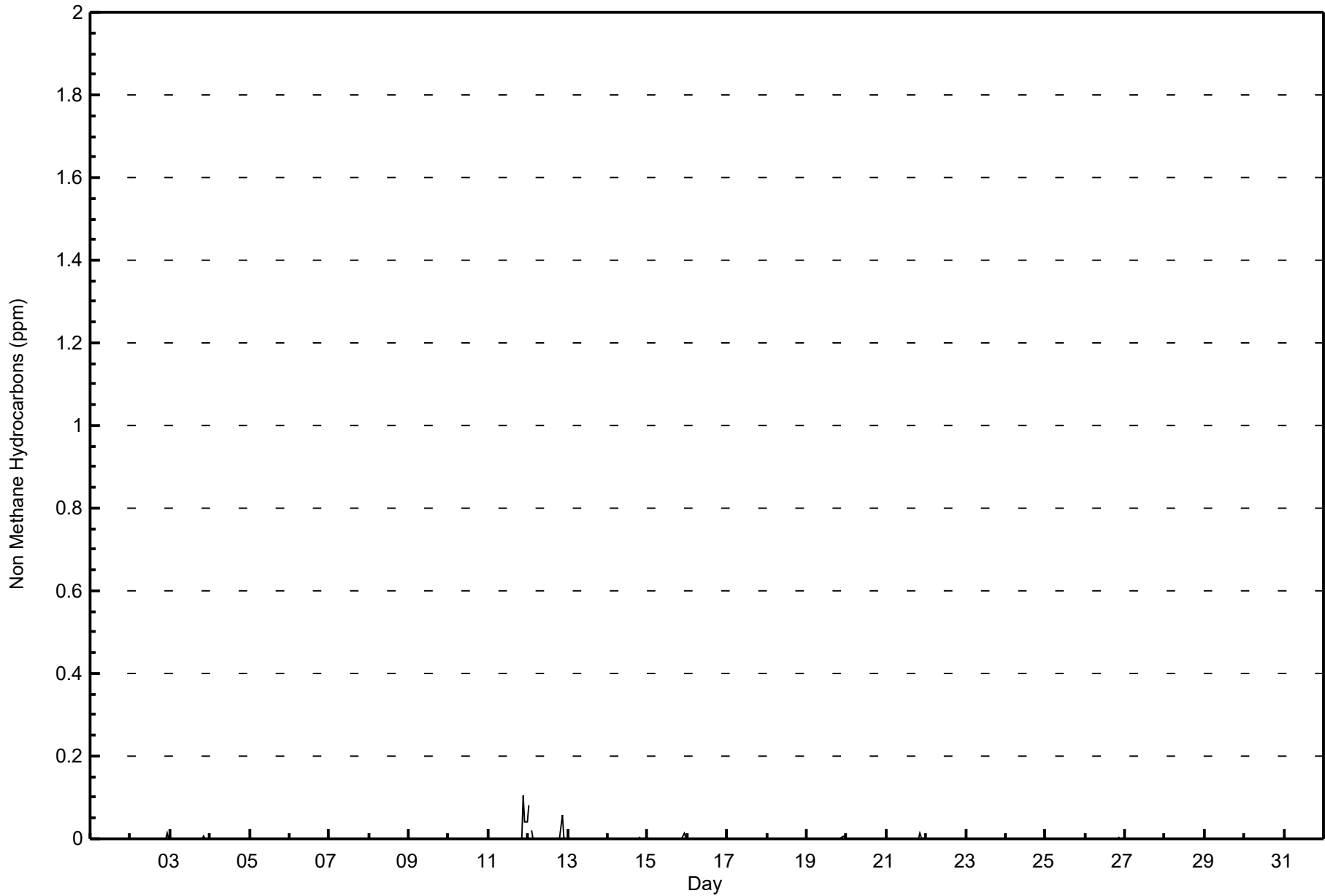
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Conklin











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Conklin - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	695	98.30	98.30
0.006 - 0.05	9	1.27	99.58
0.06 - 0.1	3	0.42	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



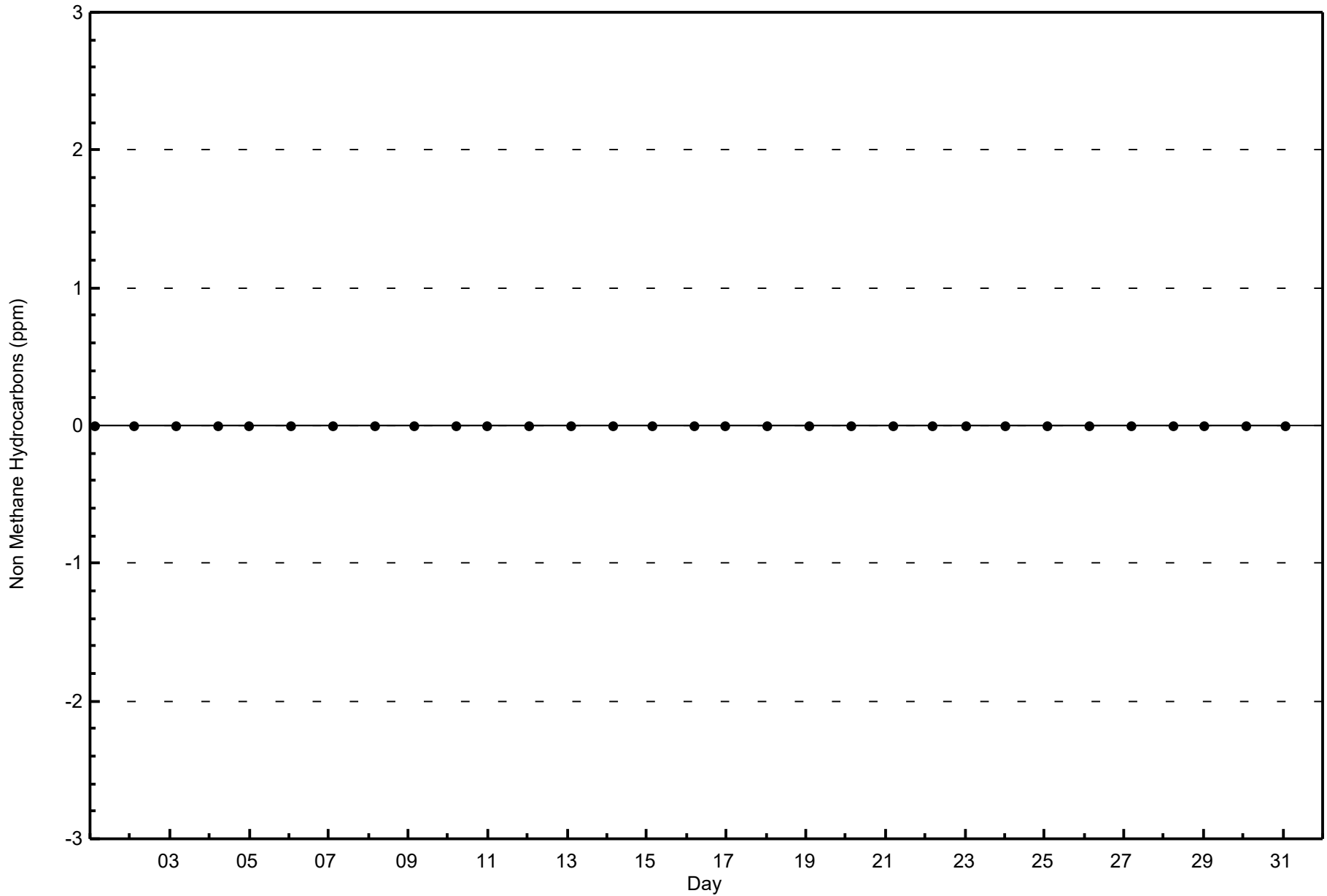
Wood Buffalo Environmental Association
Frequency Distribution

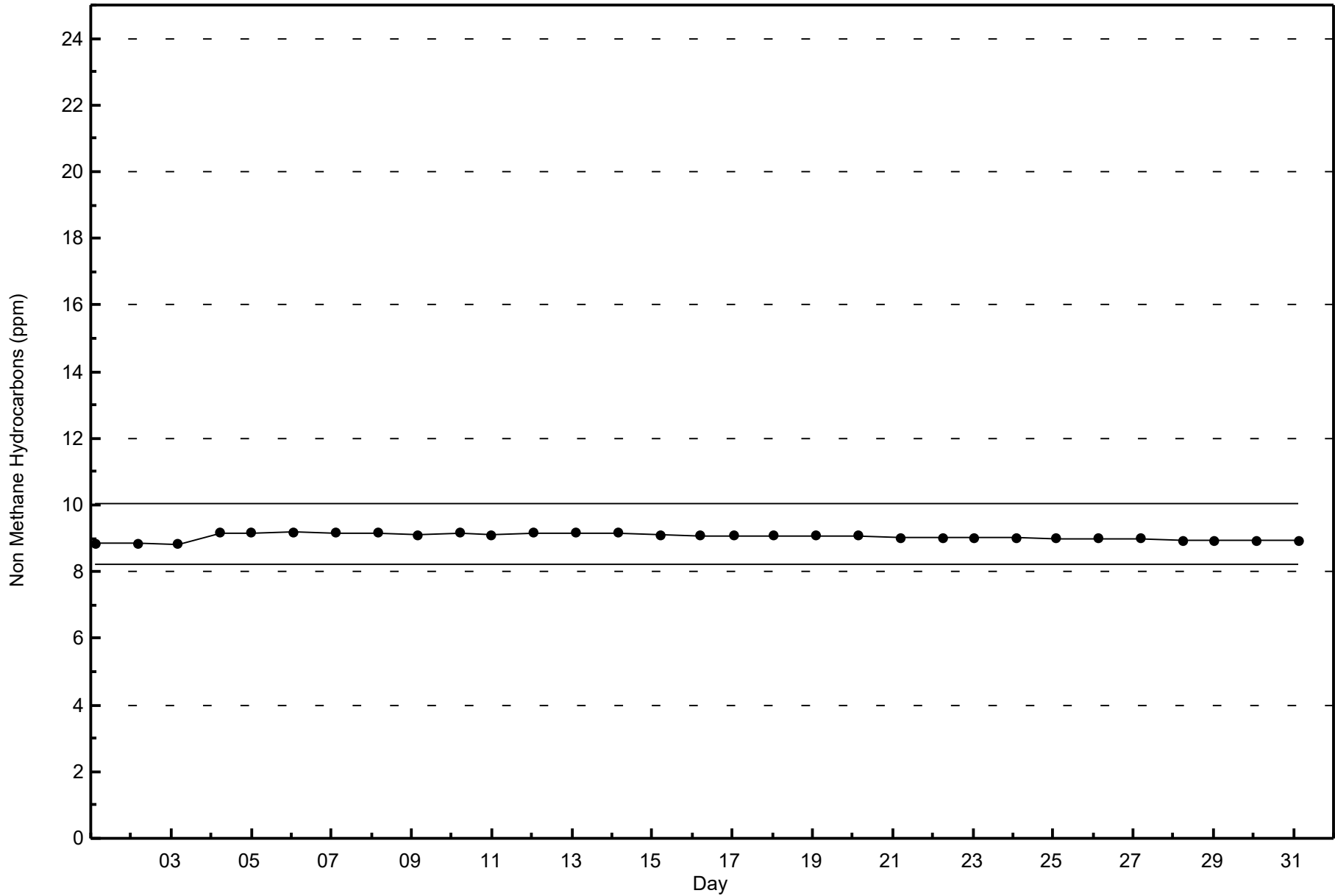
Non Methane Hydrocarbons (NMHC) - ppm
Conklin - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	27	13	18	19	23	80	69	96	84	83	53	22	8	24	36	38	693
0.006 - 0.05	0	0	0	0	1	0	2	4	2	0	0	0	0	0	0	0	9
0.06 - 0.1	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	3
> 0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	13	18	19	24	80	72	100	86	84	53	22	8	25	36	38	705

Total Number of Valid Hours: 705

Total Number of Hours: 744

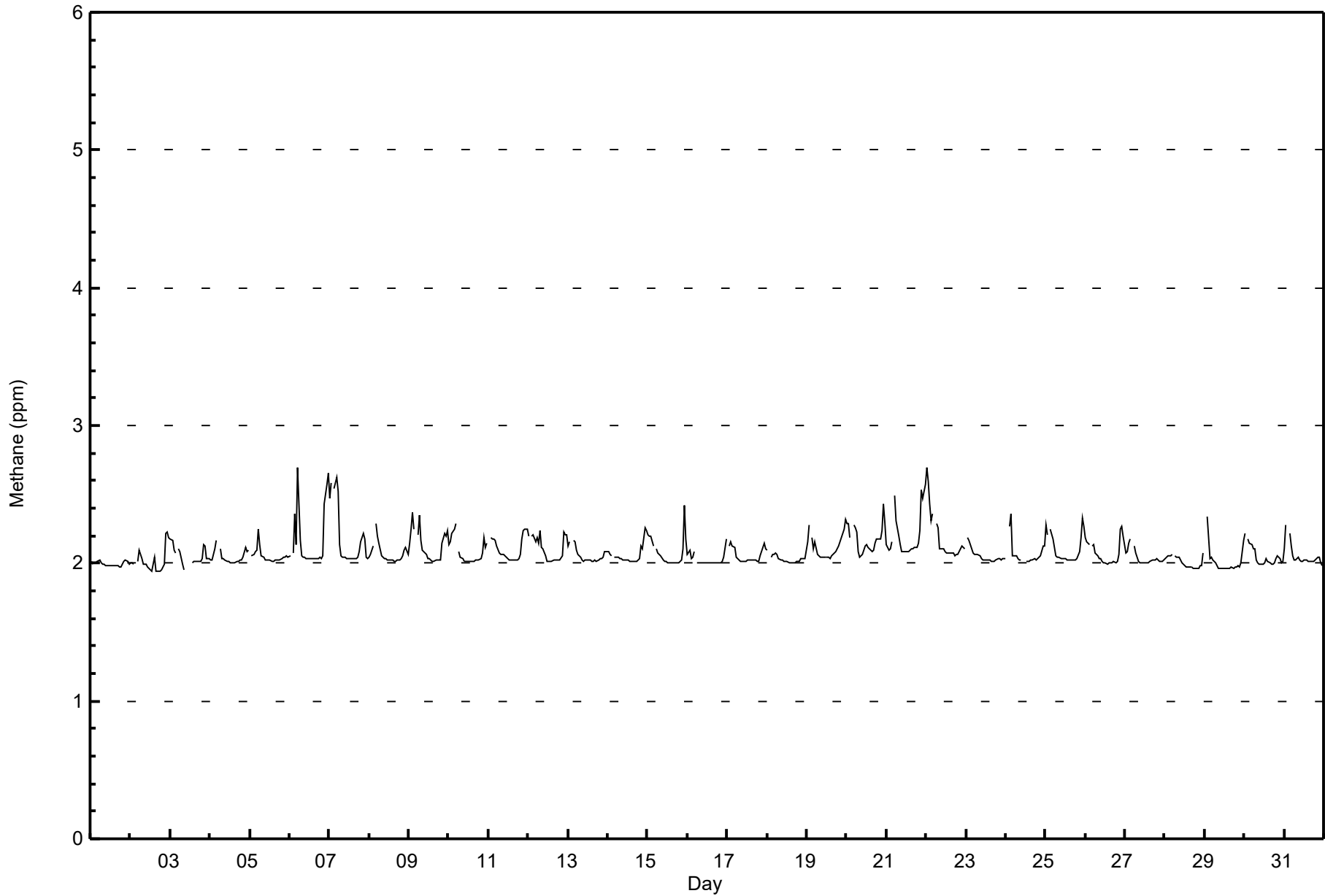






Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Conklin - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Methane (CH₄) - ppm
Conklin - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	406	57.43	57.43
2.1 - 3.0	301	42.57	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Conklin - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	18	7	9	6	10	47	36	50	37	56	46	17	7	16	25	19	406
2.1 - 3.0	9	6	9	13	14	33	36	50	49	28	7	5	1	9	11	19	299
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	13	18	19	24	80	72	100	86	84	53	22	8	25	36	38	705

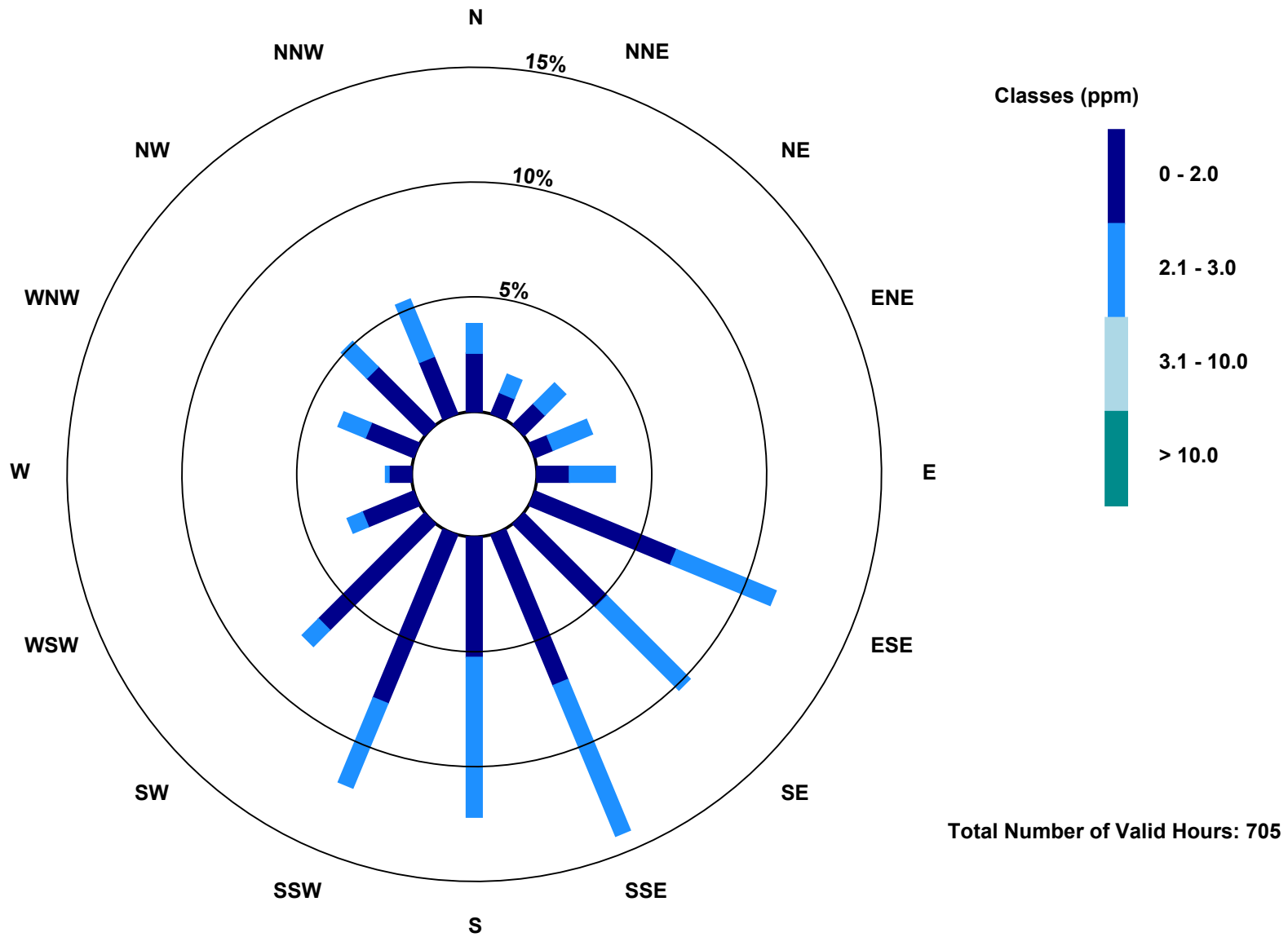
Total Number of Valid Hours: 705

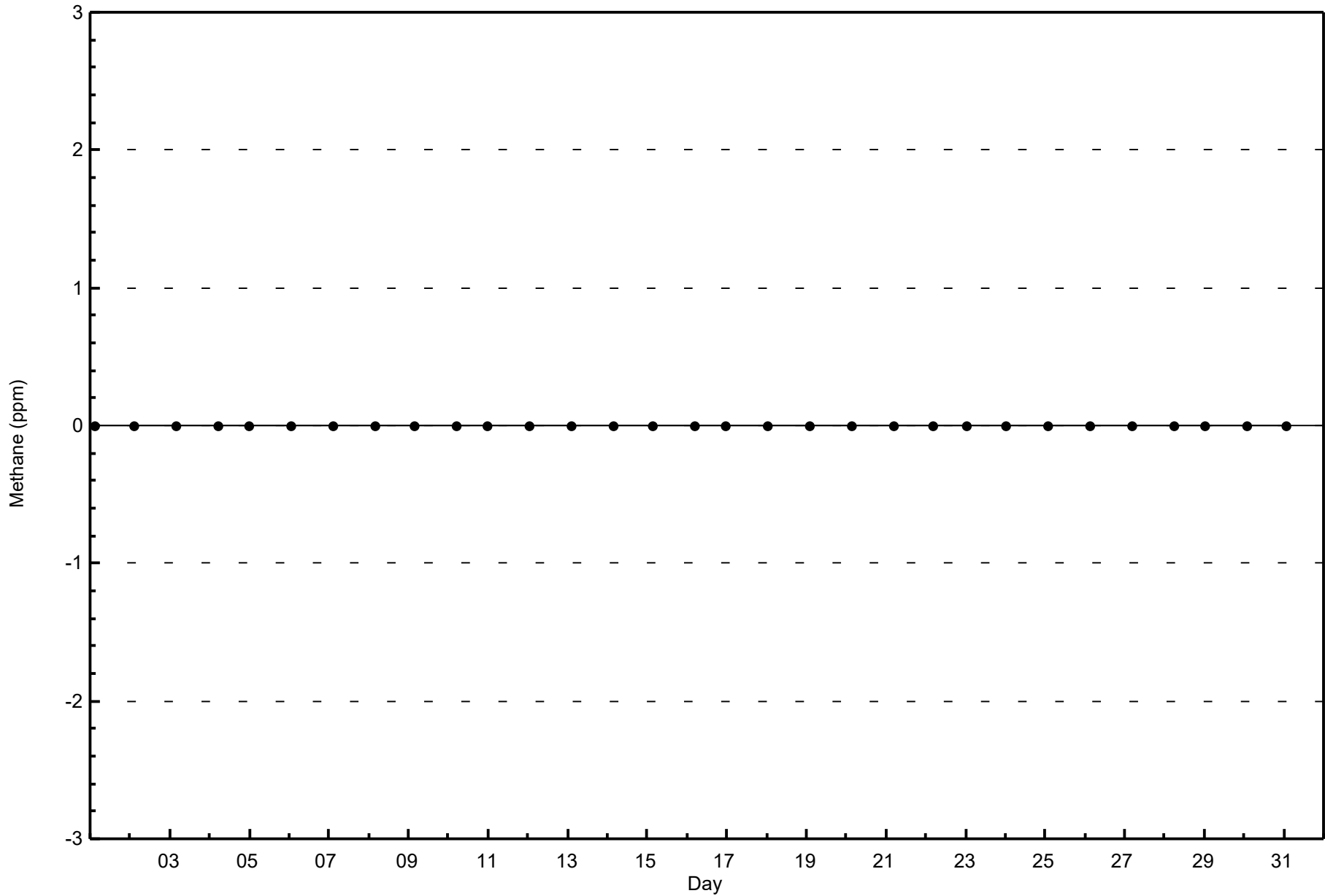
Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Methane (CH₄) - ppm
Conklin

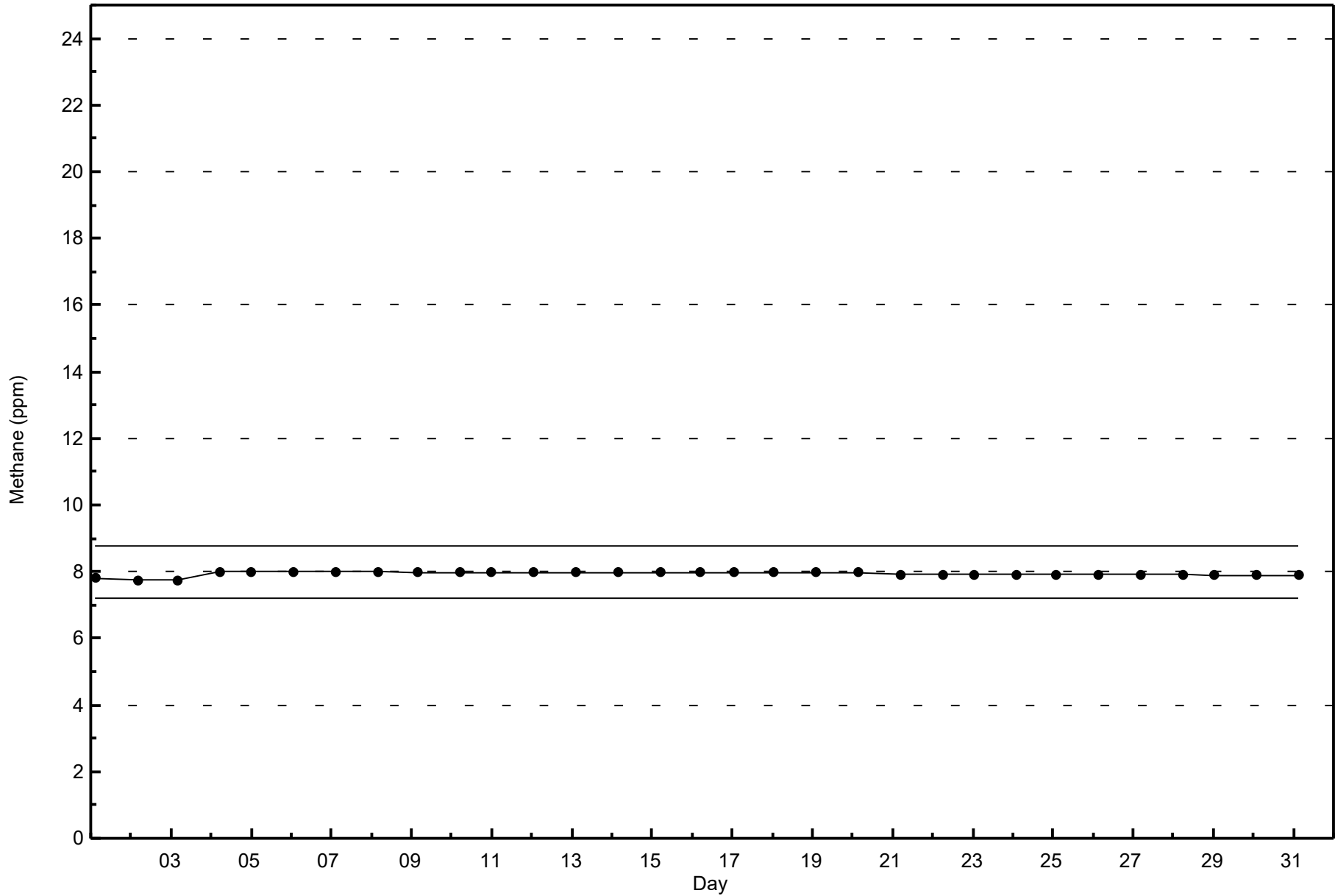






Wood Buffalo Environmental Association
Span Responses

Methane (CH₄) - ppm
Conklin - May 2023



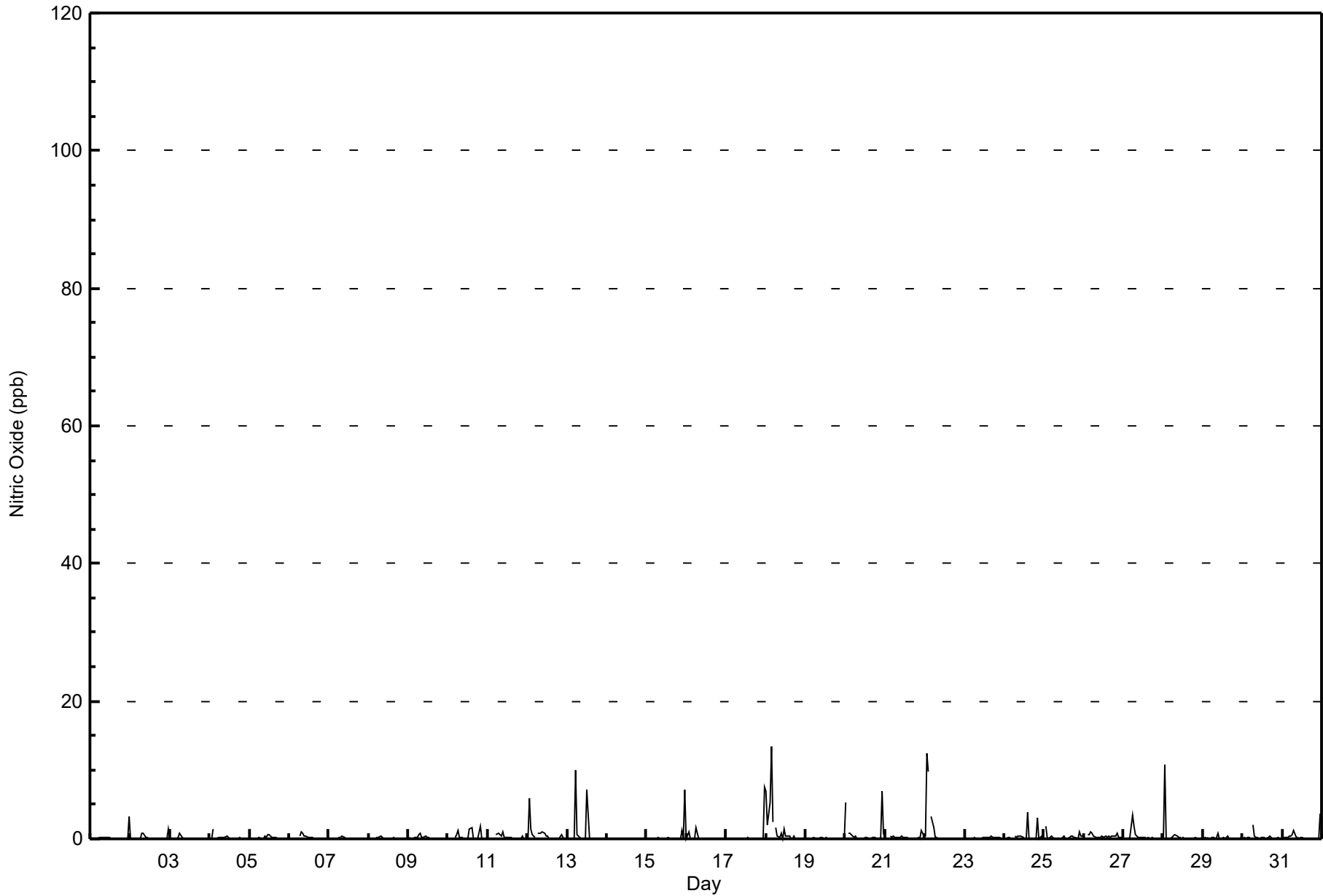


Maximum Value: 13.4 ppb on May 18 04:00																				Maximum Daily Average: 1.6 ppb on May 18					Hours in Service: 744		
Minimum Value: 0.0 ppb on May 1 20:00																				Minimum Daily Average: 0.0 ppb on May 14					Hours of Data: 708		
Maximum Diurnal Average: 1.3 ppb at hour 2																				Minimum Diurnal Average: 0.0 ppb at hour 19					Hours of Missing Data: 36		
Monthly Average: 0.35 ppb																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.2 P ₉₀ = 0.6 P ₉₉ = 7.2					Hours of Calibration: 36		
																									Percent Operational Time: 100.0		
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	Z	0.0	0.1	0.0	0.1	0.2	0.2	0.3	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.2	3.3
2-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.2	1.5	
3-May	0.1	0.0	Z	0.0	0.1	0.2	0.8	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	
4-May	0.0	0.0	1.4	Z	0.0	0.1	0.2	0.2	0.2	0.3	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.4	
5-May	0.0	0.0	0.0	0.0	Z	0.3	0.2	0.1	0.1	0.3	0.2	0.7	0.5	0.3	0.1	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	
6-May	0.0	0.0	0.0	0.0	0.0	Z	0.4	1.0	0.8	0.4	0.4	0.3	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0	
7-May	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	
8-May	0.0	Z	0.0	0.0	0.1	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.2	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.3	
9-May	0.1	0.1	Z	0.1	0.2	0.3	0.6	0.9	0.3	0.3	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.9	
10-May	0.0	0.0	0.0	Z	0.3	0.6	1.2	0.1	0.1	0.0	0.0	0.0	0.0	1.5	1.5	0.1	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.3	1.9	
11-May	0.0	0.0	0.0	0.0	Z	0.6	0.7	0.6	0.5	0.9	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.4	0.1	0.1	0.2	0.9	
12-May	0.1	5.8	1.4	0.6	0.2	Z	0.7	0.8	0.7	1.1	0.7	0.3	0.5	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.2	0.0	0.0	0.6	5.8	
13-May	Z	0.0	0.0	0.0	0.0	9.9	0.6	0.2	0.1	0.0	0.0	0.0	7.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.8	9.9	
14-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
15-May	0.0	0.0	Z	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	1.2	0.1	7.2	0.4	7.2	
16-May	0.0	1.0	0.0	Z	0.0	0.0	1.7	0.0	0.1	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.7	
17-May	0.0	0.0	0.0	0.0	Z	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	0.4	7.5	
18-May	6.8	2.1	5.3	13.4	2.4	Z	1.6	0.4	0.1	0.7	0.1	1.5	0.4	0.4	0.4	0.1	0.0	0.4	0.0	0.0	0.0	0.1	0.0	0.0	1.6	13.4	
19-May	Z	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	
20-May	5.4	Z	0.8	0.7	0.4	0.3	0.5	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	6.9	0.8	0.7	6.9	
21-May	0.0	0.0	Z	0.4	0.2	0.4	0.1	0.2	0.1	0.3	0.4	0.3	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.1	1.2	0.4	0.2	1.2	
22-May	0.5	12.4	9.8	Z	3.2	1.6	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	12.4	
23-May	0.0	0.1	0.0	0.0	Z	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.0	0.1	0.3	
24-May	0.0	0.0	0.3	0.1	0.0	Z	0.4	0.2	0.4	0.5	0.4	0.1	0.1	0.0	4.0	0.0	0.0	0.0	0.0	3.0	0.0	0.3	0.0	0.0	0.4	4.0	
25-May	Z	1.8	0.3	0.1	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.0	0.1	0.3	0.3	0.5	0.2	0.2	0.1	1.0	0.4	0.4	0.3	1.8	
26-May	0.4	Z	0.5	0.7	1.0	0.8	0.5	0.2	0.2	0.3	0.2	0.3	0.3	0.4	0.2	0.4	0.2	0.3	0.3	0.4	0.8	0.2	0.1	0.2	0.4	1.0	
27-May	0.0	0.0	Z	0.0	0.2	3.4	1.8	0.6	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.3	3.4	
28-May	0.0	10.8	0.0	Z	0.0	0.1	0.3	0.6	0.4	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.6	10.8	
29-May	0.0	0.1	0.1	0.1	Z	0.2	0.1	0.1	0.2	0.9	0.0	0.1	0.3	0.0	0.1	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.9	
30-May	0.1	0.2	0.1	0.1	0.2	Z	2.1	0.5	0.2	0.1	0.1	0.2	0.3	0.2	0.0	0.2	0.4	0.2	0.0	0.0	0.0	0.3	0.0	0.0	0.2	2.1	
31-May	Z	0.1	0.2	0.1	0.4	0.4	0.7	1.2	0.2	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	3.6	0.4	3.6	
																								Diurnal Average			
																								Diurnal Maximum			
0.5 1.3 0.8 0.6 0.4 0.8 0.5 0.3 0.2 0.3 0.2 0.2 0.4 0.2 0.2 0.1 0.1 0.1 0.0 0.1 0.2 0.1 0.3 0.8																											
6.8 12.4 9.8 13.4 3.2 9.9 2.1 1.2 0.9 1.1 0.7 1.5 7.2 1.5 4.0 0.5 0.4 0.5 0.3 1.9 3.0 1.2 6.9 7.5																											
Z - zerospan C - Calibration																											



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Conklin - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Conklin - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	708	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Conklin - May 2023**

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Totals
0 - 20	27	13	17	19	23	81	72	106	88	81	53	22	8	25	36	36	707
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	13	17	19	23	81	72	106	88	81	53	22	8	25	36	36	707

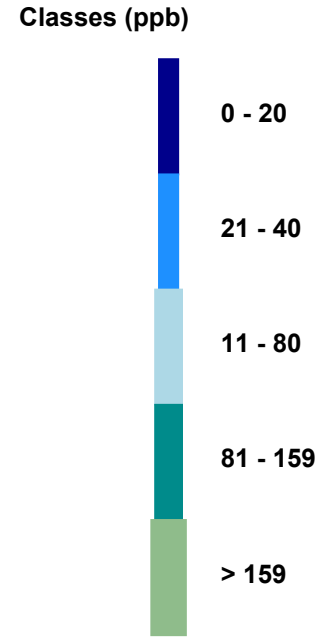
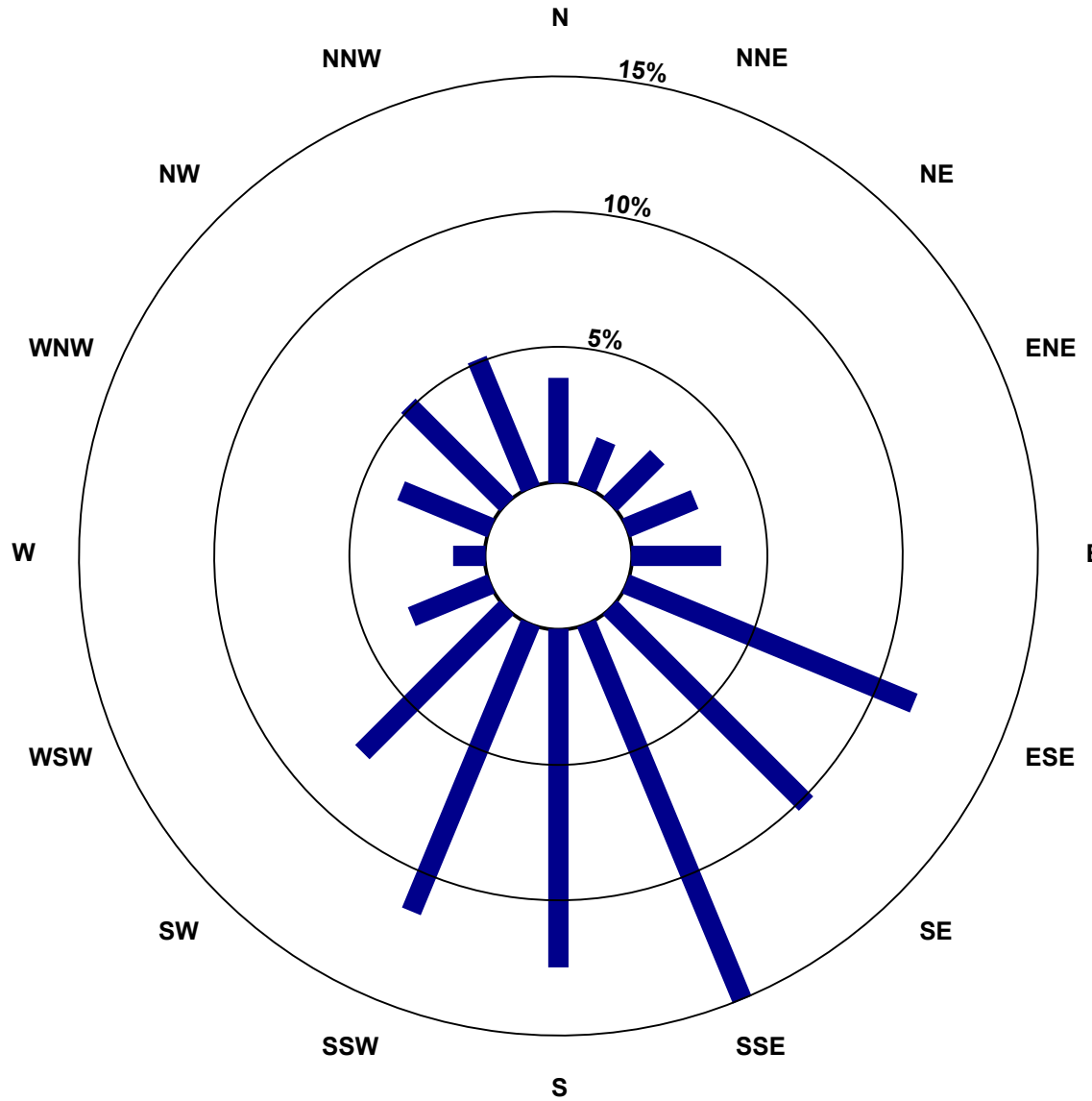
Total Number of Valid Hours: 707

Total Number of Hours: 744

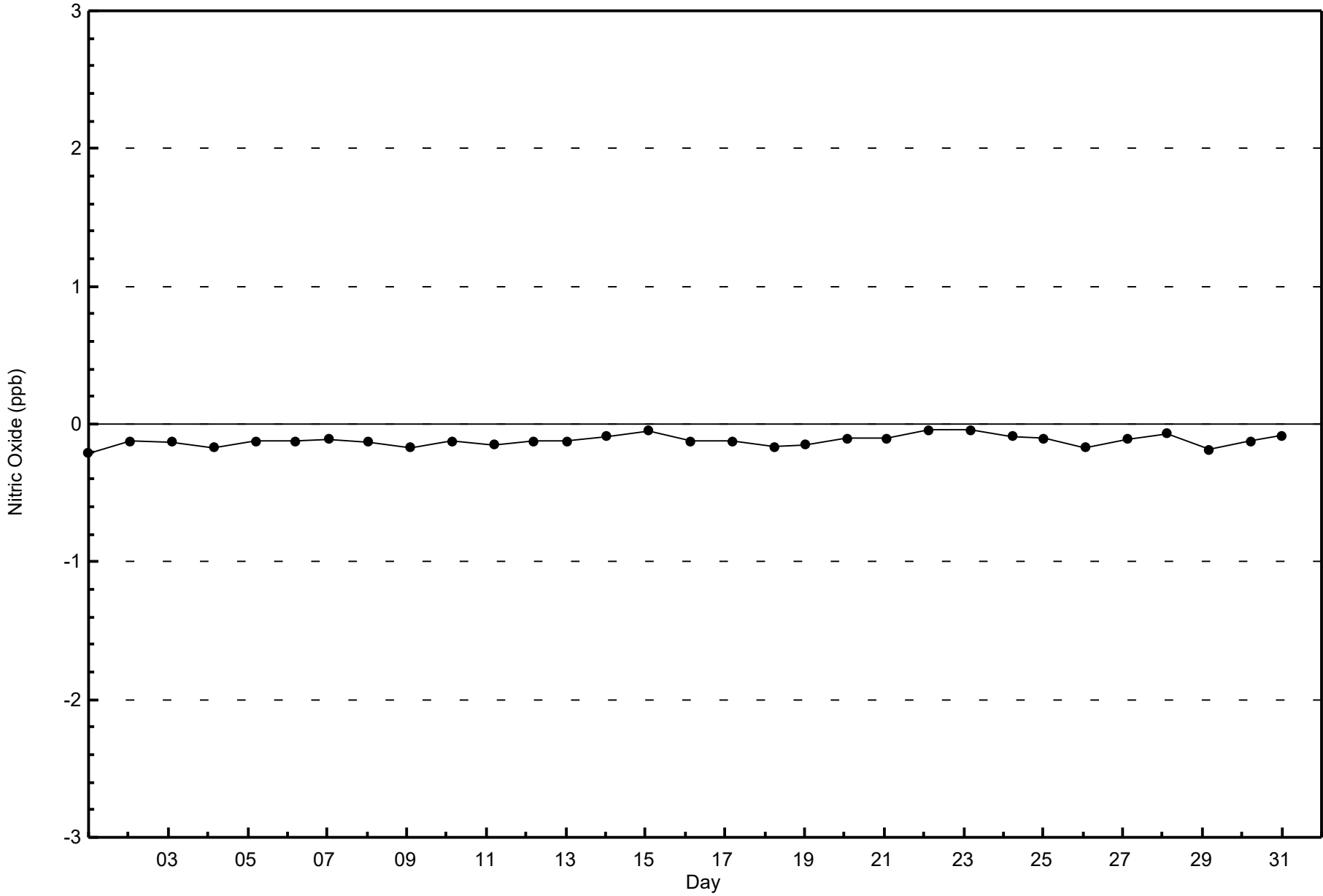


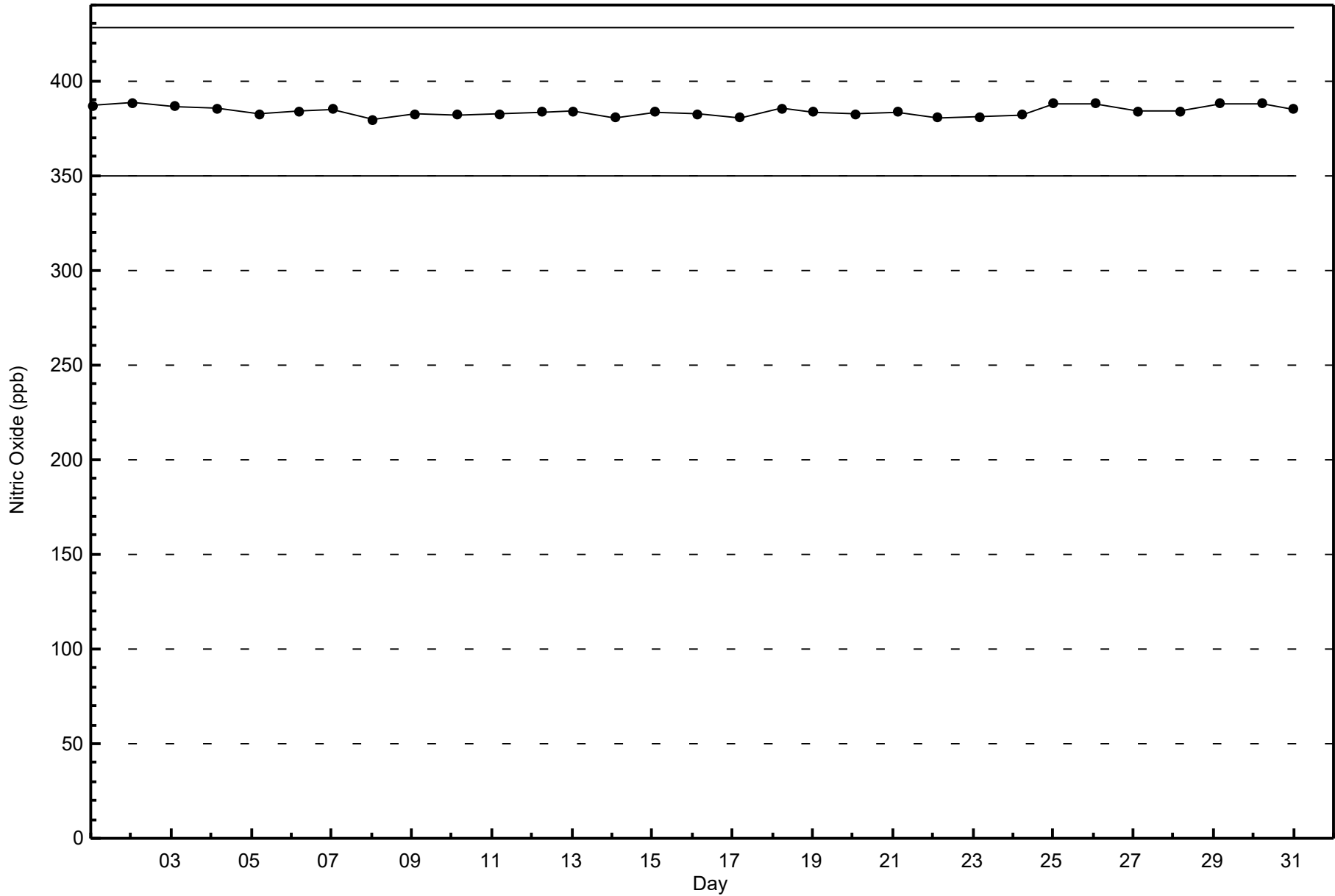
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Conklin



Total Number of Valid Hours: 707







Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

Conklin - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 16.0 ppb on May 15 22:00	Maximum Daily Average: 4.7 ppb on May 20		Hours of Data:	708
Minimum Value: 0.0 ppb on May 16 09:00	Minimum Daily Average: 1.0 ppb on May 29		Hours of Missing Data:	36
Maximum Diurnal Average: 3.0 ppb at hour 21	Minimum Diurnal Average: 1.3 ppb at hour 16		Hours of Calibration:	36
Monthly Average: 1.98 ppb	Percentiles: P ₁ = 0.3 P ₁₀ = 0.6 Q ₁ = 0.9 Median = 1.4 Q ₃ = 2.3 P ₉₀ = 4.0 P ₉₉ = 10.1		Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	Z	1.4	2.3	2.9	2.5	2.3	2.0	1.4	1.2	1.2	1.2	1.1	0.6	0.6	0.7	0.8	0.7	0.8	0.9	1.0	1.7	2.5	1.5	4.0	1.5	4.0
2-May	2.4	Z	1.1	1.0	2.3	1.9	3.1	3.7	3.4	1.9	1.4	1.0	0.6	0.4	0.3	0.3	0.4	0.3	0.6	1.4	2.7	2.2	1.6	9.7	1.9	9.7
3-May	7.3	4.1	Z	1.2	1.2	0.9	1.5	0.9	0.5	0.6	0.7	0.6	0.7	0.8	0.7	0.7	0.6	0.7	0.8	0.8	3.2	1.6	1.6	0.9	1.4	7.3
4-May	1.3	2.0	3.5	Z	2.5	3.0	2.4	1.9	1.6	1.9	1.8	1.0	0.7	0.7	0.7	0.7	0.9	2.3	0.9	2.0	1.0	0.9	2.7	1.6	3.5	
5-May	1.7	1.3	1.5	1.9	Z	2.8	2.2	0.9	0.9	1.4	0.9	1.4	1.5	0.8	0.6	1.0	1.1	0.5	0.4	0.2	0.3	0.3	0.6	1.3	1.1	2.8
6-May	1.4	2.2	4.0	2.3	1.9	Z	1.8	2.6	2.1	1.5	1.2	0.9	0.7	0.8	0.8	0.8	0.6	0.5	0.6	0.2	0.9	0.7	0.7	0.6	1.3	4.0
7-May	Z	0.8	1.2	1.1	0.6	0.5	0.9	1.2	1.2	0.8	0.5	0.6	0.8	0.6	0.4	0.6	1.0	1.0	1.1	0.8	1.8	1.9	2.4	1.5	1.0	2.4
8-May	1.0	Z	1.3	1.2	1.9	1.7	1.4	1.8	1.2	0.8	0.8	1.0	0.9	0.7	0.7	0.7	0.8	0.9	0.8	0.7	1.4	1.1	1.2	1.3	1.1	1.9
9-May	0.9	1.0	Z	0.7	0.6	0.5	0.5	2.1	1.4	1.7	1.7	1.6	1.2	1.1	0.8	0.7	1.2	1.4	2.1	1.2	3.0	3.1	1.3	1.8	1.4	3.1
10-May	1.6	1.9	2.1	Z	1.3	1.2	2.8	1.1	1.1	0.6	0.7	0.7	0.8	1.3	2.1	1.0	1.2	1.2	1.1	6.9	4.6	2.2	1.6	2.5	1.8	6.9
11-May	2.5	1.5	1.0	0.9	Z	1.2	1.9	2.1	2.8	3.9	2.0	1.7	1.2	1.0	1.1	1.1	1.1	1.1	2.3	3.2	3.5	5.9	8.7	7.6	2.6	8.7
12-May	4.5	5.4	7.3	7.5	2.7	Z	3.0	3.4	3.9	5.5	3.1	1.6	2.0	1.2	0.9	1.1	0.9	1.1	1.0	1.8	7.0	2.2	1.3	1.1	3.0	7.5
13-May	Z	1.0	0.7	0.6	0.6	13.5	4.0	1.6	0.9	0.8	1.0	0.9	2.5	0.8	0.7	0.6	0.7	0.7	1.0	1.6	4.2	1.4	1.5	1.5	1.9	13.5
14-May	1.1	Z	1.1	1.0	1.2	1.2	1.4	1.5	1.4	1.2	1.1	1.0	0.9	0.7	0.7	0.7	0.9	0.9	1.1	2.1	1.9	1.3	1.7	1.2	2.1	1.7
15-May	2.0	1.8	Z	1.8	1.5	2.0	1.6	1.8	1.6	1.1	0.8	0.7	0.7	0.9	0.6	0.6	0.5	0.7	0.5	1.1	4.1	16.0	4.5	5.6	2.3	16.0
16-May	1.9	2.2	1.1	Z	2.1	1.2	1.8	0.1	0.0	C	C	C	C	C	0.4	0.3	0.4	0.3	0.7	1.0	1.3	1.7	1.7	1.5	1.1	2.2
17-May	1.4	1.0	0.9	1.3	Z	2.2	1.3	1.7	0.9	0.9	0.6	0.5	0.7	0.8	0.7	0.7	0.4	0.3	0.3	0.7	0.6	0.6	1.3	4.7	1.1	4.7
18-May	7.7	5.2	4.5	7.4	4.4	Z	2.3	1.4	0.9	1.7	0.8	1.9	1.4	1.4	1.2	0.7	0.7	1.2	0.6	0.8	1.5	2.9	1.6	2.1	2.4	7.7
19-May	Z	2.2	1.5	1.3	1.4	1.6	1.9	1.9	2.3	2.2	1.9	2.0	2.8	2.2	2.2	2.8	2.9	3.7	3.8	4.1	3.6	3.4	2.8	2.5	2.5	4.1
20-May	4.3	Z	2.9	2.5	2.1	1.0	1.1	0.9	1.3	3.1	4.3	6.0	6.5	4.7	4.3	4.9	6.2	8.2	8.7	8.0	6.1	4.4	11.0	6.7	4.7	11.0
21-May	3.8	3.7	Z	3.8	2.4	2.3	1.8	2.6	2.5	3.2	3.9	4.0	4.3	3.8	3.8	4.1	3.9	4.0	4.2	4.7	6.2	4.5	4.8	3.5	3.7	6.2
22-May	2.0	2.5	2.7	Z	3.4	2.3	2.0	2.4	1.9	1.9	1.7	1.5	1.6	1.8	1.8	1.7	1.6	1.5	2.2	3.1	4.9	11.6	10.1	9.1	3.3	11.6
23-May	12.0	14.9	9.6	4.9	Z	2.3	2.0	2.0	1.5	0.7	0.5	0.7	0.8	0.8	0.9	0.5	1.2	1.2	1.8	1.8	1.4	1.0	1.4	1.8	2.9	14.9
24-May	1.3	1.2	1.0	0.6	0.9	Z	2.9	1.4	1.6	1.8	1.5	1.3	0.9	0.7	1.1	1.0	1.0	1.2	1.0	1.0	4.2	1.2	2.3	1.0	1.4	4.2
25-May	Z	1.6	1.4	1.0	1.4	1.4	1.1	0.8	1.0	0.8	0.8	0.8	1.1	0.9	1.1	1.7	1.9	2.5	1.3	2.1	1.6	4.7	2.3	1.8	1.5	4.7
26-May	1.1	Z	1.7	0.9	1.1	0.8	1.1	1.0	1.1	1.1	1.2	1.4	1.0	1.3	1.5	1.7	1.4	2.8	1.8	3.8	7.4	3.3	1.8	1.1	1.8	7.4
27-May	0.9	1.4	Z	1.7	1.3	5.0	4.0	2.1	1.4	1.3	1.3	1.8	2.0	1.7	1.2	1.8	1.3	1.9	2.3	2.2	1.9	1.3	1.7	1.8	1.9	5.0
28-May	2.4	10.1	2.8	Z	2.4	2.4	2.8	3.0	2.5	1.8	1.4	1.3	1.1	0.8	0.7	0.6	0.5	0.5	0.6	0.8	0.7	0.8	0.8	0.8	1.8	10.1
29-May	1.3	1.3	0.6	1.0	Z	0.9	0.8	0.6	0.6	1.0	0.4	0.4	0.5	0.5	0.8	0.9	0.9	0.9	0.9	1.2	1.3	0.9	1.6	2.7	1.0	2.7
30-May	1.1	0.7	0.7	0.5	0.5	Z	2.4	2.2	1.4	1.0	1.0	1.7	2.8	3.9	3.8	2.6	2.2	5.5	4.9	5.2	5.2	4.5	1.6	1.9	2.5	5.5
31-May	Z	1.0	1.0	0.7	0.8	1.1	1.5	3.2	3.5	3.1	2.9	3.8	4.3	4.1	4.0	3.0	3.2	2.8	2.4	3.1	4.1	2.9	1.4	3.2	2.7	4.3

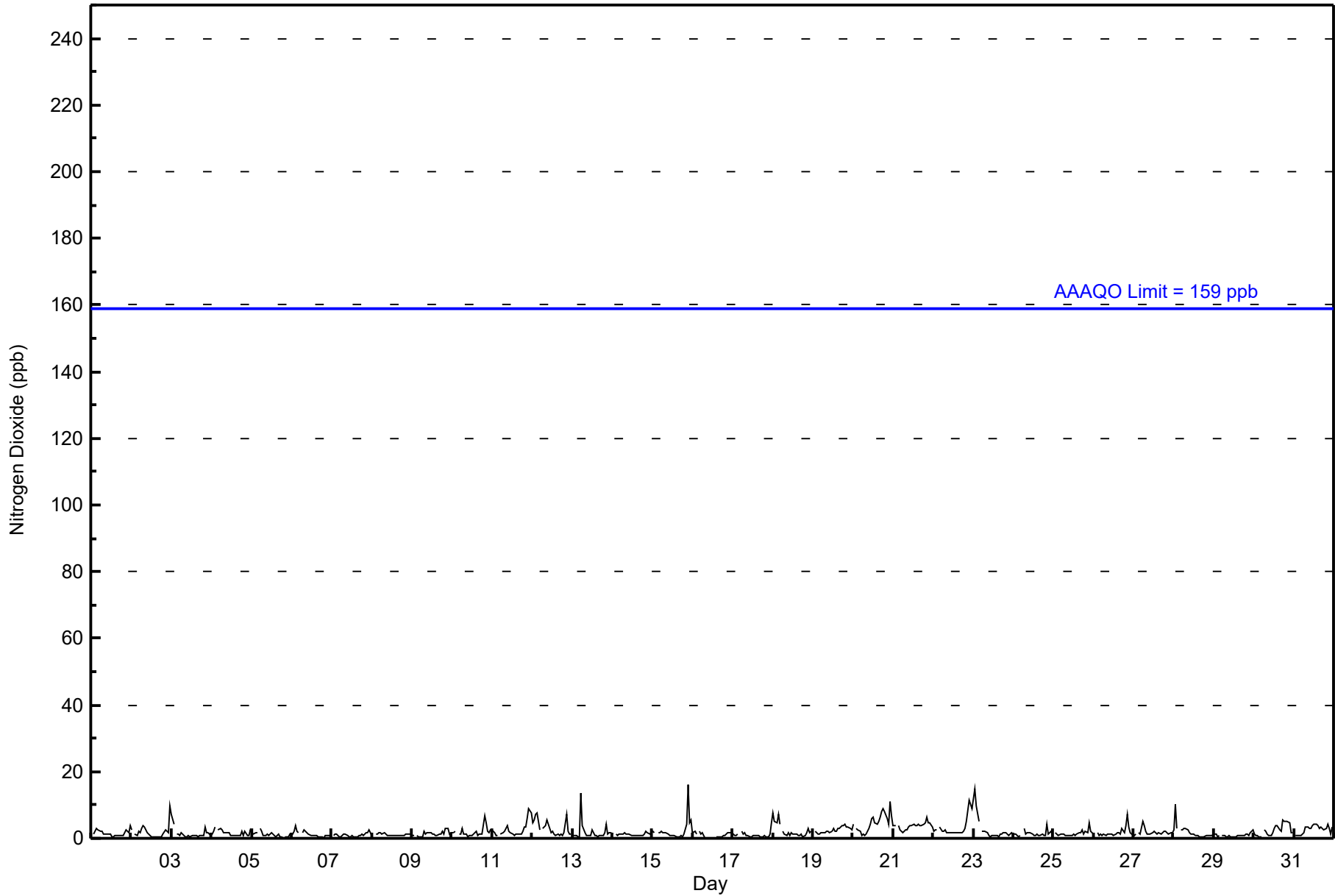
2.8	2.8	2.3	2.0	1.7	2.2	2.0	1.8	1.6	1.7	1.4	1.5	1.6	1.4	1.3	1.3	1.4	1.7	1.7	2.1	3.0	3.0	2.5	2.9	Diurnal Average	
12.0	14.9	9.6	7.5	4.4	13.5	4.0	3.7	3.9	5.5	4.3	6.0	6.5	4.7	4.3	4.9	6.2	8.2	8.7	8.0	7.4	16.0	11.0	9.7	Diurnal Maximum	

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Conklin - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Conklin - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	708	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Conklin - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	13	17	19	23	81	72	106	88	81	53	22	8	25	36	36	707
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	13	17	19	23	81	72	106	88	81	53	22	8	25	36	36	707

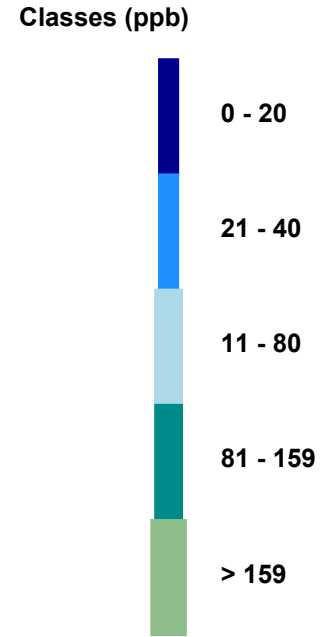
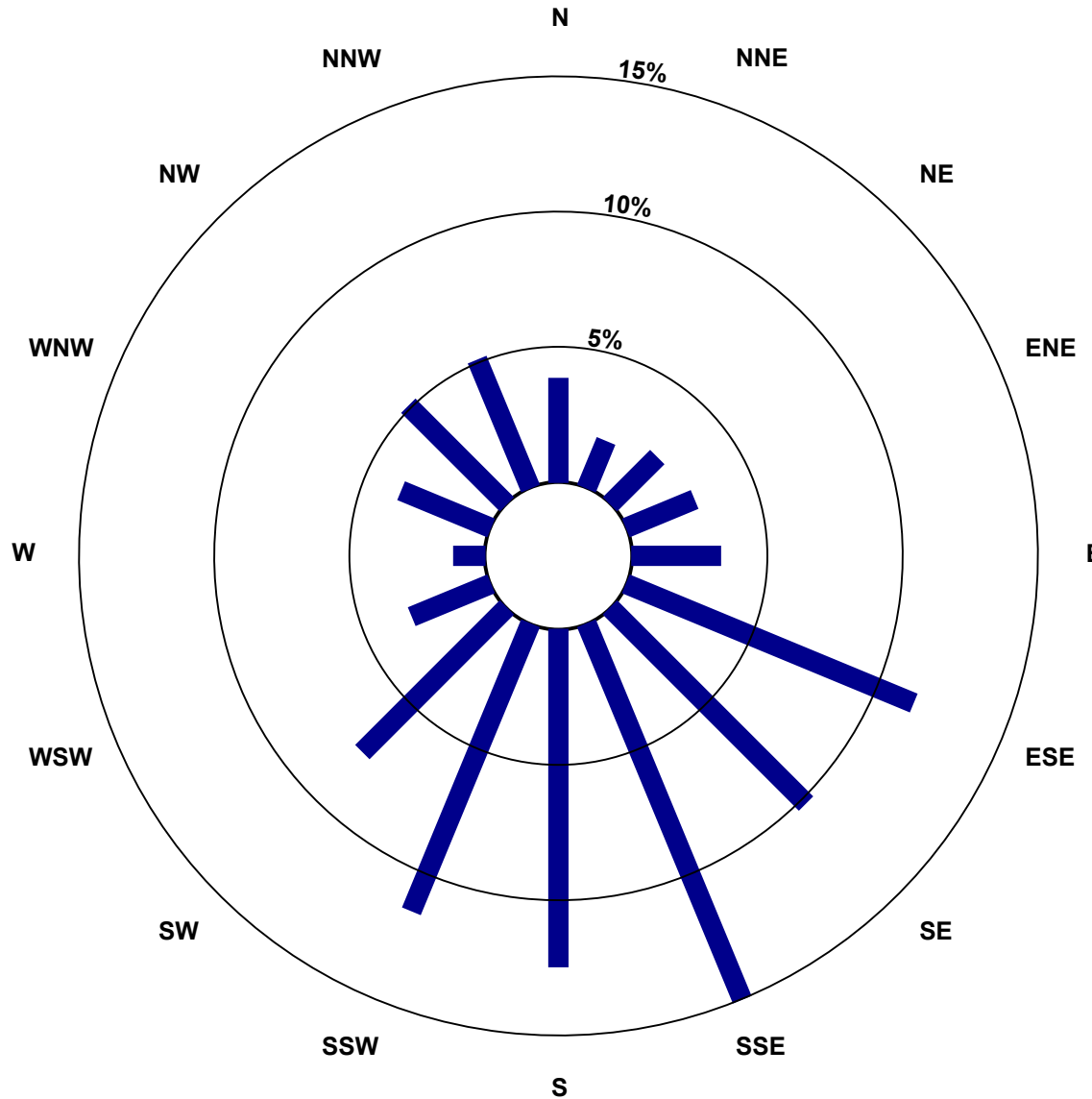
Total Number of Valid Hours: 707

Total Number of Hours: 744

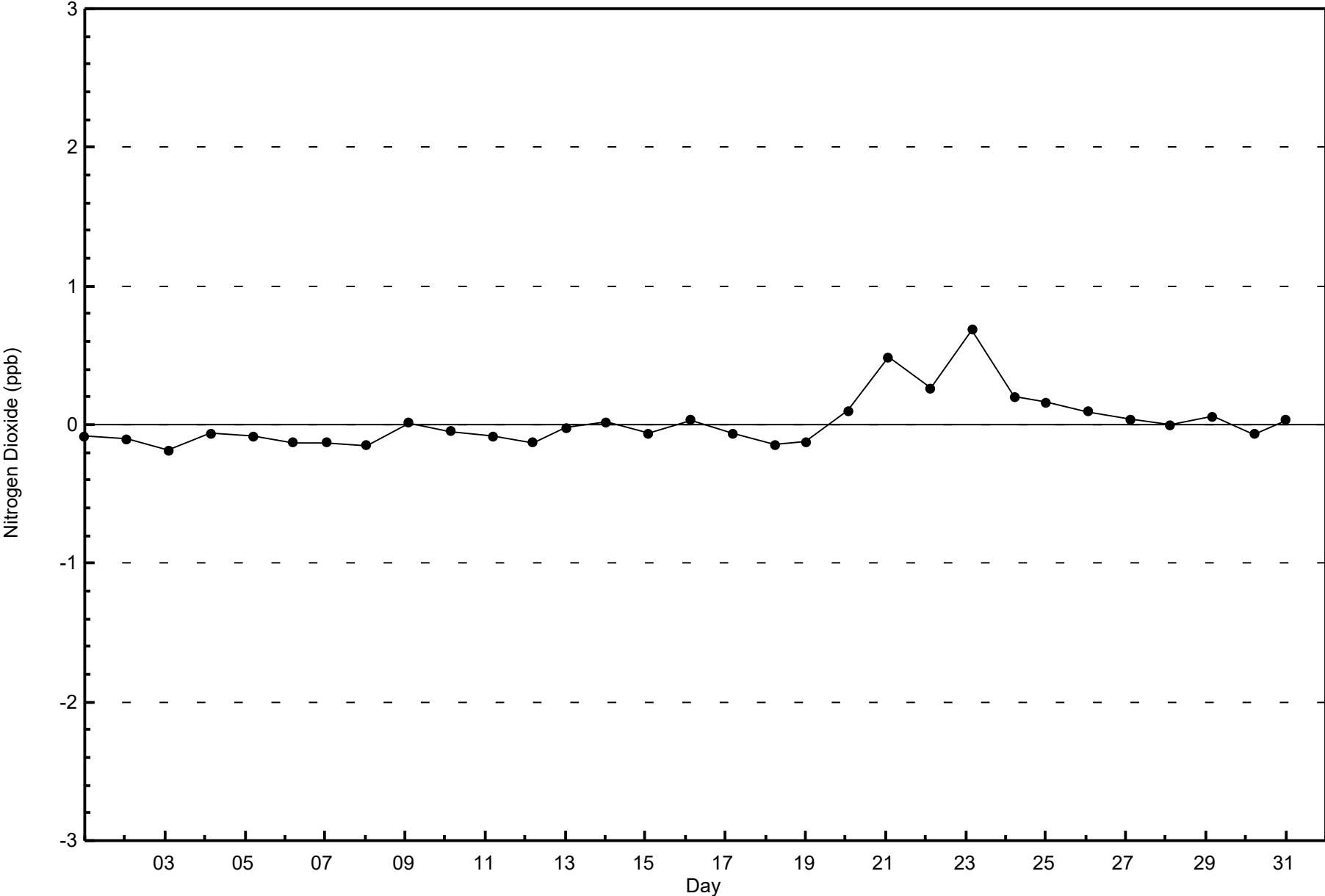


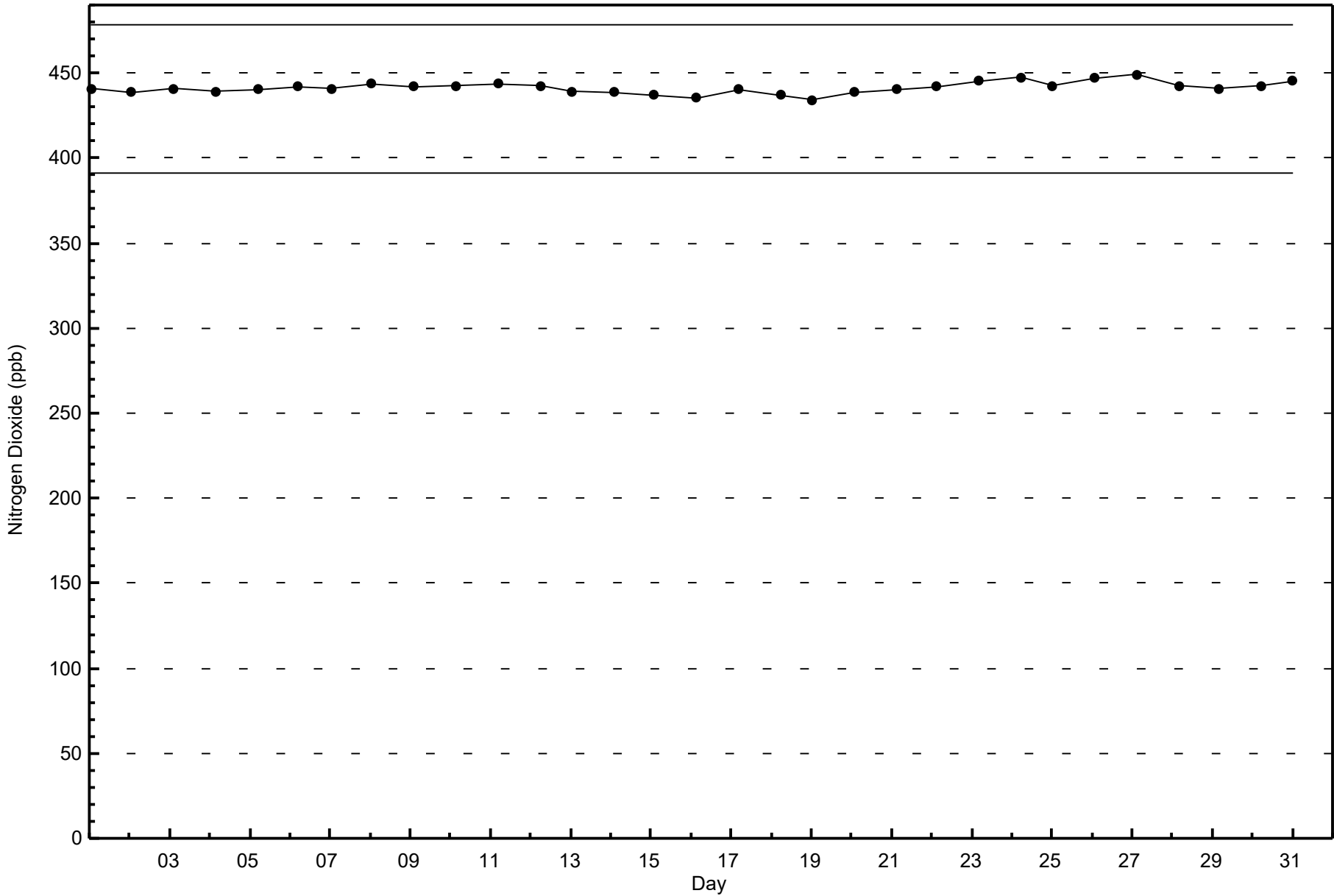
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Conklin



Total Number of Valid Hours: 707







Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_x) - ppb

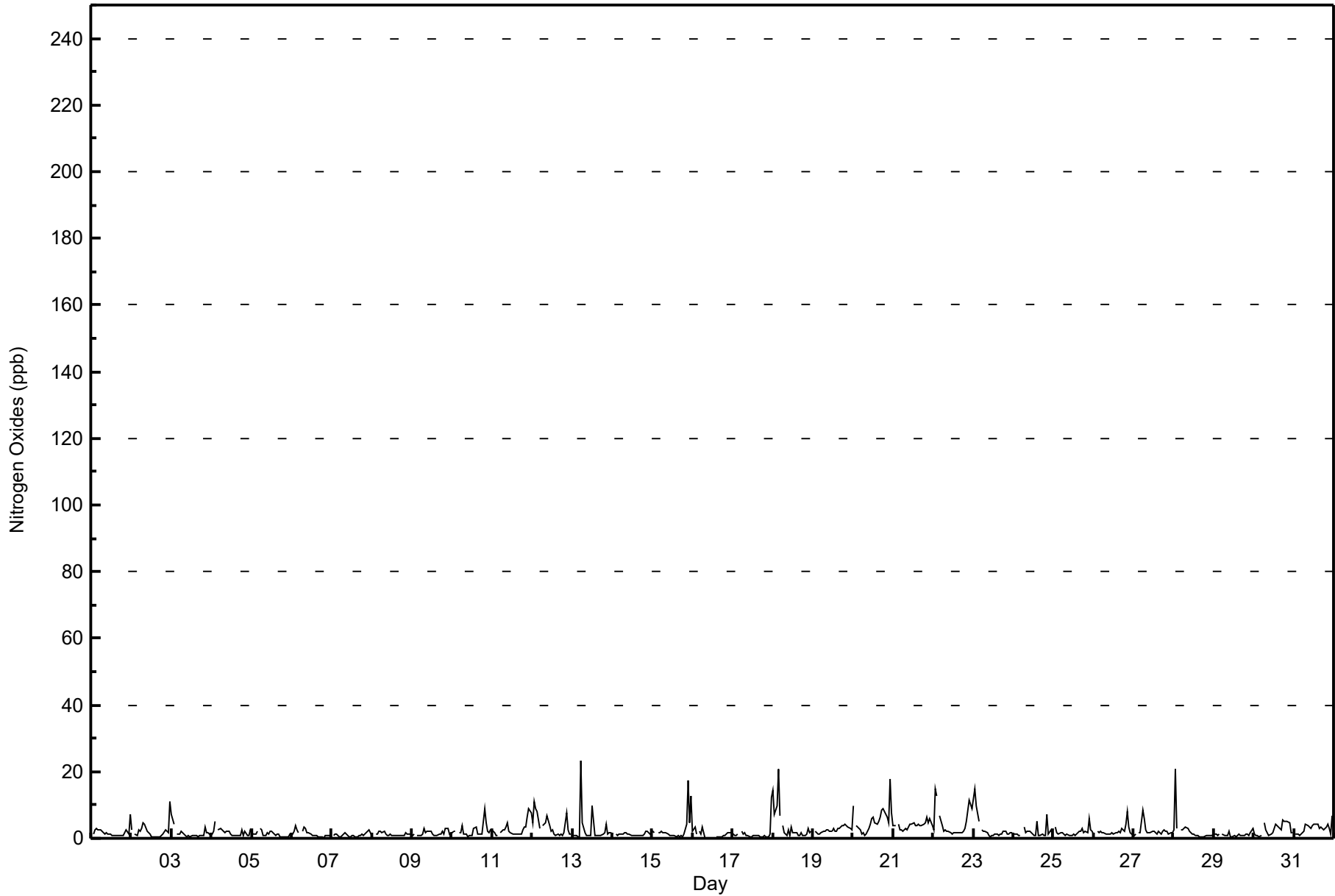
Conklin - May 2023

Maximum Value: 23.4 ppb on May 13 06:00																				Maximum Daily Average: 5.5 ppb on May 20					Hours in Service: 744				
Minimum Value: 0.1 ppb on May 16 09:00																				Minimum Daily Average: 1.1 ppb on May 7					Hours of Data: 708				
Maximum Diurnal Average: 4.2 ppb at hour 2																				Minimum Diurnal Average: 1.4 ppb at hour 16					Hours of Missing Data: 36				
Monthly Average: 2.33 ppb																				Percentiles: P ₁ = 0.3 P ₁₀ = 0.7 Q ₁ = 0.9 Median = 1.5 Q ₃ = 2.5 P ₉₀ = 4.6 P ₉₉ = 14.4					Hours of Calibration: 36				
																									Percent Operational Time: 100.0				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24					
1-May	Z	1.4	2.4	2.9	2.6	2.5	2.2	1.7	1.4	1.5	1.4	1.3	0.7	0.7	0.8	0.8	0.8	0.8	0.9	1.0	1.7	2.5	1.5	7.3	1.8	7.3			
2-May	2.4	Z	1.1	1.0	2.3	1.9	3.1	4.6	4.3	2.2	1.6	1.1	0.6	0.4	0.3	0.3	0.4	0.3	0.6	1.4	2.7	2.2	1.6	11.2	2.1	11.2			
3-May	7.4	4.1	Z	1.2	1.3	1.1	2.3	1.1	0.6	0.6	0.7	0.6	0.8	0.8	0.7	0.7	0.6	0.7	0.8	0.8	3.2	1.6	1.6	0.9	1.5	7.4			
4-May	1.3	2.0	4.9	Z	2.5	3.1	2.6	2.1	1.8	2.2	2.2	1.1	0.7	0.7	0.7	0.7	0.7	0.9	2.4	0.9	2.0	1.0	0.9	2.7	1.7	4.9			
5-May	1.7	1.3	1.5	1.9	Z	3.1	2.4	1.0	1.0	1.7	1.1	2.1	2.0	1.1	0.7	1.3	1.3	0.6	0.4	0.2	0.3	0.3	0.6	1.3	1.3	3.1			
6-May	1.4	2.2	4.0	2.3	1.9	Z	2.2	3.6	2.9	1.9	1.6	1.2	0.8	1.0	1.0	0.9	0.6	0.5	0.6	0.2	0.9	0.7	0.7	0.6	1.5	4.0			
7-May	Z	0.8	1.2	1.1	0.6	0.5	1.0	1.5	1.6	0.9	0.5	0.6	0.8	0.6	0.4	0.6	1.0	1.0	1.1	0.8	1.8	1.9	2.4	1.5	1.1	2.4			
8-May	1.0	Z	1.3	1.2	2.0	2.0	1.7	2.1	1.3	0.9	0.9	1.1	0.9	0.8	0.7	0.9	0.8	1.0	0.8	0.7	1.5	1.1	1.2	1.3	1.2	2.1			
9-May	1.0	1.1	Z	0.8	0.8	0.8	1.1	3.0	1.7	2.0	2.0	1.9	1.3	1.1	0.8	0.7	1.2	1.4	2.2	1.2	3.0	3.1	1.3	1.9	1.5	3.1			
10-May	1.6	1.9	2.1	Z	1.6	1.8	4.0	1.2	1.2	0.6	0.7	0.7	0.8	2.8	3.6	1.1	1.2	1.2	1.1	8.8	4.6	2.2	1.6	2.5	2.1	8.8			
11-May	2.5	1.5	1.0	0.9	Z	1.8	2.6	2.7	3.3	4.8	2.3	1.9	1.4	1.1	1.2	1.2	1.2	1.2	2.4	3.2	3.5	6.3	8.8	7.7	2.8	8.8			
12-May	4.6	11.2	8.7	8.1	2.9	Z	3.7	4.2	4.6	6.6	3.8	1.9	2.5	1.3	0.9	1.1	0.9	1.2	1.0	1.8	7.5	2.4	1.3	1.1	3.6	11.2			
13-May	Z	1.0	0.7	0.6	0.6	23.4	4.6	1.8	1.0	0.8	1.0	0.9	9.7	0.8	0.7	0.6	0.7	0.7	1.1	1.6	4.2	1.4	1.5	1.5	2.7	23.4			
14-May	1.1	Z	1.1	1.0	1.2	1.2	1.4	1.5	1.5	1.2	1.1	1.0	0.9	0.7	0.7	0.7	0.7	0.9	0.9	1.1	2.1	1.9	1.3	1.7	1.2	2.1			
15-May	2.0	1.8	Z	1.8	1.5	2.1	1.6	1.9	1.7	1.1	0.8	0.7	0.7	1.0	0.6	0.7	0.5	0.7	0.5	1.1	4.1	17.2	4.6	12.8	2.7	17.2			
16-May	1.9	3.2	1.1	Z	2.1	1.2	3.5	0.1	0.1	C	C	C	C	C	0.4	0.3	0.4	0.3	0.7	1.0	1.3	1.7	1.7	1.5	1.2	3.5			
17-May	1.4	1.0	0.9	1.3	Z	2.3	1.3	1.8	0.9	1.0	0.6	0.5	0.7	0.9	0.7	0.8	0.4	0.3	0.3	0.7	0.6	0.6	1.3	12.2	1.4	12.2			
18-May	14.5	7.3	9.8	20.8	6.8	Z	3.9	1.8	1.0	2.4	0.9	3.4	1.8	1.8	1.6	0.8	0.7	1.6	0.6	0.8	1.5	3.0	1.6	2.1	3.9	20.8			
19-May	Z	2.2	1.5	1.3	1.4	1.8	2.0	2.0	2.4	2.4	2.1	2.1	3.0	2.3	2.3	2.9	2.9	3.7	3.8	4.1	3.6	3.4	2.8	2.5	2.5	4.1			
20-May	9.7	Z	3.7	3.2	2.5	1.3	1.6	0.9	1.3	3.2	4.4	6.1	6.6	4.8	4.4	5.0	6.3	8.3	8.9	8.1	6.2	4.6	17.9	7.5	5.5	17.9			
21-May	3.8	3.7	Z	4.2	2.6	2.7	1.9	2.8	2.6	3.5	4.3	4.3	4.6	3.9	3.9	4.1	3.9	4.0	4.2	4.7	6.5	4.6	6.0	3.9	3.9	6.5			
22-May	2.5	14.9	12.5	Z	6.6	3.9	2.2	2.6	1.9	1.9	1.7	1.5	1.6	1.8	1.8	1.7	1.6	1.5	2.2	3.1	4.9	11.6	10.1	9.1	4.5	14.9			
23-May	12.0	15.0	9.6	4.9	Z	2.3	2.1	2.1	1.5	0.8	0.6	0.8	1.0	1.1	1.1	0.7	1.5	1.4	2.0	2.0	1.5	1.2	1.5	1.8	3.0	15.0			
24-May	1.3	1.2	1.3	0.7	0.9	Z	3.3	1.6	2.0	2.3	1.9	1.4	1.0	0.7	5.1	1.0	1.0	1.2	1.0	1.0	7.2	1.2	2.6	1.0	1.8	7.2			
25-May	Z	3.4	1.7	1.1	1.7	1.7	1.2	0.9	1.1	0.9	0.9	0.9	1.4	0.9	1.2	2.0	2.2	3.0	1.5	2.3	1.7	5.7	2.7	2.2	1.8	5.7			
26-May	1.5	Z	2.2	1.6	2.1	1.6	1.6	1.2	1.3	1.4	1.4	1.7	1.3	1.7	1.7	2.1	1.6	3.1	2.1	4.2	8.2	3.5	1.9	1.3	2.2	8.2			
27-May	0.9	1.4	Z	1.7	1.5	8.4	5.8	2.7	1.7	1.6	1.6	2.0	2.2	1.9	1.3	2.0	1.4	2.0	2.4	2.2	1.9	1.3	1.7	1.8	2.2	8.4			
28-May	2.4	20.9	2.8	Z	2.4	2.5	3.1	3.6	2.9	1.9	1.5	1.4	1.2	0.8	0.7	0.6	0.5	0.5	0.6	0.9	0.7	0.8	0.8	0.8	2.4	20.9			
29-May	1.3	1.4	0.7	1.1	Z	1.1	0.9	0.7	0.8	1.9	0.4	0.5	0.8	0.5	0.9	1.4	0.9	0.9	0.9	1.3	1.3	0.9	1.6	2.8	1.1	2.8			
30-May	1.2	0.9	0.8	0.6	0.7	Z	4.5	2.7	1.6	1.1	1.1	1.9	3.1	4.1	3.8	2.8	2.6	5.7	4.9	5.2	5.2	4.8	1.6	1.9	2.7	5.7			
31-May	Z	1.1	1.2	0.8	1.2	1.5	2.2	4.4	3.7	3.4	3.0	4.0	4.4	4.2	4.1	3.1	3.3	2.9	2.4	3.2	4.1	3.0	1.4	6.8	3.0	6.8			
																								Diurnal Average			Diurnal Maximum		
3.3 4.2 3.1 2.6 2.1 3.0 2.5 2.1 1.8 2.0 1.6 1.7 2.0 1.5 1.6 1.4 1.4 1.7 1.8 2.2 3.2 3.2 2.8 3.7																													
14.5 20.9 12.5 20.8 6.8 23.4 5.8 4.6 4.6 6.6 4.4 6.1 9.7 4.8 5.1 5.0 6.3 8.3 8.9 8.8 8.2 17.2 17.9 12.8																													
Z - zerospan C - Calibration																													



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Conklin - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Conklin - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	705	99.58	99.58
21 - 40	3	0.42	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Conklin - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	13	17	19	23	81	72	106	88	78	53	22	8	25	36	36	704
21 - 40	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	13	17	19	23	81	72	106	88	81	53	22	8	25	36	36	707

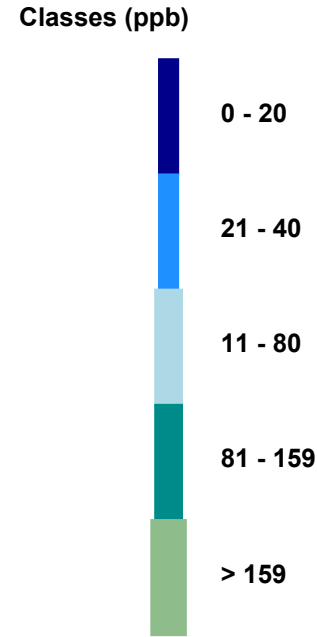
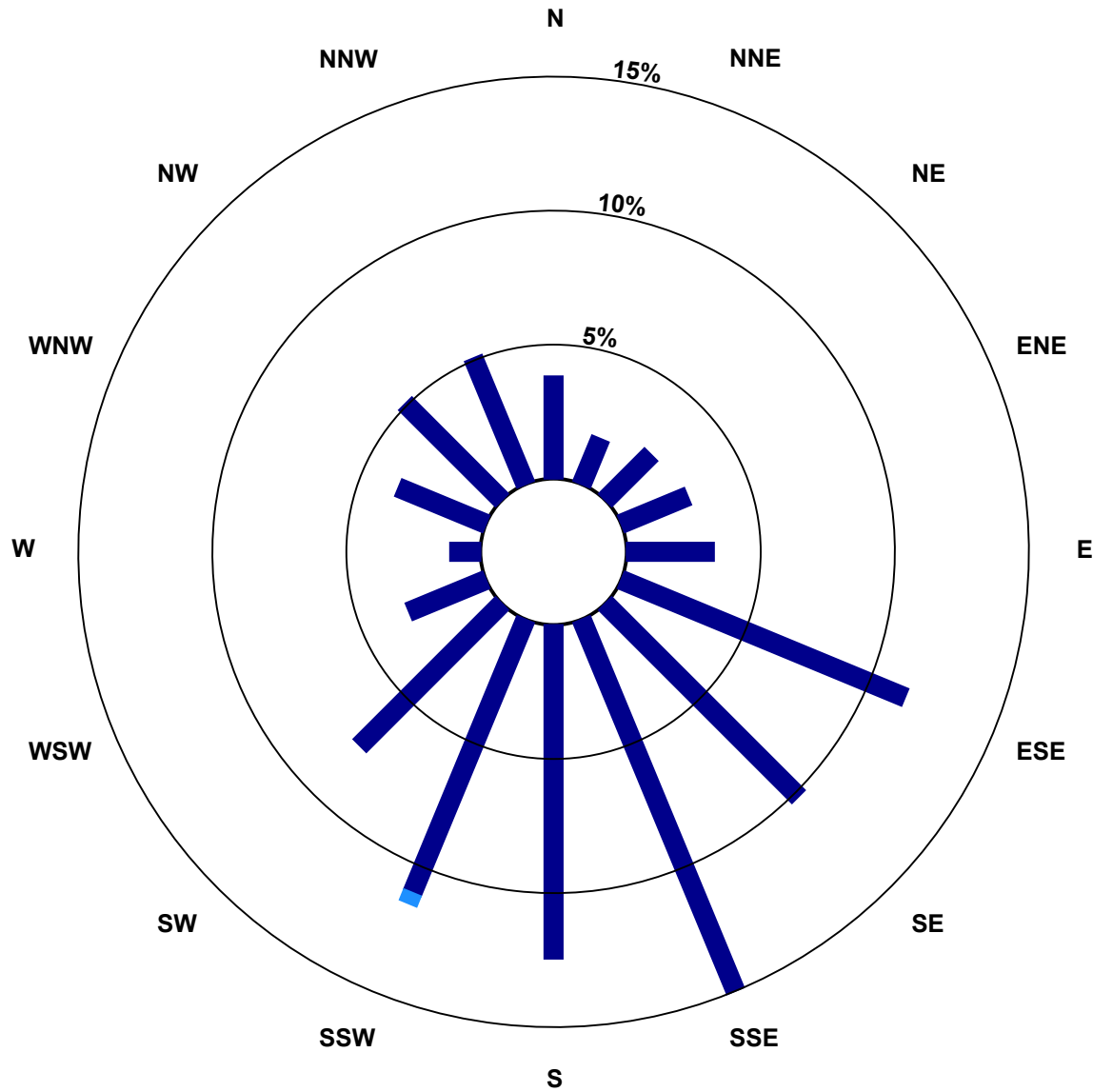
Total Number of Valid Hours: 707

Total Number of Hours: 744

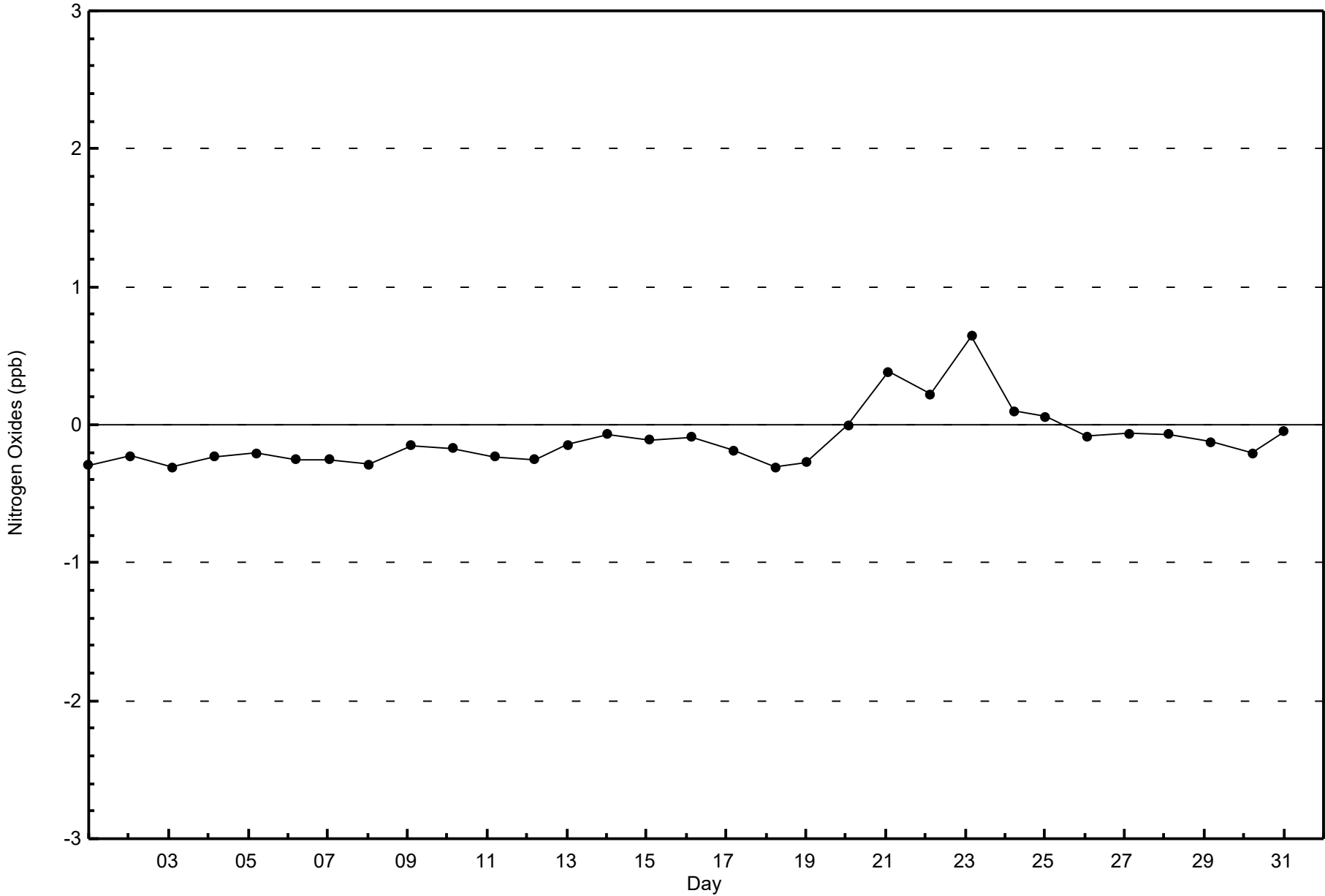


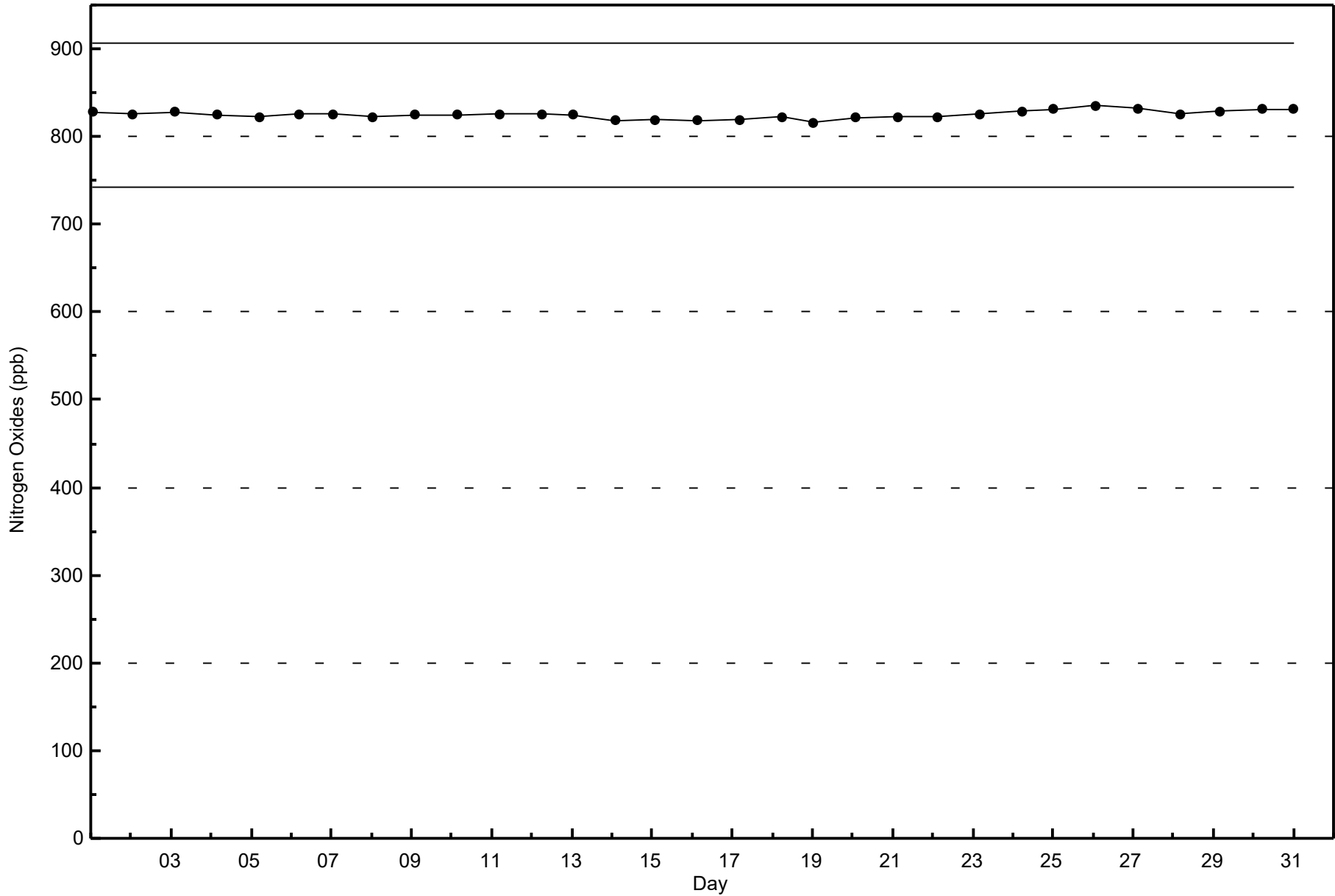
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Conklin



Total Number of Valid Hours: 707







Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Conklin - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 65.2 ppb on May 13 15:00	Maximum Daily Average: 50.3 ppb on May 4		Hours of Data:	709
Minimum Value: 2.4 ppb on May 22 03:00	Minimum Daily Average: 19.3 ppb on May 25		Hours of Missing Data:	35
Maximum Diurnal Average: 49.1 ppb at hour 17	Minimum Diurnal Average: 18.1 ppb at hour 5		Hours of Calibration:	35
Monthly Average: 35.73 ppb	Percentiles: P ₁ = 3.1 P ₁₀ = 10.0 Q ₁ = 22.8 Median = 38.9 Q ₃ = 48.2 P ₉₀ = 55.2 P ₉₉ = 64.0		Percent Operational Time:	100.0

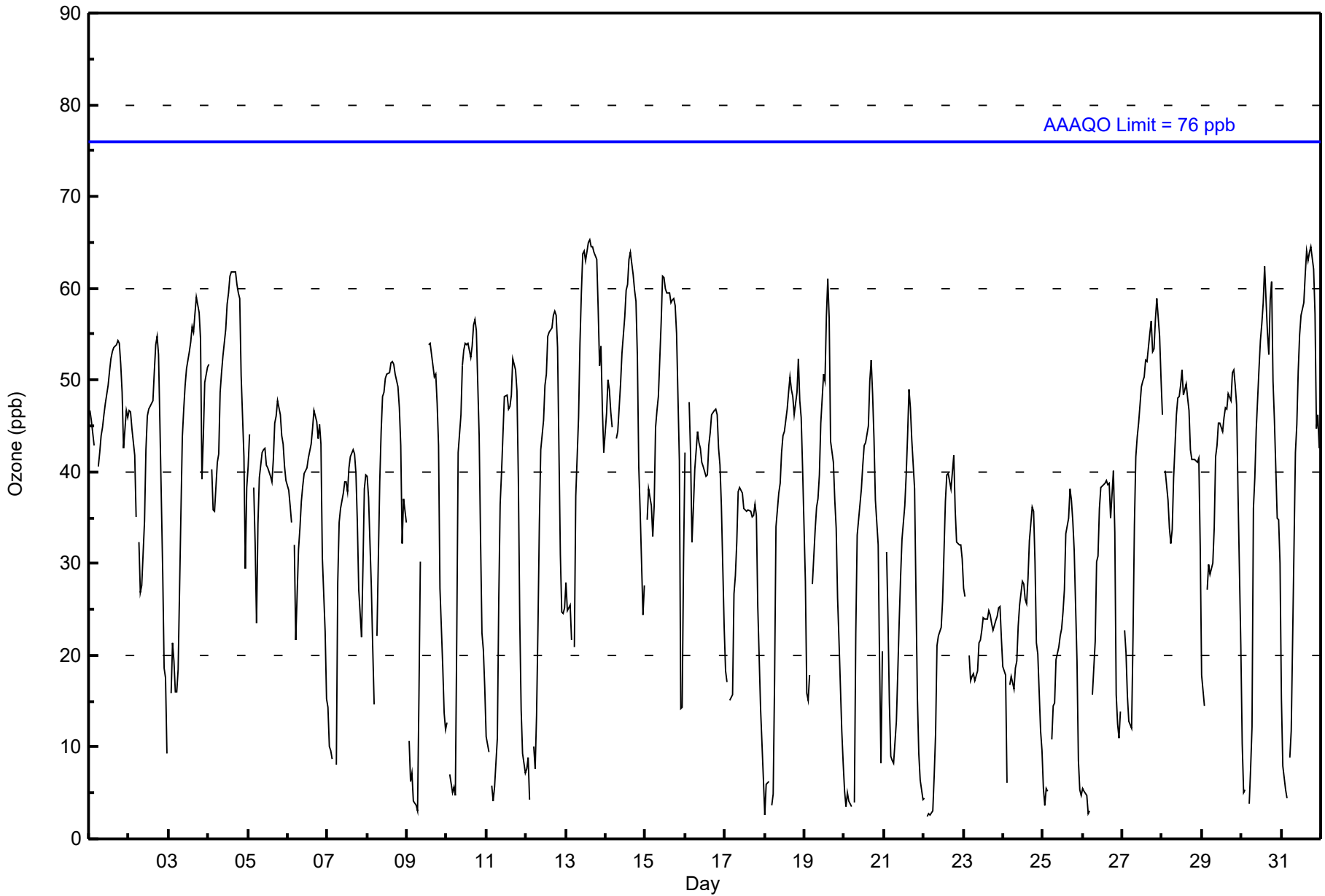
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	46.6	45.6	44.2	42.8	Z	40.6	42.1	44.0	44.8	46.1	47.4	49.4	51.0	52.4	53.0	53.6	53.8	54.3	54.0	51.7	48.7	42.6	46.7	45.9	47.9	54.3																							
2-May	46.7	46.6	44.8	41.8	35.0	Z	32.3	26.8	27.6	34.6	42.4	46.1	46.8	47.1	47.7	51.0	53.8	54.8	52.8	45.2	29.0	18.5	17.5	9.3	39.1	54.8																							
3-May	Z	15.9	21.4	19.4	16.0	16.1	18.4	35.5	43.8	46.9	49.5	51.3	53.0	54.2	55.8	55.2	57.2	59.1	57.3	54.4	39.1	43.8	49.7	51.5	41.9	59.1																							
4-May	51.7	Z	40.3	35.9	35.7	41.1	41.9	48.7	50.8	52.6	55.6	58.3	59.6	61.3	61.8	61.7	61.9	60.4	59.5	58.9	50.5	41.6	29.5	38.2	50.3	61.9																							
5-May	40.5	44.0	Z	38.4	32.1	23.5	34.2	39.4	42.2	42.4	42.5	40.7	40.4	39.5	38.9	41.3	45.2	46.1	47.8	46.2	44.0	43.1	40.7	39.0	40.5	47.8																							
6-May	37.9	36.2	34.4	Z	32.0	21.6	31.6	33.9	36.7	38.4	39.7	40.4	41.4	42.2	43.0	44.8	46.7	45.4	43.6	45.1	43.0	30.7	22.6	15.3	36.8	46.7																							
7-May	14.4	10.1	9.7	8.6	Z	8.0	27.9	34.5	36.0	37.7	39.0	38.9	37.8	40.5	41.6	42.4	41.9	39.9	34.4	27.2	21.9	29.7	38.2	39.7	30.4	42.4																							
8-May	39.6	37.3	27.5	20.8	14.6	Z	22.1	38.9	44.4	48.2	48.7	50.1	50.7	50.8	51.8	52.0	51.6	50.7	49.2	47.0	42.9	32.2	37.0	34.5	41.0	52.0																							
9-May	Z	10.7	6.3	7.2	4.1	3.7	3.0	15.5	30.2	C	C	C	C	53.8	54.0	52.7	50.3	50.7	47.5	42.8	27.3	18.8	13.7	11.9	26.5	54.0																							
10-May	12.7	Z	7.0	5.0	5.6	4.7	21.9	42.0	46.2	51.6	53.2	53.9	53.8	54.0	52.5	53.8	56.0	56.6	55.4	43.9	32.6	22.4	20.6	16.4	35.7	56.6																							
11-May	11.2	9.4	Z	5.7	4.1	5.6	11.0	26.0	36.4	40.0	44.1	48.2	48.4	46.8	47.2	48.4	52.4	51.1	48.8	39.2	23.9	14.0	9.4	7.2	29.5	52.4																							
12-May	7.6	8.8	4.2	Z	10.1	7.7	13.4	23.1	34.3	42.4	45.6	49.4	50.6	54.8	55.2	55.6	57.0	57.4	57.0	53.5	30.9	24.7	24.6	25.1	34.5	57.4																							
13-May	27.9	24.8	25.5	21.7	Z	20.9	37.3	46.0	54.0	59.5	63.7	64.0	63.0	65.0	65.2	64.6	64.5	63.9	63.1	57.9	51.5	53.7	46.8	42.1	49.9	65.2																							
14-May	46.4	50.1	49.0	46.5	44.9	Z	43.6	44.4	47.1	49.6	52.9	56.8	59.8	60.4	63.2	64.0	61.5	59.8	58.5	52.6	40.5	35.7	24.4	27.6	49.5	64.0																							
15-May	Z	34.7	38.2	36.3	33.0	36.3	44.9	46.6	48.2	56.2	61.4	61.1	59.9	59.5	59.4	58.5	58.7	58.9	58.2	55.1	41.2	14.2	14.4	30.6	46.3	61.4																							
16-May	42.1	Z	47.5	41.9	32.3	36.1	40.2	44.4	43.2	42.5	41.0	40.5	39.5	39.7	42.9	44.3	46.2	46.7	46.8	46.3	42.6	40.7	36.3	23.0	41.2	47.5																							
17-May	18.4	17.0	Z	15.1	15.7	26.7	28.6	32.3	37.9	38.3	37.6	36.0	35.8	35.7	35.8	35.8	35.1	35.3	36.4	35.3	25.4	14.2	10.4	6.5	28.1	38.3																							
18-May	2.6	5.9	6.2	Z	3.6	4.9	17.2	34.0	37.7	38.7	42.1	44.0	44.4	46.9	48.7	50.4	49.0	48.3	46.3	48.7	52.4	47.8	46.0	40.4	35.0	52.4																							
19-May	28.1	15.9	15.2	17.9	Z	27.7	33.7	36.1	37.1	39.7	45.3	50.6	49.9	56.9	61.0	56.7	43.4	41.1	37.0	33.8	26.2	21.7	11.7	8.2	34.6	61.0																							
20-May	5.2	3.5	5.0	4.1	3.5	Z	4.0	22.4	33.1	36.5	38.2	40.8	42.8	43.1	45.0	49.8	52.2	48.5	43.6	37.0	32.1	19.1	8.2	20.4	27.7	52.2																							
21-May	Z	31.3	24.0	14.8	9.0	8.6	8.2	12.8	18.1	23.7	28.5	32.6	36.3	39.6	43.9	48.9	47.0	43.4	38.1	26.5	15.4	9.2	6.4	4.3	24.8	48.9																							
22-May	4.4	Z	2.4	2.8	2.6	3.0	6.9	11.5	21.1	22.1	23.0	25.9	31.2	36.7	39.7	39.9	38.2	40.0	41.7	35.8	32.4	32.0	32.0	30.4	24.2	41.7																							
23-May	27.3	26.5	Z	20.0	17.2	17.6	18.0	17.3	18.3	21.3	21.6	22.7	24.1	24.0	23.9	24.9	24.3	23.4	22.7	23.8	24.2	25.1	25.3	21.8	22.4	27.3																							
24-May	18.8	17.9	6.1	Z	16.8	17.7	16.4	18.7	19.4	23.2	25.5	28.0	27.8	26.1	25.6	28.3	32.5	36.2	35.6	30.2	21.4	20.1	11.7	9.6	22.3	36.2																							
25-May	5.5	3.7	5.4	5.2	Z	10.8	14.5	14.8	19.5	21.0	22.1	22.8	24.7	27.1	33.2	34.9	38.2	36.9	34.7	31.5	19.4	8.6	5.4	4.7	19.3	38.2																							
26-May	5.4	5.2	4.7	2.7	3.1	Z	15.8	21.5	30.2	30.8	36.0	38.3	38.4	38.8	39.0	38.7	38.7	34.9	40.2	33.4	15.7	12.5	11.0	13.9	23.9	40.2																							
27-May	Z	22.7	20.4	15.5	12.8	12.1	22.0	34.2	41.7	43.8	45.4	49.2	49.8	50.3	52.2	52.1	55.1	56.4	53.1	53.4	56.7	58.9	54.7	50.1	41.9	58.9																							
28-May	46.2	Z	40.1	37.0	33.8	32.1	33.8	39.4	46.3	48.1	48.2	49.4	51.1	48.3	49.6	48.0	46.6	42.4	41.3	41.4	41.1	41.0	41.5	31.8	42.5	51.1																							
29-May	17.8	14.5	Z	27.2	29.9	28.8	30.0	33.9	41.6	42.8	45.3	45.3	44.4	45.9	46.9	46.9	48.6	47.8	50.8	51.1	49.5	47.2	37.6	21.1	38.9	51.1																							
30-May	10.4	5.0	5.3	Z	3.8	7.7	12.2	36.0	39.4	44.6	51.3	54.4	56.1	58.4	62.4	55.2	52.8	58.8	60.7	49.8	45.6	34.9	34.8	30.1	37.8	62.4																							
31-May	15.3	7.9	5.4	4.4	Z	8.8	11.7	21.7	42.2	45.1	50.9	54.9	57.0	58.5	61.5	64.0	62.9	63.9	64.5	62.1	57.2	44.6	46.1	42.5	41.4	64.5																							
																								24.3	21.2	20.8	20.7	18.1	18.2	23.8	31.5	37.1	40.3	42.9	44.8	45.7	47.0	48.4	49.0	49.1	48.8	47.8	43.9	36.3	30.4	27.6	25.6	Diurnal Average	
																								51.7	50.1	49.0	46.5	44.9	41.1	44.9	48.7	54.0	59.5	63.7	64.0	63.0	65.0	65.2	64.6	64.5	63.9	64.5	62.1	57.2	58.9	54.7	51.5	Diurnal Maximum	

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Conklin - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Conklin - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	149	21.02	21.02
21 - 50	422	59.52	80.54
51 - 82	138	19.46	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Ozone (O₃) - ppb
Conklin - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	5	0	0	4	6	6	18	34	34	9	2	2	1	5	8	13	147
21 - 50	17	12	14	13	13	66	45	42	36	46	29	18	6	15	24	26	422
51 - 82	6	1	4	3	2	8	11	23	19	27	23	1	1	4	4	1	138
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	28	13	18	20	21	80	74	99	89	82	54	21	8	24	36	40	707

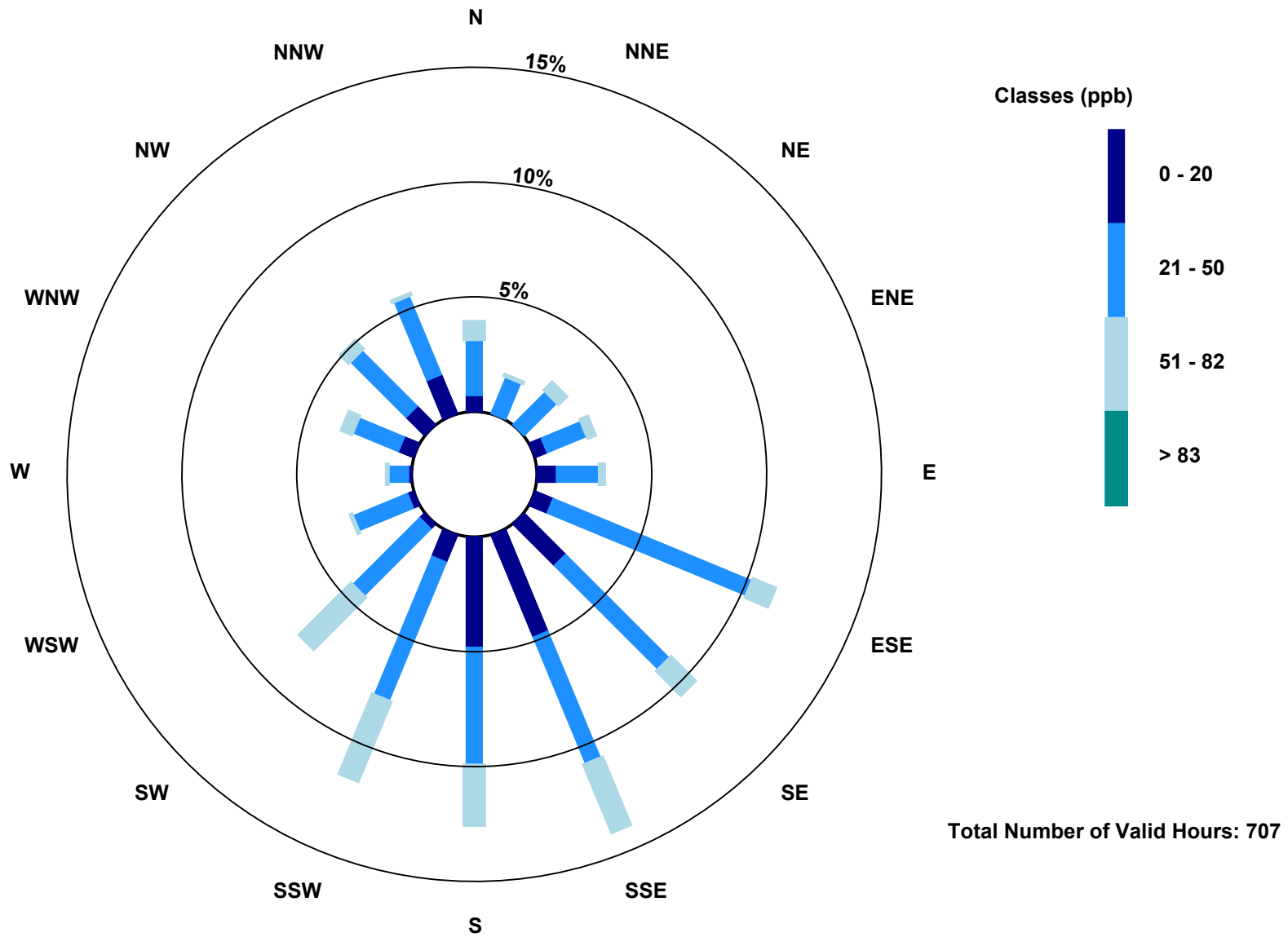
Total Number of Valid Hours: 707

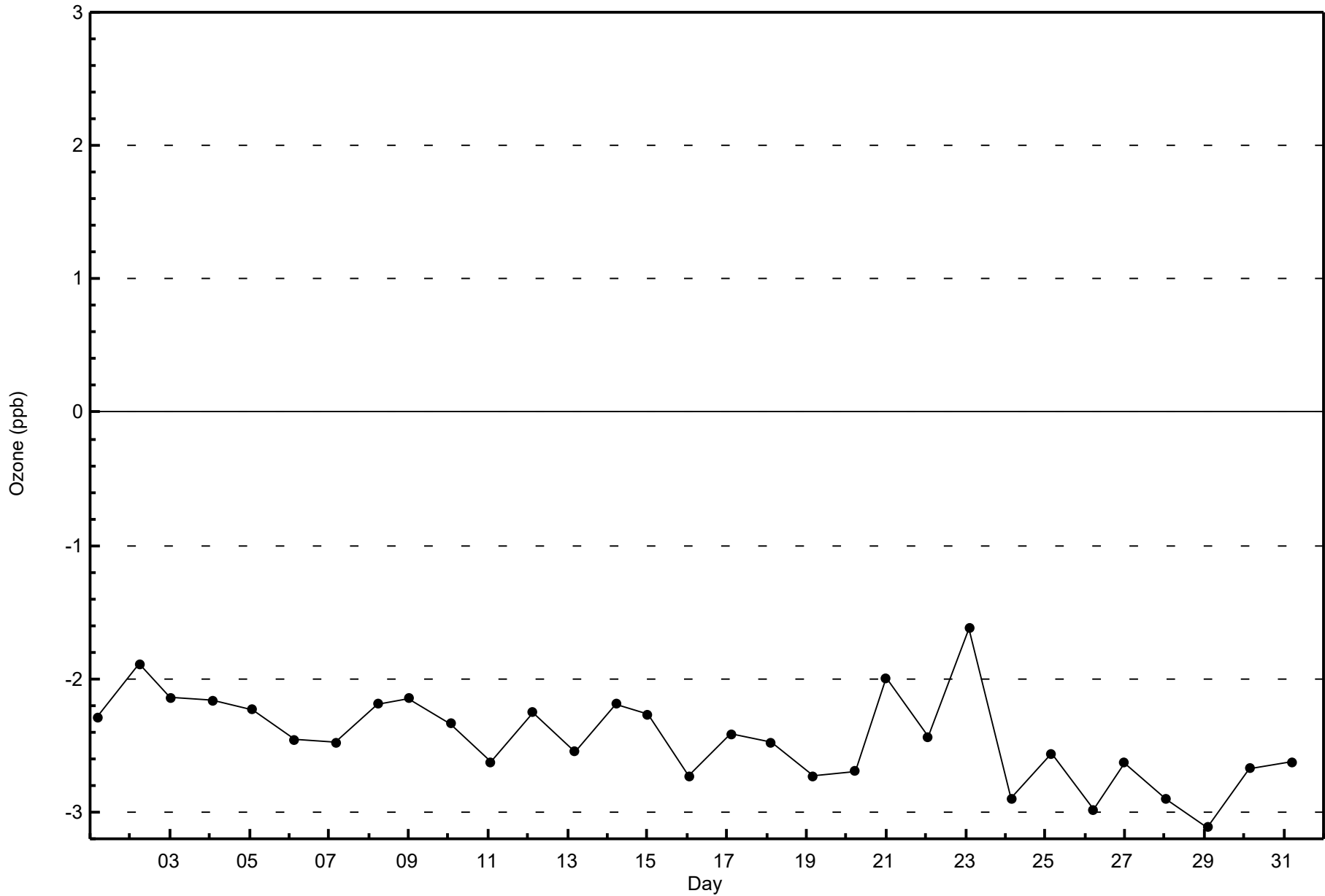
Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Ozone (O₃) - ppb
Conklin

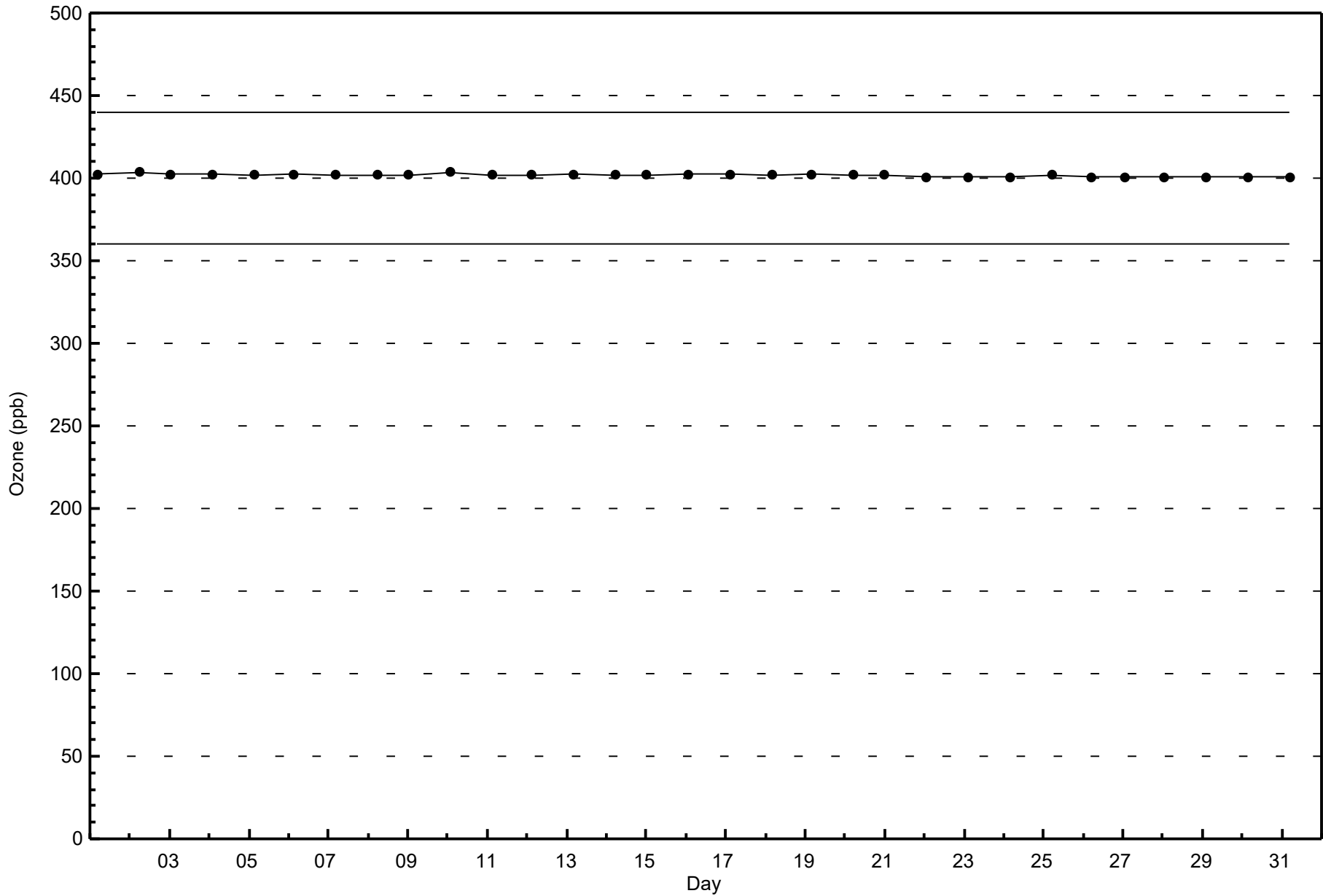






Wood Buffalo Environmental Association
Span Responses

Ozone (O₃) - ppb
Conklin - May 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM_{2.5}) - µg/m³

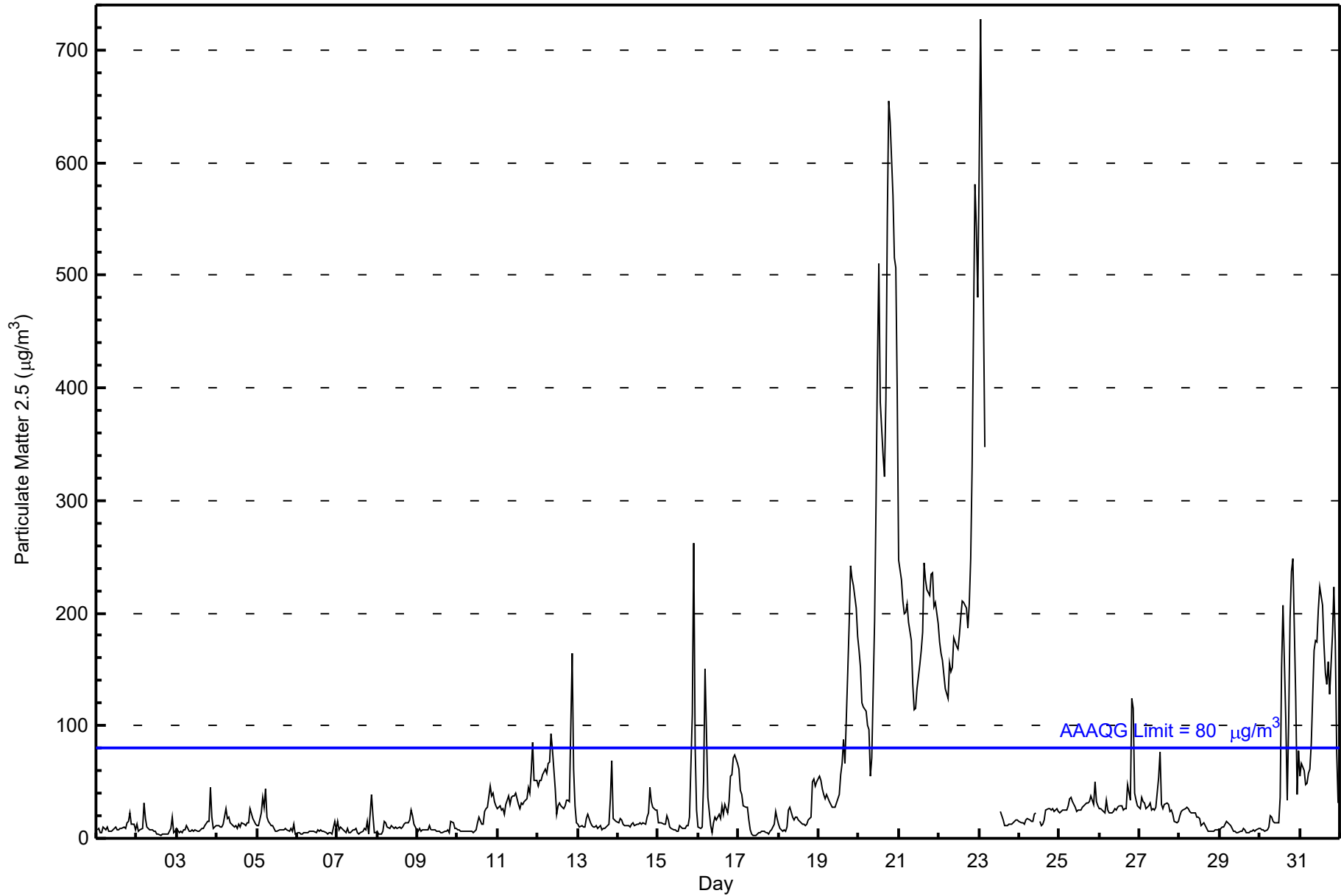
Conklin - May 2023

Number of Exceedences (AAAQO):	1-hr: 115	24-hr: 13	Hours in Service:	744
Maximum Value: 727.6 µg/m ³ on May 23 02:00	Maximum Daily Average: 320.0 µg/m ³ on May 20		Hours of Data:	734
Minimum Value: 1.9 µg/m ³ on May 17 10:00	Minimum Daily Average: 5.9 µg/m ³ on May 6		Hours of Missing Data:	10
Maximum Diurnal Average: 91.7 µg/m ³ at hour 21	Minimum Diurnal Average: 30.5 µg/m ³ at hour 8		Hours of Calibration:	1
Monthly Average: 52.28 µg/m ³	Percentiles: P ₁ = 3.5 P ₁₀ = 6.1 Q ₁ = 8.5 Median = 16.5 Q ₃ = 37.0 P ₉₀ = 167.2 P ₉₉ = 547.5		Percent Operational Time:	98.8

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	7.3	9.1	4.9	4.7	10.1	7.2	9.7	6.1	6.0	6.7	7.4	10.5	7.7	6.9	8.4	8.7	9.7	8.3	14.3	15.3	22.7	12.9	11.9	7.5	9.3	22.7
2-May	11.9	6.7	7.6	8.4	31.0	17.0	10.4	8.6	7.5	7.5	6.6	5.8	3.9	3.2	3.0	3.4	3.6	3.5	3.2	4.2	8.2	19.0	5.2	6.1	8.1	31.0
3-May	8.2	4.6	5.7	5.5	7.7	7.9	10.9	6.5	5.9	7.1	6.8	7.4	6.1	6.2	7.3	9.0	9.0	11.8	15.3	15.4	44.8	19.4	8.6	11.2	10.4	44.8
4-May	10.8	11.9	10.1	10.2	12.9	26.3	17.7	18.8	14.1	12.6	10.5	11.7	9.3	12.2	10.0	14.1	12.7	11.8	13.7	13.8	26.3	18.0	15.3	12.4	14.0	26.3
5-May	11.2	11.5	22.7	37.0	27.0	43.6	19.0	14.8	11.2	11.9	9.0	6.4	6.0	7.5	7.5	7.1	7.4	8.6	8.0	6.8	8.9	5.7	12.9	3.4	13.1	43.6
6-May	4.5	4.5	3.6	4.1	5.1	5.0	5.2	6.8	6.3	6.1	6.0	4.9	7.4	6.7	7.3	6.9	6.7	5.6	3.9	4.8	4.8	3.9	15.6	7.1	5.9	15.6
7-May	15.4	8.1	9.6	9.0	6.1	4.6	9.2	5.2	4.9	7.9	7.3	8.6	4.4	4.1	5.0	5.9	8.4	7.2	15.7	4.0	38.6	20.0	5.4	4.9	9.1	38.6
8-May	5.9	4.2	4.2	5.8	14.7	14.0	9.6	8.8	11.0	10.4	8.5	10.3	8.3	9.9	8.3	10.0	12.2	13.7	13.3	16.5	24.9	19.5	12.9	7.3	11.0	24.9
9-May	6.8	9.2	6.7	7.0	7.3	7.3	7.4	11.3	8.0	7.8	7.4	6.4	6.2	6.1	5.5	4.7	6.1	6.4	7.0	5.2	14.9	13.9	8.6	8.4	7.7	14.9
10-May	7.6	7.2	6.9	6.4	6.5	6.1	6.4	5.6	6.8	4.5	6.2	7.7	13.5	18.3	12.9	12.6	23.6	26.9	27.4	46.7	37.4	40.0	32.7	29.2	16.6	46.7
11-May	26.6	28.5	25.6	26.6	21.1	30.0	38.1	30.3	36.2	38.2	38.1	40.1	29.5	26.6	31.1	29.6	33.2	34.6	45.0	39.6	59.5	84.7	51.4	51.6	37.3	84.7
12-May	46.8	50.8	51.8	56.1	61.2	58.1	66.2	68.1	92.8	79.2	44.2	21.4	28.2	30.8	28.9	26.8	28.7	33.3	34.1	32.8	164.7	61.1	28.5	13.3	50.3	164.7
13-May	12.1	10.1	10.7	9.7	9.7	17.3	20.8	13.5	11.9	9.7	9.6	11.4	8.9	11.0	7.3	8.3	8.5	10.1	12.9	35.3	69.4	17.0	16.5	15.4	15.3	69.4
14-May	14.2	17.5	16.8	12.0	11.3	10.8	10.8	10.0	12.1	14.2	11.8	12.7	12.5	13.2	12.3	13.8	12.4	19.1	22.0	45.8	32.4	27.1	25.6	25.6	17.3	45.8
15-May	14.1	13.8	13.6	12.5	12.3	19.8	16.6	10.2	9.0	7.5	7.5	6.1	6.8	11.4	9.1	8.4	8.7	11.6	11.7	18.3	109.9	262.7	81.1	24.5	29.5	262.7
16-May	9.6	9.2	9.9	50.9	150.6	95.1	36.5	11.6	5.6	13.4	18.7	16.6	20.7	17.5	29.2	21.5	29.8	23.0	33.1	55.5	56.7	72.0	73.7	66.7	38.6	150.6
17-May	61.1	42.4	38.4	28.8	27.2	27.5	16.7	7.8	4.1	1.9	2.9	3.9	4.4	5.2	6.5	6.8	5.3	4.5	4.2	6.9	7.9	12.0	23.5	17.9	15.3	61.1
18-May	13.0	8.7	5.8	7.8	5.8	10.4	25.1	28.0	18.7	16.3	18.3	18.3	16.2	14.4	12.9	12.9	11.6	13.1	16.1	18.5	50.4	53.2	46.0	49.6	20.5	53.2
19-May	55.5	50.8	43.8	39.4	34.6	39.2	32.6	30.7	28.0	28.1	27.2	34.6	39.1	56.0	66.3	87.6	67.1	147.8	190.2	242.3	231.3	223.9	204.0	179.4	90.8	242.3
20-May	167.1	151.9	120.5	116.1	112.9	100.6	96.6	55.4	71.3	193.6	295.5	419.7	510.3	387.4	339.5	321.6	390.2	550.4	654.3	636.2	570.5	515.0	506.4	396.3	320.0	654.3
21-May	247.0	229.2	211.2	199.2	200.1	208.1	191.6	175.9	137.3	114.7	115.8	133.1	154.5	167.2	183.7	245.0	230.0	220.8	216.2	234.3	236.0	205.7	209.2	191.1	194.0	247.0
22-May	173.8	164.3	157.5	145.1	132.5	124.6	155.6	148.0	152.1	177.9	170.1	168.5	180.9	196.3	211.0	209.9	204.6	187.1	207.8	248.0	329.4	580.4	541.6	480.2	227.0	580.4
23-May	595.8	727.6	592.9	348.0	AF	AF	AF	AF	AF	M	M	M	C	24.1	16.1	10.9	11.4	11.7	13.1	13.2	13.5	14.4	16.5	16.2	--	727.6
24-May	15.1	14.4	14.0	13.1	16.3	17.2	16.5	15.5	15.6	21.3	22.2	M	15.5	11.8	12.5	16.8	25.1	25.8	26.4	25.6	26.0	23.9	26.9	24.3	19.2	26.9
25-May	22.7	23.3	24.5	25.6	25.6	29.3	35.1	37.0	32.4	27.9	24.4	25.1	25.3	25.4	27.5	30.1	31.1	31.7	32.7	37.2	30.4	50.5	32.9	28.7	29.8	50.5
26-May	26.1	26.1	24.3	23.1	33.9	24.8	22.7	22.1	24.4	25.9	25.3	28.2	28.9	28.5	25.3	26.4	26.5	47.2	33.8	124.3	115.2	40.2	33.8	28.6	36.1	124.3
27-May	26.4	36.4	32.1	30.8	25.9	28.8	31.8	25.4	25.7	25.3	28.2	53.9	76.7	30.0	26.8	29.9	31.3	30.7	24.1	25.1	21.3	14.8	13.7	14.8	29.6	76.7
28-May	19.9	24.0	25.3	26.2	27.1	26.1	24.3	22.1	22.7	22.0	18.5	18.3	17.5	11.4	13.6	11.7	8.7	6.3	6.4	6.9	6.7	7.6	7.3	8.0	16.2	27.1
29-May	8.0	10.0	10.3	12.8	14.5	13.6	11.9	8.6	6.6	5.7	5.0	5.2	6.6	6.3	9.1	7.4	5.5	5.5	6.1	6.4	7.4	6.1	7.2	8.8	8.1	14.5
30-May	8.6	8.1	7.3	6.9	7.1	10.0	20.3	18.4	15.4	13.8	14.1	13.2	35.9	151.6	207.3	103.7	33.3	102.7	195.1	237.6	248.1	125.4	38.4	78.0	70.8	248.1
31-May	55.2	66.7	59.6	47.4	49.3	58.2	61.6	84.4	166.4	175.5	174.3	202.9	223.9	206.5	171.6	146.5	137.0	157.1	127.5	180.2	223.0	174.0	76.1	31.9	127.4	223.9

55.1	57.8	50.9	43.1	36.9	36.3	34.6	30.5	32.3	36.5	38.2	45.3	50.5	48.8	49.1	47.0	46.4	57.3	65.6	77.5	91.7	88.5	70.6	59.6	Diurnal Average	
595.8	727.6	592.9	348.0	200.1	208.1	191.6	175.9	166.4	193.6	295.5	419.7	510.3	387.4	339.5	321.6	390.2	550.4	654.3	636.2	570.5	580.4	541.6	480.2	Diurnal Maximum	

C - Calibration M - Maintenance AF - Analyzer Failure
 Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m³ 24-hr 29 µg/m³





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Conklin - May 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	52	7.08	7.08
6 - 15	301	41.01	48.09
16 - 25	95	12.94	61.04
26 - 80	171	23.30	84.33
> 81.0	115	15.67	100.00

Total Number of Valid Hours: 734

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Conklin - May 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	9	1	3	1	1	9	9	3	3	0	0	0	2	5	4	2	52
6 - 15	1	4	2	3	5	37	32	54	43	42	30	15	5	11	9	6	299
16 - 25	6	1	2	0	3	5	10	15	10	16	10	4	0	2	5	6	95
26 - 80	4	3	3	4	2	13	16	26	31	22	11	2	0	5	15	14	171
> 81.0	8	4	8	10	8	17	10	11	8	6	2	1	1	2	6	13	115
Totals	28	13	18	18	19	81	77	109	95	86	53	22	8	25	39	41	732

Total Number of Valid Hours: 732

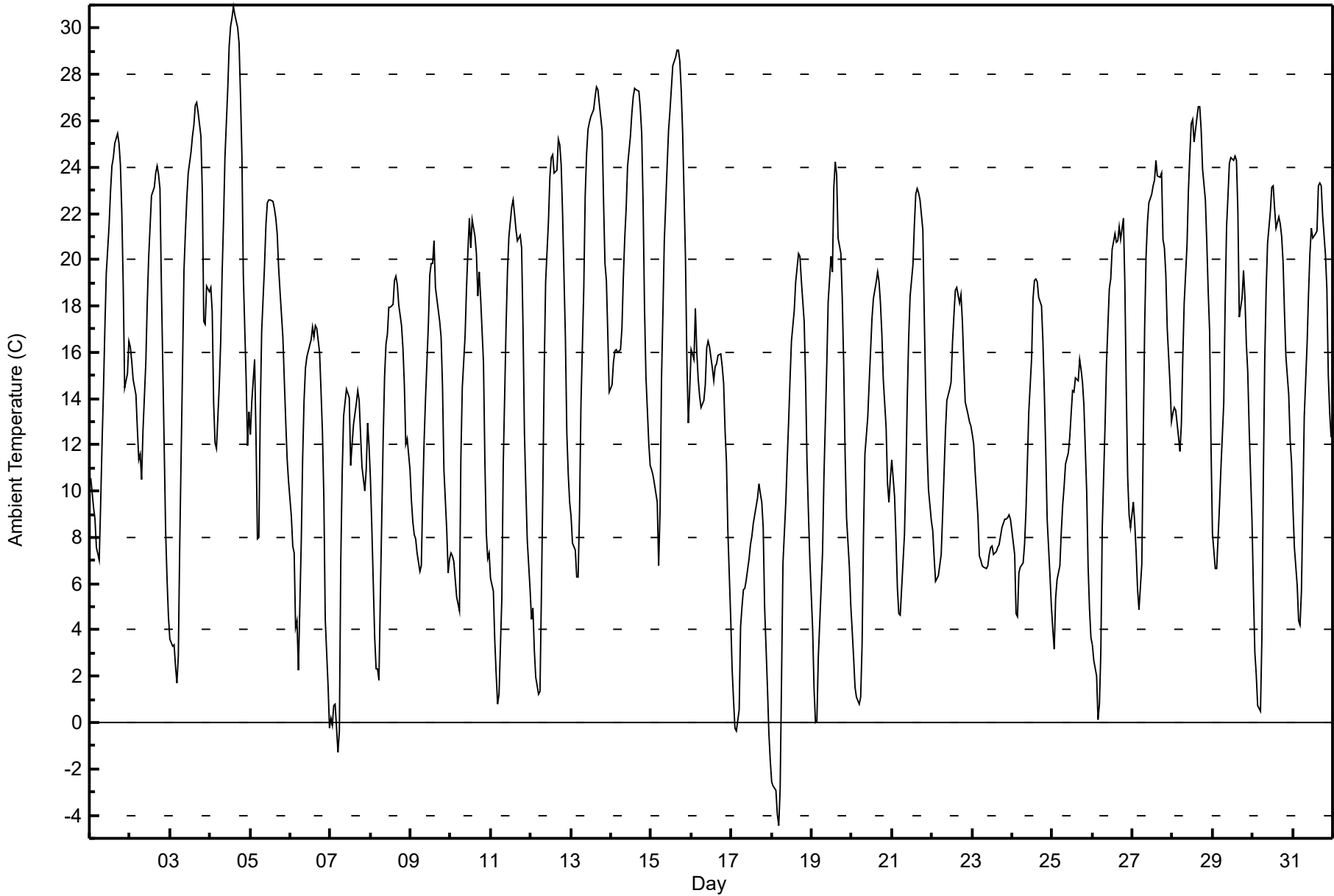
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Ambient Temperature (AT) - C
Conklin - May 2023

Maximum Value: 30.9 C on May 4 15:00 Maximum Daily Average: 21.7 C on May 4																						Hours in Service: 744 Hours of Data: 744				
Minimum Value: -4.5 C on May 18 05:00 Minimum Daily Average: 5.1 C on May 17 Maximum Diurnal Average: 21.1 C at hour 16 Minimum Diurnal Average: 5.4 C at hour 5 Monthly Average: 14.19 C Percentiles: P ₁ = -0.9 P ₁₀ = 4.5 Q ₁ = 8.3 Median = 14.4 Q ₃ = 19.8 P ₉₀ = 24.0 P ₉₉ = 29.0																						Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	10.5	9.9	9.3	8.8	7.6	7.0	9.4	12.0	14.3	17.1	19.4	21.5	23.0	24.0	24.4	25.0	25.5	25.0	24.1	22.0	18.8	14.5	15.1	16.5	16.9	25.5
2-May	16.2	15.6	14.8	14.2	12.7	11.3	11.6	10.5	12.6	15.6	18.1	20.1	21.4	22.8	23.1	23.7	24.1	23.7	23.0	18.9	11.9	8.3	6.3	4.6	16.1	24.1
3-May	3.6	3.3	3.4	2.4	1.7	2.9	7.7	15.5	19.5	21.2	22.6	23.7	24.7	25.3	25.8	26.7	26.8	26.4	25.3	22.9	17.3	17.2	18.9	18.6	16.8	26.8
4-May	18.8	17.8	13.8	12.1	11.8	14.6	16.4	19.4	21.7	24.4	27.4	29.3	30.1	30.5	30.9	30.6	30.1	29.4	27.1	24.5	19.3	14.8	11.9	13.4	21.7	30.9
5-May	12.5	13.8	15.7	12.2	7.9	8.0	13.4	16.9	19.7	21.5	22.5	22.6	30.6	22.5	22.2	21.8	21.1	19.7	18.6	16.7	14.8	13.1	11.4	10.5	16.7	22.6
6-May	8.9	7.6	7.3	4.1	4.4	2.3	7.8	11.4	13.9	15.3	15.8	16.3	16.5	17.1	16.7	17.2	17.0	16.0	14.3	12.6	9.7	4.5	1.6	-0.2	10.8	17.2
7-May	0.2	-0.1	0.7	0.8	-1.3	-0.4	7.0	10.8	13.2	14.4	14.2	14.1	11.1	12.0	12.9	13.8	14.3	13.9	12.5	11.1	10.0	10.9	13.0	12.0	9.2	14.4
8-May	10.5	8.4	3.7	2.3	2.3	1.9	5.5	12.3	15.0	16.4	16.8	17.9	17.9	18.1	19.1	19.3	18.9	18.0	17.2	16.1	14.6	12.0	12.2	10.9	12.8	19.3
9-May	9.6	8.7	8.1	7.9	7.3	6.5	6.8	9.7	12.2	14.1	17.2	19.3	19.8	19.8	20.8	18.8	17.8	17.4	16.7	14.5	10.9	8.3	6.5	7.1	12.8	20.8
10-May	7.3	7.2	6.9	5.4	5.2	4.8	11.4	14.5	16.7	18.8	20.4	21.8	20.5	21.8	21.0	20.3	18.4	19.5	18.3	15.6	11.3	8.2	7.1	7.3	13.7	21.8
11-May	6.2	5.7	3.5	2.1	0.8	1.2	5.4	11.2	14.1	17.1	19.6	21.0	22.3	22.6	22.0	21.3	20.8	21.0	20.5	17.0	12.5	10.1	7.9	5.7	13.0	22.6
12-May	4.4	4.9	3.1	2.0	1.2	1.3	5.5	10.0	15.3	19.0	21.7	23.5	24.4	24.5	23.7	23.8	25.2	25.0	24.1	22.0	16.6	12.5	10.7	9.5	14.8	25.2
13-May	8.9	7.7	7.5	6.3	6.3	9.1	13.7	18.8	22.7	24.6	25.6	25.9	26.2	26.5	27.1	27.5	27.3	26.7	25.5	22.5	19.9	19.1	16.8	14.3	19.0	27.5
14-May	14.6	15.6	16.0	16.1	16.0	16.1	17.0	19.2	20.9	22.2	24.0	25.3	26.3	27.0	27.4	27.3	27.3	26.5	25.4	22.4	17.9	15.0	12.1	11.1	20.4	27.4
15-May	10.9	10.7	10.3	9.5	6.8	9.2	14.8	17.7	20.8	24.0	25.6	26.4	27.4	28.4	28.8	29.0	29.0	28.5	27.3	25.5	20.0	15.6	13.0	14.4	19.7	29.0
16-May	16.1	15.7	17.9	16.0	14.8	14.1	13.6	13.9	14.6	16.1	16.5	16.3	15.3	14.8	15.4	15.5	15.8	15.9	15.4	14.6	12.7	11.2	8.3	4.5	14.4	17.9
17-May	2.3	1.0	-0.3	-0.4	0.6	4.2	5.0	5.7	5.8	6.1	7.1	7.7	8.1	8.6	9.0	9.7	10.3	9.9	9.5	8.4	5.0	1.5	-0.4	-1.7	5.1	10.3
18-May	-2.5	-2.8	-2.9	-3.9	-4.5	-2.9	2.0	6.9	9.5	11.4	13.0	14.9	16.5	17.8	19.1	19.7	20.2	20.1	19.1	17.3	14.8	11.3	9.1	7.1	9.6	20.2
19-May	4.0	1.5	0.0	0.1	2.8	4.3	7.3	10.6	13.0	15.4	18.2	20.1	19.5	23.2	24.3	23.7	20.9	20.3	18.2	15.4	11.5	8.8	6.7	5.1	12.3	24.3
20-May	4.0	2.8	1.5	1.1	0.8	1.1	3.4	8.1	11.6	13.2	14.7	16.0	17.5	18.3	19.1	19.5	19.0	18.1	16.8	14.8	12.7	10.3	9.5	10.5	11.0	19.5
21-May	11.3	9.8	7.9	5.8	4.7	4.6	5.8	8.1	10.8	14.0	16.7	18.4	19.8	21.5	22.8	23.1	22.9	22.6	21.3	17.6	14.3	11.9	10.1	8.8	13.9	23.1
22-May	8.3	7.2	6.1	6.3	6.3	7.3	9.0	10.7	12.6	13.9	14.4	14.7	16.4	17.6	18.7	18.8	18.1	18.5	17.3	15.5	13.9	13.3	13.0	12.8	12.9	18.8
23-May	12.4	12.0	10.8	8.9	7.2	7.0	6.8	6.7	6.7	6.8	7.3	7.6	7.6	7.2	7.4	7.6	7.7	8.0	8.4	8.8	8.8	8.8	9.0	8.8	8.3	12.4
24-May	8.3	7.3	4.7	4.6	6.5	6.7	6.9	7.7	9.1	11.2	13.4	15.8	18.3	19.1	19.2	19.0	18.4	18.0	16.5	14.3	11.7	8.8	6.3	5.0	11.5	19.2
25-May	4.0	3.2	5.3	6.2	6.8	8.2	9.4	10.2	11.2	11.7	12.3	13.4	14.3	14.3	14.9	14.7	15.7	15.3	14.7	13.7	10.0	6.7	4.9	3.7	10.2	15.7
26-May	3.3	2.7	2.0	0.1	0.8	3.0	8.4	12.8	15.5	17.2	18.7	19.2	20.4	21.1	20.8	20.8	21.4	20.9	21.8	18.9	14.4	10.6	9.0	8.4	13.0	21.8
27-May	9.5	8.6	7.3	5.7	4.9	6.8	12.1	17.0	20.2	21.6	22.5	22.8	23.2	23.4	24.3	23.6	23.6	23.8	20.9	20.5	19.4	17.0	14.6	13.0	16.9	24.3
28-May	13.4	13.6	13.5	12.3	11.7	12.9	15.7	18.1	20.6	23.0	24.5	25.9	26.1	25.1	26.1	26.6	26.6	25.6	23.9	22.6	20.7	18.6	16.9	11.9	19.8	26.6
29-May	8.2	6.7	6.7	8.0	9.4	11.0	13.8	18.1	21.4	22.7	24.1	24.4	24.3	24.5	24.3	22.1	17.5	18.4	19.5	18.4	16.4	15.1	12.7	8.7	16.5	24.5
30-May	5.8	3.1	2.1	0.7	0.5	3.6	10.4	15.5	18.7	20.7	22.1	23.1	23.2	22.2	21.4	21.9	21.6	21.0	19.9	17.7	15.8	14.1	12.2	11.2	14.5	23.2
31-May	9.3	7.6	5.9	4.4	4.2	5.7	9.4	13.2	16.4	18.5	20.3	21.4	21.0	21.1	21.2	23.2	23.3	23.2	21.9	20.2	18.7	15.0	13.4	12.4	15.4	23.3
																								Diurnal Average		
																								Diurnal Maximum		





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Conklin - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	15	2.02	2.02
0 - 10	221	29.70	31.72
10 - 20	325	43.68	75.40
> 20	183	24.60	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity (RH) - %

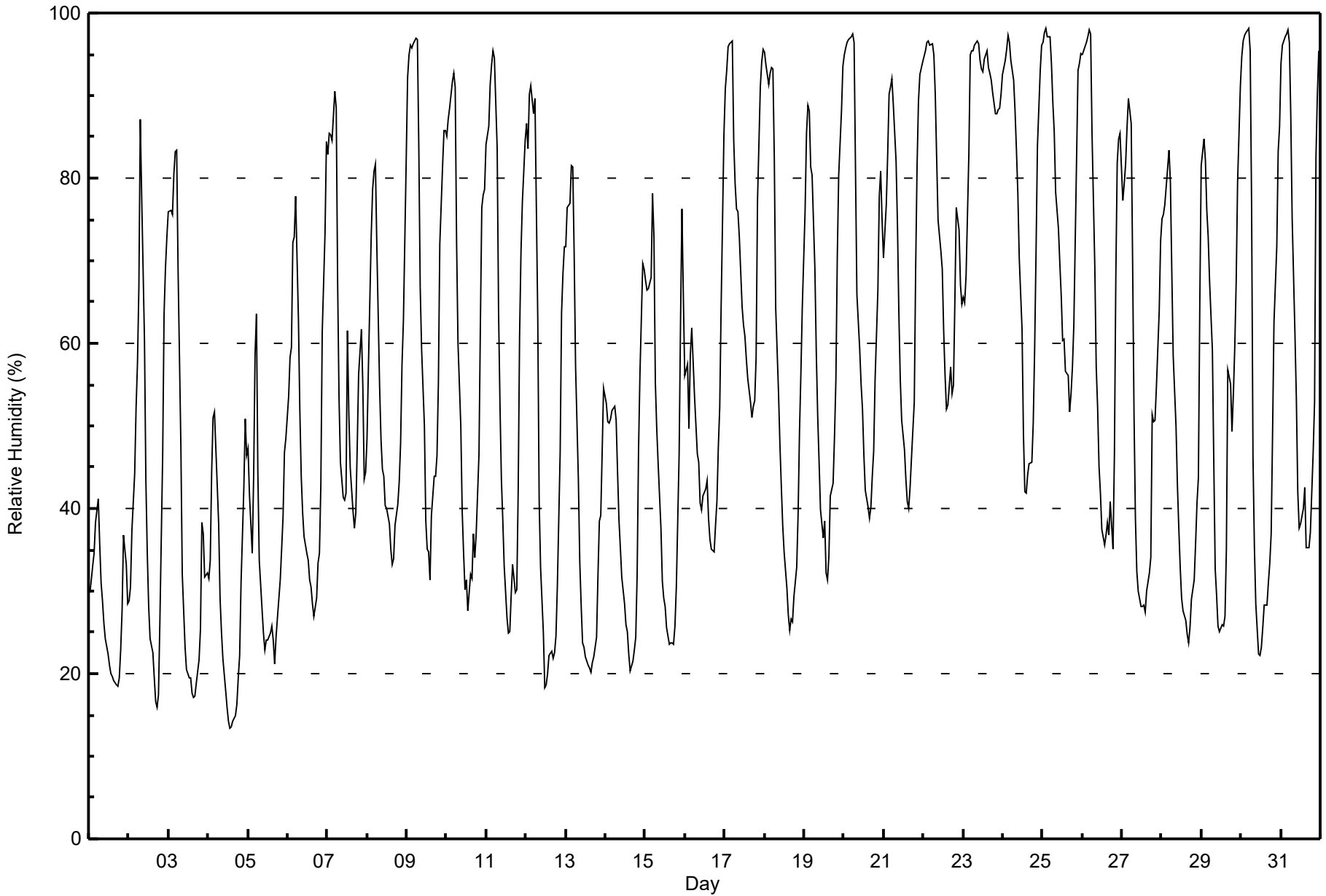
Conklin - May 2023

Maximum Value: 98.1 % on May 25 03:00 Maximum Daily Average: 89.1 % on May 23																						Hours in Service: 744 Hours of Data: 744																											
Minimum Value: 13.4 % on May 4 14:00 Minimum Daily Average: 27.6 % on May 1 Maximum Diurnal Average: 82.5 % at hour 5 Minimum Diurnal Average: 33.8 % at hour 16 Monthly Average: 56.04 % Percentiles: P₁ = 16.4 P₁₀ = 24.9 Q₁ = 34.6 Median = 52.1 Q₃ = 79.3 P₉₀ = 93.4 P₉₉ = 97.5																						Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0																											
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	29.8	31.4	33.1	34.6	38.4	41.1	35.7	31.0	28.8	26.0	24.3	22.4	21.0	19.9	19.7	19.2	18.6	18.5	19.4	22.8	27.7	36.7	33.2	28.5	27.6	41.1																							
2-May	28.9	30.5	37.3	44.3	52.2	57.6	66.8	87.2	77.8	60.4	43.4	34.6	28.1	24.2	22.6	19.5	16.6	15.8	17.4	26.3	46.4	63.6	69.2	73.0	43.5	87.2																							
3-May	76.0	76.2	75.6	80.6	83.2	83.4	69.0	47.7	32.1	27.7	23.1	20.6	19.4	19.4	17.6	17.1	17.3	18.8	21.7	25.5	38.4	36.9	31.7	32.2	41.3	83.4																							
4-May	31.6	33.7	44.5	51.0	51.8	42.7	38.2	29.1	25.0	21.9	17.9	16.0	14.3	13.4	13.5	14.3	15.0	16.3	19.5	22.1	31.0	42.5	50.9	46.5	29.3	51.8																							
5-May	47.4	41.7	34.5	43.9	58.6	63.6	44.4	33.7	27.8	24.9	22.9	24.1	24.1	25.0	25.8	24.2	21.3	24.4	26.8	31.3	35.1	39.0	46.8	48.5	35.0	63.6																							
6-May	53.6	58.2	59.5	72.2	72.8	77.8	62.9	51.9	44.0	39.5	36.6	34.6	33.7	31.3	30.6	28.5	27.0	29.1	33.4	34.6	42.8	61.3	73.4	84.4	48.9	84.4																							
7-May	82.9	85.5	85.2	84.6	90.5	88.5	67.4	53.4	45.6	41.4	41.0	41.9	61.6	51.5	44.9	39.7	37.6	39.4	47.5	56.3	61.8	54.9	43.6	44.5	58.0	90.5																							
8-May	48.5	57.1	73.0	78.6	80.8	81.6	71.8	54.8	48.4	44.7	44.0	40.3	40.0	38.2	35.0	33.3	33.9	37.9	40.5	43.2	48.0	57.5	62.7	82.2	53.2	82.2																							
9-May	92.3	94.9	96.0	95.7	96.2	96.9	96.7	83.7	66.8	59.4	50.0	38.5	35.1	34.7	31.4	39.1	44.0	43.8	46.4	55.3	72.1	81.5	85.8	85.7	67.6	96.9																							
10-May	85.1	87.1	88.4	91.6	92.7	91.1	72.2	60.0	50.0	39.6	34.6	30.2	31.3	27.6	32.0	31.5	37.0	34.1	36.9	46.6	62.4	76.4	77.9	78.6	58.1	92.7																							
11-May	84.0	86.2	91.3	93.7	95.4	94.7	83.6	63.7	52.6	43.5	38.6	33.1	26.7	24.9	25.1	29.5	33.2	29.8	30.2	42.1	60.9	70.9	77.1	84.6	58.1	95.4																							
12-May	86.6	83.5	90.1	91.3	87.8	89.7	76.3	62.8	40.9	32.8	25.0	18.3	18.6	20.1	22.2	22.6	21.9	22.6	24.6	30.7	46.8	63.7	68.5	71.7	50.8	91.3																							
13-May	71.7	76.4	76.9	81.5	81.4	70.8	57.3	43.6	33.5	28.3	23.7	23.3	22.0	20.9	20.7	20.1	21.3	22.1	24.5	31.9	38.4	39.1	46.8	54.6	43.0	81.5																							
14-May	52.7	50.5	50.3	50.8	51.9	52.3	50.7	44.4	38.7	35.3	31.7	28.4	26.0	25.0	22.4	20.3	21.6	22.9	24.4	32.0	47.1	56.3	69.7	68.9	40.6	69.7																							
15-May	67.7	66.5	66.7	67.9	78.1	73.0	55.2	49.6	45.4	37.7	31.2	29.2	28.1	25.6	23.5	23.7	23.6	23.6	25.8	30.6	46.6	62.5	76.3	65.7	46.8	78.1																							
16-May	56.1	57.4	49.6	58.6	61.9	57.7	53.6	46.6	45.6	40.7	39.9	41.5	42.4	43.4	38.7	36.3	35.1	34.8	38.0	40.9	47.5	52.2	64.4	85.3	48.7	85.3																							
17-May	90.8	93.0	96.0	96.3	96.6	84.6	79.3	76.3	75.9	72.8	64.4	62.2	60.8	58.2	55.8	52.9	51.0	52.3	53.1	58.3	77.2	91.0	94.0	95.6	74.5	96.6																							
18-May	95.2	93.8	91.3	92.7	93.4	93.3	82.3	64.3	54.0	47.7	42.7	38.0	34.8	30.4	27.1	25.3	26.6	26.4	29.4	32.8	39.4	49.3	56.4	64.5	55.5	95.2																							
19-May	76.1	85.5	88.8	88.1	81.4	80.3	69.0	58.8	51.2	45.6	39.8	36.5	38.4	32.2	31.3	34.2	41.5	43.0	48.7	55.7	70.6	80.4	88.1	93.5	60.8	93.5																							
20-May	94.8	95.8	96.4	96.7	97.1	97.5	96.4	81.2	65.9	59.3	55.1	52.0	46.5	42.1	40.2	38.7	40.2	44.0	47.0	55.7	66.4	77.7	80.9	75.0	68.4	97.5																							
21-May	70.3	76.7	82.9	90.2	91.1	92.0	89.0	82.0	74.3	63.6	55.6	50.6	47.1	43.6	40.9	40.0	42.5	46.1	52.9	69.2	81.6	89.4	92.5	94.1	69.1	94.1																							
22-May	94.7	95.4	96.4	96.6	96.1	96.2	95.0	90.3	82.4	74.8	71.2	69.0	61.6	56.1	52.0	52.5	57.1	53.9	55.0	65.1	76.5	73.7	67.1	64.7	74.7	96.6																							
23-May	65.6	65.0	68.1	82.9	95.0	95.4	95.4	96.2	96.6	96.2	94.2	93.3	92.9	94.4	95.4	93.4	92.7	91.9	90.3	87.9	87.8	88.3	88.5	90.2	89.1	96.6																							
24-May	92.6	94.2	95.6	97.3	96.5	94.2	91.8	88.2	83.3	78.1	70.3	61.7	48.9	42.0	41.9	44.1	45.5	45.6	50.3	59.3	71.1	83.9	93.1	96.1	73.6	97.3																							
25-May	96.5	97.6	98.1	97.1	97.1	93.8	89.2	85.6	78.4	74.0	69.6	65.8	60.4	60.5	56.6	56.1	51.6	53.8	57.1	62.2	82.7	93.0	93.9	95.0	77.7	98.1																							
26-May	94.9	95.5	96.4	97.1	98.0	97.5	85.4	69.2	57.2	52.2	45.0	41.8	37.5	35.7	36.8	38.2	36.7	40.8	35.1	46.6	67.9	81.9	84.8	85.5	64.9	98.0																							
27-May	77.3	79.3	81.7	86.1	89.7	86.7	69.8	51.6	38.7	32.4	30.1	28.1	28.2	28.4	27.5	30.0	32.2	34.1	51.3	50.6	50.6	54.7	64.0	72.4	53.1	89.7																							
28-May	75.1	75.6	76.7	81.2	83.3	79.4	68.7	58.5	50.0	42.9	37.7	33.0	29.2	27.6	26.4	24.7	23.7	25.5	28.9	31.3	35.8	40.7	43.6	64.8	48.5	83.3																							
29-May	81.6	84.7	82.2	76.0	72.9	67.5	59.2	45.7	32.6	29.5	25.7	25.2	25.8	25.8	26.9	35.1	56.7	55.1	49.3	53.9	59.7	67.5	79.4	91.2	54.6	91.2																							
30-May	94.7	96.7	97.4	97.6	98.1	95.4	77.0	46.2	35.5	28.6	22.3	22.1	23.3	25.5	28.3	28.3	31.0	33.4	36.9	49.1	62.6	71.7	83.2	86.3	57.1	98.1																							
31-May	93.9	96.1	97.2	97.5	98.0	96.5	87.6	75.1	61.0	53.3	42.1	37.6	38.2	40.0	42.6	35.3	35.2	35.2	37.2	46.7	52.9	82.6	90.1	95.3	65.3	98.0																							
																								73.8	75.5	77.3	80.5	82.5	81.1	72.2	61.7	52.9	46.9	41.7	38.5	37.0	35.1	34.0	33.8	35.1	36.0	38.7	45.0	56.0	65.2	70.2	74.2	Diurnal Average	
																								96.5	97.6	98.1	97.6	98.1	97.5	96.7	96.2	96.6	96.2	94.2	93.3	92.9	94.4	95.4	93.4	92.7	91.9	90.3	87.9	87.8	93.0	94.0	96.1	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Conklin - May 2023





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Speed (WS) - km/h
Conklin - May 2023

Maximum Speed: 23 km/h on May 16 16:00	Maximum Daily Speed Average: 11.7 km/h on May 5	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 20 00:00	Minimum Daily Speed Average: 0.1 km/h on May 9	Hours of Data: 742
Maximum Diurnal Speed Average: 4.4 km/h at hour 13	Minimum Diurnal Speed Average: 1.8 km/h at hour 22	Hours of Missing Data: 2
Monthly Average Velocity: 2.9 km/h 162.9 deg	Percentiles: P ₁ = 0 P ₁₀ = 1 Q ₁ = 3 Median = 7 Q ₃ = 11 P ₉₀ = 14 P ₉₉ = 18	Percent Operational Time: 99.7

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SSE10	SSE7	SSE7	SSE8	SSE7	SE6	SSE10	SSE16	SSE16	SSE14	SSE16	S16	S17	S19	S19	S17	S15	SSW16	S13	SSE8	SSE7	S4	S5	SSW7	\$11.3	S19
2-May	SSW9	SW10	WNW4	NW5	SW1	NW1	WNW4	WSW1	SW0	NW7	NW6	NW7	N9	NNW9	WNW6	NW9	WNW7	NW6	WNW4	WNW3	SSW1	S3	S3	S4	WNW3.2	SW10
3-May	SE4	S5	S5	SE5	SSE6	SE5	SE5	SSE6	S16	S17	SSE16	SSE15	S15	SSE16	SSE16	S15	S15	S15	S12	SSE8	SE4	SSE7	SSE8	SSE10	SSE9.9	S17
4-May	SSE10	SSE7	E3	SE2	SE4	ESE2	SE5	S10	S12	SSE11	SSE10	SSE11	SSE15	S14	SSE10	SSE12	SE12	ESE13	ESE13	ESE9	SE4	SE4	NE1	SSE7	SSE7.8	SSE15
5-May	SSE4	SSE7	SSE7	SE4	ESE2	SSE4	SSE7	SSE9	SSE12	SE14	SE18	ESE18	ESE17	ESE18	ESE18	ESE17	ESE18	SE17	ESE18	SE16	SE11	ESE9	ESE12	SE12	SE11.7	ESE18
6-May	ESE8	SE9	SE8	ESE4	ESE4	NE2	E5	ESE10	ESE13	ESE15	ESE17	ESE16	SE18	ESE17	ESE16	ESE15	ESE16	ESE16	ESE20	SE16	ESE5	ENE0	SW0	WNW0	ESE10.2	ESE20
7-May	SSW1	SSW1	S2	WNW1	NW3	S1	ESE5	ESE11	ESE13	SE17	SE18	SE19	SSE16	SE15	SE14	ESE12	ESE9	SE3	NE1	N2	SSE2	SE7	SE10	SE11	SE7.4	SE19
8-May	SE10	SE7	N0	ESE1	S3	SSE3	SSE3	SE7	SSE11	SSE11	SSE12	S11	SE14	SSE13	SSE13	S12	SSE13	SE14	SE13	SE9	SE4	SSE1	SSE5	SSW3	SSE7.8	SE14
9-May	SSE2	S2	SE2	S1	NW1	W1	ENE0	SSE2	SE4	ESE3	ESE2	E2	SSW5	NW5	NW7	N8	N7	SE4	SW3	NW2	SSW2	SSW1	WSW0	SSW1	S0.1	N8
10-May	WSW1	E0	SSW1	UO	SSE3	S1	NNE1	NNW4	NNW2	W2	E5	ENE4	NNE10	N4	SW13	SW13	N11	NE6	WNW5	WNW1	SSE0	SW0	S1	SSE2	NW1.0	SW13
11-May	SE1	SSW2	WNW0	SSE2	S1	S2	SSE1	ENE2	SE5	NE2	ENE5	ESE10	ESE11	ESE13	SE12	SSE11	SSW12	SSE8	SE5	N1	SSE2	SE1	SE0	SSE1	SE3.6	ESE13
12-May	WNW1	S1	SSE1	SSE2	S2	S1	N1	NNE2	ESE5	ESE7	ESE8	E9	ESE9	SE6	SSW5	SE3	SW4	SSW8	S7	SSW4	SSW3	S4	SSW6	S6	SSE3.0	E9
13-May	SSW7	SSW6	SSE5	S5	S7	SSW7	SSW6	SW7	SSW10	SSW15	SW17	SW17	SW16	SSW16	SSW15	SW14	SW13	SSW13	SSW9	S3	SW4	SW5	SSW5	S5	SSW9.3	SW17
14-May	S6	SSW7	SSW8	SSW9	SSW12	SSW12	SSW13	SW14	SW14	SW15	SW16	SW16	SW15	SW14	SW14	SSW14	SSW11	SSW10	SSW7	SSW4	S5	SSW6	SSW6	S6	SSW10.2	SW16
15-May	S6	S4	S5	SSE4	SE4	SE3	SW8	WSW12	WSW10	SSW11	SSW12	SSW13	SW13	SSW12	SW12	SSW11	SSW12	SW11	SW11	SSW6	S1	S2	SSE2	SW5	SSW7.3	SSW13
16-May	SSW6	S6	W5	NW4	NW11	NNW11	NNW11	NNW15	NNW15	NNW18	NW18	NNW17	NNW18	NNW21	NNW18	NNW23	NNW18	NW16	NW12	NW10	NW6	NW6	NNW4	NW2	NW11.1	NNW23
17-May	NNW2	NNW2	NNW2	NNW3	NW4	NW7	NW7	NNW8	N10	N14	N15	N13	NNW14	N13	NNE14	NNE12	NNE12	NE10	NE9	E5	NE1	NW0	SSE1	SW0	N6.6	N15
18-May	SSW0	S2	S3	SSW2	S2	ESE1	S5	SSW7	WSW6	WNW2	SSE6	SSW6	S5	S5	S7	SSE7	SW7	SW8	SW9	SSW7	S7	S4	SW4	SSW4	SSW4.4	SW9
19-May	SSW4	SSW4	S4	S6	S7	SSE6	S7	SSW9	SSW13	SSW12	SSW12	SSW11	WSW6	SW10	SW11	WNW9	NNW10	NNW10	NNW8	NNW6	NNW3	N3	E1	S0	SW3.9	SSW13
20-May	S0	N1	NNW3	SSW1	SSE1	NW1	NW2	NNW5	E5	ENE6	ESE7	E7	ESE8	ESE9	ESE8	ESE7	ESE9	ESE7	ESE7	ESE4	SE2	NW2	SSE1	SE4	E3.3	ESE9
21-May	SE5	SE2	NW2	SSE0	SSE2	SSE1	NNW0	S1	WNW1	ESE1	ESE5	ESE6	E8	ESE5	SE3	SSW6	SW4	SSW0	ENE2	NNW2	SSE1	ESE1	SE1	SSE1	SE1.7	E8
22-May	SSE2	WSW1	NW3	S2	S1	NNW2	NNW2	NNW5	N8	NNE7	NNE9	N11	NNE12	NNE15	NE16	NE12	NE11	NE14	E13	ENE11	ENE10	ENE10	ENE12	ENE11	NE7.0	NE16
23-May	ENE10	E12	E13	E12	ENE9	ENE10	E11	E10	E10	E9	E9	ESE12	ESE14	ESE12	ESE12	ESE14	ESE13	ESE12	ESE12	ESE11	ESE9	ESE9	ESE8	E4	E10.4	ESE14
24-May	ENE2	ESE3	SSE2	SE4	SE8	SE8	SE9	SSE6	SSE5	S7	SSE6	SW5	WSW9	WSW11	W10	WNW10	NW10	NW8	NW11	NW9	NW6	NNW2	NNW1	NNW3	WSW1.8	WSW11
25-May	E1	ESE1	SSE1	NW1	S1	WNW2	NW5	NW6	N6	NNE4	N5	NNE5	NE5	N5	NNE6	NE7	ENE7	E5	SE7	ESE4	N1	SSE1	SSE2	SSE3	NE2.0	SE7
26-May	SE4	SSE4	SE3	N1	ESE1	SSE3	S5	SSW5	WSW7	WSW7	SW3	SSW6	SSW8	SW7	WSW4	SW4	SW3	SE2	S3	S2	SSE2	S3	S5	S6	SSW3.3	SSW8
27-May	S6	S6	S5	S5	S5	SE4	ESE2	S4	SSW11	S13	SSE14	SSE16	SSE14	SSE13	S12	S10	SSW9	SSE7	SSE11	SSE11	SSE12	S9	SSW5	SSW5	S8.3	SSE16
28-May	SSW5	SSW7	SSW9	S9	S7	S6	S4	SSW9	SSW7	SW8	SW9	WSW10	SW12	W10	SW14	SW11	W9	WNW8	WNW6	WNW5	WNW5	WNW4	WNW4	WNW1	SW6.0	SW14
29-May	SE2	SSE4	SSE4	S6	SSW7	SSW6	SW8	WSW8	WSW8	WSW9	WNW9	W10	WSW11	WSW12	SW8	W12	SSW10	SW7	SSW9	SSW11	SSW8	WSW10	S3	SE4	SW6.4	W12
30-May	SSE1	NW0	SSE2	SSE1	UO	SSE2	ESE1	N6	SE6	SE7	SE8	SE8	ESE9	SE9	SE7	SE11	ESE11	ESE7	ENE3	W3	SSW2	SSW4	ENE3	NNW3	ESE3.7	ESE11
31-May	SE1	SSE2	SE1	SW1	SSE2	SSE2	SSE2	N2	NE4	ESE8	NE9	ENE7	SSE5	SW2	N2	NE6	E3	NE7	N8	N8	NNW6	NW2	NW8	NW10	NNE2.0	NW10

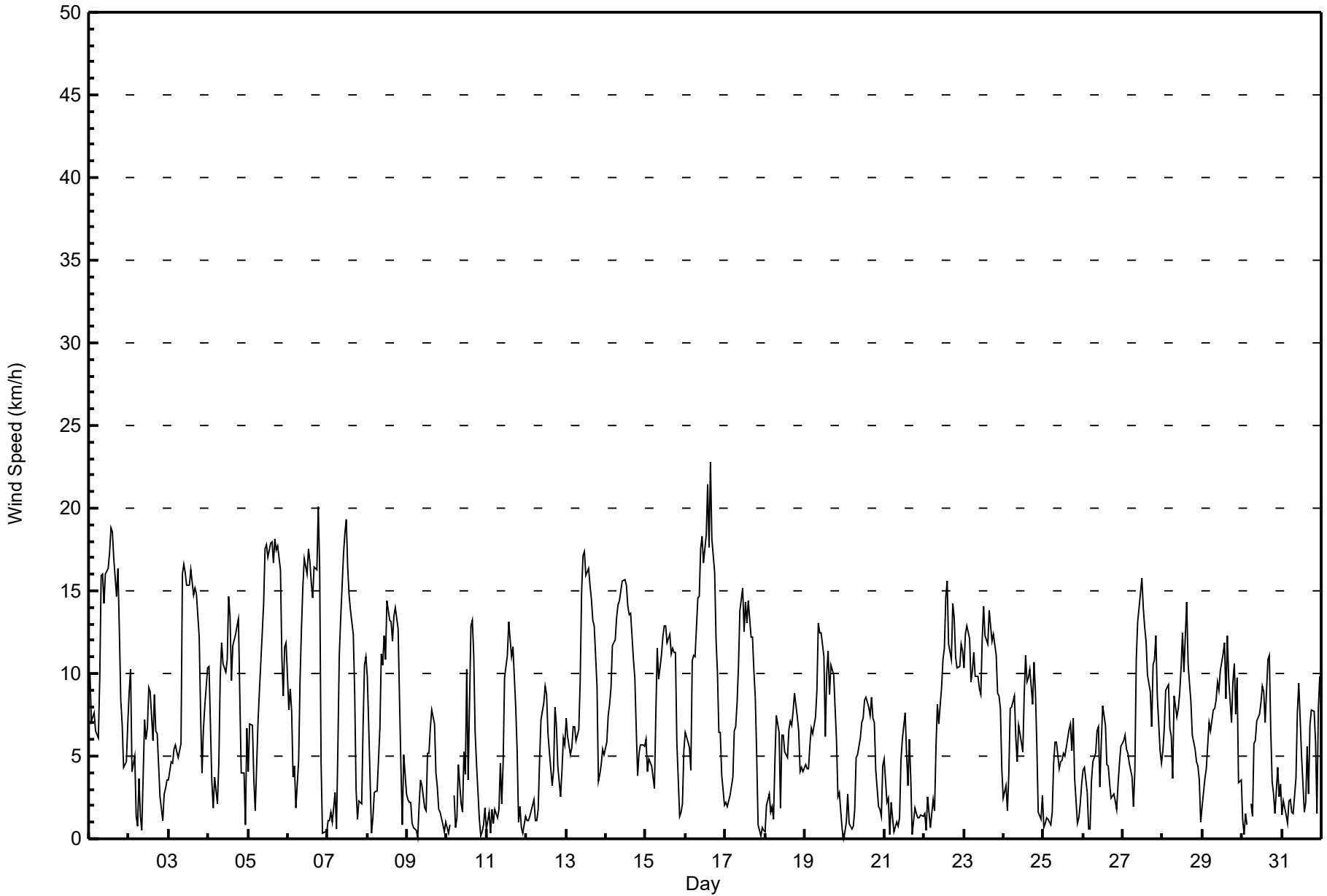
SSE3.2 SSE3.2 SSE2.2 SSE2.2 SSE2.3 SSE1.8 S2.1 S2.4 S3.6 SSE3.5 SSE4.1 SSE4.3 SSE4.4 SSE4.1 S4.3 SSE3.6 SSE2.7 SSE2.9 SSE3.2 SE2.3 SSE1.9 S1.8 SSE2.2 SSE2.5	Diurnal Average
SSE10 E12 E13 E12 SSW12 SSW12 SSW13 SSE16 S16 NNW18 SE18 SE19 NNW18 NNW21 S19 NNW23 NNW18 SE17 ESE20 SE16 SSE12 ENE10 ENE12 SE12	Diurnal Maximum

UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Conklin - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Conklin - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	320	43.13	43.13
6 - 11	265	35.71	78.84
12 - 19	154	20.75	99.60
20 - 28	3	0.40	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 742

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Conklin - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	13	4	7	9	12	22	39	50	53	28	18	5	4	18	17	21	320
6 - 11	11	4	8	10	8	28	23	37	24	41	18	14	3	7	19	10	265
12 - 19	4	5	3	1	4	32	15	22	18	17	18	3	1	0	3	8	154
20 - 28	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	3
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	28	13	18	20	24	83	77	109	95	86	54	22	8	25	39	41	742

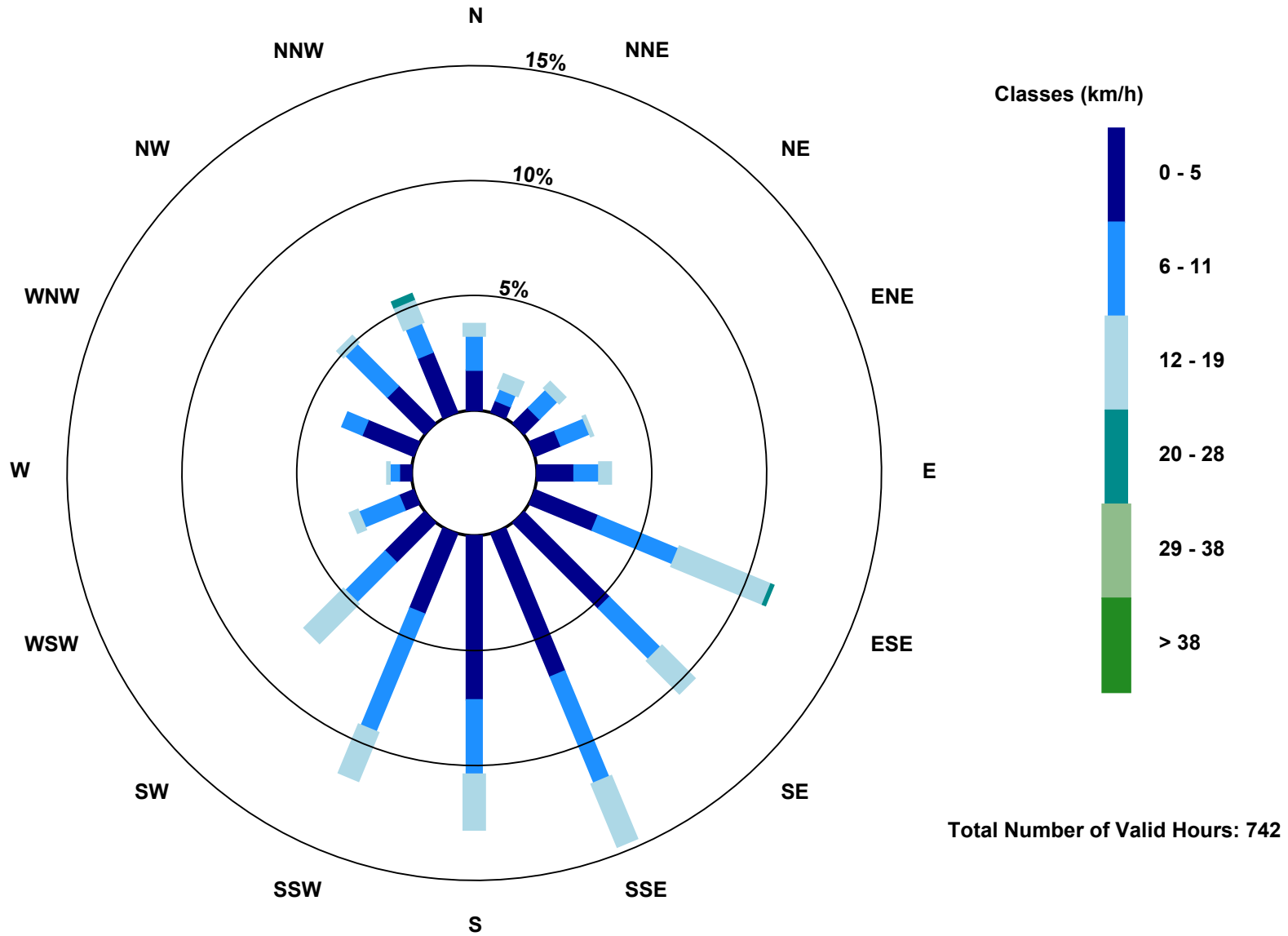
Total Number of Valid Hours: 742

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Conklin





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Conklin - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 8 km/h on May 16 16:00														Hours in Service: 744 Hours of Data: 742 Hours of Missing Data: 2 Hours of Calibration: 0 Percent Operational Time: 99.7											
Minimum Value: 0 km/h on May 9 01:00																									
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 1 Median = 2 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 6																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	3	2	2	2	1	1	3	4	4	4	5	5	5	6	6	5	5	5	4	2	2	2	2	2	6
2-May	2	4	2	2	1	1	2	2	3	3	2	3	5	4	4	4	3	3	2	1	1	1	1	1	5
3-May	1	1	2	2	1	1	1	5	5	5	5	4	5	5	5	4	5	4	4	3	1	2	2	3	5
4-May	3	2	1	2	2	2	1	4	3	3	3	4	5	4	5	4	4	4	3	3	1	1	1	3	5
5-May	3	3	2	2	1	1	2	3	4	4	5	5	5	5	5	5	5	5	5	4	3	2	3	3	5
6-May	2	3	2	1	2	1	2	3	3	5	5	5	5	5	5	4	5	5	5	5	3	1	1	1	5
7-May	1	1	1	1	1	1	2	3	4	5	5	6	5	4	4	4	2	2	1	1	1	2	2	2	6
8-May	2	2	1	1	1	1	1	4	3	3	4	4	4	4	5	4	4	4	3	2	1	1	3	2	5
9-May	0	1	2	1	1	1	1	1	1	1	2	3	3	3	3	3	3	2	1	2	1	1	1	1	3
10-May	1	1	1	UO	1	1	1	2	2	2	3	3	5	5	4	3	4	3	3	1	1	1	1	1	5
11-May	1	1	1	1	1	2	1	2	1	2	2	4	4	4	3	4	4	3	2	1	1	1	1	1	4
12-May	2	1	1	1	1	1	1	1	2	2	3	4	3	4	3	2	3	4	2	2	1	1	1	1	4
13-May	1	1	1	1	1	1	1	2	4	4	6	5	5	5	5	5	5	4	4	1	1	1	1	1	6
14-May	1	2	2	3	3	3	4	4	5	5	5	5	5	5	4	4	3	3	2	1	1	1	1	1	5
15-May	1	1	1	1	1	1	3	3	3	4	4	4	5	5	4	4	4	4	3	3	1	1	1	1	5
16-May	1	1	3	3	4	4	5	5	6	7	7	6	7	7	7	8	7	6	5	5	3	3	2	1	8
17-May	1	1	1	1	1	3	2	3	3	4	5	4	4	4	4	4	4	3	3	2	1	1	1	1	5
18-May	1	1	1	1	1	1	2	3	3	2	3	3	4	4	4	4	3	3	3	2	2	1	1	1	4
19-May	1	1	1	1	1	1	2	3	4	4	4	3	2	4	4	4	3	3	2	3	1	1	1	1	4
20-May	1	1	2	1	1	1	1	1	2	2	2	3	3	3	3	2	2	2	2	1	1	1	1	1	3
21-May	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2
22-May	1	1	1	2	1	2	2	2	3	3	3	3	5	5	6	5	4	6	5	5	5	4	5	5	6
23-May	4	5	5	5	4	4	4	4	3	3	3	4	5	4	4	5	5	4	4	4	3	3	3	1	5
24-May	1	1	1	2	2	2	2	2	2	2	2	3	4	4	5	4	4	4	4	3	2	1	1	1	5
25-May	1	1	1	1	1	2	1	2	2	2	2	2	2	2	2	2	3	2	2	2	1	1	1	1	3
26-May	1	1	2	1	1	1	1	2	2	3	2	3	3	3	2	2	2	2	2	1	1	1	1	1	3
27-May	1	1	1	1	1	1	1	2	3	4	4	5	4	5	5	4	4	3	5	5	4	3	1	1	5
28-May	2	2	2	2	2	2	3	3	2	3	3	4	4	4	4	4	4	4	3	2	2	2	2	1	4
29-May	1	1	1	1	2	2	2	2	4	4	4	5	5	5	4	7	5	3	4	3	2	3	2	1	7
30-May	1	1	1	1	UO	1	1	2	2	3	3	3	3	3	5	5	4	3	2	3	2	2	4	1	5
31-May	1	2	1	1	1	1	1	2	2	3	4	3	3	1	2	3	3	3	2	2	3	3	4	5	5
														Diurnal Maximum											
UO - Unstable Operation																									



Wood Buffalo Environmental Association
Summary of Hour Averages

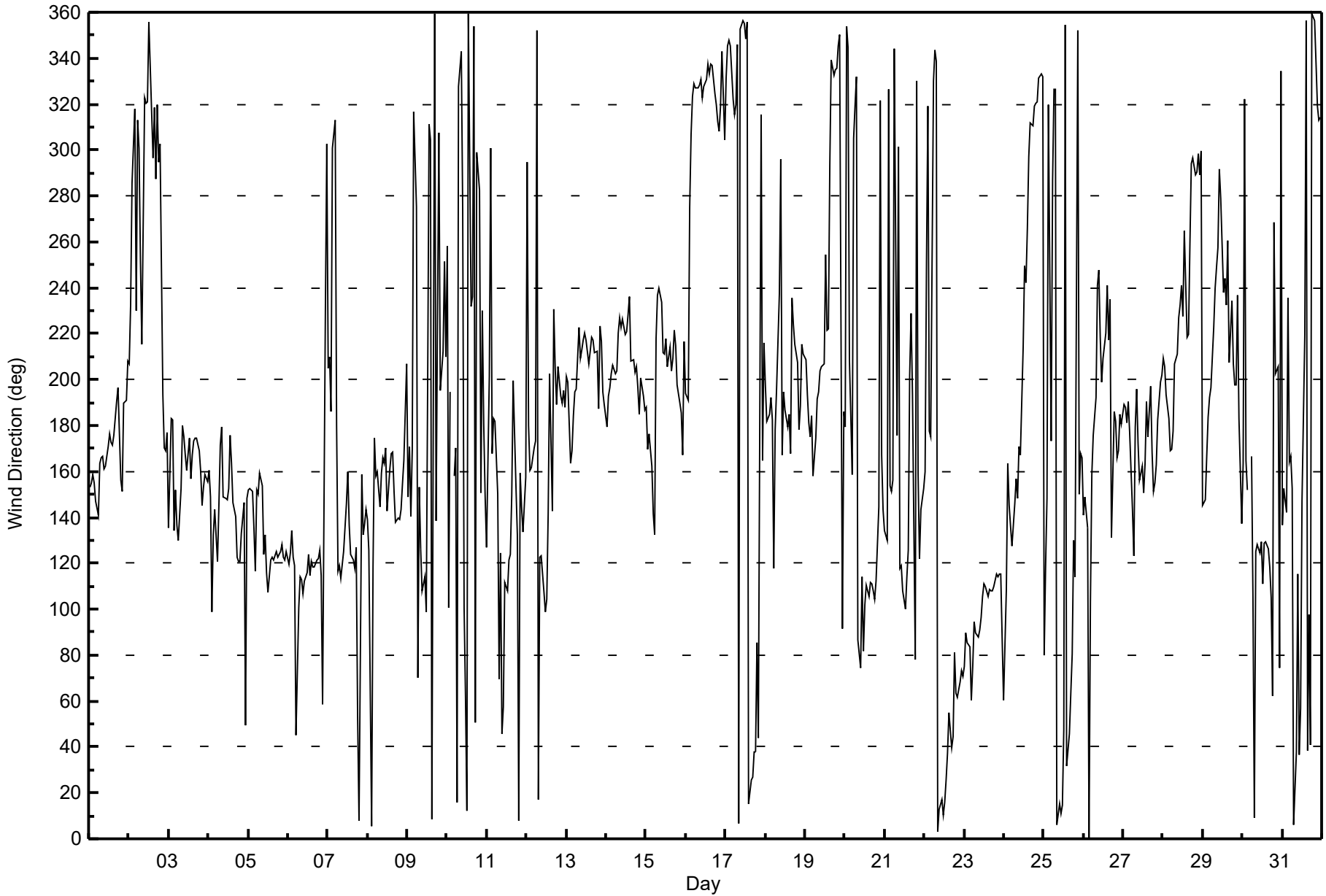
Wind Direction (WD) - deg
Conklin - May 2023

Direction of Maximum Speed: 337 deg on May 16 16:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 127.8 deg on May 5	Hours of Data: 742
Direction of Minimum Speed: 186 deg on May 20 00:00	Hours of Missing Data: 2
Direction of Minimum Daily Speed Average: 0.1 deg on May 9	Percent Operational Time: 99.7
Monthly Average Direction: 162.9 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	153	155	159	155	147	141	163	166	166	161	162	171	176	172	171	176	191	196	177	156	151	190	191	208	170.2
2-May	207	232	285	318	230	313	301	252	215	323	321	321	356	336	297	319	288	320	295	302	194	170	169	177	295.7
3-May	136	183	182	134	152	136	130	153	180	175	167	161	174	157	167	173	175	175	169	160	146	153	159	156	165.0
4-May	161	149	99	132	143	121	145	171	180	149	148	148	153	176	163	147	140	123	121	121	133	146	49	148	147.6
5-May	152	153	151	135	116	152	150	159	154	124	133	116	108	121	123	121	123	125	123	125	128	122	121	125	127.8
6-May	120	124	134	123	119	45	101	114	113	107	112	116	124	115	121	118	118	121	122	125	114	59	230	303	117.8
7-May	205	210	186	301	313	180	117	119	114	125	135	146	160	136	124	121	117	127	54	8	158	133	137	143	132.8
8-May	139	126	5	118	175	158	160	144	159	166	163	171	143	161	168	169	151	138	140	139	144	154	165	207	153.9
9-May	149	171	141	169	317	275	70	153	126	108	114	99	199	311	305	9	359	139	226	308	195	213	251	210	189.2
10-May	258	101	195	UO	158	170	16	328	343	273	101	62	12	359	232	236	354	51	299	283	151	230	181	149	318.6
11-May	127	201	301	168	183	182	150	70	124	46	57	111	108	122	124	150	200	154	132	8	159	144	133	158	133.4
12-May	294	180	160	161	170	174	352	17	123	123	107	99	104	142	203	143	231	205	189	206	193	190	195	188	158.2
13-May	201	199	163	169	184	194	196	222	209	213	217	220	217	207	212	218	217	212	212	188	223	216	195	189	208.6
14-May	179	193	197	203	206	203	204	220	227	223	227	219	221	228	236	208	209	203	206	197	185	201	193	187	212.0
15-May	188	170	177	162	142	132	218	237	240	233	211	211	218	205	214	204	209	221	215	198	190	186	167	217	209.7
16-May	194	191	275	307	323	329	327	327	328	330	323	327	331	337	333	337	337	324	320	312	308	319	343	304	325.2
17-May	331	345	348	346	322	315	320	346	7	352	356	355	348	356	15	25	27	38	38	85	44	315	165	216	3.2
18-May	198	182	185	192	182	118	178	196	237	296	167	194	186	180	185	168	235	224	216	207	178	189	215	211	198.3
19-May	209	194	182	175	184	158	175	192	195	204	206	207	254	222	222	293	339	332	335	336	345	350	91	186	222.5
20-May	179	354	345	209	158	305	319	332	87	74	114	82	102	110	106	112	111	108	104	112	145	321	167	143	101.0
21-May	134	130	326	154	151	156	344	176	301	118	119	108	100	114	126	202	229	193	78	330	159	122	143	153	132.3
22-May	160	251	319	177	175	330	344	339	3	13	17	10	16	26	37	55	40	45	81	63	62	68	73	70	41.3
23-May	75	89	86	84	61	75	95	90	88	91	97	105	111	110	105	109	108	108	110	115	114	116	116	88	98.4
24-May	61	108	163	145	136	127	146	157	148	171	167	214	250	242	266	297	312	310	319	320	321	332	333	332	246.4
25-May	80	118	148	320	173	287	326	326	6	15	11	15	47	355	32	46	63	80	130	114	352	150	168	166	40.0
26-May	141	149	135	0	103	159	176	193	241	248	218	199	209	220	241	217	235	131	186	182	166	169	185	181	197.1
27-May	189	188	181	190	177	144	123	179	196	172	157	163	151	164	191	175	197	168	151	155	163	183	199	202	171.9
28-May	210	206	194	183	169	170	177	207	211	227	233	241	227	265	219	220	259	294	296	289	290	298	289	299	230.2
29-May	145	148	166	184	192	197	223	240	249	258	292	279	238	244	232	261	207	234	207	198	198	237	183	137	226.8
30-May	163	322	165	152	UO	167	105	9	125	128	124	129	111	129	129	126	118	105	62	269	203	206	74	334	121.5
31-May	136	152	142	235	164	166	153	6	38	115	37	57	147	220	357	39	98	41	360	357	338	319	313	315	26.2

161.5 164.0 165.3 163.6 166.8 160.7 170.7 187.9 173.3 165.5 154.8 157.1 158.4 167.2 176.6 166.2 164.3 147.6 147.9 143.7 154.2 170.5 158.4 164.7
 Diurnal Average

UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Conklin - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 104 deg on May 21 04:00 Minimum Value: 7 deg on May 13 01:00 Percentiles: P ₁ = 9 P ₁₀ = 16 Q ₁ = 21 Median = 30 Q ₃ = 48 P ₉₀ = 74 P ₉₉ = 93																			Hours in Service: 744 Hours of Data: 742 Hours of Missing Data: 2 Hours of Calibration: 0 Percent Operational Time: 99.7						
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	17	21	18	18	19	14	20	20	21	24	23	25	25	23	22	24	28	21	20	14	9	31	21	21	31
2-May	21	25	34	24	60	100	42	85	88	30	37	57	51	48	65	40	50	43	30	27	35	35	19	19	100
3-May	22	16	21	16	12	16	12	40	20	23	25	27	31	26	27	25	24	20	19	15	10	12	16	15	40
4-May	16	15	42	81	46	70	21	22	20	27	27	35	29	31	43	32	28	21	16	14	16	16	88	38	88
5-May	71	33	23	57	71	24	19	24	22	22	22	20	23	18	18	20	17	17	16	13	14	15	16	14	71
6-May	15	14	13	30	44	51	40	20	20	26	23	24	21	25	21	23	19	18	16	15	27	99	53	86	99
7-May	60	45	27	70	25	73	23	21	20	22	20	20	20	21	18	18	16	32	72	60	21	17	12	12	73
8-May	13	15	93	66	23	15	20	41	20	29	27	34	27	26	28	24	22	21	16	13	11	79	44	63	93
9-May	16	26	61	84	83	69	89	29	23	54	93	92	73	61	55	42	52	55	44	73	74	81	81	75	93
10-May	76	85	83	UO	22	66	72	46	93	89	58	77	52	81	22	20	41	53	54	73	84	82	78	42	93
11-May	73	49	72	53	52	18	46	81	34	91	62	34	40	26	24	37	28	28	15	77	30	72	93	35	93
12-May	88	91	40	16	24	84	93	68	40	31	39	41	41	72	69	63	77	39	24	21	16	11	10	18	93
13-May	7	7	28	23	14	12	19	25	28	25	31	26	26	26	28	26	26	22	21	19	15	19	14	11	31
14-May	15	19	18	19	18	17	17	24	24	25	25	26	30	30	26	28	26	22	18	15	9	7	8	10	30
15-May	10	25	20	27	28	48	30	19	25	28	30	30	30	38	30	36	32	28	21	22	63	14	30	17	63
16-May	17	21	51	49	23	22	21	24	24	28	27	27	27	25	29	23	24	25	26	32	36	29	28	38	51
17-May	39	40	33	30	26	29	28	27	23	22	25	29	24	27	28	35	35	32	34	34	80	94	76	75	94
18-May	92	47	26	57	43	60	28	29	43	99	54	64	82	85	68	51	56	34	26	23	17	18	21	20	99
19-May	17	7	14	19	17	14	17	23	19	27	27	29	39	36	28	52	20	19	16	16	21	17	73	88	88
20-May	84	87	52	50	89	80	47	15	48	42	38	45	37	31	30	28	22	23	24	19	45	56	28	15	89
21-May	19	32	70	104	15	70	91	72	85	89	44	37	32	59	73	30	38	88	31	25	90	54	62	73	104
22-May	61	86	53	93	90	73	87	18	24	30	28	25	27	28	30	41	33	36	36	39	38	38	40	39	93
23-May	38	33	36	35	35	36	32	32	33	33	31	26	22	22	26	25	24	23	23	24	22	20	20	33	38
24-May	46	32	23	14	18	17	16	23	33	36	40	69	44	39	48	45	39	43	28	29	25	66	74	29	74
25-May	77	82	60	57	68	67	23	29	34	44	47	57	53	40	45	40	44	45	16	23	83	47	41	30	83
26-May	16	10	58	67	72	25	20	30	40	43	80	61	43	51	60	44	60	62	67	42	29	16	12	14	80
27-May	14	15	11	9	27	15	34	46	25	30	26	26	27	33	36	33	29	44	21	26	19	20	19	23	46
28-May	18	20	18	15	21	22	86	34	37	33	34	42	28	41	25	38	44	52	48	46	40	40	47	57	86
29-May	69	11	23	18	19	25	23	29	41	45	54	48	42	35	43	42	40	25	24	18	18	25	46	16	69
30-May	73	91	55	71	UO	28	52	26	44	50	35	39	37	26	70	24	22	31	36	58	77	49	94	39	94
31-May	73	32	55	63	69	60	68	92	58	37	42	54	56	76	80	76	82	35	25	20	52	95	48	40	95
92 91 93 104 90 100 93 92 93 99 93 92 82 85 80 76 82 88 72 77 90 99 94 88																								Diurnal Maximum	
UO - Unstable Operation																									



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS22
JANVIER
MAY 2023**

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JANVIER (AMS22)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2(ppb) Average	709	35	35	100	4.7	0	1.4	0
TRS(ppb) Average	706	38	38	100	1.1	0	0.5	0
THC(ppm) Average	707	35	37	99.73	2.4	-	2.1	-
NMHC(ppm) Average	707	35	37	99.73	0.18	-	0.019	-
CH4(ppm) Average	707	35	37	99.73	2.2	-	2.1	-
O3 (ppb) Average	709	35	35	100	68.2	0	53.7	-
NO2 (ppb) Average	684	42	60	97.58	10.6	0	3.4	-
NO (ppb) Average	684	42	60	97.58	4.6	-	0.7	-
NOX (ppb) Average	684	42	60	97.58	10.9	-	3.6	-
PM2.5 (ug/m3) Average	741	3	3	100	672	143	260.9	12
Temperature 2 m (C) Average	744	0	0	100	31.8	-	23.1	-
Relative Humidity (%) Average	744	0	0	100	97	-	86.3	-
Wind Speed 20 m (km/h) Average	743	0	1	99.87	22	-	14	-
Wind Direction 20 m (deg) Average	743	0	1	99.87	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JANVIER (AMS22)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	709	0.3	0.5	-	0	0	0	0.2	0.4	0.7	4.7
TRS (ppb) Average	706	0.18	0.1	-	0	0.1	0.1	0.2	0.2	0.3	1.1
THC (ppm) Average	707	2.02	0	-	1.9	2	2	2	2	2.1	2.4
NMHC(ppm) Average	707	0.001	0.011	-	0	0	0	0	0	0	0.18
CH4(ppm) Average	707	2.02	0	-	1.9	2	2	2	2	2.1	2.2
O3 (ppb) Average	709	39	13.4	-	3.6	20.7	30.2	40.4	49.1	55.5	68.2
NO2 (ppb) Average	684	1.56	1.5	-	0	0.4	0.7	1.1	1.9	3.3	10.6
NO (ppb) Average	684	0.16	0.3	-	0	0	0	0.1	0.2	0.4	4.6
NOX (ppb) Average	684	1.71	1.6	-	0	0.4	0.7	1.2	2.1	3.7	10.9
PM2.5 (ug/m3) Average	741	55.87	101.6	-	1.4	3.8	5.8	14.3	34.5	173.4	672
Temperature 2 m (C) Average	744	15.53	6.7	-	-2	7	9.9	15.5	20.6	24.8	31.8
Relative Humidity (%) Average	744	51.88	23.3	-	12.2	22.7	33.3	48.7	69.3	89.4	97
Wind Speed 20 m (km/h) Average	743	8.5	5	-	0	3	5	8	12	15	22
Wind Direction 20 m (deg) Average	743	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JANVIER (AMS22)
MAY 2023

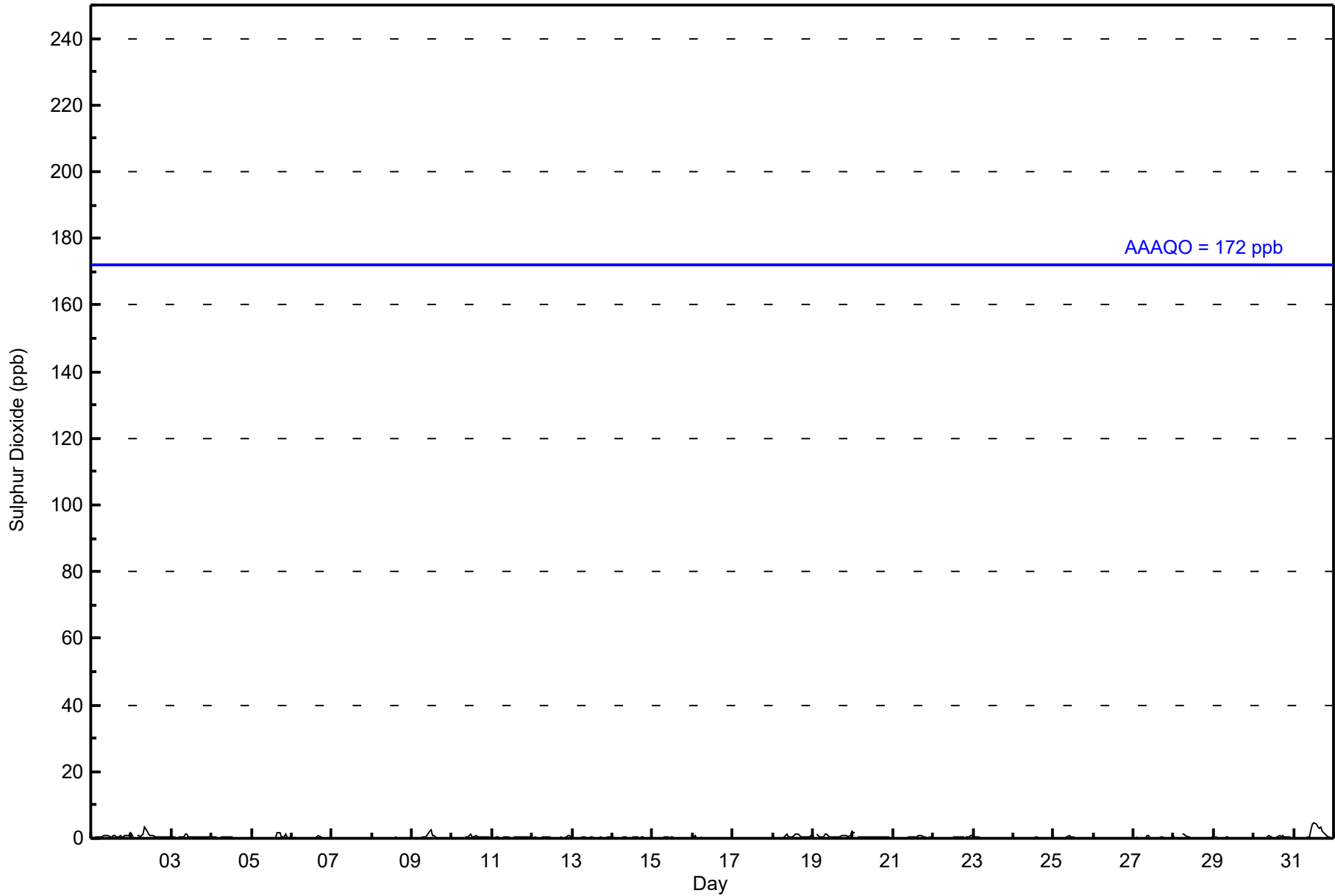
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
THC/NMHC/CH4	02 May 2023 12:00	02 May 2023 13:00	2	Maintenance - zero air generator maintenance
NO2	02 May 2023 18:00	03 May 2023 11:00	18	Maintenance - analyzer replaced
Wind Speed, Wind Direction	22 May 2023 00:00	22 May 2023 00:00	1	Flat line in sensor output signal



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Janvier - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Janvier - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	709	100.00	100.00
11 - 20	0	0.00	100.00
21 - 60	0	0.00	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Janvier - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	27	48	31	33	54	58	42	54	76	107	68	32	21	20	17	20	708
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	48	31	33	54	58	42	54	76	107	68	32	21	20	17	20	708

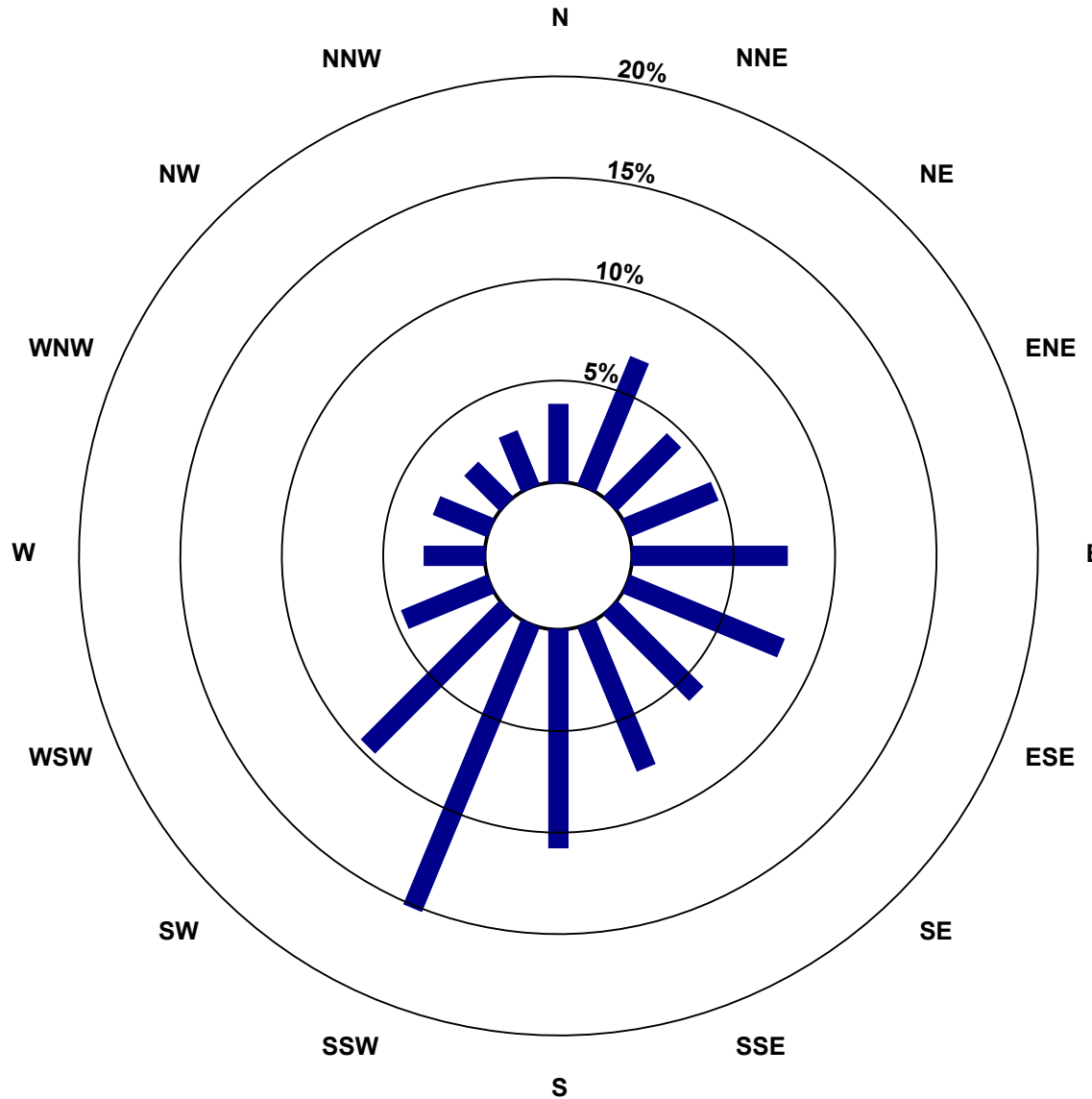
Total Number of Valid Hours: 708

Total Number of Hours: 744

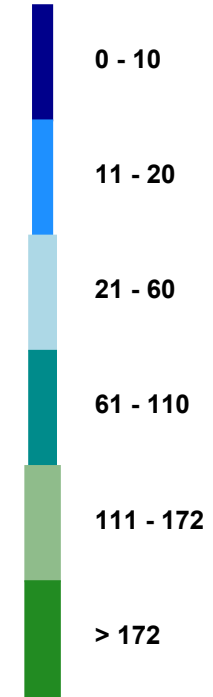


Wood Buffalo Environmental Association
Wind Rose May 2023

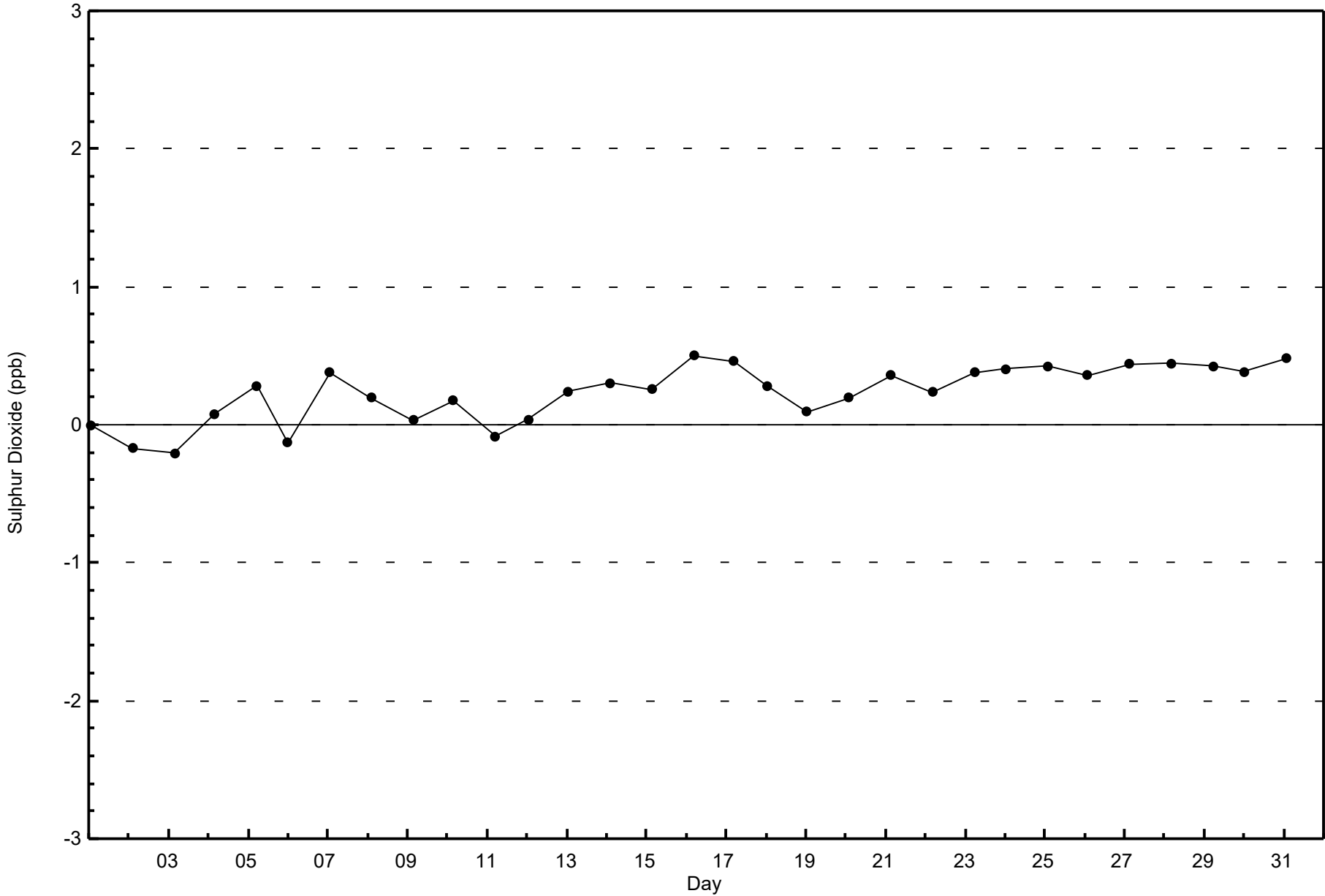
Sulphur Dioxide (SO₂) - ppb
Janvier

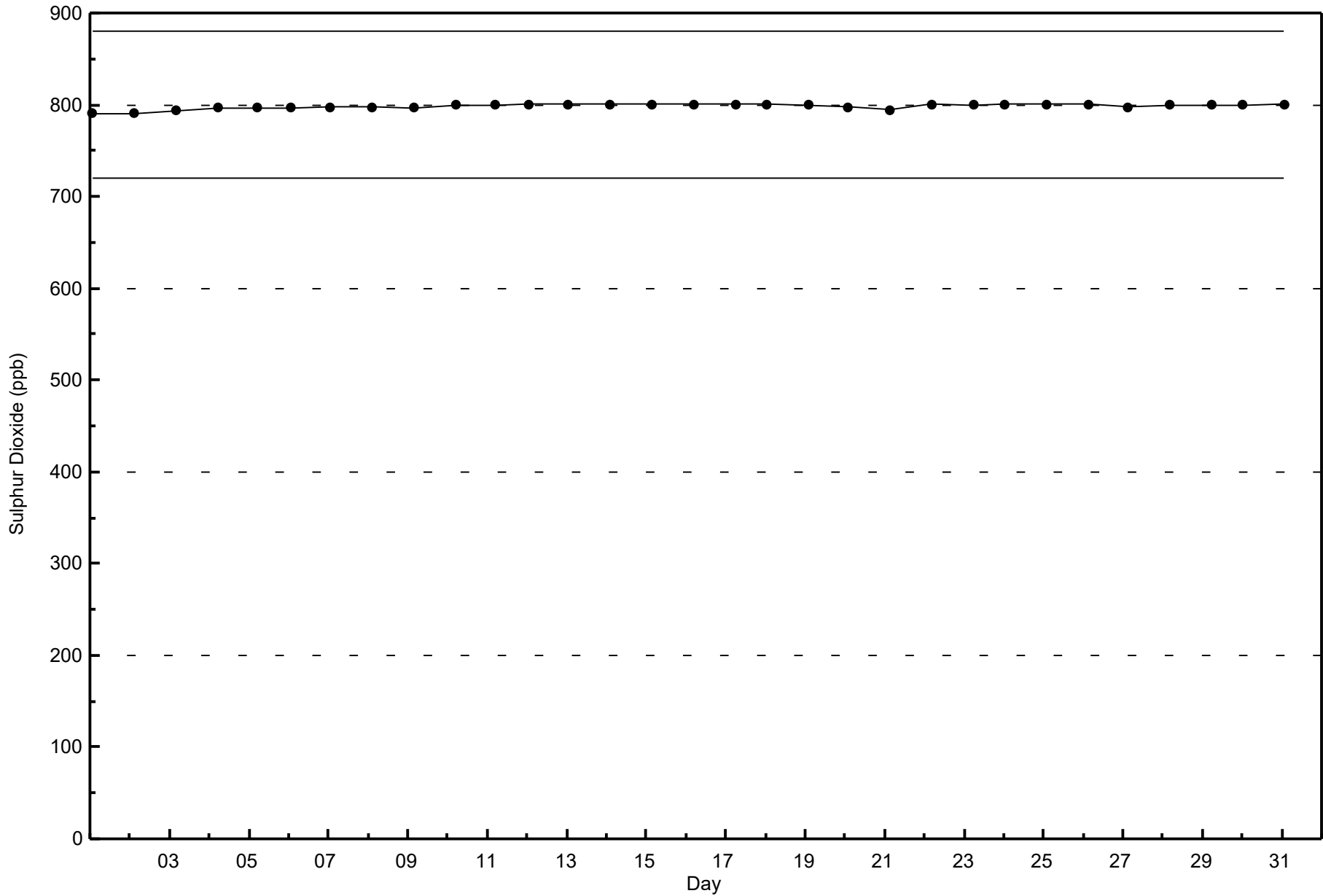


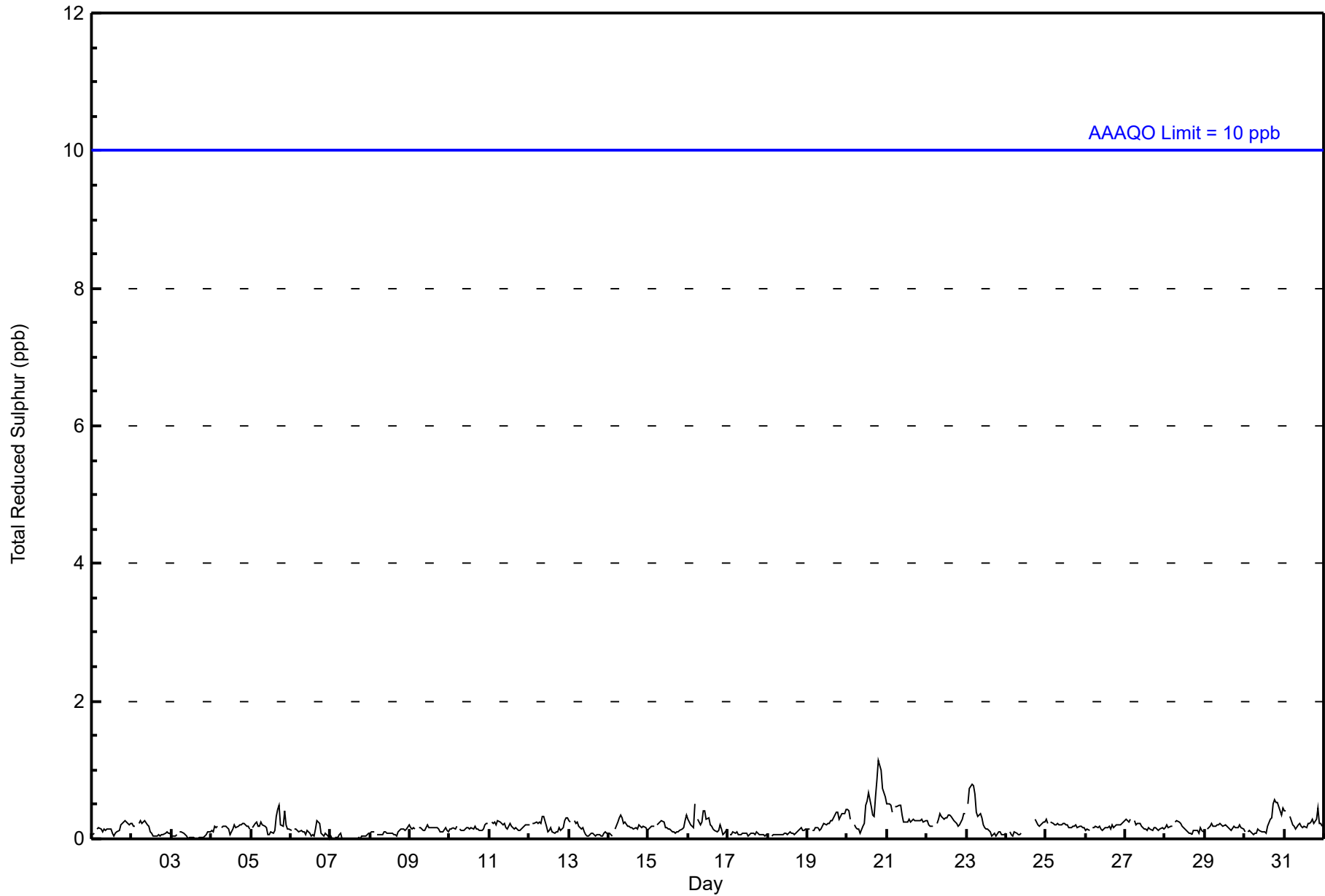
Classes (ppb)



Total Number of Valid Hours: 708









Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Janvier - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	706	100.00	100.00
3 - 4	0	0.00	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Janvier - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	31	48	31	32	53	60	40	57	76	104	66	31	21	20	16	19	705
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	31	48	31	32	53	60	40	57	76	104	66	31	21	20	16	19	705

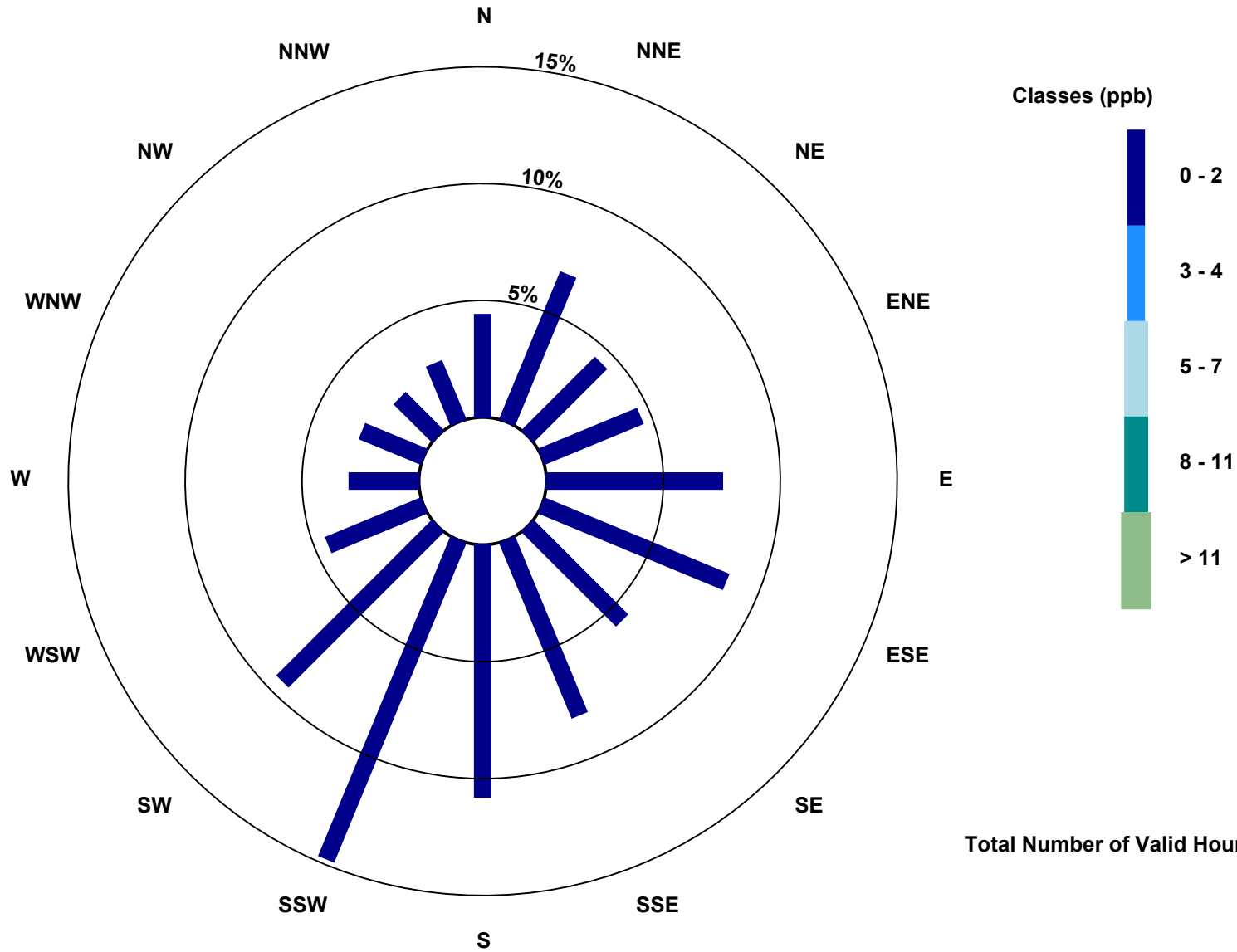
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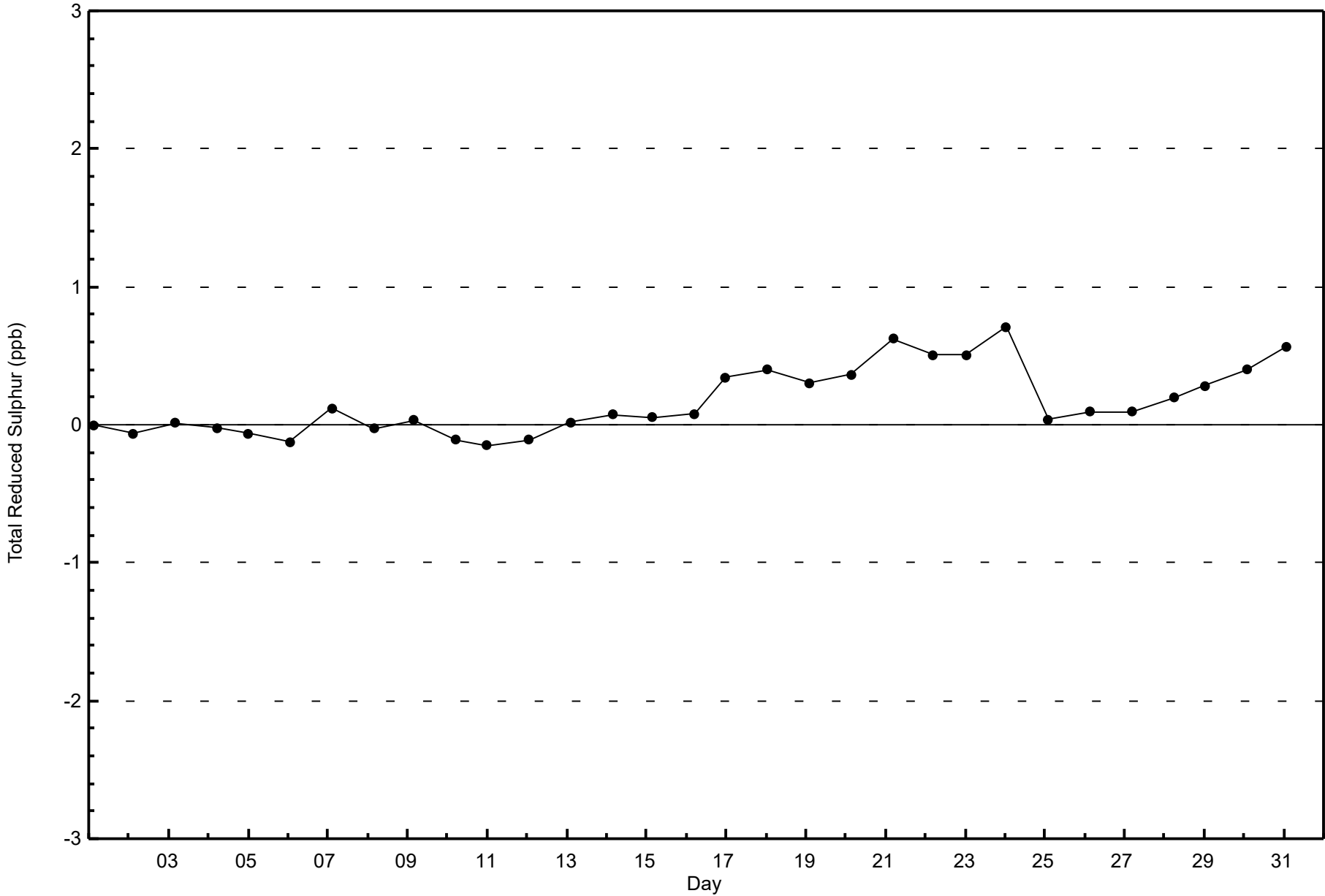
Total Number of Hours: 744

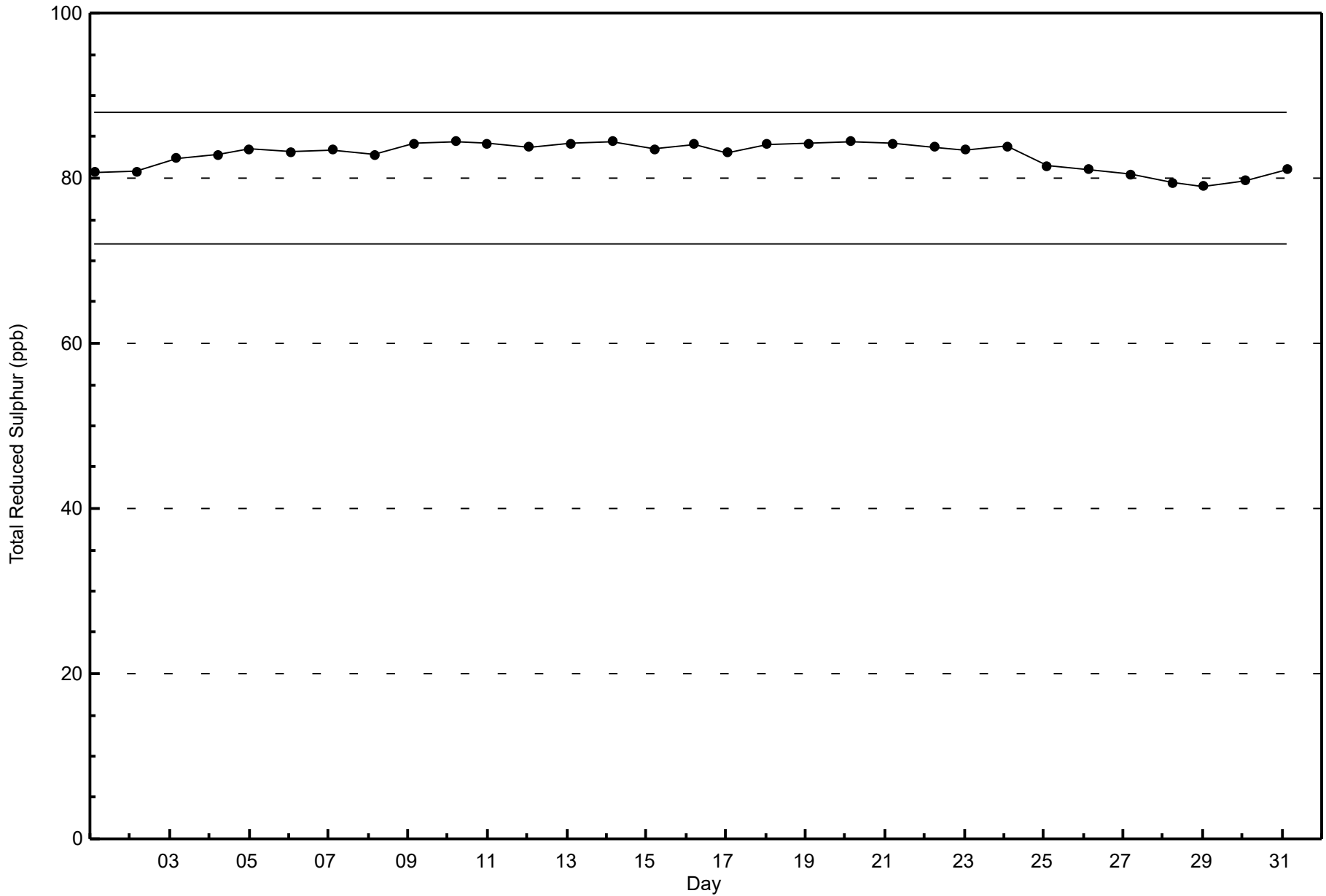


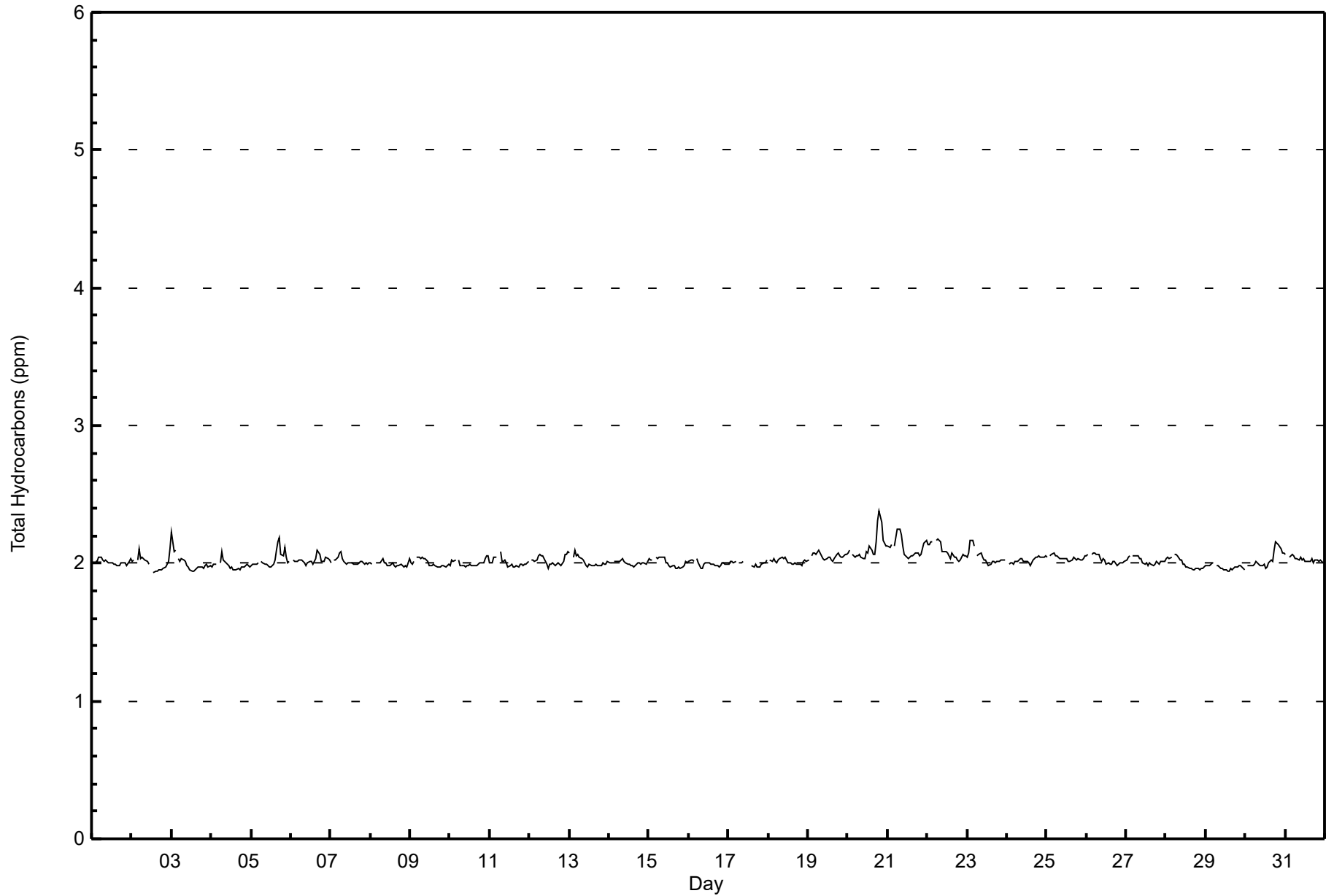
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Reduced Sulphur (TRS) - ppb
Janvier











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Janvier - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	570	80.62	80.62
2.1 - 3.0	137	19.38	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Janvier - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	20	27	27	19	41	47	36	47	64	85	58	30	18	20	15	16	570
2.1 - 3.0	6	20	4	14	13	11	6	7	12	22	10	2	3	0	2	4	136
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	26	47	31	33	54	58	42	54	76	107	68	32	21	20	17	20	706

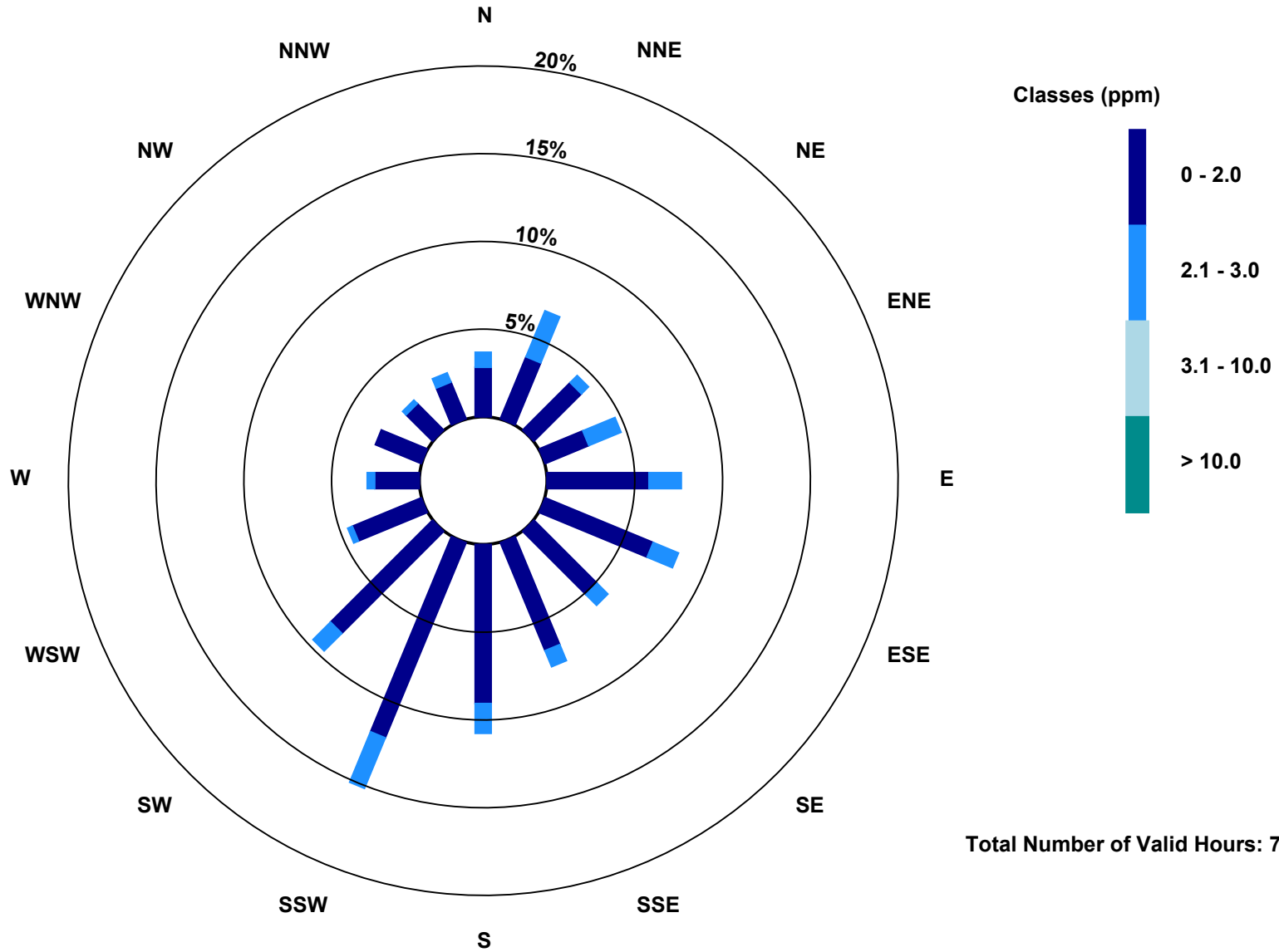
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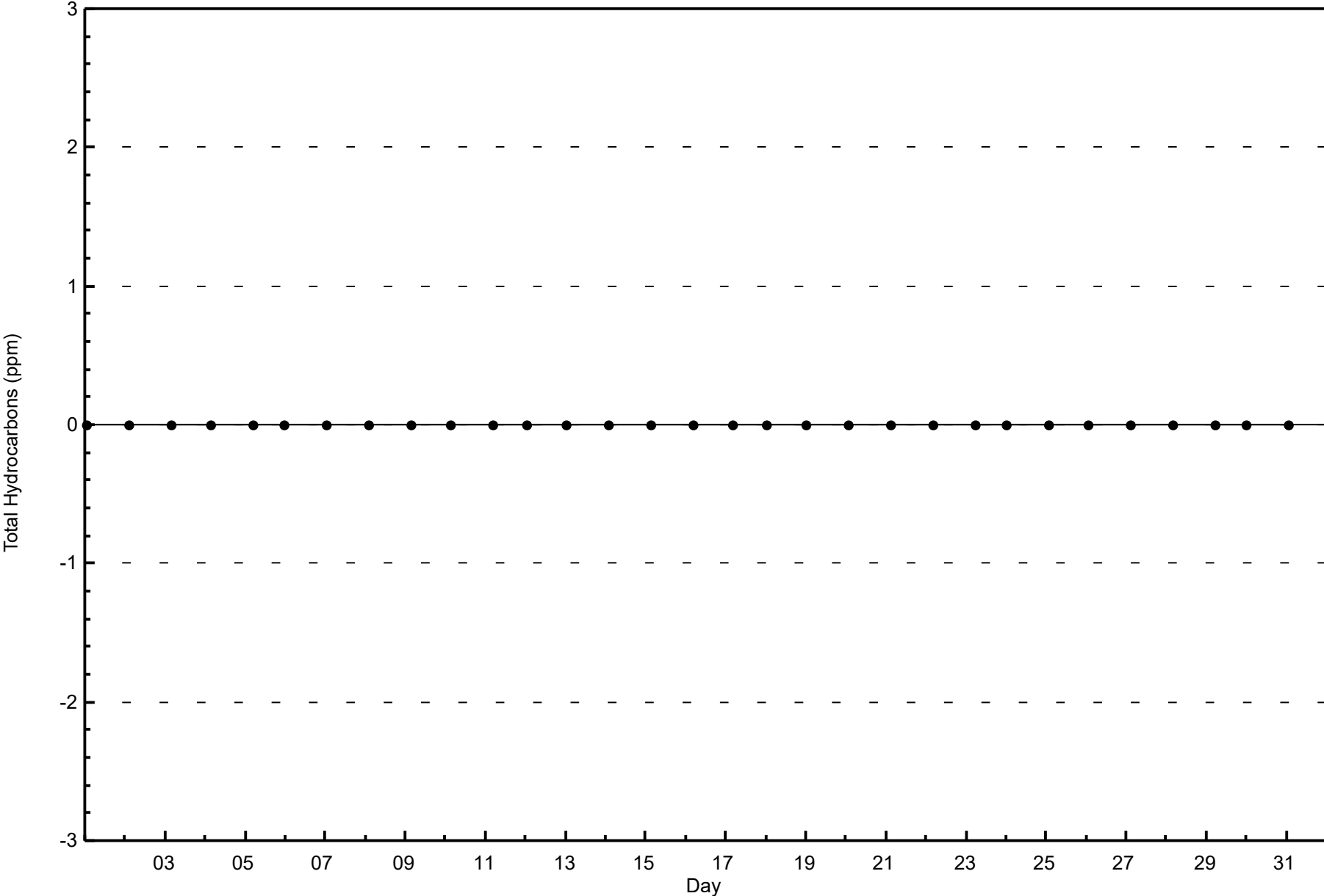
Total Number of Hours: 744

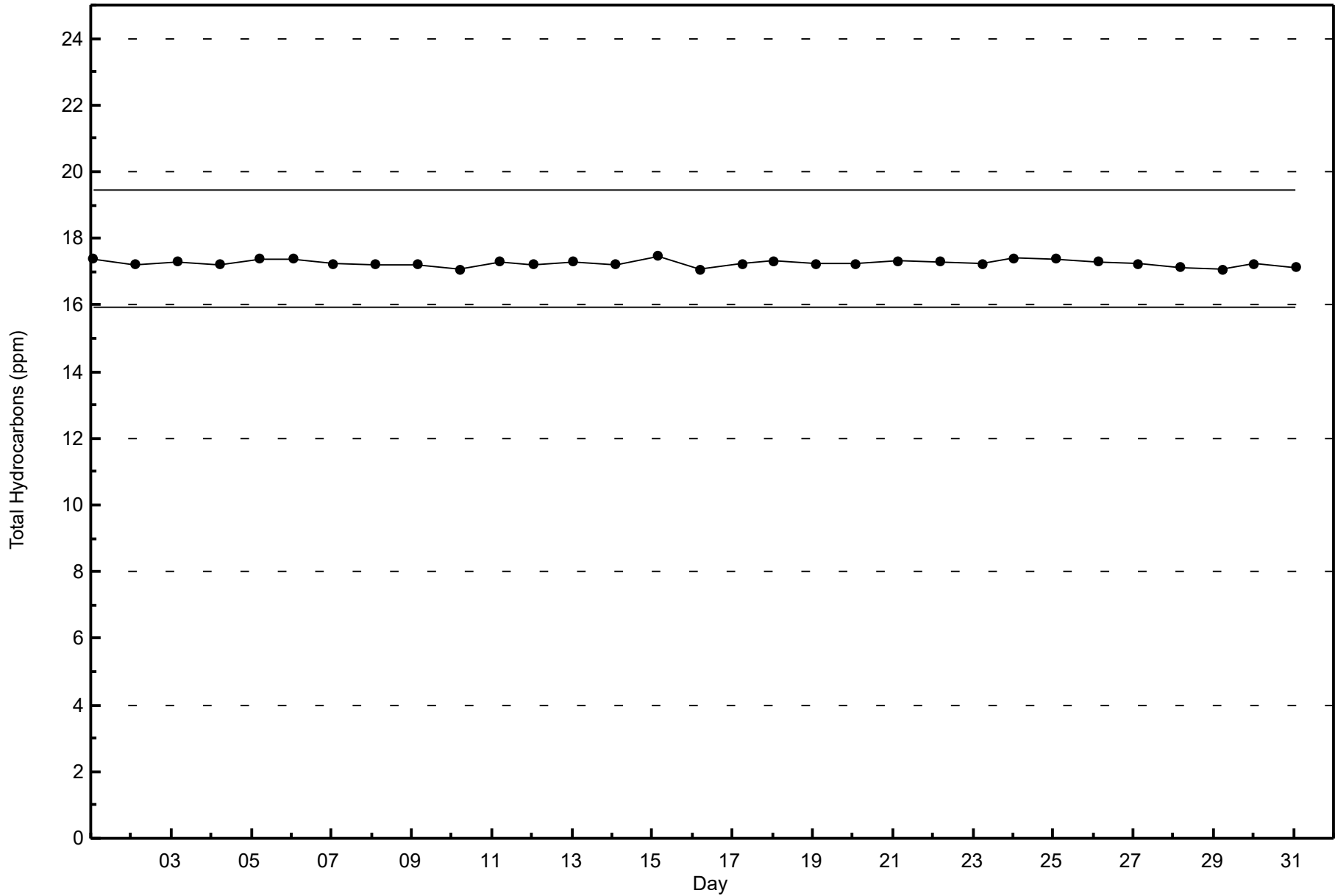


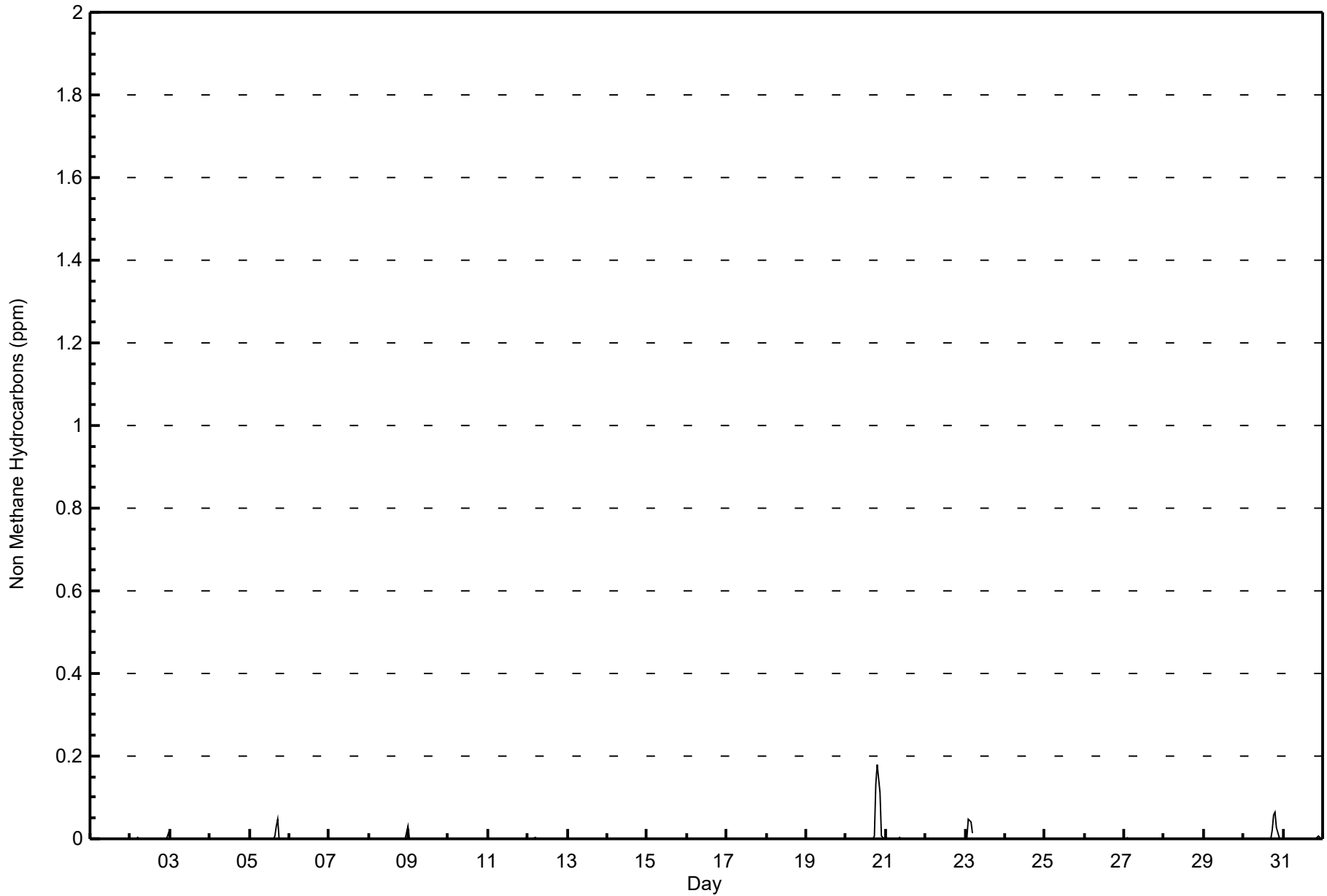
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Janvier











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Janvier - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	689	97.45	97.45
0.006 - 0.05	13	1.84	99.29
0.06 - 0.1	4	0.57	99.86
> 0.1	1	0.14	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Janvier - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	24	46	30	30	52	53	41	54	75	106	68	32	21	19	17	20	688
0.006 - 0.05	1	0	1	3	2	2	1	0	1	1	0	0	0	1	0	0	13
0.06 - 0.1	1	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
> 0.1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Totals	26	47	31	33	54	58	42	54	76	107	68	32	21	20	17	20	706

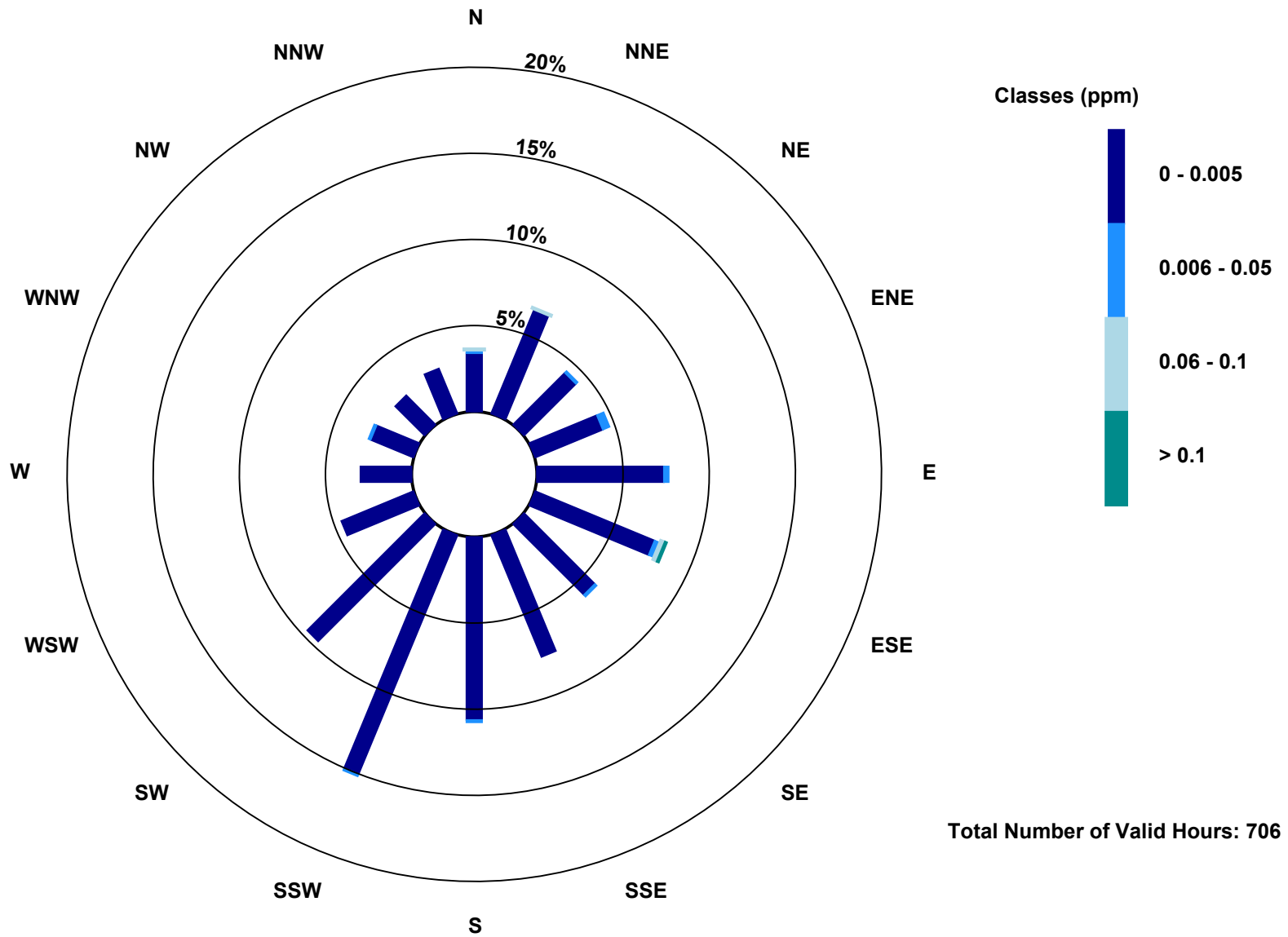
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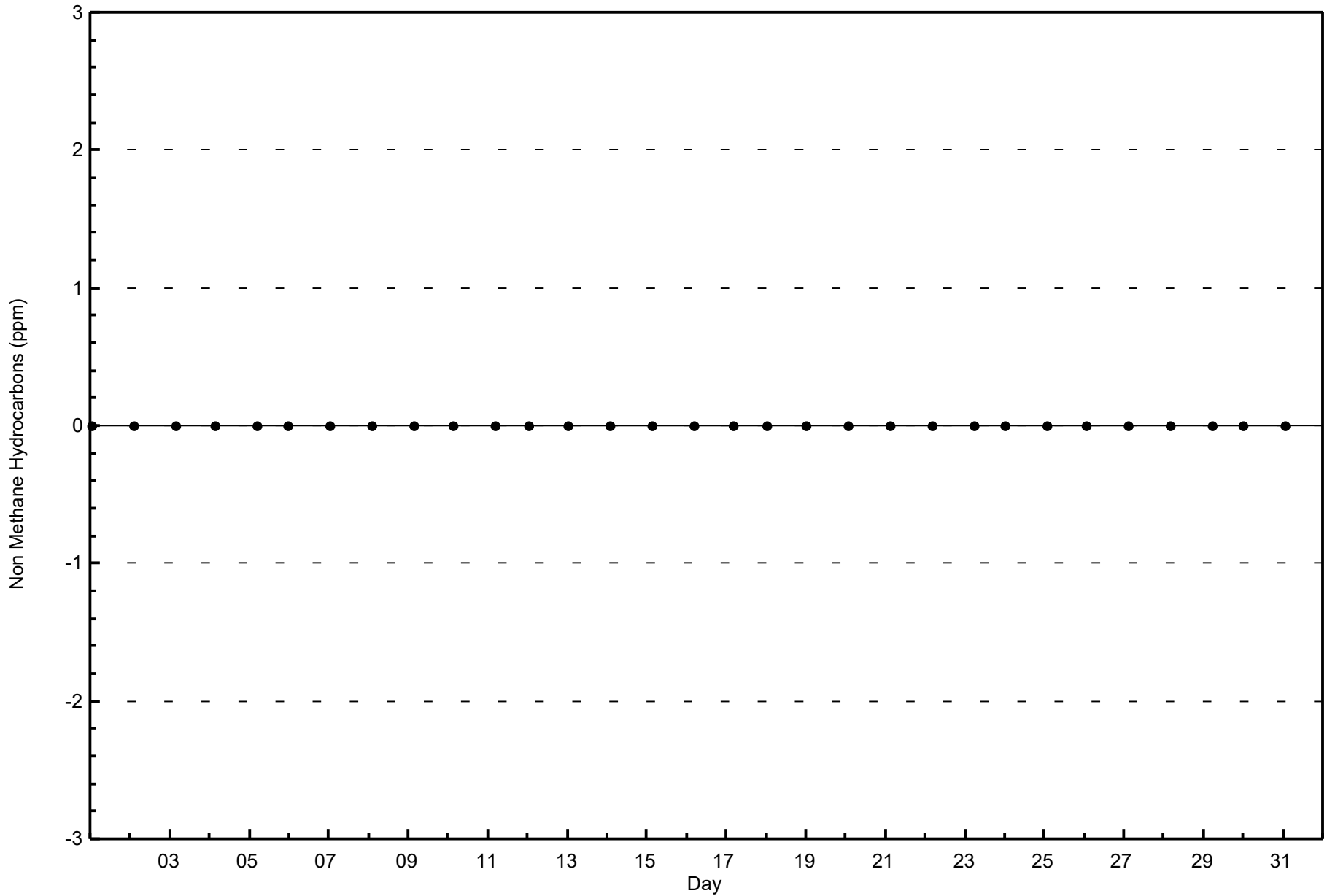
Total Number of Hours: 744

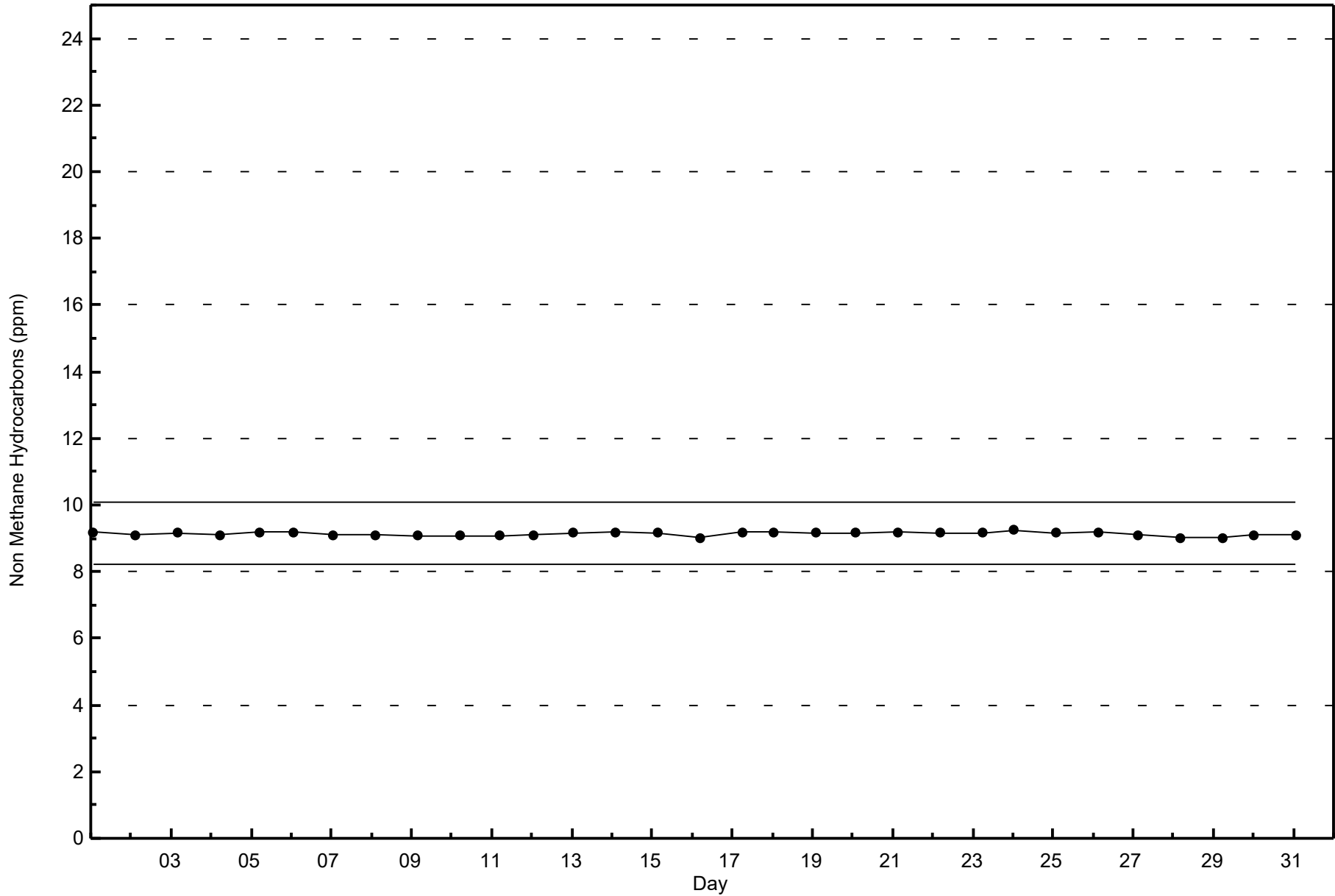


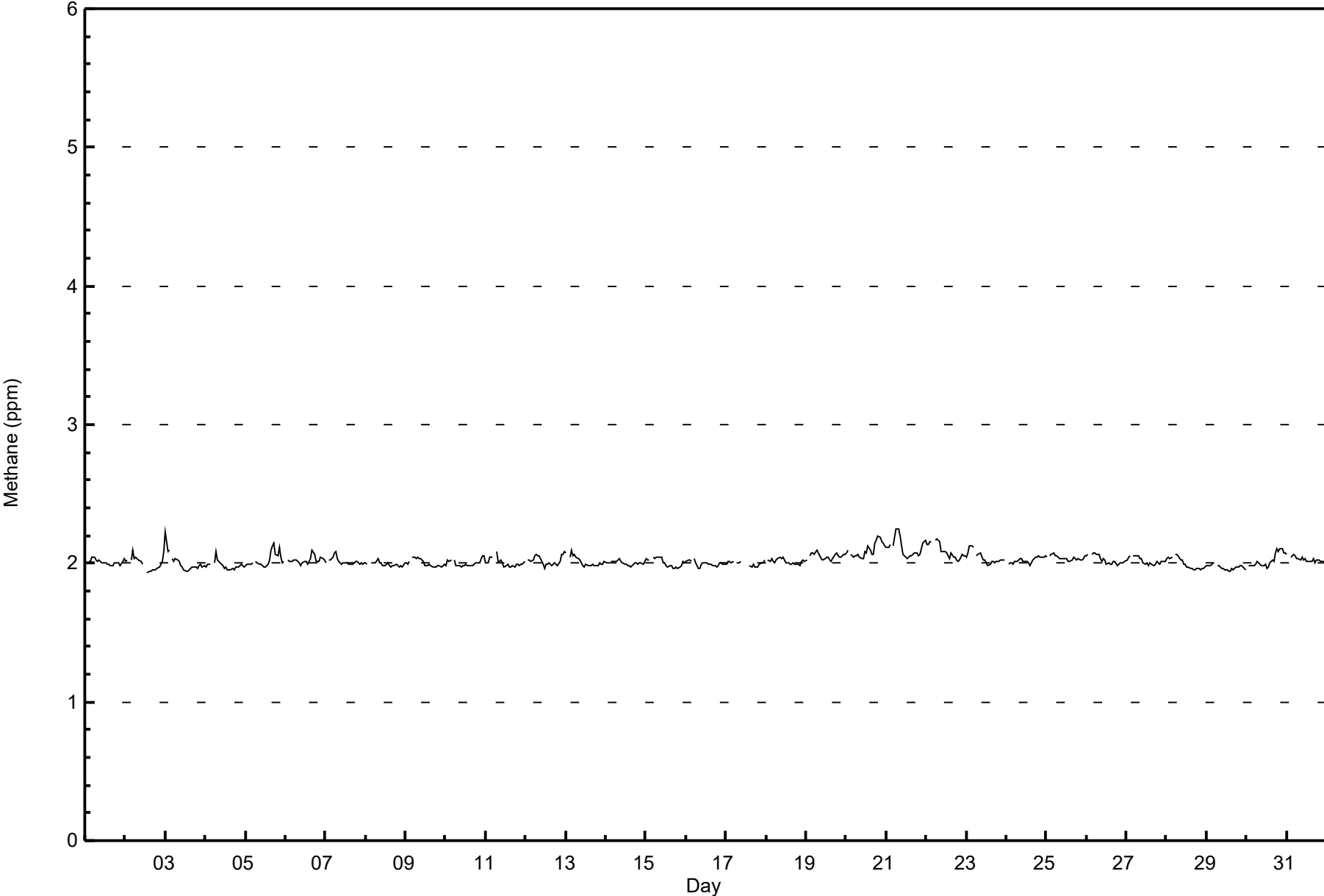
Wood Buffalo Environmental Association
Wind Rose May 2023

Non Methane Hydrocarbons (NMHC) - ppm
Janvier











**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Methane (CH₄) - ppm
Janvier - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	571	80.76	80.76
2.1 - 3.0	136	19.24	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Methane (CH₄) - ppm
Janvier - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	20	27	27	19	41	47	36	47	64	86	58	30	18	20	15	16	571
2.1 - 3.0	6	20	4	14	13	11	6	7	12	21	10	2	3	0	2	4	135
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	26	47	31	33	54	58	42	54	76	107	68	32	21	20	17	20	706

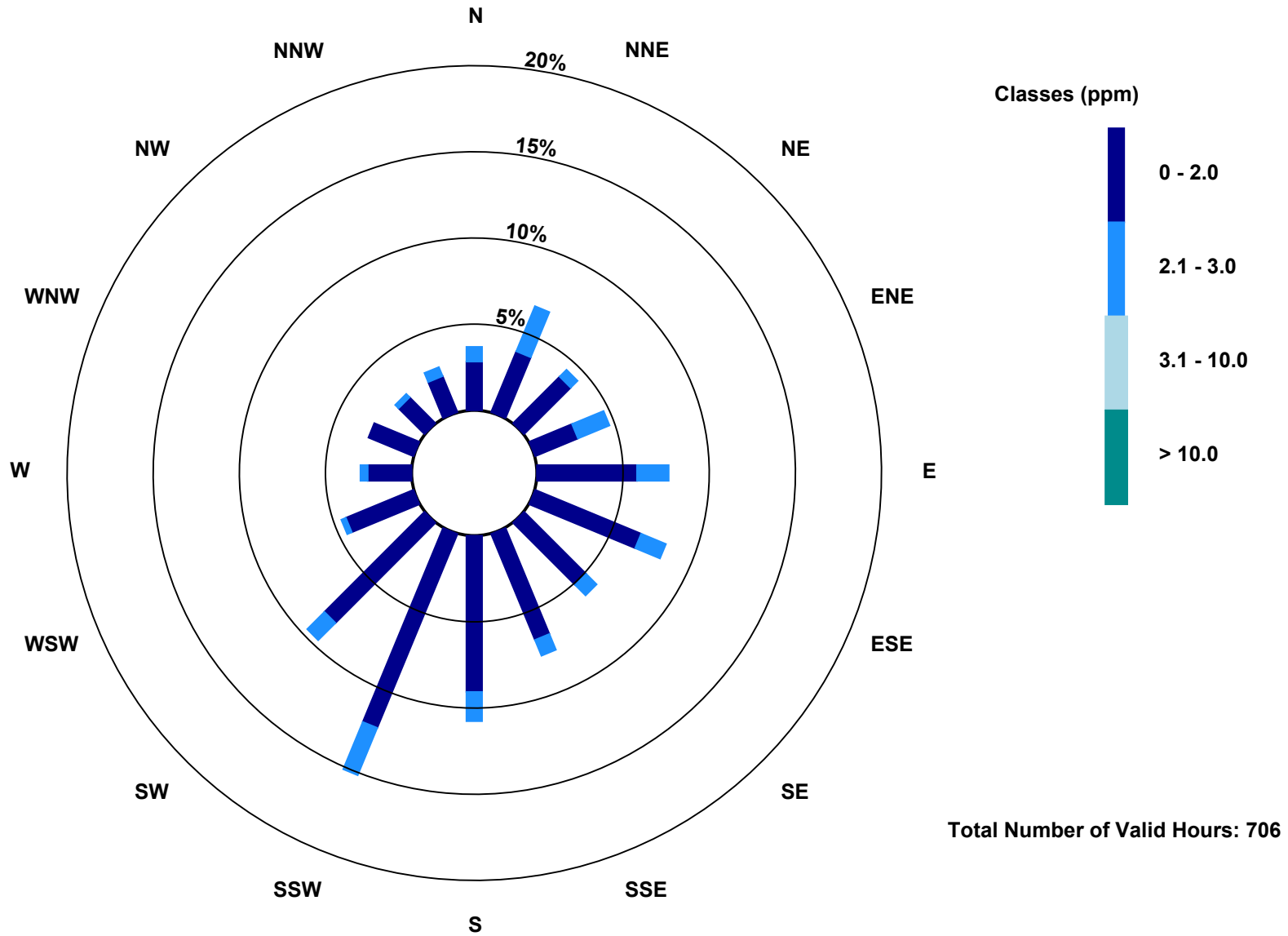
Total Number of Valid Hours: 706

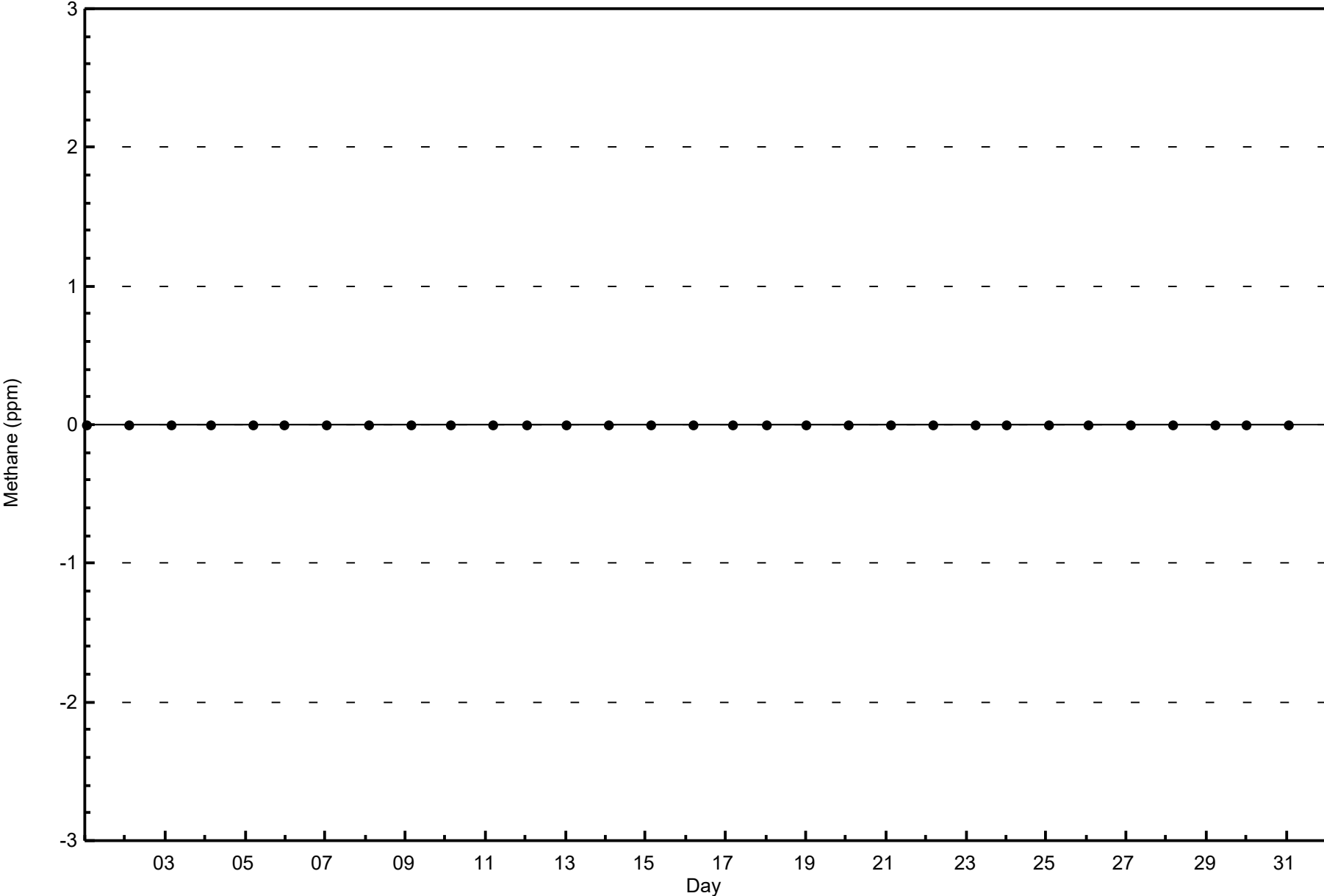
Total Number of Hours: 744

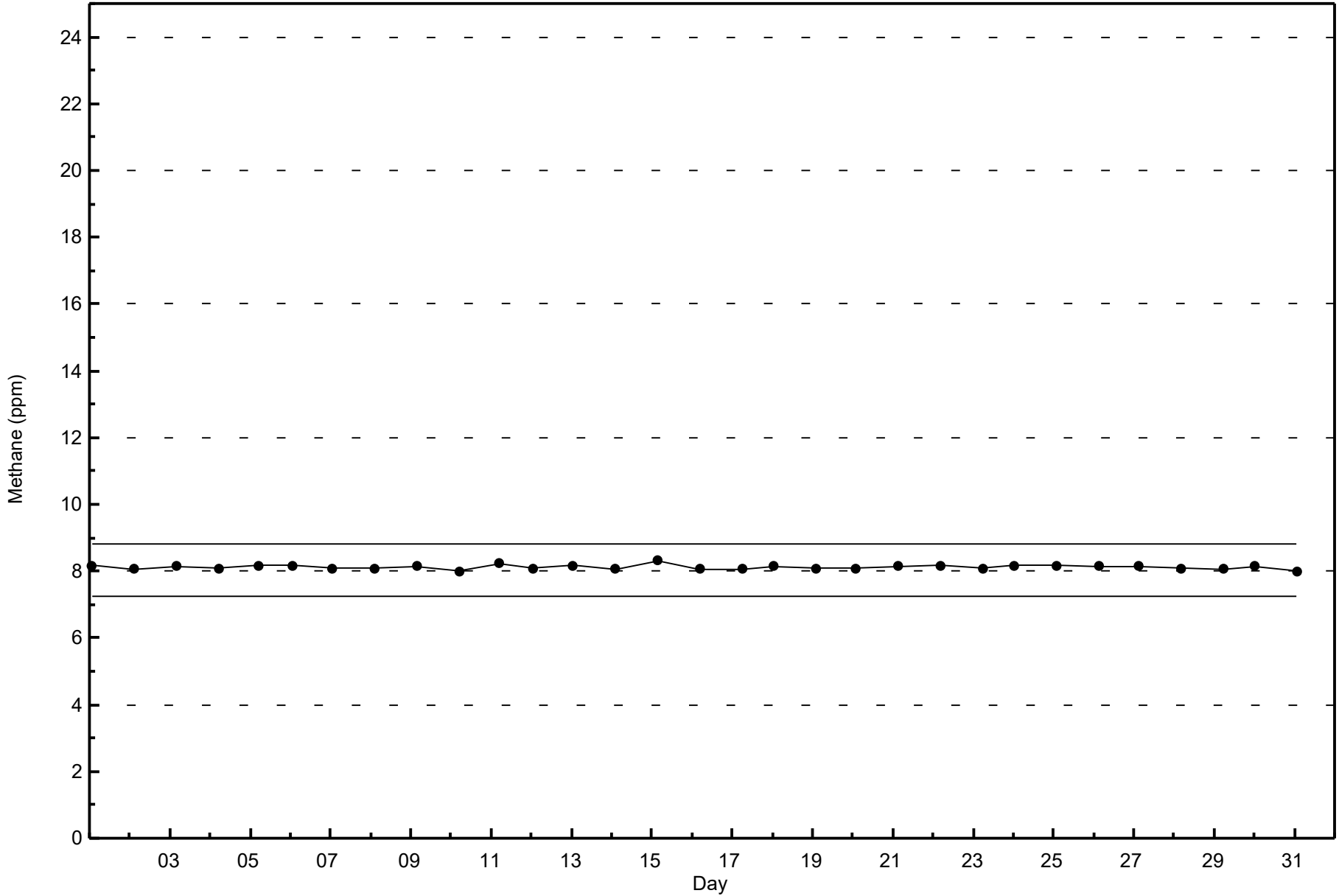


Wood Buffalo Environmental Association
Wind Rose May 2023

Methane (CH₄) - ppm
Janvier









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

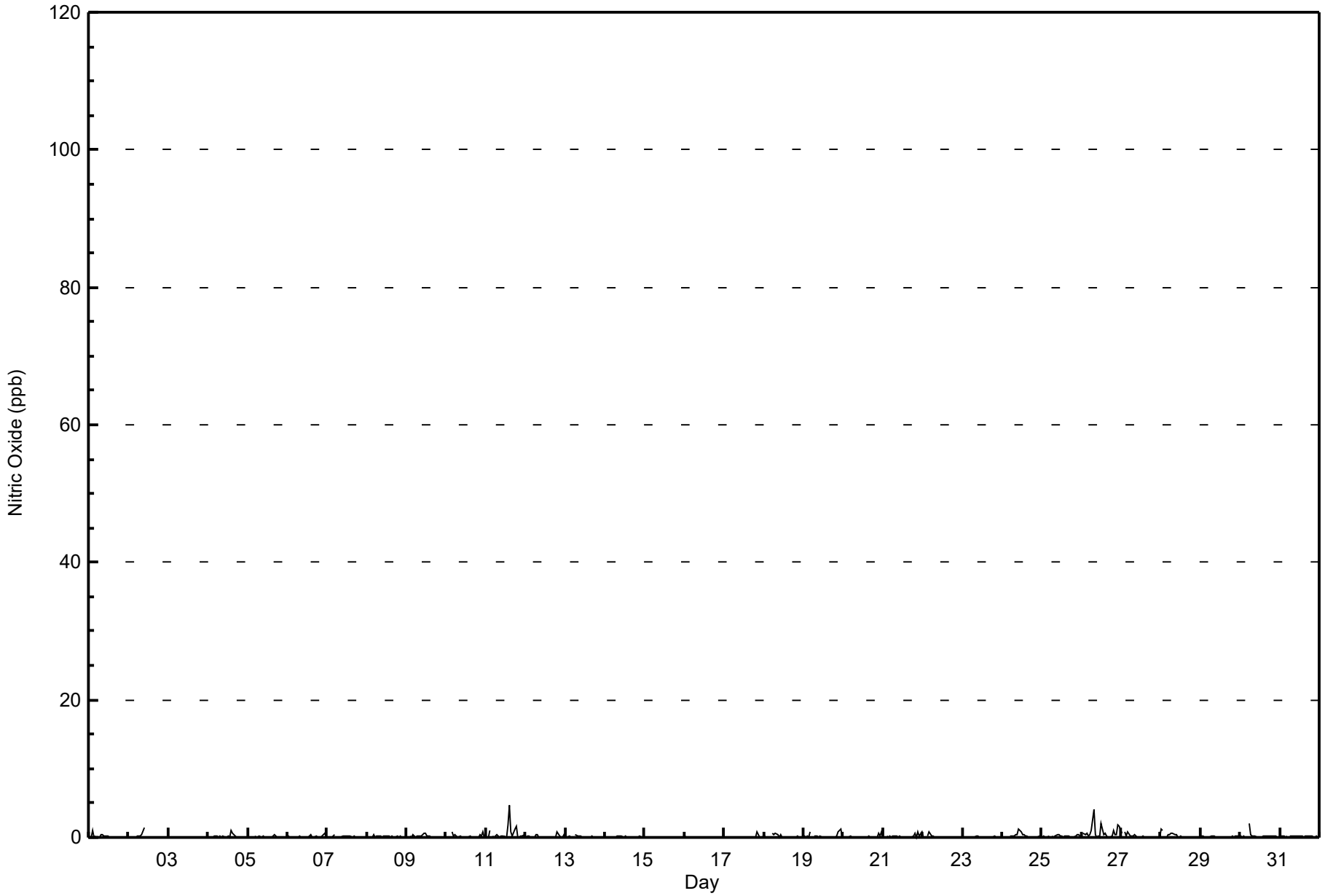
Janvier - May 2023

Maximum Value: 4.6 ppb on May 11 15:00		Maximum Daily Average: 0.7 ppb on May 26		Hours in Service: 744																						
Minimum Value: 0.0 ppb on May 1 01:00		Minimum Daily Average: 0.0 ppb on May 16		Hours of Data: 684																						
Maximum Diurnal Average: 0.3 ppb at hour 8		Minimum Diurnal Average: 0.1 ppb at hour 17		Hours of Missing Data: 60																						
Monthly Average: 0.16 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.2 P ₉₀ = 0.4 P ₉₉ = 1.7		Hours of Calibration: 42																						
				Percent Operational Time: 97.6																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.0	0.0	1.0	0.1	0.1	Z	0.1	0.3	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0
2-May	Z	0.0	0.0	0.0	0.0	0.2	0.1	0.3	0.4	1.5	C	C	C	C	C	C	C	M	M	M	M	M	M	M	--	1.5
3-May	M	M	M	M	M	M	M	M	M	M	M	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0
4-May	0.0	0.0	Z	0.1	0.3	0.2	0.1	0.2	0.1	0.2	0.1	0.0	0.2	0.1	1.0	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	1.0
5-May	0.0	0.1	0.0	Z	0.1	0.1	0.0	0.2	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.4	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.4
6-May	0.1	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.6	0.2	0.1	0.6
7-May	0.0	0.0	0.0	0.0	0.3	Z	0.1	0.0	0.1	0.2	0.3	0.3	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3
8-May	Z	0.0	0.0	0.0	0.5	0.0	0.1	0.2	0.2	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.5
9-May	0.1	Z	0.1	0.0	0.5	0.0	0.2	0.1	0.1	0.3	0.7	0.6	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7
10-May	0.1	0.0	Z	0.9	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.3	0.2	0.7	0.1	0.2	0.9
11-May	0.0	0.0	1.0	Z	0.2	0.1	0.3	0.1	0.1	0.1	0.2	0.3	0.1	1.8	4.6	0.9	0.1	1.2	1.7	0.1	0.0	0.2	0.1	0.5	0.6	4.6
12-May	0.0	0.2	0.2	0.1	Z	0.1	0.4	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.8	0.2	0.1	0.1	0.4	0.1	0.8
13-May	0.0	0.1	0.1	0.1	0.1	Z	0.3	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.3
14-May	Z	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.3
15-May	0.0	Z	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
16-May	0.1	0.0	Z	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
17-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.1	0.1	0.7
18-May	0.4	0.1	0.1	0.0	Z	0.7	0.4	0.5	0.3	0.1	0.4	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.7
19-May	0.3	0.1	0.2	0.0	0.8	Z	0.1	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	1.2	0.0	0.2	1.2
20-May	Z	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.6	0.1	0.9	0.1	0.9
21-May	0.0	Z	0.2	0.0	0.2	0.1	0.1	0.3	0.2	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.0	0.7	0.1	0.8	0.2	0.8
22-May	0.0	0.0	Z	0.1	0.8	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8
23-May	0.0	0.0	0.0	Z	0.1	0.0	0.1	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.1	0.1	0.0	0.0	0.1	0.2
24-May	0.0	0.1	0.0	0.0	Z	0.2	0.1	0.3	0.4	0.4	1.1	0.8	0.4	0.3	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	1.1
25-May	0.0	0.2	0.1	0.1	0.2	Z	0.2	0.1	0.3	0.3	0.3	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.4	0.3	0.2	0.4
26-May	Z	0.5	0.5	0.5	0.2	0.3	1.0	4.0	0.4	0.1	0.1	0.0	2.0	0.4	0.5	0.2	0.0	0.1	0.2	1.0	0.3	0.3	1.7	1.7	0.7	4.0
27-May	0.7	Z	0.8	0.2	0.9	0.2	0.1	0.2	0.4	0.3	0.0	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.9
28-May	1.3	1.0	Z	0.0	0.3	0.5	0.6	0.5	0.3	0.3	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.3
29-May	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2
30-May	0.1	0.0	0.1	0.0	Z	2.0	0.4	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	2.0
31-May	0.1	0.1	0.1	0.1	0.2	Z	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration M - Maintenance																										



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Janvier - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Janvier - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Janvier - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	47	28	33	55	60	41	51	67	100	65	31	21	21	15	21	683
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	47	28	33	55	60	41	51	67	100	65	31	21	21	15	21	683

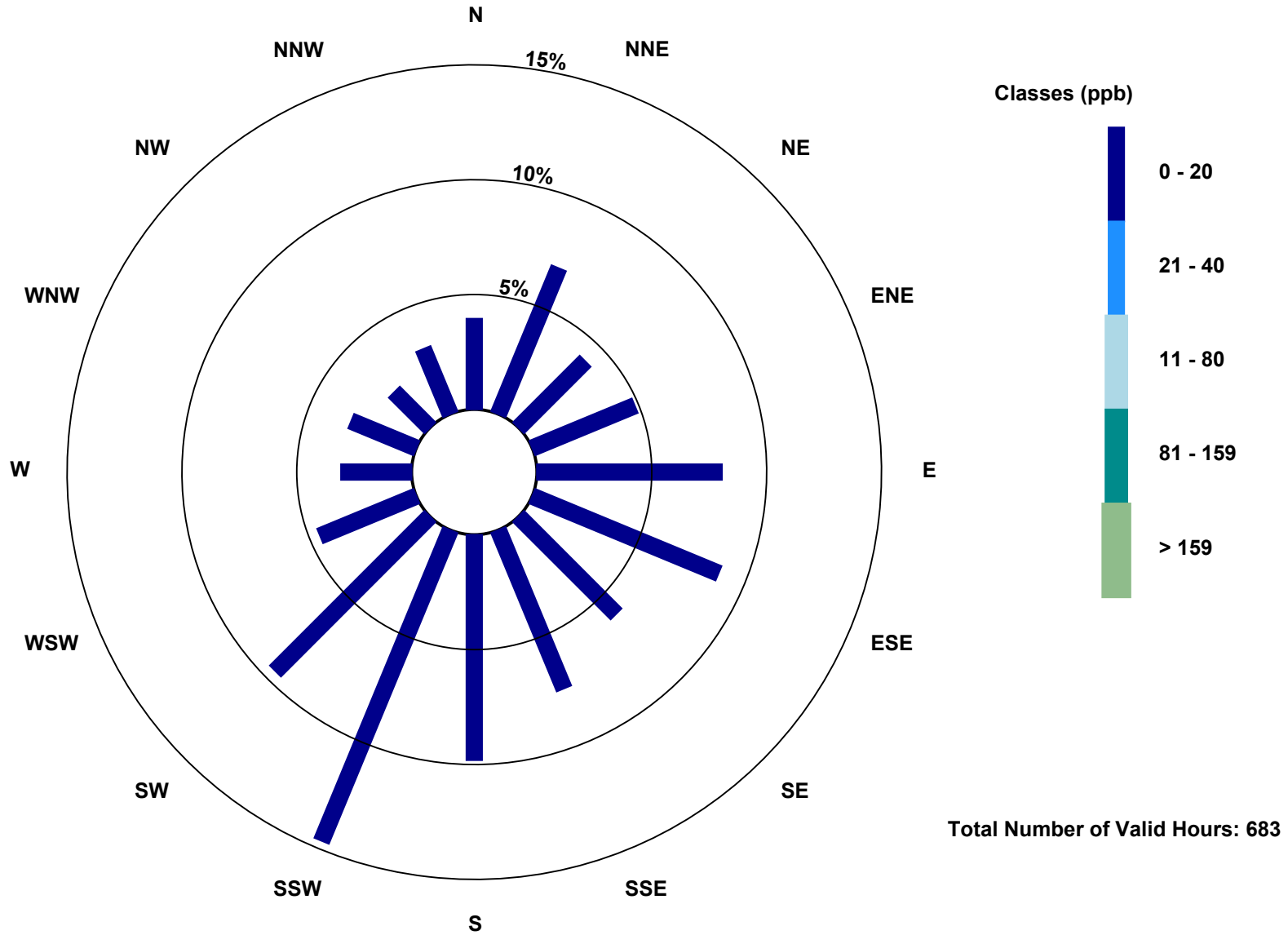
Total Number of Valid Hours: 683

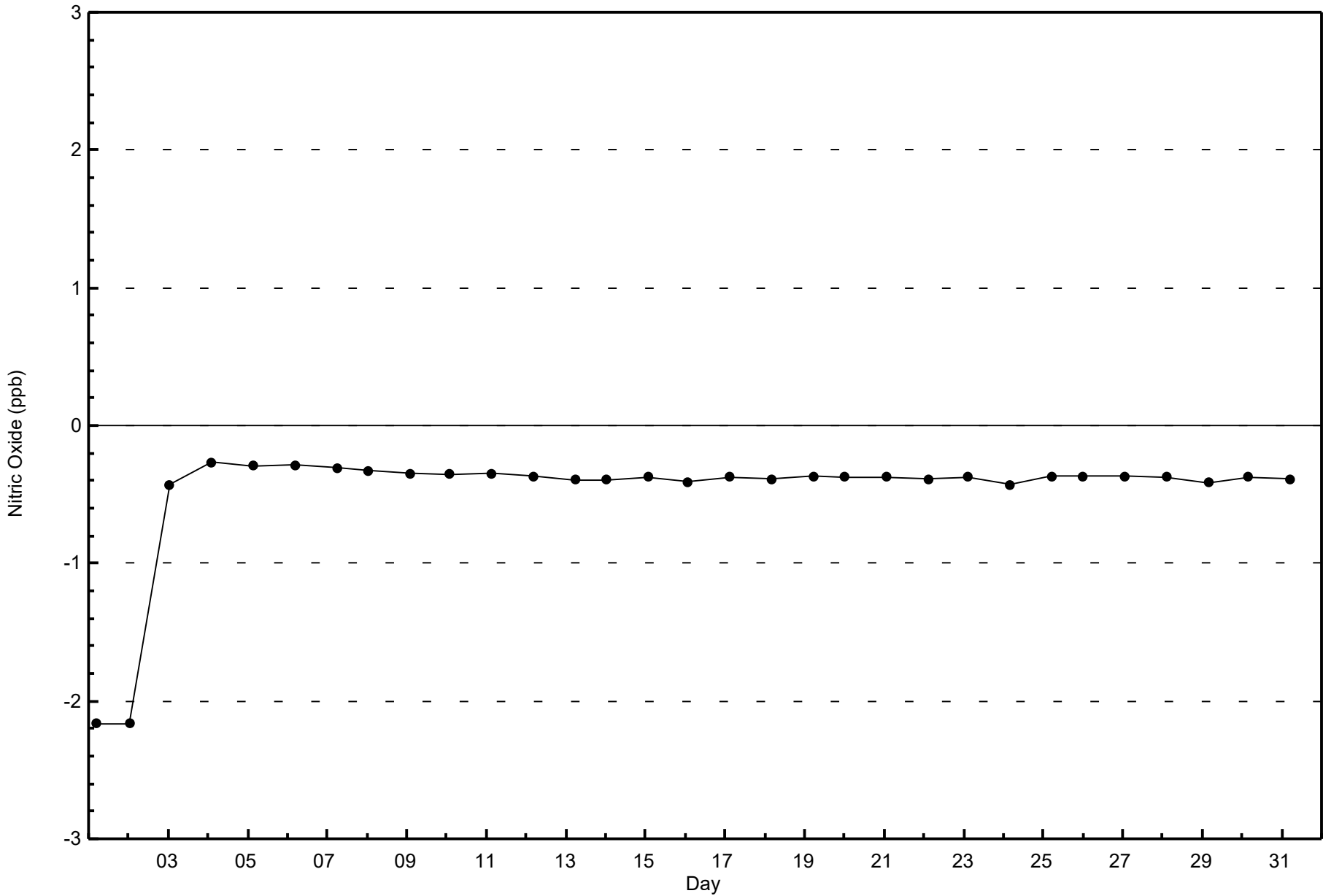
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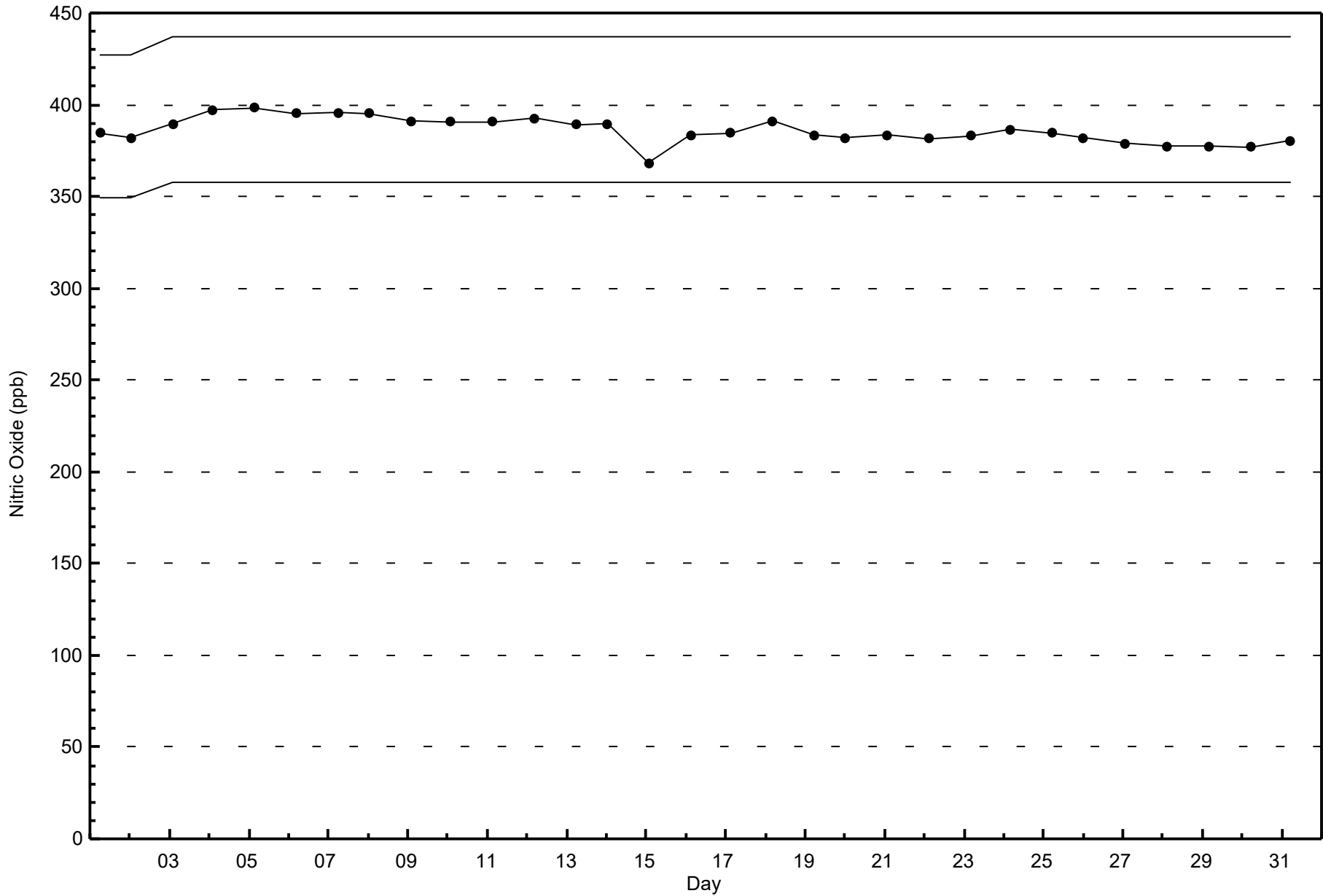


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Janvier









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

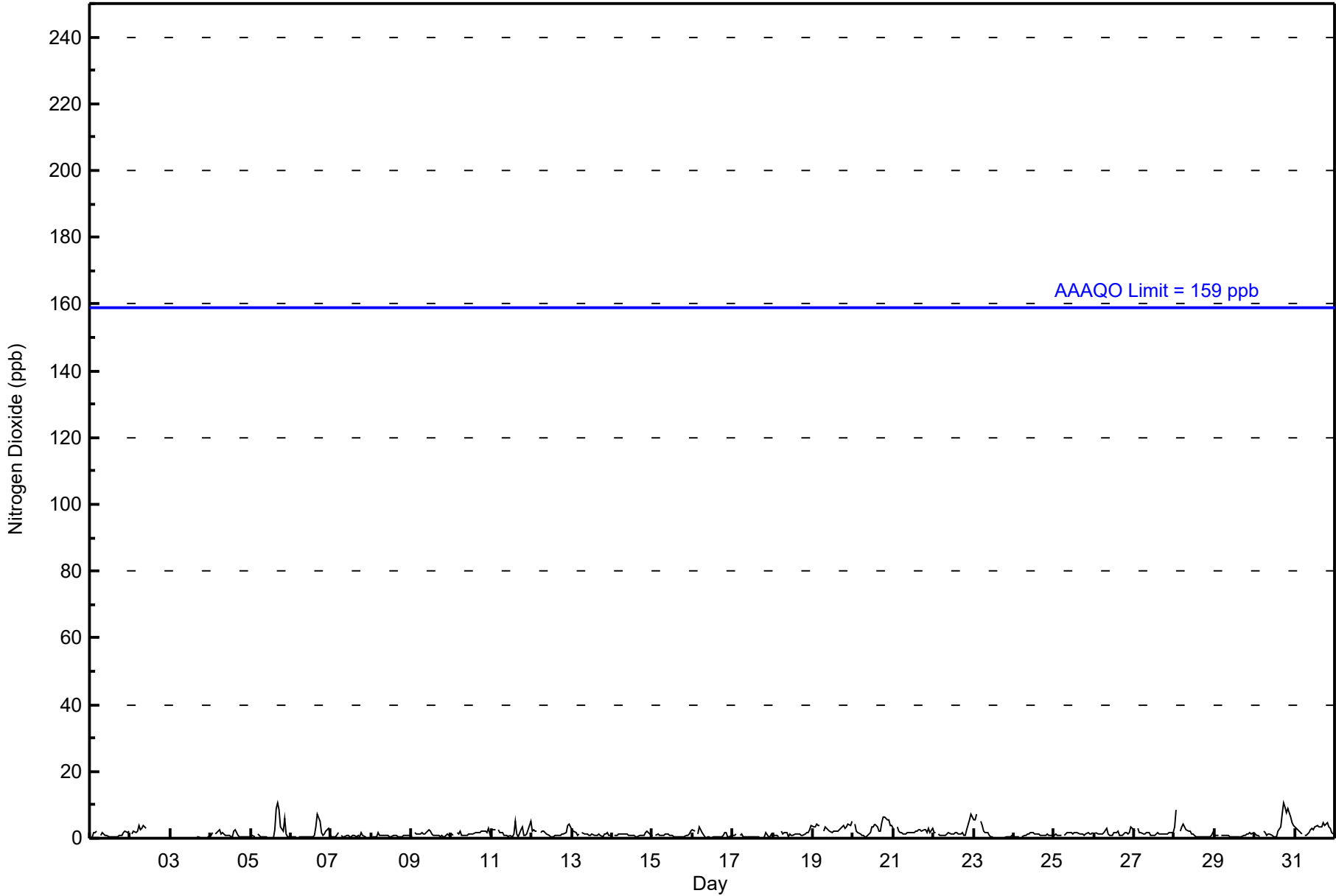
Janvier - May 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 744																	Daily Average		Daily Maximum				
Maximum Value: 10.6 ppb on May 30 18:00		Maximum Daily Average: 3.4 ppb on May 30		Hours of Data: 684																	--		4.0				
Minimum Value: 0.0 ppb on May 1 01:00		Minimum Daily Average: 0.6 ppb on May 17		Hours of Missing Data: 60																	1.0		2.2				
Maximum Diurnal Average: 2.0 ppb at hour 24		Minimum Diurnal Average: 1.0 ppb at hour 13		Hours of Calibration: 42																	1.1		2.4				
Monthly Average: 1.56 ppb		Percentiles: P ₁ = 0.1 P ₁₀ = 0.4 Q ₁ = 0.7 Median = 1.1 Q ₃ = 1.9 P ₉₀ = 3.3 P ₉₉ = 7.7		Percent Operational Time: 97.6																	2.2		10.5				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.0	0.4	1.6	1.6	2.2	Z	0.8	1.5	1.3	0.9	0.7	0.5	0.4	0.5	0.4	0.4	0.5	0.8	0.7	0.8	1.5	2.0	1.6	2.0	1.0	2.2	
2-May	Z	1.4	2.0	1.5	2.3	4.0	2.7	3.1	3.8	3.0	C	C	C	C	C	C	C	M	M	M	M	M	M	M	--	4.0	
3-May	M	M	M	M	M	M	M	M	M	M	M	C	C	C	C	C	C	0.3	0.4	0.1	0.1	0.1	0.1	0.7	--	0.7	
4-May	1.0	1.5	Z	1.3	1.9	2.4	1.4	1.9	1.1	0.9	0.8	0.7	0.6	0.5	2.2	2.4	1.0	0.4	0.5	0.5	0.5	0.3	0.3	0.4	1.1	2.4	
5-May	0.5	0.7	0.5	Z	1.4	0.7	0.5	0.6	0.4	0.3	0.1	0.1	0.0	0.0	2.5	9.1	10.5	8.4	3.4	2.1	5.8	1.4	0.3	0.4	2.2	10.5	
6-May	0.6	0.5	0.4	0.4	Z	0.5	0.5	0.6	0.4	0.3	0.3	0.4	0.3	0.5	0.8	3.6	7.3	5.0	1.6	0.7	1.1	2.2	3.1	1.3	1.4	7.3	
7-May	0.4	0.4	0.5	0.5	1.9	Z	1.0	0.6	0.4	0.7	0.7	0.6	0.6	0.8	0.9	0.5	0.9	0.5	1.5	1.0	0.3	0.2	0.2	0.2	0.7	1.9	
8-May	Z	0.5	0.4	0.5	1.8	0.7	0.9	1.0	0.9	0.7	0.7	0.6	0.6	0.9	0.8	0.7	0.5	0.6	0.6	0.7	1.0	1.0	0.9	0.9	0.8	1.8	
9-May	0.6	Z	1.7	1.2	1.3	1.1	1.7	1.1	1.1	1.7	2.6	2.3	1.2	1.0	1.0	0.7	0.7	0.6	0.7	0.5	0.5	1.2	0.8	0.8	1.1	2.6	
10-May	1.1	0.9	Z	1.9	1.2	2.0	0.8	0.7	1.0	0.8	1.1	1.2	1.1	1.2	1.6	1.5	1.6	1.7	2.1	2.1	2.1	1.6	2.9	1.4	1.5	2.9	
11-May	2.4	2.4	2.5	Z	2.7	1.9	1.6	0.8	0.7	0.8	0.6	0.8	0.6	1.4	4.9	1.3	0.6	2.6	3.4	0.8	0.7	1.3	2.7	5.0	1.8	5.0	
12-May	2.0	2.7	2.1	2.2	Z	1.6	2.2	2.2	1.7	1.4	0.8	0.3	0.4	0.5	0.7	0.8	0.7	1.0	1.1	1.4	1.6	3.9	4.3	3.6	1.7	4.3	
13-May	2.7	2.1	1.7	1.0	1.1	Z	1.9	1.2	1.2	1.1	0.7	0.9	1.1	0.8	0.9	0.8	1.1	0.7	0.6	1.2	1.1	1.5	1.0	0.8	1.2	2.7	
14-May	Z	1.0	1.0	1.0	1.1	1.1	1.2	1.4	1.3	1.1	1.0	0.8	0.9	0.8	0.6	0.6	0.7	0.7	0.8	1.0	1.5	2.1	1.4	0.8	1.0	2.1	
15-May	0.8	Z	1.0	1.2	0.9	0.8	1.0	1.0	1.3	1.1	0.8	0.8	0.9	0.6	0.6	0.4	0.4	0.3	0.3	0.6	0.8	0.7	1.4	2.3	0.9	2.3	
16-May	2.5	2.0	Z	1.1	3.4	2.4	1.6	0.4	0.2	0.6	0.6	0.2	0.3	0.3	0.4	0.4	0.6	0.6	0.9	1.9	1.5	0.3	0.3	0.9	1.0	3.4	
17-May	0.7	0.8	1.3	Z	1.0	1.3	0.6	0.4	0.4	0.4	0.3	0.5	0.3	0.3	0.3	0.4	0.2	0.2	0.2	0.4	1.5	0.3	0.6	1.2	0.6	1.5	
18-May	1.1	0.8	0.8	0.5	Z	2.2	1.3	1.7	1.5	0.6	1.1	0.8	0.8	1.1	1.2	1.2	1.1	0.7	0.7	1.1	1.9	1.5	2.7	3.8	1.3	3.8	
19-May	3.6	3.4	4.2	3.7	4.0	Z	2.3	3.4	3.1	2.5	2.0	1.9	2.1	2.1	2.2	2.1	2.4	3.4	3.9	3.0	3.5	4.4	3.9	5.2	3.1	5.2	
20-May	Z	4.1	2.2	1.5	1.4	1.0	0.8	0.6	0.4	1.1	1.8	3.6	3.5	4.2	3.2	2.1	2.2	4.6	6.2	6.5	5.3	5.6	4.0	3.8	3.0	6.5	
21-May	2.9	Z	3.2	2.2	1.7	1.8	1.4	1.3	1.9	1.7	1.8	1.8	1.8	2.1	2.1	2.5	2.6	2.2	2.5	2.7	1.7	2.8	1.9	2.8	2.1	3.2	
22-May	1.5	1.7	Z	1.2	1.0	0.7	0.7	1.0	1.3	1.5	1.3	1.4	1.2	1.6	1.8	1.4	1.3	1.5	0.9	0.9	2.4	5.5	7.1	6.5	2.0	7.1	
23-May	5.3	5.4	7.3	Z	4.9	3.7	2.0	1.8	1.9	1.0	0.4	0.4	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.4	0.3	0.3	0.4	0.7	1.6	7.3	
24-May	0.5	0.4	0.4	0.4	Z	0.6	0.7	0.7	1.1	1.2	1.8	1.7	1.4	1.4	1.3	1.1	0.9	1.0	1.0	1.0	1.1	0.9	1.0	0.9	1.0	1.8	
25-May	0.9	1.1	0.9	0.9	0.7	Z	1.0	1.1	1.7	1.8	1.7	1.4	1.5	1.5	1.6	1.3	1.2	1.2	1.0	1.2	1.5	1.2	1.4	1.6	1.3	1.8	
26-May	Z	1.5	1.4	1.2	1.4	1.1	1.7	2.9	1.2	1.0	0.8	0.7	1.9	1.8	2.1	0.9	0.8	0.9	1.5	1.6	1.2	1.5	3.3	3.0	1.5	3.3	
27-May	2.1	Z	3.0	1.9	1.9	1.2	1.3	1.5	1.9	1.6	0.9	0.9	0.8	1.3	1.6	1.4	1.1	1.4	1.1	1.1	1.2	1.6	1.9	1.7	1.5	3.0	
28-May	3.2	8.5	Z	2.3	3.2	4.3	3.3	2.6	2.3	2.2	1.2	1.1	1.0	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.6	0.7	1.5	1.8	8.5
29-May	1.0	1.0	1.0	Z	0.8	0.9	1.0	0.9	0.9	0.5	0.3	0.4	0.3	0.3	0.4	0.5	0.6	0.7	0.7	1.1	1.3	1.6	1.2	1.8	0.8	1.8	
30-May	1.3	1.0	0.9	0.5	Z	2.0	1.5	1.0	1.3	1.3	0.7	0.6	0.5	0.4	2.3	3.6	7.2	10.6	9.5	7.6	9.0	6.4	4.8	3.8	3.4	10.6	
31-May	3.4	3.1	2.1	1.7	1.1	Z	0.9	1.0	1.7	2.5	3.0	2.6	3.3	3.7	3.2	3.5	3.6	4.8	3.9	4.8	3.4	2.9	1.8	1.2	2.7	4.8	
																								1.7		Diurnal Average	
																								5.3		Diurnal Maximum	
Z - zerospan C - Calibration M - Maintenance																											
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																											



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Janvier - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Janvier - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Janvier - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	47	28	33	55	60	41	51	67	100	65	31	21	21	15	21	683
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	47	28	33	55	60	41	51	67	100	65	31	21	21	15	21	683

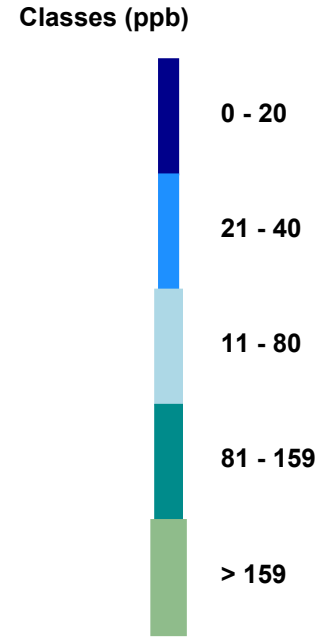
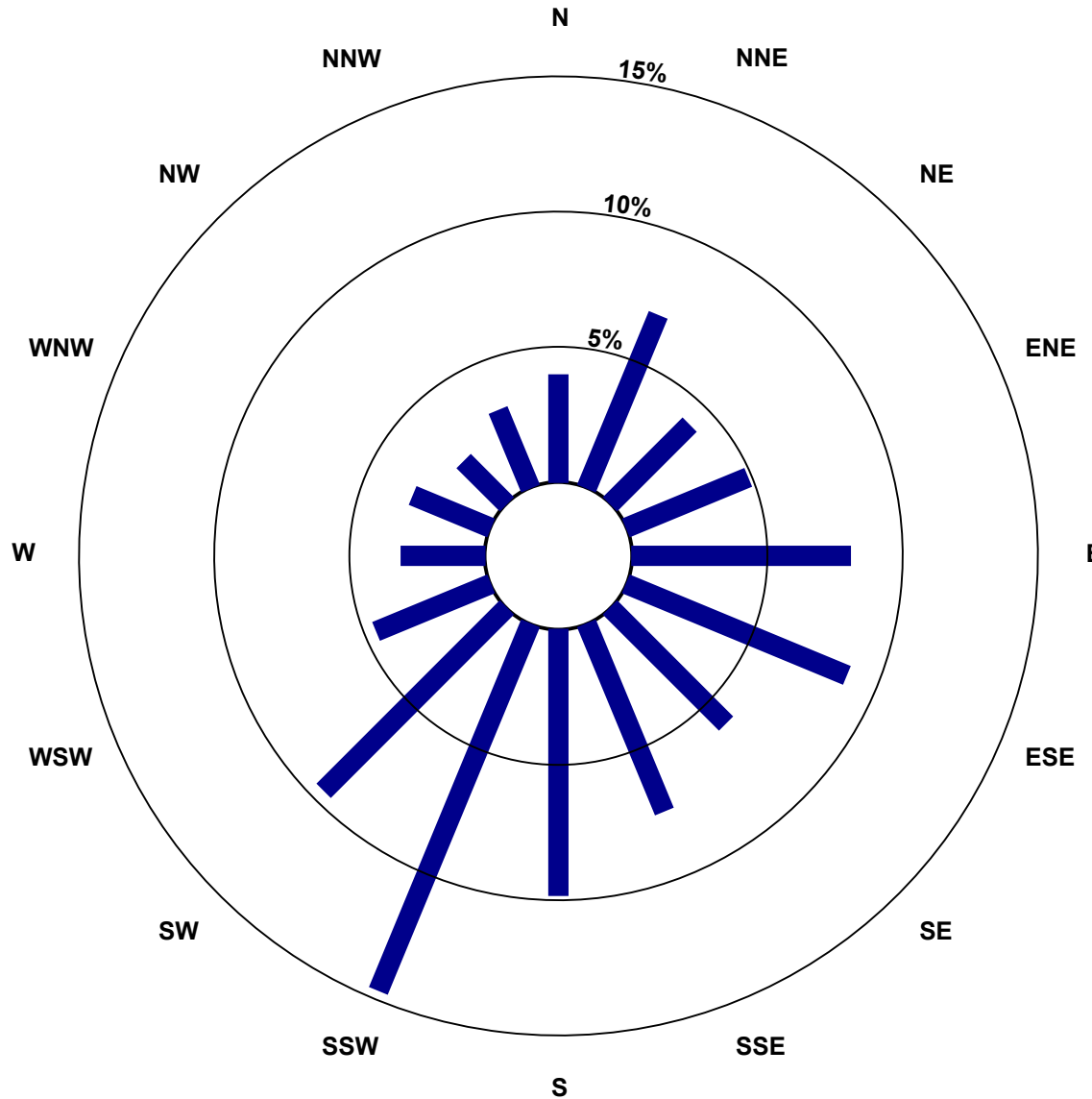
Total Number of Valid Hours: 683

Total Number of Hours: 744

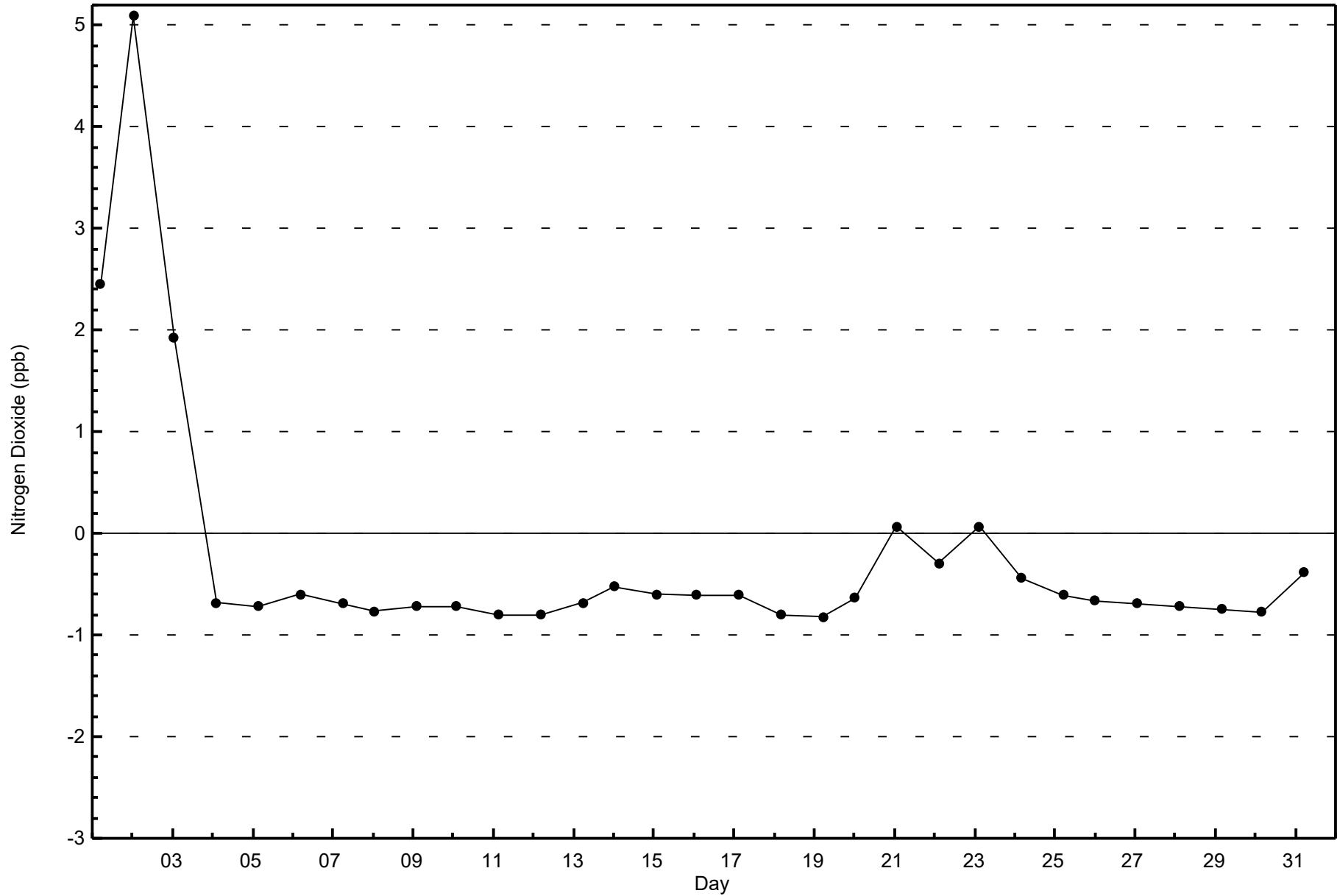


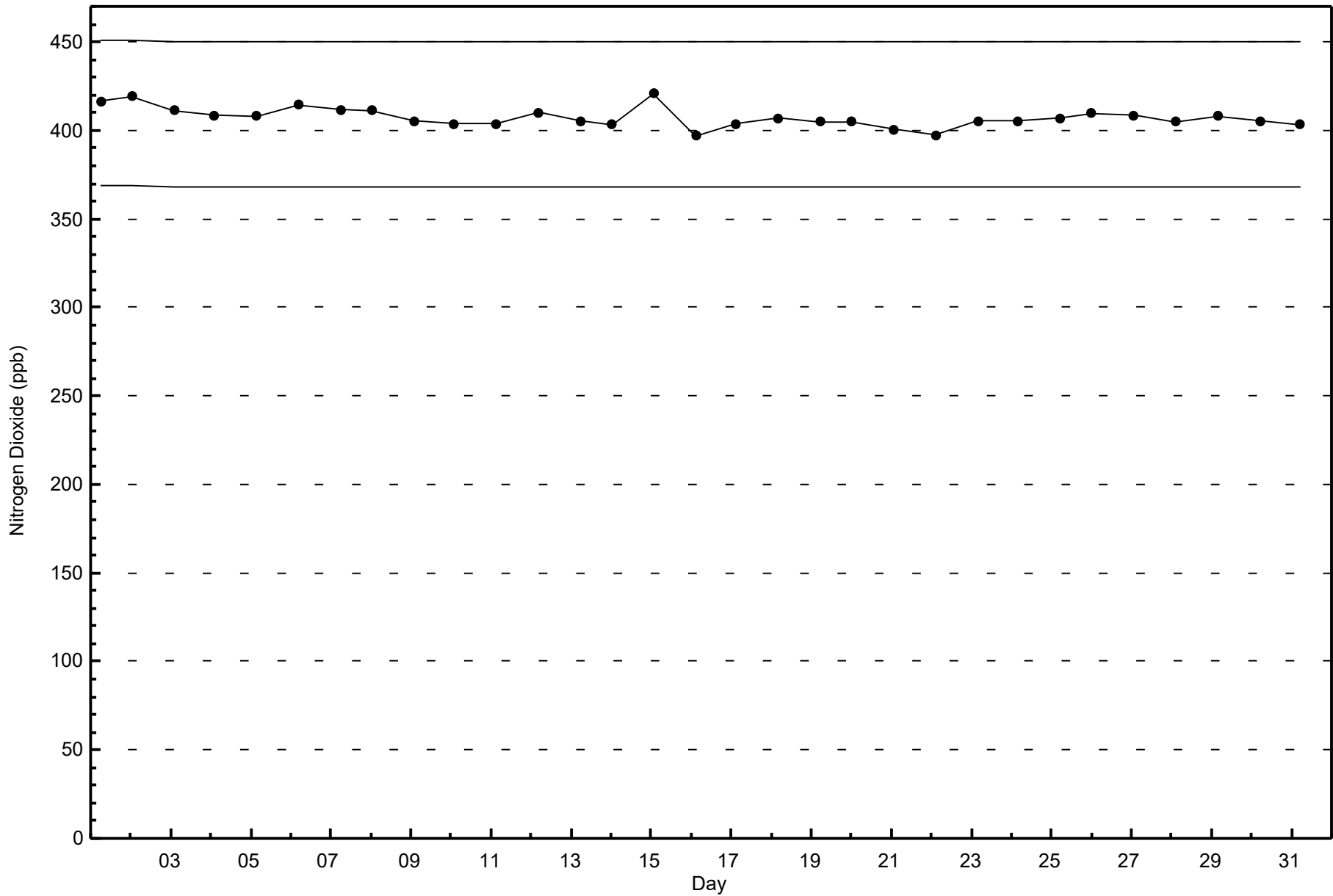
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Janvier



Total Number of Valid Hours: 683







Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_x) - ppb

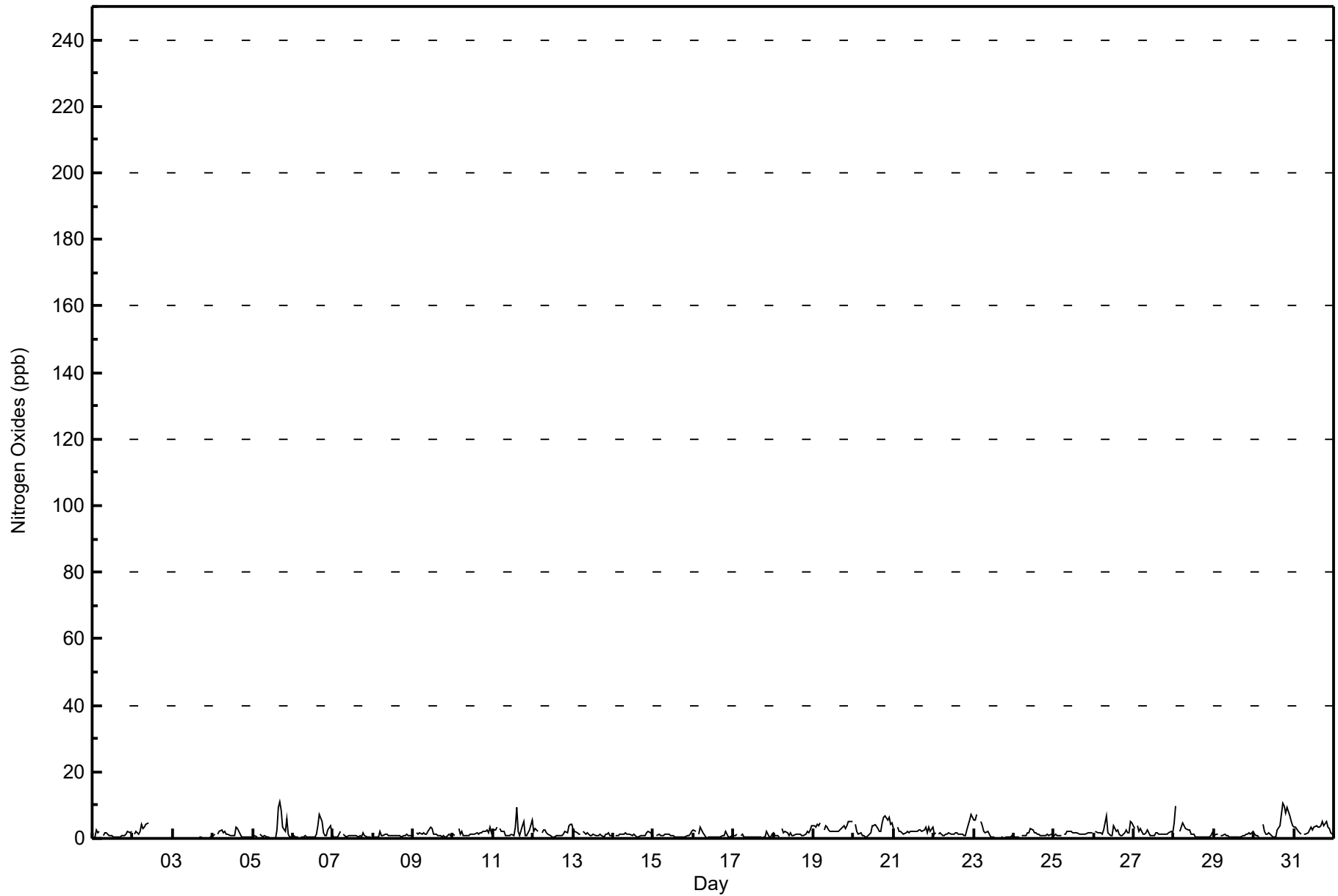
Janvier - May 2023

Maximum Value: 10.9 ppb on May 5 17:00		Maximum Daily Average: 3.6 ppb on May 30		Hours in Service: 744																							
Minimum Value: 0.0 ppb on May 1 01:00		Minimum Daily Average: 0.6 ppb on May 17		Hours of Data: 684																							
Maximum Diurnal Average: 2.2 ppb at hour 24		Minimum Diurnal Average: 1.2 ppb at hour 12		Hours of Missing Data: 60																							
Monthly Average: 1.71 ppb		Percentiles: P ₁ = 0.1 P ₁₀ = 0.4 Q ₁ = 0.7 Median = 1.2 Q ₃ = 2.1 P ₉₀ = 3.7 P ₉₉ = 8.6		Hours of Calibration: 42																							
				Percent Operational Time: 97.6																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.0	0.4	2.6	1.7	2.3	Z	0.9	1.8	1.6	1.1	0.8	0.7	0.5	0.6	0.5	0.5	0.5	0.8	0.7	0.8	1.5	2.0	1.6	2.0	1.1	2.6	
2-May	Z	1.4	2.0	1.5	2.3	4.2	2.8	3.4	4.2	4.5	C	C	C	C	C	C	C	M	M	M	M	M	M	M	--	4.5	
3-May	M	M	M	M	M	M	M	M	M	M	M	C	C	C	C	C	C	0.3	0.4	0.1	0.1	0.1	0.1	0.1	--	0.7	
4-May	1.0	1.5	Z	1.4	2.2	2.6	1.5	2.1	1.2	1.1	0.9	0.7	0.8	0.6	3.2	3.1	1.1	0.4	0.5	0.5	0.5	0.3	0.4	0.5	1.2	3.2	
5-May	0.5	0.8	0.5	Z	1.5	0.8	0.5	0.8	0.4	0.4	0.2	0.2	0.0	0.0	2.5	9.3	10.9	8.5	3.5	2.2	5.8	1.4	0.3	0.4	2.2	10.9	
6-May	0.7	0.5	0.4	0.4	Z	0.5	0.5	0.7	0.4	0.3	0.4	0.5	0.4	0.6	1.1	3.7	7.4	5.1	1.6	0.7	1.1	2.3	3.7	1.5	1.5	7.4	
7-May	0.4	0.4	0.5	0.5	2.2	Z	1.1	0.6	0.5	0.9	1.0	0.9	0.7	0.9	1.0	0.5	1.0	0.5	1.6	1.0	0.3	0.2	0.2	0.2	0.8	2.2	
8-May	Z	0.5	0.4	0.5	2.3	0.7	1.0	1.2	1.1	0.7	0.8	0.7	0.8	1.0	0.9	0.8	0.6	0.6	0.7	0.7	1.1	1.0	0.9	0.9	0.9	2.3	
9-May	0.7	Z	1.8	1.2	1.8	1.1	1.9	1.2	1.2	2.0	3.3	2.9	1.4	1.1	1.1	0.7	0.7	0.6	0.7	0.5	0.5	1.2	0.8	0.8	1.3	3.3	
10-May	1.2	0.9	Z	2.8	1.3	2.3	0.9	0.8	1.1	0.9	1.2	1.3	1.1	1.2	1.7	1.5	1.6	1.7	2.2	2.1	2.4	1.8	3.6	1.5	1.6	3.6	
11-May	2.4	2.4	3.5	Z	2.9	2.0	1.9	0.9	0.8	0.9	0.8	1.1	0.7	3.2	9.5	2.2	0.7	3.8	5.1	0.9	0.7	1.5	2.8	5.5	2.4	9.5	
12-May	2.0	2.9	2.3	2.3	Z	1.7	2.6	2.6	1.7	1.4	0.9	0.3	0.4	0.6	0.7	0.8	0.8	1.0	1.2	2.2	1.8	4.0	4.4	4.0	1.9	4.4	
13-May	2.7	2.2	1.8	1.1	1.2	Z	2.2	1.3	1.5	1.2	0.8	1.0	1.2	0.9	1.0	0.9	1.3	0.7	0.6	1.3	1.1	1.6	1.0	0.8	1.3	2.7	
14-May	Z	1.0	1.0	1.0	1.2	1.1	1.3	1.5	1.4	1.2	1.2	0.9	1.2	0.8	0.6	0.6	0.7	0.7	0.8	1.0	1.6	2.2	1.5	0.8	1.1	2.2	
15-May	0.8	Z	1.0	1.3	0.9	0.8	1.0	1.1	1.4	1.2	0.9	0.8	0.9	0.6	0.6	0.4	0.4	0.3	0.3	0.6	0.8	0.7	1.4	2.3	0.9	2.3	
16-May	2.6	2.0	Z	1.1	3.4	2.5	1.7	0.4	0.2	0.6	0.6	0.2	0.3	0.3	0.4	0.4	0.6	0.6	0.9	1.9	1.5	0.3	0.3	0.9	1.0	3.4	
17-May	0.7	0.8	1.3	Z	1.0	1.3	0.6	0.4	0.4	0.4	0.4	0.6	0.3	0.3	0.3	0.4	0.2	0.2	0.2	0.4	2.2	0.3	0.6	1.3	0.6	2.2	
18-May	1.5	0.9	0.9	0.5	Z	2.9	1.7	2.2	1.8	0.7	1.5	0.8	0.8	1.2	1.2	1.2	1.1	0.7	0.7	1.1	2.0	1.5	2.7	3.9	1.5	3.9	
19-May	3.9	3.5	4.4	3.7	4.8	Z	2.4	3.7	3.3	2.6	2.1	2.0	2.1	2.2	2.2	2.1	2.4	3.4	3.9	3.0	3.8	5.2	5.1	5.2	3.4	5.2	
20-May	Z	4.1	2.2	1.5	1.5	1.0	0.9	0.6	0.4	1.1	1.8	3.7	3.6	4.3	3.2	2.2	2.2	4.6	6.2	6.6	5.3	6.2	4.1	4.7	3.1	6.6	
21-May	2.9	Z	3.4	2.2	1.9	1.9	1.5	1.6	2.1	1.8	2.1	1.9	1.9	2.1	2.1	2.5	2.6	2.2	2.7	3.2	1.7	3.5	2.0	3.6	2.3	3.6	
22-May	1.5	1.7	Z	1.3	1.8	1.0	0.9	1.1	1.4	1.5	1.3	1.4	1.3	1.6	1.8	1.4	1.3	1.5	0.9	0.9	2.4	5.5	7.1	6.5	2.0	7.1	
23-May	5.3	5.4	7.3	Z	5.0	3.7	2.1	1.8	2.0	1.2	0.4	0.4	0.2	0.2	0.1	0.1	0.1	0.3	0.2	0.6	0.3	0.4	0.5	0.7	1.7	7.3	
24-May	0.5	0.5	0.4	0.4	Z	0.8	0.8	1.0	1.5	1.6	2.9	2.5	1.8	1.7	1.4	1.3	0.9	1.0	1.0	1.1	0.9	1.2	0.9	1.2	0.9	1.2	2.9
25-May	0.9	1.3	1.0	1.0	0.9	Z	1.2	1.2	2.0	2.1	2.0	1.6	1.6	1.6	1.8	1.4	1.3	1.3	1.1	1.3	1.7	1.6	1.8	1.9	1.5	2.1	
26-May	Z	2.0	1.9	1.7	1.6	1.4	2.7	6.9	1.6	1.1	0.9	0.7	3.9	2.2	2.6	1.1	0.8	1.0	1.7	2.6	1.5	1.8	5.0	4.7	2.2	6.9	
27-May	2.8	Z	3.8	2.1	2.8	1.4	1.4	1.7	2.3	1.9	0.9	1.0	0.9	1.5	1.7	1.4	1.1	1.4	1.1	1.1	1.2	1.6	2.0	1.7	1.7	3.8	
28-May	4.5	9.5	Z	2.3	3.5	4.8	3.9	3.1	2.6	2.5	1.3	1.2	1.1	0.6	0.6	0.5	0.5	0.5	0.4	0.5	0.5	0.6	0.7	1.6	2.1	9.5	
29-May	1.1	1.1	1.1	Z	0.9	1.0	1.1	1.0	1.0	0.5	0.3	0.4	0.3	0.4	0.4	0.5	0.6	0.8	0.8	1.2	1.4	1.7	1.3	2.0	0.9	2.0	
30-May	1.4	1.0	1.0	0.5	Z	4.0	1.9	1.2	1.5	1.5	0.8	0.6	0.5	0.4	2.4	3.7	7.4	10.8	9.7	7.8	9.2	6.6	4.9	3.9	3.6	10.8	
31-May	3.5	3.2	2.2	1.8	1.3	Z	1.1	1.3	1.9	2.7	3.2	2.7	3.5	3.9	3.3	3.6	3.7	5.0	4.0	4.9	3.5	3.0	1.9	1.3	2.9	5.0	
																								Diurnal Average			
																								Diurnal Maximum			
																								Diurnal Average			
																								Diurnal Maximum			
Z - zerospan C - Calibration M - Maintenance																											



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Janvier - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Janvier - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Janvier - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	47	28	33	55	60	41	51	67	100	65	31	21	21	15	21	683
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	47	28	33	55	60	41	51	67	100	65	31	21	21	15	21	683

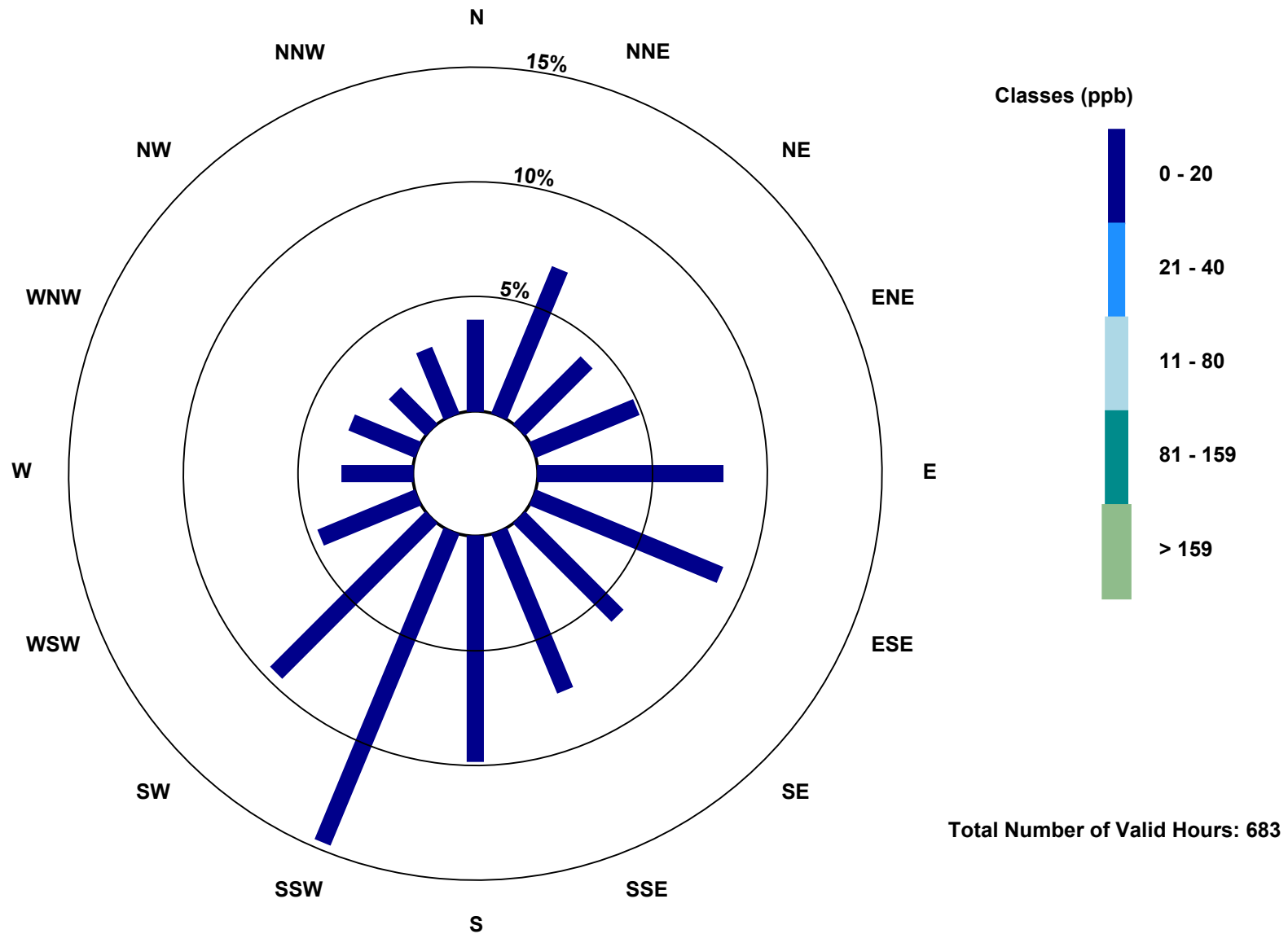
Total Number of Valid Hours: 683

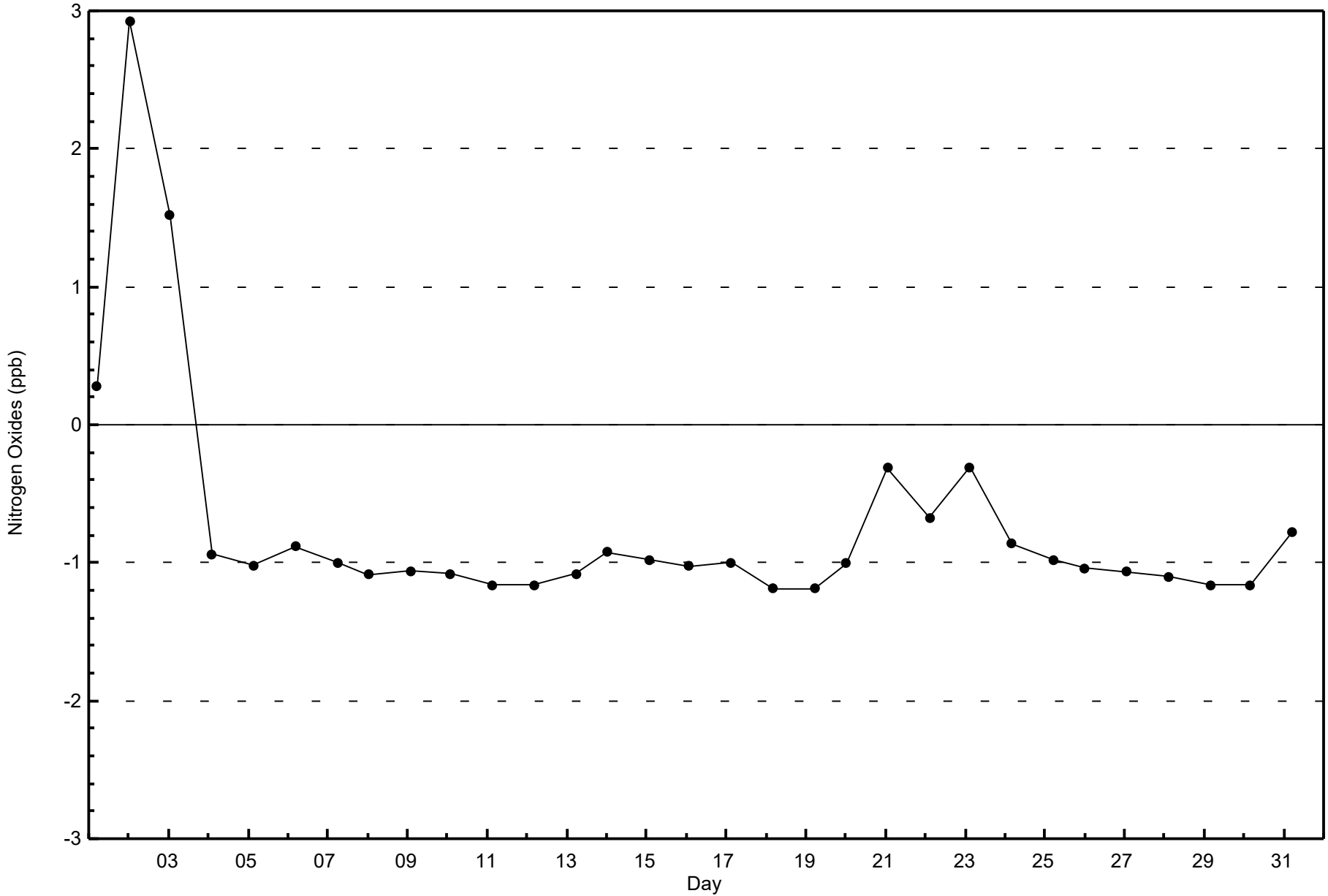
Total Number of Hours: 744

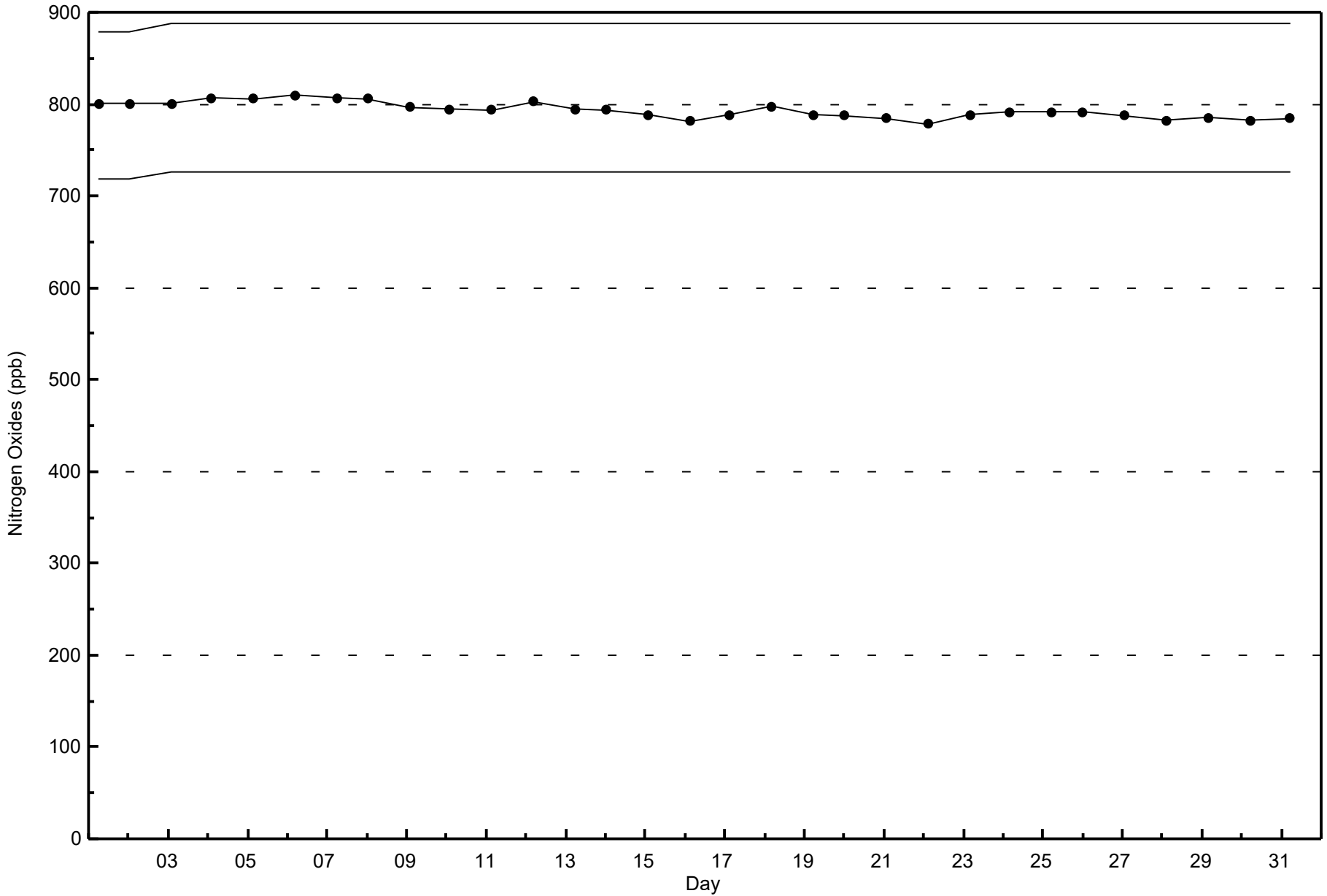


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Janvier









Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

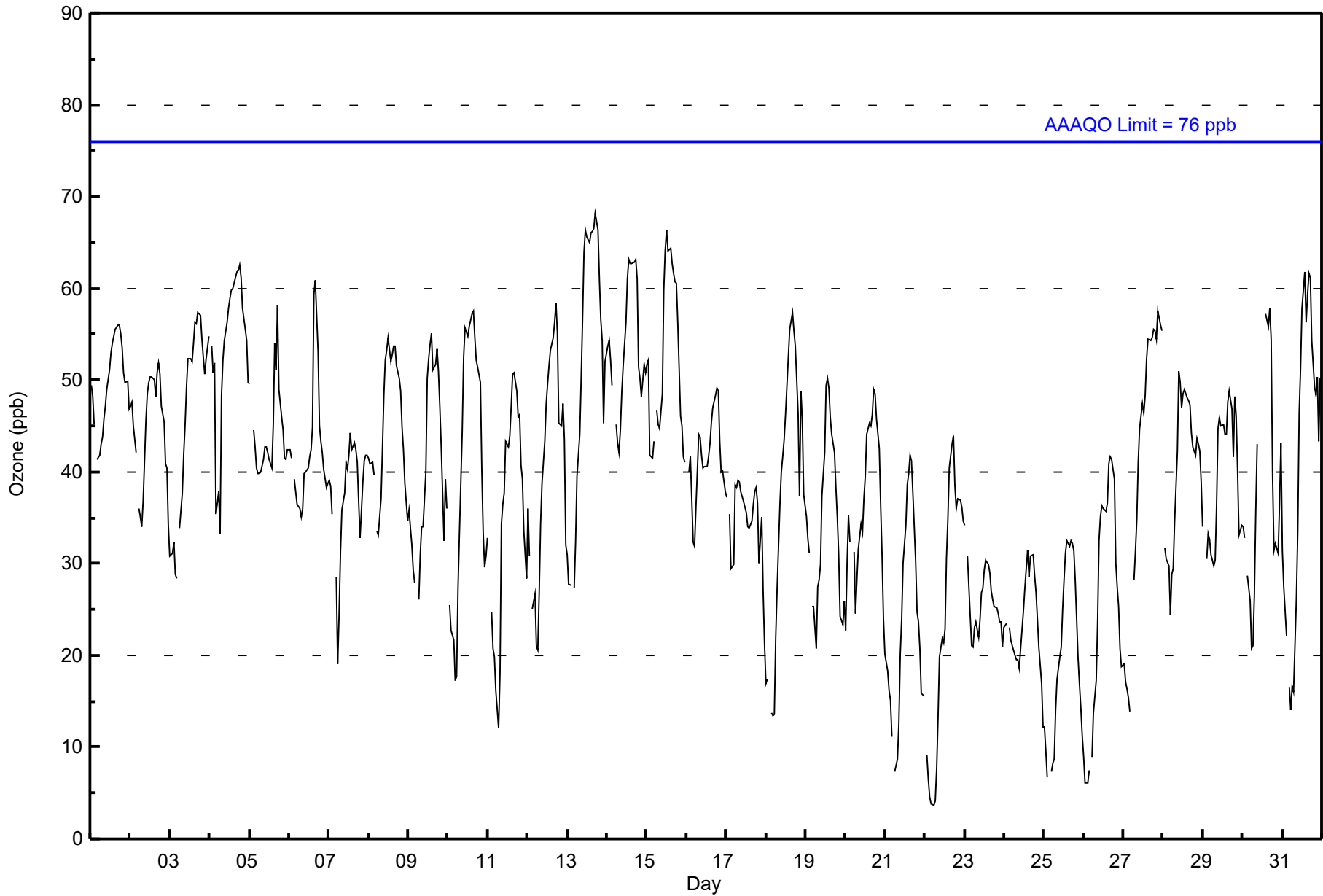
Janvier - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:																744					
Maximum Value: 68.2 ppb on May 13 18:00				Maximum Daily Average: 53.7 ppb on May 4		Hours of Data:																709					
Minimum Value: 3.6 ppb on May 22 06:00				Minimum Daily Average: 20.0 ppb on May 25		Hours of Missing Data:																35					
Maximum Diurnal Average: 50.2 ppb at hour 17				Minimum Diurnal Average: 25.1 ppb at hour 5		Hours of Calibration:																35					
Monthly Average: 39.00 ppb				Percentiles: P ₁ = 6.7 P ₁₀ = 20.7 Q ₁ = 30.2 Median = 40.4 Q ₃ = 49.1 P ₉₀ = 55.5 P ₉₉ = 65.5		Percent Operational Time:																100.0					
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	49.5	48.2	45.1	Z	41.4	41.8	42.9	43.8	45.7	47.1	49.0	51.1	53.0	54.1	54.7	55.6	56.0	56.0	55.0	53.5	50.7	49.8	49.9	46.9	49.6	56.0	
2-May	47.2	47.6	45.0	42.0	Z	35.9	35.2	34.1	36.8	45.6	48.4	49.7	50.4	50.4	50.0	48.2	50.8	51.9	50.6	47.1	45.5	40.9	40.4	34.2	44.7	51.9	
3-May	30.7	31.1	32.3	28.8	28.3	Z	33.9	37.7	41.9	45.1	49.3	52.3	52.2	52.0	54.0	56.2	56.2	57.4	57.0	54.5	52.4	50.7	52.3	54.8	46.1	57.4	
4-May	Z	53.7	50.8	51.8	35.4	37.8	33.3	48.4	52.1	54.2	56.3	57.9	58.9	59.8	59.9	60.5	61.9	62.0	62.6	61.1	57.9	55.5	54.2	49.7	53.7	62.6	
5-May	49.6	Z	44.5	42.7	40.4	39.8	39.9	39.9	41.3	42.7	42.8	42.1	41.3	40.4	45.1	54.1	51.0	58.1	49.0	45.9	44.5	41.5	41.3	42.4	44.4	58.1	
6-May	42.4	41.5	Z	39.1	37.9	36.4	36.0	35.1	36.0	39.8	40.0	40.5	41.6	42.5	44.8	59.4	60.9	53.0	45.0	43.4	42.1	40.2	38.3	38.7	42.4	60.9	
7-May	39.0	38.4	35.5	Z	28.5	19.1	24.4	31.2	35.8	37.7	41.0	40.2	41.8	44.2	42.5	43.1	42.4	41.1	36.8	32.7	39.0	41.2	41.8	41.8	37.4	44.2	
8-May	41.5	40.9	41.0	39.7	Z	33.6	33.2	37.1	42.6	48.3	52.2	53.3	54.6	52.0	52.8	53.8	53.8	51.5	50.2	48.9	44.9	42.3	38.8	34.7	45.3	54.6	
9-May	35.9	33.8	32.1	29.3	27.9	Z	26.1	31.0	34.0	34.0	39.9	50.1	52.4	53.8	55.1	51.1	51.7	53.5	50.9	47.2	42.7	32.5	39.3	35.9	40.9	55.1	
10-May	Z	25.5	22.7	21.7	17.3	17.7	27.4	33.3	44.3	52.4	55.7	55.2	54.8	55.8	57.1	57.5	54.6	52.2	51.5	49.8	40.2	33.3	29.6	30.8	40.9	57.5	
11-May	32.7	Z	24.7	20.8	19.9	16.2	12.0	17.9	34.3	36.5	37.7	43.3	42.7	43.9	47.1	50.6	50.7	48.9	45.9	46.2	40.8	39.2	33.6	28.4	35.4	50.7	
12-May	35.9	30.9	Z	25.1	26.6	21.0	20.6	26.8	34.3	38.7	43.3	47.5	49.6	51.5	53.3	54.7	56.3	58.4	55.1	45.2	44.9	47.5	43.5	32.0	41.0	58.4	
13-May	31.0	27.8	27.7	Z	27.4	32.3	39.5	44.1	50.2	56.7	64.0	66.3	65.6	65.0	66.1	66.2	66.5	68.2	66.3	61.0	56.5	54.2	45.4	52.0	52.2	68.2	
14-May	53.7	54.3	52.1	49.4	Z	45.1	43.2	42.0	44.5	48.7	51.5	56.3	61.0	63.2	62.8	62.7	62.9	63.2	61.0	51.4	50.2	48.2	51.7	50.8	53.5	63.2	
15-May	51.7	52.2	41.8	41.5	43.3	Z	46.7	45.1	44.6	48.6	59.9	64.0	66.3	64.1	64.3	62.6	61.6	60.7	60.5	56.3	46.1	45.0	41.6	41.0	52.6	66.3	
16-May	Z	39.9	41.7	37.1	32.3	31.8	36.2	44.0	43.9	41.7	40.4	40.6	40.5	41.6	43.1	45.3	47.0	48.3	49.1	48.8	43.3	40.0	40.2	37.8	41.5	49.1	
17-May	37.2	Z	35.4	29.4	29.8	38.5	38.3	39.1	39.0	37.8	36.7	36.1	35.5	34.0	33.9	34.7	36.4	37.8	38.3	36.6	30.1	35.1	26.9	21.3	34.7	39.1	
18-May	16.9	17.3	Z	13.7	13.4	13.5	22.0	27.4	36.5	40.0	41.7	43.5	46.3	52.4	55.5	56.5	57.4	55.3	53.7	46.4	37.4	48.8	45.6	37.5	38.2	57.4	
19-May	35.1	32.7	31.2	Z	25.3	25.3	20.7	27.4	28.1	29.9	37.3	42.1	49.4	50.1	49.2	45.9	44.2	42.1	38.3	35.2	30.9	24.3	23.3	26.0	34.5	50.1	
20-May	22.8	30.0	35.2	32.4	Z	31.3	24.5	28.3	31.6	34.4	33.5	37.1	39.5	44.1	45.2	45.0	46.3	48.9	48.5	45.8	42.6	36.3	30.7	24.0	36.4	48.9	
21-May	20.1	18.2	16.2	15.0	11.1	Z	7.2	8.7	12.6	20.2	24.0	30.0	34.2	38.6	39.9	41.8	41.2	37.7	30.2	24.8	23.6	20.7	15.9	15.6	23.8	41.8	
22-May	Z	9.2	6.5	4.6	3.9	3.6	4.2	7.6	13.3	19.9	21.8	21.4	22.9	30.5	34.8	40.5	43.0	44.0	38.6	36.0	37.0	36.9	36.2	34.6	23.9	44.0	
23-May	34.2	Z	30.8	24.3	21.1	20.9	23.0	23.6	22.0	23.9	26.9	27.3	29.3	30.3	29.9	28.9	27.0	26.1	25.3	25.1	24.6	23.7	23.6	20.9	25.8	34.2	
24-May	23.0	23.5	Z	23.1	21.7	21.1	19.9	19.5	19.6	18.5	20.7	24.9	27.2	29.5	31.4	28.6	30.8	31.0	28.7	26.8	24.0	20.9	16.9	12.2	23.6	31.4	
25-May	12.2	9.7	6.7	Z	7.3	8.2	8.6	14.0	17.3	19.8	20.8	25.1	28.3	31.2	32.5	31.9	32.5	32.2	31.5	28.2	19.9	16.9	14.3	11.3	20.0	32.5	
26-May	8.9	6.1	6.1	7.5	Z	8.9	13.7	17.3	23.7	32.4	35.1	36.4	36.0	35.7	36.7	40.9	41.6	41.3	39.1	30.1	27.5	25.4	20.7	18.7	25.6	41.6	
27-May	19.0	17.1	16.4	15.4	13.9	Z	28.3	31.3	34.8	41.0	44.8	47.4	46.4	48.4	52.3	54.5	54.4	54.6	55.6	55.3	54.5	57.5	55.9	55.4	41.5	57.5	
28-May	Z	31.7	30.5	29.7	24.4	28.8	29.4	34.5	42.2	50.9	49.7	47.0	48.6	48.9	48.1	47.8	47.4	44.3	42.7	41.8	43.7	43.0	42.3	38.9	40.7	50.9	
29-May	34.0	Z	30.5	33.2	32.6	30.9	29.8	30.3	36.3	44.7	45.9	45.0	45.1	44.1	44.1	47.6	48.8	46.9	41.7	48.2	46.0	40.2	33.1	34.1	39.7	48.8	
30-May	34.1	32.8	Z	28.7	25.9	20.8	21.1	26.5	35.7	43.1	Z	C	C	C	C	57.1	55.8	57.8	54.5	39.6	31.4	32.2	31.1	36.7	37.3	57.8	
31-May	31.5	27.4	22.1	Z	16.5	14.1	16.6	16.1	26.0	33.5	46.4	51.2	57.9	61.7	56.3	59.3	61.7	61.2	54.4	49.2	48.3	50.3	43.4	50.1	41.5	61.7	
		33.5	31.6	30.9	29.0	25.1	25.9	27.0	30.4	34.9	39.0	41.9	44.2	45.8	47.1	48.4	49.7	50.2	49.7	46.9	43.7	40.8	39.1	37.0	35.4	Diurnal Average	
		53.7	54.3	52.1	51.8	43.3	45.1	46.7	48.4	52.1	56.7	64.0	66.3	66.3	65.0	66.1	66.2	66.5	68.2	66.3	61.1	57.9	57.5	55.9	55.4	Diurnal Maximum	
Z - zerospan		C - Calibration																									
Alberta Ambient Air Quality Objectives (AAAQO):		1-hr 76 ppb																									



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Janvier - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Janvier - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	68	9.59	9.59
21 - 50	488	68.83	78.42
51 - 82	153	21.58	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Janvier - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	3	8	1	0	0	5	3	6	8	13	6	1	4	2	1	6	67
21 - 50	27	35	24	30	40	50	28	26	39	66	44	23	15	15	14	12	488
51 - 82	2	6	4	3	11	5	10	22	27	26	18	9	2	4	2	2	153
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	32	49	29	33	51	60	41	54	74	105	68	33	21	21	17	20	708

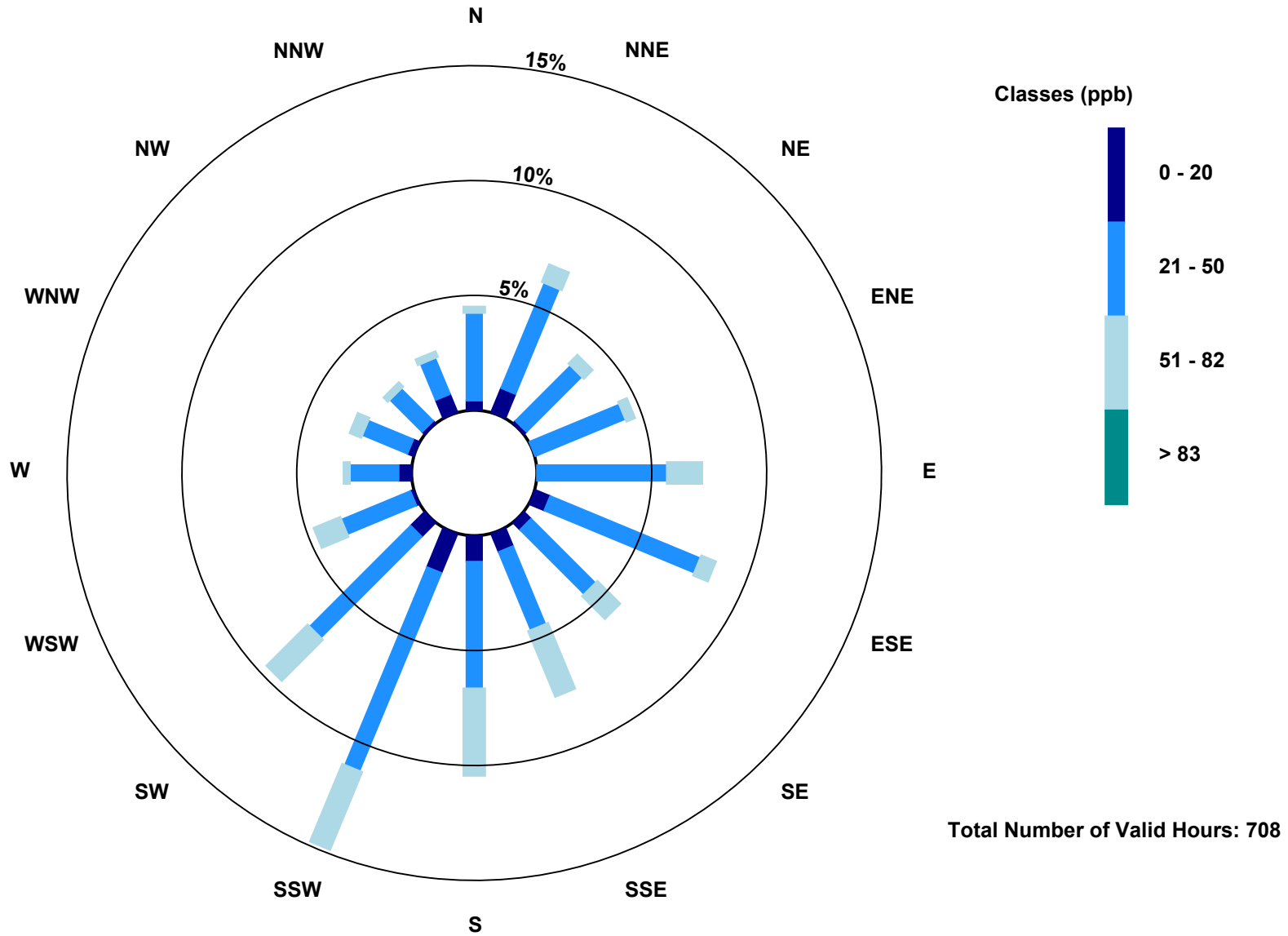
Total Number of Valid Hours: 708

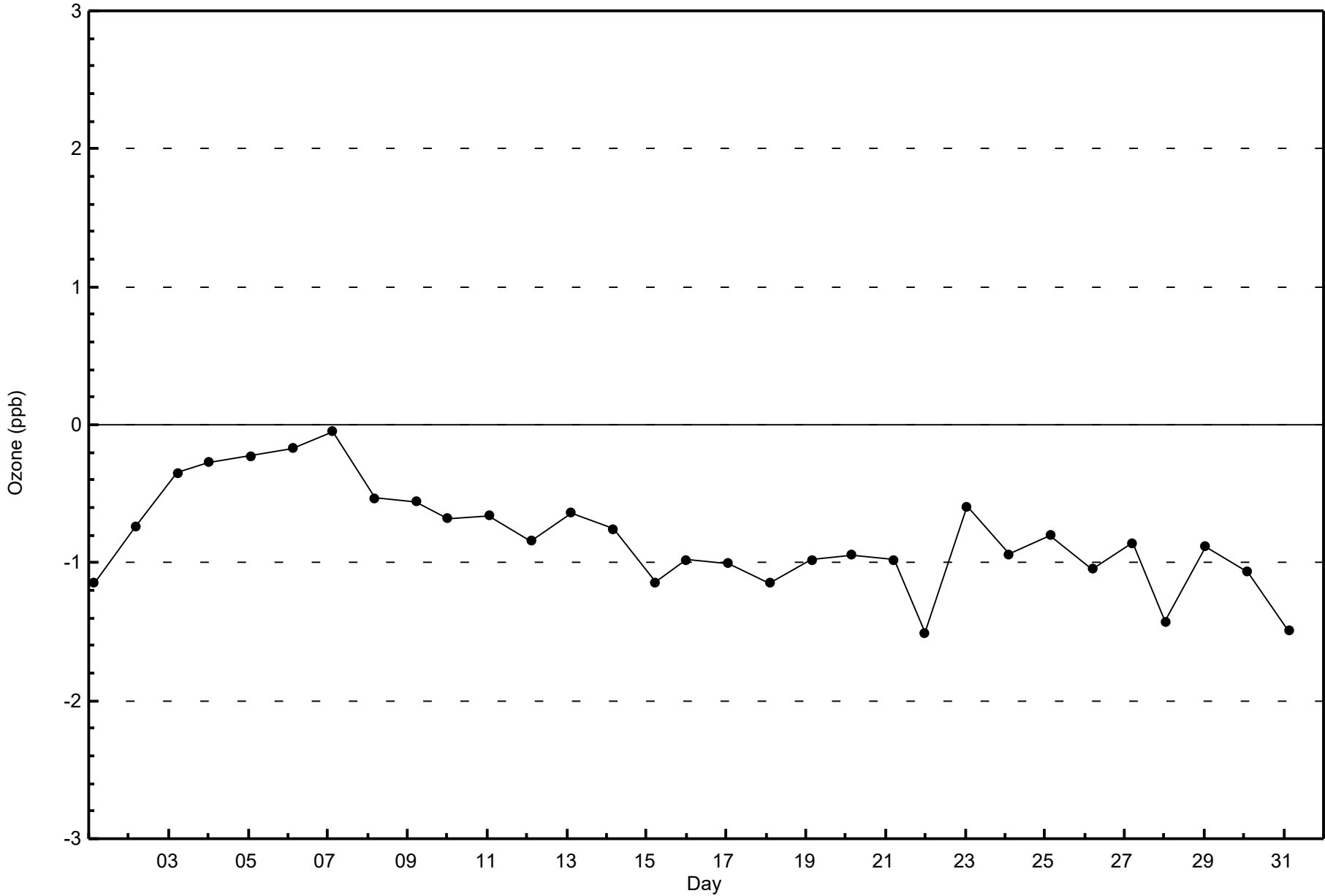
Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Ozone (O₃) - ppb
Janvier

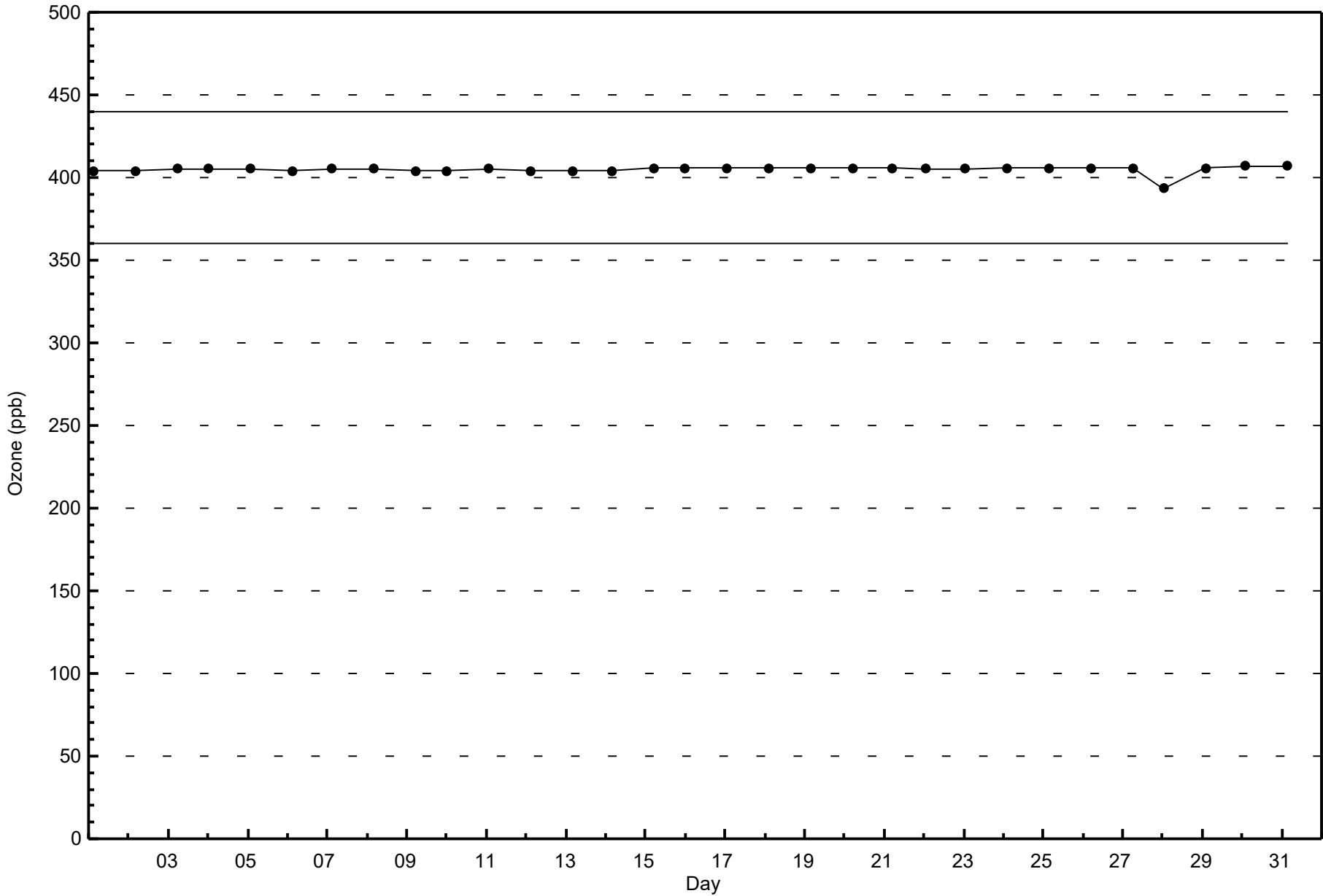






Wood Buffalo Environmental Association
Span Responses

Ozone (O₃) - ppb
Janvier - May 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM_{2.5}) - µg/m³

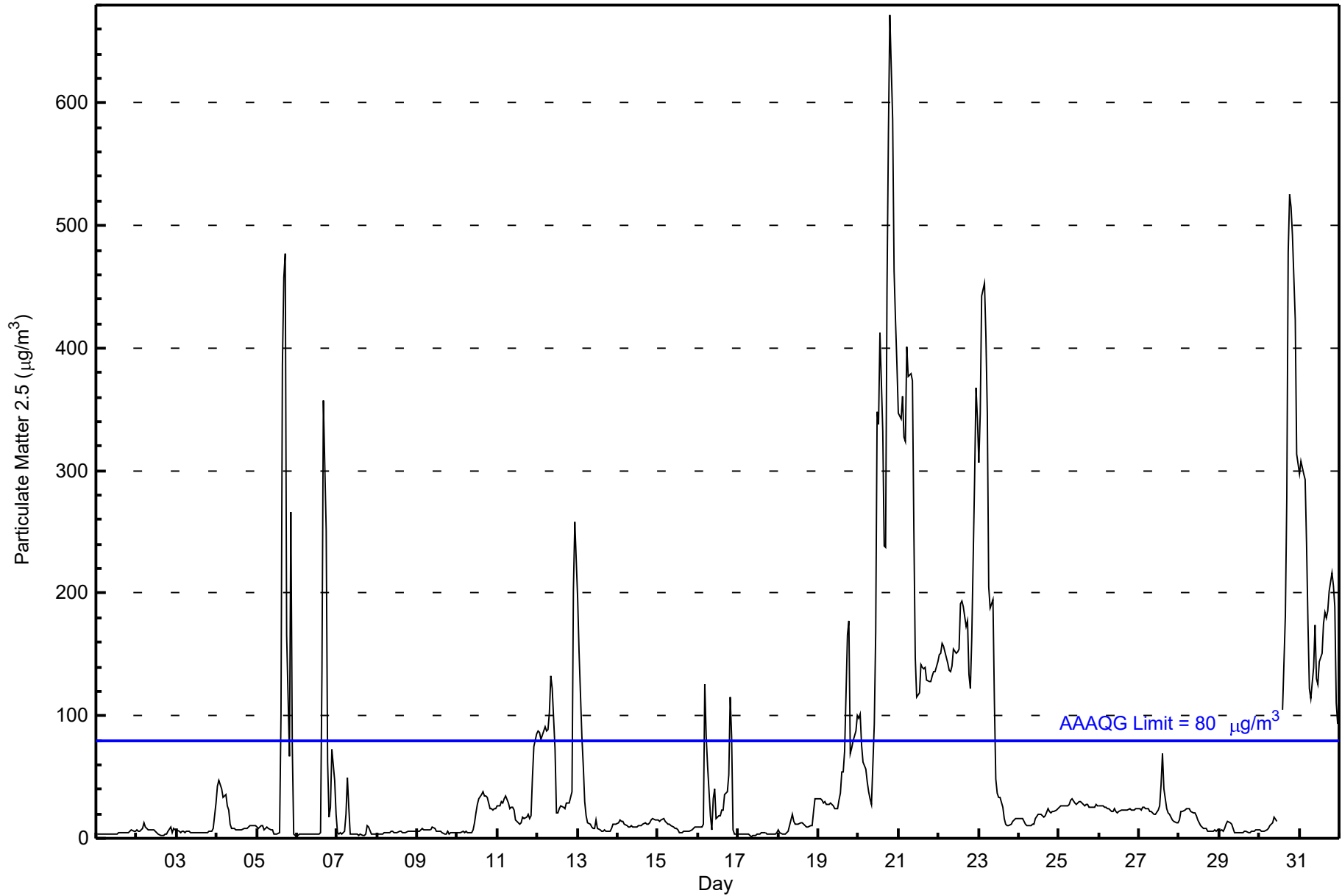
Janvier - May 2023

Number of Exceedences (AAAQO):	1-hr: 143	24-hr: 12	Hours in Service:	744
Maximum Value: 672.0 µg/m ³ on May 20 20:00	Maximum Daily Average: 260.9 µg/m ³ on May 20		Hours of Data:	741
Minimum Value: 1.4 µg/m ³ on May 17 09:00	Minimum Daily Average: 3.5 µg/m ³ on May 17		Hours of Missing Data:	3
Maximum Diurnal Average: 84.5 µg/m ³ at hour 18	Minimum Diurnal Average: 33.1 µg/m ³ at hour 11		Hours of Calibration:	3
Monthly Average: 55.87 µg/m ³	Percentiles: P ₁ = 2.7 P ₁₀ = 3.8 Q ₁ = 5.8 Median = 14.3 Q ₃ = 34.5 P ₉₀ = 173.4 P ₉₉ = 472.1		Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	3.7	3.2	3.5	3.5	3.9	3.4	3.3	3.3	3.2	3.2	3.2	3.5	3.9	4.2	4.4	5.0	5.2	5.1	4.9	4.8	6.3	7.3	5.5	5.9	4.3	7.3
2-May	6.4	5.8	6.1	8.1	12.3	9.6	8.2	6.8	7.1	7.3	6.6	5.9	5.1	3.6	2.7	2.6	2.8	2.9	3.0	5.5	9.2	5.1	7.5	7.5	6.2	12.3
3-May	6.6	5.8	5.0	5.3	5.5	5.2	5.7	5.9	5.2	4.8	4.6	4.8	4.7	4.6	4.5	4.6	4.7	4.8	5.1	5.3	5.6	5.7	8.5	29.0	6.3	29.0
4-May	43.1	46.8	43.9	40.5	33.4	35.9	26.3	23.1	11.5	8.4	7.7	7.5	6.8	7.3	7.2	7.4	7.7	7.7	8.0	9.0	10.6	10.9	10.2	10.3	18.0	46.8
5-May	9.2	7.9	10.3	9.9	6.7	7.8	8.9	8.1	6.8	7.0	4.0	3.7	3.7	4.1	99.9	386.4	458.1	477.7	166.4	66.4	266.8	74.6	3.4	2.7	87.5	477.7
6-May	2.5	3.0	3.4	3.7	3.8	3.7	3.7	3.6	3.5	3.4	3.3	3.1	3.1	3.1	4.8	137.4	356.8	251.6	61.8	16.7	25.7	72.9	47.8	19.6	43.4	356.8
7-May	4.6	3.6	4.2	3.7	5.6	19.6	49.2	25.4	3.3	3.3	3.6	3.1	3.3	2.9	3.0	2.4	2.6	3.0	10.9	9.0	3.8	3.2	3.3	3.2	7.5	49.2
8-May	3.4	3.4	3.6	3.9	4.1	4.0	5.0	5.1	5.6	5.6	5.1	4.7	4.8	5.4	5.6	4.8	4.6	4.9	5.4	5.2	5.9	5.6	5.5	6.2	4.9	6.2
9-May	5.8	6.0	7.2	8.0	7.2	7.3	7.3	7.0	6.7	9.4	8.1	5.6	5.9	5.6	5.7	5.1	3.7	3.8	5.2	3.8	4.2	4.2	4.5	4.9	5.9	9.4
10-May	5.0	4.9	4.8	5.3	5.0	5.8	5.1	5.0	5.1	7.2	13.0	20.4	27.6	32.5	36.1	38.5	34.5	34.6	33.1	24.8	23.7	23.6	23.9	24.0	18.5	38.5
11-May	26.5	26.3	30.0	28.7	31.9	35.1	28.9	24.0	25.7	25.3	22.9	14.8	12.2	11.5	12.8	17.7	16.4	17.7	19.1	16.5	18.3	49.4	75.4	85.2	28.0	85.2
12-May	87.1	86.2	81.1	84.0	91.5	87.5	88.4	102.7	132.9	122.0	72.9	21.1	20.2	24.4	26.0	25.5	23.8	28.7	28.6	29.0	38.2	202.5	258.6	227.3	82.9	258.6
13-May	195.4	152.5	83.4	59.2	30.3	19.0	12.9	11.0	9.7	7.8	7.6	15.5	8.5	6.7	6.0	6.1	6.5	5.7	5.3	5.8	8.4	12.1	11.5	12.1	29.1	195.4
14-May	12.8	14.7	14.2	13.4	11.6	9.9	9.7	9.5	9.9	8.7	9.3	9.6	9.9	10.0	10.0	11.1	12.4	11.6	11.4	12.3	14.7	16.6	15.2	14.4	11.8	16.6
15-May	14.8	14.3	14.9	16.4	14.0	12.7	11.9	11.3	10.5	8.8	7.8	7.6	6.8	4.9	4.7	5.7	5.4	5.6	5.9	6.1	7.1	8.2	9.5	8.7	9.3	16.4
16-May	8.9	9.1	9.7	11.0	125.1	82.7	59.3	18.4	6.8	32.8	40.3	16.4	17.9	18.5	22.7	23.5	35.2	38.5	51.5	114.9	83.4	7.0	3.5	3.7	35.0	125.1
17-May	4.0	3.6	3.5	3.7	3.8	3.4	3.1	1.9	1.4	1.9	2.7	3.6	3.4	3.9	4.8	4.5	4.4	3.6	3.5	3.7	3.7	3.2	3.9	4.3	3.5	4.8
18-May	7.3	4.0	3.7	3.6	3.6	4.2	5.7	10.2	19.6	13.4	11.7	11.8	12.0	13.1	12.4	11.5	10.8	9.7	9.3	9.9	10.5	21.4	32.2	31.7	11.8	32.2
19-May	32.4	32.2	31.5	29.3	29.8	28.1	28.0	29.3	28.1	26.3	24.7	24.3	30.6	36.4	53.9	53.9	70.9	165.9	178.0	69.6	74.0	79.3	87.6	100.0	56.0	178.0
20-May	98.1	101.3	75.8	62.8	56.3	45.9	38.0	32.5	27.7	93.8	168.1	348.1	337.7	412.7	331.7	238.0	237.1	448.3	575.4	672.0	586.4	463.7	422.6	387.6	260.9	672.0
21-May	347.0	342.0	360.5	326.8	323.8	400.9	376.8	379.1	373.9	252.5	147.8	115.1	118.3	142.0	139.2	137.8	139.2	129.0	127.9	128.3	132.7	136.1	135.8	143.8	223.2	400.9
22-May	149.6	151.5	159.5	156.2	152.1	143.4	136.7	136.3	140.6	154.2	150.8	152.0	154.7	191.2	193.9	189.0	173.4	177.2	133.8	122.5	163.2	293.1	367.3	341.9	178.5	367.3
23-May	306.5	346.6	442.9	453.5	410.0	346.7	205.4	187.7	194.6	113.1	48.4	37.2	33.7	33.7	25.0	16.0	11.3	9.9	10.5	11.3	13.7	15.4	16.2	15.9	137.7	453.5
24-May	16.1	16.2	15.6	13.9	11.7	10.4	10.4	10.2	11.0	11.8	16.1	20.0	19.4	19.4	18.8	16.7	18.4	23.8	22.4	21.2	21.7	21.9	23.6	24.2	17.3	24.2
25-May	25.8	27.0	26.7	26.6	26.0	26.9	28.1	31.1	31.8	28.7	27.1	28.2	30.0	29.8	28.4	26.8	28.0	27.7	25.5	25.3	25.9	25.6	27.4	26.9	27.6	31.8
26-May	26.5	26.3	26.0	25.8	24.9	24.5	24.2	21.8	21.5	23.8	21.9	21.2	21.9	23.0	22.7	22.8	22.7	23.5	23.8	23.4	22.8	23.2	23.7	24.0	23.6	26.5
27-May	24.0	23.6	25.1	24.9	24.3	24.3	22.5	21.5	20.8	19.9	19.7	22.6	27.1	43.9	69.0	40.1	24.7	20.6	19.4	17.3	14.5	14.3	12.6	13.0	24.6	69.0
28-May	14.8	22.3	21.8	22.7	24.0	24.5	23.8	22.4	21.3	20.6	18.2	15.1	12.8	10.5	8.3	7.7	7.7	6.3	5.5	5.8	5.8	6.6	6.3	6.4	14.2	24.5
29-May	6.2	6.4	6.2	7.9	11.1	13.5	13.2	11.0	8.4	5.2	4.4	4.4	4.5	4.7	5.0	6.0	5.3	4.6	5.0	5.3	5.5	6.1	6.4	6.6	6.8	13.5
30-May	6.6	6.1	5.4	5.5	7.0	7.9	10.3	11.6	13.1	17.2	13.9	C	C	C	104.6	181.6	277.4	478.7	526.1	515.0	492.4	423.0	313.1	306.0	177.3	526.1
31-May	297.3	307.3	297.5	292.3	239.7	174.6	122.1	113.9	140.0	174.3	130.6	125.9	144.2	150.6	174.7	184.1	179.6	186.1	201.8	216.7	206.8	188.7	111.1	93.5	185.5	307.3
58.0 58.4 58.9 56.8 56.1 52.5 44.6 41.6 42.2 39.4 33.1 35.9 36.5 42.1 46.7 58.7 70.7 84.5 74.0 70.4 74.6 72.0 67.2 64.2																								Diurnal Average		
347.0 346.6 442.9 453.5 410.0 400.9 376.8 379.1 373.9 252.5 168.1 348.1 337.7 412.7 331.7 386.4 458.1 478.7 575.4 672.0 586.4 463.7 422.6 387.6																								Diurnal Maximum		

C - Calibration

Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m³ 24-hr 29 µg/m³





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Janvier - May 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	165	22.27	22.27
6 - 15	218	29.42	51.69
16 - 25	107	14.44	66.13
26 - 80	108	14.57	80.70
> 81.0	143	19.30	100.00

Total Number of Valid Hours: 741

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - µg/m³
Janvier - May 2023

Concentration Ranges (µg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	10	9	6	2	3	24	14	18	30	16	7	5	8	5	2	6	165
6 - 15	4	7	7	2	14	8	12	17	20	55	40	16	5	8	1	2	218
16 - 25	0	0	4	7	9	7	5	4	9	29	9	8	2	4	7	3	107
26 - 80	8	15	3	0	11	7	6	12	10	11	7	1	3	3	5	6	108
> 81.0	10	20	11	23	16	15	6	7	9	5	6	3	4	1	2	4	142
Totals	32	51	31	34	53	61	43	58	78	116	69	33	22	21	17	21	740

Total Number of Valid Hours: 740

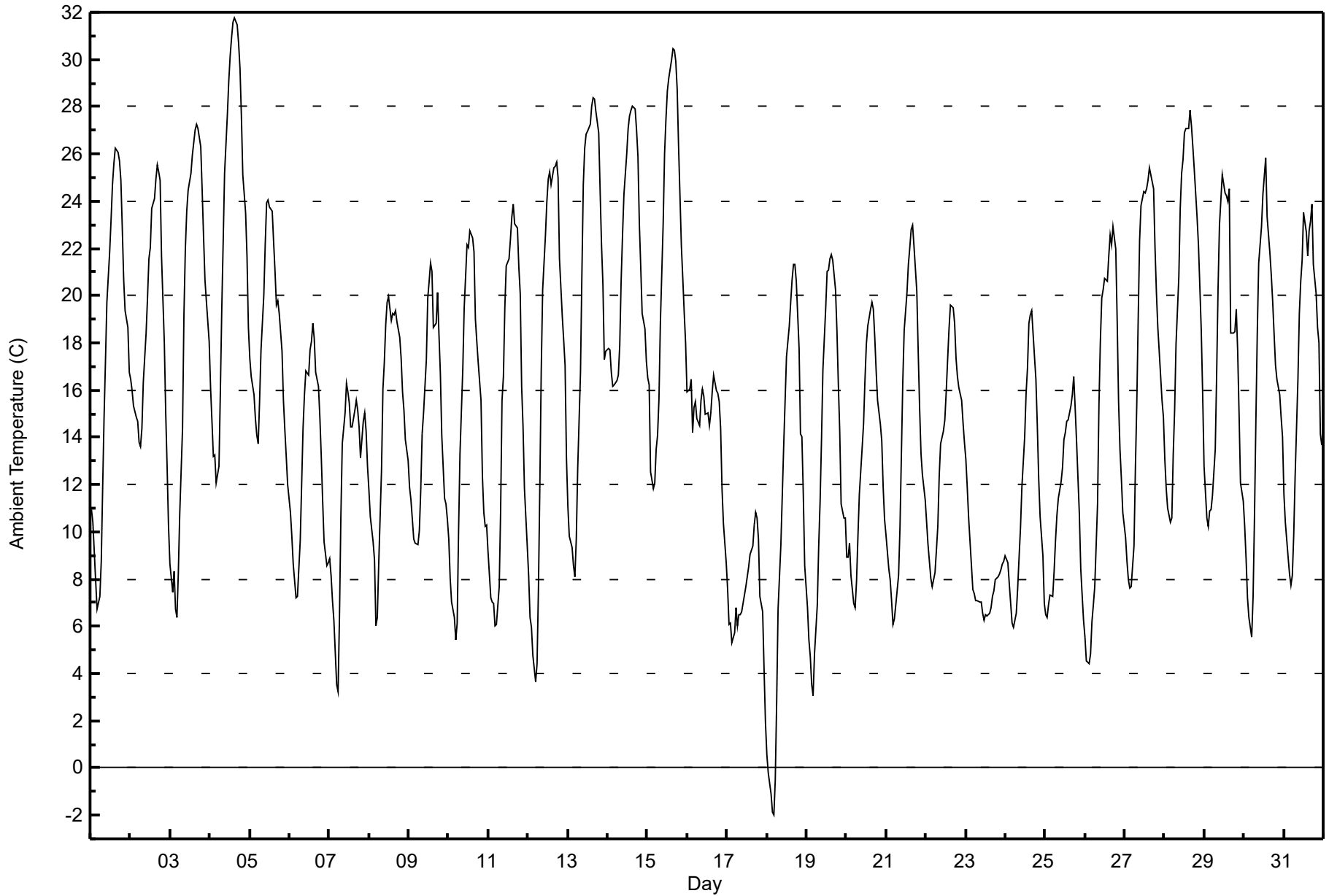
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Ambient Temperature (AT) - C
Janvier - May 2023

Maximum Value: 31.8 C on May 4 16:00 Minimum Value: -2.0 C on May 18 05:00 Maximum Diurnal Average: 21.8 C at hour 16 Monthly Average: 15.53 C		Maximum Daily Average: 23.1 C on May 4 Minimum Daily Average: 7.3 C on May 17 Minimum Diurnal Average: 7.9 C at hour 5 Percentiles: P ₁ = 2.9 P ₁₀ = 7.0 Q ₁ = 9.9 Median = 15.5 Q ₃ = 20.6 P ₉₀ = 24.8 P ₉₉ = 30.1		Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0																																												
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	10.9	10.4	9.2	7.9	6.7	7.2	8.8	11.9	14.8	17.2	19.7	21.9	23.2	24.7	25.6	26.3	26.1	25.7	24.9	22.8	20.7	19.4	18.7	16.8	17.6	26.3																						
2-May	16.5	16.0	15.4	14.9	14.7	13.8	13.6	14.4	16.3	18.4	19.9	21.5	22.0	23.7	24.1	24.9	25.5	25.2	24.9	21.7	18.0	15.0	12.7	10.2	18.5	25.5																						
3-May	8.6	7.4	8.4	6.7	6.4	8.3	10.8	14.4	19.2	22.0	23.6	24.5	25.2	26.0	26.5	27.0	27.3	27.1	26.3	24.5	22.5	20.7	19.8	18.0	18.8	27.3																						
4-May	16.1	14.7	13.2	13.2	12.1	12.8	16.0	19.4	22.3	25.1	27.7	29.1	30.2	30.9	31.6	31.8	31.5	30.7	29.6	27.6	25.1	23.5	21.7	18.6	23.1	31.8																						
5-May	17.4	16.6	15.8	14.8	14.1	13.8	15.6	17.7	20.0	22.1	23.9	24.1	23.8	23.6	22.2	21.0	19.6	19.8	19.3	17.6	15.6	14.3	13.2	12.0	18.2	24.1																						
6-May	10.8	9.8	8.6	7.9	7.2	7.3	9.6	12.0	14.4	15.8	16.8	16.7	17.7	18.1	18.8	18.2	16.7	16.2	14.9	13.2	11.3	9.6	8.6	8.7	12.9	18.8																						
7-May	8.8	8.1	7.1	6.2	3.5	3.2	6.5	10.6	13.7	15.1	16.3	15.9	15.4	14.5	14.4	15.1	15.6	15.2	14.4	13.1	14.7	15.0	14.3	12.8	12.1	16.3																						
8-May	11.8	10.7	9.6	8.8	6.0	6.4	8.7	12.6	16.0	17.2	18.8	19.7	19.9	18.9	19.2	19.2	19.4	18.9	18.2	17.3	15.9	15.2	13.9	13.0	14.8	19.9																						
9-May	11.9	11.3	10.5	9.7	9.5	9.4	10.0	11.8	14.1	15.0	17.3	19.9	20.6	21.4	21.0	18.6	18.8	20.1	18.3	16.7	14.1	11.4	11.2	10.5	14.7	21.4																						
10-May	9.7	8.0	7.0	6.4	5.4	6.2	10.1	13.3	16.9	19.5	20.8	22.2	22.0	22.7	22.4	21.9	19.0	18.0	17.1	15.6	12.4	10.8	10.2	10.3	14.5	22.7																						
11-May	9.2	7.2	7.0	7.0	6.0	6.1	7.7	10.9	15.6	16.6	19.5	21.2	21.6	22.4	23.4	23.9	23.1	22.9	21.2	20.1	16.2	14.4	11.8	9.4	15.2	23.9																						
12-May	8.1	6.4	5.9	4.8	3.6	4.4	7.6	12.0	16.9	20.3	22.6	24.0	24.9	25.2	24.7	25.4	25.5	25.7	25.0	21.6	19.1	18.1	17.0	13.1	16.8	25.7																						
13-May	11.0	9.8	9.3	8.6	8.1	9.7	12.7	16.8	20.9	24.7	26.3	26.8	27.0	27.3	28.0	28.4	28.3	27.8	26.9	24.5	22.1	20.5	17.3	17.6	20.0	28.4																						
14-May	17.8	17.7	16.8	16.2	16.2	16.4	16.6	17.9	20.6	22.6	24.3	26.0	27.0	27.6	27.8	28.0	27.9	27.0	25.9	23.1	21.2	19.3	18.6	17.2	21.7	28.0																						
15-May	16.5	16.2	12.5	11.8	12.0	13.5	14.1	15.6	18.9	23.0	26.0	27.5	28.7	29.2	30.0	30.5	30.4	29.9	28.7	26.3	22.1	20.7	19.3	18.0	21.7	30.5																						
16-May	15.9	16.0	16.5	14.2	15.2	15.5	14.8	14.5	15.6	16.1	15.7	15.0	15.0	14.5	15.1	15.9	16.6	16.0	15.9	15.5	14.4	11.8	10.4	8.7	14.8	16.6																						
17-May	7.6	6.1	6.1	5.3	5.7	6.8	6.0	6.5	6.5	6.6	7.3	7.7	8.1	8.5	9.1	9.4	10.3	10.8	10.6	9.7	7.3	6.6	4.2	1.9	7.3	10.8																						
18-May	0.6	-0.2	-1.1	-1.9	-2.0	-0.5	2.8	6.7	9.4	11.5	13.6	15.5	17.4	18.7	19.7	20.7	21.3	21.3	20.6	17.8	14.2	14.0	11.6	8.6	10.9	21.3																						
19-May	6.8	5.4	4.7	3.6	3.0	4.8	6.9	9.4	11.3	13.9	16.9	19.5	21.0	21.1	21.6	21.8	21.5	20.3	18.5	16.3	14.2	11.2	10.6	10.6	13.1	21.8																						
20-May	8.9	8.9	9.5	8.2	7.0	6.8	7.9	9.8	11.6	13.5	14.5	16.4	17.9	18.7	19.4	19.7	19.4	18.3	16.8	15.6	14.6	13.8	11.9	10.5	13.3	19.7																						
21-May	9.9	8.5	8.0	7.1	6.1	6.3	6.9	8.1	10.2	13.3	16.4	18.5	20.1	21.3	22.0	22.8	23.0	22.1	20.2	17.6	15.2	13.3	12.4	11.4	14.2	23.0																						
22-May	10.4	9.5	8.8	8.0	7.7	8.2	9.2	10.2	12.4	13.8	14.3	14.7	15.9	17.3	18.6	19.6	19.5	18.9	17.4	16.5	16.1	15.5	14.6	13.8	13.8	19.6																						
23-May	13.1	11.9	10.6	8.6	7.6	7.4	7.1	7.0	7.0	6.6	6.3	6.5	6.4	6.6	6.8	7.3	7.5	8.0	8.1	8.2	8.4	8.7	8.8	8.0	13.1	19.4																						
24-May	9.0	8.7	7.8	6.9	6.1	6.0	6.5	7.6	8.9	10.2	11.9	14.0	15.9	17.0	18.8	19.2	19.4	17.4	16.5	14.5	12.2	10.6	9.0	6.9	11.7	19.4																						
25-May	6.5	6.4	6.9	7.3	7.2	8.3	9.6	10.7	11.4	12.2	12.7	13.9	14.2	14.7	14.7	15.3	15.8	16.5	15.3	13.8	10.8	8.5	7.3	6.2	11.1	16.5																						
26-May	5.5	4.5	4.4	4.9	6.2	6.9	7.7	11.2	15.4	18.1	19.9	20.3	20.7	20.6	21.7	22.6	22.1	22.9	22.0	18.9	15.5	13.5	12.2	10.8	14.5	22.9																						
27-May	9.8	8.7	8.0	7.6	7.7	9.4	12.7	15.4	19.0	22.3	23.8	24.4	24.4	24.5	24.9	25.4	24.8	24.5	22.0	20.2	18.7	17.6	15.6	14.8	17.8	25.4																						
28-May	13.1	11.8	11.0	10.4	10.6	13.2	15.2	17.9	20.8	23.7	25.2	25.8	26.9	27.1	27.1	27.8	27.2	26.3	25.3	23.3	22.2	20.4	18.5	15.9	20.3	27.8																						
29-May	12.8	10.6	10.2	10.9	11.0	11.5	13.5	16.7	20.3	23.0	24.1	25.1	24.4	24.2	24.0	24.5	18.4	18.4	18.5	19.4	17.6	15.0	12.1	11.3	17.4	25.1																						
30-May	10.2	8.8	7.2	6.3	5.5	7.2	10.7	14.8	18.5	21.4	22.9	24.3	25.1	25.8	23.4	21.8	20.9	19.7	18.4	17.1	16.5	15.8	14.9	14.0	16.3	25.8																						
31-May	11.6	10.4	8.9	8.2	7.7	8.2	9.9	12.3	16.4	19.2	20.6	21.5	23.5	22.7	21.7	22.8	23.2	23.9	21.3	20.1	18.6	18.0	14.2	13.7	16.6	23.9																						
																								10.9	9.9	9.2	8.4	7.9	8.5	10.2	12.6	15.3	17.4	19.0	20.1	20.8	21.3	21.6	21.8	21.5	21.1	20.1	18.4	16.4	14.9	13.4	12.1	Diurnal Average
																								17.8	17.7	16.8	16.2	16.2	16.4	16.6	19.4	22.3	25.1	27.7	29.1	30.2	30.9	31.6	31.8	31.5	30.7	29.6	27.6	25.1	23.5	21.7	18.6	Diurnal Maximum





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Janvier - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	5	0.67	0.67
0 - 10	183	24.60	25.27
10 - 20	355	47.72	72.98
> 20	201	27.02	100.00

Total Number of Valid Hours: 744

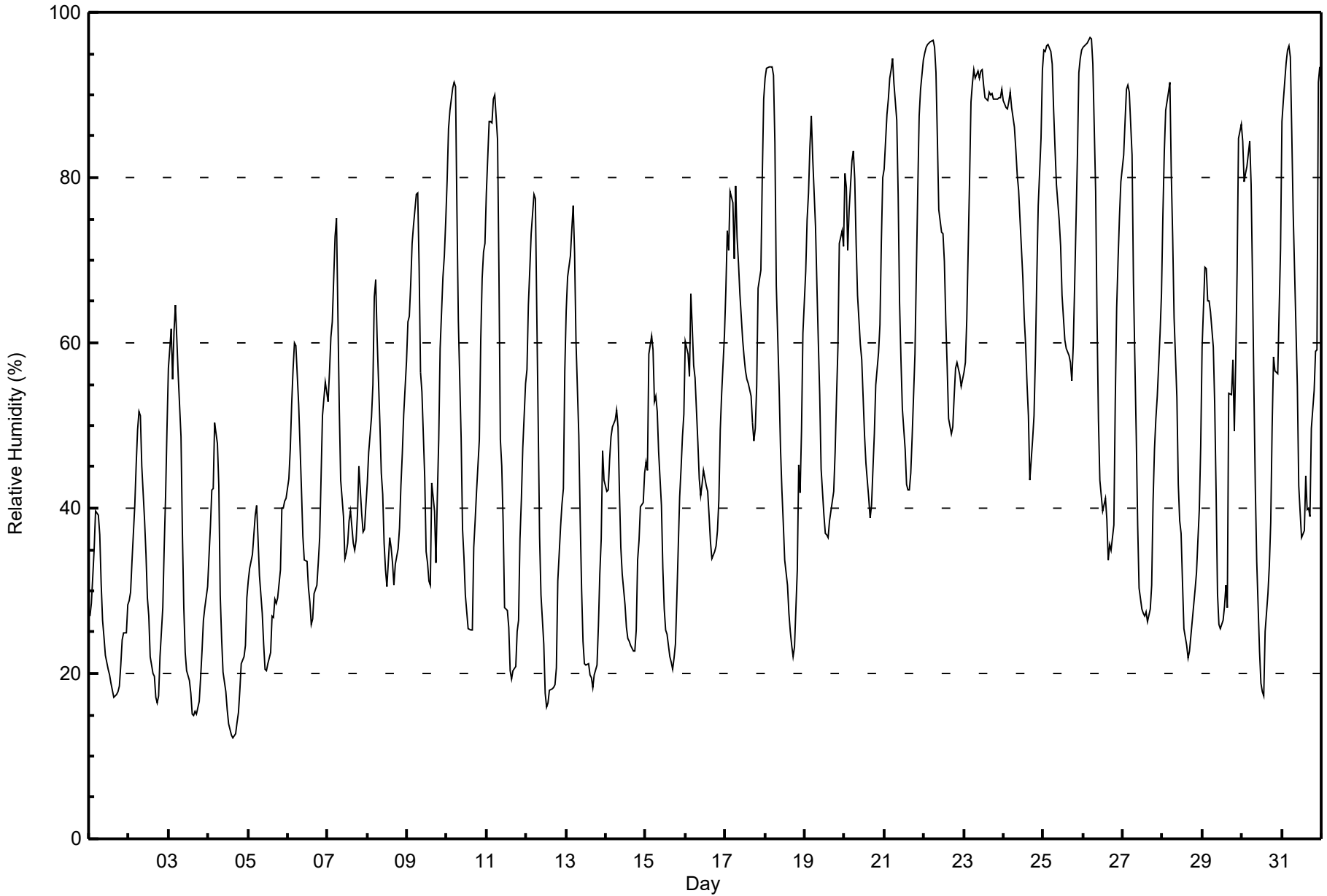
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Janvier - May 2023

Maximum Value: 97.0 % on May 26 05:00 Maximum Daily Average: 86.3 % on May 23 Minimum Value: 12.2 % on May 4 16:00 Minimum Daily Average: 25.5 % on May 4 Maximum Diurnal Average: 75.7 % at hour 5 Minimum Diurnal Average: 32.9 % at hour 16 Monthly Average: 51.88 % Percentiles: P ₁ = 15.1 P ₁₀ = 22.7 Q ₁ = 33.3 Median = 48.7 Q ₃ = 69.3 P ₉₀ = 89.4 P ₉₉ = 96.1																								Hours in Service:	744																								
																								Hours of Data:	744																								
																								Hours of Missing Data:	0																								
																								Hours of Calibration:	0																								
																								Percent Operational Time:	100.0																								
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	26.9	28.4	31.7	35.1	39.7	39.2	36.8	30.9	26.4	24.4	22.2	20.6	19.8	18.8	17.9	17.1	17.4	17.7	18.5	21.1	24.1	25.0	24.9	28.2	25.5	39.7																							
2-May	28.9	29.9	33.6	40.3	45.3	49.4	51.6	51.2	45.1	38.5	34.3	29.2	26.9	22.0	20.0	19.6	17.1	16.5	17.2	22.1	27.9	35.3	41.6	49.7	33.0	51.6																							
3-May	57.0	61.8	55.6	61.4	64.5	60.6	56.0	48.7	37.0	27.9	22.6	20.4	19.1	17.6	15.0	14.9	15.3	15.1	16.6	19.5	22.7	26.4	28.0	30.4	33.9	64.5																							
4-May	34.3	37.8	42.1	42.4	50.3	47.9	42.7	29.5	24.3	20.1	17.8	15.7	13.9	13.3	12.6	12.2	12.7	14.1	15.3	18.0	21.2	22.0	23.5	29.1	25.5	50.3																							
5-May	31.2	32.8	34.4	36.7	39.2	40.3	36.3	31.8	27.3	23.6	20.4	20.3	21.2	22.6	26.9	26.8	29.0	28.5	29.2	32.6	40.0	39.9	40.9	41.1	31.4	41.1																							
6-May	43.5	47.1	52.5	56.8	60.1	59.7	52.5	47.4	42.1	36.6	33.8	33.5	30.4	28.6	25.9	26.7	29.6	30.7	33.3	36.5	43.8	51.1	55.2	54.0	42.1	60.1																							
7-May	52.9	56.5	60.6	62.5	72.9	75.0	63.6	52.0	43.4	39.0	33.8	34.5	35.8	38.5	39.7	35.8	34.9	36.1	39.2	45.1	39.4	37.1	37.5	40.4	46.1	75.0																							
8-May	43.1	46.8	51.0	55.0	65.6	67.7	60.7	50.2	44.2	41.7	35.7	32.6	30.5	36.4	35.3	33.3	30.7	33.2	35.1	37.7	42.7	46.5	51.3	57.8	44.4	67.7																							
9-May	62.5	63.2	67.2	72.1	74.2	78.0	78.1	69.2	56.4	54.0	43.8	34.7	33.4	31.3	30.6	43.0	39.6	33.4	41.3	48.3	59.3	68.0	70.5	74.7	55.3	78.1																							
10-May	79.6	85.9	88.1	90.8	91.5	91.1	76.0	62.7	48.5	37.5	34.1	29.5	27.5	25.3	25.3	25.2	35.3	38.5	42.0	48.4	60.4	67.8	71.0	72.1	56.4	91.5																							
11-May	78.1	86.8	86.8	86.6	89.5	90.0	84.5	68.3	48.3	45.1	38.1	28.0	27.6	25.5	20.3	19.3	20.3	20.9	25.0	26.4	36.3	41.0	47.4	55.1	49.8	90.0																							
12-May	56.8	64.6	68.9	73.3	78.0	77.5	63.6	50.5	36.6	29.6	23.5	17.6	16.0	16.5	18.0	18.1	18.3	18.6	20.7	31.3	37.8	40.5	42.3	56.5	40.6	78.0																							
13-May	63.9	68.0	70.5	73.7	76.7	70.8	60.1	48.7	38.6	30.2	23.8	21.1	21.1	21.2	19.9	19.5	18.4	19.9	21.0	25.7	32.1	36.3	46.9	43.5	40.5	76.7																							
14-May	42.0	42.2	45.9	48.7	49.8	50.6	51.8	49.8	42.1	35.3	32.0	28.3	25.6	24.2	23.9	23.3	22.8	22.8	25.2	33.7	36.1	40.1	40.6	44.3	36.7	51.8																							
15-May	45.7	44.5	58.6	60.9	59.2	52.9	53.5	51.7	46.8	40.3	32.7	27.9	25.3	24.7	22.1	21.3	20.5	21.9	23.5	29.1	41.3	44.7	48.6	51.4	39.5	60.9																							
16-May	60.2	58.7	56.0	65.9	61.9	57.4	55.8	48.0	43.6	41.6	43.0	44.5	42.6	42.0	39.2	35.9	33.9	34.7	35.5	37.2	41.0	49.5	53.9	60.9	47.6	65.9																							
17-May	66.5	73.6	71.2	78.2	76.9	70.2	79.0	72.7	69.7	65.8	60.4	58.3	56.6	55.6	55.0	53.6	50.3	48.2	49.6	54.8	66.6	68.8	80.2	89.5	65.5	89.5																							
18-May	92.1	93.2	93.3	93.4	93.5	92.3	84.2	66.9	54.8	47.3	42.2	38.1	33.8	30.6	27.4	25.0	23.3	22.0	23.3	32.6	45.2	41.9	49.3	61.2	54.5	93.5																							
19-May	68.6	74.9	78.1	83.7	87.5	82.4	74.1	67.0	60.2	53.8	44.7	39.2	36.9	36.7	36.4	38.4	39.7	42.0	46.7	53.4	59.5	72.1	73.5	71.6	59.2	87.5																							
20-May	80.6	78.7	71.1	76.1	82.1	83.2	79.8	72.1	65.8	59.7	58.0	53.3	48.8	45.5	41.1	38.8	40.3	44.7	49.1	54.9	58.8	62.2	72.2	79.9	62.4	83.2																							
21-May	81.0	87.6	89.5	92.1	93.0	94.5	91.4	86.9	77.9	65.0	58.0	52.1	47.1	42.8	42.2	42.2	44.2	48.6	58.6	68.7	78.5	87.5	90.7	94.3	71.4	94.5																							
22-May	95.0	95.7	96.1	96.2	96.4	96.6	95.8	92.7	84.7	76.2	73.5	73.2	69.9	62.8	57.1	50.8	48.9	49.8	53.6	56.9	57.6	56.1	54.8	55.7	72.8	96.6																							
23-May	56.4	57.6	62.9	79.8	89.2	91.4	93.0	92.1	92.8	92.0	92.9	93.0	91.3	89.6	89.4	90.3	90.0	90.2	89.5	89.5	89.5	89.6	89.7	90.7	86.3	93.0																							
24-May	89.3	88.5	88.3	89.2	90.4	88.5	86.1	83.4	80.4	78.5	74.9	68.0	63.0	59.8	55.0	51.2	43.4	48.3	51.3	58.5	68.2	76.7	84.8	93.1	73.3	93.1																							
25-May	95.4	95.2	95.9	96.1	95.3	93.8	88.2	83.6	79.1	74.7	71.7	65.8	63.1	60.3	59.4	58.4	57.6	55.4	59.6	66.9	82.8	92.6	94.4	95.4	78.4	96.1																							
26-May	95.8	95.9	96.4	96.7	97.0	96.8	93.8	78.2	62.7	50.7	43.5	41.5	39.7	41.3	38.6	33.8	35.6	34.9	37.9	52.9	64.2	70.0	75.2	79.5	64.7	97.0																							
27-May	82.6	86.8	90.7	91.2	90.4	82.7	67.2	57.7	48.7	38.0	30.4	27.8	27.2	27.0	27.4	26.2	27.7	30.7	40.8	47.1	50.9	53.5	61.2	66.0	53.3	91.2																							
28-May	75.3	83.1	88.1	90.4	91.6	80.6	72.7	63.0	53.4	42.8	38.5	36.9	31.1	25.4	23.4	21.9	22.8	24.5	26.4	30.2	32.1	36.1	39.9	47.4	49.1	91.6																							
29-May	59.5	69.1	69.0	65.1	65.0	63.8	59.6	52.6	41.9	29.6	25.9	25.4	26.4	28.1	30.6	28.0	53.9	53.8	57.9	49.3	57.8	68.8	84.8	86.5	52.2	86.5																							
30-May	84.4	79.5	80.5	81.3	84.5	79.1	67.5	54.3	42.4	33.6	22.7	18.8	17.8	17.3	25.0	29.7	33.1	38.4	49.9	58.2	56.7	56.3	63.9	71.4	51.9	84.5																							
31-May	86.8	89.3	93.9	95.5	96.0	94.5	85.6	75.9	61.9	54.7	42.7	39.4	36.4	37.3	44.0	39.9	40.0	39.0	49.7	54.2	59.0	59.1	91.5	93.3	65.0	96.0																							
																								65.0	67.9	70.0	73.1	75.7	74.1	69.1	61.0	52.5	46.1	41.0	37.7	35.7	34.5	33.7	32.9	33.8	34.6	38.2	43.3	49.5	53.6	59.0	63.4	Diurnal Average	
																								95.8	95.9	96.4	96.7	97.0	96.8	95.8	92.7	92.8	92.0	92.9	93.0	91.3	89.6	89.4	90.3	90.0	90.2	89.5	89.5	89.5	92.6	94.4	95.4	Diurnal Maximum	





Maximum Speed: 22 km/h on May 22 18:00	Maximum Daily Speed Average: 13.3 km/h on May 1	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 11 06:00	Minimum Daily Speed Average: 0.1 km/h on May 24	Hours of Data: 743
Maximum Diurnal Speed Average: 3.7 km/h at hour 13	Minimum Diurnal Speed Average: 1.8 km/h at hour 9	Hours of Missing Data: 1
Monthly Average Velocity: 2.6 km/h 166.0 deg	Percentiles: $P_1 = 1$ $P_{10} = 3$ $Q_1 = 5$ Median = 8 $Q_3 = 12$ $P_{90} = 15$ $P_{99} = 20$	Percent Operational Time: 99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	S12	S8	S7	SSE6	S8	SSE8	S10	S13	S13	SSE12	SSE13	S18	S21	S21	S20	SSW20	SSW20	S20	S15	S14	S13	S14	SSW13	SW10	S13.3	S21
2-May	SSW13	SW9	WSW8	NW4	NNE6	WNW3	W3	WSW3	WNW3	NNE6	N5	N7	NNE4	N6	WSW3	W6	NW5	NW8	N7	NNE8	NE4	SE4	SW4	S2	NW2.3	SSW13
3-May	S3	SSW7	SSW11	S7	SSW10	SSW11	SSW9	SW8	SSW10	SSW18	SSW17	S17	SSE18	SSE19	S19	S17	SSE17	SSE15	SSE13	SSE12	SSE11	SSE10	SSE11	SSE6	S11.6	S19
4-May	SSE6	SSE5	SSE4	SSE5	SSE4	SE5	SSE5	S7	S11	S10	SE8	SSE12	S17	SSE15	S13	SE10	SSE12	SE14	SE12	SE10	ESE9	SE11	SE9	SE6	SSSE8.7	S17
5-May	SSE6	SSE7	S6	SSE6	SSE7	SSE7	S4	SSE9	SSE9	SE11	SE14	ESE15	ESE18	ESE18	E17	E16	E14	E13	E15	E13	E12	ESE14	ESE15	SE12	ESE10.1	ESE18
6-May	SE12	SE11	SE9	ESE10	ESE10	ESE6	ESE5	ESE8	ESE12	ESE16	ESE16	ESE17	ESE15	E16	ESE15	E18	E21	E19	E17	ESE10	E7	E6	E7	E8	ESE11.7	E21
7-May	ESE10	ESE8	ESE7	ESE6	E3	NE4	NNE4	E5	ESE11	SE12	SE17	ESE16	SSE16	SE11	SSE10	SE14	E7	NNE5	N3	E3	ESE9	ESE10	ESE11	SE12	ESE7.7	SE17
8-May	SE12	SE11	SSE10	SE6	SSE1	N3	N4	NE3	SSE5	SSW12	S12	S15	S16	SSW14	SSW11	S11	SSE12	SSE14	S12	SSE7	SE6	SE3	ESE5	SSW3	SSE7.3	S16
9-May	NE1	NE5	NNE4	NNE3	NNE3	NE3	E2	S4	NNW2	N2	ENE6	ENE8	E12	E9	E7	WNW11	WNW7	NNW5	NNW3	W7	SW5	SW5	WSW5	W2	NNE1.3	E12
10-May	SSW3	S4	SSW5	S2	SSE3	SSW6	SW5	SSW5	S2	ESE2	NNE5	ENE6	N3	NNE5	NE8	NNE4	WNW2	WNW5	W5	WSW6	S5	SSW5	SSW6	SSW5	SSW1.3	NE8
11-May	SW2	SW3	N2	NNE2	NNE3	WNW0	SW2	NW2	ESE3	NE7	NE8	E10	NE11	NE14	E13	E8	ENE9	ENE8	ESE5	ESE7	SE6	SE7	E3	N2	ENE4.3	NE14
12-May	ESE1	WSW3	W1	ENE2	S1	W2	WSW1	SSW2	E1	ENE6	E9	ENE9	ENE10	E10	E4	NE3	ESE4	ESE9	SE4	SE4	SE5	ESE10	SE8	SSE4	ESE3.6	ENE10
13-May	SSE4	SSW5	SSW7	S5	SSW6	SSW8	SW7	SSW7	SW9	SW10	SW19	WSW19	WSW19	WSW16	WSW14	SW15	SW15	SW15	SW13	SSW9	SSW10	SSW10	SSW9	SSW11	SW10.3	WSW19
14-May	SSW12	SSW13	SSW12	SSW12	SSW14	SSW13	SW12	SW14	SW18	SW20	SW19	SW21	SSW20	WSW17	WSW15	WSW13	WSW12	SW10	SW9	SSW8	SSW11	SSW9	SSW10	SSW10	SSW13.0	SW21
15-May	SSW11	SSW10	SW3	SSW9	SSW12	SSW12	SSW12	SSW11	SW10	SW10	SW13	SSW10	SSW11	WSW10	SW11	SSW12	SSW13	SW12	SW11	SW8	SSW7	S8	S8	S7	SSW9.6	SSW13
16-May	SSW8	SW9	SW7	WNW2	N9	N8	NW10	NW15	NNW16	NNW19	NNW17	NNW16	NNW19	NW21	NNW16	NW18	NW16	NNW15	NW14	NW14	N10	NNE12	N9	NNW7	NNW11.0	NW21
17-May	NNW6	NNW6	NW6	WSW4	W3	N13	NNE13	NNE14	N15	N13	N13	NNE12	N12	N12	NNE14	NE17	NE14	NE13	NE10	ENE6	ENE6	E6	NE2	NNE2	NNE8.3	NE17
18-May	W2	SW1	S1	S2	S3	SSW5	SW5	SW5	WSW8	SW6	SSW6	SSW6	S6	S8	S7	S7	SSW7	SW7	SSW6	S6	SSW8	SSW11	SSW9	S7	SSW5.5	SSW11
19-May	S5	SSW5	SSW5	S5	S5	SSW6	SSW4	SSW4	SW4	WSW2	SSW7	WSW5	SW9	SW12	W8	NW6	NW6	NW6	N6	N6	N6	N5	NNE5	NNE5	WSW2.2	SW12
20-May	N4	N7	N8	NNE5	NNE5	NNE5	NNE7	NNE7	NNE7	ENE7	NE7	ENE8	E8	ENE9	ENE10	ENE9	E8	ESE7	ESE9	ESE9	ESE8	ESE5	ESE5	ESE4	ENE5.6	ENE10
21-May	SE4	NNE5	ESE2	ESE3	NNE3	NE3	NNW1	NNW2	N2	W1	SE5	SE5	SSE7	S7	S7	S5	ESE4	ENE5	E4	E5	E2	S2	ESE3	UO	ESE2.3	S7
22-May	SE2	NNE3	SSE0	SW1	ESE0	NNW1	NNE2	NNE6	NNE8	NNE10	NNE8	NNE6	NNE8	NNE10	NNE14	NE19	NE18	NE22	ENE17	NE13	NE18	ENE19	ENE19	ENE16	NE9.5	NE22
23-May	ENE18	ENE16	ENE16	ENE13	NE11	ENE12	ENE12	E13	ENE12	E14	E12	E11	ESE13	ESE15	ESE13	ESE14	ESE10	E9	E10	E9	E7	E6	E5	ENE5	E11.0	ENE18
24-May	E6	E7	E9	ESE9	ESE10	ESE10	ESE6	SE5	SSE5	SSE3	SSW7	SW5	ESE2	E7	ENE6	W9	WNW15	WNW14	NW10	NW8	NW6	WNW8	WNW5	W4	SW0.1	WNW15
25-May	W7	NNW2	S1	SSW3	SW5	S2	NNW3	NNW5	N6	N5	NNE5	NNE7	NNE6	NNE7	NE6	ESE6	E6	ESE6	SE7	SE5	SE5	SSE6	S2	S3	ENE1.5	NNE7
26-May	SSE3	SSW4	SSW5	SSW7	SSW7	SSW5	SSW8	SSW8	SSW6	SW9	WSW8	SW9	SSW6	SSW4	W4	WSW7	SW8	SW8	S6	SSE6	SE8	SSE7	S5	SSW5	SSW5.6	SW9
27-May	S5	S5	SSW5	SSW6	SSW7	SSW7	SSW6	WSW5	SW4	SSW9	S13	SSE13	SSE13	SSE15	SSE14	S11	SSW12	S11	SSE12	SE7	SSE8	SSW12	SSW10	SSW10	S8.5	SSE15
28-May	SSW9	SSW6	SSW7	S6	SSW7	SSW7	SW8	SW9	SSW9	SW10	WSW12	SW12	WSW14	W15	WSW13	WSW14	WSW14	W13	WNW14	WNW11	WNW11	WNW10	WNW11	W7	WSW8.8	W15
29-May	WSW7	SSW8	SSW9	SSW11	SW11	SSW11	SW10	SW8	SW9	W12	WNW15	W13	W14	W10	WSW10	WSW14	WNW17	SW8	S9	SSW11	SSW11	SW6	SSW8	SSW8	SW8.9	WNW17
30-May	SSW9	SSW8	SSW9	SSW7	S3	SSW5	SW4	WNW1	NE5	NE8	E8	E6	ESE5	E5	S10	S9	SSE11	SE6	NNE2	N2	N5	SW4	SSE8	SSE1	SSE3.1	SSE11
31-May	SW4	SW1	SSW4	S4	SW5	SW5	SSW5	WSW2	ENE2	E6	NE9	NNE10	ESE8	S4	W4	NNE3	NE5	NE5	NNE6	NNE7	NNE8	WNW3	ENE4	NNW7	NE1.3	NNE10

S3.7	S3.1	S3.1	S3.2	S2.6	S2.4	SSW2.1	SSW2.0	S1.8	S2.2	SSE2.4	SSE3.3	SSE3.7	SSE3.1	SSE3.2	S2.3	S1.9	SSE1.9	SE2.3	SE2.5	SE3.1	SSE3.5	SSE3.3	S2.5	Diurnal Average	
ENE18	ENE16	ENE16	ENE13	SSW14	N13	NNE13	NW15	SW18	SW20	SW19	SW21	S21	S21	S20	SSW20	E21	NE22	ENE17	S14	NE18	ENE19	ENE19	ENE16	Diurnal Maximum	

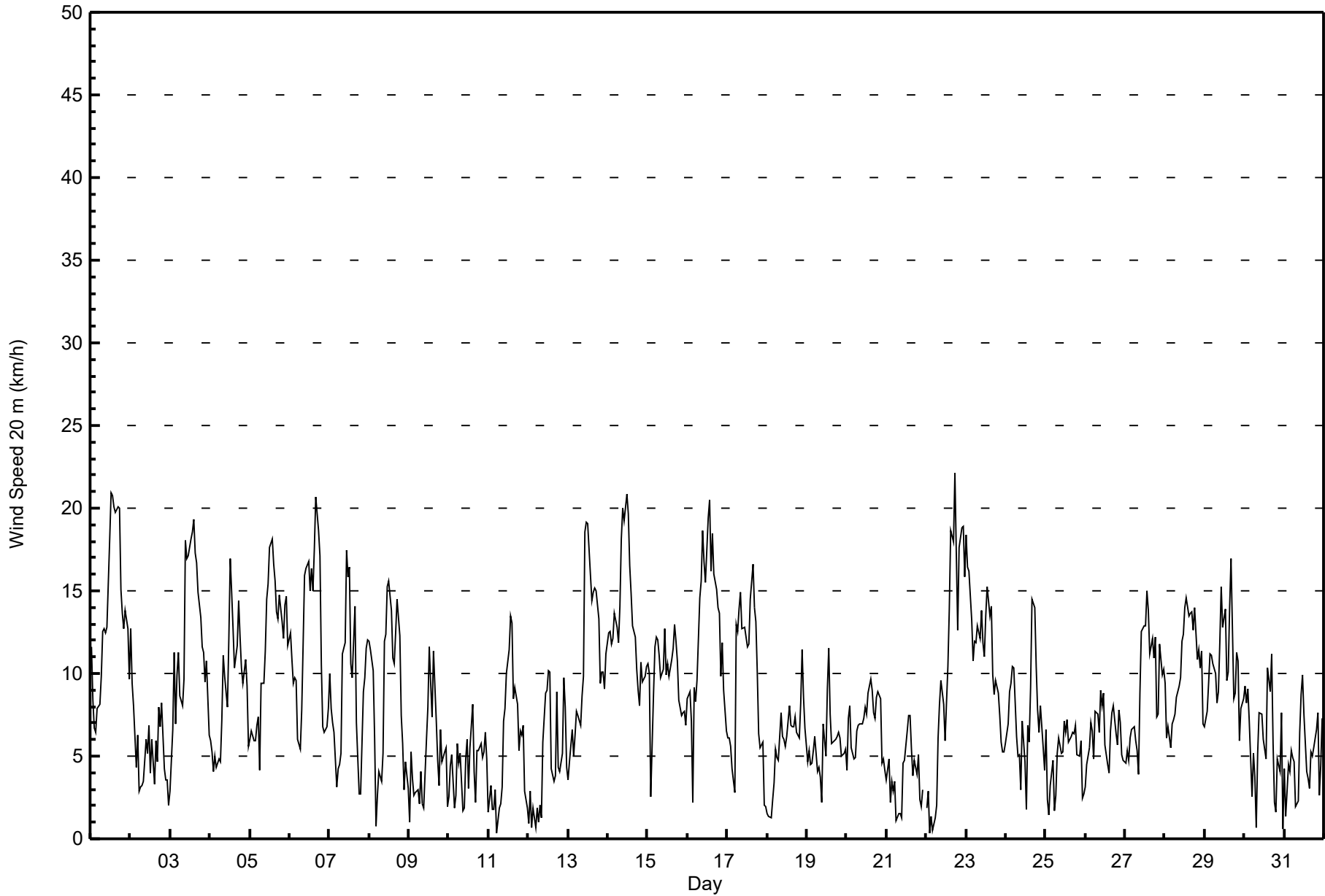
UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed 20 m (WS20m) - km/h
Janvier - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 10 km/h on May 29 17:00 Minimum Value: 1 km/h on May 18 04:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7																		Hours in Service: 744 Hours of Data: 743 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9								
Day	Hourly Period Ending At (MST)																								Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	3	3	2	1	2	2	3	3	5	3	4	6	6	6	7	6	6	5	4	4	4	3	3	2	7	
2-May	3	3	2	2	3	1	2	2	2	2	2	3	3	4	4	4	3	3	3	3	2	2	2	2	4	
3-May	1	2	3	3	2	2	2	2	3	5	6	5	6	5	6	5	5	5	5	4	3	3	3	2	6	
4-May	2	2	1	2	2	2	2	4	3	3	3	5	5	5	4	5	5	5	4	3	2	3	3	2	5	
5-May	2	2	2	2	2	3	2	3	4	4	5	5	6	7	5	6	4	5	5	4	4	4	5	4	7	
6-May	4	4	3	2	3	2	2	3	4	5	5	5	5	5	6	6	7	6	6	3	1	1	2	2	7	
7-May	3	3	4	4	2	1	1	2	4	4	6	5	5	4	5	5	3	2	2	2	2	3	4	3	6	
8-May	4	3	3	3	2	1	1	2	2	6	5	5	6	4	5	4	5	4	4	3	1	2	2	2	6	
9-May	1	2	1	1	1	1	1	2	2	1	2	3	3	4	3	4	3	3	2	2	1	1	1	2	4	
10-May	2	1	2	1	1	3	2	1	1	2	3	3	3	4	3	3	3	2	2	2	1	1	1	1	4	
11-May	1	1	1	1	1	1	2	2	2	2	3	3	4	4	4	4	4	3	1	2	1	1	2	1	4	
12-May	1	2	2	1	1	1	1	1	2	2	3	4	5	4	3	3	3	3	3	1	2	2	3	1	5	
13-May	1	1	1	1	1	1	2	2	3	5	6	6	6	5	5	5	5	5	5	2	2	1	1	2	6	
14-May	3	3	2	2	3	3	3	5	6	7	6	7	7	6	6	4	4	3	2	1	2	2	2	2	7	
15-May	2	2	2	2	2	2	3	3	3	3	4	5	5	5	4	4	5	4	3	3	1	2	2	2	5	
16-May	1	3	2	2	4	4	5	6	6	7	6	7	8	9	6	8	7	6	6	6	4	4	3	3	9	
17-May	2	2	3	1	1	5	4	5	6	5	4	5	4	4	5	4	5	4	3	2	1	2	2	1	6	
18-May	1	1	1	1	1	1	1	2	2	3	4	3	4	4	4	3	3	3	2	2	2	3	1	1	4	
19-May	1	1	1	1	1	1	2	1	1	1	5	3	4	4	3	3	2	2	2	2	2	1	1	1	5	
20-May	1	2	2	2	1	1	1	2	2	2	2	2	3	3	3	3	2	2	2	2	3	3	1	1	3	
21-May	2	2	1	1	1	1	1	1	1	1	2	2	3	3	3	2	1	1	1	1	2	1	1	UO	3	
22-May	2	1	1	2	1	1	1	2	2	2	3	2	2	3	4	6	5	6	6	4	6	6	6	5	6	
23-May	6	5	5	4	3	4	4	5	4	5	5	4	5	5	5	4	4	3	4	3	3	2	2	1	6	
24-May	2	2	2	2	2	3	2	2	2	1	2	3	3	2	2	7	5	6	4	3	2	2	2	1	7	
25-May	2	2	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	2	
26-May	1	2	1	2	1	1	2	2	2	3	3	4	3	3	5	3	3	3	2	1	1	1	1	1	5	
27-May	2	1	1	1	1	2	2	2	2	5	5	5	6	6	5	5	4	4	5	2	3	3	2	2	6	
28-May	2	1	1	1	2	2	3	3	3	3	4	4	5	5	5	5	4	5	5	4	3	3	3	1	5	
29-May	1	2	2	2	3	2	3	2	3	4	5	5	5	4	4	5	10	3	2	3	2	3	1	2	10	
30-May	1	1	1	1	1	1	1	1	2	3	3	3	3	3	4	3	4	2	1	1	2	3	5	3	5	
31-May	2	2	1	2	2	1	1	1	1	2	4	4	3	2	3	2	2	2	1	1	2	4	4	6	6	
																		Diurnal Maximum								
UO - Unstable Operation																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed 20 m (WS20m) - km/h
Janvier - May 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	227	30.55	30.55
6 - 11	326	43.88	74.43
12 - 19	178	23.96	98.38
20 - 28	12	1.62	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h
Janvier - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	14	24	12	5	12	17	13	15	28	23	22	11	10	9	3	9	227
6 - 11	13	20	10	16	28	29	20	24	28	72	31	8	7	7	8	5	326
12 - 19	5	7	8	13	14	16	10	19	18	19	13	14	5	5	5	7	178
20 - 28	0	0	1	0	1	0	0	0	4	2	3	0	0	0	1	0	12
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	32	51	31	34	55	62	43	58	78	116	69	33	22	21	17	21	743

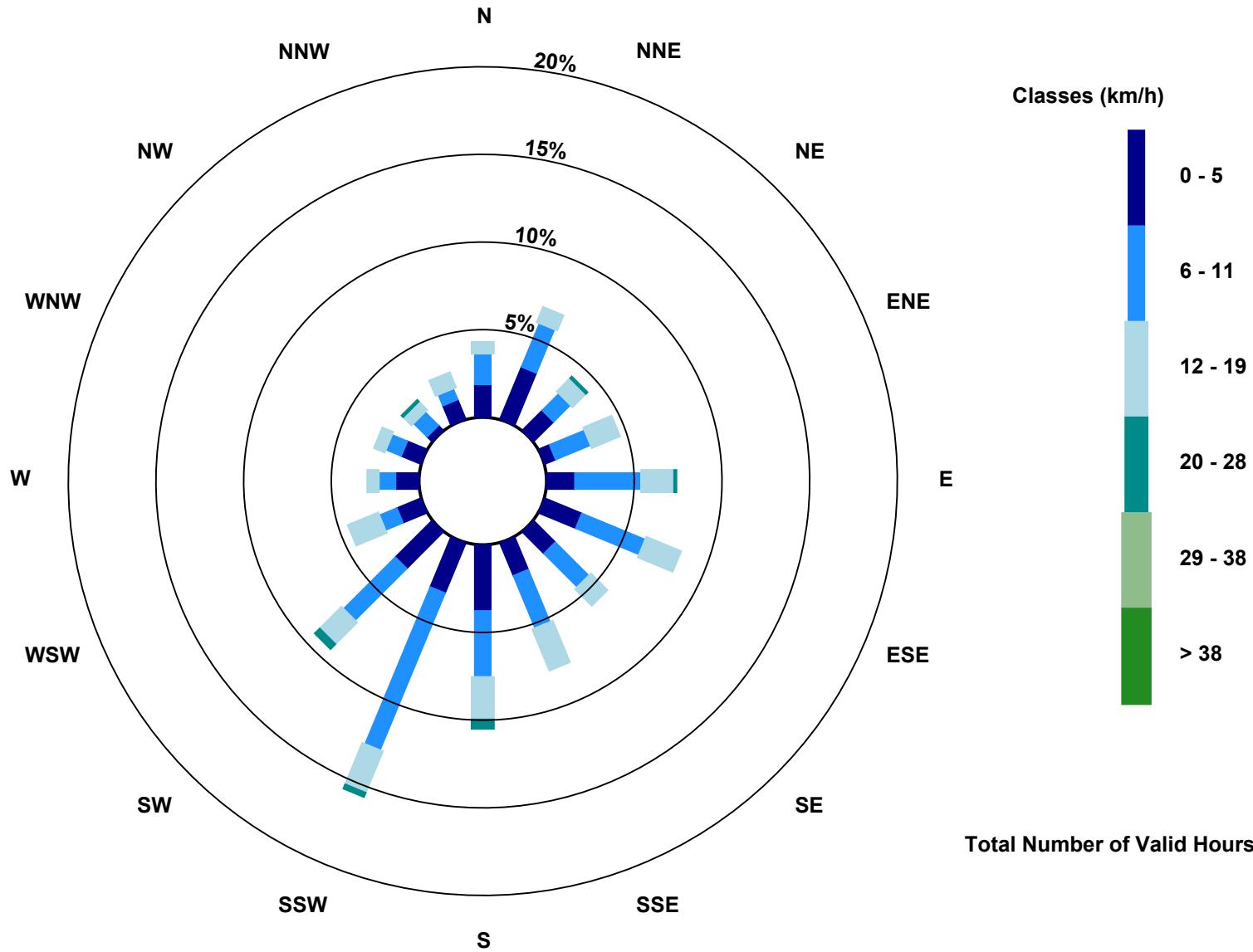
Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed 20 m (WS20m) - km/h
Janvier





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction 20 m (WD20m) - deg
Janvier - May 2023

Direction of Maximum Speed: 48 deg on May 22 18:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 183.4 deg on May 1	Hours of Data: 743
Direction of Minimum Speed: 288 deg on May 11 06:00	Hours of Missing Data: 1
Direction of Minimum Daily Speed Average: 0.1 deg on May 24	Percent Operational Time: 99.9
Monthly Average Direction: 166.0 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	182	181	173	166	172	158	175	182	181	163	164	184	185	184	184	202	203	189	179	175	169	185	201	217	183.4
2-May	208	226	249	319	17	301	272	249	301	12	1	1	17	10	254	267	305	304	351	21	47	132	227	189	308.5
3-May	169	198	203	187	207	205	209	223	201	195	194	178	165	165	175	191	165	154	156	159	160	164	165	157	179.4
4-May	154	148	149	168	152	143	150	172	178	180	137	159	185	163	173	145	163	138	140	116	129	133	140	153.7	
5-May	163	160	169	151	164	164	176	165	167	143	130	120	113	104	92	83	83	79	86	93	94	107	120	130	117.0
6-May	132	135	126	119	116	120	119	115	103	123	107	112	119	98	104	87	80	90	97	103	91	95	88	99	105.9
7-May	112	105	108	111	91	34	18	98	111	132	144	121	151	141	156	124	81	22	7	89	109	110	122	132	118.7
8-May	140	141	148	141	162	5	9	35	147	193	180	178	183	207	193	174	151	166	170	161	146	132	114	194	166.1
9-May	42	50	17	22	18	47	91	176	343	2	64	66	81	100	94	298	302	330	346	273	230	227	249	276	22.9
10-May	198	182	195	177	152	206	214	197	173	108	28	75	1	31	40	18	290	290	267	238	179	201	204	202	201.5
11-May	232	234	11	19	20	288	215	324	106	53	37	79	41	49	79	83	74	78	111	102	132	139	79	6	72.9
12-May	106	242	275	58	177	264	237	196	81	75	95	71	73	86	90	43	108	122	125	141	141	117	134	159	105.9
13-May	164	199	201	188	197	207	214	207	224	234	223	238	257	248	241	233	230	235	226	209	196	203	204	205	223.6
14-May	208	207	204	209	210	213	219	224	226	231	233	222	234	249	245	251	246	226	217	205	206	210	211	207	223.2
15-May	203	210	214	204	207	208	210	216	222	228	236	213	200	237	218	206	208	215	229	223	198	182	179	190	211.7
16-May	206	215	234	282	351	355	323	322	334	332	342	335	329	321	329	322	326	327	318	315	351	13	1	332	327.4
17-May	341	334	326	243	275	2	17	12	5	6	11	13	6	8	20	38	38	40	40	75	70	84	47	30	17.9
18-May	273	219	176	170	181	204	215	227	237	232	197	208	177	190	188	173	203	215	196	184	194	199	200	188	200.3
19-May	180	192	193	186	187	196	201	201	218	241	210	256	225	232	278	316	326	313	360	8	4	7	16	18	253.5
20-May	358	3	11	12	20	29	27	19	30	70	35	75	80	77	66	67	86	113	104	105	104	107	103	113	63.3
21-May	139	20	104	118	24	51	332	338	356	274	129	140	154	174	171	182	114	77	82	95	98	181	121	UO	122.8
22-May	144	29	167	219	103	334	25	13	30	28	22	31	28	33	33	48	48	48	60	53	55	62	63	63	47.1
23-May	65	73	65	61	55	60	66	79	76	79	83	83	102	112	111	106	103	93	101	98	101	91	86	59	83.0
24-May	84	96	98	112	113	122	115	125	165	167	208	223	107	89	67	277	282	298	314	319	308	296	299	267	223.4
25-May	259	341	189	201	224	175	333	344	357	9	16	28	19	28	53	103	95	113	126	136	142	151	186	176	72.3
26-May	157	200	199	206	198	198	208	198	201	224	237	234	210	200	259	237	235	222	188	157	145	158	172	198	203.9
27-May	185	171	193	199	193	209	213	239	225	202	178	165	168	165	164	174	192	184	148	132	163	193	198	208	181.6
28-May	199	212	207	186	192	208	220	227	212	224	247	220	246	260	248	240	241	275	285	283	300	294	290	273	246.3
29-May	247	200	201	209	215	209	221	232	223	259	284	279	274	259	237	247	286	232	189	196	196	215	207	207	234.4
30-May	207	205	198	192	179	202	229	303	42	48	86	95	108	83	181	184	163	132	25	3	6	214	156	154	160.3
31-May	235	217	199	172	224	228	208	244	74	94	42	33	109	187	264	25	51	37	16	21	17	298	69	348	42.8

174.3 174.2 176.2 169.5 178.6 187.1 205.8 206.8 185.7 177.1 165.8 154.3 164.0 157.2 161.3 173.9 171.8 151.6 137.1 137.6 132.4 151.4 155.3 171.6
 Diurnal Average

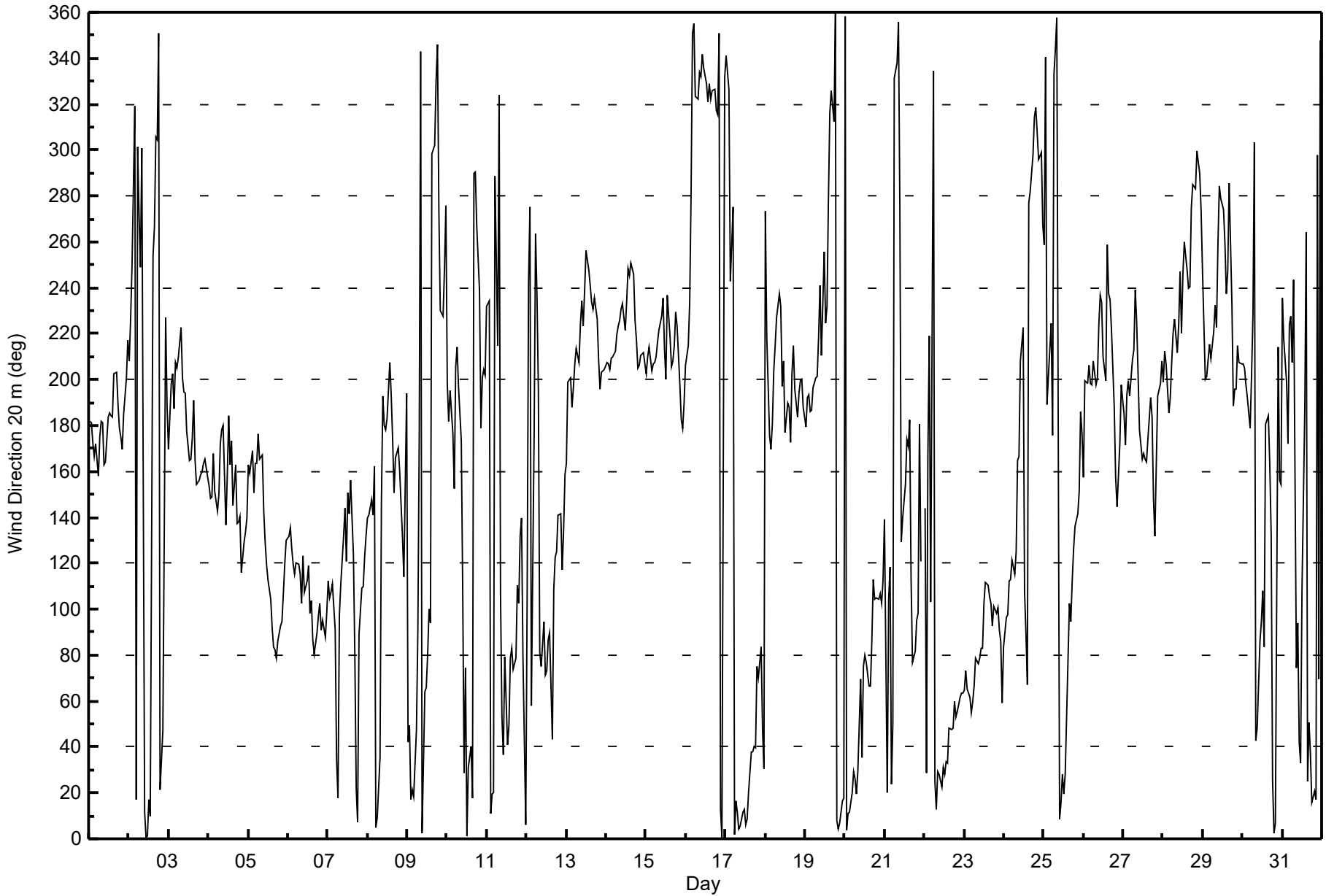
UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction 20 m (WD20m) - deg
Janvier - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 99 deg on May 30 08:00 Minimum Value: 8 deg on May 13 23:00 Percentiles: P ₁ = 10 P ₁₀ = 15 Q ₁ = 20 Median = 27 Q ₃ = 37 P ₉₀ = 60 P ₉₉ = 90																			Hours in Service: 744 Hours of Data: 743 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9						
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	18	19	18	15	13	19	20	18	24	25	30	27	26	24	25	25	26	20	19	17	17	17	16	17	30
2-May	15	19	25	42	42	65	68	64	67	40	52	57	72	67	88	71	77	51	37	17	28	63	30	43	88
3-May	21	19	10	15	9	10	16	24	25	25	28	32	28	28	30	26	28	26	24	23	21	19	20	21	32
4-May	21	24	36	19	29	21	29	33	25	35	53	39	27	30	38	42	37	27	24	20	17	20	19	23	53
5-May	23	23	22	27	22	24	49	28	29	29	31	32	28	28	24	22	21	22	22	20	22	20	21	24	49
6-May	20	21	19	17	16	28	33	30	26	28	30	26	33	26	36	25	21	22	22	18	17	13	13	15	36
7-May	20	21	25	44	44	22	18	51	32	33	30	27	29	28	39	24	33	24	52	67	17	18	20	21	67
8-May	21	19	19	42	88	38	19	48	55	36	34	31	35	21	40	27	26	24	24	23	18	48	47	46	88
9-May	88	19	30	25	39	50	54	34	78	75	34	36	26	43	35	24	26	59	54	21	29	16	22	60	88
10-May	49	19	22	62	44	16	29	25	88	80	73	65	86	71	43	60	99	38	27	21	21	15	10	9	99
11-May	63	24	44	63	40	87	61	57	96	27	45	31	25	33	30	42	34	24	21	20	13	16	60	32	96
12-May	74	21	98	61	78	72	77	59	98	40	32	37	45	42	68	90	61	29	44	30	40	13	24	16	98
13-May	25	15	10	12	12	13	17	27	32	39	32	34	29	34	34	38	34	28	24	19	13	10	8	10	39
14-May	15	15	14	16	18	19	23	22	26	25	28	25	29	30	29	29	27	26	20	11	11	13	13	13	30
15-May	12	23	86	13	12	15	17	20	24	28	32	49	46	49	38	32	30	34	30	25	13	18	17	22	86
16-May	10	35	30	56	30	34	37	33	38	34	37	38	37	34	35	35	41	35	34	30	37	22	26	33	56
17-May	30	27	37	24	48	31	24	27	29	30	30	33	31	29	24	17	28	23	21	27	14	21	55	60	60
18-May	30	49	57	34	24	14	26	46	41	56	66	72	71	46	65	56	68	33	32	18	14	16	12	10	72
19-May	10	13	12	14	10	10	21	34	33	69	66	64	40	30	31	36	33	27	29	17	22	17	13	14	69
20-May	21	17	19	21	12	15	15	18	20	29	23	29	35	28	23	24	26	20	19	19	20	29	15	21	35
21-May	33	29	50	16	38	34	55	57	80	86	39	58	41	32	36	40	47	17	19	13	46	47	20	UO	86
22-May	61	40	91	75	83	69	50	17	16	16	20	20	18	16	17	17	16	16	20	21	20	22	22	23	91
23-May	22	24	23	21	20	20	23	26	27	27	29	24	26	23	24	24	30	26	24	26	29	27	28	20	30
24-May	25	23	20	17	16	17	32	32	37	67	34	74	99	35	39	64	28	27	28	32	23	19	22	31	99
25-May	15	54	73	17	22	57	46	35	34	37	39	27	29	25	34	22	27	32	17	17	9	12	48	36	73
26-May	21	27	15	15	16	25	18	21	36	32	46	44	52	62	90	50	37	32	35	19	11	13	25	22	90
27-May	14	15	18	13	11	13	31	28	59	49	40	35	38	32	31	28	27	28	27	21	22	17	14	15	59
28-May	12	13	15	16	19	20	25	32	30	32	34	29	34	28	32	33	29	39	21	20	20	17	18	18	39
29-May	15	14	10	14	18	18	22	25	25	37	32	36	29	35	31	32	36	26	16	21	16	30	11	14	37
30-May	11	13	9	10	58	14	27	99	31	38	39	48	62	63	26	26	26	23	55	51	33	67	43	89	99
31-May	50	90	26	35	33	29	22	54	52	27	38	28	39	68	80	66	26	20	18	13	16	73	75	59	90
Diurnal Maximum																									
UO - Unstable Operation																									





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS23 FORT HILLS MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT HILLS (AMS23)
MAY 2023

MONTHLY SUMMARY for
AMD SECTION III.B.1(c)

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2(ppb) Average	702	31	42	98.52	28.5	0	6.6	0
TRS(ppb) Average	699	36	45	98.79	1.6	0	0.8	0
THC(ppm) Average	687	32	57	96.64	7.4	-	2.7	-
NMHC(ppm) Average	687	32	57	96.64	1.446	-	0.337	-
CH4(ppm) Average	687	32	57	96.64	6	-	2.4	-
NO2 (ppb) Average	703	34	41	99.06	46.1	0	19.9	-
NO (ppb) Average	703	34	41	99.06	139.7	-	15.4	-
NOX (ppb) Average	703	34	41	99.06	175.1	-	30.9	-
PM2.5 (ug/m3) Average	729	2	15	98.25	504.5	115	328.8	19
Temperature 2 m (C) Average	742	0	2	99.73	31.8	-	23	-
Relative Humidity (%) Average	742	0	2	99.73	96.2	-	76.8	-
Wind Speed 10 m (km/h) Average	742	0	2	99.73	35	-	23	-
Wind Direction 10 m (deg) Average	742	0	2	99.73	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT HILLS (AMS23)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	702	1.08	2.6	-	0	0	0.1	0.2	0.7	2.5	28.5
TRS (ppb) Average	699	0.27	0.2	-	0	0.1	0.1	0.2	0.3	0.6	1.6
THC (ppm) Average	687	2.32	0.6	-	1.9	2	2	2.1	2.4	2.8	7.4
NMHC(ppm) Average	687	0.182	0.226	-	0	0	0	0.1	0.3	0.5	1.446
CH4(ppm) Average	687	2.14	0.4	-	1.9	1.9	2	2	2.2	2.4	6
NO2 (ppb) Average	703	11.22	11.1	-	0	1.3	2.7	6.7	16.7	29.2	46.1
NO (ppb) Average	703	6.42	16.9	-	0	0	0.1	0.7	3.5	18	139.7
NOX (ppb) Average	703	17.64	25.4	-	0	1.4	3	7.2	20.9	47.8	175.1
PM2.5 (ug/m3) Average	729	50.32	72.8	-	1.8	7.3	12.5	24.2	45.9	137.4	504.5
Temperature 2 m (C) Average	742	16.96	5.6	-	4.3	10	12.5	16.6	21	24.8	31.8
Relative Humidity (%) Average	742	46.88	19	-	14.9	23.2	31.3	44.3	60.4	74.6	96.2
Wind Speed 10 m (km/h) Average	742	12.7	7	-	0	4	7	11	17	25	35
Wind Direction 10 m (deg) Average	742	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT HILLS (AMS23)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	29 May 2023 11:00	29 May 2023 11:00	1	Maintenance - station logger/modem reset
ALL PARAMETERS	24 May 2023 23:00	24 May 2023 23:00	1	Station power failure
TRS,THC/NMHC/CH4,PM2.5	23 May 2023 04:00	23 May 2023 04:00	1	Station power failure
SO2, TRS	07 May 2023 05:00	07 May 2023 06:00	2	Station power failure
TRS,THC/NMHC/CH4, NO2	06 May 2023 23:00	07 May 2023 01:00	3	Station power failure
SO2	06 May 2023 23:00	07 May 2023 02:00	4	Station power failure
SO2	10 May 2023 10:00	10 May 2023 10:00	1	DAS Failure
SO2	23 May 2023 04:00	23 May 2023 05:00	2	Station power failure
THC/NMHC/CH4	06 May 2023 13:00	06 May 2023 22:00	10	DAS Failure - data not recorded
THC/NMHC/CH4	07 May 2023 03:00	07 May 2023 05:00	3	DAS Failure - data not recorded
THC/NMHC/CH4	07 May 2023 06:00	07 May 2023 09:00	4	Station power failure
THC/NMHC/CH4	07 May 2023 12:00	07 May 2023 12:00	1	DAS Failure - data not recorded
NO2, TRS	10 May 2023 12:00	10 May 2023 12:00	1	Maintenance - sample manifold cleaned
NO2	07 May 2023 05:00	07 May 2023 05:00	1	Station power failure
PM2.5	06 May 2023 23:00	07 May 2023 00:00	2	Station power failure
PM2.5	07 May 2023 05:00	07 May 2023 12:00	8	Station power failure
All Meterological Sensors	23 May 2023 04:00	23 May 2023 04:00	1	Power Failure



Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO₂) - ppb

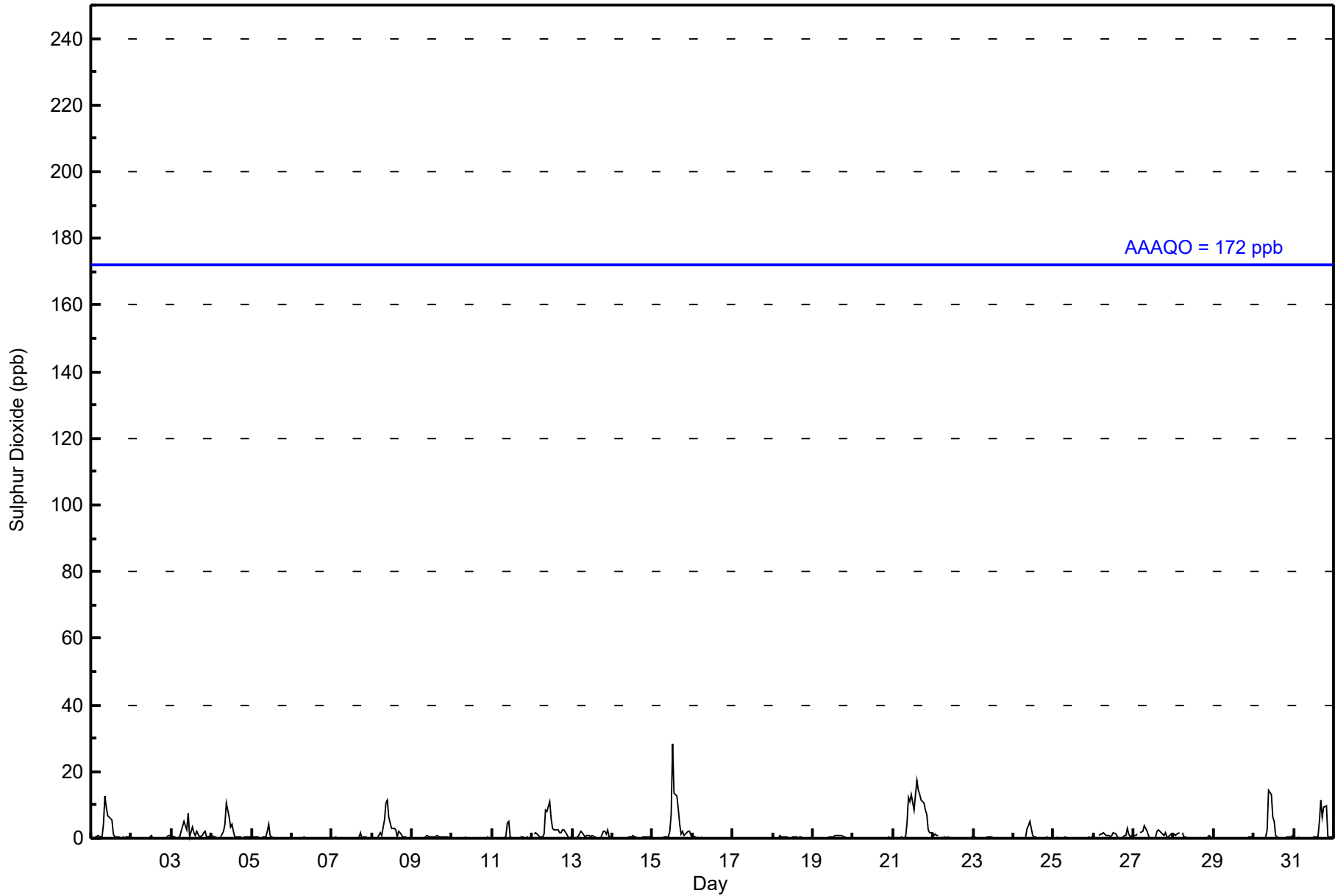
Fort Hills - May 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 744																	744																												
Maximum Value: 28.5 ppb on May 15 13:00		Maximum Daily Average: 6.6 ppb on May 21																	Hours of Data: 702																														
Minimum Value: 0.0 ppb on May 2 18:00		Minimum Daily Average: 0.0 ppb on May 17																	Hours of Missing Data: 42																														
Maximum Diurnal Average: 2.9 ppb at hour 11		Minimum Diurnal Average: 0.3 ppb at hour 4																	Hours of Calibration: 31																														
Monthly Average: 1.08 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.7 P ₉₀ = 2.5 P ₉₉ = 13.1																	Percent Operational Time: 98.5																														
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	0.1	Z	0.5	0.2	0.7	0.5	0.3	4.3	12.5	9.4	7.0	6.0	5.4	1.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.1	2.2	12.5																							
2-May	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.2	0.0	0.1	0.2	0.4	0.9	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.4	0.8	0.8	0.2	0.9																							
3-May	0.9	0.6	0.5	Z	0.4	0.6	2.1	4.9	3.7	2.5	7.4	0.6	3.4	1.6	1.0	2.0	1.3	0.4	0.9	1.7	2.0	0.5	0.5	0.8	1.8	7.4																							
4-May	0.7	0.4	0.4	0.3	Z	0.3	1.3	2.3	4.1	10.7	6.4	3.2	4.2	1.9	0.6	0.4	0.3	0.2	0.2	0.2	0.3	0.3	0.4	0.4	1.7	10.7																							
5-May	0.5	0.4	0.5	0.5	0.2	Z	0.1	0.3	0.6	2.0	4.2	1.0	0.3	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.5	4.2																							
6-May	Z	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	PF	PF	0.1	0.3																						
7-May	PF	PF	0.5	0.4	PF	PF	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	1.5	0.2	0.3	0.2	0.2	0.2	0.1	0.2	1.5																							
8-May	0.1	0.5	Z	0.2	1.0	1.6	0.8	5.4	10.4	11.5	6.3	4.5	3.0	2.8	2.5	0.4	2.1	1.8	0.2	0.3	0.3	0.1	0.2	0.1	2.4	11.5																							
9-May	0.1	0.1	0.1	Z	0.0	0.1	0.1	0.2	0.3	0.6	0.4	0.5	0.3	0.5	0.3	0.9	0.4	0.3	0.2	0.2	0.4	0.3	0.1	0.1	0.3	0.9																							
10-May	0.1	0.2	0.1	0.1	Z	0.1	0.2	0.2	0.2	DF	C	C	C	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.1	0.2																							
11-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.9	4.8	5.0	0.5	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.2	0.2	0.2	0.1	0.2	0.6	5.0																							
12-May	Z	1.2	1.5	1.1	0.5	0.3	0.3	1.3	8.5	8.0	11.2	6.0	2.9	2.4	2.6	2.4	1.9	1.7	2.5	2.6	1.3	0.3	0.1	0.3	2.6	11.2																							
13-May	0.6	Z	0.4	0.5	1.1	2.0	1.6	0.4	0.8	0.9	0.9	0.6	0.8	0.6	0.1	0.2	0.1	0.2	2.1	2.3	1.2	2.6	0.4	0.3	0.9	2.6																							
14-May	0.2	0.2	Z	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.5	0.7	0.5	0.3	0.2	0.1	0.1	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.7																							
15-May	0.2	0.1	0.1	Z	0.1	0.1	0.2	0.3	0.2	0.4	2.2	7.2	28.5	13.7	12.6	8.8	4.2	1.1	1.9	1.0	1.8	2.1	2.1	0.9	3.9	28.5																							
16-May	0.7	0.3	0.2	0.6	Z	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7																							
17-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2																							
18-May	Z	0.0	0.1	0.0	0.6	0.5	0.2	0.3	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.6																							
19-May	0.0	Z	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.2	0.2	0.3	0.4	0.7	0.8	0.8	0.9	0.7	0.5	0.4	0.1	0.1	0.1	0.1	0.3	0.9																							
20-May	0.0	0.1	Z	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.3																							
21-May	0.1	0.2	0.1	Z	0.1	0.2	0.2	0.2	4.5	12.2	10.9	13.1	8.3	13.0	17.5	14.4	13.3	11.6	10.7	8.4	7.1	2.4	1.5	1.7	6.6	17.5																							
22-May	1.0	1.2	0.8	0.7	Z	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	1.2																							
23-May	0.2	0.1	0.3	PF	PF	0.1	0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3																							
24-May	Z	0.0	0.2	0.1	0.0	0.0	0.0	0.2	3.0	3.9	4.9	0.7	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.2	PF	0.1	0.7	4.9																							
25-May	0.1	Z	0.3	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.4	0.1	0.4																							
26-May	0.6	0.6	Z	0.7	1.1	1.2	1.8	1.0	0.7	0.8	0.6	0.9	1.6	1.1	0.5	0.1	0.2	0.2	0.7	0.9	2.8	1.3	0.5	0.7	0.9	2.8																							
27-May	0.7	0.7	1.1	Z	1.8	2.0	3.7	3.1	2.0	0.7	0.1	0.0	0.1	0.5	2.3	2.5	1.5	1.1	1.0	1.6	0.6	0.5	1.1	1.3	1.3	3.7																							
28-May	1.3	1.0	1.2	1.5	Z	1.9	0.6	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.3	0.1	0.4	1.9																							
29-May	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.4	0.1	0.4																							
30-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.4	14.3	13.3	6.2	5.0	0.7	0.4	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.9	1.9	14.3																							
31-May	0.5	Z	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.3	0.2	0.5	4.9	11.5	6.4	9.5	9.5	0.5	0.4	0.4	0.3	2.0	11.5																							
																								0.4	0.3	0.3	0.3	0.3	0.5	0.5	0.9	1.8	2.8	2.9	1.8	2.2	1.4	1.4	1.3	1.3	0.9	1.0	1.0	0.7	0.5	0.4	0.4	Diurnal Average	
																								1.3	1.2	1.5	1.5	1.8	2.0	3.7	5.4	12.5	14.3	13.3	13.1	28.5	13.7	17.5	14.4	13.3	11.6	10.7	9.5	7.1	2.6	2.1	1.7	Diurnal Maximum	
Z - zerospan C - Calibration M - Maintenance DF - DAS Failure PF - Power Failure																																																	
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb																																																	



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Fort Hills - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Fort Hills - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	683	97.29	97.29
11 - 20	18	2.56	99.86
21 - 60	1	0.14	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 702

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Fort Hills - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	60	58	28	9	7	14	89	115	110	69	29	23	15	13	16	28	683
11 - 20	0	0	0	0	0	0	2	4	7	3	2	0	0	0	0	0	18
21 - 60	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	60	58	28	9	7	14	91	119	118	72	31	23	15	13	16	28	702

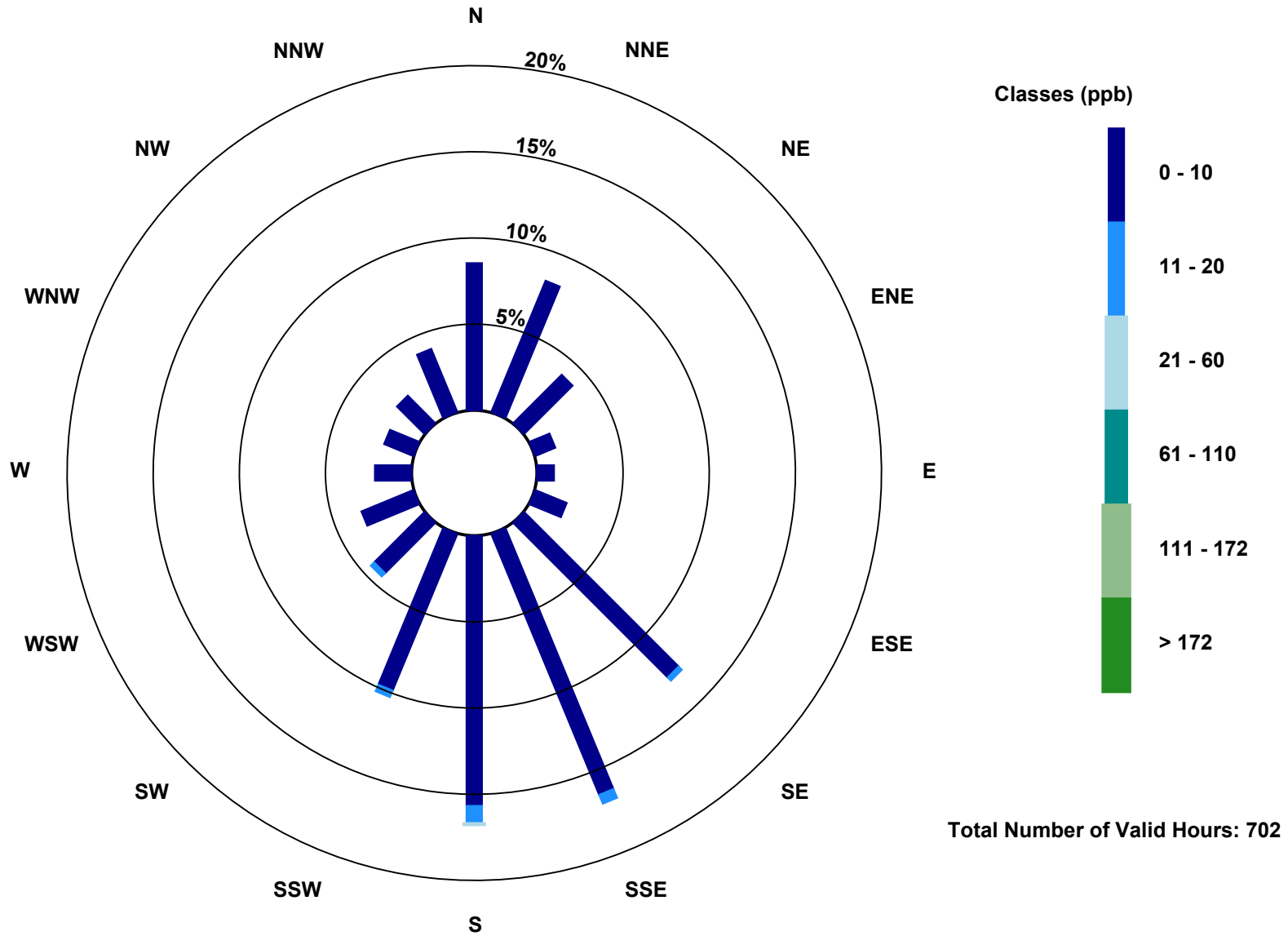
Total Number of Valid Hours: 702

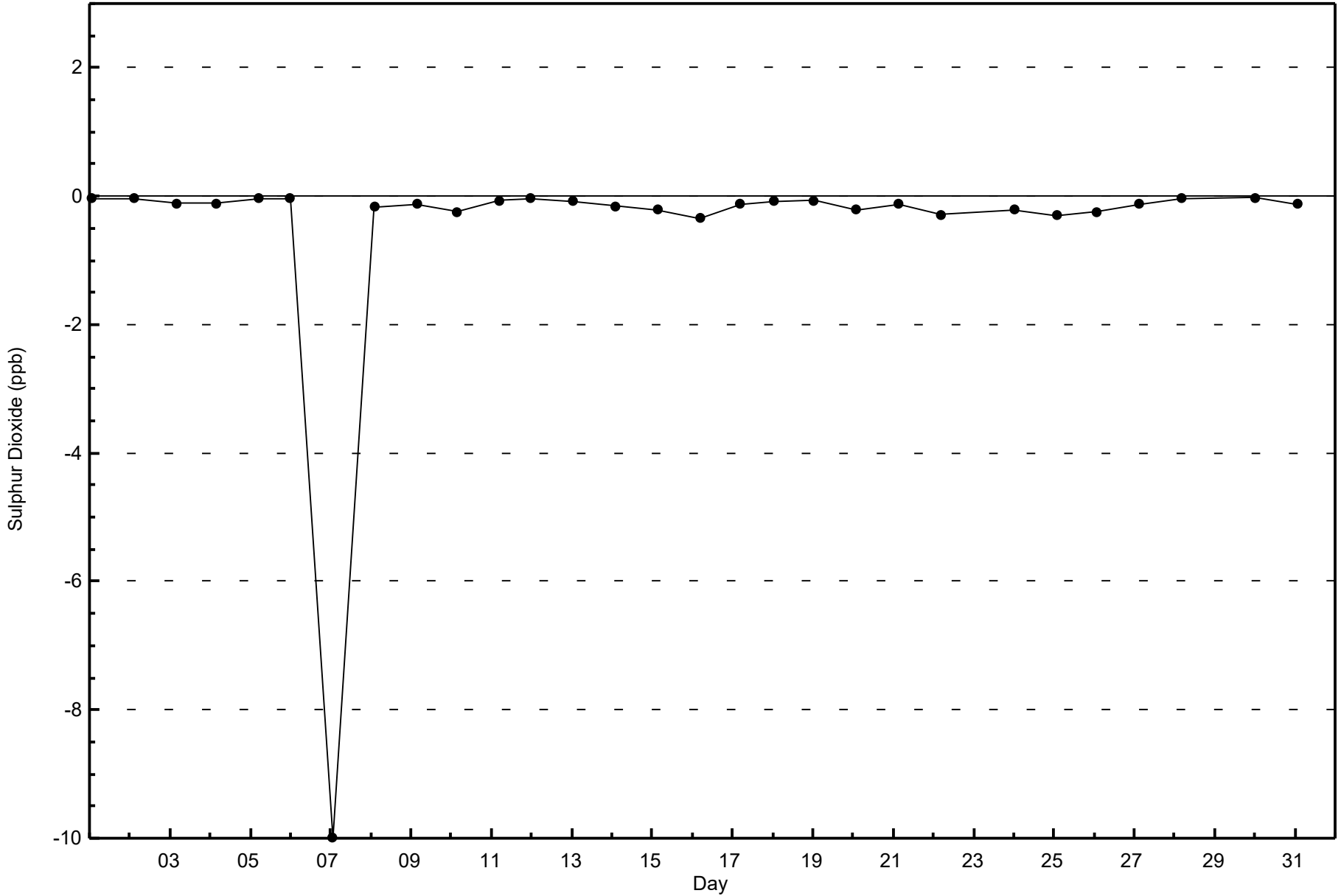
Total Number of Hours: 744

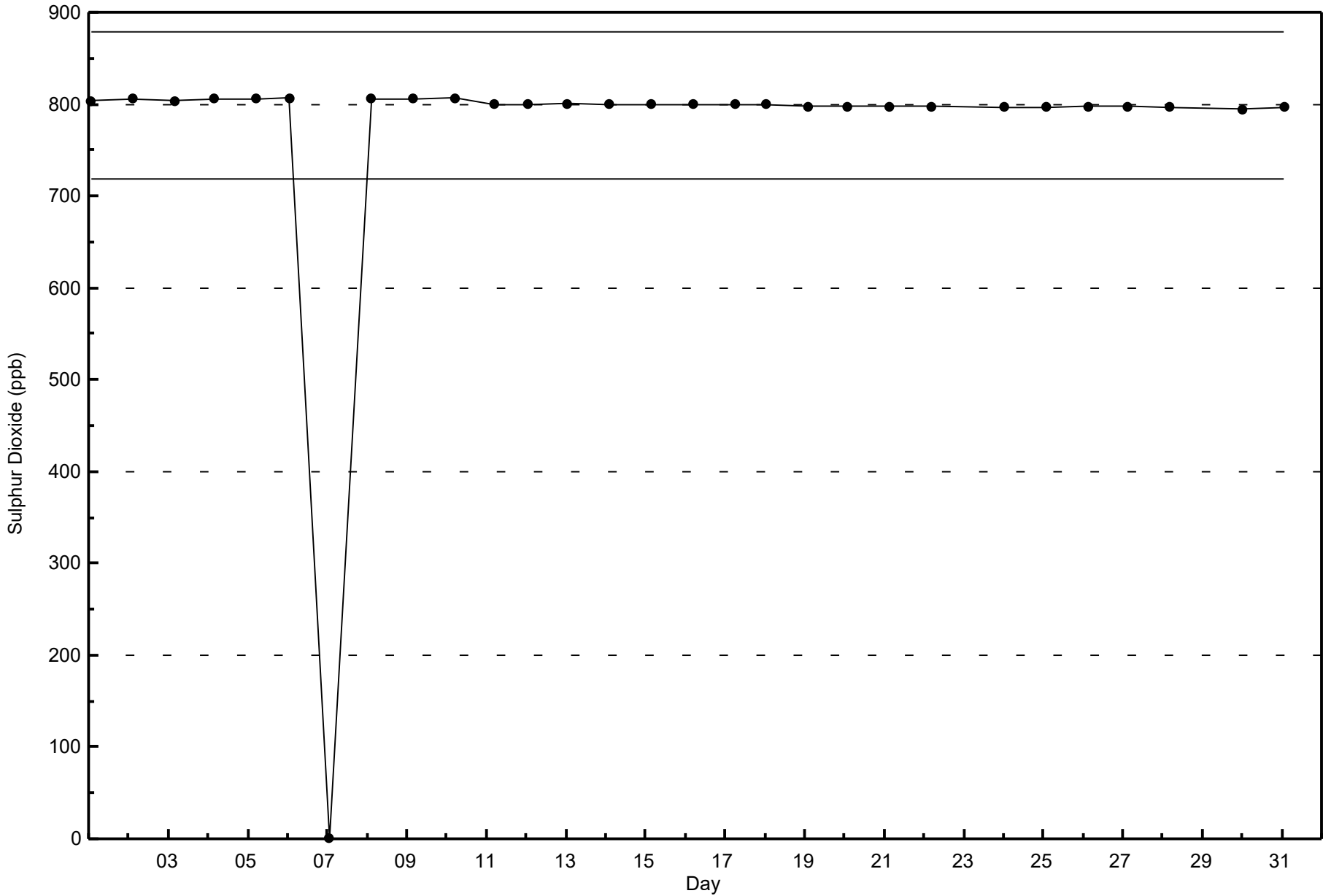


Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Fort Hills







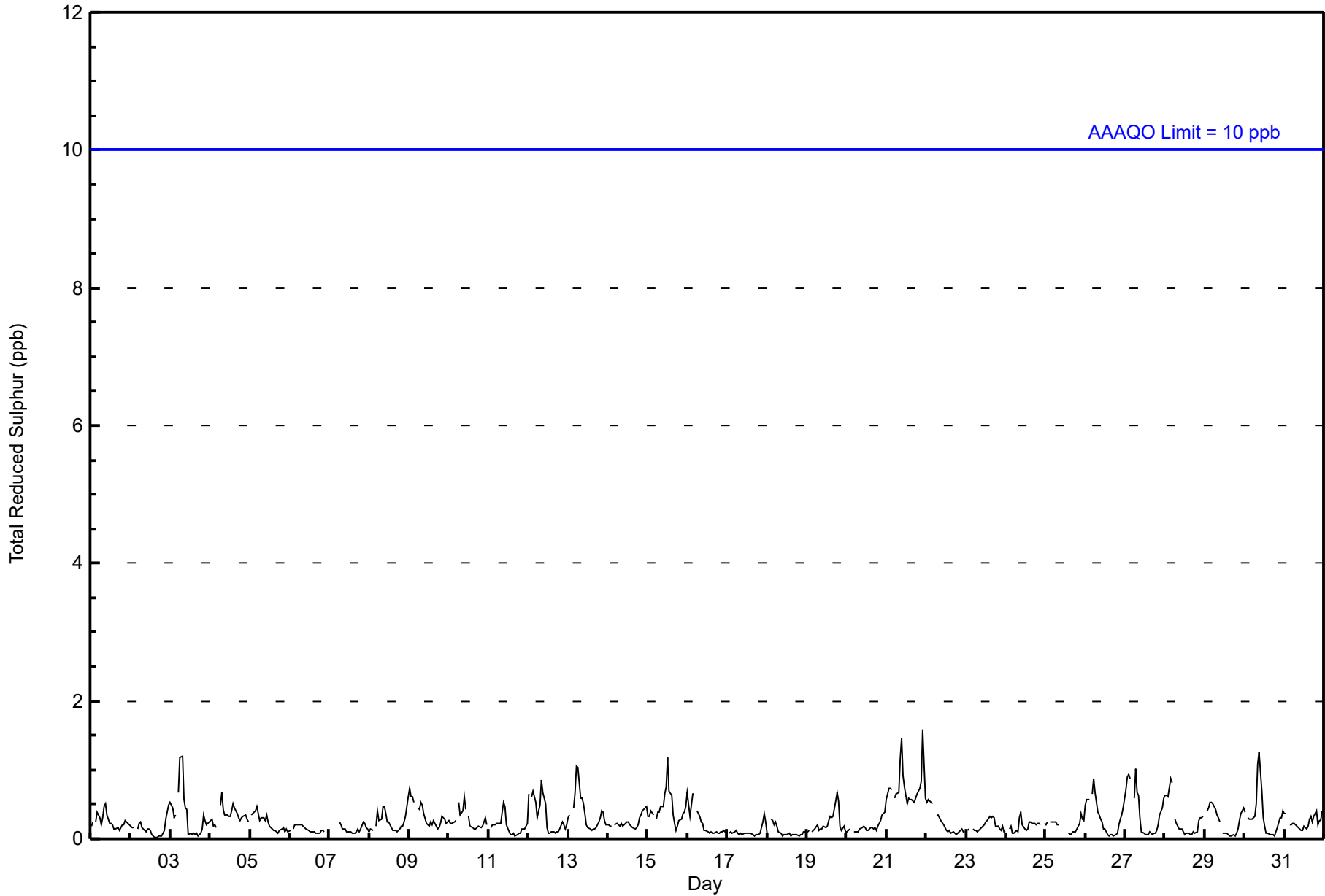


Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 1.6 ppb on May 21 23:00	Maximum Daily Average: 0.8 ppb on May 21		Hours of Data:	699
Minimum Value: 0.0 ppb on May 2 15:00	Minimum Daily Average: 0.1 ppb on May 17		Hours of Missing Data:	45
Maximum Diurnal Average: 0.4 ppb at hour 4	Minimum Diurnal Average: 0.1 ppb at hour 17		Hours of Calibration:	36
Monthly Average: 0.27 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.1 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.3 P ₉₀ = 0.6 P ₉₉ = 1.1		Percent Operational Time:	98.8

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.2	0.2	Z	0.2	0.4	0.3	0.2	0.3	0.5	0.5	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.5
2-May	0.2	0.2	0.2	Z	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.5	0.2	0.2	0.5
3-May	0.5	0.4	0.3	0.3	Z	0.7	1.2	1.2	0.6	0.4	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.3	0.3	0.2	0.3	0.3	0.3	1.2
4-May	0.3	0.3	0.2	0.2	0.2	Z	0.7	0.5	0.7	0.4	0.3	0.3	0.3	0.3	0.4	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.7
5-May	Z	0.4	0.4	0.4	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5
6-May	0.1	Z	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
7-May	PF	0.3	Z	0.3	PF	PF	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.3	0.3
8-May	0.1	0.1	0.1	Z	0.2	0.4	0.3	0.3	0.5	0.5	0.4	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.6	0.2	0.6
9-May	0.7	0.6	0.6	0.5	Z	0.5	0.4	0.5	0.5	0.4	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.7
10-May	0.3	0.2	0.2	0.2	0.3	Z	0.5	0.3	0.4	0.6	0.4	M	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.6
11-May	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.5	0.5	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.5
12-May	0.6	Z	0.6	0.7	0.5	0.3	0.4	0.5	0.9	0.7	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.3	0.9
13-May	0.3	0.3	Z	0.4	0.7	1.1	1.0	0.6	0.6	0.5	0.4	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.3	0.2	0.4	1.1	
14-May	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.2	0.5
15-May	0.3	0.3	0.4	0.3	Z	0.3	0.4	0.4	0.5	0.5	0.6	0.8	1.2	0.7	0.6	0.4	0.2	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.4	0.4	1.2
16-May	0.7	0.3	0.5	0.7	0.6	Z	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.7
17-May	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.2	0.1	0.4
18-May	0.1	Z	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.3
19-May	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.5	0.7	0.5	0.2	0.1	0.2	0.1	0.2	0.7
20-May	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.2	0.3	0.3	0.4	0.4	0.2	0.4
21-May	0.6	0.7	0.7	0.7	Z	0.6	0.7	0.7	1.2	1.5	0.9	0.8	0.5	0.6	0.6	0.6	0.5	0.5	0.6	0.7	0.7	0.8	1.6	0.6	0.8	1.6	1.6
22-May	0.5	0.6	0.6	0.5	0.5	Z	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.6
23-May	Z	0.1	0.1	PF	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.3
24-May	0.1	Z	0.1	0.2	0.1	0.1	0.1	0.1	0.3	0.4	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4
25-May	0.2	0.2	Z	0.3	0.2	0.2	0.3	0.2	0.2	C	C	C	C	C	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.3	0.3	0.2	0.4
26-May	0.5	0.6	0.6	Z	0.7	0.9	0.7	0.4	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.2	0.3	0.3	0.5	0.3	0.9
27-May	0.7	0.9	0.9	0.9	Z	0.6	1.0	0.7	0.6	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.6	0.4	1.0
28-May	0.6	0.6	0.6	0.9	0.8	Z	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.9
29-May	Z	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.3	0.2	M	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.3	0.4	0.5	0.3	0.5	0.5
30-May	0.4	Z	0.3	0.3	0.3	0.3	0.3	0.5	1.1	1.3	0.7	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.3	0.3	0.4	1.3
31-May	0.4	0.4	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.3	0.3	0.2	0.3	0.4	0.2	0.3	0.3	0.4	0.2	0.2	0.4

0.4	0.3	0.4	0.4	0.3	0.4	0.4	0.3	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	Diurnal Average
0.7	0.9	0.9	0.9	0.8	1.1	1.2	1.2	1.2	1.5	0.9	0.8	1.2	0.7	0.6	0.6	0.5	0.5	0.7	0.7	0.7	0.8	1.6	0.6	0.6	0.6	0.6	0.6	Diurnal Maximum

Z - zerospan C - Calibration M - Maintenance PF - Power Failure
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Fort Hills - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	699	100.00	100.00
3 - 4	0	0.00	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 699

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Fort Hills - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	59	54	30	9	6	15	90	121	119	73	31	24	12	13	14	29	699
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	59	54	30	9	6	15	90	121	119	73	31	24	12	13	14	29	699

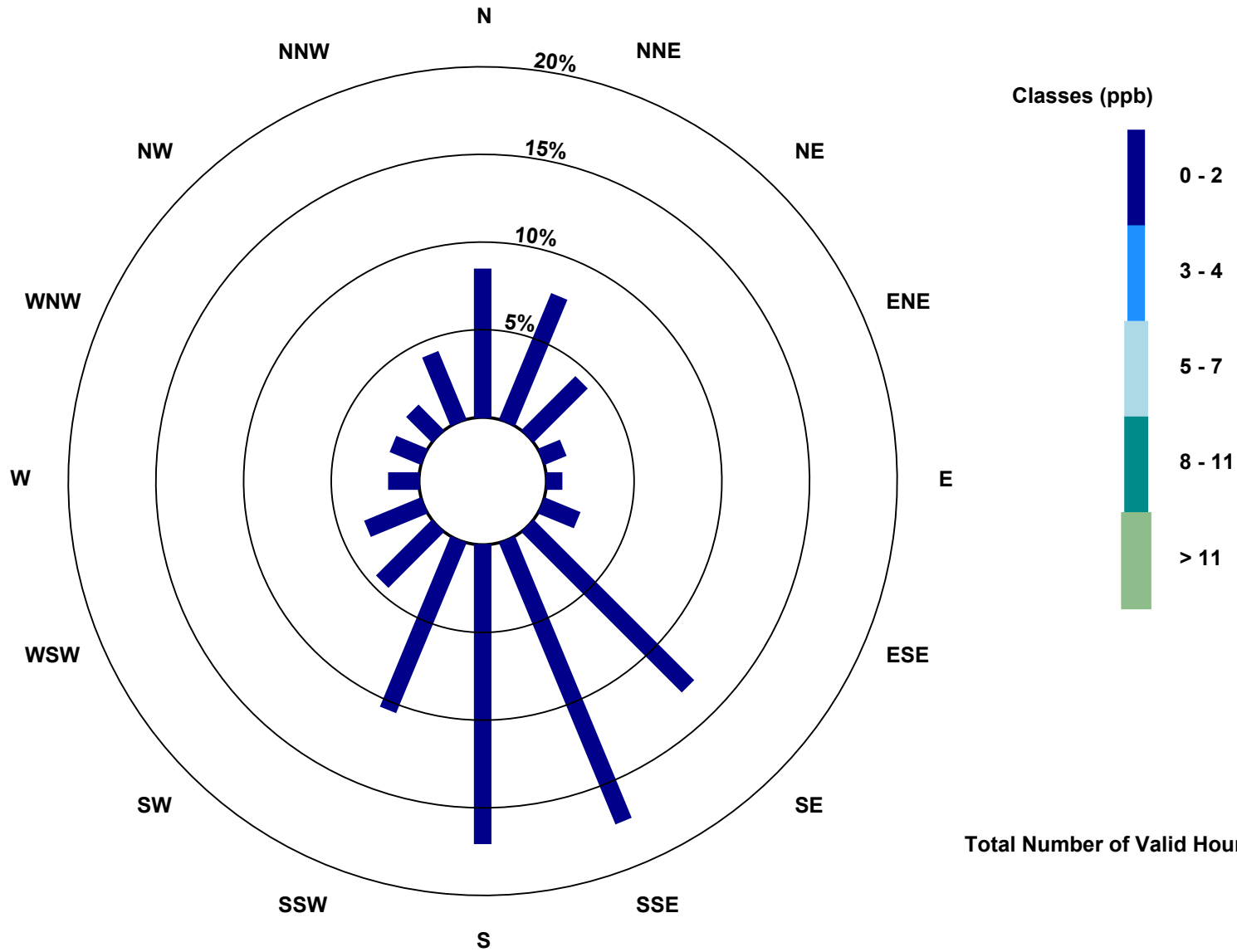
Total Number of Valid Hours: 699

Total Number of Hours: 744

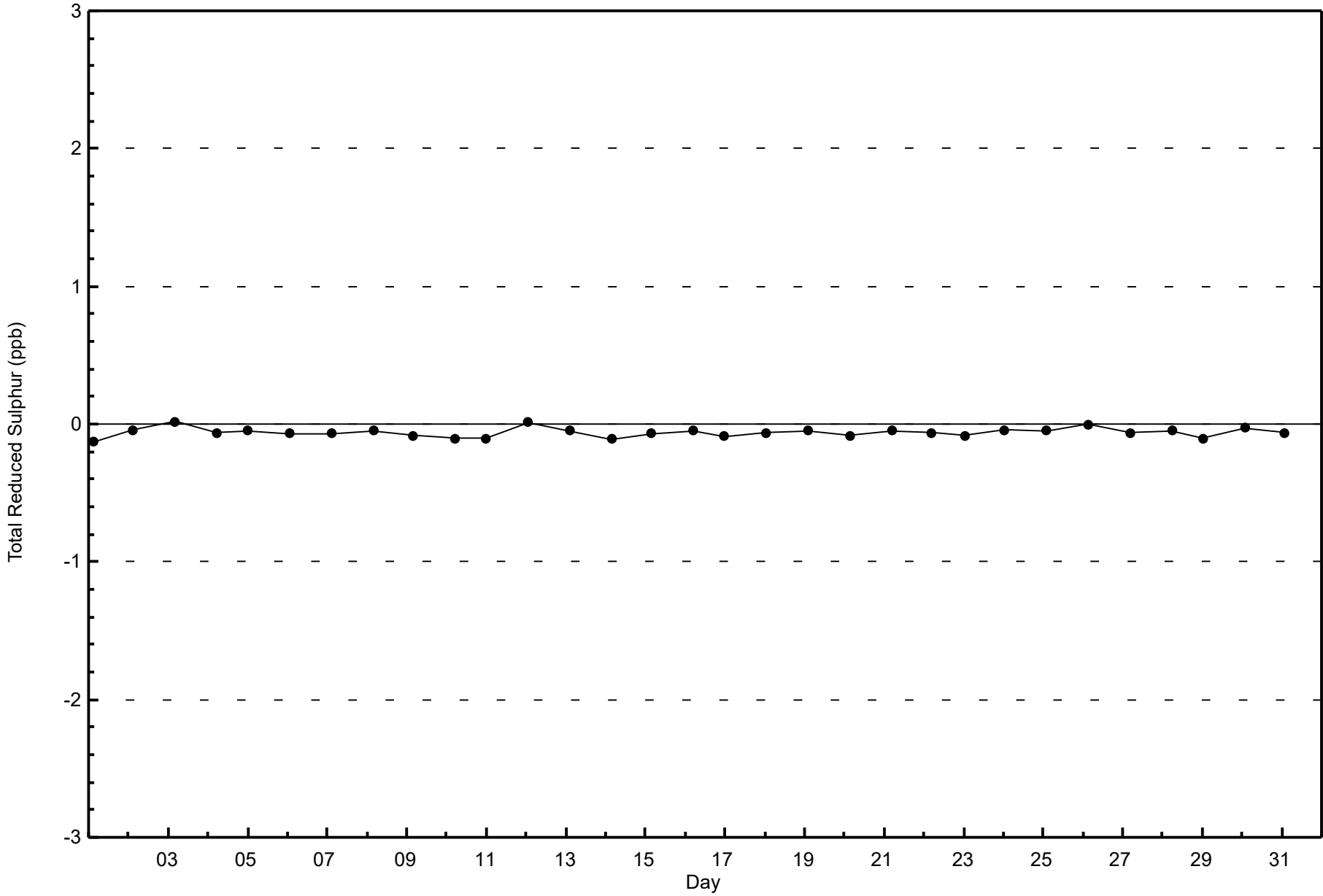


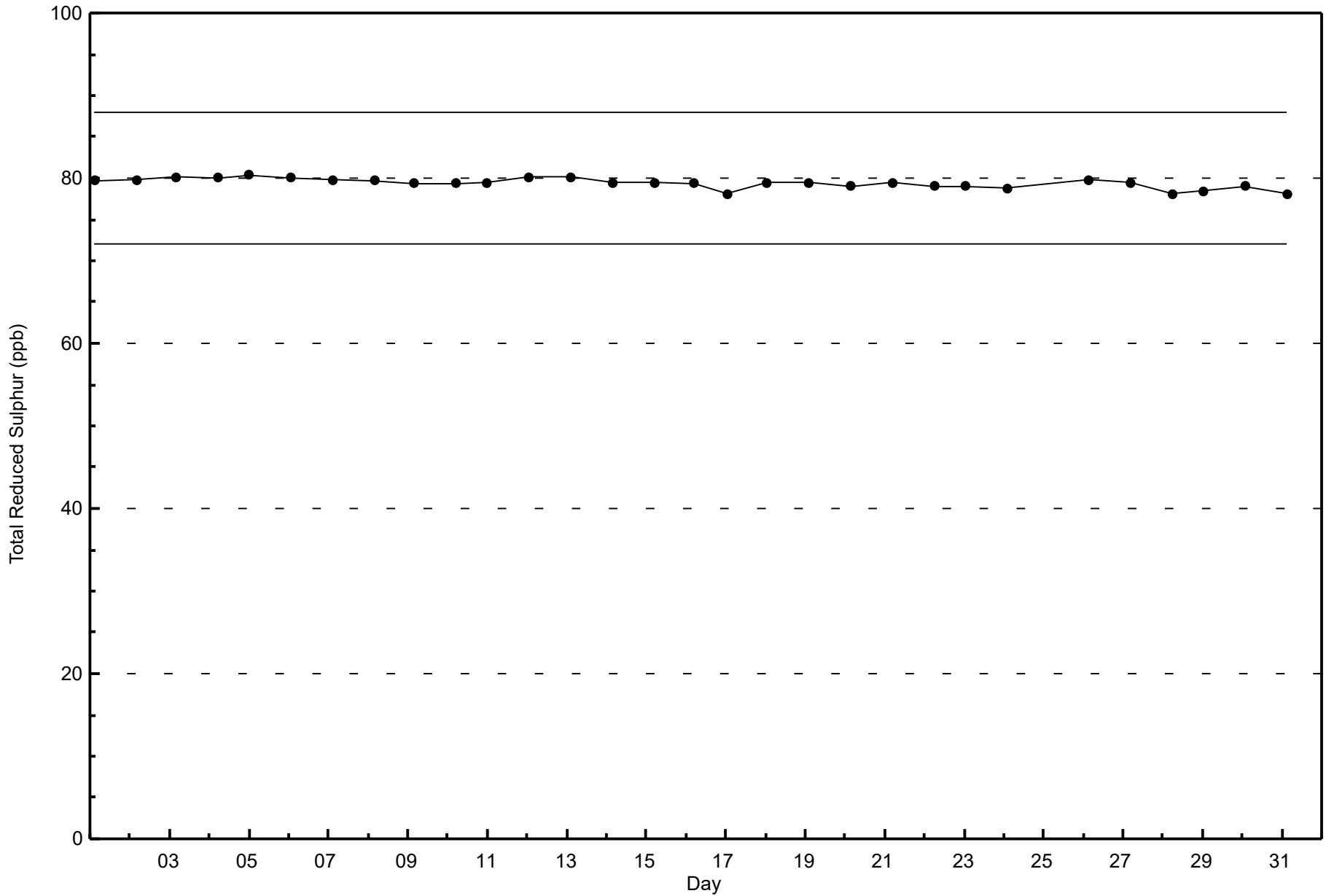
Wood Buffalo Environmental Association
Wind Rose May 2023

Total Reduced Sulphur (TRS) - ppb
Fort Hills



Total Number of Valid Hours: 699







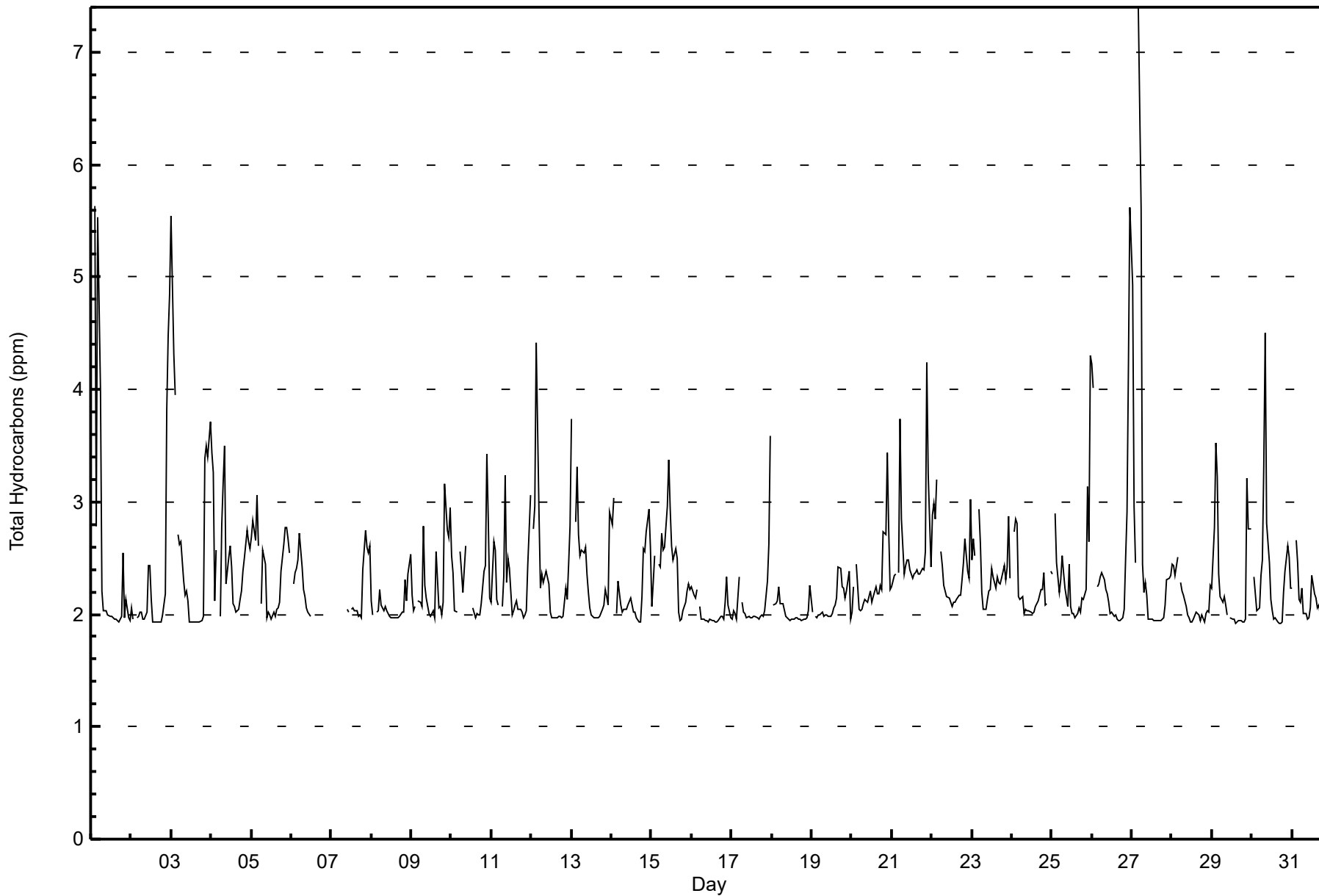
Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Fort Hills - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:														744						
Maximum Value: 7.4 ppm on May 27 05:00		Maximum Daily Average: 2.7 ppm on May 3		Hours of Data:														687								
Minimum Value: 1.9 ppm on May 30 18:00		Minimum Daily Average: 2.0 ppm on May 18		Hours of Missing Data:														57								
Maximum Diurnal Average: 2.8 ppm at hour 24		Minimum Diurnal Average: 2.0 ppm at hour 17		Hours of Calibration:														33								
Monthly Average: 2.32 ppm		Percentiles: P ₁ = 1.9 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.1 Q ₃ = 2.4 P ₉₀ = 2.8 P ₉₉ = 4.9		Percent Operational Time:														96.8								
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	2.1	Z	5.6	2.8	5.5	4.0	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.5	2.0	2.1	2.0	2.0	2.5	2.5	
2-May	2.1	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.4	2.4	2.1	1.9	1.9	1.9	1.9	1.9	2.0	2.2	3.8	4.5	4.8	2.3	4.8	
3-May	5.5	4.3	3.9	Z	2.7	2.6	2.6	2.3	2.2	2.2	2.1	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	3.4	3.5	3.4	3.7	2.7	5.5	
4-May	3.4	3.3	2.1	2.6	Z	2.0	2.8	3.2	3.5	2.3	2.5	2.6	2.4	2.1	2.1	2.0	2.0	2.1	2.2	2.4	2.5	2.7	2.6	2.6	2.5	3.5
5-May	2.7	2.8	2.7	3.1	2.6	Z	2.1	2.6	2.4	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.4	2.6	2.8	2.8	2.7	2.5	2.4	3.1
6-May	Z	2.3	2.4	2.4	2.5	2.7	2.4	2.2	2.2	2.1	2.0	2.0	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	PF	PF	--	2.7
7-May	PF	Z	DF	DF	DF	PF	PF	PF	PF	2.0	2.0	DF	DF	2.0	2.1	2.0	2.0	2.0	2.0	2.4	2.7	2.6	2.6	2.6	--	2.7
8-May	2.1	2.0	Z	2.0	2.0	2.2	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.1	2.4	2.5	2.1	2.5	2.5
9-May	2.2	2.0	2.1	Z	2.1	2.1	2.1	2.8	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.6	2.1	2.1	2.0	2.1	3.2	2.7	2.7	3.0	2.3	3.2
10-May	2.5	2.4	2.0	2.0	Z	2.6	2.4	2.2	2.6	C	C	C	C	2.1	2.0	2.0	2.0	2.0	2.1	2.4	2.4	3.4	2.8	2.1	2.3	3.4
11-May	2.1	2.7	2.6	2.1	2.1	Z	2.1	2.3	3.2	2.3	2.5	2.4	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.4	3.1	2.3	3.2	3.2
12-May	Z	2.8	3.0	4.4	2.9	2.2	2.4	2.3	2.3	2.4	2.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.1	2.5	2.8	2.4	4.4	4.4
13-May	3.7	Z	2.8	3.3	2.7	2.5	2.6	2.6	2.6	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.1	2.9	2.4	3.7	3.7
14-May	2.8	3.0	Z	2.0	2.3	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	1.9	1.9	2.2	2.6	2.6	2.7	2.9	2.6	2.3	3.0
15-May	2.1	2.3	2.5	Z	2.4	2.4	2.7	2.6	2.6	3.0	3.4	2.9	2.6	2.5	2.6	2.5	2.0	1.9	2.0	2.0	2.1	2.2	2.3	2.2	2.4	3.4
16-May	2.2	2.2	2.1	2.2	Z	2.1	2.0	2.0	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.3	2.1	2.0	2.0	2.3
17-May	2.0	2.0	2.0	2.0	2.3	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.6	3.6	2.1	3.6
18-May	Z	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.3	2.0	2.3
19-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.4	2.4	2.2	2.2	2.1	2.2	2.4	2.0	2.1	2.4
20-May	2.0	2.2	Z	2.4	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.3	2.2	2.7	2.7	3.4	2.7	2.2	2.3	3.4
21-May	2.3	2.4	2.4	Z	2.4	3.7	2.9	2.4	2.4	2.5	2.5	2.4	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.6	4.2	3.2	2.4	2.6	4.2	4.2
22-May	2.9	3.0	2.8	3.2	Z	2.6	2.4	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.5	2.7	2.4	2.3	3.0	2.4	3.2	
23-May	2.5	2.7	2.5	PF	2.9	2.6	2.2	2.0	2.0	2.1	2.2	2.2	2.4	2.3	2.2	2.3	2.3	2.3	2.4	2.3	2.4	2.9	2.3	2.4	2.9	2.9
24-May	Z	2.7	2.8	2.8	2.2	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.4	2.1	2.1	PF	2.4	2.2	2.8	2.8
25-May	2.4	Z	2.9	2.5	2.2	2.3	2.5	2.4	2.2	2.1	2.4	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.2	2.1	2.2	3.1	2.6	4.3	2.4	4.3
26-May	4.2	4.0	Z	2.2	2.3	2.3	2.4	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.5	2.9	4.2	5.6	2.6	5.6	5.6
27-May	4.9	3.0	2.5	Z	7.4	5.6	2.4	2.2	2.3	2.2	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.3	2.3	2.4	2.7	7.4
28-May	2.4	2.4	2.4	2.5	Z	2.3	2.2	2.2	2.1	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	1.9	2.0	1.9	2.0	2.0	2.0	2.3	2.1	2.5
29-May	2.2	2.8	3.5	3.2	2.4	2.2	2.1	2.2	2.1	2.0	M	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	3.2	2.8	2.8	2.3	3.5
30-May	Z	2.3	2.2	2.0	2.1	2.3	2.5	3.3	4.5	2.8	2.5	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.2	2.4	2.6	2.5	2.2	2.4	4.5
31-May	2.2	Z	2.7	2.5	2.1	2.1	2.2	2.0	2.0	2.0	2.0	2.1	2.3	2.2	2.1	2.1	2.1	2.0	2.0	2.1	2.2	2.3	2.2	2.1	2.2	2.7
																								Diurnal Average		
																								Diurnal Maximum		
																								2.7 2.6 2.7 2.5 2.7 2.5 2.3 2.3 2.3 2.2 2.2 2.1 2.1 2.0 2.0 2.1 2.0 2.0 2.1 2.2 2.3 2.6 2.6 2.8		
																								5.5 4.3 5.6 4.4 7.4 5.6 2.9 3.3 4.5 3.0 3.4 2.9 2.6 2.5 2.6 2.6 2.4 2.4 2.4 2.7 3.4 4.2 4.5 5.6		
																								Z - zerospan C - Calibration M - Maintenance DF - DAS Failure PF - Power Failure		





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Fort Hills - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	262	38.14	38.14
2.1 - 3.0	379	55.17	93.30
3.1 - 10.0	46	6.70	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Fort Hills - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	19	16	0	4	1	0	12	36	66	38	15	10	8	8	9	20	262
2.1 - 3.0	40	39	28	4	6	9	49	68	50	32	15	13	7	5	6	8	379
3.1 - 10.0	0	3	1	1	0	4	20	11	2	2	1	0	0	0	1	0	46
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	59	58	29	9	7	13	81	115	118	72	31	23	15	13	16	28	687

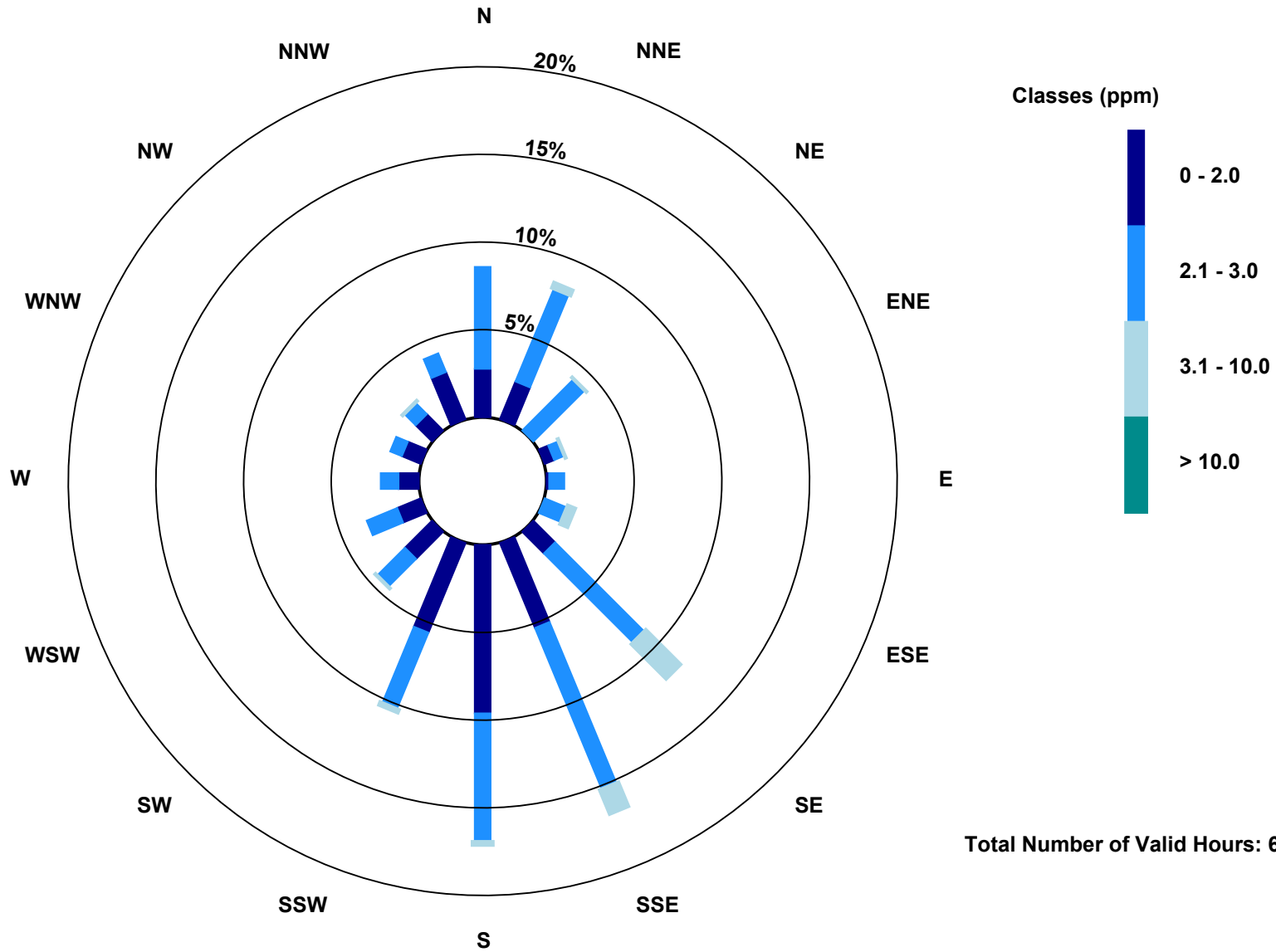
Total Number of Valid Hours: 687

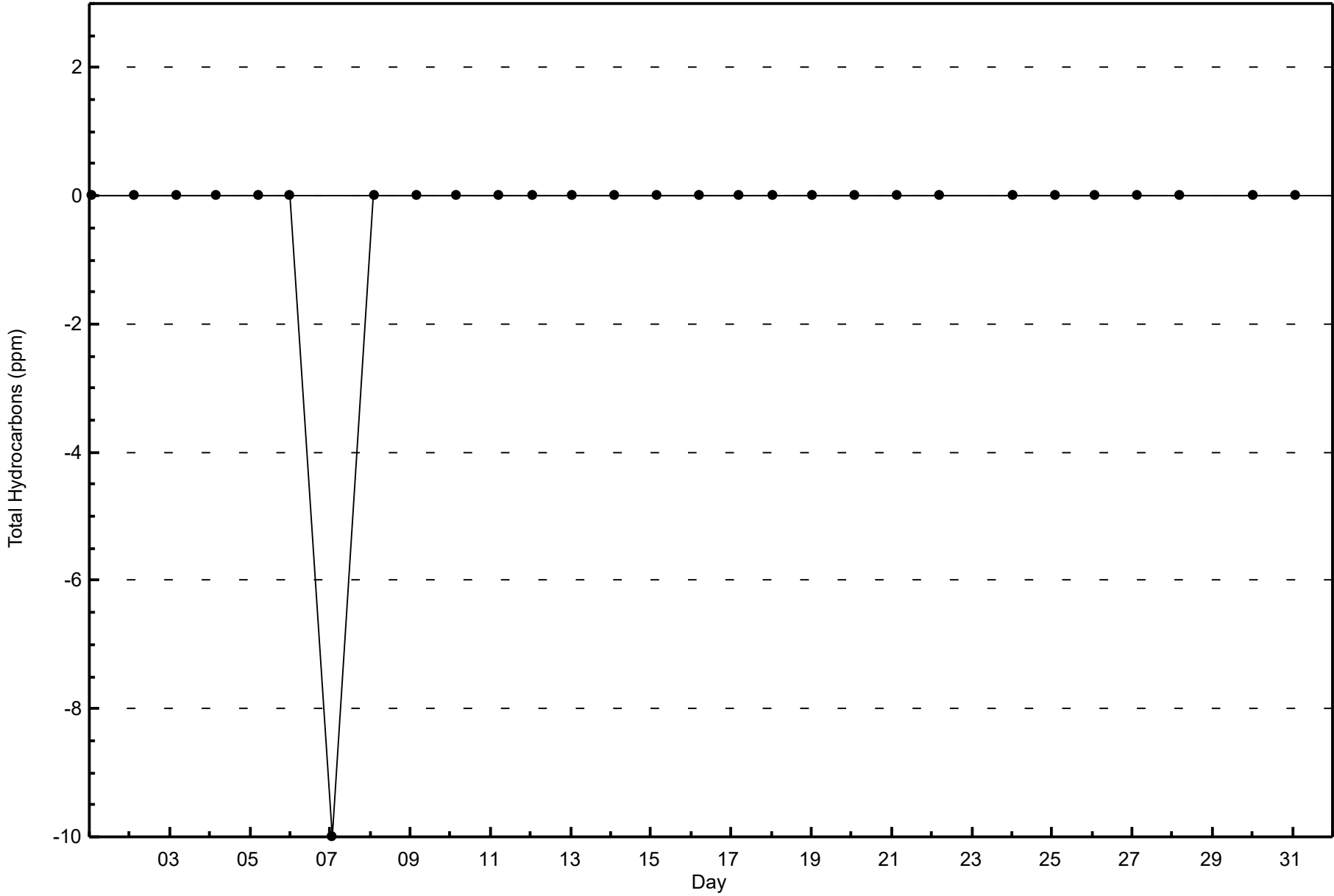
Total Number of Hours: 744

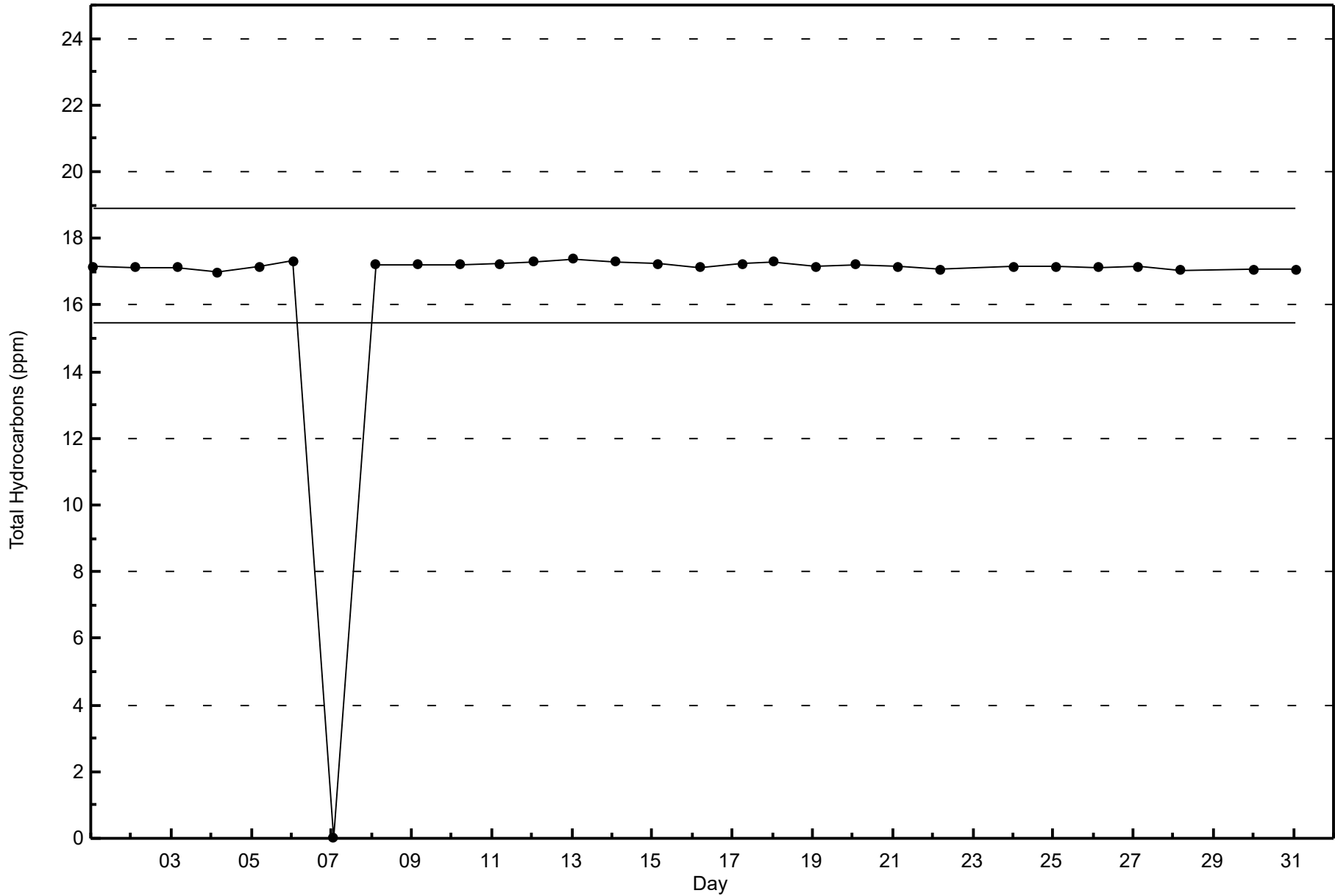


Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Fort Hills





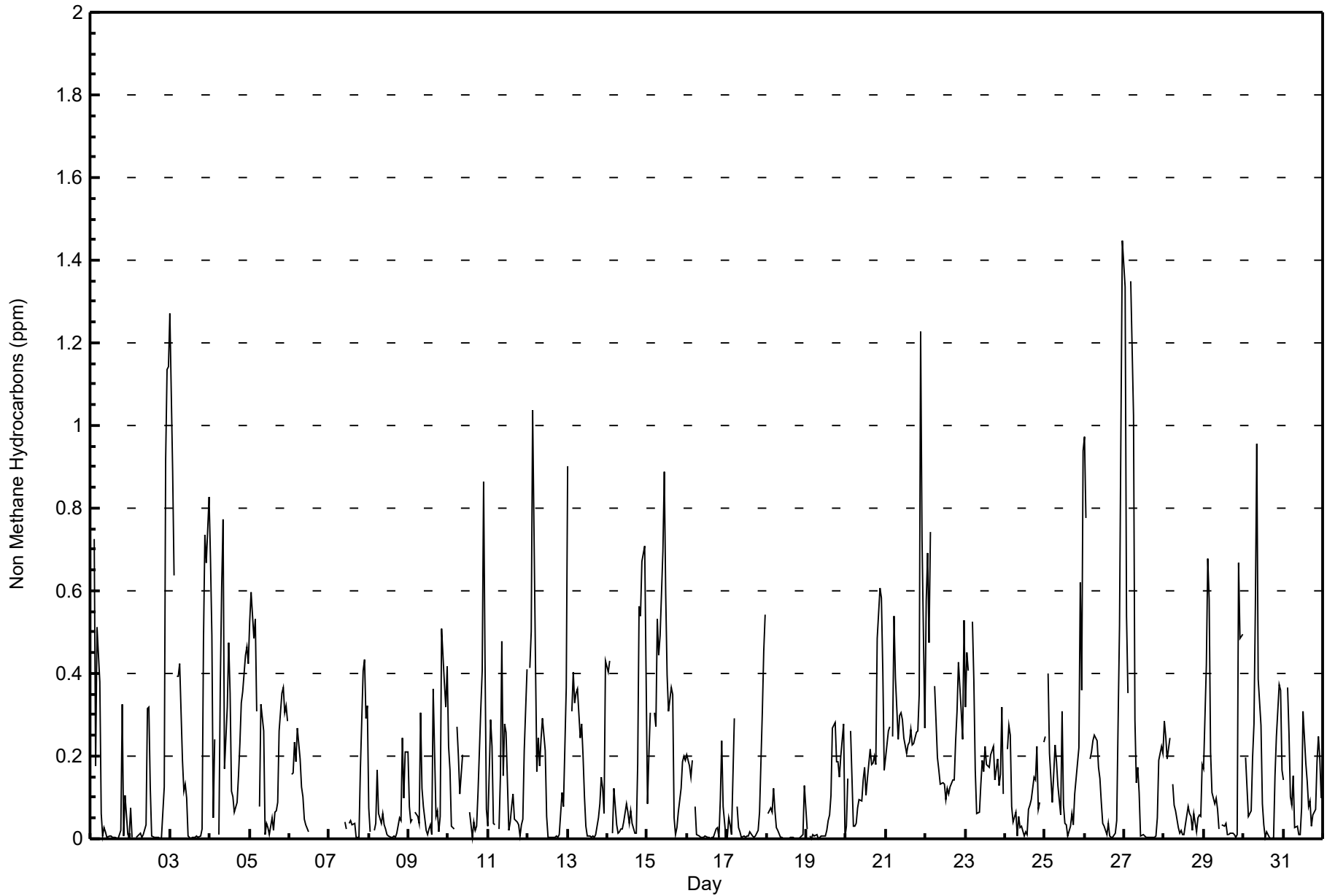




Summary of Hour Averages

Fort Hills - May 2023

Maximum Value: 1.446 ppm on May 27 00:00																				Maximum Daily Average: 0.337 ppm on May 21					Hours in Service: 744	
Minimum Value: 0.000 ppm on May 18 19:00																				Minimum Daily Average: 0.026 ppm on May 18					Hours of Data: 687	
Maximum Diurnal Average: 0.372 ppm at hour 22																				Minimum Diurnal Average: 0.058 ppm at hour 17					Hours of Missing Data: 57	
Monthly Average: 0.182 ppm																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.3 P ₉₀ = 0.5 P ₉₉ = 1.0					Hours of Calibration: 33	
																									Percent Operational Time: 96.8	
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.034	Z	0.727	0.177	0.511	0.379	0.062	0.006	0.026	0.016	0.003	0.006	0.008	0.004	0.003	0.003	0.001	0.011	0.021	0.326	0.007	0.106	0.010	0.007	0.107	0.727
2-May	0.076	0.003	Z	0.004	0.008	0.009	0.015	0.005	0.012	0.034	0.314	0.320	0.124	0.007	0.002	0.003	0.004	0.002	0.001	0.002	0.127	0.920	1.137	1.143	0.186	1.143
3-May	1.271	0.887	0.639	Z	0.394	0.392	0.425	0.190	0.114	0.132	0.099	0.006	0.000	0.005	0.003	0.003	0.006	0.005	0.006	0.025	0.478	0.737	0.666	0.827	0.318	1.271
4-May	0.678	0.491	0.051	0.239	Z	0.009	0.371	0.610	0.772	0.169	0.318	0.473	0.354	0.114	0.103	0.065	0.088	0.154	0.231	0.327	0.356	0.444	0.465	0.424	0.318	0.772
5-May	0.524	0.596	0.486	0.533	0.308	Z	0.077	0.324	0.260	0.010	0.037	0.026	0.009	0.021	0.065	0.069	0.089	0.089	0.261	0.354	0.366	0.304	0.321	0.286	0.234	0.596
6-May	Z	0.156	0.159	0.233	0.185	0.267	0.195	0.126	0.102	0.047	0.034	0.016	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	PF	PF	--	0.267
7-May	PF	Z	DF	DF	DF	PF	PF	PF	PF	0.042	0.025	DF	0.037	0.043	0.034	0.036	0.003	0.005	0.004	0.166	0.408	0.433	0.293	0.322	--	0.433
8-May	0.074	0.018	Z	0.022	0.037	0.167	0.062	0.036	0.060	0.034	0.024	0.010	0.007	0.003	0.003	0.007	0.004	0.014	0.050	0.044	0.243	0.097	0.209	0.210	0.062	0.243
9-May	0.078	0.041	0.047	Z	0.063	0.056	0.038	0.306	0.122	0.078	0.022	0.011	0.025	0.033	0.009	0.363	0.053	0.068	0.016	0.056	0.510	0.378	0.317	0.417	0.135	0.510
10-May	0.225	0.166	0.032	0.024	Z	0.271	0.202	0.110	0.204	C	C	C	C	0.063	0.005	0.040	0.019	0.029	0.112	0.315	0.407	0.865	0.435	0.072	0.189	0.865
11-May	0.031	0.287	0.224	0.038	0.033	Z	0.023	0.152	0.480	0.152	0.278	0.257	0.021	0.041	0.078	0.107	0.048	0.042	0.035	0.005	0.033	0.049	0.212	0.411	0.132	0.480
12-May	Z	0.412	0.501	1.036	0.436	0.162	0.245	0.176	0.242	0.291	0.212	0.054	0.004	0.005	0.002	0.002	0.003	0.006	0.003	0.010	0.112	0.077	0.222	0.367	0.199	1.036
13-May	0.901	Z	0.308	0.404	0.327	0.353	0.361	0.245	0.278	0.202	0.100	0.030	0.006	0.005	0.006	0.003	0.010	0.050	0.084	0.148	0.121	0.062	0.431	0.193	0.901	
14-May	0.404	0.430	Z	0.012	0.122	0.035	0.013	0.017	0.023	0.025	0.041	0.085	0.066	0.036	0.069	0.037	0.012	0.015	0.180	0.562	0.540	0.670	0.707	0.395	0.196	0.707
15-May	0.084	0.205	0.306	Z	0.304	0.270	0.533	0.443	0.491	0.696	0.887	0.592	0.395	0.309	0.366	0.350	0.052	0.009	0.027	0.066	0.121	0.185	0.201	0.188	0.308	0.887
16-May	0.205	0.175	0.150	0.191	Z	0.078	0.009	0.006	0.005	0.003	0.002	0.007	0.002	0.004	0.002	0.003	0.005	0.023	0.026	0.004	0.094	0.239	0.077	0.004	0.057	0.239
17-May	0.003	0.051	0.035	0.011	0.290	Z	0.076	0.026	0.016	0.003	0.005	0.003	0.006	0.007	0.016	0.006	0.002	0.008	0.015	0.020	0.063	0.307	0.455	0.543	0.086	0.543
18-May	Z	0.060	0.075	0.065	0.121	0.067	0.028	0.021	0.004	0.004	0.001	0.001	0.001	0.001	0.003	0.003	0.003	0.001	0.000	0.001	0.002	0.006	0.011	0.129	0.026	0.129
19-May	0.025	Z	0.007	0.002	0.010	0.006	0.011	0.001	0.005	0.006	0.007	0.006	0.020	0.043	0.059	0.106	0.267	0.281	0.187	0.187	0.150	0.200	0.277	0.004	0.081	0.281
20-May	0.031	0.147	Z	0.262	0.032	0.030	0.036	0.074	0.094	0.091	0.144	0.174	0.104	0.147	0.217	0.179	0.184	0.201	0.180	0.485	0.606	0.584	0.406	0.166	0.199	0.606
21-May	0.197	0.263	0.270	Z	0.247	0.538	0.389	0.240	0.298	0.305	0.287	0.246	0.205	0.228	0.235	0.264	0.227	0.232	0.258	0.261	0.349	1.228	0.726	0.268	0.337	1.228
22-May	0.577	0.692	0.476	0.742	Z	0.371	0.285	0.197	0.166	0.131	0.136	0.131	0.095	0.121	0.108	0.124	0.144	0.142	0.236	0.308	0.428	0.308	0.240	0.530	0.291	0.742
23-May	0.318	0.451	0.408	PF	0.526	0.382	0.168	0.062	0.066	0.133	0.188	0.162	0.224	0.179	0.173	0.203	0.214	0.224	0.143	0.194	0.130	0.155	0.320	0.110	0.223	0.526
24-May	Z	0.217	0.276	0.249	0.078	0.040	0.063	0.008	0.054	0.028	0.030	0.007	0.018	0.011	0.072	0.080	0.095	0.150	0.143	0.223	0.072	0.087	PF	0.234	0.102	0.276
25-May	0.246	Z	0.401	0.205	0.088	0.156	0.228	0.185	0.128	0.058	0.309	0.081	0.036	0.034	0.007	0.029	0.061	0.035	0.109	0.147	0.220	0.620	0.360	0.938	0.204	0.938
26-May	0.973	0.776	Z	0.194	0.211	0.237	0.253	0.236	0.174	0.144	0.087	0.036	0.032	0.010	0.037	0.008	0.005	0.003	0.013	0.044	0.284	0.516	0.991	1.446	0.292	1.446
27-May	1.337	0.540	0.353	Z	1.350	1.023	0.289	0.134	0.174	0.111	0.005	0.009	0.006	0.004	0.005	0.005	0.005	0.003	0.004	0.007	0.052	0.191	0.225	0.208	0.263	1.350
28-May	0.286	0.246	0.193	0.245	Z	0.131	0.080	0.067	0.026	0.015	0.022	0.009	0.012	0.035	0.077	0.061	0.053	0.020	0.060	0.017	0.052	0.058	0.056	0.179	0.087	0.286
29-May	0.171	0.420	0.678	0.578	0.210	0.113	0.084	0.099	0.071	0.023	M	0.035	0.029	0.036	0.010	0.010	0.015	0.013	0.009	0.002	0.011	0.669	0.484	0.495	0.185	0.678
30-May	Z	0.195	0.126	0.056	0.069	0.195	0.278	0.565	0.957	0.385	0.274	0.085	0.033	0.004	0.018	0.004	0.001	0.001	0.002	0.152	0.249	0.372	0.358	0.168	0.198	0.957
31-May	0.141	Z	0.366	0.255	0.100	0.081	0.152	0.028	0.029	0.010	0.012	0.075	0.308	0.182	0.139	0.077	0.093	0.030	0.058	0.070	0.188	0.247	0.194	0.100	0.128	0.366
																				0.356 0.317 0.292 0.241 0.242 0.216 0.168 0.156 0.182 0.113 0.135 0.102 0.075 0.059 0.063 0.075 0.058 0.061 0.081 0.149 0.227 0.372 0.360 0.367					Diurnal Average	
																				1.337 0.887 0.727 1.036 1.350 1.023 0.533 0.610 0.957 0.696 0.887 0.592 0.395 0.309 0.366 0.363 0.267 0.281 0.261 0.562 0.606 1.228 1.137 1.446					Diurnal Maximum	
Z - zerospan			C - Calibration			M - Maintenance			DF - DAS Failure			PF - Power Failure														





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Fort Hills - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	84	12.23	12.23
0.006 - 0.05	183	26.64	38.86
0.06 - 0.1	131	19.07	57.93
> 0.1	289	42.07	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 744



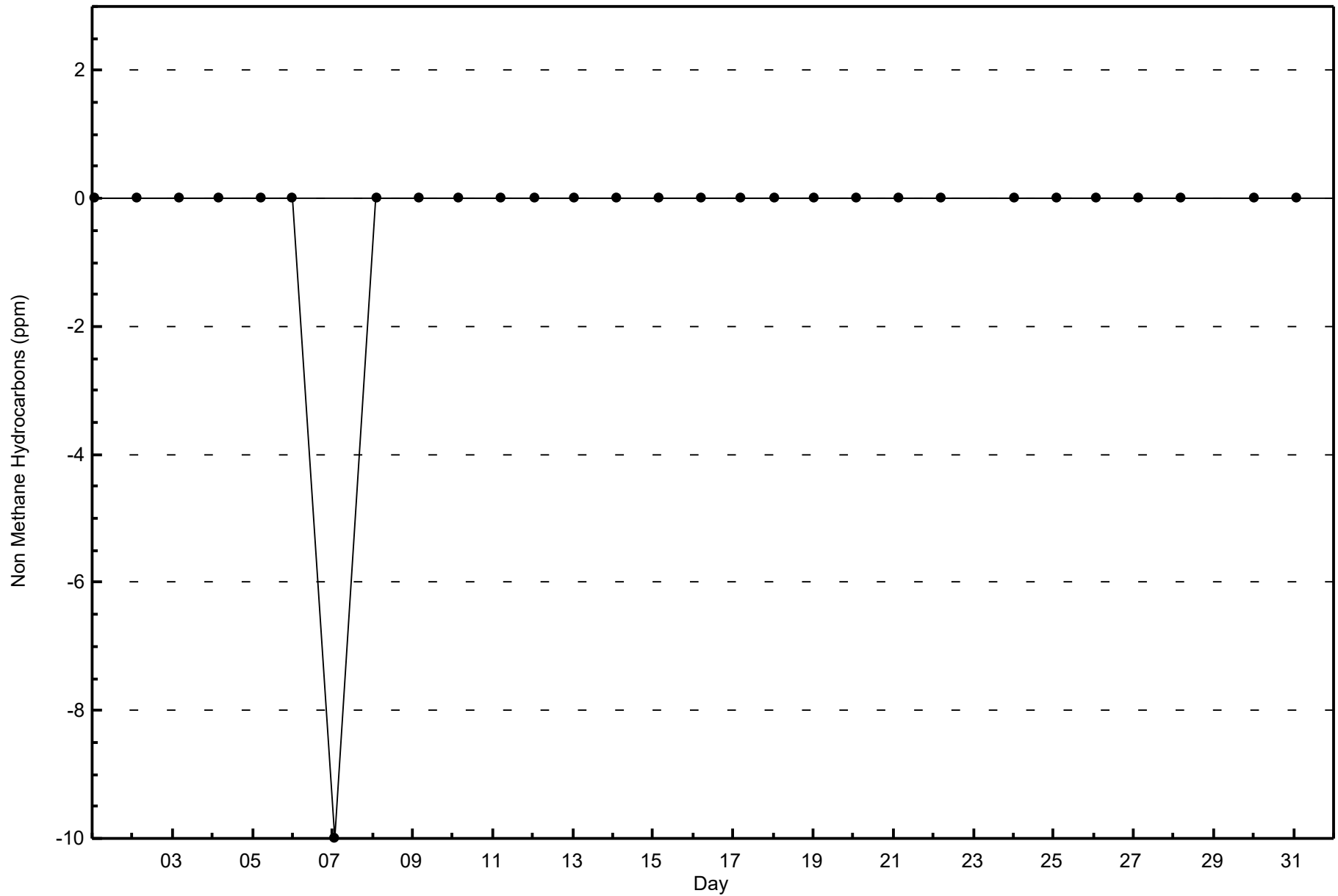
Wood Buffalo Environmental Association
Frequency Distribution

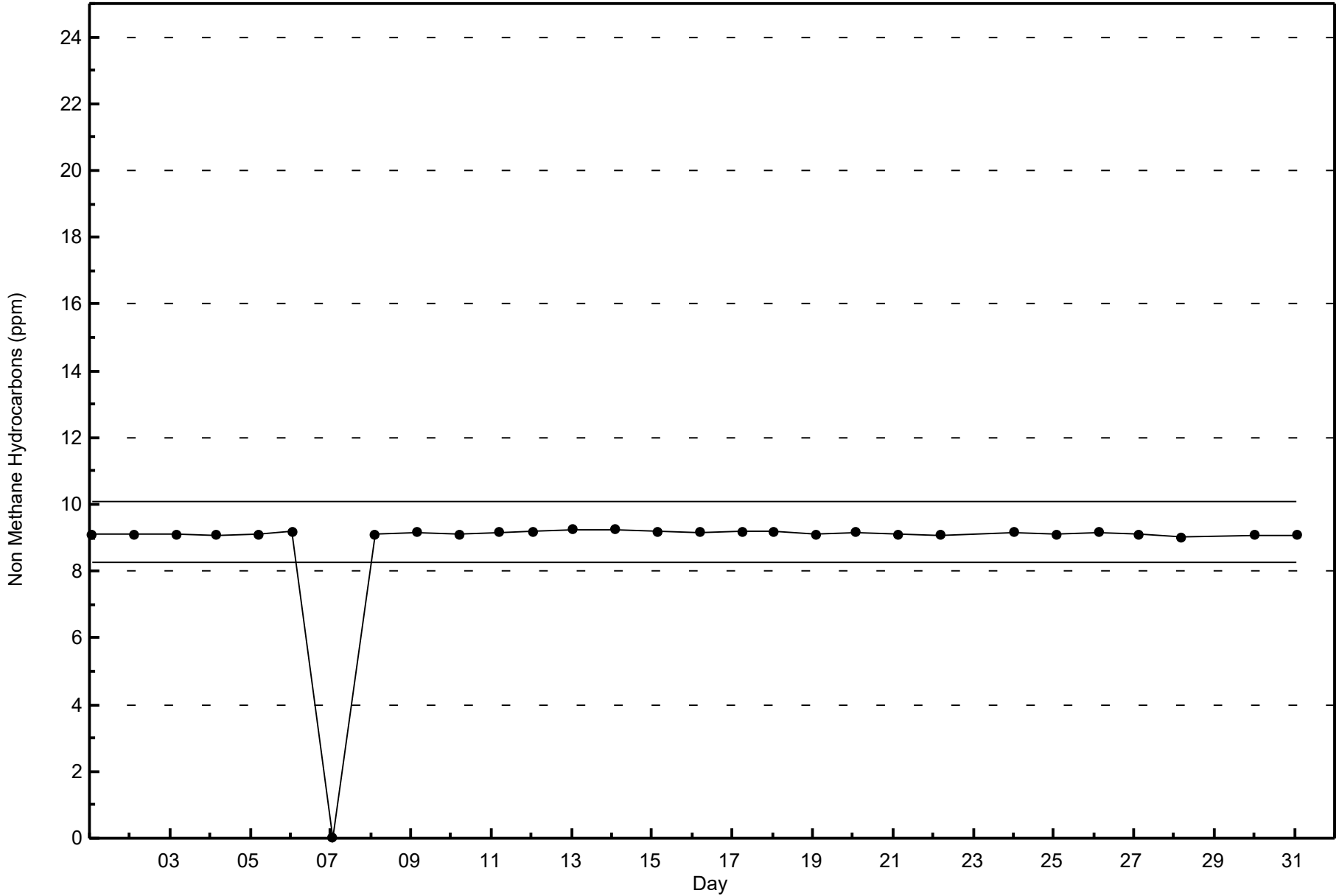
Non Methane Hydrocarbons (NMHC) - ppm
Fort Hills - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	4	3	0	0	0	0	0	5	33	15	1	0	2	2	6	13	84
0.006 - 0.05	17	11	1	2	1	0	12	38	35	26	12	8	5	4	4	7	183
0.06 - 0.1	12	12	9	3	2	3	13	20	20	9	9	7	3	3	2	4	131
> 0.1	26	32	19	4	4	10	56	52	30	22	9	8	5	4	4	4	289
Totals	59	58	29	9	7	13	81	115	118	72	31	23	15	13	16	28	687

Total Number of Valid Hours: 687

Total Number of Hours: 744







Wood Buffalo Environmental Association
Summary of Hour Averages

Methane (CH₄) - ppm
Fort Hills - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 6.0 ppm on May 27 05:00	Maximum Daily Average: 2.4 ppm on May 27		Hours of Data:	687
Minimum Value: 1.9 ppm on May 29 15:00	Minimum Daily Average: 2.0 ppm on May 16		Hours of Missing Data:	57
Maximum Diurnal Average: 2.4 ppm at hour 5	Minimum Diurnal Average: 2.0 ppm at hour 17		Hours of Calibration:	33
Monthly Average: 2.14 ppm	Percentiles: P ₁ = 1.9 P ₁₀ = 1.9 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.2 P ₉₀ = 2.4 P ₉₉ = 3.6		Percent Operational Time:	96.8

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	2.0	Z	4.9	2.6	5.0	3.6	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.2	2.0	2.0	2.0	1.9	2.4	5.0	
2-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.1	2.1	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.9	3.3	3.7	2.2	3.7	
3-May	4.3	3.4	3.3	Z	2.3	2.2	2.2	2.1	2.1	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.9	2.8	2.7	2.9	2.4	4.3		
4-May	2.8	2.8	2.1	2.3	Z	2.0	2.4	2.6	2.7	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.3	2.2	2.2	2.2	2.8	
5-May	2.2	2.2	2.2	2.5	2.3	Z	2.0	2.3	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.4	2.5	2.3	2.3	2.2	2.5	
6-May	Z	2.1	2.2	2.2	2.3	2.4	2.2	2.1	2.1	2.0	2.0	2.0	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	PF	PF	--	2.4
7-May	PF	Z	DF	DF	DF	PF	PF	PF	PF	2.0	2.0	DF	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.3	2.2	2.3	2.3	--	2.3	
8-May	2.0	2.0	Z	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.3	2.0	2.0	2.3	
9-May	2.1	2.0	2.0	Z	2.1	2.1	2.0	2.5	2.1	2.1	2.0	2.0	2.0	2.0	2.2	2.0	2.0	2.0	2.1	2.6	2.4	2.4	2.5	2.1	2.6	
10-May	2.3	2.2	2.0	2.0	Z	2.3	2.2	2.1	2.4	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.6	2.4	2.1	2.1	2.6	
11-May	2.1	2.4	2.3	2.1	2.0	Z	2.0	2.2	2.8	2.1	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.6	2.1	2.8	
12-May	Z	2.4	2.5	3.4	2.4	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.4	2.2	2.2	3.4	
13-May	2.8	Z	2.5	2.9	2.4	2.2	2.2	2.3	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.5	2.2	2.2	2.9	
14-May	2.4	2.6	Z	2.0	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.1	2.2	2.2	2.1	2.1	2.6	
15-May	2.0	2.1	2.2	Z	2.1	2.1	2.2	2.1	2.1	2.3	2.5	2.4	2.2	2.2	2.2	2.1	2.0	1.9	1.9	2.0	2.0	2.1	2.0	2.1	2.5	
16-May	2.0	2.0	2.0	2.0	Z	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.1	
17-May	2.0	2.0	2.0	1.9	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	3.0	2.0	3.0	
18-May	Z	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.1	2.0	2.1	
19-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.2	
20-May	2.0	2.1	Z	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.3	2.1	2.9	2.3	2.1	2.1	2.9	
21-May	2.1	2.1	2.1	Z	2.1	3.2	2.5	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	3.0	2.5	2.1	2.2	3.2	
22-May	2.3	2.3	2.4	2.5	Z	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.1	2.1	2.5	2.1	2.5	
23-May	2.2	2.2	2.1	PF	2.4	2.3	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.1	2.1	2.0	2.2	2.2	2.2	2.3	2.6	2.2	2.2	2.6	
24-May	Z	2.5	2.6	2.6	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	PF	2.2	2.1	2.6	
25-May	2.1	Z	2.5	2.3	2.1	2.2	2.3	2.2	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.3	3.4	2.2	3.4	
26-May	3.3	3.2	Z	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	2.2	2.4	3.2	4.2	2.3	4.2	
27-May	3.6	2.4	2.1	Z	6.0	4.6	2.2	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.1	2.1	2.4	6.0	
28-May	2.2	2.2	2.2	2.3	Z	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.0	2.3	
29-May	2.1	2.4	2.8	2.6	2.1	2.0	2.0	2.1	2.0	2.0	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.5	2.3	2.3	2.1	2.8	
30-May	Z	2.1	2.1	2.0	2.0	2.2	2.2	2.8	3.5	2.4	2.2	2.1	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.1	2.2	2.2	2.1	2.2	3.5	
31-May	2.1	Z	2.3	2.2	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	

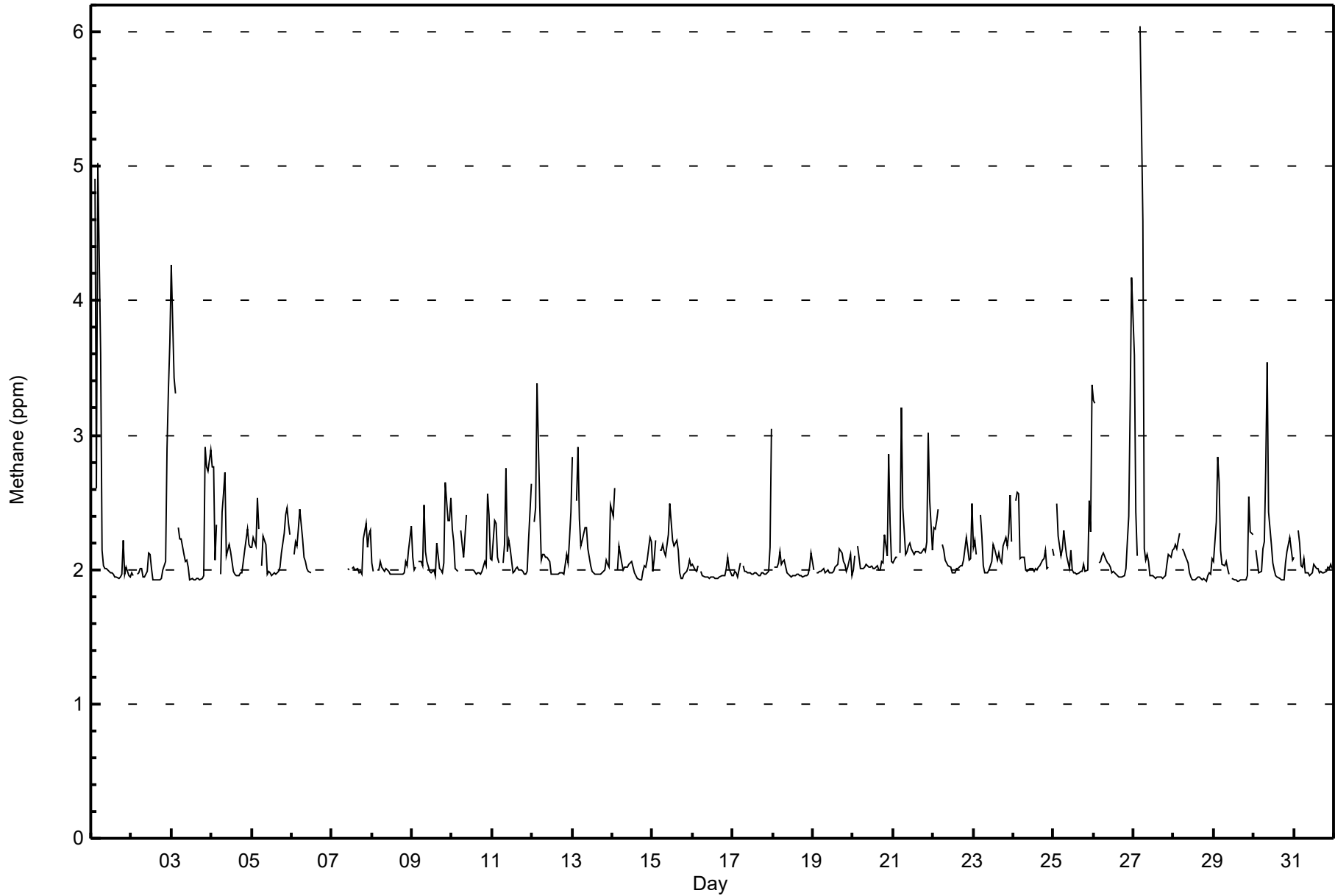
2.3	2.3	2.4	2.3	2.4	2.3	2.1	2.1	2.2	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.3	2.4	Diurnal Average		
4.3	3.4	4.9	3.4	6.0	4.6	2.5	2.8	3.5	2.4	2.5	2.4	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.3	2.9	3.0	3.3	4.2	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance DF - DAS Failure PF - Power Failure



Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Fort Hills - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Methane (CH₄) - ppm
Fort Hills - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	384	55.90	55.90
2.1 - 3.0	284	41.34	97.23
3.1 - 10.0	19	2.77	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Fort Hills - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	36	37	14	6	6	3	22	47	80	44	21	14	10	8	12	24	384
2.1 - 3.0	23	21	15	3	1	9	50	61	36	28	10	9	5	5	4	4	284
3.1 - 10.0	0	0	0	0	0	1	9	7	2	0	0	0	0	0	0	0	19
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	59	58	29	9	7	13	81	115	118	72	31	23	15	13	16	28	687

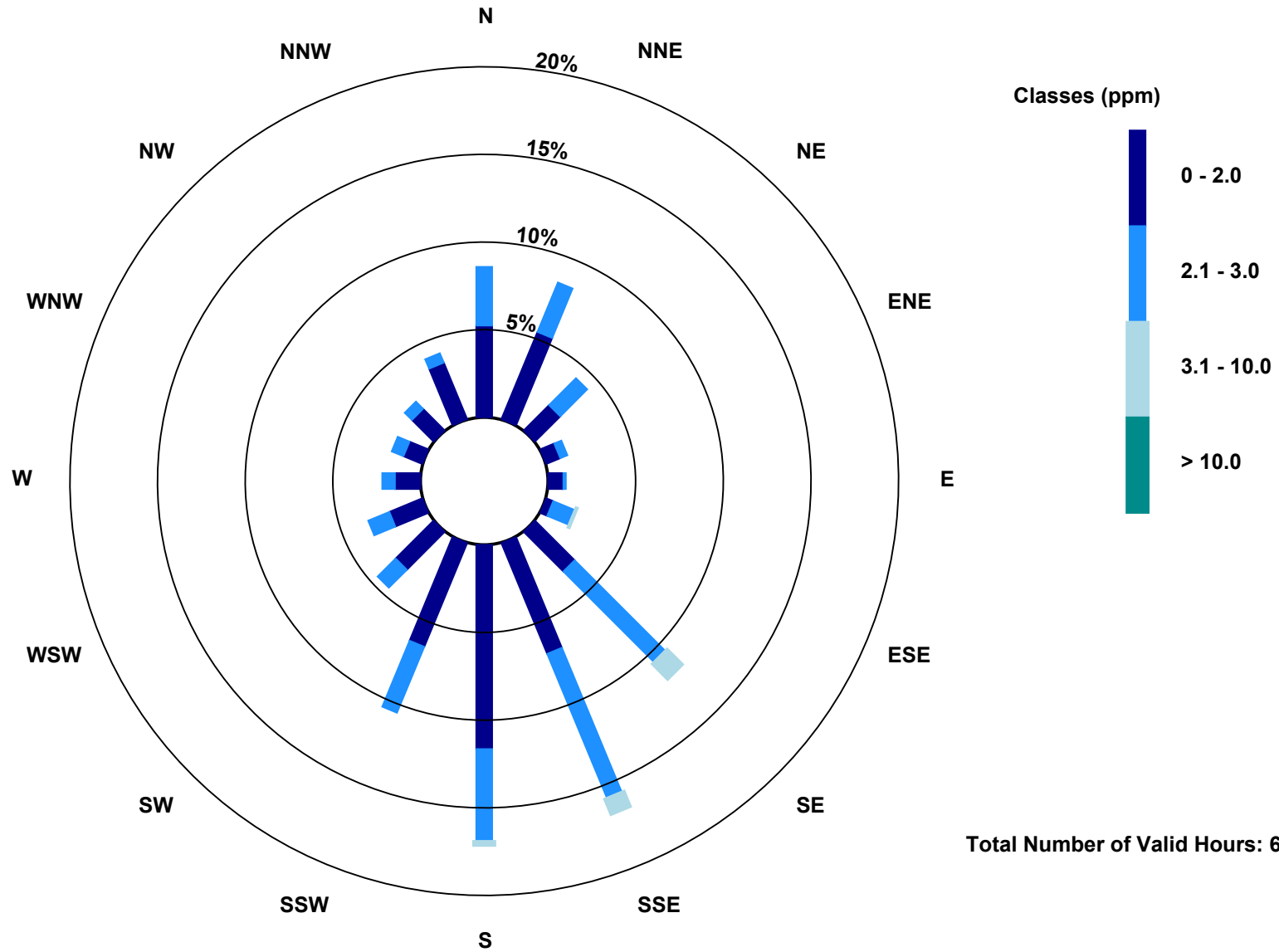
Total Number of Valid Hours: 687

Total Number of Hours: 744

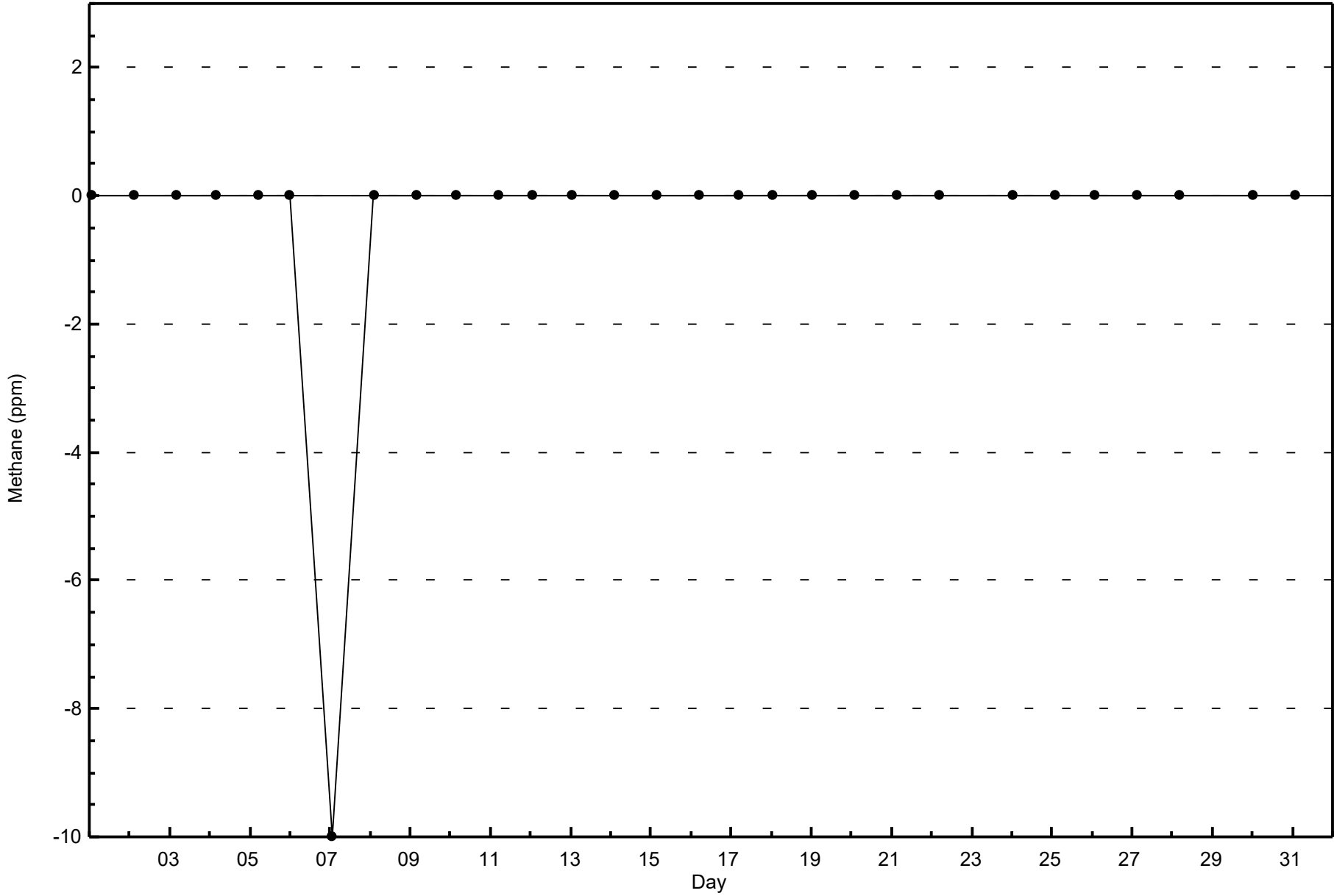


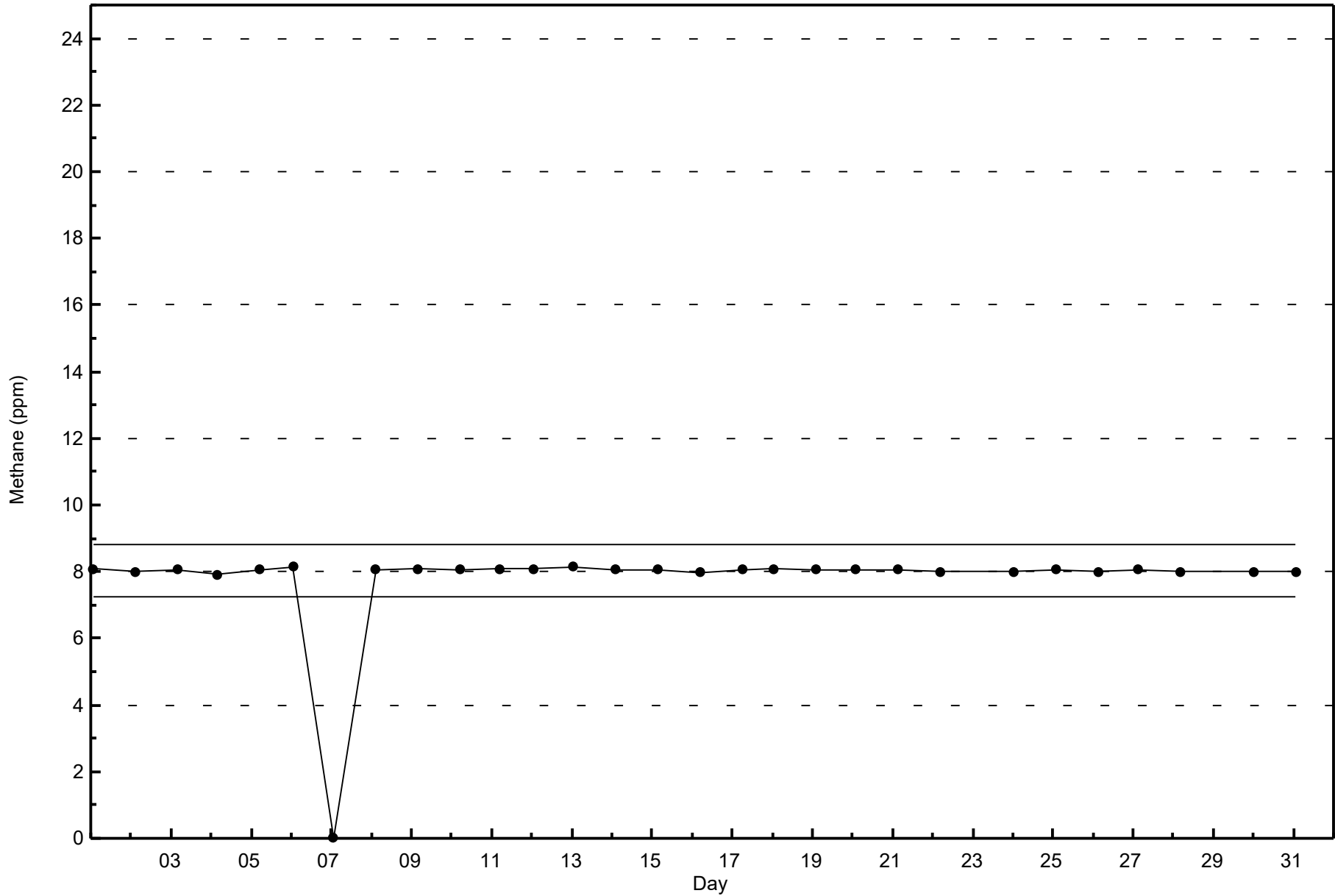
Wood Buffalo Environmental Association
Wind Rose May 2023

Methane (CH₄) - ppm
Fort Hills



Total Number of Valid Hours: 687







Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

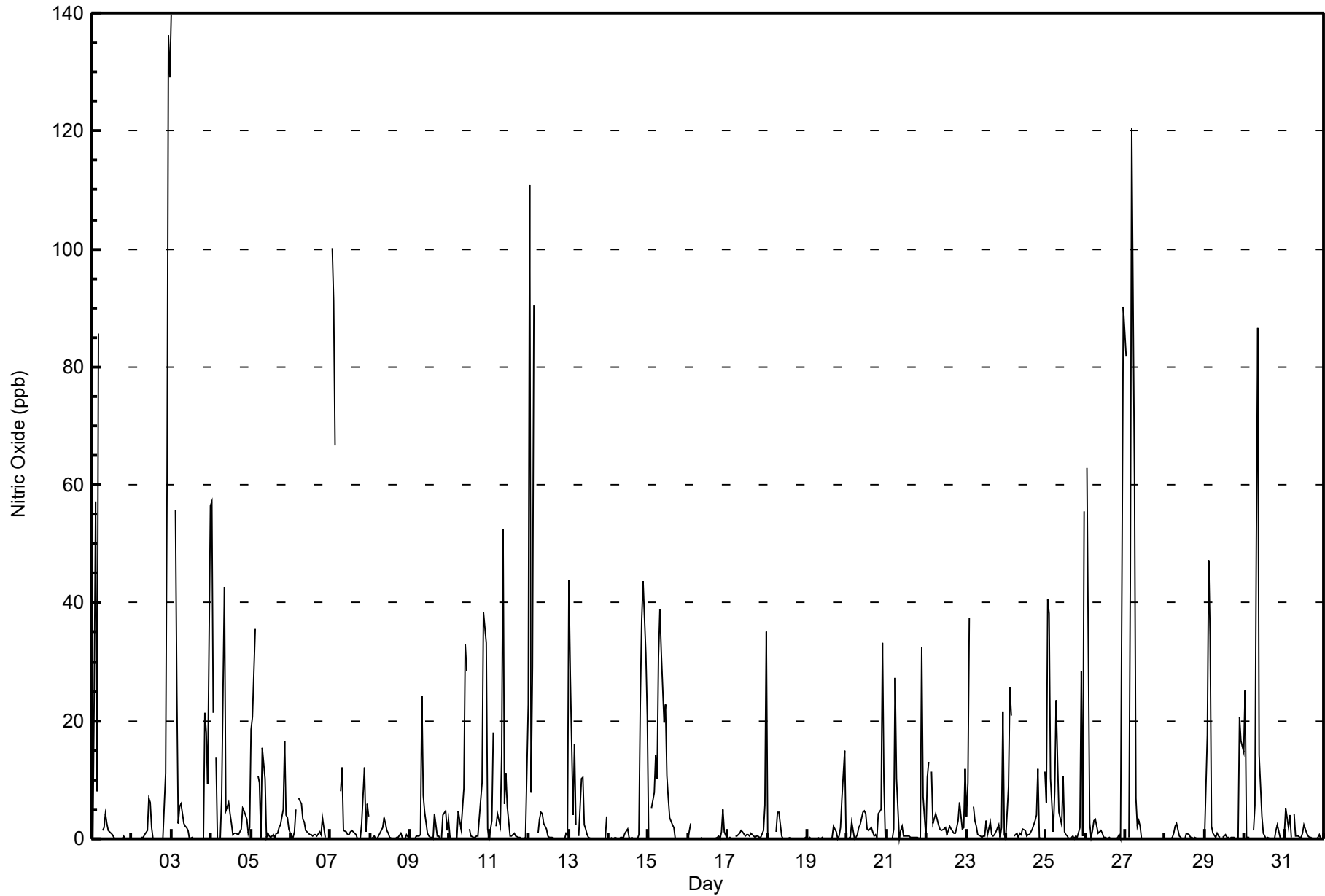
Fort Hills - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		744																			
Maximum Value: 139.7 ppb on May 3 01:00		Maximum Daily Average: 15.4 ppb on May 2		Minimum Daily Average: 0.4 ppb on May 28		Hours of Data:		703																			
Minimum Value: 0.0 ppb on May 1 01:00		Minimum Diurnal Average: 20.0 ppb at hour 1		Minimum Diurnal Average: 0.4 ppb at hour 17		Hours of Missing Data:		41																			
Monthly Average: 6.42 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.7 Q ₃ = 3.5 P ₉₀ = 18.0 P ₉₉ = 90.3		Percent Operational Time:		34		99.1																			
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.0	25.3	57.1	8.0	85.5	Z	1.4	1.8	4.3	2.5	1.4	0.9	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	8.2	85.5	
2-May	Z	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.7	1.4	7.0	6.3	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	60.4	136.2	129.1	15.4	136.2	
3-May	139.7	Z	55.7	24.8	2.7	5.4	5.9	2.6	2.0	1.9	1.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.3	18.0	9.3	56.4	15.1	139.7	
4-May	57.2	21.2	Z	13.7	0.0	0.0	6.9	25.3	42.8	4.7	6.1	4.2	2.5	0.7	0.9	0.9	0.8	1.2	1.6	5.2	4.7	3.3	0.9	1.8	9.0	57.2	
5-May	18.4	20.6	35.5	Z	10.6	9.5	0.2	15.5	10.2	0.2	1.0	0.5	0.2	0.6	0.3	0.9	1.0	1.9	2.4	5.1	16.6	3.9	3.4	1.6	7.0	35.5	
6-May	0.2	0.3	1.1	5.0	Z	6.8	5.9	3.4	2.8	1.3	1.2	0.7	0.7	0.6	0.7	0.8	0.5	1.2	0.8	3.6	2.0	0.3	PF	PF	1.9	6.8	
7-May	PF	100.3	91.0	66.8	PF	Z	8.1	12.0	1.5	1.2	0.8	0.7	1.1	1.3	1.2	0.6	0.0	0.1	0.0	2.6	12.1	1.3	6.0	3.7	14.9	100.3	
8-May	Z	0.0	0.5	0.0	0.0	0.6	0.8	2.0	3.5	2.5	1.4	1.0	0.3	0.1	0.1	0.1	0.2	0.2	1.0	0.2	0.0	0.0	0.8	0.0	0.7	3.5	
9-May	0.1	Z	0.0	0.0	0.4	0.5	0.8	24.1	7.4	4.4	0.9	0.5	0.3	0.2	0.0	4.3	0.5	0.5	0.0	0.0	4.0	4.8	1.4	3.2	2.5	24.1	
10-May	0.4	0.1	Z	0.0	0.3	4.6	3.0	1.8	8.6	32.9	28.4	M	1.6	0.4	0.1	0.3	0.4	0.5	3.5	9.5	38.5	35.8	33.1	1.8	9.3	38.5	
11-May	0.0	3.0	18.0	Z	2.1	4.2	2.2	14.1	52.6	5.9	11.1	5.5	0.4	0.6	0.7	1.0	0.5	0.3	0.2	0.0	0.0	0.0	0.2	22.7	6.3	52.6	
12-May	110.9	7.9	29.3	90.3	Z	0.9	3.2	4.4	4.2	2.6	1.5	0.4	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.8	11.2	110.9	
13-May	44.0	28.0	4.0	16.2	2.4	Z	0.6	10.3	10.5	2.4	1.6	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	5.4	44.0	
14-May	Z	0.2	0.0	0.0	0.3	0.0	0.0	0.1	0.2	0.3	0.8	1.6	0.3	0.1	0.3	0.1	0.1	0.0	0.7	22.6	37.0	43.7	31.3	20.9	7.0	43.7	
15-May	0.0	Z	5.2	7.8	14.4	10.2	30.9	38.8	31.5	19.8	22.9	10.7	6.8	3.5	2.4	2.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	9.0	38.8	
16-May	0.0	2.7	Z	0.0	0.0	0.0	0.1	0.1	0.2	C	C	C	C	C	0.0	0.0	0.0	0.3	0.5	0.0	1.1	5.1	1.2	0.0	0.6	5.1	
17-May	0.0	0.3	0.0	Z	0.4	0.5	0.7	0.9	1.4	1.1	0.5	0.8	0.7	0.5	0.9	0.6	0.2	0.4	0.5	0.3	0.2	1.4	5.6	35.1	2.3	35.1	
18-May	0.4	0.0	0.1	0.0	Z	1.2	4.5	4.5	0.4	0.1	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.5	4.5	
19-May	0.0	0.2	0.0	0.0	0.0	Z	0.3	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.2	2.0	1.2	0.0	0.6	1.8	6.8	14.9	0.0	1.2	14.9	
20-May	Z	0.2	0.3	2.7	0.0	0.2	0.6	2.0	2.4	4.5	4.7	4.2	1.7	1.5	1.9	1.1	0.6	0.8	0.2	4.4	5.1	33.1	9.7	0.0	3.6	33.1	
21-May	0.0	Z	0.0	0.0	1.7	27.3	10.3	0.1	1.4	2.1	0.5	0.5	0.4	0.5	0.3	0.3	0.2	0.3	0.2	0.1	0.3	32.6	7.2	0.2	3.8	32.6	
22-May	10.4	13.1	Z	11.3	2.6	4.4	3.2	2.5	1.6	1.5	1.7	1.8	0.7	1.5	2.2	1.6	0.9	1.0	1.9	3.1	6.1	1.6	1.8	11.8	3.8	13.1	
23-May	3.8	9.6	37.4	Z	5.5	3.2	2.2	0.8	0.5	0.2	0.4	0.6	3.0	0.8	2.9	0.7	0.4	0.8	1.3	2.3	0.3	2.0	21.7	0.6	4.4	37.4	
24-May	0.0	8.7	25.6	20.8	Z	0.4	1.1	0.2	0.9	0.7	1.7	1.4	0.4	0.6	0.7	1.3	1.7	3.1	4.1	11.8	0.2	0.0	PF	11.3	4.4	25.6	
25-May	6.2	40.7	38.2	10.1	1.2	8.1	23.5	13.6	4.5	2.4	10.6	1.1	0.8	0.4	0.0	0.2	0.5	0.1	0.5	0.3	1.8	28.5	0.4	55.5	10.4	55.5	
26-May	Z	62.8	2.6	0.2	1.3	3.0	3.3	1.0	1.1	1.3	0.9	0.2	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.7	0.1	44.0	90.1	9.3	90.1	
27-May	81.8	Z	0.2	43.8	120.6	60.2	6.9	2.1	3.2	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.0	120.6	
28-May	0.0	0.0	Z	0.0	0.3	1.1	2.2	2.6	0.5	0.1	0.1	0.0	0.1	1.1	0.8	0.3	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.4	2.6	
29-May	0.0	17.6	47.2	34.3	2.2	0.8	0.3	0.9	0.4	0.2	M	0.3	0.7	0.4	0.1	0.1	0.2	0.1	0.1	0.0	0.1	20.6	16.5	14.8	6.9	47.2	
30-May	25.2	0.2	0.3	0.2	Z	1.4	5.7	50.4	86.6	14.2	3.9	1.0	0.4	0.0	0.1	0.0	0.0	0.0	0.0	1.5	2.3	0.3	0.1	0.0	8.4	86.6	
31-May	0.7	5.3	1.8	3.9	0.2	Z	4.2	0.4	0.4	0.1	0.2	0.9	2.3	1.0	0.5	0.1	0.3	0.1	0.0	0.0	0.2	0.7	0.1	0.0	1.0	5.3	
		20.0	14.2	17.4	13.3	10.2	5.9	4.5	7.7	9.3	3.8	3.9	1.6	1.0	0.6	0.6	0.6	0.4	0.5	0.6	2.4	5.4	9.8	12.0	15.5	Diurnal Average	
		139.7	100.3	91.0	90.3	120.6	60.2	30.9	50.4	86.6	32.9	28.4	10.7	6.8	3.5	2.9	4.3	2.0	3.1	4.1	22.6	38.5	60.4	136.2	129.1	Diurnal Maximum	
Z - zerospan		C - Calibration			M - Maintenance			PF - Power Failure																			



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Fort Hills - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Fort Hills - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	635	90.33	90.33
21 - 40	38	5.41	95.73
41 - 80	18	2.56	98.29
81 - 159	12	1.71	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 703

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Fort Hills - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	49	52	28	8	7	11	68	109	115	69	29	22	14	13	13	28	635
21 - 40	6	5	2	1	0	1	11	8	0	1	0	0	1	0	0	2	38
41 - 80	0	1	0	0	0	2	8	3	0	2	1	1	0	0	0	0	18
81 - 159	0	0	0	0	0	1	7	3	1	0	0	0	0	0	0	0	12
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	55	58	30	9	7	15	94	123	116	72	30	23	15	13	13	30	703

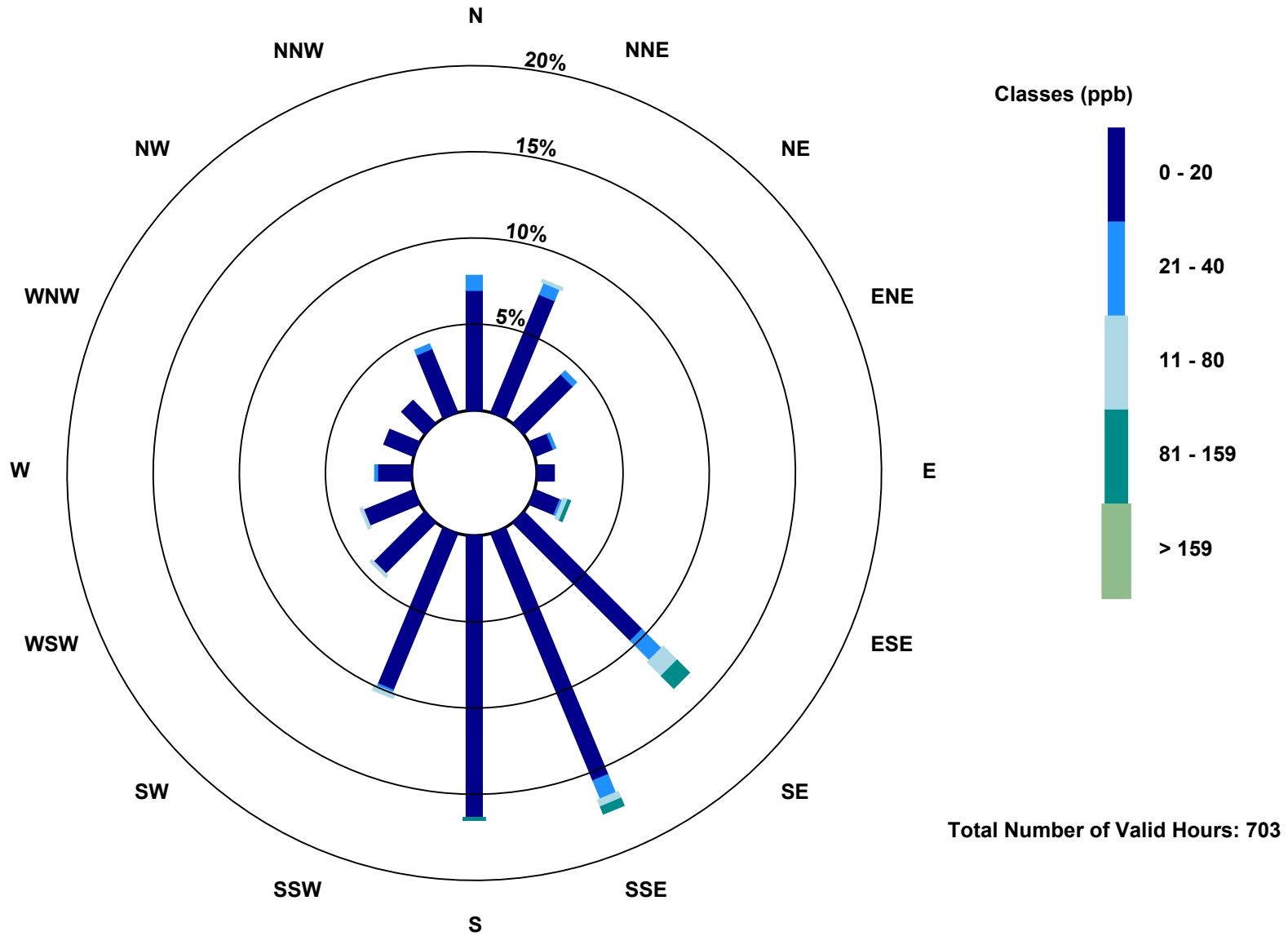
Total Number of Valid Hours: 703

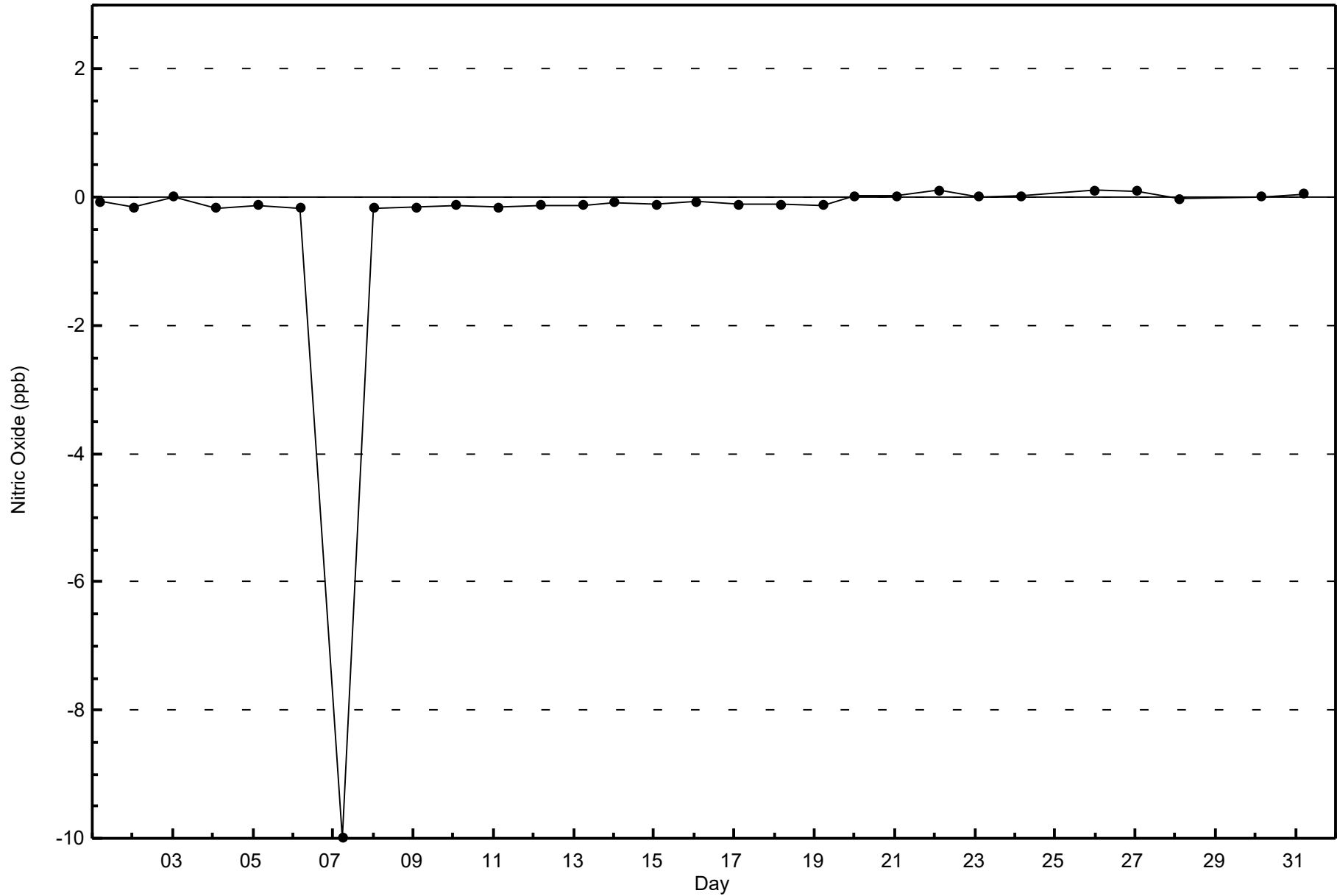
Total Number of Hours: 744

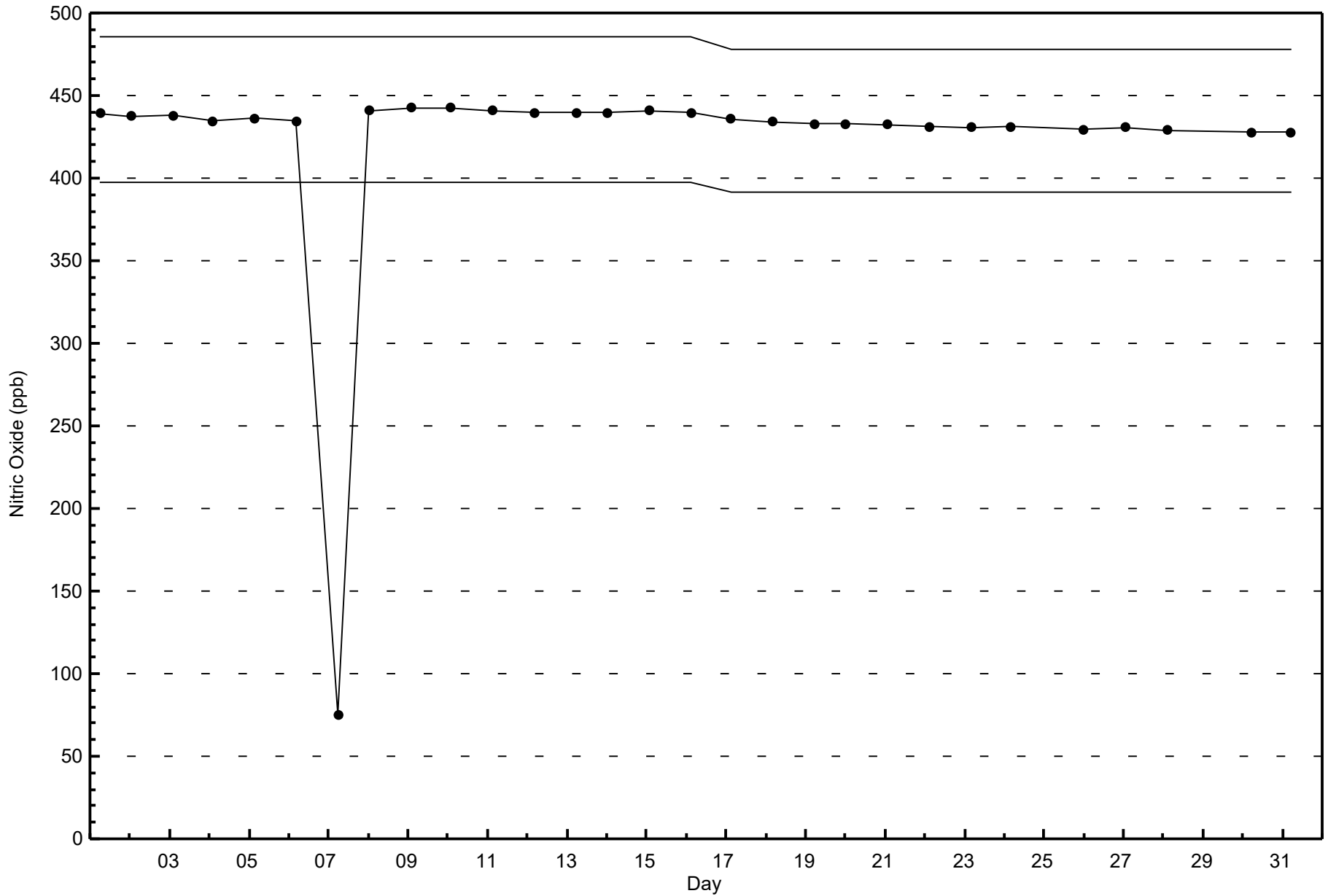


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Fort Hills









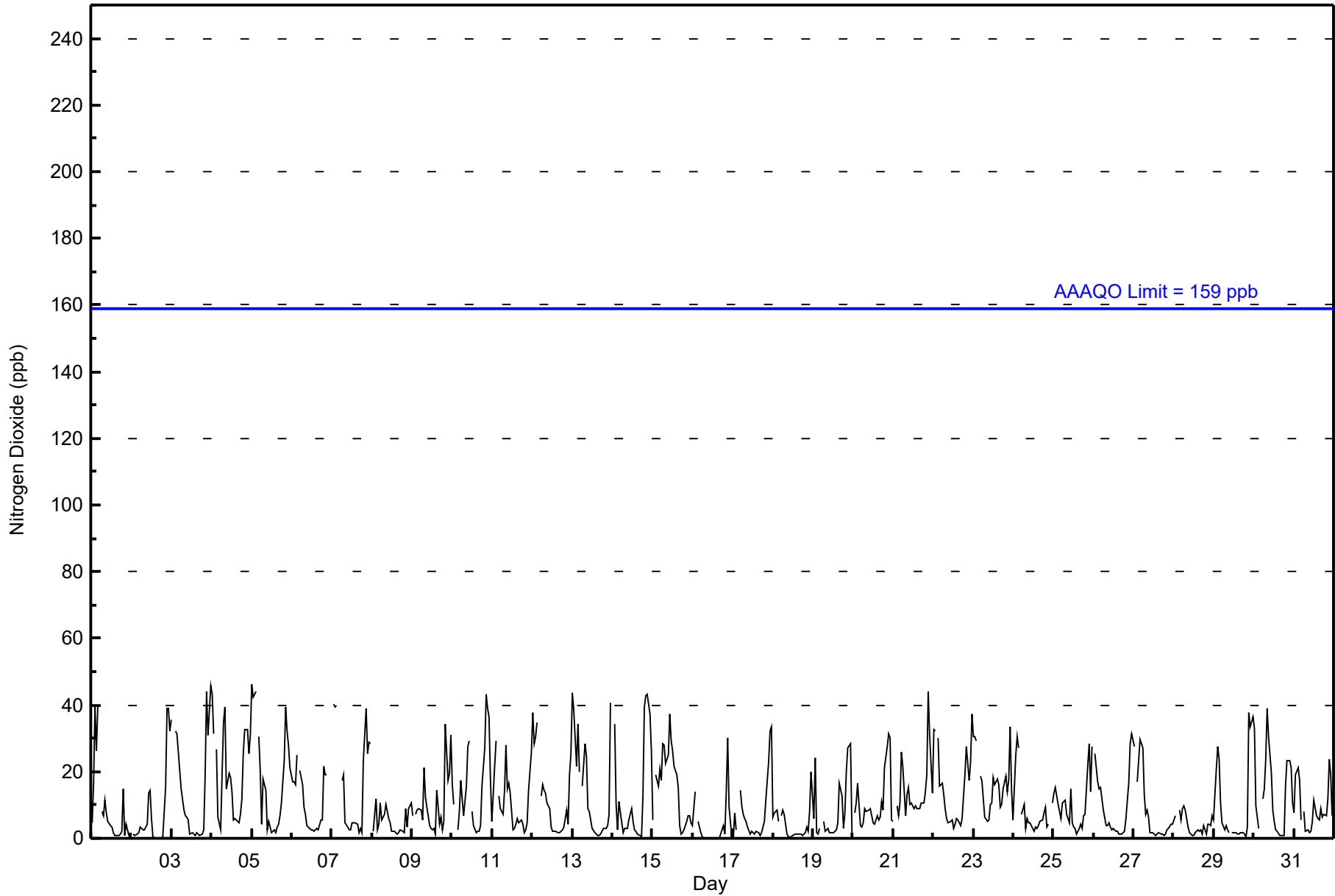
Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

Fort Hills - May 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 744																	744						
Maximum Value: 46.1 ppb on May 5 01:00		Maximum Daily Average: 19.9 ppb on May 4																	Hours of Data: 703								
Minimum Value: 0.0 ppb on May 16 09:00		Minimum Daily Average: 4.2 ppb on May 28																	Hours of Missing Data: 41								
Maximum Diurnal Average: 21.4 ppb at hour 23		Minimum Diurnal Average: 3.5 ppb at hour 17																	Hours of Calibration: 34								
Monthly Average: 11.22 ppb		Percentiles: P ₁ = 0.1 P ₁₀ = 1.3 Q ₁ = 2.7 Median = 6.7 Q ₃ = 16.7 P ₉₀ = 29.2 P ₉₉ = 43.1																	Percent Operational Time: 99.1								
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	4.5	16.7	39.5	26.2	39.7	Z	8.2	6.8	11.6	7.8	4.9	3.9	3.3	1.7	1.0	0.8	0.7	1.2	2.3	14.9	0.9	4.2	0.9	0.9	8.8	39.7	
2-May	Z	1.2	0.7	1.2	1.9	3.4	3.0	2.7	2.6	4.2	13.7	14.3	5.8	0.4	0.1	0.2	0.1	0.1	0.1	0.6	15.1	39.1	38.9	32.4	7.9	39.1	
3-May	35.4	Z	32.1	31.4	25.7	20.3	15.0	8.5	6.6	6.4	5.6	1.2	1.8	1.3	0.9	1.5	1.2	1.0	1.3	2.4	19.1	44.2	31.0	45.8	14.8	45.8	
4-May	43.1	31.3	Z	26.9	6.4	2.5	19.7	34.6	39.4	14.7	19.6	18.1	14.1	5.6	5.8	5.4	4.7	7.4	12.0	25.6	32.7	32.8	25.3	30.9	19.9	43.1	
5-May	46.1	42.3	44.0	Z	30.7	20.3	4.3	17.7	14.3	2.6	5.0	3.5	1.7	2.6	1.9	3.6	4.1	6.7	10.8	23.1	39.2	32.2	27.8	21.0	17.6	46.1	
6-May	17.1	16.9	16.3	25.2	Z	20.2	15.9	9.4	7.4	3.9	3.3	2.4	2.4	2.0	2.6	2.8	2.4	5.3	5.3	21.7	18.9	18.9	PF	PF	10.5	25.2	
7-May	PF	40.2	39.2	39.8	PF	Z	17.3	18.9	4.5	3.5	2.7	2.4	4.5	4.6	4.5	4.2	1.6	3.0	1.5	23.3	38.9	25.5	28.8	28.6	16.1	40.2	
8-May	Z	2.3	11.9	2.7	4.4	10.4	5.7	7.3	10.3	8.2	5.8	4.7	2.1	2.0	1.8	1.4	1.9	2.7	2.2	1.9	8.7	3.6	9.1	10.8	5.3	11.9	
9-May	6.9	Z	7.2	8.6	8.9	8.4	5.7	21.2	12.1	9.5	3.8	2.8	2.6	3.0	1.2	14.2	4.1	6.2	2.5	5.0	34.5	17.2	19.4	31.1	10.3	34.5	
10-May	15.9	10.0	Z	2.7	8.0	17.5	11.9	6.8	15.8	27.4	29.1	M	8.1	4.0	1.9	2.2	2.3	3.8	15.5	27.3	43.1	38.9	36.3	17.6	15.7	43.1	
11-May	4.9	21.6	29.2	Z	12.8	9.1	7.2	14.5	28.0	14.8	16.7	13.7	2.4	3.1	4.2	6.1	4.6	5.3	4.1	1.7	2.6	4.8	14.4	26.0	10.9	29.2	
12-May	37.9	28.4	30.4	34.7	Z	12.8	16.0	14.5	13.6	10.4	8.8	3.2	2.2	2.2	2.1	1.7	1.9	2.2	2.6	3.2	8.6	4.4	19.1	25.3	12.4	37.9	
13-May	43.8	38.6	21.7	34.5	20.0	Z	15.6	28.5	24.6	9.1	8.1	5.7	3.1	1.7	1.1	1.0	1.0	1.2	2.9	3.0	2.9	4.0	7.1	40.7	13.9	43.8	
14-May	Z	34.5	10.3	2.4	11.1	4.5	1.8	2.9	2.8	3.0	5.5	9.1	5.2	2.4	2.0	1.1	0.7	0.6	12.6	39.4	43.0	43.3	37.5	25.8	13.1	43.3	
15-May	5.6	Z	18.9	15.6	20.9	17.5	28.4	28.0	22.5	25.1	37.2	29.4	26.3	21.4	19.0	15.2	3.8	1.1	1.9	2.4	5.1	6.7	6.7	4.6	15.8	37.2	
16-May	3.7	13.8	Z	5.2	3.5	1.8	0.6	0.1	0.0	C	C	C	C	C	0.1	0.0	0.0	2.5	3.9	1.1	13.8	29.9	9.5	0.2	5.0	29.9	
17-May	0.1	7.7	2.7	Z	14.4	9.6	7.1	5.9	5.2	3.6	1.4	2.2	1.9	1.4	2.3	1.6	0.8	1.9	3.6	5.2	11.5	22.9	32.2	33.5	7.8	33.5	
18-May	6.3	7.7	8.5	4.9	Z	6.8	8.5	7.0	1.4	0.6	0.6	0.5	1.0	1.3	1.3	1.3	1.2	1.2	0.8	1.9	3.4	2.2	7.9	19.9	4.2	19.9	
19-May	5.9	24.1	1.7	1.3	2.8	Z	5.2	2.1	2.7	2.9	1.9	1.5	1.6	2.3	2.7	4.6	16.7	12.6	3.1	7.8	20.1	27.2	28.2	1.8	7.9	28.2	
20-May	Z	7.7	10.8	16.5	3.8	3.6	4.7	8.8	8.2	8.6	9.0	6.9	4.5	4.4	6.7	5.5	6.4	11.0	8.3	21.2	27.4	31.5	30.0	5.3	10.9	31.5	
21-May	5.2	Z	9.9	6.7	10.6	25.7	21.4	6.9	13.3	15.4	10.0	10.8	9.1	9.9	9.1	9.1	9.1	10.5	10.4	14.0	19.1	44.2	31.1	13.6	14.1	44.2	
22-May	32.8	32.3	Z	30.2	15.5	16.6	13.2	8.9	6.1	4.6	5.1	5.5	3.0	4.4	6.1	5.5	3.9	5.9	12.6	19.0	27.4	17.4	22.7	37.1	14.6	37.1	
23-May	30.3	30.6	29.1	Z	18.6	17.4	11.9	6.3	5.0	5.5	10.2	10.7	18.2	16.3	17.6	16.1	9.4	10.2	14.7	18.7	13.9	17.2	33.5	14.9	16.4	33.5	
24-May	5.4	25.1	30.5	27.2	Z	7.3	10.1	3.0	6.0	4.5	4.7	2.8	2.3	3.3	2.9	3.7	5.2	5.7	7.7	9.4	3.6	4.3	PF	10.6	8.4	30.5	
25-May	13.5	15.4	12.8	10.2	5.9	10.4	10.9	11.6	7.0	4.6	14.7	4.5	3.6	2.9	1.4	3.1	4.3	2.9	6.7	7.4	22.2	28.4	14.0	27.4	10.2	28.4	
26-May	Z	25.4	16.9	14.7	15.2	12.0	8.6	3.8	3.8	4.5	3.6	2.4	2.9	2.1	2.2	1.2	1.2	1.1	2.0	6.1	11.3	16.6	28.2	31.3	9.4	31.3	
27-May	27.5	Z	17.0	23.5	29.6	27.2	13.1	7.3	8.4	6.4	1.6	1.5	1.2	1.0	1.4	1.6	1.2	1.3	1.0	1.3	2.7	2.8	4.1	4.2	8.1	29.6	
28-May	5.3	6.7	Z	8.4	5.7	9.1	9.7	8.3	3.5	1.5	1.3	0.9	0.9	1.7	2.5	2.2	2.6	1.4	3.7	1.2	4.1	4.4	4.0	6.9	4.2	9.7	
29-May	5.3	20.6	27.6	23.9	10.6	4.6	2.6	3.9	2.6	1.8	M	1.6	1.5	1.8	1.1	1.1	1.9	1.8	1.3	0.4	3.4	37.9	33.4	36.6	9.9	37.9	
30-May	32.9	9.7	6.5	2.9	Z	11.8	14.8	23.9	38.9	30.7	19.7	8.4	5.1	2.4	2.2	1.0	0.7	0.7	1.0	15.6	23.3	23.3	21.3	10.6	13.4	38.9	
31-May	7.7	19.1	21.0	17.4	5.7	Z	7.9	2.3	2.4	1.8	2.1	5.1	11.4	6.9	6.0	5.6	8.9	6.5	7.2	6.7	11.7	23.9	19.1	6.9	9.3	23.9	
		17.7	20.4	19.1	16.5	13.3	12.0	10.5	10.7	10.7	8.3	8.8	6.2	5.1	4.0	3.7	4.0	3.5	4.0	5.3	10.7	17.2	21.1	21.4	20.1	Diurnal Average	
		46.1	42.3	44.0	39.8	39.7	27.2	28.4	34.6	39.4	30.7	37.2	29.4	26.3	21.4	19.0	16.1	16.7	12.6	15.5	39.4	43.1	44.2	38.9	45.8	Diurnal Maximum	
Z - zerospan		C - Calibration				M - Maintenance				PF - Power Failure																	
Alberta Ambient Air Quality Objectives (AAAQO):		1-hr		159 ppb																							





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Fort Hills - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	568	80.80	80.80
21 - 40	123	17.50	98.29
41 - 80	12	1.71	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 703

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort Hills - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	43	38	21	5	6	8	53	102	109	69	26	22	15	12	11	28	568
21 - 40	11	15	9	3	1	6	38	21	7	3	3	1	0	1	2	2	123
41 - 80	1	5	0	1	0	1	3	0	0	0	1	0	0	0	0	0	12
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	55	58	30	9	7	15	94	123	116	72	30	23	15	13	13	30	703

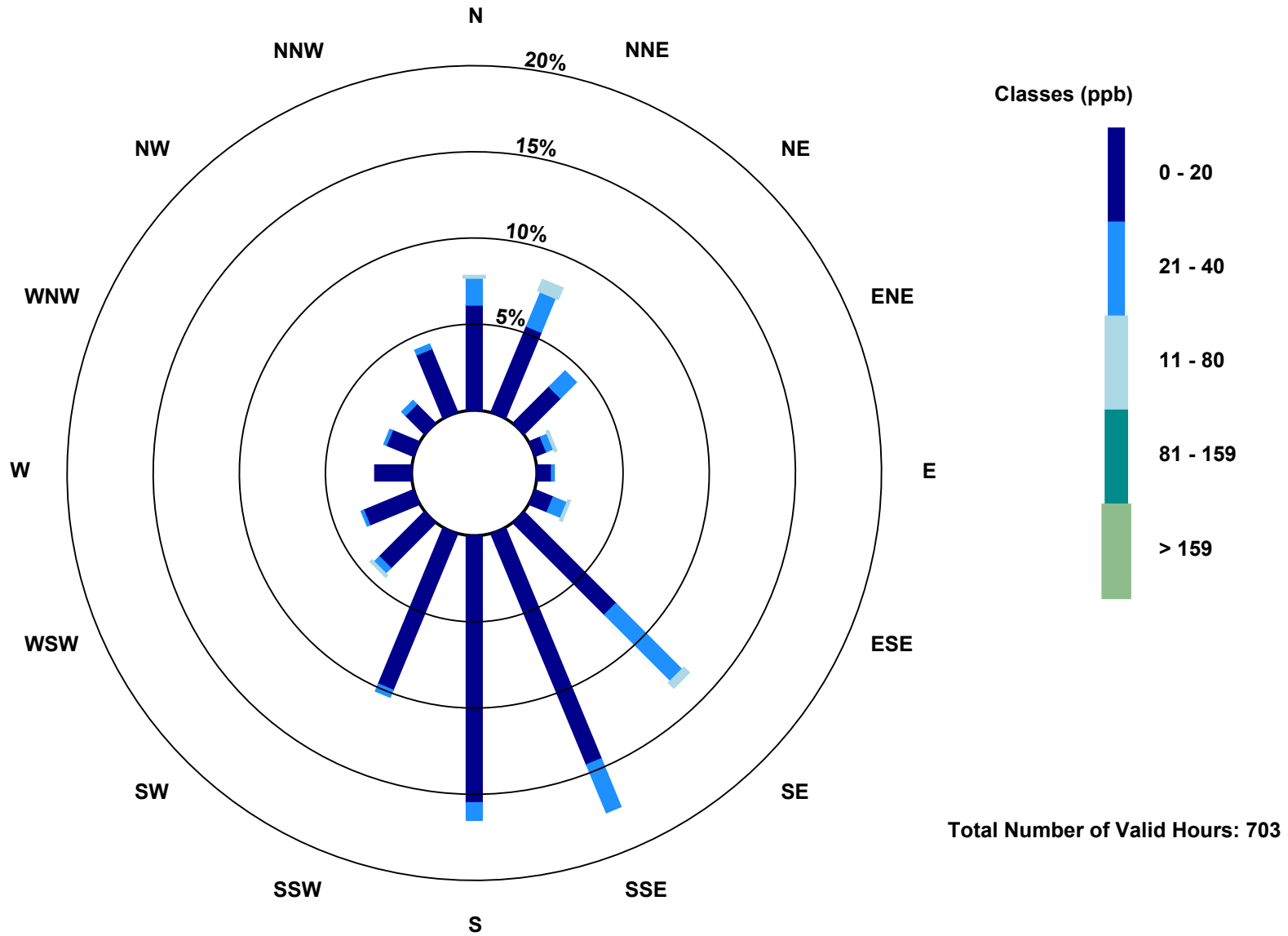
Total Number of Valid Hours: 703

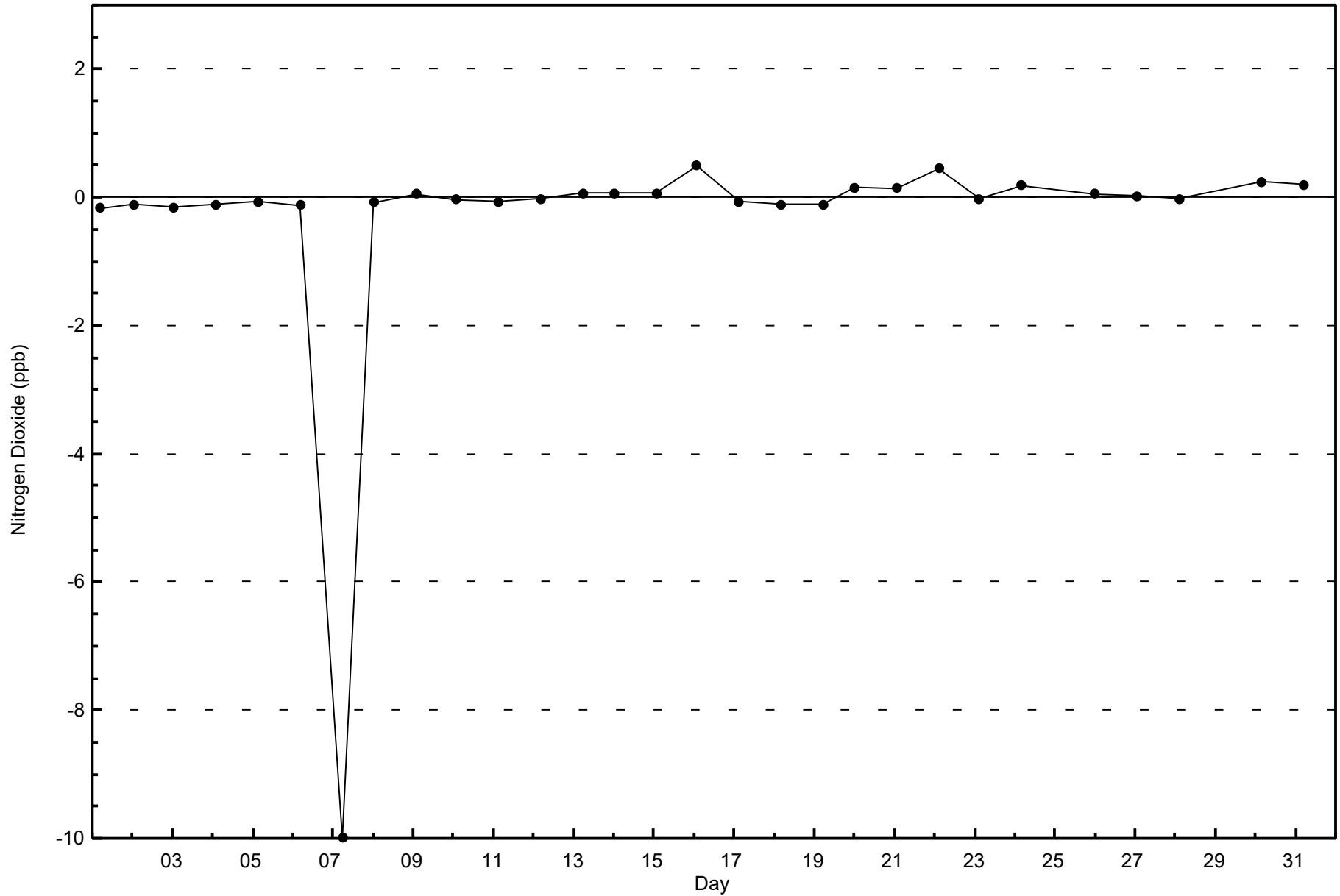
Total Number of Hours: 744

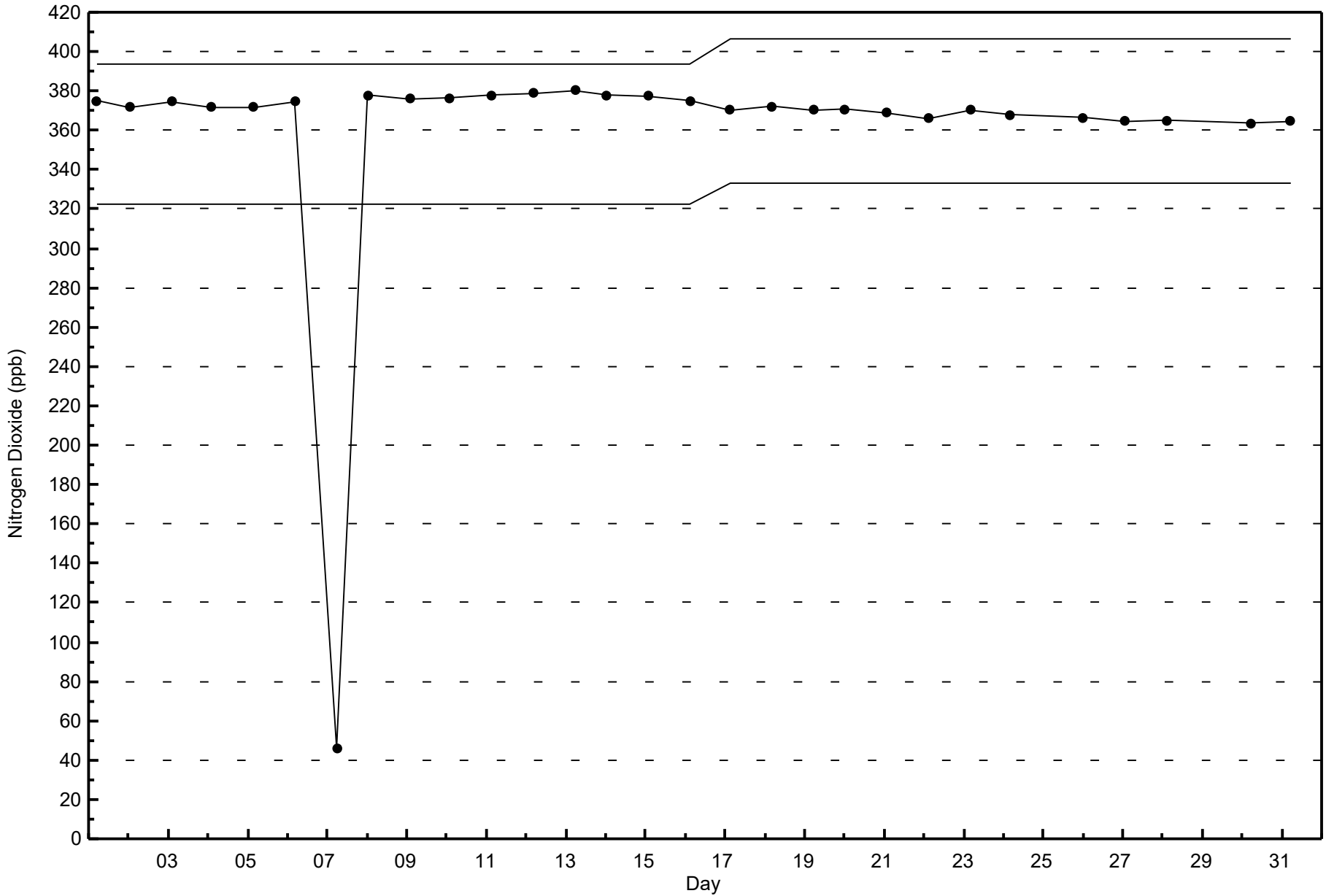


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Fort Hills









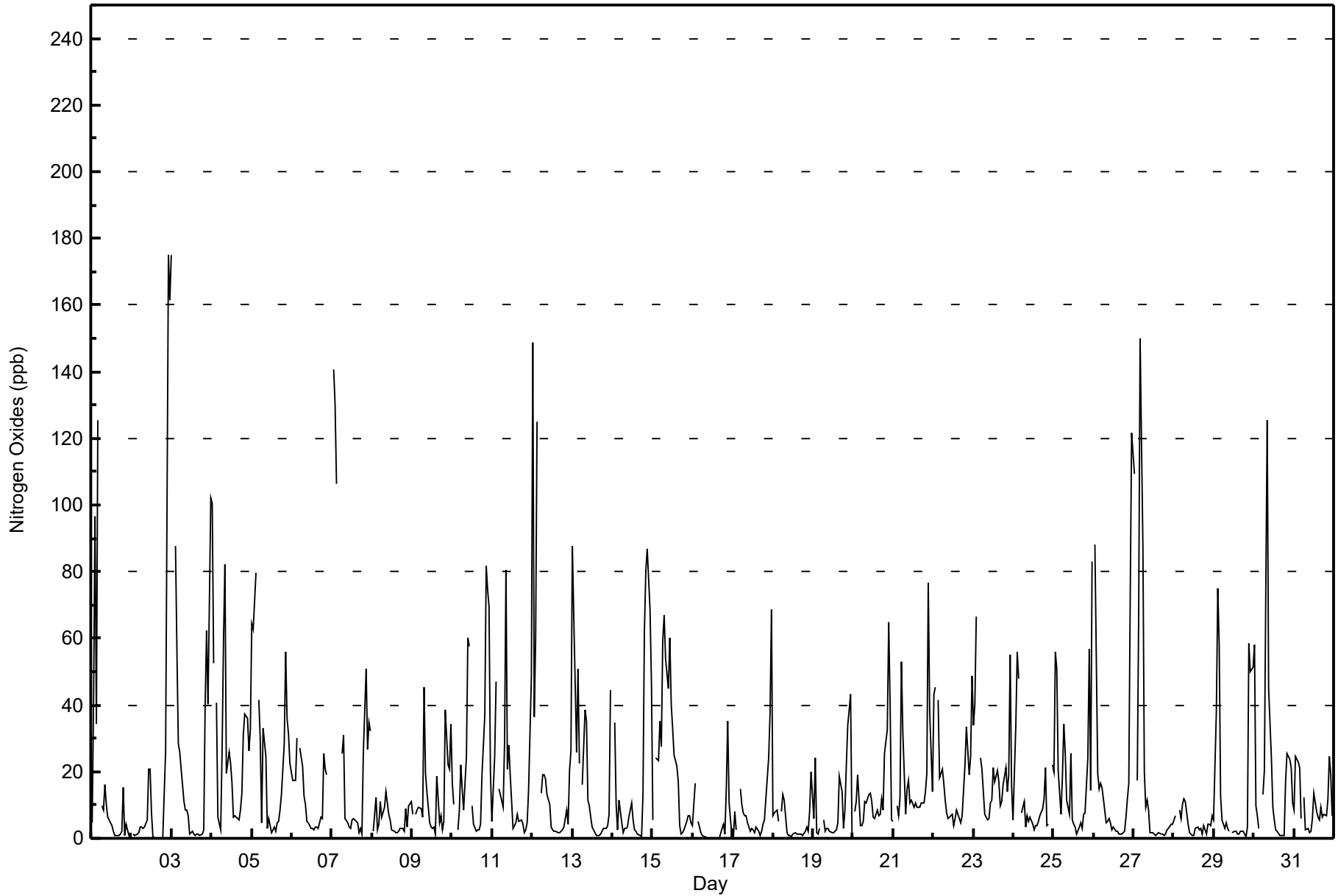
Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_x) - ppb

Fort Hills - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		744																																								
Maximum Value: 175.1 ppb on May 3 01:00		Maximum Daily Average: 30.9 ppb on May 7		Minimum Daily Average: 4.6 ppb on May 28		Hours of Data:		703																																								
Minimum Value: 0.0 ppb on May 16 16:00		Minimum Diurnal Average: 3.9 ppb at hour 17		Minimum Diurnal Average: 3.9 ppb at hour 17		Hours of Missing Data:		41																																								
Maximum Diurnal Average: 37.7 ppb at hour 1		Percentiles: P ₁ = 0.1 P ₁₀ = 1.4 Q ₁ = 3.0 Median = 7.2 Q ₃ = 20.9 P ₉₀ = 47.8 P ₉₉ = 125.5		Monthly Average: 17.64 ppb		Hours of Calibration:		34		Percent Operational Time: 99.1																																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	4.5	42.0	96.6	34.2	125.2	Z	9.6	8.6	15.9	10.3	6.3	4.8	3.9	1.9	1.0	0.8	0.7	1.2	2.3	15.4	0.9	4.2	0.9	0.9	17.1	125.2																						
2-May	Z	1.2	0.7	1.2	1.9	3.4	3.2	3.0	3.3	5.6	20.7	20.6	7.6	0.4	0.1	0.2	0.1	0.1	0.1	0.6	26.2	99.5	175.1	161.5	23.3	175.1																						
3-May	175.1	Z	87.8	56.2	28.4	25.7	20.9	11.1	8.6	8.3	6.9	1.2	2.0	1.3	0.9	1.5	1.2	1.0	1.3	2.4	40.4	62.2	40.3	102.2	29.9	175.1																						
4-May	100.3	52.5	Z	40.6	6.4	2.5	26.6	59.9	82.2	19.4	25.7	22.3	16.6	6.3	6.7	6.3	5.5	8.6	13.6	30.8	37.4	36.1	26.2	32.7	28.9	100.3																						
5-May	64.5	62.9	79.5	Z	41.3	29.8	4.5	33.2	24.5	2.8	6.0	4.0	1.9	3.2	2.2	4.5	5.1	8.6	13.2	28.2	55.8	36.1	31.2	22.6	24.6	79.5																						
6-May	17.3	17.2	17.4	30.2	Z	27.0	21.8	12.8	10.2	5.2	4.5	3.1	3.1	2.6	3.3	3.6	2.9	6.5	6.1	25.3	20.9	19.2	PF	PF	12.4	30.2																						
7-May	PF	140.5	130.2	106.6	PF	Z	25.4	30.9	6.0	4.7	3.5	3.1	5.6	5.9	5.7	4.8	1.6	3.1	1.5	25.9	51.0	26.8	34.8	32.3	30.9	140.5																						
8-May	Z	2.3	12.4	2.7	4.4	11.0	6.5	9.3	13.8	10.7	7.2	5.7	2.4	2.1	1.9	1.5	2.1	2.9	3.2	2.1	8.7	3.6	9.9	10.8	6.0	13.8																						
9-May	7.0	Z	7.2	8.6	9.3	8.9	6.5	45.3	19.5	13.9	4.7	3.3	2.9	3.2	1.2	18.5	4.6	6.7	2.5	5.0	38.5	22.0	20.8	34.3	12.8	45.3																						
10-May	16.3	10.1	Z	2.7	8.3	22.1	14.9	8.6	24.4	60.3	57.5	M	9.7	4.4	2.0	2.5	2.7	4.3	19.0	36.8	81.6	74.7	69.4	19.4	25.1	81.6																						
11-May	4.9	24.6	47.2	Z	14.9	13.3	9.4	28.6	80.6	20.7	27.8	19.2	2.8	3.7	4.9	7.1	5.1	5.6	4.3	1.7	2.6	4.8	14.6	48.7	17.3	80.6																						
12-May	148.8	36.3	59.7	125.1	Z	13.7	19.2	18.9	17.8	13.0	10.3	3.6	2.5	2.3	2.2	1.8	1.9	2.2	2.6	3.2	8.6	4.4	20.1	26.1	23.7	148.8																						
13-May	87.8	66.6	25.7	50.7	22.4	Z	16.2	38.8	35.1	11.5	9.7	6.3	3.3	1.7	1.1	1.0	1.0	1.2	2.9	3.0	2.9	4.0	7.1	44.6	19.3	87.8																						
14-May	Z	34.7	10.3	2.4	11.4	4.5	1.8	3.0	3.0	3.3	6.3	10.7	5.5	2.5	2.3	1.2	0.8	0.6	13.3	62.0	80.0	87.0	68.8	46.7	20.1	87.0																						
15-May	5.6	Z	24.1	23.4	35.3	27.7	59.3	66.8	54.0	44.9	60.1	40.1	33.1	24.9	21.4	17.2	3.9	1.1	1.9	2.4	5.1	6.7	6.8	4.6	24.8	66.8																						
16-May	3.7	16.5	Z	5.2	3.5	1.8	0.7	0.2	0.2	C	C	C	C	C	0.1	0.0	0.0	2.8	4.4	1.1	14.9	35.0	10.7	0.2	5.6	35.0																						
17-May	0.1	8.0	2.7	Z	14.8	10.1	7.8	6.8	6.6	4.7	1.9	3.0	2.6	1.9	3.2	2.2	1.0	2.3	4.1	5.5	11.7	24.3	37.8	68.6	10.1	68.6																						
18-May	6.7	7.7	8.6	4.9	Z	8.0	13.0	11.5	1.8	0.7	0.6	0.5	1.1	1.5	1.4	1.4	1.3	1.3	0.8	1.9	3.4	2.2	7.9	20.0	4.7	20.0																						
19-May	5.9	24.3	1.7	1.3	2.8	Z	5.5	2.2	2.8	3.1	2.0	1.5	1.6	2.3	2.7	4.8	18.7	13.8	3.1	8.4	21.9	34.0	43.1	1.8	9.1	43.1																						
20-May	Z	7.9	11.1	19.2	3.8	3.8	5.3	10.8	10.6	13.1	13.7	11.1	6.2	5.9	8.6	6.6	7.0	11.8	8.5	25.6	32.5	64.6	39.7	5.3	14.5	64.6																						
21-May	5.2	Z	9.9	6.7	12.3	53.0	31.7	7.0	14.7	17.5	10.5	11.3	9.5	10.4	9.4	9.4	9.3	10.8	10.6	14.1	19.4	76.8	38.3	13.8	17.9	76.8																						
22-May	43.2	45.4	Z	41.5	18.1	21.0	16.4	11.4	7.7	6.1	6.8	7.3	3.7	5.9	8.3	7.1	4.8	6.9	14.5	22.1	33.5	19.0	24.5	48.9	18.4	48.9																						
23-May	34.1	40.2	66.5	Z	24.1	20.6	14.1	7.1	5.5	5.7	10.6	11.3	21.2	17.1	20.5	16.8	9.8	11.0	16.0	21.0	14.2	19.2	55.2	15.5	20.7	66.5																						
24-May	5.4	33.8	56.1	48.0	Z	7.7	11.2	3.2	6.9	5.2	6.4	4.2	2.7	3.9	3.6	5.0	6.9	8.8	11.8	21.2	3.8	4.3	PF	21.9	12.8	56.1																						
25-May	19.7	56.1	51.0	20.3	7.1	18.5	34.4	25.2	11.5	7.0	25.3	5.6	4.4	3.3	1.4	3.3	4.8	3.0	7.2	7.7	24.0	56.9	14.4	82.9	20.6	82.9																						
26-May	Z	88.2	19.5	14.9	16.5	15.0	11.9	4.8	4.9	5.8	4.5	2.6	3.3	2.1	2.3	1.2	1.2	1.1	2.0	6.3	12.0	16.7	72.2	121.4	18.7	121.4																						
27-May	109.3	Z	17.2	67.3	150.2	87.4	20.0	9.4	11.6	8.6	1.6	1.5	1.2	1.0	1.4	1.6	1.2	1.3	1.0	1.3	2.7	2.8	4.1	4.2	22.1	150.2																						
28-May	5.3	6.7	Z	8.4	6.0	10.2	11.9	10.9	4.0	1.6	1.4	0.9	1.0	2.8	3.3	2.5	2.9	1.4	4.0	1.2	4.1	4.4	4.0	6.9	4.6	11.9																						
29-May	5.3	38.2	74.8	58.2	12.8	5.4	2.9	4.8	3.0	2.0	M	1.9	2.2	2.2	1.2	1.2	2.1	1.9	1.4	0.4	3.5	58.5	49.9	51.4	16.8	74.8																						
30-May	58.1	9.9	6.8	3.1	Z	13.2	20.5	74.3	125.5	44.9	23.6	9.4	5.5	2.4	2.3	1.0	0.7	0.7	1.0	17.1	25.6	23.6	21.4	10.6	21.8	125.5																						
31-May	8.4	24.4	22.8	21.3	5.9	Z	12.1	2.7	2.8	1.9	2.3	6.0	13.7	7.9	6.5	5.7	9.2	6.6	7.2	6.7	11.9	24.6	19.2	6.9	10.3	24.6																						
																								37.7	34.5	36.4	29.8	23.5	17.9	15.0	18.4	20.0	12.1	12.7	7.8	6.1	4.6	4.3	4.6	3.9	4.5	6.0	13.1	22.6	30.9	33.4	35.6	Diurnal Average
																								175.1	140.5	130.2	125.1	150.2	87.4	59.3	74.3	125.5	60.3	60.1	40.1	33.1	24.9	21.4	18.5	18.7	13.8	19.0	62.0	81.6	99.5	175.1	161.5	Diurnal Maximum
Z - zerospan		C - Calibration				M - Maintenance				PF - Power Failure																																						





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Fort Hills - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	520	73.97	73.97
21 - 40	99	14.08	88.05
41 - 80	58	8.25	96.30
81 - 159	22	3.13	99.43
> 159	3	0.43	99.86

Total Number of Valid Hours: 703

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Fort Hills - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	40	35	17	5	6	6	42	94	105	65	25	19	13	11	10	27	520
21 - 40	5	13	8	2	1	5	24	13	10	5	3	3	1	2	3	1	99
11 - 80	10	8	5	2	0	1	15	10	0	1	2	1	1	0	0	2	58
81 - 159	0	2	0	0	0	2	11	6	1	0	0	0	0	0	0	0	22
> 159	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	3
Totals	55	58	30	9	7	15	94	123	116	71	30	23	15	13	13	30	702

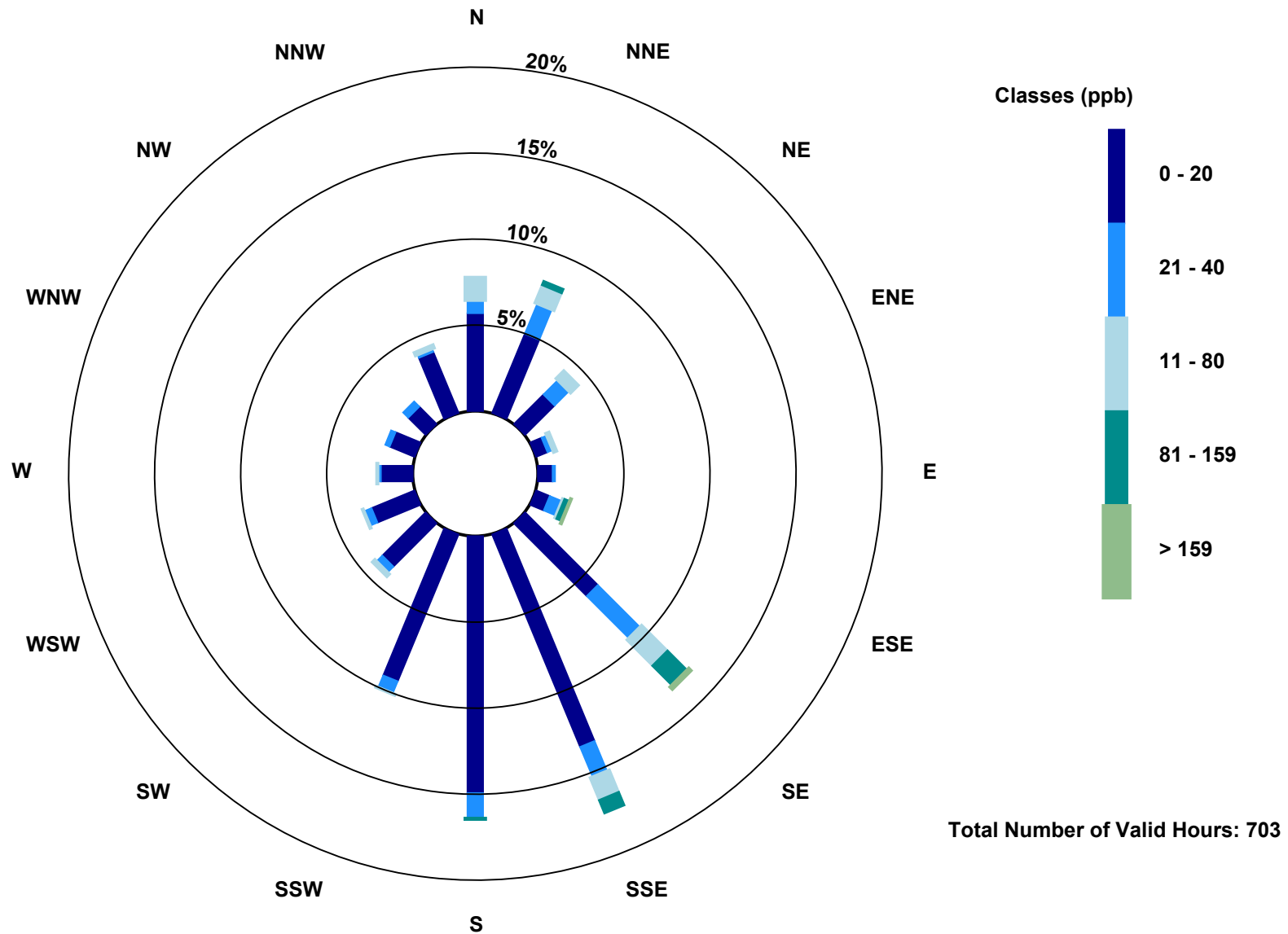
Total Number of Valid Hours: 703

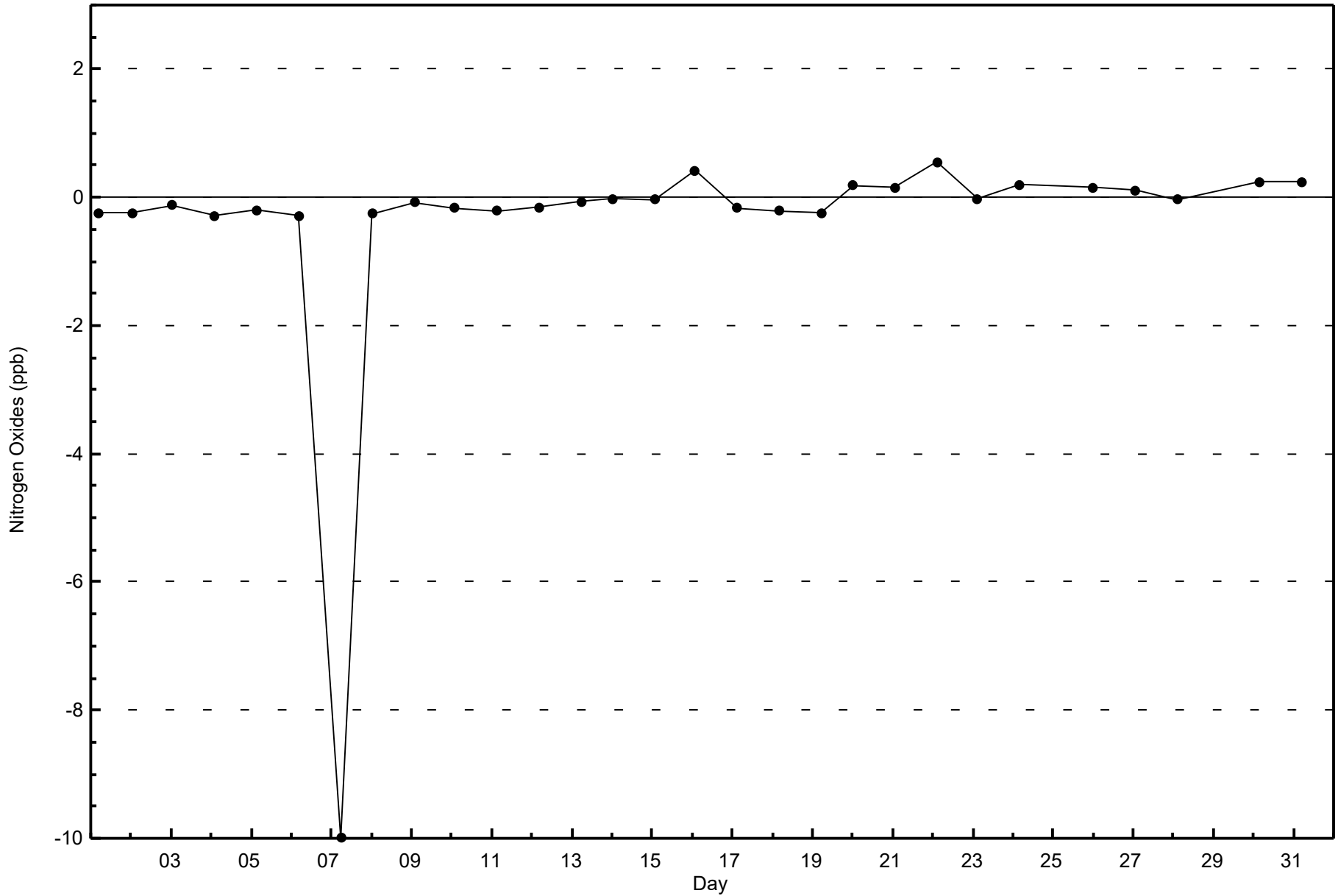
Total Number of Hours: 744

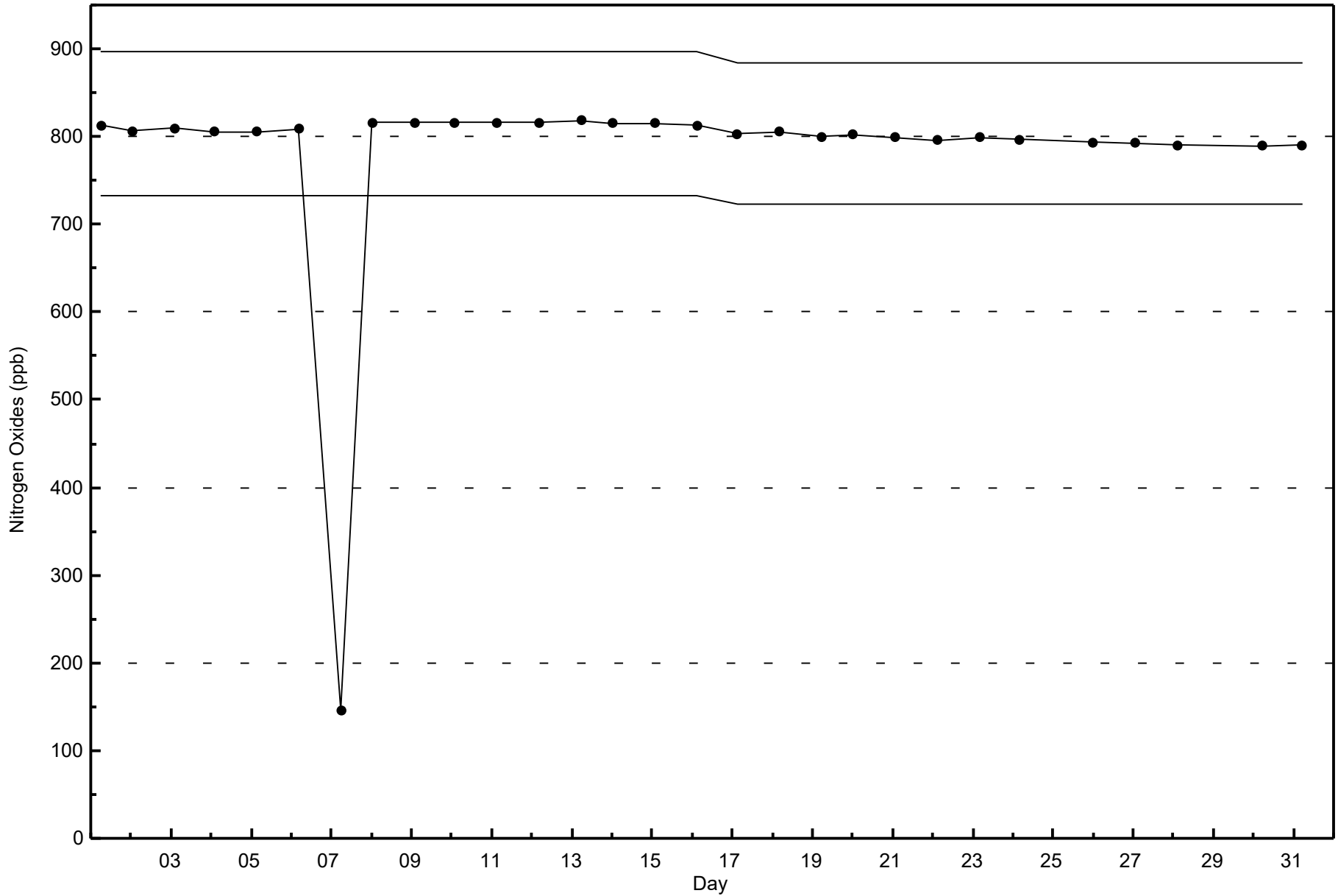


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Fort Hills





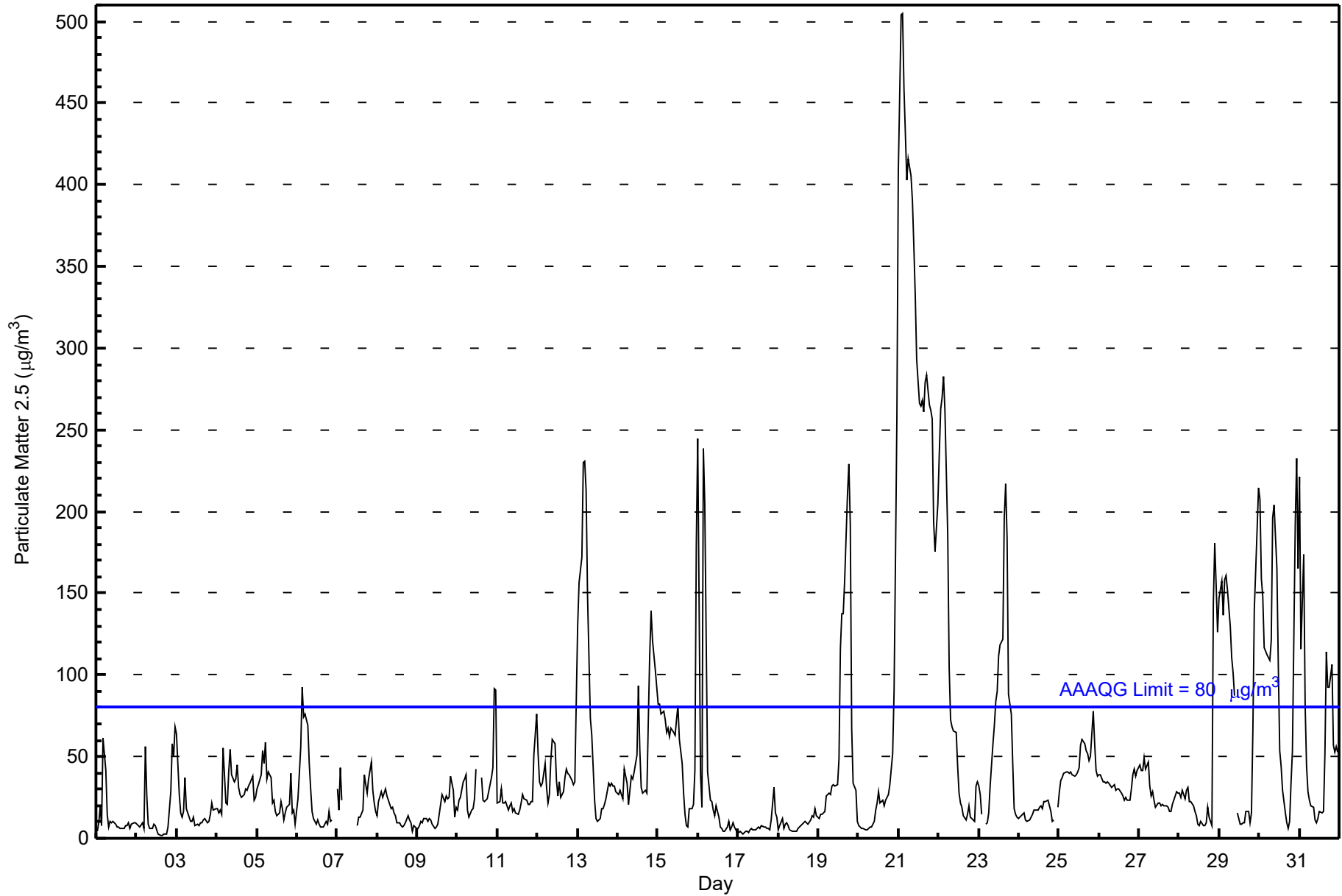




Summary of Hour Averages

Fort Hills - May 2023

Number of Exceedences (AAAQO):		1-hr: 115		24-hr: 19		Hours in Service:		744																		
Maximum Value: 504.5 µg/m ³ on May 21 03:00		Maximum Daily Average: 328.8 µg/m ³ on May 21				Hours of Data:		729																		
Minimum Value: 1.8 µg/m ³ on May 2 15:00		Minimum Daily Average: 7.4 µg/m ³ on May 17				Hours of Missing Data:		15																		
Maximum Diurnal Average: 73.3 µg/m ³ at hour 4		Minimum Diurnal Average: 34.7 µg/m ³ at hour 15				Hours of Calibration:		2																		
Monthly Average: 50.32 µg/m ³		Percentiles: P ₁ = 3.2 P ₁₀ = 7.3 Q ₁ = 12.5 Median = 24.2 Q ₃ = 45.9 P ₉₀ = 137.4 P ₉₉ = 398.9				Percent Operational Time:		98.3																		
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	4.1	9.1	18.8	7.6	61.3	41.5	14.5	7.2	10.0	9.6	10.0	8.6	7.2	7.3	6.1	6.0	6.4	7.4	8.1	9.8	5.9	8.4	9.9	9.3	12.3	61.3
2-May	8.5	7.5	6.9	9.4	6.0	55.8	26.2	8.6	5.7	5.8	8.7	7.5	5.4	2.7	1.8	2.0	2.4	2.3	2.6	6.7	28.6	57.6	49.8	68.4	16.1	68.4
3-May	64.2	27.0	15.6	12.9	16.2	37.0	17.8	13.2	10.2	10.6	13.0	8.1	8.5	7.8	9.2	9.2	11.3	12.1	9.8	10.0	14.7	21.9	17.2	17.9	16.5	64.2
4-May	18.2	15.8	17.3	14.7	54.9	21.3	20.5	40.7	54.7	39.3	34.2	36.1	44.5	31.2	26.6	24.9	26.6	30.2	29.6	32.2	34.0	37.6	23.7	25.4	30.6	54.9
5-May	30.5	32.9	38.6	53.3	46.0	59.0	36.7	40.5	37.3	22.0	23.4	16.3	13.8	15.4	22.9	18.4	11.4	15.9	19.3	21.2	39.4	15.5	17.2	8.7	27.3	59.0
6-May	24.6	39.4	56.6	92.2	74.6	76.4	68.9	45.6	30.1	16.6	12.1	8.8	11.5	8.5	7.2	7.3	7.2	10.4	8.3	16.2	10.3	11.4	PF	PF	29.3	92.2
7-May	30.2	17.4	43.4	23.2	PF	PF	PF	PF	PF	PF	PF	PF	7.8	12.9	13.1	17.6	38.8	32.9	27.4	35.9	47.0	29.0	21.4	16.3	--	47.0
8-May	14.1	22.1	28.4	24.9	27.7	30.6	25.8	21.1	17.8	19.1	15.8	14.1	9.7	9.8	7.7	7.2	7.7	9.3	13.9	11.6	9.1	4.7	7.5	5.9	15.2	30.6
9-May	6.5	7.9	10.1	9.1	12.4	12.5	10.6	12.5	11.5	8.7	6.4	6.8	8.9	14.6	20.5	26.4	22.7	25.9	23.9	25.3	37.7	29.5	12.7	18.8	15.9	37.7
10-May	17.3	23.6	25.1	34.7	36.6	39.1	17.6	12.9	16.9	18.5	24.2	42.3	C	C	36.9	23.5	22.5	23.4	24.2	32.9	36.8	43.2	91.8	90.3	33.4	91.8
11-May	21.8	22.5	30.1	21.4	21.7	22.2	16.9	19.7	21.6	16.2	18.0	15.4	14.9	17.2	21.9	26.6	24.2	23.1	20.4	20.5	22.3	22.3	51.2	76.0	24.5	76.0
12-May	51.5	35.0	32.4	33.9	45.7	31.2	21.4	27.1	47.4	60.7	57.7	35.2	26.3	34.5	25.5	28.9	37.1	42.6	39.4	39.0	35.7	32.4	34.3	83.3	39.1	83.3
13-May	129.8	156.7	172.2	230.3	230.8	213.0	148.4	73.3	62.9	43.3	23.5	12.4	10.0	12.2	17.8	17.9	21.0	24.0	33.9	32.2	33.9	31.9	31.6	28.3	74.6	230.8
14-May	26.7	29.1	26.8	24.2	41.9	33.6	20.9	29.6	38.2	36.5	40.7	51.2	93.2	54.9	30.8	27.4	29.3	27.5	71.1	111.4	139.3	121.4	102.6	92.5	54.2	139.3
15-May	82.3	82.5	76.0	78.2	72.9	65.2	67.0	61.9	67.5	65.1	63.1	72.6	80.9	60.4	45.7	27.6	15.0	7.8	6.6	17.7	18.5	20.9	41.7	179.4	57.4	179.4
16-May	244.7	38.8	19.4	238.8	204.9	121.8	40.8	23.3	22.5	17.4	14.2	19.6	13.1	7.3	5.8	3.9	4.0	6.8	10.0	5.2	7.0	9.9	6.8	3.8	45.4	244.7
17-May	3.6	4.5	3.1	2.9	4.5	4.7	3.7	4.9	5.7	5.6	4.8	6.3	6.6	6.4	7.5	7.1	7.1	6.2	5.8	5.0	11.6	30.8	15.9	13.4	7.4	30.8
18-May	4.9	7.9	12.0	6.2	8.6	9.3	7.5	5.3	4.2	4.2	4.4	4.6	6.0	7.9	8.9	9.6	10.2	9.7	8.5	10.9	14.0	13.3	17.9	13.4	8.7	17.9
19-May	11.8	14.7	14.3	15.6	16.3	26.0	27.7	27.2	31.7	32.4	32.1	32.5	48.2	116.0	137.3	137.5	157.5	209.9	228.8	192.7	67.7	33.6	29.1	10.0	68.8	228.8
20-May	7.8	6.9	5.6	6.1	5.1	5.0	6.0	6.5	6.9	10.2	17.5	22.0	28.2	21.6	23.6	20.1	23.6	25.2	27.0	33.1	52.2	90.3	171.0	258.7	36.7	258.7
21-May	408.3	504.1	504.5	459.1	431.7	402.6	416.0	405.1	389.4	361.8	332.1	293.0	266.2	264.1	268.3	261.5	279.6	283.9	265.8	262.1	256.5	194.0	175.3	205.2	328.8	504.5
22-May	235.1	263.1	269.8	282.8	261.8	185.4	104.8	72.5	68.4	65.5	64.9	44.2	27.6	21.8	19.3	13.8	11.3	14.7	20.2	13.1	11.8	10.3	31.9	34.9	89.6	282.8
23-May	32.1	26.4	14.6	PF	8.6	9.2	15.9	32.3	58.1	69.4	83.7	89.6	111.9	118.8	121.7	196.0	216.9	183.1	88.6	76.1	45.9	18.0	14.9	12.9	71.5	216.9
24-May	12.5	13.8	15.1	15.7	11.2	10.7	11.6	12.6	14.6	17.2	17.6	17.2	19.2	20.1	18.5	22.3	22.5	23.1	20.0	16.8	10.0	11.5	PF	19.4	16.2	23.1
25-May	28.3	35.9	37.0	39.7	40.4	40.7	39.7	40.4	38.5	37.6	38.5	40.6	42.9	56.7	60.2	58.2	53.4	51.4	47.9	50.5	77.7	58.3	41.7	37.8	45.6	77.7
26-May	39.1	39.0	34.6	34.6	33.4	34.4	33.6	31.5	32.1	33.0	29.1	30.0	30.4	27.8	25.7	23.7	24.8	23.2	23.2	30.3	38.9	42.1	38.4	41.4	32.3	42.1
27-May	44.9	41.2	41.5	49.0	42.7	46.7	31.8	26.2	28.2	23.4	19.0	21.3	21.5	20.1	20.3	19.9	20.0	19.1	16.8	16.8	21.1	23.2	28.3	27.8	27.9	49.0
28-May	28.0	25.2	29.6	24.2	29.5	30.9	22.5	22.2	19.9	16.6	13.6	8.8	7.9	10.8	7.9	7.8	9.6	19.1	13.4	7.8	143.2	180.5	154.6	126.2	40.0	180.5
29-May	147.3	157.5	136.3	158.3	160.9	152.5	129.6	110.7	101.0	87.2	M	15.6	8.7	8.4	9.5	9.5	16.3	16.6	9.1	15.3	66.6	140.1	164.6	214.5	88.5	214.5
30-May	207.6	159.4	147.8	116.4	112.7	110.4	109.0	121.2	196.0	203.8	165.1	105.1	53.3	44.0	29.7	15.7	9.7	6.3	10.0	33.4	53.5	192.8	232.7	165.2	108.4	232.7
31-May	221.5	115.5	173.8	81.0	43.9	28.8	23.7	20.2	19.3	10.9	9.1	12.4	16.1	15.9	16.4	52.0	114.0	92.8	92.3	106.7	57.2	53.1	56.3	52.4	61.9	221.5
71.2 63.9 66.4 73.3 72.2 65.2 51.2 45.9 48.9 45.6 41.3 36.6 35.0 35.2 34.7 36.4 40.8 41.5 39.5 41.9 46.7 51.3 58.3 65.3																								Diurnal Average		
408.3 504.1 504.5 459.1 431.7 402.6 416.0 405.1 389.4 361.8 332.1 293.0 266.2 264.1 268.3 261.5 279.6 283.9 265.8 262.1 256.5 194.0 232.7 258.7																								Diurnal Maximum		
C - Calibration M - Maintenance PF - Power Failure																										
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort Hills - May 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	31	4.25	4.25
6 - 15	195	26.75	31.00
16 - 25	152	20.85	51.85
26 - 80	236	32.37	84.23
> 81.0	115	15.78	100.00

Total Number of Valid Hours: 729

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Fort Hills - May 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	6	2	3	1	0	0	1	1	0	4	3	0	0	2	0	8	31
6 - 15	17	11	9	1	1	3	25	26	42	20	12	8	6	3	6	5	195
16 - 25	5	9	7	0	1	2	22	32	26	20	5	8	4	2	5	4	152
26 - 80	21	28	7	5	3	8	34	49	36	18	9	5	2	1	2	8	236
> 81.0	12	9	3	2	2	2	14	19	17	12	2	3	3	5	4	6	115
Totals	61	59	29	9	7	15	96	127	121	74	31	24	15	13	17	31	729

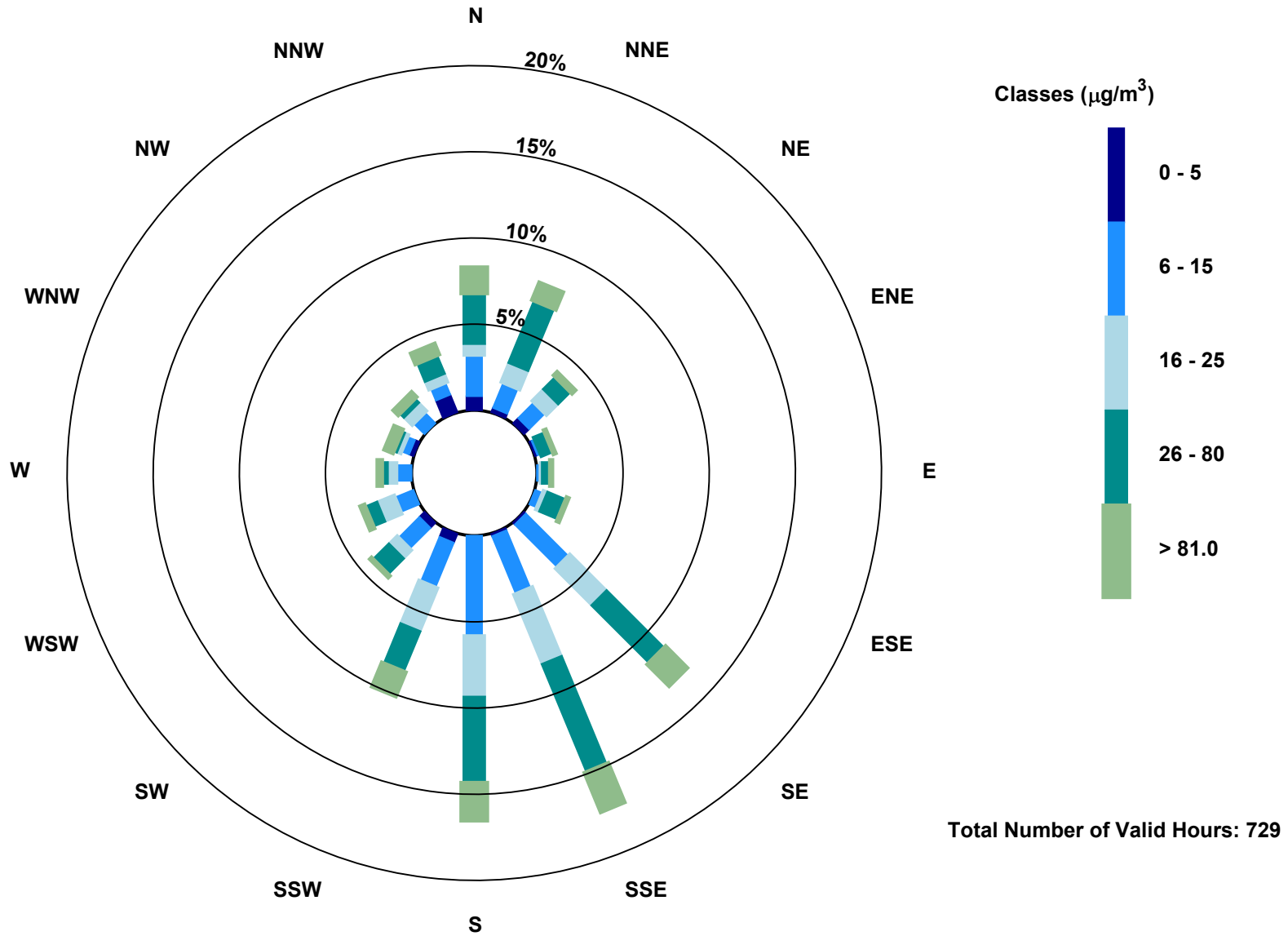
Total Number of Valid Hours: 729

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort Hills



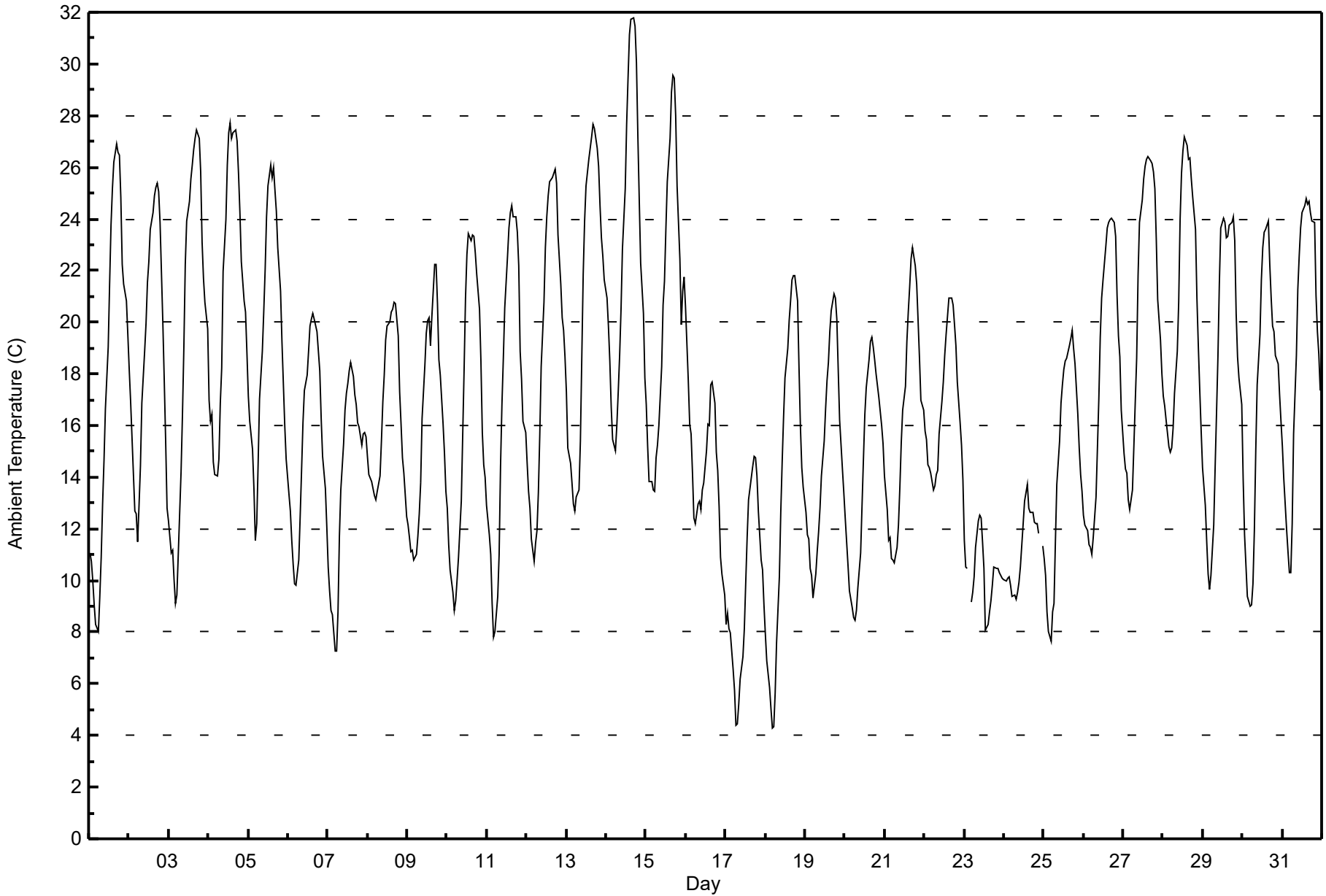
Total Number of Valid Hours: 729



Wood Buffalo Environmental Association
Summary of Hour Averages

Ambient Temperature (AT) - C
Fort Hills - May 2023

Maximum Value: 31.8 C on May 14 17:00		Maximum Daily Average: 23.0 C on May 14		Hours in Service: 744																							
Minimum Value: 4.3 C on May 18 05:00		Minimum Daily Average: 9.6 C on May 17		Hours of Data: 742																							
Maximum Diurnal Average: 22.6 C at hour 17		Minimum Diurnal Average: 10.6 C at hour 6		Hours of Missing Data: 2																							
Monthly Average: 16.96 C		Percentiles: P ₁ = 5.8 P ₁₀ = 10.0 Q ₁ = 12.5 Median = 16.6 Q ₃ = 21.0 P ₉₀ = 24.8 P ₉₉ = 29.2		Hours of Calibration: 0																							
				Percent Operational Time: 99.7																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	11.1	10.7	10.0	9.1	8.3	8.0	9.4	10.9	12.9	14.6	16.6	19.0	21.5	23.7	25.2	26.2	26.9	26.6	26.4	24.8	22.2	21.5	20.8	19.5	17.8	26.9	
2-May	18.2	16.9	15.5	12.7	12.6	11.5	12.9	14.4	16.9	18.9	20.0	21.5	22.3	23.6	24.2	24.9	25.2	25.4	25.1	23.9	19.9	17.8	15.4	12.8	18.8	25.4	
3-May	12.3	11.1	11.2	10.1	9.1	9.4	11.0	14.2	16.5	19.1	22.2	23.9	24.7	25.5	26.1	26.7	27.1	27.4	27.1	25.8	23.1	21.7	20.8	19.7	19.4	27.4	
4-May	17.0	16.1	16.4	14.6	14.1	14.1	14.7	16.9	18.2	21.9	24.0	26.1	27.3	27.7	27.1	27.3	27.4	27.0	25.8	24.2	22.3	20.8	20.4	18.8	21.3	27.7	
5-May	17.1	16.1	15.1	13.5	11.6	12.2	14.5	17.0	18.9	20.4	22.0	24.1	25.3	26.1	25.6	26.0	25.1	24.3	22.9	21.2	19.2	17.6	16.0	14.7	19.4	26.1	
6-May	13.4	12.7	11.5	10.7	9.9	9.8	10.8	12.5	14.3	16.1	17.4	18.0	18.9	19.8	20.1	20.3	20.1	19.6	18.9	18.1	16.3	14.8	13.5	12.1	15.4	20.3	
7-May	10.5	9.6	8.8	8.7	7.3	7.3	8.8	11.7	13.5	15.3	16.6	17.3	17.6	18.1	18.4	17.9	17.2	16.8	16.1	16.0	15.2	15.7	15.7	15.6	14.0	18.4	
8-May	14.8	14.1	13.8	13.6	13.3	13.1	13.5	14.1	15.4	16.9	18.0	19.3	19.8	20.0	20.4	20.5	20.8	20.7	19.5	17.3	16.0	14.7	14.2	12.5	16.5	20.8	
9-May	12.1	11.7	11.1	11.2	10.8	11.0	11.7	12.6	13.8	16.3	18.3	19.6	20.1	20.2	19.1	20.2	22.2	22.3	20.7	18.6	18.0	16.1	14.9	13.5	16.1	22.3	
10-May	12.8	11.4	10.4	9.5	8.8	9.2	10.0	10.9	13.1	15.6	18.2	20.9	22.6	23.4	23.2	23.4	23.3	22.7	21.9	20.5	18.5	15.7	14.5	14.0	16.4	23.4	
11-May	12.9	11.8	11.0	9.1	7.8	8.0	9.4	11.0	14.4	16.8	18.6	20.5	22.6	23.7	24.2	24.5	24.1	24.1	23.5	22.2	18.9	17.8	16.2	15.7	17.0	24.5	
12-May	14.5	13.5	12.8	11.6	10.7	11.5	11.9	13.4	15.6	18.3	20.8	22.9	24.1	24.9	25.4	25.6	25.8	25.9	25.4	23.4	21.5	20.2	19.7	18.7	19.1	25.9	
13-May	17.3	15.1	14.6	13.8	13.0	12.7	13.2	13.5	15.4	18.6	21.9	23.9	25.3	26.3	26.7	27.2	27.7	27.5	26.7	26.0	24.5	23.2	22.6	21.6	20.8	27.7	
14-May	21.0	19.9	18.5	16.7	15.5	15.0	16.0	17.3	18.7	20.5	22.8	25.1	27.6	29.5	31.1	31.7	31.8	31.5	30.1	27.2	24.7	22.3	20.3	17.9	23.0	31.8	
15-May	16.8	15.2	13.8	13.8	13.5	13.5	14.7	15.2	16.0	18.3	20.7	21.6	23.6	25.4	27.1	28.9	29.6	29.4	28.0	25.3	22.5	19.9	21.2	21.7	20.7	29.6	
16-May	20.6	17.7	16.1	15.7	14.2	12.4	12.2	13.0	13.1	12.8	13.5	13.8	15.0	16.1	16.0	17.6	17.7	16.9	15.0	14.2	12.8	10.9	10.3	9.4	14.5	20.6	
17-May	8.3	8.7	8.2	8.0	6.5	5.8	4.4	4.4	5.2	6.2	7.0	8.1	10.0	11.7	13.1	14.0	14.4	14.8	14.7	14.0	12.7	10.8	10.4	9.1	9.6	14.8	
18-May	7.9	6.9	5.9	5.0	4.3	4.3	5.6	7.6	10.2	12.6	14.6	16.3	17.8	19.0	20.1	20.8	21.6	21.8	21.8	20.8	18.3	16.0	14.4	13.6	13.6	21.8	
19-May	12.6	11.8	11.6	10.5	10.2	9.3	10.2	11.1	11.9	12.8	14.0	15.4	16.6	17.8	18.4	19.6	20.4	21.1	21.0	20.1	18.2	16.2	14.3	13.4	14.9	21.1	
20-May	12.4	11.5	10.6	9.6	8.9	8.6	8.5	8.9	9.7	11.1	12.9	14.7	16.4	17.5	18.5	19.3	19.4	19.0	18.6	18.0	17.1	16.5	16.0	15.3	14.1	19.4	
21-May	14.0	12.8	11.5	11.6	10.9	10.8	10.7	11.3	12.1	13.6	15.3	16.6	17.5	19.2	20.4	21.4	22.5	22.9	22.2	21.5	20.0	18.6	17.0	16.6	16.3	22.9	
22-May	15.8	15.5	14.5	14.4	14.2	13.5	13.7	14.1	14.3	15.7	16.9	17.7	18.7	19.5	20.2	20.9	20.9	20.7	19.9	19.1	17.7	16.1	15.3	13.9	16.8	20.9	
23-May	11.5	10.5	10.5	PF	9.2	9.5	10.1	11.3	12.3	12.5	12.4	11.5	10.5	8.1	8.3	8.8	9.2	9.8	10.5	10.5	10.3	10.2	10.1	10.4	12.5	10.4	12.5
24-May	10.0	10.0	10.1	10.1	9.8	9.4	9.4	9.3	9.5	9.9	10.5	12.2	13.1	13.4	13.7	12.8	12.7	12.7	12.3	12.2	11.8	PF	11.3	11.2	13.7	11.2	13.7
25-May	10.9	10.2	8.8	8.0	7.6	8.8	9.1	11.5	13.7	15.4	16.9	17.6	18.2	18.5	18.6	19.1	19.4	19.7	19.0	18.4	16.4	15.2	14.1	13.4	14.5	19.7	
26-May	12.6	12.2	11.9	11.4	11.3	11.0	11.7	13.3	15.1	17.0	19.4	20.9	21.6	22.9	23.7	23.8	24.0	24.0	23.9	23.3	21.1	19.5	18.6	16.6	17.9	24.0	
27-May	14.9	14.3	14.2	13.1	12.7	13.5	15.2	16.9	18.6	21.8	23.8	24.7	25.5	26.0	26.3	26.4	26.2	26.1	25.8	25.2	23.2	20.9	19.3	18.0	20.5	26.4	
28-May	17.2	16.8	16.2	15.2	15.0	15.1	15.9	17.3	18.9	20.8	24.0	25.8	26.7	27.2	26.8	26.3	26.4	25.5	24.8	23.6	21.0	19.1	17.4	15.9	20.8	27.2	
29-May	14.4	12.9	11.5	10.2	9.7	10.2	12.1	14.4	16.5	18.6	21.5	23.7	24.0	23.9	23.3	23.3	23.8	23.9	24.1	23.1	20.3	18.6	17.8	16.8	18.3	24.1	
30-May	13.9	11.8	10.6	9.4	9.0	9.1	9.9	11.9	15.0	17.6	19.5	21.6	22.9	23.5	23.6	23.9	22.3	20.9	19.9	19.6	18.7	18.4	17.2	16.2	16.9	23.9	
31-May	15.2	13.9	12.0	11.1	10.3	10.3	12.2	15.7	18.7	21.3	22.6	23.6	24.3	24.5	24.8	24.6	24.7	24.2	23.9	23.9	21.0	19.6	18.8	17.4	19.1	24.8	
		14.0	13.0	12.2	11.4	10.6	10.6	11.4	12.8	14.5	16.4	18.2	19.6	20.7	21.5	21.9	22.4	22.6	22.4	21.8	20.7	18.8	17.4	16.6	15.3	Diurnal Average	
		21.0	19.9	18.5	16.7	15.5	15.1	16.0	17.3	18.9	21.9	24.0	26.1	27.6	29.5	31.1	31.7	31.8	31.5	30.1	27.2	24.7	23.2	22.6	21.7	Diurnal Maximum	
PF - Power Failure																											





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Fort Hills - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	76	10.24	10.24
10 - 20	436	58.76	69.00
> 20	230	31.00	100.00

Total Number of Valid Hours: 742

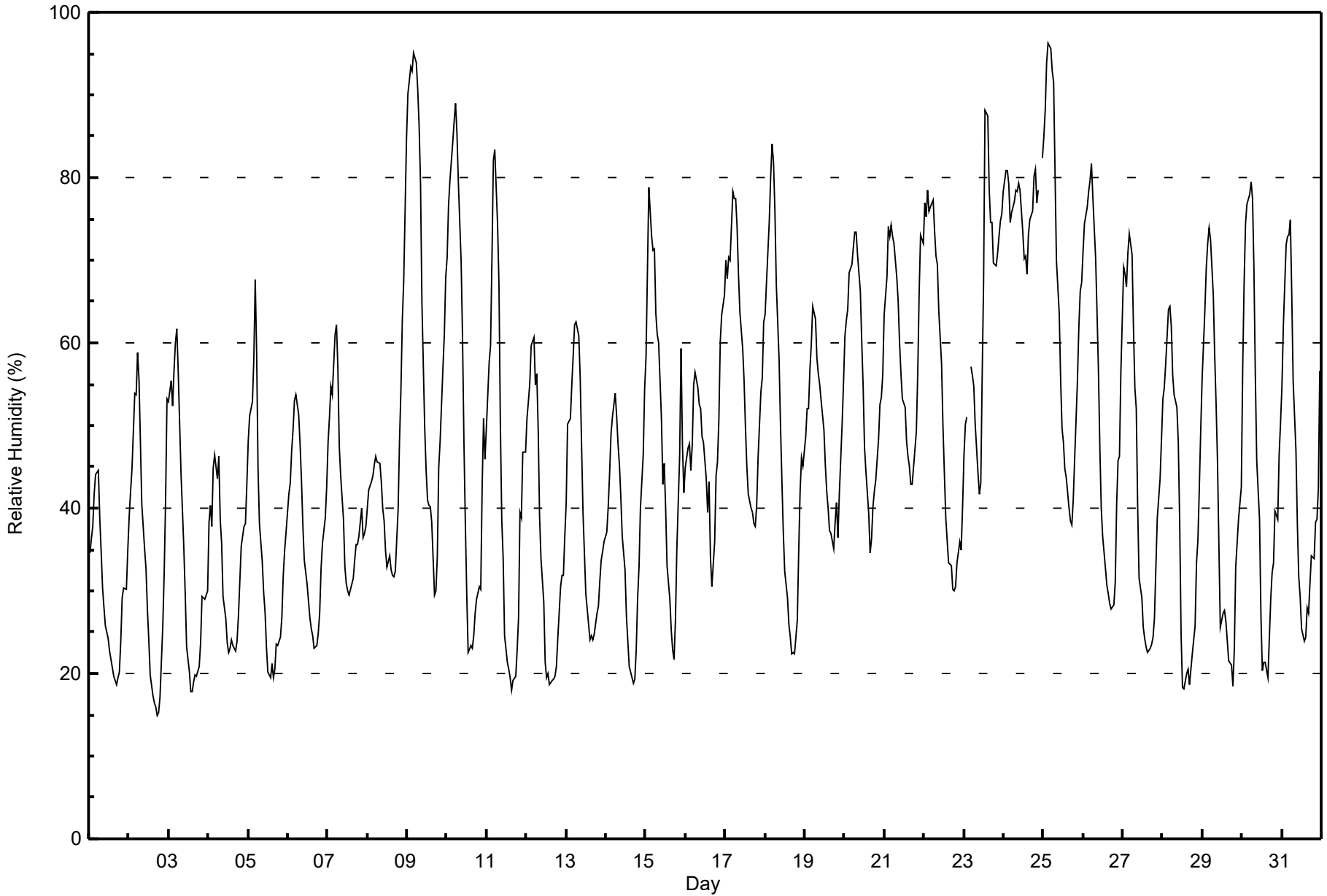
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Fort Hills - May 2023

Maximum Value: 96.2 % on May 25 04:00 Maximum Daily Average: 76.8 % on May 24 Minimum Value: 14.9 % on May 2 18:00 Minimum Daily Average: 29.7 % on May 1 Maximum Diurnal Average: 67.9 % at hour 6 Minimum Diurnal Average: 29.6 % at hour 17 Monthly Average: 46.88 % Percentiles: P ₁ = 17.9 P ₁₀ = 23.2 Q ₁ = 31.3 Median = 44.3 Q ₃ = 60.4 P ₉₀ = 74.6 P ₉₉ = 92.4																								Hours in Service:	744																								
																								Hours of Data:	742																								
																								Hours of Missing Data:	2																								
																								Hours of Calibration:	0																								
																								Percent Operational Time:	99.7																								
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	34.6	36.2	37.7	41.6	44.0	44.5	38.8	34.7	30.3	28.0	25.7	24.2	22.8	21.8	20.7	19.7	18.6	19.5	20.2	24.0	29.1	30.4	30.2	35.0	29.7	44.5																							
2-May	38.9	42.0	44.7	53.8	53.7	58.8	55.6	48.2	40.5	35.1	32.7	27.9	24.1	19.8	17.2	16.5	16.0	14.9	15.2	17.1	25.8	32.3	40.9	53.2	34.4	58.8																							
3-May	52.9	55.4	52.4	56.6	60.0	61.7	56.6	44.2	39.8	35.2	29.7	23.2	20.1	17.8	17.9	19.1	19.8	19.6	20.9	23.8	29.3	29.2	29.0	30.0	35.2	61.7																							
4-May	38.3	40.3	37.8	45.0	46.5	43.6	46.2	38.7	35.8	29.3	26.6	23.7	22.5	23.0	24.0	23.4	22.8	23.9	26.9	31.2	35.5	37.8	38.2	42.9	33.5	46.5																							
5-May	48.1	51.2	52.9	58.2	67.7	58.8	44.7	38.2	33.5	29.8	27.5	23.1	20.3	19.6	21.2	19.5	20.5	23.5	23.3	24.5	26.7	31.9	35.0	37.1	34.9	67.7																							
6-May	41.7	43.0	46.9	49.5	53.0	53.7	51.3	47.8	43.4	38.0	33.7	30.9	28.8	26.8	25.4	24.6	23.1	23.4	24.9	27.3	32.7	35.8	38.8	42.5	37.0	53.7																							
7-May	48.0	51.0	54.7	53.7	60.9	62.2	57.0	47.4	43.9	38.7	32.9	30.9	29.9	29.5	30.2	31.5	33.8	35.7	35.5	36.7	40.0	36.4	36.9	37.7	41.5	62.2																							
8-May	40.0	42.2	43.2	43.8	45.2	46.2	45.6	45.5	43.1	40.0	38.5	35.0	33.0	34.3	32.5	31.8	31.7	32.3	39.8	48.1	54.2	62.8	67.4	84.8	44.2	84.8																							
9-May	90.1	91.7	93.4	92.9	95.1	93.9	90.8	86.3	79.4	64.9	49.6	44.5	41.0	40.4	40.2	38.3	29.5	29.9	34.2	44.9	48.2	57.0	61.1	67.9	62.7	95.1																							
10-May	70.4	76.6	79.7	84.3	86.8	88.9	85.4	79.4	69.8	60.4	48.0	38.1	29.7	22.5	23.3	23.0	24.6	27.2	28.9	30.6	30.2	42.6	50.8	45.9	52.0	88.9																							
11-May	49.7	57.6	59.7	70.2	82.0	83.5	74.5	67.2	50.1	38.7	33.9	24.6	21.4	20.5	19.5	18.0	19.2	19.7	22.9	26.8	39.5	38.8	46.7	46.8	43.0	83.5																							
12-May	50.8	53.0	55.0	59.7	60.6	54.8	56.2	49.7	39.0	33.9	28.7	21.4	19.4	20.0	18.7	19.1	19.3	19.6	20.8	24.3	30.5	31.8	31.8	36.6	35.6	60.6																							
13-May	40.6	50.2	50.9	54.9	58.5	62.2	62.5	60.8	55.7	47.5	39.5	34.7	29.6	25.9	24.1	24.6	24.1	24.8	27.3	28.1	31.2	33.8	34.8	35.9	40.1	62.5																							
14-May	37.1	40.2	44.2	49.0	51.1	54.0	51.1	47.8	45.2	41.3	36.6	32.5	26.9	23.9	20.9	20.1	18.9	19.3	23.0	29.2	32.8	40.1	46.5	54.4	36.9	54.4																							
15-May	58.4	68.7	78.7	72.8	71.2	71.3	63.5	61.0	60.0	50.9	42.9	45.4	39.9	33.0	29.0	25.3	22.9	21.7	26.4	35.1	46.2	59.3	47.7	41.9	48.9	78.7																							
16-May	44.9	47.2	47.8	44.6	47.7	54.9	56.5	54.5	52.5	52.1	48.7	47.9	43.5	39.6	43.2	34.1	30.5	35.9	43.9	45.7	50.6	60.2	63.4	65.7	48.1	65.7																							
17-May	70.1	67.7	70.4	70.0	78.4	77.4	77.4	74.1	68.4	63.8	59.4	55.5	49.6	44.9	41.6	39.9	39.5	38.2	37.8	40.3	46.1	54.1	55.8	62.5	57.6	78.4																							
18-May	63.4	67.4	74.8	80.2	84.1	81.9	76.1	67.2	57.9	50.1	43.3	37.2	32.3	29.2	25.9	24.3	22.3	22.5	22.4	26.5	34.7	42.0	46.2	45.1	48.2	84.1																							
19-May	48.7	52.1	52.1	56.8	59.8	64.5	62.8	58.2	56.3	54.9	53.1	49.5	45.3	42.0	40.0	37.3	36.9	35.1	38.2	40.6	36.4	41.8	50.2	55.3	48.7	64.5																							
20-May	60.8	62.7	64.1	68.4	69.6	71.5	73.3	73.3	70.7	66.2	60.1	54.7	47.3	44.4	39.3	34.6	36.2	40.1	42.0	43.4	48.3	52.5	53.3	56.1	55.6	73.3																							
21-May	63.4	68.0	74.0	72.9	74.3	72.9	72.0	68.0	65.0	60.0	56.2	53.2	52.1	48.2	46.3	45.1	42.8	42.9	47.0	49.4	56.5	66.1	73.0	72.0	60.1	74.3																							
22-May	76.9	75.3	78.5	75.9	76.5	77.3	73.6	70.6	69.5	64.0	57.5	49.8	44.2	38.8	36.1	33.4	33.0	30.2	30.0	30.5	33.4	36.0	35.0	40.2	52.8	78.5																							
23-May	46.4	50.1	50.9	PF	57.2	56.2	54.8	50.2	44.2	41.6	43.0	56.0	67.5	88.2	87.5	78.7	74.7	74.6	69.7	69.4	70.8	73.0	74.7	75.6	63.3	88.2																							
24-May	78.4	80.9	80.9	79.1	74.5	75.8	77.1	78.4	78.2	79.4	73.4	70.1	70.4	68.3	73.0	74.9	75.8	80.2	81.0	76.9	78.5	PF	82.3	76.8	82.3	76.8	82.3																						
25-May	84.9	88.1	94.0	96.2	95.6	93.0	91.5	80.7	70.0	63.6	55.7	49.6	47.9	44.8	43.7	40.1	38.5	38.0	41.0	46.0	55.4	61.9	66.2	67.2	64.7	96.2																							
26-May	71.0	74.4	76.4	78.3	79.6	81.6	77.7	70.1	63.6	56.6	47.3	40.1	36.6	32.7	30.7	29.6	28.5	27.8	28.4	31.1	40.6	45.7	46.3	56.4	52.1	81.6																							
27-May	69.2	68.3	66.8	70.8	73.2	70.7	61.9	54.6	52.1	40.1	31.5	29.1	25.6	24.2	23.2	22.5	23.0	23.5	24.4	26.8	32.8	38.8	43.6	48.3	43.5	73.2																							
28-May	53.2	54.7	57.5	64.1	64.4	62.0	56.0	53.8	52.2	47.9	38.3	24.7	18.3	18.2	20.0	20.6	18.6	20.5	22.4	25.8	33.4	36.1	42.3	49.3	39.8	64.4																							
29-May	55.7	64.1	69.1	72.1	73.8	72.6	65.8	58.5	52.5	45.7	35.4	25.6	27.4	27.6	26.3	23.8	21.4	21.0	18.6	22.9	32.9	35.8	38.7	42.5	42.9	73.8																							
30-May	57.1	67.3	74.3	76.7	78.0	79.6	77.4	69.0	56.1	45.7	38.6	27.1	20.3	21.4	21.4	19.5	24.3	29.0	32.2	33.4	39.6	38.7	46.5	50.3	46.8	79.6																							
31-May	54.8	62.1	71.9	72.9	73.0	74.9	65.9	55.4	47.0	38.1	31.7	29.4	25.5	23.9	24.4	28.0	27.3	30.8	34.2	33.8	38.3	38.7	42.3	56.5	45.0	74.9																							
																								56.1	59.7	62.4	65.5	67.6	67.9	64.5	59.1	53.7	47.8	42.1	37.5	34.3	32.8	31.7	30.3	29.6	30.4	32.3	35.4	40.6	45.1	47.1	52.2	Diurnal Average	
																								90.1	91.7	94.0	96.2	95.6	93.9	91.5	86.3	79.4	79.4	78.4	73.4	70.1	88.2	87.5	78.7	74.9	75.8	80.2	81.0	76.9	78.5	74.7	84.8	Diurnal Maximum	
PF - Power Failure																																																	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Fort Hills - May 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	34	4.58	4.58
20 - 40	274	36.93	41.51
40 - 60	245	33.02	74.53
60 - 80	155	20.89	95.42
80 - 100	34	4.58	100.00

Total Number of Valid Hours: 742

Total Number of Hours: 744



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Fort Hills - May 2023

Maximum Speed: 35 km/h on May 29 15:00	Maximum Daily Speed Average: 22.5 km/h on May 22	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 21 21:00	Minimum Daily Speed Average: 0.8 km/h on May 15	Hours of Data: 742
Maximum Diurnal Speed Average: 8.1 km/h at hour 13	Minimum Diurnal Speed Average: 1.0 km/h at hour 1	Hours of Missing Data: 2
Monthly Average Velocity: 3.6 km/h 159.7 deg	Percentiles: $P_1 = 1$ $P_{10} = 4$ $Q_1 = 7$ Median = 11 $Q_3 = 17$ $P_{90} = 25$ $P_{99} = 30$	Percent Operational Time: 99.7

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	SSE8	SSE8	SSE8	SE11	SE12	SSE13	SSE16	SSE18	S22	S20	S21	S22	S21	S22	SSW21	SSW21	SSW21	SW15	SW12	SW11	S9	NNW12	N20	N22	S10.5	S22	
2-May	N14	NNW6	NW8	W4	WNW4	NNW1	W1	SSW2	N4	SE1	SE7	ESE5	SW8	WNW9	WNW12	NNW12	NNW14	NNW11	NNW9	NNW5	ESE4	ESE6	SE4	ESE2	NNW3.2	NNW14	
3-May	SE4	S4	SE8	SSE8	SSE6	SSE8	S7	S14	S14	SSE12	S13	S27	S30	S27	S29	S26	S25	S26	S21	SSE17	SE15	SE16	SE13	ESE9	S15.1	S30	
4-May	SE4	SSE7	SSE14	SSE12	S9	S6	NW3	ESE8	SE11	SSE3	SSE4	NE7	NNE14	N20	N21	NNE21	NNE24	NNE25	NNE26	NNE23	NNE23	NNE17	NNE23	NNE9	NNE8.6	NNE26	
5-May	NNE12	N12	NNE6	NE3	N1	S8	S8	SE5	SSE14	S20	SSE22	SSE23	SSE25	SE25	SSE27	SE27	SE28	SE27	SE29	SE27	SE27	SE20	SE23	SE25	SSE24	SE15.5	SE29
6-May	SSE17	SE21	SE17	SE19	SSE19	SE21	SSE19	SSE20	SE16	SSE23	SE22	SSE23	SE22	ESE18	SE19	SE22	SE25	SE26	SE28	SE25	SSE20	SSE21	SE16	SE13	SE20.2	SE28	
7-May	SE11	SE9	SE6	SE7	ESE3	NNE3	N6	SE10	SSE16	SSE21	SE25	SSE24	SE23	SE26	SE24	SSE27	S27	S16	SSE13	SE5	ENE5	ESE8	SE17	SSE19	SE13.3	S27	
8-May	SSW11	S11	SSE13	SSE18	SSE17	SSE15	SSE15	SSE13	SSE11	SSE15	S16	SSE21	S22	S20	S20	S16	SSW15	SW15	W17	W11	SSW8	SW10	WSW5	SSW4	S12.1	S22	
9-May	SE3	SSW3	S4	S5	SSE3	SSW3	E1	SSE7	S7	SSW4	SSW2	SE4	SSW4	WSW5	W11	SSW5	NE4	SE1	WNW3	SSE5	SE5	SSW9	WSW8	SW3	SSW3.1	W11	
10-May	SSW2	SSE6	SSE4	SSE7	SSE6	SE8	SSE9	SSE6	SE6	SE6	SE7	ESE6	E6	NE6	N12	N9	NNE17	NNE17	NNE16	NNE16	NNE13	NNE7	N5	N7	NE4.2	NNE17	
11-May	N7	N8	N8	N3	NW3	NNW4	NW4	NNW2	SSW6	SSW3	SSE14	SSE14	SE9	SE7	SE4	S5	S6	SSE4	SSE10	S6	S6	S6	SW6	SE9	SSE2.9	SSE14	
12-May	SE10	SSE5	SE7	S5	S8	SSE8	S7	SSW8	SSW11	SSW9	SSW9	S19	S24	SSE22	SSE19	S20	S16	S18	S11	S8	SSE14	SSE15	SSE17	SE13	SSE12.0	S24	
13-May	SE9	SSE4	SE10	SE10	SE9	SE9	SSE7	S10	S13	S14	S16	S19	S24	SSW25	SSW26	SSW22	SSW21	SSW18	S15	S14	SSE14	S11	SSW13	SW8	S13.1	SSW26	
14-May	SW10	S11	SSW13	SSE10	SE9	SSE9	SSE10	S10	SSE12	SSE9	SSE11	SE14	SSE17	SSE17	SW18	WSW12	NNW18	NNW16	NNE15	NNE13	NNE13	NNE6	N5	NNW6	S3.2	SW18	
15-May	N5	N3	NW2	N7	NW6	N10	N6	N9	N10	N6	SE6	S7	S6	SW6	SE8	SE8	S7	S14	S6	NW1	SW3	SW4	NNW10	N12	N0.8	S14	
16-May	N19	NNE17	N16	NNW17	NNW20	NW16	NNW24	NNW27	NNW33	NW25	NW27	NW28	NW28	NNW33	NW28	NNW30	NNW29	N26	NNE25	N21	NNE17	NNE8	N11	NNW9	NNW20.9	NNW33	
17-May	NNW10	N17	N17	NE14	NE19	NE22	NNE25	NNE24	NNE25	NNE23	NNE19	NNE18	N17	NNE20	NNE18	N18	NNE17	NNE15	ENE13	ENE8	E5	ESE5	SSE10	NNE14.8	NNE25		
18-May	SE14	SE9	SSE8	S7	S5	S8	SSW12	SSW13	SSW14	SSW16	SW14	SSW13	SSW10	S14	S12	S13	S11	S14	S13	S12	SSE11	SSW8	SSW9	SW11	S10.5	SSW16	
19-May	SSW11	SSW8	SSW12	S9	S10	SSE8	SSE12	S14	SSW16	SSW16	SSW16	SSW16	SSW17	SSW14	SSW7	S2	SSW1	N15	N18	N20	NNE28	NNE18	N11	N12	SSW2.7	NNE28	
20-May	N18	N16	N19	N22	N21	N20	N17	N16	N15	N14	NNE11	NNE10	NE8	NE7	NE6	NE6	E4	W4	N5	NE6	ESE4	SSE9	SSE16	SSE16	NNE8.1	N22	
21-May	S8	SSE4	SSE7	SSE9	SE9	SE8	SSE9	S8	S10	S14	S10	SSW11	SSW10	S7	SSW10	S8	S9	SSE11	S6	WNW7	SSE0	ENE4	NW6	N13	S5.8	S14	
22-May	NNE15	NNE15	N15	NNE18	NNE17	NNE17	NNE21	NNE25	NNE23	NNE25	NNE27	NNE32	N32	NNE30	NE28	NE28	NE28	NE30	NE26	NE26	NE25	NE16	NE21	NE17	NNE22.5	NNE32	
23-May	NNE14	NE12	NE14	PF	NE18	NE17	NE16	ENE14	E14	ESE15	ESE15	SE17	SSE14	SE8	E5	SE13	ESE8	E7	SE16	SE16	SSE14	SE16	SE15	SSE16	ESE10.1	NE18	
24-May	SSE12	SE9	SE10	SE12	SSE20	SSE20	SSE18	SSE16	S13	SSW11	SSW14	SSW11	SSW14	SSW11	WSW17	WSW18	WSW15	WSW13	SW14	WSW12	W12	W9	PF	W8	SSW10.0	SSE20	
25-May	WSW7	WSW5	W2	WNW5	WSW2	SSW4	SSW6	SW6	S3	E2	NNE4	NNE7	NNW7	N10	N12	NNE8	NNE8	ENE6	NE8	ENE7	ENE4	SE7	SSE10	SE8	NNE1.5	N12	
26-May	SE8	SSE5	SSE10	SSE10	SSE9	S8	S13	SSW10	SE9	SE11	SE9	SSE5	SW8	S3	SSE6	SSE6	S8	S9	S10	SSE10	SSE12	SSE13	SE11	SE6	SSE8.0	S13	
27-May	SSE5	S7	SSE7	SE8	SSE6	SSE7	SSE12	S11	WSW5	SSW15	SSW28	S28	S27	S26	S27	SSE29	S29	S25	S24	S18	SSE13	SSE12	S11	S7	S15.5	S29	
28-May	S6	S12	SE12	SSE11	SSE13	SSE15	S13	SSW14	SSW14	SSW17	SW20	SW26	SW29	WSW27	WSW27	SW26	WSW27	WSW27	WSW26	WNW18	NW16	WNW9	W7	WSW8	SW13.6	SW29	
29-May	W5	WSW5	SW4	SSE3	SSE6	S9	S7	SSE8	SSE9	SSW11	SSW16	WSW27	WSW24	SW31	SW35	SW26	SW22	SW18	W14	NW12	NNW8	NE10	NE13	NE9	SW8.9	SW35	
30-May	NNW4	NW5	NNW3	WNW3	WSW2	SSW3	SSW3	SSW2	SSE5	SSE8	SE8	S9	SW7	SSW10	SSW8	W16	NNW18	NW17	NNW9	N7	N4	ENE7	WNW3	W4	W2.5	WNW18	
31-May	WNW5	S3	S2	S6	S6	S6	SSW6	SSE5	SE6	S4	SE2	ESE5	SE6	SSE8	SSW4	SW10	SW14	SSW8	SSW6	NNW0	N19	NNE18	N10	NNW2	S1.6	N19	

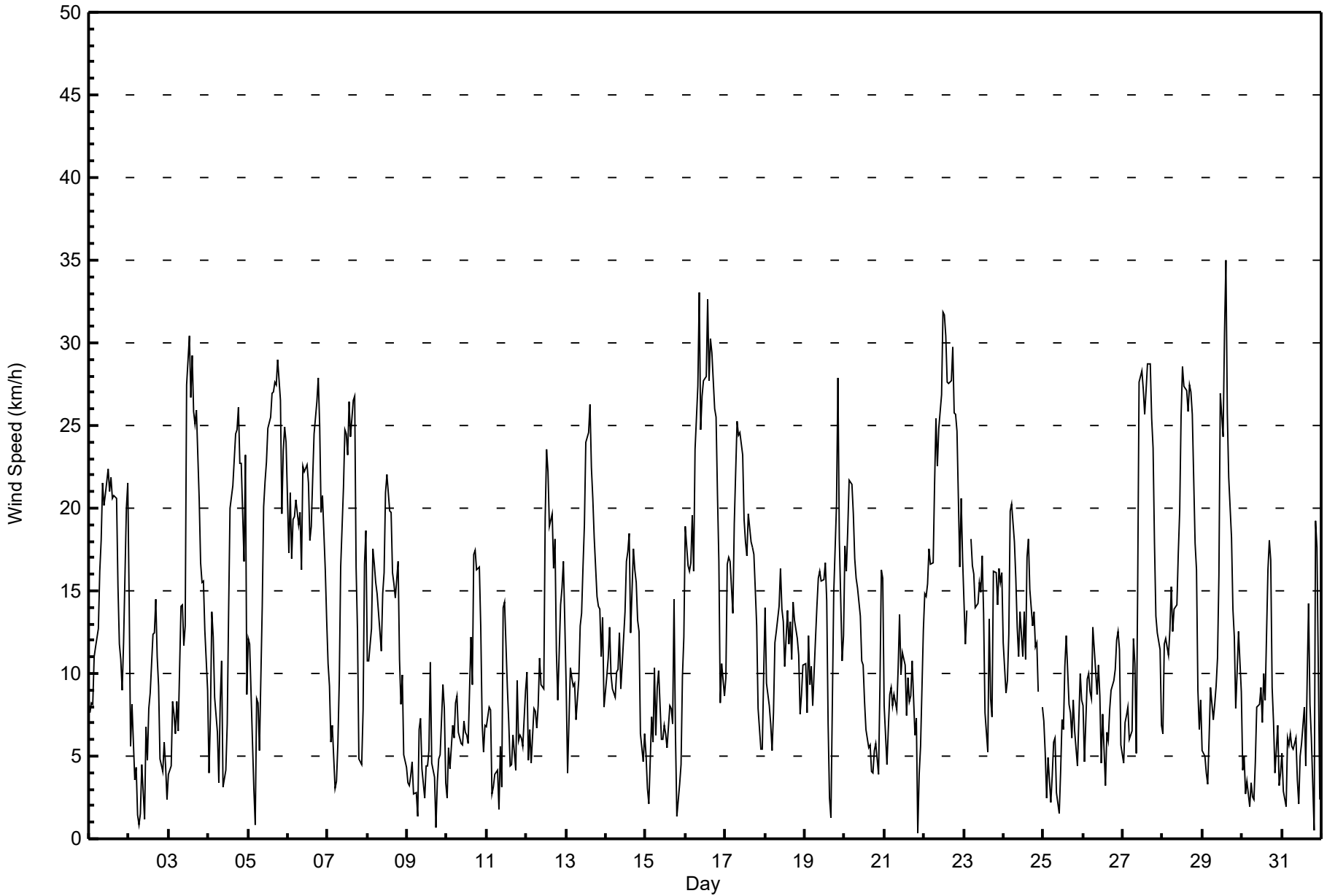
ESE1.0 ESE2.0 SE2.8 SE3.3 SE3.6 SE4.1 SSE3.4 SSE4.0 SSE4.6 S5.8 S6.9 S8.0 S8.1 S6.5 SSW6.0 S5.4 SSW3.9 S2.7 SSE1.9 E2.1 E3.2 ESE3.8 ESE3.1 ESE2.3	Diurnal Average
N19 SE21 N19 N22 N21 SE21 NNW24 NNW27 NNW33 NNE25 SSW28 NNE32 N32 NNW33 SW35 NNW30 NNW29 NE30 SE29 SE27 NNE28 SE23 SE25 SSE24	Diurnal Maximum

PF - Power Failure
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Fort Hills - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Fort Hills - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	121	16.31	16.31
6 - 11	257	34.64	50.94
12 - 19	219	29.51	80.46
20 - 28	129	17.39	97.84
29 - 38	16	2.16	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 742

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Wind Speed (WS) - km/h
Fort Hills - May 2023

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	9	3	1	3	5	7	12	16	12	16	4	7	6	7	5	8	121
6 - 11	17	10	10	4	1	7	45	48	51	28	12	3	5	3	3	10	257
12 - 19	25	26	10	2	1	3	21	48	29	23	8	6	4	3	4	6	219
20 - 28	10	19	8	0	0	0	21	17	26	8	4	8	0	0	5	3	129
29 - 38	1	2	1	0	0	0	1	1	3	0	3	0	0	0	0	4	16
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	62	60	30	9	7	17	100	130	121	75	31	24	15	13	17	31	742

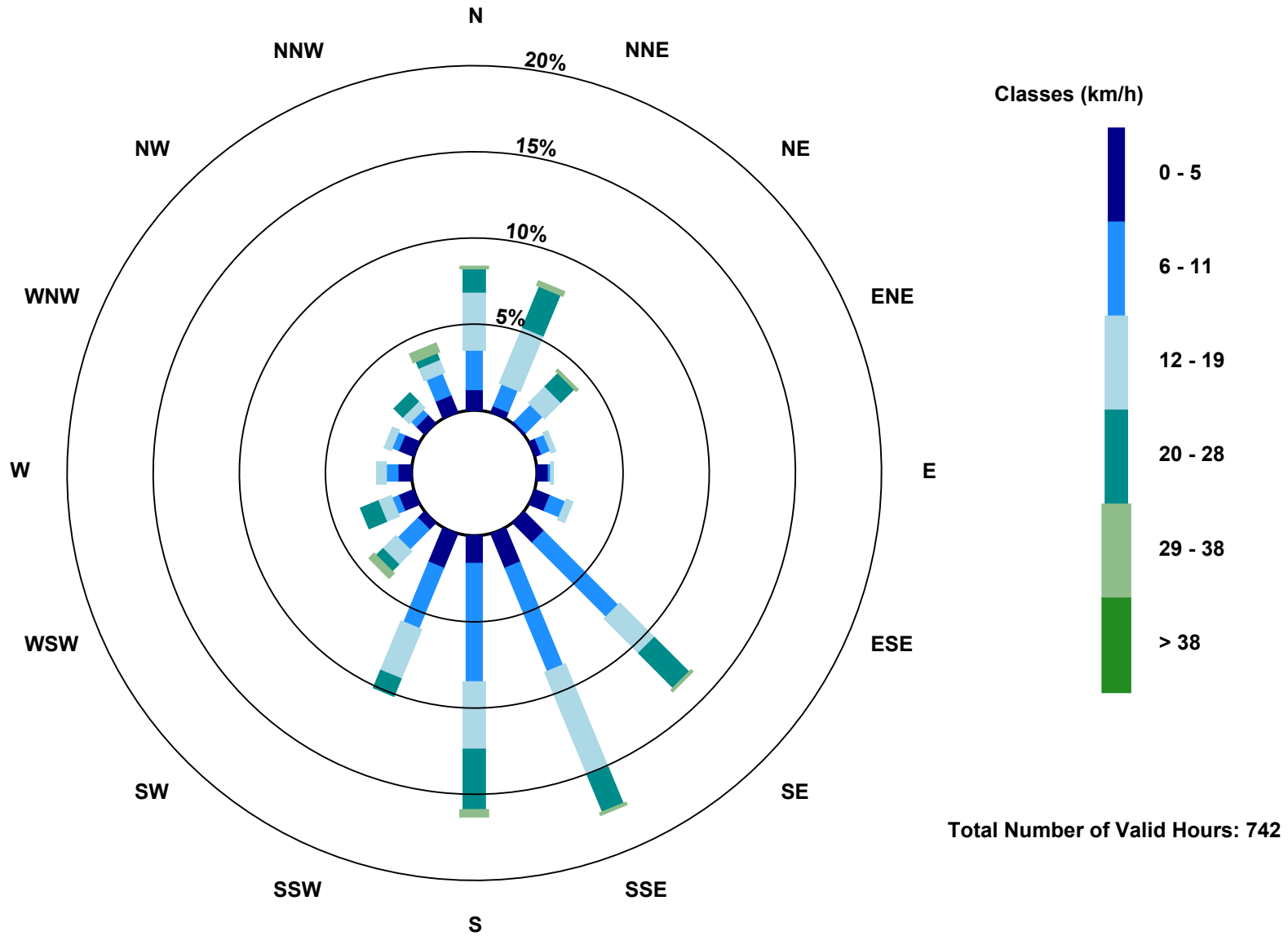
Total Number of Valid Hours: 742

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Fort Hills





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Fort Hills - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 9 km/h on May 27 10:00														Hours in Service: 744 Hours of Data: 742 Hours of Missing Data: 2 Hours of Calibration: 0 Percent Operational Time: 99.7											
Minimum Value: 1 km/h on May 30 07:00																									
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	2	1	2	2	1	1	2	2	3	4	4	5	5	5	4	5	4	3	3	3	1	5	4	4	5
2-May	5	2	2	1	1	1	1	1	2	2	3	3	5	5	5	5	4	4	3	2	1	1	2	1	5
3-May	1	2	2	2	1	1	2	2	3	3	7	6	6	6	6	5	5	4	4	2	1	1	2	1	7
4-May	2	3	2	1	3	3	3	5	2	2	3	4	4	4	3	5	4	4	3	4	2	5	5	5	5
5-May	2	1	3	1	1	1	2	3	6	3	4	5	4	5	6	5	5	4	4	5	3	4	5	3	6
6-May	3	3	3	3	3	3	3	3	2	5	5	5	6	6	6	5	5	5	4	5	3	3	4	3	6
7-May	2	1	2	2	1	1	1	4	3	4	5	5	5	5	6	7	4	4	7	3	2	3	3	3	7
8-May	4	2	3	5	2	2	2	2	3	3	4	5	5	4	4	5	4	3	4	5	3	3	2	2	5
9-May	2	2	2	1	1	2	1	2	2	2	1	3	3	4	3	2	2	2	2	2	1	4	2	1	4
10-May	1	1	1	1	1	1	1	1	1	1	2	2	3	4	5	5	4	4	3	4	2	2	2	1	5
11-May	1	2	3	1	2	1	1	1	2	2	3	3	4	3	3	3	2	3	2	1	2	1	3	2	4
12-May	2	3	2	1	1	1	1	3	2	3	3	5	5	5	6	5	4	3	3	1	2	1	2	2	6
13-May	2	2	1	1	1	1	2	1	2	2	3	3	4	4	4	4	4	3	2	2	1	3	2	1	4
14-May	2	2	1	3	1	1	1	2	2	3	3	3	4	4	6	6	4	4	4	2	2	3	2	2	6
15-May	2	2	1	3	3	4	2	2	2	2	3	3	2	2	3	3	4	3	2	2	1	3	3	3	4
16-May	5	4	3	4	5	6	6	7	8	6	7	6	7	9	7	7	7	6	5	4	4	3	6	2	9
17-May	2	4	4	4	2	5	4	5	5	5	5	5	5	5	5	5	5	5	3	2	2	1	1	4	5
18-May	3	1	1	1	1	2	2	2	2	3	4	4	5	5	5	5	5	4	3	3	1	1	2	1	5
19-May	2	2	3	3	2	1	2	2	3	3	2	3	2	3	4	1	1	7	4	7	6	4	2	2	7
20-May	3	3	4	3	3	4	3	3	3	3	3	3	3	3	3	3	2	1	1	2	1	1	2	2	4
21-May	2	2	3	1	1	1	1	1	3	2	2	2	2	3	2	3	3	2	3	3	4	5	2	2	5
22-May	3	3	2	3	3	3	4	4	4	5	5	6	6	6	6	5	6	5	6	5	5	3	3	4	6
23-May	2	2	2	PF	3	3	3	3	4	4	4	5	3	4	5	4	3	2	3	3	3	3	3	3	5
24-May	2	2	2	4	3	3	2	3	3	2	3	3	3	2	4	3	3	2	2	2	2	2	PF	2	4
25-May	1	1	1	1	1	1	1	1	1	2	3	3	3	4	3	3	3	2	3	2	1	4	1	1	4
26-May	1	1	2	1	2	2	2	2	2	2	2	3	3	3	4	3	4	4	2	1	1	2	2	3	4
27-May	2	1	2	2	2	1	3	3	2	9	5	5	6	5	5	5	4	4	5	3	1	1	2	2	9
28-May	2	2	2	2	3	2	2	2	3	3	5	6	5	6	6	6	5	6	5	5	4	2	2	2	6
29-May	1	2	1	2	1	2	1	2	2	3	5	6	7	7	7	6	4	5	5	3	2	2	2	1	7
30-May	1	1	1	1	2	1	1	1	1	3	3	5	5	4	3	5	5	4	3	2	2	2	3	4	5
31-May	2	1	1	2	1	1	1	1	2	1	2	3	4	4	3	3	3	3	2	5	4	3	4	3	5
														Diurnal Maximum											
PF - Power Failure																									



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Fort Hills - May 2023

Direction of Maximum Speed: 227 deg on May 29 15:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 26.0 deg on May 22	Hours of Data: 742
Direction of Minimum Speed: 166 deg on May 21 21:00	Hours of Missing Data: 2
Direction of Minimum Daily Speed Average: 0.8 deg on May 15	Percent Operational Time: 99.7
Monthly Average Direction: 159.7 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	164	151	152	145	145	153	155	164	171	170	173	175	170	188	203	199	209	217	223	222	185	333	359	4	180.3
2-May	357	348	326	267	292	329	269	195	1	130	144	119	235	288	289	336	337	339	336	343	110	121	129	115	329.3
3-May	146	171	143	153	156	147	181	169	172	160	173	183	173	181	178	178	187	187	182	166	146	140	135	123	169.8
4-May	138	160	161	151	169	191	304	111	138	149	153	48	14	10	9	12	15	18	18	18	20	23	23	29	31.7
5-May	15	8	26	34	357	185	184	140	166	174	165	164	166	140	151	133	134	133	143	142	133	134	146	151	144.9
6-May	153	146	146	141	150	141	147	151	145	149	143	151	135	123	127	127	130	137	146	141	152	151	141	144	142.3
7-May	135	133	129	133	112	30	357	138	154	151	145	147	145	142	131	153	171	184	167	131	66	108	135	151	145.3
8-May	195	172	155	166	158	160	158	166	158	150	171	166	187	175	181	188	198	226	265	266	210	225	245	201	183.1
9-May	141	195	178	175	160	195	90	164	190	211	212	133	206	252	279	210	54	141	293	158	143	208	241	234	199.9
10-May	210	150	154	168	152	141	161	164	135	136	138	112	101	56	9	358	17	20	25	27	24	16	3	7	55.4
11-May	358	1	1	350	322	344	314	335	209	199	159	162	137	136	129	174	183	166	165	177	180	169	221	132	162.0
12-May	135	151	133	183	172	164	181	198	193	197	209	182	169	156	156	176	171	170	181	176	155	152	150	140	167.5
13-May	134	156	144	143	141	142	163	174	188	184	191	186	189	197	210	209	205	197	172	169	165	182	213	226	184.9
14-May	214	190	196	164	146	163	166	171	163	159	149	145	150	156	230	258	329	339	16	22	23	14	5	342	170.8
15-May	355	352	311	357	323	1	4	8	2	7	133	184	174	216	141	139	173	181	176	314	230	231	337	359	355.2
16-May	350	18	6	330	327	317	331	332	328	320	324	321	318	328	315	332	342	1	14	6	12	19	358	337	338.3
17-May	329	11	5	357	35	34	36	16	20	24	14	19	14	7	21	13	8	22	31	58	78	86	109	150	22.5
18-May	142	139	160	170	191	187	199	211	204	205	215	210	205	186	183	188	179	177	183	172	168	200	212	222	189.0
19-May	210	202	202	178	177	162	162	189	200	209	205	211	196	193	208	183	194	0	4	10	23	24	8	359	200.9
20-May	7	9	9	8	8	6	6	11	7	6	13	18	54	46	56	51	98	276	354	50	102	147	159	168	21.5
21-May	175	163	164	162	145	144	153	175	177	186	186	201	201	186	192	189	190	157	181	303	166	63	317	4	178.1
22-May	17	16	10	13	22	16	13	14	14	14	15	17	11	20	36	40	40	38	35	40	43	52	45	37	26.0
23-May	15	38	45	PF	41	48	52	74	98	103	106	125	150	130	90	127	102	85	135	141	155	145	143	151	102.8
24-May	164	141	136	144	151	154	155	164	184	198	208	204	201	199	244	246	237	239	235	241	263	266	PF	260	199.2
25-May	251	252	271	292	251	205	197	219	171	90	14	15	348	357	0	17	21	57	53	66	72	126	148	126	33.7
26-May	129	164	155	156	157	171	183	193	146	141	135	166	229	177	165	160	170	182	180	155	158	151	133	128	160.8
27-May	151	175	162	145	152	153	161	185	256	213	199	181	187	184	172	166	169	175	172	172	168	156	172	174	176.2
28-May	190	170	143	161	147	162	180	196	210	202	227	224	230	245	245	236	245	258	254	284	315	288	265	255	229.1
29-May	266	250	219	166	164	170	187	150	159	200	206	241	240	234	227	230	236	233	269	316	343	39	50	50	229.1
30-May	334	324	330	302	250	199	210	211	155	147	142	180	218	195	193	272	297	316	341	8	3	57	296	279	270.2
31-May	303	180	169	172	186	175	192	161	136	174	133	108	124	148	197	217	216	213	207	343	2	19	8	327	177.8

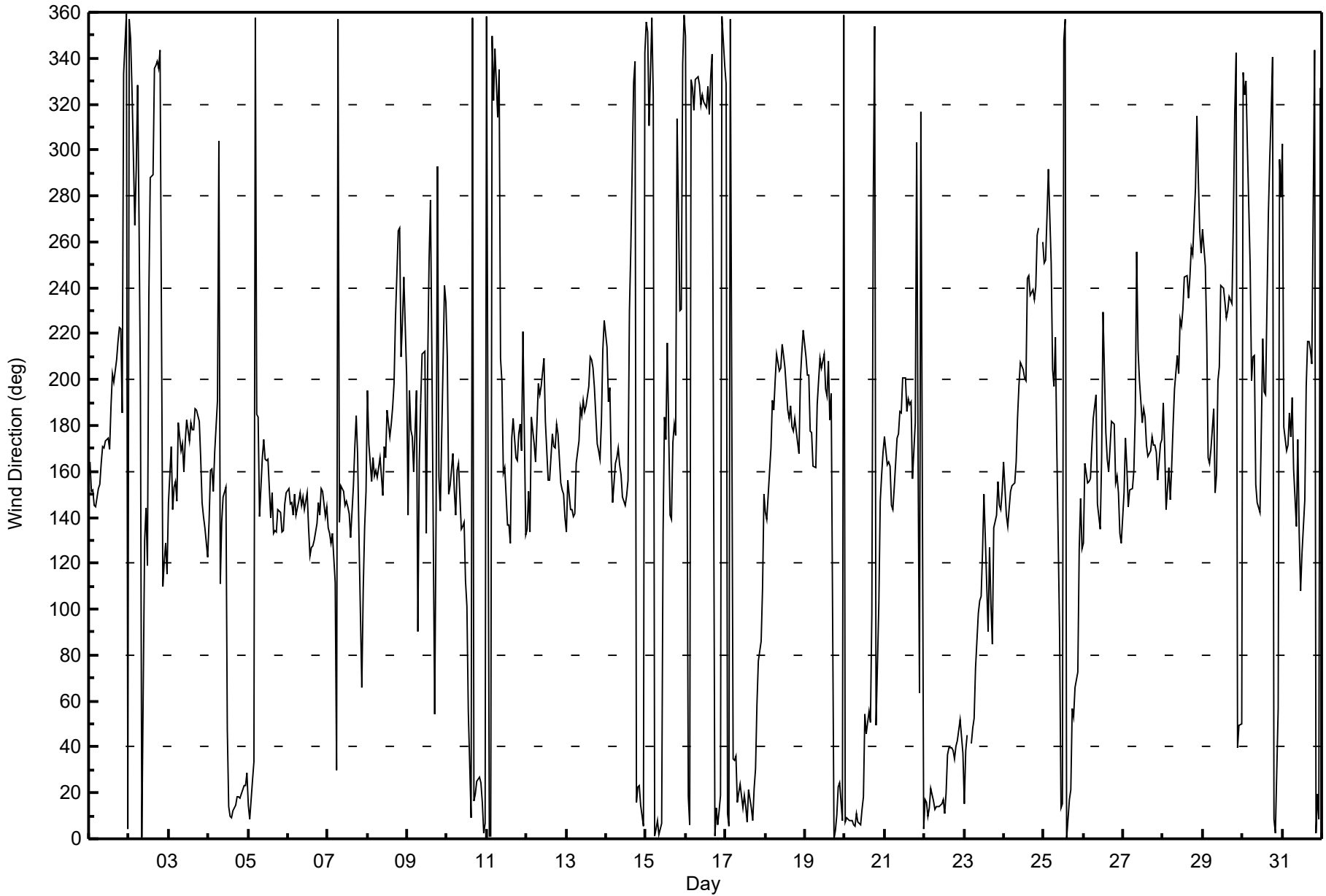
115.7 118.8 126.0 143.3 134.5 138.0 149.2 156.7 163.4 168.9 171.7 174.9 182.0 180.5 193.7 189.6 194.4 187.7 158.9 95.4 89.3 114.6 114.2 121.3
 Diurnal Average

PF - Power Failure
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Direction (WD) - deg
Fort Hills - May 2023





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Fort Hills - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 93 deg on May 15 20:00 Minimum Value: 4 deg on May 26 21:00 Percentiles: P ₁ = 6 P ₁₀ = 9 Q ₁ = 12 Median = 16 Q ₃ = 25 P ₉₀ = 49 P ₉₉ = 88																	Hours in Service: 744 Hours of Data: 742 Hours of Missing Data: 2 Hours of Calibration: 0 Percent Operational Time: 99.7								
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	13	8	9	6	6	5	6	9	10	14	18	16	17	24	17	16	19	13	11	19	5	51	15	13	51
2-May	26	32	14	44	21	46	75	61	58	79	44	72	57	58	37	33	23	30	19	33	21	17	23	44	79
3-May	20	12	19	12	12	12	15	11	13	21	29	16	17	20	17	19	18	11	9	10	8	6	9	8	29
4-May	22	13	4	5	17	25	82	56	16	72	56	49	22	14	14	13	12	12	9	9	8	9	9	45	82
5-May	12	9	48	41	92	14	13	41	23	13	13	12	17	14	13	15	12	11	9	8	9	8	9	8	92
6-May	9	8	8	9	7	8	8	11	15	15	19	22	20	25	23	20	16	11	9	10	9	7	8	9	25
7-May	6	6	15	15	26	46	15	42	13	16	17	22	17	14	17	14	14	21	20	26	26	23	10	11	46
8-May	25	13	15	9	8	11	12	17	21	21	17	17	18	16	17	21	24	23	14	24	25	9	29	46	46
9-May	73	55	52	33	52	55	78	15	22	45	64	78	61	56	18	52	73	93	25	14	28	33	19	43	93
10-May	56	12	19	10	11	10	11	20	16	23	20	41	58	74	23	51	15	15	12	10	9	28	54	12	74
11-May	9	11	11	38	46	21	16	67	24	69	14	16	32	48	79	62	39	58	19	9	12	27	47	15	79
12-May	13	31	27	21	15	9	20	11	15	23	23	19	19	15	28	23	19	12	16	11	7	6	6	8	31
13-May	13	40	9	7	5	6	12	7	8	12	15	15	11	11	12	12	11	12	10	6	8	27	7	26	40
14-May	13	9	9	17	16	12	7	9	12	17	20	14	19	23	23	41	17	15	20	9	9	50	26	12	50
15-May	13	78	60	15	54	13	14	14	14	37	52	45	33	35	25	44	42	9	15	93	46	21	36	16	93
16-May	15	15	19	15	16	20	14	14	12	14	16	15	17	17	16	15	14	21	13	15	12	11	24	26	26
17-May	11	16	13	17	11	12	12	15	13	14	17	20	20	20	18	20	18	19	17	12	15	19	25	24	25
18-May	10	9	12	15	20	17	12	12	17	15	24	32	38	33	29	25	39	23	19	12	4	20	11	12	39
19-May	10	16	10	13	8	15	13	9	11	10	11	11	11	15	31	35	89	26	15	15	10	10	14	13	89
20-May	13	12	11	11	12	12	13	12	13	15	20	28	36	45	51	48	57	44	21	27	41	12	6	8	57
21-May	9	11	9	7	6	8	7	16	15	13	20	17	17	29	22	21	20	18	30	52	91	93	52	12	93
22-May	9	9	11	10	10	11	11	11	11	13	13	11	14	14	15	13	13	13	11	10	9	10	9	11	15
23-May	14	16	16	PF	9	12	11	18	22	23	23	15	19	35	51	16	24	27	11	11	10	10	9	11	51
24-May	9	13	11	10	7	7	10	10	12	13	13	22	16	15	28	13	12	10	10	15	11	13	PF	11	28
25-May	11	27	57	13	56	17	18	17	51	90	70	39	51	33	22	27	28	33	15	15	11	27	13	11	90
26-May	11	22	10	11	11	11	9	15	25	16	29	65	57	84	53	56	42	25	27	7	4	6	13	30	84
27-May	29	24	17	11	14	14	10	28	38	41	14	16	15	18	15	15	12	13	9	8	6	9	33	35	41
28-May	28	8	9	16	17	12	12	16	14	15	15	15	15	18	15	13	16	16	11	23	12	13	13	10	28
29-May	17	20	23	53	14	14	12	14	21	19	25	17	15	14	12	20	16	22	23	21	18	12	9	8	53
30-May	38	22	53	29	44	15	27	39	24	24	26	35	59	44	41	16	13	15	16	22	54	37	88	58	88
31-May	30	42	52	18	25	15	24	18	21	35	81	67	72	39	58	37	15	10	10	77	19	10	40	91	91
73 78 60 53 92 55 82 67 58 90 81 78 72 84 79 62 89 93 30 93 91 93 88 91																								Diurnal Maximum	
PF - Power Failure																									



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS25 WASKŌW OHCI PIMÂTISIWIN MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WASKŌW OHCI PIMÂTISIWIN (AMS25)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO ₂ (ppb) Average	708	35	36	99.87	61.3	0	8	0
H ₂ S(ppb) Average	697	36	47	98.52	2.7	0	0.8	0
Temperature 2 m (C) Average	744	0	0	100	32.1	0	23	0
Relative Humidity (%) Average	744	0	0	100	99	-	77.6	-
Wind Speed 10 m (km/h) Average	731	0	13	98.25	21	0	14	0
Wind Direction 10 m (deg) Average	731	0	13	98.25	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WASKŌW OHCI PIMĀTISIWIN (AMS25)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	708	1.75	4.6	-	0	0	0.1	0.3	1.1	4.8	61.3
H2S (ppb) Average	697	0.29	0.3	-	0	0.1	0.1	0.2	0.3	0.7	2.7
Temperature 2 m (C) Average	744	16.65	6.6	-	2.8	8.5	11.3	16	21.7	25.8	32.1
Relative Humidity (%) Average	744	49.99	21.6	-	15.8	22.6	31.8	47.1	66.3	81.3	99
Wind Speed 10 m (km/h) Average	731	5.7	4	-	0	1	3	5	8	11	21
Wind Direction 10 m (deg) Average	731	-	-	-	-	-	-	-	-	-	-

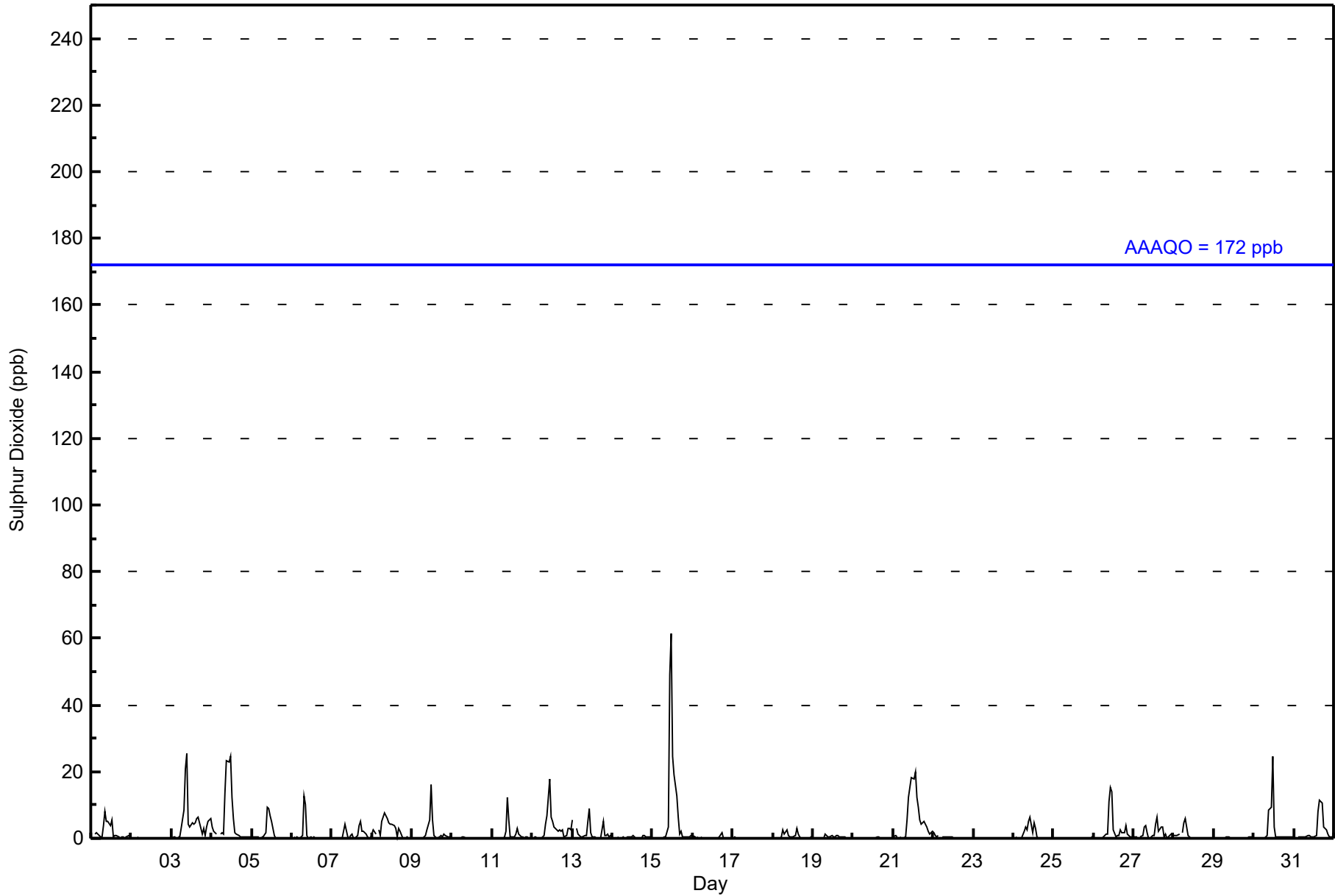
WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WASKŌW OHCI PIMĀTISIWIN (AMS25)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
SO2	17 May 2023 08:00	17 May 2023 08:00	1	Maintenance - sample manifold cleaned
H2S	25 May 2023 07:00	25 May 2023 13:00	7	Maintenance - verify daily QA response
H2S	26 May 2023 07:00	26 May 2023 10:00	4	Maintenance - verify daily QA response
Wind Speed, Wind Direction	01 May 2023 05:00	01 May 2023 05:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	02 May 2023 23:00	03 May 2023 02:00	4	Flat line in sensor output signal
Wind Speed, Wind Direction	09 May 2023 07:00	09 May 2023 07:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	10 May 2023 05:00	10 May 2023 05:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	13 May 2023 04:00	13 May 2023 04:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	18 May 2023 02:00	18 May 2023 02:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	25 May 2023 21:00	25 May 2023 21:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	26 May 2023 03:00	26 May 2023 03:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	30 May 2023 06:00	30 May 2023 07:00	2	Flat line in sensor output signal



Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 744																	744					
Maximum Value: 61.3 ppb on May 15 12:00		Maximum Daily Average: 8.0 ppb on May 15		Hours of Data: 708																	708					
Minimum Value: 0.0 ppb on May 2 14:00		Minimum Daily Average: 0.0 ppb on May 17		Hours of Missing Data: 36																	36					
Maximum Diurnal Average: 6.4 ppb at hour 12		Minimum Diurnal Average: 0.3 ppb at hour 5		Hours of Calibration: 35																	35					
Monthly Average: 1.75 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.3 Q ₃ = 1.1 P ₉₀ = 4.8 P ₉₉ = 22.9		Percent Operational Time: 99.9																	99.9					
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	2.2	Z	1.3	1.9	1.3	0.6	0.5	3.7	8.2	4.9	4.9	3.7	5.6	0.5	0.8	0.7	0.3	0.2	0.2	0.2	0.2	0.4	0.9	0.3	1.9	8.2
2-May	0.2	0.2	Z	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.2
3-May	0.0	0.3	0.3	Z	0.3	0.3	3.0	8.3	20.6	25.3	4.4	3.3	4.5	4.3	4.8	6.1	6.3	4.6	1.1	2.9	1.0	3.5	5.1	6.0	5.0	25.3
4-May	3.5	2.1	1.8	1.3	Z	1.1	1.7	1.2	13.6	23.5	23.1	24.7	12.1	5.8	1.9	1.2	0.7	0.5	0.4	0.4	0.5	0.4	0.4	0.5	5.3	24.7
5-May	0.5	0.5	0.4	0.3	0.3	Z	0.3	0.4	1.5	9.1	8.7	6.9	5.1	1.0	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.1	1.6	9.1
6-May	Z	0.3	0.2	0.2	0.2	0.2	1.0	12.5	10.0	0.7	0.2	0.3	0.2	0.4	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	1.2	12.5
7-May	0.0	Z	0.1	0.0	0.0	0.1	0.0	2.2	4.4	0.6	0.1	1.0	1.1	0.0	0.0	1.0	3.9	5.0	2.0	2.1	1.1	0.4	0.2	0.1	1.1	5.0
8-May	1.5	2.5	1.1	Z	2.7	1.0	4.9	7.7	6.6	6.0	4.7	4.2	4.2	3.7	2.9	0.3	3.0	2.3	0.2	0.2	0.2	0.4	0.2	0.2	2.6	7.7
9-May	0.1	0.1	0.1	Z	0.2	0.1	0.1	0.3	0.9	2.4	5.6	16.2	5.5	0.8	0.2	0.2	0.3	0.8	0.6	1.1	0.7	0.3	0.2	0.2	1.6	16.2
10-May	0.1	0.1	0.2	0.1	Z	0.2	0.3	0.3	0.2	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
11-May	0.0	0.1	0.0	0.1	0.1	Z	0.2	0.3	2.1	12.3	5.6	0.4	0.4	0.6	1.1	2.8	1.3	0.2	0.4	0.1	0.5	0.3	0.1	0.2	1.3	12.3
12-May	Z	0.3	0.2	0.2	0.1	0.2	0.4	1.0	4.2	7.0	17.9	6.4	5.1	3.2	2.9	2.0	2.5	2.2	2.6	0.5	0.9	3.0	2.8	2.4	3.0	17.9
13-May	5.4	Z	3.1	1.2	0.7	0.5	0.5	0.7	0.8	5.2	8.7	1.7	0.3	0.4	0.2	0.2	0.1	0.2	5.3	0.7	1.1	1.1	0.3	0.6	1.7	8.7
14-May	0.1	0.0	Z	0.3	0.1	0.1	0.2	0.2	0.1	0.3	0.4	0.6	0.9	0.3	0.2	0.1	0.1	0.0	0.8	0.7	0.3	0.3	0.2	0.3	0.3	0.9
15-May	0.2	0.2	0.2	Z	0.1	0.1	0.1	0.2	0.3	3.6	49.0	61.3	24.6	19.1	12.8	6.4	1.1	2.0	0.3	0.4	0.3	0.3	0.4	0.7	8.0	61.3
16-May	0.8	0.5	0.1	0.4	Z	0.3	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	1.5	0.1	0.0	0.0	0.0	0.1	0.0	0.2	1.5
17-May	0.0	0.3	0.1	0.0	0.0	Z	0.1	M	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
18-May	Z	0.0	0.0	0.0	0.2	0.4	2.6	1.5	2.4	1.0	0.3	0.4	0.3	0.7	2.8	1.2	0.3	0.1	0.0	0.1	0.0	0.1	0.5	0.6	0.6	2.8
19-May	0.1	Z	0.2	0.2	0.2	0.1	0.1	1.4	1.0	0.3	0.5	0.7	0.6	0.6	0.7	0.7	0.4	0.4	0.4	0.3	0.2	0.0	0.0	0.0	0.4	1.4
20-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.2	0.1	0.3
21-May	0.6	1.0	0.4	Z	0.2	0.2	0.2	0.4	5.6	12.3	15.2	18.4	17.9	20.1	12.4	9.1	5.6	4.3	5.2	4.2	3.3	2.1	1.5	2.0	6.2	20.1
22-May	1.6	0.9	0.5	0.8	Z	0.5	0.4	0.3	0.3	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	1.6
23-May	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.0	0.2
24-May	Z	0.5	0.0	0.1	0.0	0.1	2.0	3.2	2.4	5.1	6.5	1.8	4.7	2.8	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	1.3	6.5
25-May	0.1	Z	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.2
26-May	0.2	0.2	Z	0.2	0.1	0.2	0.4	1.3	1.3	11.0	15.3	13.8	2.7	0.6	0.8	0.9	2.5	1.8	1.8	3.7	1.4	0.7	0.6	0.6	2.7	15.3
27-May	0.3	0.3	0.5	Z	0.4	0.9	3.4	3.8	1.9	0.0	0.0	0.9	0.9	4.3	6.5	2.1	3.4	3.5	0.5	1.2	0.1	0.5	1.1	1.2	1.6	6.5
28-May	1.0	0.8	0.8	1.1	Z	1.5	4.8	5.9	0.7	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.8	5.9
29-May	0.0	0.1	0.1	0.0	0.0	Z	0.2	0.3	0.3	0.4	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.2	0.2	0.3	0.1	0.4
30-May	Z	0.2	0.2	0.1	0.2	0.1	0.2	0.3	0.9	8.6	9.5	24.4	3.3	0.6	0.4	0.3	0.3	0.2	0.3	0.4	0.5	0.5	0.5	0.6	2.3	24.4
31-May	0.4	Z	0.4	0.3	0.3	0.3	0.4	0.4	0.9	0.7	0.3	0.3	0.3	1.0	8.0	11.6	10.9	10.5	3.5	2.6	1.1	0.5	0.6	0.5	2.4	11.6
																								Diurnal Average		
																								Diurnal Maximum		
0.7 0.5 0.5 0.4 0.3 0.4 0.9 1.9 3.0 4.7 6.1 6.4 3.4 2.3 2.0 1.5 1.4 1.3 0.8 0.7 0.5 0.5 0.5 0.6																										
5.4 2.5 3.1 1.9 2.7 1.5 4.9 12.5 20.6 25.3 49.0 61.3 24.6 20.1 12.8 11.6 10.9 10.5 5.3 4.2 3.3 3.5 5.1 6.0																										
Z - zerospan C - Calibration M - Maintenance																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Waskow ohci Pimatisiwin - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	679	95.90	95.90
11 - 20	20	2.82	98.73
21 - 60	8	1.13	99.86
61 - 110	1	0.14	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Waskow ohci Pimatisiwin - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	39	30	16	14	30	51	132	117	40	20	20	21	29	29	40	40	668
11 - 20	0	0	1	0	1	4	11	1	2	0	0	0	0	0	0	0	20
21 - 60	1	0	0	0	0	2	5	0	0	0	0	0	0	0	0	0	8
61 - 110	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	40	30	17	14	31	57	149	118	42	20	20	21	29	29	40	40	697

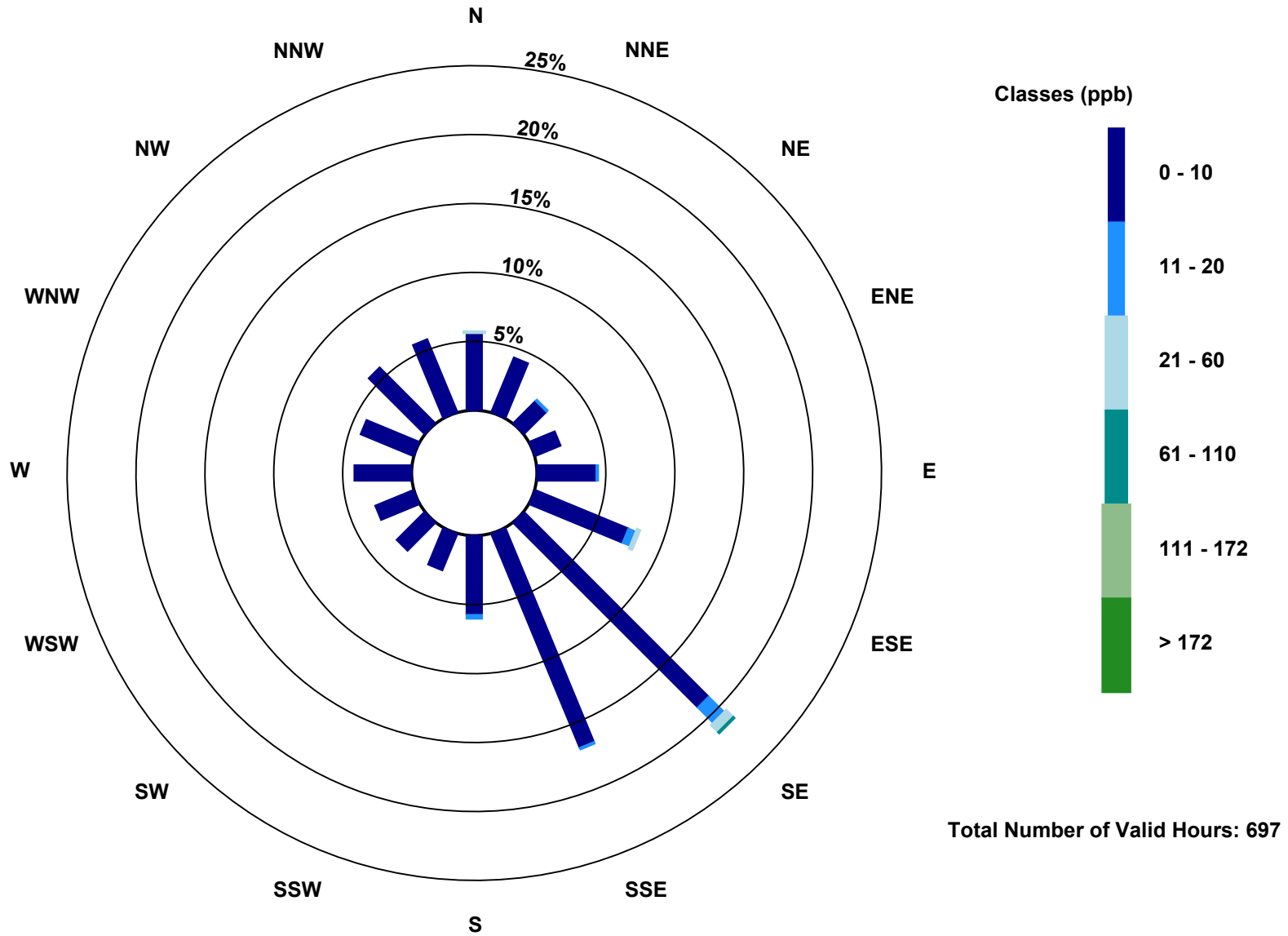
Total Number of Valid Hours: 697

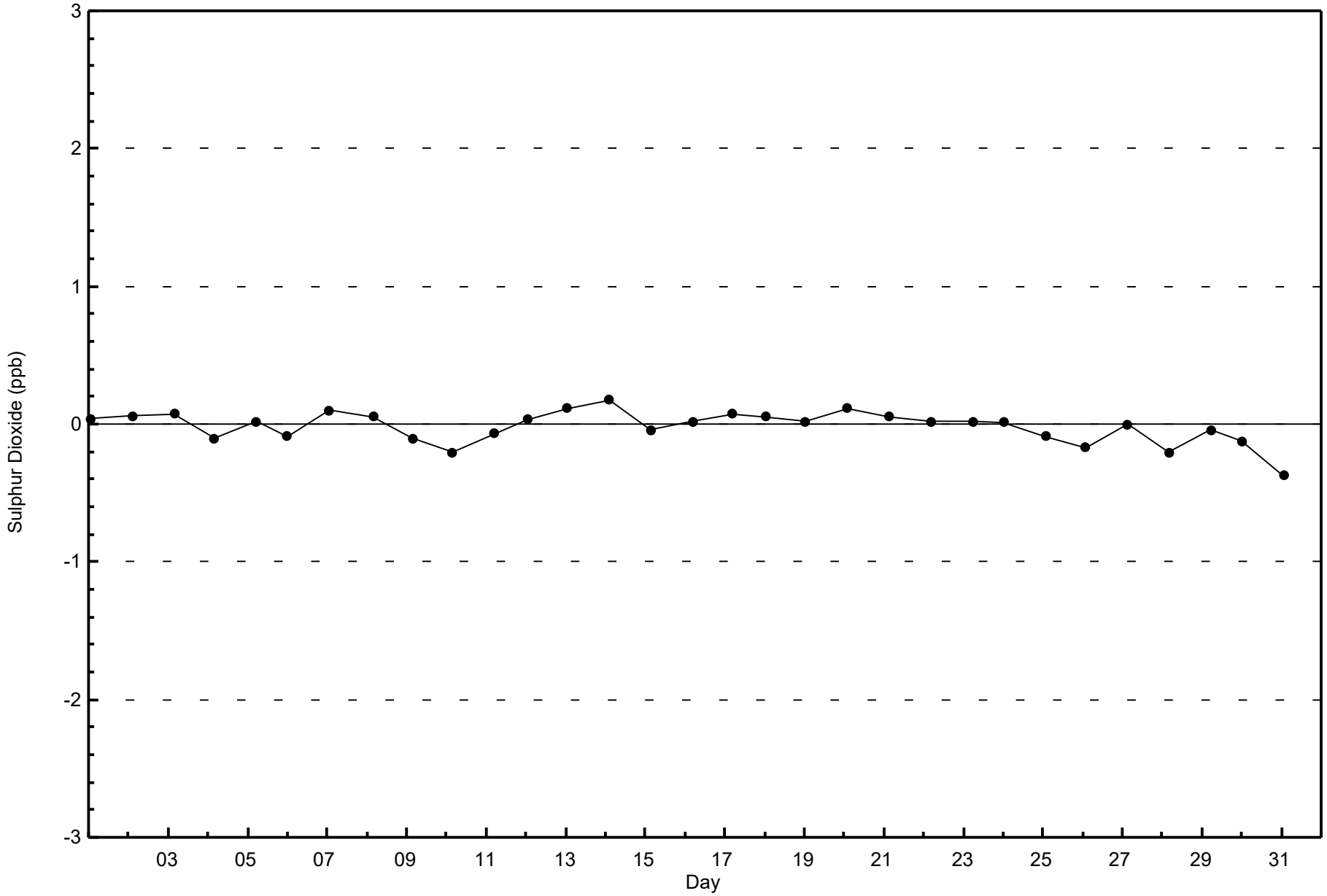
Total Number of Hours: 744

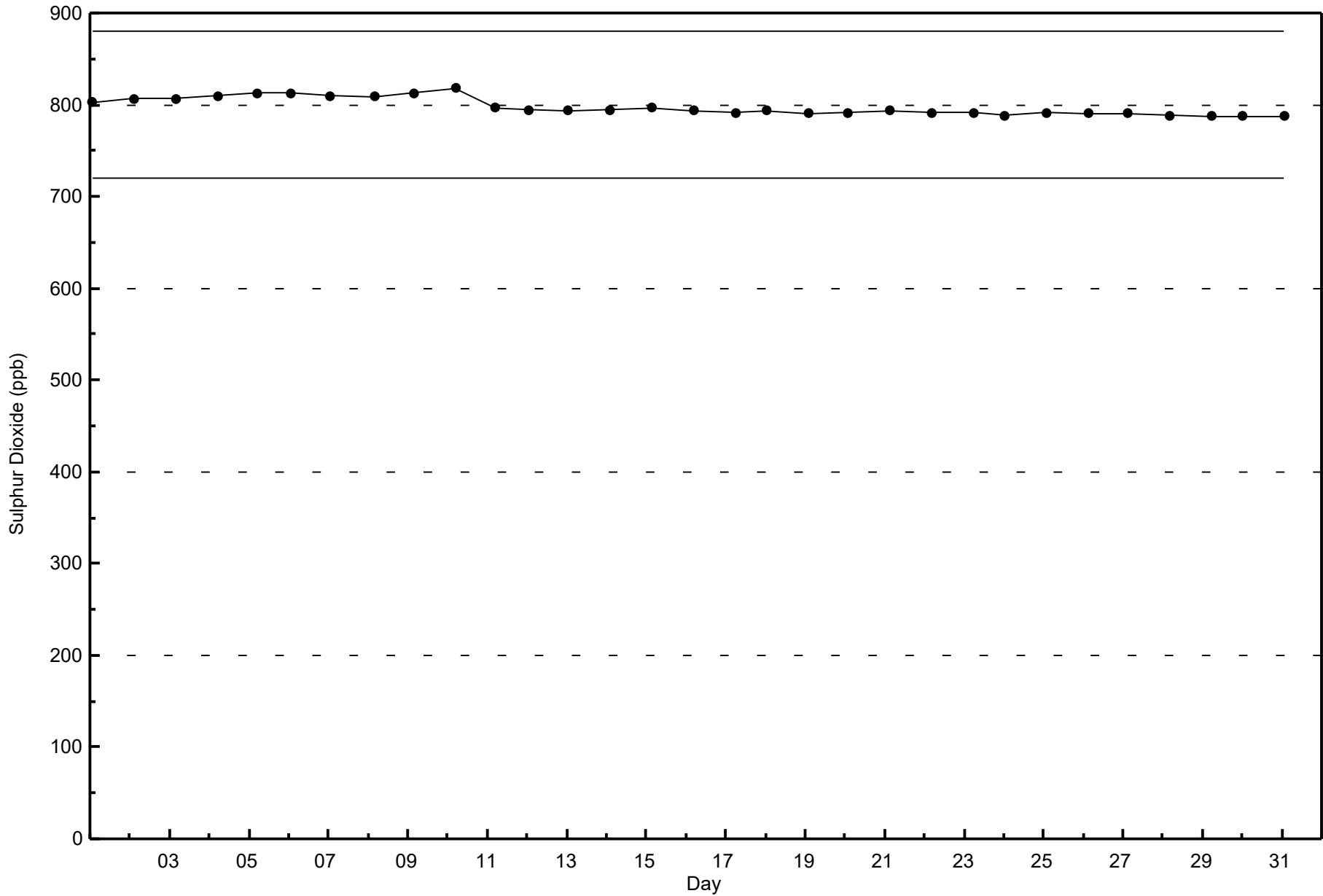


Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Waskow ohci Pimatisiwin









Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H₂S) - ppb

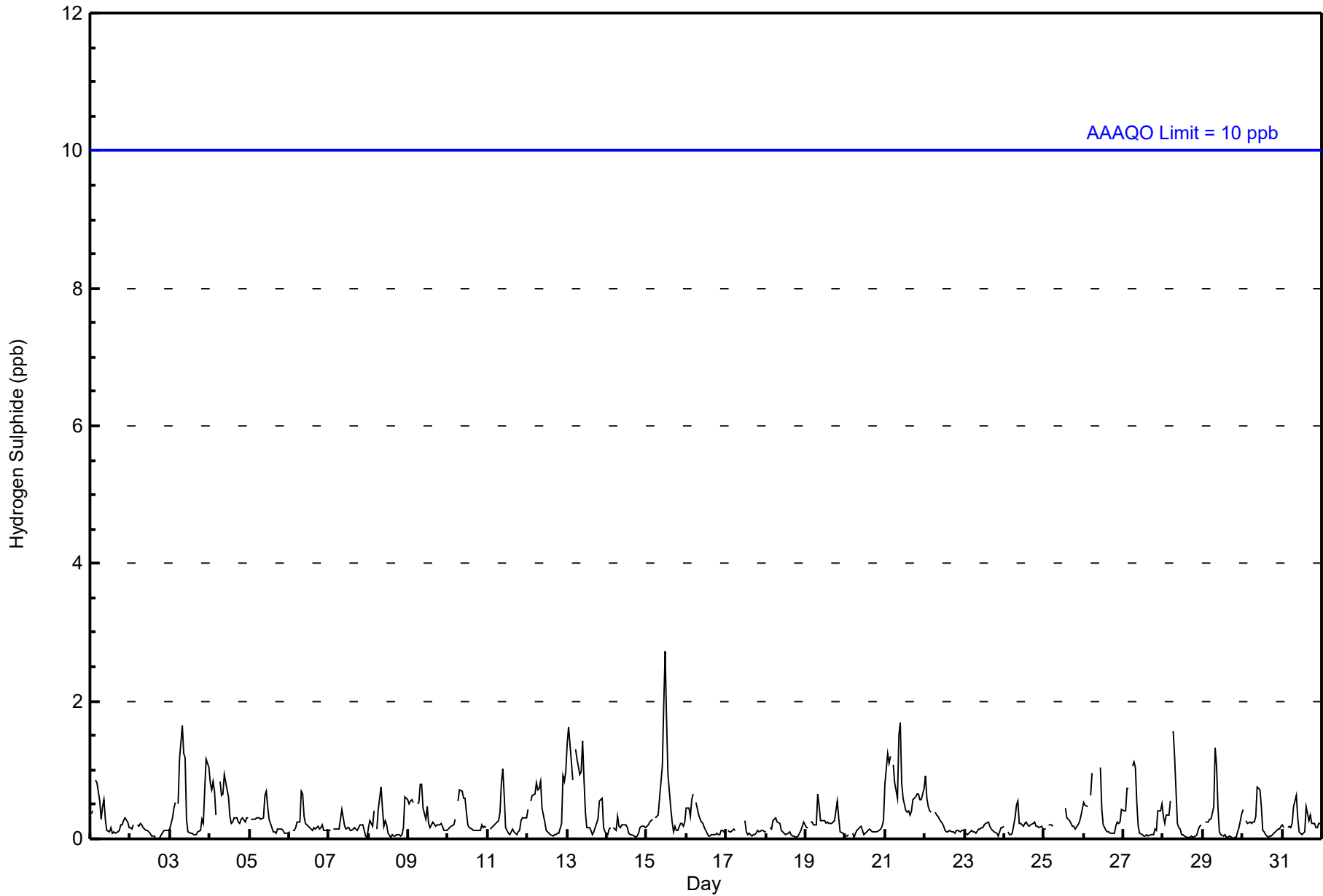
Waskow ohci Pimatisiwin - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 2.7 ppb on May 15 12:00	Maximum Daily Average: 0.8 ppb on May 21		Hours of Data:	697
Minimum Value: 0.0 ppb on May 29 19:00	Minimum Daily Average: 0.1 ppb on May 17		Hours of Missing Data:	47
Maximum Diurnal Average: 0.6 ppb at hour 8	Minimum Diurnal Average: 0.1 ppb at hour 17		Hours of Calibration:	36
Monthly Average: 0.29 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.1 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.3 P ₉₀ = 0.7 P ₉₉ = 1.5		Percent Operational Time:	98.5

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.4	0.4	Z	0.9	0.8	0.6	0.3	0.5	0.6	0.3	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.9
2-May	0.2	0.1	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2
3-May	0.1	0.3	0.4	0.5	Z	0.5	1.2	1.6	1.2	1.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.7	1.2	1.0	1.6	
4-May	0.8	0.7	0.8	0.7	0.3	Z	0.8	0.6	0.6	0.9	0.7	0.6	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.9
5-May	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.7	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7
6-May	0.1	Z	0.1	0.1	0.2	0.2	0.3	0.7	0.7	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.7
7-May	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.3	0.4	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.4
8-May	0.2	0.3	0.2	0.4	Z	0.1	0.4	0.8	0.4	0.2	0.3	0.2	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.6	0.6	0.8	
9-May	0.5	0.5	0.6	0.5	Z	0.5	0.5	0.8	0.8	0.4	0.3	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.8
10-May	0.1	0.2	0.2	0.2	0.3	Z	0.5	0.7	0.7	0.6	0.6	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.7	
11-May	Z	0.1	0.2	0.2	0.2	0.2	0.3	0.4	0.8	1.0	0.6	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	1.0	
12-May	0.4	Z	0.6	0.6	0.7	0.8	0.7	0.7	0.8	0.4	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.9	0.8	1.0	1.0	
13-May	1.4	1.6	1.1	0.9	Z	1.3	1.2	0.9	1.0	1.4	0.9	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.6	0.6	0.2	0.1	1.6	
14-May	0.1	0.2	0.2	Z	0.2	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.3	
15-May	0.2	0.2	0.3	0.3	Z	0.3	0.3	0.3	0.3	0.6	1.1	1.9	2.7	1.7	0.9	0.4	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.2	2.7	
16-May	0.5	0.5	0.3	0.6	0.7	Z	0.5	0.3	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7	
17-May	Z	0.1	0.1	0.1	0.1	0.1	C	C	C	C	C	0.3	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	
18-May	0.1	Z	0.2	0.1	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	
19-May	0.2	0.2	Z	0.3	0.2	0.2	0.2	0.7	0.5	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.5	0.3	0.1	0.1	0.1	0.7	
20-May	0.0	0.0	0.1	Z	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	
21-May	0.8	1.2	1.1	1.2	Z	1.1	0.8	0.6	1.5	1.7	0.8	0.6	0.4	0.4	0.4	0.4	0.4	0.6	0.6	0.6	0.7	0.6	0.6	0.7	1.7	
22-May	0.9	0.6	0.5	0.4	0.4	Z	0.4	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.9	
23-May	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.3	
24-May	0.2	Z	0.1	0.1	0.1	0.1	0.3	0.5	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.5	
25-May	0.2	0.2	Z	0.2	0.2	0.2	M	M	M	M	M	M	M	M	0.5	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.5	
26-May	0.5	0.5	0.5	Z	0.6	1.0	M	M	M	M	1.0	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.3	0.4	1.0	
27-May	0.4	0.4	0.7	0.7	Z	1.1	1.1	1.0	0.5	0.2	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.4	0.4	0.5	1.1	
28-May	0.3	0.2	0.3	0.3	0.5	Z	1.6	1.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	1.6	
29-May	Z	0.2	0.2	0.2	0.3	0.3	0.5	1.3	1.1	0.4	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	1.3	
30-May	0.4	Z	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.8	0.7	0.5	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.2	0.8	
31-May	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.5	0.6	0.3	0.1	0.1	0.1	0.1	0.5	0.4	0.3	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.6	

0.4	0.4	0.4	0.4	0.3	0.4	0.5	0.6	0.6	0.5	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	Diurnal Average
1.4	1.6	1.1	1.2	0.8	1.3	1.6	1.6	1.5	1.7	1.9	2.7	1.7	0.9	0.5	0.4	0.4	0.6	0.6	0.6	0.7	0.9	1.2	1.0	1.0	1.0	Diurnal Maximum

Z - zerospan C - Calibration M - Maintenance
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Waskow ohci Pimatisiwin - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	696	99.86	99.86
3 - 4	1	0.14	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 697

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Waskow ohci Pimatisiwin - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	37	29	18	14	29	60	146	116	45	20	19	20	25	28	39	39	684
3 - 4	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	37	29	18	14	29	60	147	116	45	20	19	20	25	28	39	39	685

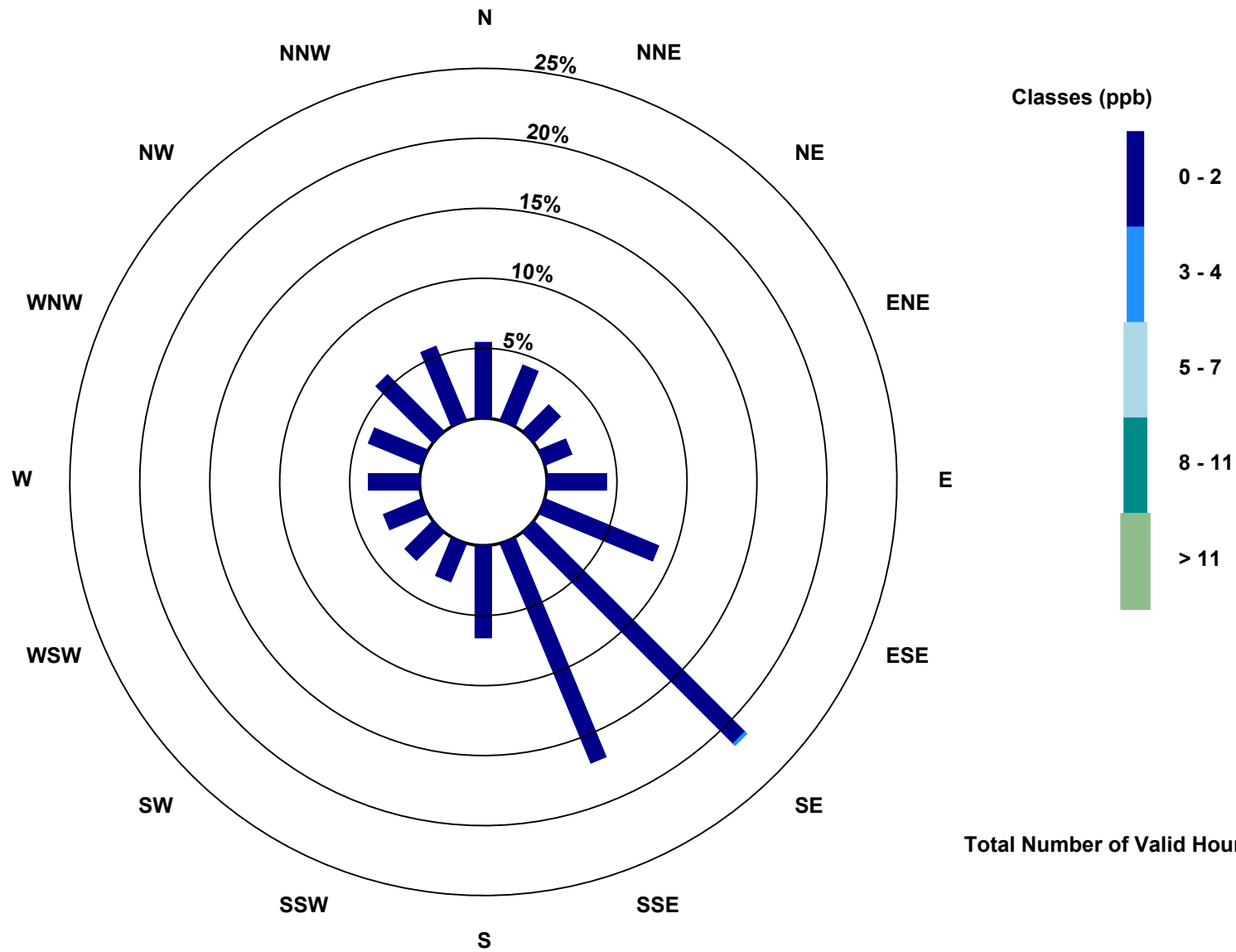
Total Number of Valid Hours: 685

Total Number of Hours: 744

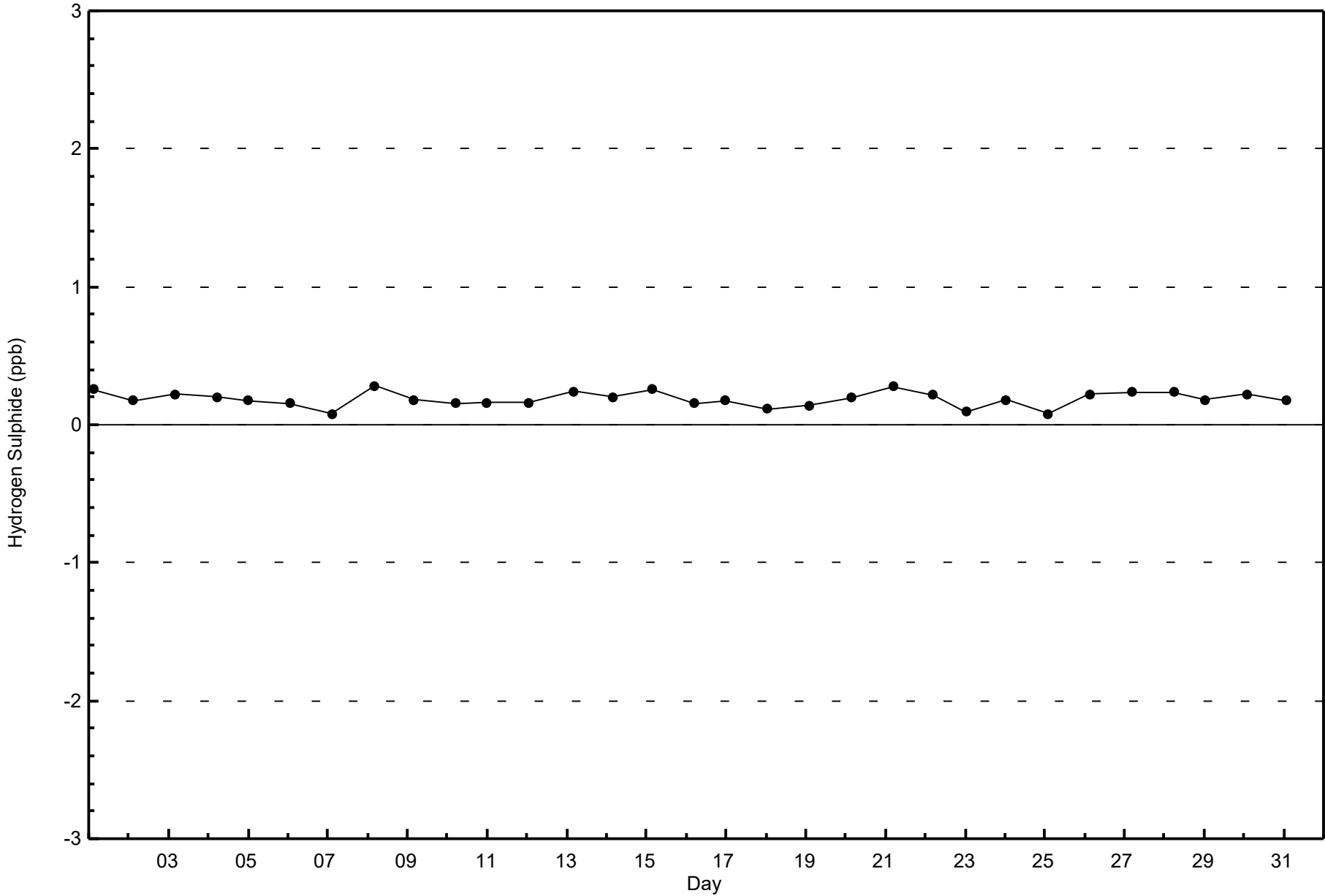


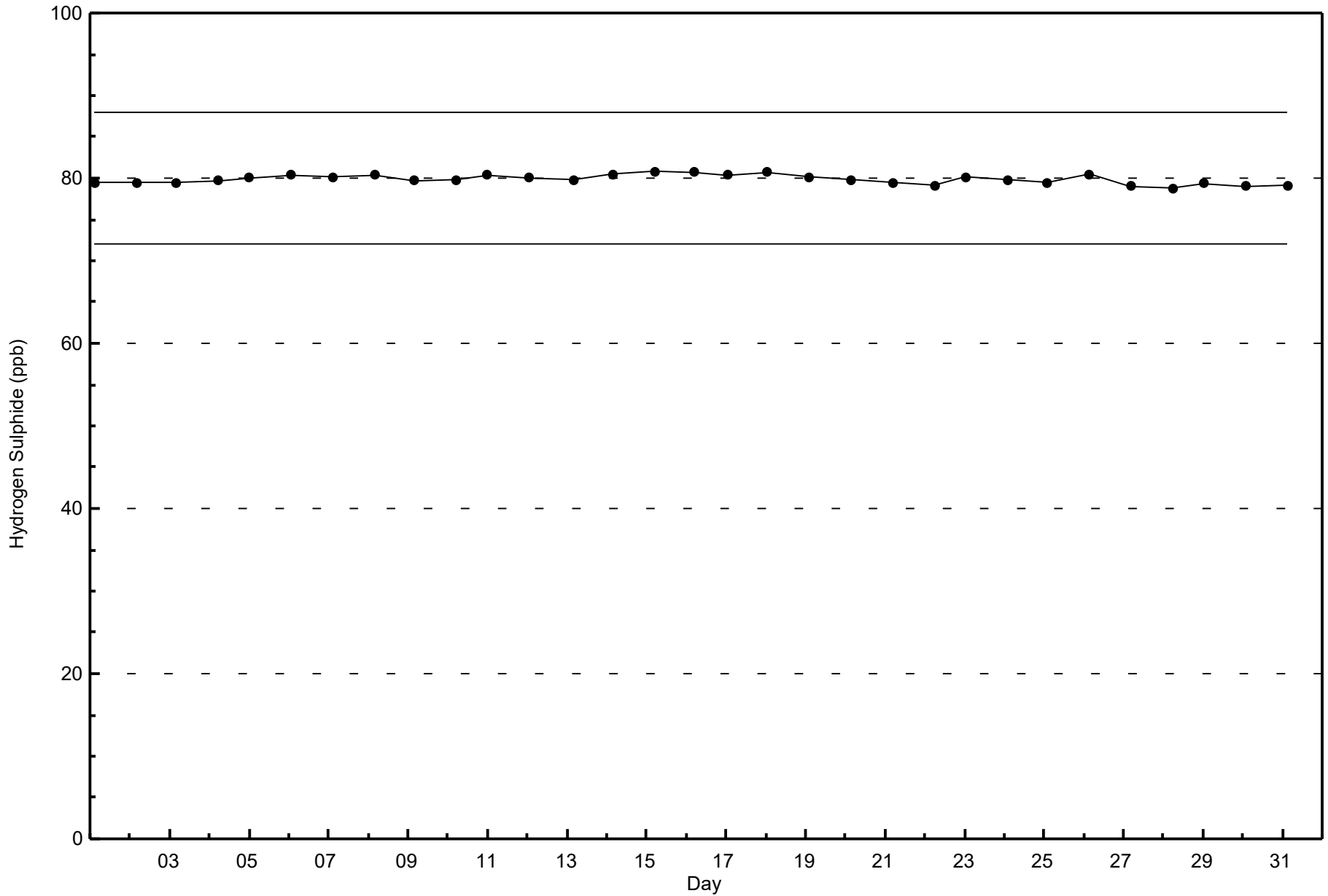
Wood Buffalo Environmental Association
Wind Rose May 2023

Hydrogen Sulphide (H₂S) - ppb
Waskow ohci Pimatisiwin



Total Number of Valid Hours: 685



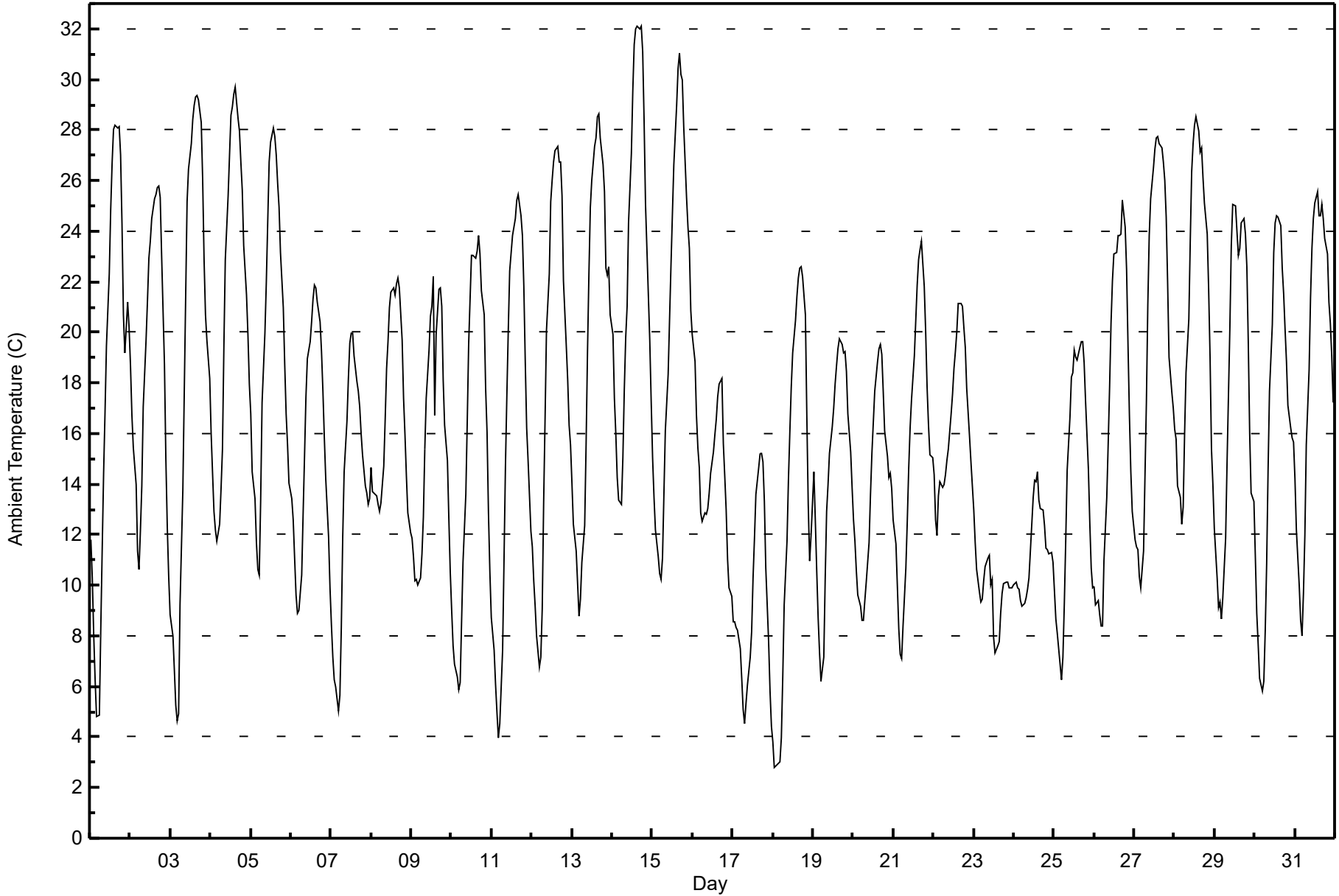




Wood Buffalo Environmental Association
Summary of Hour Averages

Ambient Temperature (AT) - C
Waskow ohci Pimatisiwin - May 2023

Maximum Value: 32.1 C on May 14 16:00		Maximum Daily Average: 23.0 C on May 14		Hours in Service: 744																							
Minimum Value: 2.8 C on May 18 02:00		Minimum Daily Average: 9.2 C on May 17		Hours of Data: 744																							
Maximum Diurnal Average: 23.2 C at hour 17		Minimum Diurnal Average: 8.7 C at hour 5		Hours of Missing Data: 0																							
Monthly Average: 16.65 C		Percentiles: $P_1 = 4.5$ $P_{10} = 8.5$ $Q_1 = 11.3$ Median = 16.0 $Q_3 = 21.7$ $P_{90} = 25.8$ $P_{99} = 30.3$		Hours of Calibration: 0																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	11.8	10.3	8.1	6.3	4.8	4.9	8.3	11.4	14.4	16.9	19.5	22.3	24.8	26.7	28.0	28.2	28.1	28.1	27.0	24.3	20.7	19.2	21.2	20.2	18.1	28.2	
2-May	18.7	16.7	15.4	14.0	11.3	10.6	12.1	13.9	17.0	19.7	21.2	23.0	23.6	24.5	25.3	25.4	25.8	25.8	25.4	23.0	18.7	15.0	12.3	10.3	18.7	25.8	
3-May	8.8	8.0	6.7	5.3	4.6	4.9	9.2	13.8	17.6	21.4	25.2	26.5	27.5	28.4	29.0	29.3	29.4	29.2	28.3	26.1	22.9	20.7	19.7	18.2	19.2	29.4	
4-May	16.0	14.4	12.9	12.2	11.8	12.4	13.8	15.4	19.4	22.9	25.4	27.0	28.6	28.9	29.4	29.7	28.5	28.0	26.8	25.6	23.4	21.5	19.9	18.0	21.3	29.7	
5-May	16.8	14.5	13.4	11.7	10.6	10.4	13.4	17.2	20.0	22.0	24.4	26.7	27.5	28.1	27.8	27.0	25.9	24.9	23.2	21.0	18.8	16.8	15.6	14.0	19.6	28.1	
6-May	13.4	12.6	11.1	9.6	8.9	9.0	10.4	12.8	15.1	17.5	19.0	19.7	20.4	21.3	21.8	21.7	21.2	20.4	19.3	17.7	15.8	14.2	11.9	9.9	15.6	21.8	
7-May	8.4	7.1	6.3	6.0	5.1	5.6	8.3	11.9	14.5	16.5	18.2	19.6	20.0	20.0	19.1	18.0	17.7	17.0	16.0	15.2	13.9	13.7	13.2	13.4	13.5	20.0	
8-May	14.6	13.7	13.6	13.6	13.2	12.9	13.3	14.7	16.5	18.6	19.6	20.9	21.6	21.8	21.5	21.9	22.2	21.8	19.7	17.4	16.0	14.3	12.8	12.1	17.0	22.2	
9-May	11.8	11.1	10.2	10.2	10.0	10.3	11.2	12.7	15.4	17.4	19.3	20.7	21.0	22.2	16.7	19.9	21.7	21.7	21.0	18.1	16.3	14.9	12.6	10.5	15.7	22.2	
10-May	9.0	7.6	6.9	6.4	5.9	6.2	8.6	10.9	13.6	16.4	19.5	21.3	23.0	23.1	22.9	23.2	23.8	23.1	21.6	20.7	17.8	16.1	12.9	10.5	15.5	23.8	
11-May	8.7	7.5	6.1	5.0	4.0	4.5	7.4	11.0	14.7	17.5	20.1	22.4	23.8	24.2	24.5	25.2	25.4	24.6	23.8	21.8	18.9	16.2	14.9	12.2	16.0	25.4	
12-May	11.5	10.2	9.2	8.0	6.8	7.1	9.0	13.2	16.6	20.1	22.3	25.1	26.0	26.7	27.2	27.3	26.8	26.8	25.4	22.0	19.4	18.1	16.3	15.6	18.2	27.3	
13-May	14.1	12.4	11.3	10.1	8.8	9.4	10.9	12.3	15.5	19.3	22.3	24.9	26.0	27.3	27.7	28.5	28.6	27.7	26.6	25.6	22.6	22.2	22.6	20.7	19.9	28.6	
14-May	19.9	17.4	16.0	14.2	13.4	13.2	15.1	17.7	19.8	21.0	24.4	27.1	29.5	31.4	32.0	32.1	32.0	32.1	31.1	28.3	25.1	23.2	19.7	17.3	23.0	32.1	
15-May	15.1	13.5	12.2	11.1	10.4	10.2	11.1	13.6	16.1	18.4	20.6	22.7	24.7	26.6	29.0	30.4	31.1	30.2	30.0	28.1	25.3	24.2	23.3	20.8	20.8	31.1	
16-May	19.9	18.8	16.7	15.4	14.7	12.9	12.5	12.9	12.8	13.0	13.6	14.4	15.2	15.9	16.6	17.5	18.0	18.2	15.6	14.3	13.0	11.0	9.9	9.6	14.7	19.9	
17-May	8.6	8.5	8.3	8.2	7.5	6.3	5.1	4.5	5.3	6.0	7.2	8.2	10.3	11.8	13.6	14.7	15.2	15.2	14.9	13.3	10.7	7.8	5.8	4.4	9.2	15.2	
18-May	3.8	2.8	2.9	3.0	3.0	4.0	6.4	9.2	11.7	14.1	16.1	17.8	19.2	20.5	21.4	22.2	22.5	22.6	22.2	20.7	16.7	13.2	10.9	12.0	13.3	22.6	
19-May	14.5	12.6	10.6	8.8	7.4	6.2	7.2	10.3	12.9	14.0	15.2	16.2	17.0	18.0	18.7	19.4	19.7	19.5	19.2	19.2	18.5	16.8	15.3	13.9	14.6	19.7	
20-May	12.6	11.7	10.6	9.6	9.2	8.6	8.6	9.4	10.1	11.7	13.6	15.2	16.4	17.7	18.8	19.4	19.5	19.1	17.7	16.1	15.1	14.3	14.4	13.8	13.9	19.5	
21-May	12.6	11.6	10.0	8.3	7.2	7.1	8.4	10.7	12.5	14.6	16.2	17.4	19.0	20.5	21.9	22.8	23.3	23.6	21.8	20.0	17.8	16.3	15.1	15.1	15.6	23.6	
22-May	14.4	12.6	12.0	13.6	14.1	13.9	14.0	14.4	15.0	15.4	16.8	17.6	18.6	19.2	20.0	21.1	21.2	21.0	20.2	19.4	17.8	15.9	14.9	13.9	16.5	21.2	
23-May	13.0	11.7	10.6	9.7	9.4	9.5	10.2	10.7	11.1	11.2	10.0	10.3	7.9	7.3	7.6	7.8	8.9	9.7	10.1	10.1	10.1	9.9	9.9	9.9	9.9	13.0	
24-May	10.0	10.1	9.9	9.8	9.4	9.2	9.3	9.5	9.8	10.3	11.4	13.5	14.1	14.1	14.5	13.3	13.1	13.0	12.4	11.5	11.4	11.3	11.3	10.9	11.4	14.5	
25-May	9.8	8.7	8.1	7.5	6.3	7.2	9.3	11.8	14.5	16.7	18.2	18.4	18.3	19.3	19.0	18.9	19.4	19.6	18.8	17.3	14.6	12.5	10.7	9.9	14.0	19.6	
26-May	10.0	9.2	9.4	8.8	8.4	8.4	11.0	13.5	15.6	17.9	20.4	22.1	23.1	23.2	23.8	23.8	23.9	25.2	24.2	22.5	19.5	16.7	14.5	12.9	17.0	25.2	
27-May	11.8	11.5	11.4	10.3	9.9	11.4	14.3	17.2	21.1	23.8	25.3	26.5	27.3	27.7	27.8	27.4	27.3	26.7	26.0	24.5	22.0	19.0	17.6	17.0	20.2	27.8	
28-May	16.2	15.8	13.9	13.5	12.4	13.1	16.0	18.4	20.5	23.6	26.3	27.5	28.2	28.5	28.0	27.1	27.3	26.1	25.1	23.9	21.7	19.0	15.4	14.0	20.9	28.5	
29-May	12.3	10.3	9.1	9.3	8.7	9.5	11.9	14.8	17.5	20.2	23.4	25.1	25.0	24.0	23.1	23.3	24.3	24.5	23.9	22.6	19.6	16.0	13.6	13.3	17.7	25.1	
30-May	11.1	8.9	7.7	6.3	5.8	6.2	8.2	10.9	14.5	17.7	20.3	23.1	24.3	24.6	24.6	24.2	22.6	21.5	20.1	18.9	17.1	16.2	15.9	15.6	16.1	24.6	
31-May	14.2	12.2	10.0	8.6	8.0	9.7	12.0	15.6	18.5	21.4	23.3	24.5	25.1	25.6	24.6	24.6	25.1	24.5	23.7	23.1	21.2	20.3	19.1	17.2	18.8	25.6	
		12.7	11.4	10.3	9.5	8.7	8.9	10.5	12.8	15.2	17.3	19.3	20.9	21.9	22.5	22.8	23.1	23.2	23.0	22.0	20.4	18.1	16.3	14.9	13.8	Diurnal Average	
		19.9	18.8	16.7	15.4	14.7	13.9	16.0	18.4	21.1	23.8	26.3	27.5	29.5	31.4	32.0	32.1	32.0	32.1	31.1	28.3	25.3	24.2	23.3	20.8	Diurnal Maximum	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Waskow ohci Pimatisiwin - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	131	17.61	17.61
10 - 20	376	50.54	68.15
> 20	237	31.85	100.00

Total Number of Valid Hours: 744

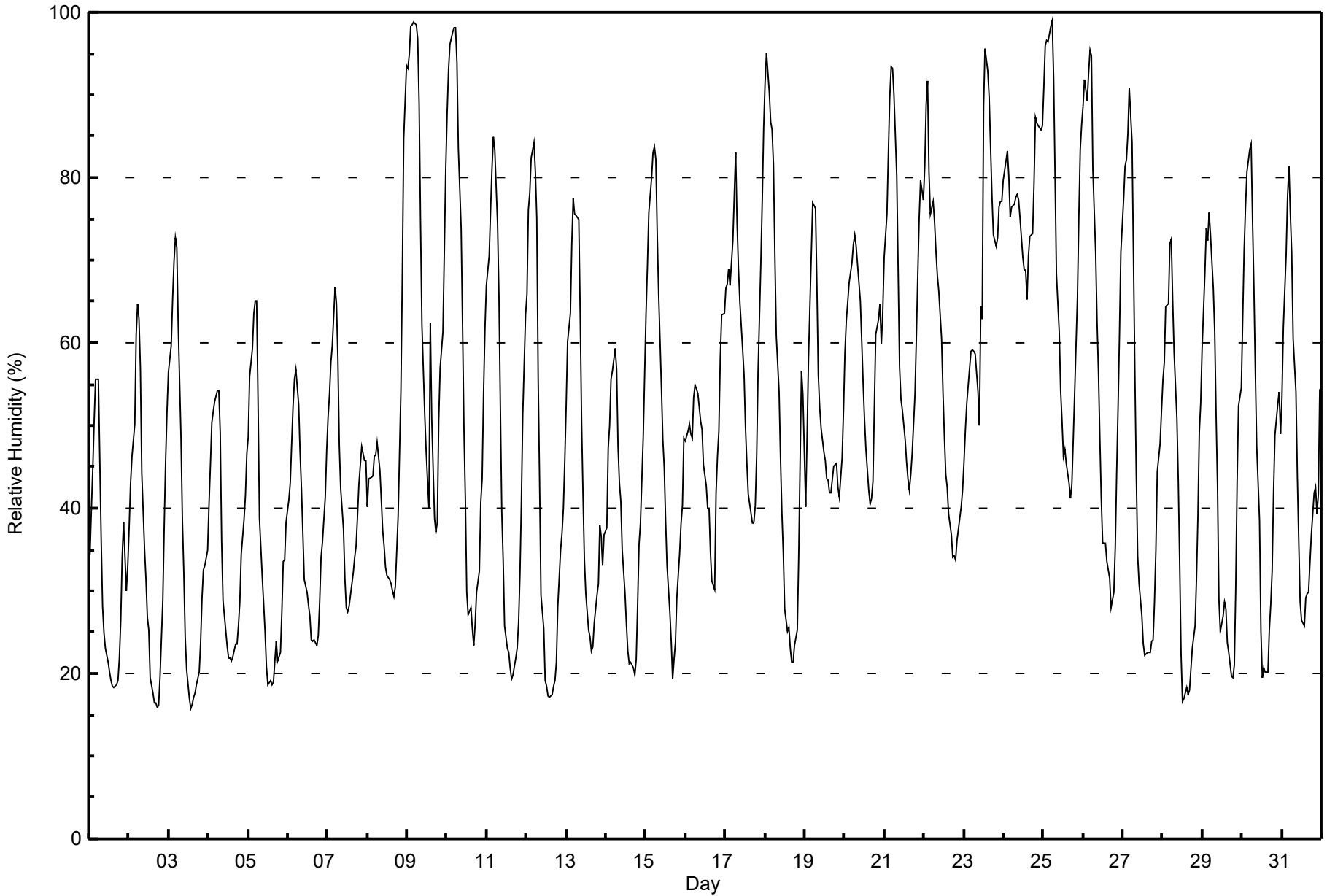
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Waskow ohci Pimatisiwin - May 2023

Maximum Value: 99.0 % on May 25 06:00																						Hours in Service: 744				
Maximum Daily Average: 77.6 % on May 24																						Hours of Data: 744				
Minimum Value: 15.8 % on May 3 14:00																						Hours of Missing Data: 0				
Minimum Daily Average: 31.6 % on May 1																						Hours of Calibration: 0				
Maximum Diurnal Average: 74.5 % at hour 6																						Percent Operational Time: 100.0				
Minimum Diurnal Average: 30.7 % at hour 17																										
Monthly Average: 49.99 %																										
Percentiles: P ₁ = 16.9 P ₁₀ = 22.6 Q ₁ = 31.8 Median = 47.1 Q ₃ = 66.3 P ₉₀ = 81.3 P ₉₉ = 97.9																										
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	34.4	39.9	44.8	50.7	55.5	55.6	45.9	36.2	28.2	25.0	23.0	21.3	20.1	19.2	18.5	18.3	18.7	19.1	21.9	26.5	34.1	38.3	30.0	33.0	31.6	55.6
2-May	37.8	43.0	46.3	50.2	60.9	64.7	62.9	57.0	44.3	34.9	31.3	26.8	25.2	19.5	17.7	16.4	16.4	16.0	16.0	19.6	28.7	37.9	45.7	51.7	36.3	64.7
3-May	56.5	59.7	65.2	69.8	72.7	71.4	62.2	48.5	38.5	32.2	24.5	20.5	16.9	15.8	16.3	17.1	17.6	18.6	20.2	23.7	29.2	32.6	33.0	34.9	37.4	72.7
4-May	40.5	45.2	50.4	51.7	52.9	54.2	54.3	49.1	36.0	28.9	25.1	23.3	21.8	21.8	21.5	22.0	23.5	23.5	25.8	28.7	34.4	38.6	41.6	46.6	35.9	54.3
5-May	48.7	55.9	59.4	63.6	65.1	65.0	53.0	38.8	31.7	28.5	25.0	20.9	18.7	19.1	18.7	18.9	21.5	24.0	21.5	22.5	27.5	33.5	33.8	38.3	35.6	65.1
6-May	41.1	43.1	47.7	52.4	55.6	56.7	52.6	46.8	42.4	36.9	31.4	29.8	28.4	27.0	24.2	23.9	24.0	23.4	24.7	28.6	34.1	35.9	41.3	47.0	37.5	56.7
7-May	51.1	53.7	57.7	59.6	66.8	64.8	58.2	47.7	42.4	37.4	31.6	28.0	27.5	28.1	29.5	32.2	34.1	35.4	39.0	43.0	47.4	46.7	45.8	45.8	43.9	66.8
8-May	40.2	43.6	43.8	43.9	46.2	46.4	48.0	44.6	41.1	37.3	35.5	32.9	31.8	31.3	30.8	30.0	29.4	30.6	39.0	46.6	54.2	68.2	84.7	93.5	44.7	93.5
9-May	93.2	94.9	98.4	98.5	98.8	98.4	96.8	89.0	74.7	62.2	51.3	47.0	43.4	40.1	62.4	50.8	38.8	37.2	38.3	50.7	57.0	61.3	71.1	81.0	68.1	98.8
10-May	87.9	93.0	96.1	97.6	98.2	98.1	93.8	83.5	73.9	62.2	49.7	41.3	29.9	27.2	28.0	25.5	23.4	25.9	29.8	32.4	40.6	43.6	53.9	61.7	58.2	98.2
11-May	66.9	70.5	75.9	81.0	84.9	83.5	74.4	65.5	52.1	39.6	33.8	25.8	23.1	22.5	20.7	19.3	19.8	21.9	23.0	26.2	32.0	40.6	51.3	63.4	46.6	84.9
12-May	66.0	76.1	78.1	82.4	84.3	80.6	75.2	55.6	43.2	29.6	25.5	19.2	18.4	17.3	17.1	17.4	18.4	19.2	21.3	28.2	34.9	37.0	40.0	45.7	42.9	84.3
13-May	52.6	60.2	63.6	72.0	77.4	75.7	75.4	75.0	63.5	50.3	41.8	33.7	29.6	25.2	24.4	22.7	23.1	26.1	29.4	30.9	38.0	36.7	33.1	36.7	45.7	77.4
14-May	37.6	47.2	50.1	55.7	56.5	59.3	56.8	47.4	43.0	40.8	34.9	29.7	25.9	22.7	21.2	21.4	20.6	19.8	21.8	28.4	35.6	38.2	48.6	56.1	38.3	59.3
15-May	63.6	69.4	75.8	79.9	83.0	83.8	82.2	73.1	65.9	54.6	48.2	44.9	38.5	33.0	27.5	23.9	19.4	21.7	23.7	29.1	34.5	38.2	40.3	48.5	50.1	83.8
16-May	48.1	49.4	50.1	49.0	48.4	53.4	55.0	53.8	52.2	50.5	49.4	45.2	42.8	39.9	40.0	34.7	31.2	30.1	41.8	46.4	49.3	58.1	63.4	63.6	47.7	63.6
17-May	66.7	67.1	68.9	67.0	72.3	77.8	83.1	74.6	69.0	65.0	59.2	56.1	49.8	45.4	41.6	39.3	38.2	38.2	40.3	46.4	56.6	69.8	77.5	86.1	60.7	86.1
18-May	91.5	95.1	90.4	86.9	85.8	81.5	70.6	60.8	54.0	46.2	39.5	34.5	27.7	25.0	25.6	23.0	21.4	21.4	23.4	25.3	34.0	45.5	56.6	53.6	50.8	95.1
19-May	40.2	48.8	58.1	64.4	70.6	76.9	76.3	67.0	56.1	52.2	49.7	46.7	45.7	43.6	43.3	41.9	41.8	45.1	45.2	45.3	42.6	41.3	46.1	51.9	51.7	76.9
20-May	58.8	62.7	64.9	67.2	69.7	71.9	73.0	71.7	69.5	65.1	60.2	55.2	50.7	47.1	42.2	40.6	41.1	43.2	52.2	60.9	62.9	64.8	59.9	63.6	59.1	73.0
21-May	70.4	75.6	82.9	89.7	93.3	93.3	89.9	80.2	68.8	57.1	53.2	51.9	48.2	45.6	43.5	42.2	44.1	46.6	53.7	60.6	68.2	75.0	79.6	77.3	66.3	93.3
22-May	81.4	88.7	91.7	80.7	75.6	77.1	74.5	71.1	68.1	66.3	60.5	54.0	48.7	44.1	42.5	39.3	36.8	34.1	34.3	33.7	36.1	38.8	40.1	42.3	56.7	91.7
23-May	45.6	49.5	52.8	56.9	58.9	59.1	59.0	58.6	54.0	50.1	64.5	62.8	88.6	95.6	92.9	89.7	83.6	77.7	73.1	71.7	72.6	76.4	77.1	77.2	68.7	95.6
24-May	79.6	82.1	83.2	80.1	75.3	76.4	76.8	77.6	78.0	77.3	75.1	70.3	68.8	68.8	65.3	70.5	72.9	73.2	79.3	87.3	86.6	86.3	85.7	86.2	77.6	87.3
25-May	90.8	96.0	96.6	96.4	98.4	99.0	92.0	80.5	68.3	61.4	54.2	50.6	46.3	47.2	45.3	43.0	41.2	42.8	48.4	53.9	65.5	75.3	83.3	86.4	69.3	99.0
26-May	88.6	91.8	89.3	92.7	95.4	94.7	81.1	70.9	62.6	56.5	48.4	41.1	35.8	35.8	33.5	32.5	31.5	28.0	29.9	35.2	44.3	52.2	61.0	71.1	58.5	95.4
27-May	77.4	81.4	82.2	85.3	90.9	84.3	70.3	56.3	44.1	34.3	30.8	27.0	23.6	22.2	22.4	22.6	22.6	24.0	24.1	28.7	34.9	44.4	47.8	51.7	47.2	90.9
28-May	55.4	57.6	64.4	64.8	72.1	72.5	65.1	58.8	50.9	43.2	33.2	22.2	16.7	16.9	18.3	17.4	17.9	20.5	23.0	25.7	31.6	39.0	49.2	52.8	41.2	72.5
29-May	59.3	68.4	73.8	72.4	75.8	73.0	66.6	61.4	51.2	42.7	29.0	25.0	27.0	28.6	27.8	23.7	22.6	19.6	19.5	20.9	30.2	43.1	52.3	54.5	44.5	75.8
30-May	63.1	71.3	76.4	80.7	83.4	84.1	74.9	66.5	56.6	47.5	38.5	25.1	19.6	20.7	20.2	20.2	25.2	28.3	32.4	41.9	48.8	52.5	54.0	48.9	49.2	84.1
31-May	53.5	61.8	70.8	77.6	81.3	75.5	70.8	60.6	54.0	43.9	36.2	28.7	26.5	25.7	29.2	29.6	29.8	33.4	36.8	41.9	42.6	39.4	41.8	54.4	47.7	81.3
	60.9	65.9	69.3	71.6	74.4	74.5	70.0	62.2	54.1	47.1	41.7	36.8	34.4	33.0	32.7	31.3	30.7	31.2	34.0	38.4	44.2	49.3	53.9	58.2		Diurnal Average
	93.2	96.0	98.4	98.5	98.8	99.0	96.8	89.0	78.0	77.3	75.1	70.3	88.6	95.6	92.9	89.7	83.6	77.7	79.3	87.3	86.6	86.3	85.7	93.5		Diurnal Maximum





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %
Waskow ohci Pimatisiwin - May 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	41	5.51	5.51
20 - 40	231	31.05	36.56
40 - 60	234	31.45	68.01
60 - 80	153	20.56	88.58
80 - 100	85	11.42	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Maximum Speed: 21 km/h on May 16 12:00	Maximum Daily Speed Average: 13.8 km/h on May 16	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 9 04:00	Minimum Daily Speed Average: 0.4 km/h on May 19	Hours of Data: 731
Maximum Diurnal Speed Average: 4.6 km/h at hour 13	Minimum Diurnal Speed Average: 0.3 km/h at hour 23	Hours of Missing Data: 13
Monthly Average Velocity: 1.5 km/h 131.8 deg	Percentiles: $P_1 = 0$ $P_{10} = 1$ $Q_1 = 3$ Median = 5 $Q_3 = 8$ $P_{90} = 11$ $P_{99} = 19$	Percent Operational Time: 98.3

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	SE5	ESE2	W1	WNW1	UO	ESE1	SE3	SE7	SE10	SE10	SE12	SE11	SE11	S13	SSE11	SSE11	S9	S8	S8	S4	S2	W3	NNW15	NNW11	SSE4.4	NNW15	
2-May	NNW8	NW2	WNW4	WNW5	NW1	ENE1	ESE1	SE2	ENE2	ENE5	ENE5	SE5	E2	NW6	WNW7	NW8	NW8	W7	NW5	NNW0	S1	W0	UO	UO	NW1.8	NW8	
3-May	UO	UO	SW1	SW1	WSW1	SW1	SE3	SE5	SE7	SE7	S11	SSE13	SSE14	SE12	SSE12	SSE12	SSE11	SSE10	SSE9	SSE6	SE4	SE5	SSE6	SE4	SSE6.8	SSE14	
4-May	E2	WNW2	WNW1	SSE2	SSE3	SW1	ESE0	ESE2	SSE6	SE6	ESE3	N4	NE4	NNE5	N8	NNE11	NNE9	NNE11	NNE12	NNE10	NNE8	NNE6	N5	N2	NNE3.6	NNE12	
5-May	NNW3	NNW2	NNW4	WNW2	NW1	SSW0	SSE6	SE7	SE7	SE10	SE9	SE11	SE13	SE11	SE10	SE12	SE12	ESE9	ESE9	ESE10	ESE8	ESE6	ESE7	SE8	SE8	SE6.4	SE13
6-May	SE10	SE8	SE6	ESE5	SE6	ESE5	SE7	SE10	SE10	SE10	SE12	SSE12	SE13	SE9	ESE9	ESE9	ESE9	ESE9	ESE9	ESE8	ESE7	ESE6	SE3	ESE2	SE7.9	SE13	
7-May	NE1	ENE1	SE2	SE3	E2	SE1	SE4	SE7	SE10	SE12	SE12	SE11	SE12	ESE10	SE9	SE12	SSE9	SE6	SE3	N2	NW2	N1	E1	ESE4	SE5.1	SE12	
8-May	SSE6	SSE3	SE5	SE8	SSE6	SSE4	SE8	SE8	SE8	SE7	SE8	SE10	SE10	SE9	SSE7	S7	S9	SSE7	W8	W4	SW4	S2	SSW2	SSE1	SSE5.2	SSE10	
9-May	SSW1	NW1	SW1	SE0	W2	SSE0	UO	SSE3	SE5	SE4	E4	ESE7	SSE6	SE6	NW3	WNW2	ESE4	ESE3	E2	SSE2	SW3	SSW2	SSE2	S1	SE1.8	ESE7	
10-May	SSW1	SSE1	SSE2	SSE2	UO	SSW1	SE2	SE3	ESE3	ESE4	ESE4	NE3	NE3	WSW2	W8	NNW6	N6	NNE8	NE7	NE6	N3	NNW4	W2	W2	NNE1.1	NNE8	
11-May	W2	W3	W2	W2	WSW2	WNW2	W1	NNW1	ESE3	E3	E3	E4	SE6	SE6	E3	ENE3	ESE5	E5	ESE3	SSE3	SSE3	SSW2	SE2	SSE2	SE1.4	SE6	
12-May	SE3	SW0	E1	WSW1	SW1	WSW0	WNW2	S1	SE3	SE7	SE6	SE11	SSE10	SE9	SE9	SE9	SE8	SE7	SSE4	SE2	SSE3	SSE3	SE3	SE2	SE4.0	SE11	
13-May	SE1	SE1	WNW1	UO	SSE1	SSE2	S2	SE2	SE4	SE7	SE7	SSE9	SSE10	SSE10	S9	S11	S10	SSE7	SE5	SE4	SE4	SSE4	SSW5	SSW4	SSE4.9	S11	
14-May	S4	SSE2	SSE3	SSE2	SSE3	SSE2	SSE3	SSE5	SE5	SE7	SE6	SE8	SE9	S8	S10	S9	SSW5	NNW9	NNW7	N4	N5	NNW5	WNW2	WSW1	SSE2.3	S10	
15-May	WNW3	WNW3	WN1	WNW3	WNW2	WNW1	WNW1	NNE2	ESE2	SE5	SE5	SE5	ESE4	SE3	ESE5	SE7	SSE9	SSE6	S6	S4	S4	S4	WNW6	NW3	SSE2.0	SSE9	
16-May	NW5	NNW10	NNW8	NW10	NW14	NW14	NW16	NW20	NW21	NW19	NW16	NW21	NW20	NW19	NW18	NW19	NW21	NNW20	N12	N11	N9	N6	NNW6	NNW7	NW13.8	NW21	
17-May	NW7	NW7	NNW8	N14	N10	NNE9	NNE9	N13	N11	NNE9	N11	N11	N10	N10	NNE9	NE8	NNE8	NNE7	NNE6	ENE4	NNE1	WNW2	SSW1	ESE2	N7.1	N14	
18-May	SE1	UO	SSE3	SSE3	SSE4	SSE4	SSE7	SSE6	SE7	S7	SSE8	SSE8	SSE8	SSE8	SSE8	SSE8	SSE7	SE7	SE6	SSE5	SE1	SE2	SSE2	S5	SSE5.4	SSE8	
19-May	S7	SE3	SSE5	S1	NNE0	WSW1	SSW2	SSE5	SSE7	S6	S6	S6	S6	S6	SSE5	W1	NNW3	NNW3	NNW6	NNW8	N12	N12	NNW10	NNW9	WSW0.4	N12	
20-May	NNW9	N8	NNW10	NNW9	NNW8	NNW7	NNW8	N8	N7	N6	NNE5	NE5	N5	N5	N5	N3	N3	NNW4	N2	NW1	SE0	ESE2	ESE3	SE3	N4.5	NNW10	
21-May	SE3	ESE2	NNW1	W2	W2	WNW1	NW2	SSE2	SE5	SE6	SE7	SE6	SE6	SE6	SE5	SE5	SE4	ESE2	NW1	NNW2	SSW1	SE1	WNW3	NNW4	SE1.8	SE7	
22-May	N2	NW3	NW4	NNW5	NNW9	N9	N9	NNE9	N9	N11	N12	N13	NNE12	NNE12	NNE11	NNE12	NNE11	NNE12	NNE12	NE10	ENE7	ENE6	NE7	NE6	NNE8.3	N13	
23-May	NE5	ENE4	NE5	NE5	NE5	NE4	E3	E6	E7	E6	E7	E5	E3	E4	E4	E4	E5	ESE7	ESE6	ESE6	ESE4	ESE5	ESE6	E4.7	E7		
24-May	ESE5	ESE4	E3	E4	ESE5	ESE5	SE9	SE9	SSE9	SSE6	SSE7	SE7	SE7	SSW4	WSW8	WSW8	SW6	SSW6	WSW6	WSW5	WSW5	W4	W5	W4	S3.3	SE9	
25-May	W2	W3	WNW4	NW3	WNW1	SSE1	WSW1	SW1	SE1	E4	E5	ENE4	NE4	NE4	NNE5	N6	NNE5	ENE2	NNE1	ENE0	UO	E1	SE1	ESE1	NNE1.2	N6	
26-May	ESE2	SE1	UO	NW1	SSW1	SSE3	SE5	SE5	SE7	SE6	ESE5	ESE6	SSE7	ESE3	SE5	E3	ESE4	ESE3	SE5	SSE5	SSE2	SE2	SE1	SE2	SE3.4	SSE7	
27-May	SE3	SSE3	S2	S1	SE1	SSE3	SE6	SSE7	SSE8	S11	S11	SSE12	SSE11	SSE12	SE12	SE12	SSE11	SSE11	SSE9	SSE6	SE3	SE3	SSE4	SSE6	SSE6.9	SE12	
28-May	SSE5	SSE4	SSE4	SSE4	S2	SSE3	SSE6	SSE7	S7	SSE8	SSW10	S13	SW12	SW13	SW12	SSW12	WSW11	WSW12	WSW10	WNW8	WNW9	WNW5	W2	W3	SW5.5	SW13	
29-May	WNW1	SE1	SSE1	W2	ESE1	S3	SSE3	SE4	SE6	SSE5	WSW9	WSW10	SW11	SW11	SSW16	SSW13	SSW9	WSW8	SW6	SW5	WNW5	NW3	NW2	NNW3	SW4.4	SSW16	
30-May	WSW2	W4	W3	WSW2	W1	UO	UO	SSE2	ENE3	ESE4	SSE5	SE7	SSE5	SE3	WSW3	WNW9	WNW13	NW12	NW6	NE0	WSW0	W1	SSW1	NW4	W1.6	WNW13	
31-May	SW3	NW1	W1	S3	SSE1	SSE1	SSE4	SE5	SE6	SE4	E4	E4	SE5	SE2	SSE6	S6	S6	SE3	SSE2	ENE1	NW8	N7	NW2	NW4	SSE1.4	NW8	

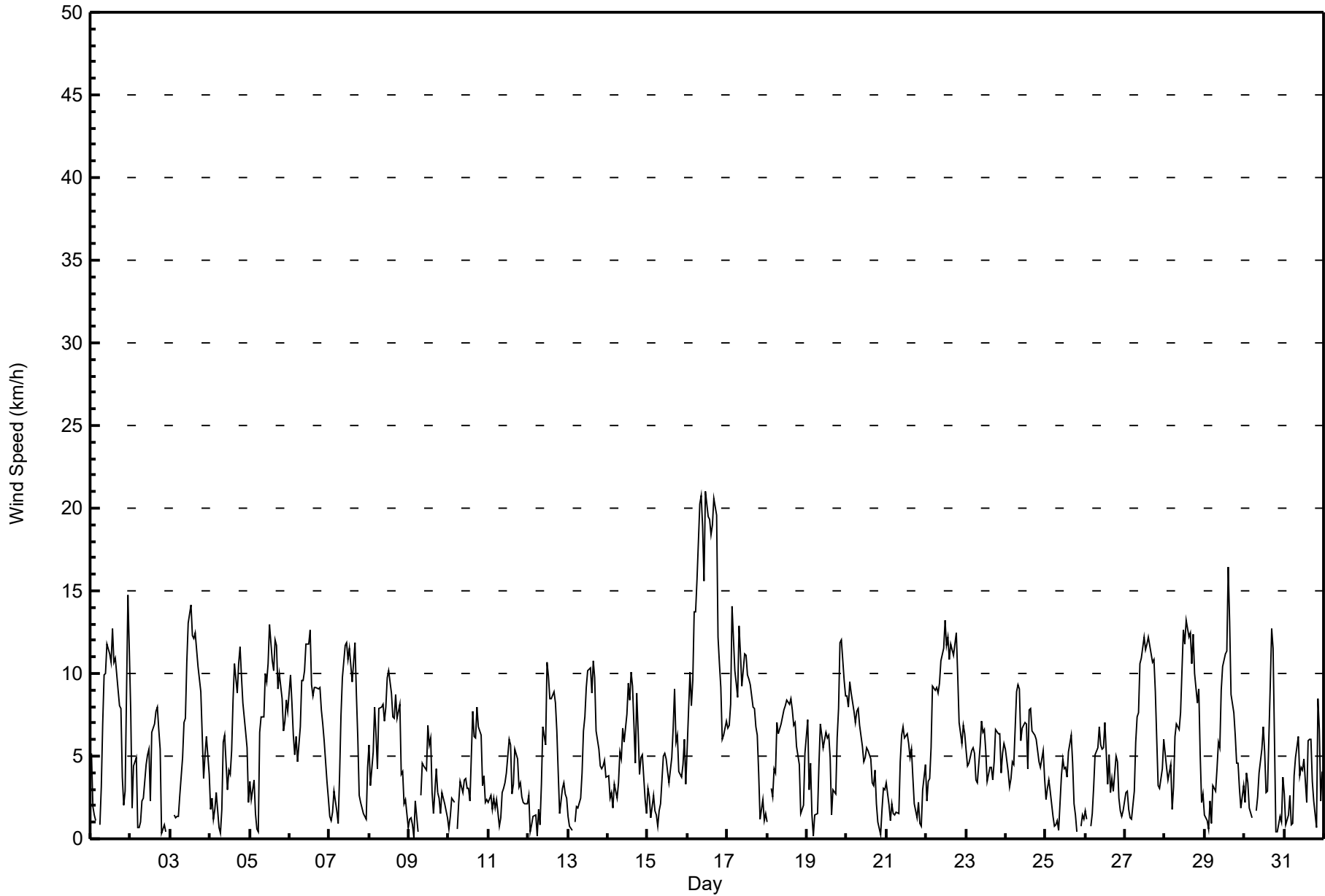
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SE10	NNW10	NNW10	N14	NW14	NW14	NW16	NW20	NW21	NW19	NW16	NW21	NW20	NW19	NW18	NW19	NW21	NNW20	NNE12	N11	N12	N12	NNW15	NNW11	Diurnal Maximum

UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Waskow ohci Pimatisiwin - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed (WS) - km/h
Waskow ohci Pimatisiwin - May 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	401	54.86	54.86
6 - 11	271	37.07	91.93
12 - 19	54	7.39	99.32
20 - 28	5	0.68	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 731

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Waskow ohci Pimatisiwin - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	14	8	14	13	27	41	68	64	18	16	13	13	28	26	20	18	401
6 - 11	20	17	6	2	4	20	74	50	25	2	5	8	3	5	8	22	271
12 - 19	7	6	0	0	0	0	13	7	2	3	3	1	0	1	10	1	54
20 - 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	5
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	41	31	20	15	31	61	155	121	45	21	21	22	31	32	42	42	731

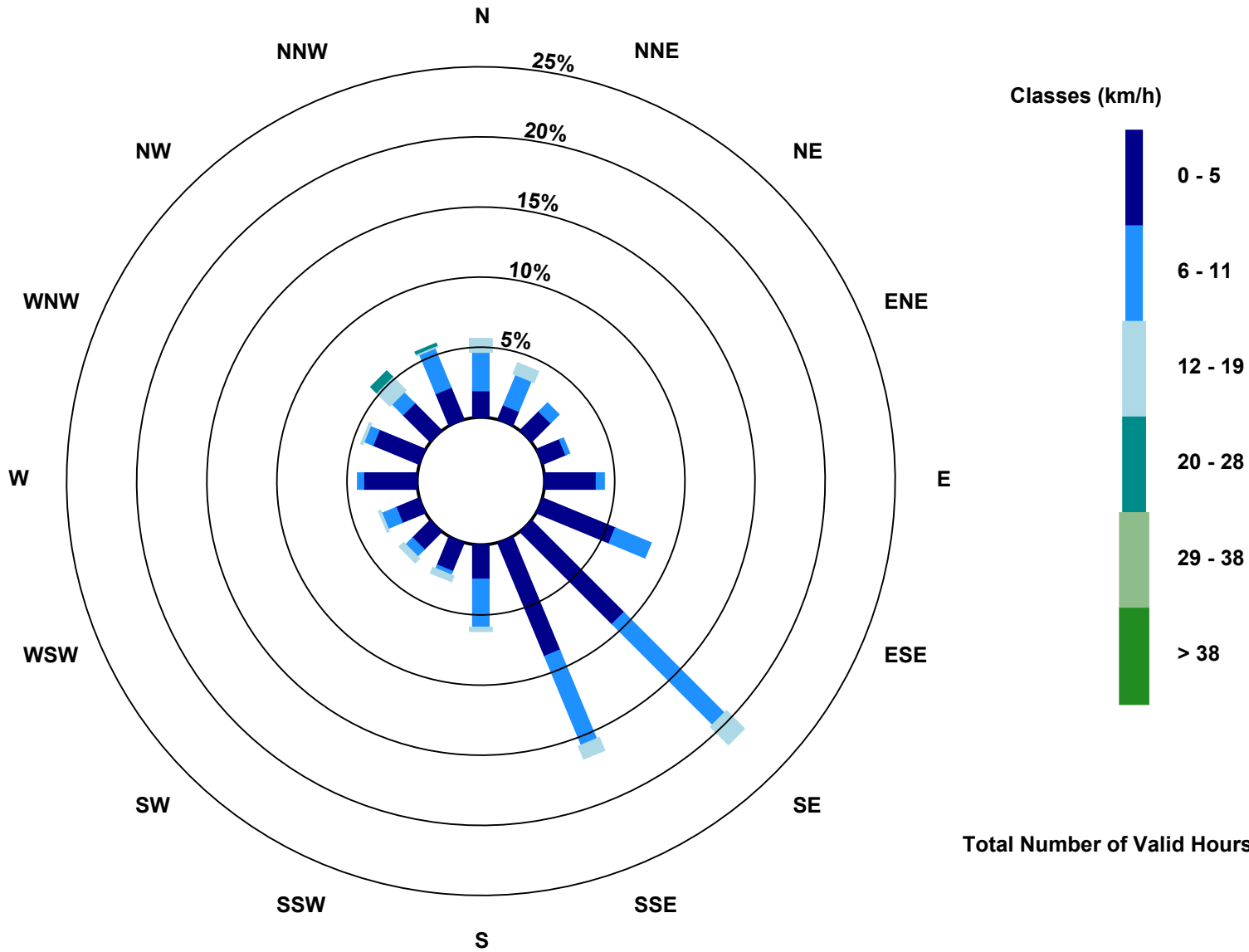
Total Number of Valid Hours: 731

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Waskow ohci Pimatisiwin



Total Number of Valid Hours: 731



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h

Waskow ohci Pimatisiwin - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 744
Maximum Value: 7 km/h on May 16 18:00	Hours of Data: 731
Minimum Value: 0 km/h on May 18 22:00	Hours of Missing Data: 13
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 1 Median = 2 Q ₃ = 3 P ₉₀ = 4 P ₉₉ = 6	Hours of Calibration: 0
	Percent Operational Time: 98.3

Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	2	1	1	1	UO	1	2	3	3	3	4	4	4	4	4	4	4	3	3	2	1	3	7	3	7
2-May	2	2	1	1	1	1	1	1	2	1	1	2	2	4	4	4	3	3	3	1	1	1	UO	UO	4
3-May	UO	UO	2	1	1	1	1	2	2	3	4	5	5	5	5	5	4	3	2	1	2	2	1	5	
4-May	1	1	1	1	1	1	2	2	3	2	2	2	1	2	3	4	4	4	4	3	3	2	2	4	
5-May	1	1	1	1	1	1	2	3	3	3	3	4	5	4	4	4	5	3	4	3	2	2	3	5	
6-May	3	3	2	2	2	2	2	3	3	4	5	5	5	4	3	3	3	3	3	3	2	2	2	1	5
7-May	1	1	1	1	1	1	2	2	4	5	4	5	5	4	4	4	4	3	2	1	1	1	1	2	5
8-May	3	2	2	3	2	2	3	2	2	2	3	4	4	3	3	3	4	3	4	3	2	1	1	1	4
9-May	1	1	1	1	1	1	UO	1	2	2	1	2	3	3	4	2	1	1	1	1	2	1	1	1	4
10-May	1	1	2	1	UO	1	2	1	1	1	1	2	2	4	4	3	3	3	3	3	1	1	1	2	4
11-May	1	1	1	1	1	1	1	1	1	1	1	2	2	3	1	2	2	1	1	1	1	1	1	1	3
12-May	2	1	1	1	1	1	1	1	2	2	2	5	4	3	4	4	3	3	2	1	1	1	1	1	5
13-May	1	1	1	UO	1	1	1	1	2	2	3	4	4	4	4	4	4	3	2	2	1	2	2	2	4
14-May	1	1	1	1	2	1	1	1	2	2	2	3	3	4	4	4	4	3	2	2	2	3	2	1	4
15-May	1	1	1	2	1	2	1	1	1	2	2	2	2	2	2	3	4	3	2	1	1	1	3	2	4
16-May	3	4	3	3	5	5	6	6	6	6	6	7	7	6	6	7	7	7	4	4	4	2	2	2	7
17-May	2	2	4	5	4	3	5	5	4	4	5	4	4	4	4	3	3	3	3	2	1	0	1	1	5
18-May	1	UO	1	1	2	2	2	2	3	3	3	4	3	3	3	3	3	3	2	2	1	0	1	3	4
19-May	3	2	1	1	1	1	1	1	3	2	2	3	2	2	2	1	2	1	2	2	4	4	3	2	4
20-May	2	2	3	2	2	2	2	2	2	2	2	2	2	3	2	2	1	1	1	1	1	1	1	1	3
21-May	1	2	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	2
22-May	2	1	1	2	3	3	3	3	3	4	5	5	5	5	4	5	5	5	5	4	3	2	2	3	5
23-May	2	2	2	2	2	2	2	1	2	3	2	3	2	2	3	2	1	2	3	3	3	2	2	3	3
24-May	2	2	1	2	2	3	4	4	4	2	3	2	3	2	4	3	3	3	2	2	2	2	2	2	4
25-May	1	1	1	1	1	1	1	1	2	1	1	2	2	2	2	3	2	1	1	1	UO	1	1	1	3
26-May	2	1	UO	1	1	1	2	2	2	2	2	2	3	2	2	1	1	1	2	2	1	1	1	1	3
27-May	1	1	1	1	1	1	2	2	3	5	4	5	4	4	5	5	4	4	3	2	1	1	1	2	5
28-May	2	1	1	1	1	2	2	2	3	3	4	5	5	6	6	6	5	6	5	5	3	3	1	1	6
29-May	1	1	1	1	1	1	1	2	2	2	5	5	6	6	7	6	4	4	3	2	2	1	1	1	7
30-May	1	1	1	1	1	UO	UO	1	1	2	2	3	3	2	2	4	5	4	4	1	1	2	2	1	5
31-May	1	1	2	1	1	1	1	2	2	2	1	2	2	2	2	2	2	2	1	1	4	3	2	1	4
	3	4	4	5	5	5	6	6	6	6	6	7	7	6	7	7	7	7	5	5	4	4	7	3	

Diurnal Maximum

UO - Unstable Operation



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Waskow ohci Pimatisiwin - May 2023

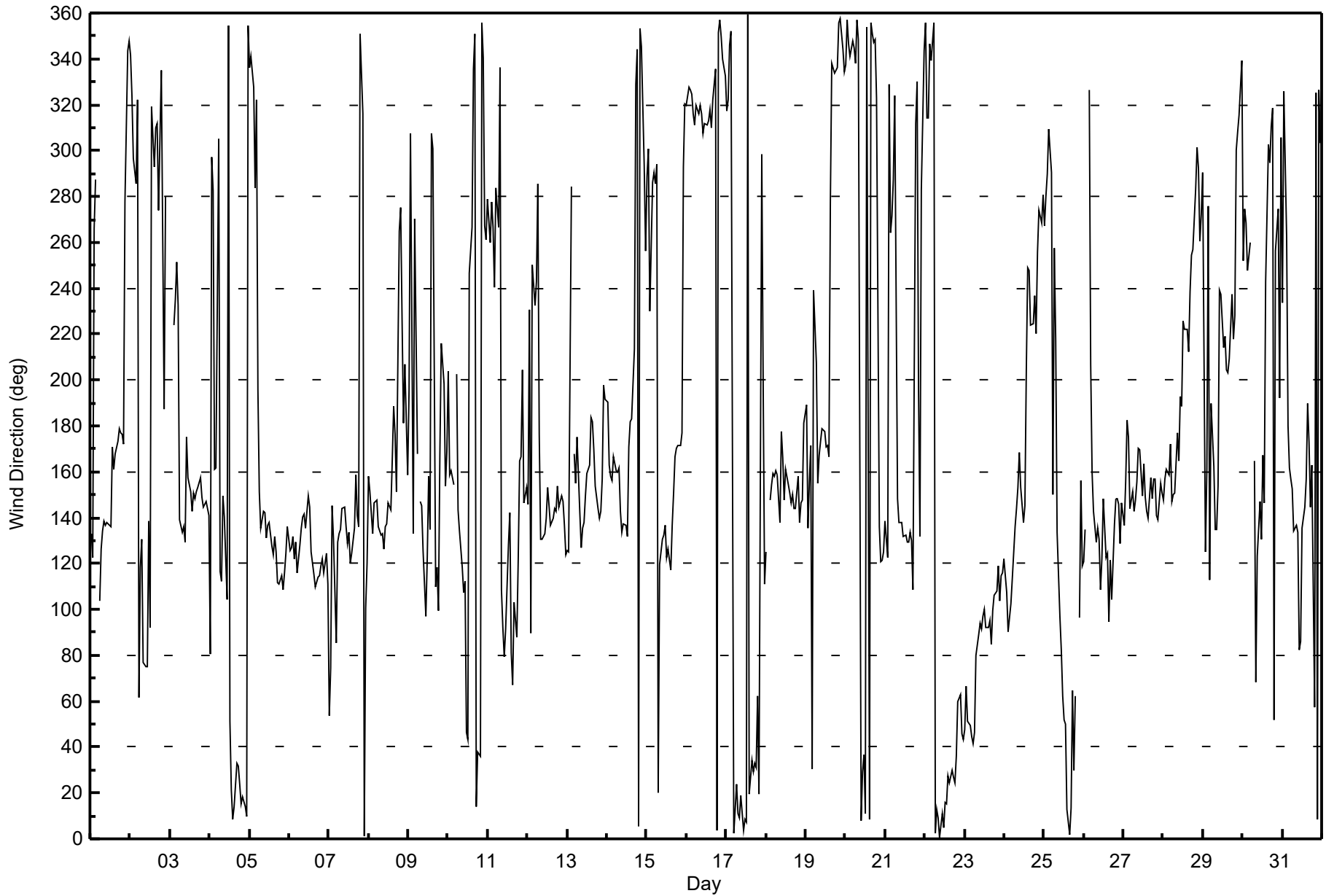
Direction of Maximum Speed: 312 deg on May 16 12:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 322.4 deg on May 16	Hours of Data: 731
Direction of Minimum Speed: 133 deg on May 9 04:00	Hours of Missing Data: 13
Direction of Minimum Daily Speed Average: 0.4 deg on May 19	Percent Operational Time: 98.3
Monthly Average Direction: 131.8 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	133	122	266	287	UO	104	126	134	138	137	138	137	136	171	161	168	174	179	177	176	172	278	343	348	151.6
2-May	342	324	297	285	322	62	119	130	77	75	75	138	92	319	293	310	311	274	305	335	188	280	UO	UO	319.8
3-May	UO	UO	224	235	252	232	139	134	136	129	175	158	152	142	151	148	151	153	157	149	145	146	147	141	151.7
4-May	81	297	283	161	161	305	117	112	149	141	104	355	51	21	9	14	33	32	24	15	18	14	10	355	29.3
5-May	336	341	327	284	322	196	151	135	143	142	131	137	138	128	124	132	125	112	111	115	109	116	124	136	127.2
6-May	126	127	132	122	129	116	128	136	141	142	136	149	145	125	120	115	110	114	115	119	122	116	124	111	127.6
7-May	54	75	145	131	85	129	133	135	144	145	136	129	134	120	125	135	159	141	136	351	316	1	100	120	132.3
8-May	158	151	133	146	147	148	136	132	133	126	136	138	146	143	165	188	176	152	265	275	226	181	207	159	155.2
9-May	196	307	223	133	270	168	UO	147	145	126	97	123	158	135	307	301	110	118	100	167	216	198	154	169	143.5
10-May	204	158	160	154	UO	203	143	134	119	107	112	46	43	247	267	336	351	14	38	36	356	340	267	261	21.3
11-May	279	260	278	267	240	284	267	336	109	92	79	91	128	142	81	67	103	88	122	165	167	204	146	153	125.7
12-May	146	231	89	250	233	243	285	176	130	131	133	140	153	145	137	140	144	143	154	145	150	147	136	124	144.0
13-May	126	125	285	UO	168	155	175	142	127	135	138	149	160	163	184	182	169	154	144	140	143	157	198	192	159.3
14-May	190	163	158	156	167	161	160	162	143	134	137	137	132	171	182	183	213	329	344	6	353	345	293	257	162.2
15-May	289	301	230	286	290	285	294	20	120	130	132	136	123	126	117	137	151	166	170	171	171	177	293	320	159.3
16-May	320	328	327	325	316	311	320	316	320	316	308	312	311	313	318	310	322	336	4	351	357	350	340	333	322.4
17-May	317	322	346	352	2	13	24	11	9	19	4	8	7	360	20	34	30	33	31	62	20	298	198	111	8.5
18-May	125	UO	148	154	160	158	161	159	138	178	166	148	161	155	150	147	150	144	144	158	138	146	148	181	154.8
19-May	189	135	156	171	31	239	207	155	167	174	179	178	171	171	167	277	338	334	335	336	356	357	344	335	245.9
20-May	337	357	346	341	348	345	338	357	349	8	29	36	11	354	8	356	351	347	349	323	136	121	122	125	357.0
21-May	139	122	329	264	272	287	324	148	138	138	138	132	132	130	129	134	130	109	312	330	196	132	283	344	135.5
22-May	356	314	314	346	339	356	2	13	9	0	11	5	16	15	27	24	30	27	24	36	60	63	46	43	16.2
23-May	48	66	51	49	45	41	46	80	89	94	92	97	100	92	92	95	85	99	106	108	119	103	115	116	86.7
24-May	122	107	90	97	103	114	136	144	153	168	153	138	145	204	249	248	224	225	237	220	255	274	269	281	179.2
25-May	267	280	290	309	291	150	258	218	134	97	82	63	52	50	13	2	13	65	30	62	UO	96	156	119	28.1
26-May	121	135	UO	326	207	160	143	130	135	131	109	122	148	123	124	94	122	105	137	148	148	146	129	146	132.4
27-May	137	156	182	175	144	151	143	147	156	170	170	149	163	149	143	140	157	148	157	157	141	139	155	151	153.2
28-May	148	157	161	159	172	147	150	151	177	165	193	188	226	222	222	212	239	254	257	283	302	292	260	272	214.4
29-May	290	125	161	276	113	190	162	135	135	154	239	238	214	219	204	203	209	237	218	228	300	308	315	339	215.3
30-May	252	275	268	248	260	UO	UO	165	68	123	147	131	167	146	243	303	295	311	319	52	256	275	192	306	273.3
31-May	234	326	262	180	162	157	153	134	137	134	82	86	135	145	157	190	173	145	163	57	325	9	326	304	146.3

146.5 352.8 308.2 319.8 345.6 30.9 125.4 123.4 128.1 130.2 132.8 133.1 143.0 148.7 157.6 157.4 151.2 110.1 98.9 87.1 29.0 42.9 4.9 24.2
 Diurnal Average

UO - Unstable Operation

All monthly, daily, and diurnal averages have been calculated using vector methods





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Waskow ohci Pimatisiwin - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 744
Maximum Value: 109 deg on May 10 14:00	Hours of Data: 731
Minimum Value: 16 deg on May 22 02:00	Hours of Missing Data: 13
Percentiles: P ₁ = 18 P ₁₀ = 24 Q ₁ = 29 Median = 37 Q ₃ = 51 P ₉₀ = 72 P ₉₉ = 99	Hours of Calibration: 0
	Percent Operational Time: 98.3

Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	32	39	52	40	UO	43	38	26	25	24	23	27	29	37	43	33	38	36	32	39	32	54	20	22	54
2-May	23	84	25	16	91	79	81	31	36	35	34	49	93	62	62	57	46	51	33	84	52	85	UO	UO	93
3-May	UO	UO	90	88	53	68	29	24	24	26	40	33	29	31	35	30	30	30	27	21	23	19	18	26	90
4-May	41	63	83	48	24	93	101	81	34	33	71	66	45	40	31	26	26	25	26	23	23	22	28	47	101
5-May	41	49	31	54	95	94	17	23	29	25	30	26	26	29	31	27	28	26	25	23	22	24	25	28	95
6-May	24	24	24	22	24	29	26	24	26	29	28	32	28	29	34	31	29	27	26	26	23	23	39	36	39
7-May	48	69	49	28	28	57	34	28	29	25	27	32	31	30	29	27	34	38	56	28	70	61	72	27	72
8-May	43	40	34	28	27	27	22	24	27	29	31	26	32	32	48	48	39	31	47	67	56	76	65	93	93
9-May	74	80	77	94	29	88	UO	41	41	43	45	32	69	49	99	81	31	62	33	26	42	65	55	75	99
10-May	90	79	62	30	UO	82	52	31	58	44	57	65	83	109	56	47	51	30	29	29	33	20	54	45	109
11-May	43	20	44	44	56	48	78	73	49	62	65	61	43	50	75	66	35	27	41	23	38	62	57	40	78
12-May	43	99	60	54	69	98	44	98	67	29	29	33	42	41	38	39	38	34	38	38	31	23	30	28	99
13-May	40	62	59	UO	83	38	39	31	28	26	26	32	32	43	41	37	38	32	24	30	23	38	32	33	83
14-May	46	54	29	78	38	35	28	24	43	26	34	32	30	51	43	43	81	28	27	29	28	21	76	67	81
15-May	27	29	54	53	56	85	70	54	55	41	35	47	51	61	52	36	34	42	30	30	37	34	57	33	85
16-May	25	21	21	19	19	22	23	20	21	23	31	23	27	27	27	25	21	27	27	24	28	23	22	21	31
17-May	20	26	23	25	29	29	36	31	33	38	32	33	41	42	45	40	41	40	40	39	59	24	69	56	69
18-May	36	UO	37	39	24	21	26	37	39	54	44	41	46	46	46	48	45	37	33	26	43	28	18	35	54
19-May	41	53	30	79	98	59	57	24	37	37	44	47	40	40	37	87	54	39	20	17	25	26	21	18	98
20-May	20	24	20	18	21	21	19	26	27	47	50	50	51	67	52	61	51	24	36	84	88	42	37	33	88
21-May	30	35	55	26	69	42	45	72	31	35	27	30	33	33	34	33	35	42	85	57	95	73	34	23	95
22-May	28	16	19	30	19	24	26	32	31	27	32	30	32	32	35	33	33	32	32	33	30	31	31	36	36
23-May	36	29	29	28	29	30	37	35	29	29	26	30	29	40	36	32	38	33	32	36	38	34	41	41	41
24-May	40	36	36	36	37	39	34	31	31	33	32	36	33	55	58	45	50	50	51	40	56	47	44	51	58
25-May	56	34	42	45	65	74	99	95	109	42	38	49	49	52	43	43	46	51	42	72	UO	59	45	53	109
26-May	61	49	UO	89	61	20	33	31	30	39	34	42	47	68	41	50	42	54	31	23	30	36	38	43	89
27-May	31	32	56	48	38	37	26	25	34	39	40	34	42	35	32	33	36	31	32	25	32	27	24	24	56
28-May	22	25	28	28	46	44	27	33	41	42	46	44	53	52	54	51	51	51	57	54	29	32	44	43	57
29-May	72	54	78	78	75	49	42	36	32	50	61	56	52	51	40	45	50	55	60	60	26	47	60	44	78
30-May	48	22	25	57	71	UO	UO	69	56	49	37	40	65	80	84	39	33	26	66	77	99	98	80	29	99
31-May	61	81	72	30	76	100	35	31	29	75	44	60	51	92	38	37	43	47	47	55	31	29	75	44	100
	90	99	90	94	98	100	101	98	109	75	71	66	93	109	99	87	81	62	85	84	99	98	80	93	
	Diurnal Maximum																								

UO - Unstable Operation



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS26 CHRISTINA LAKE MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CHRISTINA LAKE (AMS26)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	707	34	37	99.6	27.3	0	7.3	0
H2S (ppb) Average	705	36	39	99.6	2.7	0	0.7	0
NO2 (ppb) Average	707	37	37	100	18.7	0	5.5	-
NO (ppb) Average	707	37	37	100	18	-	2.7	-
NOX (ppb) Average	707	37	37	100	26.6	-	8.2	-
Temperature 2 m (C) Average	744	0	0	100	29.8	-	22.7	-
Relative Humidity (%) Average	744	0	0	100	98.5	-	88.6	-
Wind Speed 10 m (km/h) Average	744	0	0	100	31	-	22	-
Wind Direction 10 m (deg) Average	744	0	0	100	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CHRISTINA LAKE (AMS26)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	707	0.96	2.6	-	0	0	0.1	0.3	0.7	1.9	27.3
H2S (ppb) Average	705	0.29	0.3	-	0	0	0.1	0.2	0.4	0.6	2.7
NO2 (ppb) Average	707	2.94	2.8	-	0.1	0.6	1.1	2	3.9	6.3	18.7
NO (ppb) Average	707	0.76	1.7	-	0	0	0.1	0.2	0.5	1.7	18
NOX (ppb) Average	707	3.7	4.1	-	0.2	0.8	1.3	2.3	4.5	8	26.6
Temperature 2 m (C) Average	744	15.16	6.3	-	-2.7	7.1	10	15.2	19.9	23.7	29.8
Relative Humidity (%) Average	744	52.34	21.4	-	16.1	26.4	34.8	49.1	67.6	86.2	98.5
Wind Speed 10 m (km/h) Average	744	11.8	6	-	0	4	7	11	16	20	31
Wind Direction 10 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-

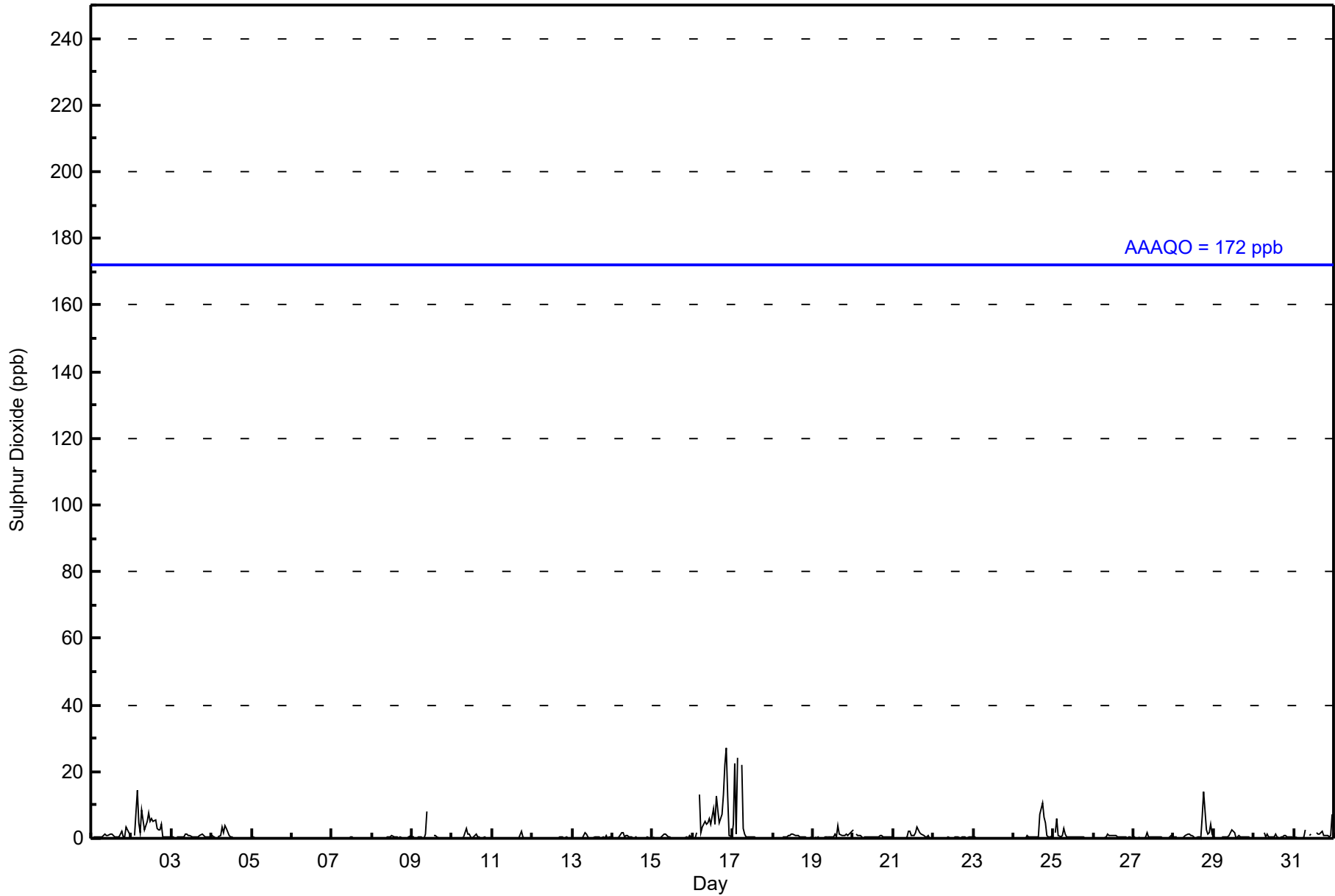
WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CHRISTINA LAKE (AMS26)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
H2S, SO2	31 May 2023 12:00	31 May 2023 13:00	2	Maintenance - sample manifold cleaned
SO2	31 May 2023 09:00	31 May 2023 09:00	1	Maintenance - reinitiated daily QA check
H2S	30 May 2023 13:00	30 May 2023 13:00	1	Maintenance - station operator activities



Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 744																	744					
Maximum Value: 27.3 ppb on May 16 21:00		Maximum Daily Average: 7.3 ppb on May 16																	Hours of Data: 707							
Minimum Value: 0.0 ppb on May 4 15:00		Minimum Daily Average: 0.0 ppb on May 6																	Hours of Missing Data: 37							
Maximum Diurnal Average: 1.7 ppb at hour 4		Minimum Diurnal Average: 0.4 ppb at hour 23																	Hours of Calibration: 34							
Monthly Average: 0.96 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.3 Q ₃ = 0.7 P ₉₀ = 1.9 P ₉₉ = 13.1																	Percent Operational Time: 99.6							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	Z	0.3	0.2	0.4	0.3	0.3	0.5	0.6	1.1	0.8	0.8	1.1	1.2	0.8	0.2	0.4	0.6	1.3	2.3	0.4	0.2	3.5	1.7	0.8	0.9	3.5
2-May	0.7	Z	0.9	14.4	4.6	1.9	8.6	5.6	2.7	4.9	7.5	5.2	5.8	5.3	5.4	3.0	2.5	2.5	4.3	0.6	0.3	0.3	0.3	0.3	3.8	14.4
3-May	0.4	0.3	Z	0.3	0.4	0.3	0.4	0.4	1.2	1.2	0.9	0.8	0.4	0.3	0.4	0.4	0.3	0.9	1.2	0.9	0.3	0.3	0.3	0.5	0.5	1.2
4-May	0.8	0.6	0.5	Z	0.6	1.0	3.4	1.9	3.8	2.8	0.7	0.5	0.5	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.7	3.8
5-May	0.0	0.2	0.2	0.1	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
6-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1
7-May	Z	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.5
8-May	0.1	Z	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.5	0.6	0.4	0.9	0.5	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.8	0.3	0.9
9-May	0.5	0.6	Z	0.2	0.3	0.2	0.1	0.2	1.2	7.9	C	C	C	0.9	1.0	0.5	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.7	7.9
10-May	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.3	3.2	1.2	1.4	0.2	0.1	0.3	1.5	0.5	0.5	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.4	3.2
11-May	0.0	0.0	0.0	0.1	Z	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2	2.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.1
12-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.6	0.4	0.4	0.1	0.2	0.2	0.1	0.2	0.1	0.6
13-May	Z	0.1	0.1	0.1	0.1	0.1	0.2	1.7	1.2	0.3	0.1	0.1	0.2	0.3	0.4	0.2	0.2	0.1	0.3	0.2	0.9	0.1	0.3	0.4	0.3	1.7
14-May	0.6	Z	0.1	0.0	0.6	1.9	1.5	0.6	0.8	0.7	0.5	0.3	0.1	0.1	0.2	0.2	0.2	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.4	1.9
15-May	0.0	0.6	Z	0.1	0.0	0.3	0.9	1.4	1.2	0.4	0.4	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.2	0.6	0.0	0.7	0.5	0.3	1.4
16-May	0.1	0.0	1.5	Z	13.2	1.8	3.6	5.1	4.3	4.7	5.8	4.4	8.9	4.2	12.7	8.5	4.5	7.3	13.1	21.9	27.3	12.9	0.8	0.5	7.3	27.3
17-May	4.2	22.3	1.1	24.3	Z	22.2	2.8	1.4	0.4	0.4	0.3	0.3	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	3.5	24.3
18-May	0.0	0.0	0.0	0.1	0.0	Z	0.5	0.3	0.5	0.7	1.0	1.3	1.2	1.0	0.9	0.7	0.5	0.4	0.3	0.3	0.1	0.1	0.1	0.3	0.4	1.3
19-May	Z	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.4	1.4	0.6	3.7	1.3	0.9	0.8	1.0	1.2	0.7	1.6	2.0	0.8	3.7
20-May	2.4	Z	1.4	0.8	0.6	0.4	0.2	0.2	0.3	0.3	0.5	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.5	0.4	0.2	0.2	0.3	0.2	0.6	2.4
21-May	0.1	0.1	Z	0.0	0.0	0.0	0.0	0.0	0.3	2.0	2.3	1.0	1.0	1.9	3.3	2.7	1.6	1.2	0.8	0.5	0.3	0.8	0.2	0.0	0.9	3.3
22-May	0.1	0.2	0.1	Z	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.1	0.3	0.2	0.3	0.2	0.3
23-May	0.4	0.4	0.1	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
24-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.8	0.3	0.5	0.6	0.4	0.4	0.3	0.6	7.1	10.6	6.1	4.7	1.0	0.6	0.4	1.1	1.6	10.6
25-May	Z	1.8	6.1	0.6	0.5	1.0	3.0	1.3	0.5	0.6	0.5	0.5	0.4	0.4	0.3	0.2	0.5	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.8	6.1
26-May	0.2	Z	0.1	0.2	0.1	0.1	0.1	0.4	1.3	0.8	0.7	0.8	0.8	0.7	0.6	0.4	0.5	0.4	0.3	0.3	0.2	0.4	0.3	0.1	0.4	1.3
27-May	0.3	0.1	Z	0.3	0.0	0.1	0.1	0.5	1.6	0.4	0.5	0.4	0.2	0.3	0.2	0.2	0.3	0.2	0.0	0.1	0.0	0.1	0.8	0.3	0.3	1.6
28-May	0.5	0.3	0.2	Z	0.1	0.1	0.4	0.9	1.2	1.3	0.8	0.8	0.3	0.1	0.3	0.2	0.1	6.3	14.2	2.5	1.2	1.9	4.3	1.3	1.7	14.2
29-May	0.3	0.0	0.0	0.0	Z	0.6	0.5	0.3	0.4	0.9	1.9	2.4	1.5	0.2	0.5	0.7	0.6	0.4	0.5	0.3	0.2	0.4	0.2	0.1	0.6	2.4
30-May	0.1	0.1	0.1	0.1	0.2	Z	1.7	0.6	1.1	0.6	0.4	0.3	0.6	1.2	0.6	0.2	0.2	0.3	0.7	0.7	0.4	0.3	0.2	0.6	0.5	1.7
31-May	Z	0.3	0.2	0.2	0.1	0.1	0.4	2.7	M	1.0	1.3	M	M	1.7	1.2	1.2	1.6	2.0	1.0	0.7	0.8	0.4	0.7	7.2	1.2	7.2
																								Diurnal Average		
																								Diurnal Maximum		
0.5 1.1 0.5 1.7 0.8 1.3 1.0 0.9 1.0 1.1 1.0 0.8 0.9 0.8 1.0 0.8 0.8 1.3 1.6 1.2 1.2 0.8 0.4 0.6																										
4.2 22.3 6.1 24.3 13.2 22.2 8.6 5.6 4.3 7.9 7.5 5.2 8.9 5.3 12.7 8.5 7.1 10.6 14.2 21.9 27.3 12.9 4.3 7.2																										
Z - zerospan C - Calibration M - Maintenance																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Christina Lake - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	695	98.30	98.30
11 - 20	7	0.99	99.29
21 - 60	5	0.71	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Christina Lake - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	9	28	23	29	36	83	53	81	103	97	55	27	18	9	25	19	695
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5	0	7
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	9	28	23	29	36	83	53	81	103	97	55	27	18	11	35	19	707

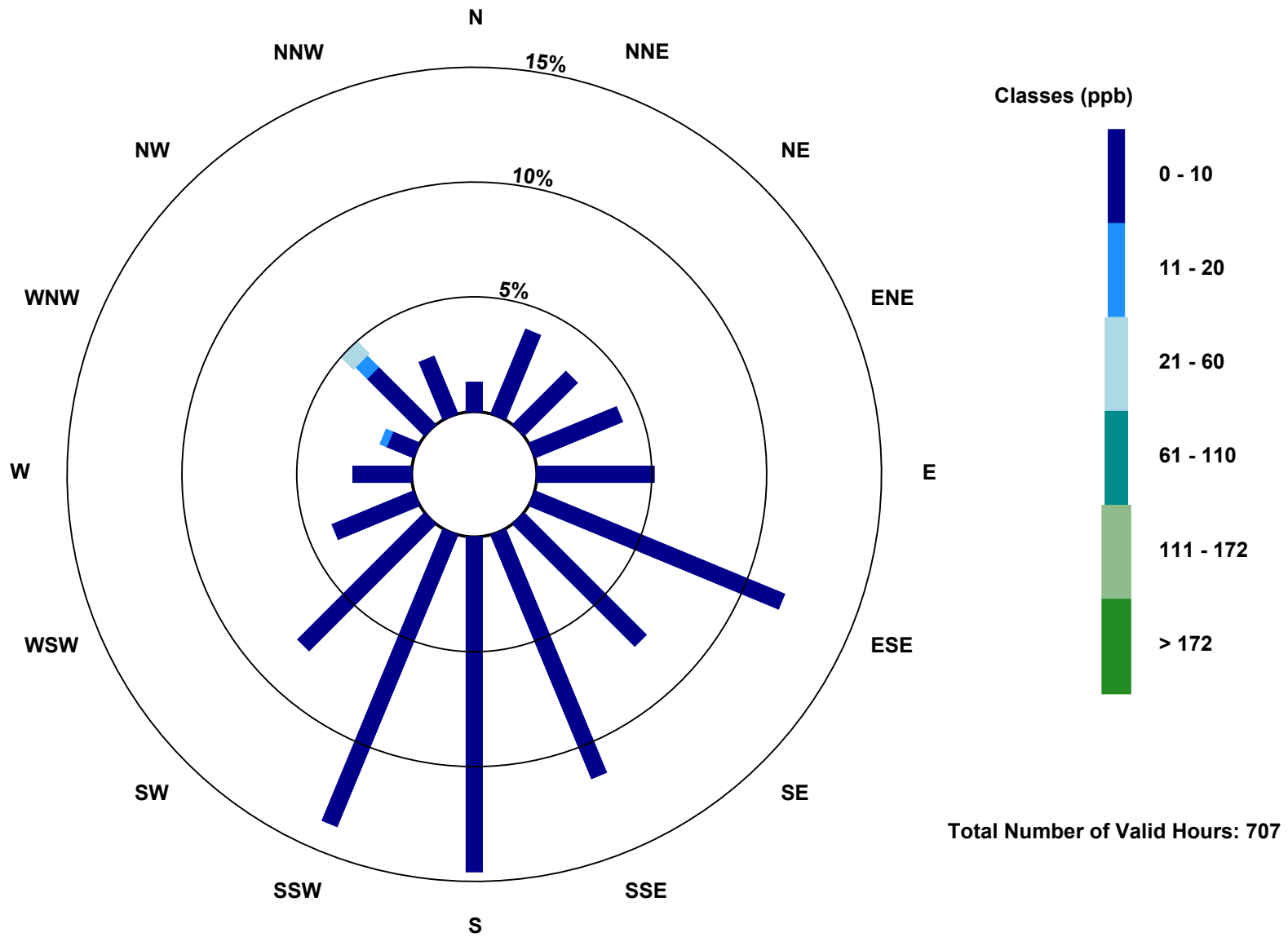
Total Number of Valid Hours: 707

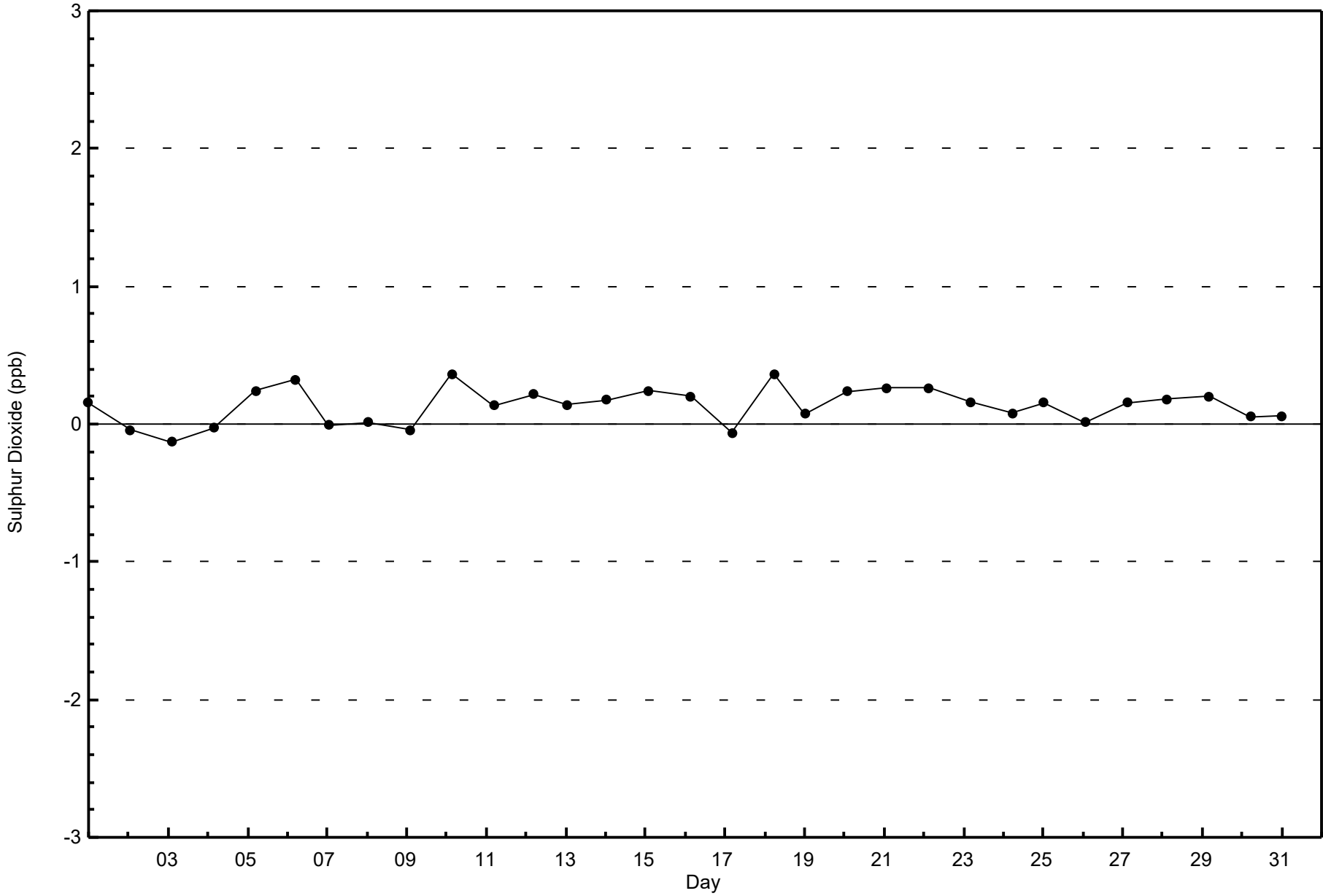
Total Number of Hours: 744

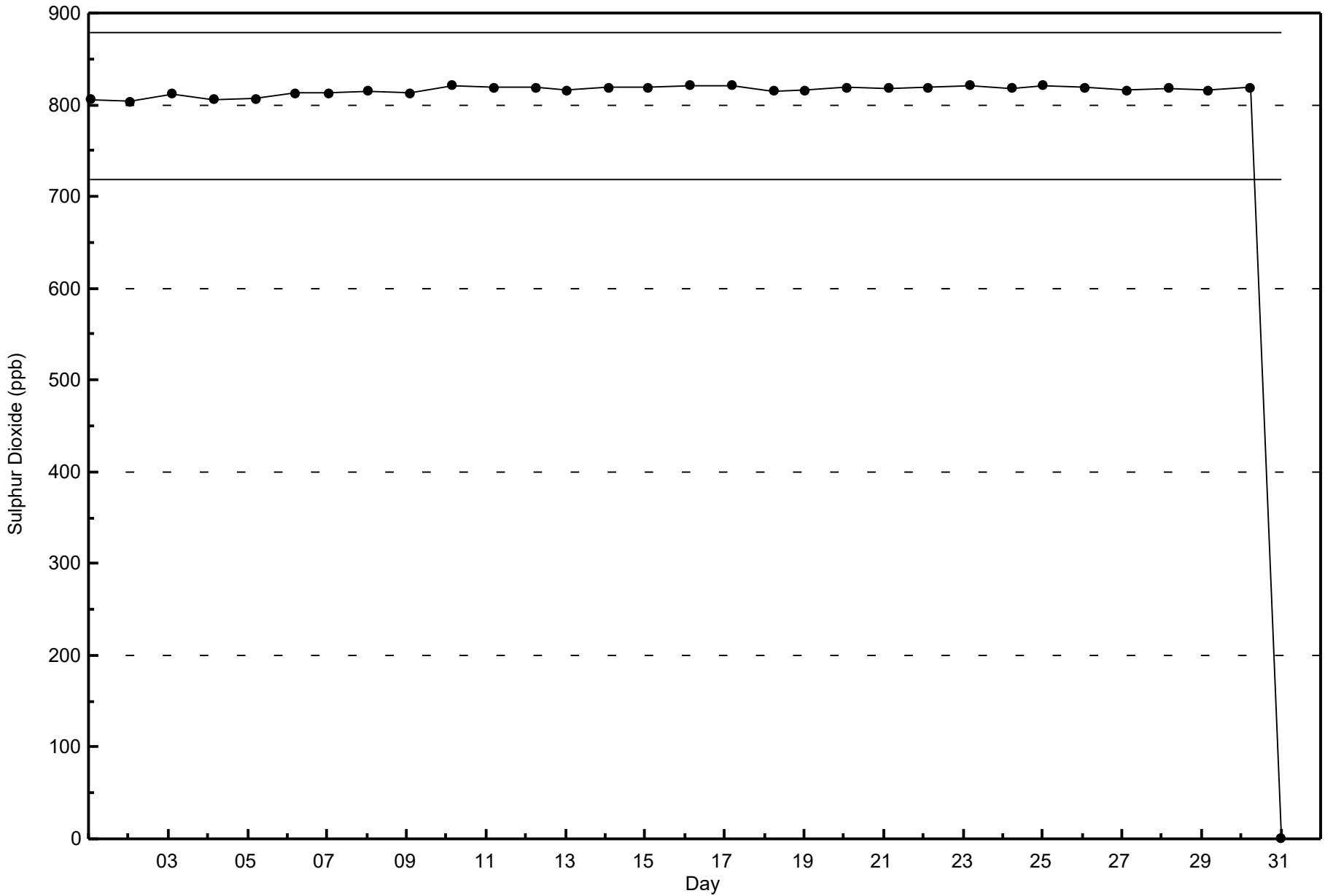


Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Christina Lake

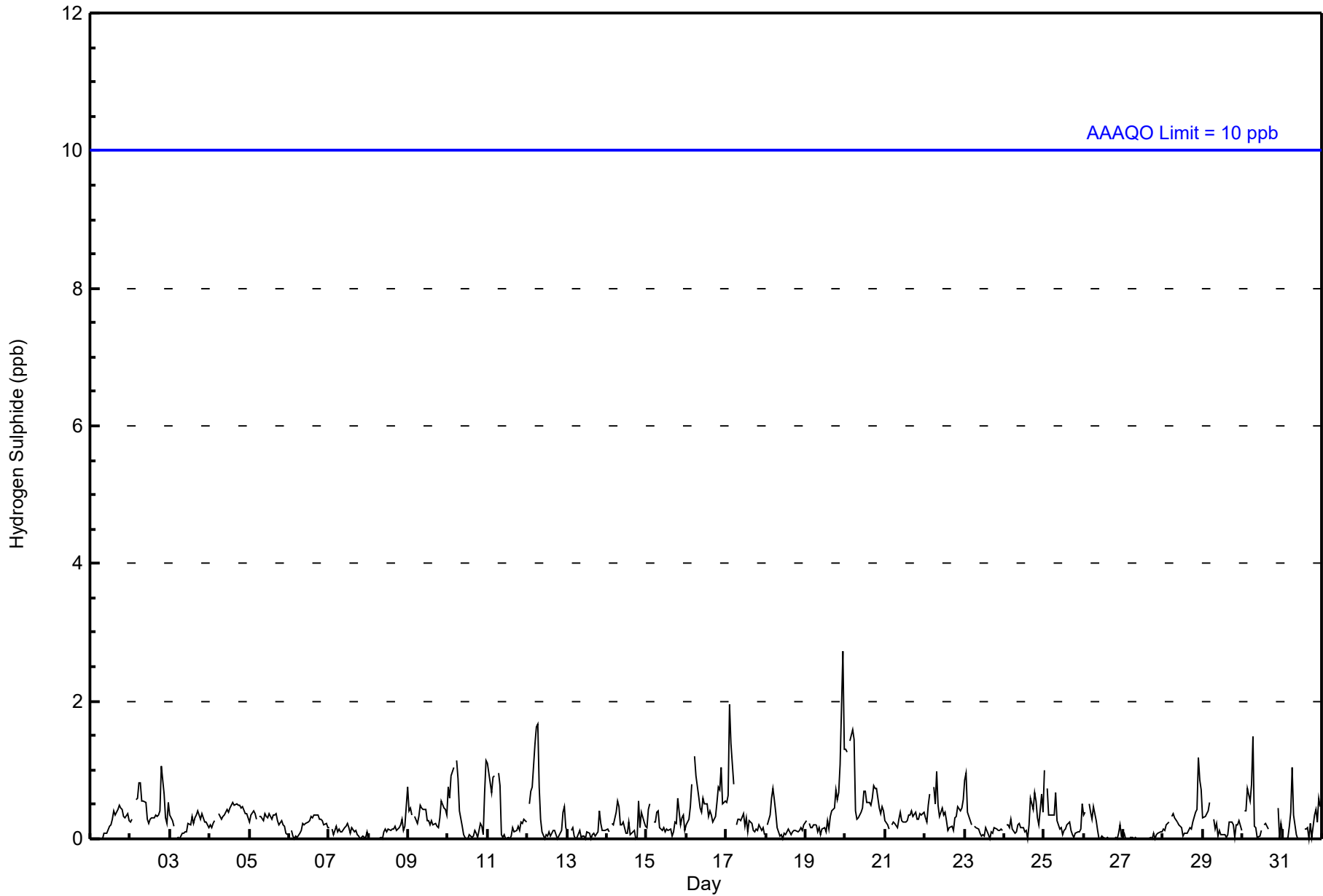








Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744																											
Maximum Value: 2.7 ppb on May 19 23:00		Maximum Daily Average: 0.7 ppb on May 20																	Hours of Data:	705																													
Minimum Value: 0.0 ppb on May 1 01:00		Minimum Daily Average: 0.0 ppb on May 27																	Hours of Missing Data:	39																													
Maximum Diurnal Average: 0.5 ppb at hour 4		Minimum Diurnal Average: 0.2 ppb at hour 10																	Hours of Calibration:	36																													
Monthly Average: 0.29 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.4 P ₉₀ = 0.6 P ₉₉ = 1.4																	Percent Operational Time:	99.6																													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.3	0.4	0.5	0.5	0.4	0.3	0.3	0.4	0.3	0.2	0.5	0.2	0.5																					
2-May	0.3	0.3	Z	0.6	0.6	0.8	0.8	0.6	0.5	0.5	0.3	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.4	1.1	0.6	0.3	0.2	0.5	0.2	0.5	0.5	1.1																					
3-May	0.3	0.3	0.2	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.3	0.3	0.4	0.3	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.4	0.4																					
4-May	0.2	0.2	0.2	0.3	Z	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.4	0.3	0.4	0.5																					
5-May	0.2	0.3	0.4	0.4	0.3	Z	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.3	0.4	0.4																					
6-May	Z	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.4																					
7-May	0.2	Z	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2																					
8-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.3	0.1	0.2	0.8	0.1	0.8	0.1	0.8																					
9-May	0.4	0.4	0.3	Z	0.3	0.2	0.3	0.5	0.5	0.4	0.4	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.6	0.5	0.4	0.4	0.3	0.6	0.6	0.6																					
10-May	0.8	0.6	0.9	1.0	Z	1.1	0.9	0.4	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.1	0.7	1.1	0.4	1.1	0.4	1.1																					
11-May	1.1	0.8	0.7	0.9	0.9	Z	1.0	0.8	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.3	0.2	0.3	1.1	0.3	1.1																					
12-May	Z	0.5	0.7	0.7	1.4	1.6	1.7	0.8	0.3	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.4	0.5	0.2	0.4	1.7	0.4	1.7																					
13-May	0.1	Z	0.1	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.4	0.2	0.1	0.1	0.1	0.1	0.4	0.1	0.4																					
14-May	0.1	0.1	Z	0.2	0.2	0.4	0.5	0.5	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.6	0.2	0.4	0.3	0.2	0.2	0.6	0.2	0.6																					
15-May	0.2	0.4	0.5	Z	0.2	0.3	0.4	0.4	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.3	0.2	0.6	0.2	0.3	0.4	0.1	0.2	0.6	0.2	0.6																					
16-May	0.2	0.3	0.5	0.8	Z	1.2	0.9	0.6	0.5	0.4	0.6	0.5	0.5	0.3	0.4	0.4	0.2	0.3	0.5	0.8	0.7	1.0	0.5	0.6	0.6	1.2	0.6	1.2																					
17-May	0.5	0.6	2.0	1.4	0.8	Z	0.2	0.3	0.3	0.3	0.4	0.2	0.3	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.4	2.0	0.4	2.0																					
18-May	Z	0.2	0.3	0.6	0.7	0.6	0.4	0.2	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.7	0.2	0.7																					
19-May	0.3	Z	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.3	0.1	0.3	0.4	0.5	0.7	0.6	0.7	1.1	2.7	1.3	0.5	2.7	0.5	2.7																					
20-May	1.3	1.3	Z	1.4	1.6	1.4	0.4	0.3	0.3	0.4	0.4	0.7	0.7	0.5	0.5	0.5	0.6	0.8	0.7	0.7	0.4	0.4	0.5	0.4	0.7	1.6	0.7	1.6																					
21-May	0.3	0.2	0.1	Z	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.2	0.2	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4																				
22-May	0.3	0.2	0.5	0.7	Z	0.8	0.5	1.0	0.5	0.3	0.4	0.4	0.4	0.3	0.1	0.2	0.2	0.1	0.3	0.3	0.5	0.4	0.4	0.6	0.4	1.0	0.4	1.0																					
23-May	0.9	1.0	0.4	0.3	0.2	Z	0.2	0.2	0.1	0.1	0.0	0.1	0.0	0.2	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	1.0	0.2	1.0																					
24-May	Z	0.2	0.2	0.2	0.3	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.2	0.6	0.4	0.7	0.5	0.3	0.2	0.6	0.4	0.3	0.7	0.3	0.7																					
25-May	1.0	Z	0.7	0.3	0.3	0.3	0.3	0.7	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.5	0.3	1.0	0.3	1.0																					
26-May	0.3	0.4	Z	0.5	0.4	0.3	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.1	0.5	0.1	0.5																					
27-May	0.1	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1																					
28-May	0.1	0.1	0.2	0.2	Z	0.3	0.4	0.3	0.3	0.2	0.2	0.2	0.0	0.1	0.1	0.1	0.2	0.1	0.3	0.4	0.4	1.2	0.9	0.7	0.3	1.2	0.3	1.2																					
29-May	0.3	0.3	0.4	0.4	0.5	Z	0.3	0.1	0.2	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.3	0.2	0.0	0.2	0.2	0.3	0.1	0.2	0.5	0.2	0.5																					
30-May	Z	0.4	0.4	0.7	0.5	0.8	1.5	0.2	0.2	0.0	0.0	0.1	M	0.2	0.2	0.1	C	C	C	C	C	0.4	0.0	0.2	--	1.5	--	1.5																					
31-May	0.1	Z	0.0	0.0	0.2	0.4	1.0	0.3	0.1	0.0	0.0	M	M	0.2	0.1	0.2	0.0	0.2	0.0	0.3	0.4	0.2	0.6	0.5	0.2	1.0	0.2	1.0																					
																								0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.3	Diurnal Average	
																								1.3	1.3	2.0	1.4	1.6	1.6	1.7	1.0	0.5	0.5	0.6	0.7	0.7	0.5	0.5	0.5	0.6	0.8	0.7	1.1	0.7	1.2	2.7	1.3	Diurnal Maximum	
Z - zerospan C - Calibration M - Maintenance																																																	
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb																																																	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Christina Lake - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	704	99.86	99.86
3 - 4	1	0.14	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Christina Lake - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	10	29	22	28	34	82	52	80	104	98	57	26	18	13	33	18	704
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	10	29	22	28	34	82	52	80	104	98	57	26	18	13	33	19	705

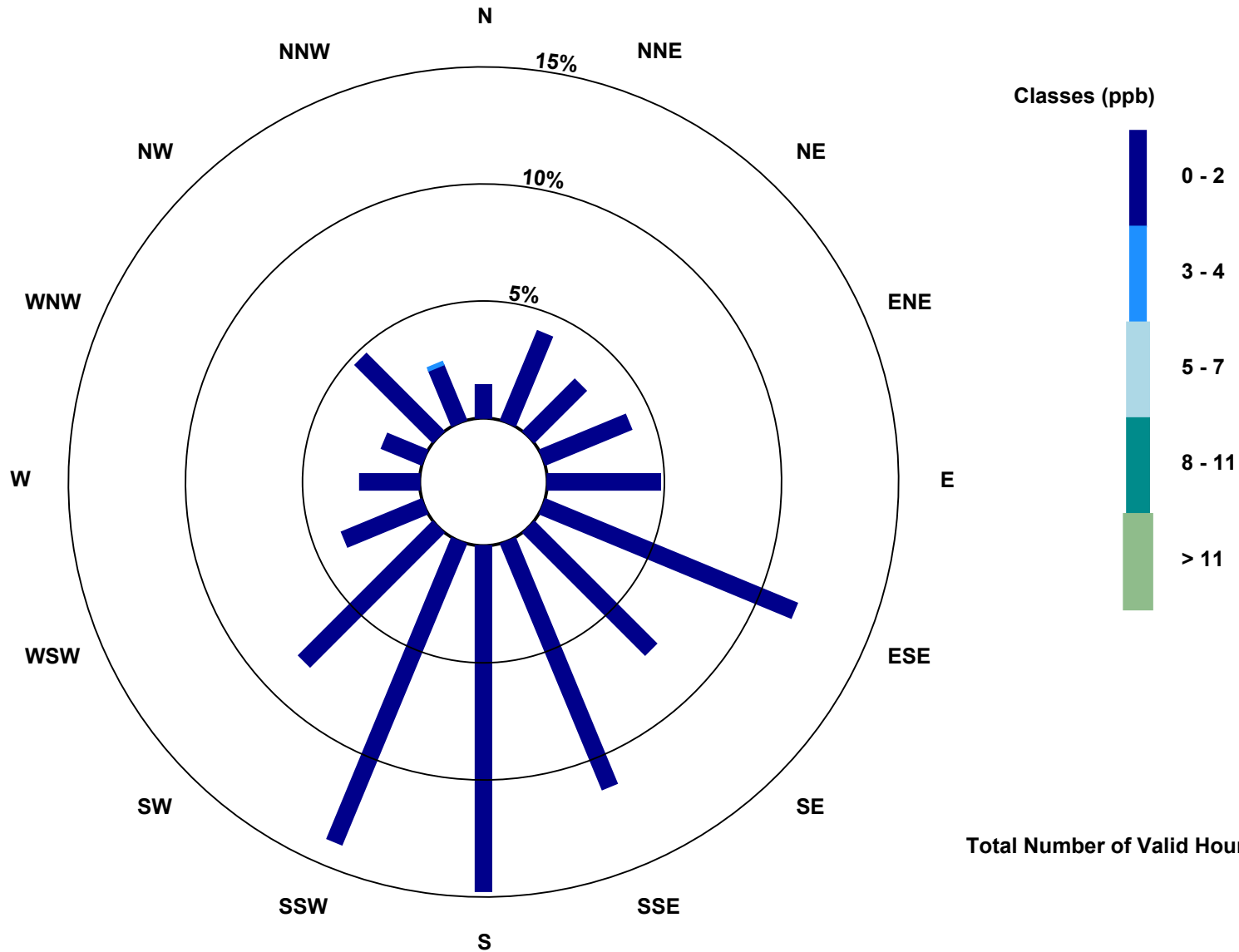
Total Number of Valid Hours: 705

Total Number of Hours: 744

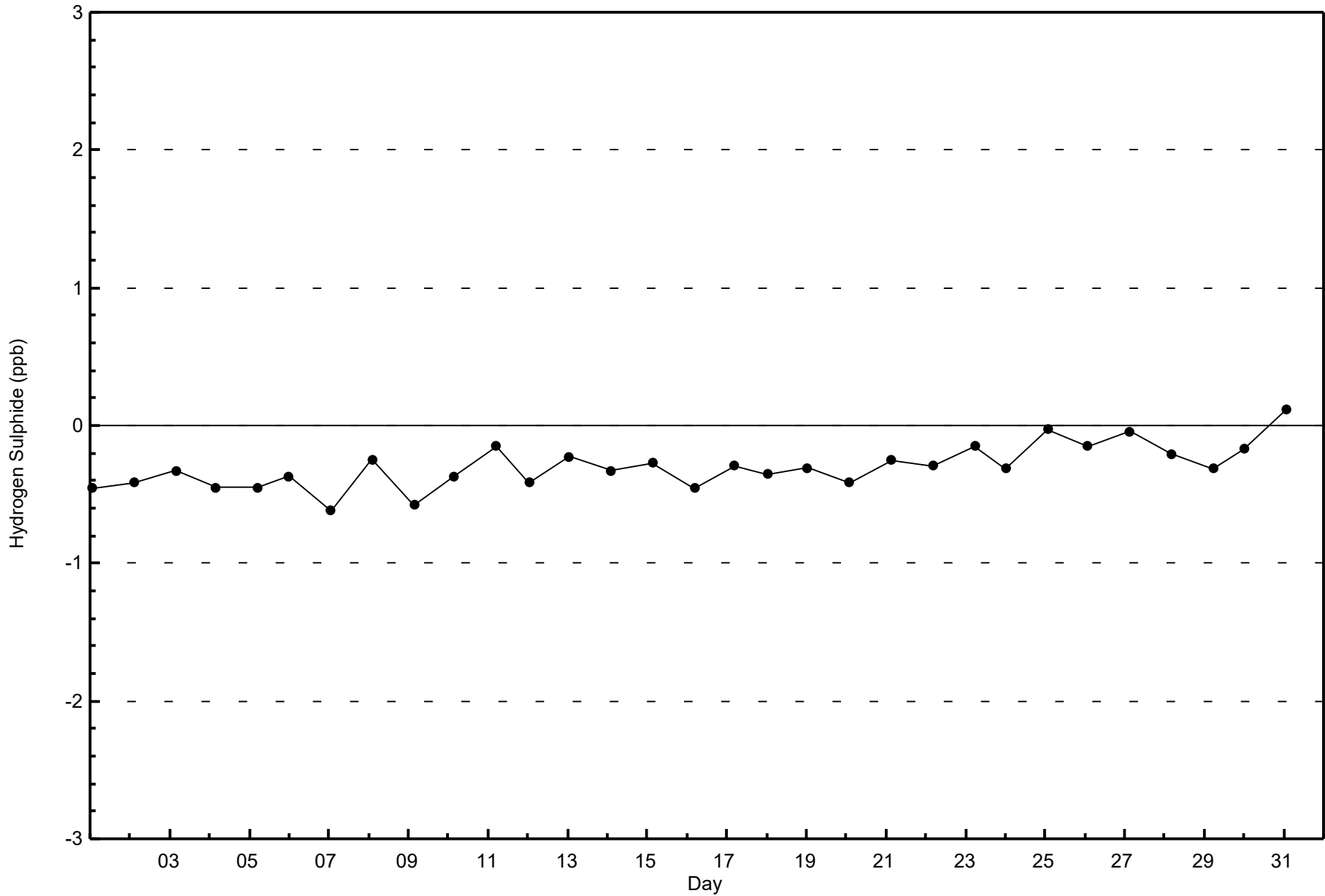


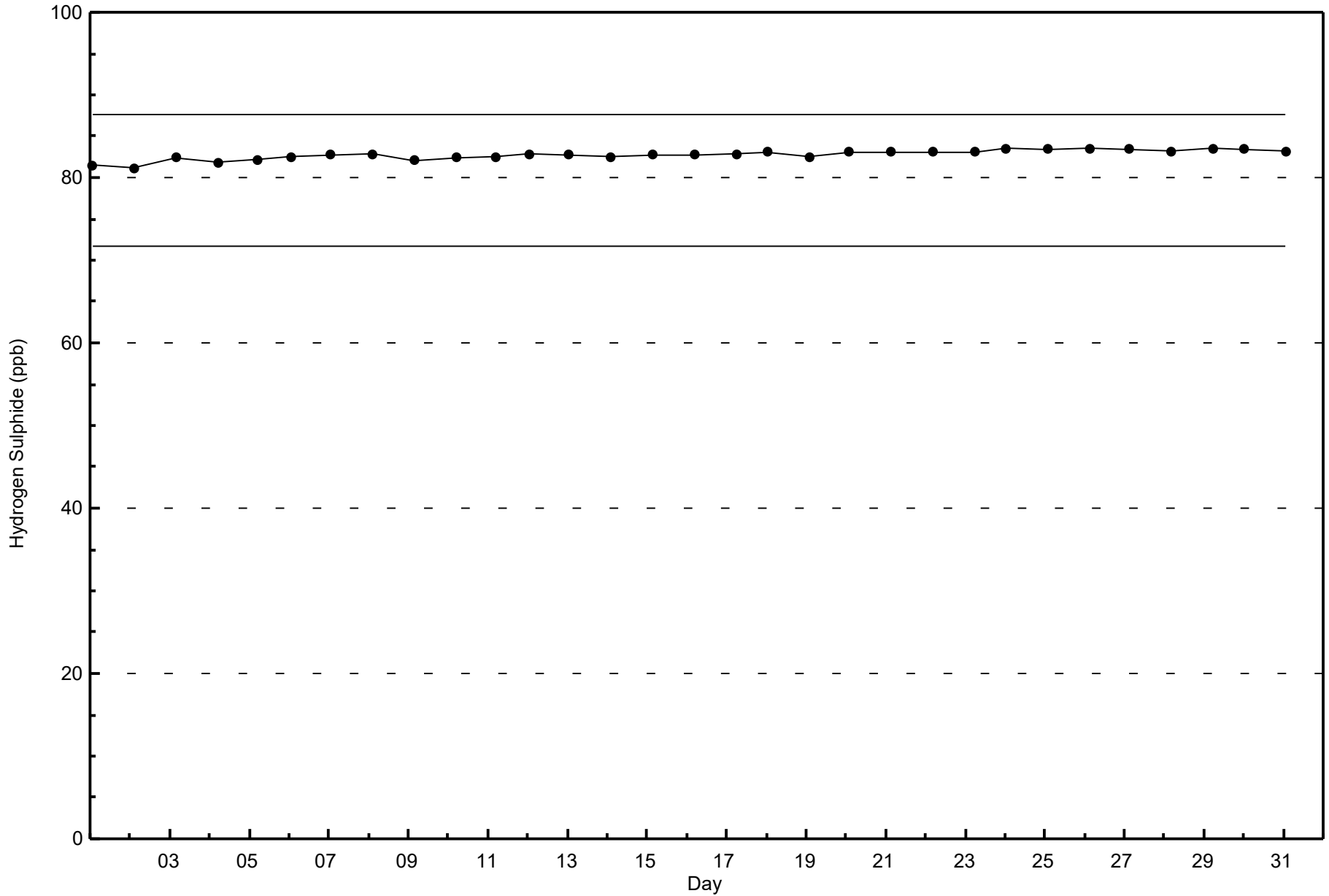
Wood Buffalo Environmental Association
Wind Rose May 2023

Hydrogen Sulphide (H₂S) - ppb
Christina Lake



Total Number of Valid Hours: 705







Wood Buffalo Environmental Association
Summary of Hour Averages

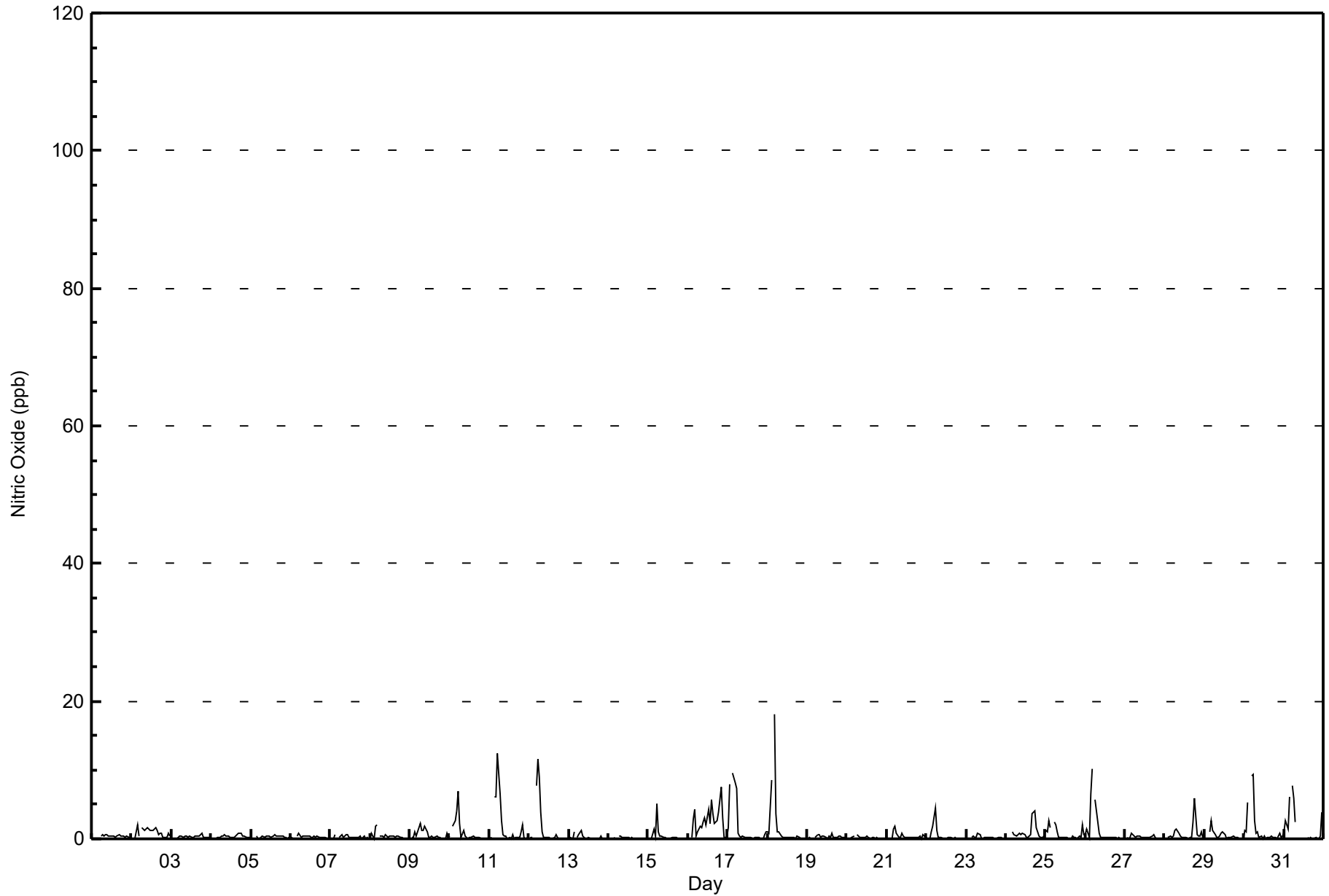
Nitric Oxide (NO) - ppb
Christina Lake - May 2023

Maximum Value: 18.0 ppb on May 18 05:00		Maximum Daily Average: 2.7 ppb on May 16		Hours in Service: 744																							
Minimum Value: 0.0 ppb on May 21 03:00		Minimum Daily Average: 0.1 ppb on May 14		Hours of Data: 707																							
Maximum Diurnal Average: 3.2 ppb at hour 5		Minimum Diurnal Average: 0.2 ppb at hour 22		Hours of Missing Data: 37																							
Monthly Average: 0.76 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.5 P ₉₀ = 1.7 P ₉₉ = 8.9		Hours of Calibration: 37																							
				Percent Operational Time: 100.0																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.0	0.1	0.0	0.0	Z	0.5	0.5	0.5	0.6	0.7	0.4	0.4	0.4	0.4	0.3	0.4	0.5	0.5	0.4	0.4	0.3	0.3	0.1	0.1	0.3	0.7	
2-May	0.0	0.0	0.0	2.0	0.4	Z	1.7	1.4	1.2	1.6	1.5	1.2	1.3	1.3	1.7	1.1	0.7	0.8	0.8	0.2	0.2	0.2	0.8	0.4	0.9	2.0	
3-May	Z	0.0	0.0	0.0	0.3	0.5	0.3	0.1	0.3	0.4	0.2	0.3	0.2	0.2	0.3	0.4	0.3	0.5	0.8	0.3	0.3	0.2	0.1	0.1	0.3	0.8	
4-May	0.1	Z	0.0	0.0	0.1	0.1	0.3	0.3	0.5	0.5	0.3	0.2	0.2	0.2	0.3	0.5	0.8	0.8	0.7	0.4	0.3	0.3	0.2	0.1	0.3	0.8	
5-May	0.1	0.1	Z	0.3	0.1	0.1	0.2	0.5	0.1	0.3	0.4	0.4	0.3	0.4	0.6	0.4	0.3	0.4	0.4	0.4	0.2	0.1	0.1	0.3	0.3	0.6	
6-May	0.1	0.1	0.1	Z	0.4	0.7	0.3	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.4	0.3	0.3	0.2	0.3	0.2	0.2	0.1	0.0	0.0	0.3	0.7	
7-May	0.0	0.0	0.0	0.6	Z	0.1	0.3	0.5	0.2	0.5	0.6	0.2	0.3	0.2	0.3	0.2	0.2	0.2	0.3	0.1	0.4	0.1	0.1	0.1	0.2	0.6	
8-May	0.1	0.7	0.1	1.8	2.1	Z	0.4	0.3	0.2	0.6	0.3	0.3	0.3	0.4	0.5	0.2	0.3	0.4	0.3	0.1	0.1	0.1	0.0	0.0	0.4	2.1	
9-May	Z	0.1	0.1	0.9	0.3	1.6	2.2	1.1	1.3	1.8	1.0	0.2	0.2	0.3	0.2	0.2	0.4	0.2	0.2	0.1	0.1	0.1	0.8	0.2	0.6	2.2	
10-May	0.4	Z	1.8	2.6	4.1	6.8	2.3	0.2	1.2	0.4	0.3	0.1	0.1	0.2	0.5	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.9	6.8	
11-May	0.0	0.3	Z	6.2	6.0	12.4	6.6	2.7	0.7	0.5	0.5	0.1	0.2	0.1	0.5	0.1	0.3	0.3	0.1	1.0	2.1	0.2	0.1	0.2	1.8	12.4	
12-May	0.0	0.2	0.2	Z	7.8	11.6	8.9	3.9	0.9	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.7	0.1	0.0	0.0	0.0	0.0	0.1	0.1	1.5	11.6	
13-May	0.1	0.2	0.0	1.1	Z	0.2	0.6	1.2	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.2	1.2	
14-May	0.0	0.0	0.0	0.1	0.1	Z	0.3	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.4	
15-May	Z	0.1	0.0	1.4	0.5	5.0	1.1	0.4	0.3	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.5	5.0	
16-May	0.1	Z	0.3	2.9	4.3	0.3	1.1	1.8	1.6	2.5	3.1	2.1	4.3	2.3	5.7	3.8	2.2	2.6	3.8	5.8	7.5	3.1	0.1	0.2	2.7	7.5	
17-May	1.7	7.9	Z	9.5	8.2	7.4	0.7	0.5	0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.0	0.5	1.0	1.7	9.5	
18-May	1.0	0.7	8.6	Z	18.0	3.6	1.0	1.0	0.3	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.3	0.1	0.0	0.0	0.0	0.1	1.6	18.0	
19-May	0.0	0.2	0.1	0.0	Z	0.2	0.7	0.7	0.3	0.5	0.4	0.2	0.0	0.3	0.1	0.8	0.2	0.1	0.1	0.5	0.5	0.1	0.2	0.2	0.3	0.8	
20-May	0.1	0.1	0.0	0.2	0.3	Z	0.5	0.4	0.2	0.2	0.2	0.1	0.4	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.5	
21-May	Z	0.0	0.0	0.0	1.5	1.8	0.7	0.3	0.3	0.7	0.4	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.3	0.2	0.3	0.1	0.6	0.2	0.4	1.8	
22-May	0.3	Z	0.1	0.9	1.9	4.4	1.3	0.3	0.1	0.2	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	4.4	
23-May	0.1	0.1	Z	0.1	0.5	0.1	0.2	0.8	0.6	0.1	0.0	0.3	0.2	0.3	0.1	0.2	0.2	0.0	0.0	0.2	0.1	0.2	0.0	0.0	0.2	0.8	
24-May	0.0	0.0	0.1	Z	1.1	0.5	0.4	0.7	0.8	0.5	0.8	0.7	0.3	0.2	0.4	0.7	3.7	4.2	1.7	1.0	0.4	0.1	0.1	0.8	0.8	4.2	
25-May	1.3	0.9	2.7	1.6	Z	2.5	2.0	1.0	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.5	0.2	0.2	0.1	0.3	0.2	2.1	0.6	0.8	2.7	
26-May	0.5	1.5	0.2	6.6	10.1	Z	5.6	2.4	0.8	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.3	0.1	0.2	0.1	0.1	0.0	0.0	0.1	1.3	10.1	
27-May	Z	0.2	0.0	0.3	0.8	0.5	0.2	0.5	0.5	0.4	0.2	0.2	0.3	0.3	0.1	0.2	0.3	0.6	0.1	0.1	0.1	0.0	0.1	0.1	0.3	0.8	
28-May	0.1	Z	0.1	0.3	0.2	0.5	1.2	1.3	0.9	0.4	0.2	0.2	0.1	0.2	0.1	0.1	0.1	2.4	5.9	0.7	0.3	0.4	1.1	0.1	0.7	5.9	
29-May	0.0	0.1	Z	0.9	2.6	1.1	0.7	0.2	0.1	0.5	0.7	1.0	0.6	0.1	0.3	0.3	0.2	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.5	2.6	
30-May	1.3	1.0	5.2	Z	9.1	9.4	2.7	0.8	1.1	0.2	0.3	0.1	0.4	0.1	0.2	0.2	0.4	0.2	0.2	0.2	0.1	0.8	0.2	0.3	1.5	9.4	
31-May	0.9	2.6	1.5	6.2	Z	7.8	6.0	2.3	C	C	C	C	C	C	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.3	3.9	--	7.8	
		0.3	0.7	0.8	1.8	3.2	3.1	1.6	0.9	0.5	0.5	0.5	0.3	0.4	0.3	0.5	0.4	0.5	0.5	0.6	0.4	0.5	0.2	0.3	0.3	Diurnal Average	
		1.7	7.9	8.6	9.5	18.0	12.4	8.9	3.9	1.6	2.5	3.1	2.1	4.3	2.3	5.7	3.8	3.7	4.2	5.9	5.8	7.5	3.1	2.1	3.9	Diurnal Maximum	
Z - zerospan		C - Calibration																									



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Christina Lake - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Christina Lake - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	707	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Christina Lake - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	10	28	21	30	35	82	54	81	103	95	58	27	17	13	34	19	707
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	10	28	21	30	35	82	54	81	103	95	58	27	17	13	34	19	707

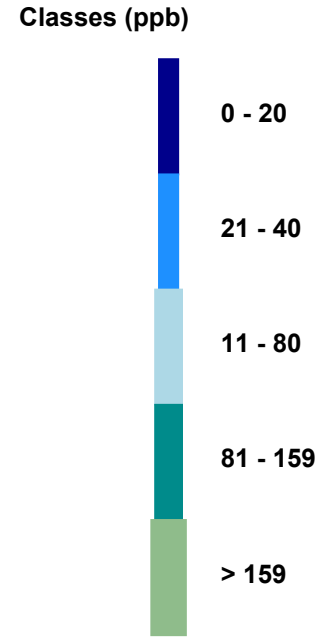
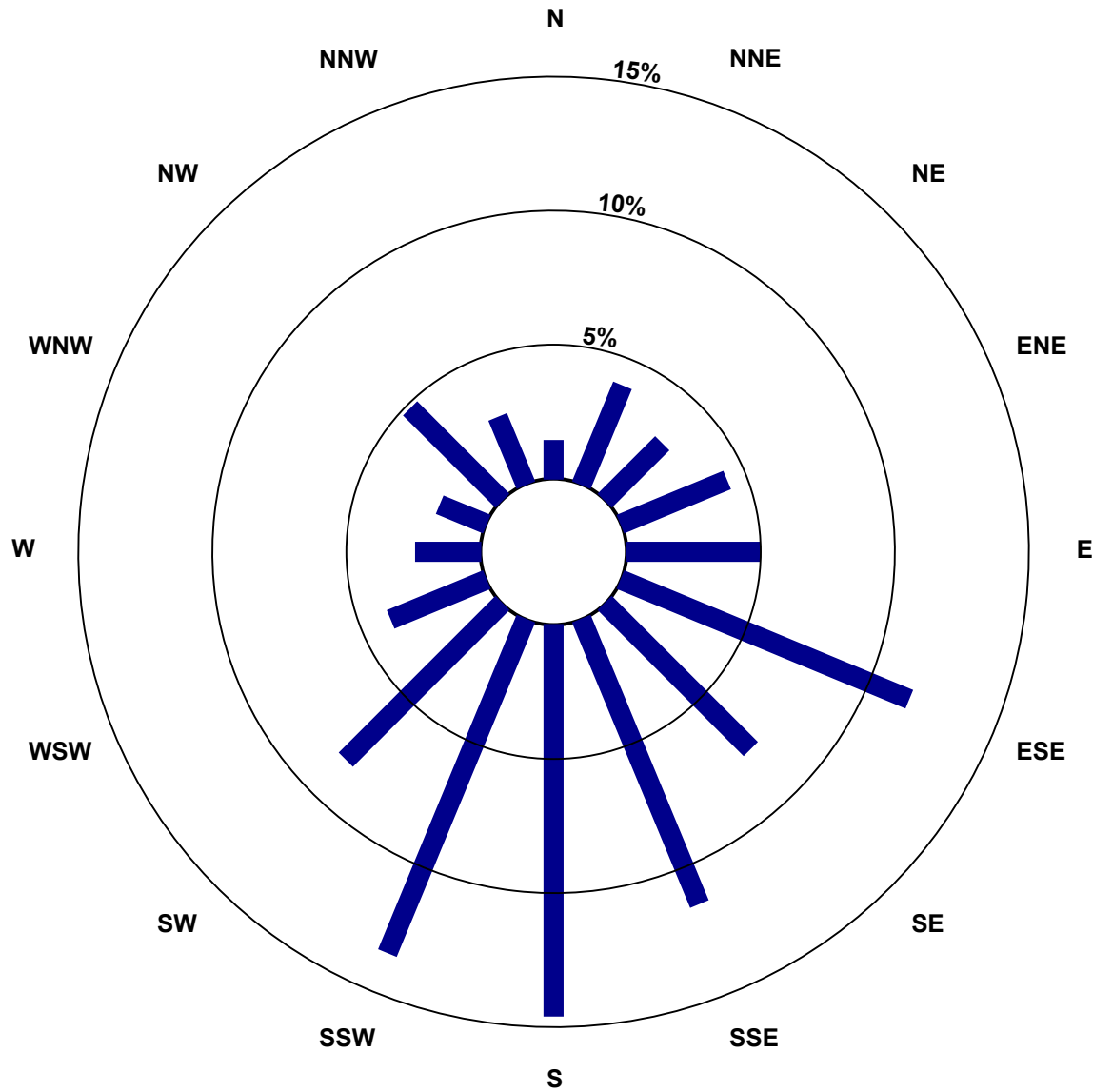
Total Number of Valid Hours: 707

Total Number of Hours: 744

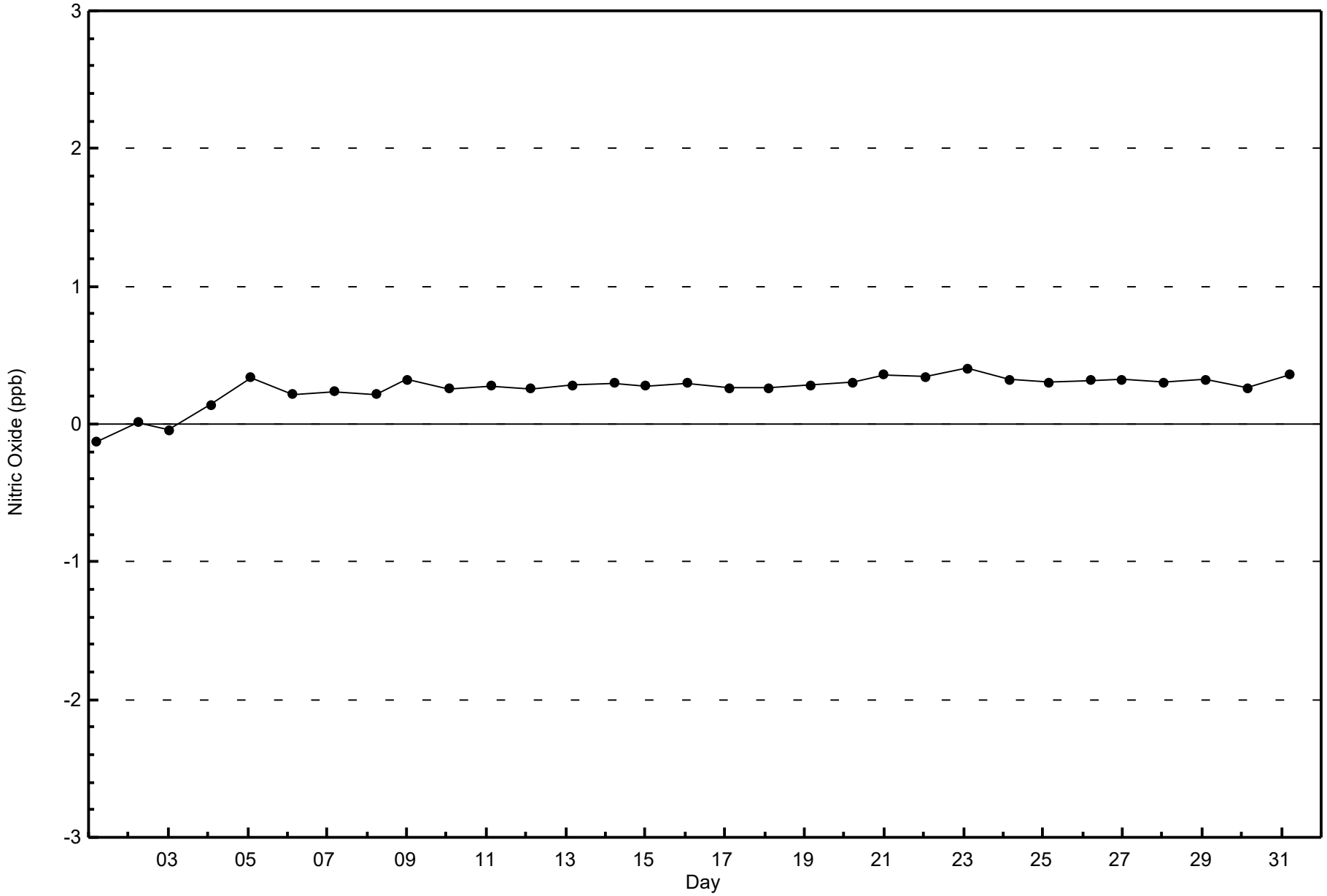


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Christina Lake



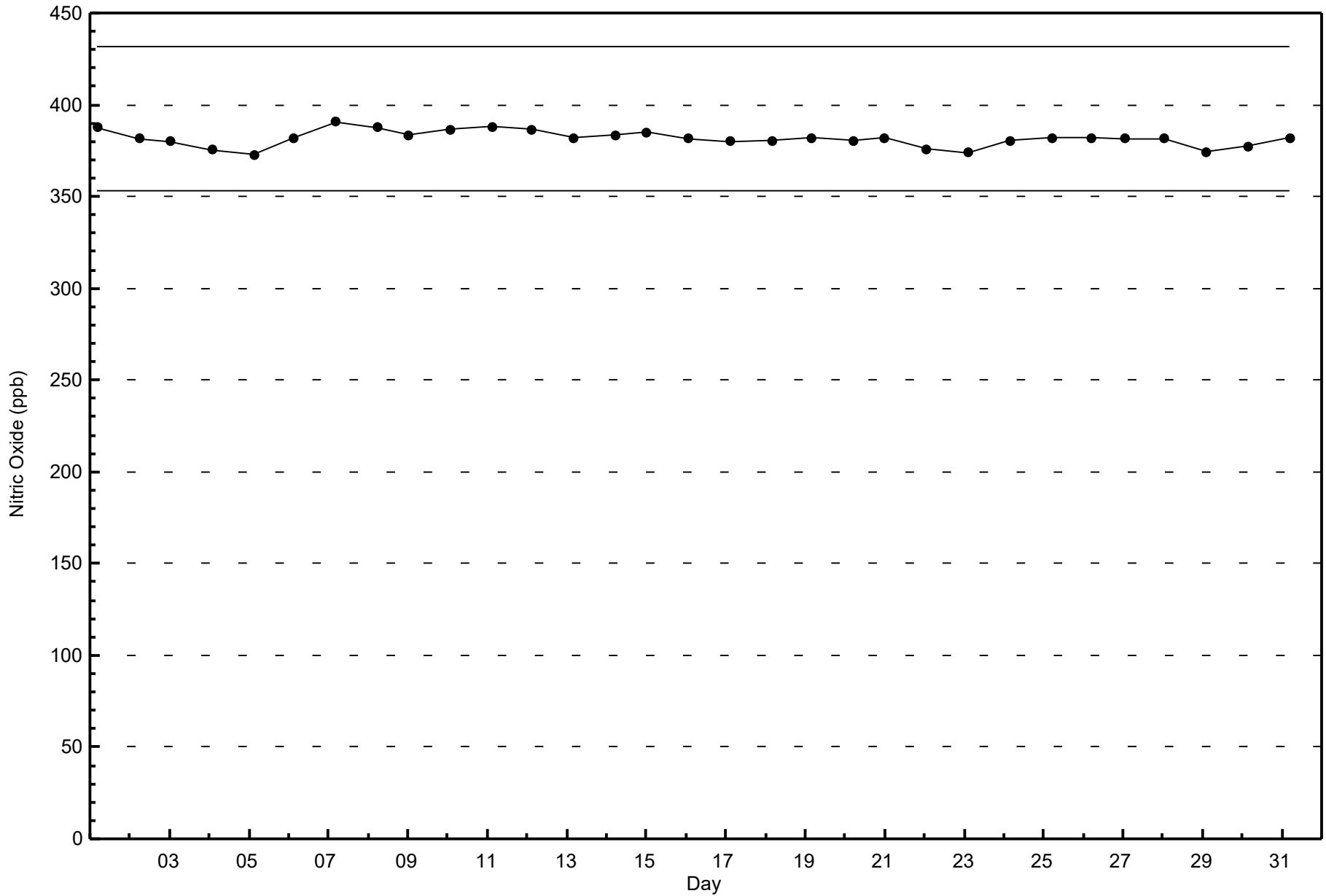
Total Number of Valid Hours: 707





Wood Buffalo Environmental Association
Span Responses

Nitric Oxide (NO) - ppb
Christina Lake - May 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

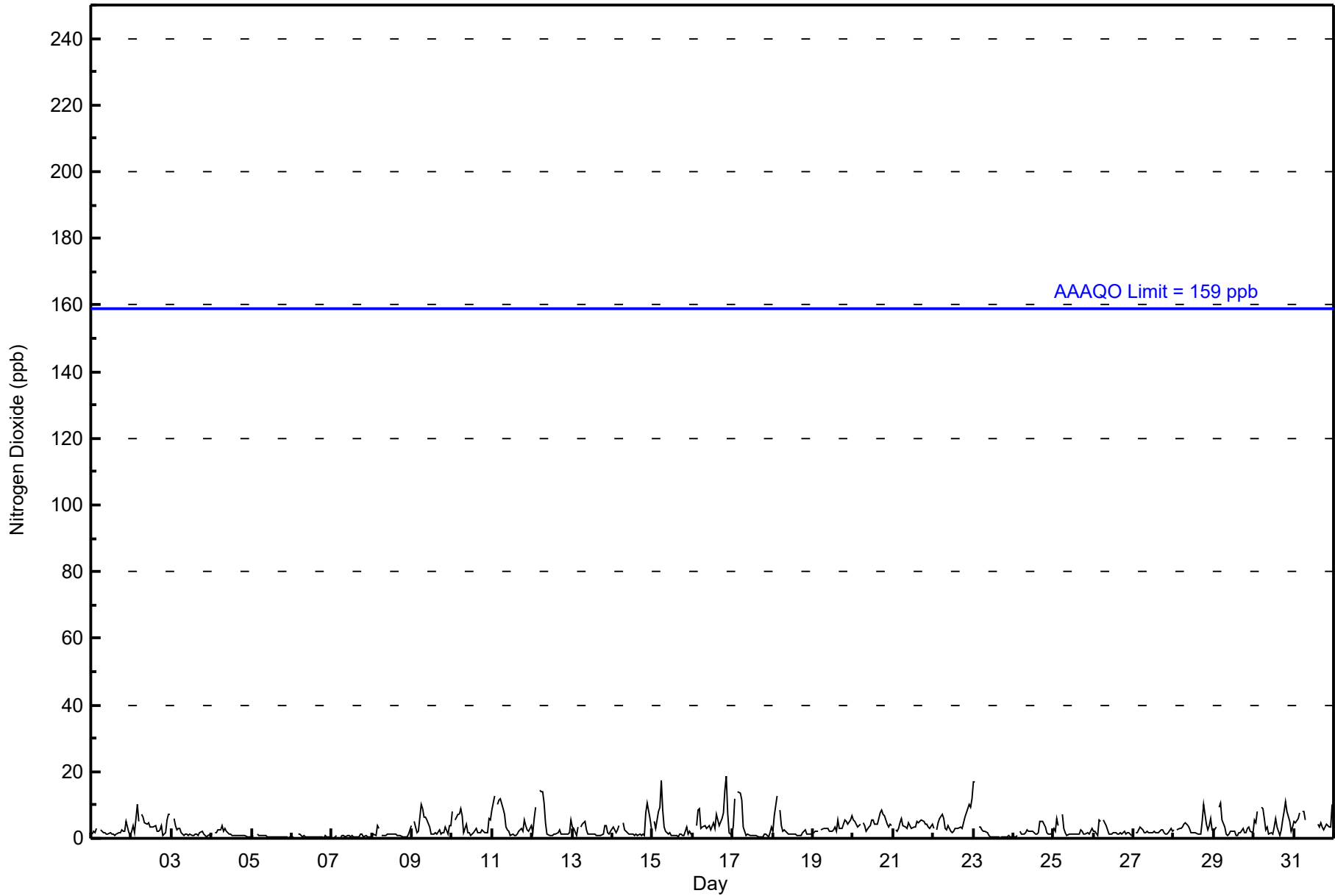
Christina Lake - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		744																		
Maximum Value: 18.7 ppb on May 16 21:00		Maximum Daily Average: 5.5 ppb on May 16		Minimum Value: 0.1 ppb on May 6 02:00		Minimum Daily Average: 0.5 ppb on May 6		Hours of Data: 707																		
Maximum Diurnal Average: 5.9 ppb at hour 5		Minimum Diurnal Average: 1.5 ppb at hour 12		Hours of Missing Data: 37		Hours of Calibration: 37		Percent Operational Time: 100.0																		
Monthly Average: 2.94 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.6 Q ₁ = 1.1 Median = 2.0 Q ₃ = 3.9 P ₉₀ = 6.3 P ₉₉ = 14.0																								
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	1.1	2.0	1.8	2.8	Z	2.6	2.2	1.6	1.6	1.4	1.3	1.5	1.4	1.1	0.8	1.2	1.6	1.7	2.5	2.1	2.1	5.1	1.8	1.0	1.8	5.1
2-May	2.1	3.8	1.8	10.0	5.2	Z	7.2	6.5	4.7	4.4	4.7	3.5	3.4	3.2	3.8	2.3	2.0	2.5	3.9	1.0	1.5	5.4	7.4	7.2	4.2	10.0
3-May	Z	5.8	4.0	2.5	2.8	3.1	1.7	1.0	1.2	1.1	1.0	1.2	0.7	0.7	1.1	1.1	0.9	1.5	2.1	1.2	0.7	0.5	0.7	1.2	1.6	5.8
4-May	1.3	Z	1.6	1.9	2.5	2.7	4.0	2.3	2.9	2.2	1.3	1.1	1.0	0.9	0.8	0.8	0.9	0.9	1.0	0.9	0.7	0.5	0.6	0.5	1.4	4.0
5-May	0.4	0.7	Z	1.4	0.9	0.9	0.7	0.8	0.7	0.5	0.6	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.3	0.2	0.3	0.5	1.4
6-May	0.3	0.1	0.2	Z	1.2	1.3	0.6	0.7	0.6	0.5	0.6	0.5	0.4	0.3	0.5	0.3	0.4	0.3	0.3	0.2	0.8	0.5	0.3	0.3	0.5	1.3
7-May	0.2	0.2	0.3	1.0	Z	0.6	0.8	0.7	0.4	0.7	0.8	0.5	0.9	0.4	0.5	0.4	0.6	1.4	1.3	0.5	0.7	0.3	0.4	0.4	0.6	1.4
8-May	0.3	1.2	0.9	3.9	2.9	Z	0.9	1.0	0.9	1.4	1.4	1.3	1.4	1.2	1.3	0.9	1.0	0.9	0.6	0.6	0.6	0.5	1.2	3.8	1.3	3.9
9-May	Z	5.0	3.2	1.8	2.2	10.1	8.8	6.2	6.4	5.7	3.4	1.2	1.3	1.3	1.7	1.3	2.4	1.2	1.5	1.7	3.2	1.2	3.9	3.7	3.4	10.1
10-May	8.2	Z	5.7	7.0	7.1	9.0	6.7	1.5	4.1	1.7	1.5	0.7	1.2	1.6	2.9	1.8	1.6	1.9	2.5	1.7	1.6	1.7	6.1	5.5	3.6	9.0
11-May	8.6	12.6	Z	10.0	11.3	11.7	8.7	7.4	3.3	2.4	2.2	0.9	1.1	0.7	1.0	1.1	2.2	2.8	2.2	5.3	4.0	2.7	2.1	3.9	4.7	12.6
12-May	1.8	5.9	9.5	Z	14.5	13.9	14.0	10.5	4.5	1.4	0.7	0.8	0.9	1.2	1.2	1.5	2.7	1.2	1.2	1.2	1.2	1.3	1.6	5.5	4.3	14.5
13-May	3.5	3.0	0.9	3.4	Z	3.3	4.2	5.1	2.5	1.4	1.1	1.2	1.2	1.1	1.0	1.0	0.9	0.8	1.1	4.0	3.9	1.5	1.3	2.3	2.2	5.1
14-May	3.6	2.7	1.6	2.4	3.7	Z	4.7	2.6	2.0	1.6	1.3	1.1	1.1	1.0	1.1	0.9	1.2	0.9	1.3	1.0	7.5	10.8	5.8	2.9	2.7	10.8
15-May	Z	5.0	3.0	8.0	9.5	17.5	8.3	3.3	2.3	1.4	1.7	0.8	0.8	0.7	0.8	0.6	1.1	1.1	0.9	0.8	3.5	1.1	2.2	1.2	3.3	17.5
16-May	1.2	Z	3.8	8.3	9.1	3.1	3.2	3.7	3.0	3.3	3.9	2.7	4.6	3.1	7.2	5.5	4.0	6.1	7.8	14.3	18.7	7.8	1.6	1.0	5.5	18.7
17-May	3.9	11.9	Z	14.0	13.5	11.6	3.4	2.3	0.7	1.3	0.8	0.7	0.9	1.0	0.8	0.4	0.6	0.5	0.5	1.3	1.1	0.6	1.9	3.5	3.4	14.0
18-May	2.0	6.6	12.7	Z	8.6	4.0	2.2	2.4	1.5	1.3	1.4	1.4	1.4	1.1	1.0	0.9	1.0	1.0	1.6	2.5	1.4	1.4	1.2	1.4	2.6	12.7
19-May	1.5	2.3	2.2	2.2	Z	2.5	3.0	2.9	2.8	3.1	2.3	2.2	2.6	3.3	2.2	5.4	3.1	3.1	4.1	5.4	5.1	4.2	5.6	6.6	3.4	6.6
20-May	5.6	5.0	4.4	3.5	4.2	Z	4.7	4.0	2.2	3.3	4.0	5.5	5.3	4.4	4.4	5.9	7.5	8.3	7.1	6.8	4.3	3.2	4.3	3.9	4.9	8.3
21-May	Z	2.6	2.0	3.0	4.8	5.9	4.0	3.6	3.0	4.6	3.8	2.8	3.2	3.6	5.0	4.6	5.0	5.3	4.9	4.4	4.3	3.3	3.1	4.4	4.0	5.9
22-May	3.1	Z	2.5	4.7	5.8	7.0	5.8	3.0	2.4	3.8	2.2	1.9	2.2	2.8	3.0	2.9	3.2	2.9	4.7	6.3	7.5	10.2	9.5	12.0	4.8	12.0
23-May	17.0	16.8	Z	3.4	3.2	2.6	2.3	2.1	1.6	0.8	0.6	0.5	0.4	0.5	0.4	0.3	0.2	0.3	0.4	0.6	0.6	0.7	0.5	0.5	2.4	17.0
24-May	0.6	0.5	0.7	Z	2.2	1.2	1.2	1.7	2.7	2.2	2.1	2.0	1.5	1.3	1.1	1.9	5.0	5.2	4.2	3.5	1.8	1.4	1.3	2.1	2.1	5.2
25-May	2.9	2.3	5.9	4.0	Z	7.4	3.1	1.7	0.9	1.3	1.2	1.3	1.3	1.3	1.2	1.4	2.5	2.0	1.4	1.2	1.8	1.3	2.0	3.0	2.3	7.4
26-May	2.3	2.0	1.0	5.3	5.2	Z	5.7	3.8	2.6	1.4	1.3	1.4	1.6	1.5	1.4	1.4	1.7	1.4	2.0	1.3	1.5	1.5	1.3	0.9	2.2	5.7
27-May	Z	1.9	1.8	2.7	3.2	2.7	1.9	1.9	2.1	1.5	1.7	1.8	2.1	1.9	1.5	1.8	2.4	2.4	1.5	1.3	1.3	1.7	3.1	2.1	2.0	3.2
28-May	2.4	Z	2.7	2.9	2.9	3.2	4.1	4.6	3.9	2.9	1.9	1.7	1.5	1.5	1.2	1.3	1.1	5.1	10.1	4.3	2.7	4.0	6.1	2.7	3.3	10.1
29-May	2.0	3.5	Z	9.2	10.5	5.6	3.2	1.2	1.0	1.3	2.0	2.3	2.0	0.8	1.0	1.8	1.9	2.9	1.9	1.5	3.1	3.6	2.1	1.6	2.9	10.5
30-May	5.5	4.6	7.9	Z	9.3	9.1	5.8	2.6	3.4	1.4	1.7	1.3	3.3	5.8	3.2	0.7	2.7	5.3	7.9	11.2	8.1	5.1	2.0	3.2	4.8	11.2
31-May	4.9	4.6	6.1	7.7	Z	7.9	8.2	5.5	C	C	C	C	C	C	4.1	3.6	4.7	3.6	2.7	4.2	3.7	3.3	3.5	10.3	--	10.3
																								Diurnal Average		
																								Diurnal Maximum		
																								3.3 4.3 3.4 4.9 5.9 5.8 4.4 3.2 2.4 2.0 1.8 1.5 1.7 1.7 1.9 1.8 2.1 2.4 2.8 3.0 3.2 2.8 2.7 3.2		
																								17.0 16.8 12.7 14.0 14.5 17.5 14.0 10.5 6.4 5.7 4.7 5.5 5.3 5.8 7.2 5.9 7.5 8.3 10.1 14.3 18.7 10.8 9.5 12.0		
Z - zerospan C - Calibration																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																										



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Christina Lake - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Christina Lake - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	707	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Christina Lake - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	10	28	21	30	35	82	54	81	103	95	58	27	17	13	34	19	707
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	10	28	21	30	35	82	54	81	103	95	58	27	17	13	34	19	707

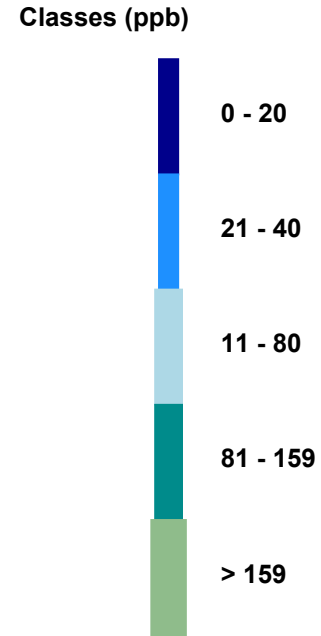
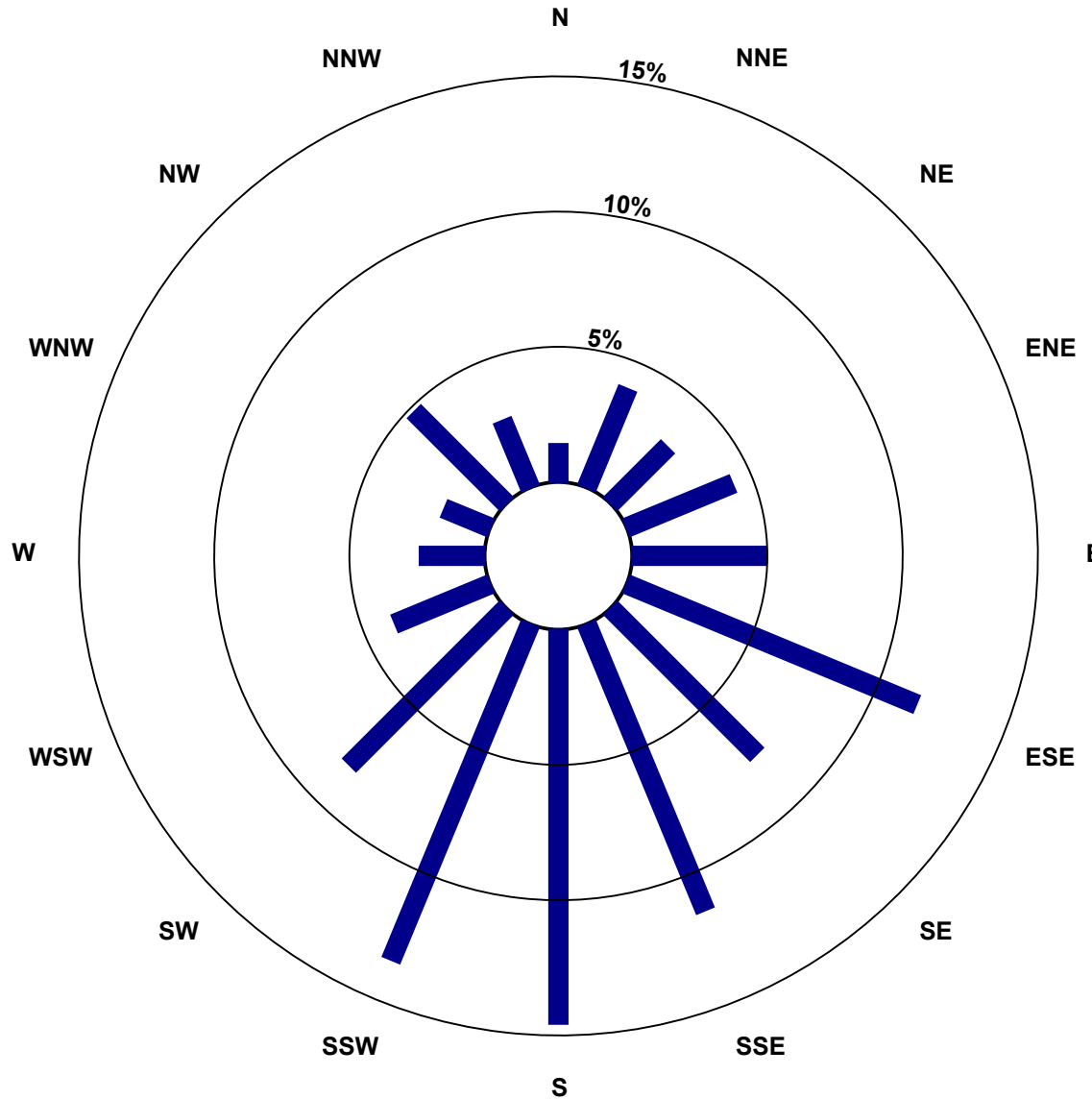
Total Number of Valid Hours: 707

Total Number of Hours: 744

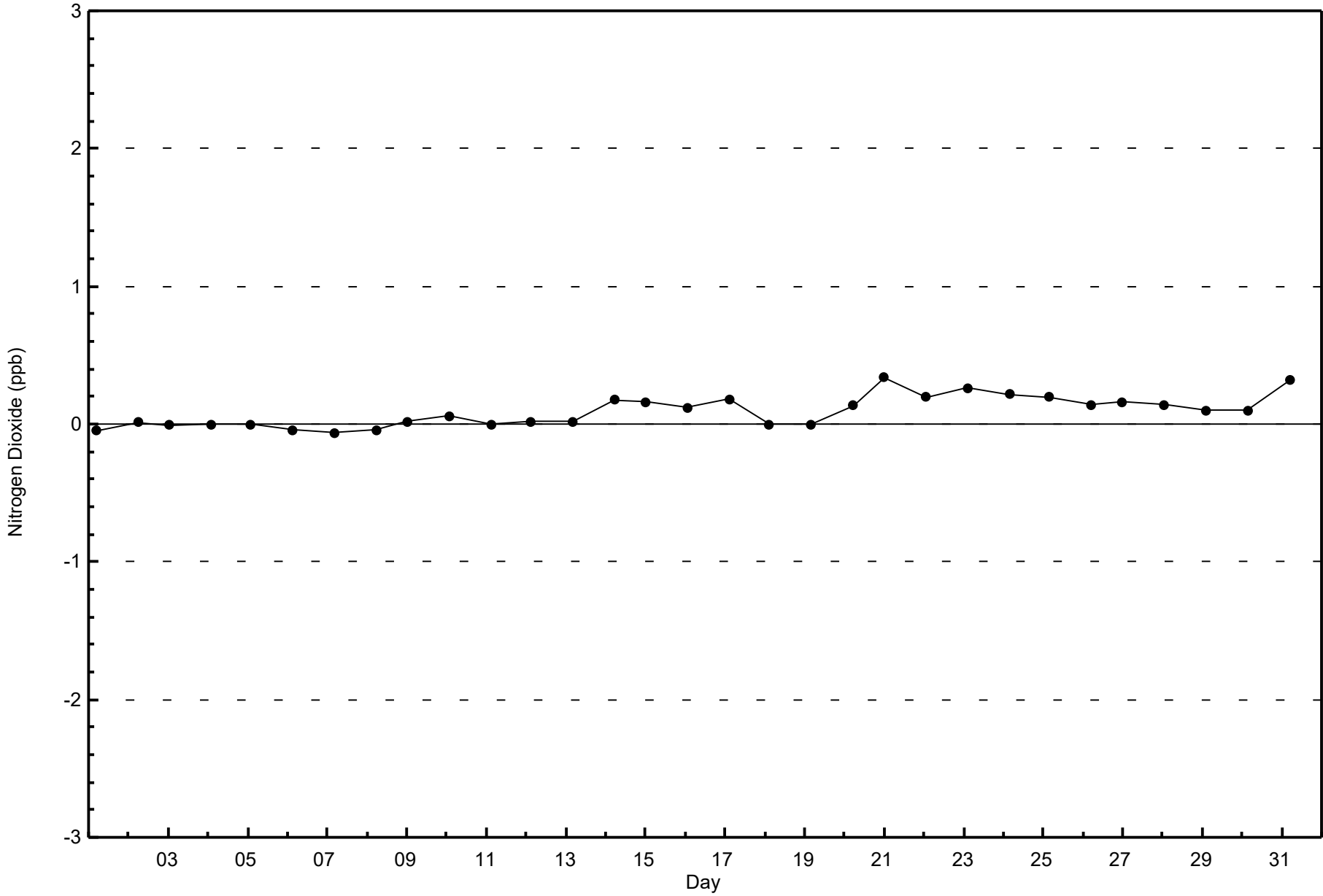


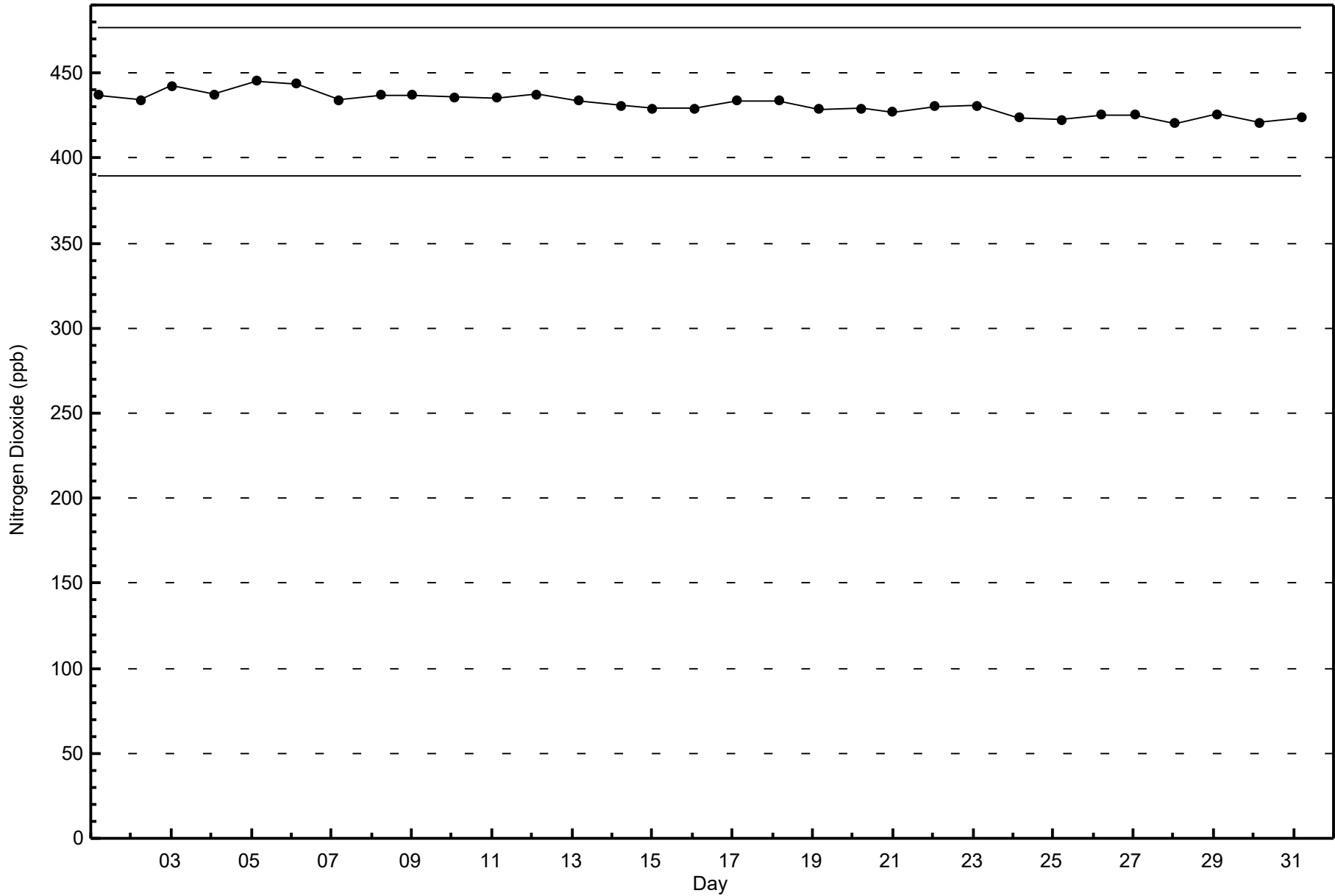
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Christina Lake



Total Number of Valid Hours: 707







Wood Buffalo Environmental Association
Summary of Hour Averages

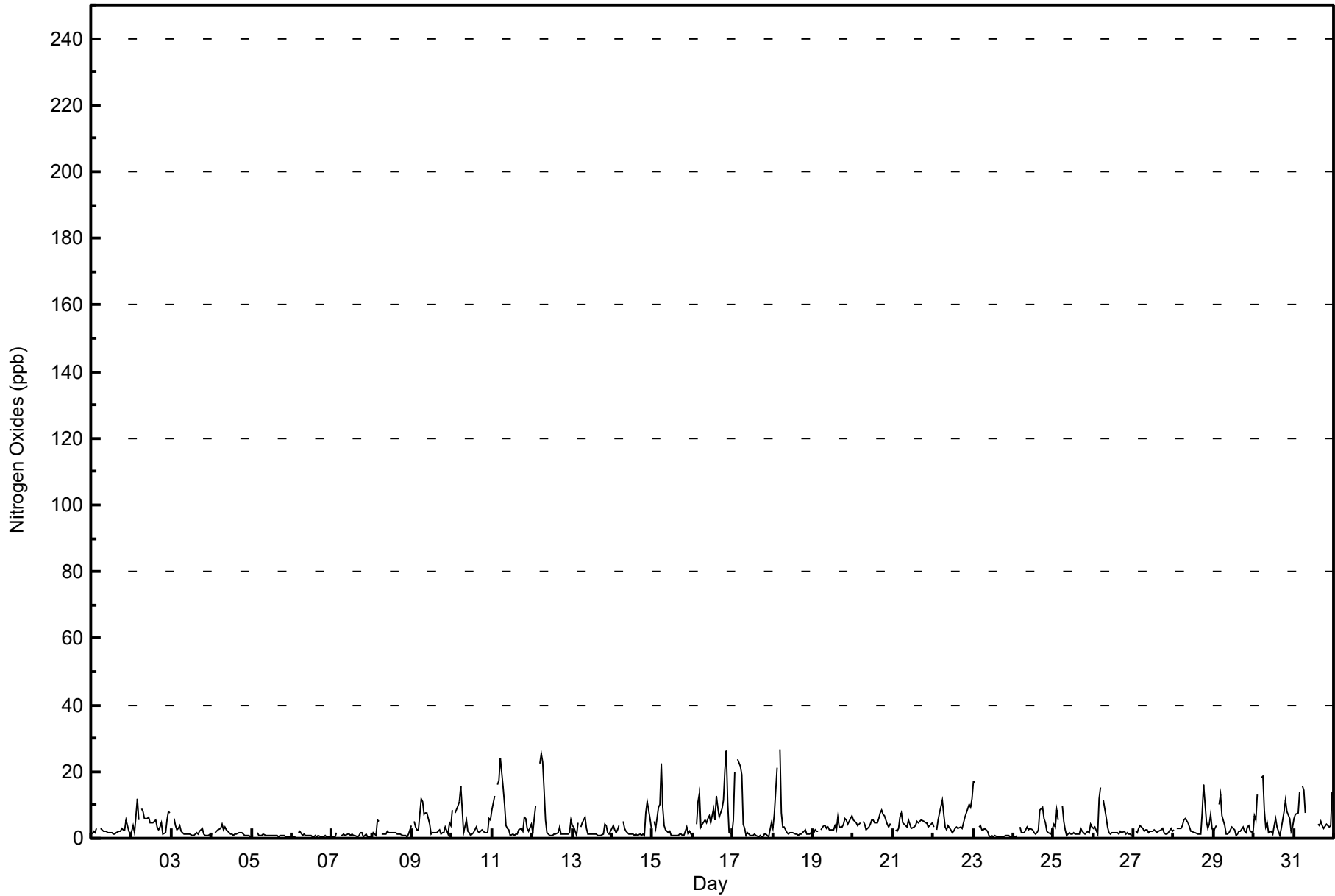
Nitrogen Oxides (NO_x) - ppb
Christina Lake - May 2023

Maximum Value: 26.6 ppb on May 18 05:00		Maximum Daily Average: 8.2 ppb on May 16		Hours in Service: 744																						
Minimum Value: 0.2 ppb on May 7 01:00		Minimum Daily Average: 0.7 ppb on May 6		Hours of Data: 707																						
Maximum Diurnal Average: 9.1 ppb at hour 5		Minimum Diurnal Average: 1.9 ppb at hour 12		Hours of Missing Data: 37																						
Monthly Average: 3.70 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.8 Q ₁ = 1.3 Median = 2.3 Q ₃ = 4.5 P ₉₀ = 8.0 P ₉₉ = 22.3		Hours of Calibration: 37																						
				Percent Operational Time: 100.0																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	1.1	2.1	1.8	2.8	Z	3.1	2.7	2.1	2.2	2.1	1.7	1.9	1.8	1.5	1.1	1.6	2.1	2.2	2.9	2.5	2.4	5.4	1.9	1.1	2.2	5.4
2-May	2.1	3.8	1.8	12.0	5.6	Z	8.9	7.9	5.9	6.0	6.2	4.7	4.7	4.5	5.5	3.4	2.7	3.3	4.7	1.2	1.7	5.6	8.2	7.6	5.1	12.0
3-May	Z	5.8	4.0	2.5	3.1	3.6	2.0	1.1	1.5	1.5	1.2	1.5	0.9	0.9	1.4	1.5	1.2	2.0	2.9	1.5	1.0	0.7	0.8	1.3	1.9	5.8
4-May	1.4	Z	1.6	1.9	2.6	2.8	4.3	2.6	3.4	2.7	1.6	1.3	1.2	1.1	1.1	1.3	1.7	1.7	1.3	1.0	0.8	0.8	0.6	0.6	1.8	4.3
5-May	0.5	0.8	Z	1.7	1.0	1.0	0.9	1.3	0.8	0.8	1.0	0.8	0.7	0.8	1.0	0.8	0.6	0.7	0.7	0.8	0.6	0.4	0.3	0.6	0.8	1.7
6-May	0.4	0.2	0.3	Z	1.6	2.0	0.9	1.1	1.0	0.9	0.9	0.8	0.6	0.5	0.9	0.6	0.7	0.5	0.6	0.4	1.0	0.6	0.3	0.3	0.7	2.0
7-May	0.2	0.2	0.3	1.6	Z	0.7	1.1	1.2	0.6	1.2	1.4	0.7	1.2	0.6	0.8	0.6	0.8	1.6	1.6	0.6	1.1	0.4	0.5	0.5	0.9	1.6
8-May	0.4	1.9	1.0	5.7	5.0	Z	1.3	1.3	1.1	2.0	1.7	1.6	1.7	1.6	1.8	1.1	1.3	1.3	0.9	0.7	0.7	0.6	1.2	3.8	1.7	5.7
9-May	Z	5.1	3.3	2.7	2.5	11.7	11.0	7.3	7.7	7.5	4.4	1.4	1.5	1.6	1.9	1.5	2.8	1.4	1.7	1.8	3.3	1.3	4.7	3.9	4.0	11.7
10-May	8.6	Z	7.5	9.6	11.2	15.8	9.0	1.7	5.3	2.1	1.8	0.8	1.3	1.8	3.4	2.0	1.8	2.0	2.6	1.7	1.6	1.7	6.1	5.5	4.6	15.8
11-May	8.6	12.9	Z	16.2	17.3	24.1	15.3	10.1	4.0	2.9	2.7	1.0	1.3	0.8	1.5	1.2	2.5	3.1	2.3	6.3	6.1	2.9	2.2	4.1	6.5	24.1
12-May	1.8	6.1	9.7	Z	22.3	25.5	22.9	14.4	5.4	1.6	0.9	1.0	1.0	1.3	1.3	1.6	3.4	1.3	1.2	1.2	1.2	1.3	1.7	5.6	5.8	25.5
13-May	3.6	3.2	0.9	4.5	Z	3.5	4.8	6.3	2.9	1.5	1.2	1.3	1.3	1.2	1.1	1.1	1.0	0.8	1.1	4.3	3.9	1.5	1.3	2.3	2.4	6.3
14-May	3.6	2.7	1.6	2.5	3.8	Z	5.0	3.0	2.2	1.7	1.4	1.2	1.2	1.1	1.2	1.0	1.3	0.9	1.3	1.0	7.5	10.9	5.9	3.0	2.8	10.9
15-May	Z	5.1	3.0	9.4	10.0	22.5	9.4	3.7	2.6	1.6	2.0	0.9	0.9	0.8	0.9	0.7	1.3	1.2	1.0	0.9	3.5	1.1	2.3	1.3	3.7	22.5
16-May	1.3	Z	4.1	11.2	13.4	3.4	4.3	5.5	4.6	5.8	7.0	4.8	8.9	5.4	12.9	9.3	6.2	8.7	11.6	20.1	26.2	10.9	1.7	1.2	8.2	26.2
17-May	5.6	19.8	Z	23.5	21.7	19.0	4.1	2.8	0.8	1.7	0.9	0.8	1.0	1.1	0.9	0.5	0.8	0.6	0.6	1.5	1.2	0.6	2.4	4.5	5.1	23.5
18-May	3.0	7.3	21.3	Z	26.6	7.6	3.2	3.4	1.8	1.5	1.7	1.6	1.6	1.3	1.1	1.0	1.1	1.1	1.9	2.6	1.4	1.4	1.2	1.5	4.2	26.6
19-May	1.5	2.5	2.3	2.2	Z	2.7	3.7	3.6	3.1	3.6	2.7	2.4	2.6	3.6	2.3	6.2	3.3	3.2	4.2	5.9	5.6	4.3	5.8	6.8	3.7	6.8
20-May	5.7	5.1	4.4	3.7	4.5	Z	5.2	4.4	2.4	3.5	4.2	5.6	5.7	4.6	4.5	6.0	7.7	8.4	7.2	6.9	4.3	3.3	4.4	4.0	5.0	8.4
21-May	Z	2.6	2.0	3.0	6.3	7.7	4.7	3.9	3.3	5.3	4.2	3.0	3.4	3.8	5.3	4.8	5.2	5.4	5.2	4.6	4.6	3.4	3.7	4.6	4.4	7.7
22-May	3.4	Z	2.6	5.6	7.7	11.4	7.1	3.3	2.5	4.0	2.3	1.9	2.3	2.9	3.2	3.0	3.3	3.0	4.7	6.3	7.5	10.2	9.5	12.0	5.2	12.0
23-May	17.1	16.9	Z	3.5	3.7	2.7	2.5	2.9	2.2	0.9	0.6	0.8	0.6	0.8	0.5	0.5	0.4	0.3	0.4	0.8	0.7	0.9	0.5	0.5	2.6	17.1
24-May	0.6	0.5	0.8	Z	3.3	1.7	1.6	2.4	3.5	2.7	2.9	2.7	1.8	1.5	1.5	2.6	8.7	9.4	5.9	4.5	2.2	1.5	1.4	2.9	2.9	9.4
25-May	4.2	3.2	8.6	5.6	Z	9.9	5.1	2.7	1.0	1.5	1.4	1.5	1.5	1.4	1.3	1.5	3.0	2.2	1.6	1.3	2.1	1.5	4.1	3.6	3.0	9.9
26-May	2.8	3.5	1.2	11.9	15.3	Z	11.3	6.2	3.4	1.6	1.4	1.6	1.7	1.7	1.6	1.5	2.0	1.5	2.2	1.4	1.6	1.5	1.3	1.0	3.4	15.3
27-May	Z	2.1	1.8	3.0	4.0	3.2	2.1	2.4	2.6	1.9	1.9	2.0	2.4	2.2	1.6	2.0	2.7	3.0	1.6	1.4	1.4	1.7	3.2	2.2	2.3	4.0
28-May	2.5	Z	2.8	3.2	3.1	3.7	5.3	5.9	4.8	3.3	2.1	1.9	1.6	1.7	1.3	1.4	1.2	7.5	16.0	5.0	3.0	4.4	7.2	2.8	4.0	16.0
29-May	2.0	3.6	Z	10.1	13.1	6.7	3.9	1.4	1.1	1.8	2.7	3.3	2.6	0.9	1.3	2.1	2.1	3.3	2.1	1.6	3.2	3.7	2.2	1.7	3.3	13.1
30-May	6.8	5.6	13.1	Z	18.4	18.5	8.5	3.4	4.5	1.6	2.0	1.4	3.7	5.9	3.4	0.9	3.1	5.5	8.1	11.4	8.2	5.9	2.2	3.5	6.3	18.5
31-May	5.8	7.2	7.6	13.9	Z	15.7	14.2	7.8	C	C	C	C	C	C	4.2	3.7	4.9	3.7	2.8	4.3	3.8	3.4	3.8	14.2	--	15.7
																								Diurnal Average		
																								Diurnal Maximum		
																								3.6 5.0 4.2 6.7 9.1 8.8 6.0 4.1 2.9 2.6 2.3 1.9 2.1 2.0 2.3 2.2 2.6 2.9 3.3 3.4 3.7 3.0 3.0 3.5		
																								17.1 19.8 21.3 23.5 26.6 25.5 22.9 14.4 7.7 7.5 7.0 5.6 8.9 5.9 12.9 9.3 8.7 9.4 16.0 20.1 26.2 10.9 9.5 14.2		
Z - zerospan C - Calibration																										



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Christina Lake - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Christina Lake - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	697	98.59	98.59
21 - 40	10	1.41	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Christina Lake - May 2023**

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Totals
0 - 20	10	28	21	30	35	82	53	81	100	93	57	27	17	12	32	19	697
21 - 40	0	0	0	0	0	0	1	0	3	2	1	0	0	1	2	0	10
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	10	28	21	30	35	82	54	81	103	95	58	27	17	13	34	19	707

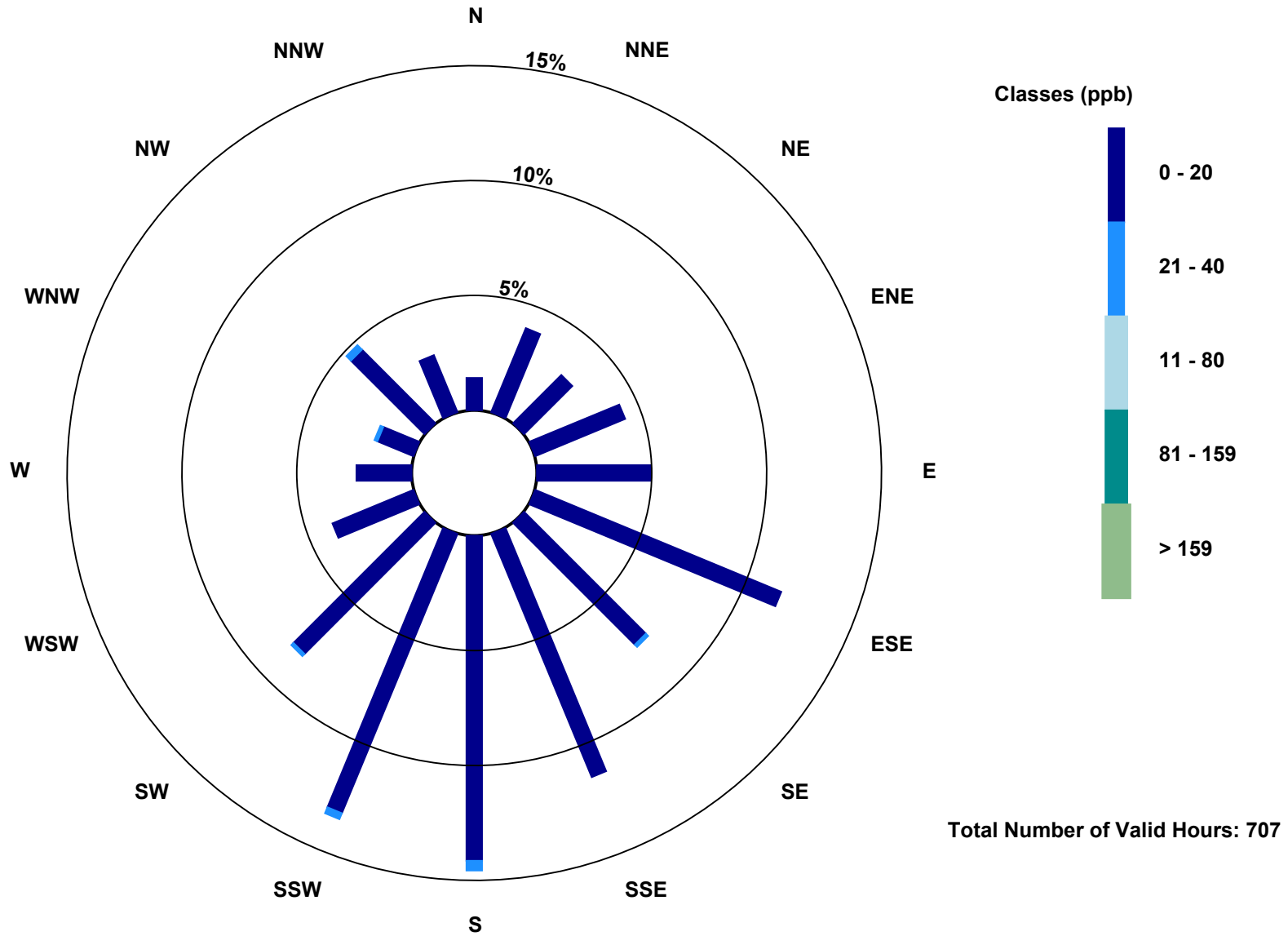
Total Number of Valid Hours: 707

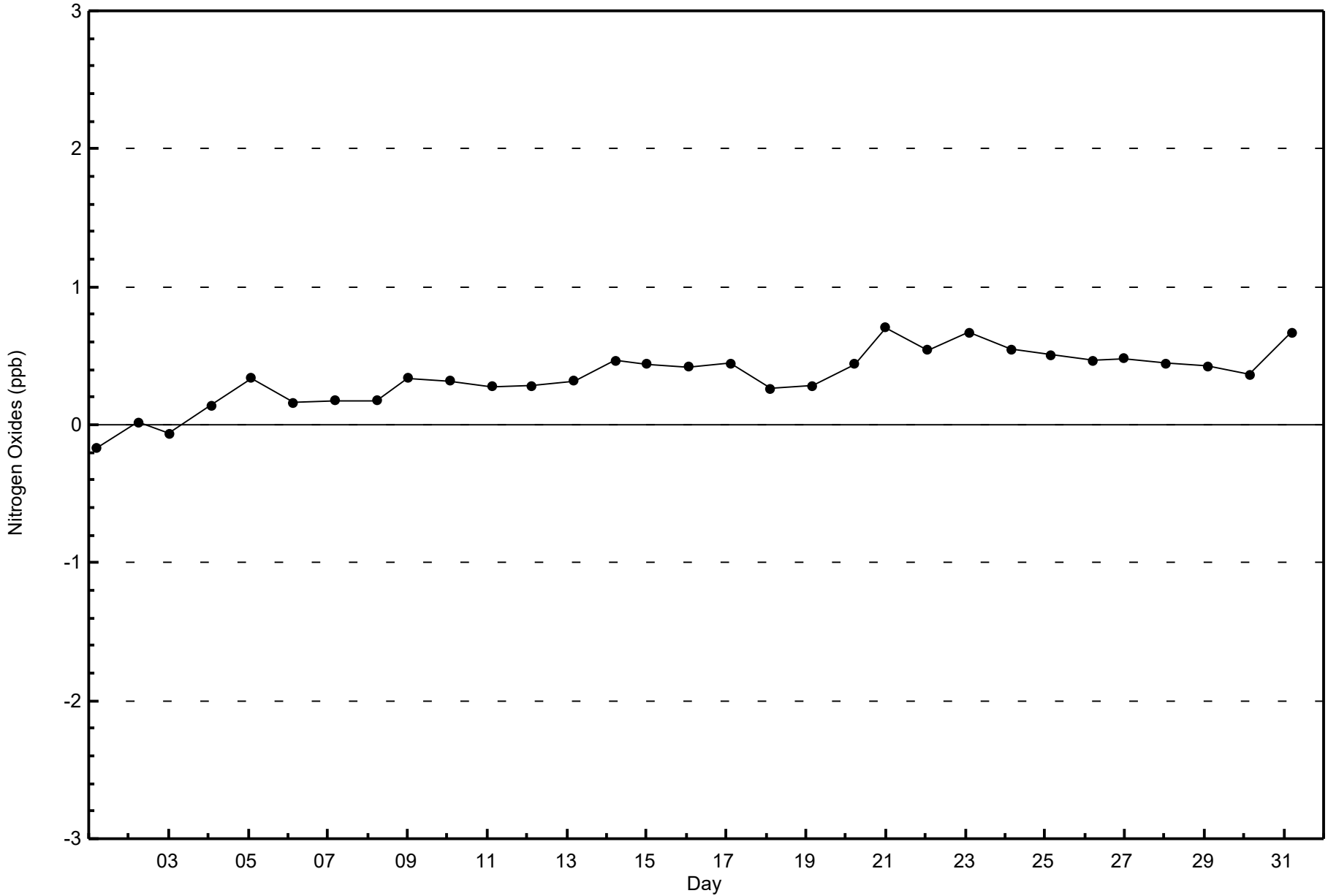
Total Number of Hours: 744

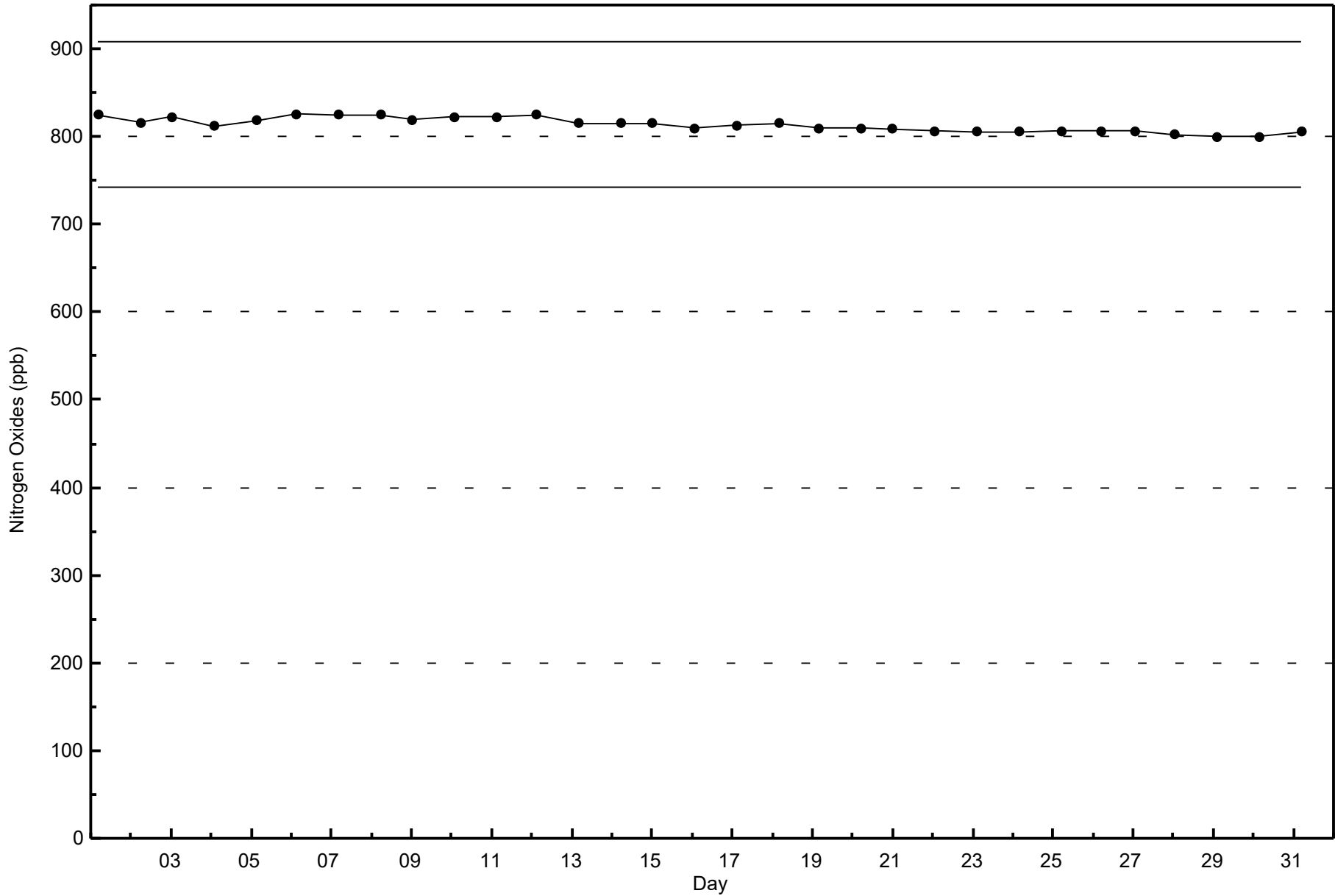


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Christina Lake





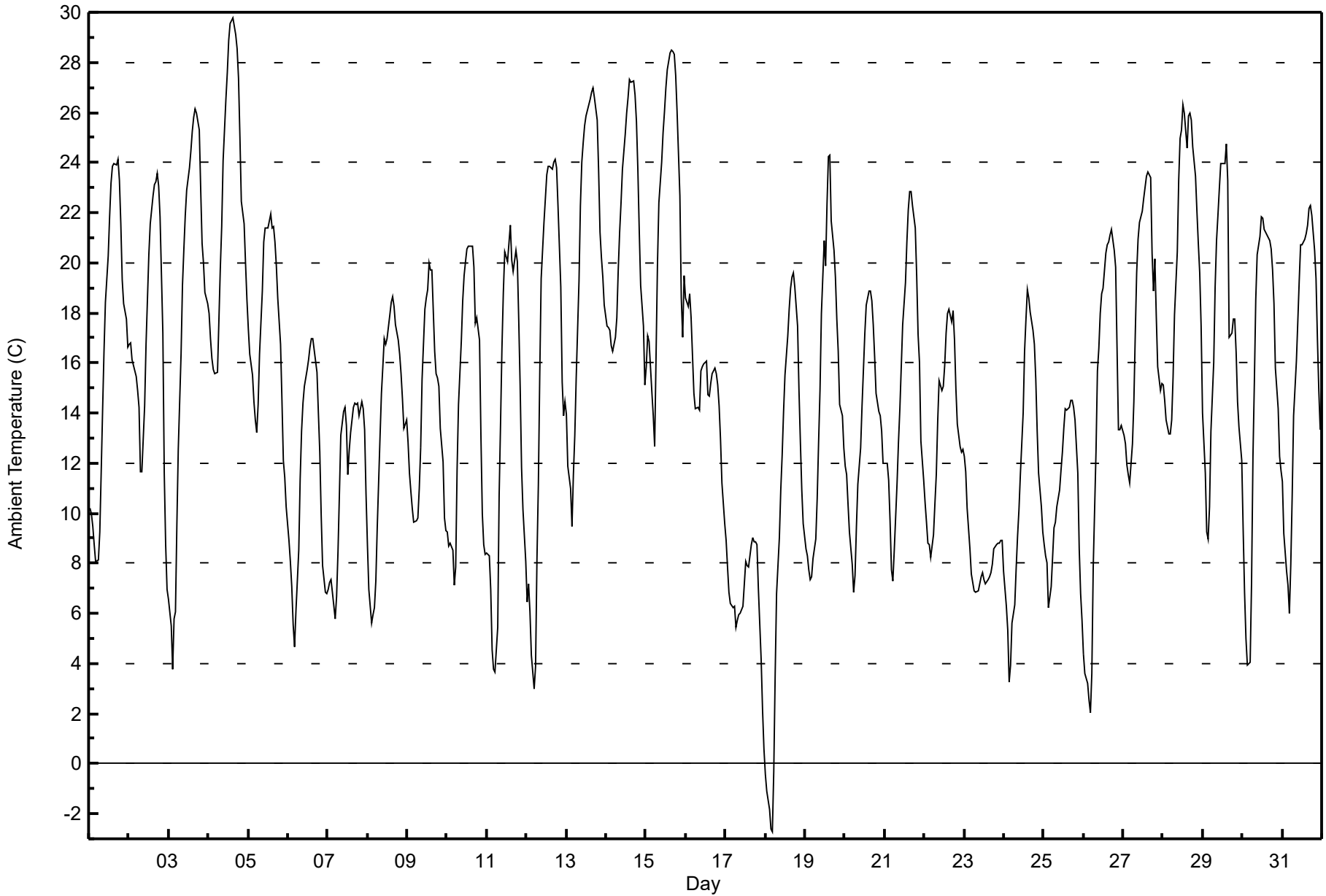




Wood Buffalo Environmental Association
Summary of Hour Averages

Ambient Temperature (AT) - C
Christina Lake - May 2023

Maximum Value: 29.8 C on May 4 16:00 Maximum Daily Average: 22.7 C on May 4																						Hours in Service: 744 Hours of Data: 744				
Minimum Value: -2.7 C on May 18 05:00 Minimum Daily Average: 6.7 C on May 17 Maximum Diurnal Average: 20.8 C at hour 16 Minimum Diurnal Average: 8.3 C at hour 5 Monthly Average: 15.16 C Percentiles: P ₁ = 2.1 P ₁₀ = 7.1 Q ₁ = 10.0 Median = 15.2 Q ₃ = 19.9 P ₉₀ = 23.7 P ₉₉ = 28.4																						Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	10.2	10.0	9.5	8.8	8.1	8.1	9.2	11.6	14.1	16.4	18.4	20.3	21.8	23.2	23.8	24.0	23.9	24.2	23.3	21.6	19.3	18.4	17.7	16.6	16.8	24.2
2-May	16.7	16.8	16.1	15.7	15.5	14.9	14.2	11.6	11.7	14.3	16.7	18.6	20.3	21.5	22.7	23.1	23.2	23.6	23.0	21.8	17.2	11.6	8.7	7.0	16.9	23.6
3-May	6.6	5.5	3.8	5.8	6.1	9.5	12.6	16.3	19.1	20.6	21.9	22.9	23.8	24.5	25.3	25.8	26.1	26.0	25.3	22.9	20.8	20.0	18.8	18.3	17.8	26.1
4-May	18.0	17.0	16.2	15.8	15.5	15.6	17.7	19.8	21.4	24.1	26.6	27.6	28.9	29.6	29.7	29.8	29.1	28.5	27.4	25.0	22.4	21.5	20.0	18.5	22.7	29.8
5-May	17.3	16.4	15.5	14.4	13.7	13.2	14.4	16.4	18.8	20.9	21.4	21.4	21.4	21.9	21.4	21.5	20.8	19.9	18.6	16.8	14.5	12.1	11.5	10.3	17.3	21.9
6-May	8.9	8.1	7.1	5.5	4.6	6.1	8.5	11.4	13.3	14.4	15.1	15.7	16.1	16.6	17.0	17.0	16.5	15.6	14.0	12.5	9.9	7.9	6.8	6.8	11.5	17.0
7-May	7.0	7.2	7.3	6.9	5.8	6.7	8.5	10.8	13.1	14.1	14.3	13.5	11.5	12.5	13.2	14.2	14.4	14.3	14.4	13.9	14.4	14.2	13.4	10.8	11.5	14.4
8-May	8.7	7.0	5.6	6.0	6.2	7.3	9.4	13.0	14.8	15.9	17.0	16.8	17.0	17.9	18.4	18.6	18.2	17.5	16.9	16.4	15.6	14.5	13.4	13.8	13.6	18.6
9-May	12.8	11.6	10.9	10.2	9.6	9.7	9.8	11.0	12.6	15.3	18.1	18.6	19.0	20.0	19.7	19.7	16.5	15.6	15.4	15.1	13.4	12.0	9.8	9.3	14.0	20.0
10-May	9.2	8.7	8.8	8.5	7.1	7.8	11.8	14.4	16.8	18.5	19.5	20.0	20.6	20.7	20.7	20.7	19.8	17.6	17.8	16.9	13.1	10.0	8.7	8.4	14.4	20.7
11-May	8.4	8.3	6.9	4.5	3.8	3.7	5.4	10.7	13.6	16.6	18.8	20.4	20.0	20.8	21.5	20.1	19.6	20.5	20.0	17.7	15.1	11.8	10.1	8.1	13.6	21.5
12-May	6.5	7.2	6.1	4.4	3.0	3.9	8.2	11.1	15.5	19.4	21.6	22.5	23.5	23.8	23.9	23.7	24.0	24.1	23.8	22.3	19.0	15.2	13.9	14.4	15.9	24.1
13-May	14.0	11.9	11.0	9.5	11.5	13.1	15.4	19.2	22.3	24.0	24.8	25.5	25.9	26.3	26.5	26.8	27.0	26.6	25.7	23.7	21.2	20.2	19.4	18.3	20.4	27.0
14-May	17.5	17.4	17.3	16.7	16.5	17.0	17.8	19.7	21.2	22.4	23.7	25.1	26.0	26.6	27.3	27.2	27.2	26.7	25.6	23.7	21.3	19.1	17.5	15.1	21.5	27.3
15-May	15.9	17.1	16.9	14.8	13.9	12.7	16.3	19.9	22.4	24.0	25.2	26.0	27.0	27.7	28.4	28.5	28.5	28.3	27.5	26.0	22.7	18.6	17.1	19.5	21.9	28.5
16-May	18.6	18.2	18.8	17.8	16.3	14.8	14.2	14.2	14.1	15.7	15.8	16.0	16.1	14.7	14.7	15.2	15.6	15.8	15.6	15.1	14.3	13.0	11.2	9.6	15.2	18.8
17-May	8.9	7.8	6.8	6.4	6.2	6.3	5.5	5.7	5.9	6.0	6.3	7.2	8.1	7.9	7.9	8.7	9.0	8.9	8.9	8.8	7.0	4.1	2.2	0.6	6.7	9.0
18-May	-0.4	-1.1	-1.8	-2.6	-2.7	-0.3	3.5	6.8	9.0	10.9	12.3	14.1	15.5	17.1	18.2	19.0	19.4	19.6	19.0	17.5	14.9	12.8	10.9	9.6	10.1	19.6
19-May	8.6	8.3	7.7	7.4	7.5	8.2	9.0	10.6	12.8	14.9	18.0	20.9	19.9	22.3	24.2	24.3	21.6	20.5	19.4	17.7	16.5	14.3	13.9	12.6	15.1	24.3
20-May	11.9	11.5	10.4	9.3	8.0	6.9	7.5	9.5	11.1	12.6	14.3	15.7	17.2	18.3	18.9	18.9	18.5	17.5	16.2	14.8	14.1	13.9	13.3	12.0	13.4	18.9
21-May	12.0	12.0	11.3	9.7	7.7	7.3	8.5	11.2	12.9	14.2	15.8	17.5	19.2	20.8	22.1	22.9	22.9	22.3	21.4	19.5	17.1	16.0	12.9	11.3	15.3	22.9
22-May	10.4	9.6	8.8	8.8	8.3	9.1	10.4	11.6	13.7	15.3	14.9	15.1	15.9	17.2	18.0	18.2	17.7	18.1	16.9	15.0	13.6	12.7	12.4	12.5	13.5	18.2
23-May	12.3	11.6	10.2	8.6	7.5	7.2	6.9	6.8	6.9	7.2	7.5	7.6	7.4	7.2	7.4	7.5	7.6	8.0	8.6	8.7	8.8	8.8	8.9	8.9	8.2	12.3
24-May	7.7	6.3	5.3	3.3	3.9	5.6	6.3	7.8	9.1	10.2	11.5	14.0	16.5	17.7	18.9	18.6	18.0	17.3	16.8	15.4	13.3	11.6	10.3	9.2	11.4	18.9
25-May	8.8	8.3	8.0	6.2	7.1	8.3	9.4	9.6	10.3	10.9	11.7	12.4	13.4	14.2	14.1	14.2	14.5	14.5	14.3	13.7	11.6	8.6	6.8	5.7	10.7	14.5
26-May	4.4	3.6	3.2	2.5	2.0	3.6	7.9	12.5	15.7	16.6	18.0	18.8	19.0	20.4	20.7	20.8	21.1	21.3	20.5	19.8	16.6	13.3	13.3	13.5	13.7	21.3
27-May	13.1	12.8	11.9	11.5	11.2	12.8	14.5	17.2	19.6	20.9	21.6	22.1	22.5	23.0	23.4	23.6	23.4	20.4	18.8	20.2	17.9	15.9	14.9	15.2	17.9	23.6
28-May	15.1	14.5	13.7	13.2	13.1	13.7	15.4	17.9	20.5	23.3	25.0	25.3	26.3	26.0	24.6	25.9	25.9	25.7	24.6	23.5	22.1	20.8	19.6	17.5	20.5	26.3
29-May	14.0	11.6	9.2	8.9	10.2	13.3	16.0	19.0	20.9	21.9	23.0	24.0	23.9	23.9	24.7	23.3	17.0	17.2	17.7	17.8	16.4	14.4	13.4	12.1	17.3	24.7
30-May	9.4	6.8	5.0	3.9	4.1	7.2	12.3	15.2	18.5	20.3	21.1	21.8	21.8	21.3	21.2	21.0	20.9	20.6	19.7	18.4	15.8	14.2	12.3	11.7	15.2	21.8
31-May	11.3	9.2	7.7	7.1	6.0	8.0	10.7	13.9	16.1	17.7	19.2	20.7	20.7	20.9	21.2	21.5	22.1	22.3	21.9	20.5	19.4	17.0	14.9	13.3	16.0	22.3
																								Diurnal Average		
																								Diurnal Maximum		





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Christina Lake - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	6	0.81	0.81
0 - 10	181	24.33	25.13
10 - 20	375	50.40	75.54
> 20	182	24.46	100.00

Total Number of Valid Hours: 744

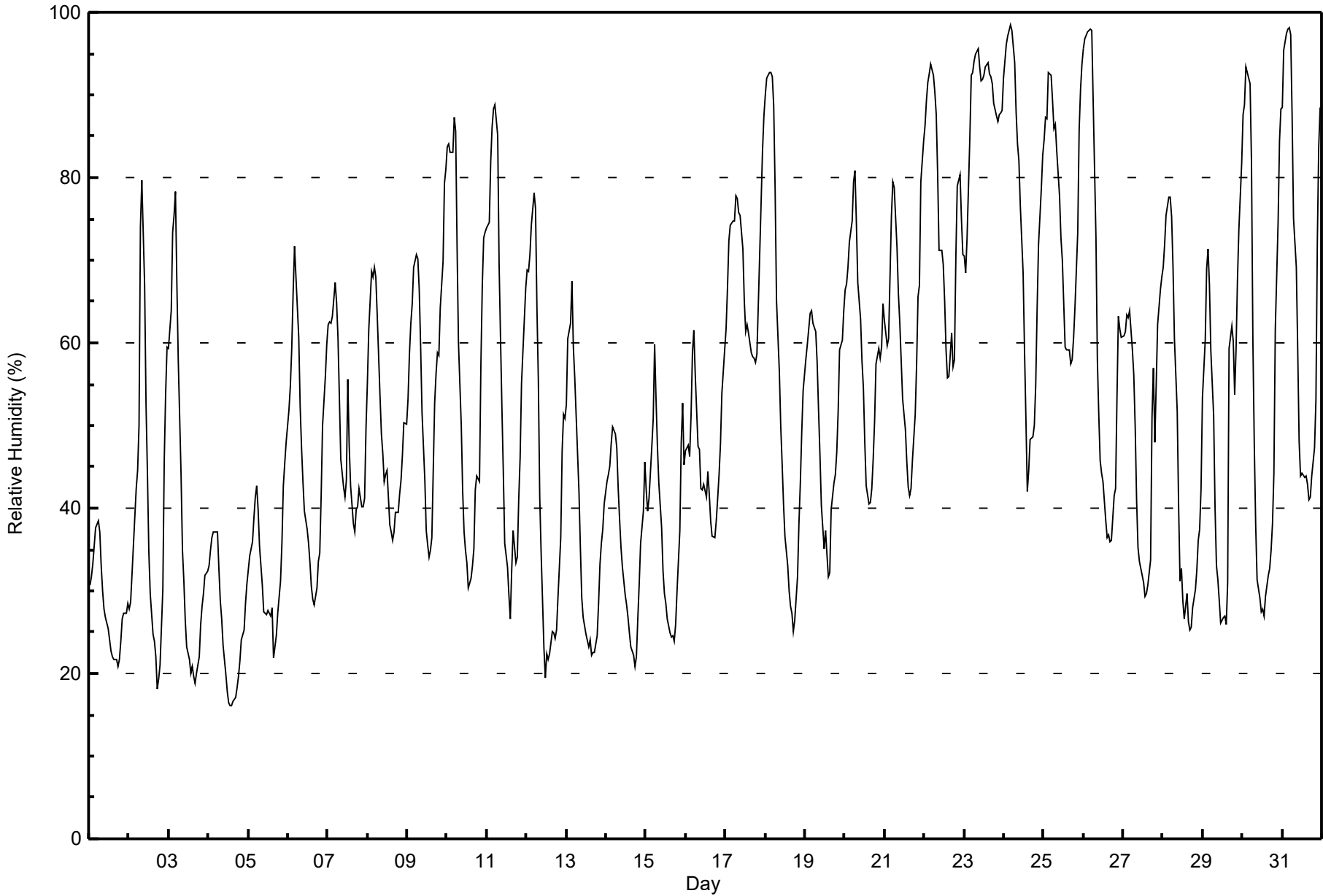
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Christina Lake - May 2023

Maximum Value: 98.5 % on May 24 05:00 Maximum Daily Average: 88.6 % on May 23 Minimum Value: 16.1 % on May 4 14:00 Minimum Daily Average: 25.6 % on May 4 Maximum Diurnal Average: 72.3 % at hour 5 Minimum Diurnal Average: 35.3 % at hour 16 Monthly Average: 52.34 % Percentiles: P ₁ = 18.5 P ₁₀ = 26.4 Q ₁ = 34.8 Median = 49.1 Q ₃ = 67.6 P ₉₀ = 86.2 P ₉₉ = 97.7																								Hours in Service:	744																								
																								Hours of Data:	744																								
																								Hours of Missing Data:	0																								
																								Hours of Calibration:	0																								
																								Percent Operational Time:	100.0																								
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	30.7	31.7	33.2	35.4	37.6	38.4	37.1	33.0	30.1	27.8	26.7	25.5	24.0	22.7	22.1	21.7	21.7	20.8	21.7	23.8	26.6	27.3	27.3	28.5	28.1	38.4																							
2-May	27.9	28.7	32.0	39.0	42.3	44.7	50.0	74.1	79.6	66.9	52.6	44.2	34.7	29.6	24.7	24.0	22.0	18.1	19.3	21.1	30.1	45.7	53.9	59.4	40.2	79.6																							
3-May	59.4	63.8	73.4	75.4	78.3	67.2	58.0	44.0	34.9	31.3	26.4	23.3	21.7	20.0	20.8	19.7	18.9	19.9	22.1	26.0	28.2	29.7	31.9	32.4	38.6	78.3																							
4-May	33.1	35.0	36.5	37.2	37.1	37.1	32.6	28.8	26.6	23.3	19.8	17.8	16.5	16.1	16.1	16.6	17.2	18.3	19.7	21.6	24.0	25.2	28.5	30.9	25.6	37.2																							
5-May	32.6	34.3	35.9	38.9	41.4	42.7	39.8	35.4	30.7	27.5	27.3	27.1	27.5	27.0	27.9	21.8	23.2	24.6	27.3	31.2	35.7	42.6	45.5	48.0	33.2	48.0																							
6-May	51.9	54.8	59.3	66.1	71.8	68.0	60.7	52.4	47.3	43.3	39.6	37.4	35.7	33.4	30.5	29.0	28.3	30.4	33.6	34.6	41.5	50.0	56.0	59.8	46.5	71.8																							
7-May	62.2	62.6	62.4	63.3	67.3	64.9	60.6	53.4	46.0	42.6	41.3	43.3	55.7	47.6	42.7	38.2	37.1	39.8	40.2	42.4	40.1	40.2	41.1	49.6	49.4	67.3																							
8-May	55.2	61.7	68.7	68.0	69.2	68.0	63.3	53.6	49.0	46.6	43.2	44.0	44.5	38.0	37.1	36.1	37.1	39.4	39.6	41.7	43.3	46.4	50.3	50.2	49.8	69.2																							
9-May	53.2	58.6	62.5	64.8	69.2	70.6	70.2	66.4	59.6	51.5	43.4	37.4	35.6	34.1	34.9	36.4	52.7	56.3	58.8	58.5	64.2	69.8	79.4	81.1	57.1	81.1																							
10-May	83.7	84.0	83.1	83.1	87.3	85.5	71.7	60.0	50.0	42.1	37.0	35.0	33.4	30.3	31.5	33.1	35.2	42.3	43.8	43.2	57.3	66.9	72.7	73.4	56.9	87.3																							
11-May	73.9	74.5	81.9	86.2	88.3	88.9	85.1	69.4	60.8	52.2	44.4	35.8	32.8	29.5	26.7	32.5	37.3	33.4	34.0	41.0	46.1	55.1	59.0	66.6	55.6	88.9																							
12-May	68.8	68.6	70.6	74.3	78.2	76.3	64.2	55.6	41.3	34.6	23.0	19.5	22.3	21.8	22.4	25.2	24.9	24.2	25.2	29.2	36.5	47.0	51.3	50.9	44.0	78.2																							
13-May	52.6	60.4	62.4	67.5	59.5	55.8	51.2	42.1	35.3	29.2	26.8	25.7	24.8	23.2	24.0	22.3	22.6	22.5	24.5	28.4	33.3	35.7	37.4	40.5	37.8	67.5																							
14-May	43.2	44.2	45.1	47.7	49.8	49.0	47.3	42.4	38.7	35.3	32.9	29.5	28.3	26.9	24.9	23.2	22.3	20.8	22.1	26.6	30.8	35.8	39.6	45.6	35.5	49.8																							
15-May	42.3	39.6	41.2	47.4	50.9	59.9	53.3	47.5	43.0	37.6	32.5	29.7	28.4	26.6	24.8	24.4	24.6	23.9	25.9	29.9	37.3	48.0	52.6	45.2	38.2	59.9																							
16-May	47.0	47.7	46.3	51.1	58.8	61.6	56.1	47.4	47.1	42.3	42.1	42.9	41.4	44.3	41.6	38.4	36.7	36.5	38.5	41.2	44.1	47.9	54.0	59.1	46.4	61.6																							
17-May	61.6	66.7	72.3	74.2	74.8	74.7	77.9	77.5	75.8	75.3	71.4	65.0	61.3	62.1	61.3	58.8	58.3	58.1	57.6	58.6	64.5	77.0	83.2	87.5	69.0	87.5																							
18-May	90.1	92.0	92.7	92.6	92.2	88.6	78.7	65.1	56.7	50.0	45.4	40.5	36.6	33.1	30.0	28.1	27.3	25.1	26.4	31.7	38.1	43.1	49.1	54.2	54.5	92.7																							
19-May	58.2	59.8	61.6	63.5	63.9	62.3	61.4	57.7	51.8	46.5	40.4	35.1	37.3	34.4	31.6	32.2	39.8	43.0	44.1	46.8	51.7	59.1	60.4	63.9	50.3	63.9																							
20-May	66.4	67.2	69.2	72.3	74.7	79.4	80.9	74.6	67.3	62.9	57.8	54.5	48.0	42.7	40.5	40.7	42.3	46.0	50.4	57.5	59.4	58.1	59.4	64.8	59.9	80.9																							
21-May	62.7	59.7	60.6	67.9	75.3	79.5	78.7	71.6	66.0	62.3	57.7	53.2	49.5	45.6	42.5	41.6	42.3	45.7	51.4	57.4	65.6	67.0	79.5	84.3	61.2	84.3																							
22-May	86.2	89.4	91.5	92.6	93.7	92.4	90.3	87.7	80.5	71.1	71.1	69.5	65.1	59.2	55.8	55.9	61.1	57.1	58.0	70.3	79.0	80.4	74.9	70.7	75.1	93.7																							
23-May	70.5	68.5	72.7	84.9	92.4	92.7	94.2	95.0	95.5	93.4	91.7	91.9	92.4	93.4	93.9	92.5	92.3	91.3	89.0	87.5	86.7	87.6	87.8	88.1	88.6	95.5																							
24-May	92.0	96.1	97.1	97.9	98.5	97.8	93.9	88.0	84.1	82.1	76.5	68.5	59.2	50.9	42.0	44.6	48.3	48.6	50.0	55.0	64.1	71.9	78.6	82.8	73.7	98.5																							
25-May	84.6	87.3	87.1	92.7	92.3	89.3	86.0	86.4	83.2	77.7	72.7	69.9	64.7	59.4	59.1	59.1	57.5	58.0	60.5	64.2	73.4	85.8	90.7	93.8	76.5	93.8																							
26-May	95.6	96.9	97.6	97.8	97.9	97.8	89.3	72.8	57.9	51.4	45.7	44.2	43.3	38.4	36.5	36.8	36.0	36.0	41.5	42.4	53.3	63.3	61.7	60.6	62.3	97.9																							
27-May	60.8	61.3	63.3	63.1	63.9	59.1	56.1	49.8	41.0	35.3	33.5	31.8	31.0	29.4	29.7	30.6	33.8	51.0	56.9	48.0	55.0	62.3	66.5	68.0	49.2	68.0																							
28-May	69.1	71.9	75.4	77.6	77.6	75.2	69.1	60.5	51.7	40.2	31.2	32.7	28.9	26.5	29.6	26.2	25.3	25.6	28.0	30.2	32.6	36.1	37.4	42.3	45.9	77.6																							
29-May	53.4	60.3	68.9	71.4	67.0	59.1	51.2	40.0	33.0	31.3	28.8	26.2	26.7	27.0	25.9	30.9	59.3	62.0	60.2	53.7	59.4	67.7	73.8	81.8	50.8	81.8																							
30-May	87.6	88.9	93.4	92.8	91.3	81.8	60.4	47.7	38.0	31.4	29.1	27.5	27.9	27.0	29.3	31.8	32.6	34.8	38.2	44.2	61.8	74.6	84.4	88.3	56.0	93.4																							
31-May	88.5	95.4	97.5	97.9	98.1	97.4	87.4	75.1	69.1	59.2	48.1	43.9	44.2	43.7	44.0	42.8	40.9	41.4	43.8	47.3	53.1	72.3	83.7	88.6	66.8	98.1																							
																								62.7	64.9	67.6	70.5	72.3	71.1	66.3	59.8	53.9	48.5	43.9	41.0	39.5	36.9	35.6	35.3	37.4	38.5	40.4	43.1	48.9	55.5	59.7	62.6	Diurnal Average	
																								95.6	96.9	97.6	97.9	98.5	97.8	94.2	95.0	95.5	93.4	91.7	91.9	92.4	93.4	93.9	92.5	92.3	91.3	89.0	87.5	86.7	87.6	90.7	93.8	Diurnal Maximum	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Christina Lake - May 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	15	2.02	2.02
20 - 40	240	32.26	34.27
40 - 60	227	30.51	64.79
60 - 80	161	21.64	86.42
80 - 100	101	13.58	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Christina Lake - May 2023

Maximum Speed: 31 km/h on May 16 16:00	Maximum Daily Speed Average: 19.6 km/h on May 16	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 12 07:00	Minimum Daily Speed Average: 0.6 km/h on May 10	Hours of Data: 744
Maximum Diurnal Speed Average: 5.3 km/h at hour 1	Minimum Diurnal Speed Average: 2.7 km/h at hour 17	Hours of Missing Data: 0
Monthly Average Velocity: 4.0 km/h 164.5 deg	Percentiles: $P_1 = 2$ $P_{10} = 4$ $Q_1 = 7$ Median = 11 $Q_3 = 16$ $P_{90} = 20$ $P_{99} = 28$	Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SSE17	SSE15	SSE17	SSE13	SSE11	SSE13	SSE18	SSE21	S22	S21	S21	S22	S23	S23	SSW22	S23	S22	S21	S17	SSE13	SSE11	S16	S18	SSW16	\$17.8	S23
2-May	SSW17	SW12	WSW11	WNW12	N7	NW2	WNW13	SW6	WSW3	NW12	WNW7	W6	NW9	W8	NW9	WNW9	W8	WNW11	WNW8	WNW7	SSW5	SSE4	SSW6	S7	W5.7	SSW17
3-May	S5	S4	SSE4	S5	S4	S7	S9	S15	S19	S20	S21	S19	SSE21	S22	SSE20	SSE20	SSE19	S19	S16	SSE11	SE12	SSE14	SSE13	SSE17	\$13.6	S22
4-May	SSS17	SSE15	SSE13	SSE7	S7	SSE9	S5	S10	S15	S14	SSE13	SSE16	S17	SSE18	SSE15	SE14	SE14	ESE22	ESE18	ESE11	SE10	SE14	SSE12	SSE12	SSE12.3	ESE22
5-May	SSE12	SSE16	SSE16	SSE16	SSE16	SSE19	SSE19	SSE19	SSE16	SE17	ESE22	ESE24	ESE23	ESE23	ESE22	ESE23	ESE23	SE25	ESE23	ESE18	SE12	ESE12	ESE19	SE15	SE17.7	SE25
6-May	SE14	SE13	ESE11	ESE9	ESE9	SE9	SE13	SE14	ESE16	ESE21	ESE24	ESE22	ESE21	ESE20	SE21	ESE22	ESE23	ESE25	ESE23	ESE14	ESE8	ESE7	ESE6	SE9	ESE15.4	ESE25
7-May	ESE8	SE10	SE10	SE11	SE10	SE11	ESE14	SE16	SE17	SE22	SE23	SSE24	SSE19	SE18	ESE20	ESE18	ESE10	ESE4	S8	ESE8	SE13	SE14	SE13	ESE9	SE13.3	SSE24
8-May	ESE10	ESE9	ESE6	SE7	SSE9	SE9	SE10	SSE19	SSE18	S14	S12	SSE12	SSW14	S18	SSW16	SSE15	SE17	SE19	SSE17	SE11	SE10	SE8	S4	WSW6	SSE10.8	SSE19
9-May	SSW5	ESE5	SE6	ESE6	ESE3	NE4	E4	E2	S3	E0	NNE6	ESE4	SSW3	S3	NNW7	NNW12	NE13	SSE8	S4	SW7	SW6	SW6	SSW3	S4	SE1.5	NE13
10-May	E1	S3	SSW5	S4	SSE4	SSE3	SSW3	NNE3	E2	ENE5	NE8	NE10	NE12	NNW9	NNW10	SW14	NW12	N7	E6	WNV6	SE4	S4	S3	SSW5	NNW0.6	SW14
11-May	SSW4	SSW3	ESE2	SSW5	S3	SE3	S4	ENE4	E4	ENE4	ENE8	NE13	ENE12	ENE16	ESE12	S8	SSW12	SSE5	ENE4	E6	ESE6	ESE5	SSE5	E4	ESE3.8	ENE16
12-May	SSE4	N1	SSW4	SSE4	S5	SSW4	SW0	ENE5	ENE4	E8	E13	ESE11	SE7	SE7	S8	SW8	SSE6	SE9	SSE8	SSE8	SSE7	S8	SSW8	SSW9	SSE4.6	E13
13-May	SSW7	SSW5	S3	S5	SSW6	SSW7	SSW8	SSW9	SSW12	SW19	SW20	SW22	SW20	WSW19	WSW19	SW18	WSW18	WSW17	SW15	SW10	SSW9	SSW10	SSW12	S12	SW12.0	SW22
14-May	SSW11	SSW13	SSW14	SSW13	SSW11	SSW14	SSW18	SW20	SW19	SW22	SW21	SW20	SW19	SW19	SW16	WSW16	W15	WSW13	SW11	SW8	SSW10	SSW9	SSW8	SSW6	SW13.9	SW22
15-May	SSW8	SSW9	SW7	SSW6	SSW7	S5	SSW8	SW10	SW13	WSW14	SSW13	SW14	S16	SSW14	SSW16	S16	SSW16	SSW14	SSW15	SW9	SSW7	SSE9	S9	S13	SSW10.8	SSW16
16-May	SSW13	SSW13	WSW10	WNW12	NW24	NW18	NW23	NW27	NW24	NNW28	NW29	NW29	NW29	NNW30	NW28	NNW31	NNW29	NW26	NW24	NW21	NW17	NW20	N11	NNW13	NW19.6	NNW31
17-May	NW17	NW19	NW14	NW20	NW14	NW20	NNW16	N15	N20	NNW20	NNE19	N19	NNE18	NNE17	NNE19	NNE19	NE22	NE19	NE13	ENE10	E5	ESE4	ESE4	ESE4	N11.8	NE22
18-May	S4	SSW4	SSW6	S4	S5	S3	S5	SSW11	WSW5	WSW4	SW4	SW8	SSW8	S6	SSW8	S8	SSW10	SSW10	SSW11	SSW12	S11	SSW12	SSW11	S10	SSW7.2	SSW12
19-May	S10	S12	S13	S12	S14	S13	S12	S13	S12	SSW14	S15	SW16	WSW11	WSW9	WSW12	W16	NNW17	NNW15	NNW17	NNW20	N14	NNE8	NNW8	NNW5	WSW5.6	NNW20
20-May	N11	N12	NNE8	NNE7	NNE5	NNE6	NE4	NE8	ENE10	ENE9	ENE9	ENE11	ENE12	E14	E12	ESE13	E13	E13	E10	E8	ESE9	SE8	SE7	ESE8	ENE7.5	E14
21-May	SE8	SSE11	SE7	ENE6	E6	E5	ENE4	SSE4	SSE11	SSE8	SSE9	SSE7	SE8	SSE7	S7	S7	S6	SSW5	ESE6	ESE7	SSE8	S6	E5	ESE5	SE5.8	SSE11
22-May	E4	ESE4	ESE3	S1	SSW5	E3	NE5	NNE6	NNE13	NE15	NNE17	NNE16	NNE19	NE23	NE28	NE22	NE20	ENE26	ENE26	ENE21	ENE22	ENE21	ENE18	ENE20	NE13.6	NE28
23-May	ENE19	E21	E26	E23	ENE20	E20	E20	E17	E16	E17	ESE18	ESE20	ESE20	ESE19	ESE18	ESE21	ESE20	ESE18	ESE17	ESE17	ESE15	ESE11	ESE10	ESE9	E17.6	E26
24-May	ESE6	E7	ESE5	ESE5	ESE8	SE8	SE9	SSE9	S8	SW8	SSW9	SSW8	SSW9	SW12	WSW18	W14	WNW16	NW18	NW17	NW18	NW17	NW17	NW17	NW11	W4.2	NW18
25-May	NW12	NW14	W7	SSE3	S4	SW4	NW17	NW13	NNE10	NNE11	NNE11	NNE11	NNE11	NNE12	NNE10	NNE12	NE10	E8	ESE5	ESE8	SE5	S6	S6	SSW6	NNE3.8	NW17
26-May	SSE5	S4	SE2	SSW3	S4	S3	SSE2	S4	SSW7	SW8	SW5	SW10	SW6	SSW7	SW9	WSW8	SW6	SW7	S5	SSE7	SSE8	SSE8	S8	S9	SSW5.4	SW10
27-May	S11	S13	SSW11	S10	SSW9	S12	SSW10	S12	S17	S18	SSE18	SSE17	S18	SSE16	S14	SSW14	SSW12	SSE12	SE9	SSE15	SSE17	SSE16	S12	S19	S13.4	S19
28-May	S19	S17	SSW15	S15	S14	SSW10	SSW9	SSW10	SSW10	SW9	SW14	SW14	SW16	SW21	WSW16	WSW16	WSW15	W16	WNW18	W13	W12	W13	W16	W10	SW11.9	SW21
29-May	SW6	S5	SSW7	SSW8	SW9	SSW10	SW11	WSW12	WSW14	WSW14	WSW12	W15	W14	WSW15	WSW13	W21	W19	SW8	SW12	SSW13	SSW8	SW6	SW7	SW8	WSW10.2	W21
30-May	SW6	SSW4	S2	S4	SSW4	SSW2	NNW2	ENE6	E7	ESE7	E6	ESE10	SE12	SE11	SE8	SE19	ESE17	E13	ENE10	NE5	SSW8	SW8	SE8	SSE4	SE5.4	SE19
31-May	SSW3	SSE3	SSW5	SSW2	SSW5	ESE1	SSW2	ENE3	NNE7	NE13	NE15	NE12	E4	W3	NNW9	NE12	NE12	NNE12	NNE14	NNE12	NNE10	ENE7	NW15	NW22	NNE5.0	NW22

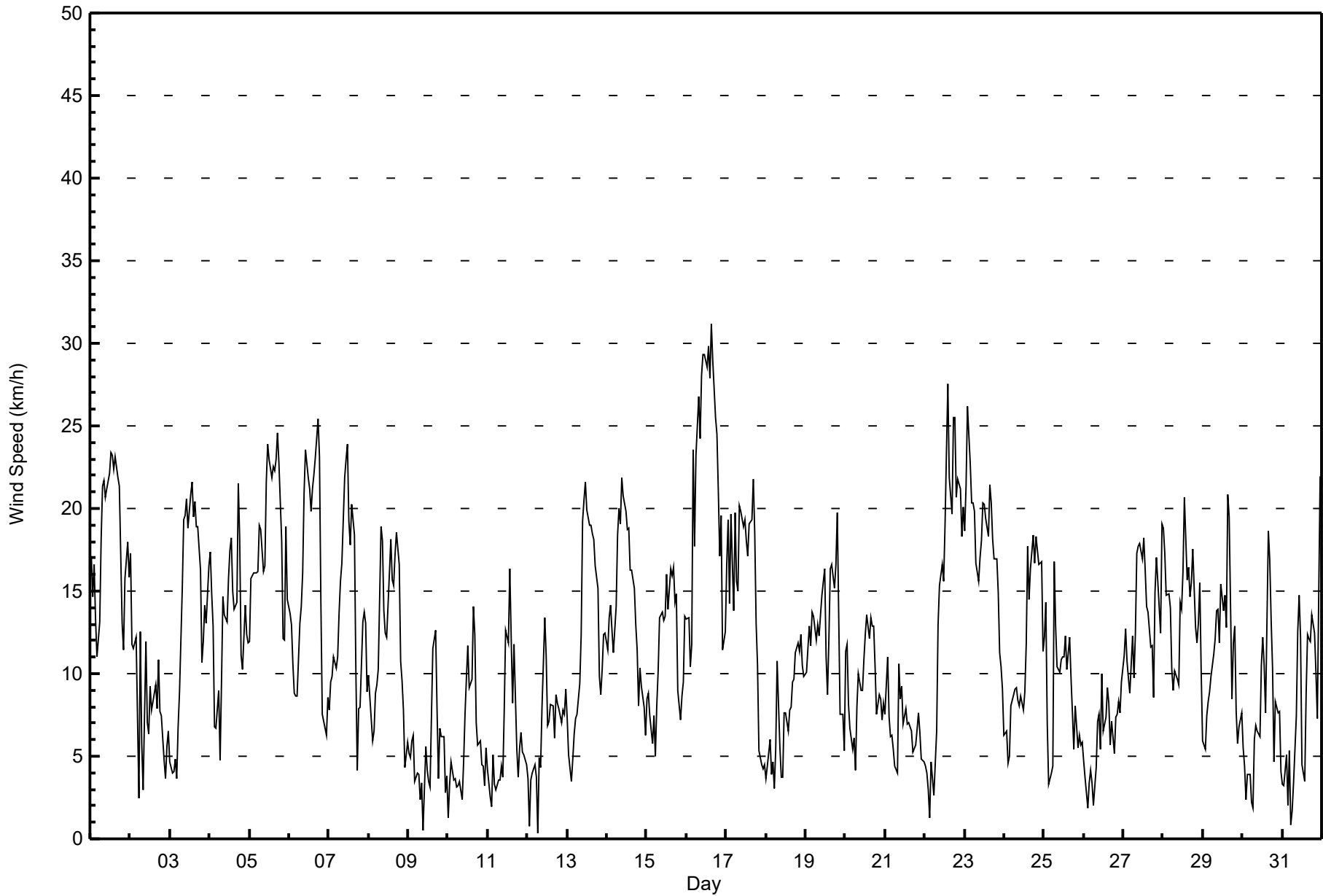
S5.3	S4.9	S4.9	S4.0	S3.9	SSE3.7	S3.3	S4.3	S4.6	SSE3.6	SSE4.3	SSE4.1	SSE4.8	SSE4.7	S4.2	S4.2	SSE2.7	SE3.3	SE3.4	SE3.0	SSE4.4	SSE4.7	SSE4.1	S4.2			Diurnal Average
S19	E21	E26	E23	NW24	E20	NW23	NW27	NNW24	NNW28	NW29	NW29	NW29	NNW30	NW28	NNW31	NNW29	ENE26	ENE26	NW21	ENE22	ENE21	ESE19	NW22			Diurnal Maximum

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Christina Lake - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Christina Lake - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	133	17.88	17.88
6 - 11	251	33.74	51.61
12 - 19	267	35.89	87.50
20 - 28	87	11.69	99.19
29 - 38	6	0.81	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Christina Lake - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1	2	4	8	13	17	3	14	34	26	4	3	1	0	1	2	133
6 - 11	4	14	4	10	10	29	28	24	25	49	29	6	5	7	3	4	251
12 - 19	4	14	11	5	9	18	21	42	39	28	17	18	11	6	18	6	267
20 - 28	1	0	5	7	5	22	5	5	12	1	8	0	1	0	11	4	87
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	6
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	10	30	24	30	37	86	57	85	110	104	58	27	18	13	36	19	744

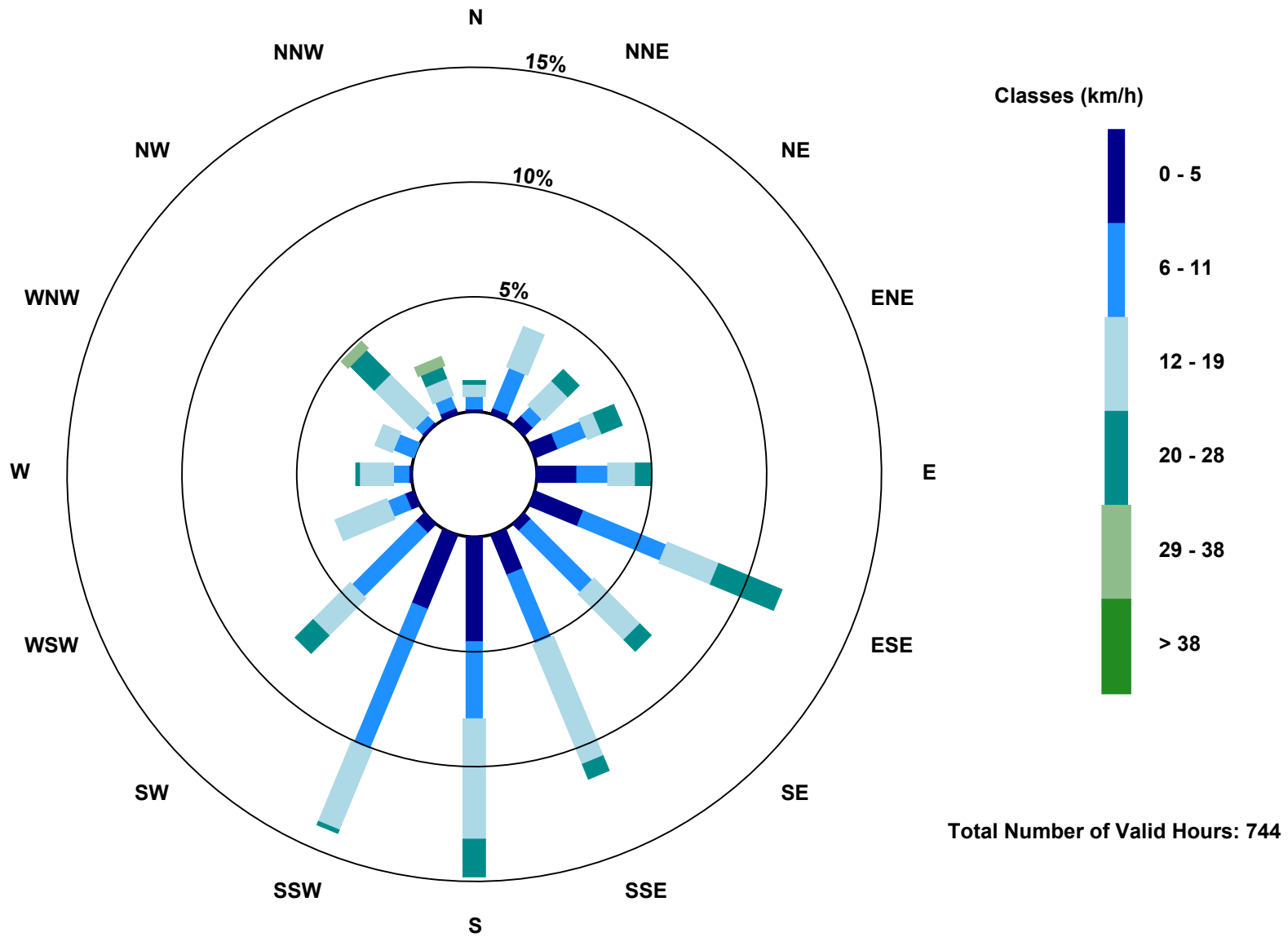
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Christina Lake





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Christina Lake - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 11 km/h on May 29 16:00 Minimum Value: 1 km/h on May 11 21:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7																		Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0							
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	3	3	4	3	3	3	4	5	5	5	5	6	5	5	5	5	5	5	4	3	2	4	3	3	6
2-May	4	3	3	6	3	2	7	5	5	5	3	4	5	5	4	4	4	4	3	2	1	2	1	3	7
3-May	2	1	3	2	1	2	2	4	5	5	5	5	6	5	6	4	4	4	3	2	2	2	2	3	6
4-May	3	2	2	3	2	2	4	3	4	3	4	4	5	4	5	5	4	4	4	2	2	2	2	2	5
5-May	2	3	3	3	3	4	3	4	3	4	5	5	6	5	5	5	5	4	6	5	3	2	4	3	6
6-May	3	3	2	2	1	2	3	3	3	5	5	5	6	6	6	5	5	6	6	5	1	2	1	1	6
7-May	1	2	2	2	2	2	3	3	4	6	6	6	5	5	4	4	4	2	3	2	3	3	3	1	6
8-May	1	1	1	1	1	2	2	4	4	3	4	5	5	5	4	5	4	4	4	3	2	1	2	2	5
9-May	1	2	2	2	2	1	1	1	1	1	3	2	2	3	4	7	6	3	2	2	2	2	1	2	7
10-May	1	1	2	2	1	1	2	2	1	2	4	5	5	6	3	4	7	9	4	3	2	2	1	2	9
11-May	1	2	1	1	1	2	1	2	2	2	3	5	3	4	4	5	3	2	1	1	1	1	2	1	5
12-May	1	2	1	1	1	1	2	1	1	3	3	4	4	5	5	4	3	3	3	2	1	2	1	1	5
13-May	2	1	1	2	1	1	1	2	4	5	5	5	5	5	5	5	5	5	4	2	1	2	2	2	5
14-May	2	3	3	3	2	3	4	4	5	5	4	5	5	5	4	5	4	4	3	1	1	1	2	2	5
15-May	1	2	1	2	2	1	2	2	3	3	4	5	5	6	5	5	5	4	4	2	1	1	1	2	6
16-May	2	3	5	7	4	4	6	6	6	7	7	6	7	7	7	8	7	6	6	6	5	4	4	4	8
17-May	4	4	3	3	5	5	3	4	4	5	4	4	4	4	4	4	5	4	4	2	1	1	1	1	5
18-May	1	1	1	1	1	1	3	2	2	3	3	4	4	4	5	4	3	3	3	2	2	2	2	1	5
19-May	1	2	2	2	3	3	3	3	3	4	4	5	5	3	5	4	4	3	3	3	4	3	3	2	5
20-May	3	3	2	1	1	1	3	2	2	2	2	3	3	3	3	3	3	2	2	1	2	2	2	1	3
21-May	1	2	2	2	1	1	2	3	3	2	2	2	2	3	2	3	2	1	1	1	1	2	1	2	3
22-May	1	1	1	1	1	1	2	2	3	3	3	3	4	4	5	5	5	5	5	4	5	6	4	4	6
23-May	4	6	7	7	5	4	4	4	3	4	5	5	5	5	5	5	5	5	4	4	4	3	2	2	7
24-May	2	1	1	1	1	1	2	3	2	3	3	3	3	4	5	5	5	4	4	4	3	4	3	3	5
25-May	3	3	3	1	1	2	5	3	2	2	3	3	3	3	3	3	2	2	1	2	1	1	1	1	5
26-May	1	1	1	2	1	2	1	2	2	3	3	3	3	4	3	3	2	3	1	1	1	1	1	2	4
27-May	2	2	2	2	2	2	2	4	4	4	5	5	5	5	4	4	4	6	3	4	4	3	3	4	6
28-May	4	3	3	3	3	3	2	3	2	3	4	4	5	6	5	5	4	5	5	4	3	4	5	4	6
29-May	4	3	2	2	1	2	2	3	4	4	5	5	4	5	5	11	8	2	2	3	2	1	1	1	11
30-May	2	1	2	2	2	2	2	2	2	3	3	4	3	3	4	7	4	3	2	2	3	3	7	6	7
31-May	1	1	1	2	2	2	1	1	2	3	3	4	5	2	6	2	2	2	2	2	3	4	8	5	8
Diurnal Maximum																									



Wood Buffalo Environmental Association
Summary of Hour Averages

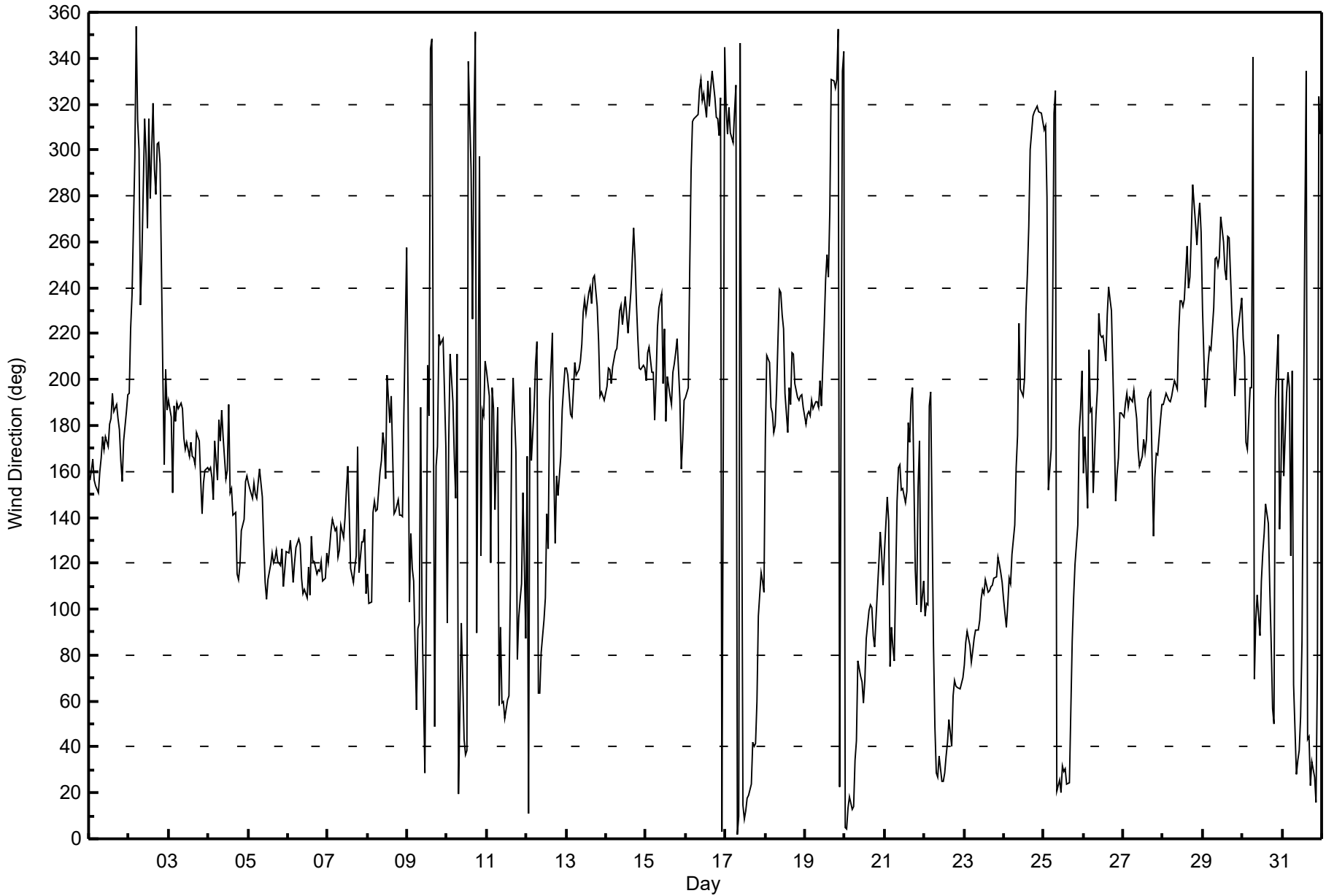
Wind Direction (WD) - deg
Christina Lake - May 2023

Direction of Maximum Speed: 327 deg on May 16 16:00		Hours in Service:	744
Direction of Maximum Daily Speed Average: 318.0 deg on May 16		Hours of Data:	744
Direction of Minimum Speed: 217 deg on May 12 07:00		Hours of Missing Data:	0
Direction of Minimum Daily Speed Average: 0.6 deg on May 10		Percent Operational Time:	100.0
Monthly Average Direction: 164.5 deg			

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	156	160	165	156	153	151	160	166	175	169	175	171	181	183	194	186	189	183	178	165	155	173	186	193	173.8
2-May	194	222	237	297	354	313	300	233	252	314	298	266	314	279	321	292	281	303	303	294	202	163	204	187	273.6
3-May	191	184	151	188	182	190	187	190	187	174	170	173	167	173	167	166	163	177	174	156	142	155	161	162	170.6
4-May	160	161	158	148	173	156	183	173	187	175	157	160	189	150	152	141	142	115	113	119	134	139	156	158	152.4
5-May	155	153	149	155	150	149	155	161	149	129	111	105	113	120	124	120	122	126	121	119	126	110	117	125	130.0
6-May	125	130	122	112	120	127	131	128	113	107	108	105	119	106	132	121	121	116	117	116	121	112	114	125	117.8
7-May	120	127	134	139	134	135	123	126	137	131	139	152	162	142	118	112	118	123	171	116	129	129	135	107	133.0
8-May	115	103	103	142	147	143	143	160	165	177	172	157	202	181	193	167	142	143	148	141	141	140	185	258	157.5
9-May	192	103	133	118	112	56	91	94	188	98	29	106	206	184	344	348	49	162	171	219	216	218	195	170	131.4
10-May	94	172	211	190	167	148	211	20	94	70	43	37	38	338	291	226	309	351	90	297	124	187	184	208	331.7
11-May	204	193	120	197	187	143	188	58	92	59	60	53	60	62	108	179	201	168	78	96	104	111	151	87	108.1
12-May	167	11	197	165	188	207	217	63	63	81	95	105	142	126	190	220	161	129	158	150	167	187	196	205	151.4
13-May	205	202	185	183	195	207	202	204	208	215	230	235	229	238	240	233	244	245	232	217	193	194	193	191	220.8
14-May	197	205	204	198	206	212	213	221	230	233	224	236	228	220	229	238	266	253	233	218	205	204	206	205	222.4
15-May	199	212	214	203	203	182	200	223	232	237	198	222	182	202	193	189	203	207	212	218	192	161	174	191	202.8
16-May	192	196	247	291	312	314	314	316	326	330	322	325	314	330	319	327	334	323	314	314	306	323	3	345	318.0
17-May	318	307	319	307	304	317	328	2	10	347	15	8	12	18	19	24	42	40	42	60	97	116	112	107	1.4
18-May	174	210	207	188	185	177	180	196	239	238	229	222	194	177	196	189	212	211	198	192	191	193	193	188	198.1
19-May	180	185	186	184	191	187	191	190	188	200	189	224	244	254	245	273	331	330	327	331	352	22	335	343	239.0
20-May	5	4	14	18	13	14	34	43	77	71	68	59	69	87	99	102	100	88	84	97	120	134	124	111	72.8
21-May	125	149	139	75	92	83	77	147	161	163	152	152	146	151	181	173	191	196	117	102	153	173	99	112	142.4
22-May	97	102	102	188	195	84	49	29	27	36	25	25	29	36	42	52	40	62	69	66	66	66	68	70	52.5
23-May	75	85	90	84	77	82	88	91	91	95	104	109	107	113	107	108	110	111	114	114	122	119	116	112	99.5
24-May	105	92	102	114	111	124	137	162	175	224	196	193	201	230	246	267	300	315	317	318	319	317	316	312	275.8
25-May	309	311	279	152	170	225	316	326	21	25	20	32	29	31	24	24	56	86	105	119	137	178	187	204	12.7
26-May	159	175	144	213	186	188	150	185	196	229	219	218	219	208	228	241	235	230	178	147	159	166	186	185	198.3
27-May	184	190	194	188	192	190	195	189	183	170	162	166	174	168	174	192	195	164	132	157	168	167	182	189	177.2
28-May	189	191	194	191	190	193	197	200	196	221	234	234	232	235	258	240	244	264	285	268	259	269	277	264	231.4
29-May	231	188	197	207	214	213	231	253	253	249	253	271	260	248	243	263	262	228	216	193	205	221	225	236	238.0
30-May	218	210	173	169	197	196	340	69	95	106	88	112	124	133	146	137	109	86	57	50	192	219	135	160	126.1
31-May	200	158	194	203	196	123	204	67	28	34	39	53	86	262	335	43	44	23	33	27	16	74	323	307	21.5

169.1	170.5	170.2	170.5	172.5	167.4	180.7	174.2	168.8	166.9	147.3	154.7	168.3	165.7	182.3	177.9	156.8	139.7	136.6	136.3	151.0	157.7	166.5	176.5
Diurnal Average																							

All monthly, daily, and diurnal averages have been calculated using vector methods





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Christina Lake - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 96 deg on May 10 18:00 Minimum Value: 5 deg on May 2 23:00 Percentiles: P ₁ = 7 P ₁₀ = 10 Q ₁ = 12 Median = 18 Q ₃ = 27 P ₉₀ = 48 P ₉₉ = 84																			Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0						
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	10	11	12	15	15	13	12	14	15	17	18	18	18	19	21	16	16	14	14	12	10	13	10	12	21
2-May	11	22	13	33	66	80	35	61	63	45	46	59	54	68	63	48	54	34	44	26	38	45	5	19	80
3-May	16	22	38	25	35	14	13	13	13	19	20	23	23	19	22	16	16	19	13	20	10	11	10	11	38
4-May	11	9	10	25	47	15	82	25	14	22	26	22	25	20	28	32	22	12	10	10	10	10	9	82	
5-May	9	9	9	9	10	11	12	14	16	22	16	15	18	19	16	18	15	14	12	11	12	10	11	11	22
6-May	10	10	11	13	12	11	13	13	15	15	18	24	19	23	22	19	16	14	13	11	12	7	14	9	24
7-May	10	10	11	10	11	12	12	14	17	19	19	21	17	20	14	15	18	38	18	12	12	12	12	15	38
8-May	11	8	13	16	9	10	11	13	16	19	30	35	20	19	23	31	18	14	12	11	10	10	45	21	45
9-May	37	15	22	16	48	24	26	41	37	93	64	62	68	90	57	48	34	49	53	26	22	48	58	31	93
10-May	84	36	33	43	37	36	65	64	82	52	59	46	38	52	37	19	58	96	61	67	28	45	58	25	96
11-May	14	38	54	16	27	42	31	24	31	62	33	29	22	18	38	59	17	32	28	17	6	10	23	28	62
12-May	51	78	32	35	20	10	84	23	27	25	20	34	67	63	50	42	62	23	24	16	6	15	14	8	84
13-May	11	11	26	20	13	12	14	15	17	17	21	18	21	21	19	20	20	17	14	11	9	10	10	10	26
14-May	12	12	13	12	14	13	13	14	14	14	14	16	22	23	22	21	19	19	11	8	6	7	8	11	23
15-May	11	12	13	15	11	24	14	16	17	24	32	27	24	32	27	22	20	20	16	11	11	10	7	10	32
16-May	11	12	42	35	10	13	10	14	18	18	17	19	15	17	18	19	17	16	12	13	17	15	27	30	42
17-May	16	9	14	9	16	14	15	24	16	21	15	20	20	23	14	15	15	17	19	15	18	15	20	18	24
18-May	23	14	11	9	9	25	18	17	63	85	86	52	49	72	53	49	36	30	14	12	10	10	11	9	86
19-May	7	9	10	11	11	11	14	13	17	18	18	24	21	31	28	19	27	12	14	10	21	27	29	34	34
20-May	14	14	14	11	13	12	28	14	14	17	17	21	21	15	18	14	13	10	10	12	12	12	20	8	28
21-May	12	12	19	38	11	16	29	50	13	23	21	32	36	39	36	37	18	22	14	5	18	23	21	30	50
22-May	26	19	52	92	16	36	38	14	11	12	11	12	13	11	13	11	13	12	12	11	12	12	12	11	92
23-May	13	13	13	13	11	12	12	12	13	15	15	14	13	15	13	12	13	14	14	13	14	14	14	10	15
24-May	13	5	7	19	7	11	16	20	19	23	25	30	34	24	22	20	24	23	14	12	11	9	9	12	34
25-May	13	9	56	36	31	46	23	22	15	12	20	17	18	20	18	17	21	25	25	14	12	17	19	18	56
26-May	20	15	53	23	18	44	51	30	33	37	61	26	39	54	28	23	46	33	21	9	6	8	7	9	61
27-May	10	10	11	10	11	11	13	15	15	18	21	22	24	26	31	28	24	23	21	13	11	10	15	11	31
28-May	11	10	11	12	14	19	22	25	22	28	22	24	24	16	22	21	23	31	16	20	18	18	17	27	31
29-May	74	57	11	10	16	12	13	20	23	28	40	32	23	22	32	24	22	29	15	13	12	31	16	11	74
30-May	15	30	66	25	41	74	89	32	28	51	49	35	26	17	26	20	17	14	15	55	24	20	62	72	89
31-May	57	35	21	61	14	88	75	37	21	17	17	27	73	80	66	21	15	13	10	10	33	63	31	23	88
Diurnal Maximum																									



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS27
JACKFISH 2/3
MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 2/3 (AMS27)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	708	35	36	99.87	8.8	0	1.1	0
H2S (ppb) Average	706	35	38	99.6	1	0	0.4	0
NO2 (ppb) Average	706	37	38	99.87	19.5	0	5.2	-
NO (ppb) Average	706	37	38	99.87	3.6	-	0.5	-
NOX (ppb) Average	706	37	38	99.87	19.9	-	5.4	-
Temperature 2 m (C) Average	743	0	1	99.87	29.3	-	22.1	-
Relative Humidity (%) Average	743	0	1	99.87	98.9	-	92.3	-
Wind Speed 10 m (km/h) Average	743	0	1	99.87	17	-	12	-
Wind Direction 10 m (deg) Average	743	0	1	99.87	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 2/3 (AMS27)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	708	0.46	0.7	-	0	0	0.1	0.2	0.6	1.1	8.8
H2S (ppb) Average	706	0.24	0.1	-	0	0.1	0.2	0.2	0.3	0.4	1
NO2 (ppb) Average	706	1.75	1.9	-	0	0.4	0.7	1.1	2.1	3.6	19.5
NO (ppb) Average	706	0.17	0.3	-	0	0	0	0.1	0.2	0.4	3.6
NOX (ppb) Average	706	1.92	2	-	0	0.5	0.8	1.3	2.3	3.8	19.9
Temperature 2 m (C) Average	743	14.88	5.9	-	0.1	7.4	10.4	14.6	19	23	29.3
Relative Humidity (%) Average	743	52.5	21.3	-	14.9	26.5	35.3	48.8	67.4	85.1	98.9
Wind Speed 10 m (km/h) Average	743	7.1	3	-	0	3	5	7	9	12	17
Wind Direction 10 m (deg) Average	743	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 2/3 (AMS27)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL PARAMETERS	22 May 2023 16:00	22 May 2023 16:00	1	DAS Failure - data not recorded
H2S	02 May 2023 20:00	02 May 2023 21:00	2	Unstable Operation - excessive baseline drift

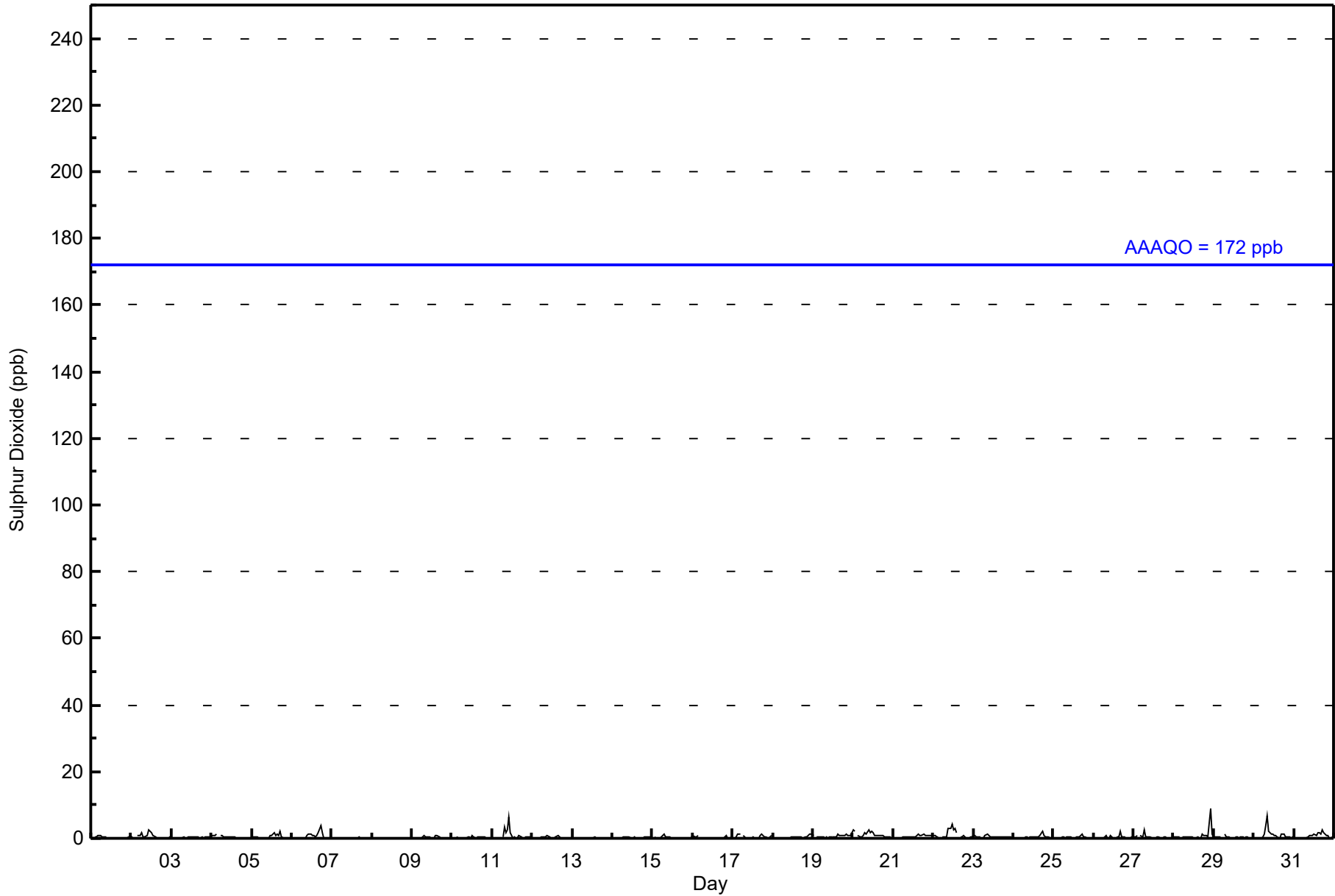


Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744				
Maximum Value: 8.8 ppb on May 28 23:00		Maximum Daily Average: 1.1 ppb on May 20																	Hours of Data:	708						
Minimum Value: 0.0 ppb on May 3 05:00		Minimum Daily Average: 0.0 ppb on May 8																	Hours of Missing Data:	36						
Maximum Diurnal Average: 0.8 ppb at hour 11		Minimum Diurnal Average: 0.2 ppb at hour 6																	Hours of Calibration:	35						
Monthly Average: 0.46 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.6 P ₉₀ = 1.1 P ₉₉ = 3.3																	Percent Operational Time:	99.9						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.3	Z	0.6	0.5	0.8	0.7	0.5	0.5	0.5	0.5	C	C	C	C	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.8	0.4	0.8
2-May	0.4	0.2	Z	1.0	0.9	1.1	1.5	0.4	0.5	0.9	2.5	2.0	1.7	1.0	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.7	2.5
3-May	0.1	0.2	0.2	Z	0.0	0.1	0.1	0.4	0.1	0.1	0.4	0.4	0.5	0.3	0.3	0.2	0.3	0.2	0.3	0.2	0.4	0.3	0.4	0.6	0.3	0.6
4-May	0.8	0.9	0.9	1.2	Z	0.6	0.7	0.6	0.6	0.4	0.5	0.3	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.4	1.2
5-May	0.2	0.3	0.5	0.4	0.1	Z	0.0	0.0	0.0	0.0	0.1	0.8	0.9	1.6	0.7	1.2	1.0	1.9	0.4	0.1	0.0	0.1	0.1	0.1	0.5	1.9
6-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.3	1.2	0.8	0.7	0.6	1.0	1.6	3.8	1.5	0.1	0.2	0.2	0.1	0.1	0.6	3.8
7-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
8-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
9-May	0.0	0.0	0.0	Z	0.0	0.0	0.4	0.7	0.6	0.5	0.2	0.2	0.2	0.1	0.8	0.7	0.5	0.1	0.0	0.0	0.0	0.2	0.1	0.0	0.2	0.8
10-May	0.0	0.1	0.1	0.5	Z	0.0	0.2	0.2	0.1	0.3	0.4	0.2	0.7	0.4	0.2	0.4	0.2	0.6	0.6	0.5	0.1	0.1	0.1	0.0	0.3	0.7
11-May	0.1	0.1	0.1	0.1	0.1	Z	0.4	3.3	1.7	2.4	6.5	1.5	0.2	0.6	0.1	0.1	0.8	0.5	0.1	0.1	0.3	0.4	0.3	0.4	0.9	6.5
12-May	Z	0.0	0.0	0.0	0.0	0.2	0.4	0.2	0.6	1.0	0.4	0.0	0.1	0.2	0.2	0.8	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0
13-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.2	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.3
14-May	0.1	0.2	Z	0.0	0.0	0.0	0.3	0.5	0.6	0.5	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.6
15-May	0.2	0.2	0.2	Z	0.0	0.3	1.1	1.1	0.6	0.4	0.4	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.1
16-May	0.9	0.3	0.3	0.7	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9	0.2	0.2	0.4	0.2	0.9
17-May	0.1	0.1	0.5	1.1	1.3	Z	0.7	0.5	0.1	0.1	0.2	0.1	0.3	0.1	0.0	0.2	1.0	1.1	0.7	0.5	0.3	0.2	0.2	0.9	0.4	1.3
18-May	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.6	0.4	0.4	0.5	0.4	0.3	0.2	0.2	0.3	0.9	1.5	1.3	0.4	1.5
19-May	1.0	Z	0.4	0.6	0.6	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.4	0.3	0.4	1.1	0.9	0.8	1.0	0.8	1.2	1.1	0.8	1.6	0.6	1.6
20-May	2.5	2.3	Z	0.8	0.4	0.3	0.7	1.6	1.5	2.7	1.6	2.3	1.9	0.8	0.9	0.8	0.9	0.8	0.8	0.6	0.3	0.3	0.2	0.1	1.1	2.7
21-May	0.1	0.1	0.2	Z	0.0	0.2	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.9	1.1	0.8	1.0	1.1	0.7	0.7	0.7	0.7	0.7	0.6	1.1
22-May	0.7	0.7	0.6	0.3	Z	0.4	0.5	0.6	0.4	3.2	3.1	4.1	2.4	2.9	1.7	DF	0.3	0.4	0.7	0.2	0.1	0.2	0.2	0.3	1.1	4.1
23-May	0.7	0.7	0.4	0.6	0.5	Z	0.0	0.7	1.1	0.9	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	1.1
24-May	Z	0.0	0.0	0.1	0.0	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.5	0.4	0.4	0.5	0.9	2.0	1.1	0.5	0.2	0.2	0.2	0.2	0.4	2.0
25-May	0.2	Z	0.0	0.0	0.1	0.3	0.2	0.2	0.3	0.3	0.5	0.2	0.2	0.2	0.3	0.2	0.9	1.3	0.4	0.2	0.1	0.1	0.0	0.1	0.3	1.3
26-May	0.1	0.0	Z	0.0	0.0	0.0	0.0	0.7	0.2	0.1	0.7	0.6	0.2	0.1	0.2	0.6	2.2	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.3	2.2
27-May	0.3	0.5	0.8	Z	0.7	0.5	2.6	0.6	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.3	0.1	0.1	0.2	0.3	0.4	2.6
28-May	0.4	0.5	0.6	0.3	Z	0.4	0.5	0.3	0.3	0.3	0.4	0.5	0.1	0.2	0.3	0.1	0.1	1.2	1.0	0.6	0.2	4.7	8.8	1.5	1.0	8.8
29-May	0.3	0.3	0.3	0.3	0.3	Z	1.3	0.3	0.4	0.4	0.2	0.1	0.0	0.3	0.2	0.1	0.4	0.2	0.2	0.6	0.5	0.2	0.2	0.1	0.3	1.3
30-May	Z	0.0	0.0	0.0	0.0	0.3	1.3	4.0	6.7	2.0	1.3	1.1	0.6	0.8	0.6	0.0	1.1	1.1	1.2	0.5	0.2	0.2	0.2	0.6	1.0	6.7
31-May	0.3	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.9	0.8	0.8	1.1	1.0	1.8	1.9	1.3	2.4	1.6	0.9	0.8	0.1	0.1	0.5	0.7	2.4
																								Diurnal Average		
																								Diurnal Maximum		
0.4 0.3 0.3 0.3 0.2 0.2 0.5 0.6 0.6 0.6 0.8 0.6 0.5 0.5 0.4 0.4 0.6 0.7 0.5 0.3 0.3 0.4 0.5 0.4																										
2.5 2.3 0.9 1.2 1.3 1.1 2.6 4.0 6.7 3.2 6.5 4.1 2.4 2.9 1.8 1.9 2.2 3.8 1.6 0.9 1.2 4.7 8.8 1.6																										
Z - zerospan C - Calibration DF - DAS Failure																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb																										



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Jackfish 2/3 - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Jackfish 2/3 - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	708	100.00	100.00
11 - 20	0	0.00	100.00
21 - 60	0	0.00	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Jackfish 2/3 - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	1	0	0	0	0	0	0	11	12	6	2	1	3	7	4	0	47
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	1	0	0	0	0	0	0	11	12	6	2	1	3	7	4	0	47

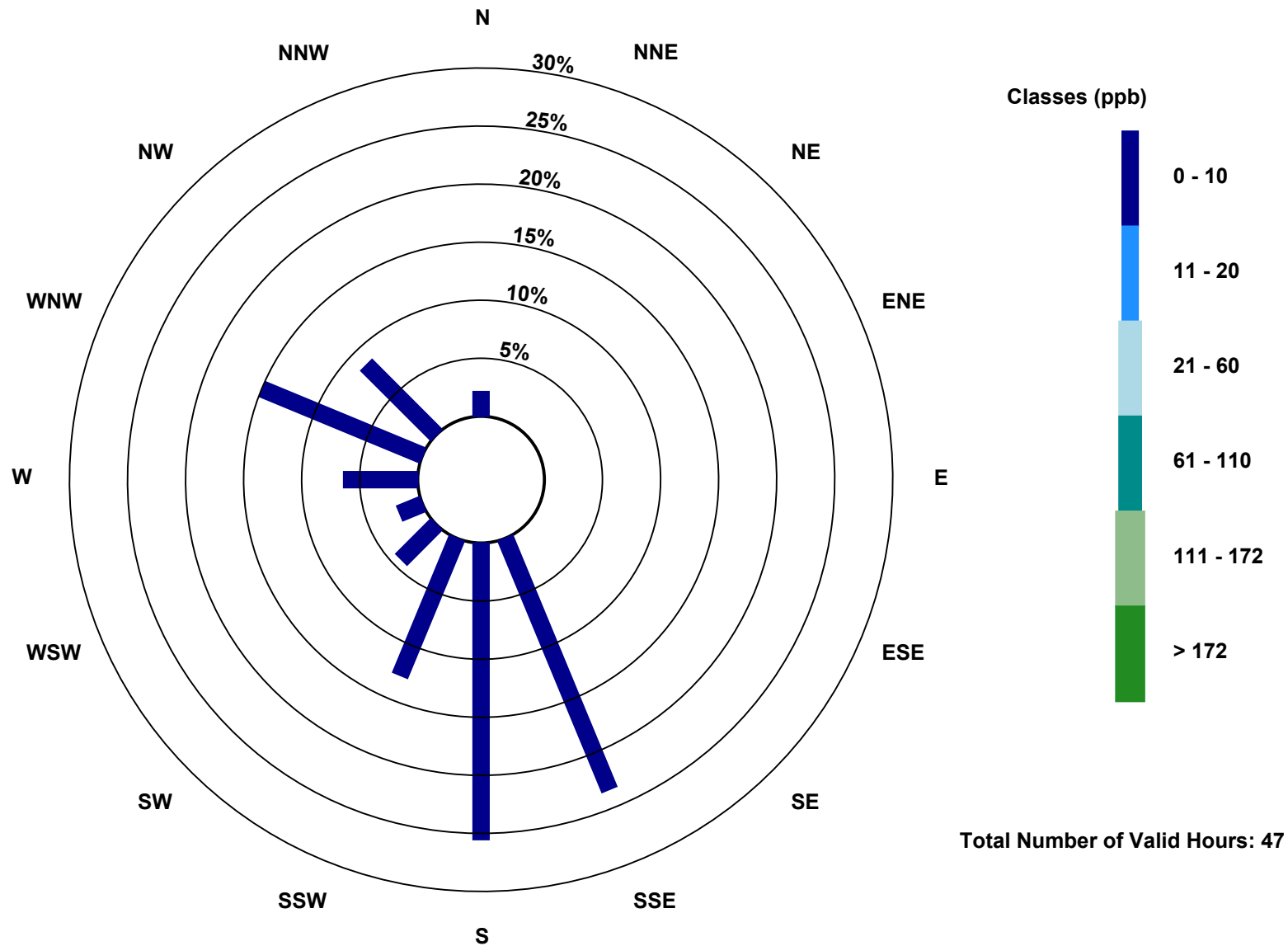
Total Number of Valid Hours: 47

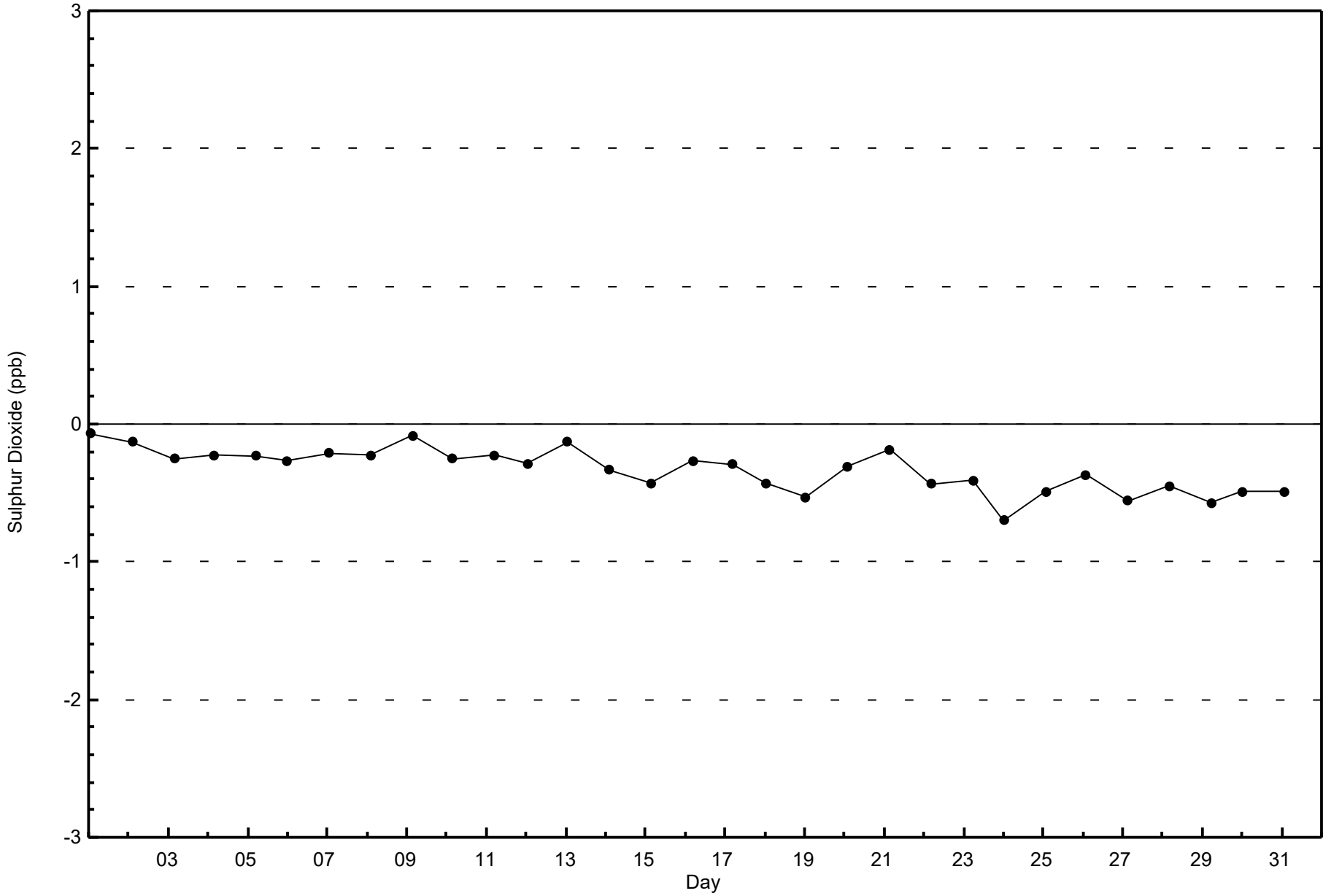
Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Jackfish 2/3

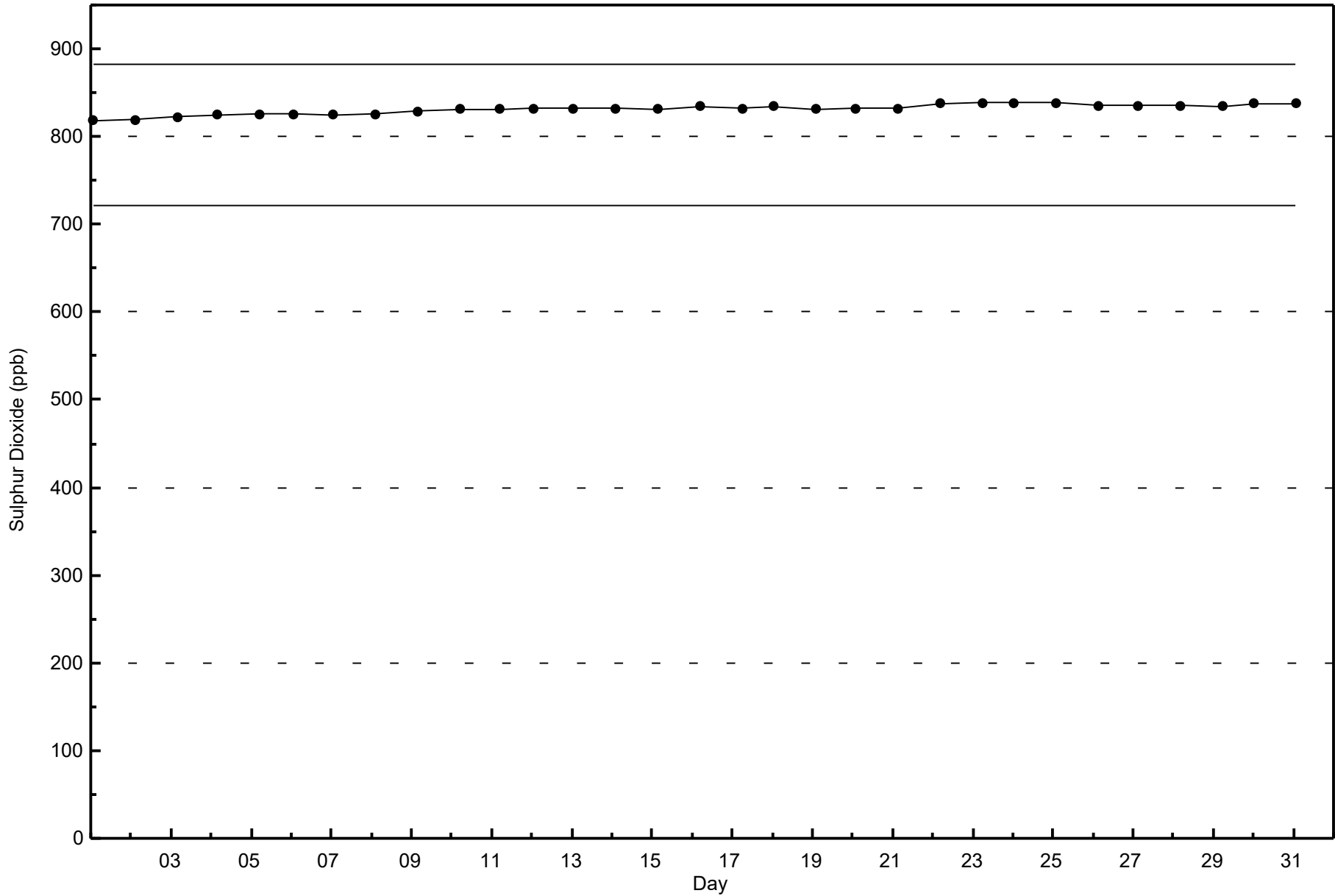






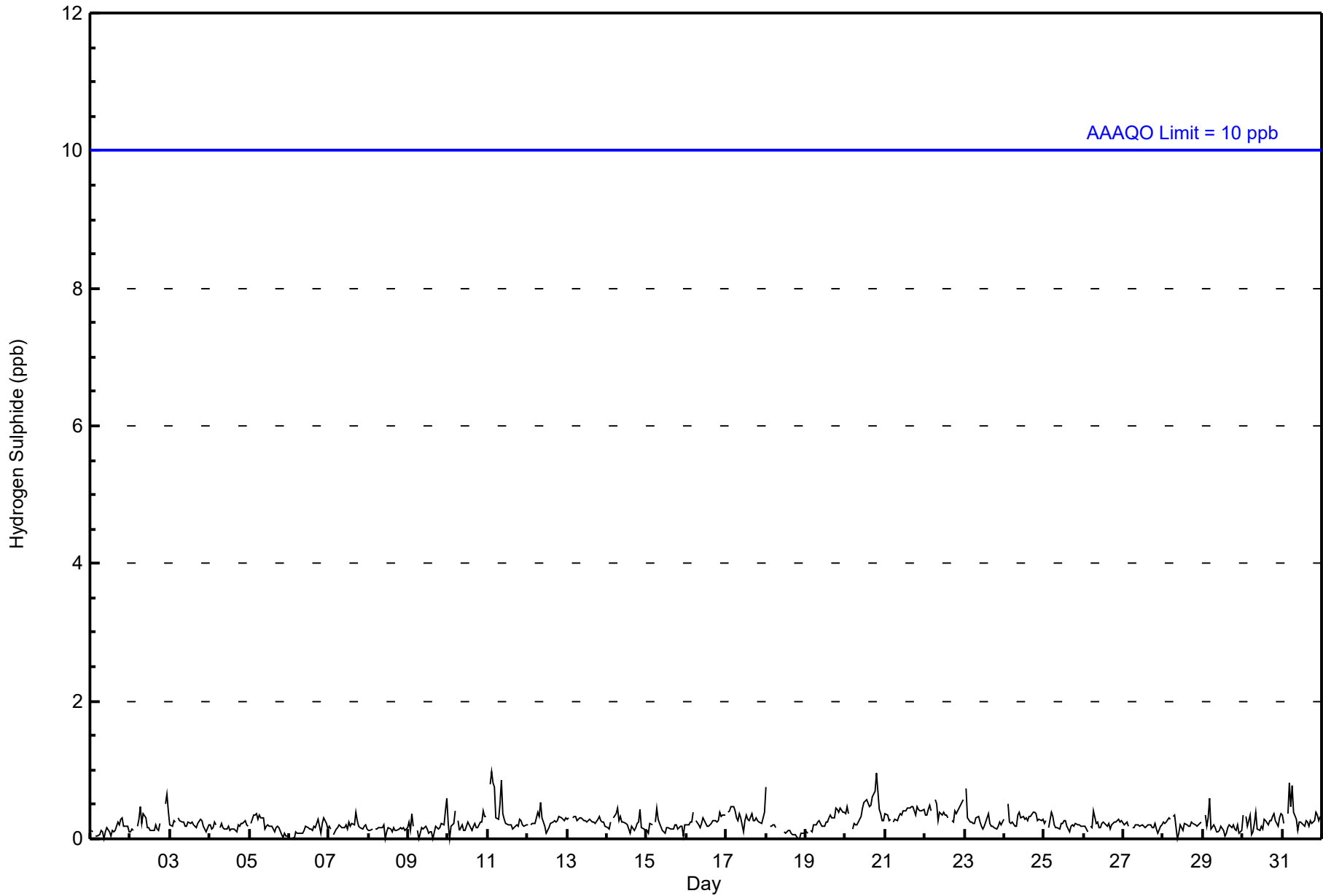
Wood Buffalo Environmental Association
Span Responses

Sulphur Dioxide (SO₂) - ppb
Jackfish 2/3 - May 2023





Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744				
Maximum Value: 1.0 ppb on May 11 03:00		Maximum Daily Average: 0.4 ppb on May 20																	Hours of Data:	706						
Minimum Value: 0.0 ppb on May 1 09:00		Minimum Daily Average: 0.1 ppb on May 1																	Hours of Missing Data:	38						
Maximum Diurnal Average: 0.3 ppb at hour 5		Minimum Diurnal Average: 0.2 ppb at hour 11																	Hours of Calibration:	35						
Monthly Average: 0.24 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.1 Q ₁ = 0.2 Median = 0.2 Q ₃ = 0.3 P ₉₀ = 0.4 P ₉₉ = 0.8																	Percent Operational Time:	99.6						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.1	0.1	Z	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.3
2-May	0.1	0.1	0.1	Z	0.2	0.3	0.5	0.2	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	UO	UO	0.5	0.6	0.4	0.2	0.6
3-May	0.2	0.2	0.3	0.2	Z	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.2	0.2	0.3
4-May	0.2	0.2	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3
5-May	Z	0.2	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.1	0.2	0.4
6-May	0.0	Z	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.2	0.3	0.2	0.1	0.1	0.3
7-May	0.2	0.2	Z	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.3	0.2	0.2	0.2	0.4	0.3	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.4
8-May	0.1	0.1	0.2	Z	0.1	0.1	0.2	0.2	0.2	0.2	0.0	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2
9-May	0.2	0.1	0.4	0.2	Z	0.1	0.0	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.2	0.2	0.1	0.2	0.2	0.2	0.4	0.6	0.2	0.6
10-May	0.2	0.0	0.2	0.2	0.4	Z	0.3	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.3	0.3	0.2	0.4
11-May	Z	0.8	1.0	0.8	0.7	0.3	0.3	0.5	0.8	0.4	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.4	1.0
12-May	0.2	Z	0.2	0.2	0.2	0.3	0.4	0.3	0.5	0.3	0.2	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5
13-May	0.3	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3
14-May	0.2	0.1	0.2	Z	0.3	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.4	0.2	0.1	0.1	0.2	0.4
15-May	0.1	0.1	0.2	0.2	Z	0.2	0.4	0.3	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.0	0.2	0.2	0.2	0.4
16-May	0.2	0.2	0.2	0.2	0.4	Z	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.4
17-May	Z	0.4	0.4	0.5	0.5	0.4	0.3	0.3	0.4	0.3	0.1	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.4	0.3	0.5
18-May	0.8	Z	0.2	0.2	0.2	0.2	0.2	C	C	C	C	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.8
19-May	0.1	0.1	Z	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4
20-May	0.4	0.5	0.4	Z	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.6	0.5	0.5	0.6	0.6	0.7	1.0	0.4	0.4	0.3	0.3	0.4	1.0
21-May	0.4	0.3	0.3	0.3	Z	0.2	0.3	0.3	0.3	0.4	0.3	0.4	0.4	0.5	0.4	0.5	0.5	0.5	0.3	0.5	0.4	0.4	0.4	0.4	0.4	0.5
22-May	0.3	0.3	0.4	0.5	0.4	Z	0.6	0.5	0.3	0.4	0.3	0.4	0.4	0.3	0.3	DF	0.3	0.2	0.4	0.4	0.4	0.5	0.5	0.6	0.4	0.6
23-May	Z	0.7	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.1	0.2	0.2	0.4	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.7
24-May	0.3	Z	0.5	0.3	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.5
25-May	0.2	0.3	Z	0.2	0.4	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.3	0.3	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4
26-May	0.2	0.2	0.1	Z	0.2	0.2	0.4	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.2	0.4
27-May	0.2	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2
28-May	0.3	0.2	0.2	0.3	0.3	Z	0.3	0.3	0.0	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3
29-May	Z	0.3	0.2	0.3	0.6	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.6
30-May	0.3	Z	0.3	0.2	0.3	0.1	0.1	0.2	0.4	0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.3	0.4	0.3	0.2	0.3	0.4	0.2	0.4
31-May	0.3	0.2	Z	0.4	0.8	0.5	0.8	0.4	0.3	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.3	0.4	0.4	0.3	0.3	0.3	0.8
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration DF - DAS Failure UO - Unstable Operation Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Jackfish 2/3 - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	706	100.00	100.00
3 - 4	0	0.00	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Jackfish 2/3 - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	19	21	33	30	53	48	52	69	115	76	77	38	18	17	28	12	706
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	19	21	33	30	53	48	52	69	115	76	77	38	18	17	28	12	706

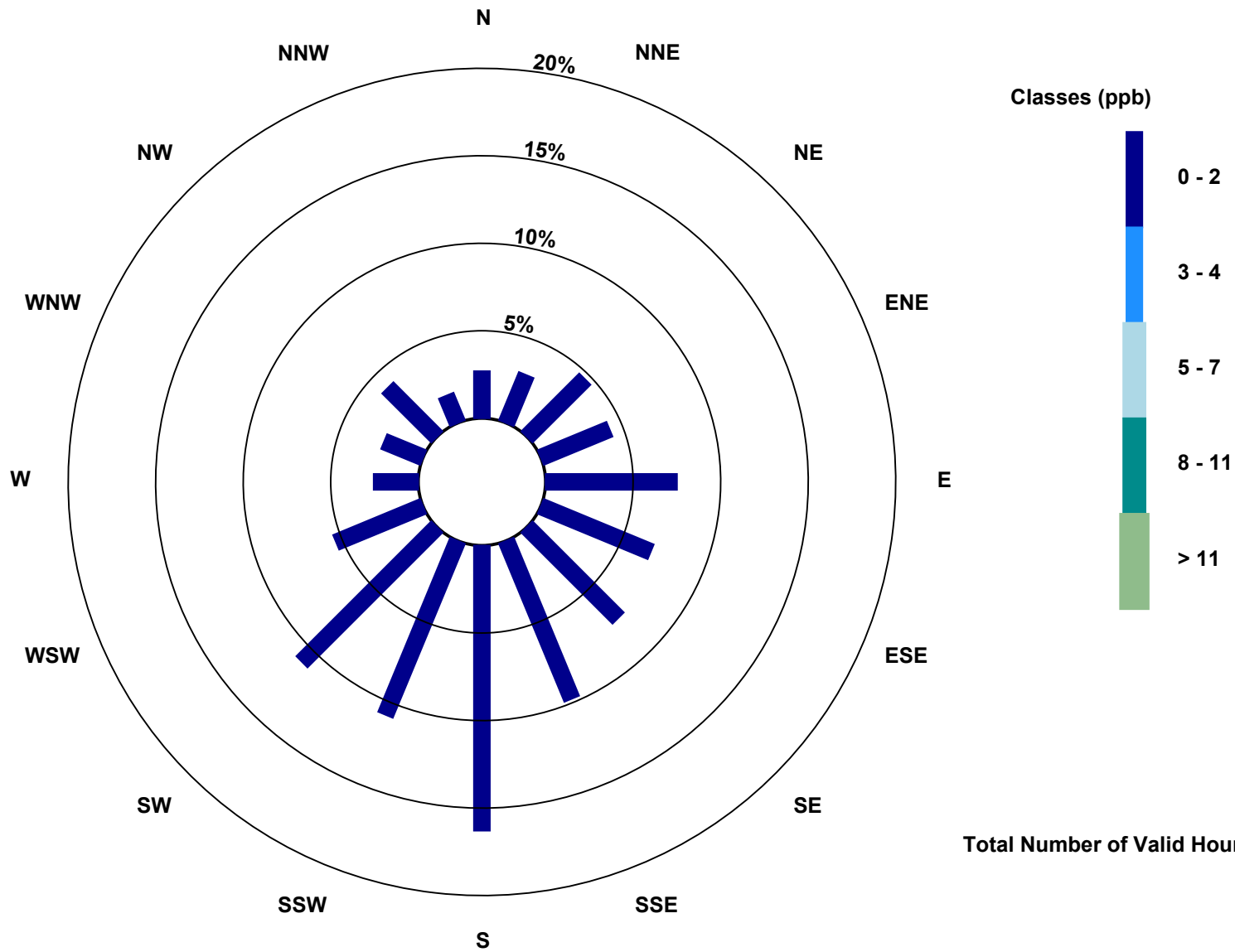
Total Number of Valid Hours: 706

Total Number of Hours: 744

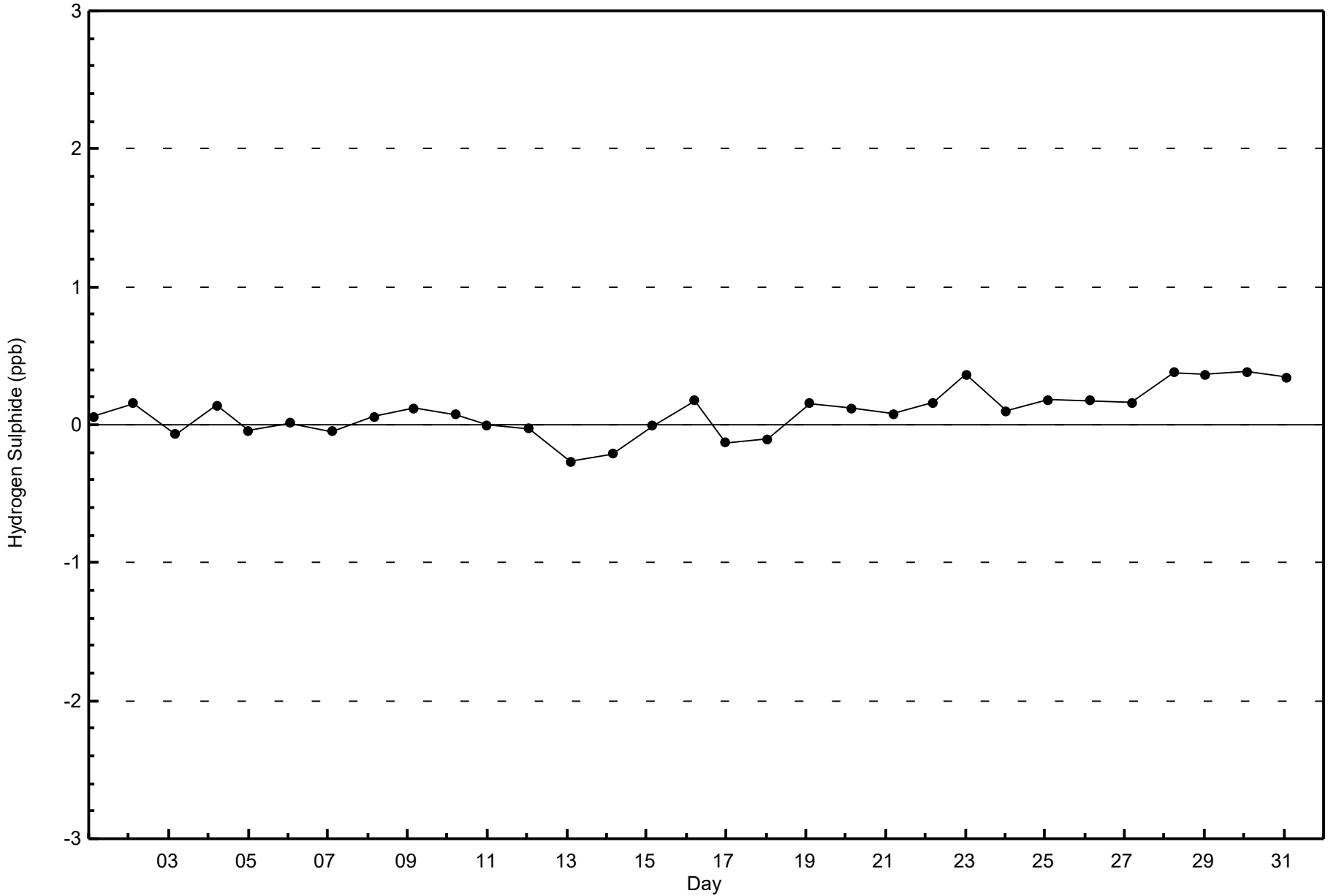


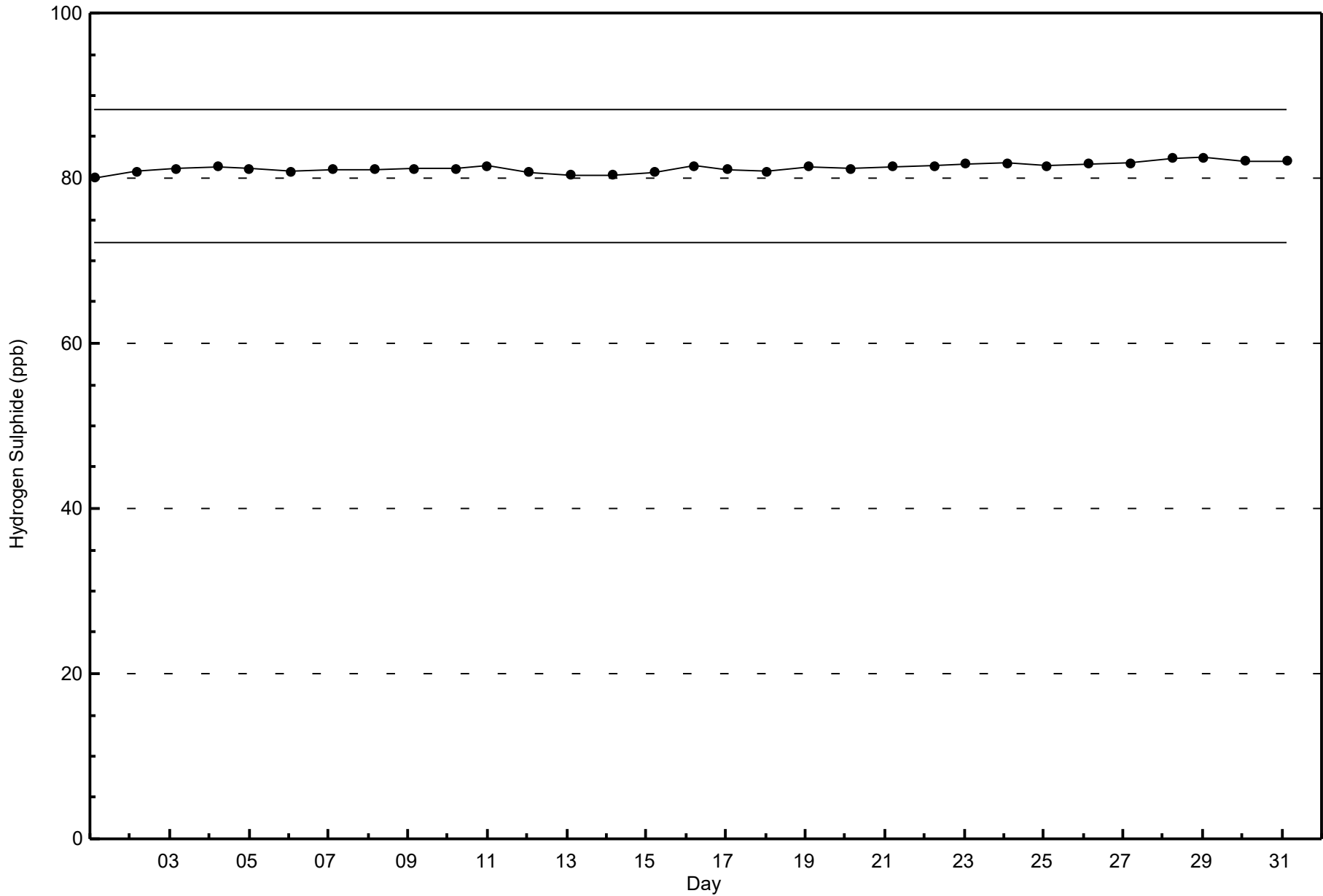
Wood Buffalo Environmental Association
Wind Rose May 2023

Hydrogen Sulphide (H₂S) - ppb
Jackfish 2/3



Total Number of Valid Hours: 706







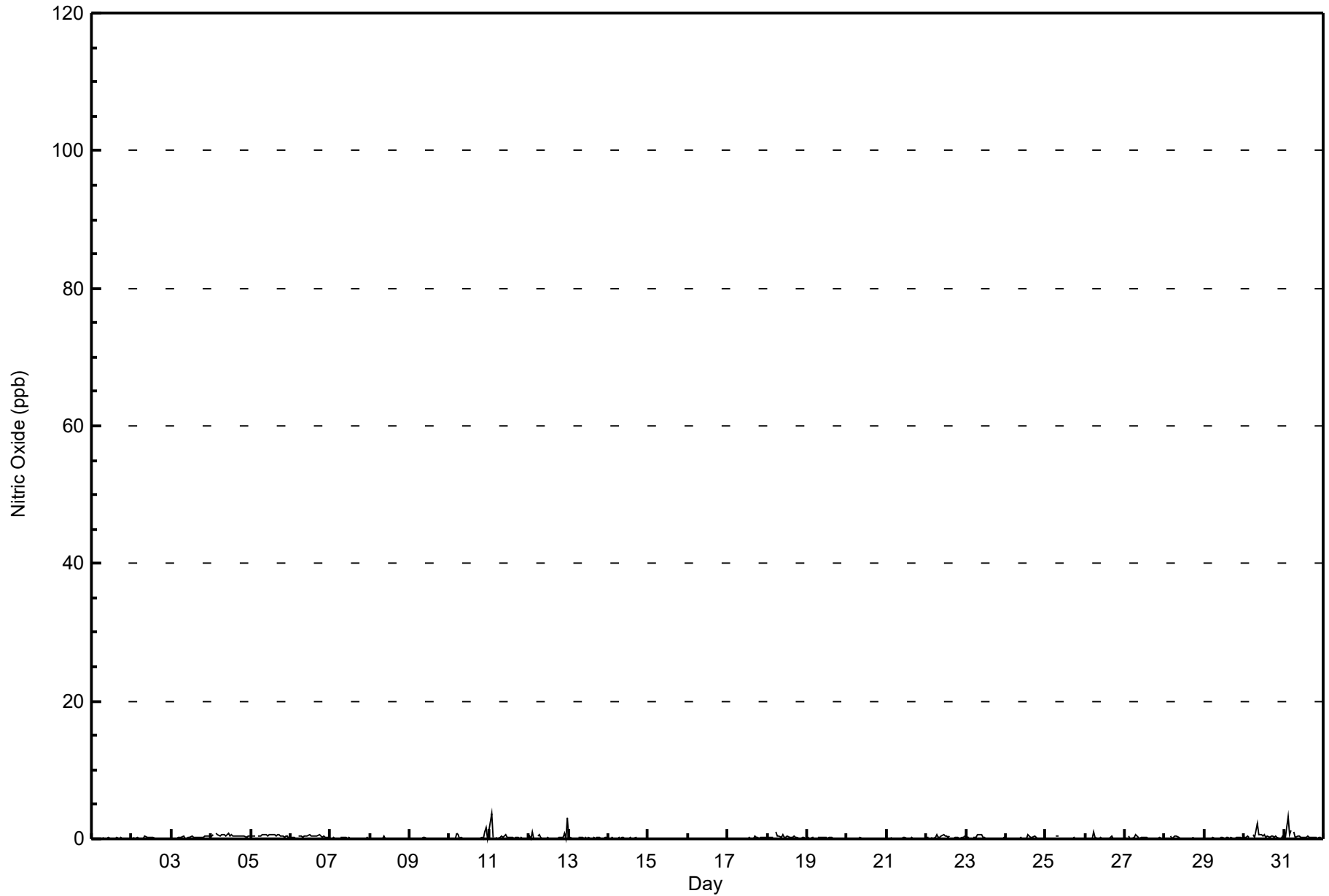
Maximum Value: 3.6 ppb on May 11 02:00		Maximum Daily Average: 0.5 ppb on May 4		Hours in Service: 744																							
Minimum Value: 0.0 ppb on May 1 01:00		Minimum Daily Average: 0.0 ppb on May 16		Hours of Data: 706																							
Maximum Diurnal Average: 0.3 ppb at hour 9		Minimum Diurnal Average: 0.1 ppb at hour 21		Hours of Missing Data: 38																							
Monthly Average: 0.17 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.2 P ₉₀ = 0.4 P ₉₉ = 1.1		Hours of Calibration: 37																							
				Percent Operational Time: 99.9																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.0	0.0	0.0	0.0	0.0	Z	0.2	0.1	0.0	0.1	0.2	0.0	0.1	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	
2-May	Z	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.4	0.2	0.2	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
3-May	0.0	Z	0.0	0.0	0.3	0.2	0.3	0.3	0.1	0.0	0.1	0.1	0.4	0.2	0.2	0.1	0.2	0.1	0.2	0.3	0.4	0.4	0.5	0.3	0.2	0.5	0.5
4-May	0.4	0.5	Z	0.8	0.6	0.4	0.5	0.7	0.6	0.5	0.7	0.5	0.4	0.5	0.4	0.4	0.5	0.4	0.5	0.4	0.5	0.3	0.3	0.4	0.4	0.5	0.8
5-May	0.5	0.4	0.5	Z	0.4	0.4	0.3	0.5	0.7	0.6	0.4	0.6	0.5	0.7	0.5	0.4	0.5	0.6	0.3	0.4	0.2	0.3	0.3	0.0	0.4	0.7	0.7
6-May	0.1	0.3	0.3	0.1	Z	0.4	0.3	0.2	0.5	0.3	0.4	0.7	0.4	0.3	0.4	0.4	0.3	0.6	0.3	0.3	0.3	0.1	0.2	0.2	0.3	0.7	0.7
7-May	0.0	0.0	0.2	0.1	0.0	Z	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.2
8-May	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.3
9-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
10-May	0.0	0.0	Z	0.0	0.8	0.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	1.0	1.6	0.0	0.2	1.6	1.6
11-May	1.2	3.6	0.2	Z	0.1	0.1	0.1	0.5	0.1	0.4	0.5	0.2	0.1	0.2	0.2	0.0	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.3	3.6	3.6
12-May	0.4	0.1	1.1	0.0	Z	0.4	0.6	0.2	0.1	0.0	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.8	0.0	3.0	0.3	3.0	3.0
13-May	0.3	0.3	0.1	0.0	0.0	Z	0.2	0.3	0.2	0.1	0.2	0.0	0.2	0.1	0.0	0.1	0.0	0.2	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.3	0.3
14-May	Z	0.1	0.2	0.1	0.0	0.1	0.2	0.0	0.1	0.2	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2
15-May	0.0	Z	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
16-May	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
17-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.2	0.1	0.0	0.2	0.1	0.1	0.2	0.1	0.4	0.4
18-May	0.2	0.2	0.2	0.2	Z	0.9	0.4	0.4	0.3	0.7	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.1	0.1	0.0	0.0	0.2	0.1	0.1	0.3	0.9	0.9
19-May	0.1	0.1	0.0	0.1	0.2	Z	0.3	0.1	0.2	0.2	0.3	0.1	0.0	0.2	0.2	0.2	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.3	0.3
20-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
21-May	0.0	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
22-May	0.1	0.1	Z	0.2	0.0	0.2	0.5	0.3	0.2	0.4	0.6	0.5	0.4	0.3	0.4	DF	0.1	0.2	0.2	0.3	0.0	0.1	0.1	0.3	0.2	0.6	0.6
23-May	0.4	0.1	0.1	Z	0.2	0.2	0.2	0.7	0.6	0.5	0.2	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.7	0.7
24-May	0.0	0.0	0.1	0.0	Z	0.1	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.5	0.5	0.2	0.3	0.3	0.2	0.1	0.0	0.1	0.0	0.2	0.1	0.5	0.5
25-May	0.1	0.0	0.0	0.0	0.0	Z	0.4	0.4	0.4	C	C	C	C	C	C	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	--	0.4	0.4
26-May	Z	0.0	0.0	0.0	0.0	1.0	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.3	0.4	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	1.0	1.0
27-May	0.1	Z	0.3	0.1	0.1	0.3	0.7	0.3	0.2	0.1	0.1	0.2	0.3	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.7	0.7
28-May	0.0	0.0	Z	0.4	0.0	0.3	0.5	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.5	0.5
29-May	0.0	0.0	0.0	Z	0.0	0.2	0.0	0.0	0.0	0.0	0.3	0.2	0.1	0.1	0.2	0.0	0.2	0.0	0.0	0.1	0.2	0.2	0.2	0.0	0.1	0.3	0.3
30-May	0.1	0.3	0.4	0.3	Z	0.5	0.2	1.3	2.2	0.6	0.6	0.5	0.6	0.3	0.4	0.2	0.4	0.4	0.2	0.3	0.2	0.1	0.1	0.3	0.5	2.2	2.2
31-May	0.2	0.2	3.2	0.6	1.2	Z	0.9	0.2	0.3	0.4	0.1	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.2	0.2	0.1	0.2	0.1	0.0	0.4	3.2	3.2
																								Diurnal Average			
																								Diurnal Maximum			
																								0.2			
																								1.2			

Z - zerospan C - Calibration DF - DAS Failure



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Jackfish 2/3 - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Jackfish 2/3 - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	706	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Jackfish 2/3 - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	16	18	33	30	53	47	53	67	115	81	75	41	17	19	29	12	706
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	16	18	33	30	53	47	53	67	115	81	75	41	17	19	29	12	706

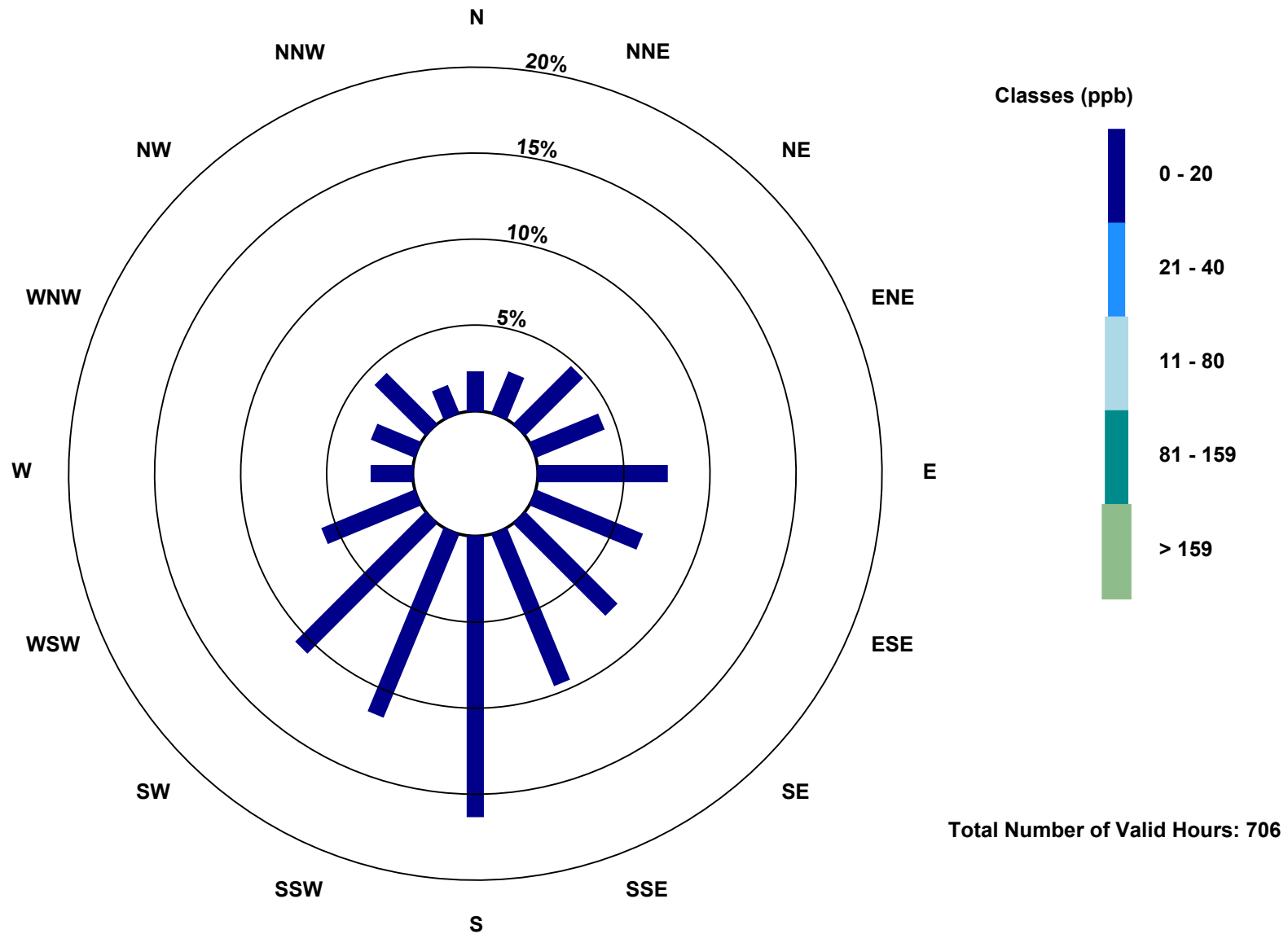
Total Number of Valid Hours: 706

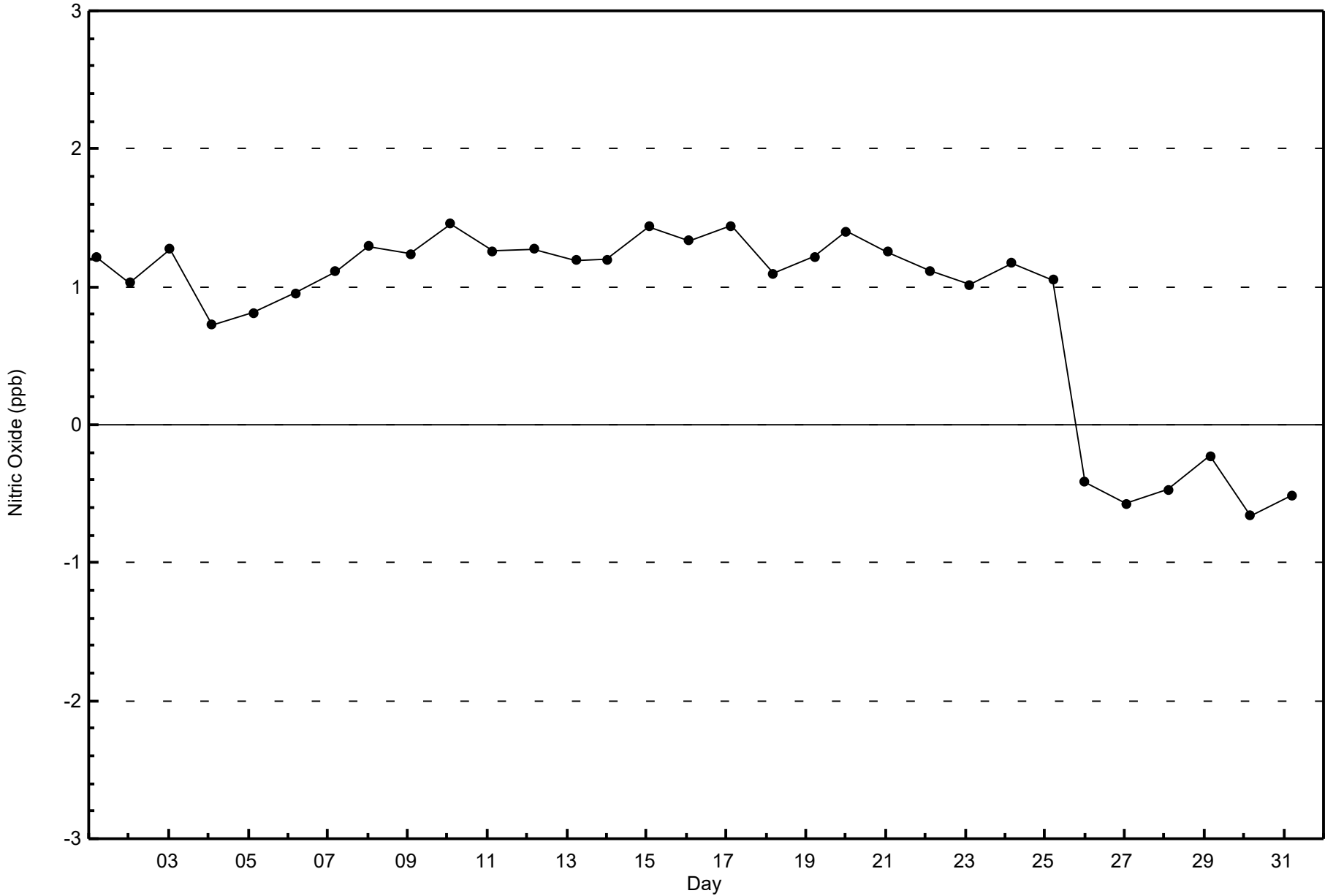
Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Jackfish 2/3

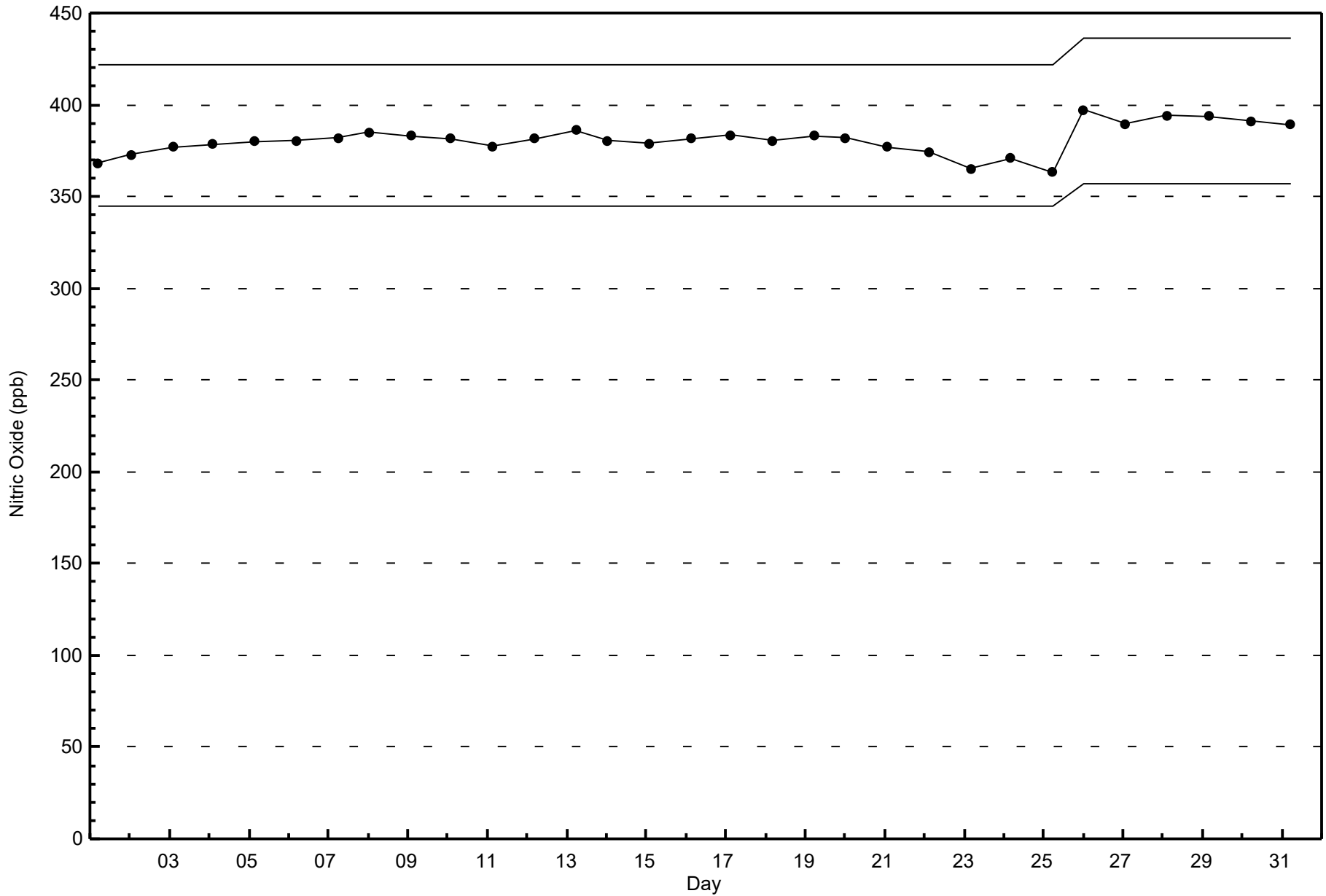






Wood Buffalo Environmental Association
Span Responses

Nitric Oxide (NO) - ppb
Jackfish 2/3 - May 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

Jackfish 2/3 - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 19.5 ppb on May 23 01:00	Maximum Daily Average: 5.2 ppb on May 22		Hours of Data:	706
Minimum Value: 0.0 ppb on May 6 00:00	Minimum Daily Average: 0.4 ppb on May 7		Hours of Missing Data:	38
Maximum Diurnal Average: 2.3 ppb at hour 2	Minimum Diurnal Average: 1.3 ppb at hour 15		Hours of Calibration:	37
Monthly Average: 1.75 ppb	Percentiles: P ₁ = 0.1 P ₁₀ = 0.4 Q ₁ = 0.7 Median = 1.1 Q ₃ = 2.1 P ₉₀ = 3.6 P ₉₉ = 9.2		Percent Operational Time:	99.9

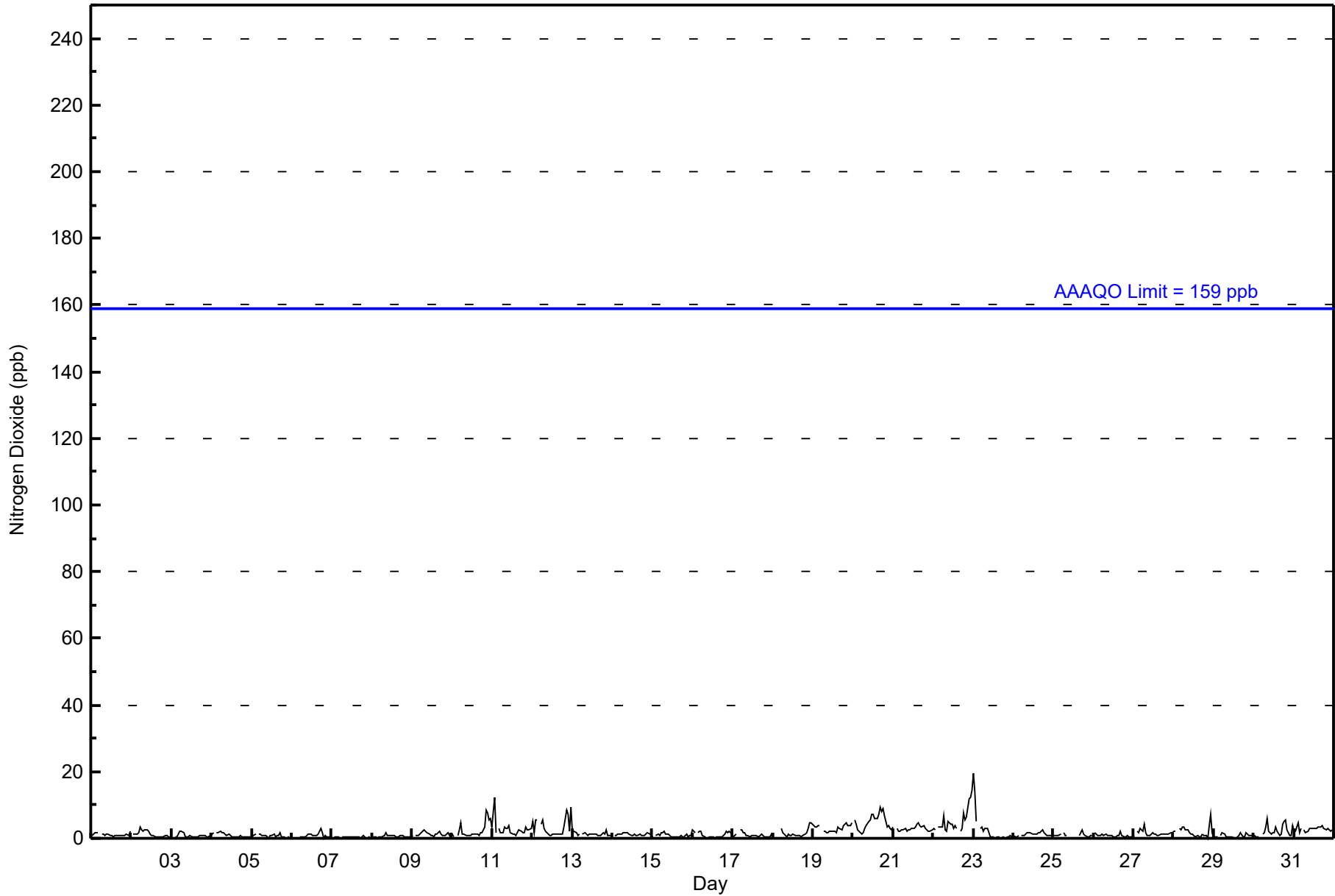
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	1.0	1.1	1.5	1.5	1.6	Z	1.4	1.2	0.9	1.2	1.1	1.0	0.7	0.6	0.8	0.9	1.0	0.9	0.8	1.0	0.9	1.2	0.8	2.3	1.1	2.3																							
2-May	Z	1.2	1.3	1.4	1.5	3.4	2.5	2.3	2.6	2.6	2.3	1.4	0.9	0.8	0.4	0.4	0.3	0.3	0.3	0.3	1.0	0.7	0.4	0.4	1.2	3.4																							
3-May	0.3	Z	0.6	0.4	1.3	2.3	2.0	1.6	0.6	0.4	0.5	0.7	0.5	0.5	0.5	0.5	0.5	0.7	0.9	0.7	0.9	0.5	0.4	0.9	0.8	2.3																							
4-May	1.3	1.6	Z	1.8	1.6	2.1	1.9	1.7	1.4	0.8	1.2	0.7	0.6	0.5	0.6	0.6	0.6	0.7	0.5	0.4	0.6	0.5	0.3	0.4	1.0	2.1																							
5-May	0.5	0.9	1.1	Z	1.2	1.2	0.9	0.9	0.9	0.5	0.2	0.7	0.9	1.1	0.6	0.9	0.9	1.5	0.5	0.3	0.2	0.1	0.3	0.0	0.7	1.5																							
6-May	0.2	0.1	0.1	0.1	Z	0.5	0.4	0.4	0.5	0.9	1.1	1.2	0.9	0.8	0.7	1.0	1.4	2.9	1.6	0.2	0.9	0.4	0.4	0.2	0.7	2.9																							
7-May	0.2	0.2	0.4	0.3	0.4	Z	0.5	0.5	0.5	0.6	0.6	0.5	0.5	0.6	0.5	0.4	0.5	0.2	0.3	1.0	0.2	0.2	0.4	0.2	0.4	1.0																							
8-May	Z	0.4	0.4	0.2	0.3	0.5	0.4	1.0	1.6	0.8	0.8	0.9	0.8	0.7	0.6	0.5	0.6	0.7	0.7	0.5	0.6	0.4	0.5	0.6	0.6	1.6																							
9-May	0.7	Z	0.8	0.8	0.9	1.6	2.1	2.4	2.1	1.7	1.1	0.9	0.8	0.6	1.1	1.2	2.1	1.3	1.0	0.8	0.7	1.6	1.0	0.3	1.2	2.4																							
10-May	1.3	0.6	Z	1.0	2.4	4.7	1.4	1.3	1.0	0.8	1.0	0.8	1.2	1.1	1.2	1.4	0.9	1.6	1.6	3.5	8.4	7.5	5.4	5.9	2.4	8.4																							
11-May	3.5	12.2	1.8	Z	2.9	1.9	1.7	3.3	3.0	3.0	3.7	1.9	1.2	1.4	1.0	1.5	2.5	2.0	1.7	1.9	3.2	2.7	2.6	2.9	2.8	12.2																							
12-May	5.1	1.9	5.5	5.7	Z	4.2	5.4	3.1	2.3	1.7	1.0	0.8	1.2	1.4	1.3	1.4	1.4	1.3	1.2	3.3	8.5	7.2	2.1	9.2	3.3	9.2																							
13-May	2.2	2.0	1.8	0.9	1.1	Z	1.3	1.9	1.2	0.9	1.2	1.2	1.1	1.1	1.2	0.9	0.7	0.8	1.5	1.4	2.7	0.7	0.7	0.8	1.3	2.7																							
14-May	Z	0.9	1.0	1.1	1.1	1.3	1.6	1.6	1.5	1.5	1.1	0.9	1.0	1.2	0.8	0.8	1.1	0.7	0.8	0.8	1.2	1.8	1.2	0.8	1.1	1.8																							
15-May	0.3	Z	1.0	1.2	0.9	1.9	1.9	2.1	1.4	1.1	0.8	0.6	0.6	0.5	0.4	0.5	0.5	0.7	0.3	0.6	1.3	0.6	0.8	0.7	0.9	2.1																							
16-May	2.7	1.7	Z	1.8	2.3	2.1	0.9	0.4	0.2	0.2	0.3	0.4	0.5	0.2	0.4	0.5	0.5	0.5	0.7	1.2	2.1	1.8	2.0	1.4	1.1	2.7																							
17-May	0.5	0.9	1.4	Z	2.6	2.6	1.6	1.6	0.9	0.7	0.6	0.7	0.8	0.7	0.8	0.5	1.0	1.1	1.0	0.6	0.4	0.5	0.4	1.3	1.0	2.6																							
18-May	0.2	0.2	0.2	0.2	Z	2.9	1.7	1.1	0.6	1.1	0.7	0.7	1.1	1.0	0.9	0.9	0.7	0.6	0.7	1.3	1.8	2.9	4.6	4.7	1.3	4.7																							
19-May	3.7	3.6	3.2	3.7	3.8	Z	2.2	2.0	1.9	1.9	2.0	2.1	2.1	2.1	1.9	3.2	2.9	2.7	3.9	4.4	4.6	4.0	3.7	4.6	3.1	4.6																							
20-May	Z	5.6	4.2	2.7	1.6	1.2	1.5	2.8	3.8	5.1	5.5	7.4	7.0	6.0	6.1	7.3	9.3	8.0	9.1	6.9	3.6	3.9	3.0	2.7	5.0	9.3																							
21-May	3.3	Z	3.0	2.3	2.0	2.5	2.4	2.9	2.3	2.7	2.5	3.0	3.1	3.4	4.1	4.6	3.8	3.5	3.7	3.1	2.4	2.2	2.1	2.6	2.9	4.6																							
22-May	2.8	2.4	Z	3.3	3.4	3.3	6.6	2.6	2.0	5.0	4.2	4.3	3.1	3.9	3.0	DF	2.1	2.8	7.7	5.7	6.5	12.0	12.3	14.4	5.2	14.4																							
23-May	19.5	13.8	5.0	Z	3.1	3.3	2.1	2.8	2.8	1.5	0.3	0.3	0.3	0.1	0.6	0.3	0.1	0.2	0.3	0.2	0.4	0.4	0.7	0.6	2.6	19.5																							
24-May	0.7	0.5	0.6	0.7	Z	1.0	0.8	1.1	1.7	1.8	1.5	1.4	1.3	1.3	1.2	1.6	1.6	2.6	1.7	1.3	1.0	1.0	1.0	1.0	1.2	2.6																							
25-May	0.9	0.9	0.8	0.8	1.3	Z	1.6	1.0	0.9	C	C	C	C	C	C	1.0	1.7	2.6	1.4	0.8	0.6	0.6	0.7	0.7	--	2.6																							
26-May	Z	1.9	0.8	0.9	0.8	1.4	1.0	1.2	0.8	0.9	0.9	1.0	0.6	0.6	0.7	0.9	2.0	0.8	0.6	0.6	0.8	0.5	0.5	0.6	0.9	2.0																							
27-May	0.7	Z	2.3	1.8	2.8	2.0	4.3	1.7	0.9	1.0	1.0	1.5	1.4	1.2	1.0	1.0	1.1	1.3	1.3	1.4	1.1	1.3	1.5	1.9	1.5	4.3																							
28-May	2.1	2.2	Z	2.9	2.4	3.6	3.2	2.6	2.4	1.7	1.3	1.2	0.8	0.6	0.7	0.5	0.3	1.1	0.9	0.8	0.2	3.8	7.4	1.5	1.9	7.4																							
29-May	0.4	0.4	0.4	Z	0.7	1.5	1.2	0.5	0.4	0.5	0.6	0.4	0.1	0.2	0.4	0.7	1.6	0.6	0.5	1.6	1.4	0.7	0.8	0.9	0.7	1.6																							
30-May	0.7	0.4	0.5	0.6	Z	1.4	1.6	3.5	6.1	2.1	1.4	1.5	1.6	3.6	2.0	0.7	1.4	4.2	5.2	5.4	2.4	0.9	1.0	3.8	2.3	6.1																							
31-May	2.3	2.2	4.6	1.7	2.8	Z	2.4	1.6	2.2	2.9	2.8	2.9	3.1	3.0	3.6	3.4	3.4	3.7	3.1	2.4	2.9	2.6	2.0	2.5	2.8	4.6																							
																								2.2	2.3	1.7	1.5	1.8	2.2	2.0	1.8	1.7	1.6	1.4	1.4	1.3	1.4	1.3	1.3	1.6	1.7	1.8	1.8	2.0	2.1	2.0	2.3	Diurnal Average	
																								19.5	13.8	5.5	5.7	3.8	4.7	6.6	3.5	6.1	5.1	5.5	7.4	7.0	6.0	6.1	7.3	9.3	8.0	9.1	6.9	8.5	12.0	12.3	14.4	Diurnal Maximum	

Z - zerospan C - Calibration DF - DAS Failure
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Jackfish 2/3 - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Jackfish 2/3 - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	706	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Jackfish 2/3 - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	16	18	33	30	53	47	53	67	115	81	75	41	17	19	29	12	706
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	16	18	33	30	53	47	53	67	115	81	75	41	17	19	29	12	706

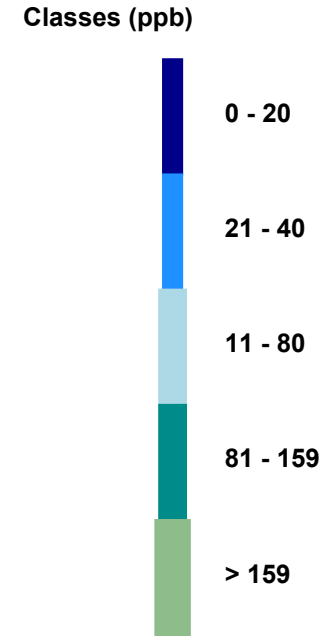
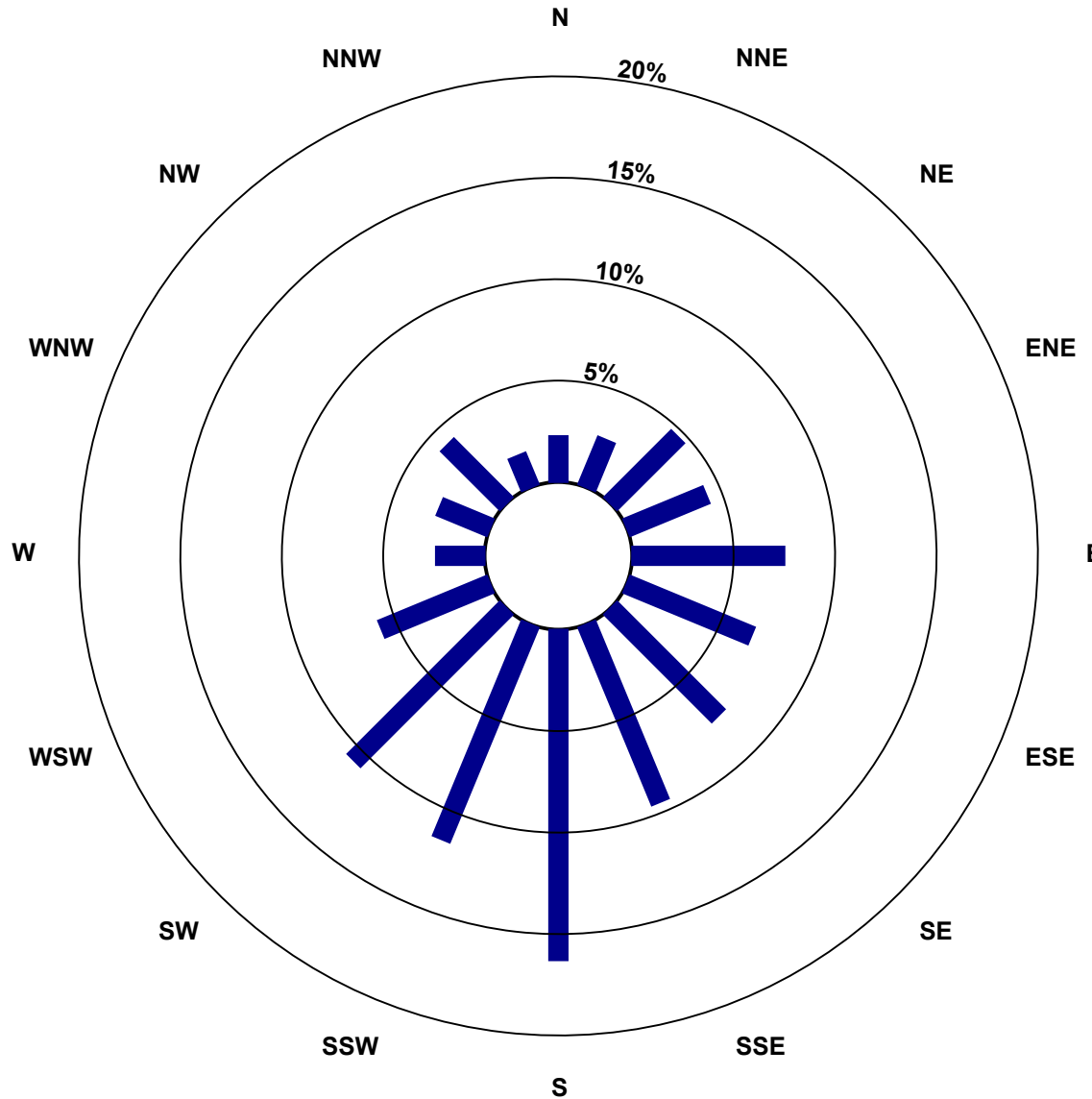
Total Number of Valid Hours: 706

Total Number of Hours: 744

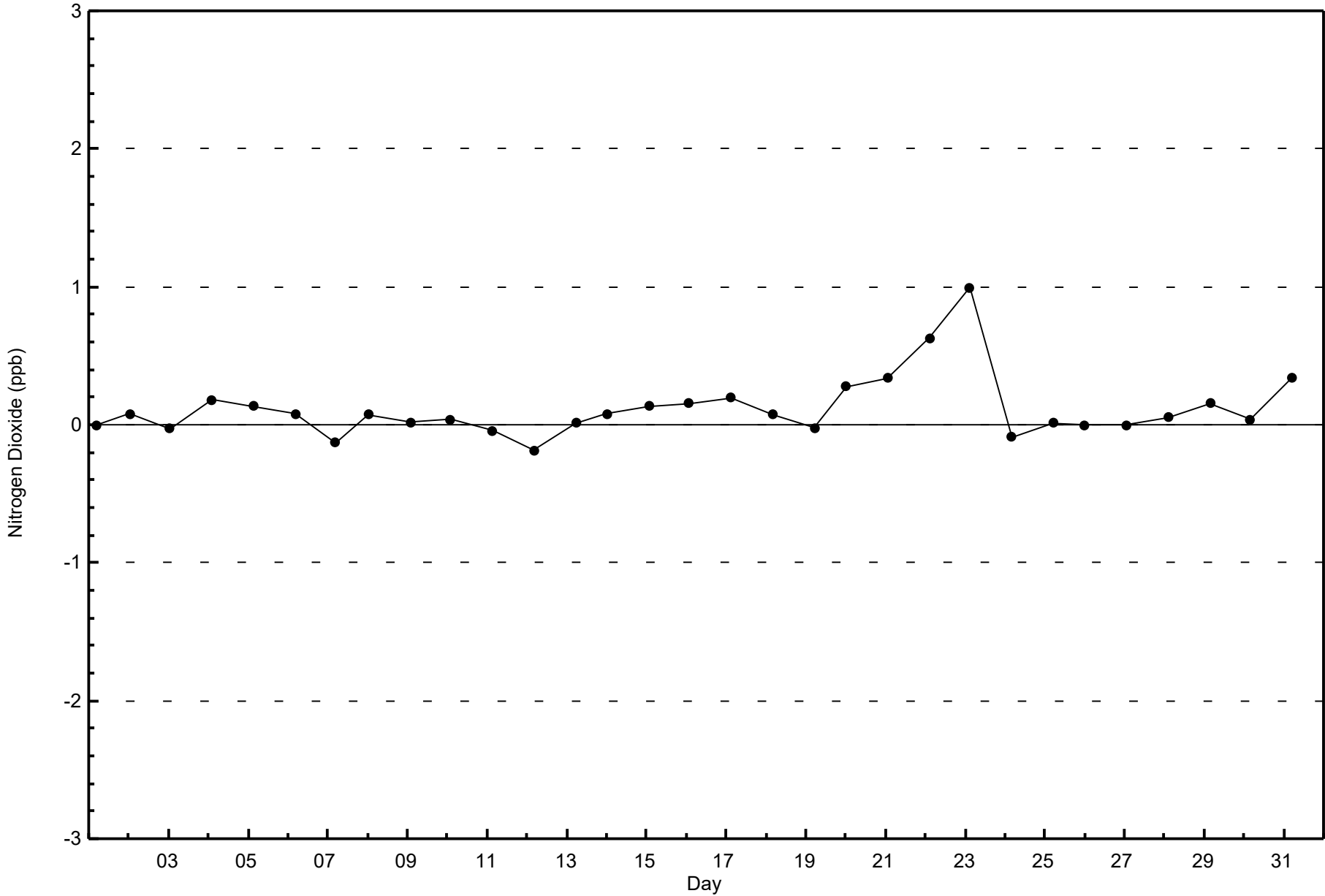


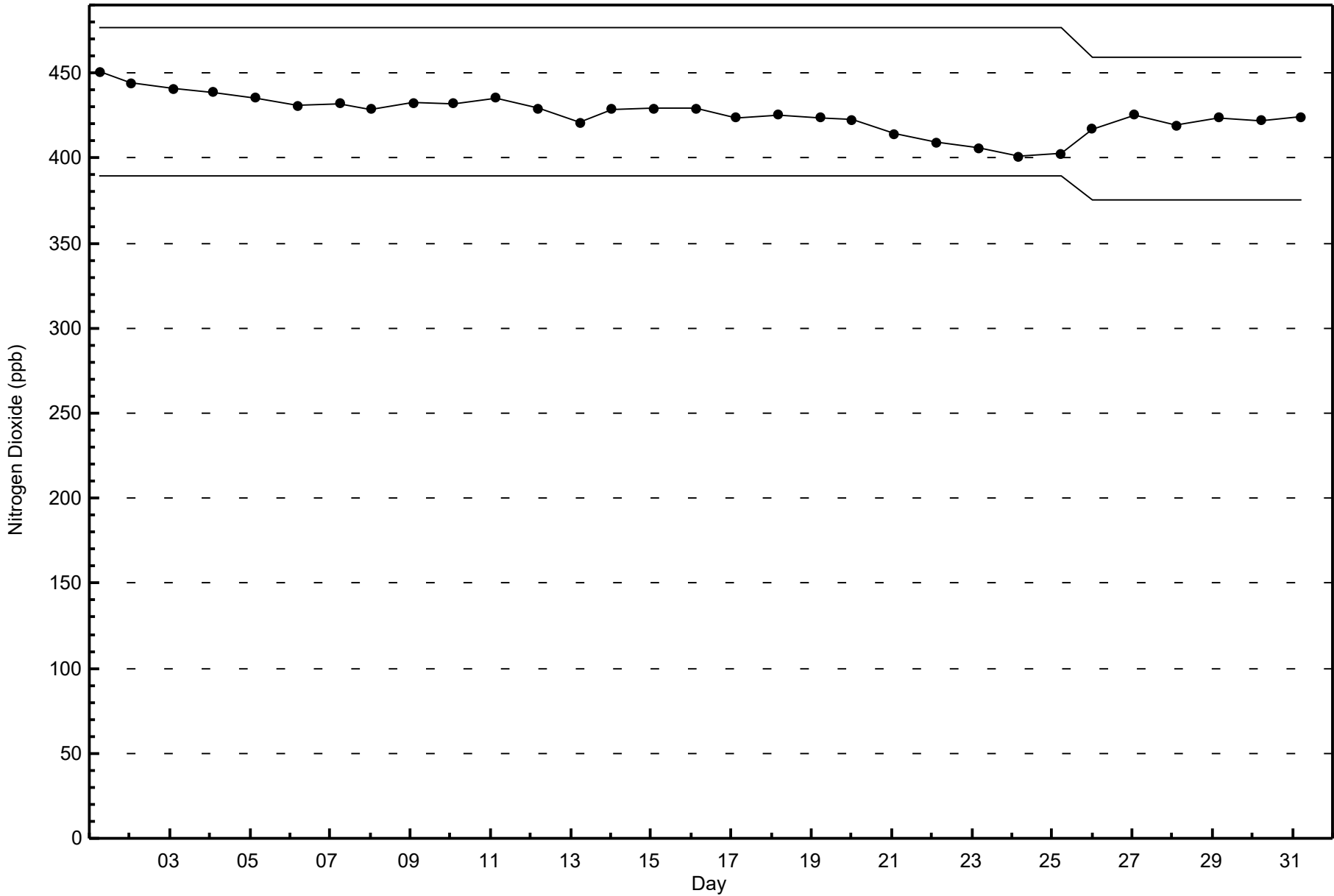
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Jackfish 2/3



Total Number of Valid Hours: 706





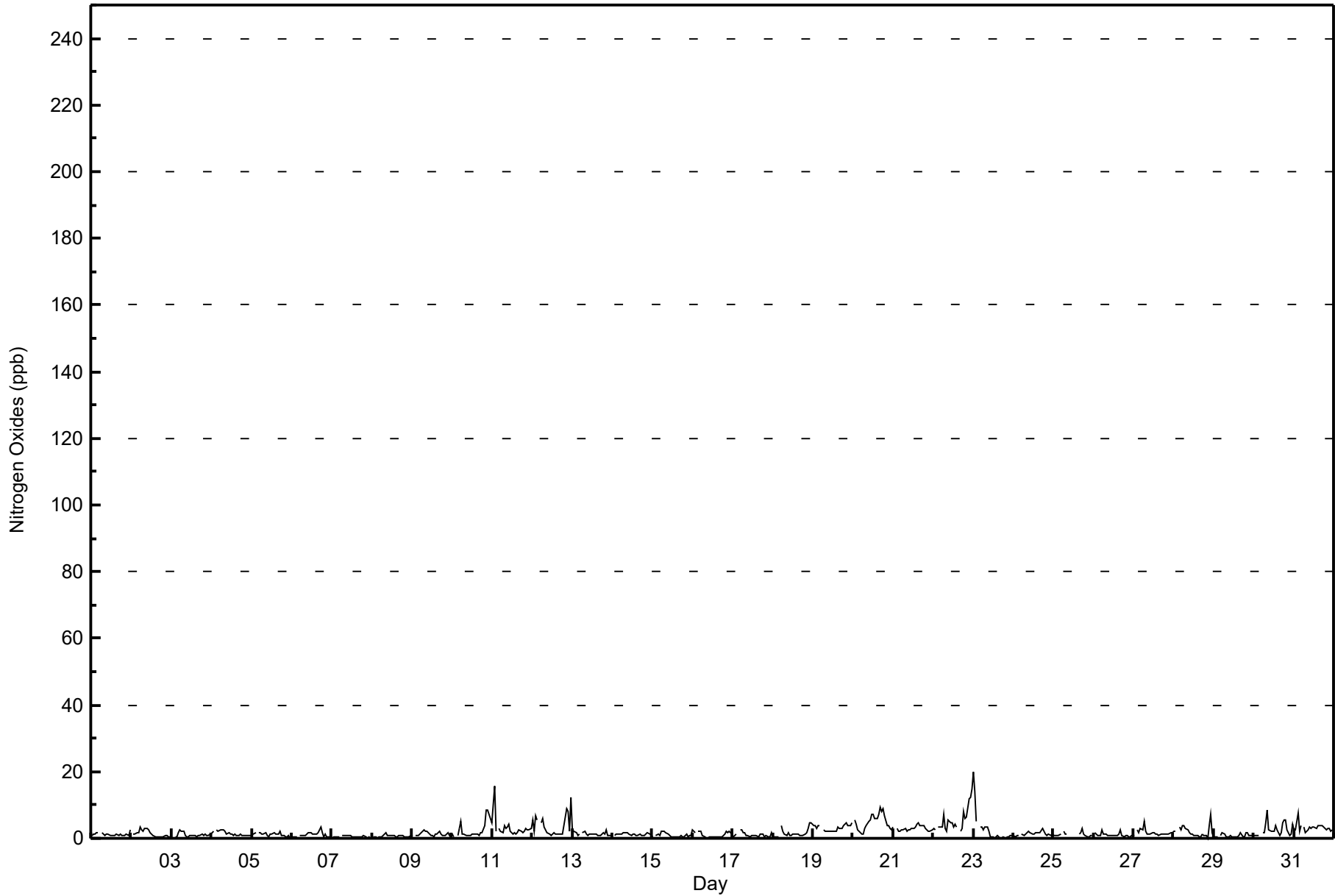


Maximum Value: 19.9 ppb on May 23 01:00		Maximum Daily Average: 5.4 ppb on May 22		Hours in Service: 744																																													
Minimum Value: 0.0 ppb on May 6 00:00		Minimum Daily Average: 0.5 ppb on May 7		Hours of Data: 706																																													
Maximum Diurnal Average: 2.6 ppb at hour 2		Minimum Diurnal Average: 1.4 ppb at hour 16		Hours of Missing Data: 38																																													
Monthly Average: 1.92 ppb		Percentiles: P ₁ = 0.2 P ₁₀ = 0.5 Q ₁ = 0.8 Median = 1.3 Q ₃ = 2.3 P ₉₀ = 3.8 P ₉₉ = 9.3		Hours of Calibration: 37																																													
				Percent Operational Time: 99.9																																													
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	1.0	1.1	1.5	1.5	1.6	Z	1.6	1.3	0.9	1.3	1.3	1.0	0.8	0.6	0.8	1.1	1.0	1.1	0.8	1.0	0.9	1.2	0.8	2.4	1.2	2.4																							
2-May	Z	1.4	1.3	1.5	1.5	3.4	2.5	2.3	3.0	2.8	2.5	1.5	1.1	1.0	0.4	0.4	0.3	0.3	0.3	0.3	1.0	0.7	0.4	0.4	1.3	3.4																							
3-May	0.3	Z	0.6	0.4	1.6	2.5	2.3	1.9	0.7	0.4	0.6	0.8	0.9	0.7	0.7	0.6	0.7	0.8	1.1	1.0	1.3	0.9	0.9	1.2	1.0	2.5																							
4-May	1.7	2.1	Z	2.6	2.2	2.5	2.4	2.4	2.0	1.3	1.9	1.2	1.1	0.9	1.1	1.0	1.0	1.2	0.9	0.9	0.8	0.7	0.8	1.5	2.6																								
5-May	1.0	1.3	1.6	Z	1.6	1.6	1.2	1.4	1.6	1.1	0.6	1.3	1.4	1.8	1.1	1.3	1.4	2.1	0.8	0.7	0.4	0.6	0.0	1.1	2.1																								
6-May	0.3	0.4	0.4	0.2	Z	0.9	0.7	0.6	1.0	1.2	1.5	1.9	1.3	1.1	1.1	1.4	1.7	3.5	1.9	0.5	1.2	0.5	0.6	0.4	1.1	3.5																							
7-May	0.2	0.2	0.6	0.4	0.4	Z	0.7	0.7	0.7	0.8	0.7	0.6	0.5	0.6	0.5	0.4	0.5	0.2	0.3	1.0	0.2	0.2	0.5	0.2	0.5	1.0																							
8-May	Z	0.5	0.4	0.2	0.3	0.5	0.4	1.1	1.9	0.8	0.8	0.9	0.8	0.7	0.6	0.5	0.7	0.8	0.7	0.5	0.6	0.4	0.5	0.7	0.7	1.9																							
9-May	0.7	Z	0.8	0.8	0.9	1.6	2.1	2.5	2.2	1.9	1.1	0.9	0.8	0.6	1.2	1.2	2.1	1.3	1.0	0.8	0.7	1.6	1.0	0.3	1.2	2.5																							
10-May	1.3	0.6	Z	1.0	3.2	5.3	1.4	1.4	1.0	0.8	1.0	0.8	1.2	1.1	1.2	1.4	0.9	1.6	1.6	3.7	8.5	8.5	7.0	5.9	2.6	8.5																							
11-May	4.7	15.8	2.0	Z	3.0	2.0	1.8	3.8	3.1	3.4	4.2	2.1	1.3	1.6	1.2	1.5	2.7	2.1	1.8	2.0	3.2	2.7	2.6	2.9	3.1	15.8																							
12-May	5.5	2.0	6.6	5.7	Z	4.6	6.0	3.3	2.4	1.7	1.1	1.0	1.2	1.5	1.3	1.4	1.4	1.3	1.3	3.6	8.7	8.0	2.1	12.2	3.6	12.2																							
13-May	2.5	2.3	1.9	0.9	1.1	Z	1.5	2.2	1.4	1.0	1.4	1.2	1.3	1.2	1.2	1.0	0.7	1.0	1.6	1.4	2.7	0.7	0.8	1.0	1.4	2.7																							
14-May	Z	1.0	1.2	1.2	1.1	1.4	1.8	1.6	1.6	1.7	1.1	0.9	1.1	1.3	0.9	0.8	1.2	0.7	0.8	0.8	1.2	1.8	1.2	0.8	1.2	1.8																							
15-May	0.3	Z	1.0	1.2	0.9	2.0	1.9	2.2	1.5	1.1	0.8	0.6	0.6	0.5	0.4	0.5	0.5	0.7	0.3	0.6	1.3	0.6	0.8	0.7	0.9	2.2																							
16-May	2.7	1.7	Z	1.9	2.3	2.1	0.9	0.4	0.2	0.2	0.3	0.5	0.5	0.2	0.4	0.5	0.5	0.5	0.8	1.2	2.1	1.8	2.0	1.4	1.1	2.7																							
17-May	0.5	0.9	1.4	Z	2.6	2.6	1.6	1.6	0.9	0.7	0.6	0.7	0.8	0.8	0.8	0.5	1.4	1.3	1.1	0.6	0.6	0.6	0.5	1.5	1.1	2.6																							
18-May	0.4	0.4	0.4	0.4	Z	3.8	2.1	1.5	0.9	1.8	0.9	0.9	1.4	1.2	1.1	1.1	1.0	0.7	0.8	1.3	1.8	3.1	4.7	4.8	1.6	4.8																							
19-May	3.8	3.7	3.2	3.8	4.0	Z	2.5	2.1	2.1	2.1	2.3	2.2	2.1	2.3	2.1	3.4	2.9	2.8	3.9	4.4	4.7	4.0	3.7	4.6	3.2	4.7																							
20-May	Z	5.6	4.2	2.7	1.6	1.2	1.5	2.8	3.9	5.1	5.5	7.4	7.0	6.0	6.1	7.3	9.3	8.0	9.1	6.9	3.6	3.9	3.0	2.7	5.0	9.3																							
21-May	3.3	Z	3.1	2.3	2.0	2.5	2.4	2.9	2.3	2.7	2.7	3.1	3.1	3.5	4.1	4.7	3.8	3.6	3.7	3.1	2.4	2.2	2.1	2.6	3.0	4.7																							
22-May	2.9	2.5	Z	3.5	3.4	3.5	7.1	2.9	2.2	5.4	4.8	4.8	3.5	4.2	3.4	DF	2.2	3.0	7.9	6.0	6.5	12.1	12.4	14.7	5.4	14.7																							
23-May	19.9	13.9	5.1	Z	3.3	3.5	2.3	3.5	3.4	2.0	0.5	0.5	0.4	0.1	0.7	0.3	0.1	0.2	0.3	0.2	0.4	0.4	0.7	0.7	2.7	19.9																							
24-May	0.7	0.5	0.7	0.7	Z	1.1	0.8	1.2	1.7	2.0	1.5	1.4	1.3	1.8	1.7	1.8	1.9	2.9	1.9	1.4	1.0	1.1	1.0	1.2	1.4	2.9																							
25-May	1.0	0.9	0.8	0.8	1.3	Z	2.0	1.4	1.3	C	C	C	C	C	C	1.1	1.7	2.8	1.4	0.8	0.6	0.6	0.7	0.7	--	2.8																							
26-May	Z	1.9	0.8	0.9	0.8	2.4	1.2	1.2	0.8	1.0	1.0	1.0	0.6	0.7	0.7	1.2	2.4	0.8	0.6	0.7	0.9	0.6	0.5	0.6	1.0	2.4																							
27-May	0.8	Z	2.6	1.9	2.9	2.3	5.0	2.0	1.1	1.1	1.1	1.7	1.7	1.3	1.1	1.0	1.2	1.4	1.3	1.4	1.1	1.4	1.5	1.9	1.7	5.0																							
28-May	2.1	2.2	Z	3.3	2.4	3.9	3.7	2.9	2.6	1.7	1.3	1.2	0.8	0.6	0.8	0.6	0.3	1.2	1.0	0.8	0.2	3.9	7.4	1.5	2.0	7.4																							
29-May	0.4	0.4	0.4	Z	0.7	1.7	1.2	0.5	0.4	0.5	0.9	0.6	0.2	0.3	0.6	0.7	1.8	0.6	0.5	1.7	1.6	0.9	1.0	0.9	0.8	1.8																							
30-May	0.8	0.7	0.9	0.9	Z	1.9	1.8	4.8	8.3	2.7	2.0	2.0	2.2	3.9	2.4	0.9	1.8	4.6	5.4	5.7	2.6	1.0	1.1	4.1	2.7	8.3																							
31-May	2.5	2.4	7.8	2.3	4.0	Z	3.3	1.8	2.5	3.3	2.9	3.2	3.4	3.2	3.9	3.6	3.7	4.0	3.3	2.6	3.0	2.8	2.1	2.5	3.2	7.8																							
																								2.4	2.6	2.0	1.7	2.0	2.4	2.2	2.0	1.9	1.8	1.6	1.6	1.5	1.5	1.4	1.7	1.8	1.9	1.9	2.1	2.2	2.1	2.5	Diurnal Average		
																								19.9	15.8	7.8	5.7	4.0	5.3	7.1	4.8	8.3	5.4	5.5	7.4	7.0	6.0	6.1	7.3	9.3	8.0	9.1	6.9	8.7	12.1	12.4	14.7	Diurnal Maximum	
Z - zerospan		C - Calibration				DF - DAS Failure																																											



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Jackfish 2/3 - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Jackfish 2/3 - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	706	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Jackfish 2/3 - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	16	18	33	30	53	47	53	67	115	81	75	41	17	19	29	12	706
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	16	18	33	30	53	47	53	67	115	81	75	41	17	19	29	12	706

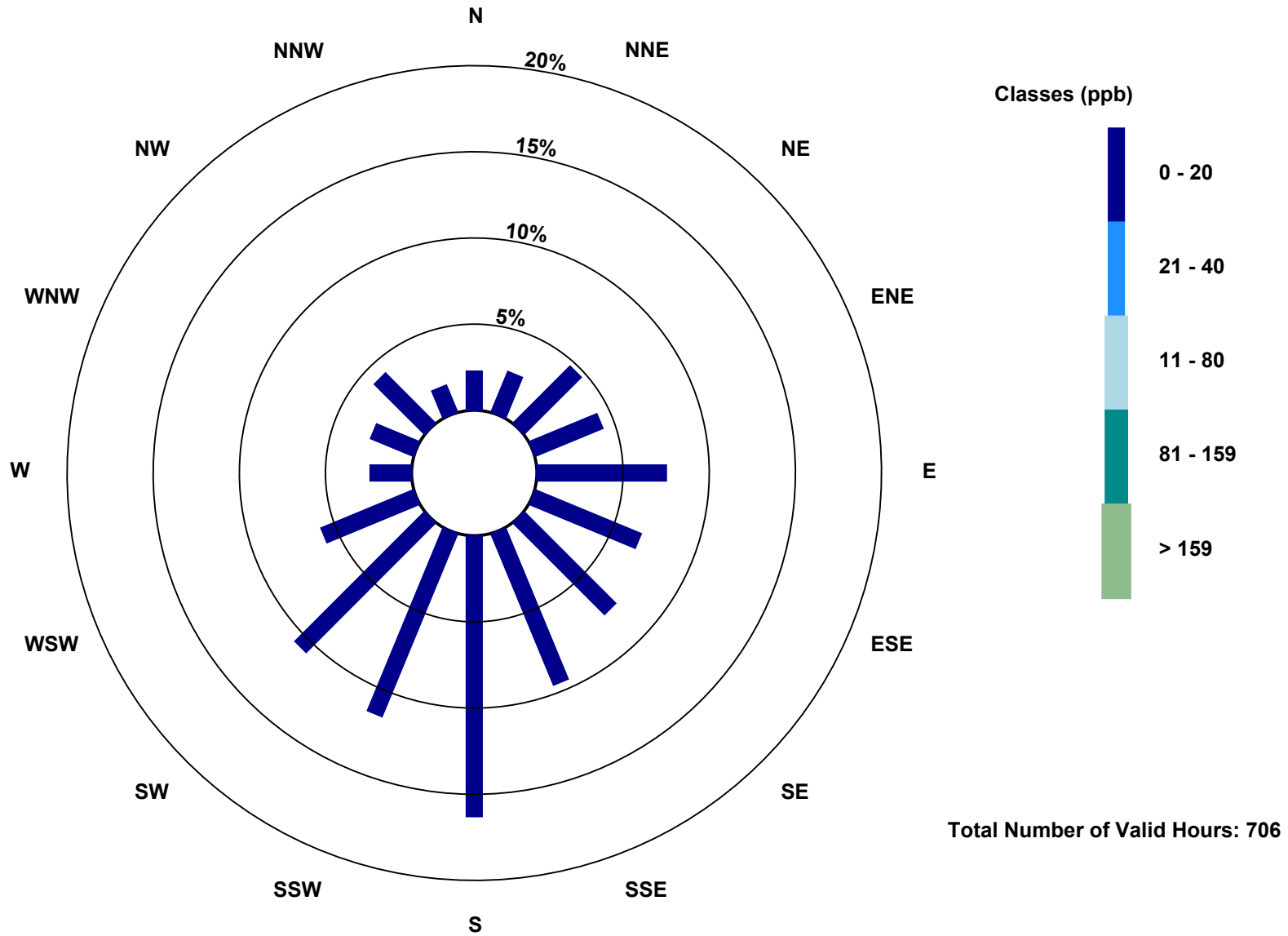
Total Number of Valid Hours: 706

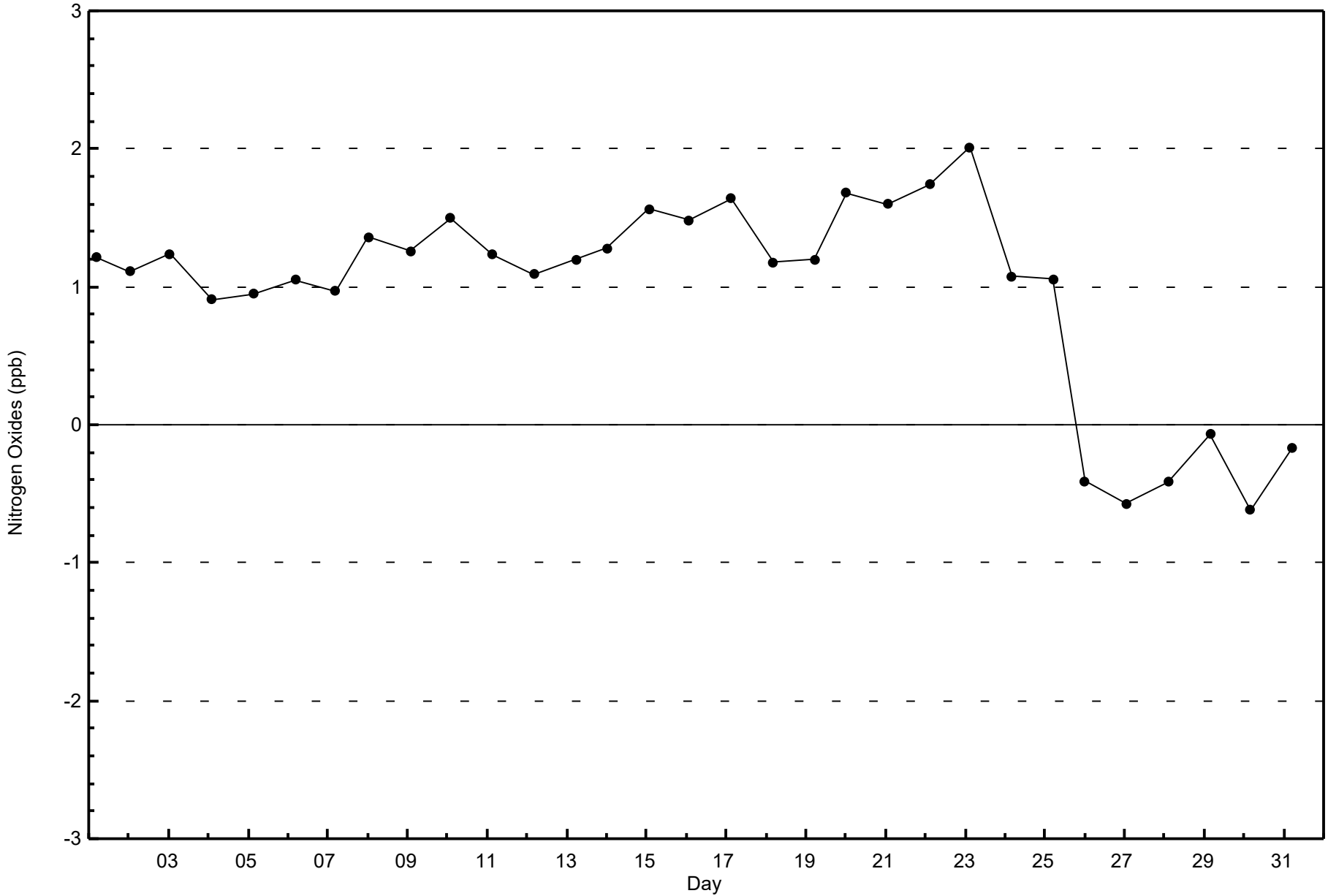
Total Number of Hours: 744

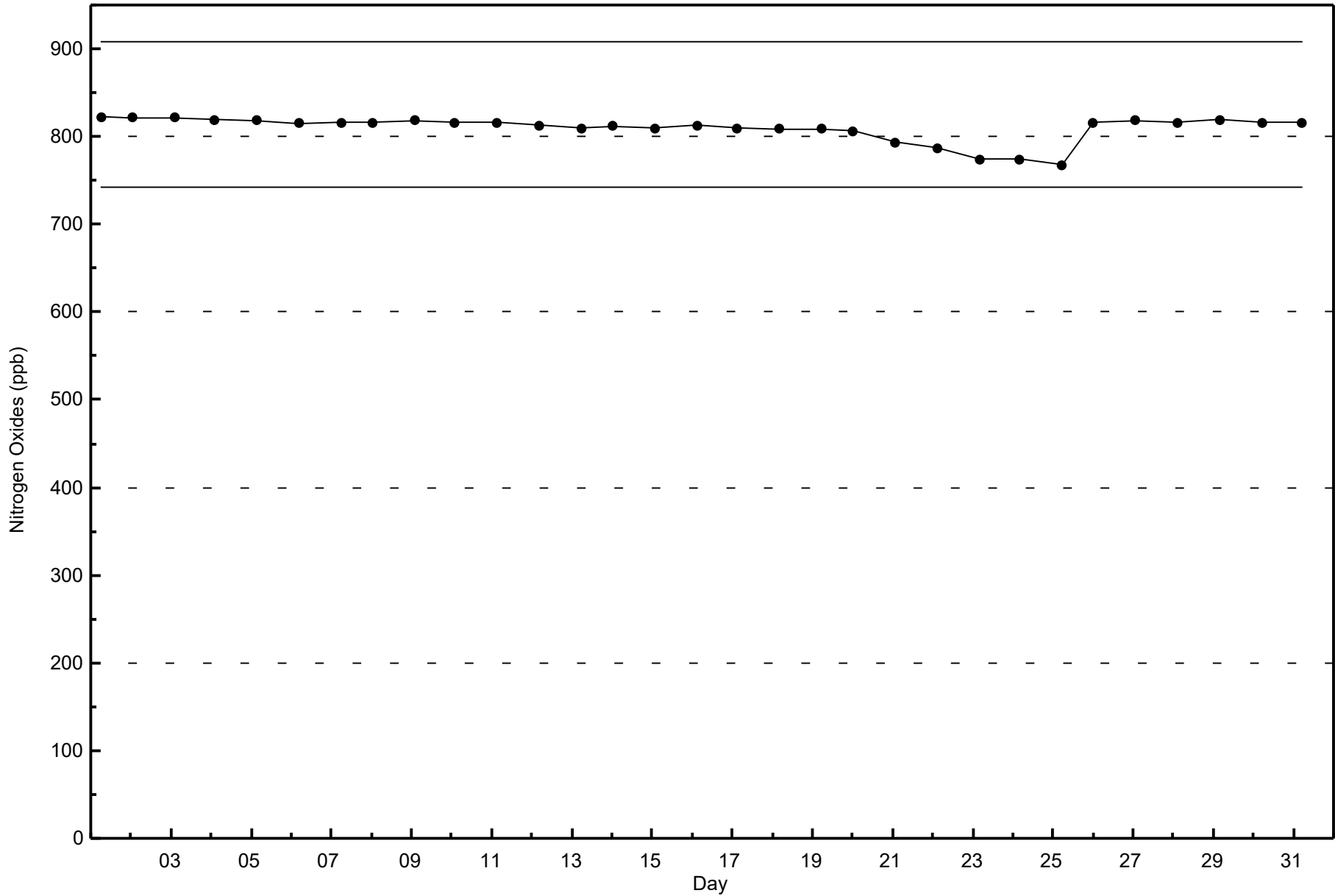


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Jackfish 2/3









Wood Buffalo Environmental Association
Summary of Hour Averages

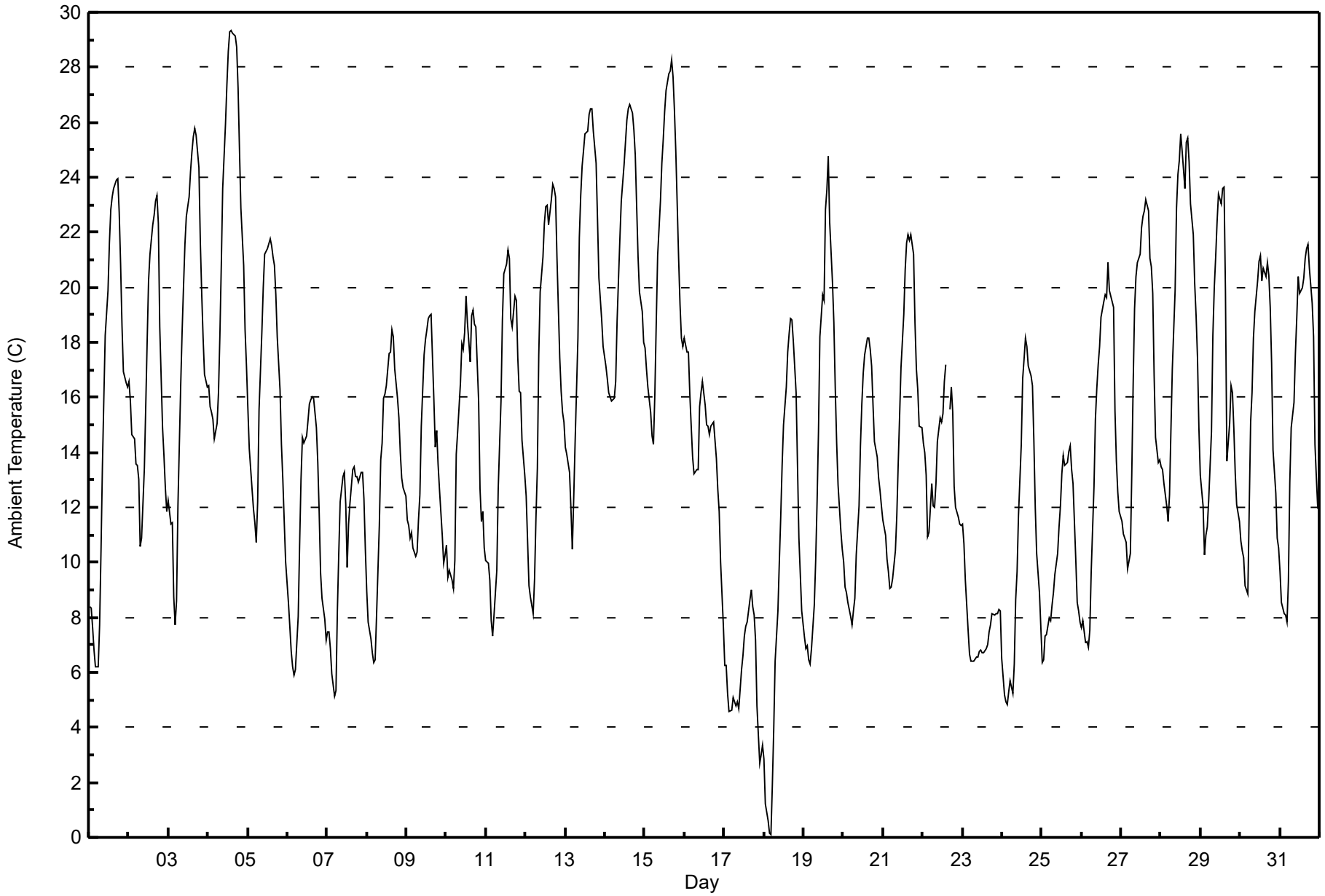
Ambient Temperature (AT) - C
Jackfish 2/3 - May 2023

Maximum Value: 29.3 C on May 4 15:00 Maximum Daily Average: 22.1 C on May 4																						Hours in Service: 744 Hours of Data: 743																										
Minimum Value: 0.1 C on May 18 05:00 Minimum Daily Average: 5.9 C on May 17 Maximum Diurnal Average: 20.2 C at hour 16 Minimum Diurnal Average: 8.9 C at hour 5 Monthly Average: 14.88 C Percentiles: P ₁ = 3.2 P ₁₀ = 7.4 Q ₁ = 10.4 Median = 14.6 Q ₃ = 19.0 P ₉₀ = 23.0 P ₉₉ = 27.8																						Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9																										
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	8.4	8.3	7.6	6.8	6.2	6.2	7.7	10.4	13.5	15.9	18.2	19.9	21.6	22.8	23.3	23.6	23.9	23.9	22.7	20.9	18.6	16.9	16.5	16.4	15.9	23.9																						
2-May	16.6	15.9	14.7	14.5	13.6	13.5	13.0	10.6	10.9	13.4	15.7	18.0	20.2	21.2	22.3	22.6	23.1	23.3	22.3	18.6	14.9	13.9	12.7	11.8	16.6	23.3																						
3-May	12.3	11.4	11.4	8.7	7.7	8.6	12.0	16.5	18.4	20.0	21.6	22.6	23.3	24.2	24.9	25.5	25.8	25.5	24.3	21.7	19.8	18.2	16.8	16.4	18.2	25.8																						
4-May	16.4	15.6	15.5	15.2	14.5	15.0	16.2	18.2	20.8	23.6	25.9	27.3	28.6	29.3	29.3	29.2	29.1	28.7	27.3	25.0	22.9	20.8	18.4	17.1	22.1	29.3																						
5-May	15.6	14.1	12.6	11.9	11.5	10.7	12.2	15.5	18.3	20.0	21.2	21.3	21.4	21.8	21.5	21.1	20.8	19.7	18.2	16.3	14.3	13.0	11.5	10.0	16.4	21.8																						
6-May	8.5	7.7	6.8	6.2	5.9	6.1	8.0	10.6	13.0	14.5	14.4	14.6	15.1	15.7	15.9	16.0	16.0	14.9	13.6	11.8	9.6	8.7	7.9	7.2	11.2	16.0																						
7-May	7.5	7.5	6.9	6.0	5.1	5.4	8.2	10.3	12.2	13.1	13.3	12.1	9.8	11.4	12.2	13.4	13.5	13.1	13.1	12.9	13.3	13.3	12.3	10.5	10.7	13.5																						
8-May	8.9	7.8	7.2	6.7	6.4	6.5	8.0	11.3	13.7	14.4	16.0	16.1	16.4	17.6	17.6	18.5	18.2	17.0	16.0	15.3	14.0	13.0	12.7	12.4	13.0	18.5																						
9-May	11.6	11.3	10.9	11.1	10.5	10.2	10.4	11.5	12.4	14.9	17.5	18.1	18.4	18.9	19.0	19.0	15.9	14.2	14.8	13.6	12.7	11.0	10.0	10.3	13.7	19.0																						
10-May	10.6	9.5	9.7	9.4	9.1	10.1	13.9	14.7	16.5	17.9	17.7	18.4	19.7	18.7	17.3	18.9	19.2	18.7	18.6	15.9	12.7	11.5	11.9	10.5	14.6	19.7																						
11-May	10.1	10.0	9.4	7.9	7.3	8.1	9.7	12.7	14.3	15.9	18.8	20.5	20.9	21.4	21.1	18.9	18.6	19.7	19.5	17.5	16.2	16.2	14.4	13.2	15.1	21.4																						
12-May	12.4	10.8	9.2	8.7	8.1	9.4	11.6	13.4	17.6	19.8	21.1	22.3	22.9	23.0	22.3	23.2	23.7	23.6	23.3	21.1	17.4	16.2	15.5	15.1	17.2	23.7																						
13-May	14.2	13.9	13.3	11.9	10.5	12.3	14.4	18.1	21.8	23.3	24.4	25.0	25.6	25.7	26.3	26.5	26.5	25.7	24.5	22.5	20.4	19.6	18.8	17.9	20.1	26.5																						
14-May	17.1	16.7	16.2	16.0	15.9	16.0	16.6	18.8	20.3	21.7	23.1	24.4	25.3	26.1	26.5	26.7	26.4	25.7	24.8	22.9	21.1	19.9	19.1	18.0	21.0	26.7																						
15-May	17.8	17.0	16.4	15.5	14.6	14.3	16.1	18.7	21.2	23.1	24.5	25.4	26.4	27.1	27.7	27.9	28.3	27.7	26.5	24.9	21.1	19.3	18.2	17.9	21.6	28.3																						
16-May	18.2	17.7	17.6	16.1	15.0	13.8	13.2	13.4	13.4	15.6	16.2	16.6	15.7	15.0	14.7	14.9	15.1	14.4	13.8	12.6	11.9	10.0	7.7	7.7	14.5	18.2																						
17-May	6.2	6.3	5.2	4.6	4.6	5.1	4.9	4.8	4.9	4.7	6.1	6.6	7.3	7.7	7.8	8.7	9.0	8.4	8.1	7.2	4.8	2.7	3.0	3.4	5.9	9.0																						
18-May	2.9	1.2	0.6	0.2	0.1	1.9	3.9	6.4	8.2	10.0	11.6	13.5	15.0	16.4	17.6	18.3	18.9	18.8	18.1	16.2	13.5	10.9	9.6	8.2	10.1	18.9																						
19-May	7.3	6.9	7.0	6.5	6.3	6.8	8.4	10.1	12.2	14.7	18.2	19.7	19.5	22.8	23.5	24.8	22.3	20.2	18.7	16.3	14.3	12.8	11.1	10.5	14.2	24.8																						
20-May	10.0	9.1	8.9	8.5	8.0	7.7	8.2	8.7	10.3	12.0	14.3	15.8	16.9	17.5	18.2	18.1	17.8	17.2	15.7	14.4	13.8	13.1	12.6	12.1	12.9	18.2																						
21-May	11.5	11.0	10.1	9.7	9.0	9.1	9.4	10.4	11.7	13.6	15.3	17.1	19.0	20.6	21.6	21.9	21.7	21.9	21.2	18.7	17.0	16.3	14.9	14.9	15.3	21.9																						
22-May	14.3	14.0	13.2	10.9	11.1	12.9	12.0	12.0	12.8	14.4	15.2	15.1	15.4	16.6	17.2	DF	15.6	16.4	15.5	12.8	12.0	11.7	11.4	11.3	13.6	17.2																						
23-May	11.4	10.7	9.4	7.5	6.7	6.4	6.4	6.4	6.6	6.6	6.8	6.8	6.7	6.7	6.8	7.0	7.5	7.7	8.1	8.1	8.1	8.2	8.3	8.3	7.6	11.4																						
24-May	6.5	5.2	4.9	4.8	5.3	5.7	5.2	6.3	8.7	9.7	11.7	14.3	16.7	17.4	18.2	17.9	17.1	16.8	16.4	14.5	12.0	10.3	8.9	7.6	10.9	18.2																						
25-May	6.4	6.4	7.3	7.4	8.0	7.9	8.4	8.9	9.6	10.3	11.3	12.0	13.2	13.9	13.5	13.6	14.0	14.2	13.4	12.9	10.1	8.5	8.2	7.8	10.3	14.2																						
26-May	7.7	7.9	7.1	7.1	6.9	7.5	9.6	12.8	15.2	16.3	17.2	17.8	18.9	19.5	19.7	19.6	20.9	19.9	19.5	19.3	15.5	13.7	12.6	11.8	14.3	20.9																						
27-May	11.5	11.0	10.9	10.8	9.8	10.3	13.2	16.5	19.2	20.4	20.9	21.2	22.2	22.6	22.8	23.2	22.8	21.0	20.8	19.8	16.8	14.6	13.6	13.7	17.1	23.2																						
28-May	13.5	13.4	12.9	12.1	11.5	12.5	14.8	17.0	19.9	22.9	24.1	24.6	25.6	25.0	23.6	25.3	25.4	24.5	23.0	21.9	20.2	19.0	17.4	14.9	19.4	25.6																						
29-May	13.2	12.1	10.2	11.0	11.3	12.3	14.7	18.2	20.0	21.1	22.4	23.4	23.0	23.6	23.6	19.8	13.7	15.0	16.4	16.2	14.8	13.2	12.1	11.5	16.4	23.6																						
30-May	10.8	10.4	10.2	9.1	8.9	12.0	15.1	16.2	18.2	19.1	20.2	21.0	21.1	20.2	20.7	20.4	20.9	20.4	19.3	17.3	14.1	12.5	10.9	10.5	15.8	21.1																						
31-May	9.7	8.5	8.1	8.1	7.8	9.3	12.9	14.9	15.8	17.6	18.9	20.4	19.8	20.0	20.3	21.0	21.4	21.6	20.7	19.4	18.2	14.3	13.1	12.0	15.6	21.6																						
																								11.3	10.6	10.0	9.4	8.9	9.5	10.9	12.7	14.6	16.2	17.5	18.5	19.1	19.7	19.9	20.2	19.8	19.4	18.7	17.1	15.1	13.7	12.7	12.0	Diurnal Average
																								18.2	17.7	17.6	16.1	15.9	16.0	16.6	18.8	21.8	23.6	25.9	27.3	28.6	29.3	29.3	29.2	29.1	28.7	27.3	25.0	22.9	20.8	19.1	18.0	Diurnal Maximum
DF - DAS Failure																																																



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Jackfish 2/3 - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ambient Temperature (AT) - C
Jackfish 2/3 - May 2023

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	167	22.48	22.48
10 - 20	420	56.53	79.00
> 20	156	21.00	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



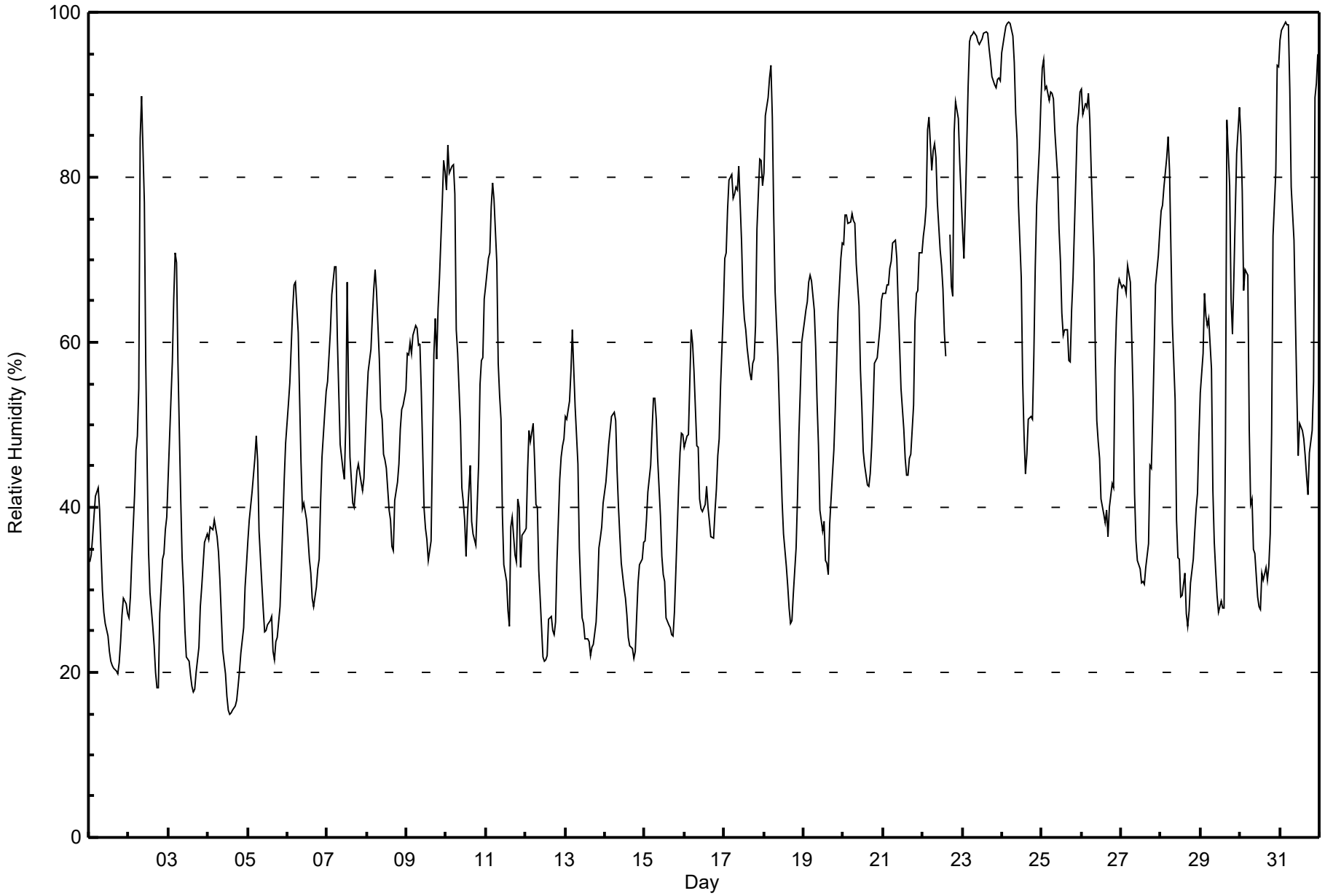
Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity (RH) - %

Jackfish 2/3 - May 2023

Maximum Value: 98.9 % on May 24 05:00																								Hours in Service: 744		
Minimum Value: 14.9 % on May 4 14:00																								Hours of Data: 743		
Maximum Diurnal Average: 70.1 % at hour 5																								Hours of Missing Data: 1		
Monthly Average: 52.50 %																								Hours of Calibration: 0		
Percentiles: P ₁ = 17.7 P ₁₀ = 26.5 Q ₁ = 35.3 Median = 48.8 Q ₃ = 67.4 P ₉₀ = 85.1 P ₉₉ = 98.1																								Percent Operational Time: 99.9		
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	33.5	34.3	36.5	39.0	41.4	42.4	39.7	34.7	30.0	27.3	25.9	24.4	22.6	21.3	20.9	20.5	20.1	19.8	21.2	23.8	27.0	28.9	28.3	27.1	28.8	42.4
2-May	26.6	29.1	33.8	41.5	46.9	48.6	54.4	84.8	89.8	77.0	57.5	45.0	34.6	29.7	25.7	23.2	19.9	18.1	18.1	27.1	33.7	34.5	37.2	38.9	40.7	89.8
3-May	43.6	53.1	57.6	65.3	70.8	69.7	57.7	41.0	34.0	30.2	25.1	21.9	21.4	19.6	18.3	17.5	18.0	20.0	23.0	27.9	30.4	33.0	35.7	36.7	36.3	70.8
4-May	36.1	37.6	37.5	37.4	38.4	36.4	34.6	31.2	26.9	22.7	19.8	17.2	15.5	14.9	15.0	15.4	15.9	16.6	18.4	20.2	22.3	25.4	30.4	33.1	25.8	38.4
5-May	36.0	38.6	41.8	43.9	45.9	48.6	45.5	37.1	30.7	27.7	24.9	25.1	25.7	26.3	26.7	22.5	21.5	23.7	24.3	27.9	32.8	38.1	43.4	47.8	33.6	48.6
6-May	52.5	55.0	59.4	63.9	66.9	67.2	61.1	53.2	45.4	39.8	40.5	38.6	36.3	33.8	32.0	29.0	27.9	30.3	32.6	33.8	40.6	46.1	51.5	54.0	45.5	67.2
7-May	55.3	58.3	61.4	65.8	69.2	69.2	60.3	53.9	47.6	44.6	43.4	50.0	67.3	53.8	46.1	40.6	40.0	42.2	44.4	45.2	43.1	42.0	43.6	48.3	51.5	69.2
8-May	52.9	56.5	59.2	63.0	66.5	68.9	66.1	58.0	51.9	50.7	46.5	45.8	44.8	39.6	38.4	35.2	34.8	40.8	43.0	45.3	49.4	51.9	52.4	54.3	50.7	68.9
9-May	58.6	58.4	60.1	58.6	60.9	62.1	61.7	59.6	59.8	54.0	39.9	37.5	36.1	33.6	34.8	36.0	58.5	62.8	58.0	64.1	67.8	77.0	82.1	80.7	56.8	82.1
10-May	78.5	83.9	80.4	81.3	81.5	77.9	61.5	58.6	50.0	42.5	40.7	38.4	34.0	38.9	45.0	38.4	36.7	36.1	35.4	45.2	55.0	57.8	58.1	65.2	55.0	83.9
11-May	66.7	70.2	70.9	76.4	79.4	77.3	69.7	57.5	53.6	50.8	39.2	33.0	31.0	27.5	25.5	37.6	38.9	34.3	33.4	41.0	39.9	32.7	36.5	37.2	48.3	79.4
12-May	37.5	44.5	49.4	48.0	50.2	45.8	40.3	40.0	32.4	28.9	21.8	21.3	21.5	22.1	26.4	26.7	25.2	24.6	26.0	33.3	43.4	46.1	47.4	48.3	35.5	50.2
13-May	51.0	50.7	52.9	56.4	61.6	56.8	52.1	45.3	35.2	30.4	26.7	26.0	24.0	24.1	23.8	22.0	23.0	23.5	26.1	29.9	35.1	36.2	37.6	40.4	37.1	61.6
14-May	43.1	45.2	47.6	49.3	51.1	51.5	50.5	44.4	40.0	36.5	33.2	30.1	29.0	26.9	24.3	23.2	22.8	21.6	22.5	26.7	30.9	33.1	33.8	35.8	35.5	51.5
15-May	36.0	38.4	41.8	45.1	49.3	53.3	53.1	50.6	46.0	38.9	34.0	31.9	31.0	26.5	25.8	25.4	24.5	24.4	27.4	32.3	42.4	46.7	49.1	48.8	38.4	53.3
16-May	47.3	48.6	48.8	55.2	61.6	59.8	56.4	47.5	47.2	41.0	39.8	39.4	40.4	42.6	40.0	38.3	36.4	36.3	39.6	42.3	46.3	48.3	54.7	64.1	46.8	64.1
17-May	70.1	70.8	76.1	79.6	80.3	77.5	78.0	78.9	78.5	81.4	72.1	65.6	62.8	61.5	59.3	56.2	55.4	57.5	57.9	62.0	73.8	82.3	82.1	79.0	70.8	82.3
18-May	80.6	87.5	89.7	92.0	93.5	87.2	75.5	66.1	58.1	52.0	46.3	40.7	36.8	32.9	30.5	27.7	25.9	26.3	29.5	35.0	41.2	48.9	54.2	59.9	54.9	93.5
19-May	62.6	63.9	64.9	67.3	68.1	67.4	63.8	59.4	52.8	47.5	39.6	37.1	38.3	33.6	33.1	31.9	37.9	44.1	47.0	51.8	57.8	63.7	70.2	72.0	53.2	72.0
20-May	71.9	75.4	75.4	74.4	74.5	75.6	74.8	74.4	69.5	64.4	56.5	52.2	46.8	45.2	42.6	42.6	44.0	47.4	51.9	57.5	58.1	60.0	61.8	65.1	60.9	75.6
21-May	65.9	66.0	67.0	66.9	68.9	69.8	72.1	72.4	70.3	64.6	59.7	54.3	49.4	46.0	43.9	43.9	46.0	46.4	52.4	62.5	65.9	66.3	70.9	70.8	60.9	72.4
22-May	73.0	74.3	76.4	85.8	87.3	80.9	83.3	84.0	82.4	77.0	71.2	69.3	66.4	61.2	58.2	DF	73.1	66.8	65.6	85.4	89.2	87.2	81.9	77.8	76.4	89.2
23-May	73.8	70.1	76.5	91.0	96.4	97.2	97.3	97.6	97.1	96.5	96.1	96.4	96.9	97.4	97.7	97.4	95.7	94.1	92.2	91.2	90.8	91.8	92.0	91.7	92.3	97.7
24-May	95.0	97.3	98.3	98.6	98.9	98.6	97.1	93.9	87.8	84.6	76.6	67.8	55.2	48.7	44.1	46.4	50.7	51.0	50.7	58.6	69.1	76.6	83.7	89.0	75.8	98.9
25-May	93.2	94.3	90.7	91.0	89.4	90.3	90.2	89.5	85.6	80.2	73.7	69.9	63.6	60.9	61.6	61.6	57.8	57.7	63.9	67.8	79.9	86.1	87.8	90.4	78.2	94.3
26-May	90.8	87.7	89.0	88.4	90.1	87.0	80.8	70.0	58.2	50.5	48.0	46.0	41.0	39.2	38.1	39.7	36.4	39.9	42.9	42.4	56.8	62.8	66.4	67.7	60.8	90.8
27-May	66.7	66.9	66.8	66.0	69.4	67.3	60.6	53.2	41.7	35.9	33.6	32.5	30.9	31.0	30.8	32.7	35.6	45.2	44.7	51.0	58.7	66.9	70.5	73.4	51.3	73.4
28-May	75.9	76.6	78.9	82.4	84.9	80.9	71.4	62.4	53.0	38.5	33.9	33.8	29.2	29.3	32.1	27.2	25.5	27.4	30.9	33.6	36.9	39.8	41.7	48.4	48.9	84.9
29-May	53.8	58.6	66.0	63.1	62.1	62.9	56.7	42.0	35.8	32.4	29.4	27.2	28.6	27.9	27.9	47.9	86.9	79.0	65.3	61.0	67.8	75.6	82.8	88.4	55.4	88.4
30-May	85.1	78.3	66.3	68.8	68.2	49.4	40.3	40.9	34.9	34.4	29.2	28.0	27.6	32.1	31.2	32.7	31.1	32.9	36.8	49.0	72.8	80.7	93.5	93.4	51.6	93.5
31-May	96.6	97.9	98.5	98.8	98.5	98.4	90.7	78.8	72.3	63.1	54.1	46.2	50.1	49.4	48.3	46.2	43.8	41.6	46.7	49.3	55.3	89.7	91.3	94.9	70.9	98.8
61.6 63.5 65.1 67.9 70.1 68.6 64.4 60.0 54.8 49.9 44.5 41.7 40.0 38.0 37.0 36.2 39.0 39.7 41.0 45.9 52.1 56.7 59.8 62.0																								Diurnal Average		
96.6 97.9 98.5 98.8 98.9 98.6 97.3 97.6 97.1 96.5 96.1 96.4 96.9 97.4 97.7 97.4 95.7 94.1 92.2 91.2 90.8 91.8 93.5 94.9																								Diurnal Maximum		
DF - DAS Failure																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Jackfish 2/3 - May 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	17	2.29	2.29
20 - 40	240	32.30	34.59
40 - 60	226	30.42	65.01
60 - 80	159	21.40	86.41
80 - 100	101	13.59	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Jackfish 2/3 - May 2023

Maximum Speed: 17 km/h on May 14 09:00	Maximum Daily Speed Average: 11.8 km/h on May 23	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 22 04:00	Minimum Daily Speed Average: 1.4 km/h on May 10	Hours of Data: 743
Maximum Diurnal Speed Average: 3.9 km/h at hour 2	Minimum Diurnal Speed Average: 1.8 km/h at hour 17	Hours of Missing Data: 1
Monthly Average Velocity: 2.7 km/h 170.1 deg	Percentiles: $P_1 = 1$ $P_{10} = 3$ $Q_1 = 5$ Median = 7 $Q_3 = 9$ $P_{90} = 12$ $P_{99} = 15$	Percent Operational Time: 99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	S9	S10	SSE10	S9	S10	SSE11	SSE12	SSE13	SSE12	SSE10	S13	S14	S14	S14	S14	S15	S13	S12	S9	S7	SSE7	S7	S7	S9	\$10.7	S15	
2-May	SSW11	SW10	WSW8	WNW5	NNW4	WSW3	WNW5	SSW2	WSW4	WNW5	NW4	NW6	NW6	NW5	NW7	N4	WNW6	NNW5	N3	S2	SSW3	SSW3	SSW1	S5	W2.8	SSW11	
3-May	SSW8	SSW9	SSW9	S7	S7	S7	S6	S10	S11	S12	SSE12	SSE11	SSE12	SSE11	S12	S12	SSE10	S10	S9	SSE4	SE6	SSE7	SSE7	S7	S8.6	S12	
4-May	SSE8	SSE8	SSE9	S9	S7	SSE8	S8	S8	S10	S9	SSE8	S9	S9	SE11	SE9	SE8	SE8	ESE9	ESE7	SE7	SSE5	SSE6	SSE6	SSE6	SSW7.7	SE11	
5-May	SSE6	S7	S7	SSE7	SSE8	SSE8	SSE8	SSE10	SSE9	SE10	SE12	ESE14	ESE13	E14	ENE15	E15	E15	E14	ESE13	ESE11	ESE9	ESE10	ESE11	SE8	ESE9.2	E15	
6-May	ESE8	SE8	SE6	SE6	ESE6	SE5	SE7	SE10	SE10	ESE11	E12	E13	ESE12	E13	E13	E13	E14	E14	E13	ESE9	E6	E7	E6	ESE5	ESE9.1	E14	
7-May	ESE6	ESE6	SE4	SE6	SE6	SE4	SE6	SE9	SE10	ESE10	SE11	SSE11	SE7	ESE9	ESE11	ESE10	ESE6	E3	SE4	E6	ESE7	SE7	SE6	SE5	SE6.9	SE11	
8-May	SE6	SE6	SE6	SE6	SE6	SSE6	SSE7	SSE9	SSE7	S8	S7	SE7	SSE8	S10	S8	SSE10	SE10	SE9	SE7	SE5	SE3	SE3	SSW3	SW4	SSE6.3	SE10	
9-May	SSE2	SSE2	SE2	SSE5	SSE6	S6	SSE5	E1	SSW4	S2	SE4	ESE5	S5	N1	N4	NNW4	N3	SE5	SSW2	SSW4	SSW5	SW6	WSW4	SW4	S2.2	SW6	
10-May	WSW2	E2	NNE3	WSW0	SW3	WSW3	NNW2	NNW3	NW3	N3	ENE2	NE2	ENE2	WNW5	SW9	SW9	WSW7	NNE7	NW4	W0	S2	SSW3	SW3	ESE1	W1.4	SW9	
11-May	SSW3	SW3	WSW4	SW2	W1	NNE3	NE5	ENE5	ESE3	NE3	ENE6	ENE6	ENE10	ESE10	ESE10	SSW10	SSW8	S4	ESE4	E2	ESE4	SE5	SSE4	SE4	ESE2.6	ENE10	
12-May	SSE4	SSW4	SSW3	ESE3	SE2	SSE4	S5	SE4	ENE5	E7	ESE7	ESE4	SSE4	SW5	SSW3	NE4	S4	SSW5	SSW5	SSW4	S3	SSW4	S5	S5	SSW2.9	ESE7	
13-May	SSW5	S6	S6	S7	S7	S6	SSW6	SSW6	SW10	SW14	SW16	SW15	SW15	SW14	SW14	SW13	WSW15	WSW13	SW11	SSW5	S5	S5	SSW6	SSW7	SW8.7	SW16	
14-May	SSW8	SSW9	SSW9	SSW10	SSW11	SW12	SW13	SW16	SW17	SW17	SW15	SW15	SW13	SSW12	SW13	SW12	SW11	WSW10	SW9	SW6	SSW6	SSW6	SSW7	SSW7	SSW10.9	SW17	
15-May	SW10	SW10	SW10	SSW9	SSW9	SSW8	SW9	SW10	SW11	SW11	SW10	SW10	SW10	SW13	SSW11	SSW10	SSW9	SW10	SW10	SSW5	SSW3	S3	S3	S4	SSW8.6	SW13	
16-May	S6	S6	SW8	W6	NW9	NW9	NW8	NW11	NW10	NW11	NW11	NW11	NW12	NNW11	NW11	NNW11	NNW11	NW10	WNW9	WNW9	WNW9	WNW8	NW4	W1	NW7.5	NW12	
17-May	WNW3	WNW5	NW4	NW4	WNW5	NW7	NNW6	N8	N7	N11	N9	NNW7	NNE9	NNE11	NE11	NE13	NE10	NNE8	ENE6	SE2	SE2	E4	E5	N5.2	NE13		
18-May	E5	SE2	S2	S2	S4	S5	S5	SSW6	SW6	WSW5	SSW4	SSW5	SSW6	SW7	SW7	SSW6	SW7	SSW7	SSW7	SSW7	SSW7	SSW5	SSW4	SSW4	S4	SSW4.6	SW7
19-May	S4	S5	S7	S6	S7	S8	S8	SSW8	SSW12	SSW8	SW13	SW13	SW11	SW11	WSW11	WSW9	NW5	NNW5	N5	N6	NNE4	NNE4	NNE2	NNE2	SW4.5	SW13	
20-May	NNE4	NNE4	NE5	NNE5	NE4	NE4	NE4	NE7	NE7	ENE7	ENE8	ENE9	ENE9	E7	E7	E8	E7	ENE7	ENE6	E5	ESE5	SE5	SSE5	SE5	ENE5.3	ENE9	
21-May	SSE6	SSE6	S5	SSE6	S6	S8	S8	S8	S8	S4	SSE5	SSE5	SSE5	S4	SSW5	SW5	SSW4	S2	SE1	ESE2	SSE2	S3	S3	S4	S4.6	S8	
22-May	S4	S4	SE1	SW0	ESE1	NE5	NE6	NE6	NNE7	NE8	NNE9	NE12	NE13	NE15	NE15	DF	NE13	ENE15	ENE14	ENE12	ENE13	ENE12	ENE13	ENE11	NE8.2	ENE15	
23-May	E14	ENE16	E16	ENE13	ENE13	ENE15	E14	E13	E14	E13	E14	E13	E14	E11	E13	E12	E11	E12	E10	E9	ESE8	E7	ESE7	E5	E11.8	E16	
24-May	ENE2	E3	E3	E3	E4	SE6	SSE7	S7	SSW5	SW8	SSW6	SW8	SW10	WSW11	WSW12	WSW9	WNW7	WNW7	WNW7	WNW7	WNW7	WNW5	NW6	NW5	N1	WSW3.0	WSW12
25-May	W3	W3	NW3	W1	W3	W4	WNW4	NW5	NNE5	N5	N5	NNE5	NNE5	N5	NE7	NNE5	NE6	NE4	ENE4	ESE2	SSE2	SSE3	SSE3	S4	N1.7	NE7	
26-May	S5	S5	S5	SSW6	SSW6	SSW7	SW7	SSW6	SW6	SW5	SW4	SW6	WSW6	SSW3	WSW4	W3	WSW6	SW3	ESE3	SSE3	SSE1	SSE3	SSE3	S4	SSW4.0	SSW7	
27-May	S5	S5	S5	S5	S5	S5	SSW5	S5	SSE7	SSE8	SSE8	S9	SSE8	S8	SSW9	S7	S6	SE5	SSE6	SSE6	SSE5	S5	S5	S6	S6.0	S9	
28-May	S5	S6	S6	S7	S7	S8	SSW10	SSW10	SSW7	SW9	WSW10	WSW10	SW13	WSW14	WSW11	SW12	SW10	W9	W7	W6	W6	W6	W6	W3	SW7.2	WSW14	
29-May	WSW4	SW4	S4	SSW7	SW7	SW7	SW7	WSW9	WSW9	WSW10	WSW10	WSW10	WSW9	WSW11	SW9	WSW14	W7	SW6	SW8	SSW6	SSW5	SSW6	SW7	WSW6	SW7.2	WSW14	
30-May	WSW5	WSW5	WSW4	SW4	WSW2	N0	N3	NE5	ESE4	ESE5	ESE4	ESE6	E8	ESE2	E5	ESE10	E10	E9	ENE7	NW1	SSW5	WSW10	ESE6	SSE2	ESE2.4	E10	
31-May	SSW2	S2	SSE2	SSW3	SSW3	SSE1	SSW0	NE4	NE8	NE9	NE10	ENE9	SE1	NW3	N4	NE7	NE6	NNE7	NE7	NE7	NNE3	NE2	WNW6	WNW9	NE2.7	NE10	

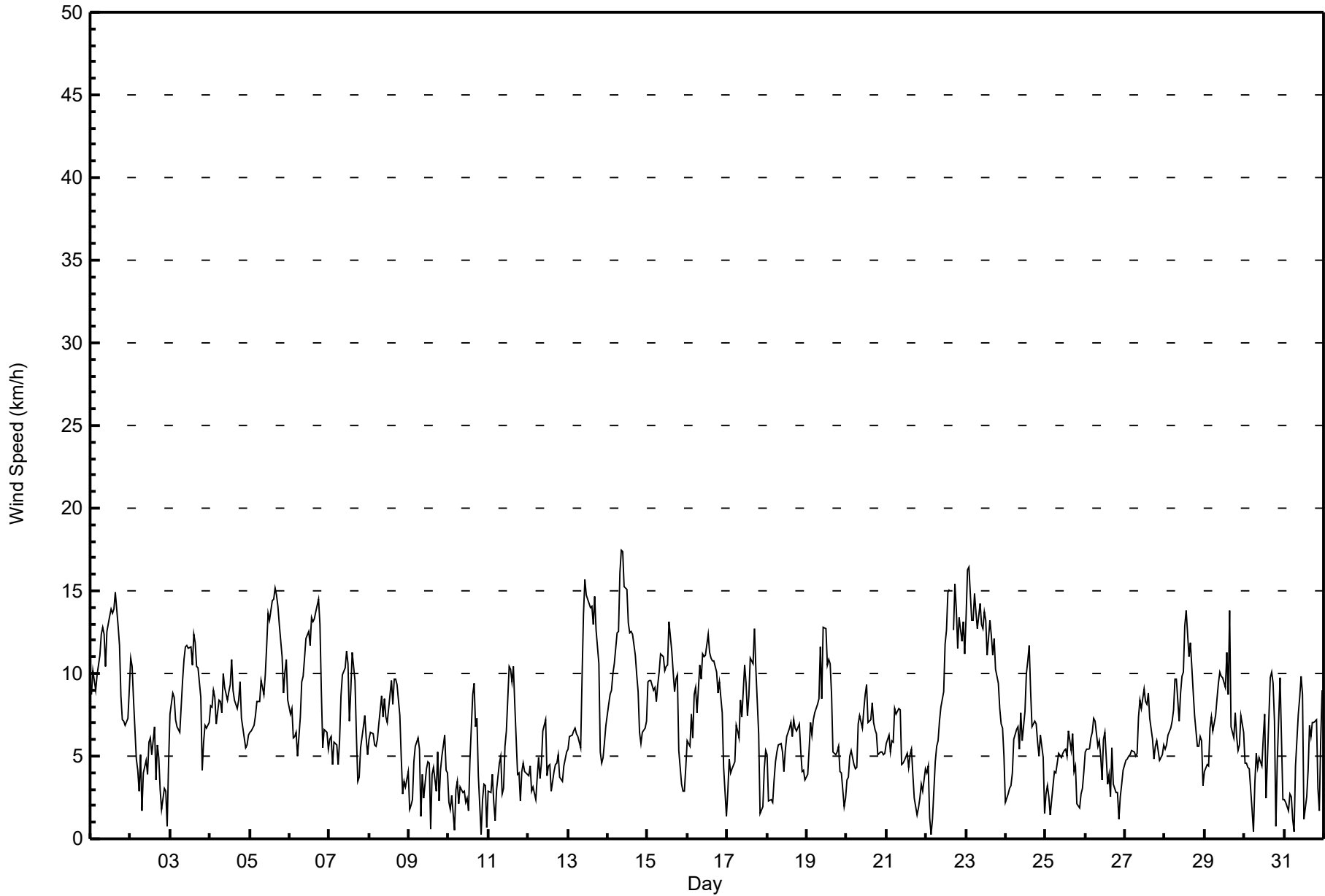
S3.6	S3.9	S3.5	S3.4	S3.2	S3.4	S3.3	S3.2	S3.4	\$2.8	SSE2.8	SSE2.9	S3.1	S2.8	S2.2	S2.8	SSE1.8	SE1.9	SE1.9	SE2.0	SSE2.3	SSE2.4	SSE2.4	S2.8	Diurnal Average	
ENE14	ENE16	E16	ENE13	ENE13	ENE15	E14	SW16	SW17	SW17	SW16	SW15	SW15	NE15	NE15	E15	E15	ENE15	ENE14	ENE12	ENE13	ENE12	ENE13	ENE11	Diurnal Maximum	

DF - DAS Failure
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Jackfish 2/3 - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Jackfish 2/3 - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	282	37.95	37.95
6 - 11	369	49.66	87.62
12 - 19	92	12.38	100.00
20 - 28	0	0.00	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Jackfish 2/3 - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	14	15	12	6	14	17	23	27	50	37	15	14	10	9	13	6	282
6 - 11	5	7	16	13	17	27	32	42	60	46	42	22	8	10	16	6	369
12 - 19	0	0	6	12	23	4	1	5	11	2	21	6	0	0	1	0	92
20 - 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	19	22	34	31	54	48	56	74	121	85	78	42	18	19	30	12	743

Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Jackfish 2/3 - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 6 km/h on May 29 16:00 Minimum Value: 0 km/h on May 2 21:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 5																	Hours in Service: 744 Hours of Data: 743 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9									
Day	Hourly Period Ending At (MST)																								Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	3	3	3	3	3	4	4	5	5	4	5	5	5	5	5	5	5	4	3	3	3	3	3	3	5	
2-May	3	3	3	2	2	2	2	2	2	2	2	3	3	3	3	3	3	2	2	1	0	1	1	3	3	
3-May	1	2	2	2	2	2	2	3	4	4	4	4	4	4	5	5	4	4	3	2	2	3	2	3	5	
4-May	3	3	3	3	3	3	3	3	4	4	3	4	4	4	4	4	3	4	4	3	3	3	2	2	4	
5-May	3	2	3	3	3	3	3	3	3	4	5	5	5	5	5	6	5	5	5	4	3	4	4	4	6	
6-May	3	3	3	3	3	2	3	4	4	5	5	5	4	5	5	5	5	5	5	4	2	2	2	2	5	
7-May	2	3	2	2	3	2	3	3	4	5	5	5	3	4	5	5	3	2	3	2	3	3	3	2	5	
8-May	2	3	3	2	2	2	3	3	3	3	3	3	4	4	3	4	4	4	3	2	1	1	1	1	4	
9-May	1	1	1	2	2	1	2	1	1	1	3	2	3	2	2	3	2	2	2	1	1	1	1	1	3	
10-May	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	2	1	1	1	1	1	3	
11-May	1	1	1	1	1	1	1	1	1	1	2	3	4	4	4	5	3	2	2	1	2	2	2	2	5	
12-May	1	1	1	1	1	1	1	2	2	2	3	3	3	3	2	2	2	2	2	1	1	1	1	1	3	
13-May	2	1	1	1	1	2	2	2	4	5	5	5	5	5	6	5	5	4	4	2	1	2	2	2	6	
14-May	3	2	3	3	3	4	4	5	5	5	5	4	4	4	4	4	4	3	3	2	2	2	2	2	5	
15-May	3	3	2	2	2	2	2	3	3	4	4	4	4	5	4	4	4	3	3	2	1	1	1	2	5	
16-May	2	2	4	3	4	4	4	5	4	5	5	5	6	5	5	5	5	5	4	4	4	4	2	1	6	
17-May	2	2	2	2	2	3	3	3	4	3	4	4	3	4	4	4	5	4	3	3	1	1	2	2	5	
18-May	2	1	1	1	1	1	2	2	3	3	3	3	3	3	3	3	3	3	2	2	2	1	2	1	3	
19-May	1	2	2	2	3	2	3	3	4	3	4	4	4	4	4	4	3	2	2	2	2	1	1	1	4	
20-May	1	1	1	1	1	1	1	2	2	2	3	3	3	3	3	3	3	2	2	1	2	2	2	3	3	
21-May	2	3	2	2	2	3	3	3	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	3	
22-May	1	1	2	2	1	1	1	2	3	3	3	4	4	5	5	DF	5	5	5	4	5	4	4	4	5	
23-May	5	6	6	5	4	4	5	5	5	5	5	5	5	4	5	4	4	4	4	4	3	3	3	2	6	
24-May	1	1	1	1	1	2	3	3	2	3	3	3	4	4	4	4	3	3	3	2	3	2	1	4	4	
25-May	1	1	1	1	1	1	2	2	2	2	2	2	3	2	2	2	3	2	1	1	1	1	1	1	3	
26-May	1	1	1	1	1	2	1	2	2	2	2	3	4	2	3	2	3	3	1	2	1	1	1	1	4	
27-May	1	1	1	1	1	1	2	2	3	3	4	4	4	4	4	3	3	3	3	3	2	2	2	2	4	
28-May	2	2	2	2	2	2	3	3	2	3	4	4	5	5	4	4	4	3	4	3	2	3	2	1	5	
29-May	1	1	1	2	2	1	2	3	3	4	4	4	4	4	3	6	4	2	3	2	1	1	1	2	6	
30-May	1	1	1	1	1	1	2	2	2	3	2	3	3	2	4	4	4	3	3	3	2	3	4	3	4	
31-May	1	1	1	1	1	1	1	2	2	3	3	3	3	1	2	3	2	2	2	2	2	3	3	4	4	
																	Diurnal Maximum									
DF - DAS Failure																										



Wood Buffalo Environmental Association
Summary of Hour Averages

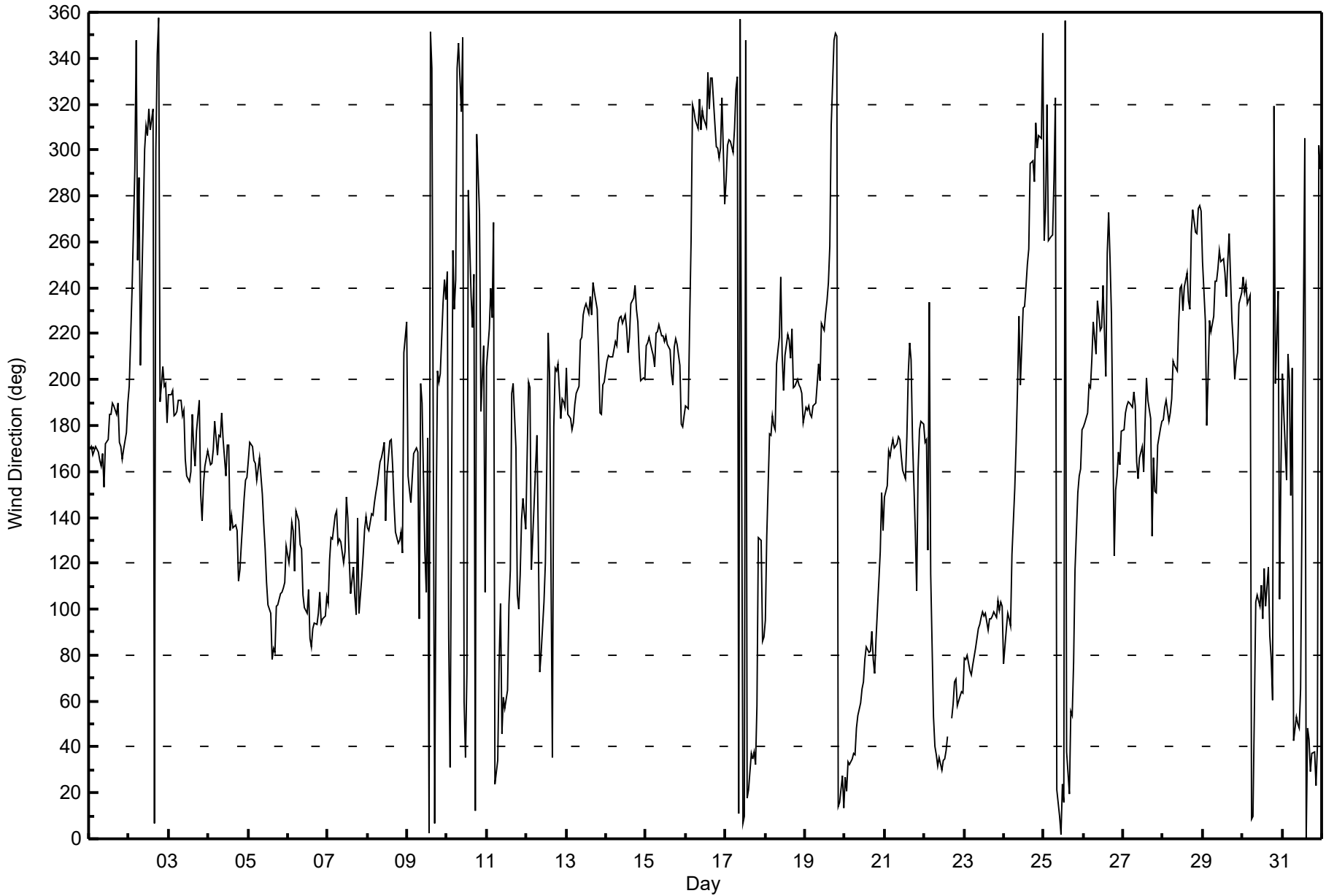
Wind Direction (WD) - deg
Jackfish 2/3 - May 2023

Direction of Maximum Speed: 227 deg on May 14 09:00		Hours in Service: 744
Direction of Maximum Daily Speed Average: 89.0 deg on May 23		Hours of Data: 743
Direction of Minimum Speed: 234 deg on May 22 04:00	Direction of Minimum Daily Speed Average: 1.4 deg on May 10	Hours of Missing Data: 1
Monthly Average Direction: 170.1 deg		Percent Operational Time: 99.9

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	169	171	167	169	171	168	165	162	168	153	172	174	185	185	190	189	185	190	172	171	165	169	177	190	174.9
2-May	197	218	239	292	348	252	288	206	242	300	311	306	318	309	318	7	300	342	357	190	206	197	198	181	272.3
3-May	193	194	195	184	185	186	191	191	184	187	165	158	155	160	185	171	162	178	191	150	138	154	162	169	175.1
4-May	166	163	164	170	182	167	176	175	186	174	158	172	171	134	141	135	137	134	112	117	128	148	156	157	155.6
5-May	165	173	171	165	163	156	161	166	150	137	126	112	102	98	78	83	81	101	102	106	107	109	111	128	119.2
6-May	120	127	138	134	117	143	139	128	126	106	101	98	108	88	83	91	94	93	98	107	94	96	97	106	106.0
7-May	102	122	131	130	141	143	129	131	129	120	125	149	140	122	107	118	105	98	140	98	114	124	135	140	124.7
8-May	135	134	141	141	146	151	155	164	166	169	172	139	160	173	174	162	146	134	129	130	134	124	211	225	154.1
9-May	158	152	146	158	168	170	168	96	198	190	125	107	175	2	351	336	6	136	204	199	203	234	243	235	178.5
10-May	247	88	31	257	230	244	336	346	317	349	60	35	72	282	236	222	246	12	307	272	186	201	215	107	268.3
11-May	206	222	240	227	268	24	34	77	102	46	62	57	65	102	117	194	198	170	106	100	114	139	148	135	117.6
12-May	167	199	196	117	146	162	176	128	73	81	103	120	162	220	202	35	179	205	204	207	183	192	190	188	163.6
13-May	205	185	183	178	181	189	194	197	217	218	228	231	233	229	236	228	242	238	230	210	185	185	198	199	217.4
14-May	208	211	210	210	210	217	214	225	227	228	224	228	222	212	218	233	235	241	231	225	210	200	201	200	220.2
15-May	215	216	218	213	211	206	220	221	224	219	219	217	219	215	213	203	198	214	218	215	206	180	179	184	213.3
16-May	189	187	226	260	320	318	313	309	322	309	317	314	310	334	318	332	331	311	301	301	297	301	323	277	307.8
17-May	287	302	305	304	299	309	326	332	11	357	7	10	348	18	21	37	35	38	32	58	131	130	86	88	10.0
18-May	95	132	176	176	184	180	178	207	219	245	211	195	211	219	217	210	222	196	197	200	197	196	194	181	199.7
19-May	188	187	189	185	184	188	190	198	207	200	225	222	229	235	242	258	310	348	351	350	14	16	27	13	222.2
20-May	27	21	34	32	35	37	37	48	54	59	66	68	78	83	81	82	90	78	72	87	112	125	151	134	71.3
21-May	149	154	169	167	171	174	170	172	175	174	167	161	157	175	202	216	209	174	134	108	160	178	182	181	172.2
22-May	173	174	126	234	115	53	40	36	32	35	30	34	35	39	44	DF	52	59	69	70	58	62	64	64	53.1
23-May	79	78	80	73	72	76	79	83	92	93	96	99	97	98	91	96	96	97	99	97	104	100	103	101	89.0
24-May	76	91	98	96	93	124	152	173	197	228	198	231	232	241	250	257	294	296	286	312	301	306	305	351	243.5
25-May	261	274	320	261	263	263	287	323	21	10	2	24	16	356	38	19	55	54	77	117	150	158	161	178	9.8
26-May	180	181	185	198	197	208	225	211	234	228	222	223	241	202	255	273	252	228	123	152	158	168	163	178	208.7
27-May	178	186	189	191	190	188	195	188	164	157	166	171	160	181	201	191	183	132	166	152	151	172	179	182	175.2
28-May	182	188	191	182	185	191	208	206	204	225	240	241	230	240	246	235	231	264	274	264	264	275	276	273	229.8
29-May	251	226	180	201	226	221	227	243	243	248	256	252	253	247	236	252	263	226	215	200	208	212	233	238	235.4
30-May	245	238	242	233	237	9	10	55	103	106	102	110	96	118	101	118	88	79	60	319	198	239	104	163	113.9
31-May	202	185	156	211	199	149	205	43	53	50	48	66	143	305	0	48	43	29	37	38	23	40	302	292	35.1

173.2 175.7 178.6 177.9 180.0 179.1 182.7 176.8 177.7 176.6 163.5 163.6 175.1 180.2 183.3 179.5 156.9 128.5 133.6 132.8 148.1 162.9 160.9 169.9
 Diurnal Average

DF - DAS Failure
 All monthly, daily, and diurnal averages have been calculated using vector methods





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Jackfish 2/3 - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 119 deg on May 30 06:00 Minimum Value: 9 deg on May 29 03:00 Percentiles: P ₁ = 13 P ₁₀ = 21 Q ₁ = 29 Median = 38 Q ₃ = 51 P ₉₀ = 63 P ₉₉ = 92		Hours in Service: 744 Hours of Data: 743 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9																							
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	29	30	27	28	29	30	30	33	38	44	38	36	35	34	38	35	36	35	34	37	39	34	34	32	44
2-May	26	26	30	53	45	62	37	85	42	42	55	59	65	66	56	85	64	59	72	69	14	13	87	68	87
3-May	12	14	18	15	14	17	25	29	34	36	40	44	43	46	39	39	41	35	32	50	43	41	35	40	50
4-May	38	33	31	30	34	30	26	36	32	40	43	48	45	46	51	51	47	44	39	34	41	53	44	42	53
5-May	35	29	32	34	30	34	33	31	42	40	42	42	42	36	34	32	32	36	32	35	38	37	38	42	42
6-May	44	37	44	47	34	50	41	39	43	44	39	36	40	33	34	32	37	31	31	35	20	22	23	30	50
7-May	31	40	60	44	45	52	52	43	43	48	42	43	51	44	37	42	43	35	53	23	38	44	48	54	60
8-May	45	43	54	45	45	41	39	36	46	40	47	49	50	47	49	46	47	40	39	46	53	46	49	23	54
9-May	42	36	44	30	23	17	52	74	41	71	67	74	63	109	62	75	78	41	75	23	23	12	16	12	109
10-May	56	61	28	82	11	25	80	66	76	75	83	80	95	55	19	26	61	47	55	99	22	11	55	78	99
11-May	25	20	12	77	80	29	24	32	55	56	50	60	39	43	40	40	33	51	36	43	33	44	50	55	80
12-May	43	20	24	30	43	35	18	52	40	45	49	85	92	69	80	67	59	45	32	21	14	20	18	18	92
13-May	21	18	17	16	14	21	24	30	28	31	29	32	30	31	32	31	25	25	23	23	25	29	28	26	32
14-May	27	25	25	24	24	23	25	22	23	23	25	27	32	32	32	30	28	26	21	18	20	20	21	22	32
15-May	22	21	21	19	18	18	19	21	23	32	38	38	38	35	38	41	43	29	26	26	30	49	75	42	75
16-May	27	24	40	35	56	57	58	54	57	55	59	55	50	59	58	59	56	54	53	54	46	47	66	102	102
17-May	75	53	58	61	52	52	54	59	48	56	50	54	61	52	47	46	34	40	39	32	57	37	33	22	75
18-May	18	48	41	30	15	17	25	41	53	64	83	68	56	66	56	63	50	41	39	31	30	33	41	46	83
19-May	45	29	31	32	32	30	32	34	31	39	31	28	28	31	32	45	67	54	60	59	53	45	87	77	87
20-May	47	42	31	26	27	16	22	22	28	35	31	32	34	39	37	31	33	25	23	25	41	51	65	57	65
21-May	60	55	54	50	36	35	37	31	30	56	54	54	57	58	51	38	37	51	31	29	57	38	36	22	60
22-May	32	20	82	99	52	17	20	25	36	29	38	33	34	30	33	DF	28	31	28	27	28	32	27	28	99
23-May	27	28	27	29	28	27	27	28	32	32	34	34	32	35	30	33	35	35	38	37	40	35	38	35	40
24-May	36	21	25	22	24	42	47	40	39	31	49	35	38	37	34	40	56	50	54	58	56	49	55	94	94
25-May	57	73	84	92	44	32	41	55	52	50	51	52	55	64	40	49	43	70	33	63	36	22	39	27	92
26-May	14	14	14	15	17	19	18	27	46	63	71	51	66	81	81	74	57	58	42	48	45	24	22	21	81
27-May	26	31	23	23	20	18	31	39	50	50	57	50	57	54	44	53	55	51	59	55	66	62	57	45	66
28-May	52	40	27	28	27	23	24	27	31	30	36	37	31	29	31	29	36	40	42	36	35	38	39	27	52
29-May	22	21	9	17	18	17	20	31	35	38	55	45	45	34	45	31	61	43	34	26	20	21	14	16	61
30-May	14	13	18	26	92	119	56	46	58	56	68	57	44	78	63	44	37	30	30	88	38	17	61	72	119
31-May	35	24	56	22	31	54	91	33	30	43	39	44	79	66	65	38	35	38	29	29	91	87	60	53	91
Diurnal Maximum																									
DF - DAS Failure																									



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS29
SURMONT 2
MAY 2023**

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SURMONT2 (AMS29)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	705	37	39	99.73	12.1	0	1.7	0
H2S (ppb) Average	707	37	37	100	0.9	0	0.3	0
THC(ppm) Average	705	37	39	99.73	2.6	-	2.3	-
NO2 (ppb) Average	706	38	38	100	11.9	0	3.4	-
NO (ppb) Average	706	38	38	100	1.2	-	0.3	-
NOX (ppb) Average	706	38	38	100	12.1	-	3.6	-
PM2.5 (ug/m3) Average	741	3	3	100	597.4	131	245.3	13
Temperature 2 m (C) Average	744	0	0	100	29.8	-	23	-
Relative Humidity (%) Average	743	0	1	99.87	100.1	-	91.3	-
Wind Speed 10 m (km/h) Average	741	0	3	99.6	18	-	11	-
Wind Direction 10 m (deg) Average	741	0	3	99.6	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SURMONT 2 (AMS29)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	705	0.56	1.1	-	0	0	0.1	0.2	0.5	1.2	12.1
H2S (ppb) Average	707	0.13	0.1	-	0	0	0.1	0.1	0.2	0.3	0.9
THC (ppm) Average	705	2.13	0.1	-	2	2	2.1	2.1	2.2	2.3	2.6
NO2 (ppb) Average	706	1.7	1.6	-	0.1	0.5	0.7	1.2	2.2	3.4	11.9
NO (ppb) Average	706	0.16	0.1	-	0	0.1	0.1	0.1	0.2	0.3	1.2
NOX (ppb) Average	706	1.86	1.6	-	0.2	0.6	0.8	1.3	2.4	3.6	12.1
PM2.5 (ug/m3) Average	741	48.77	87	-	1.6	4.2	6.1	15.4	34.9	147.1	597.4
Temperature 2 m (C) Average	744	15.16	6.7	-	-2.4	6.2	9.7	15.1	20.3	24.1	29.8
Relative Humidity (%) Average	743	51.32	22.6	-	14.7	23.2	33.1	47.4	67.7	85	100.1
Wind Speed 10 m (km/h) Average	741	6	4	-	0	2	3	6	8	11	18
Wind Direction 10 m (deg) Average	741	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SURMONT 2 (AMS29)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
SO ₂ , THC	09 May 2023 11:00	09 May 2023 12:00	2	Maintenance - multi-point verification check
Relative Humidity	01 Jun 2023 00:00	01 Jun 2023 00:00	1	Sensor operated out of range
Wind Speed, Wind Direction	10 May 2023 23:00	10 May 2023 23:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	11 May 2023 01:00	11 May 2023 02:00	2	Flat line in sensor output signal



Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 12.1 ppb on May 19 01:00	Maximum Daily Average: 1.7 ppb on May 13		Hours of Data:	705
Minimum Value: 0.0 ppb on May 3 02:00	Minimum Daily Average: 0.0 ppb on May 8		Hours of Missing Data:	39
Maximum Diurnal Average: 0.9 ppb at hour 1	Minimum Diurnal Average: 0.3 ppb at hour 2		Hours of Calibration:	37
Monthly Average: 0.56 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.5 P ₉₀ = 1.2 P ₉₉ = 5.2		Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.4	Z	1.0	1.0	0.9	0.9	1.1	1.1	1.0	1.1	1.2	0.9	0.8	0.5	0.6	0.6	0.6	0.6	0.3	0.2	0.3	0.5	4.3	6.8	1.2	6.8	
2-May	0.4	0.9	Z	1.5	1.5	2.2	3.7	3.7	2.4	1.4	0.4	0.6	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.9	3.7	
3-May	0.0	0.0	0.0	Z	0.1	0.1	0.7	4.9	1.3	0.4	0.2	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.3	0.5	0.5	0.6	4.9	
4-May	0.4	0.4	0.3	0.4	Z	0.9	0.9	0.9	0.9	1.0	1.1	0.7	0.3	0.4	0.7	0.3	0.3	0.7	0.4	0.6	0.4	1.0	2.4	0.7	0.7	2.4	
5-May	0.2	0.2	0.2	0.2	0.1	Z	0.2	0.2	0.2	0.2	0.3	0.1	0.1	0.3	1.0	0.7	1.5	2.0	1.6	1.2	0.6	0.2	0.7	0.4	0.5	2.0	
6-May	Z	0.1	0.0	0.0	0.0	0.1	0.4	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.9	0.6	0.1	0.1	0.1	0.1	0.2	0.9	
7-May	0.0	Z	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.3	
8-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.1	
9-May	0.1	0.1	0.0	Z	0.0	0.0	0.0	0.1	0.4	0.5	M	M	0.3	0.3	0.4	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.5	
10-May	0.0	0.0	0.0	0.0	Z	0.1	0.1	4.2	6.1	4.3	C	C	C	C	C	C	0.4	0.5	0.7	0.4	0.2	0.2	0.1	0.1	--	6.1	
11-May	0.1	0.1	0.1	0.1	0.1	Z	0.4	1.0	0.7	0.7	0.7	0.7	0.7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.4	0.7	0.2	0.3	1.0	
12-May	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4	1.2	1.5	0.8	1.5	
13-May	0.5	Z	0.4	0.2	0.2	0.2	0.1	0.8	1.1	0.9	1.0	1.9	1.0	1.3	1.2	0.5	0.3	0.1	0.1	1.9	6.9	11.9	4.7	0.6	1.7	11.9	
14-May	0.2	0.1	Z	0.4	0.6	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.8	2.3	0.4	0.1	0.4	2.3	
15-May	0.1	0.2	0.1	Z	0.6	0.3	0.2	0.2	0.2	0.2	0.5	0.5	0.4	0.3	0.4	0.1	0.1	0.1	0.1	0.3	1.1	1.6	1.4	3.6	0.6	3.6	
16-May	3.6	1.4	2.1	1.0	Z	0.5	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.3	0.2	0.1	0.1	0.5	3.6	
17-May	0.1	0.1	0.2	0.1	0.1	Z	0.2	0.1	0.1	0.2	0.1	0.2	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.4
18-May	Z	0.2	0.1	0.1	0.1	0.1	0.2	2.0	0.8	2.4	1.4	0.4	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.3	1.0	0.4	5.2	0.7	5.2	
19-May	12.1	Z	0.8	0.4	0.7	2.1	1.4	0.2	0.3	0.2	0.3	0.4	0.5	1.3	0.6	0.6	1.0	0.8	0.6	0.6	0.5	1.2	3.6	3.9	1.5	12.1	
20-May	1.9	1.2	Z	0.4	0.1	0.1	0.1	0.2	0.1	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.3	1.1	3.8	0.7	0.5	3.8	
21-May	0.3	0.2	4.6	Z	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.7	1.0	0.9	0.8	0.8	0.8	0.8	0.7	0.6	0.4	0.3	0.2	0.1	0.7	4.6	
22-May	0.1	0.1	0.0	0.0	Z	0.0	0.0	0.2	0.3	0.4	0.3	0.4	0.4	0.6	0.4	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.6	
23-May	0.2	0.3	0.2	0.1	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.3	1.3	0.5	0.2	1.3	
24-May	Z	0.0	0.0	0.6	0.9	0.9	0.2	0.1	0.1	0.1	0.8	0.5	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.1	0.1	0.1	0.1	0.2	0.9	
25-May	0.1	Z	0.0	0.0	0.1	0.0	0.1	0.3	1.6	1.3	0.5	0.3	0.2	0.4	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2	1.6	
26-May	0.0	0.0	Z	0.0	0.0	0.0	0.2	0.2	0.5	0.9	0.2	0.3	0.5	0.4	0.2	0.4	1.0	0.7	0.1	0.2	0.2	0.1	0.1	0.1	0.3	1.0	
27-May	0.1	0.8	3.0	Z	2.5	1.4	8.5	0.9	0.3	0.2	0.3	0.4	0.2	0.1	0.1	0.3	0.2	0.1	0.1	0.2	0.4	0.2	0.5	1.1	1.0	8.5	
28-May	2.1	1.0	1.7	6.0	Z	0.7	0.9	1.1	1.6	0.5	0.4	0.2	0.1	0.1	0.1	0.1	0.0	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.8	6.0	
29-May	0.1	0.1	0.2	0.2	0.2	Z	0.3	0.4	0.2	0.0	0.0	0.1	0.2	0.1	0.0	0.4	0.3	0.1	0.3	0.1	0.2	0.0	0.0	0.0	0.1	0.4	
30-May	Z	0.0	0.0	0.0	0.2	0.4	0.7	1.1	1.3	0.5	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.6	0.7	0.3	0.3	0.3	0.5	0.8	0.4	1.3	
31-May	1.6	Z	0.5	0.3	0.3	0.2	0.2	0.6	1.4	1.8	1.9	2.1	3.6	3.5	2.9	3.8	3.2	2.9	2.1	1.3	0.6	0.4	0.3	0.2	1.6	3.8	

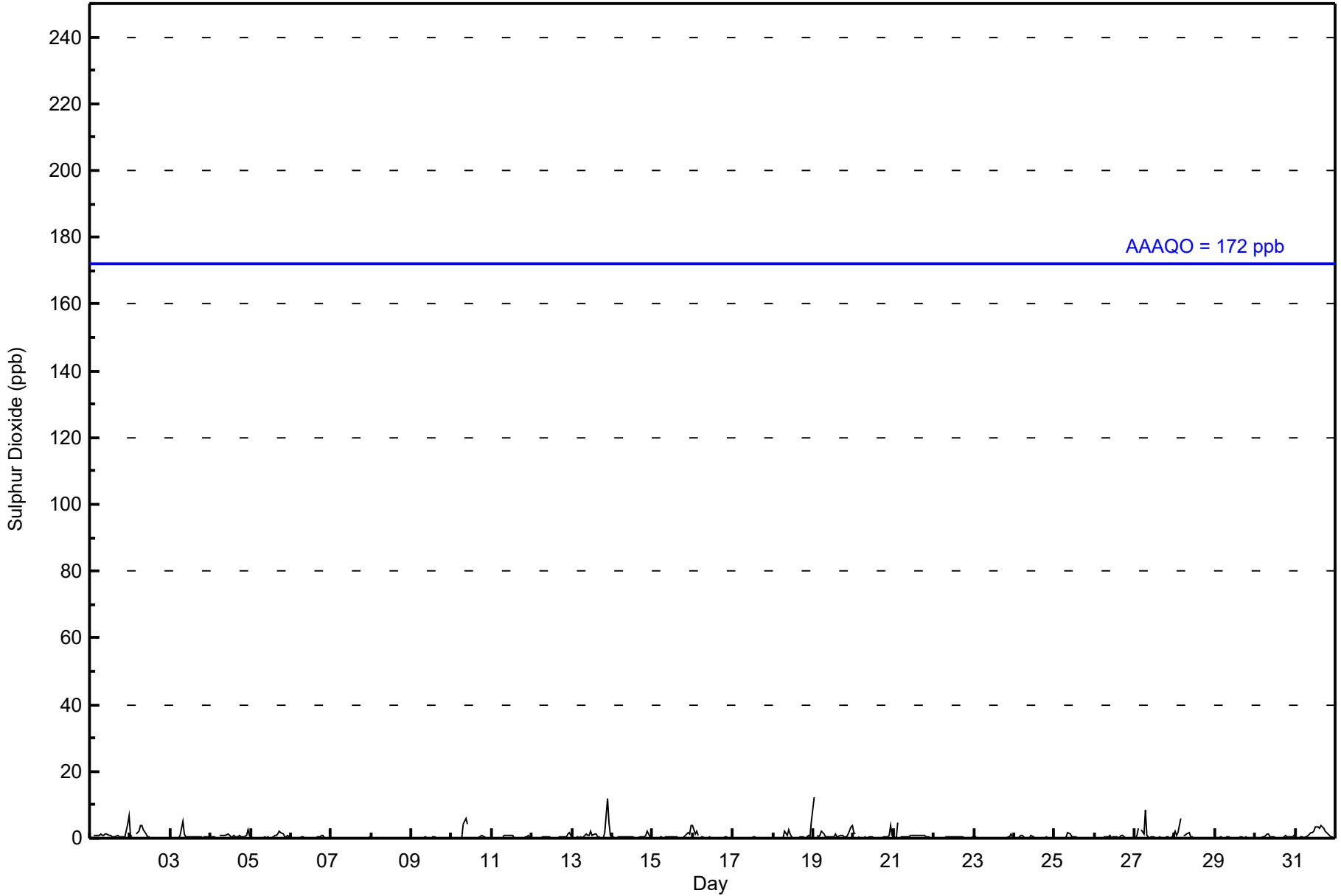
0.9	0.3	0.6	0.5	0.4	0.5	0.7	0.9	0.8	0.7	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.8	0.9	0.9	Diurnal Average	
12.1	1.4	4.6	6.0	2.5	2.2	8.5	4.9	6.1	4.3	1.9	2.1	3.6	3.5	2.9	3.8	3.2	2.9	2.1	1.9	6.9	11.9	4.7	6.8	Diurnal Maximum		

Z - zerospan C - Calibration M - Maintenance
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Surmont 2 - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Surmont 2 - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	703	99.72	99.72
11 - 20	2	0.28	100.00
21 - 60	0	0.00	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Surmont 2 - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	18	8	9	14	46	87	97	45	20	25	19	144	91	32	22	23	700
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	18	8	9	14	46	87	97	45	20	25	19	144	93	32	22	23	702

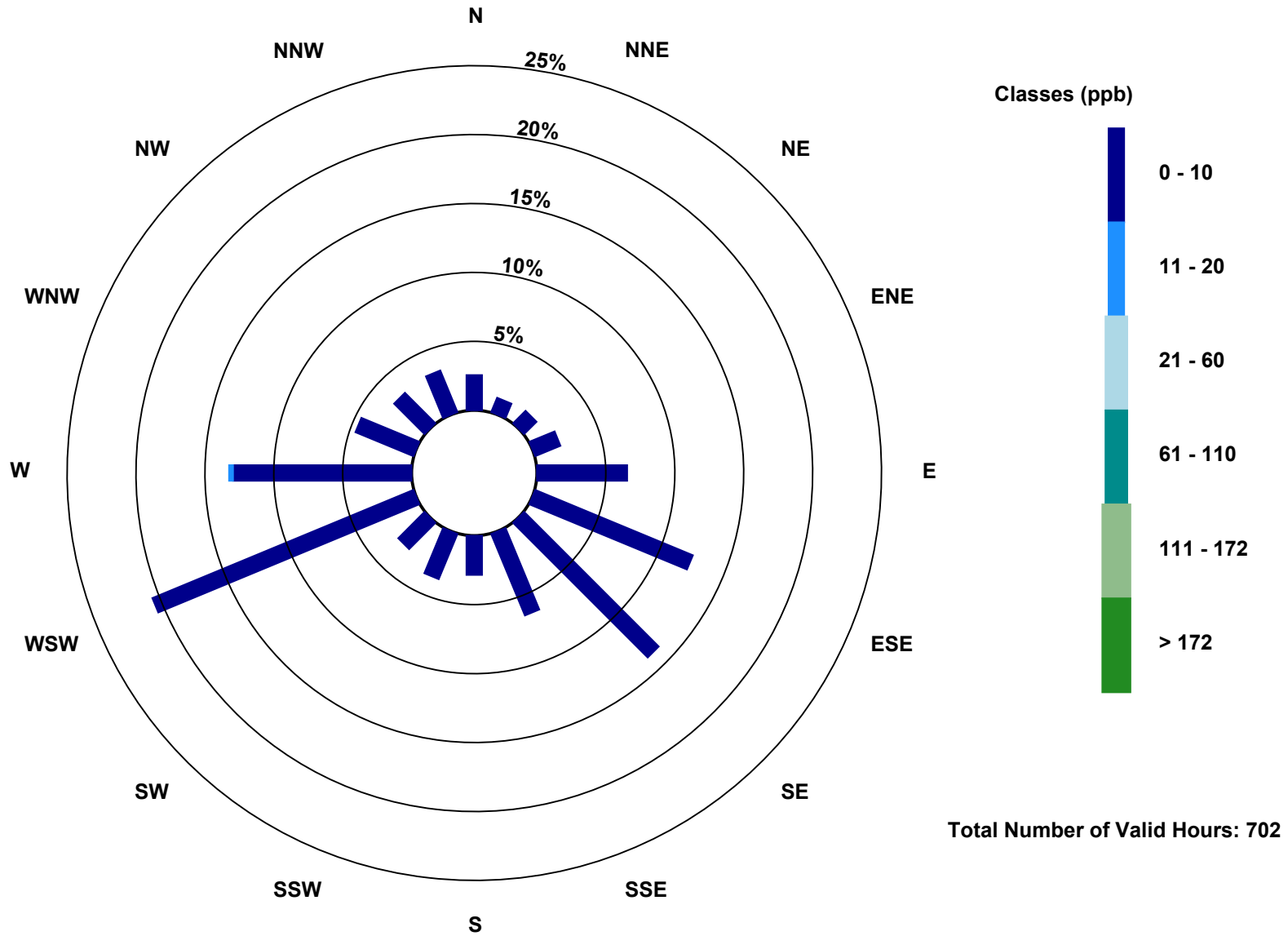
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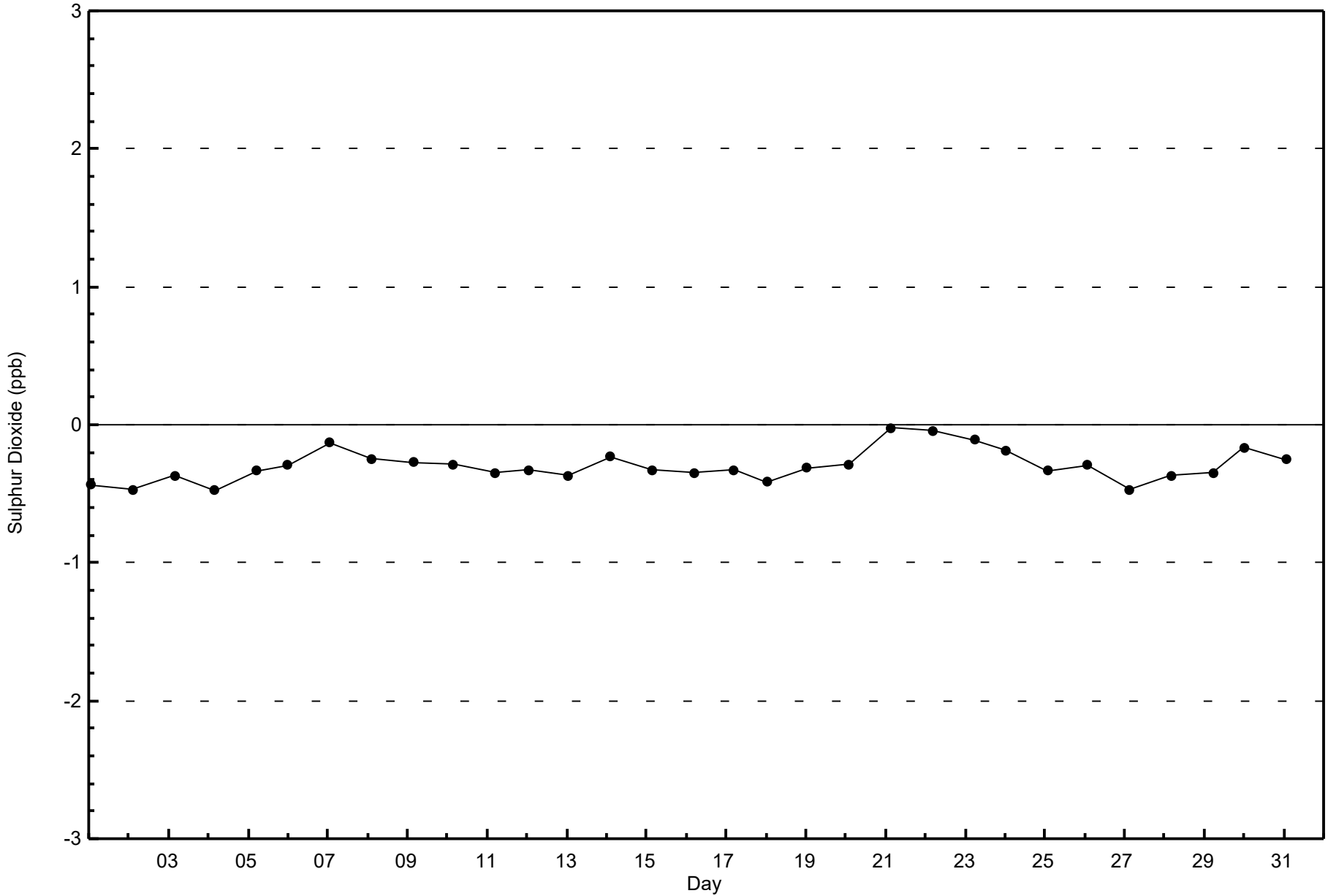
Total Number of Hours: 744

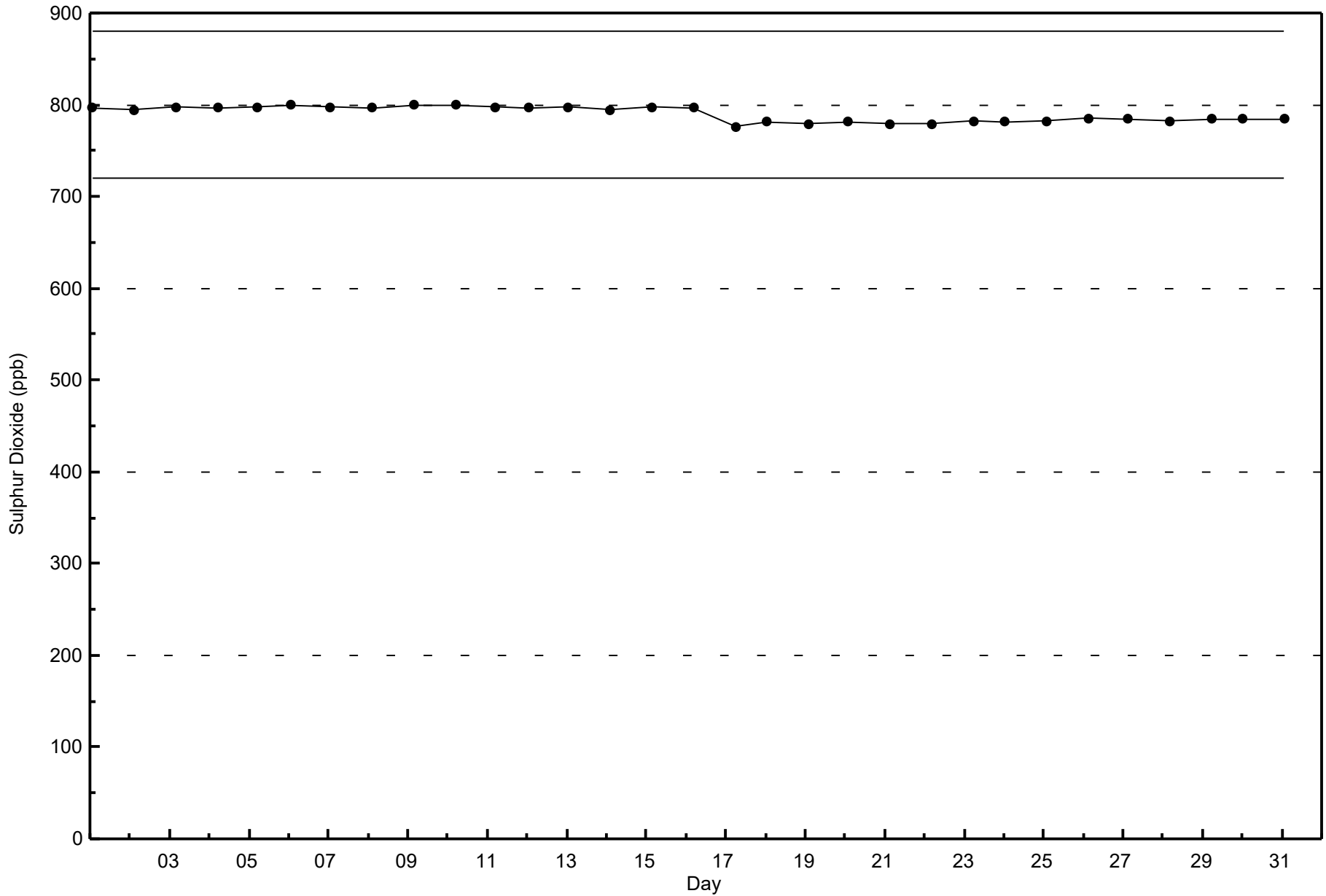


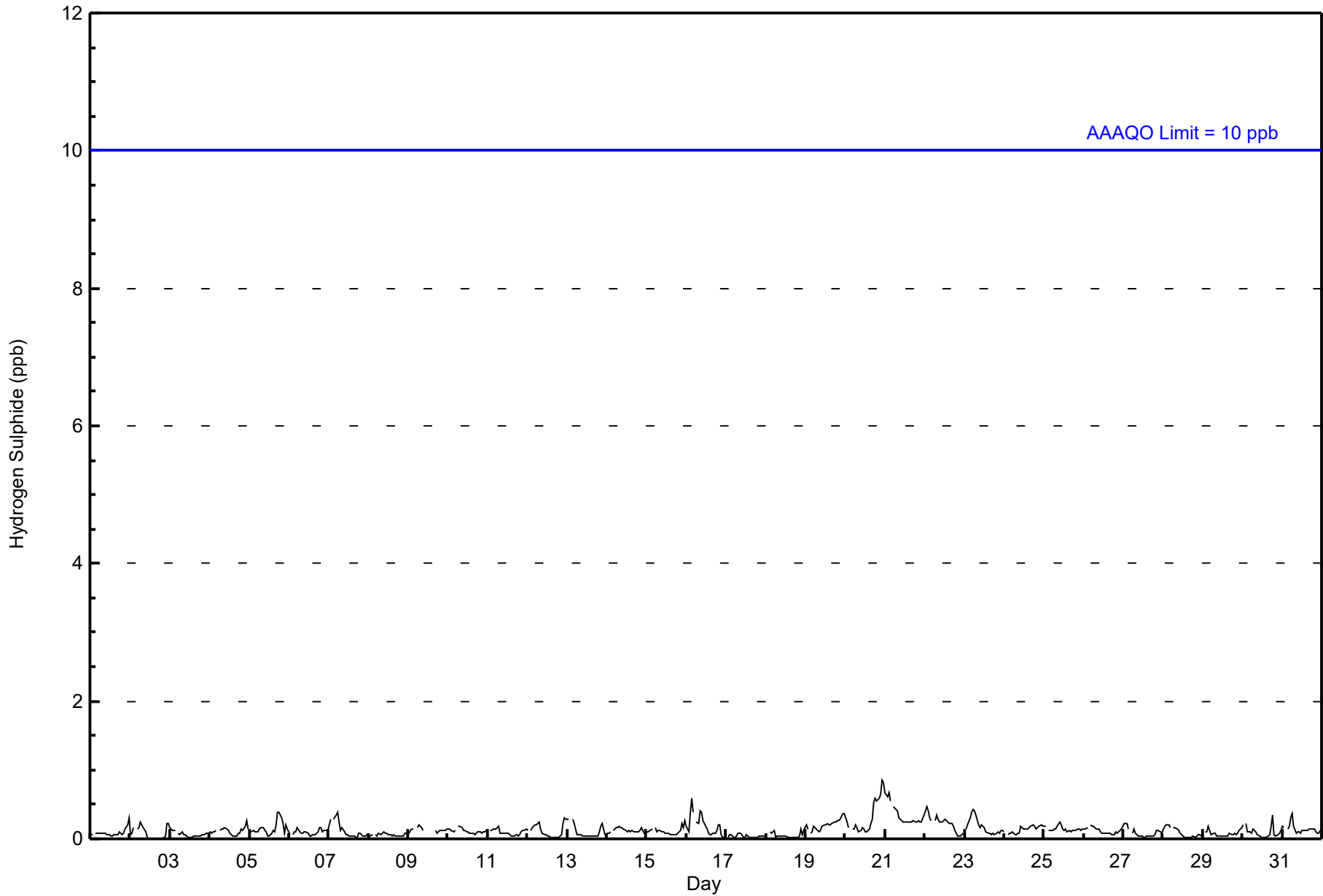
Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Surmont 2











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Surmont 2 - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	707	100.00	100.00
3 - 4	0	0.00	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Surmont 2 - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	19	9	12	15	44	88	98	45	19	25	19	143	92	31	22	24	705
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	19	9	12	15	44	88	98	45	19	25	19	143	92	31	22	24	705

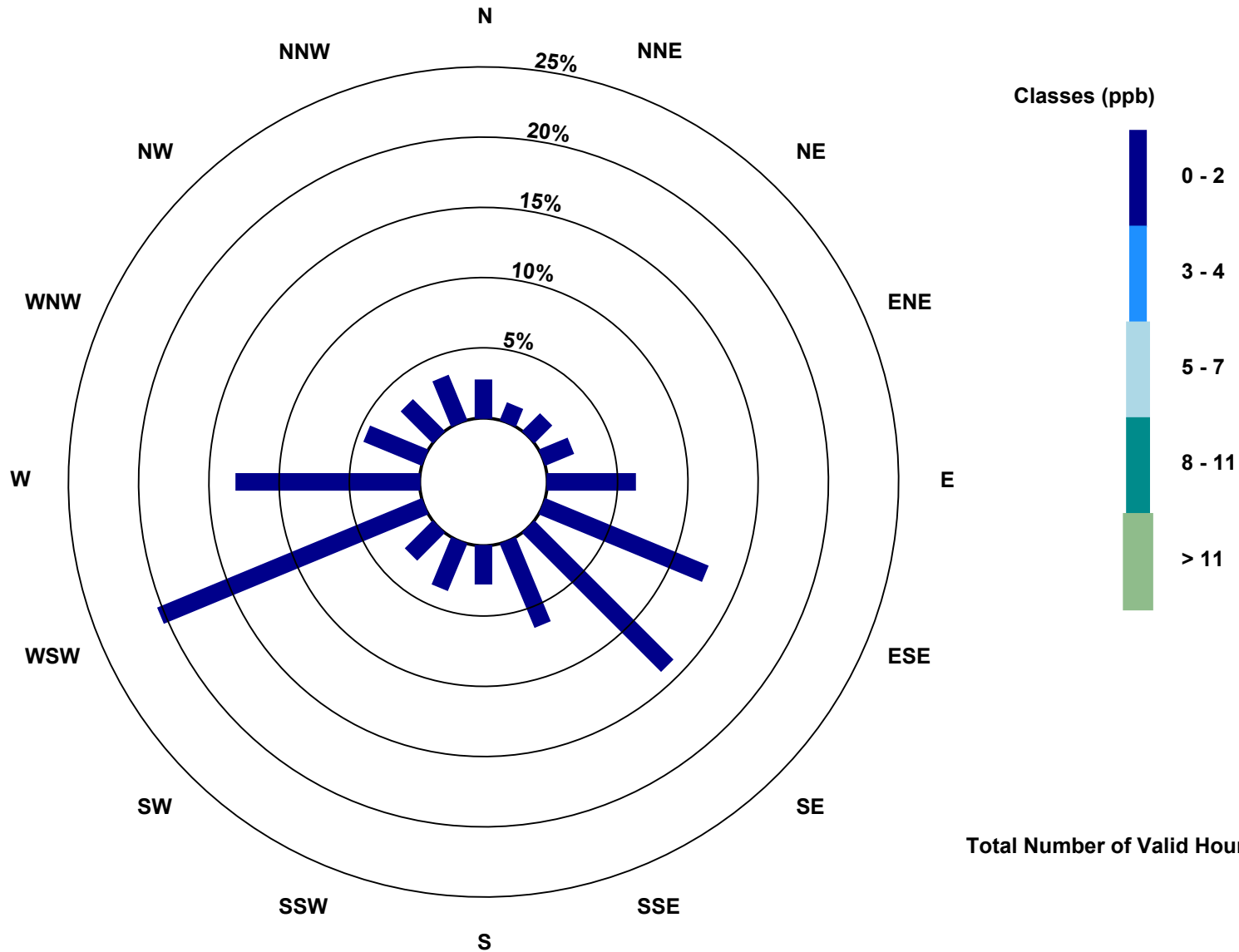
Total Number of Valid Hours: 705

Total Number of Hours: 744

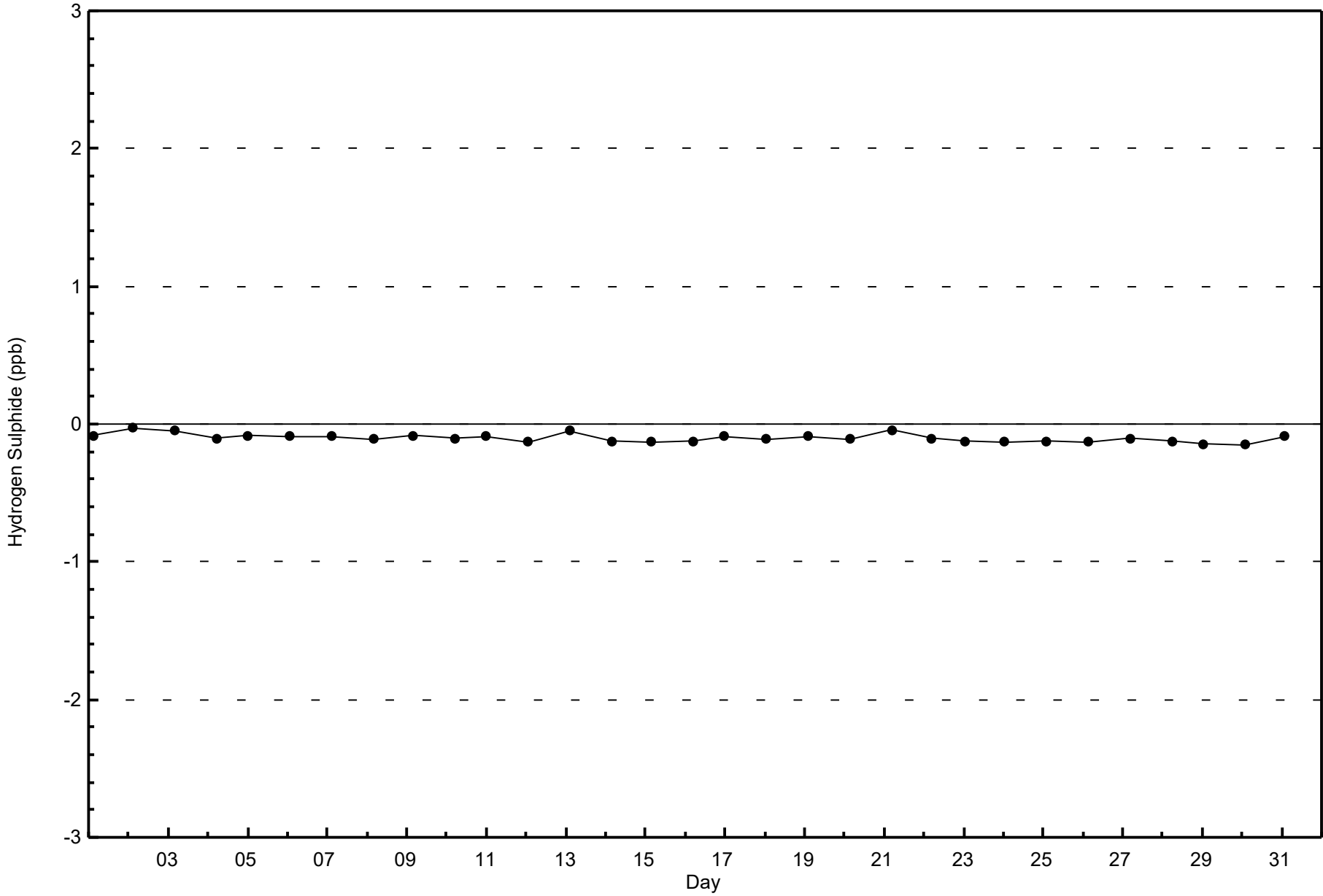


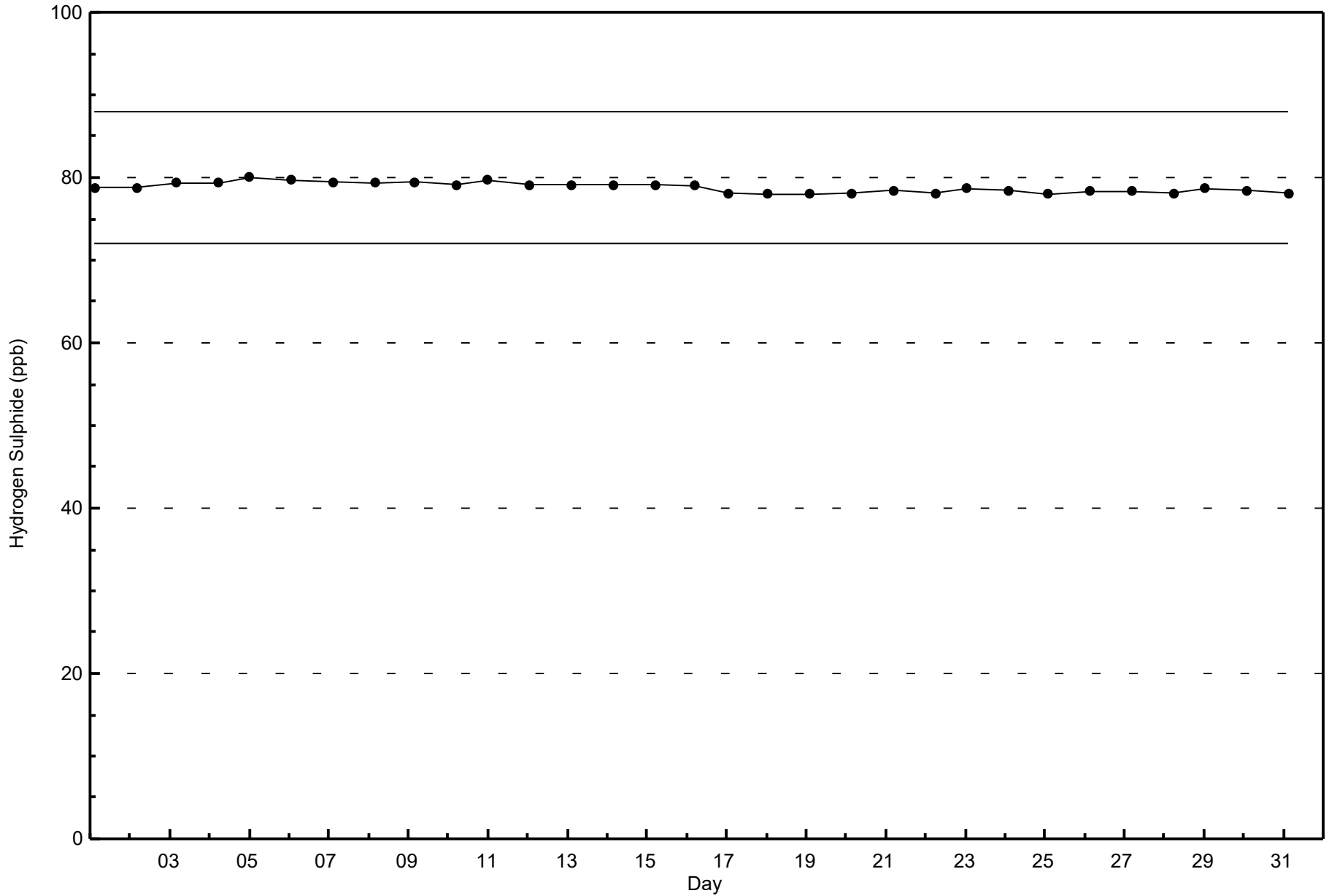
Wood Buffalo Environmental Association
Wind Rose May 2023

Hydrogen Sulphide (H₂S) - ppb
Surmont 2



Total Number of Valid Hours: 705







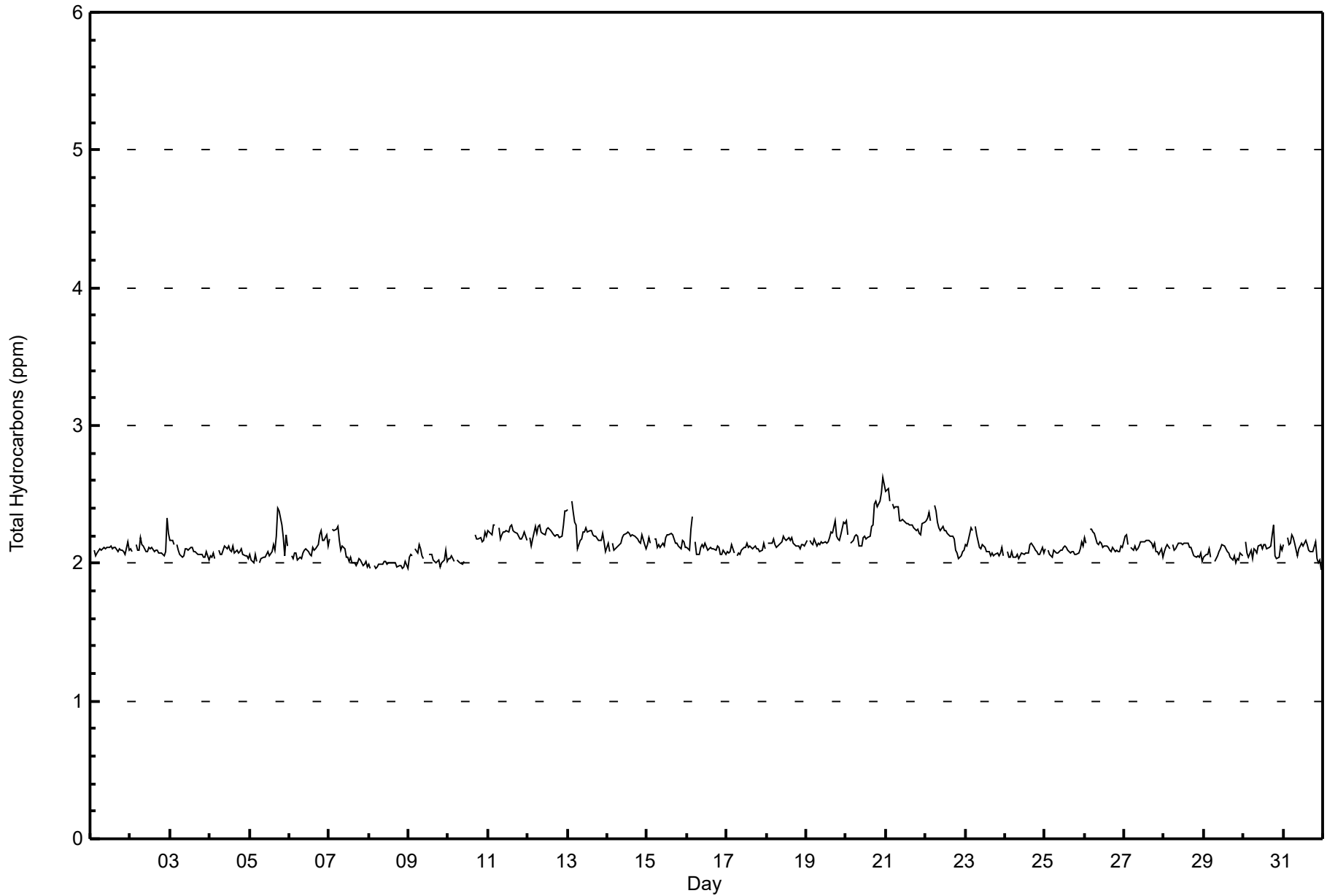
Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Surmont 2 - May 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:														744						
Maximum Value: 2.6 ppm on May 20 23:00		Maximum Daily Average: 2.3 ppm on May 21		Hours of Data:														705								
Minimum Value: 2.0 ppm on Jun 1 00:00		Minimum Daily Average: 2.0 ppm on May 8		Hours of Missing Data:														39								
Maximum Diurnal Average: 2.2 ppm at hour 23		Minimum Diurnal Average: 2.1 ppm at hour 21		Hours of Calibration:														37								
Monthly Average: 2.13 ppm		Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.1 Median = 2.1 Q ₃ = 2.2 P ₉₀ = 2.3 P ₉₉ = 2.4		Percent Operational Time:														99.7								
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2
2-May	2.1	2.1	Z	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.2	2.1	2.3
3-May	2.2	2.2	2.1	Z	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.0	2.1	2.2
4-May	2.1	2.0	2.1	2.0	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1
5-May	2.1	2.0	2.0	2.1	2.0	Z	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4	2.4	2.3	2.2	2.1	2.2	2.1	2.1	2.4
6-May	Z	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2
7-May	2.2	Z	2.3	2.2	2.3	2.3	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3
8-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
9-May	2.0	2.1	2.0	Z	2.1	2.1	2.1	2.1	2.0	2.0	M	M	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1
10-May	2.0	2.0	2.1	2.0	Z	2.0	2.0	2.0	2.0	2.0	C	C	C	C	C	C	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	--	2.2
11-May	2.2	2.2	2.2	2.3	2.3	Z	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3
12-May	Z	2.2	2.1	2.2	2.3	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.4	2.2	2.4
13-May	2.4	Z	2.4	2.4	2.3	2.3	2.1	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.4
14-May	2.1	2.1	Z	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.2	2.2
15-May	2.1	2.2	2.1	Z	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.2	2.1	2.2	2.2
16-May	2.1	2.1	2.3	2.3	Z	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3
17-May	2.1	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18-May	Z	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
19-May	2.2	Z	2.2	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.1	2.2	2.1	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.3
20-May	2.3	2.2	Z	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.4	2.5	2.4	2.4	2.5	2.6	2.6	2.3	2.6
21-May	2.5	2.5	2.5	Z	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.5
22-May	2.3	2.3	2.4	2.3	Z	2.4	2.4	2.3	2.3	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.1	2.1	2.1	2.2	2.4
23-May	2.1	2.1	2.2	2.3	2.2	Z	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3
24-May	Z	2.1	2.0	2.0	2.1	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
25-May	2.1	Z	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2
26-May	2.2	2.1	Z	2.2	2.3	2.2	2.2	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3
27-May	2.2	2.2	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.2
28-May	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.1	2.0	2.2
29-May	2.0	2.1	2.1	2.1	2.0	Z	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1
30-May	Z	2.2	2.1	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.3
31-May	2.1	Z	2.2	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.0	2.0	2.0	2.0	2.1	2.2
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration M - Maintenance																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Surmont 2 - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	103	14.61	14.61
2.1 - 3.0	602	85.39	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Surmont 2 - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	1	0	2	2	1	23	24	4	1	3	3	14	21	3	0	1	103
2.1 - 3.0	17	8	7	12	45	64	73	41	19	22	16	130	72	29	22	22	599
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	18	8	9	14	46	87	97	45	20	25	19	144	93	32	22	23	702

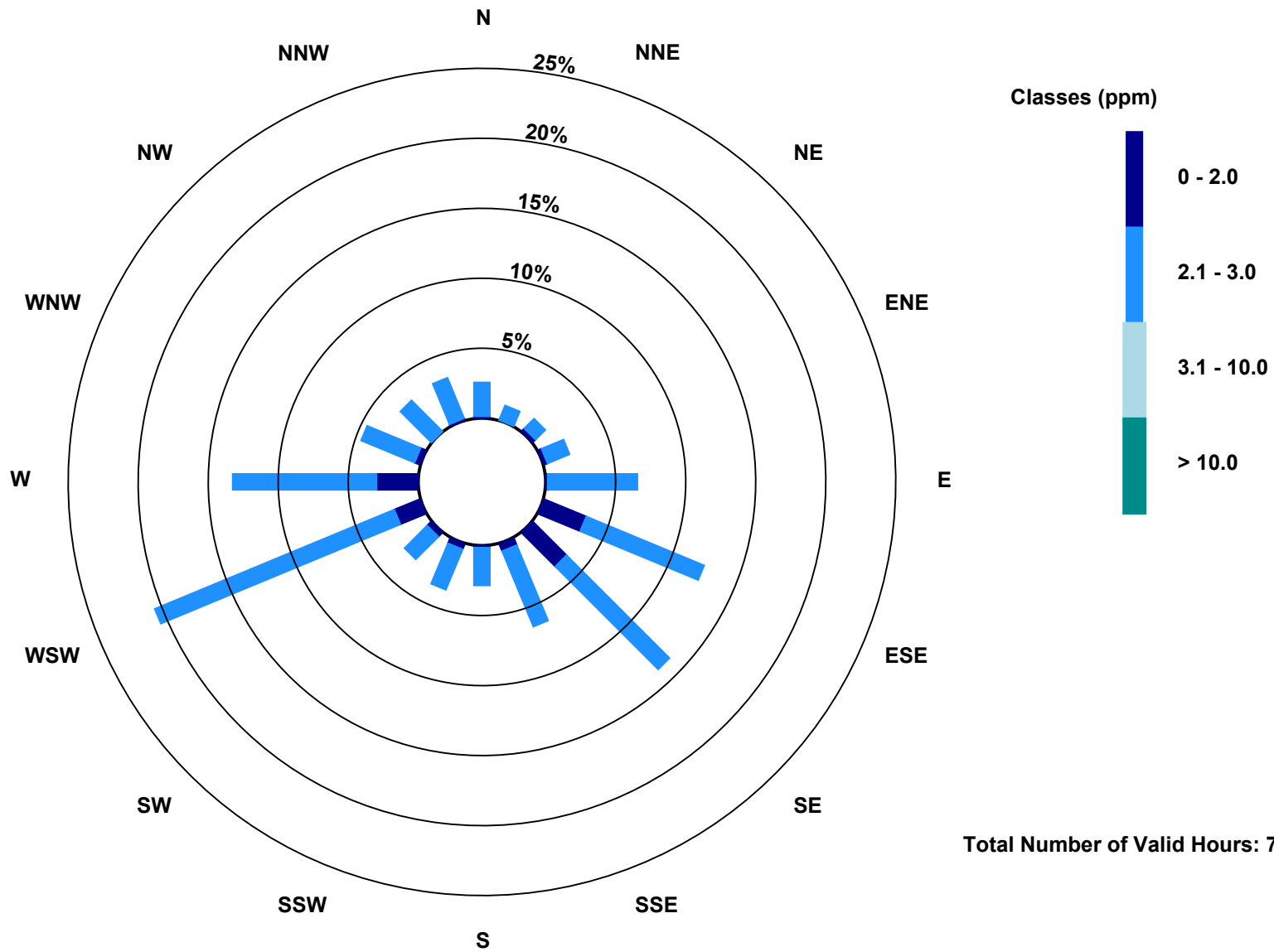
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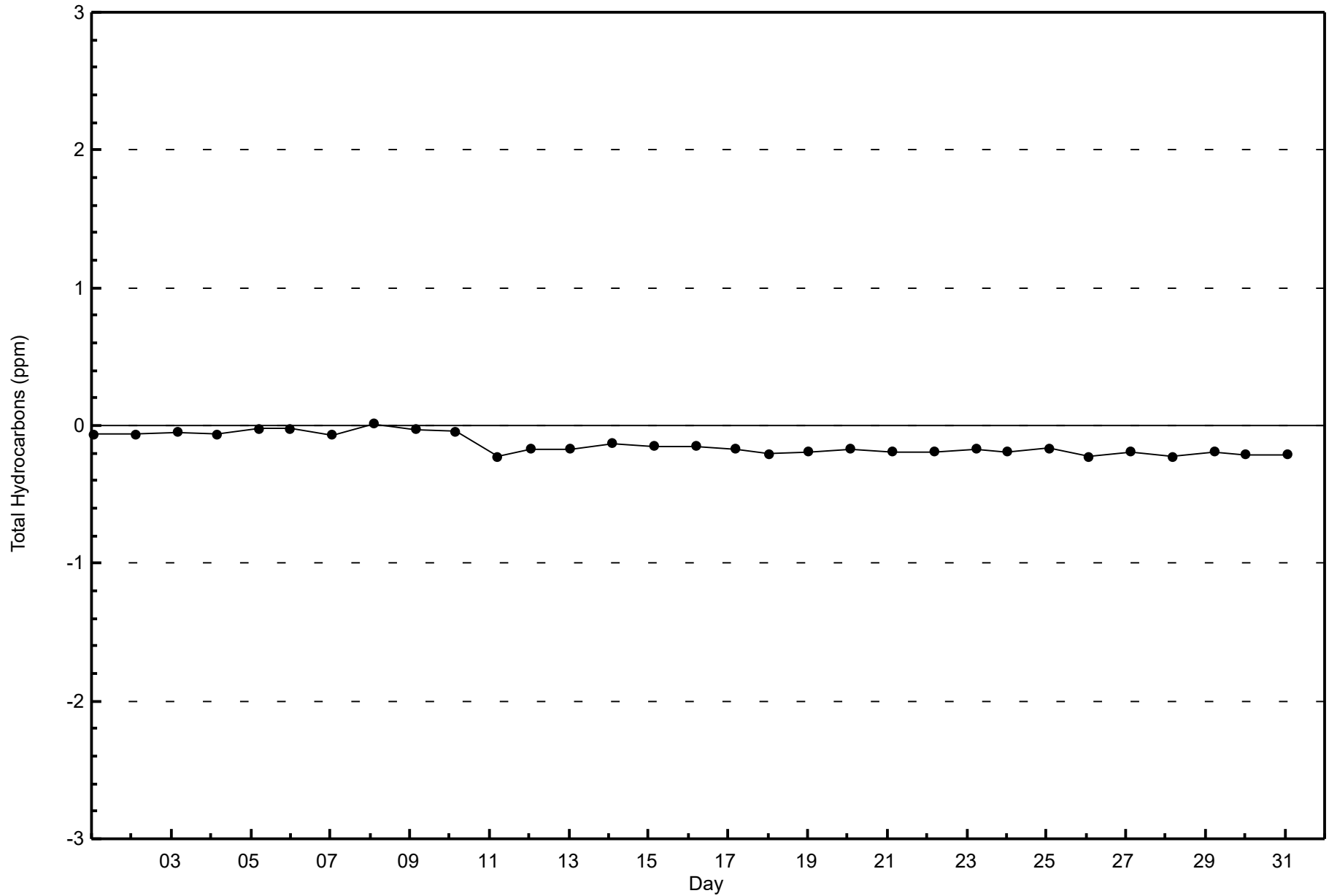
Total Number of Hours: 744

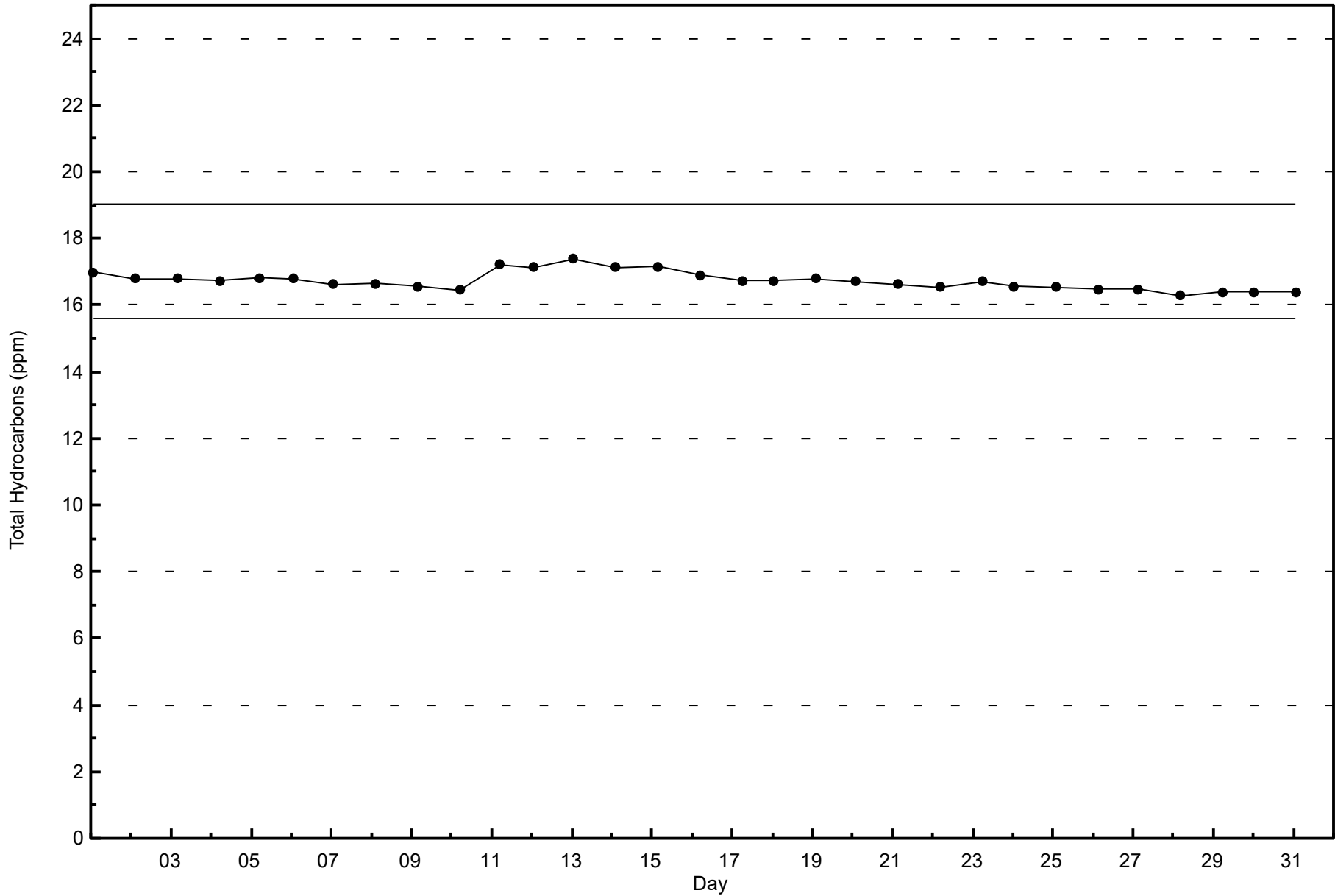


Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Surmont 2



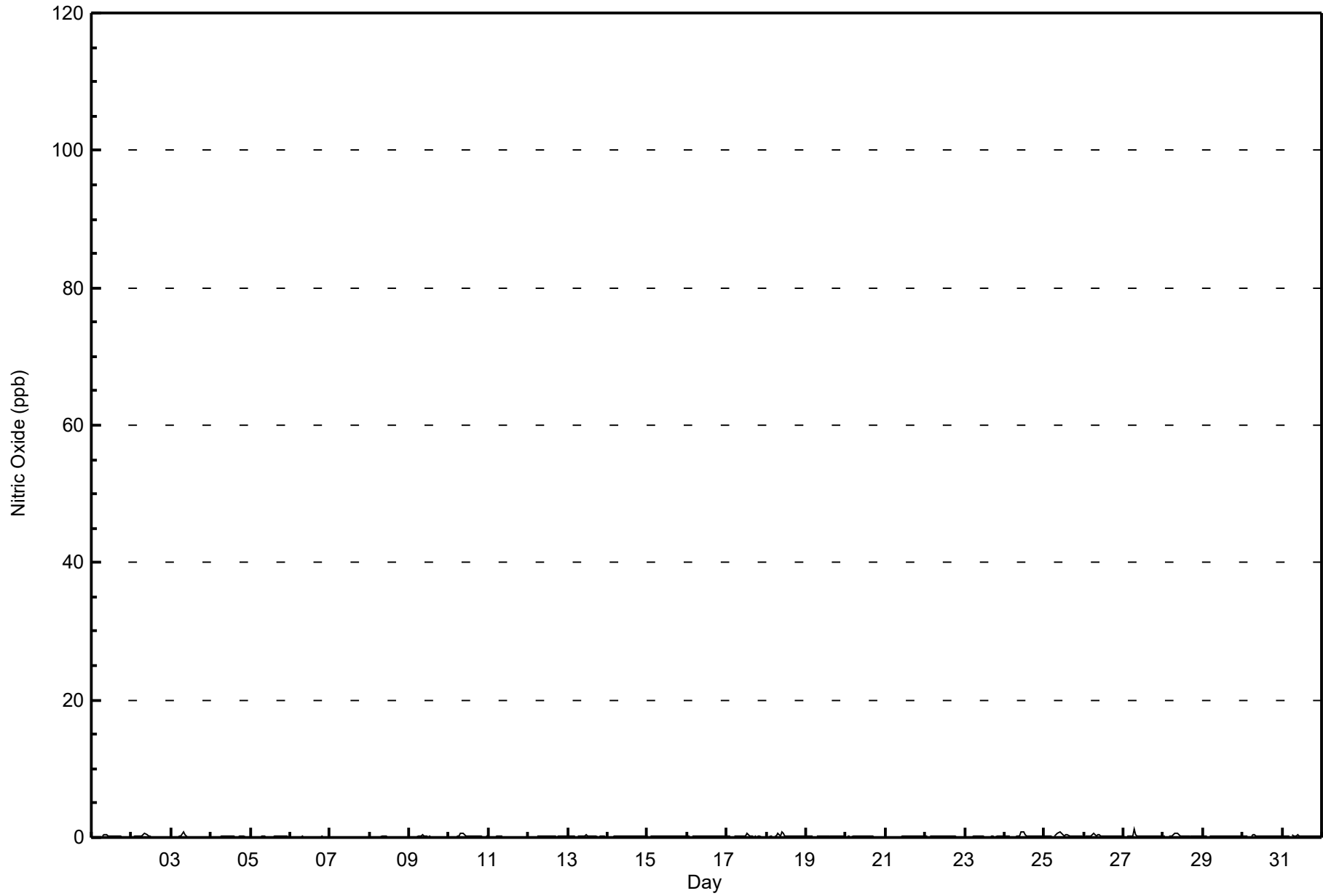






Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Surmont 2 - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitric Oxide (NO) - ppb
Surmont 2 - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	706	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Surmont 2 - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	19	9	12	16	44	89	99	42	20	25	17	138	95	32	23	23	703
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	19	9	12	16	44	89	99	42	20	25	17	138	95	32	23	23	703

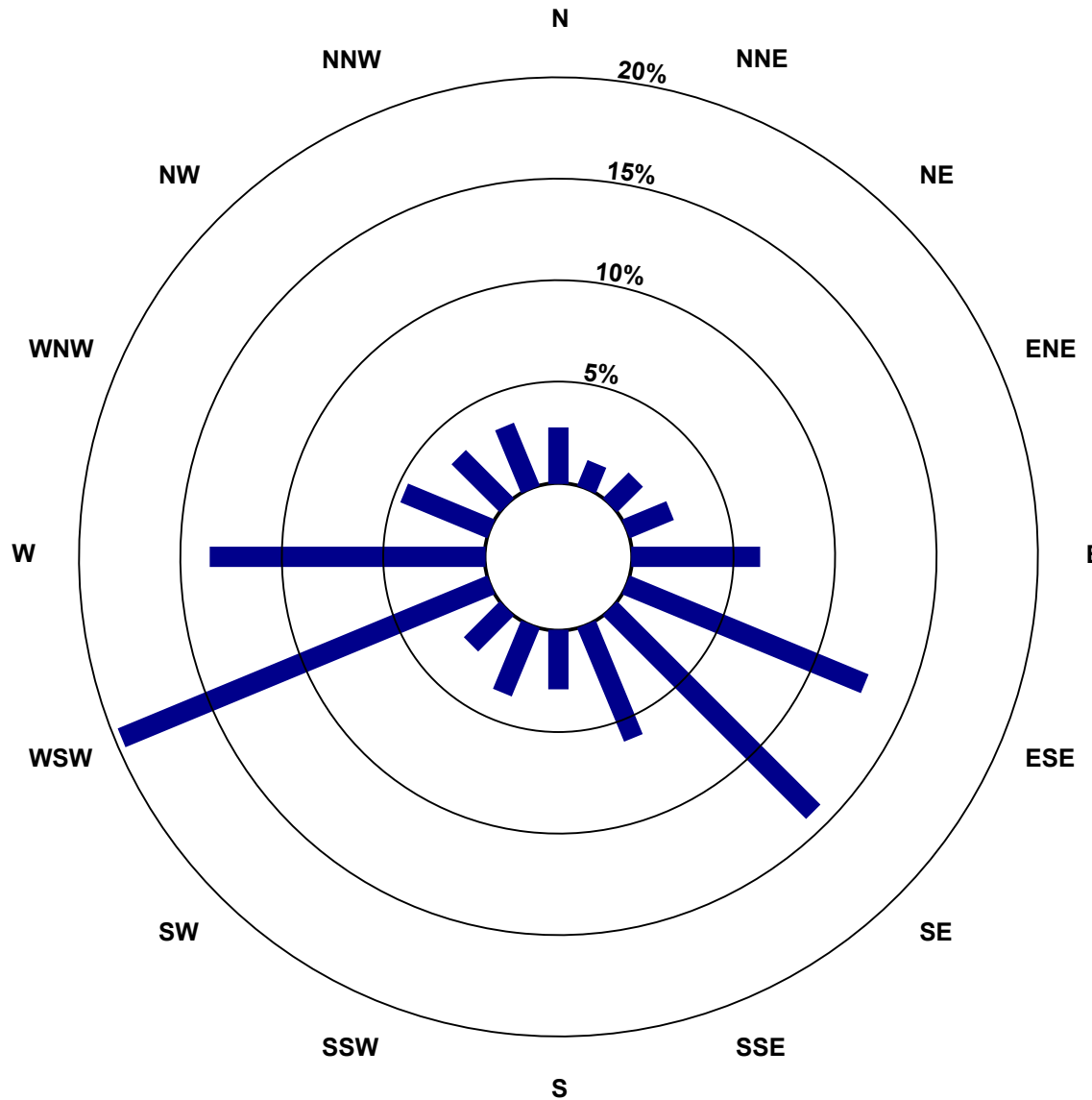
Total Number of Valid Hours: 703

Total Number of Hours: 744

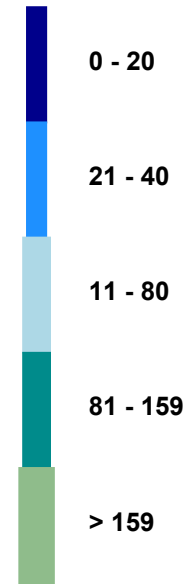


Wood Buffalo Environmental Association
Wind Rose May 2023

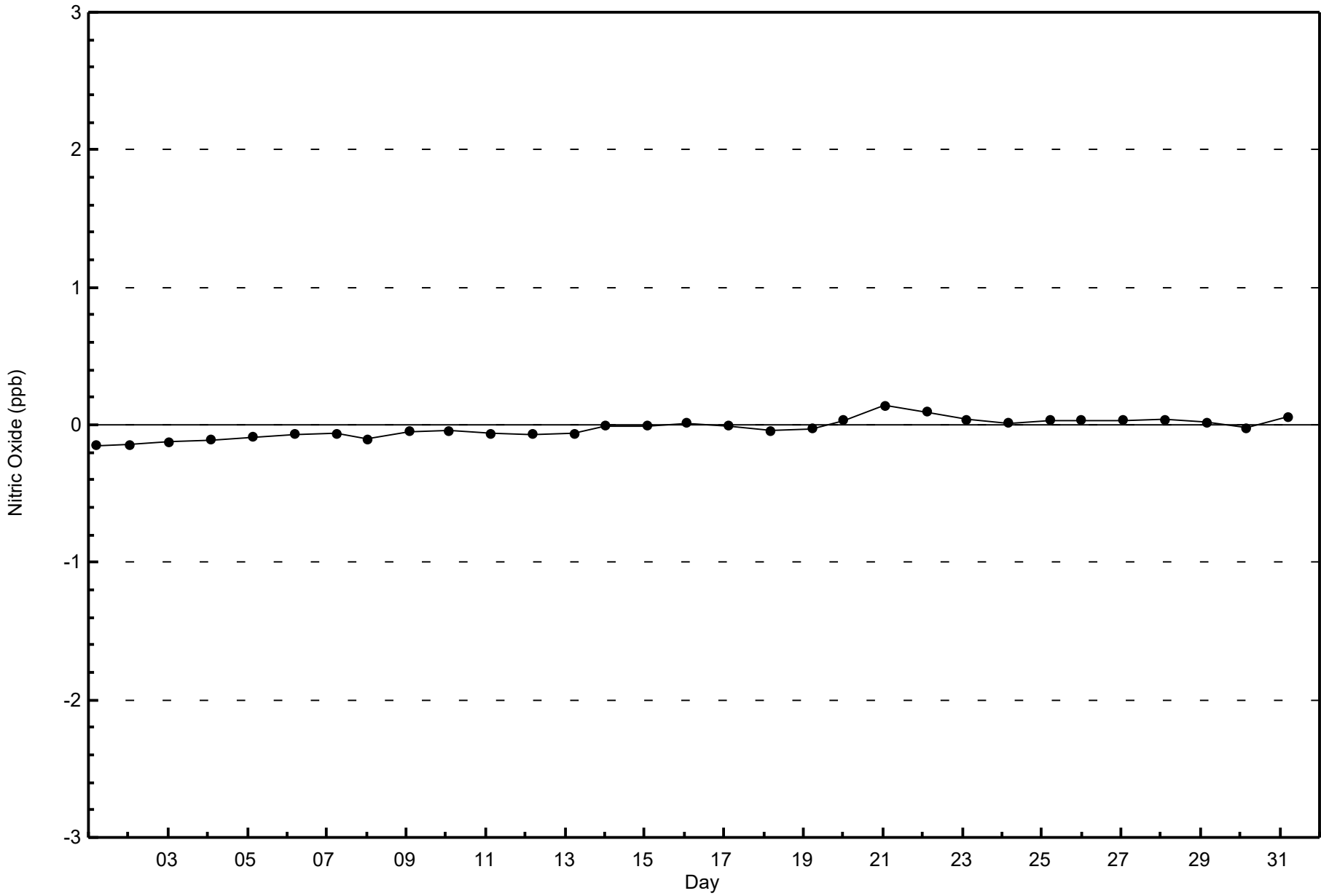
Nitric Oxide (NO) - ppb
Surmont 2

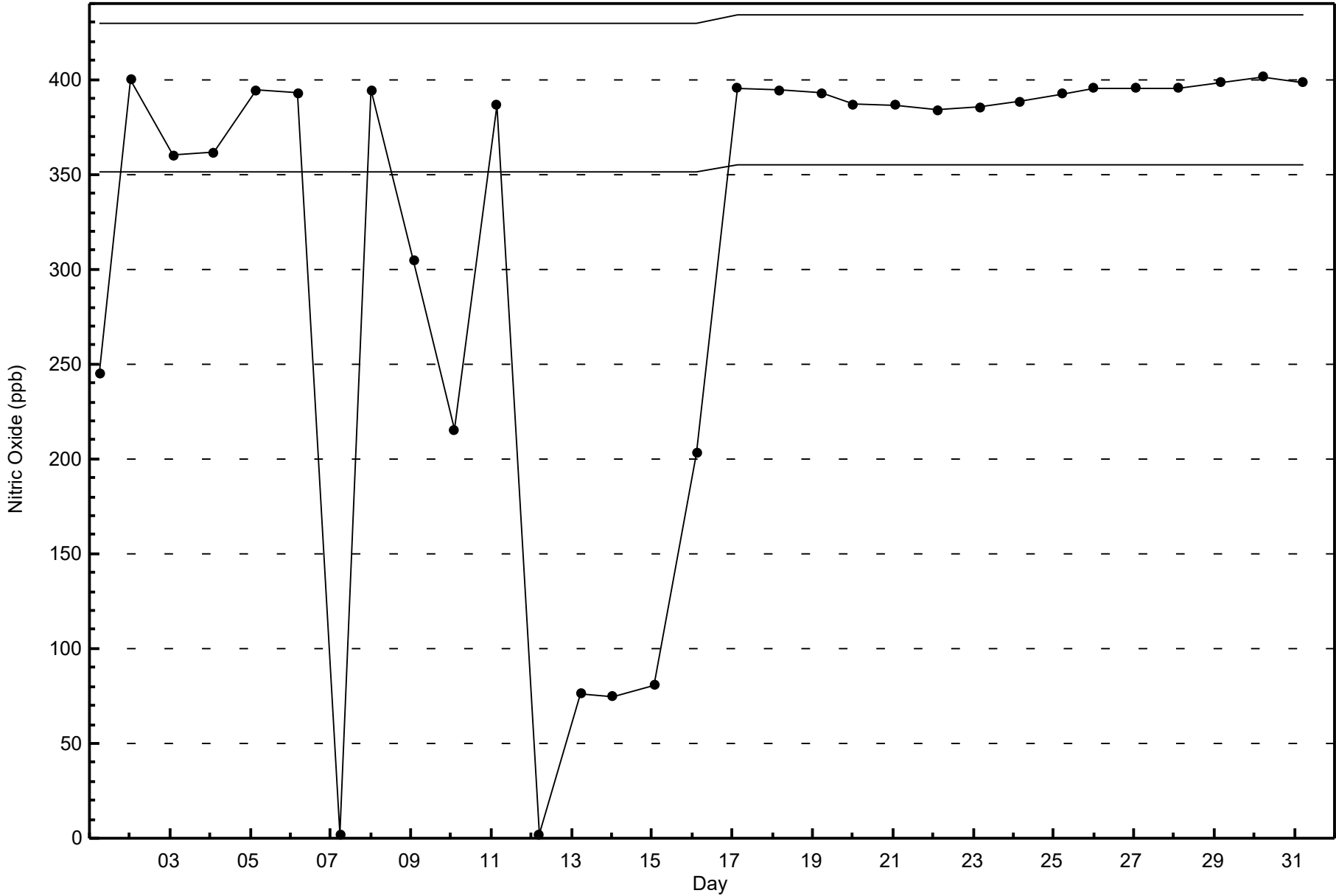


Classes (ppb)



Total Number of Valid Hours: 703



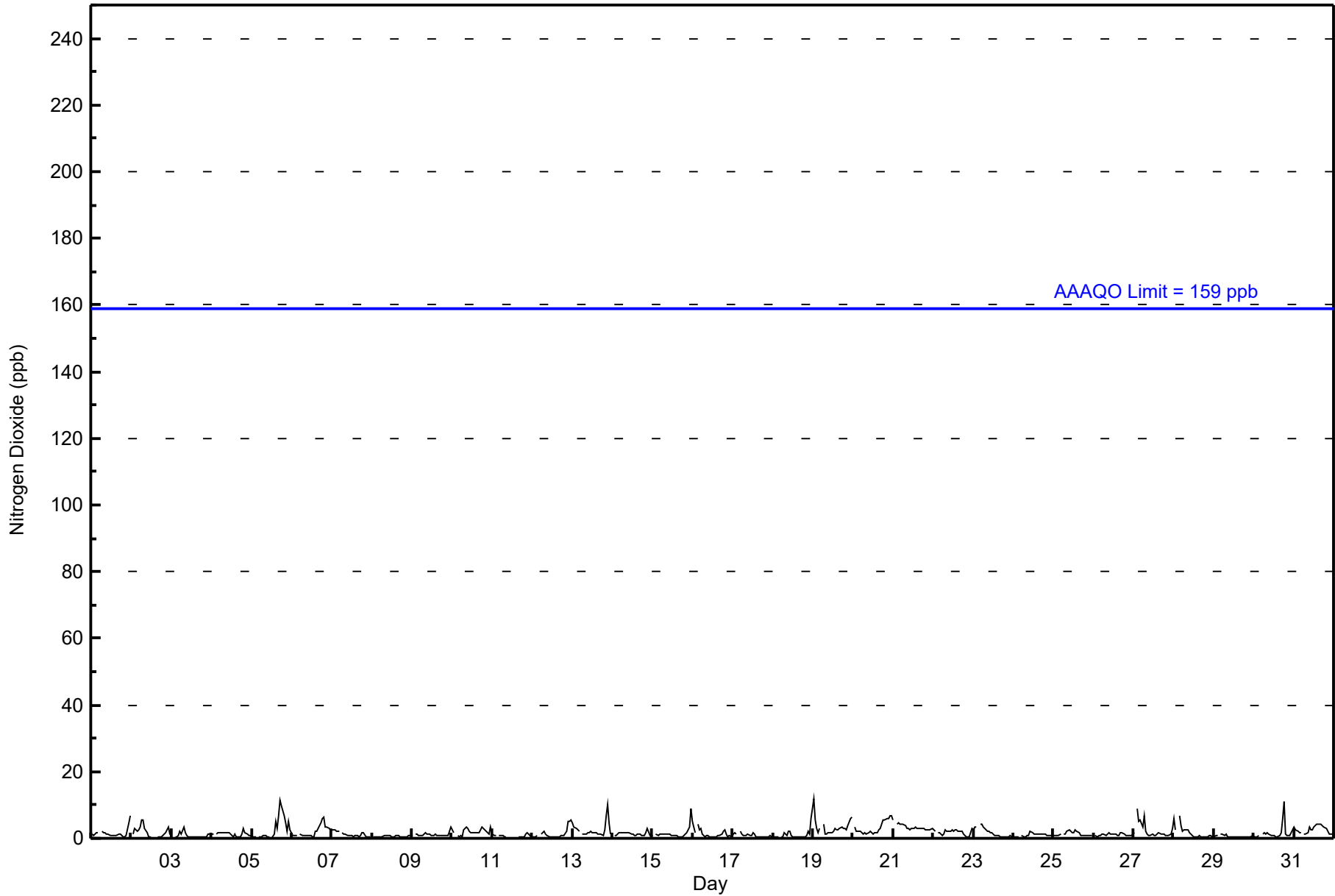




Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 11.9 ppb on May 19 01:00	Maximum Daily Average: 3.4 ppb on May 19		Hours of Data:	706
Minimum Value: 0.1 ppb on May 5 12:00	Minimum Daily Average: 0.6 ppb on May 8		Hours of Missing Data:	38
Maximum Diurnal Average: 2.5 ppb at hour 24	Minimum Diurnal Average: 1.2 ppb at hour 13		Hours of Calibration:	38
Monthly Average: 1.70 ppb	Percentiles: P ₁ = 0.3 P ₁₀ = 0.5 Q ₁ = 0.7 Median = 1.2 Q ₃ = 2.2 P ₉₀ = 3.4 P ₉₉ = 6.9		Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	1.2	0.8	1.4	1.6	1.6	Z	2.2	1.7	1.5	1.4	1.3	1.0	0.9	0.7	0.9	0.9	1.4	1.3	0.7	0.6	0.6	0.9	4.7	6.8	1.6	6.8																							
2-May	Z	1.3	3.1	2.3	2.6	3.5	5.7	5.3	3.0	1.7	0.6	0.5	0.2	0.2	0.2	0.2	0.4	0.3	0.4	0.8	1.7	2.7	3.6	1.4	1.8	5.7																							
3-May	0.8	Z	0.5	0.5	0.9	2.2	1.1	3.3	1.6	0.7	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.6	1.2	1.4	0.9	3.3																							
4-May	1.3	1.4	Z	1.2	1.6	1.8	1.9	1.8	1.7	1.6	1.5	1.1	0.7	0.6	1.2	0.6	0.6	0.6	1.3	3.0	1.9	1.2	0.9	0.7	1.3	3.0																							
5-May	0.5	0.5	0.5	Z	0.4	0.4	0.5	0.8	0.8	0.6	0.3	0.1	0.1	1.2	4.9	3.0	6.9	11.5	9.6	6.9	4.6	2.1	5.2	2.5	2.8	11.5																							
6-May	0.9	0.8	0.9	1.0	Z	1.1	0.7	0.8	0.8	0.8	0.8	0.9	0.8	0.6	0.5	2.0	2.3	3.1	4.5	6.1	6.3	3.3	3.4	2.8	2.3	2.0	6.3																						
7-May	2.5	2.6	2.7	2.1	2.2	Z	1.7	1.1	1.2	1.0	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.6	0.7	1.8	1.5	0.5	0.4	0.4	0.5	1.2	2.7																						
8-May	Z	0.5	0.4	0.4	0.5	0.5	0.8	1.0	0.8	0.8	0.8	0.8	0.6	0.6	0.7	0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.8	0.6	1.0	0.6	1.0																					
9-May	0.8	Z	1.2	1.1	0.9	0.9	0.8	1.4	1.8	1.2	1.1	1.0	1.0	1.0	1.1	1.0	0.8	0.8	0.7	0.7	0.7	0.7	2.3	3.3	1.1	3.3	1.1	3.3																					
10-May	2.4	1.7	Z	0.9	0.6	0.7	0.5	2.7	3.4	2.9	2.3	1.7	1.7	1.8	1.7	1.7	1.8	2.4	3.3	2.5	2.1	1.9	1.3	3.4	2.0	3.4	2.0	3.4																					
11-May	1.2	0.9	0.8	Z	0.9	0.7	0.7	0.6	0.5	C	C	C	C	C	C	C	C	0.6	0.5	0.5	0.6	1.2	1.8	1.3	0.5	--	1.8	1.8																					
12-May	0.4	0.4	0.6	1.0	Z	1.4	1.5	2.1	1.3	0.8	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.9	2.0	5.0	5.2	5.5	1.5	5.5	1.5	5.5																				
13-May	4.5	3.6	3.0	2.6	2.3	Z	1.2	1.4	1.4	1.5	1.6	2.2	1.8	1.8	1.7	1.2	1.1	1.1	1.0	2.5	6.6	10.3	4.5	1.2	2.6	10.3	2.6	10.3																					
14-May	Z	1.0	0.9	1.1	1.5	1.7	1.8	1.9	1.9	1.6	1.5	1.2	1.1	1.0	1.0	1.1	1.4	1.0	1.0	0.9	1.5	2.8	0.9	0.7	1.3	2.8	1.3	2.8																					
15-May	0.7	Z	1.1	1.0	1.4	1.3	1.2	1.3	1.2	1.1	1.1	1.0	0.7	0.7	0.8	0.6	0.4	0.5	0.4	0.7	1.5	2.6	3.4	9.0	1.5	9.0	1.5	9.0																					
16-May	5.1	1.5	Z	4.4	2.4	3.0	1.1	0.5	0.8	0.9	0.5	0.4	0.5	0.5	0.6	0.8	1.0	1.4	2.3	2.6	1.2	0.6	0.8	0.4	1.4	5.1	1.4	5.1																					
17-May	1.1	1.8	1.3	Z	2.3	1.2	0.8	0.8	0.9	1.1	0.9	1.0	1.9	1.3	0.5	0.4	0.3	0.3	0.3	0.4	0.3	0.5	0.7	0.3	0.9	2.3	0.9	2.3																					
18-May	0.3	0.3	0.3	0.3	Z	0.4	0.5	1.8	0.8	2.2	2.0	0.8	0.5	0.5	0.5	0.6	0.5	0.5	0.6	0.5	0.8	2.3	1.2	5.9	1.0	5.9	1.0	5.9																					
19-May	11.9	5.4	2.8	1.7	2.9	Z	4.1	1.4	1.4	1.6	1.7	1.8	2.1	2.9	2.5	2.6	2.9	3.4	2.8	3.0	2.6	3.9	6.1	6.3	3.4	11.9	3.4	11.9																					
20-May	Z	3.6	2.3	2.2	2.3	1.9	1.3	1.8	1.2	1.7	2.1	1.8	1.4	1.6	1.8	2.6	2.9	4.3	5.4	5.5	5.8	5.9	6.7	6.7	3.2	6.7	3.2	6.7																					
21-May	5.5	Z	4.3	4.5	4.2	4.3	4.2	3.8	3.0	2.9	2.7	2.9	3.1	3.2	3.1	3.1	3.0	3.1	3.0	2.7	2.6	2.7	2.7	3.0	3.4	5.5	3.4	5.5																					
22-May	2.5	2.3	Z	1.7	1.6	0.9	1.4	2.4	2.3	2.3	2.3	2.4	2.3	2.5	2.6	2.2	2.3	2.3	1.3	0.7	0.6	0.6	1.7	2.8	1.9	2.8	1.9	2.8																					
23-May	2.7	3.5	3.3	Z	4.3	4.1	3.5	2.9	2.3	2.1	1.9	1.7	1.2	0.9	0.9	0.7	0.6	0.5	0.6	0.5	0.6	0.6	0.7	0.6	1.8	4.3	1.8	4.3																					
24-May	0.6	0.6	0.5	0.5	Z	0.7	0.6	0.6	0.7	0.9	2.1	1.8	1.2	1.1	1.1	1.3	1.4	1.3	1.1	1.1	1.0	1.0	1.0	0.9	1.0	2.1	1.0	2.1																					
25-May	0.8	0.8	0.7	0.8	1.1	Z	1.1	1.4	2.3	2.4	2.1	1.7	1.8	2.7	2.0	1.5	1.0	0.8	0.9	0.9	0.9	0.8	0.7	0.8	1.3	2.7	1.3	2.7																					
26-May	Z	0.7	0.6	0.7	0.8	1.1	1.3	1.0	1.3	1.7	1.2	1.2	1.2	1.4	0.8	0.9	1.7	1.6	1.2	1.0	0.9	0.9	0.7	1.0	1.1	1.7	1.1	1.7																					
27-May	1.8	Z	9.1	4.9	5.5	3.3	6.7	2.0	1.4	0.9	1.0	1.1	1.0	1.0	1.1	1.5	1.2	1.1	1.1	1.0	1.0	0.9	1.4	2.9	2.3	9.1	2.3	9.1																					
28-May	6.0	2.7	Z	6.9	3.9	2.0	2.5	2.5	2.6	1.6	1.2	0.8	0.6	0.6	0.6	0.7	0.4	0.5	0.5	0.6	0.5	0.9	0.9	0.6	1.7	6.9	1.7	6.9																					
29-May	0.6	0.7	0.8	Z	1.1	1.2	0.9	1.1	0.6	0.4	0.4	0.5	0.4	0.4	0.5	0.6	0.6	0.5	0.6	0.6	0.5	0.5	0.6	0.8	0.6	1.2	0.6	1.2																					
30-May	0.5	0.5	0.5	0.7	Z	1.2	1.5	1.4	1.7	1.2	1.0	0.8	0.9	0.6	0.5	0.8	1.5	5.8	11.1	1.1	0.8	1.0	1.7	2.5	1.7	11.1	1.7	11.1																					
31-May	3.6	2.6	2.1	1.7	1.7	Z	1.4	1.1	1.8	3.3	2.7	2.6	3.5	4.4	4.4	4.1	4.4	4.0	3.6	3.1	2.0	1.2	1.3	1.1	2.7	4.4	2.7	4.4																					
																								2.3	1.6	1.8	1.8	2.0	1.7	1.8	1.7	1.6	1.5	1.4	1.2	1.2	1.2	1.4	1.3	1.5	1.9	2.1	1.8	1.7	2.0	2.2	2.5	Diurnal Average	
																								11.9	5.4	9.1	6.9	5.5	4.3	6.7	5.3	3.4	3.3	2.7	2.9	3.5	4.4	4.9	4.1	6.9	11.5	11.1	6.9	6.6	10.3	6.7	9.0	Diurnal Maximum	

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Surmont 2 - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	706	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Surmont 2 - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	19	9	12	16	44	89	99	42	20	25	17	138	95	32	23	23	703
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	19	9	12	16	44	89	99	42	20	25	17	138	95	32	23	23	703

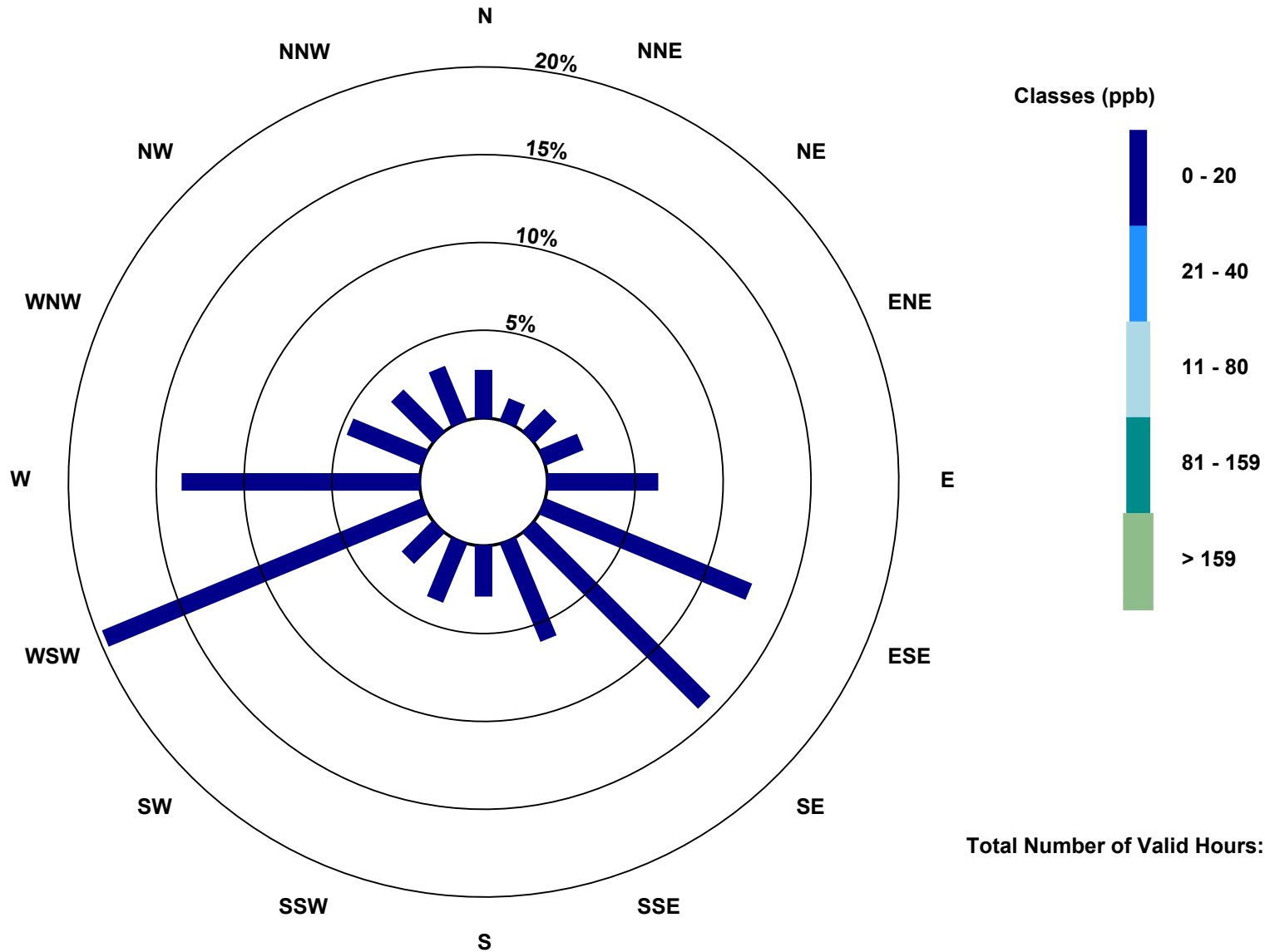
Total Number of Valid Hours: 703

Total Number of Hours: 744

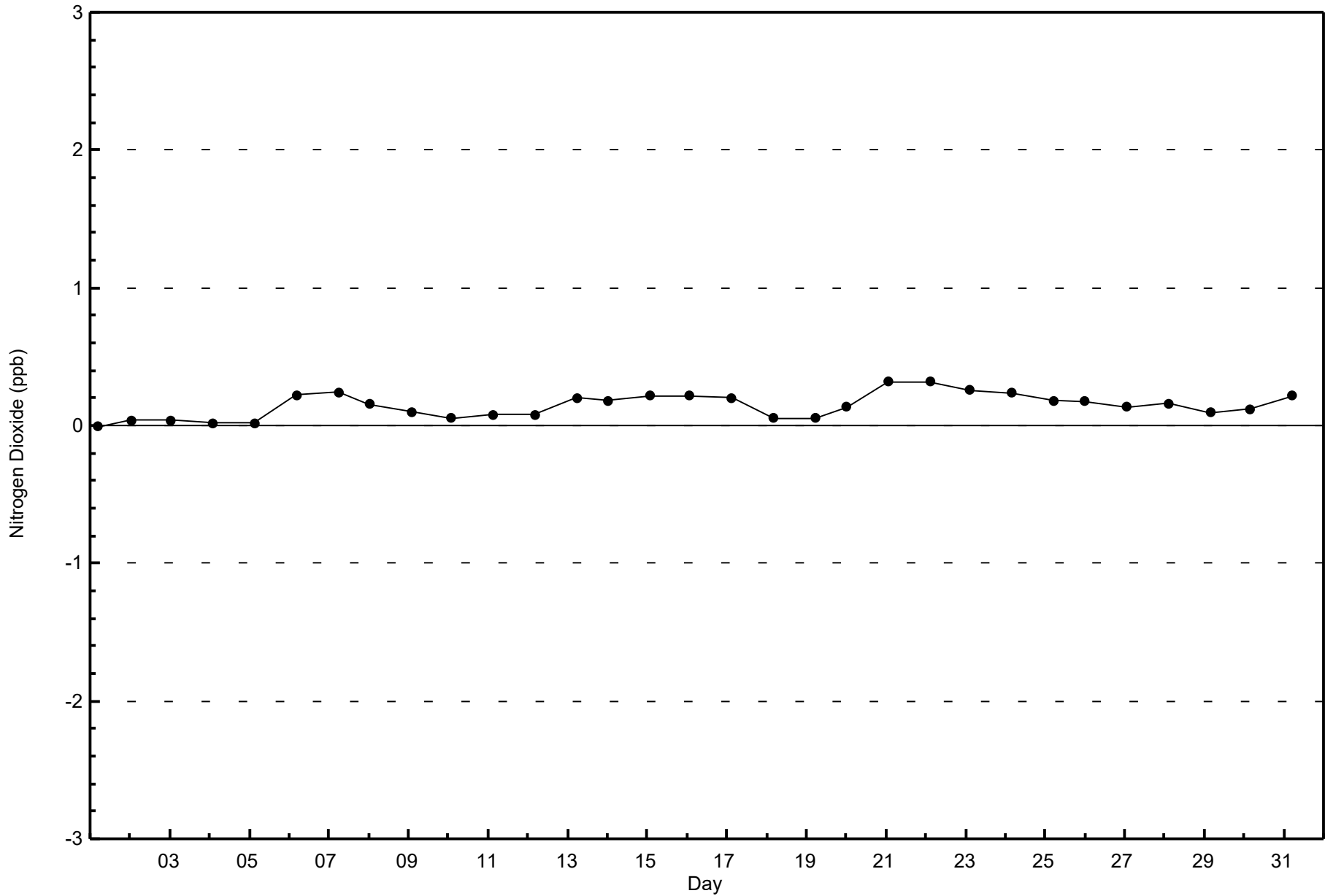


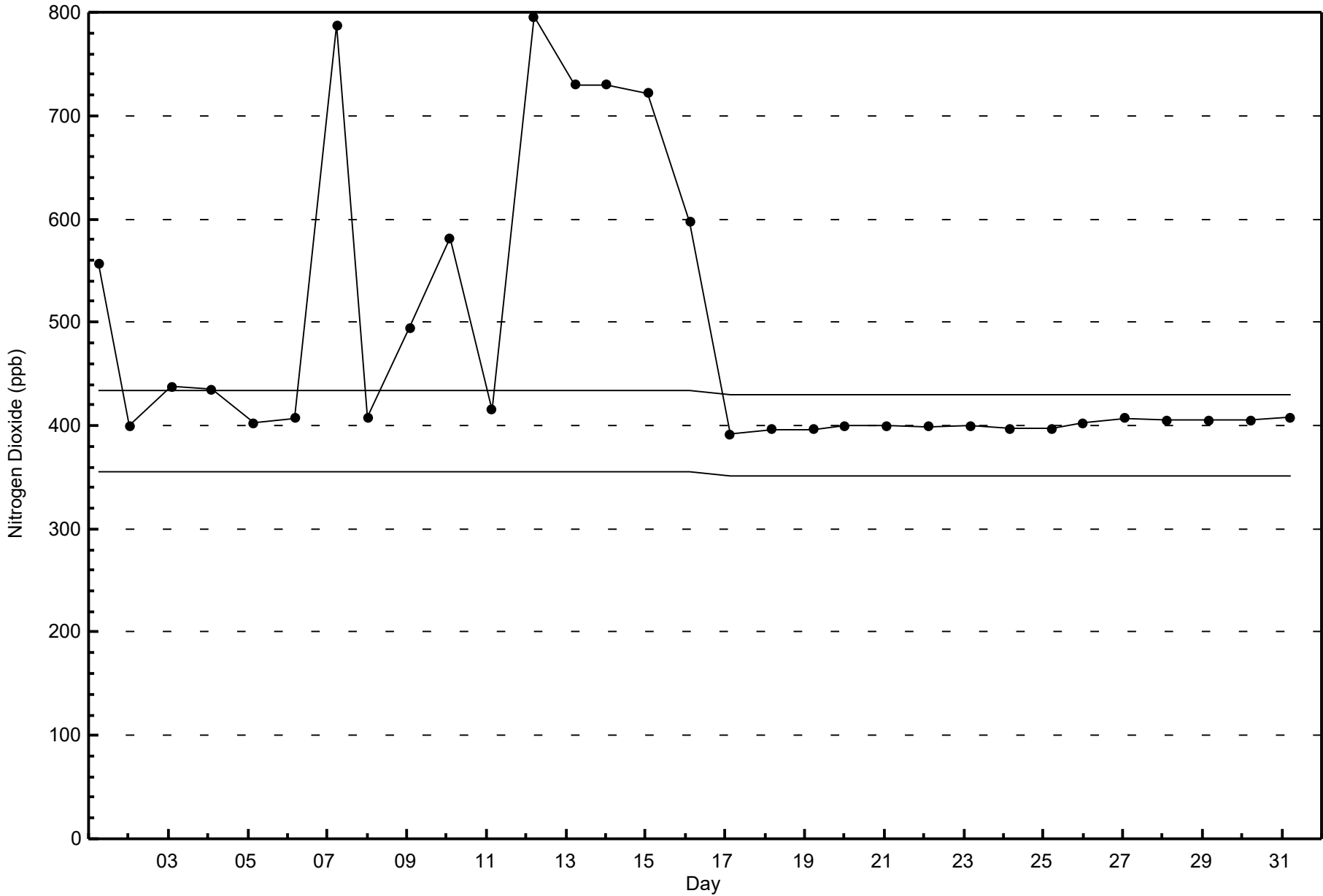
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Surmont 2



Total Number of Valid Hours: 703







Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_x) - ppb

Surmont 2 - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 12.1 ppb on May 19 01:00	Maximum Daily Average: 3.6 ppb on May 19		Hours of Data:	706
Minimum Value: 0.2 ppb on May 5 13:00	Minimum Daily Average: 0.8 ppb on May 8		Hours of Missing Data:	38
Maximum Diurnal Average: 2.6 ppb at hour 24	Minimum Diurnal Average: 1.3 ppb at hour 13		Hours of Calibration:	38
Monthly Average: 1.86 ppb	Percentiles: P ₁ = 0.4 P ₁₀ = 0.6 Q ₁ = 0.8 Median = 1.3 Q ₃ = 2.4 P ₉₀ = 3.6 P ₉₉ = 7.9		Percent Operational Time:	100.0

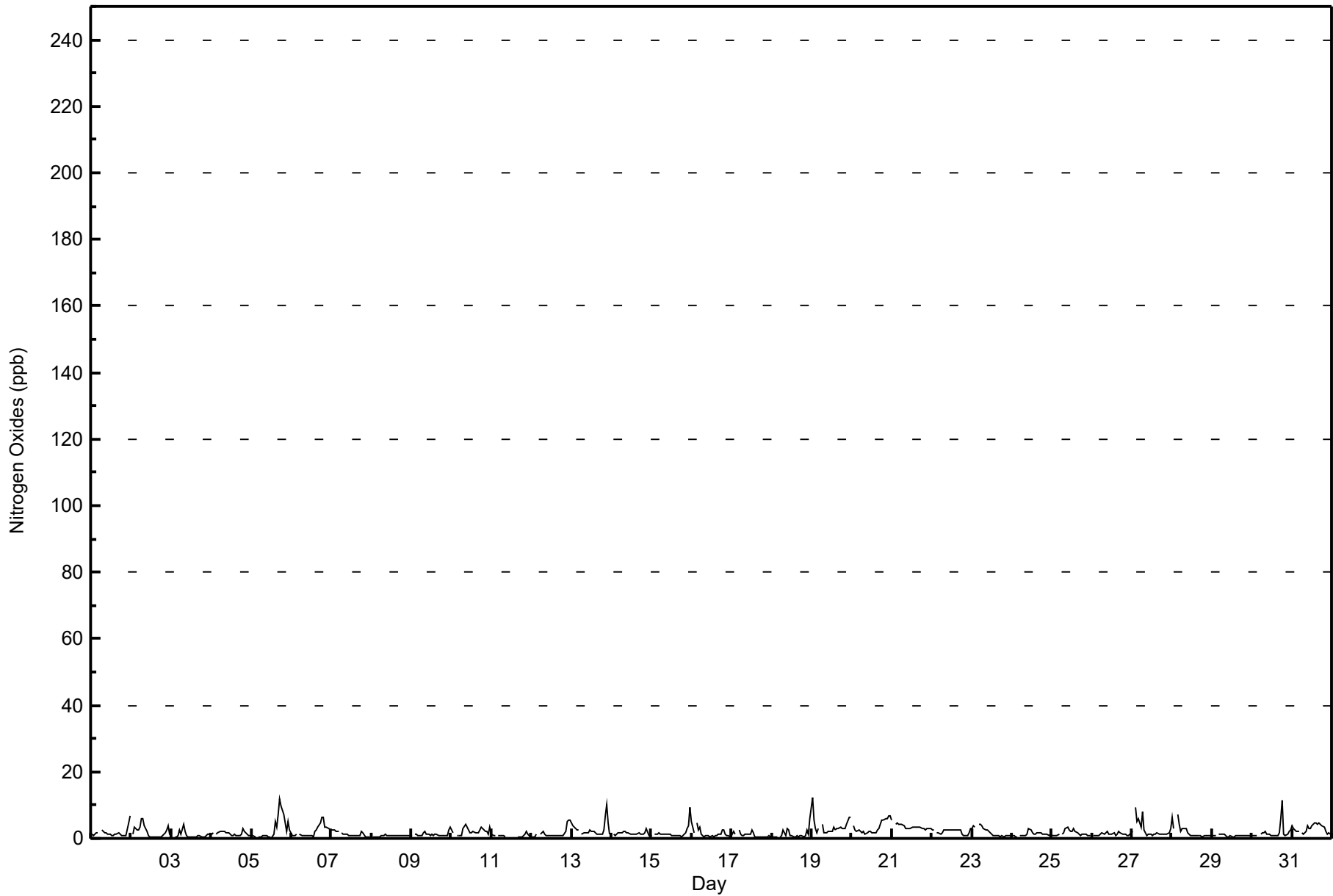
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	1.2	0.8	1.4	1.6	1.6	Z	2.4	2.0	1.8	1.7	1.5	1.2	1.0	0.8	1.1	1.1	1.6	1.5	0.8	0.7	0.7	1.0	4.8	6.9	1.7	6.9																							
2-May	Z	1.4	3.2	2.4	2.7	3.6	6.0	5.7	3.6	2.1	0.8	0.6	0.3	0.3	0.3	0.3	0.5	0.4	0.4	0.8	1.8	2.7	3.7	1.4	2.0	6.0																							
3-May	0.8	Z	0.6	0.6	1.0	2.4	1.3	4.1	2.0	0.9	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.7	1.3	1.5	1.0	4.1																							
4-May	1.4	1.5	Z	1.3	1.7	1.9	2.1	2.0	1.9	1.8	1.6	1.3	0.8	0.7	1.3	0.7	0.7	0.7	1.4	3.1	2.0	1.3	1.0	0.8	1.4	3.1																							
5-May	0.6	0.6	0.6	Z	0.5	0.5	0.5	0.9	0.9	0.7	0.4	0.2	0.2	1.3	5.1	3.2	7.1	11.7	9.8	7.0	4.7	2.2	5.3	2.6	2.9	11.7																							
6-May	1.0	0.9	1.0	1.1	Z	1.2	0.8	0.9	0.9	0.9	1.0	0.9	0.7	0.6	2.1	2.4	3.2	4.6	6.2	6.4	3.4	3.5	2.8	2.3	2.1	6.4																							
7-May	2.5	2.6	2.7	2.2	2.3	Z	1.8	1.2	1.3	1.1	0.8	0.8	0.8	0.7	0.8	0.8	0.7	0.8	1.9	1.6	0.6	0.5	0.5	0.6	1.3	2.7																							
8-May	Z	0.6	0.5	0.5	0.6	0.6	0.6	0.9	1.2	0.9	0.9	0.9	0.7	0.7	0.8	0.9	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.9	0.8	1.2																							
9-May	0.9	Z	1.3	1.2	1.0	1.0	1.0	1.7	2.1	1.4	1.2	1.1	1.1	1.1	1.2	1.1	0.9	0.9	0.8	0.8	0.8	0.8	2.4	3.4	1.3	3.4																							
10-May	2.5	1.8	Z	1.0	0.7	0.8	0.7	3.2	4.1	3.4	2.6	1.9	1.8	1.9	1.8	1.8	1.9	2.5	3.4	2.6	2.2	2.0	1.4	3.5	2.2	4.1																							
11-May	1.3	1.0	0.9	Z	1.0	0.9	0.9	0.7	0.6	C	C	C	C	C	C	C	0.6	0.5	0.5	0.7	1.3	1.9	1.3	0.5	--	1.9																							
12-May	0.4	0.4	0.6	1.1	Z	1.5	1.6	2.2	1.4	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	1.0	2.1	5.1	5.4	5.6	1.6	5.6																							
13-May	4.6	3.7	3.1	2.7	2.4	Z	1.4	1.6	1.7	1.7	1.8	2.5	2.0	2.0	1.9	1.3	1.2	1.2	1.1	2.6	6.7	10.4	4.6	1.3	2.8	10.4																							
14-May	Z	1.1	1.0	1.2	1.6	1.8	1.9	2.1	2.1	1.8	1.7	1.4	1.3	1.2	1.2	1.3	1.6	1.2	1.2	1.1	1.7	3.0	1.0	0.8	1.5	3.0																							
15-May	0.8	Z	1.2	1.1	1.5	1.4	1.3	1.4	1.4	1.3	1.3	1.2	0.9	0.9	1.0	0.8	0.6	0.7	0.6	0.9	1.7	2.8	3.6	9.2	1.6	9.2																							
16-May	5.3	1.7	Z	4.6	2.6	3.2	1.2	0.6	0.9	1.0	0.7	0.5	0.7	0.6	0.8	0.9	1.1	1.5	2.4	2.7	1.3	0.7	0.9	0.5	1.6	5.3																							
17-May	1.2	1.9	1.4	Z	2.4	1.3	0.9	0.9	1.1	1.4	1.1	1.2	2.5	1.7	0.6	0.5	0.4	0.4	0.4	0.5	0.4	0.6	0.8	0.4	1.0	2.5																							
18-May	0.4	0.4	0.4	0.4	Z	0.5	0.7	2.4	1.0	2.9	2.6	1.0	0.7	0.6	0.6	0.7	0.6	0.6	0.7	0.6	0.9	2.4	1.3	6.1	1.2	6.1																							
19-May	12.1	5.5	2.9	1.8	3.1	Z	4.3	1.5	1.6	1.7	1.9	2.0	2.3	3.2	2.7	2.8	3.1	3.6	3.0	3.2	2.8	4.1	6.3	6.5	3.6	12.1																							
20-May	Z	3.8	2.4	2.3	2.4	2.1	1.5	2.1	1.4	1.8	2.2	1.9	1.5	1.7	1.9	2.7	3.0	4.4	5.5	5.6	5.9	6.0	6.8	6.7	3.3	6.8																							
21-May	5.5	Z	4.3	4.5	4.2	4.3	4.2	3.8	3.1	3.0	2.8	3.0	3.3	3.4	3.3	3.3	3.2	3.3	3.2	2.9	2.7	2.8	2.8	3.1	3.5	5.5																							
22-May	2.6	2.4	Z	1.8	1.7	1.2	1.7	2.6	2.4	2.4	2.4	2.4	2.5	2.4	2.6	2.8	2.4	2.4	2.4	1.4	0.8	0.7	0.7	1.8	2.0	2.9																							
23-May	2.8	3.6	3.4	Z	4.4	4.2	3.7	3.1	2.5	2.3	2.0	1.8	1.3	1.0	1.0	0.8	0.7	0.6	0.7	0.6	0.7	0.7	0.8	0.7	1.9	4.4																							
24-May	0.7	0.7	0.6	0.6	Z	0.8	0.7	0.8	1.2	2.9	2.6	1.6	1.3	1.4	1.5	1.6	1.6	1.3	1.3	1.2	1.1	1.1	1.1	1.1	1.2	2.9																							
25-May	1.0	1.0	0.9	1.0	1.3	Z	1.3	1.7	3.0	3.3	2.6	2.0	2.0	3.0	2.3	1.7	1.2	1.0	1.1	1.1	1.1	1.0	0.9	0.9	1.6	3.3																							
26-May	Z	0.9	0.8	0.9	1.0	1.5	1.9	1.3	1.7	2.1	1.4	1.4	1.4	1.6	1.0	1.1	1.9	1.8	1.4	1.2	1.1	1.1	0.9	1.1	1.3	2.1																							
27-May	1.9	Z	9.2	5.0	5.8	3.6	7.9	2.4	1.6	1.0	1.1	1.2	1.1	1.1	1.2	1.7	1.3	1.2	1.2	1.2	1.2	1.1	1.6	3.1	2.5	9.2																							
28-May	6.2	2.9	Z	7.1	4.1	2.3	2.9	3.0	3.1	1.9	1.5	1.0	0.8	0.8	0.7	0.9	0.6	0.7	0.6	0.7	0.7	1.0	1.0	0.7	2.0	7.1																							
29-May	0.7	0.8	0.9	Z	1.2	1.4	1.1	1.4	0.8	0.5	0.6	0.7	0.6	0.6	0.7	0.8	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.9	0.8	1.4																							
30-May	0.7	0.7	0.7	0.8	Z	1.4	1.9	1.7	2.0	1.4	1.2	1.0	1.0	0.8	0.7	1.0	1.7	6.0	11.4	1.3	1.0	1.2	1.9	2.7	1.9	11.4																							
31-May	3.8	2.8	2.3	1.9	1.9	Z	1.8	1.4	2.1	3.7	3.0	2.8	3.8	4.7	4.7	4.4	4.7	4.3	3.9	3.3	2.2	1.4	1.5	1.3	2.9	4.7																							
																								2.4	1.8	1.9	2.0	2.1	1.8	2.0	2.0	1.8	1.7	1.6	1.4	1.3	1.4	1.5	1.5	1.7	2.0	2.2	1.9	1.8	2.1	2.3	2.6	Diurnal Average	
																								12.1	5.5	9.2	7.1	5.8	4.3	7.9	5.7	4.1	3.7	3.0	3.0	3.8	4.7	5.1	4.4	7.1	11.7	11.4	7.0	6.7	10.4	6.8	9.2	Diurnal Maximum	

Z - zerospan C - Calibration



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Surmont 2 - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Surmont 2 - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	706	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Surmont 2 - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	19	9	12	16	44	89	99	42	20	25	17	138	95	32	23	23	703
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	19	9	12	16	44	89	99	42	20	25	17	138	95	32	23	23	703

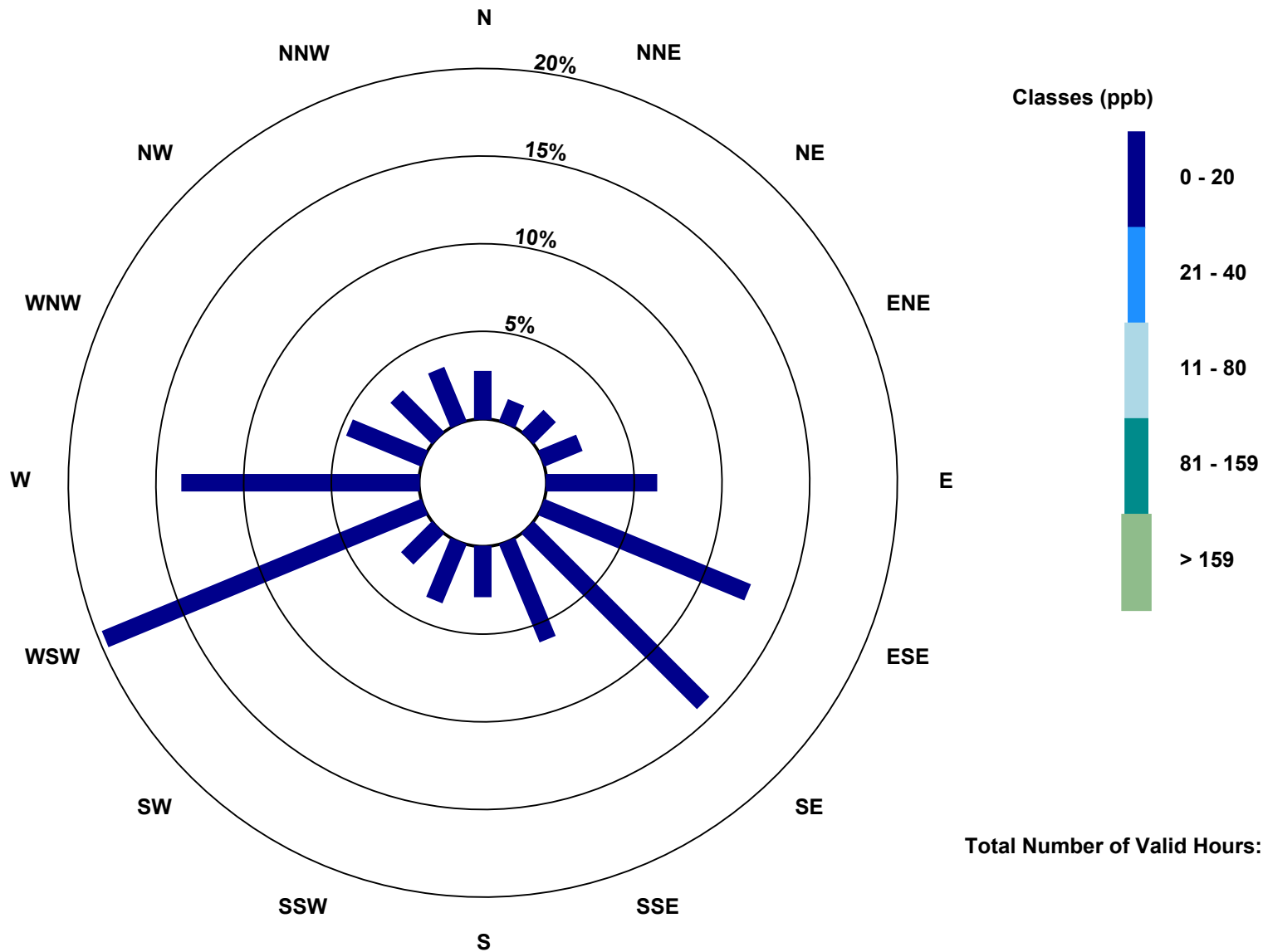
Total Number of Valid Hours: 703

Total Number of Hours: 744

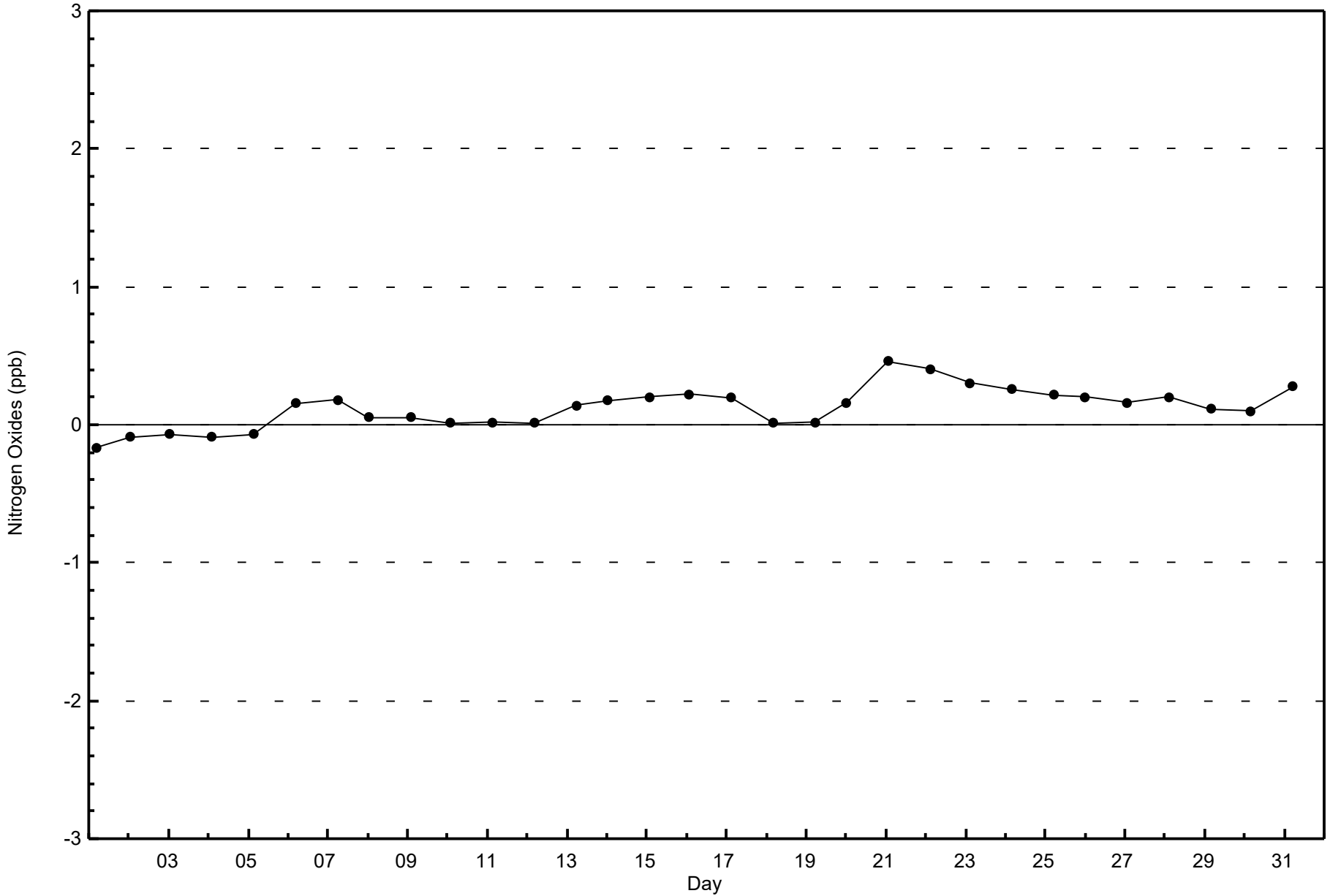


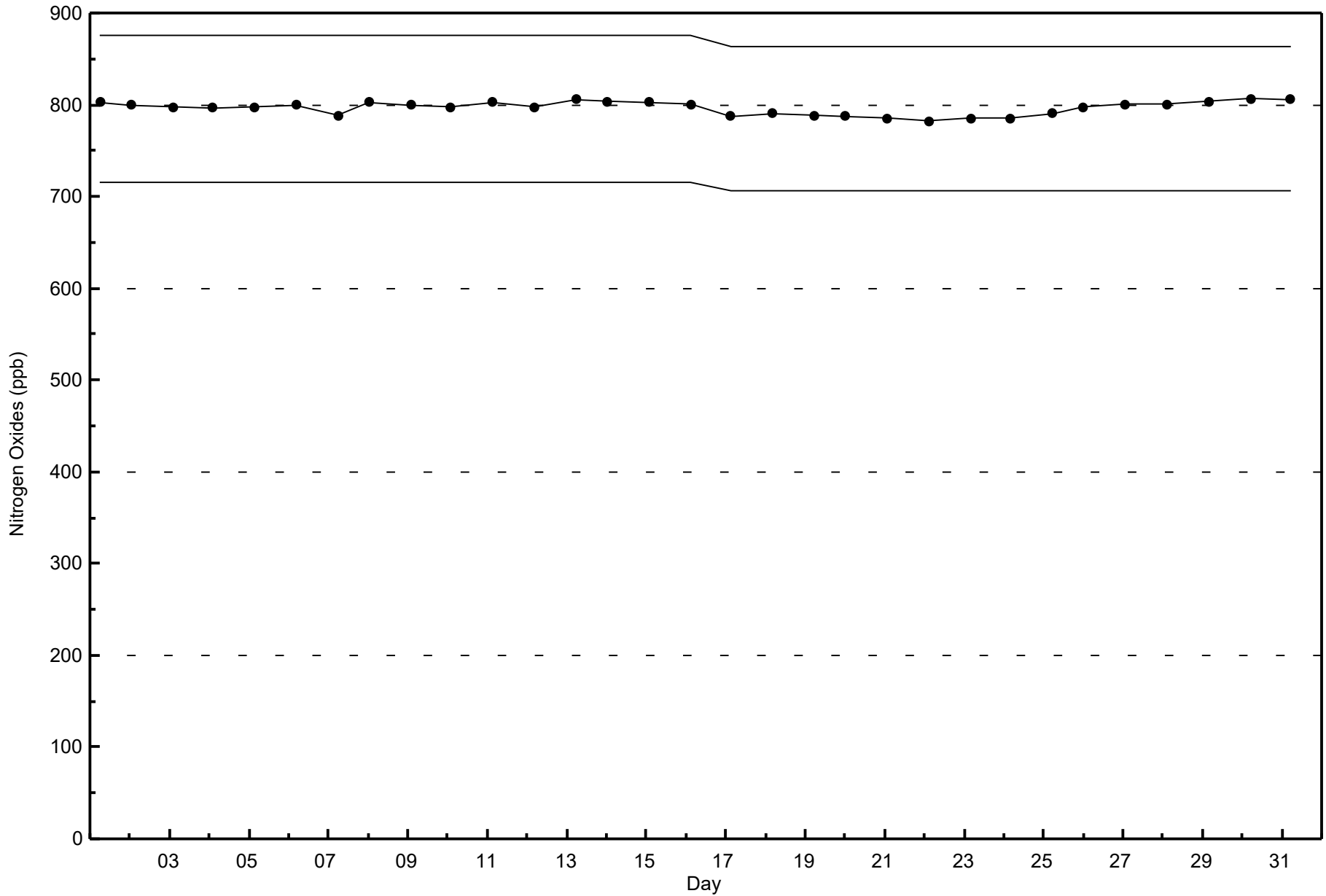
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Surmont 2



Total Number of Valid Hours: 703







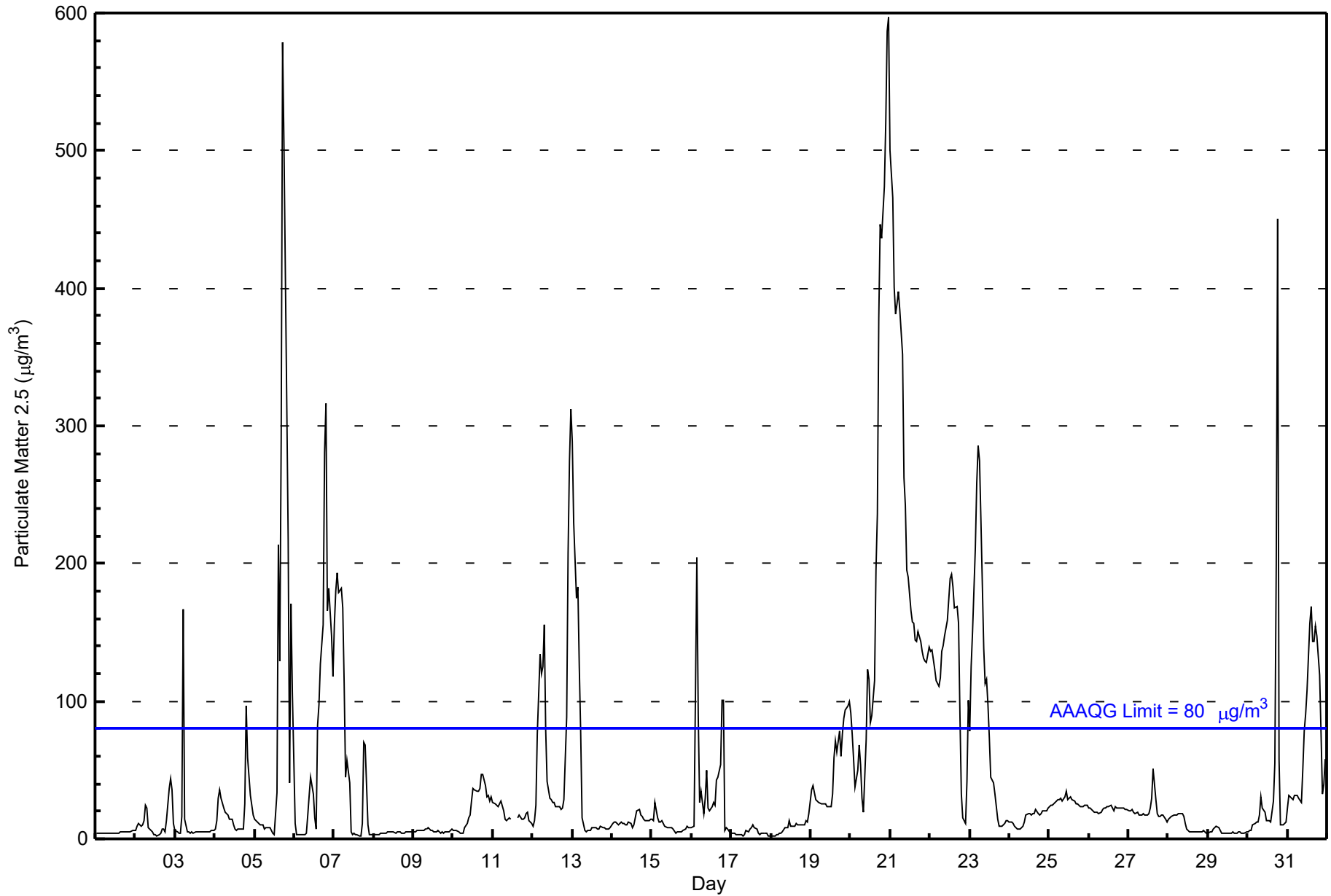
Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM_{2.5}) - µg/m³

Surmont 2 - May 2023

Number of Exceedences (AAAQO):		1-hr: 131		24-hr: 13		Hours in Service:															744					
Maximum Value: 597.4 µg/m ³ on May 21 00:00		Maximum Daily Average: 245.3 µg/m ³ on May 21		Hours of Data:															741							
Minimum Value: 1.6 µg/m ³ on May 17 08:00		Minimum Daily Average: 4.4 µg/m ³ on May 1		Hours of Missing Data:															3							
Maximum Diurnal Average: 82.8 µg/m ³ at hour 19		Minimum Diurnal Average: 31.3 µg/m ³ at hour 13		Hours of Calibration:															3							
Monthly Average: 48.77 µg/m ³		Percentiles: P ₁ = 2.5 P ₁₀ = 4.2 Q ₁ = 6.1 Median = 15.4 Q ₃ = 34.9 P ₉₀ = 147.1 P ₉₉ = 459.8		Percent Operational Time:															100.0							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	4.0	3.9	3.9	3.8	3.7	3.6	3.7	4.1	3.7	3.7	4.1	3.9	4.4	4.4	4.5	4.6	4.9	4.9	4.8	4.9	4.9	5.1	5.7	5.7	4.4	5.7
2-May	6.0	9.6	10.9	8.9	10.5	13.5	24.0	22.1	7.8	6.1	4.7	3.0	2.8	2.5	2.9	3.7	7.2	6.7	4.9	12.8	36.2	44.2	35.9	11.0	12.4	44.2
3-May	6.1	4.6	4.1	4.3	16.4	166.3	14.5	5.5	5.0	4.6	4.6	4.4	4.8	5.2	5.1	5.0	5.0	5.0	4.6	4.8	5.0	5.3	5.7	5.9	12.6	166.3
4-May	6.8	13.5	29.7	35.1	29.1	22.2	19.1	18.4	16.9	14.6	13.9	10.4	6.8	6.4	7.0	7.0	7.0	7.2	25.4	96.2	58.7	31.6	23.9	17.2	21.9	96.2
5-May	14.4	13.1	10.9	10.6	10.0	9.8	7.3	8.0	8.0	8.0	6.5	4.1	3.4	33.3	214.0	129.1	290.1	578.3	503.4	315.6	217.7	40.7	171.2	105.8	113.1	578.3
6-May	11.1	3.4	3.2	3.3	3.3	3.4	3.4	3.6	17.2	31.4	44.4	32.7	15.3	7.4	82.7	97.8	127.1	155.5	281.2	316.7	165.4	182.0	147.2	118.2	77.4	316.7
7-May	156.0	179.8	193.7	178.5	182.2	167.9	112.8	44.5	57.4	40.3	5.0	3.1	4.0	2.9	2.7	2.5	11.1	70.0	67.8	10.3	3.1	3.1	3.2	62.7	193.7	
8-May	3.1	3.3	3.4	3.5	3.7	3.8	4.1	4.4	4.8	4.9	5.4	5.6	4.6	4.6	4.8	5.1	5.0	4.4	4.5	4.7	4.8	5.0	5.0	5.2	4.5	5.6
9-May	5.2	5.5	5.9	6.5	6.3	6.5	6.4	6.7	7.6	8.4	6.5	5.7	4.8	5.3	5.3	6.0	4.6	4.9	4.1	5.1	4.8	5.5	5.8	7.0	5.8	8.4
10-May	6.3	6.4	6.0	4.7	3.9	4.0	3.9	7.9	11.2	14.9	17.1	27.5	36.2	35.6	34.2	34.9	37.1	46.5	46.6	38.4	30.3	31.6	27.7	30.1	22.6	46.6
11-May	26.8	25.5	24.4	23.8	25.1	27.0	20.5	13.8	13.6	14.4	15.0	14.2	C	C	C	15.0	17.5	14.4	14.3	14.9	18.5	18.9	13.6	11.3	18.2	27.0
12-May	9.6	13.2	24.7	75.9	133.8	120.4	125.0	155.7	79.8	41.9	29.6	28.3	26.9	26.2	23.7	23.0	22.9	21.7	22.2	28.0	88.7	207.0	274.9	312.4	79.8	312.4
13-May	289.1	230.0	174.5	183.0	125.0	76.8	15.0	6.1	5.4	6.3	5.7	5.8	8.2	8.0	7.9	7.2	7.4	9.4	8.5	8.6	7.5	7.5	7.5	8.6	50.8	289.1
14-May	11.0	12.0	11.9	11.4	10.5	11.8	10.8	10.8	10.2	10.4	12.2	11.4	8.6	10.4	14.9	19.9	21.0	16.8	15.9	14.7	13.7	12.9	12.7	14.7	12.9	21.0
15-May	14.1	13.3	26.8	15.1	12.6	11.9	13.3	11.3	8.7	7.9	8.0	7.9	8.5	7.1	4.4	4.7	5.1	4.8	5.4	5.9	7.2	9.6	7.9	8.1	9.6	26.8
16-May	8.2	8.7	103.9	204.4	89.4	26.4	34.7	18.5	29.7	49.8	22.2	20.7	23.1	26.0	24.8	42.8	44.4	53.7	100.2	100.2	6.2	7.7	6.8	3.6	44.0	204.4
17-May	4.0	3.8	3.7	3.5	3.4	3.5	3.4	1.6	2.9	6.1	5.2	7.0	7.9	10.6	8.1	6.7	4.0	3.4	4.0	4.3	4.2	3.6	2.4	2.5	4.6	10.6
18-May	2.5	2.5	2.4	2.6	3.1	4.3	4.2	4.7	8.6	7.9	8.3	12.9	9.4	8.8	9.6	10.8	10.6	10.6	10.3	10.0	9.7	12.8	12.3	18.4	8.2	18.4
19-May	35.1	38.8	33.3	28.9	27.7	26.4	25.3	25.7	25.6	25.1	23.9	23.4	23.6	32.8	58.6	70.9	62.8	78.7	59.7	76.0	87.8	93.4	96.5	100.1	49.2	100.1
20-May	91.2	76.8	58.1	37.8	50.1	67.6	54.2	29.3	19.0	72.2	123.0	116.1	84.0	89.3	115.0	195.3	236.0	378.5	446.0	436.3	474.1	520.6	586.9	597.4	206.4	597.4
21-May	500.6	466.1	400.2	381.6	388.6	397.4	384.8	351.9	262.8	242.4	195.1	190.6	166.0	157.2	156.3	144.2	143.9	150.4	143.8	136.4	130.8	129.0	128.6	139.4	245.3	500.6
22-May	136.1	137.6	129.8	122.9	115.4	110.7	116.6	136.1	140.3	147.1	158.2	173.9	189.5	192.3	183.5	167.7	169.2	156.4	89.6	32.1	15.4	11.1	42.1	101.0	123.9	192.3
23-May	78.6	125.3	150.1	211.1	257.9	286.3	274.3	231.2	138.2	112.9	116.0	97.9	73.3	45.0	40.4	32.2	23.4	14.6	9.2	9.1	10.0	11.2	12.9	13.4	98.9	286.3
24-May	12.6	12.4	11.3	8.9	8.0	7.2	7.4	7.8	8.8	12.0	17.1	18.3	18.6	17.8	17.8	18.1	21.6	18.0	17.7	18.5	19.9	19.9	20.7	21.9	15.1	21.9
25-May	23.8	24.4	24.1	25.2	27.1	28.1	28.9	29.4	27.8	30.4	34.4	28.8	29.7	30.2	28.0	27.1	25.8	25.6	24.2	23.4	23.8	24.1	24.4	24.0	26.8	34.4
26-May	22.9	22.0	20.8	19.5	19.4	19.2	18.6	19.6	21.3	22.6	22.3	23.8	23.6	24.5	21.9	20.8	23.7	22.5	22.8	22.0	22.4	21.9	21.5	21.2	21.7	24.5
27-May	20.7	20.8	20.9	19.8	17.9	18.9	17.1	17.5	17.2	18.1	17.5	17.7	18.2	22.2	29.5	51.4	28.8	18.8	16.7	16.1	17.3	17.2	14.1	12.3	20.3	51.4
28-May	13.8	15.6	16.7	17.6	16.9	17.3	17.9	18.5	18.3	16.8	10.9	7.2	6.4	5.6	4.9	4.8	4.9	4.8	4.7	4.9	5.3	6.3	5.3	4.3	10.4	18.5
29-May	4.2	4.8	4.8	6.8	8.6	9.5	8.0	6.4	4.5	4.0	4.1	4.3	4.3	4.3	4.4	4.7	4.5	4.5	4.7	4.8	4.0	3.9	4.2	4.7	5.1	9.5
30-May	4.7	5.9	6.2	9.8	11.6	12.7	12.2	17.2	30.8	22.3	19.8	13.4	13.1	12.9	12.3	27.1	55.0	199.5	450.4	57.9	10.5	10.3	11.3	12.7	43.3	450.4
31-May	22.7	31.8	29.7	28.6	31.3	32.0	31.7	29.5	26.2	50.7	78.7	90.3	108.1	156.2	168.6	143.6	143.0	154.6	147.6	119.2	77.6	32.4	39.6	58.0	76.3	168.6
50.0 49.5 50.0 54.7 53.3 55.4 45.9 40.9 33.5 34.1 33.5 32.7 31.3 33.2 43.3 43.0 50.5 70.5 82.8 64.8 51.4 49.5 57.3 58.0																								Diurnal Average		
500.6 466.1 400.2 381.6 388.6 397.4 384.8 351.9 262.8 242.4 195.1 190.6 189.5 192.3 214.0 195.3 290.1 578.3 503.4 436.3 474.1 520.6 586.9 597.4																								Diurnal Maximum		
C - Calibration																										
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Surmont 2 - May 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	164	22.13	22.13
6 - 15	207	27.94	50.07
16 - 25	123	16.60	66.67
26 - 80	116	15.65	82.32
> 81.0	131	17.68	100.00

Total Number of Valid Hours: 741

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Surmont 2 - May 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	4	1	4	0	2	16	38	11	8	7	4	26	29	4	4	6	164
6 - 15	9	1	3	3	7	29	18	10	6	7	4	73	23	6	5	3	207
16 - 25	0	0	2	5	4	8	18	13	4	7	9	21	19	7	5	0	122
26 - 80	5	6	2	3	9	18	7	5	2	2	2	10	19	10	6	8	114
> 81.0	1	1	1	5	24	19	22	5	0	3	1	22	10	6	4	7	131
Totals	19	9	12	16	46	90	103	44	20	26	20	152	100	33	24	24	738

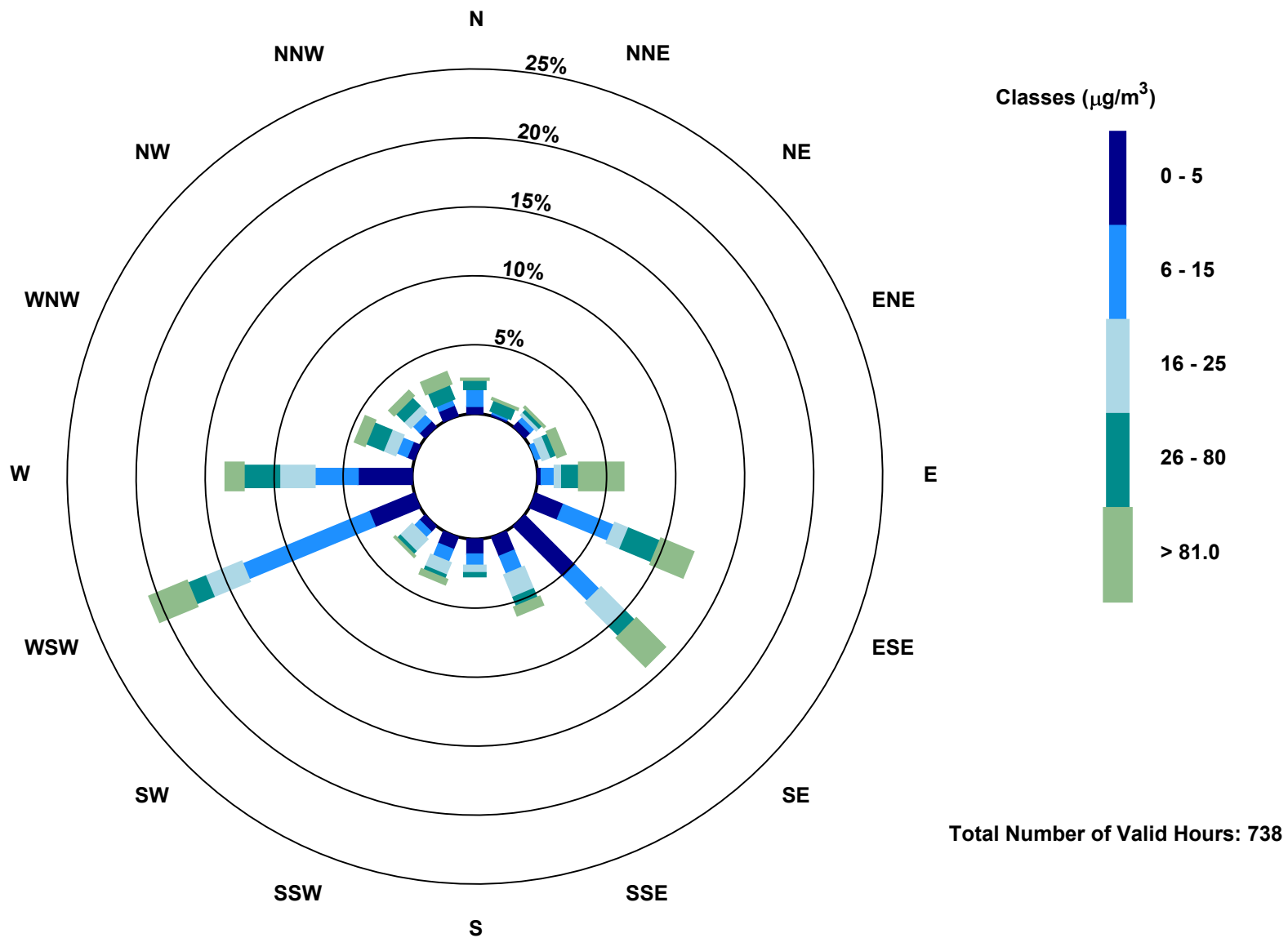
Total Number of Valid Hours: 738

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Surmont 2



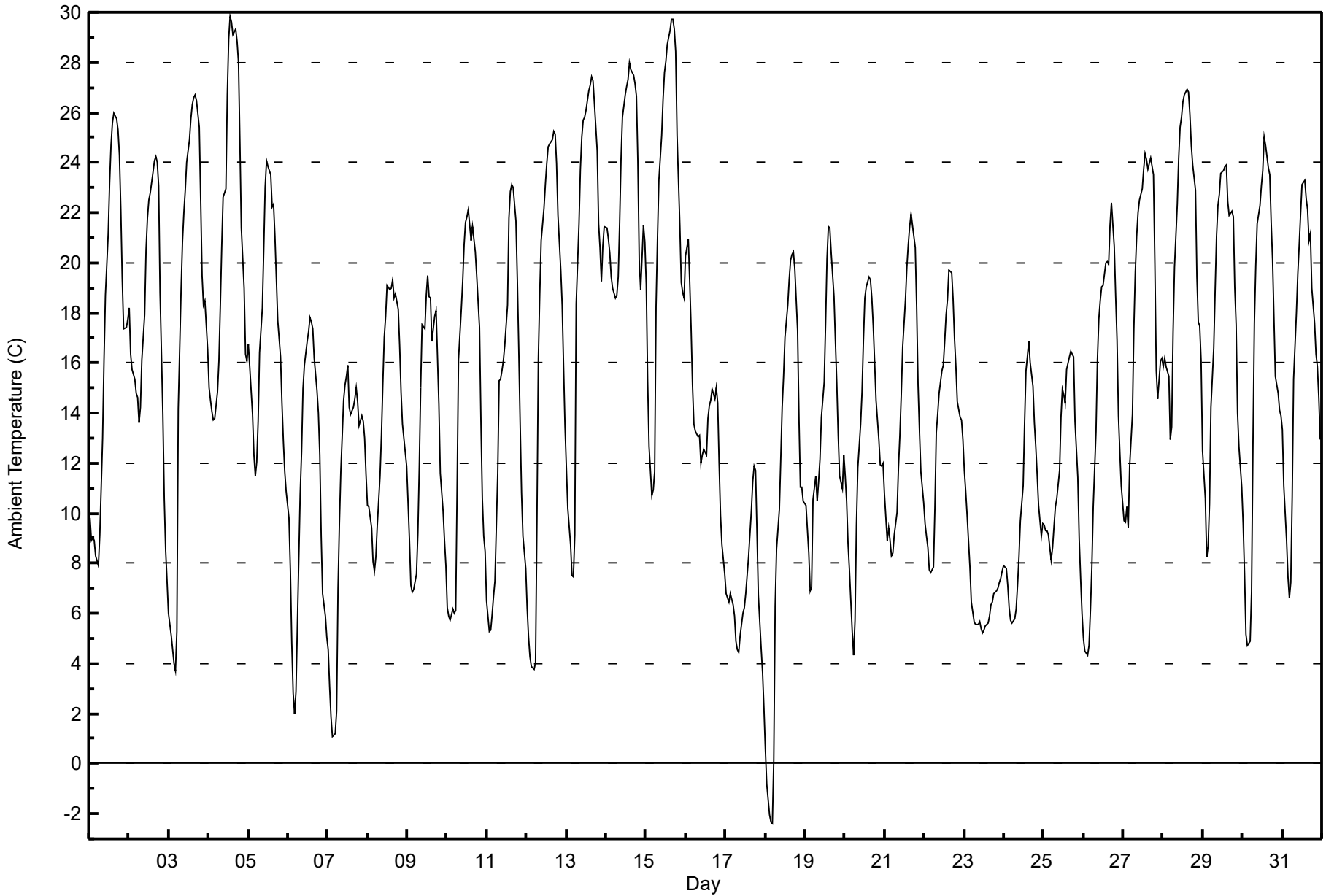


Maximum Value: 29.8 C on May 4 14:00 Maximum Daily Average: 23.0 C on May 14																						Hours in Service: 744 Hours of Data: 744																											
Minimum Value: -2.4 C on May 18 05:00 Minimum Daily Average: 6.8 C on May 17 Maximum Diurnal Average: 21.1 C at hour 16 Minimum Diurnal Average: 7.9 C at hour 5 Monthly Average: 15.16 C Percentiles: P ₁ = 1.5 P ₁₀ = 6.2 Q ₁ = 9.7 Median = 15.1 Q ₃ = 20.3 P ₉₀ = 24.1 P ₉₉ = 29.0																						Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0																											
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	9.8	8.9	9.0	8.9	8.3	7.9	9.1	11.0	13.0	16.1	18.7	21.2	23.2	24.7	25.6	26.0	25.8	25.3	24.3	22.1	19.4	17.4	17.4	17.8	17.1	26.0																							
2-May	18.2	16.3	15.8	15.3	14.8	14.6	13.6	14.2	16.1	17.9	20.5	21.8	22.5	22.8	23.6	24.1	24.2	24.0	23.0	18.8	13.9	10.6	8.5	7.3	17.6	24.2																							
3-May	6.0	5.1	4.5	4.0	3.7	5.3	14.2	18.8	20.8	22.0	22.9	24.0	24.9	25.8	26.3	26.6	26.7	26.5	25.4	22.5	19.5	18.3	18.5	16.5	17.9	26.7																							
4-May	15.0	14.5	14.0	13.7	13.8	14.8	16.1	18.2	20.6	22.6	23.0	26.7	28.9	29.8	29.6	29.1	29.3	28.8	28.0	24.8	21.4	19.0	16.3	16.1	21.4	29.8																							
5-May	16.7	15.8	14.0	12.3	11.5	12.1	13.6	16.4	18.2	20.5	23.0	24.1	23.8	23.5	22.2	22.3	21.0	19.4	17.7	16.2	14.4	12.9	11.7	10.9	17.3	24.1																							
6-May	9.8	7.7	4.8	2.8	2.0	2.9	8.1	10.7	12.4	15.0	15.9	16.8	17.3	17.8	17.6	17.4	16.2	14.9	14.0	12.3	9.1	6.8	5.9	5.0	11.0	17.8																							
7-May	4.5	3.1	1.9	1.1	1.2	2.1	7.0	9.6	11.7	14.5	15.1	15.5	15.9	14.3	14.0	14.2	14.6	15.0	14.4	13.5	13.9	13.7	13.0	11.6	10.6	15.9																							
8-May	10.3	10.3	9.4	8.1	7.7	8.3	9.5	11.5	13.1	15.2	17.0	17.9	19.1	18.9	19.0	19.3	18.6	18.8	18.2	16.7	14.8	13.5	13.0	11.9	14.2	19.3																							
9-May	10.4	8.9	7.1	6.9	6.9	7.6	9.2	11.8	15.0	17.5	17.4	18.7	19.5	18.7	18.6	16.9	17.9	18.1	16.3	14.3	11.6	10.1	8.9	7.9	13.2	19.5																							
10-May	6.2	5.9	5.7	6.2	6.0	6.1	11.0	16.1	18.1	19.3	20.7	21.6	21.8	22.1	20.9	21.4	21.0	20.4	19.5	17.4	13.7	10.6	9.1	8.5	14.6	22.1																							
11-May	6.5	5.3	5.3	5.9	6.7	7.3	11.6	15.3	15.3	15.7	16.1	16.7	18.3	21.8	22.8	23.1	23.0	21.7	19.3	16.6	13.6	10.8	9.1	7.8	14.0	23.1																							
12-May	6.3	5.1	4.3	3.9	3.8	4.1	9.7	16.2	18.7	20.9	22.1	23.1	23.9	24.6	24.8	24.9	25.3	25.1	24.0	21.9	19.7	18.3	15.9	13.5	16.7	25.3																							
13-May	11.8	10.2	8.7	7.5	7.5	9.2	18.4	21.6	23.7	25.0	25.7	25.8	26.1	26.9	27.1	27.4	27.3	26.3	24.5	21.5	20.6	19.3	20.7	21.5	20.2	27.4																							
14-May	21.4	21.0	20.4	19.5	19.0	18.6	18.7	19.4	21.5	24.1	25.8	26.7	27.1	27.3	28.0	27.7	27.5	27.2	26.6	24.1	20.1	18.9	21.5	20.9	23.0	28.0																							
15-May	19.1	15.3	12.7	10.7	10.9	11.7	18.3	20.9	23.3	25.1	26.6	27.6	28.0	28.7	29.3	29.7	29.7	29.3	28.4	25.1	21.4	19.2	18.8	18.6	22.0	29.7																							
16-May	20.3	20.9	19.3	17.4	15.1	13.5	13.3	13.1	13.1	12.0	12.3	12.5	12.3	13.8	14.3	14.5	15.0	14.6	15.0	14.4	12.0	9.9	8.7	7.6	14.0	20.9																							
17-May	6.8	6.6	6.5	6.8	6.3	5.9	4.9	4.5	4.4	5.1	6.0	6.2	6.8	7.5	8.2	10.1	11.3	11.9	11.7	9.3	6.7	4.6	3.7	2.2	6.8	11.9																							
18-May	0.6	-0.8	-2.0	-2.4	-2.4	0.1	6.3	8.6	10.1	12.1	14.2	15.5	17.0	18.3	19.3	20.1	20.3	20.5	19.8	17.3	13.8	11.0	11.0	10.5	10.8	20.5																							
19-May	10.3	9.4	8.4	6.9	7.1	10.5	11.5	10.5	11.3	12.2	13.9	15.2	17.6	20.2	21.5	21.4	20.4	18.6	16.8	15.2	13.1	11.5	11.0	12.3	13.6	21.5																							
20-May	11.5	10.5	8.8	7.7	5.3	4.4	5.7	9.5	11.8	13.6	14.8	16.9	18.6	19.1	19.4	19.3	18.6	17.5	16.0	14.5	12.9	11.9	11.9	12.0	13.0	19.4																							
21-May	10.7	8.9	9.4	8.9	8.3	8.4	9.1	10.0	11.8	13.1	14.8	16.6	18.5	19.8	20.7	21.5	22.0	21.5	20.6	18.2	15.1	13.3	11.7	10.4	14.3	22.0																							
22-May	9.6	9.1	8.6	7.7	7.6	7.8	10.2	13.2	14.0	14.8	15.7	15.9	16.9	17.9	18.6	19.7	19.6	18.5	17.0	15.8	14.5	13.9	13.7	12.9	13.9	19.7																							
23-May	11.7	10.9	9.9	7.9	6.5	6.1	5.7	5.5	5.6	5.6	5.4	5.2	5.4	5.5	5.6	5.9	6.4	6.5	6.8	6.9	7.0	7.2	7.4	7.7	6.8	11.7																							
24-May	7.9	7.8	7.1	6.3	5.7	5.6	5.8	6.2	7.1	8.2	9.7	11.1	13.6	15.7	16.2	16.8	16.0	15.1	13.6	12.6	11.5	10.3	9.1	9.6	10.4	16.8																							
25-May	9.5	9.3	9.3	9.2	8.1	8.6	9.5	10.2	10.6	11.7	13.8	15.0	14.8	14.4	15.7	16.2	16.5	16.4	16.2	13.7	11.4	9.0	7.4	6.0	11.8	16.5																							
26-May	5.0	4.5	4.3	4.7	6.1	7.8	10.2	13.3	16.1	17.8	18.5	19.1	19.1	20.0	20.0	19.9	21.5	22.4	20.7	18.7	16.9	13.9	12.4	11.1	14.3	22.4																							
27-May	9.7	9.6	10.3	9.4	11.9	13.9	17.4	19.6	21.1	22.0	22.5	22.9	23.7	24.4	24.2	23.8	24.2	23.9	23.5	19.9	15.7	14.5	16.1	16.2	18.3	24.4																							
28-May	15.9	16.2	15.8	15.5	12.9	13.4	17.2	19.8	22.3	24.2	25.4	25.8	26.4	26.7	26.9	26.8	25.9	24.7	23.9	22.9	19.4	17.6	17.5	16.1	20.8	26.9																							
29-May	12.5	10.6	8.2	8.7	10.4	14.2	16.6	18.9	21.0	22.3	22.8	23.6	23.7	23.8	23.9	22.4	21.9	22.1	21.8	19.0	17.5	14.0	12.7	11.0	17.7	23.9																							
30-May	9.6	7.6	5.2	4.7	4.9	6.8	12.7	17.6	19.9	21.6	22.3	23.1	23.7	25.0	24.7	23.8	23.5	21.6	20.1	17.7	15.4	14.8	14.1	13.9	16.4	25.0																							
31-May	13.3	11.1	8.9	7.5	6.6	7.2	10.7	15.4	18.0	19.6	20.7	22.0	23.1	23.3	22.5	22.1	20.9	21.1	19.0	17.6	16.3	15.8	14.6	12.9	16.3	23.3																							
																								10.9	9.9	8.9	8.2	7.9	8.6	11.4	13.8	15.5	17.0	18.2	19.2	20.0	20.7	21.0	21.1	21.0	20.6	19.6	17.5	15.1	13.3	12.6	11.9	Diurnal Average	
																								21.4	21.0	20.4	19.5	19.0	18.6	18.7	21.6	23.7	25.1	26.6	27.6	28.9	29.8	29.6	29.7	29.7	29.3	28.4	25.1	21.4	19.3	21.5	21.5	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Surmont 2 - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Surmont 2 - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	4	0.54	0.54
0 - 10	189	25.40	25.94
10 - 20	357	47.98	73.92
> 20	194	26.08	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

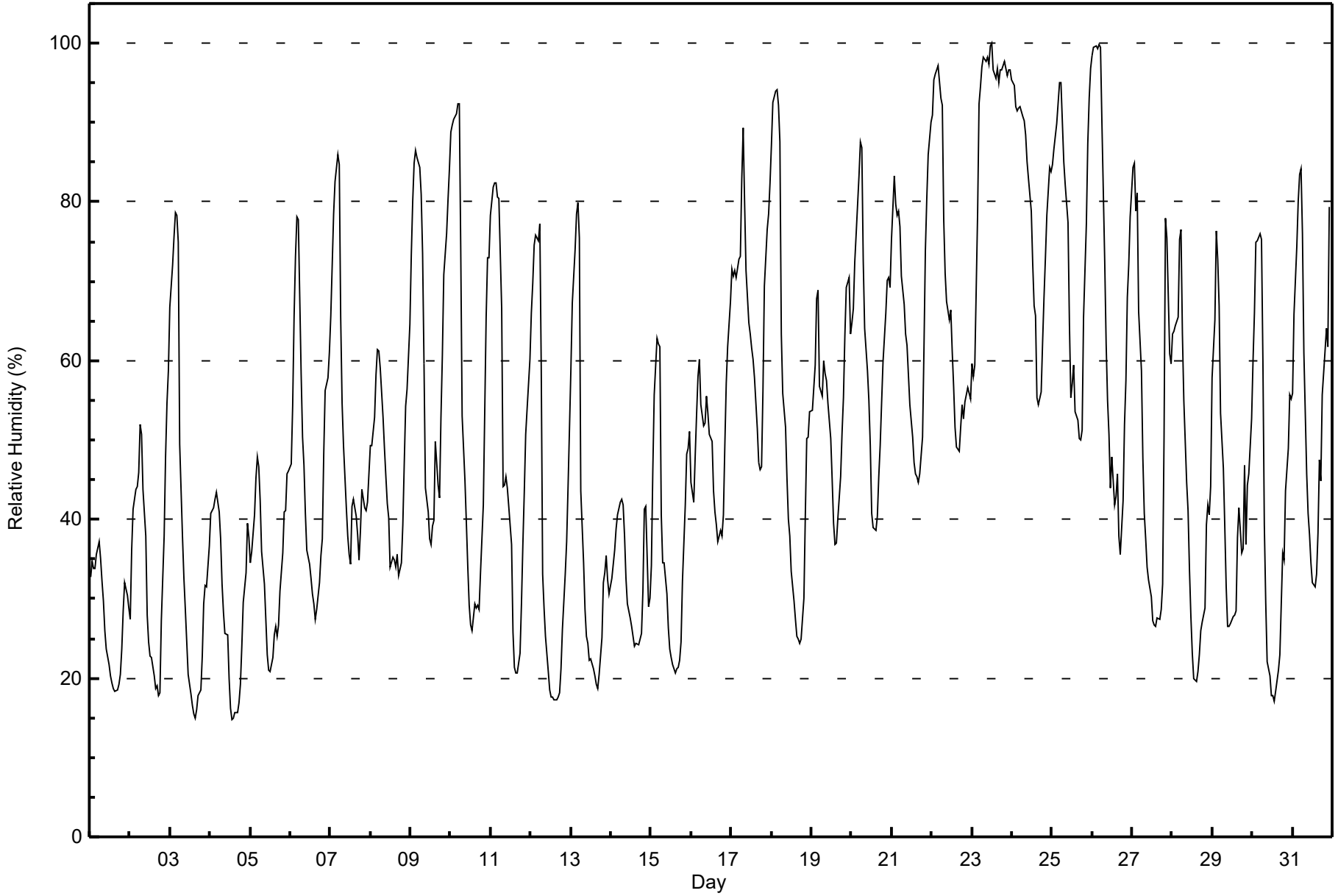
Relative Humidity (RH) - %
Surmont 2 - May 2023

Maximum Value: 100.1 % on May 23 13:00 Maximum Daily Average: 91.3 % on May 23																						Hours in Service:	744			
Minimum Value: 14.7 % on May 4 14:00 Minimum Daily Average: 27.3 % on May 1																						Hours of Data:	743			
Maximum Diurnal Average: 73.8 % at hour 5 Minimum Diurnal Average: 34.1 % at hour 15																						Hours of Missing Data:	1			
Monthly Average: 51.32 % Percentiles: P ₁ = 16.4 P ₁₀ = 23.2 Q ₁ = 33.1 Median = 47.4 Q ₃ = 67.7 P ₉₀ = 85.0 P ₉₉ = 98.4																						Hours of Calibration:	0			
																						Percent Operational Time:	99.9			
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	32.7	34.8	33.8	33.8	35.6	37.2	35.1	32.3	29.8	26.0	23.7	21.7	20.4	19.4	18.7	18.4	18.6	19.2	20.5	23.6	28.5	32.0	30.4	28.9	27.3	37.2
2-May	27.5	36.2	41.3	43.7	44.1	45.9	51.9	50.6	43.9	37.8	28.0	24.5	22.8	22.6	20.3	18.8	19.0	17.8	18.2	27.3	37.8	47.8	54.7	58.7	35.1	58.7
3-May	66.7	72.1	75.6	78.6	78.3	75.0	49.5	37.7	32.6	28.6	24.5	20.4	18.0	16.6	15.5	14.9	16.0	17.7	18.5	22.9	29.3	31.6	31.4	36.7	37.9	78.6
4-May	40.7	41.1	41.4	42.5	43.3	41.0	37.6	31.8	28.3	25.7	25.4	20.0	16.2	14.7	15.0	15.6	15.7	17.0	19.2	24.1	29.6	33.4	39.6	37.7	29.0	43.3
5-May	34.6	35.9	40.5	45.3	47.8	46.7	42.3	36.0	31.9	27.4	22.9	21.0	20.8	22.5	25.5	26.5	25.3	26.7	30.9	35.8	40.8	41.1	45.8	46.0	34.2	47.8
6-May	47.0	54.3	65.5	73.2	78.2	77.8	58.4	50.3	46.8	40.7	36.2	34.4	32.5	30.6	29.4	27.5	28.7	31.9	35.5	37.5	48.3	56.3	57.8	61.0	47.5	78.2
7-May	65.6	72.0	78.5	82.6	85.9	84.7	65.5	54.6	49.3	41.5	38.0	35.6	34.3	41.7	42.6	40.5	38.1	34.9	38.6	43.8	41.5	41.2	42.1	45.7	51.6	85.9
8-May	49.3	49.4	52.8	58.2	61.4	61.2	59.2	52.9	48.9	45.3	42.0	40.2	34.0	35.3	34.9	33.9	35.6	32.9	34.5	39.3	47.0	54.2	56.5	64.6	46.8	64.6
9-May	73.4	80.1	84.9	86.5	85.7	84.3	81.0	73.5	59.5	44.0	40.9	37.5	36.8	39.1	39.8	49.7	44.3	42.7	52.8	60.6	70.8	76.0	80.3	84.1	62.8	86.5
10-May	88.8	89.6	90.4	91.2	92.5	92.4	74.2	53.0	44.9	39.6	34.1	29.2	26.6	26.0	29.3	28.8	29.2	28.6	33.3	41.8	53.6	65.5	73.0	73.0	55.3	92.5
11-May	78.3	81.9	82.4	82.4	80.6	80.4	66.5	44.2	44.3	45.4	44.0	41.7	36.9	25.8	21.4	20.7	20.7	23.1	29.3	36.9	43.4	50.7	54.0	60.2	49.8	82.4
12-May	66.0	69.7	74.5	75.9	75.2	77.2	59.2	33.2	28.9	25.2	20.8	18.5	17.7	17.6	17.3	17.3	17.6	18.2	21.1	26.2	33.1	37.2	44.1	51.5	39.3	77.2
13-May	58.9	67.2	74.0	78.4	79.8	75.4	43.6	34.5	28.7	25.2	24.3	22.2	22.4	21.3	20.3	19.2	18.7	20.5	25.1	32.0	33.3	35.3	32.4	30.7	38.5	79.8
14-May	32.5	34.4	36.0	38.7	40.6	42.2	42.6	41.8	37.9	32.6	29.4	27.6	26.5	25.3	24.1	24.3	24.3	25.0	25.6	30.9	41.3	41.6	29.0	30.1	32.7	42.6
15-May	34.1	46.0	55.7	62.9	62.1	61.7	40.5	34.5	34.5	30.6	26.3	23.7	22.7	21.7	20.6	21.3	21.4	22.2	24.6	32.2	41.8	48.3	48.9	51.1	37.1	62.9
16-May	44.7	42.1	47.9	53.3	58.1	60.2	54.5	51.8	52.1	55.5	53.4	50.8	49.9	43.6	40.9	39.3	37.3	38.5	38.0	40.7	49.3	57.0	61.8	67.5	49.5	67.5
17-May	71.5	70.6	71.3	70.5	72.8	73.1	83.0	89.4	80.0	71.4	64.8	63.4	61.6	60.1	57.9	51.4	47.2	46.4	46.7	56.3	69.4	76.6	78.5	82.5	67.3	89.4
18-May	87.3	92.6	93.9	94.2	92.2	87.6	63.3	55.9	51.5	45.3	40.0	37.9	33.5	29.7	27.4	25.3	25.0	24.4	25.0	30.0	40.6	50.2	50.4	53.5	52.4	94.2
19-May	53.7	56.6	59.5	67.9	68.9	56.8	55.5	60.0	58.3	57.5	54.6	50.2	45.0	39.5	36.9	37.0	40.1	45.5	50.9	55.3	63.2	69.3	70.5	63.4	54.8	70.5
20-May	64.7	66.5	72.5	76.0	83.2	87.6	86.9	72.7	64.1	58.7	55.1	49.3	40.8	39.0	38.6	40.4	45.3	49.3	54.6	59.7	66.0	70.1	70.5	69.3	61.7	87.6
21-May	75.3	83.3	79.8	78.3	78.8	76.9	70.7	67.0	63.3	61.9	58.2	54.4	50.3	47.1	45.7	45.3	44.6	45.7	50.3	61.4	73.8	80.4	86.0	90.1	65.4	90.1
22-May	90.9	95.4	96.1	96.7	97.3	93.0	92.2	77.8	70.9	67.5	65.2	66.3	61.3	56.7	51.5	49.1	48.6	51.6	54.5	52.8	54.9	56.6	55.9	55.2	69.1	97.3
23-May	59.7	58.0	59.4	78.7	92.3	94.6	97.0	98.3	97.7	98.3	97.4	99.7	100.1	96.6	95.6	96.8	95.1	96.6	96.6	97.8	96.8	95.9	96.7	96.6	91.3	100.1
24-May	95.4	94.6	92.1	91.4	91.9	92.0	90.8	90.2	88.4	85.0	82.9	78.9	72.2	67.0	65.6	55.4	54.5	56.0	62.2	67.9	73.0	78.2	84.4	83.9	78.9	95.4
25-May	84.8	86.6	88.4	90.0	95.1	90.0	85.0	82.3	77.5	64.6	55.3	57.2	59.4	53.6	52.5	50.2	50.0	51.2	65.4	77.3	87.3	93.0	96.7	74.5	96.7	96.7
26-May	98.5	99.5	99.6	99.3	99.8	99.5	90.1	72.5	62.1	54.9	50.7	43.9	47.9	41.9	42.8	45.8	38.0	35.7	42.3	52.0	57.5	68.1	72.0	78.1	66.3	99.8
27-May	84.3	85.0	78.9	81.2	66.1	58.7	47.6	40.8	37.6	34.0	32.4	30.3	27.2	26.7	26.4	27.7	27.4	28.7	31.8	50.4	78.0	75.4	60.9	59.6	49.9	85.0
28-May	63.3	63.7	64.4	65.6	75.3	76.5	63.3	55.0	44.7	41.1	33.6	27.8	23.1	19.9	19.5	20.9	23.0	26.1	27.1	28.7	39.4	41.8	40.6	44.1	42.9	76.5
29-May	57.8	65.1	76.3	72.7	66.9	53.4	46.4	39.1	31.4	26.4	26.5	26.8	27.8	28.0	28.5	37.8	41.4	35.7	36.2	46.8	36.8	44.3	45.8	52.7	43.8	76.3
30-May	59.9	66.0	74.8	75.1	76.0	75.3	60.0	39.4	29.6	22.0	20.3	17.8	17.8	17.0	18.4	21.0	23.0	29.4	35.8	34.9	43.5	48.9	55.6	55.2	42.4	76.0
31-May	55.9	65.9	74.4	80.0	83.4	84.2	76.0	61.1	45.7	40.8	38.0	34.6	32.1	31.6	33.1	38.3	47.4	44.9	55.6	61.2	64.1	61.8	79.3	OR	56.1	84.2
																						Diurnal Average	60.3			
																						Diurnal Maximum	96.7			
OR - Out of Range																										



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Surmont 2 - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %
Surmont 2 - May 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	39	5.25	5.25
20 - 40	232	31.22	36.47
40 - 60	226	30.42	66.89
60 - 80	143	19.25	86.14
80 - 100	102	13.73	99.87

Total Number of Valid Hours: 743

Total Number of Hours: 744



Maximum Speed: 18 km/h on May 5 15:00	Maximum Daily Speed Average: 10.8 km/h on May 5	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 15 06:00	Minimum Daily Speed Average: 0.8 km/h on May 31	Hours of Data: 741
Maximum Diurnal Speed Average: 3.1 km/h at hour 14	Minimum Diurnal Speed Average: 0.8 km/h at hour 6	Hours of Missing Data: 3
Monthly Average Velocity: 1.4 km/h 156.3 deg	Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 3 Median = 6 Q ₃ = 8 P ₉₀ = 11 P ₉₉ = 15	Percent Operational Time: 99.6

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SE6	SE6	SE7	SE7	SE7	SE8	SE10	SE9	SE11	SE11	SE13	SE13	SE12	SSE11	S10	S11	S10	S9	S8	SSE6	SSE4	S5	SSW4	WSW7	SSE7.6	SE13
2-May	WSW12	W9	NW9	NW7	NW6	NW5	W4	W3	NW5	WNW3	NNW5	NNW6	NNW7	NW7	NW7	W6	N7	NNE7	NNE6	W2	WSW4	WSW2	WSW3	WSW3	NW4.4	WSW12
3-May	WSW3	WSW2	WSW3	WSW1	W1	W2	WSW6	SW8	SSW8	S9	SSE10	SSE12	SE11	SE12	SE12	SE10	ESE11	SE9	SE5	SSE4	SE4	SSE6	ESE5	SSE5.5	SE12	
4-May	ESE5	SE6	SE6	SE5	ESE6	SE7	SE6	ESE8	ESE8	SE8	SE7	SSE10	SSE8	S7	SSW5	SSE5	ESE8	ESE8	ESE8	ESE11	SE6	SE4	SSE3	SSW3	SE6.0	ESE11
5-May	SE5	SSE5	SE5	SE6	SE6	SE7	SE8	ESE8	SE9	SE10	ESE12	ESE15	ESE16	E16	ESE18	ESE15	ESE15	ESE16	ESE15	ESE13	E11	ESE12	ESE11	ESE11	ESE10.8	ESE18
6-May	ESE8	S3	WSW1	WSW1	WSW2	SW1	SE6	ESE8	ESE10	E14	ESE15	ESE15	E15	ESE14	E14	ESE15	ESE16	ESE13	ESE11	ESE10	ESE2	SE1	WSW2	WSW2	ESE7.4	ESE16
7-May	WSW3	WSW3	WSW3	WSW2	WSW3	WSW2	E5	ESE9	ESE9	ESE10	ESE14	ESE13	ESE14	SE11	SE8	SE8	ESE10	E9	ESE4	ESE4	ESE8	ESE9	ESE9	SE7	ESE6.2	ESE14
8-May	SE6	SE7	SE6	ESE5	SE4	SE4	SE6	SE7	SE10	SE9	SE9	ESE8	ESE12	ESE11	SSE7	SE7	ESE10	ESE10	ESE8	SE6	SSW2	SSW2	W2	WNW2	SE6.1	ESE12
9-May	WSW2	W3	WSW2	W2	WSW2	W1	WNW0	N3	NE5	ENE6	E4	SE4	E6	E4	SW3	W7	W6	W4	W7	W4	WSW3	WSW3	WSW3	W1	W1.0	W7
10-May	W1	WSW1	W1	WSW1	W1	W0	WNW1	N1	NE3	NNW4	NE3	ENE6	NNE3	NNW4	NE7	NE8	NNE6	NNW5	WNW2	WSW5	W3	W1	UO	W3	N1.7	NE8
11-May	UO	UO	WSW1	W1	WSW3	W1	ESE2	ESE6	S3	SSW4	SW3	WSW2	SSE2	E7	E7	E4	E3	E6	ESE3	WSW2	WSW4	WSW4	WSW4	WSW4	SSE1.1	E7
12-May	WSW3	WSW3	WSW2	WSW3	WSW3	WSW2	SSE2	SE5	SE8	ESE10	ESE11	ESE9	E9	SSE5	ENE2	SE5	ESE4	ESE6	SE4	SE4	SE5	SE5	SSW3	WSW3	SE3.4	ESE11
13-May	WSW3	WSW2	W1	WSW1	W1	W2	WSW8	WSW8	WSW10	WSW12	WSW10	WSW11	WSW13	WSW10	WSW9	WSW10	WSW10	W8	WSW4	WSW2	WSW2	W3	WSW5	WSW8	WSW6.3	WSW13
14-May	WSW11	WSW13	WSW16	WSW14	WSW16	WSW15	WSW14	WSW14	WSW12	WSW10	W11	W10	WSW11	WSW12	WSW11	WSW10	WSW9	WSW7	WSW7	WSW4	SSW2	WSW3	WSW8	WSW7	WSW10.3	WSW16
15-May	WNW3	WSW2	WSW2	SSW1	WSW2	SSE0	W6	W7	WSW9	WSW8	WSW6	SSW5	SSW6	S6	S6	SSE7	SSE6	SSE6	SSE6	SSW2	WSW2	WSW3	WSW3	WSW2	SSW3.3	WSW9
16-May	SW4	W8	NW7	NNW9	NW8	NW7	WNW9	NW12	NW11	NNW12	NW11	NW11	NW12	NW12	NW13	WNW14	NW11	WNW8	NW11	NNW8	NNW6	WNW5	WNW5	WNW5	NW8.7	WNW14
17-May	WNW5	NW7	NW6	NNW6	NNW10	N10	N8	N6	N9	N10	NNW9	N9	N9	N9	N8	NE8	NE8	NE7	NE6	NE3	W2	SW2	WSW2	WSW3	N5.4	N10
18-May	WSW2	WSW2	WSW1	WSW2	WSW2	SSW2	SSW5	SSW5	WNW5	WSW1	ESE6	ESE6	ESE8	SE8	SE9	SE8	SE8	SE7	SE6	SSE4	WSW3	WSW2	WSW4	WSW3	SSE2.7	SE9
19-May	W3	SW3	SSW3	SSW2	SSE4	SSE5	ESE4	E5	ESE4	SE5	SSE5	SE6	SE4	S1	W5	W6	NNW4	N3	WNW4	WNW4	W3	W3	W3	WNW5	SSW1.0	W6
20-May	WNW5	WNW5	W3	W3	W2	W1	W2	NNW2	E3	ENE3	E5	ENE6	E8	E8	ESE7	E8	E8	E8	E6	ESE4	SSW1	SSE1	ESE4	SE6	E2.4	E8
21-May	SSW1	SW2	SSE4	SE5	SE3	SE4	SE5	SE5	SE5	SE7	SSE6	SE7	SE6	SE8	SE7	SE7	SE6	SE5	SE4	WSW2	WSW4	WSW2	WSW2	W2	SE3.7	SE8
22-May	WSW2	WSW2	WSW3	W2	WNW2	WNW2	W2	NNW3	NNW4	NNW5	N4	NNW3	N4	NNE6	NE8	ENE10	ENE11	E12	E11	ENE9	ENE7	ENE8	E12	E12	ENE3.9	E12
23-May	E9	E12	E13	E11	E8	E8	E9	E8	ESE12	E12	E15	E13	E13	ESE14	ESE13	ESE12	E13	E11	ESE11	ESE10	ESE11	ESE8	E8	ESE7	E10.8	E15
24-May	ESE6	ESE6	ESE8	ESE7	ESE7	ESE6	ESE7	ESE7	SSE5	SSE5	SSW5	SE5	SE7	SE7	W2	WNW9	W9	W10	W7	WNW6	W6	W6	WNW5	WNW4	S1.4	W10
25-May	WNW3	W4	W2	WNW3	W2	W2	WNW4	NW4	NNW6	NW6	N5	N6	N5	NNE5	NNE4	E6	E7	E6	E4	S2	SW2	W3	W2	W2	NNW1.6	E7
26-May	WSW2	WSW2	W2	WSW1	W1	WSW1	SE3	SSE4	SSE4	SSE4	SSW1	W3	SW1	SSW3	SE6	E2	WSW4	SW4	WSW4	WSW2	SW2	SW3	WSW2	WSW2	SSW1.7	SE6
27-May	SW1	SW2	S1	SE1	W3	WSW3	SW2	SW5	SSE6	SSE8	SSE8	SE8	SE8	SE10	SE10	SE8	SSE6	SSE6	SE6	SSE6	SSW3	SSW3	SSE6	S6	SSE4.5	SE10
28-May	S4	SSW6	SSE3	S2	ENE4	ENE4	SE4	S4	SSE4	SSE5	WSW10	W10	WSW11	WSW11	WSW12	W11	W10	W11	W10	W10	WSW4	WSW5	W7	W7	WSW5.1	WSW12
29-May	WSW3	WSW3	W1	WSW3	W4	WSW6	W6	W7	W9	W11	W12	W11	W11	W10	W9	W8	W7	WSW7	W5	W3	W4	WSW5	W4	W4	W6.4	W12
30-May	WSW5	WSW3	SW1	W1	WSW2	WSW2	WSW1	WNW1	N1	ENE5	NE6	NNW4	N3	ESE3	S7	S6	SSE7	SSE5	WSW2	WNW4	W2	W3	W2	WSW3	SW0.9	S7
31-May	WSW4	W2	W1	WSW2	WSW2	WSW1	W1	NNW1	NNW4	NNE6	NNE6	ENE6	ENE6	E4	SE4	SE2	NW2	WNW3	W2	WNW3	W4	WSW5	SW3	W3	NW0.8	ENE6

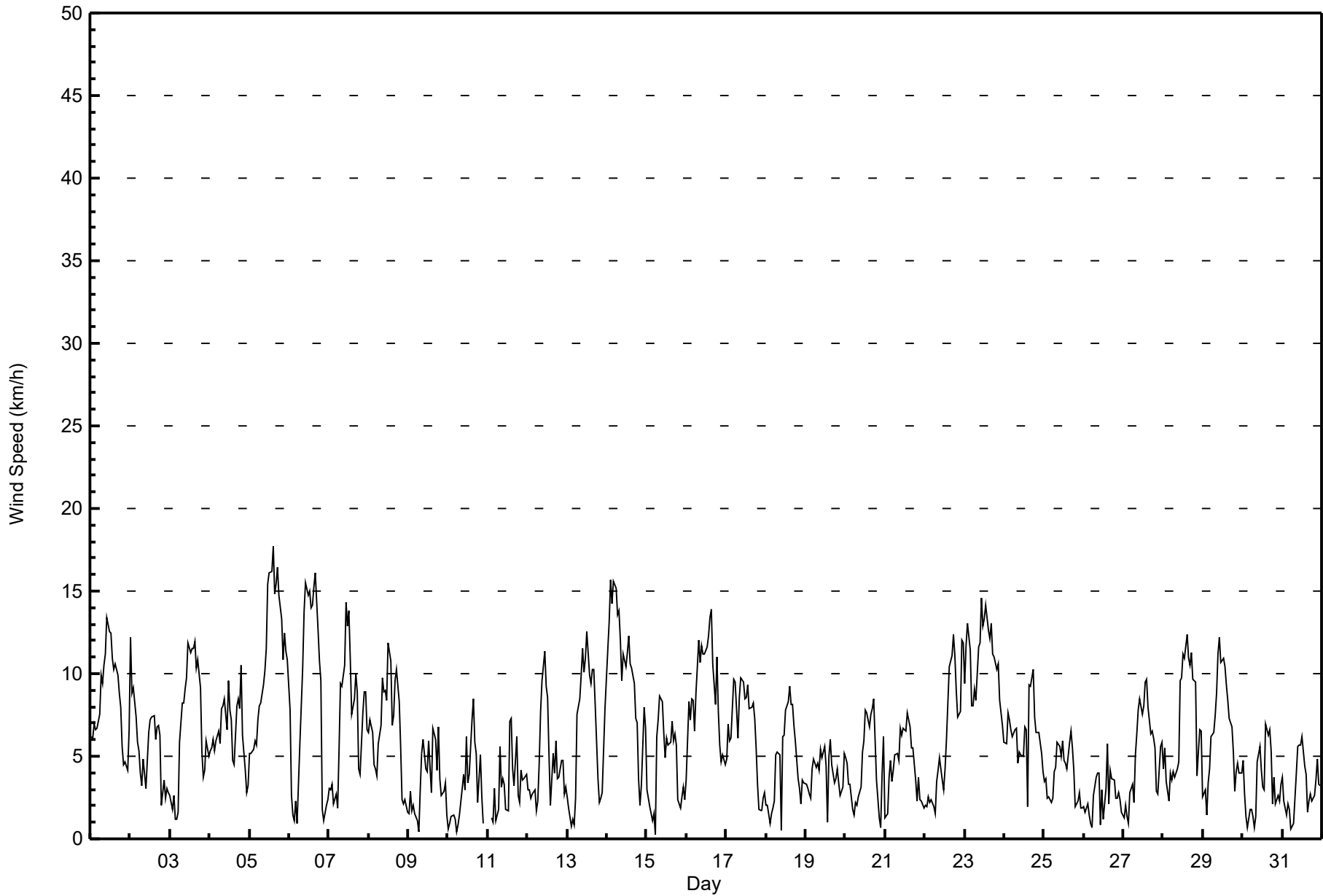
SW1.8 SW1.9 SW1.1 SW0.8WSW0.9 SW0.8 S1.5 SSE1.3 SE1.4 SE2.2 SE2.4 ESE2.6 ESE3.1 SE3.1 SE2.5 SE2.4 ESE2.4 ESE2.7 SE1.9 SSE1.1SSW1.1SSW1.4SSW1.7 SW1.7	Diurnal Average
WSW12WSW13WSW16WSW14WSW16WSW15WSW14WSW14WSW12 E14 ESE15 ESE15 ESE16 E16 ESE18 ESE15 ESE16 ESE16 ESE15 ESE13 E11 ESE12 E12 E12	Diurnal Maximum

UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Surmont 2 - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Surmont 2 - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	370	49.93	49.93
6 - 11	306	41.30	91.23
12 - 19	65	8.77	100.00
20 - 28	0	0.00	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 741

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Surmont 2 - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	8	3	4	6	10	14	32	24	9	22	19	106	67	28	4	14	370
6 - 11	11	6	8	10	24	52	65	20	11	4	1	33	32	4	16	9	306
12 - 19	0	0	0	0	14	24	6	1	0	0	0	13	1	1	4	1	65
20 - 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	19	9	12	16	48	90	103	45	20	26	20	152	100	33	24	24	741

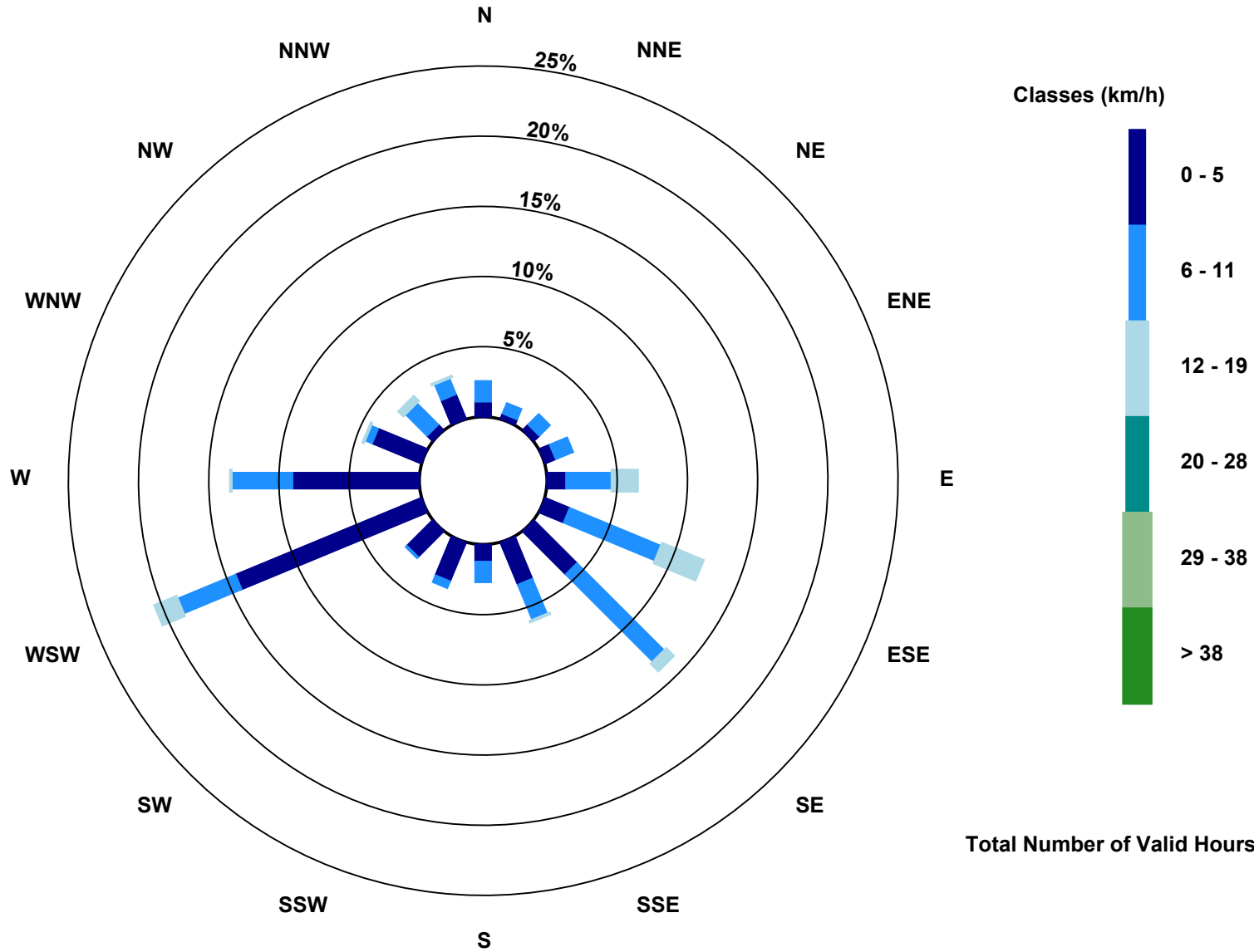
Total Number of Valid Hours: 741

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Surmont 2



Total Number of Valid Hours: 741



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Surmont 2 - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 6 km/h on May 16 15:00														Hours in Service: 744 Hours of Data: 741 Hours of Missing Data: 3 Hours of Calibration: 0 Percent Operational Time: 99.6											
Minimum Value: 1 km/h on May 15 04:00																									
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 1 Median = 2 Q ₃ = 3 P ₉₀ = 4 P ₉₉ = 5																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	2	2	3	3	3	3	4	3	4	4	4	5	5	5	5	4	4	4	3	2	2	2	2	3	5
2-May	4	3	4	3	2	2	1	2	2	2	3	4	4	4	3	3	3	3	3	2	2	1	2	1	4
3-May	1	1	1	1	1	1	3	4	4	4	4	5	5	5	4	5	4	4	3	2	1	2	2	2	5
4-May	2	2	3	2	2	2	2	3	3	3	2	3	3	3	3	3	3	3	4	3	2	2	1	2	4
5-May	2	2	2	2	2	3	3	3	4	4	4	6	6	5	6	5	5	5	4	4	3	3	3	4	6
6-May	3	2	1	1	1	1	2	3	4	5	5	5	6	5	5	5	5	4	3	3	2	2	1	1	6
7-May	1	1	1	1	1	1	3	3	3	4	5	5	5	5	3	3	3	4	3	2	3	3	3	3	5
8-May	3	3	2	2	2	2	2	3	3	3	3	4	5	4	3	3	3	3	3	3	1	1	1	1	5
9-May	1	1	1	1	1	1	1	1	2	2	2	3	3	2	2	2	2	2	2	2	2	2	2	1	3
10-May	1	1	1	1	1	1	1	1	2	2	2	2	3	3	3	3	3	3	1	2	1	1	UO	1	3
11-May	UO	UO	1	1	1	1	1	2	2	1	1	1	2	3	3	3	3	3	2	1	2	2	1	1	3
12-May	1	1	1	1	2	1	2	2	2	3	4	4	4	3	2	3	3	2	2	3	2	2	1	1	4
13-May	1	1	1	1	1	1	3	3	4	5	5	4	5	5	4	4	4	4	2	1	1	1	3	3	5
14-May	4	5	6	5	5	5	5	4	4	4	4	5	5	4	4	4	4	3	3	2	1	2	3	3	6
15-May	2	1	1	1	1	1	3	3	3	4	3	3	4	4	4	4	3	3	3	1	1	1	1	1	4
16-May	2	3	3	4	4	3	4	5	5	5	5	5	5	5	6	6	5	4	5	4	3	2	2	2	6
17-May	2	3	3	3	4	5	3	3	4	4	4	3	4	4	4	4	3	3	2	2	1	1	1	1	5
18-May	1	1	1	1	1	2	2	2	2	2	3	3	4	4	3	4	3	3	2	2	1	1	2	1	4
19-May	2	1	1	1	2	2	2	1	1	2	2	2	2	1	2	2	2	2	2	1	1	1	1	1	2
20-May	1	1	1	1	1	1	1	1	2	1	2	2	3	3	3	3	3	4	2	1	1	1	2	3	4
21-May	2	1	1	2	2	2	2	2	2	3	2	2	2	3	3	3	2	2	2	1	1	1	1	1	3
22-May	1	1	1	1	1	1	1	2	2	2	1	1	2	3	4	5	4	5	5	3	3	3	5	5	5
23-May	4	5	5	5	4	3	4	3	4	4	5	4	5	5	4	4	5	4	4	4	3	3	3	2	5
24-May	2	2	2	3	2	2	3	2	2	2	2	3	3	3	2	4	3	4	2	3	2	2	2	3	4
25-May	1	1	1	1	1	1	1	2	3	2	3	3	2	2	2	2	3	2	2	1	1	1	1	1	3
26-May	1	1	1	1	1	1	2	1	2	2	2	2	2	2	3	2	3	2	2	1	1	1	1	1	3
27-May	1	1	1	1	2	2	2	2	3	3	4	4	4	4	4	4	3	4	3	3	1	1	3	3	4
28-May	2	3	2	2	1	1	2	2	3	3	4	4	4	5	5	5	4	4	4	4	2	2	2	2	5
29-May	1	1	1	1	2	3	3	3	4	4	4	5	5	4	4	4	4	3	2	1	1	1	1	1	5
30-May	2	2	1	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	2	2	1	1	2	2	3
31-May	1	1	1	1	1	1	1	1	2	2	3	3	3	3	2	1	1	1	1	1	1	2	2	2	3
														4 5 6 5 5 5 5 5 5 5 5 6 6 5 6 6 5 5 5 5 4 3 3 5 5											
Diurnal Maximum																									
UO - Unstable Operation																									



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Surmont 2 - May 2023

Direction of Maximum Speed: 106 deg on May 5 15:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 114.4 deg on May 5	Hours of Data: 741
Direction of Minimum Speed: 156 deg on May 15 06:00	Hours of Missing Data: 3
Direction of Minimum Daily Speed Average: 0.8 deg on May 31	Percent Operational Time: 99.6
Monthly Average Direction: 156.3 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	131	124	127	129	132	138	146	135	126	134	127	137	142	162	177	185	177	191	173	155	153	171	210	240	151.6
2-May	257	275	320	317	317	325	260	280	316	290	340	341	332	308	314	269	358	25	16	274	244	242	243	242	307.1
3-May	239	248	241	252	279	268	239	233	205	171	159	150	141	144	143	139	135	122	125	139	162	143	158	123	156.8
4-May	123	124	134	130	122	127	126	120	116	125	129	147	147	169	213	157	102	114	121	109	124	145	166	196	131.5
5-May	143	147	141	128	142	136	136	122	132	140	111	102	109	101	106	109	113	111	106	102	101	106	111	112	114.4
6-May	115	177	254	258	245	217	138	115	113	101	111	106	100	105	100	109	105	110	109	109	102	143	237	255	111.0
7-May	238	237	245	238	242	254	97	104	108	114	111	112	113	135	139	125	108	99	110	112	112	111	118	129	119.2
8-May	138	136	124	123	139	143	128	130	126	130	143	118	119	108	162	144	116	121	123	144	196	202	278	296	131.1
9-May	252	260	254	259	256	261	289	8	43	75	92	141	99	83	235	268	275	281	267	276	256	248	246	273	266.8
10-May	260	248	270	246	259	267	302	353	38	348	50	59	22	346	46	43	20	331	282	258	267	279	UO	277	358.9
11-May	UO	UO	256	268	245	260	119	106	171	205	224	257	152	84	79	92	79	100	115	249	255	244	247	242	153.6
12-May	243	243	245	244	244	246	160	130	128	119	113	105	101	155	78	132	107	120	144	125	130	129	202	238	134.5
13-May	241	257	276	257	274	271	246	241	248	241	239	240	248	238	243	257	254	259	258	243	257	264	247	248	247.8
14-May	247	247	250	252	250	253	255	252	251	258	259	261	250	247	247	254	256	258	250	258	211	248	252	256	252.0
15-May	295	252	246	204	250	156	260	261	254	249	238	207	195	170	176	152	166	162	152	226	252	250	254	245	217.1
16-May	220	272	308	327	326	316	301	307	316	330	312	313	306	310	309	299	306	301	305	328	339	298	297	303	309.0
17-May	297	315	317	333	337	351	11	0	359	359	346	349	351	1	5	49	49	48	34	41	266	221	239	247	356.0
18-May	250	256	255	252	250	202	199	211	287	254	121	122	123	127	126	126	138	139	139	168	253	252	255	256	160.0
19-May	271	232	197	192	155	161	110	83	110	127	149	143	144	172	272	273	333	351	301	298	269	265	272	287	210.8
20-May	285	282	275	273	274	273	276	327	79	73	83	67	91	101	107	94	88	92	95	122	192	157	104	134	94.6
21-May	211	230	148	125	125	142	130	124	141	126	149	135	127	138	138	131	134	128	143	249	253	253	251	268	143.1
22-May	250	254	254	267	288	285	265	332	331	338	349	340	10	24	52	61	75	83	79	78	74	76	86	85	57.2
23-May	80	87	90	93	92	90	93	96	102	98	100	99	99	103	102	102	100	101	103	102	106	104	101	103	98.0
24-May	110	109	107	112	107	107	120	122	148	162	212	144	127	135	270	284	276	280	280	292	279	273	284	290	183.8
25-May	288	274	277	286	277	280	298	316	335	317	7	9	352	20	30	79	92	96	89	188	223	260	264	264	343.4
26-May	255	255	263	251	270	255	145	155	163	155	212	270	215	192	132	101	245	231	257	250	221	230	250	250	211.1
27-May	235	216	181	140	268	249	232	214	164	157	150	135	137	134	144	143	154	148	139	154	206	194	156	171	158.8
28-May	186	207	167	179	72	71	129	176	157	153	254	263	250	258	256	270	269	270	269	264	254	253	266	259	248.2
29-May	243	239	267	244	268	256	259	267	273	271	277	267	270	259	277	274	280	253	259	279	266	253	262	260	266.1
30-May	256	255	233	272	258	245	246	291	1	67	34	327	3	111	174	180	156	148	238	287	264	260	267	246	222.2
31-May	238	267	270	254	256	257	278	327	348	27	27	63	58	97	145	126	307	291	277	288	271	255	235	281	316.0

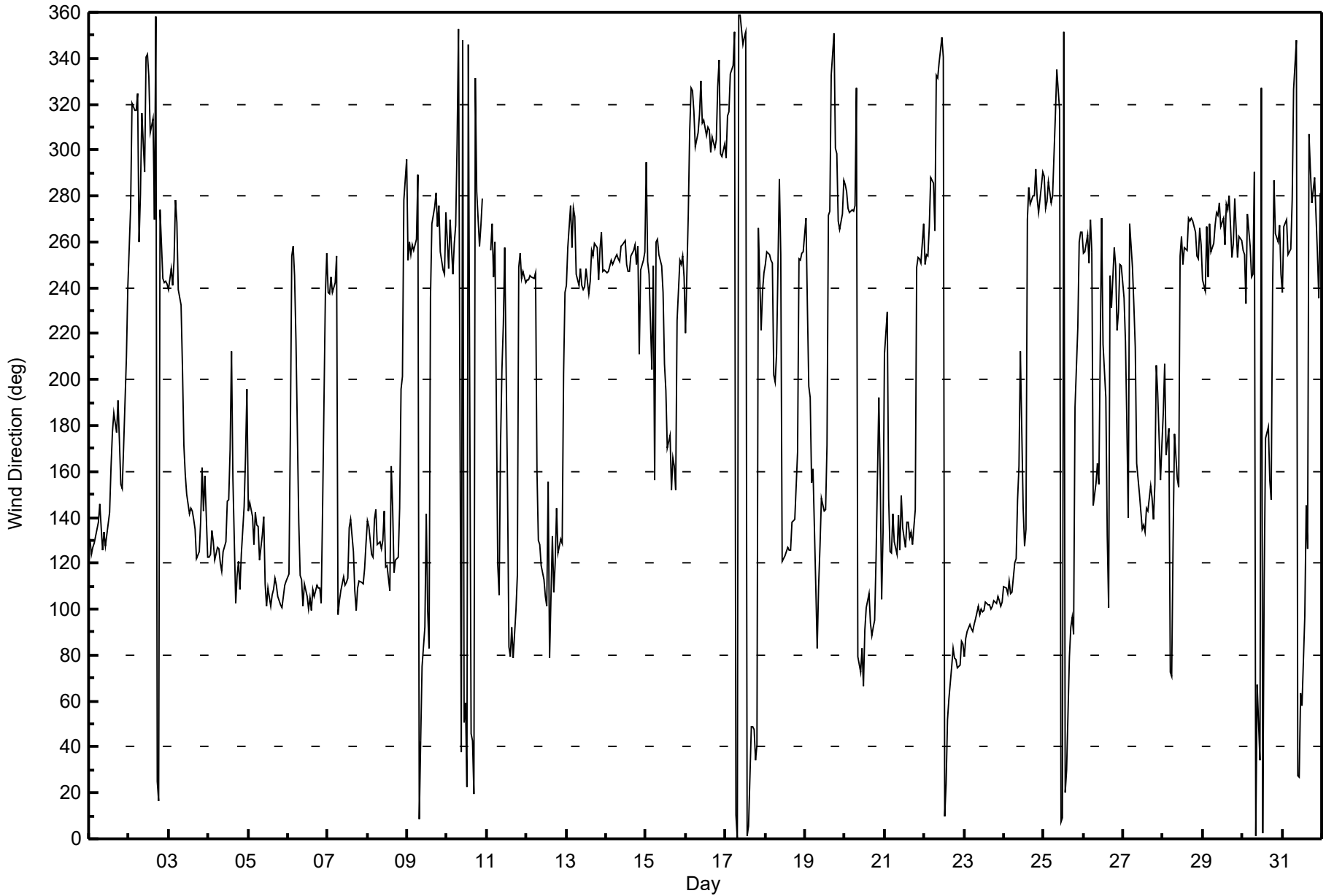
219.6 228.8 218.5 218.3 239.8 214.7 182.5 167.2 144.3 132.4 130.2 122.7 122.8 132.0 142.5 141.4 120.9 122.6 131.5 149.5 192.7 197.3 210.5 223.7
 Diurnal Average

UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Direction (WD) - deg
Surmont 2 - May 2023





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Surmont 2 - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 114 deg on May 20 22:00 Minimum Value: 11 deg on May 26 03:00 Percentiles: P ₁ = 13 P ₁₀ = 24 Q ₁ = 33 Median = 46 Q ₃ = 59 P ₉₀ = 71 P ₉₉ = 104																								Hours in Service: 744 Hours of Data: 741 Hours of Missing Data: 3 Hours of Calibration: 0 Percent Operational Time: 99.6	
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	49	45	49	51	51	50	49	46	41	43	38	44	48	59	61	57	59	55	52	58	56	63	73	59	73
2-May	29	29	36	41	36	37	40	69	47	75	67	73	65	60	56	65	48	49	42	44	14	65	35	16	75
3-May	21	21	23	52	28	60	56	49	57	59	62	52	55	53	50	45	50	38	37	51	67	62	48	46	67
4-May	41	47	54	47	48	50	56	36	31	38	49	45	53	63	72	68	27	31	49	20	38	58	67	60	72
5-May	60	58	49	47	48	43	45	40	47	46	34	27	31	28	24	27	30	25	20	16	16	18	20	24	60
6-May	36	66	23	29	13	52	46	37	35	28	31	30	30	37	32	27	22	24	24	24	113	101	67	41	113
7-May	34	29	19	32	21	31	59	27	31	35	34	32	32	50	43	46	28	29	57	71	26	22	32	44	71
8-May	50	55	50	56	64	67	43	54	38	41	46	47	47	29	67	51	35	36	41	60	65	71	65	48	71
9-May	73	26	22	16	23	44	45	69	57	43	65	81	54	50	69	29	40	40	27	30	50	67	43	43	81
10-May	49	54	35	34	21	42	56	92	77	73	89	67	82	81	42	43	48	43	25	18	32	29	UO	43	92
11-May	UO	UO	23	44	15	33	85	43	60	44	45	77	91	54	53	84	101	46	78	13	15	26	18	17	101
12-May	16	24	22	14	34	34	76	52	43	37	37	48	57	80	101	60	73	52	65	66	51	51	65	27	101
13-May	33	14	32	40	15	46	36	37	36	52	54	51	44	58	52	39	40	34	32	45	63	42	49	48	63
14-May	36	34	31	32	28	31	32	28	31	44	39	40	39	35	39	37	33	36	38	37	60	65	32	32	65
15-May	73	55	49	89	70	112	32	37	34	39	55	71	72	76	81	69	73	70	63	70	21	17	27	56	112
16-May	72	35	44	49	50	53	46	52	51	49	56	52	48	50	49	47	50	51	49	56	58	43	40	45	72
17-May	45	49	58	55	54	50	57	55	54	50	49	50	56	53	56	49	42	45	48	65	24	59	51	23	65
18-May	37	24	34	26	32	70	62	59	64	105	62	75	61	59	38	54	52	56	56	64	33	33	58	49	105
19-May	63	58	58	65	53	73	62	32	54	56	65	50	61	108	47	35	62	63	52	38	24	19	31	27	108
20-May	25	27	21	16	26	32	34	62	85	71	57	49	46	46	49	43	32	29	32	62	84	114	61	56	114
21-May	76	51	62	58	80	68	64	58	51	48	51	51	51	56	52	52	52	56	69	45	16	19	15	43	80
22-May	40	28	26	30	14	33	39	56	51	43	60	51	47	59	40	43	38	30	32	34	31	31	27	29	60
23-May	31	30	29	30	39	34	32	33	25	24	24	22	26	27	28	26	26	28	29	29	33	40	36	38	40
24-May	41	42	37	42	44	35	51	51	65	63	67	67	55	55	91	37	36	35	35	35	29	30	33	49	91
25-May	42	24	28	30	30	25	42	55	50	51	66	68	65	53	66	51	44	48	67	70	53	13	15	56	70
26-May	29	36	11	51	36	45	61	50	54	67	110	60	79	75	57	98	83	76	37	33	45	31	17	13	110
27-May	32	70	98	106	84	69	106	72	68	64	65	69	63	55	57	58	64	66	63	56	58	79	71	71	106
28-May	79	81	95	101	39	42	58	63	67	84	43	41	45	46	46	42	36	35	34	32	17	17	22	20	101
29-May	42	12	12	16	41	40	34	39	40	43	39	43	45	42	44	38	44	46	47	37	22	12	14	17	47
30-May	17	62	60	29	30	43	81	93	88	70	60	67	89	98	62	63	67	77	79	41	16	18	71	50	98
31-May	27	29	38	14	38	47	40	95	52	53	55	66	57	79	65	87	60	33	31	13	14	26	85	61	95
79 81 98 106 84 112 106 95 88 105 110 81 91 108 101 98 101 77 79 71 113 114 85 71																									
Diurnal Maximum																									
UO - Unstable Operation																									



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS30
ELLS RIVER
MAY 2023**

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ELLS RIVER (AMS30)
MAY 2023

MONTHLY SUMMARY for
AMD SECTION III.B.1(c)

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	709	34	35	99.87	19.7	0	4.9	0
TRS (ppb) Average	708	35	36	99.87	2.6	0	1.2	0
THC (ppm) Average	708	34	36	99.73	3.8	-	2.3	-
NMHC (ppm) Average	708	34	36	99.73	0.261	-	0.061	-
CH4 (ppm) Average	708	34	36	99.73	3.5	-	2.2	-
NO2 (ppb) Average	707	36	37	99.87	36.8	0	12.6	-
NO (ppb) Average	707	36	37	99.87	72.9	-	9.5	-
NOX (ppb) Average	707	36	37	99.87	102.7	-	20.1	-
PM2.5 (ug/m3) Average	742	1	2	99.87	512	95	302.4	14
Temperature 2 m (C) Average	743	0	1	99.87	32.1	-	23.6	-
Relative Humidity (%) Average	743	0	1	99.87	96.3	-	77.4	-
Wind Speed 10 m (km/h) Average	738	0	6	99.19	36	-	23	-
Wind Direction 10 m (deg) Average	738	0	6	99.19	-	-	-	-
Global Solar Radiation (W/m2) Average	744	0	0	100	864	-	324.8	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ELLS RIVER (AMS30)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	709	1.1	2.8	-	0	0	0.1	0.2	0.6	2.7	19.7
TRS (ppb) Average	708	0.61	0.3	-	0.4	0.4	0.4	0.5	0.7	0.9	2.6
THC (ppm) Average	708	2.07	0.1	-	1.9	2	2	2	2.1	2.2	3.8
NMHC(ppm) Average	708	0.005	0.028	-	0	0	0	0	0	0	0.261
CH4(ppm) Average	708	2.07	0.1	-	1.9	2	2	2	2.1	2.2	3.5
NO2 (ppb) Average	707	5.45	6.3	-	0.1	0.6	1.2	2.9	7.5	13.4	36.8
NO (ppb) Average	707	1.08	4.7	-	0	0	0	0.1	0.5	1.9	72.9
NOX (ppb) Average	707	6.52	9.6	-	0.1	0.7	1.3	3.2	8.4	15.2	102.7
PM2.5 (ug/m3) Average	742	40.74	63.4	-	1.9	5	8.4	19.6	36.8	97.1	512
Temperature 2 m (C) Average	743	16.69	6.4	-	2	8.6	11.6	16.3	21.5	25.6	32.1
Relative Humidity (%) Average	743	47.43	20.2	-	16.1	21.7	30.5	44.8	62.8	76.9	96.3
Wind Speed 10 m (km/h) Average	738	11.1	7	-	0	3	6	10	15	22	36
Wind Direction 10 m (deg) Average	738	167.9	-	-	-	-	-	-	-	-	-
Global Solar Radiation (W/m2) Average	744	231.69	258	-	0	0	0.3	111.5	431.6	662	864

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ELLS RIVER (AMS30)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	03 May 2023 08:00	03 May 2023 08:00	1	Maintenance - station logger/modem reset
THC/NMHC/CH4	26 May 2023 13:00	26 May 2023 13:00	1	Maintenance - replaced support gas cylinder
Wind Speed, Wind Direction	01 May 2023 04:00	01 May 2023 04:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	01 May 2023 06:00	01 May 2023 06:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	19 May 2023 03:00	19 May 2023 03:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	21 May 2023 04:00	21 May 2023 04:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	25 May 2023 21:00	25 May 2023 21:00	1	Flat line in sensor output signal

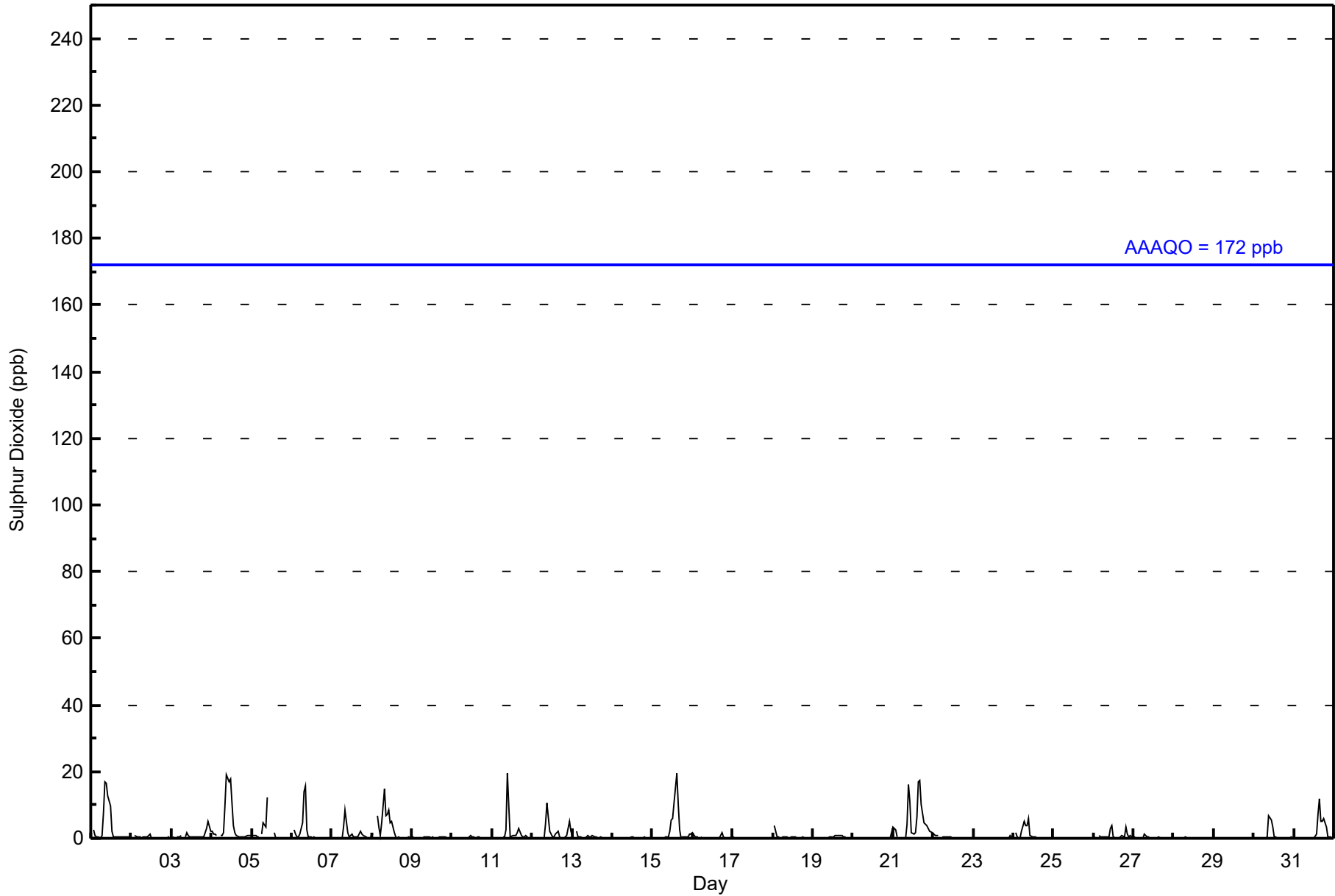


Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	744				
Maximum Value: 19.7 ppb on May 11 10:00		Maximum Daily Average: 4.9 ppb on May 21																	Hours of Data:	709						
Minimum Value: 0.0 ppb on May 5 15:00		Minimum Daily Average: 0.0 ppb on May 25																	Hours of Missing Data:	35						
Maximum Diurnal Average: 4.0 ppb at hour 10		Minimum Diurnal Average: 0.2 ppb at hour 5																	Hours of Calibration:	34						
Monthly Average: 1.10 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.6 P ₉₀ = 2.7 P ₉₉ = 16.8																	Percent Operational Time:	99.9						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	Z	2.6	0.9	0.6	0.2	0.1	0.9	7.8	17.1	16.3	12.5	9.8	2.0	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.4	0.6	0.5	3.2	17.1
2-May	0.5	Z	0.7	0.3	0.3	0.3	0.2	0.3	0.3	0.3	1.0	1.1	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.3	1.1
3-May	0.1	0.2	Z	0.3	0.2	0.4	0.7	M	0.4	1.5	0.7	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.3	0.4	1.5	3.0	4.9	2.2	0.9	4.9
4-May	2.0	1.3	1.1	1.0	Z	0.8	1.0	1.7	9.8	18.9	16.8	18.0	10.6	4.0	1.9	0.8	0.6	0.5	0.4	0.3	0.5	0.7	0.8	0.8	4.1	18.9
5-May	0.8	0.8	0.7	0.6	0.5	Z	1.2	4.5	3.3	12.4	C	C	C	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.3	12.4	
6-May	Z	2.5	1.1	0.3	0.2	1.2	4.7	14.0	15.5	2.5	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.9	15.5	
7-May	0.1	Z	0.1	0.1	0.2	0.1	0.1	3.3	8.5	1.8	0.4	0.9	1.1	0.6	0.4	0.3	1.2	2.3	1.5	1.0	0.6	0.2	0.1	0.0	1.1	8.5
8-May	1.4	1.4	Z	6.6	3.3	0.7	4.5	14.7	6.9	7.1	8.7	4.6	5.0	1.7	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	3.0	14.7
9-May	0.2	0.1	0.1	Z	0.1	0.1	0.2	0.3	0.5	0.4	0.3	0.2	0.3	0.2	0.1	0.1	0.3	0.6	0.5	0.3	0.3	0.1	0.1	0.1	0.2	0.6
10-May	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.2	0.4	0.6	0.5	0.4	0.2	0.3	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.6
11-May	0.1	0.1	0.1	0.2	0.1	Z	0.3	0.6	2.7	19.7	9.6	0.5	0.9	0.8	0.8	1.7	3.1	1.0	0.4	0.6	0.7	0.2	0.0	0.0	1.9	19.7
12-May	Z	0.2	0.0	0.0	0.0	0.0	0.0	0.0	4.1	10.6	2.0	1.1	0.3	0.3	1.5	1.9	0.5	0.2	0.1	0.1	0.7	2.9	5.0	2.0	1.5	10.6
13-May	0.8	Z	2.3	0.5	0.3	0.3	0.1	0.1	0.6	0.9	0.6	0.6	1.0	0.5	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.0	0.0	0.4	2.3
14-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.6	0.5	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.6
15-May	0.2	0.2	0.1	Z	0.0	0.1	0.2	0.2	0.2	0.4	2.2	5.7	5.9	10.5	19.5	10.3	2.4	0.1	0.2	0.3	0.3	0.2	1.1	1.2	2.7	19.5
16-May	1.5	0.5	0.3	0.5	Z	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.6	0.4	0.1	0.1	0.1	0.2	0.2	0.3	1.6	
17-May	0.4	0.2	0.2	0.2	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
18-May	Z	3.7	0.6	0.2	0.0	0.1	0.3	0.4	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.1	0.2	0.2	0.3	0.1	0.1	0.0	0.0	0.0	0.3	3.7
19-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.3	0.3	0.4	0.8	0.7	0.7	0.7	0.8	0.4	0.4	0.2	0.1	0.0	0.0	0.3	0.8
20-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	1.5	0.1	1.5
21-May	3.5	2.4	0.3	Z	0.0	0.0	0.0	0.1	4.1	15.9	11.2	1.5	1.4	1.9	6.3	17.0	17.3	10.1	4.6	4.0	3.8	2.8	2.3	1.7	4.9	17.3
22-May	1.3	1.1	1.0	0.8	Z	0.6	0.4	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.3	1.3
23-May	0.1	0.0	0.1	0.0	0.0	Z	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.7	0.5	0.1	0.7
24-May	Z	1.8	0.4	0.2	0.1	2.3	5.0	3.9	3.8	5.8	0.7	0.5	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	1.1	5.8
25-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2
26-May	0.3	0.5	Z	0.6	0.4	0.2	0.3	0.2	0.3	0.3	2.8	3.8	0.6	0.1	0.0	0.1	0.3	0.8	0.3	3.2	1.4	0.2	1.0	0.3	0.8	3.8
27-May	0.5	0.1	0.0	Z	0.0	0.1	1.1	0.8	0.6	0.4	0.1	0.1	0.1	0.1	0.2	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	1.1
28-May	0.0	0.1	0.0	0.0	Z	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.2
29-May	0.1	0.0	0.0	0.1	0.1	Z	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.2
30-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	6.7	5.4	3.3	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.2	0.7	6.7
31-May	0.1	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	7.4	12.0	5.3	5.2	5.9	3.5	0.4	0.3	0.3	0.2	1.8	12.0
																								Diurnal Average		
																								Diurnal Maximum		
0.6 0.8 0.4 0.5 0.2 0.3 0.7 1.8 2.6 4.0 2.6 1.8 1.1 0.9 1.3 1.5 1.1 0.8 0.5 0.5 0.4 0.4 0.6 0.4																										
3.5 3.7 2.3 6.6 3.3 2.3 5.0 14.7 17.1 19.7 16.8 18.0 10.6 10.5 19.5 17.0 17.3 10.1 5.9 4.0 3.8 3.0 5.0 2.2																										
Z - zerospan C - Calibration M - Maintenance																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb																										



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Ells River - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Ells River - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	690	97.32	97.32
11 - 20	19	2.68	100.00
21 - 60	0	0.00	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 709

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Ells River - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	34	67	31	15	14	11	50	81	120	75	34	42	21	39	28	24	686
11 - 20	0	0	1	0	2	0	2	6	5	1	1	0	0	0	0	1	19
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	34	67	32	15	16	11	52	87	125	76	35	42	21	39	28	25	705

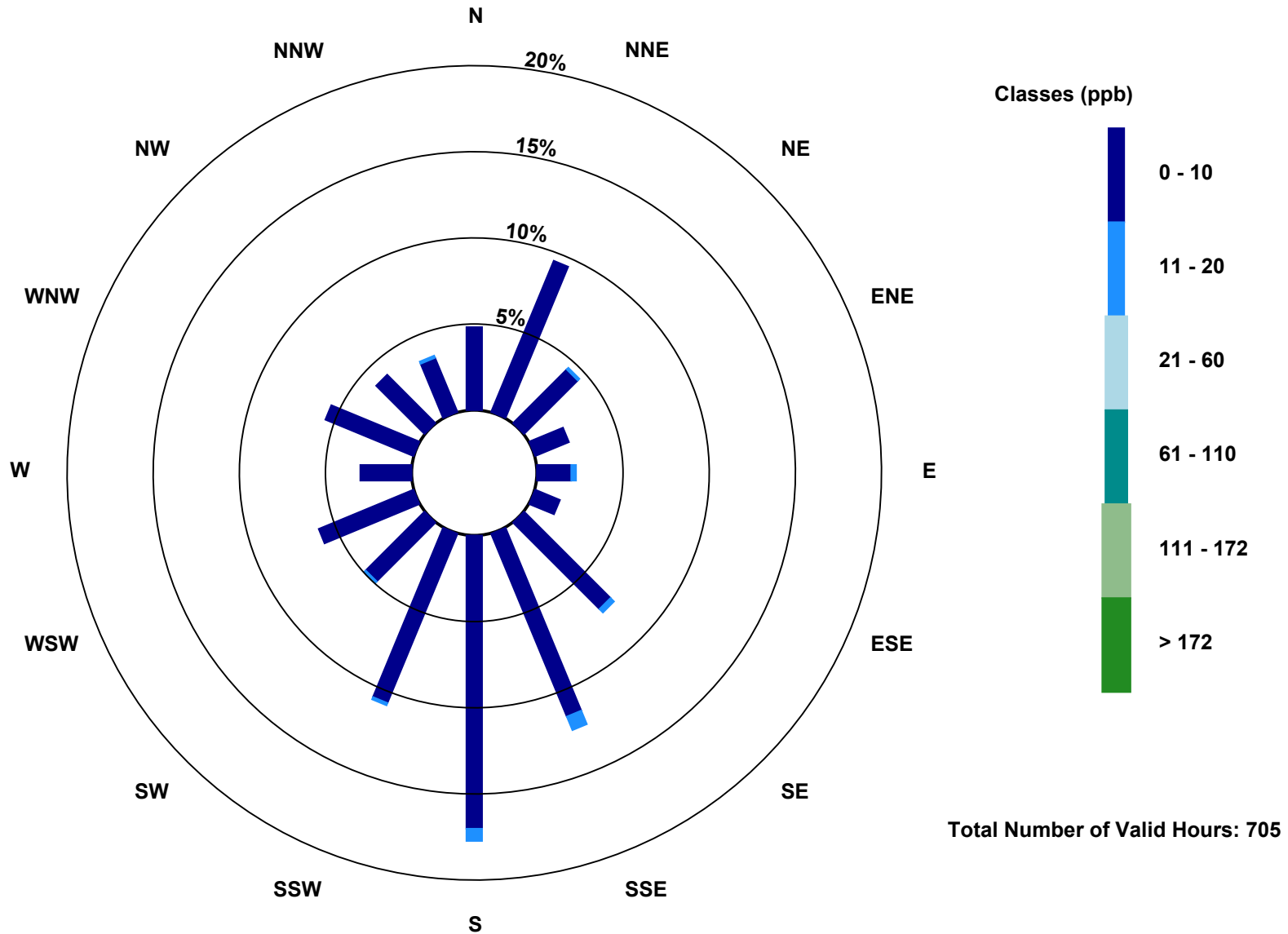
Total Number of Valid Hours: 705

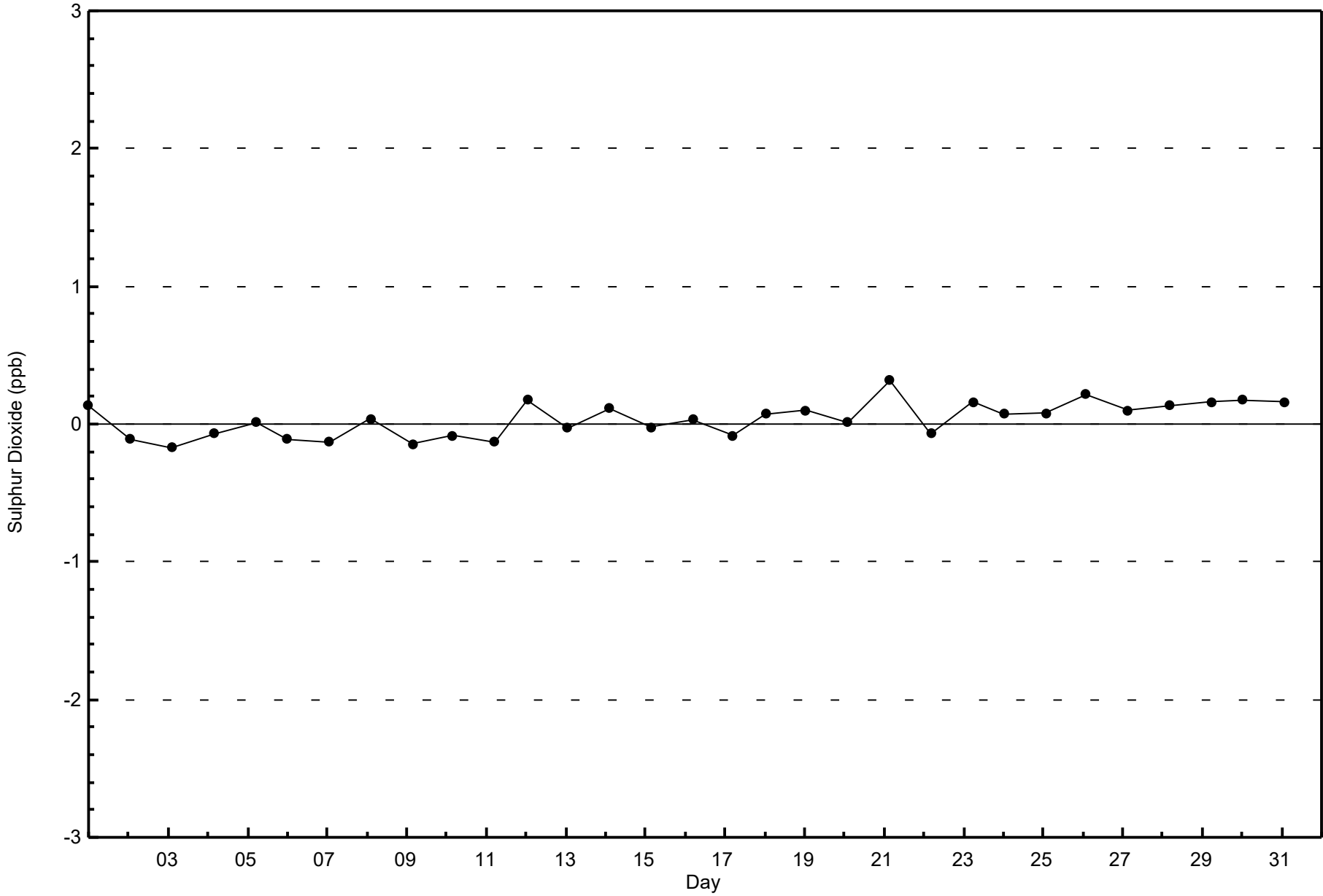
Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Ells River

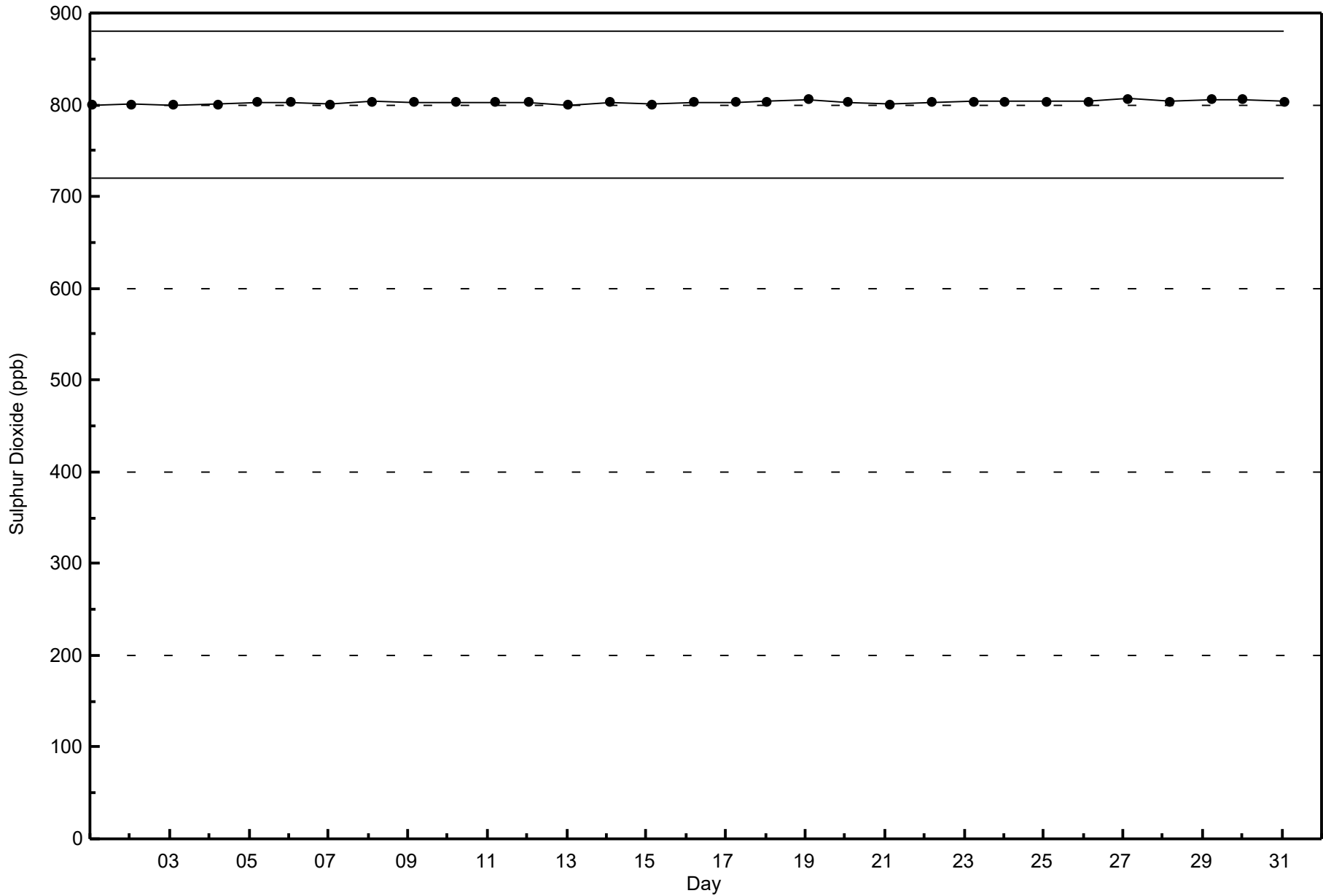






Wood Buffalo Environmental Association
Span Responses

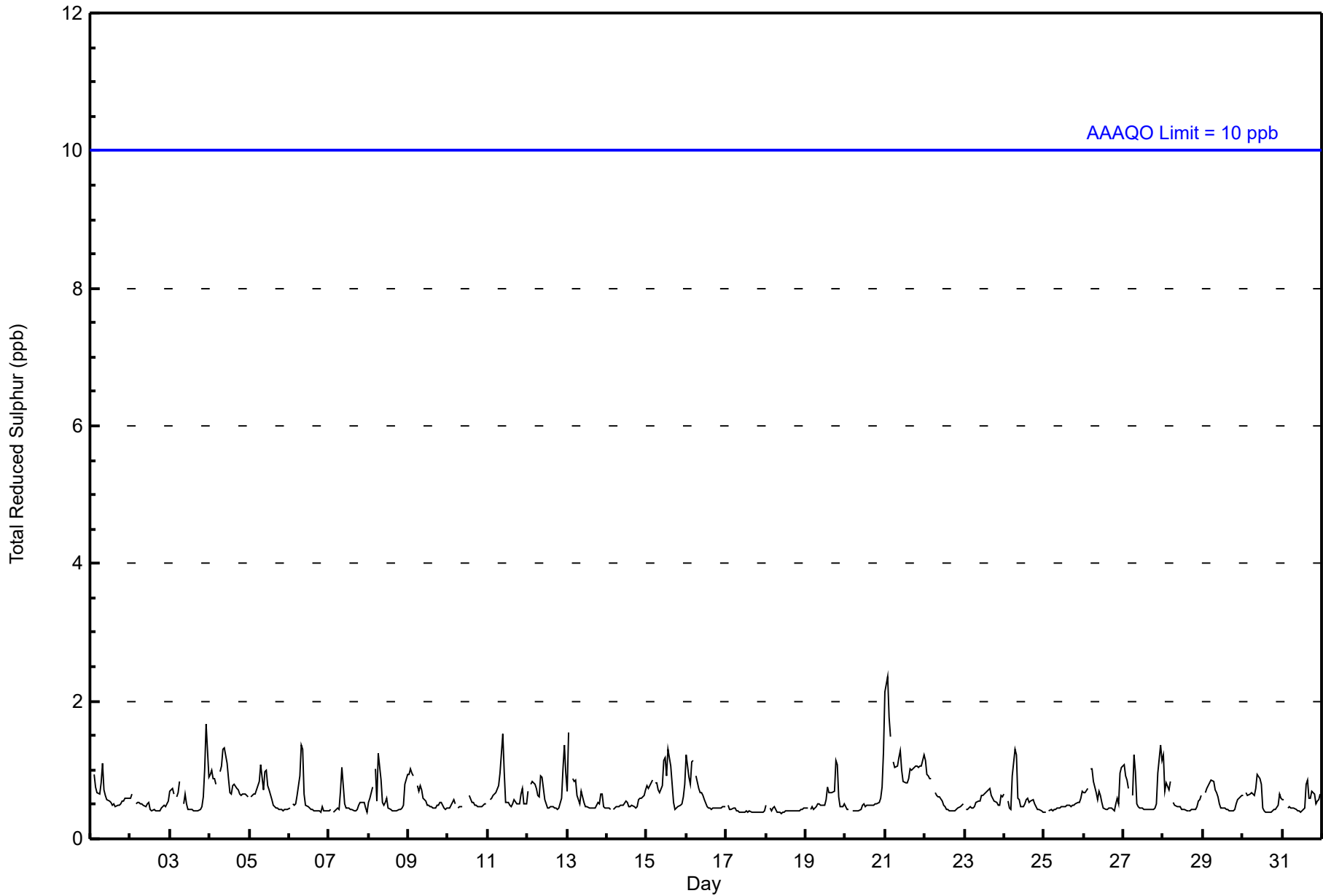
Sulphur Dioxide (SO₂) - ppb
Ells River - May 2023





Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service: 744														Daily Average		Daily Maximum					
Maximum Value: 2.6 ppb on May 1 01:00		Maximum Daily Average: 1.2 ppb on May 21		Hours of Data: 708														Hours of Missing Data: 36		Hours of Calibration: 35							
Minimum Value: 0.4 ppb on May 18 10:00		Minimum Daily Average: 0.4 ppb on May 17		Hours of Calibration: 35														Percent Operational Time: 99.9									
Maximum Diurnal Average: 0.8 ppb at hour 1		Minimum Diurnal Average: 0.5 ppb at hour 18		Percentiles: P ₁ = 0.4 P ₁₀ = 0.4 Q ₁ = 0.4 Median = 0.5 Q ₃ = 0.7 P ₉₀ = 0.9 P ₉₉ = 1.5																							
Monthly Average: 0.61 ppb																											
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	2.6	Z	0.9	0.8	0.7	0.7	0.8	1.1	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7	2.6	
2-May	0.6	0.6	Z	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.5	0.6	
3-May	0.7	0.7	0.7	Z	0.6	0.7	0.8	M	0.5	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	1.0	1.7	0.9	0.6	1.7		
4-May	0.9	1.0	0.9	0.9	0.8	Z	1.0	1.1	1.3	1.3	1.1	0.9	0.7	0.6	0.8	0.8	0.7	0.7	0.6	0.6	0.7	0.6	0.6	0.6	0.8	1.3	
5-May	Z	0.6	0.6	0.7	0.7	0.8	0.8	1.1	0.7	1.0	1.0	0.8	0.7	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.6	1.1	
6-May	0.5	Z	0.5	0.5	0.5	0.6	0.9	1.4	1.3	0.7	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.6	1.4		
7-May	0.4	0.4	Z	0.4	0.4	0.5	0.4	0.7	1.0	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.5	1.0		
8-May	0.5	0.6	0.8	Z	1.0	0.5	1.2	0.8	0.5	0.5	0.5	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.8	0.9	0.6	1.2		
9-May	0.9	1.0	1.0	0.9	Z	0.8	0.7	0.8	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4	1.0		
10-May	0.4	0.4	0.5	0.6	0.5	Z	0.5	0.5	0.5	C	C	C	C	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6		
11-May	Z	0.6	0.6	0.6	0.7	0.7	0.8	1.0	1.2	1.5	1.0	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.6	0.7	0.5	0.5	1.5		
12-May	0.7	Z	0.8	0.8	0.8	0.7	0.6	0.6	0.9	0.9	0.6	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.6	1.0	1.4	1.0	1.4		
13-May	0.7	1.5	Z	0.9	0.8	0.9	0.6	0.5	0.7	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.7	0.7	0.5	0.5	0.6	1.5		
14-May	0.4	0.4	0.4	Z	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.5	0.7		
15-May	0.8	0.7	0.8	0.8	Z	0.8	0.8	0.7	0.7	0.8	1.1	1.2	0.9	1.3	1.0	0.8	0.5	0.4	0.4	0.5	0.5	0.5	0.6	0.8	1.3		
16-May	1.2	0.9	0.8	1.1	1.1	Z	0.9	0.7	0.7	0.7	0.6	0.6	0.5	0.4	0.5	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.5	0.5	1.2		
17-May	Z	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5		
18-May	0.5	Z	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5		
19-May	0.4	0.5	Z	0.4	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.7	0.7	1.1	1.1	0.6	0.5	0.5	0.5	1.1		
20-May	0.5	0.4	0.4	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.8	1.3	1.3		
21-May	2.1	2.4	1.8	1.5	Z	1.1	1.0	1.1	1.2	1.3	1.0	0.8	0.8	0.8	0.9	1.0	1.0	1.0	1.1	1.1	1.0	1.1	1.1	1.2	2.4		
22-May	1.1	0.9	0.9	0.9	0.9	Z	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	1.1		
23-May	Z	0.4	0.4	0.5	0.5	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.7		
24-May	0.6	Z	0.5	0.4	0.4	0.9	1.3	1.2	0.6	0.6	0.5	0.5	0.6	0.6	0.5	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	1.3		
25-May	0.4	0.4	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.5	0.7		
26-May	0.7	0.7	0.7	Z	1.0	1.0	0.8	0.7	0.6	0.7	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.5	1.0	1.0	1.0		
27-May	1.1	0.9	0.9	0.7	Z	0.6	1.2	1.0	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	1.0	1.4	1.1	1.4		
28-May	1.2	0.7	0.8	0.7	0.8	Z	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.6	1.2		
29-May	Z	0.7	0.7	0.8	0.8	0.9	0.8	0.7	0.7	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.9		
30-May	0.6	Z	0.7	0.6	0.7	0.7	0.6	0.6	0.7	0.9	0.9	0.8	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.7	0.6	0.9		
31-May	0.6	0.6	Z	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.8	0.8	0.6	0.6	0.7	0.7	0.5	0.5	0.6	0.7	0.8		
																								Diurnal Average		Diurnal Maximum	
																								0.8		2.6	
																								0.7		2.4	
																								0.7		1.8	
																								0.7		1.5	
																								0.6		1.1	
																								0.6		1.1	
																								0.7		1.3	
																								0.7		1.4	
																								0.7		1.3	
																								0.6		1.5	
																								0.6		1.1	
																								0.5		1.2	
																								0.5		0.9	
																								0.5		1.3	
																								0.5		1.0	
																								0.5		1.0	
																								0.5		1.0	
																								0.5		1.1	
																								0.5		1.1	
																								0.5		1.0	
																								0.6		1.1	
																								0.7		1.7	
																								0.7		1.3	

Z - zerospan C - Calibration M - Maintenance
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Ells River - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	707	99.86	99.86
3 - 4	1	0.14	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Ells River - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	34	66	34	12	15	11	52	90	127	76	33	42	23	35	26	27	703
3 - 4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	34	66	34	12	15	11	52	90	128	76	33	42	23	35	26	27	704

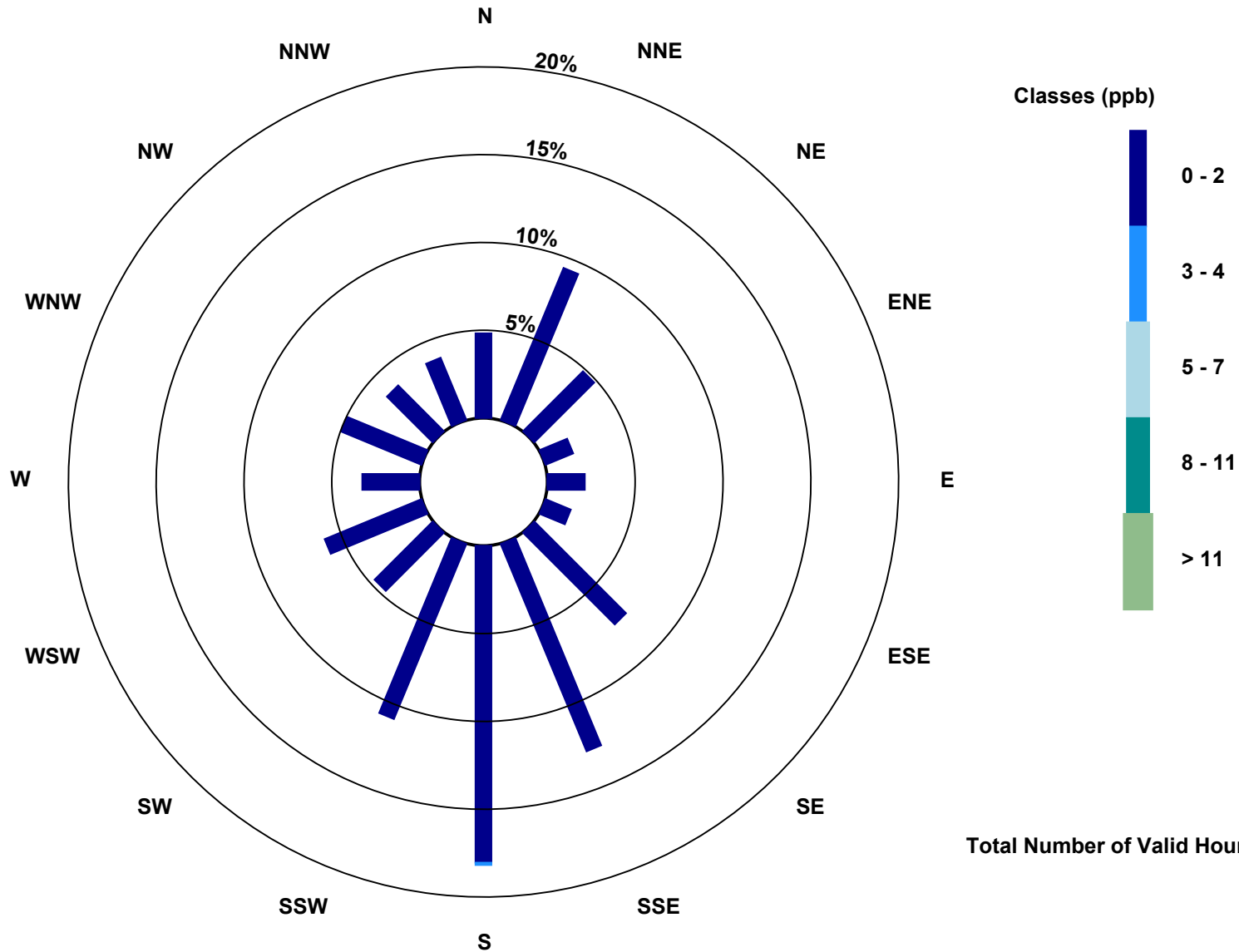
Total Number of Valid Hours: 704

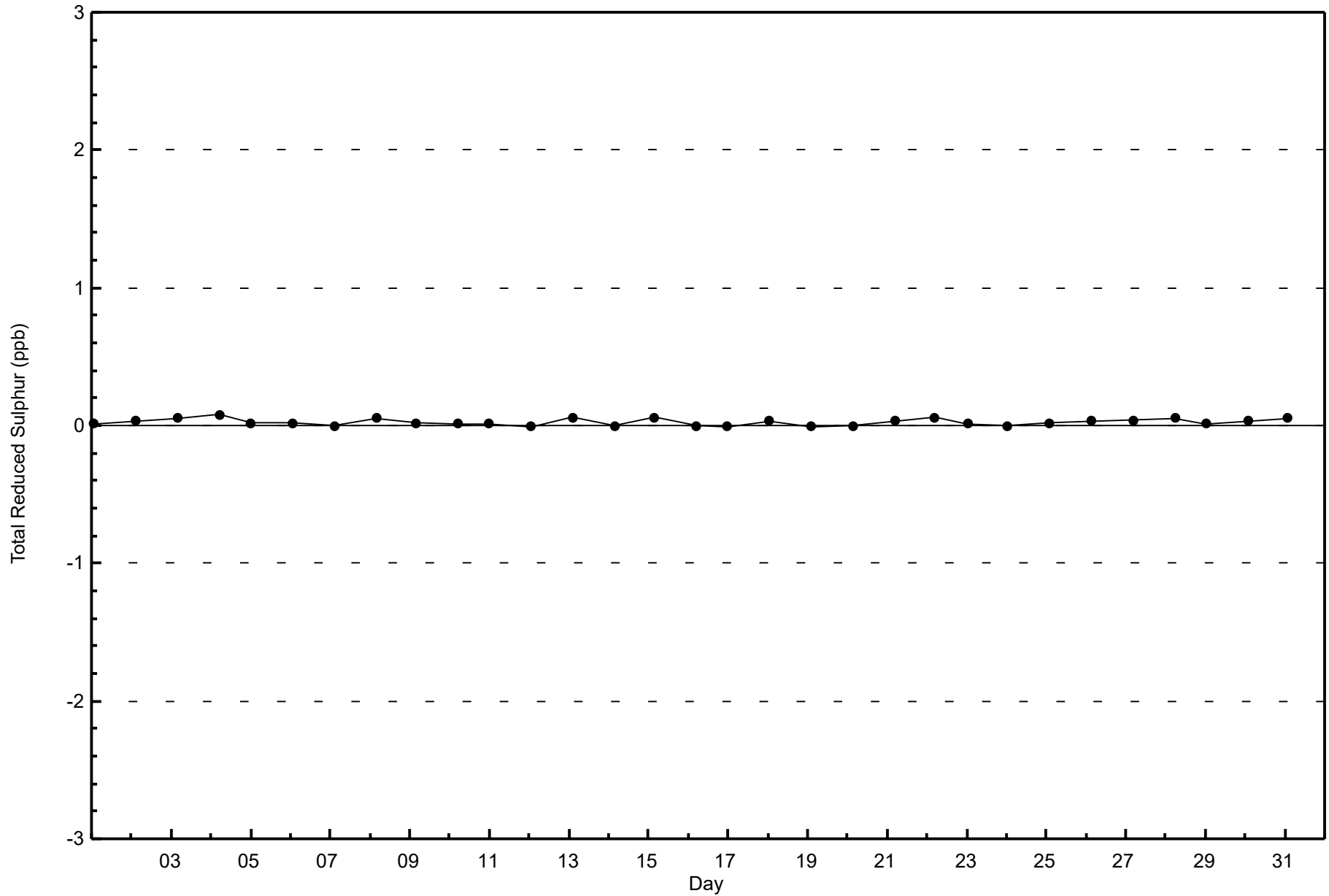
Total Number of Hours: 744

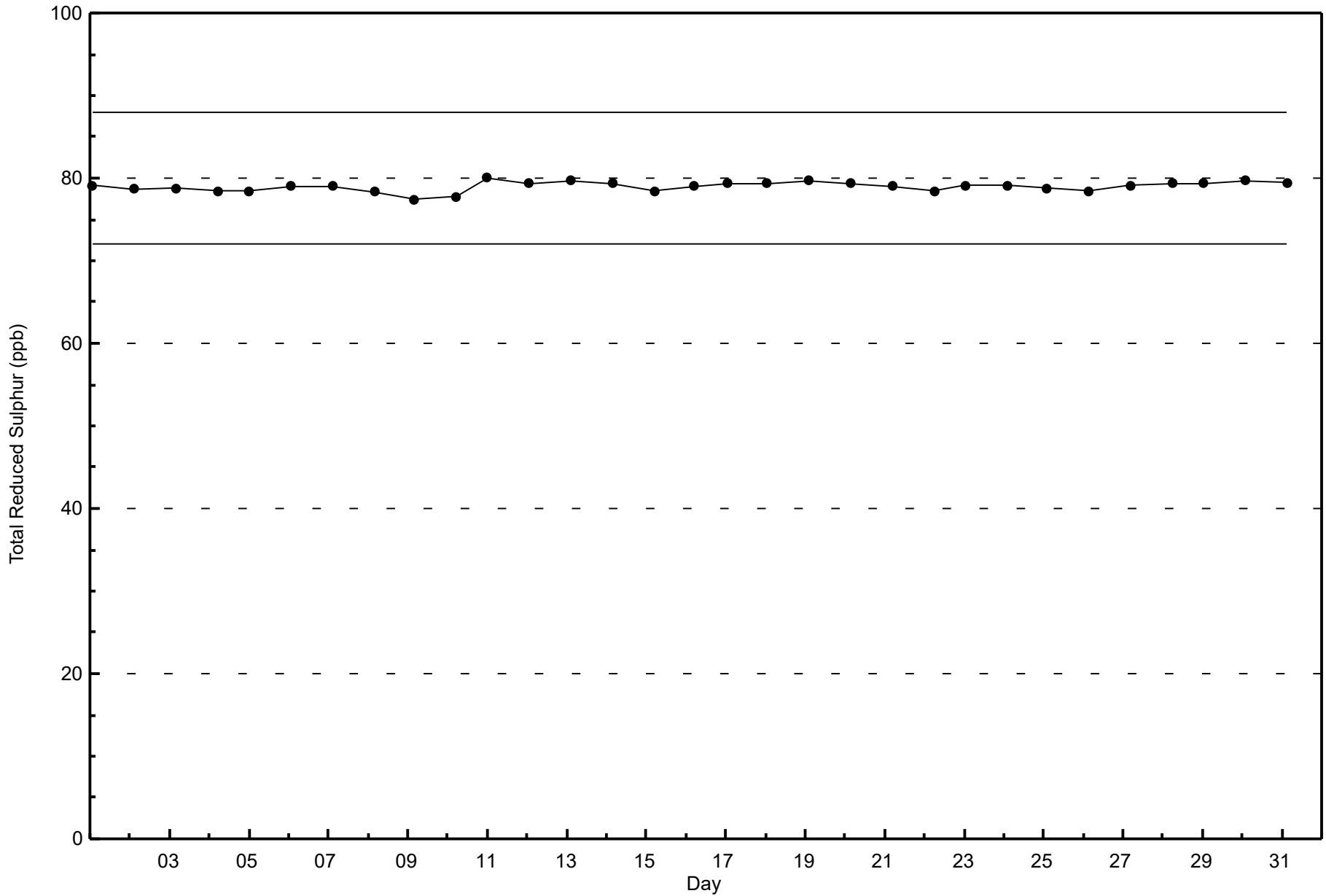


Wood Buffalo Environmental Association
Wind Rose May 2023

Total Reduced Sulphur (TRS) - ppb
Ells River

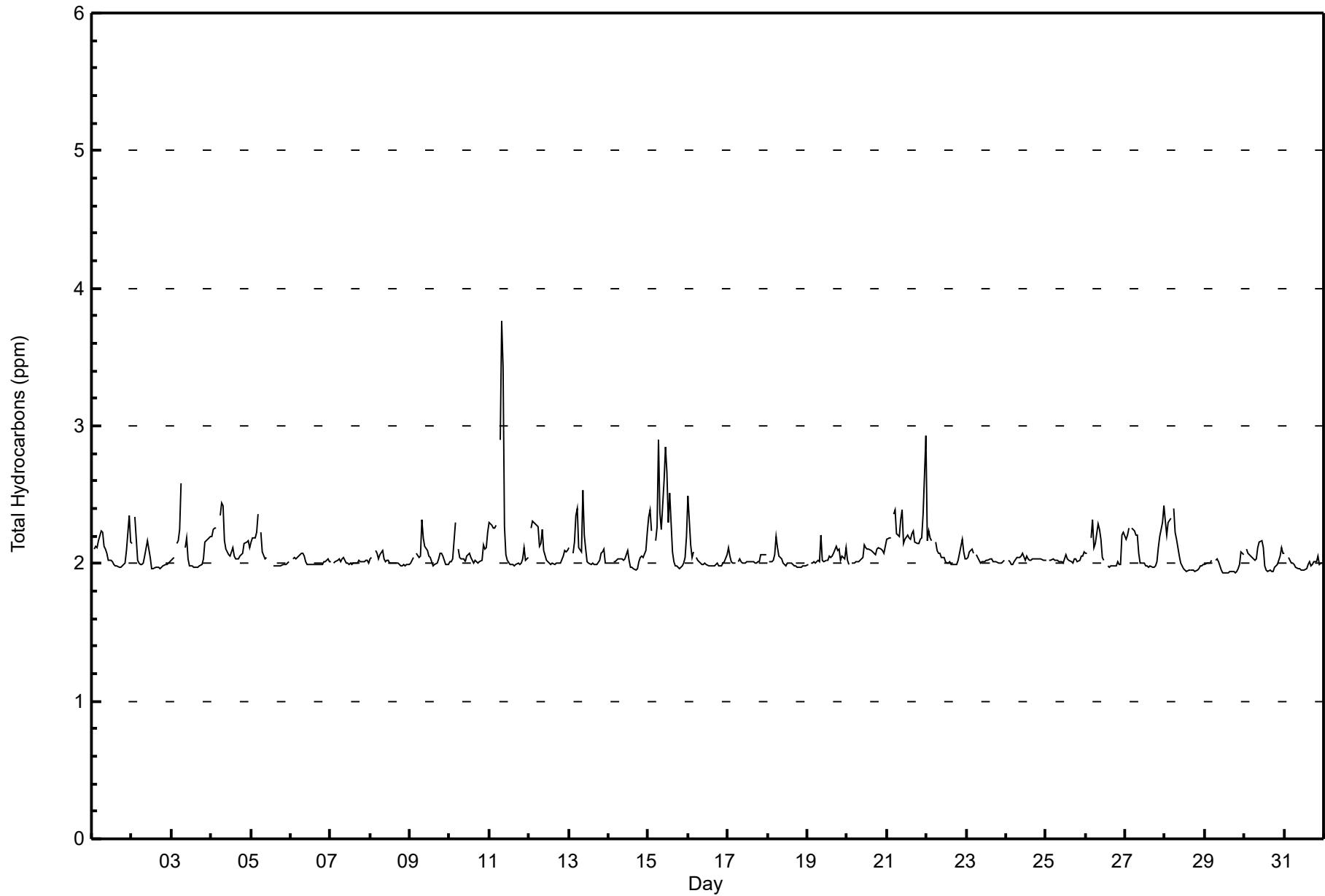








Maximum Value: 3.8 ppm on May 11 08:00																				Maximum Daily Average: 2.3 ppm on May 15					Hours in Service: 744	
Minimum Value: 1.9 ppm on May 29 14:00																				Minimum Daily Average: 2.0 ppm on May 29					Hours of Data: 708	
Maximum Diurnal Average: 2.2 ppm at hour 7																				Minimum Diurnal Average: 2.0 ppm at hour 17					Hours of Missing Data: 36	
Monthly Average: 2.07 ppm																				Percentiles: P ₁ = 1.9 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.2 P ₉₉ = 2.6					Hours of Calibration: 34	
																									Percent Operational Time: 99.7	
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	Z	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.2	2.1	2.3
2-May	2.1	Z	2.3	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3
3-May	2.0	2.0	Z	2.1	2.2	2.3	2.6	M	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.2	2.2	2.1	2.6	
4-May	2.2	2.2	2.3	2.3	Z	2.3	2.4	2.4	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.2	2.4	
5-May	2.2	2.2	2.2	2.2	2.4	Z	2.2	2.1	2.0	2.0	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4	
6-May	Z	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	
7-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
8-May	2.0	2.0	Z	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	
9-May	2.0	2.0	2.0	Z	2.1	2.0	2.1	2.3	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.3	
10-May	2.0	2.0	2.0	2.3	Z	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.1	2.3	
11-May	2.3	2.3	2.3	2.3	2.3	Z	2.9	3.8	3.4	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.3	3.8	
12-May	Z	2.3	2.3	2.3	2.3	2.3	2.1	2.1	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.3	
13-May	2.1	Z	2.1	2.2	2.4	2.4	2.1	2.1	2.5	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.1	2.5	
14-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.2	2.0	2.2	
15-May	2.3	2.4	2.2	Z	2.2	2.3	2.9	2.4	2.2	2.6	2.8	2.7	2.3	2.5	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.3	2.9	
16-May	2.5	2.1	2.0	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.5	
17-May	2.1	2.1	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.1	
18-May	Z	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	
19-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.2	
20-May	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	
21-May	2.2	2.2	2.2	Z	2.4	2.4	2.2	2.2	2.3	2.4	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.4	2.3	2.9	
22-May	2.2	2.2	2.2	2.2	Z	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.1	2.2	
23-May	2.0	2.0	2.1	2.1	2.1	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	
24-May	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	
25-May	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	
26-May	2.1	2.1	Z	2.2	2.3	2.1	2.2	2.3	2.2	2.2	2.0	2.0	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.1	2.3	
27-May	2.2	2.2	2.3	Z	2.3	2.2	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.4	2.1	2.4	
28-May	2.3	2.2	2.3	2.3	Z	2.4	2.2	2.2	2.1	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.1	2.4	
29-May	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.0	2.1	
30-May	Z	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.1	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.0	2.2	
31-May	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration M - Maintenance																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Ells River - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	448	63.28	63.28
2.1 - 3.0	258	36.44	99.72
3.1 - 10.0	2	0.28	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Ells River - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	14	43	16	8	9	9	40	54	72	49	29	39	17	16	14	17	446
2.1 - 3.0	19	23	16	7	7	2	12	32	53	27	6	3	4	23	14	8	256
3.1 - 10.0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	34	67	32	15	16	11	52	86	125	76	35	42	21	39	28	25	704

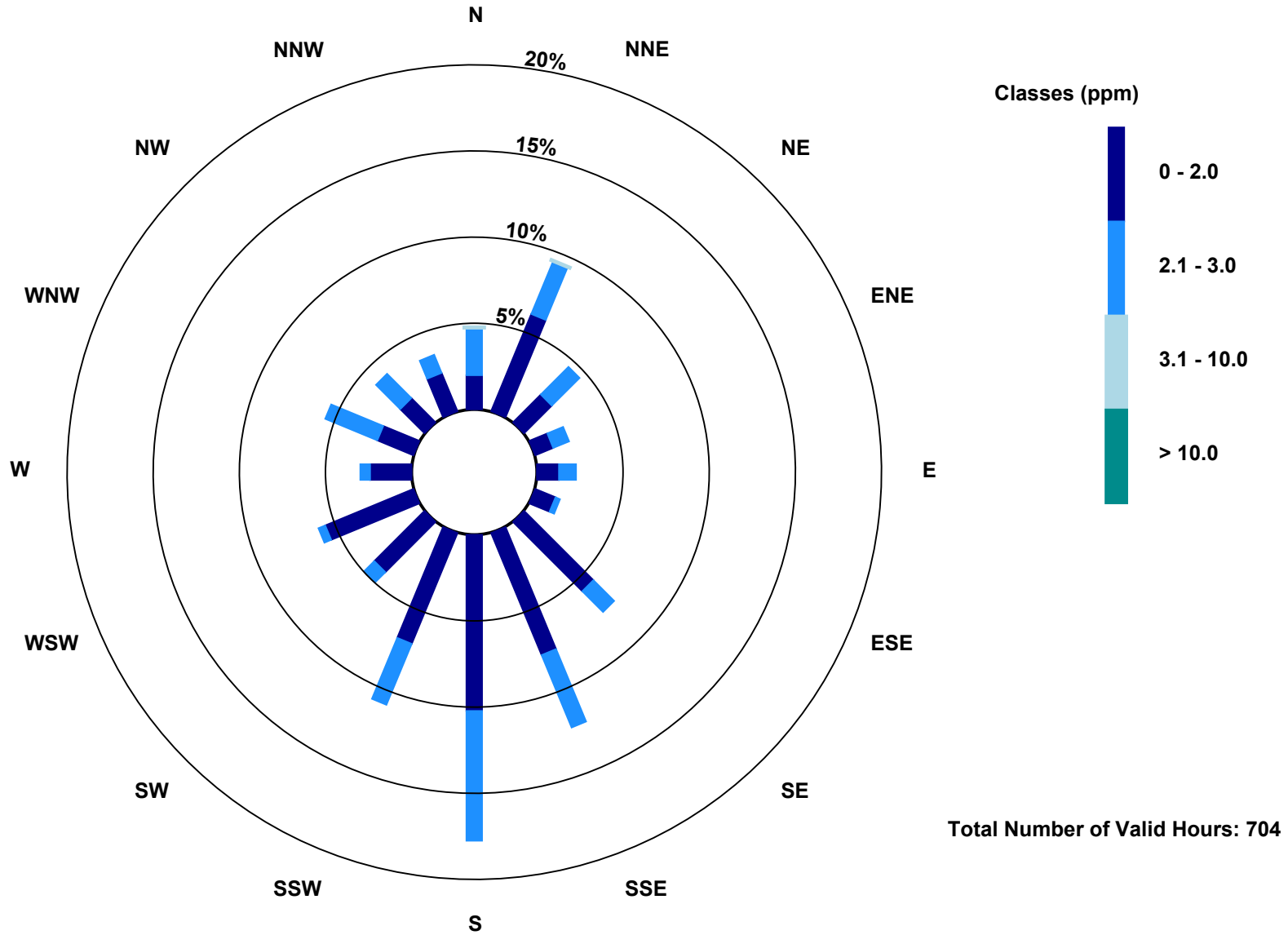
Total Number of Valid Hours: 704

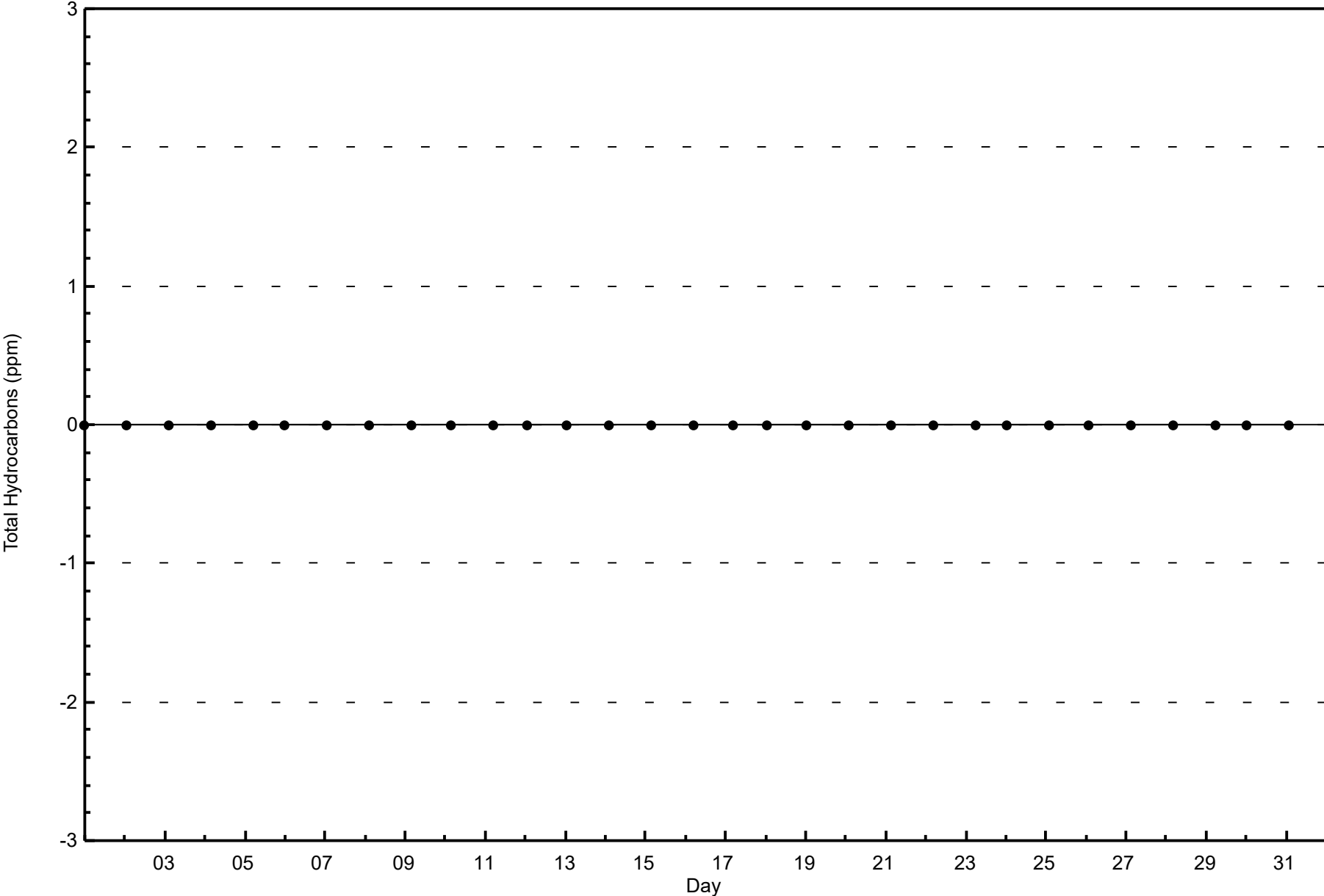
Total Number of Hours: 744

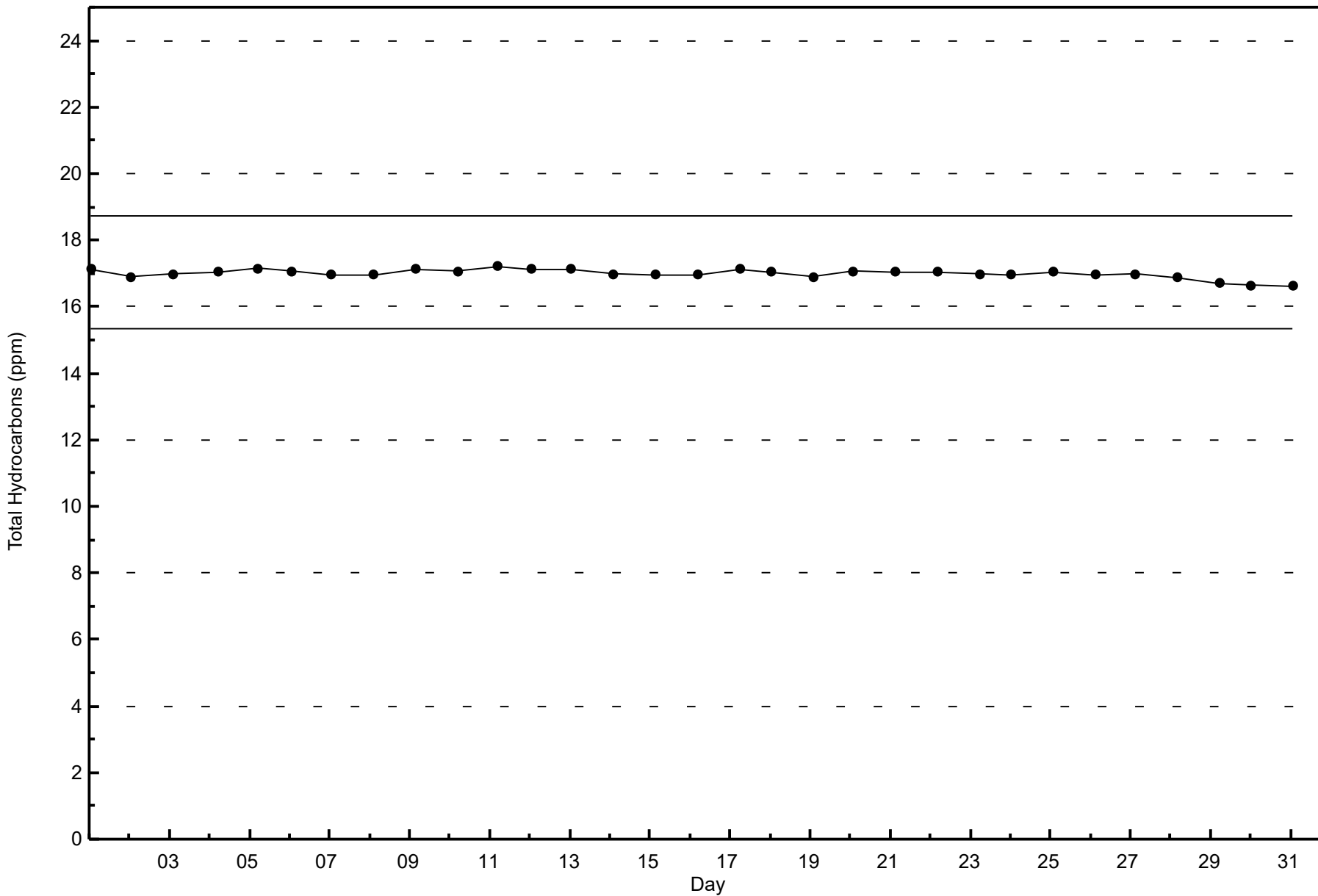


Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Ells River





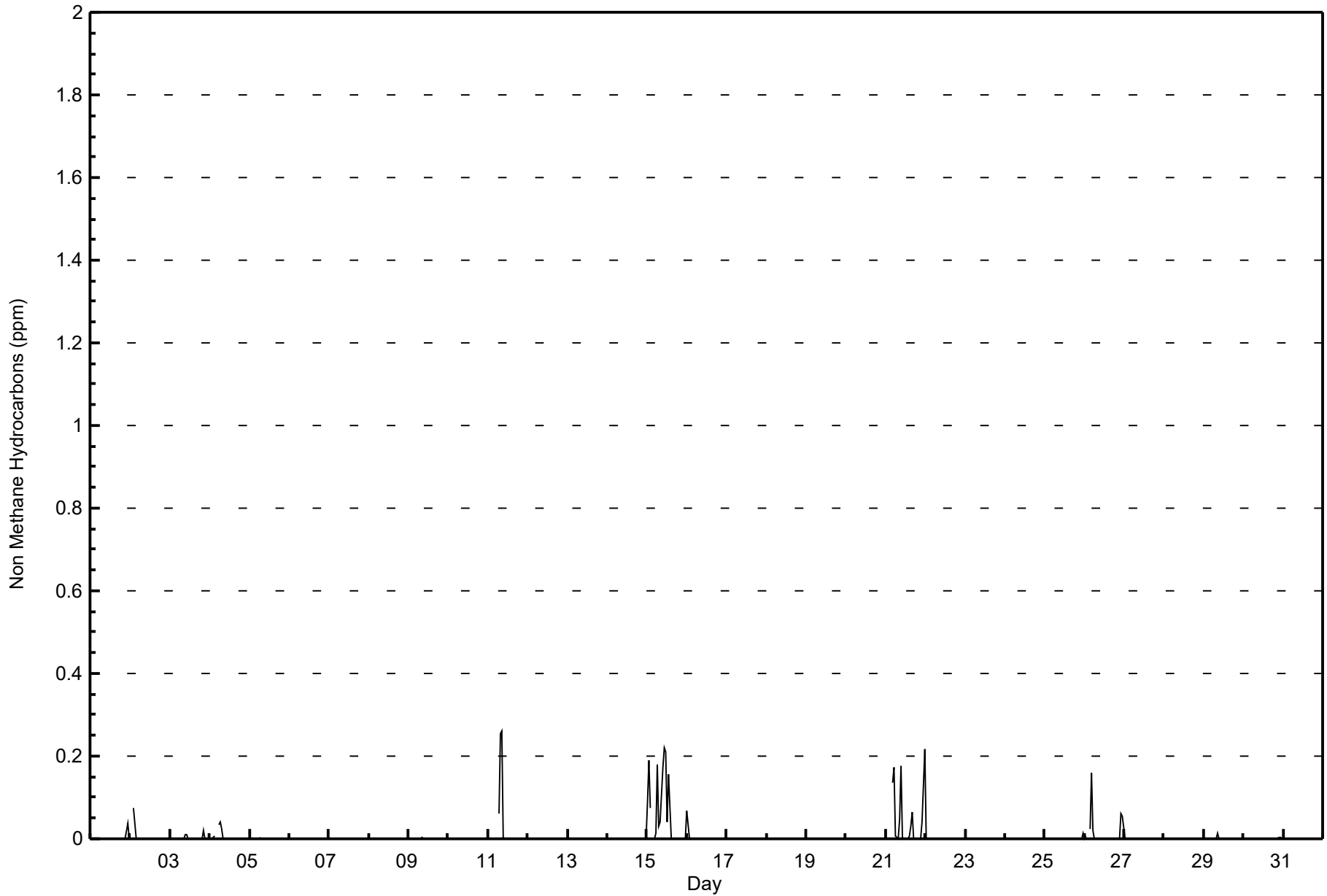




Summary of Hour Averages

Ells River - May 2023

Maximum Value: 0.261 ppm on May 11 09:00																				Maximum Daily Average: 0.061 ppm on May 15					Hours in Service:	744
Minimum Value: 0.000 ppm on May 1 02:00																				Minimum Daily Average: 0.000 ppm on May 6					Hours of Data:	708
Maximum Diurnal Average: 0.012 ppm at hour 9																				Minimum Diurnal Average: 0.000 ppm at hour 18					Hours of Missing Data:	36
Monthly Average: 0.005 ppm																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.2					Hours of Calibration:	34
																									Percent Operational Time:	99.7
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.039	0.000	0.002	0.039
2-May	0.000	Z	0.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.075
3-May	0.000	0.000	Z	0.000	0.000	0.000	0.000	M	0.000	0.011	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021	0.000	0.000	0.000	0.002	0.021
4-May	0.000	0.000	0.002	0.008	Z	0.035	0.041	0.024	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.041
5-May	0.000	0.000	0.000	0.000	0.000	Z	0.002	0.000	0.000	0.000	C	C	C	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002
6-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8-May	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9-May	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002
10-May	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11-May	0.000	0.000	0.000	0.000	0.000	Z	0.060	0.256	0.261	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.025	0.261
12-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
13-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
14-May	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
15-May	0.087	0.191	0.076	Z	0.000	0.012	0.180	0.030	0.040	0.172	0.221	0.210	0.039	0.154	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.061	0.221
16-May	0.068	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.068
17-May	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
18-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
19-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20-May	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
21-May	0.000	0.000	0.000	Z	0.137	0.172	0.008	0.000	0.049	0.175	0.004	0.000	0.000	0.000	0.007	0.031	0.064	0.000	0.000	0.000	0.000	0.000	0.041	0.216	0.039	0.216
22-May	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
23-May	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
24-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
25-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.000	0.001	0.015
26-May	0.000	0.006	Z	0.025	0.161	0.021	0.000	0.000	0.000	0.000	0.000	0.000	M	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.061	0.055	0.015	0.161	
27-May	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
28-May	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
29-May	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.013
30-May	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.005	0.000	0.000	0.005
31-May	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration M - Maintenance																										





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Ells River - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	665	93.93	93.93
0.006 - 0.05	23	3.25	97.18
0.06 - 0.1	8	1.13	98.31
> 0.1	12	1.69	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Ells River - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	29	65	32	15	16	10	48	80	115	76	34	42	21	31	25	22	661
0.006 - 0.05	2	0	0	0	0	1	2	5	7	0	1	0	0	2	1	2	23
0.06 - 0.1	0	0	0	0	0	0	0	1	1	0	0	0	0	4	1	1	8
> 0.1	3	2	0	0	0	0	2	0	2	0	0	0	0	2	1	0	12
Totals	34	67	32	15	16	11	52	86	125	76	35	42	21	39	28	25	704

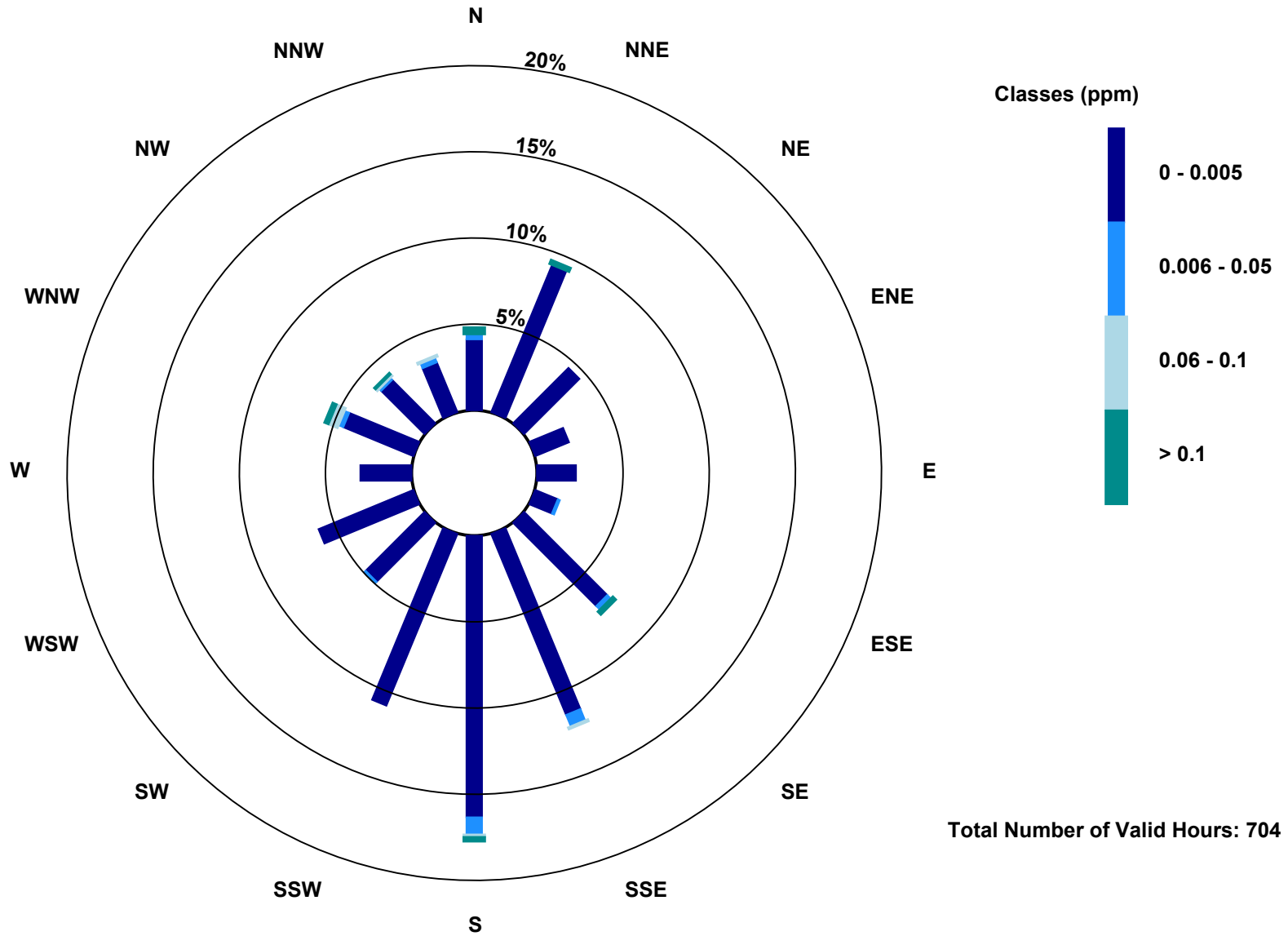
Total Number of Valid Hours: 704

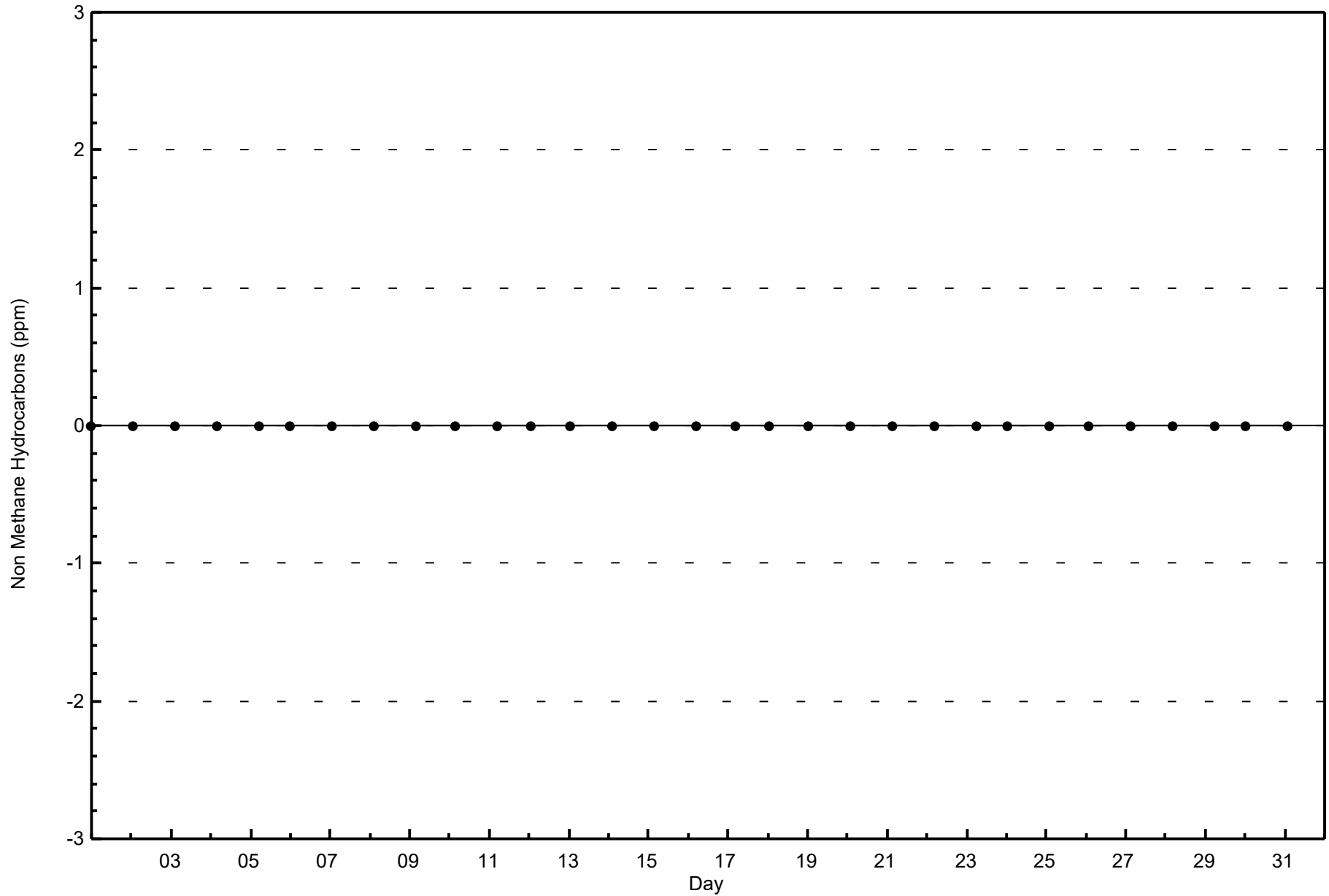
Total Number of Hours: 744

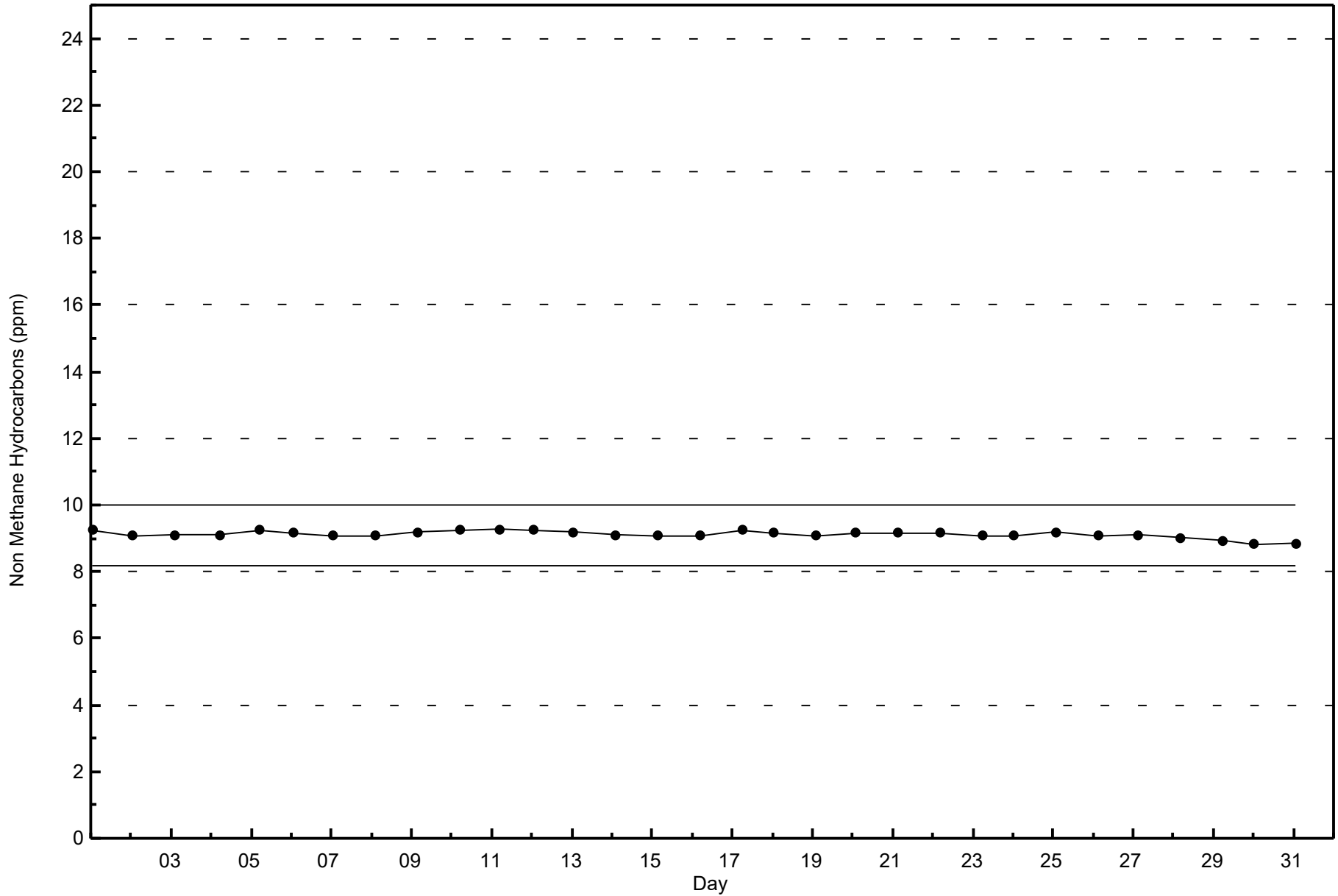


Wood Buffalo Environmental Association
Wind Rose May 2023

Non Methane Hydrocarbons (NMHC) - ppm
Ells River



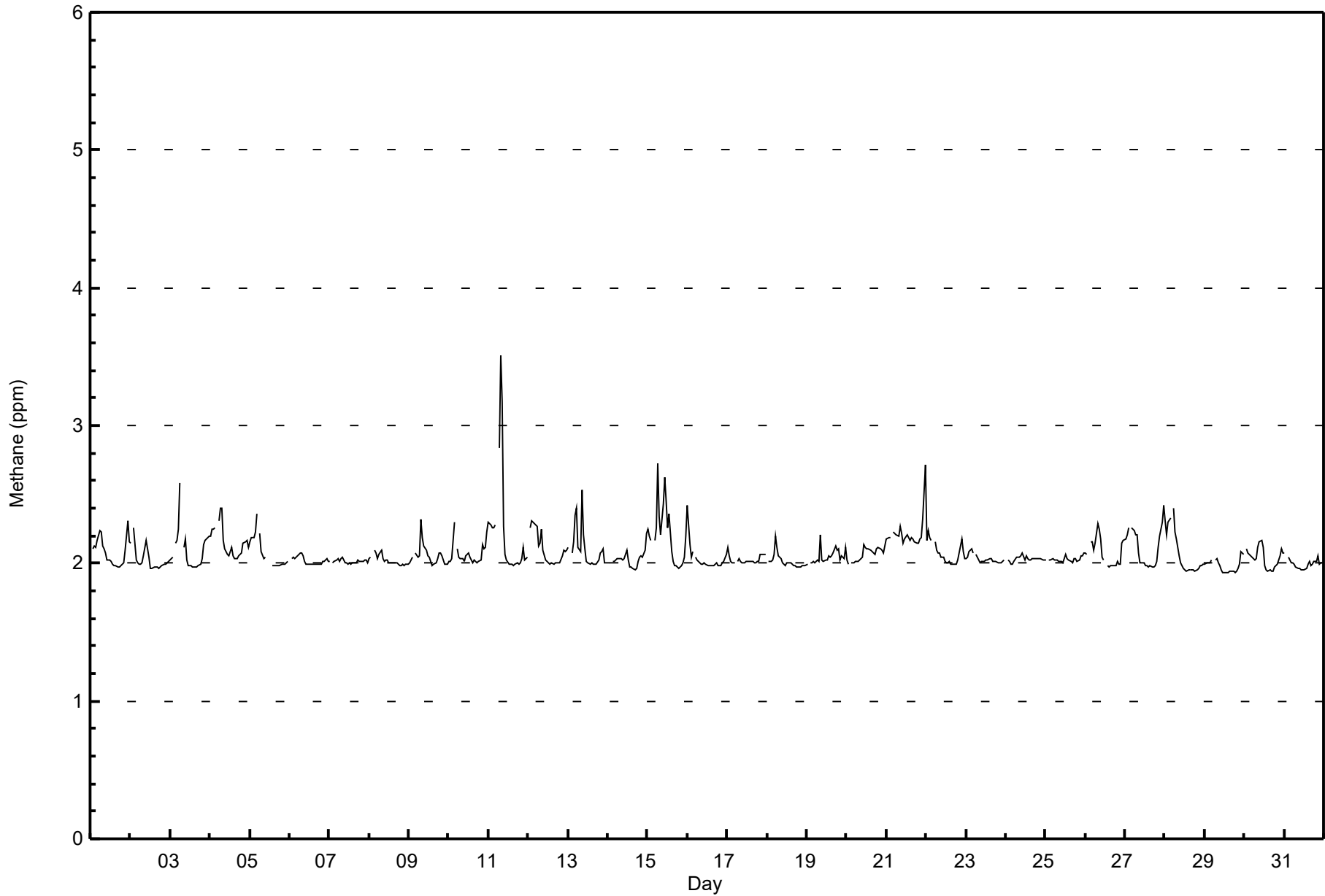






Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Ells River - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Methane (CH₄) - ppm
Ells River - May 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	448	63.28	63.28
2.1 - 3.0	258	36.44	99.72
3.1 - 10.0	2	0.28	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Ells River - May 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	14	43	16	8	9	9	40	54	72	49	29	39	17	16	14	17	446
2.1 - 3.0	19	23	16	7	7	2	12	32	53	27	6	3	4	23	14	8	256
3.1 - 10.0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	34	67	32	15	16	11	52	86	125	76	35	42	21	39	28	25	704

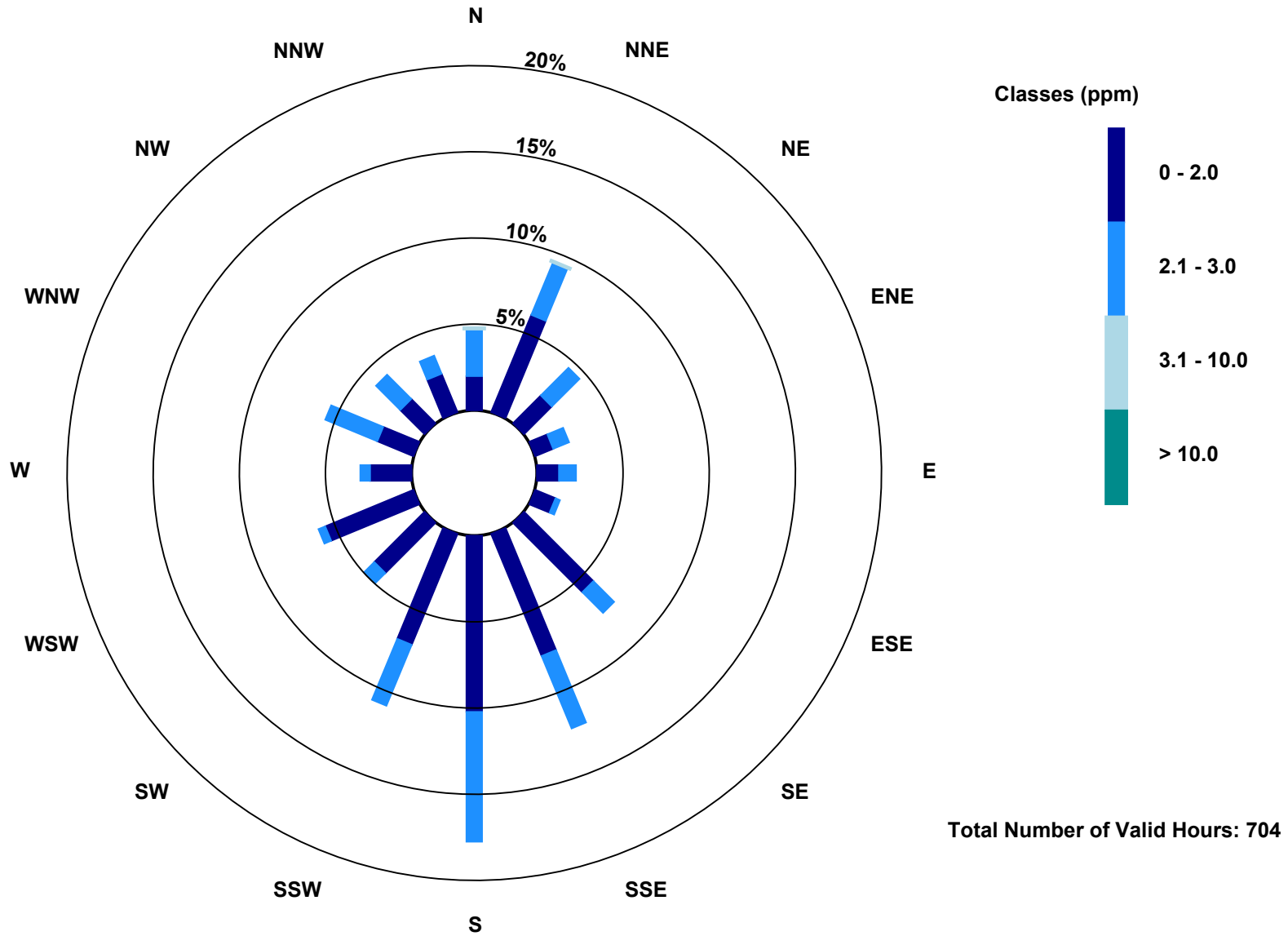
Total Number of Valid Hours: 704

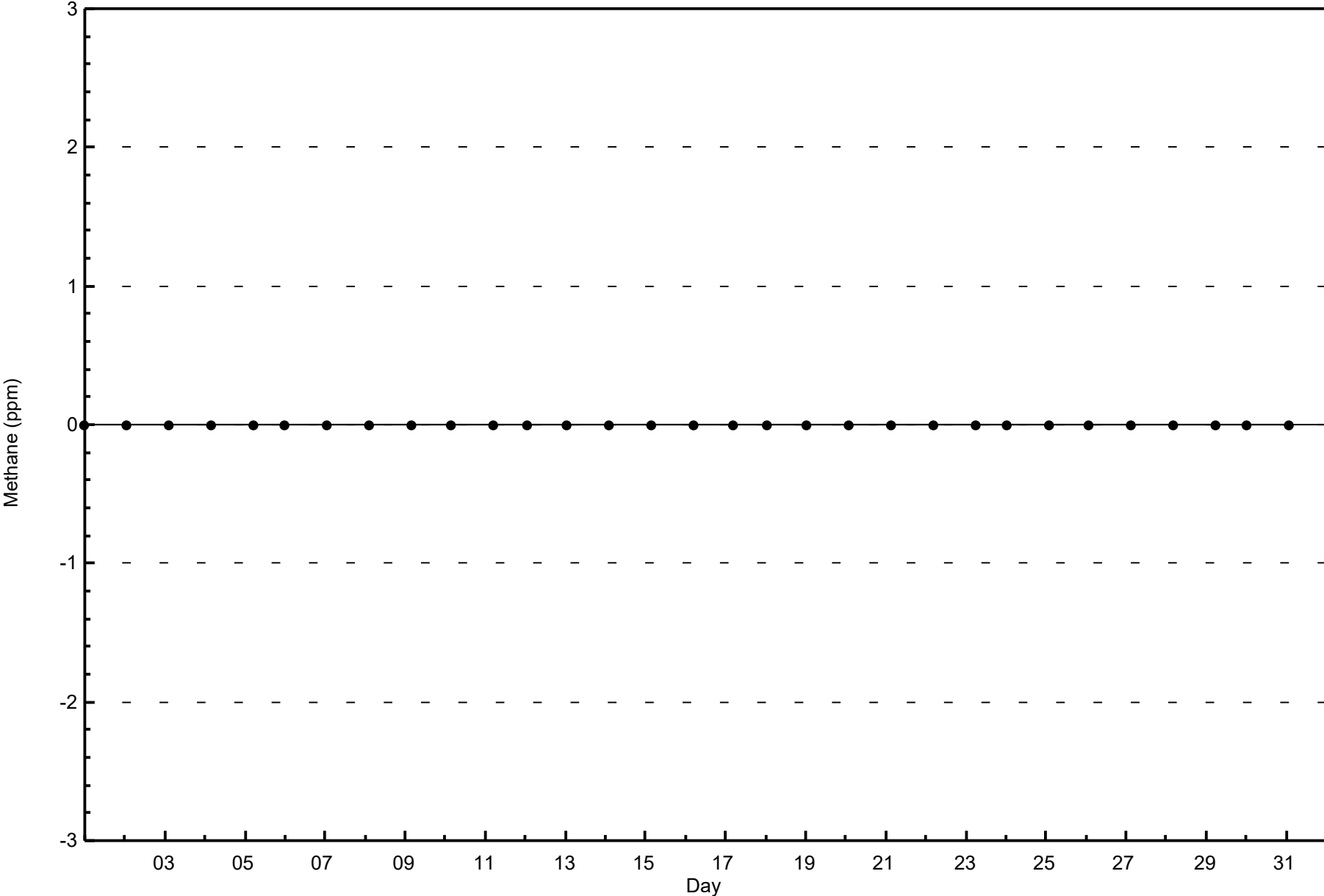
Total Number of Hours: 744

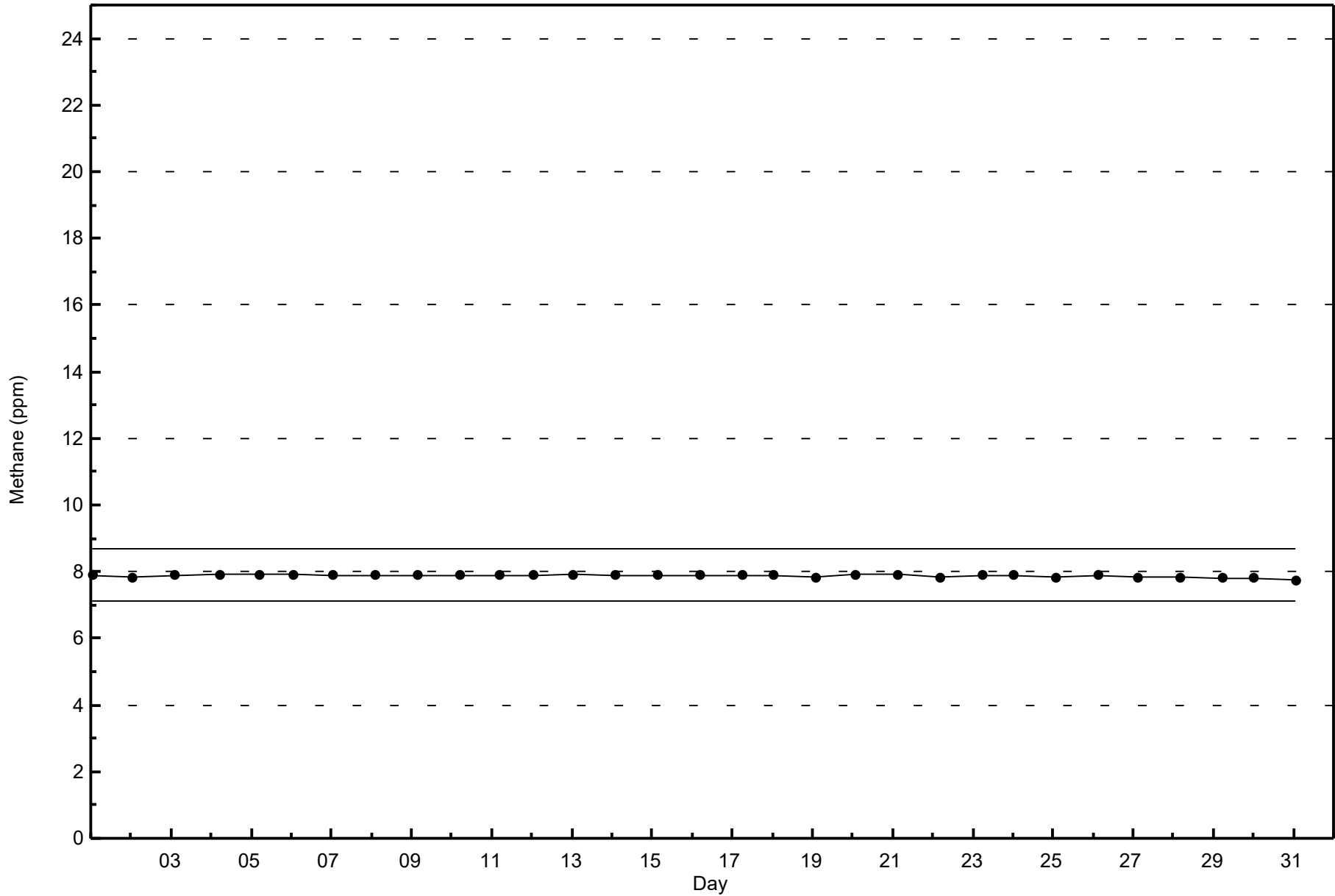


Wood Buffalo Environmental Association
Wind Rose May 2023

Methane (CH₄) - ppm
Ells River









Wood Buffalo Environmental Association
Summary of Hour Averages

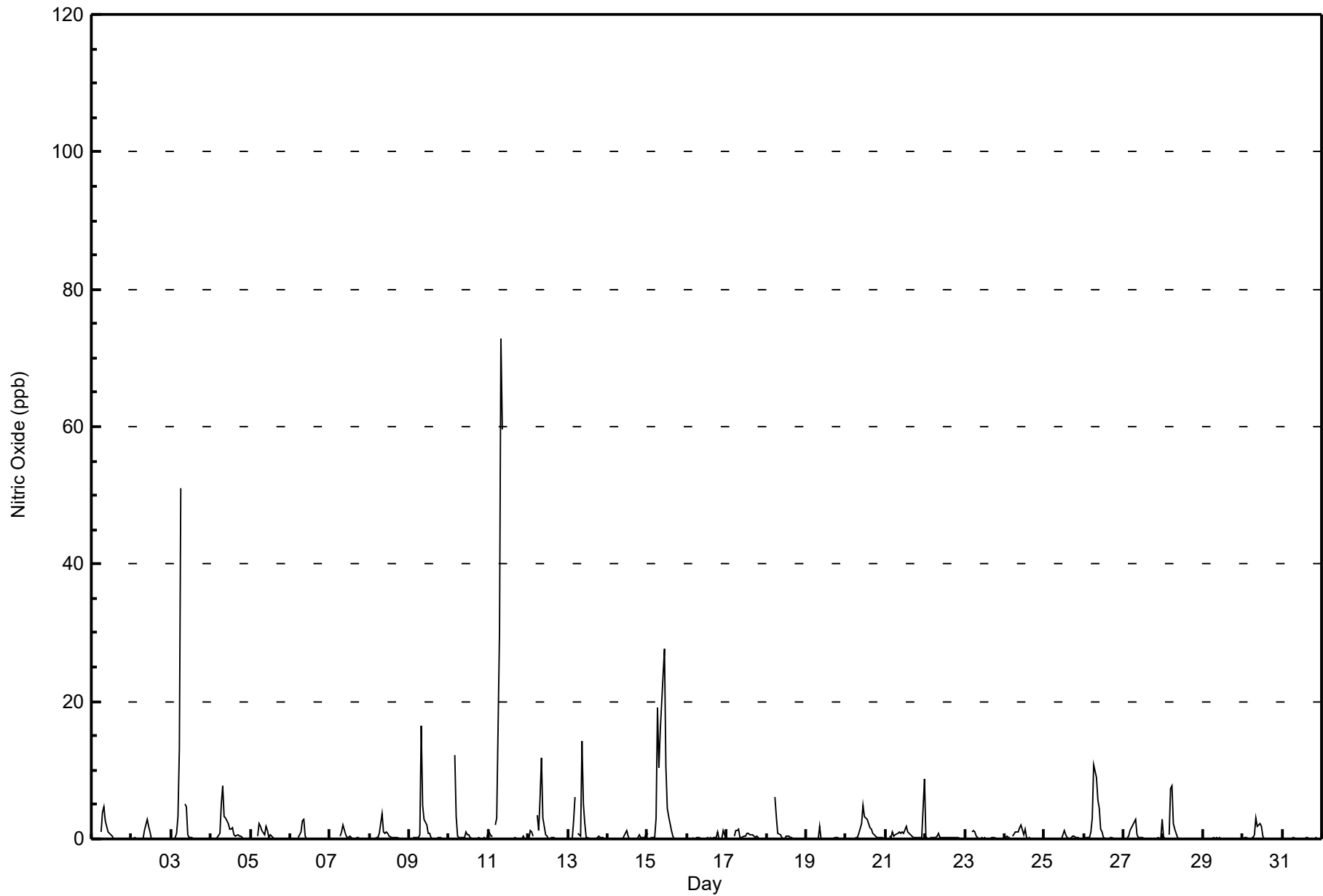
Nitric Oxide (NO) - ppb
Ells River - May 2023

Maximum Value: 72.9 ppb on May 11 08:00		Maximum Daily Average: 9.5 ppb on May 11		Hours in Service: 744																						
Minimum Value: 0.0 ppb on May 1 16:00		Minimum Daily Average: 0.0 ppb on May 29		Hours of Data: 707																						
Maximum Diurnal Average: 4.9 ppb at hour 8		Minimum Diurnal Average: 0.0 ppb at hour 8		Hours of Missing Data: 37																						
Monthly Average: 1.08 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.5 P ₉₀ = 1.9 P ₉₉ = 16.5		Hours of Calibration: 36																						
				Percent Operational Time: 99.9																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.1	0.1	0.1	0.1	Z	1.0	3.9	4.7	2.7	1.9	1.0	0.6	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	4.7
2-May	0.0	0.1	0.2	0.0	0.0	Z	0.1	0.1	1.3	2.9	1.9	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	2.9
3-May	Z	0.1	0.1	0.8	3.3	13.3	51.0	M	5.2	4.7	0.7	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	3.6	51.0
4-May	0.0	0.1	Z	0.1	0.1	0.8	5.1	7.8	3.2	3.1	2.2	1.4	1.4	1.7	0.6	0.5	0.7	0.5	0.4	0.3	0.0	0.0	0.0	0.0	1.3	7.8
5-May	0.0	0.1	0.1	Z	0.3	2.2	1.9	1.3	0.6	1.9	1.3	0.3	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.2
6-May	0.0	0.0	0.0	0.0	Z	0.2	1.0	2.6	2.9	0.5	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.9
7-May	0.0	0.0	0.0	0.0	0.0	Z	0.3	1.0	2.1	0.5	0.2	0.3	0.3	0.2	0.1	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.3	2.1
8-May	Z	0.1	0.1	0.1	0.1	0.1	0.9	3.6	1.1	0.7	1.0	0.7	0.5	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.4	3.6
9-May	0.1	Z	0.2	0.2	0.3	0.2	0.7	16.5	4.9	2.9	2.1	0.8	0.9	0.3	0.0	0.1	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.0	1.3	16.5
10-May	0.0	0.0	Z	12.1	3.2	0.5	0.2	0.2	0.2	0.3	1.0	0.7	0.6	0.2	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.9	12.1
11-May	1.3	0.5	0.3	Z	2.1	3.1	30.2	72.9	59.6	C	C	C	C	C	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.4	0.0	0.1	9.5	72.9
12-May	0.1	1.2	1.0	0.4	Z	3.4	1.3	6.0	11.7	3.1	0.6	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	11.7
13-May	0.0	0.1	0.0	2.6	6.1	Z	0.7	0.5	14.3	5.1	2.1	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.2	0.1	0.1	0.0	1.4	14.3
14-May	Z	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.3	1.2	0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.2	0.2	0.1	1.1	0.2	1.2
15-May	0.6	Z	0.1	0.1	0.1	3.0	19.2	10.4	15.9	23.9	27.7	10.6	4.5	3.3	1.2	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	5.3	27.7
16-May	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.2	0.1	1.0	0.1	0.0	0.0	1.3	0.0	0.2	1.3
17-May	0.1	0.0	0.0	Z	0.4	1.3	1.3	1.4	0.2	0.2	0.5	0.5	0.7	0.8	0.7	0.7	0.4	0.3	0.4	0.1	0.1	0.0	0.0	0.0	0.4	1.4
18-May	0.0	0.1	0.0	0.1	Z	6.2	3.3	0.7	0.5	0.2	0.0	0.1	0.4	0.3	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	6.2
19-May	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.1	1.8	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	1.8
20-May	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.8	2.3	4.8	3.2	3.1	2.9	1.7	1.4	0.7	0.5	0.4	0.2	0.2	0.1	0.1	0.1	1.0	4.8
21-May	0.1	Z	0.4	0.2	0.9	0.4	0.5	0.8	1.0	0.8	1.0	0.9	1.8	0.9	0.7	0.6	0.4	0.3	0.2	0.1	0.1	0.1	0.2	8.8	0.9	8.8
22-May	0.2	0.2	Z	0.2	0.2	0.2	0.1	0.4	0.8	0.2	0.2	0.2	0.1	0.2	0.3	0.1	0.2	0.2	0.1	0.2	0.2	0.0	0.1	0.1	0.2	0.8
23-May	0.0	0.0	0.0	Z	1.1	1.2	0.9	0.3	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	1.2
24-May	0.0	0.3	0.2	0.1	Z	0.4	1.1	1.0	1.0	1.6	2.1	0.6	1.4	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.1
25-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.0	0.0	0.0	0.6	1.3	0.6	0.3	0.1	0.2	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.2	1.3
26-May	Z	0.1	0.1	0.1	1.0	3.0	10.7	9.0	5.7	4.4	1.4	1.0	0.2	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.1	1.6	10.7
27-May	0.1	Z	0.2	0.3	1.2	2.0	2.4	2.8	0.7	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	2.8	0.6	2.8
28-May	0.3	0.1	Z	0.5	7.3	7.7	2.2	1.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	7.7
29-May	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2
30-May	0.1	0.1	0.1	0.1	Z	0.2	0.2	0.6	3.1	1.8	2.2	1.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	3.1
31-May	0.0	0.0	0.0	0.0	0.0	Z	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.3
		0.1	0.1	0.1	0.7	1.1	2.0	4.5	4.9	4.6	2.1	1.8	0.9	0.7	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.5	Diurnal Average
		1.3	1.2	1.0	12.1	7.3	13.3	51.0	72.9	59.6	23.9	27.7	10.6	4.5	3.3	1.7	1.4	0.7	0.5	1.0	0.6	0.2	0.4	1.3	8.8	Diurnal Maximum
Z - zerospan		C - Calibration				M - Maintenance																				



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Ells River - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Ells River - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	701	99.15	99.15
21 - 40	3	0.42	99.58
41 - 80	3	0.42	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Ells River - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	28	67	33	15	15	11	51	89	127	76	33	37	24	36	27	27	696
21 - 40	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3
41 - 80	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	30	69	33	15	15	11	51	89	128	76	33	37	24	37	27	27	702

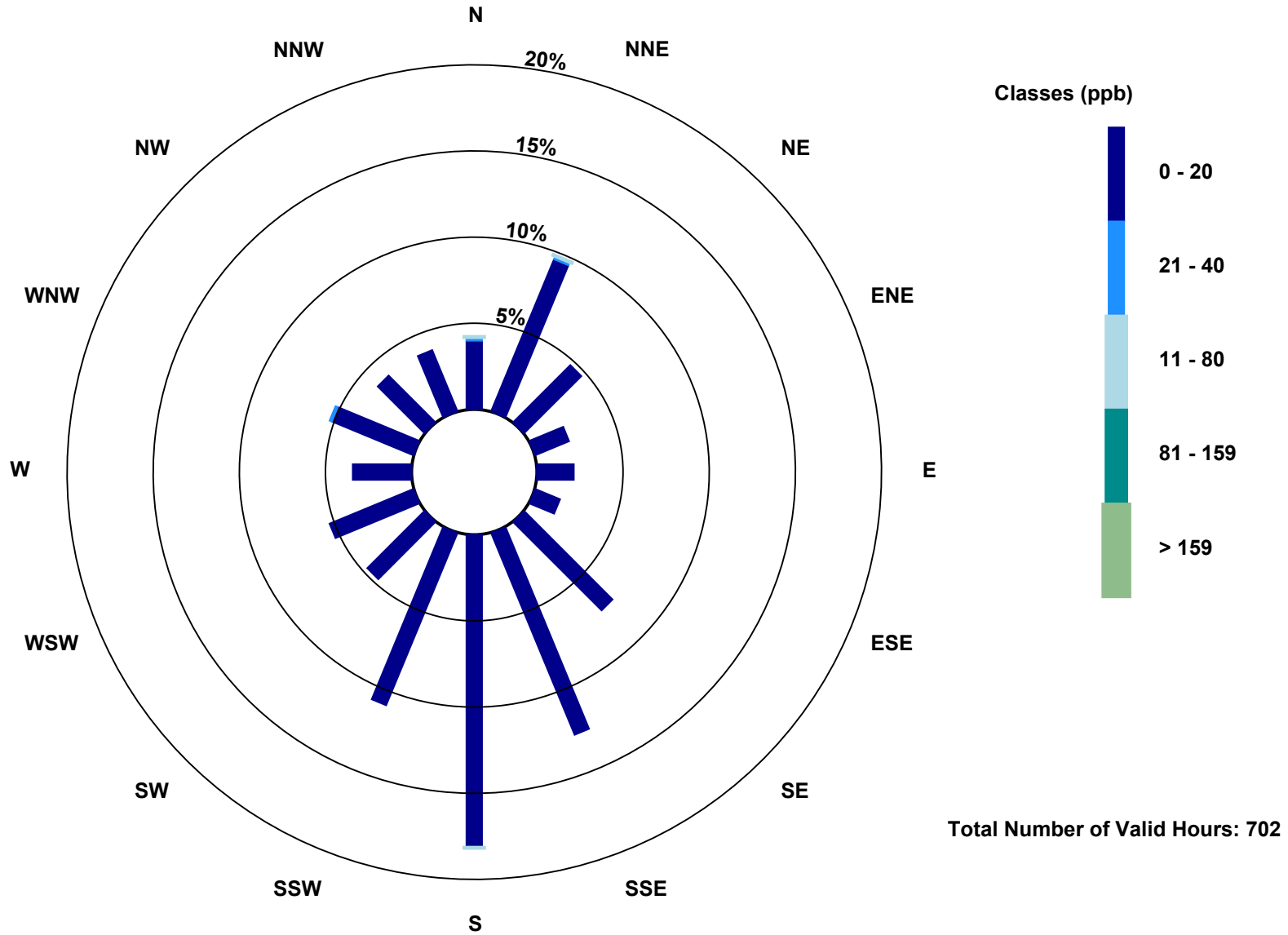
Total Number of Valid Hours: 702

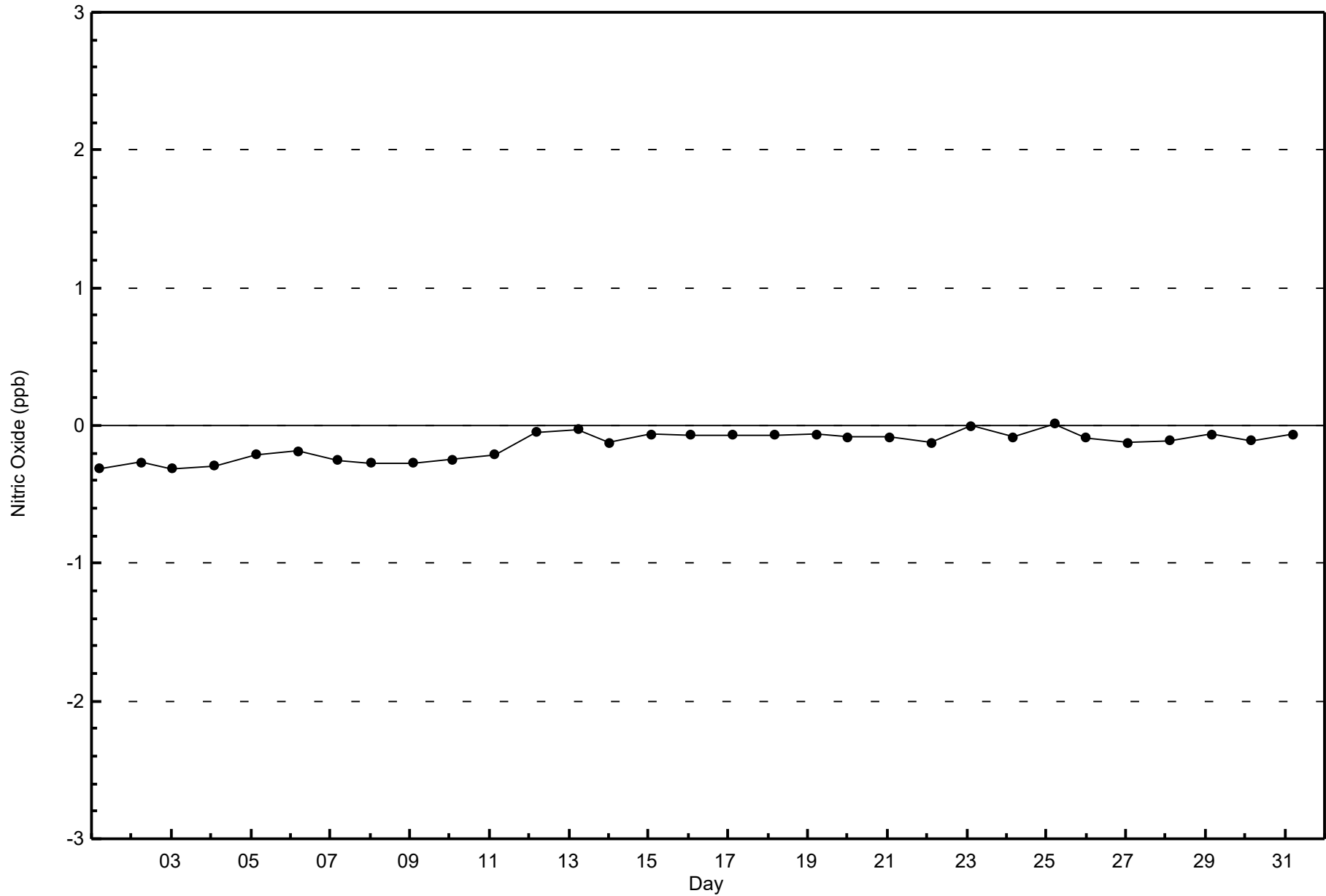
Total Number of Hours: 744

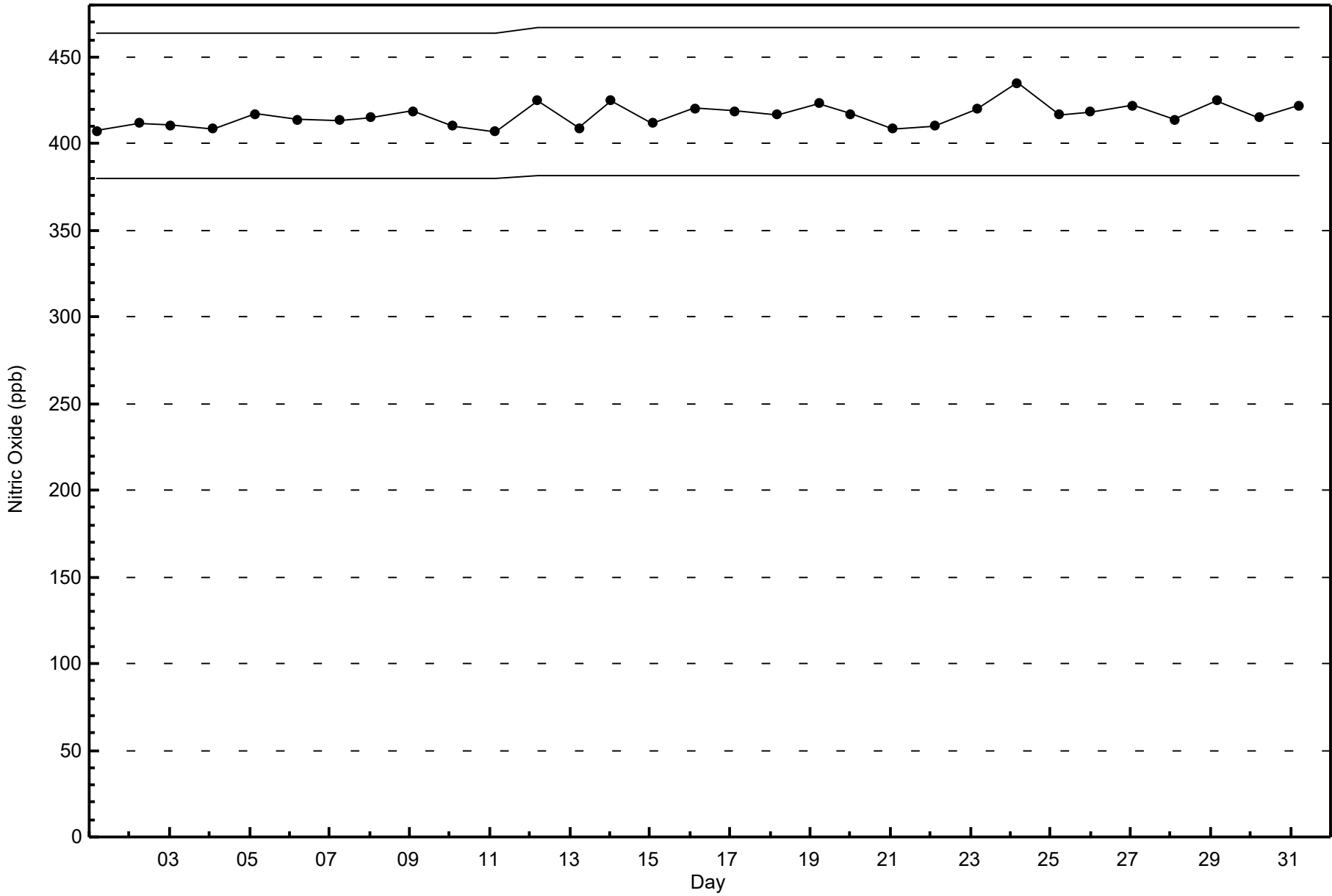


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Ells River







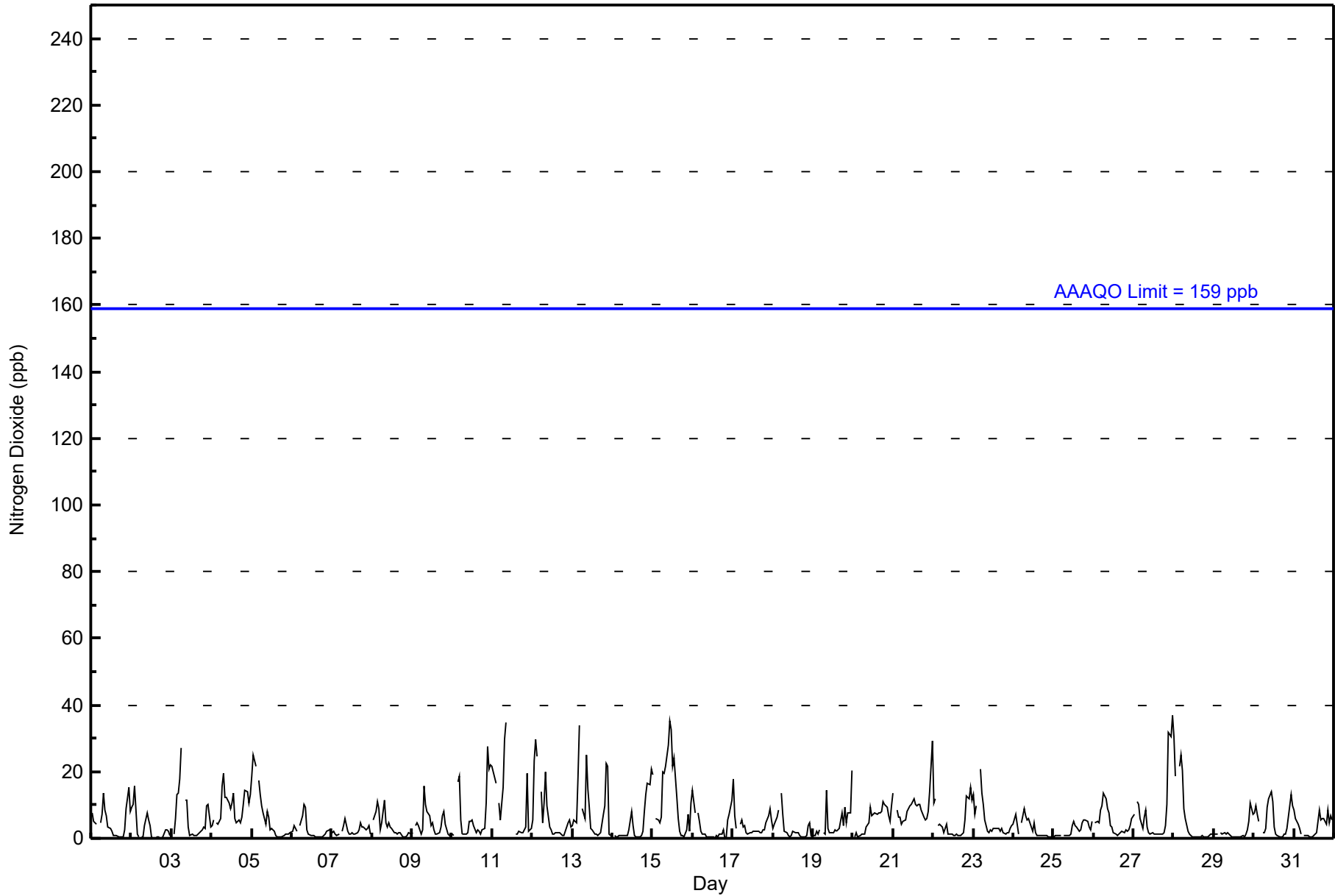


Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 744																	744					
Maximum Value: 36.8 ppb on May 28 00:00		Maximum Daily Average: 12.6 ppb on May 15																	Hours of Data: 707							
Minimum Value: 0.1 ppb on May 2 18:00		Minimum Daily Average: 1.9 ppb on May 29																	Hours of Missing Data: 37							
Maximum Diurnal Average: 8.8 ppb at hour 1		Minimum Diurnal Average: 2.1 ppb at hour 17																	Hours of Calibration: 36							
Monthly Average: 5.45 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.6 Q ₁ = 1.2 Median = 2.9 Q ₃ = 7.5 P ₉₀ = 13.4 P ₉₉ = 30.5																	Percent Operational Time: 99.9							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	7.7	5.2	4.7	4.4	Z	4.5	7.3	13.5	8.6	6.9	3.6	2.8	2.3	0.9	0.9	0.7	0.6	0.6	0.6	0.6	2.7	8.8	15.2	8.0	4.8	15.2
2-May	9.2	10.2	15.8	1.2	0.6	Z	0.5	0.6	4.0	7.6	5.6	4.0	0.3	0.2	0.2	0.5	0.4	0.1	0.1	0.6	2.4	2.4	2.2	0.9	3.0	15.8
3-May	Z	1.1	5.9	13.1	13.5	17.8	27.2	M	11.5	11.6	3.2	1.0	1.3	0.8	0.8	1.0	1.2	1.6	2.7	3.5	3.1	9.8	10.3	3.5	6.6	27.2
4-May	4.0	5.7	Z	4.8	4.4	5.9	15.6	19.7	12.3	12.4	10.7	8.7	10.4	13.6	6.0	4.8	5.4	4.6	6.2	10.0	14.2	14.0	10.7	13.2	9.4	19.7
5-May	18.5	24.8	21.8	Z	17.5	13.0	9.8	7.7	4.2	8.0	6.3	2.7	3.1	2.1	0.7	0.5	0.6	0.5	0.5	0.7	1.1	1.1	1.3	1.6	6.4	24.8
6-May	2.0	3.7	3.1	2.2	Z	4.0	6.9	10.1	9.5	2.7	1.2	0.9	0.9	0.7	0.6	0.5	0.5	0.5	0.5	0.9	1.2	2.0	2.6	2.1	2.6	10.1
7-May	1.8	2.2	1.2	1.0	1.1	Z	2.0	3.8	6.1	2.2	1.3	1.2	1.7	1.2	1.1	1.6	2.5	4.8	3.3	3.3	2.7	2.8	3.7	1.4	2.3	6.1
8-May	Z	5.3	7.9	11.1	8.7	2.7	4.7	11.5	4.5	3.5	4.7	3.6	2.9	1.9	1.7	1.3	1.6	1.7	0.6	0.6	0.6	0.8	1.6	1.1	3.7	11.5
9-May	1.7	Z	3.7	4.6	3.8	1.4	2.6	15.6	10.0	8.2	6.6	4.0	4.7	2.4	1.4	1.3	1.6	3.2	6.6	7.9	4.1	1.1	0.9	0.8	4.3	15.6
10-May	1.4	0.8	Z	16.9	18.8	5.5	1.4	1.1	1.1	1.6	5.0	5.2	5.6	3.9	1.7	2.6	2.2	1.2	2.4	3.1	10.6	27.6	20.9	22.1	7.1	27.6
11-May	21.5	18.2	16.5	Z	10.6	5.6	15.3	29.8	34.8	C	C	C	C	C	1.2	1.4	2.3	1.6	1.8	2.4	3.4	19.5	2.2	2.9	10.6	34.8
12-May	5.5	23.3	29.7	24.4	Z	13.9	4.8	10.4	20.1	9.6	3.6	2.4	1.2	1.2	1.6	1.9	1.6	1.2	0.8	0.8	3.2	4.8	5.5	3.5	7.6	29.7
13-May	3.7	5.6	4.5	18.2	34.0	Z	9.0	5.8	25.0	14.8	9.3	2.8	2.5	1.3	1.1	1.0	1.1	1.7	7.2	9.7	22.3	21.6	1.2	0.8	8.9	34.0
14-May	Z	0.7	0.6	0.6	0.8	0.9	0.7	0.8	0.9	1.0	2.5	8.0	3.7	0.7	0.6	0.5	0.5	0.8	2.3	8.1	13.2	16.7	16.1	20.7	4.4	20.7
15-May	19.2	Z	6.1	5.5	4.6	6.5	19.9	19.3	21.5	27.9	35.1	32.6	21.6	24.3	12.2	6.1	2.3	1.0	0.7	0.5	2.5	7.3	2.2	10.8	12.6	35.1
16-May	14.5	7.7	Z	7.7	5.2	2.2	1.3	1.2	0.6	0.4	0.5	0.4	0.3	0.2	0.8	0.6	1.2	1.4	2.7	0.2	0.3	5.3	7.4	11.4	3.2	14.5
17-May	17.7	6.6	2.8	Z	4.3	5.5	3.6	3.7	1.6	1.2	1.8	1.8	2.1	2.2	2.2	2.2	1.9	1.6	2.4	2.5	4.8	6.8	8.7	5.5	4.1	17.7
18-May	3.1	4.1	6.3	8.6	Z	13.4	7.1	2.0	1.6	0.8	0.6	0.9	2.0	1.9	1.9	1.8	1.0	0.6	0.6	0.6	0.7	3.7	4.5	0.7	3.0	13.4
19-May	0.7	0.9	2.3	1.1	2.4	Z	1.6	1.3	14.2	2.8	1.5	1.6	1.9	2.6	2.3	2.4	3.0	7.5	3.8	9.2	4.8	7.5	7.6	20.4	4.5	20.4
20-May	Z	0.6	1.7	0.4	0.9	1.2	1.1	1.4	3.3	4.8	9.3	6.8	7.4	7.6	7.0	7.5	7.7	8.2	11.1	10.2	9.4	6.8	5.1	9.7	5.6	11.1
21-May	13.6	Z	8.5	6.4	6.3	4.4	5.1	5.5	8.2	9.1	9.9	10.1	12.0	10.2	9.6	10.2	10.0	8.4	6.3	5.5	6.1	7.9	13.8	29.1	9.4	29.1
22-May	10.5	12.0	Z	3.8	4.4	3.6	1.8	2.8	4.1	1.4	1.4	1.1	0.8	0.7	1.1	0.7	0.9	1.2	1.6	5.5	12.5	11.7	15.1	11.3	4.8	15.1
23-May	13.2	7.0	9.8	Z	20.7	13.7	10.0	5.3	2.1	1.8	2.7	2.2	3.1	2.9	3.1	2.8	2.3	2.9	1.9	1.3	1.6	1.9	3.1	4.0	5.2	20.7
24-May	4.4	7.1	4.3	1.2	Z	4.6	9.0	6.9	5.6	6.1	4.8	2.0	4.5	1.9	0.9	1.0	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	3.0	9.0
25-May	0.6	0.7	0.7	0.7	0.8	Z	0.9	0.8	0.9	1.0	1.1	3.7	5.2	3.8	3.2	2.2	2.4	4.7	5.4	5.4	5.0	3.5	2.6	5.2	2.6	5.4
26-May	Z	4.7	4.9	4.7	8.4	9.9	13.5	11.8	8.8	7.7	3.9	3.6	1.8	1.2	1.0	1.2	1.8	2.1	1.5	2.6	2.3	2.5	3.7	6.0	4.8	13.5
27-May	7.1	Z	11.2	10.0	5.9	3.0	6.4	8.4	3.3	1.6	1.4	1.6	1.2	1.2	1.1	1.2	1.2	1.3	1.5	3.7	10.1	31.8	30.7	36.8	7.9	36.8
28-May	30.5	18.7	Z	21.4	25.0	20.3	8.8	5.8	2.2	1.1	1.0	0.5	0.3	0.3	0.3	0.3	0.3	0.7	0.6	0.4	0.6	1.0	1.3	1.4	6.2	30.5
29-May	1.4	1.3	1.4	Z	1.5	1.4	1.5	1.3	1.5	1.3	0.8	0.4	0.4	0.3	0.3	0.3	0.6	0.7	0.6	1.1	2.4	5.1	10.8	7.1	1.9	10.8
30-May	7.7	9.6	7.1	5.2	Z	1.7	1.5	2.8	9.4	11.8	13.9	11.2	3.3	1.4	0.7	0.5	0.5	0.5	1.2	1.2	2.9	9.7	13.0	9.9	5.5	13.9
31-May	8.3	5.9	4.3	3.0	1.2	Z	0.9	0.9	0.7	0.6	0.5	0.5	0.9	1.9	5.2	8.5	5.5	5.9	5.9	4.4	8.6	4.6	6.6	5.5	3.9	8.6
8.8 7.2 7.2 7.0 8.2 6.7 6.5 7.1 7.8 5.7 5.1 4.3 3.6 3.2 2.3 2.2 2.1 2.4 2.7 3.5 5.2 8.1 7.5 8.3																								Diurnal Average		
30.5 24.8 29.7 24.4 34.0 20.3 27.2 29.8 34.8 27.9 35.1 32.6 21.6 24.3 12.2 10.2 10.0 8.4 11.1 10.2 22.3 31.8 30.7 36.8																								Diurnal Maximum		
Z - zerospan C - Calibration M - Maintenance																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																										



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Ells River - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Ells River - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	676	95.62	95.62
21 - 40	31	4.38	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Ells River - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	25	65	32	15	15	10	49	88	121	71	33	37	23	34	26	27	671
21 - 40	5	4	1	0	0	1	2	1	7	5	0	0	1	3	1	0	31
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	30	69	33	15	15	11	51	89	128	76	33	37	24	37	27	27	702

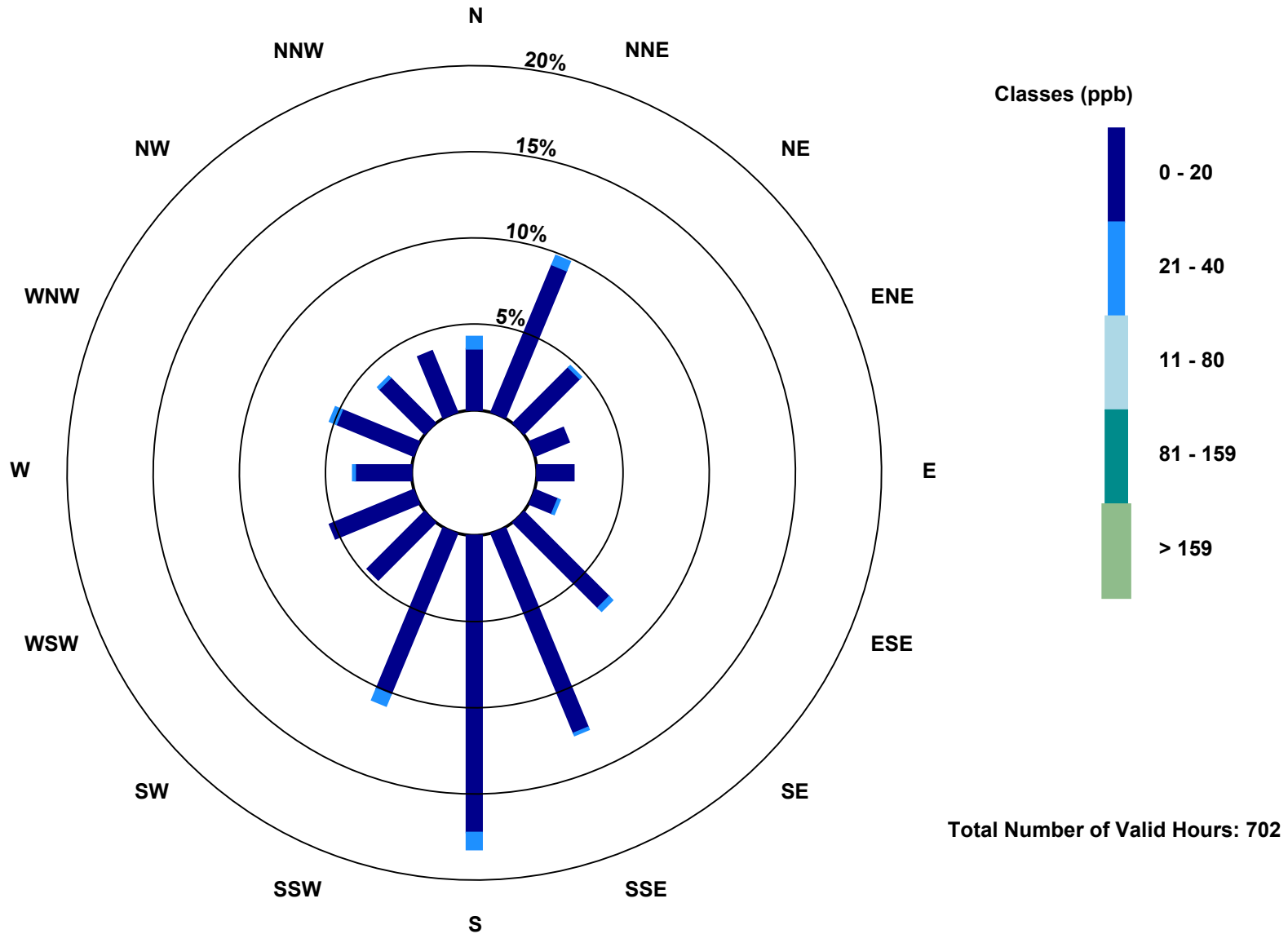
Total Number of Valid Hours: 702

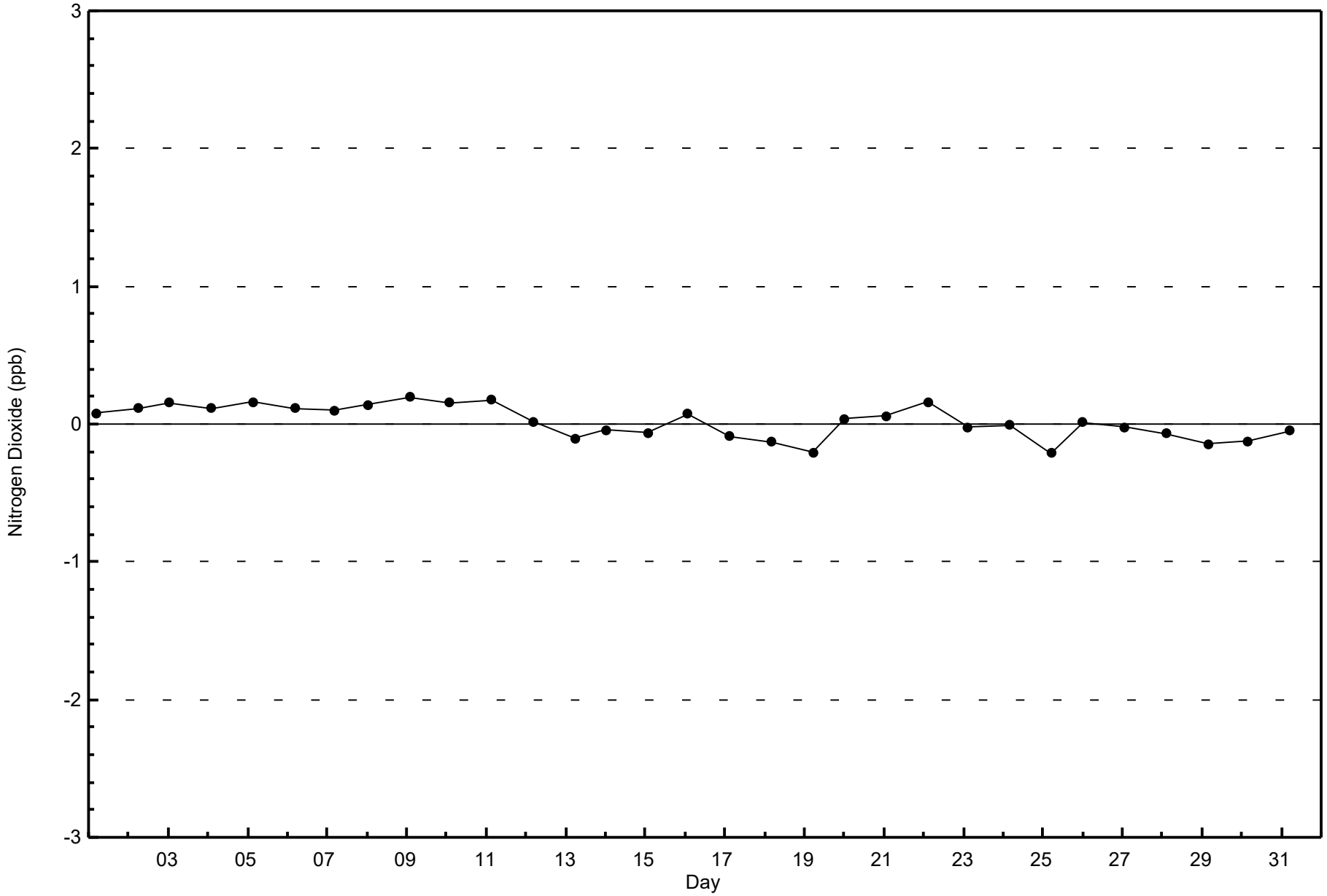
Total Number of Hours: 744

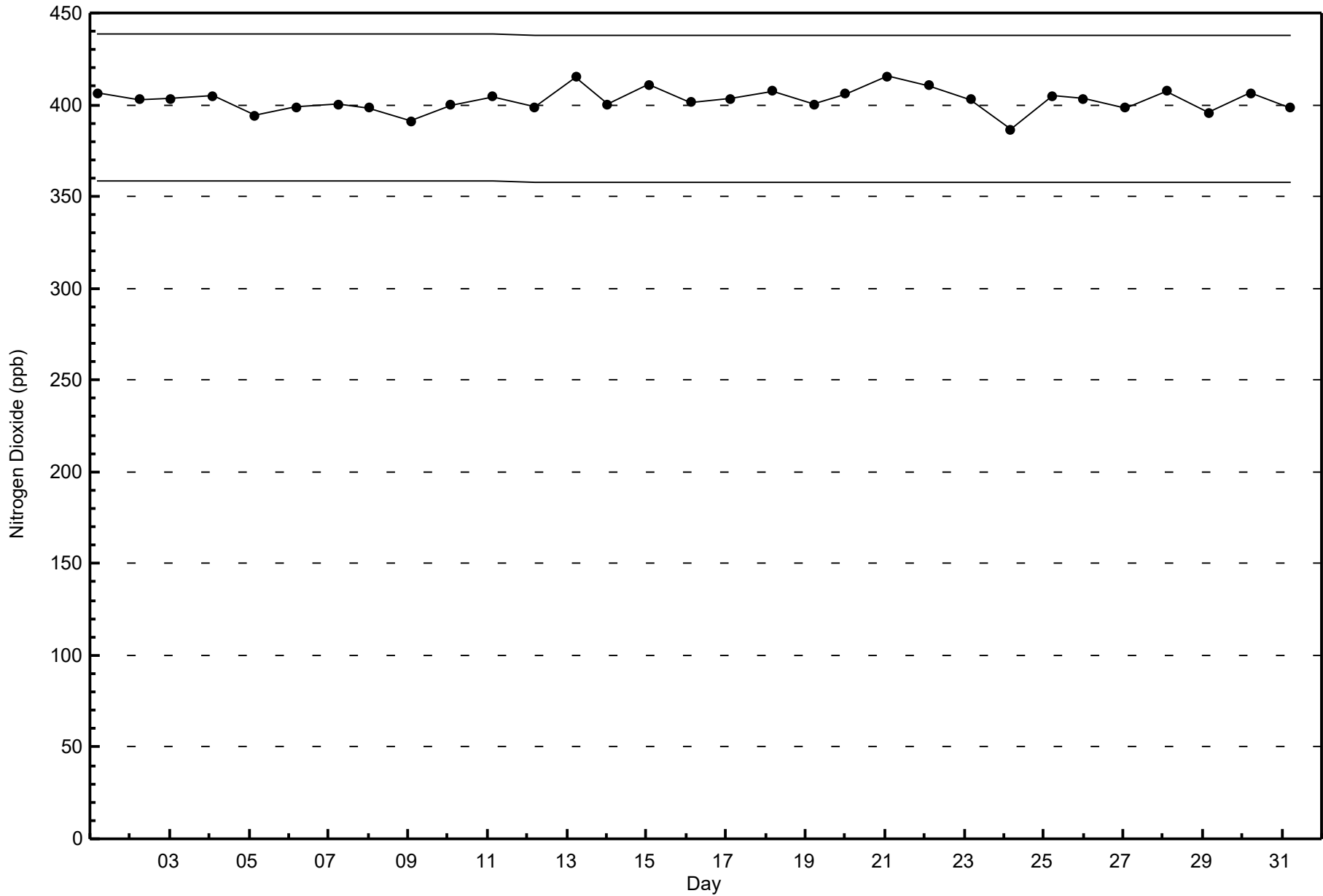


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Ells River





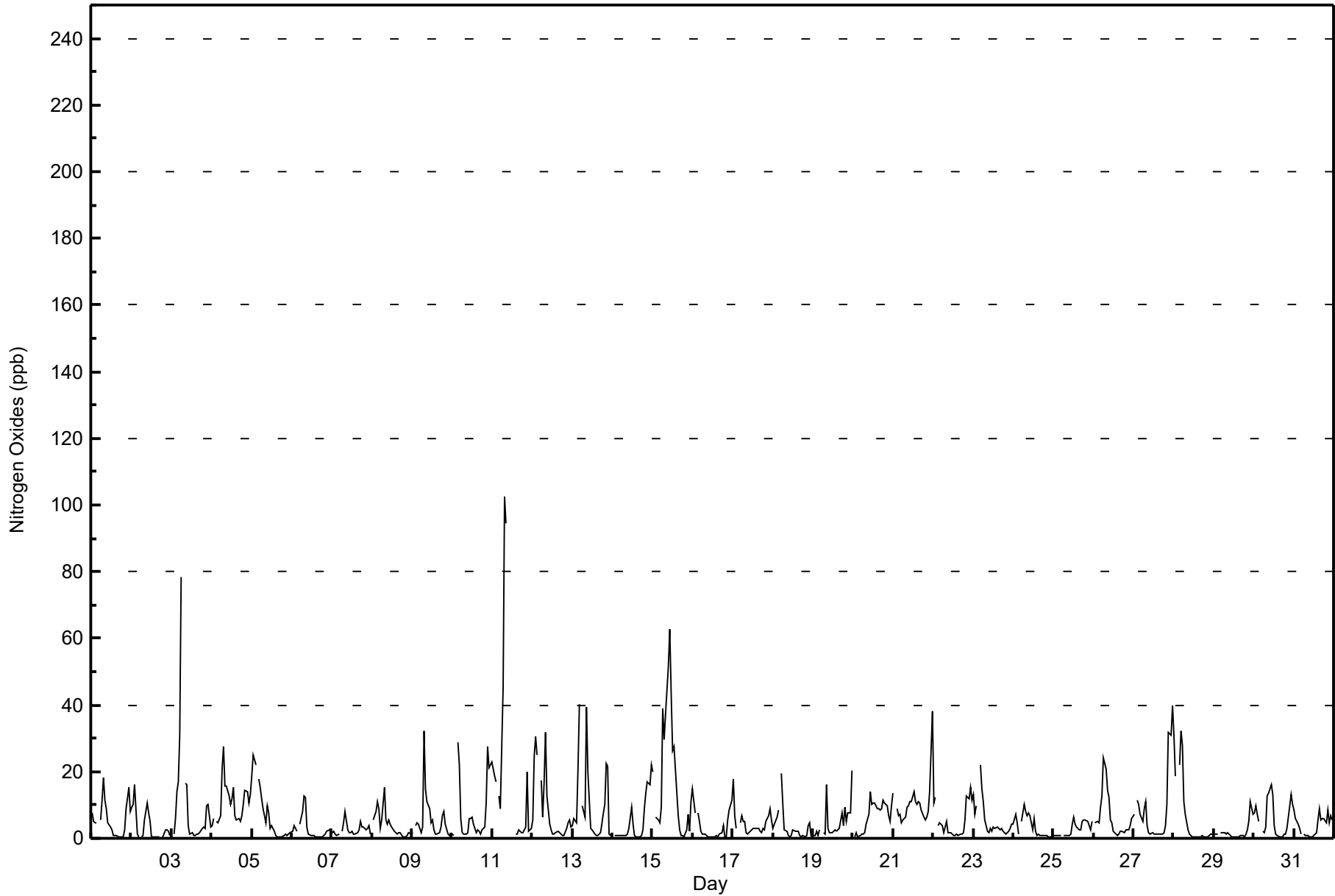




Wood Buffalo Environmental Association
Summary of Hour Averages

Nitrogen Oxides (NO_x) - ppb
Ells River - May 2023

Maximum Value: 102.7 ppb on May 11 08:00																						Maximum Daily Average: 20.1 ppb on May 11																						Hours in Service: 744	
Minimum Value: 0.1 ppb on May 2 19:00																						Minimum Daily Average: 1.9 ppb on May 29																						Hours of Data: 707	
Maximum Diurnal Average: 12.4 ppb at hour 9																						Minimum Diurnal Average: 2.2 ppb at hour 17																						Hours of Missing Data: 37	
Monthly Average: 6.52 ppb																						Percentiles: P ₁ = 0.3 P ₁₀ = 0.7 Q ₁ = 1.3 Median = 3.2 Q ₃ = 8.4 P ₉₀ = 15.2 P ₉₉ = 40.1																						Hours of Calibration: 36	
																																												Percent Operational Time: 99.9	
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																					
1-May	7.8	5.3	4.8	4.5	Z	5.5	11.2	18.2	11.3	8.8	4.6	3.4	2.7	1.0	0.9	0.7	0.6	0.6	0.6	0.6	2.7	8.8	15.2	8.0	5.6	18.2																			
2-May	9.2	10.3	16.0	1.2	0.6	Z	0.6	0.7	5.3	10.5	7.5	5.0	0.3	0.2	0.2	0.5	0.4	0.1	0.1	0.6	2.4	2.4	2.2	1.0	3.4	16.0																			
3-May	Z	1.2	6.0	13.9	16.8	31.1	78.2	M	16.7	16.3	3.9	1.1	1.5	0.9	0.9	1.1	1.2	1.7	2.8	3.5	3.1	9.8	10.3	3.5	10.2	78.2																			
4-May	4.0	5.8	Z	4.9	4.5	6.7	20.7	27.5	15.5	15.5	12.9	10.1	11.8	15.3	6.6	5.3	6.1	5.1	6.6	10.3	14.2	14.0	10.7	13.2	10.8	27.5																			
5-May	18.5	24.9	21.9	Z	17.8	15.2	11.7	9.0	4.8	9.9	7.6	3.0	3.7	2.3	0.7	0.5	0.6	0.5	0.5	0.7	1.1	1.1	1.3	1.6	6.9	24.9																			
6-May	2.0	3.7	3.1	2.2	Z	4.2	7.9	12.7	12.4	3.2	1.3	1.0	1.0	0.7	0.6	0.5	0.5	0.5	0.5	0.9	1.2	2.0	2.6	2.1	2.9	12.7																			
7-May	1.8	2.2	1.2	1.0	1.1	Z	2.3	4.8	8.2	2.7	1.5	1.5	2.0	1.4	1.2	1.7	2.7	5.0	3.4	3.3	2.7	2.8	3.7	1.4	2.6	8.2																			
8-May	Z	5.4	8.0	11.2	8.8	2.8	5.6	15.1	5.6	4.2	5.7	4.3	3.4	2.1	1.8	1.4	1.7	1.8	0.6	0.6	0.6	0.8	1.7	1.2	4.1	15.1																			
9-May	1.8	Z	3.9	4.8	4.1	1.6	3.3	32.1	14.9	11.1	8.7	4.8	5.6	2.7	1.4	1.4	1.6	3.4	6.8	8.1	4.1	1.1	0.9	0.8	5.6	32.1																			
10-May	1.4	0.8	Z	29.0	22.0	6.0	1.6	1.3	1.3	1.9	6.0	5.9	6.2	4.1	1.7	2.7	2.3	1.2	2.5	3.2	10.7	27.7	21.0	22.2	7.9	29.0																			
11-May	22.8	18.7	16.8	Z	12.7	8.7	45.5	102.7	94.4	C	C	C	C	C	1.2	1.5	2.4	1.7	1.8	2.4	3.4	19.9	2.2	3.0	20.1	102.7																			
12-May	5.6	24.5	30.7	24.8	Z	17.3	6.1	16.4	31.8	12.7	4.2	2.7	1.3	1.3	1.7	2.0	1.6	1.2	0.8	0.8	3.2	4.8	5.5	3.5	8.9	31.8																			
13-May	3.7	5.7	4.5	20.8	40.1	Z	9.7	6.3	39.3	19.9	11.4	3.0	2.6	1.3	1.1	1.0	1.1	1.8	7.5	10.0	22.5	21.7	1.3	0.8	10.3	40.1																			
14-May	Z	0.8	0.7	0.7	0.8	1.0	0.8	0.9	1.0	1.1	2.8	9.2	4.1	0.7	0.6	0.5	0.5	0.8	2.5	8.7	13.4	16.9	16.2	21.8	4.6	21.8																			
15-May	19.8	Z	6.2	5.6	4.7	9.5	39.1	29.7	37.4	51.8	62.8	43.2	26.2	27.6	13.4	6.6	2.3	1.0	0.7	0.5	2.5	7.3	2.2	10.9	17.9	62.8																			
16-May	14.6	7.8	Z	7.8	5.3	2.3	1.4	1.3	0.7	0.4	0.5	0.4	0.4	0.3	0.9	0.6	1.4	1.5	3.7	0.3	0.3	5.3	8.7	11.4	3.4	14.6																			
17-May	17.8	6.6	2.8	Z	4.7	6.8	4.9	5.1	1.8	1.4	2.3	2.3	2.8	3.0	2.9	2.9	2.3	1.9	2.8	2.6	4.9	6.8	8.7	5.5	4.5	17.8																			
18-May	3.1	4.2	6.3	8.7	Z	19.6	10.4	2.7	2.1	1.0	0.6	1.0	2.4	2.2	2.2	2.0	1.0	0.6	0.6	0.6	0.7	3.7	4.5	0.7	3.5	19.6																			
19-May	0.7	0.9	2.3	1.1	2.4	Z	1.7	1.4	16.0	2.9	1.6	1.6	1.9	2.6	2.3	2.4	3.1	7.7	3.9	9.4	4.9	7.6	7.7	20.5	4.6	20.5																			
20-May	Z	0.6	1.7	0.4	0.9	1.3	1.2	1.6	4.1	7.1	14.1	10.0	10.5	10.5	8.7	8.9	8.4	8.7	11.5	10.4	9.6	6.9	5.2	9.8	6.6	14.1																			
21-May	13.7	Z	8.9	6.6	7.2	4.8	5.6	6.3	9.2	9.9	10.9	11.0	13.8	11.1	10.3	10.8	10.4	8.7	6.5	5.6	6.2	8.0	14.0	37.9	10.3	37.9																			
22-May	10.7	12.2	Z	4.0	4.6	3.8	1.9	3.2	4.9	1.6	1.6	1.3	0.9	0.9	1.4	0.8	1.1	1.4	1.7	5.7	12.7	11.7	15.2	11.4	5.0	15.2																			
23-May	13.2	7.0	9.8	Z	21.8	14.9	10.9	5.6	2.2	1.8	2.8	2.3	3.2	2.9	3.2	2.9	2.4	3.1	2.0	1.4	1.7	2.0	3.2	4.1	5.4	21.8																			
24-May	4.4	7.4	4.5	1.3	Z	5.0	10.1	7.9	6.6	7.7	6.9	2.6	5.9	2.2	1.0	1.1	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	3.5	10.1																			
25-May	0.6	0.7	0.7	0.7	0.8	Z	0.9	0.9	0.9	1.0	1.1	4.3	6.5	4.4	3.5	2.3	2.6	5.1	5.7	5.6	5.1	3.6	2.7	5.3	2.8	6.5																			
26-May	Z	4.8	5.0	4.8	9.4	12.9	24.2	20.8	14.5	12.1	5.3	4.6	2.0	1.2	1.0	1.2	1.9	2.3	1.6	2.7	2.3	2.5	3.7	6.1	6.4	24.2																			
27-May	7.2	Z	11.4	10.3	7.1	5.0	8.8	11.2	4.0	1.8	1.5	1.7	1.3	1.3	1.2	1.3	1.3	1.4	1.5	3.8	10.2	31.9	30.8	39.6	8.5	39.6																			
28-May	30.8	18.8	Z	21.9	32.3	28.0	11.0	7.3	2.4	1.1	1.0	0.5	0.3	0.3	0.3	0.3	0.3	0.7	0.6	0.4	0.6	1.0	1.3	1.4	7.1	32.3																			
29-May	1.4	1.3	1.4	Z	1.6	1.5	1.6	1.4	1.6	1.4	1.0	0.4	0.4	0.3	0.3	0.3	0.6	0.7	0.6	1.1	2.4	5.1	10.9	7.2	1.9	10.9																			
30-May	7.8	9.7	7.2	5.3	Z	1.9	1.7	3.4	12.5	13.6	16.1	13.0	3.8	1.4	0.7	0.5	0.5	0.5	1.2	1.2	2.9	9.7	13.0	10.0	6.0	16.1																			
31-May	8.3	5.9	4.3	3.0	1.2	Z	1.1	1.0	0.8	0.6	0.5	0.5	0.9	1.9	5.3	8.8	5.6	6.0	6.0	4.4	8.7	4.7	6.7	5.6	4.0	8.8																			
9.0 7.3 7.3 7.7 9.3 8.7 11.0 11.9 12.4 7.8 6.9 5.2 4.3 3.6 2.5 2.4 2.2 2.5 2.9 3.6 5.2 8.1 7.5 8.8																								Diurnal Average																					
30.8 24.9 30.7 29.0 40.1 31.1 78.2 102.7 94.4 51.8 62.8 43.2 26.2 27.6 13.4 10.8 10.4 8.7 11.5 10.4 22.5 31.9 30.8 39.6																								Diurnal Maximum																					
Z - zerospan C - Calibration M - Maintenance																																													





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Ells River - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	661	93.49	93.49
21 - 40	39	5.52	99.01
41 - 80	5	0.71	99.72
81 - 159	2	0.28	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Ells River - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	23	65	32	15	15	10	48	87	117	67	33	37	23	33	25	26	656
21 - 40	5	2	1	0	0	1	2	2	10	9	0	0	1	3	2	1	39
11 - 80	1	1	0	0	0	0	1	0	1	0	0	0	0	1	0	0	5
81 - 159	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	30	69	33	15	15	11	51	89	128	76	33	37	24	37	27	27	702

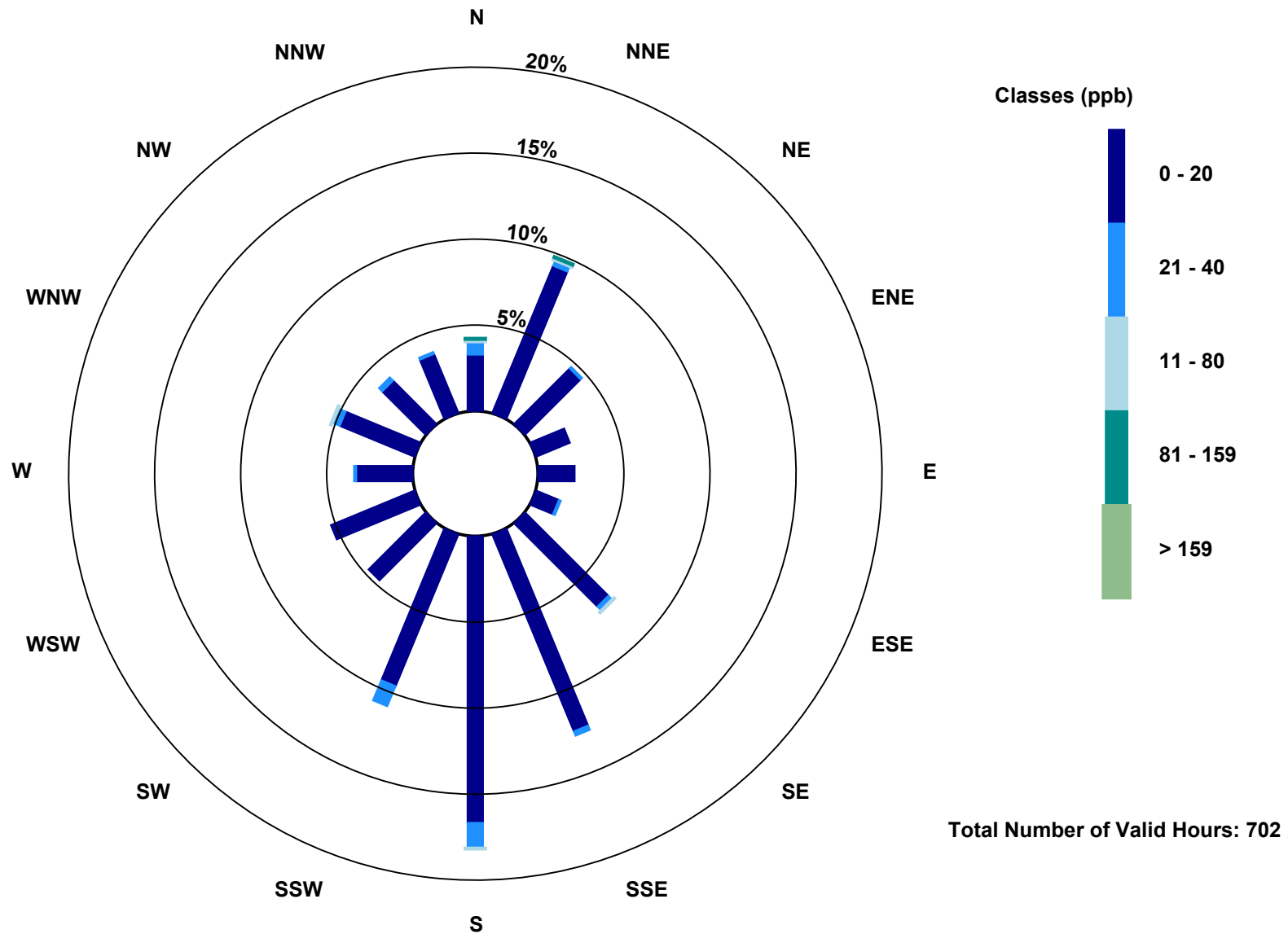
Total Number of Valid Hours: 702

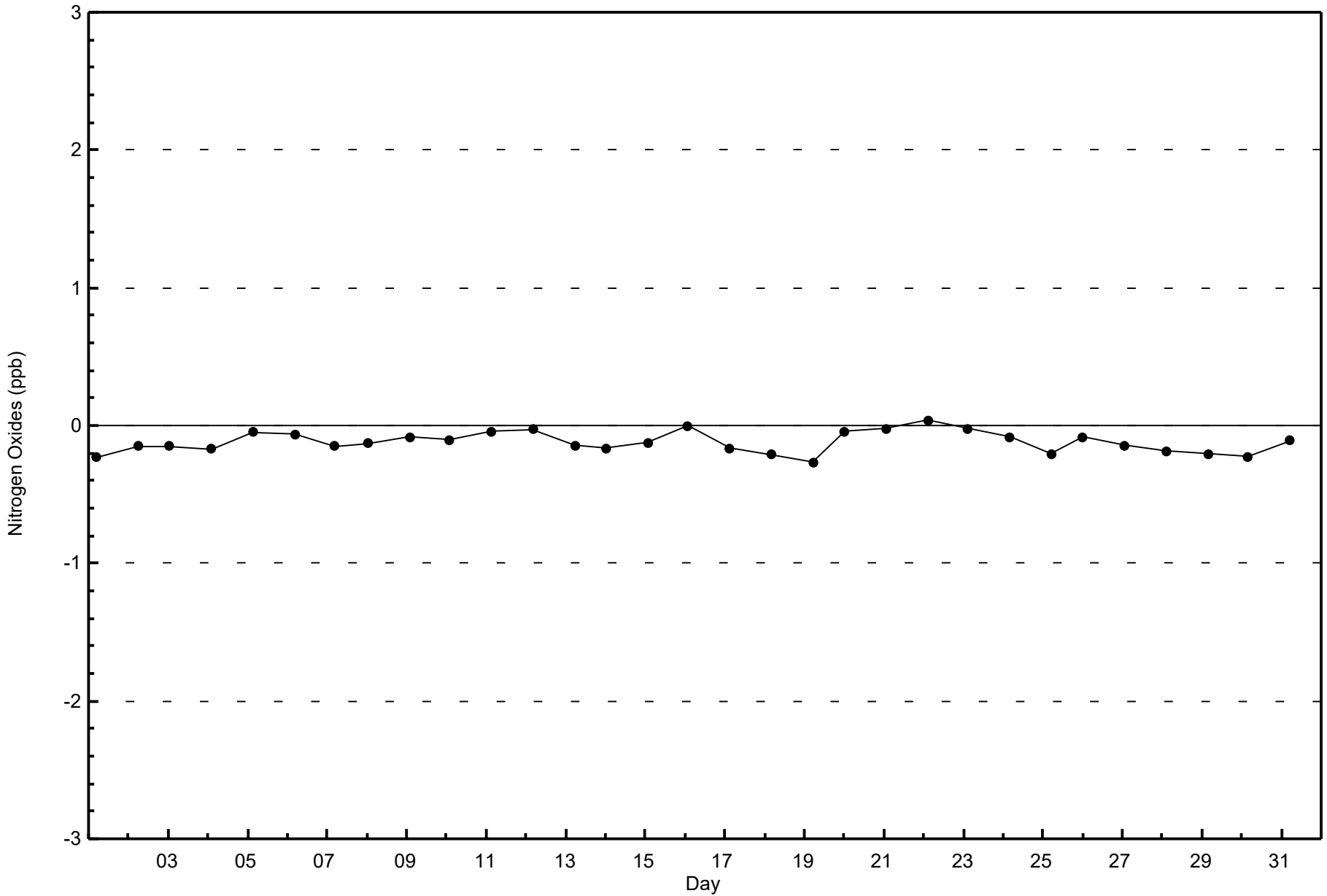
Total Number of Hours: 744

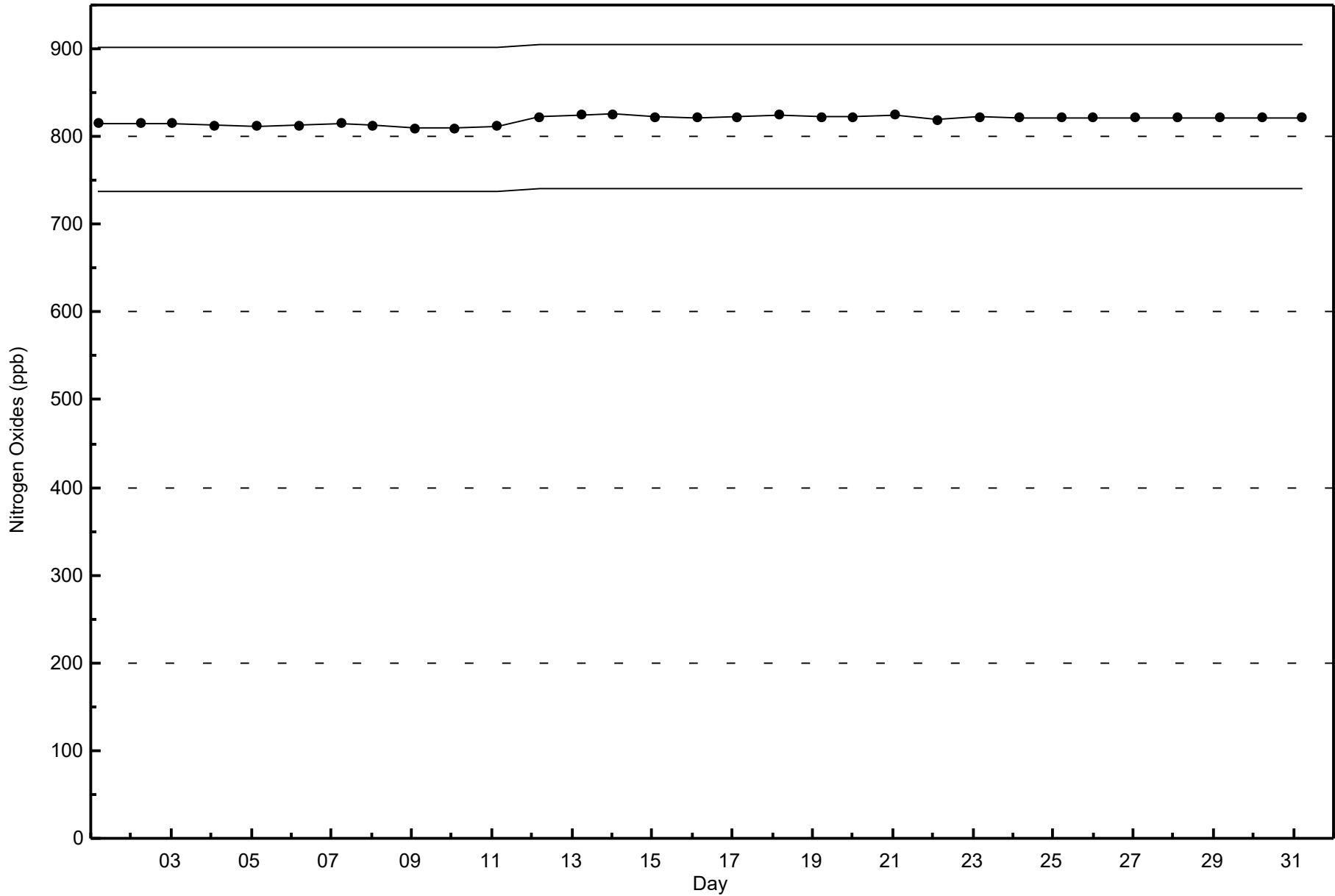


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Ells River





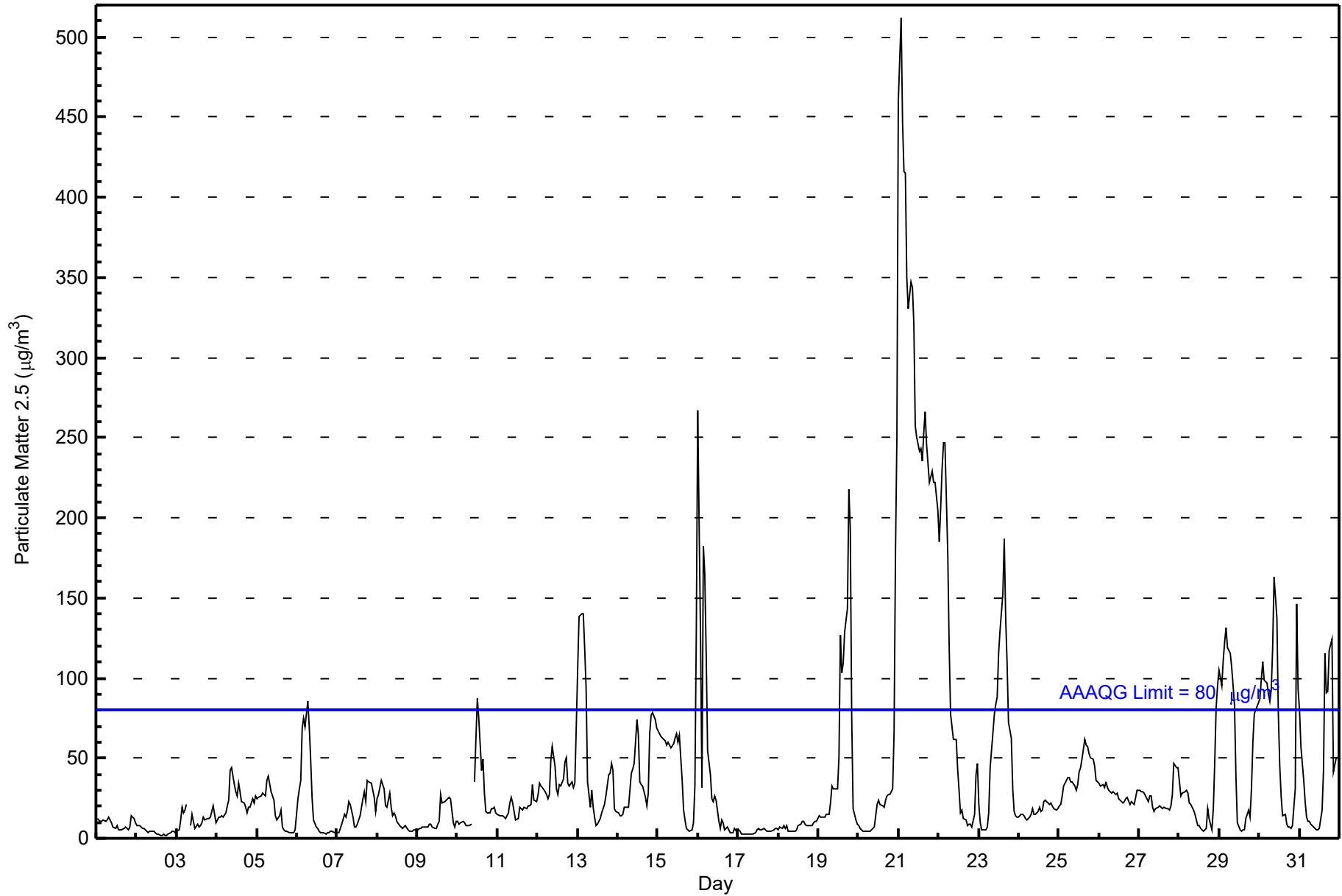




Summary of Hour Averages

Ells River - May 2023

Number of Exceedences (AAAQO):		1-hr: 95		24-hr: 14		Hours in Service:															744					
Maximum Value: 512.0 µg/m ³ on May 21 02:00				Maximum Daily Average: 302.4 µg/m ³ on May 21		Hours of Data:															742					
Minimum Value: 1.9 µg/m ³ on May 2 15:00				Minimum Daily Average: 4.1 µg/m ³ on May 2		Hours of Missing Data:															2					
Maximum Diurnal Average: 55.8 µg/m ³ at hour 1				Minimum Diurnal Average: 30.8 µg/m ³ at hour 21		Hours of Calibration:															1					
Monthly Average: 40.74 µg/m ³				Percentiles: P ₁ = 2.5 P ₁₀ = 5.0 Q ₁ = 8.4 Median = 19.6 Q ₃ = 36.8 P ₉₀ = 97.1 P ₉₉ = 338.3		Percent Operational Time:															99.9					
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	12.5	11.2	10.6	11.0	11.1	11.0	11.2	12.9	11.3	9.6	7.2	6.2	8.0	5.2	5.3	5.7	6.4	6.7	6.6	5.7	7.4	14.2	12.8	9.8	9.1	14.2
2-May	7.9	7.9	8.3	6.1	5.9	5.2	4.4	3.8	4.1	4.3	4.0	3.8	2.6	2.6	1.9	1.9	2.2	2.2	2.2	2.3	3.3	4.6	4.2	3.8	4.1	8.3
3-May	4.1	5.5	11.4	19.2	15.5	17.5	20.9	M	8.0	14.8	10.3	6.2	8.5	7.3	8.3	9.4	13.3	11.5	12.4	12.7	13.6	16.8	20.2	9.9	12.0	20.9
4-May	11.5	13.2	13.6	14.1	13.4	15.9	20.2	23.7	42.6	44.1	33.1	28.7	26.8	34.6	29.3	23.2	21.6	19.6	16.2	19.1	19.2	24.5	22.2	26.1	23.2	44.1
5-May	24.3	25.7	26.3	27.8	27.5	26.5	35.7	38.8	28.9	26.5	23.7	14.1	11.8	14.3	17.8	7.2	5.7	4.6	4.0	3.9	3.5	3.4	3.9	5.7	17.2	38.8
6-May	24.9	30.6	36.1	69.2	74.7	69.3	85.3	70.1	49.3	25.2	11.3	6.8	6.5	4.7	3.5	3.3	3.5	2.8	3.4	3.8	4.1	4.3	3.6	3.7	25.0	85.3
7-May	3.3	3.7	5.9	8.7	14.7	13.3	16.5	22.5	21.0	13.3	7.4	6.7	8.4	11.5	14.2	24.5	28.8	22.7	36.5	35.7	33.9	29.9	25.5	16.5	17.7	36.5
8-May	24.8	27.5	36.4	33.7	30.7	19.9	19.1	27.8	19.3	14.4	15.6	14.2	10.3	8.3	7.3	6.5	7.1	7.9	5.3	4.2	4.0	4.0	4.9	5.3	14.9	36.4
9-May	5.5	6.1	6.4	7.1	7.3	6.7	7.1	8.7	9.1	7.0	6.4	6.1	8.7	10.9	27.6	22.0	23.0	24.0	24.5	25.4	24.7	9.4	7.3	10.5	12.6	27.6
10-May	10.4	9.2	9.5	10.5	9.5	8.3	7.9	8.0	8.5	C	35.3	62.5	86.8	74.6	42.1	49.7	28.1	17.0	16.3	16.3	18.4	18.2	19.0	16.2	25.3	86.8
11-May	14.8	14.2	13.8	13.9	13.3	12.4	15.7	21.8	25.6	22.0	16.5	11.8	12.4	19.3	18.5	17.8	19.8	18.9	20.1	20.1	21.3	33.4	24.1	22.9	18.5	33.4
12-May	27.2	34.5	32.9	31.4	29.1	27.3	24.9	27.0	48.6	57.4	44.7	30.9	27.3	33.4	32.3	36.9	47.4	49.9	34.3	32.9	34.9	32.0	34.1	68.5	36.7	68.5
13-May	104.8	138.0	140.2	139.9	118.4	93.3	35.5	19.6	29.6	19.5	13.6	7.9	9.0	12.4	16.1	18.7	21.3	26.6	39.3	40.8	46.8	42.1	18.8	17.2	48.7	140.2
14-May	15.9	13.7	14.1	15.2	19.4	19.0	19.3	29.9	40.3	43.4	46.7	74.2	64.1	34.8	33.3	32.5	25.6	20.1	27.8	65.4	76.7	78.2	73.9	68.4	39.7	78.2
15-May	66.8	64.8	63.7	61.8	60.7	58.5	59.7	57.9	56.8	59.4	62.2	65.1	60.0	64.6	35.9	18.0	11.4	6.3	5.2	4.4	5.6	10.1	32.4	129.0	46.7	129.0
16-May	267.4	124.8	31.7	182.5	164.5	115.0	54.6	39.3	24.5	22.9	26.8	24.2	10.2	6.0	11.2	9.7	5.6	6.7	5.4	3.5	3.6	3.7	6.3	3.9	48.1	267.4
17-May	5.1	4.4	2.9	2.6	2.6	2.6	2.3	2.6	2.5	2.6	3.8	5.1	6.0	5.2	5.4	6.3	5.7	4.8	4.2	4.1	4.7	5.6	6.1	6.3	4.3	6.3
18-May	5.4	7.4	6.5	7.8	6.5	7.9	4.5	4.1	4.5	4.3	4.4	5.0	7.8	9.2	10.3	10.8	8.7	7.8	7.7	7.9	8.1	9.8	10.9	10.2	7.4	10.9
19-May	13.8	13.6	13.5	13.0	13.3	14.8	15.2	21.7	32.4	31.1	31.1	30.5	51.1	126.7	103.5	109.1	128.3	143.8	218.1	193.0	76.7	18.8	11.0	9.2	59.7	218.1
20-May	7.8	6.3	5.3	4.5	4.2	4.1	4.0	4.1	5.1	7.0	14.1	20.8	23.9	21.2	20.0	19.3	24.1	26.7	27.6	27.4	30.7	66.3	178.2	251.3	33.5	251.3
21-May	460.4	512.0	446.6	415.8	415.4	350.1	330.7	347.0	343.5	320.7	257.0	250.0	241.1	242.9	235.5	252.6	265.9	246.0	222.0	225.9	228.9	222.0	221.8	204.8	302.4	512.0
22-May	184.7	206.5	231.3	246.9	246.9	178.4	120.1	77.7	69.4	62.0	61.8	42.8	29.9	15.9	17.5	12.3	11.2	8.0	8.8	8.8	7.4	15.0	39.8	46.8	81.2	246.9
23-May	21.5	9.9	5.1	5.5	5.6	7.1	15.7	43.7	66.3	77.2	83.6	88.3	115.2	129.8	152.9	187.1	137.5	109.3	72.6	62.4	30.7	17.1	14.3	13.0	61.3	187.1
24-May	13.3	15.2	14.8	14.5	12.0	11.2	13.3	15.2	18.5	14.8	14.9	17.1	19.1	16.9	17.9	23.3	24.0	22.2	21.5	21.9	20.5	18.3	17.6	18.6	17.4	24.0
25-May	20.5	21.5	26.4	33.0	36.2	37.5	38.0	35.3	34.9	33.0	29.9	33.2	41.2	44.4	49.8	61.9	57.9	57.4	53.2	50.4	49.3	44.7	36.5	35.3	40.1	61.9
26-May	34.6	32.5	33.4	31.8	34.9	31.9	30.1	28.4	29.1	28.4	27.2	28.0	24.6	23.3	21.7	22.9	24.9	25.4	21.5	22.6	22.0	21.3	25.5	29.9	27.3	34.9
27-May	30.1	28.9	28.8	28.6	26.4	23.4	26.3	26.2	19.5	17.2	18.3	19.8	20.3	19.3	18.2	19.4	18.7	18.5	17.8	20.0	27.1	46.7	44.4	43.8	25.3	46.7
28-May	35.0	26.7	28.5	29.1	29.8	28.1	21.6	21.0	17.7	15.0	11.4	7.5	7.8	5.8	4.6	5.0	5.8	18.9	12.5	4.9	18.2	47.9	81.9	95.0	24.2	95.0
29-May	104.8	95.3	111.4	122.5	131.4	118.6	115.6	106.8	95.6	82.9	39.0	9.7	5.2	4.7	5.0	5.2	12.7	17.6	13.1	31.2	59.7	78.0	80.5	84.8	63.8	131.4
30-May	87.0	99.8	110.0	98.8	97.3	89.6	85.3	92.8	118.7	162.9	137.5	78.5	46.3	26.5	14.2	14.7	8.4	6.7	6.6	6.5	7.8	30.5	146.5	93.5	69.4	162.9
31-May	80.4	57.3	36.4	22.8	13.1	10.5	10.3	8.9	7.0	6.0	5.2	5.5	6.4	17.5	42.1	115.6	90.7	91.4	117.5	124.3	41.2	46.1	50.1	50.5	44.0	124.3
55.8 53.8 50.4 55.8 54.6 46.3 41.0 41.6 41.7 41.6 35.6 32.6 32.5 34.0 33.0 37.2 35.3 33.9 35.0 35.7 30.8 32.8 41.2 45.5																								Diurnal Average		
460.4 512.0 446.6 415.8 415.4 350.1 330.7 347.0 343.5 320.7 257.0 250.0 241.1 242.9 235.5 252.6 265.9 246.0 222.0 225.9 228.9 222.0 221.8 251.3																								Diurnal Maximum		
C - Calibration M - Maintenance																										
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																										





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Ells River - May 2023**

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	97	13.07	13.07
6 - 15	210	28.30	41.37
16 - 25	138	18.60	59.97
26 - 80	204	27.49	87.47
> 81.0	93	12.53	100.00

Total Number of Valid Hours: 742

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Ells River - May 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	7	20	5	2	2	0	18	2	5	8	7	5	3	4	4	5	97
6 - 15	7	6	11	4	1	2	10	35	48	26	10	12	6	14	8	7	207
16 - 25	1	16	10	1	4	2	10	21	23	16	8	12	5	2	3	4	138
26 - 80	12	21	8	8	5	4	9	27	43	19	5	10	5	14	8	5	203
> 81.0	7	6	0	0	4	3	7	8	13	10	6	4	6	6	6	6	92
Totals	34	69	34	15	16	11	54	93	132	79	36	43	25	40	29	27	737

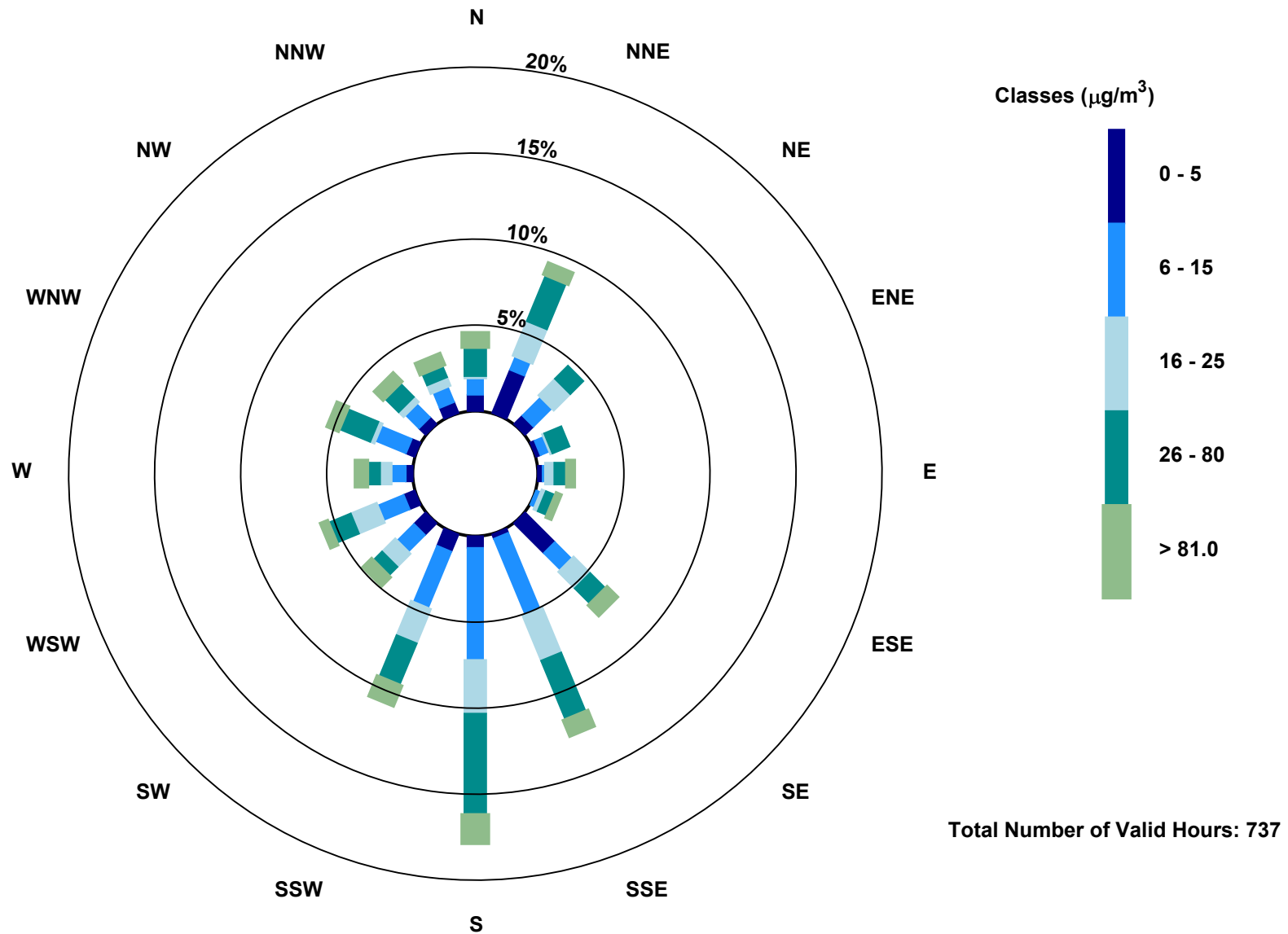
Total Number of Valid Hours: 737

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Ells River

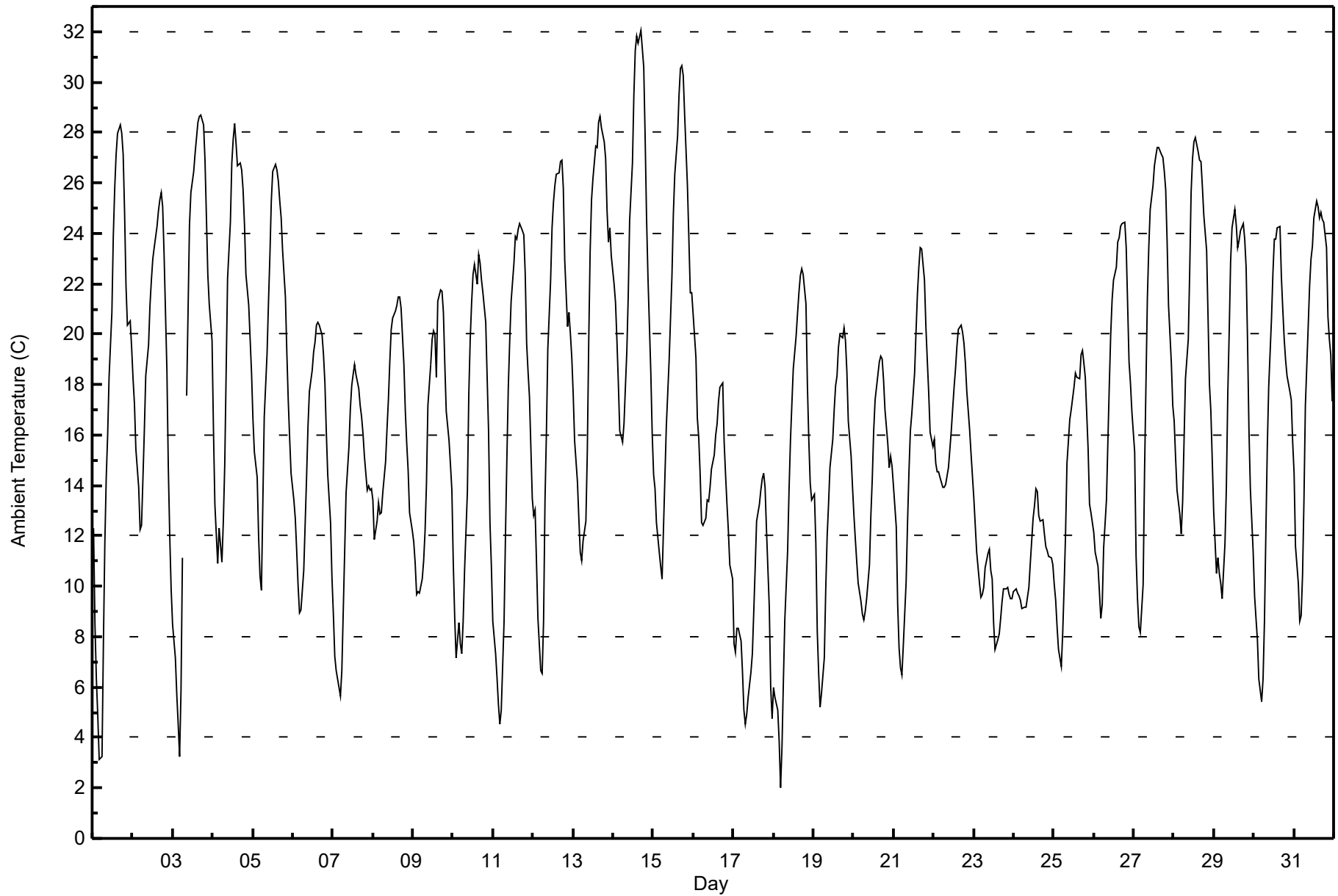




Wood Buffalo Environmental Association
Summary of Hour Averages

Ambient Temperature (AT) - C
Ells River - May 2023

Maximum Value: 32.1 C on May 14 17:00		Maximum Daily Average: 23.6 C on May 14		Hours in Service: 744																							
Minimum Value: 2.0 C on May 18 05:00		Minimum Daily Average: 8.9 C on May 17		Hours of Data: 743																							
Maximum Diurnal Average: 22.8 C at hour 17		Minimum Diurnal Average: 8.9 C at hour 5		Hours of Missing Data: 1																							
Monthly Average: 16.69 C		Percentiles: P ₁ = 4.5 P ₁₀ = 8.6 Q ₁ = 11.6 Median = 16.3 Q ₃ = 21.5 P ₉₀ = 25.6 P ₉₉ = 30.4		Hours of Calibration: 0																							
				Percent Operational Time: 99.9																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	12.3	8.5	6.3	4.9	3.2	3.2	7.7	11.7	14.3	16.0	18.3	20.8	23.9	25.8	27.1	28.0	28.3	28.0	27.1	24.9	21.9	20.4	20.5	19.5	17.6	28.3	
2-May	18.2	17.2	15.4	13.9	12.2	12.4	14.3	16.2	18.3	19.6	21.1	22.1	23.0	23.4	24.3	24.9	25.3	25.6	25.0	23.1	18.6	14.7	12.0	9.9	18.8	25.6	
3-May	8.5	7.2	5.7	4.5	3.3	5.9	11.1	M	17.6	20.9	24.3	25.6	26.5	27.2	27.8	28.4	28.6	28.7	28.3	26.9	24.6	22.4	21.2	19.7	19.3	28.7	
4-May	16.2	13.3	12.1	10.9	12.3	10.9	12.6	14.8	18.5	22.2	24.4	26.8	27.8	28.4	27.6	26.7	26.8	26.5	25.7	24.4	22.4	21.1	19.8	18.5	20.4	28.4	
5-May	16.6	15.3	14.3	12.0	10.4	9.9	13.3	16.7	19.2	21.2	23.1	25.3	26.4	26.8	26.5	26.1	25.3	24.6	23.3	21.5	19.3	17.4	15.9	14.5	19.4	26.8	
6-May	13.4	12.7	11.4	10.0	8.9	9.1	10.6	12.5	14.3	16.3	17.7	18.6	19.3	19.7	20.4	20.5	20.3	20.0	19.2	18.1	16.1	14.4	12.5	10.4	15.3	20.5	
7-May	8.9	7.2	6.7	6.3	5.6	6.6	9.0	11.4	13.7	15.5	17.0	17.9	18.4	18.8	18.4	17.8	17.2	16.7	16.0	15.2	13.8	14.0	13.8	13.9	13.3	18.8	
8-May	13.4	11.8	12.6	13.3	12.9	12.9	13.7	15.0	16.2	17.4	18.9	20.2	20.7	20.9	21.2	21.5	21.5	21.0	18.8	17.0	15.7	14.6	12.9	12.2	16.5	21.5	
9-May	11.7	10.9	9.7	9.8	9.7	10.3	11.0	12.2	14.1	17.2	18.8	19.8	20.2	20.0	18.3	21.3	21.8	21.7	20.9	18.8	17.0	15.7	14.8	13.8	15.8	21.8	
10-May	10.9	8.8	7.2	8.6	7.7	7.3	8.6	10.6	13.7	17.6	19.8	21.2	22.4	22.7	22.0	23.1	22.8	22.1	21.7	20.5	18.3	16.2	12.5	10.8	15.7	23.1	
11-May	8.6	7.3	6.4	5.3	4.5	5.1	8.6	12.0	15.1	17.9	19.8	21.3	22.8	23.9	23.8	24.2	24.4	24.1	23.9	22.4	19.7	18.5	17.5	13.5	16.3	24.4	
12-May	12.8	13.0	10.9	8.7	6.7	6.5	8.6	13.4	16.0	19.4	22.1	24.2	25.2	25.9	26.3	26.4	26.8	26.9	25.8	22.9	20.3	20.9	20.0	19.1	18.7	26.9	
13-May	17.6	15.8	14.2	12.7	11.3	11.0	11.8	12.6	15.3	19.7	23.3	25.3	26.2	27.5	27.4	28.4	28.7	28.2	27.6	27.0	24.9	23.7	24.2	23.1	21.1	28.7	
14-May	22.0	21.3	19.8	18.1	16.1	15.7	16.4	17.9	19.3	21.5	24.5	26.8	29.5	31.3	31.8	31.6	32.1	31.3	30.6	27.8	24.6	22.3	18.5	16.1	23.6	32.1	
15-May	14.4	13.9	12.5	11.3	10.8	10.3	12.3	14.3	16.3	18.9	20.6	22.3	24.8	26.4	27.9	29.5	30.5	30.6	30.3	28.7	25.9	23.7	21.7	21.6	20.8	30.6	
16-May	20.8	19.1	16.7	15.9	14.4	12.5	12.4	12.7	13.4	13.4	13.9	14.6	15.2	16.0	16.4	17.4	17.9	18.1	15.7	14.4	13.3	12.2	10.8	10.3	14.9	20.8	
17-May	7.7	7.4	8.3	8.4	7.8	6.6	5.1	4.5	4.9	5.6	6.6	7.3	9.0	10.7	12.6	13.2	13.8	14.3	14.5	13.9	12.2	9.2	6.0	4.7	8.9	14.5	
18-May	6.0	5.6	5.1	3.9	2.0	3.6	6.3	8.7	11.4	13.8	15.8	17.3	18.7	19.9	20.8	21.7	22.3	22.6	22.4	21.2	18.0	15.8	14.1	13.4	13.8	22.6	
19-May	13.7	11.7	8.2	6.5	5.2	5.8	7.2	9.8	12.0	13.3	14.7	15.8	17.0	17.9	18.4	19.5	20.0	19.9	20.2	19.7	18.5	16.6	15.2	13.9	14.2	20.2	
20-May	12.8	11.9	10.9	10.1	9.4	8.9	8.7	9.0	9.5	10.9	12.8	14.3	16.2	17.4	18.4	18.9	19.1	19.0	18.2	17.0	15.6	14.7	15.2	14.7	13.9	19.1	
21-May	14.0	12.4	9.3	7.6	6.8	6.5	7.7	10.2	12.5	14.6	16.2	16.8	18.5	20.1	21.6	22.6	23.5	23.4	22.2	20.3	19.0	17.7	16.1	15.6	15.6	23.5	
22-May	15.8	14.9	14.5	14.5	14.3	14.0	13.9	14.0	14.4	14.7	16.2	17.1	17.9	18.6	19.5	20.2	20.3	20.1	19.6	18.9	17.7	16.2	15.2	14.4	16.5	20.3	
23-May	13.5	12.4	11.3	10.1	9.5	9.7	9.9	10.7	11.3	11.5	10.6	10.3	8.5	7.5	7.9	8.1	8.7	9.4	9.9	9.9	9.7	9.5	9.5	9.5	10.0	13.5	
24-May	9.8	9.9	9.7	9.6	9.4	9.1	9.2	9.2	9.5	9.9	10.9	12.7	13.2	13.9	13.8	12.8	12.6	12.7	12.1	11.6	11.4	11.2	11.2	10.8	11.1	13.9	
25-May	10.1	9.5	8.4	7.5	6.8	8.1	10.0	12.1	14.9	16.6	17.0	17.4	17.9	18.5	18.3	18.2	19.2	19.4	18.9	18.3	15.4	13.3	12.9	12.5	14.2	19.4	
26-May	12.1	11.3	10.8	9.8	8.7	9.3	11.5	13.4	15.7	17.9	20.0	21.3	22.1	22.6	23.7	23.8	24.3	24.4	24.4	23.4	21.2	18.9	18.0	16.9	17.7	24.4	
27-May	15.3	11.2	9.5	8.4	8.2	10.1	14.5	18.0	21.4	23.4	24.9	25.9	26.7	27.1	27.4	27.4	27.1	27.0	26.4	25.7	23.7	21.2	18.8	17.2	20.3	27.4	
28-May	16.5	15.1	13.8	12.8	12.1	13.4	15.8	18.2	19.8	22.5	25.6	27.0	27.6	27.8	27.2	26.9	26.9	25.9	24.7	23.3	20.7	18.0	16.9	15.0	20.6	27.8	
29-May	13.0	10.5	11.1	10.5	10.1	9.5	11.7	13.9	17.6	20.1	22.9	24.2	24.9	24.3	23.4	23.7	24.1	24.4	23.8	22.6	19.7	16.2	13.9	11.3	17.8	24.9	
30-May	9.6	8.7	7.9	6.3	5.4	6.3	8.6	12.1	15.5	17.9	20.6	22.4	23.8	23.8	24.2	24.3	22.3	21.0	19.8	19.0	18.3	17.7	17.4	15.7	16.2	24.3	
31-May	14.5	11.6	10.1	8.6	8.8	10.4	13.4	17.2	20.3	21.9	23.0	23.5	24.6	25.3	25.1	24.6	24.8	24.5	24.4	23.4	20.7	19.8	19.2	17.3	19.0	25.3	
		13.3	11.8	10.7	9.7	8.9	9.1	10.8	12.8	15.0	17.1	18.9	20.2	21.3	21.9	22.2	22.6	22.8	22.6	22.0	20.7	18.7	17.0	15.8	14.5	Diurnal Average	
		22.0	21.3	19.8	18.1	16.1	15.7	16.4	18.2	21.4	23.4	25.6	27.0	29.5	31.3	31.8	31.6	32.1	31.3	30.6	28.7	25.9	23.7	24.2	23.1	Diurnal Maximum	
M - Maintenance																											





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Ells River - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	129	17.36	17.36
10 - 20	379	51.01	68.37
> 20	235	31.63	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

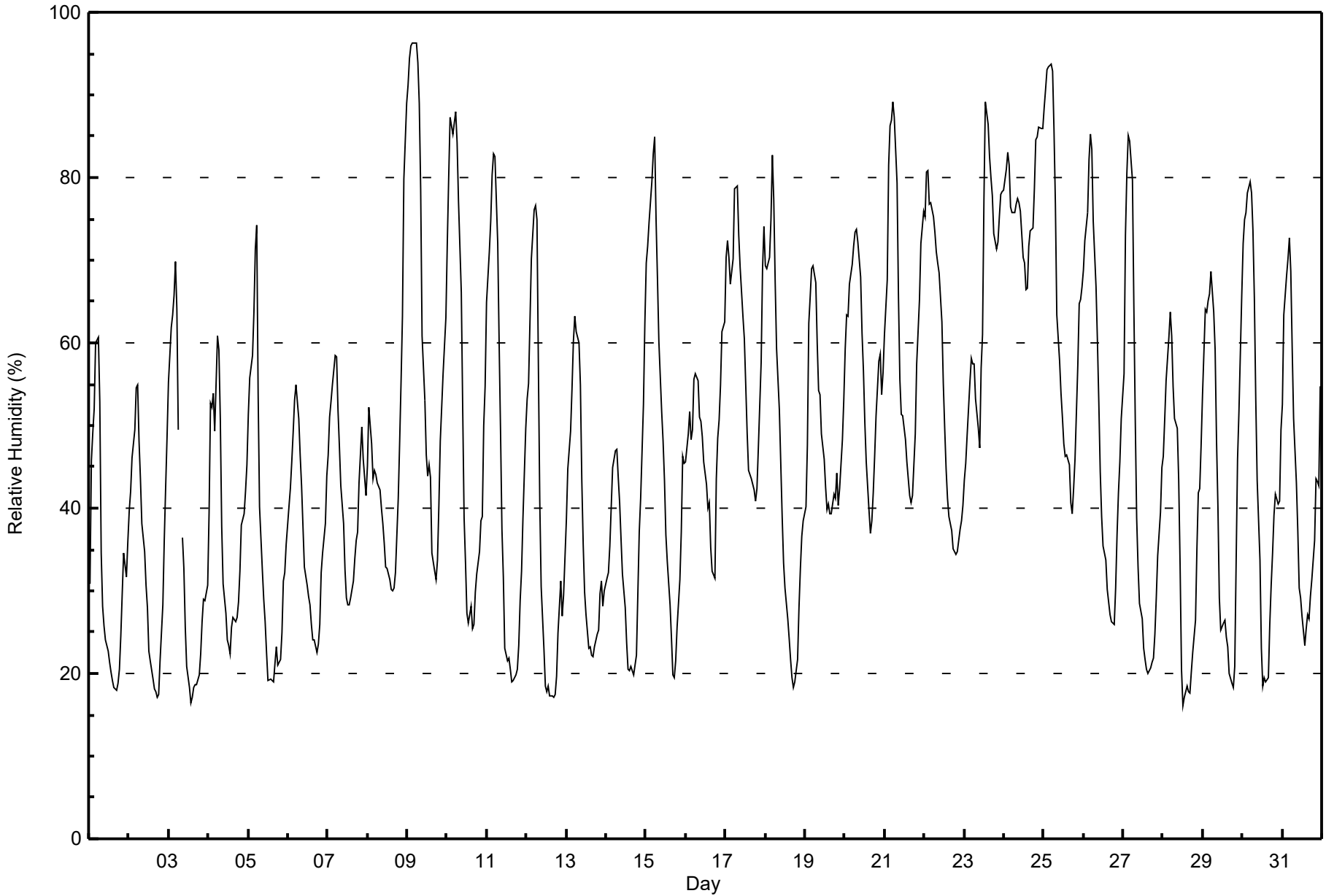
Relative Humidity (RH) - %
Ells River - May 2023

Maximum Value: 96.3 % on May 9 04:00 Maximum Daily Average: 77.4 % on May 24																						Hours in Service: 744 Hours of Data: 743																											
Minimum Value: 16.1 % on May 28 13:00 Minimum Daily Average: 32.5 % on May 1 Maximum Diurnal Average: 70.7 % at hour 6 Minimum Diurnal Average: 30.0 % at hour 17 Monthly Average: 47.43 % Percentiles: P ₁ = 17.4 P ₁₀ = 21.7 Q ₁ = 30.5 Median = 44.8 Q ₃ = 62.8 P ₉₀ = 76.9 P ₉₉ = 93.3																						Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9																											
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	30.8	45.7	49.1	52.1	60.0	60.7	52.9	34.5	28.1	25.8	24.1	22.8	21.3	20.2	19.2	18.2	17.9	18.8	20.5	24.6	29.6	34.6	31.7	35.9	32.5	60.7																							
2-May	39.7	42.0	46.1	49.5	54.6	54.8	48.1	43.5	38.2	34.7	30.6	27.9	22.7	21.6	19.2	18.2	17.9	17.2	17.5	21.6	28.3	36.1	42.6	48.7	34.2	54.8																							
3-May	55.2	61.8	63.4	65.8	69.9	64.1	49.5	M	36.4	32.7	25.7	20.9	18.4	16.5	17.1	18.3	18.6	18.7	19.8	22.3	26.2	28.9	28.8	30.6	35.2	69.9																							
4-May	39.5	52.7	52.2	53.9	49.3	60.8	59.1	50.9	37.7	30.8	27.3	24.0	23.4	22.4	25.5	26.7	26.3	26.7	28.7	32.4	38.0	39.3	42.1	45.2	38.1	60.8																							
5-May	51.4	55.7	58.5	63.7	71.3	74.3	53.9	40.1	32.6	29.0	26.2	22.5	19.2	19.3	19.1	19.1	21.1	23.2	21.1	21.6	24.9	31.1	32.2	35.5	36.1	74.3																							
6-May	40.1	42.3	45.6	49.1	53.1	54.9	50.9	46.4	42.7	37.9	32.9	30.7	29.4	28.4	25.9	24.0	24.0	22.6	23.6	26.0	32.2	34.5	38.1	43.8	36.6	54.9																							
7-May	46.5	51.1	52.8	54.9	58.5	58.2	51.9	47.4	42.6	38.1	32.6	29.1	28.2	28.4	29.2	31.2	34.0	36.1	37.2	43.0	49.8	45.9	43.7	41.5	42.2	58.5																							
8-May	45.1	52.3	47.8	43.5	44.6	44.1	43.0	42.2	40.0	38.1	35.7	32.9	32.6	31.3	30.2	30.1	30.3	32.1	41.1	48.0	55.2	63.2	79.9	88.9	44.7	88.9																							
9-May	91.1	94.5	95.9	96.3	96.3	96.2	93.8	89.0	78.6	60.9	53.0	46.4	43.9	45.3	43.7	34.6	32.4	31.4	33.8	40.3	48.1	56.2	59.7	63.0	63.5	96.3																							
10-May	72.0	80.0	87.3	85.3	86.6	88.0	84.3	77.0	66.2	52.0	38.7	33.4	27.3	26.1	28.2	25.5	26.0	29.8	32.0	34.8	38.4	39.0	50.0	54.8	52.6	88.0																							
11-May	64.9	70.9	74.7	80.3	82.9	82.5	72.1	60.1	49.4	37.5	31.6	23.1	21.6	21.8	20.6	19.0	19.1	19.8	20.6	23.5	28.8	32.5	38.8	49.7	43.6	82.9																							
12-May	53.2	55.1	62.6	70.2	76.0	76.6	74.8	57.5	40.9	30.6	22.9	18.6	17.9	18.5	17.3	17.3	17.2	17.4	19.7	24.9	31.2	27.0	29.5	34.1	38.0	76.6																							
13-May	38.6	44.8	49.3	54.5	60.2	63.3	61.4	60.0	55.0	43.3	35.6	29.8	27.0	23.1	23.3	22.3	22.1	23.2	24.8	25.3	29.6	31.2	28.1	30.0	37.7	63.3																							
14-May	31.4	32.2	35.4	40.3	44.9	46.9	47.1	43.8	40.7	36.3	32.1	27.9	23.7	20.5	20.4	20.9	19.9	21.0	22.2	29.7	37.1	41.1	52.6	62.3	34.6	62.3																							
15-May	69.6	71.6	74.6	79.5	82.9	84.9	74.9	67.8	60.2	51.7	48.2	43.4	36.8	33.6	28.2	24.3	19.8	19.5	21.5	25.6	31.4	37.1	46.2	45.4	49.1	84.9																							
16-May	45.6	49.1	51.8	48.3	49.5	55.6	56.2	55.4	51.1	50.4	48.7	45.6	43.0	40.0	40.6	35.3	32.4	31.5	43.5	48.4	50.7	55.0	61.3	62.5	48.0	62.5																							
17-May	70.4	72.3	70.3	67.2	70.1	78.7	78.8	78.9	73.0	69.2	63.3	60.6	55.0	49.2	44.6	43.5	42.8	42.3	40.9	42.3	47.3	57.6	69.0	74.0	60.9	78.9																							
18-May	69.3	69.0	70.3	75.0	82.8	77.3	67.4	59.3	51.9	45.4	39.0	33.4	30.4	26.6	24.3	21.7	19.4	18.2	19.0	21.7	28.0	32.7	36.6	38.5	44.1	82.8																							
19-May	40.2	47.6	62.4	65.6	68.9	69.3	67.3	59.9	54.3	53.7	49.0	45.9	42.5	39.8	40.5	39.3	39.3	41.7	41.2	44.2	40.4	42.3	48.4	53.2	49.9	69.3																							
20-May	59.3	63.4	63.2	67.0	69.6	71.7	73.4	73.7	72.2	68.0	61.2	56.6	50.4	45.6	39.7	37.0	38.5	41.8	46.3	51.3	57.8	58.7	53.7	56.4	57.3	73.7																							
21-May	61.0	67.7	81.5	86.3	87.0	89.2	87.3	79.4	65.6	55.6	51.4	51.2	48.3	45.7	43.6	41.5	40.7	41.5	49.0	57.4	61.4	65.3	72.1	76.0	62.7	89.2																							
22-May	75.3	80.6	80.8	76.8	76.9	75.3	73.4	71.1	69.6	68.4	62.5	55.1	49.7	44.7	41.2	38.9	37.3	35.1	34.8	34.5	34.7	37.5	38.5	40.4	55.6	80.8																							
23-May	43.4	45.4	48.7	55.3	58.2	57.5	57.4	53.2	49.6	47.2	56.9	61.0	77.3	89.2	86.4	82.5	79.9	77.8	73.3	71.3	72.2	75.3	77.9	78.3	65.6	89.2																							
24-May	78.5	81.0	83.0	81.5	76.5	75.7	75.8	76.7	77.4	77.0	75.9	70.4	69.6	66.4	66.7	71.7	73.6	73.9	78.6	84.5	84.8	86.1	85.9	85.9	77.4	86.1																							
25-May	88.5	90.7	93.0	93.4	93.8	92.9	85.7	76.8	63.4	57.7	53.9	50.9	47.9	46.2	46.4	45.3	40.7	39.4	42.3	46.0	57.3	64.7	65.2	66.8	64.5	93.8																							
26-May	68.7	72.3	75.8	82.2	85.3	83.5	74.7	66.8	60.1	52.7	44.4	38.9	35.5	33.8	30.2	28.6	27.2	26.3	25.9	30.3	36.7	41.9	45.7	50.8	50.8	85.3																							
27-May	56.3	73.0	80.4	85.1	84.5	79.6	64.4	50.7	38.9	32.9	28.5	26.6	23.0	21.6	20.5	20.1	20.6	21.3	21.8	24.8	29.2	34.2	39.4	44.8	42.6	85.1																							
28-May	46.3	50.6	55.4	60.6	63.7	60.9	54.7	50.9	49.6	43.3	33.0	20.6	16.1	17.0	18.5	17.8	17.7	20.2	22.6	26.4	35.0	41.8	42.3	47.6	38.0	63.7																							
29-May	53.7	64.1	63.7	65.1	66.0	68.7	63.8	59.2	48.1	40.1	29.2	25.2	26.1	26.4	24.3	23.2	20.0	18.9	18.4	20.8	33.6	45.9	51.7	65.7	42.6	68.7																							
30-May	72.0	75.0	75.8	78.2	79.5	78.2	73.5	65.5	53.2	43.4	33.8	23.1	18.5	19.4	19.0	19.6	26.0	30.7	34.6	39.2	41.8	40.5	40.9	49.5	47.1	79.5																							
31-May	52.5	63.4	68.1	70.2	72.6	68.7	59.4	50.9	43.0	37.3	30.3	29.1	26.9	23.4	25.5	27.1	26.5	29.3	31.3	36.1	43.5	43.2	42.6	54.7	44.0	72.6																							
																								56.5	61.9	65.1	67.6	70.2	70.7	65.5	59.6	51.9	45.9	40.6	36.4	34.0	32.6	31.6	30.4	30.0	30.6	32.5	36.2	41.4	45.2	48.9	53.4	Diurnal Average	
																								91.1	94.5	95.9	96.3	96.3	96.2	93.8	89.0	78.6	77.0	75.9	70.4	77.3	89.2	86.4	82.5	79.9	77.8	78.6	84.5	84.8	86.1	85.9	88.9	Diurnal Maximum	
M - Maintenance																																																	



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Ells River - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Ells River - May 2023

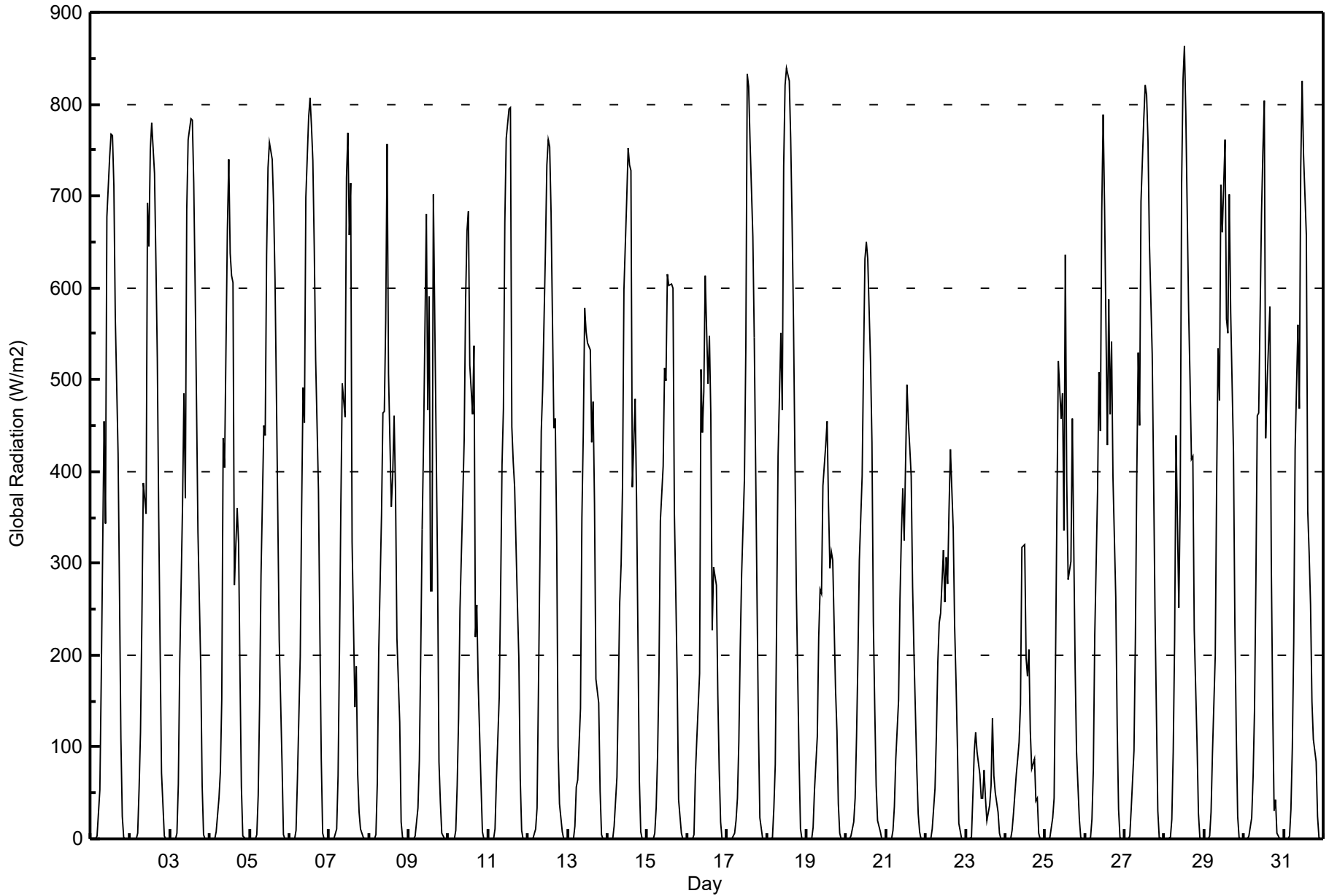
Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	48	6.46	6.46
20 - 40	252	33.92	40.38
40 - 60	233	31.36	71.74
60 - 80	158	21.27	93.00
80 - 100	52	7.00	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



Maximum Value: 864.0 W/m2 on May 28 13:00																						Maximum Daily Average: 324.8 W/m2 on May 18					Hours in Service:		744																				
Minimum Value: 0.0 W/m2 on May 1 22:00																						Minimum Daily Average: 42.9 W/m2 on May 23					Hours of Data:		744																				
Maximum Diurnal Average: 646.2 W/m2 at hour 13																						Minimum Diurnal Average: 0.1 W/m2 at hour 24					Hours of Missing Data:		0																				
Monthly Average: 231.69 W/m2																						Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.3 Median = 111.5 Q ₃ = 431.6 P ₉₀ = 662.0 P ₉₉ = 819.4					Hours of Calibration:		0																				
																											Percent Operational Time:		100.0																				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	0.3	0.3	0.2	0.3	3.3	52.8	176.0	316.3	454.8	343.9	676.6	742.2	767.9	765.6	710.4	569.1	418.8	269.3	109.5	23.9	1.6	0.0	0.0	0.0	266.8	767.9																							
2-May	0.0	0.0	0.1	0.0	6.3	55.6	116.0	239.5	387.4	354.5	692.1	645.6	750.6	779.3	724.5	628.4	522.6	350.6	207.3	71.4	3.0	0.4	0.3	0.1	272.3	779.3																							
3-May	0.1	0.1	0.1	0.1	6.6	59.5	190.4	362.7	485.7	371.1	684.2	761.6	783.8	782.0	713.3	601.5	471.8	333.7	186.4	57.7	3.8	0.1	0.1	0.1	285.7	783.8																							
4-May	0.2	0.0	0.1	0.1	7.4	43.8	73.6	152.3	435.9	404.9	663.4	739.9	637.2	613.0	606.1	276.7	360.5	322.3	180.2	56.4	2.4	0.0	0.0	0.0	232.3	739.9																							
5-May	0.0	0.0	0.0	0.2	4.8	46.5	147.0	286.9	450.1	439.1	636.5	730.7	757.5	740.5	689.3	608.4	483.9	351.0	216.8	82.7	4.8	0.1	0.0	0.0	278.2	757.5																							
6-May	0.0	0.0	0.0	0.1	9.3	65.6	198.2	359.4	491.1	452.9	699.3	785.1	807.1	777.2	737.9	643.2	521.2	380.5	226.1	86.9	6.0	0.1	0.2	0.3	302.0	807.1																							
7-May	0.3	0.2	0.2	0.2	11.1	69.0	203.9	364.5	495.9	459.1	720.1	769.2	657.4	714.0	323.1	143.1	186.9	69.4	28.4	10.7	1.6	0.0	0.0	0.0	217.8	769.2																							
8-May	0.0	0.0	0.0	0.0	3.9	61.3	202.8	352.8	464.0	465.9	564.5	757.0	506.1	361.0	396.1	460.8	378.1	218.4	127.3	18.6	1.6	0.0	0.0	0.0	222.5	757.0																							
9-May	0.0	0.0	0.0	0.0	3.5	34.3	86.1	203.5	336.6	431.5	680.5	466.6	590.3	270.1	270.0	701.4	430.9	292.3	84.2	39.4	5.9	0.2	0.0	0.0	205.3	701.4																							
10-May	0.2	0.1	0.0	0.2	9.9	57.8	131.2	250.1	370.5	435.4	585.0	662.4	683.5	515.3	461.5	537.3	219.5	254.6	169.5	60.2	7.3	0.1	0.1	0.2	225.5	683.5																							
11-May	0.0	0.0	0.1	0.2	10.1	63.9	154.7	267.8	407.0	467.6	671.4	762.6	794.1	795.8	449.0	410.4	382.8	255.0	196.2	66.0	8.7	0.3	0.2	0.2	256.8	795.8																							
12-May	0.0	0.2	0.2	0.4	10.4	32.8	163.0	299.5	443.8	489.1	642.1	733.3	760.6	753.1	681.1	446.4	458.1	329.7	101.3	37.5	7.4	0.2	0.0	0.0	266.3	760.6																							
13-May	0.1	0.2	0.3	0.5	13.9	56.3	63.6	142.0	349.3	442.5	577.7	551.5	539.5	533.0	431.7	476.2	364.5	174.2	148.3	51.8	4.9	0.1	0.1	0.2	205.1	577.7																							
14-May	0.1	0.1	0.1	0.4	13.7	66.8	156.7	257.2	299.0	384.9	597.3	697.3	751.8	733.9	727.3	382.9	479.2	369.9	219.4	63.4	7.2	0.2	0.2	0.0	258.7	751.8																							
15-May	0.0	0.0	0.0	0.2	6.8	33.4	90.1	180.3	346.1	406.2	512.7	498.7	614.4	602.2	604.5	599.1	355.6	269.0	174.1	42.6	6.5	0.4	0.0	0.0	222.6	614.4																							
16-May	0.0	0.0	0.0	0.0	5.0	70.0	109.0	179.8	510.9	442.0	486.0	613.5	496.1	548.2	461.6	227.1	295.3	276.2	156.6	74.5	18.8	0.0	0.0	0.0	207.1	613.5																							
17-May	0.1	0.0	0.0	0.0	6.4	19.7	43.9	105.7	207.4	287.9	391.4	535.6	832.3	818.7	759.1	655.6	545.4	405.4	258.8	120.8	22.6	0.6	0.2	0.0	250.7	832.3																							
18-May	0.0	0.1	0.1	1.5	33.3	81.3	240.7	416.6	550.4	466.8	732.2	821.2	838.3	824.9	762.4	673.3	563.8	419.4	272.4	85.9	10.1	0.5	0.3	0.3	324.8	838.3																							
19-May	0.2	0.3	0.2	0.5	12.0	54.0	112.0	220.4	271.2	266.3	383.9	428.5	454.7	363.6	294.0	313.4	303.9	162.9	117.6	38.4	6.7	0.1	0.0	0.0	158.5	454.7																							
20-May	0.0	0.0	0.0	2.6	17.7	43.9	111.0	197.2	303.1	394.4	519.9	631.3	649.7	631.3	518.9	431.6	236.0	141.4	58.1	20.1	7.3	0.0	0.0	0.0	204.8	649.7																							
21-May	0.1	0.2	0.1	0.6	9.9	35.1	87.7	151.6	260.5	330.5	381.2	324.9	493.6	453.2	425.6	395.5	275.3	201.1	76.6	27.8	7.4	0.2	0.0	0.0	164.1	493.6																							
22-May	0.0	0.0	0.0	0.6	10.8	55.2	113.8	193.0	234.7	245.7	313.5	258.1	306.8	278.3	358.9	423.6	336.5	232.4	171.0	99.8	16.2	0.5	0.0	0.0	152.1	423.6																							
23-May	0.0	0.0	0.0	2.2	45.7	94.4	116.3	94.7	70.6	44.1	43.6	74.6	43.6	20.2	37.0	57.3	131.7	67.9	50.6	29.6	5.5	0.0	0.0	0.0	42.9	131.7																							
24-May	0.0	0.0	0.0	0.3	9.1	27.0	70.2	86.8	104.9	145.8	317.5	319.8	196.6	177.3	205.2	117.7	76.0	87.2	41.7	44.0	5.4	0.0	0.0	0.0	84.7	319.8																							
25-May	0.0	0.0	0.0	1.6	22.3	44.4	192.8	359.5	519.5	457.5	484.9	335.7	636.1	390.0	282.4	302.5	458.0	319.9	188.1	94.5	20.7	0.8	0.1	0.0	213.0	636.1																							
26-May	0.0	0.0	0.0	1.4	21.0	76.4	221.8	378.4	507.4	444.2	684.1	789.0	688.3	428.6	587.2	463.0	541.3	393.9	261.8	123.7	31.4	1.5	0.1	0.0	276.9	789.0																							
27-May	0.2	0.2	0.1	2.5	32.6	96.7	218.6	394.5	530.1	449.5	694.7	783.7	820.0	810.4	759.4	649.5	528.0	394.0	246.4	137.8	29.9	1.3	0.2	0.0	315.8	820.0																							
28-May	0.1	0.0	0.1	1.5	21.8	94.2	217.0	439.7	251.5	371.3	713.5	826.9	864.0	788.8	574.6	500.8	413.0	416.3	226.8	104.0	27.7	1.5	0.2	0.2	285.6	864.0																							
29-May	0.1	0.0	0.0	2.6	29.6	92.7	199.9	389.4	533.3	477.1	712.8	661.1	761.7	566.5	551.0	701.8	573.0	421.5	233.8	115.0	24.3	1.6	0.2	0.1	293.7	761.7																							
30-May	0.1	0.0	0.1	2.5	22.8	67.5	138.4	280.8	460.8	464.0	679.6	748.3	804.5	436.5	495.7	579.7	298.0	143.3	31.2	42.6	5.5	0.4	0.0	0.0	237.6	804.5																							
31-May	0.0	0.2	0.1	2.6	31.9	99.2	213.5	424.6	559.8	468.8	730.9	824.6	744.1	657.2	356.5	310.8	254.8	149.5	108.4	84.6	24.4	1.2	0.0	0.0	252.0	824.6																							
																								0.1	0.1	0.1	0.8	14.6	59.7	147.1	269.3	390.1	390.5	576.6	621.9	646.2	578.4	514.7	460.9	382.7	273.3	157.2	64.9	10.9	0.4	0.1	0.1	Diurnal Average	
																								0.3	0.3	0.3	2.6	45.7	99.2	240.7	439.7	559.8	489.1	732.2	826.9	864.0	824.9	762.4	701.8	573.0	421.5	272.4	137.8	31.4	1.6	0.3	0.3	Diurnal Maximum	





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Ells River - May 2023

Maximum Speed: 36 km/h on May 16 09:00	Maximum Daily Speed Average: 22.3 km/h on May 22	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 8 02:00	Minimum Daily Speed Average: 1.3 km/h on May 19	Hours of Data: 738
Maximum Diurnal Speed Average: 6.3 km/h at hour 13	Minimum Diurnal Speed Average: 0.5 km/h at hour 4	Hours of Missing Data: 6
Monthly Average Velocity: 2.6 km/h 165.6 deg	Percentiles: P ₁ = 1 P ₁₀ = 3 Q ₁ = 6 Median = 10 Q ₃ = 15 P ₉₀ = 22 P ₉₉ = 31	Percent Operational Time: 99.2

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	S9 WNW2	NW2	UO	WNW2	UO	SSE3	SSE12	S16	S17	S21	S19	S21 SSW21	SSW18	SSW17	SSW15	SSW13	SW12	SSW8	S7	NW9	NNW14	N17	SSW8.4	SSW21		
2-May	N12 NNW10	WNW11	WNW11	WNW10	W10	WNW8	WSW1	N3	N2	NNE2	NE3	NNW14	N13	NNW11	NNW10	NNW11	WNW10	NW6	E3	SE4	S2	S2	W2	NW5.4	NNW14	
3-May	WSW1	NW3	SSW4	SW3	S5	SSW8	S10	M	S11	S11	S19	S24	S24	S27	S27	S24	S24	S24	S19	S14	SSE12	SSE13	S12	SSE12	S14.0	S27
4-May	W3	NW3	SSE2	SSE5	S8	SW2	NNW2	SE4	SSE7	E3	SE4	NNW2	NE8	ENE10	NNE19	NNE23	NNE25	NNE26	NE25	NNE23	NNE19	NE21	NE15	NNE10	NE8.5	NNE26
5-May	NNE6	N5	NNE4	NW3	NNW2	SSE2	S6	SSE15	SSE15	SSE16	SE18	SSE19	SE26	SSE25	SE25	SSE28	SSE28	SE25	SE25	SE20	SE16	SE17	NE23	SE16	SE14.5	SSE28
6-May	SSE17	SSE17	SSE16	SSE15	SE13	SSE13	SSE15	SSE18	SSE17	SSE20	SSE22	SSE21	SSE20	SSE19	SE21	SE20	SE23	SE23	SE24	SE19	SSE17	SE15	SE9	SE6	SSE17.3	SE24
7-May	SE6	SE6	SSE7	SSE8	SE8	SE8	SE9	SSE17	SSE19	SSE20	SSE24	SSE23	SE23	SE26	SSE24	SSE24	S18	S12	SE7	ENE4	N2	ENE5	SE6	SSE7	SSE12.3	SE26
8-May	WSW4	N0	SSE9	SSE15	SSE12	SSE14	SSE17	S14	S14	SSE11	SSE14	SE18	S18	S18	S16	S14	SSW13	SW10	W14	WNW7	SW6	SSW6	SW8	WSW3	S9.6	S18
9-May	S6	WNW3	S3	S2	SSW2	NW0	SSE6	S6	SSW5	NE1	N3	WNW2	SSW6	WNW6	SSW4	NNE5	NNE6	NE8	E6	SSE5	SW5	SW7	WSW7	W6	SSW1.4	NE8
10-May	W3	SSW7	S9	SSW10	SSW6	S5	S5	S7	ESE3	SE3	ENE9	ENE7	E6	WSW3	WSW11	WNW2	NNE8	NNE18	NNE16	NE14	NNE11	NNE6	NW4	W2	NE1.5	NNE18
11-May	WNW4	WNW4	WNW3	NW3	W2	WNW2	WNW4	N3	NNE2	E3	SE8	SSE10	S10	SSE7	SE7	E7	ESE5	SE11	SE9	S3	S8	SSW9	SW8	SSE6	SSE2.9	SE11
12-May	S10	SSW8	SSW4	WNW1	SSW4	WSW2	WNW2	NE2	SSE7	SSE9	S13	S17	S21	S18	S17	S15	S15	SSW12	SSW8	S5	SSE9	S13	S14	S14	S9.4	S21
13-May	S13	SSW8	S8	SSW9	SSW11	SSW11	SSW9	SSW7	S10	S14	S15	S18	S20	SSW18	SSW18	SSW20	SSW19	SSW14	S12	S11	S11	SSW11	SSW12	SW11	SSW12.5	S20
14-May	SW12	SW12	WSW11	SW6	SSW10	SSW9	SSW9	SW8	SSW9	S10	S9	S13	S13	SW12	SSW14	SW10	NNW15	NNW15	N12	NNE12	NNE8	N6	WNW4	WNW5	SW4.4	NNW15
15-May	WNW5	WNW3	WNW2	NW2	WNW3	WNW4	NW6	N5	N6	N3	NNE3	SE5	ESE2	SE5	SE10	SE10	S13	SSW12	SSW11	SSW8	SSW9	SSW8	NNW10	NNW10	SW1.9	S13
16-May	NNW13	N15	N12	NNW18	NNW22	NW18	NNW22	NNW27	NNW36	NNW31	NW29	NW32	NW31	NNW31	NNW28	NNW29	NNW29	NNW29	NNE23	NNE19	NNE18	NNE19	NNE10	N13	NNW21.7	NNW36
17-May	NW9	NW8	N16	N27	NNE22	NE19	NE23	NNE25	NNE25	NNE25	NNE23	NNE21	NNE19	NNE19	NE18	NNE17	NNE18	NNE18	NE15	ENE12	E7	E5	SSE2	SSE8	NNE14.9	N27
18-May	S12	S12	S12	SSW7	SW3	S4	S9	S9	SSW9	SW9	SSW10	SSW11	SSE14	SSE15	SSE14	S13	S12	SSW11	SSW11	S8	S7	SSW8	SSW9	SSW10	S9.5	SSE15
19-May	SSW10	SW4	UO	SSW2	SSE4	S7	S8	SSW8	SSW10	SW6	SW10	SSW12	SSW13	SSW11	SW9	WNW5	NNW3	N7	NNE17	N18	NNE31	NNE22	NNE15	N13	NW1.3	NNE31
20-May	N18	NNE15	NNE14	NNE15	N13	NNE13	NNE13	NNE16	NNE14	N10	NE9	NNE10	NE9	NE8	NE7	NE6	E6	NE5	N4	NE4	ENE1	SSE7	SSE11	SSE13	NNE7.6	N18
21-May	S9	SSW4	NW2	UO	NW1	WNW4	WNW2	WNW1	SSE5	S11	SSW10	S10	S10	S10	S8	SSE9	SSE9	SE9	S1	NW6	SSW3	SE2	NW5	N6	S3.8	S11
22-May	NNE8	N9	N13	NNE19	NNE19	NNE21	NNE20	NNE23	NNE22	NNE24	NNE28	NNE29	NNE31	NNE27	NE30	NE32	NE33	NE34	NE32	NE24	NE22	ENE15	ENE19	ENE20	NNE22.3	NE34
23-May	ENE19	ENE15	ENE15	NE14	NE14	NE17	NE15	E14	E15	ESE16	SE11	ESE15	SE11	E8	E8	ESE11	E10	ESE7	SE9	ESE10	SSE12	ESE7	SSE7	SSE7	E10.0	ENE19
24-May	SSE12	SE8	ESE6	SE7	SE13	SSE14	SSE18	SSE16	S14	S13	SSW12	S9	S8	WSW9	WSW14	WSW13	WSW9	WSW10	WSW10	WSW9	WSW7	WSW7	W7	W6	SSW7.7	SSE18
25-May	WSW6	W6	W8	WNW9	W5	WSW6	WSW7	WSW5	NW3	N3	NNE7	NNE5	NNE9	NNE9	NNE10	NNE10	NE8	NE5	E7	E6	UO	SSE4	S9	S10	NNW1.6	S10
26-May	SSE9	S7	S7	SE3	S9	S9	S10	S9	S8	S6	SE7	SSE4	SSE5	SE8	SSW2	S7	SSE10	SSE9	SSE9	SSE11	SSE9	S9	S11	SSE12	SSE7.7	SSE12
27-May	S8	WSW3	WNW3	W2	SSW1	SW1	SSE5	S11	SSW16	SSW20	S23	S22	S25	S25	S22	S21	S22	S19	S17	S12	S9	S9	S9	S10	S12.8	S25
28-May	SSW8	SSW8	S10	S5	SSE7	S8	SSW8	SSW12	SSW10	SSW12	SW16	WSW20	WSW19	WSW19	WSW20	SW17	W17	W19	W17	WNW14	NW11	WNW6	WSW6	WSW5	WSW10.0	WSW20
29-May	W5	W5	W7	WSW7	SW6	S7	S6	SSE8	S7	S8	WSW16	WSW18	SW18	WSW20	SW26	SW22	WSW15	WSW14	WSW11	W8	WNW7	NW4	WNW1	NW3	SW8.9	SW26
30-May	W4	WNW4	W3	SW4	SW2	WSW1	SW1	NNW1	N2	SE4	SE5	S7	S7	SSW9	SW8	NNW15	NNW20	NW16	NW8	SSE2	ENE2	ESE6	SE1	WNW5	W2.5	WNW20
31-May	WSW6	W3	WSW4	SW4	WSW6	WSW7	SW6	SW5	WSW5	N4	NNW4	NNE3	ENE9	SSE6	SSE10	SW12	SSW11	S9	SSE7	W3	N15	NE14	NE7	NW3	SW1.4	N15

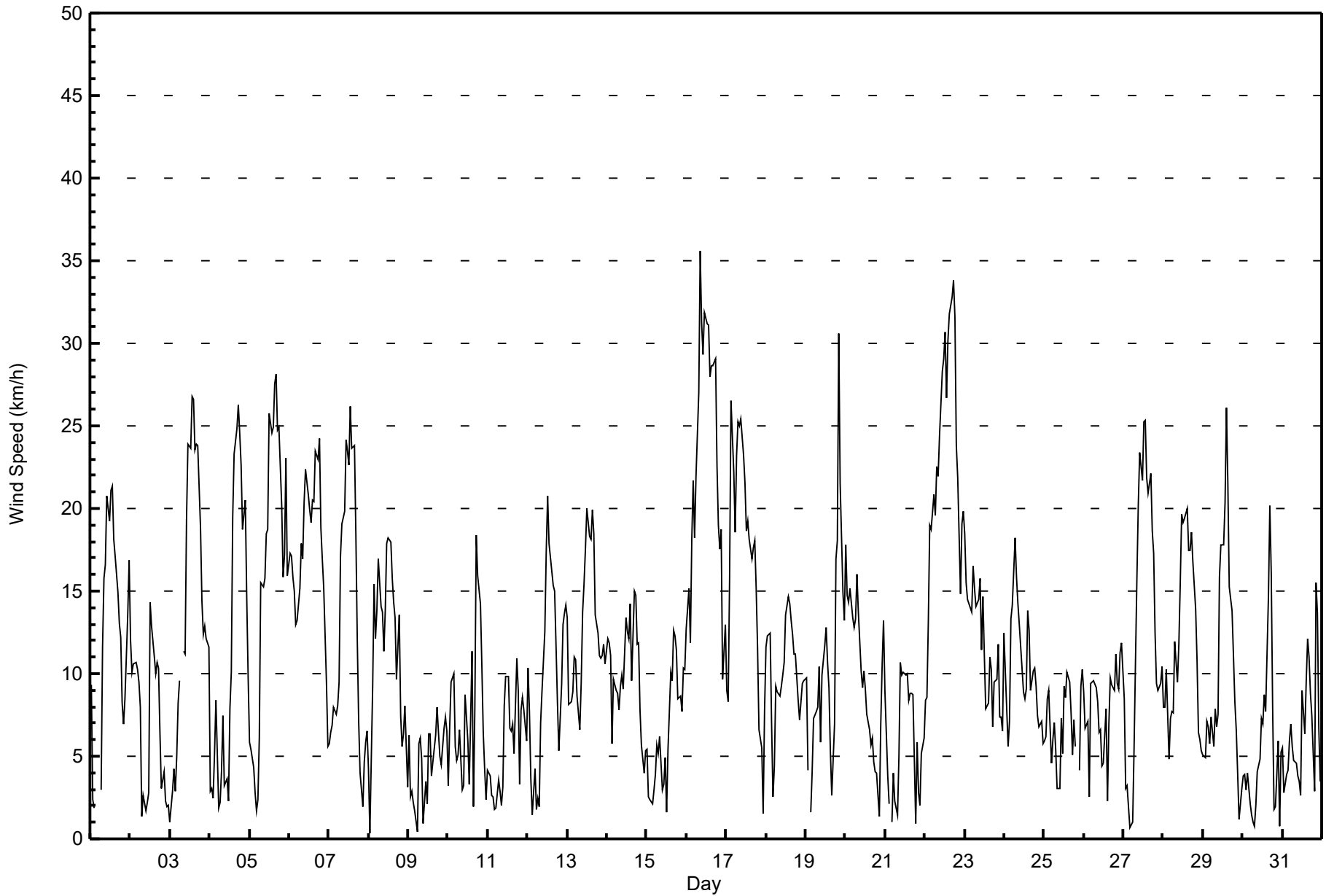
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ENE19	SSE17	SSE16	N27	NNE22	NNE21	NE23	NNW27	NNW36	NNW31	NW29	NW32	NW31	NNW31	NE30	NE32	NE33	NE34	NE32	NE24	NNE31	NNE22	SE23	ENE20	Diurnal Maximum

M - Maintenance UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Ells River - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Ells River - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	168	22.76	22.76
6 - 11	278	37.67	60.43
12 - 19	193	26.15	86.59
20 - 28	82	11.11	97.70
29 - 38	17	2.30	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 738

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Ells River - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	13	7	6	4	4	3	11	13	12	11	11	12	13	27	15	6	168
6 - 11	6	15	9	4	10	6	22	32	61	46	16	19	8	10	9	5	278
12 - 19	14	24	10	6	2	2	9	36	41	19	7	9	4	2	2	6	193
20 - 28	1	20	4	1	0	0	13	12	18	3	2	3	0	1	0	4	82
29 - 38	0	3	5	0	0	0	0	0	0	0	0	0	0	0	3	6	17
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	34	69	34	15	16	11	55	93	132	79	36	43	25	40	29	27	738

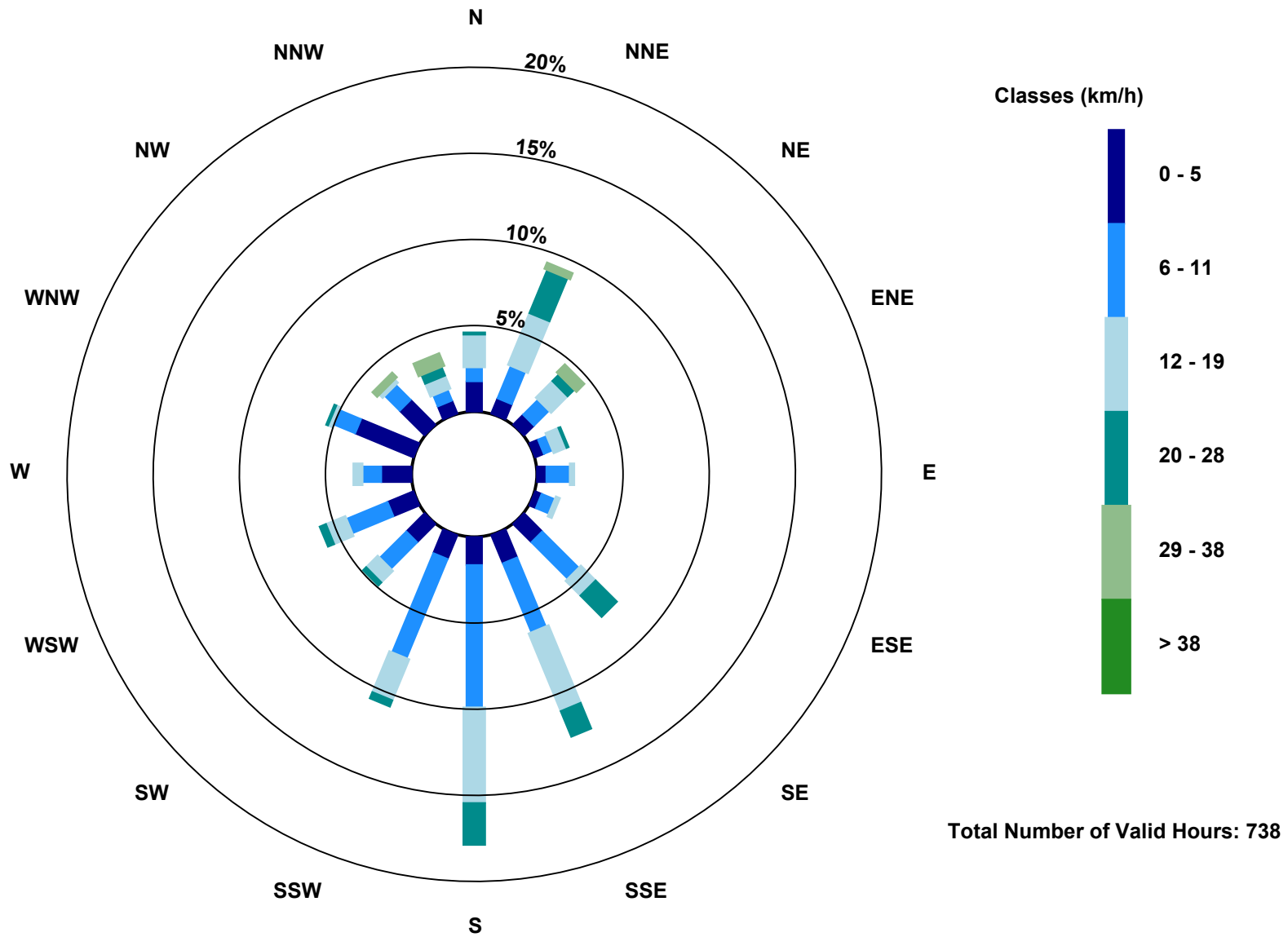
Total Number of Valid Hours: 738

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Ells River





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Ells River - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 8 km/h on May 16 08:00														Hours in Service: 744 Hours of Data: 738 Hours of Missing Data: 6 Hours of Calibration: 0 Percent Operational Time: 99.2											
Minimum Value: 1 km/h on May 7 05:00																									
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	4	1	1	UO	1	UO	3	2	3	4	5	4	6	5	5	5	4	4	4	2	1	5	6	4	6
2-May	3	2	2	2	2	2	2	2	1	2	3	3	5	7	6	5	5	3	4	1	1	1	2	1	7
3-May	1	1	2	2	2	2	1	M	3	4	6	6	6	7	6	5	5	5	4	3	2	2	1	2	7
4-May	1	2	1	2	1	2	4	1	3	2	2	3	4	4	4	3	4	3	4	3	2	4	3	3	4
5-May	2	1	1	2	1	2	3	4	3	3	4	5	6	6	6	6	5	6	5	3	3	4	3	6	
6-May	3	4	2	2	2	1	2	3	4	5	5	5	5	7	5	6	5	5	5	4	4	2	2	1	7
7-May	1	1	1	1	1	1	2	3	3	5	5	6	6	7	6	5	5	4	2	1	1	2	1	1	7
8-May	3	1	2	3	2	2	3	3	3	4	5	5	5	5	4	5	4	3	4	4	3	3	2	2	5
9-May	3	1	1	2	1	1	2	2	2	2	2	3	4	4	2	2	3	3	1	1	3	2	2	2	4
10-May	1	2	3	2	2	1	1	1	2	1	3	3	3	6	4	4	6	2	2	2	1	3	1	1	6
11-May	1	1	1	2	1	1	2	1	2	2	3	4	4	5	3	3	4	3	2	1	2	2	2	2	5
12-May	2	3	2	1	2	2	1	1	2	3	4	7	6	6	5	6	5	3	3	1	3	2	2	2	7
13-May	2	3	1	1	1	1	1	1	3	2	4	4	4	5	5	5	4	4	2	2	2	2	2	3	5
14-May	4	3	3	3	2	3	2	2	2	3	3	4	5	5	6	6	4	3	3	3	2	2	2	2	6
15-May	1	1	2	1	2	2	2	2	2	1	2	3	2	3	3	5	4	3	4	2	1	3	3	3	5
16-May	4	5	3	6	5	5	6	8	8	7	7	7	7	7	7	7	6	6	5	3	4	4	3	3	8
17-May	2	3	4	5	5	3	4	5	3	4	4	5	5	5	6	5	5	4	3	3	1	1	2	3	6
18-May	3	2	2	1	2	2	3	3	3	4	4	4	5	5	5	5	4	4	3	2	1	1	1	2	5
19-May	3	3	UO	1	2	1	1	2	3	2	3	3	4	3	3	2	1	3	3	4	5	5	4	2	5
20-May	3	3	3	2	3	2	3	3	2	2	3	3	3	4	3	3	2	2	1	2	1	3	2	3	4
21-May	3	2	2	UO	1	2	1	1	3	2	3	2	3	3	2	3	2	1	2	3	2	2	2	2	3
22-May	2	1	3	2	4	5	4	4	3	3	4	4	4	5	5	5	5	6	4	4	3	4	3	3	6
23-May	3	3	3	2	2	3	2	3	3	4	3	3	3	2	3	2	2	2	3	2	2	2	3	3	4
24-May	4	3	1	2	2	3	4	3	3	3	3	3	3	3	4	4	4	4	3	3	2	2	2	2	4
25-May	1	1	2	1	2	1	1	1	2	1	4	4	4	4	3	3	4	3	2	1	UO	4	1	2	4
26-May	2	2	1	2	1	1	1	2	2	2	3	3	4	3	3	4	4	3	3	2	1	1	1	1	4
27-May	3	1	1	1	1	1	3	3	4	5	6	5	6	6	6	5	5	4	4	3	1	1	1	2	6
28-May	2	1	1	3	2	2	2	3	3	4	5	5	7	7	6	6	6	7	6	4	3	2	1	2	7
29-May	1	2	1	2	2	2	1	2	3	4	5	6	6	6	8	6	5	5	4	3	2	3	1	1	8
30-May	1	2	2	2	1	1	1	1	1	3	3	4	5	3	4	4	5	4	3	1	3	4	3	2	5
31-May	2	1	2	1	2	2	2	1	2	3	4	3	4	4	3	3	3	2	2	6	3	3	5	3	6
Diurnal Maximum																									
M - Maintenance UO - Unstable Operation																									



Wood Buffalo Environmental Association
Summary of Hour Averages

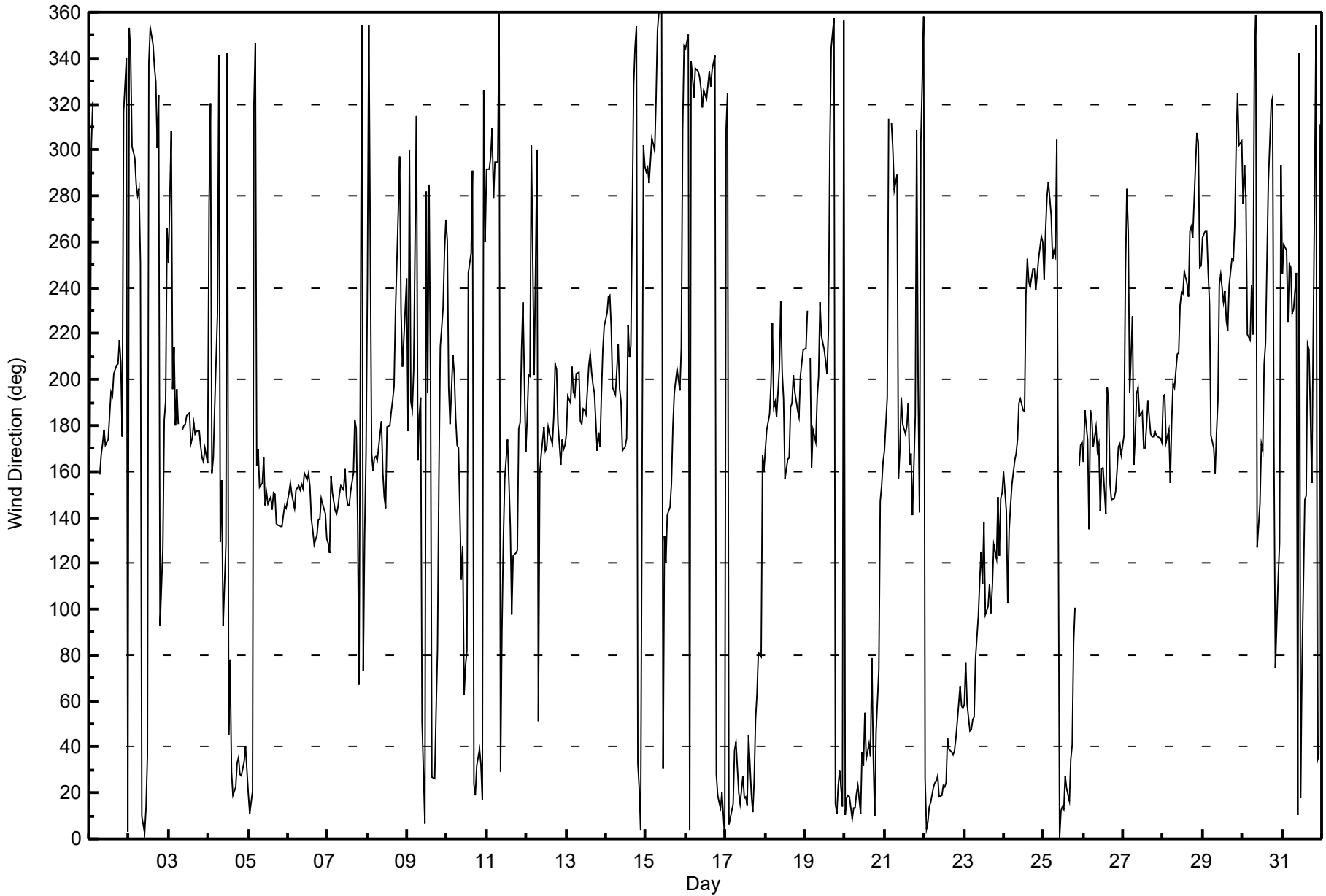
Wind Direction (WD) - deg
Ells River - May 2023

Direction of Maximum Speed: 332 deg on May 16 09:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 32.1 deg on May 22	Hours of Data: 738
Direction of Minimum Speed: 354 deg on May 8 02:00	Hours of Missing Data: 6
Direction of Minimum Daily Speed Average: 1.3 deg on May 19	Percent Operational Time: 99.2
Monthly Average Direction: 165.6 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	171	302	321	UO	302	UO	159	167	172	178	171	174	184	195	193	202	206	207	217	207	175	317	340	3	193.1
2-May	353	342	301	297	285	280	283	251	10	3	13	36	338	353	346	336	329	301	324	93	127	182	190	266	323.9
3-May	251	308	196	214	180	196	180	M	178	180	181	185	185	172	174	181	176	178	178	171	166	164	170	164	178.0
4-May	276	321	159	166	189	229	341	129	156	93	128	342	45	78	29	19	23	33	35	28	27	34	40	30	36.5
5-May	20	11	21	320	347	163	169	153	155	166	145	150	146	149	144	151	150	138	137	136	136	141	145	144	144.3
6-May	151	155	150	147	144	152	154	152	155	152	159	156	159	153	139	134	128	133	139	139	149	146	142	131	146.7
7-May	129	125	158	151	143	142	145	150	154	152	161	150	145	145	152	160	182	179	140	67	355	73	132	168	151.1
8-May	243	354	168	160	166	167	165	177	182	159	149	144	180	180	186	191	197	229	273	297	229	206	218	244	183.6
9-May	177	300	190	186	204	315	165	184	192	51	7	282	194	285	204	27	26	55	82	156	214	231	256	269	207.0
10-May	261	197	181	211	203	183	171	170	113	128	63	76	82	246	255	291	24	19	32	39	33	17	326	260	54.2
11-May	292	292	297	310	279	294	295	360	30	91	130	157	174	155	135	98	123	125	126	179	181	213	234	168	161.6
12-May	182	202	201	302	202	249	300	51	160	167	179	169	171	179	176	172	183	207	205	180	163	174	169	172	178.9
13-May	176	193	190	206	195	193	203	203	182	181	187	187	185	206	211	203	197	194	169	177	171	193	213	224	193.4
14-May	229	236	237	223	196	194	205	215	196	191	169	171	174	224	210	215	328	345	354	33	22	4	302	293	226.3
15-May	290	293	286	305	303	299	322	352	360	360	31	132	120	141	145	155	180	194	200	204	195	213	309	346	218.1
16-May	344	350	4	339	332	323	336	334	332	327	319	326	322	328	334	328	335	341	28	19	16	14	20	1	339.8
17-May	309	325	6	9	15	39	42	31	20	15	27	17	18	15	45	19	12	25	52	63	81	79	167	161	24.8
18-May	170	178	185	198	225	188	190	184	205	234	203	192	157	166	166	188	190	202	195	187	184	201	207	213	188.8
19-May	213	230	UO	209	162	178	173	192	201	233	219	213	208	203	221	300	345	358	15	11	23	30	14	356	322.3
20-May	11	18	19	19	8	14	14	19	23	11	38	32	55	35	41	36	79	36	10	46	74	147	154	164	30.9
21-May	169	192	314	UO	312	300	283	289	157	169	192	181	176	180	190	163	168	141	184	309	200	142	304	358	184.2
22-May	27	4	7	14	16	22	25	25	28	18	19	23	22	25	44	39	38	37	39	44	51	66	58	57	32.1
23-May	59	77	58	47	48	52	53	79	97	112	125	111	138	98	101	111	98	110	128	122	149	123	148	151	93.3
24-May	160	143	102	134	145	154	165	167	174	190	192	187	186	237	253	243	240	248	248	239	245	252	262	260	197.7
25-May	243	265	279	286	271	253	256	254	304	0	12	14	13	28	22	17	35	41	85	101	UO	162	172	173	338.2
26-May	164	187	174	135	187	183	171	180	169	172	143	161	162	142	196	189	154	148	148	151	160	171	172	167	166.0
27-May	176	247	283	265	194	228	163	176	194	197	184	186	170	170	179	191	177	175	175	177	175	175	175	173	181.2
28-May	193	193	173	178	155	182	199	196	211	212	233	238	237	247	242	236	265	267	262	294	308	303	249	250	236.8
29-May	262	265	265	247	233	176	170	159	177	191	242	246	234	239	226	222	241	253	252	267	302	325	302	304	236.1
30-May	277	294	278	220	217	241	219	334	359	127	146	172	169	207	216	286	302	320	323	167	74	113	129	293	266.0
31-May	246	259	256	225	250	249	229	231	247	11	342	18	74	148	149	215	213	186	155	280	354	34	37	311	232.6

193.7 242.2 214.1 292.3 197.3 176.6 163.2 150.3 161.1 164.9 166.5 168.2 168.1 178.5 176.7 185.5 181.4 149.4 114.2 97.6 99.1 119.5 168.9 175.5
 Diurnal Average

M - Maintenance UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Ells River - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 97 deg on May 9 10:00 Minimum Value: 4 deg on May 15 21:00 Percentiles: P ₁ = 6 P ₁₀ = 8 Q ₁ = 12 Median = 20 Q ₃ = 33 P ₉₀ = 57 P ₉₉ = 90																		Hours in Service: 744 Hours of Data: 738 Hours of Missing Data: 6 Hours of Calibration: 0 Percent Operational Time: 99.2							
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	12	39	34	UO	27	UO	74	13	14	16	17	19	19	20	20	24	21	17	22	20	7	65	35	13	74
2-May	26	20	12	9	11	11	15	89	38	74	78	83	28	50	47	41	38	32	59	38	16	57	54	45	89
3-May	63	19	28	49	25	8	10	M	19	28	18	20	19	19	16	19	15	15	13	10	9	8	8	9	63
4-May	47	55	46	12	7	76	89	33	22	67	68	84	46	36	13	7	9	10	8	6	6	7	8	24	89
5-May	19	16	19	37	39	76	40	10	12	19	15	17	11	18	16	14	15	13	11	9	8	9	7	8	76
6-May	8	9	7	6	7	6	9	10	15	13	21	17	20	24	23	17	14	15	12	8	8	6	7	8	24
7-May	8	9	11	9	5	6	9	9	13	16	16	19	17	15	15	15	19	23	13	24	64	37	14	29	64
8-May	59	87	23	9	8	10	11	16	24	22	21	16	24	21	21	25	27	40	19	39	54	48	22	48	87
9-May	38	41	57	80	70	86	19	23	41	97	45	88	73	58	59	43	40	29	23	23	34	21	22	22	97
10-May	43	29	16	9	16	12	14	15	55	49	26	37	56	92	27	95	59	11	12	8	8	28	15	52	95
11-May	26	11	30	30	31	43	21	68	52	69	42	31	43	76	41	48	60	17	14	34	10	15	17	39	76
12-May	13	42	44	33	35	64	57	48	33	26	26	27	21	27	23	29	27	20	17	13	17	8	7	8	64
13-May	7	21	6	9	7	6	9	15	17	17	18	19	16	19	16	18	16	11	9	8	13	14	18	21	21
14-May	18	21	20	68	13	19	17	21	22	18	34	15	32	35	34	44	33	20	17	8	15	25	52	11	68
15-May	16	58	39	51	48	35	14	21	19	25	49	47	90	62	24	38	26	16	18	11	4	25	22	14	90
16-May	17	15	20	16	11	15	17	17	14	14	14	16	15	17	16	15	18	12	8	8	9	12	17	20	20
17-May	13	30	15	12	15	10	9	10	10	14	14	14	21	22	24	22	22	19	15	13	12	12	73	15	73
18-May	8	9	8	11	58	31	16	26	44	44	48	41	24	29	28	32	29	22	16	13	7	8	8	10	58
19-May	12	62	UO	78	20	6	9	13	22	30	27	18	20	22	26	29	41	17	7	8	8	8	15	12	78
20-May	8	7	8	9	9	8	10	11	11	21	27	28	32	32	56	51	30	24	39	45	58	30	10	8	58
21-May	14	58	34	UO	70	23	48	54	65	17	24	24	22	26	31	22	21	10	83	34	72	90	24	27	90
22-May	8	11	12	6	7	8	8	8	9	8	9	9	7	12	11	10	9	8	8	9	9	10	9	9	12
23-May	9	11	10	9	8	9	10	15	14	13	15	12	11	23	17	13	14	16	14	12	9	12	13	19	23
24-May	13	14	21	12	7	10	12	12	13	15	20	34	27	28	23	23	26	23	23	21	20	18	20	20	34
25-May	17	20	13	10	32	13	12	36	62	43	41	63	27	34	28	24	44	49	39	11	UO	8	8	9	63
26-May	20	24	13	68	5	7	11	21	24	34	53	91	77	51	96	67	32	26	16	7	5	8	7	7	96
27-May	23	11	14	36	65	50	16	16	19	18	17	21	16	21	21	21	16	17	13	12	9	6	10	12	65
28-May	24	25	11	26	17	17	21	20	25	29	28	25	28	26	25	24	28	23	23	18	15	18	23	23	29
29-May	19	27	15	20	22	15	27	22	37	49	26	28	29	23	23	23	28	31	31	29	22	52	65	30	65
30-May	19	32	36	45	43	53	69	81	66	74	76	50	69	43	53	27	15	15	15	78	86	42	86	39	86
31-May	43	55	41	35	23	19	24	32	65	61	79	87	44	62	48	21	21	29	11	67	25	12	51	91	91
63 87 57 80 70 86 89 89 66 97 79 91 90 92 96 95 60 49 83 78 86 90 86 91																								Diurnal Maximum	
M - Maintenance																								UO - Unstable Operation	



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS506
JACKFISH 1
MAY 2023**

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 1 (AMS506)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	710	34	34	100	37.9	0	4.7	0
H2S (ppb) Average	708	36	36	100	8.6	0	0.8	0
NO2 (ppb) Average	708	36	36	100	23.1	0	4.5	-
NO (ppb) Average	708	36	36	100	7	-	0.8	-
NOX (ppb) Average	708	36	36	100	28.5	-	4.8	-
Temperature 2 m (C) Average	744	0	0	100	30.6	-	22.5	-
Relative Humidity (%) Average	744	0	0	100	97.9	-	90.4	-
Wind Speed 10 m (km/h) Average	744	0	0	100	19	-	13	-
Wind Direction 10 m (deg) Average	744	0	0	100	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 1 (AMS506)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	710	0.57	2.1	-	0	0	0	0.1	0.4	0.9	37.9
H2S (ppb) Average	708	0.25	0.5	-	0	0	0	0.1	0.3	0.5	8.6
NO2 (ppb) Average	708	2.13	2.3	-	0.1	0.4	0.8	1.4	2.8	4.5	23.1
NO (ppb) Average	708	0.32	0.7	-	0	0	0	0	0.3	1	7
NOX (ppb) Average	708	2.44	2.7	-	0.1	0.5	0.8	1.5	3.2	5.5	28.5
Temperature 2 m (C) Average	744	15.15	6.2	-	-1.1	7.2	10.2	14.7	19.7	23.8	30.6
Relative Humidity (%) Average	744	52.26	21.8	-	14.2	25.2	34.5	49.1	67.9	86.7	97.9
Wind Speed 10 m (km/h) Average	744	6.3	4	-	0	2	4	6	8	12	19
Wind Direction 10 m (deg) Average	744	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 1 (AMS506)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
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No operational issues to report



Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 37.9 ppb on May 16 21:00	Maximum Daily Average: 4.7 ppb on May 16		Hours of Data:	710
Minimum Value: 0.0 ppb on May 3 00:00	Minimum Daily Average: 0.0 ppb on May 7		Hours of Missing Data:	34
Maximum Diurnal Average: 1.4 ppb at hour 21	Minimum Diurnal Average: 0.2 ppb at hour 24		Hours of Calibration:	34
Monthly Average: 0.57 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.4 P ₉₀ = 0.9 P ₉₉ = 7.2		Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	0.5	Z	0.4	0.5	0.5	0.4	0.5	0.6	0.8	0.8	0.6	0.5	0.5	0.3	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.5	0.7	0.7	0.4	0.8																						
2-May	0.4	0.5	Z	4.1	2.0	1.8	4.6	8.2	0.6	1.9	3.7	3.7	3.2	5.1	5.0	1.3	2.0	1.7	1.7	0.7	0.1	0.2	0.5	0.0	2.3	8.2																						
3-May	0.0	0.0	0.0	Z	0.0	0.1	0.3	0.1	0.1	0.1	0.3	0.3	0.2	0.1	0.2	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.4	0.2	0.4																						
4-May	0.7	0.6	0.5	0.4	Z	0.5	0.6	0.6	0.6	0.6	0.7	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.4	0.7																						
5-May	0.1	0.2	0.2	0.2	0.0	Z	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2																						
6-May	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1																						
7-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1																						
8-May	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1																						
9-May	0.0	0.0	0.0	Z	0.0	0.1	0.1	0.3	0.4	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.5																						
10-May	0.0	0.0	0.0	0.1	Z	0.0	1.2	2.4	5.6	8.8	4.4	1.2	0.5	1.1	0.7	0.5	0.9	0.5	0.1	0.2	0.2	0.2	0.2	0.0	1.3	8.8																						
11-May	0.1	0.1	0.0	0.2	0.2	Z	0.0	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.4	0.2	0.3	0.1	0.4																							
12-May	Z	0.3	0.2	0.2	0.1	0.1	0.3	0.3	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.8	1.3	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.2	1.3																						
13-May	0.1	Z	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3																						
14-May	0.1	0.3	Z	0.1	0.0	0.0	0.1	0.2	0.4	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4																						
15-May	0.0	0.0	0.0	Z	0.0	0.1	0.5	1.0	0.6	0.3	0.3	0.1	0.1	0.2	0.0	0.0	0.0	0.1	0.1	0.3	0.2	0.3	0.2	0.2	0.2	1.0																						
16-May	0.2	0.2	2.9	2.1	Z	1.0	1.3	0.6	0.4	0.7	0.7	0.4	3.0	1.4	1.1	0.1	2.5	1.1	7.4	21.1	37.9	20.1	0.8	0.5	4.7	37.9																						
17-May	2.9	5.0	0.7	3.1	13.5	Z	2.5	1.3	0.4	0.7	0.6	0.3	0.3	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	1.4	13.5																						
18-May	Z	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	C	C	C	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2																						
19-May	0.1	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.5	4.8	5.0	0.8	0.9	1.2	1.4	0.7	0.9	1.5	0.8	5.0																						
20-May	2.0	2.2	Z	0.9	0.5	0.4	0.4	0.4	0.4	0.6	0.6	0.7	0.6	0.6	0.7	0.9	0.9	0.9	0.8	0.6	0.4	0.3	0.3	0.2	0.7	2.2																						
21-May	0.2	0.2	0.1	Z	0.2	0.2	0.2	0.3	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	1.1	0.7	0.7	0.5	0.4	0.4	0.4	0.3	0.5	1.1																						
22-May	0.2	0.2	0.1	0.0	Z	0.1	0.0	0.2	0.1	0.2	0.3	0.2	0.3	0.3	0.3	0.4	0.2	0.4	0.5	0.1	0.0	0.0	0.1	0.1	0.2	0.5																						
23-May	0.3	0.2	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3																						
24-May	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.6	3.9	4.1	2.6	0.8	0.3	0.2	0.1	0.1	0.6	4.1																						
25-May	0.4	Z	0.2	0.3	0.3	0.2	0.4	0.7	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.7																						
26-May	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.4	0.2	0.7	1.9	0.3	0.2	0.1	0.3	0.6	1.6	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.4	1.9																						
27-May	0.1	0.1	0.1	Z	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.4																						
28-May	0.2	0.2	0.1	0.1	Z	0.2	0.2	0.6	0.5	0.6	0.2	0.3	0.3	0.1	0.5	0.1	0.2	0.2	14.8	0.7	1.1	0.3	3.4	1.1	1.1	14.8																						
29-May	0.1	0.3	0.1	0.1	0.0	Z	0.6	1.2	0.8	0.5	0.4	2.5	0.1	0.6	0.3	0.1	0.5	0.3	0.1	0.0	0.0	0.1	0.1	0.2	0.4	2.5																						
30-May	Z	0.1	0.2	0.6	0.8	1.2	3.0	2.8	0.5	0.4	0.2	0.2	0.7	0.6	0.2	0.0	0.0	0.3	0.3	0.7	0.1	0.0	0.0	0.0	0.6	3.0																						
31-May	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.3	0.4	0.3	0.3	1.0	2.0	1.0	1.4	1.0	0.6	0.6	0.2	0.1	1.0	0.5	2.0																						
																								0.3	0.4	0.2	0.5	0.7	0.3	0.6	0.8	0.5	0.6	0.6	0.4	0.4	0.4	0.4	0.5	0.7	0.4	1.0	0.9	1.4	0.8	0.3	0.2	Diurnal Average
																								2.9	5.0	2.9	4.1	13.5	1.8	4.6	8.2	5.6	8.8	4.4	3.7	3.2	5.1	5.0	4.8	5.0	4.1	14.8	21.1	37.9	20.1	3.4	1.5	Diurnal Maximum

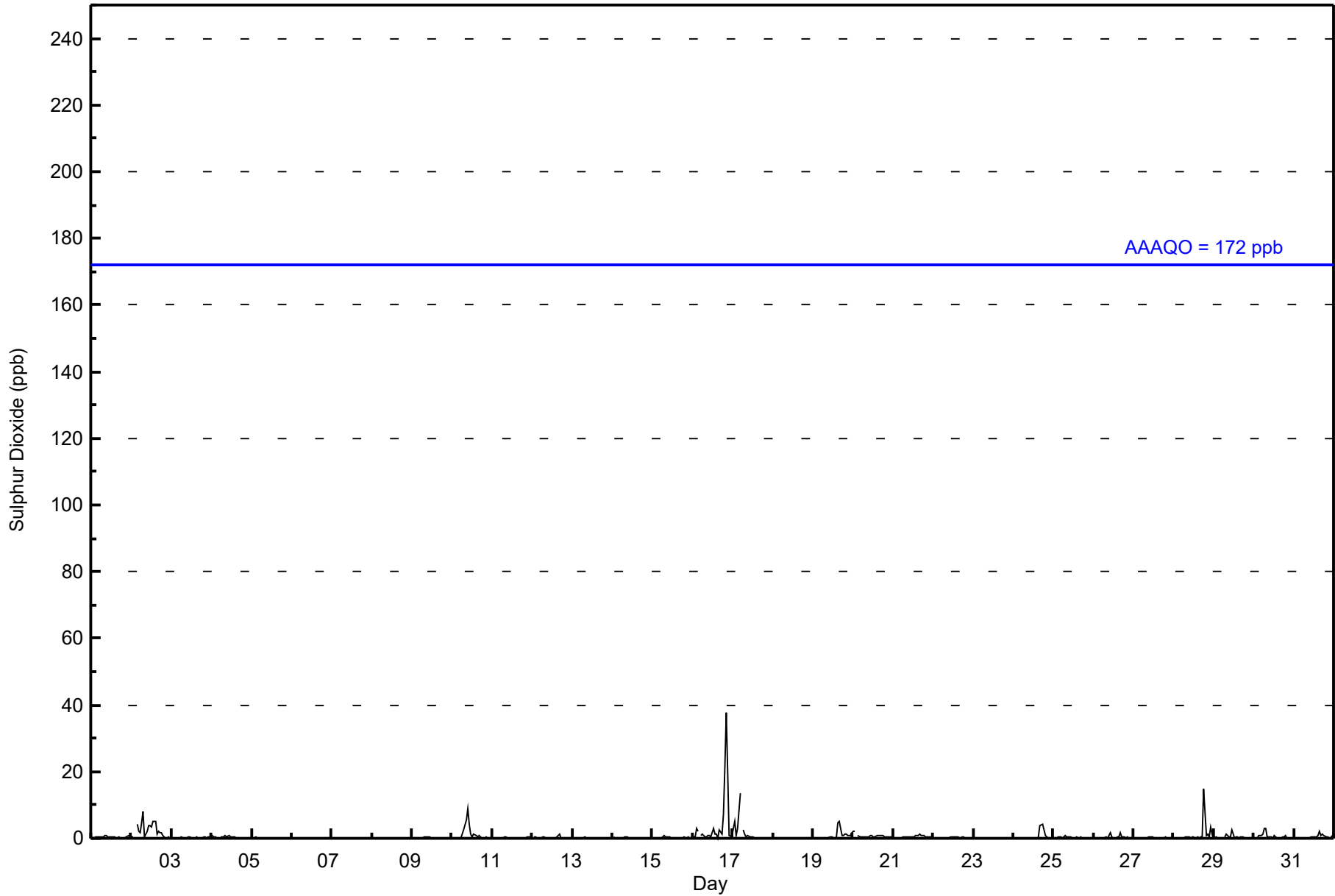
Z - zerospan C - Calibration

Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Jackfish 1 - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Jackfish 1 - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	705	99.30	99.30
11 - 20	3	0.42	99.72
21 - 60	2	0.28	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 710

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Jackfish 1 - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	22	14	16	12	21	41	92	79	176	64	35	19	26	12	24	52	705
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	22	14	16	12	21	41	92	79	176	64	35	19	26	12	29	52	710

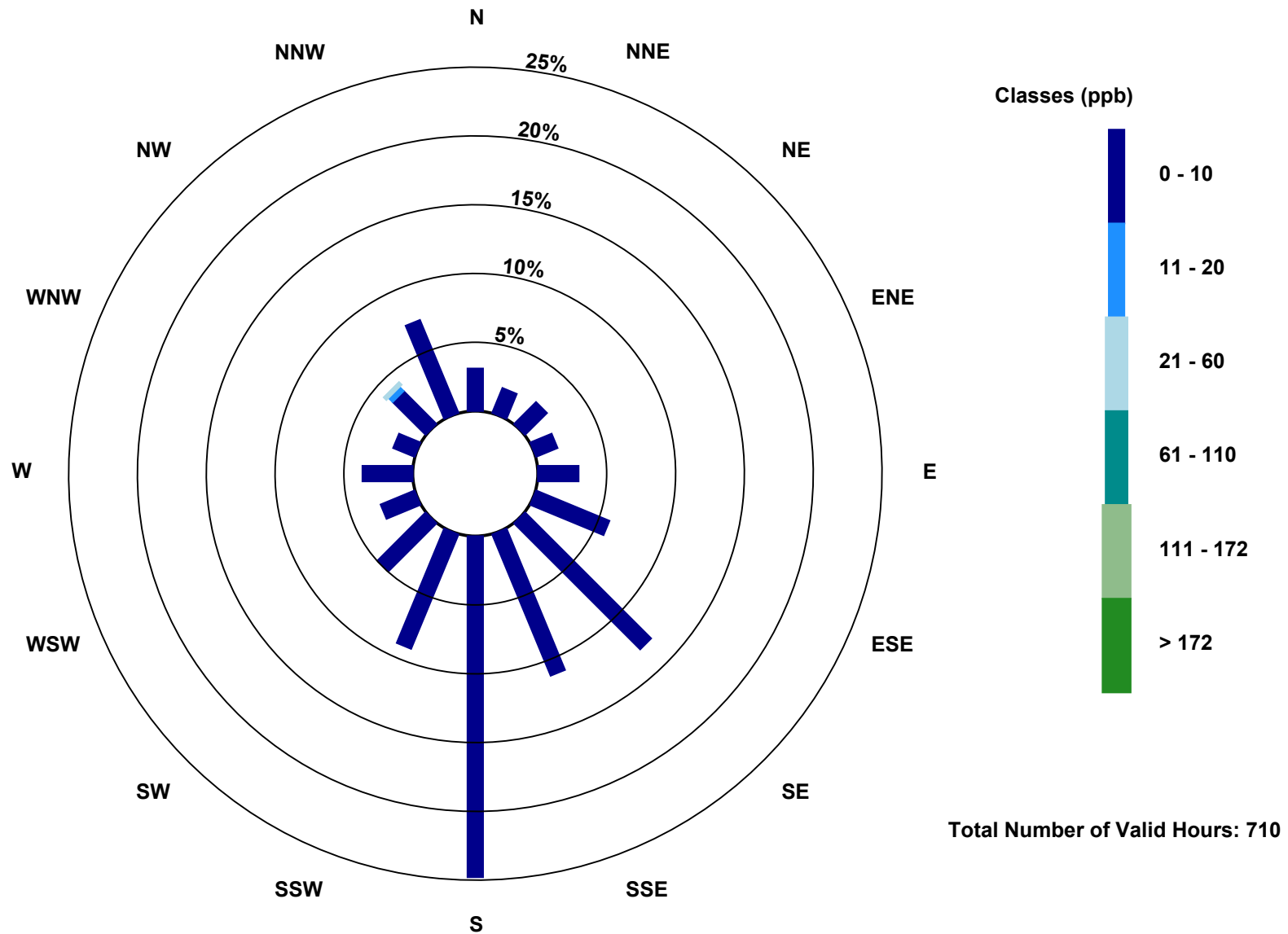
Total Number of Valid Hours: 710

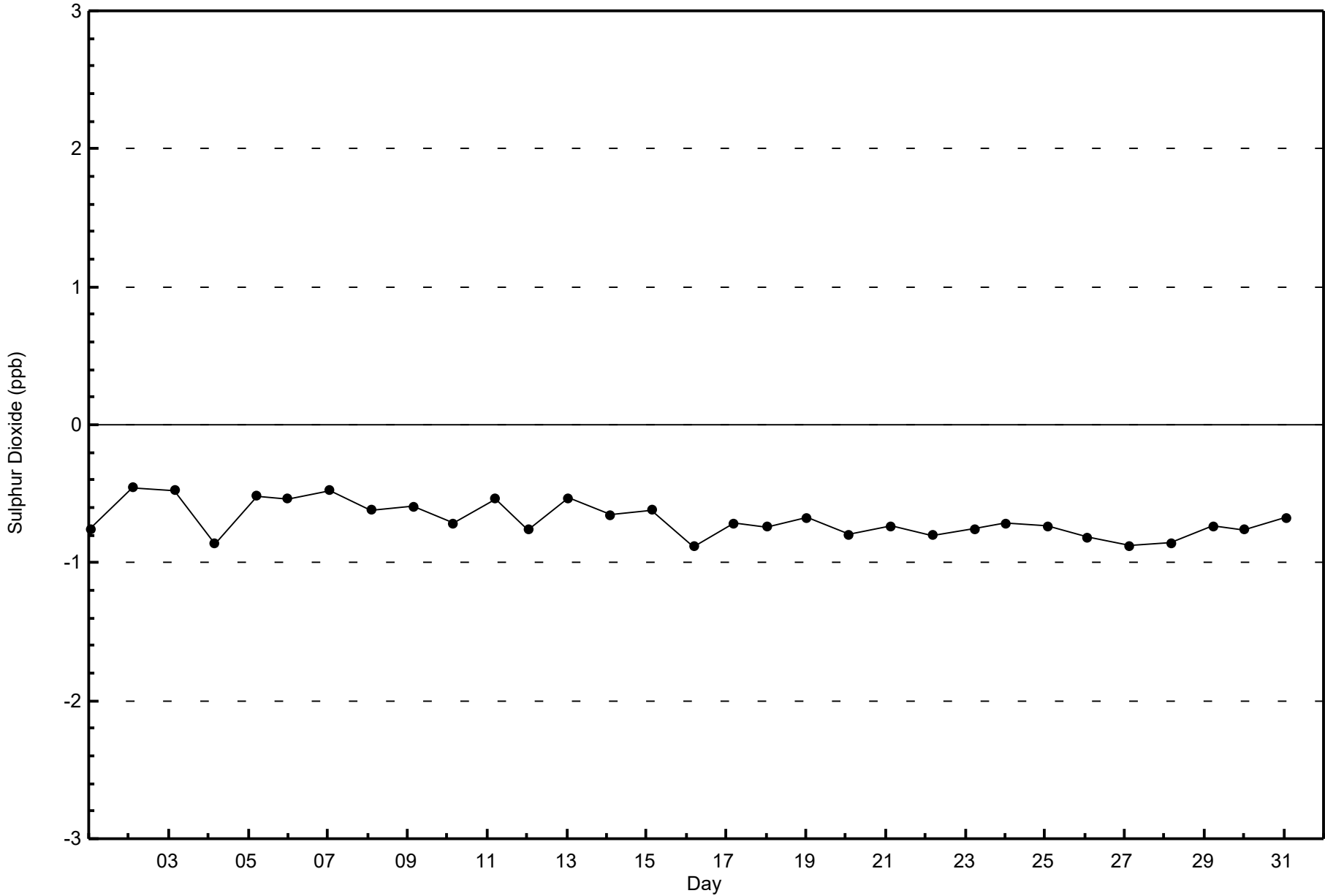
Total Number of Hours: 744

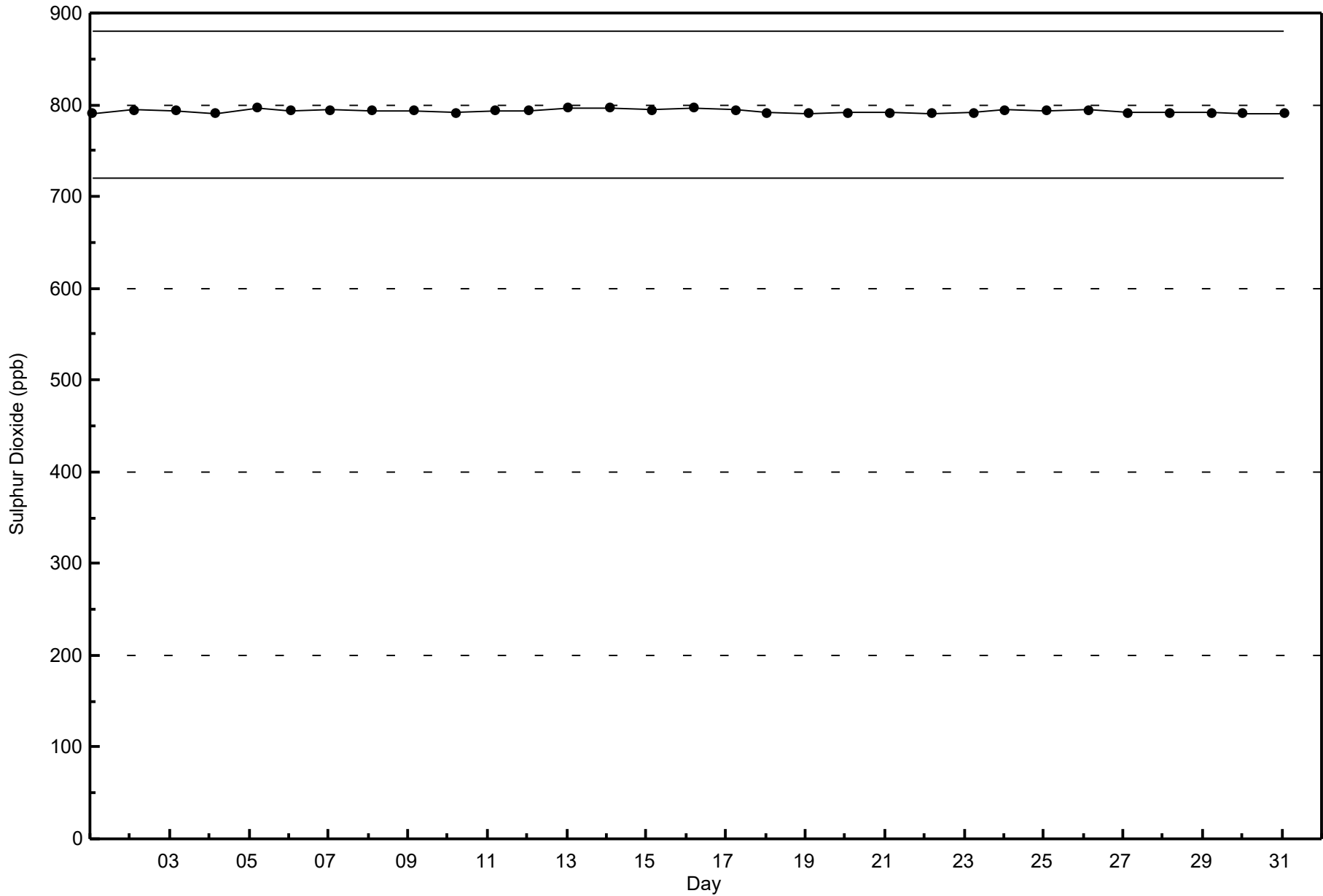


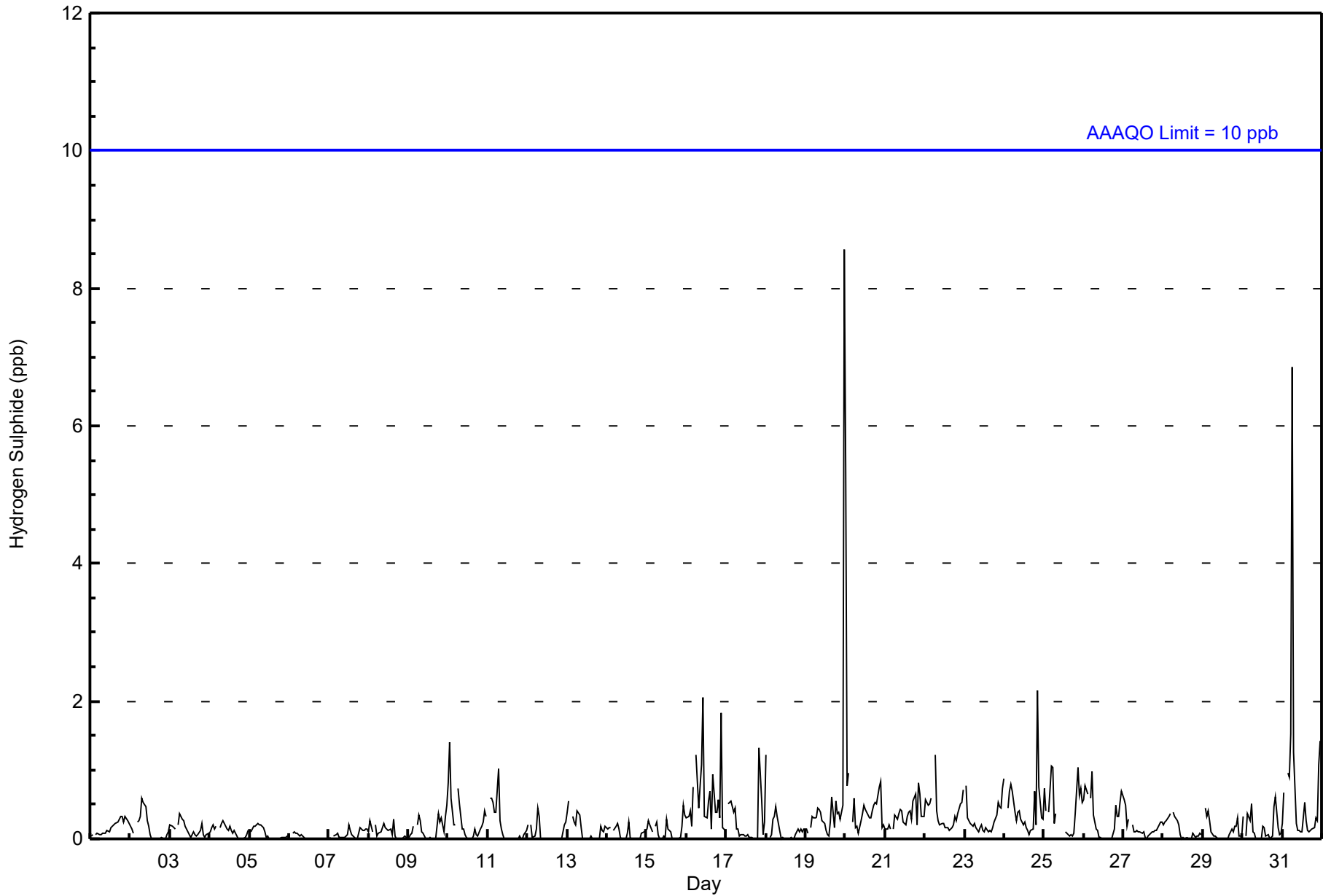
Wood Buffalo Environmental Association
Wind Rose May 2023

Sulphur Dioxide (SO₂) - ppb
Jackfish 1











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Jackfish 1 - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	705	99.58	99.58
3 - 4	0	0.00	99.58
5 - 7	2	0.28	99.86
8 - 11	1	0.14	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Jackfish 1 - May 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	17	14	16	12	20	40	94	83	172	63	35	21	25	12	31	50	705
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	17	14	16	12	20	40	94	83	172	63	35	21	25	12	32	52	708

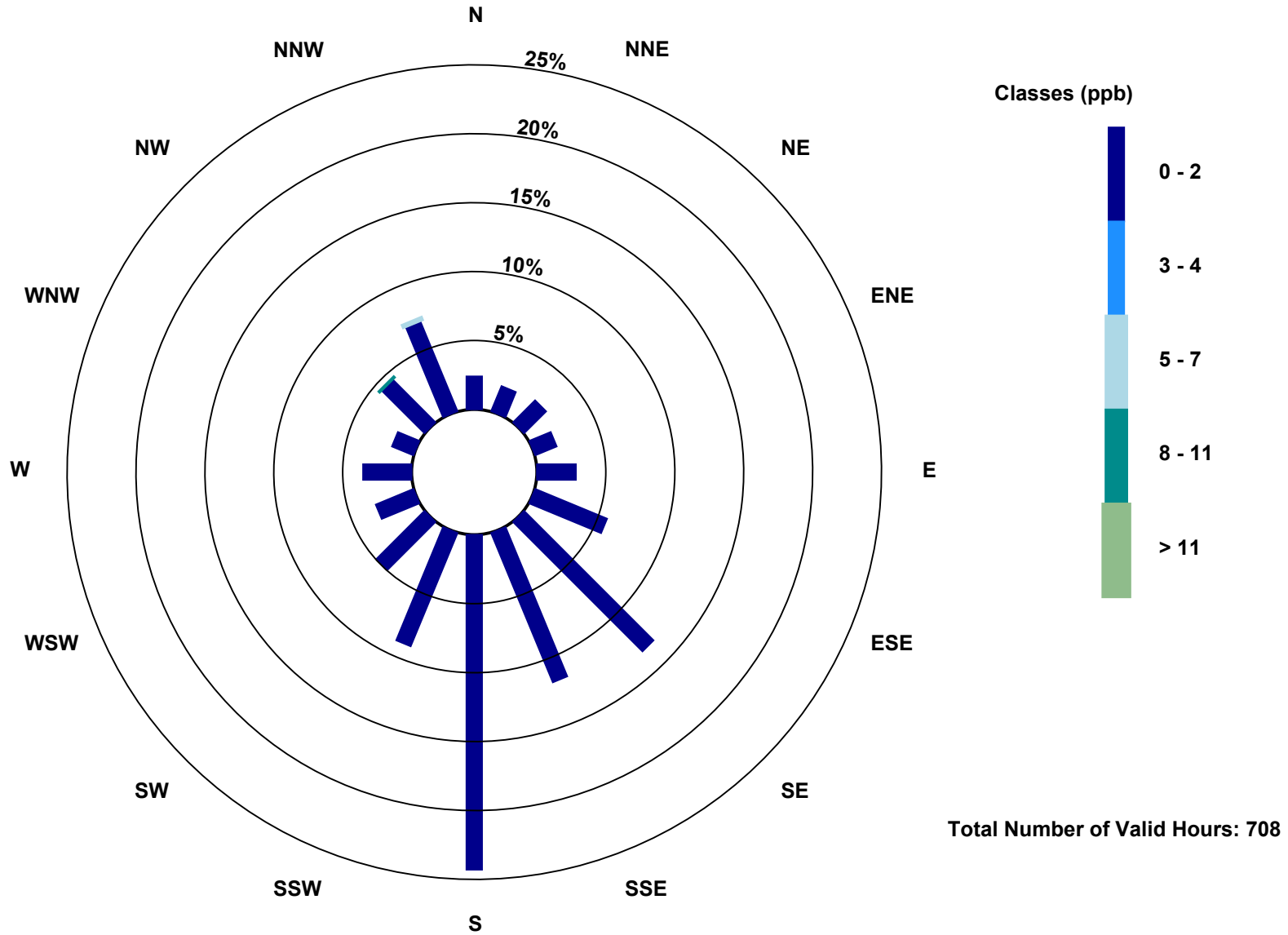
Total Number of Valid Hours: 708

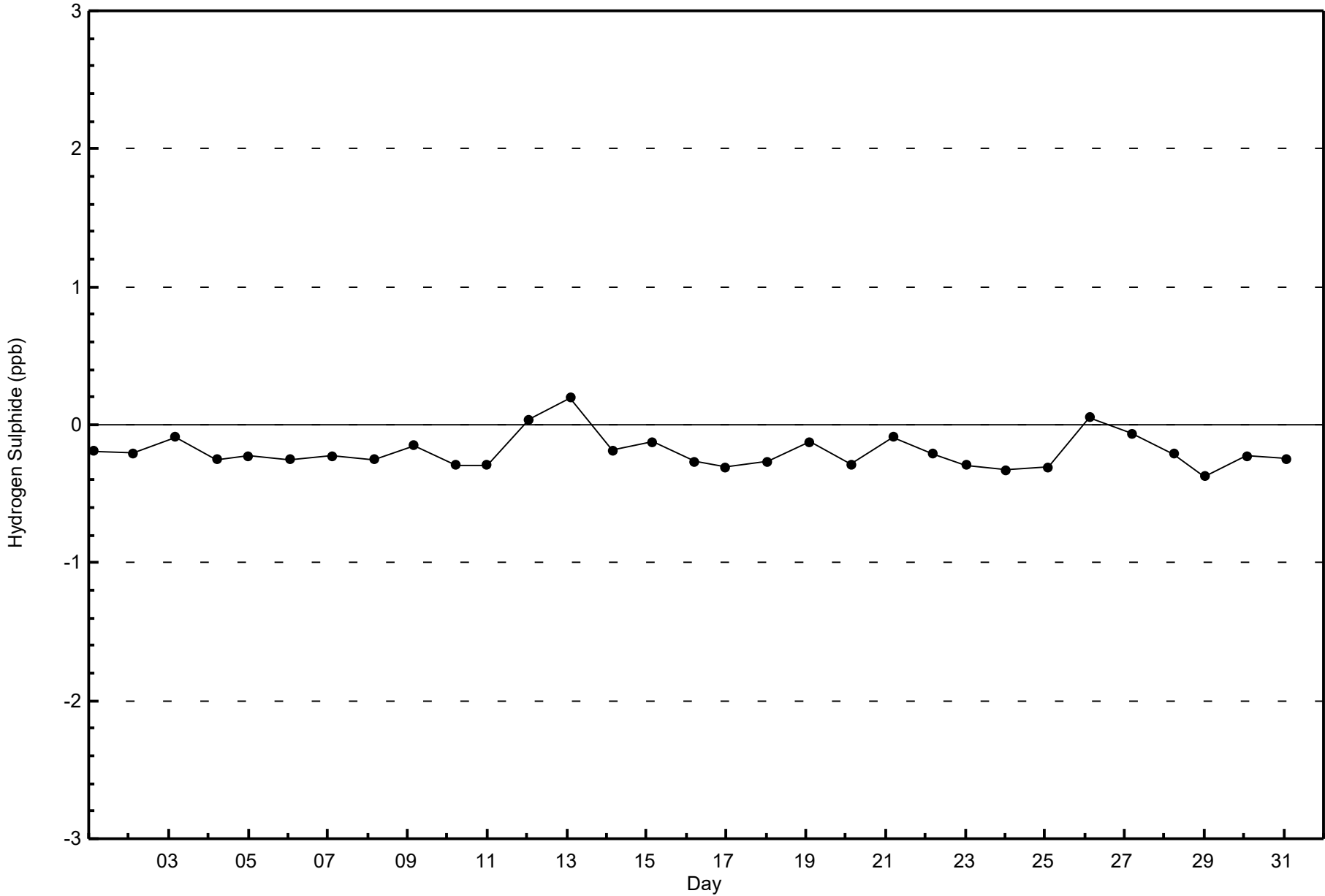
Total Number of Hours: 744

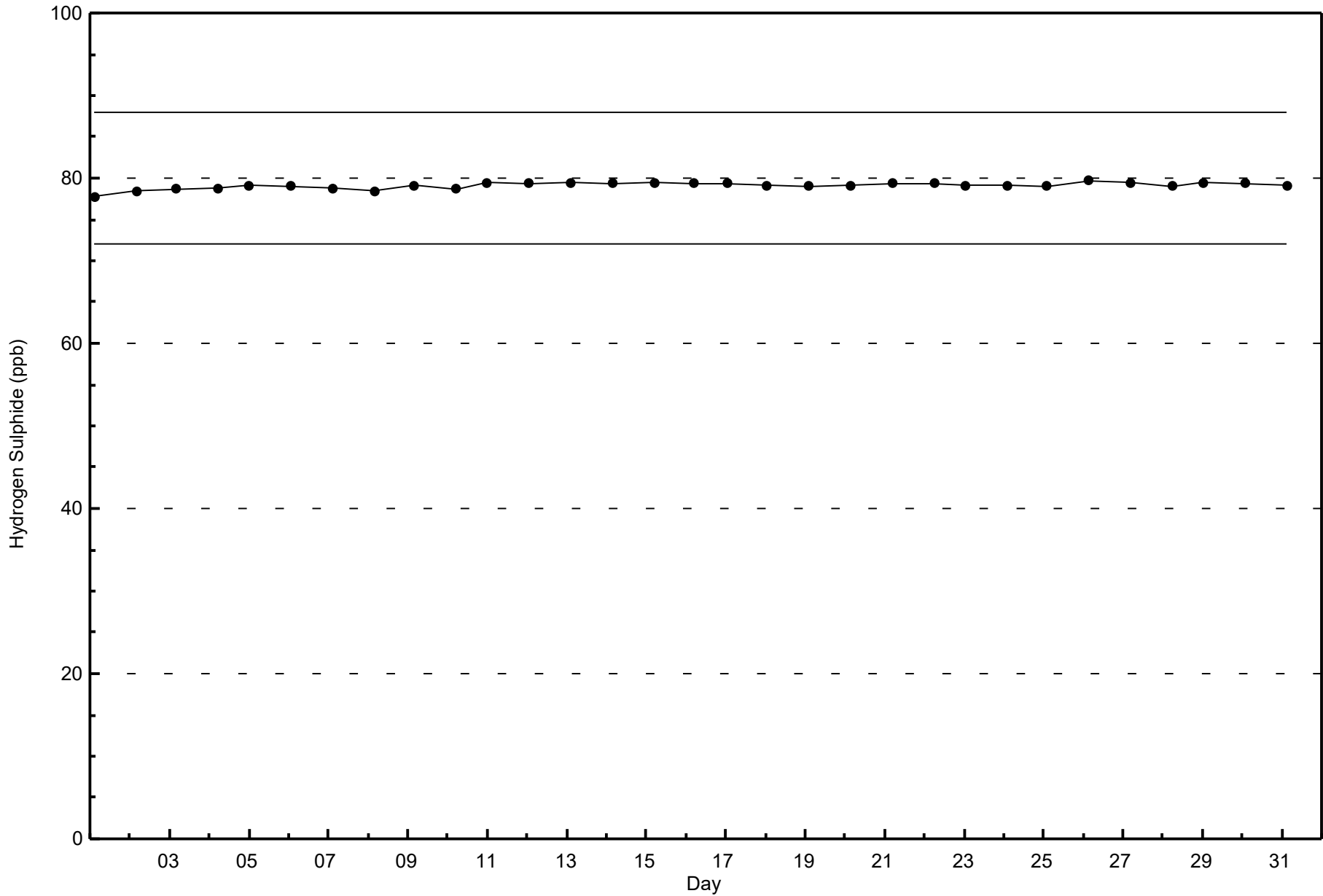


Wood Buffalo Environmental Association
Wind Rose May 2023

Hydrogen Sulphide (H₂S) - ppb
Jackfish 1









Wood Buffalo Environmental Association
Summary of Hour Averages

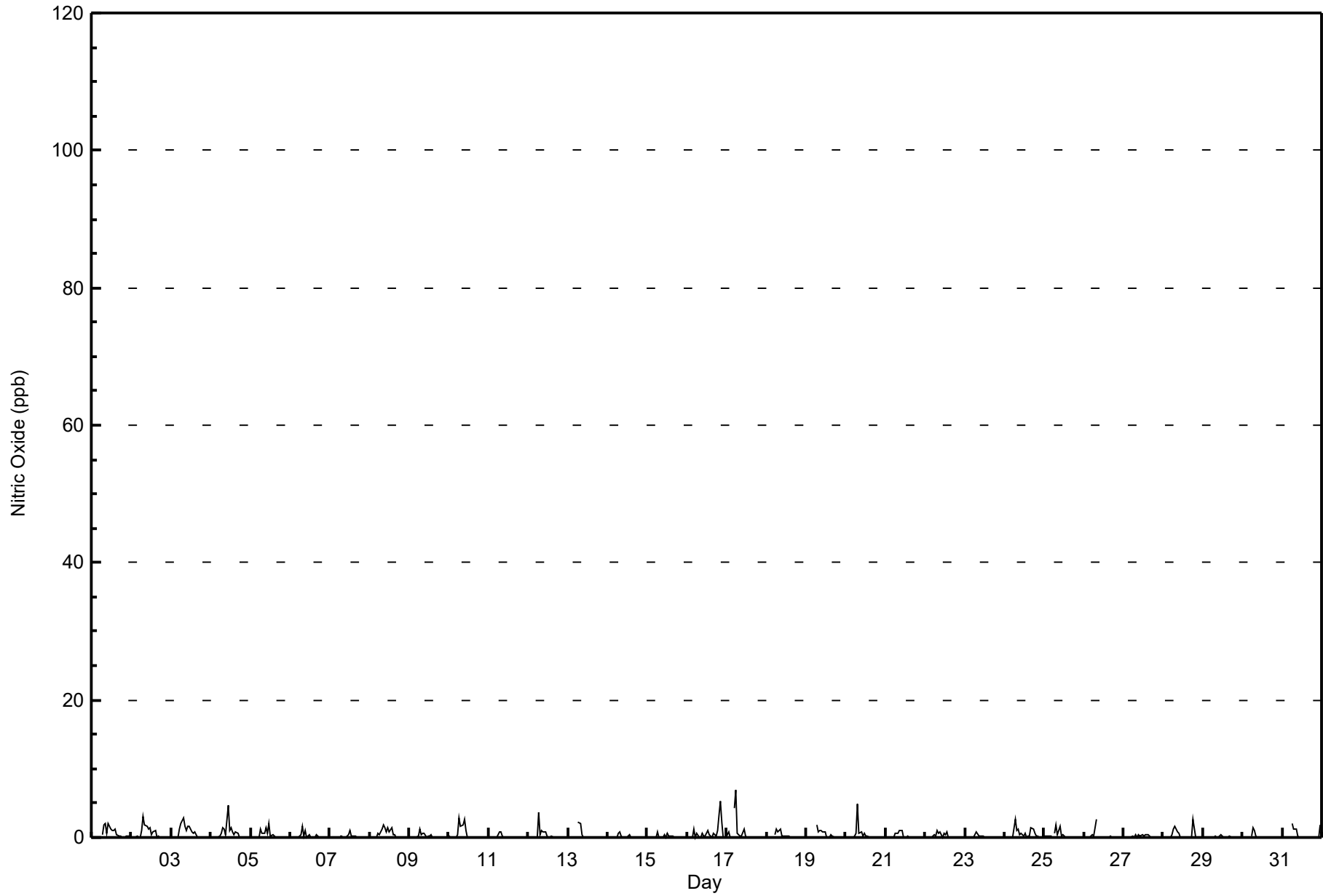
Nitric Oxide (NO) - ppb
Jackfish 1 - May 2023

Maximum Value: 7.0 ppb on May 17 06:00		Maximum Daily Average: 0.8 ppb on May 16		Hours in Service: 744																						
Minimum Value: 0.0 ppb on May 1 01:00		Minimum Daily Average: 0.1 ppb on May 29		Hours of Data: 708																						
Maximum Diurnal Average: 1.2 ppb at hour 8		Minimum Diurnal Average: 0.0 ppb at hour 3		Hours of Missing Data: 36																						
Monthly Average: 0.32 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.3 P ₉₀ = 1.0 P ₉₉ = 3.0		Hours of Calibration: 36																						
				Percent Operational Time: 100.0																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.0	0.0	0.0	0.0	0.0	Z	0.4	1.9	2.1	0.6	2.1	1.1	0.9	1.0	1.2	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.5	2.1
2-May	Z	0.0	0.0	0.3	0.0	0.0	1.1	3.0	1.8	1.6	1.2	1.5	0.4	0.8	1.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	3.0
3-May	0.0	Z	0.0	0.0	0.0	1.2	2.0	2.9	1.7	1.0	1.6	1.6	0.8	0.6	0.8	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.9
4-May	0.0	0.0	Z	0.1	0.0	0.2	0.6	1.5	1.2	0.4	4.6	1.1	1.4	0.7	0.4	0.7	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.6	4.6
5-May	0.1	0.0	0.0	Z	0.0	0.1	1.2	0.6	0.6	1.5	0.7	2.0	0.1	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.0
6-May	0.0	0.0	0.0	0.0	Z	0.1	0.5	1.6	0.2	1.1	0.1	0.5	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.6
7-May	0.0	0.0	0.0	0.0	0.0	Z	0.2	0.1	0.0	0.0	0.1	0.4	1.0	0.1	0.2	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	1.0
8-May	Z	0.0	0.0	0.0	0.0	0.6	0.4	1.1	1.8	1.4	0.8	1.5	0.8	1.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.8
9-May	0.0	Z	0.0	0.1	0.1	0.2	1.2	0.5	0.5	0.7	0.1	0.1	0.1	0.4	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.2	1.2
10-May	0.2	0.1	Z	0.0	0.0	0.4	2.9	1.5	1.8	2.6	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.9
11-May	0.0	0.0	0.0	Z	0.0	0.0	0.9	0.9	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.9
12-May	0.1	0.1	0.0	0.0	Z	0.1	3.6	0.4	1.1	0.8	0.9	0.3	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	3.6
13-May	0.1	0.1	0.1	0.0	0.0	Z	2.3	2.0	0.5	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.3
14-May	Z	0.0	0.0	0.0	0.0	0.0	0.6	0.8	0.2	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8
15-May	0.0	Z	0.0	0.0	0.0	0.1	0.9	0.0	0.1	0.0	0.3	0.0	0.6	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.9
16-May	0.1	0.0	Z	0.0	1.1	0.0	0.6	0.1	0.1	0.6	0.2	0.1	1.0	0.4	0.3	0.0	0.5	0.1	1.1	3.3	5.4	2.3	0.0	0.0	0.8	5.4
17-May	0.4	0.8	0.0	Z	4.2	7.0	0.6	0.5	0.2	0.3	1.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	7.0
18-May	0.0	0.0	0.0	0.0	Z	0.4	1.1	0.9	1.3	0.3	0.3	0.2	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.3
19-May	0.0	0.0	0.0	0.0	0.1	Z	1.8	0.8	1.0	1.0	0.9	0.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.8
20-May	Z	0.0	0.0	0.0	0.0	0.1	0.6	4.9	0.6	0.7	0.3	0.5	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	4.9
21-May	0.0	Z	0.0	0.0	0.0	0.0	0.7	0.6	0.9	1.1	1.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.1
22-May	0.0	0.0	Z	0.0	0.0	0.3	0.3	1.0	0.5	0.8	0.0	0.6	0.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0
23-May	0.0	0.0	0.0	Z	0.0	0.0	0.5	0.7	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7
24-May	0.0	0.0	0.0	0.0	Z	0.1	2.6	0.9	1.3	0.5	0.6	0.2	0.7	0.1	0.1	0.2	1.4	1.2	0.6	0.2	0.1	0.1	0.0	0.0	0.5	2.6
25-May	0.2	0.2	0.2	0.1	0.2	Z	0.5	1.7	0.3	1.6	0.2	0.4	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.7
26-May	Z	0.1	0.1	0.1	0.1	0.5	0.2	2.6	C	C	C	C	C	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.6
27-May	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.4	0.1	0.4	0.2	0.4	0.3	0.3	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
28-May	0.0	0.0	Z	0.0	0.1	0.4	1.3	1.6	0.7	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.3	2.7
29-May	0.0	0.0	0.0	Z	0.0	0.1	0.1	0.2	0.1	0.0	0.1	0.5	0.0	0.0	0.1	0.0	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.5
30-May	0.0	0.0	0.0	0.0	Z	0.3	1.4	0.9	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.4
31-May	0.0	0.0	0.0	0.0	0.1	Z	2.0	1.2	1.3	0.3	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.9	0.3	2.0
																								Diurnal Average		
																								Diurnal Maximum		
0.0 0.1 0.0 0.0 0.2 0.5 1.1 1.2 0.7 0.7 0.6 0.5 0.3 0.3 0.2 0.1 0.1 0.1 0.2 0.1 0.2 0.1 0.0 0.1 0.4 0.8 0.2 0.3 4.2 7.0 3.6 4.9 2.1 2.6 4.6 2.0 1.4 1.4 1.2 0.7 1.4 1.2 2.7 3.3 5.4 2.3 0.2 1.9																										
Z - zerospan C - Calibration																										



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Jackfish 1 - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Jackfish 1 - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	708	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Jackfish 1 - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	22	13	16	12	21	41	95	79	172	62	34	22	23	11	31	54	708
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	22	13	16	12	21	41	95	79	172	62	34	22	23	11	31	54	708

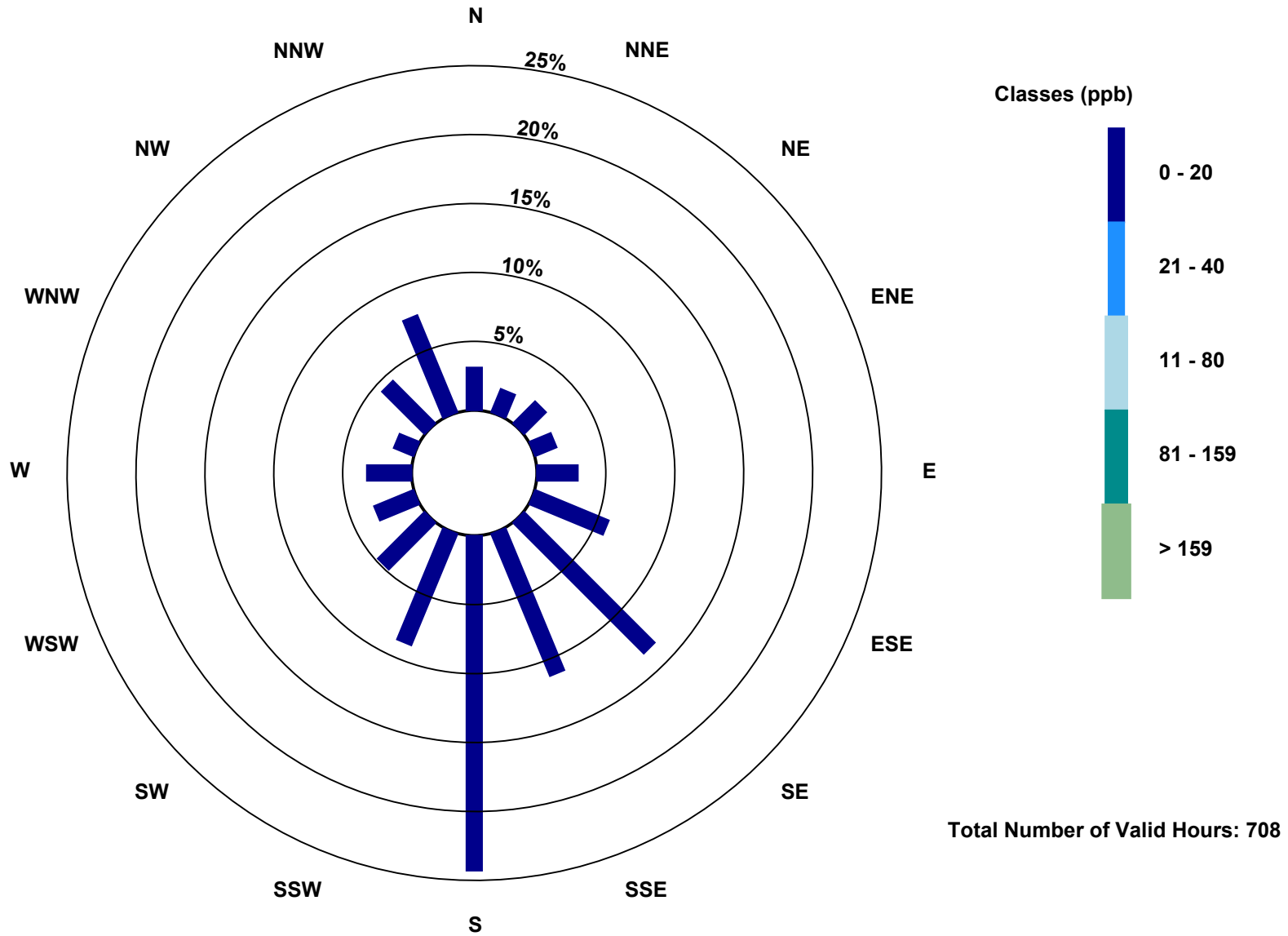
Total Number of Valid Hours: 708

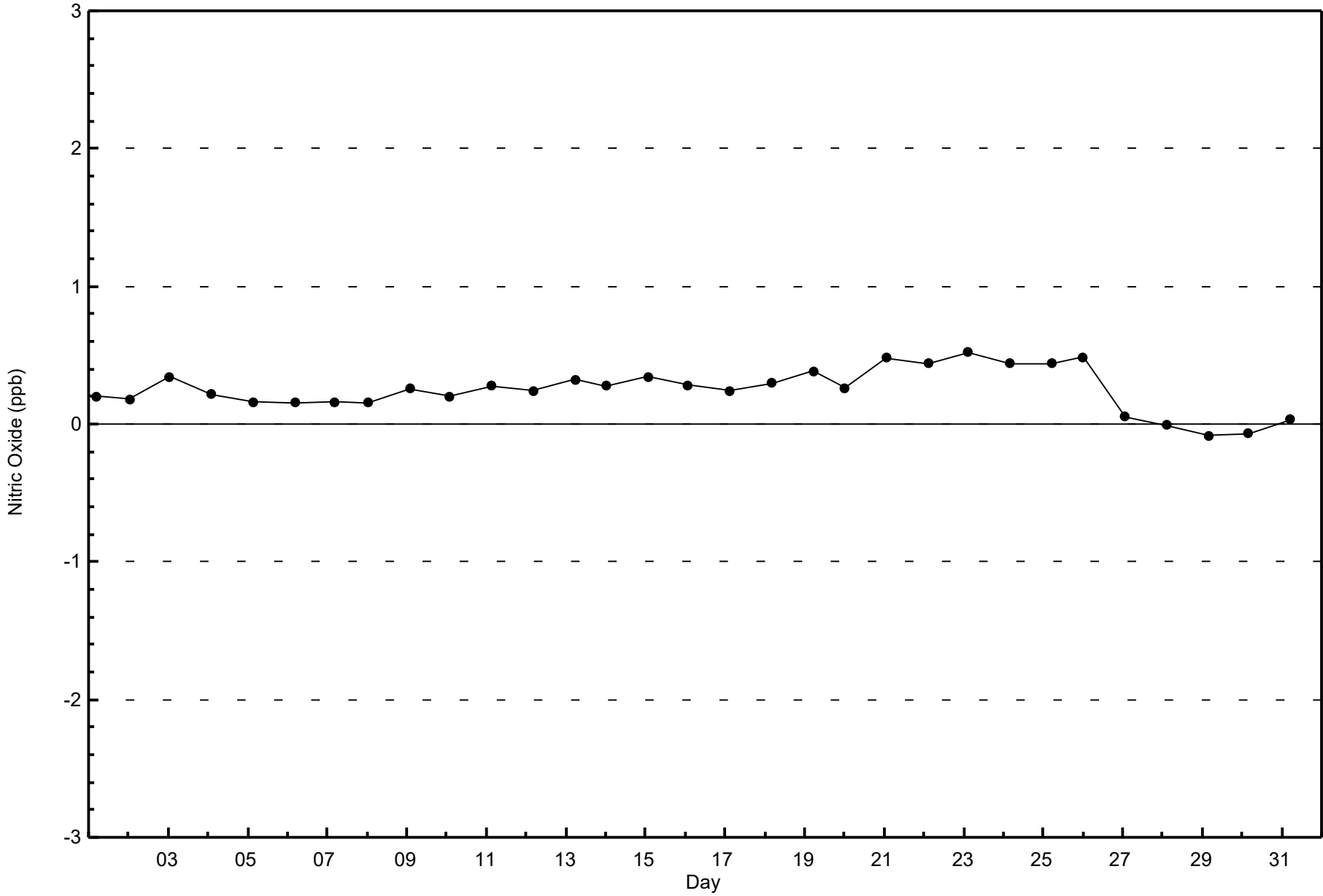
Total Number of Hours: 744

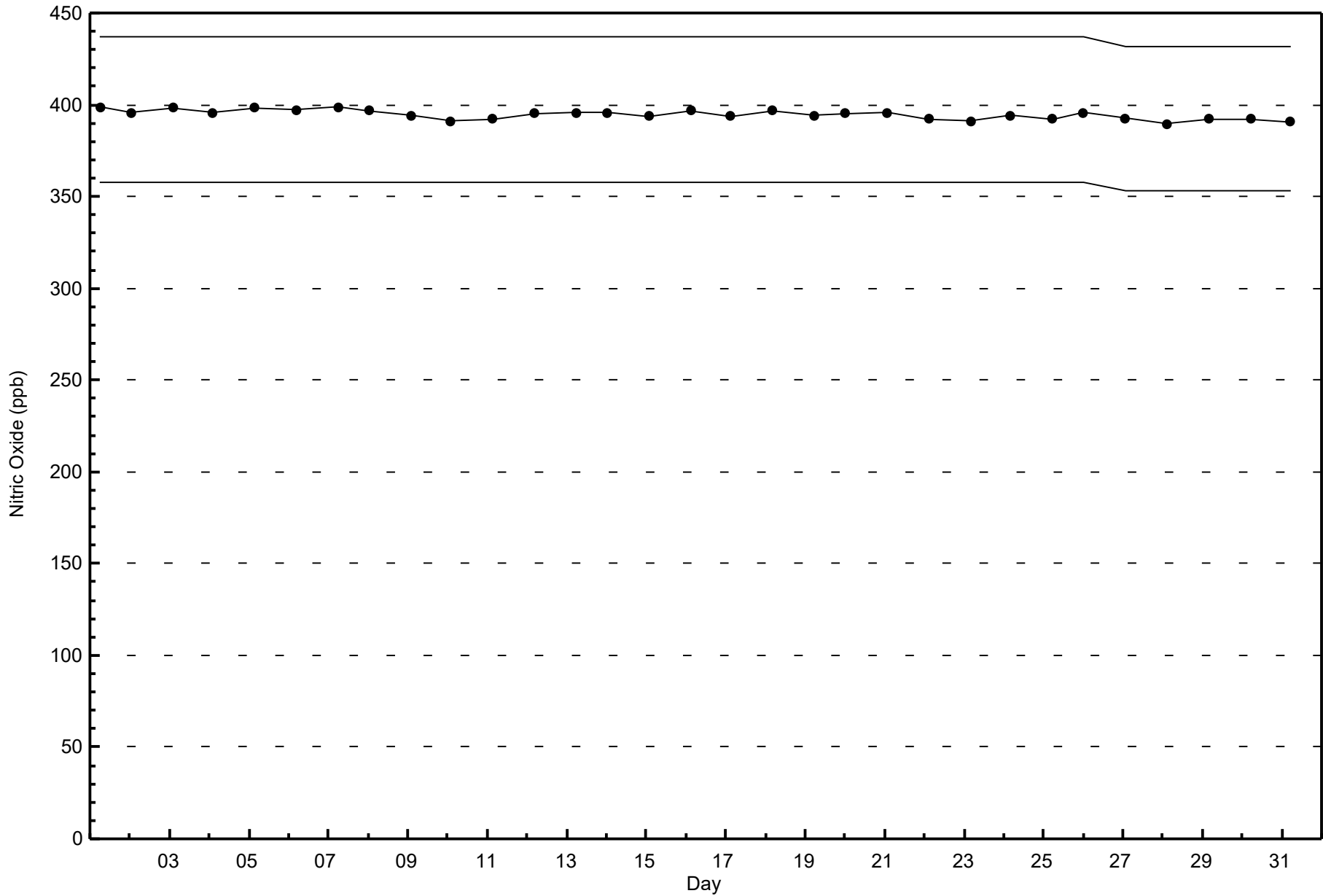


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitric Oxide (NO) - ppb
Jackfish 1









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

Jackfish 1 - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 23.1 ppb on May 16 21:00	Maximum Daily Average: 4.5 ppb on May 20		Hours of Data:	708
Minimum Value: 0.1 ppb on May 5 16:00	Minimum Daily Average: 0.4 ppb on May 6		Hours of Missing Data:	36
Maximum Diurnal Average: 3.5 ppb at hour 8	Minimum Diurnal Average: 1.5 ppb at hour 8		Hours of Calibration:	36
Monthly Average: 2.13 ppb	Percentiles: P ₁ = 0.1 P ₁₀ = 0.4 Q ₁ = 0.8 Median = 1.4 Q ₃ = 2.8 P ₉₀ = 4.5 P ₉₉ = 11.9		Percent Operational Time:	100.0

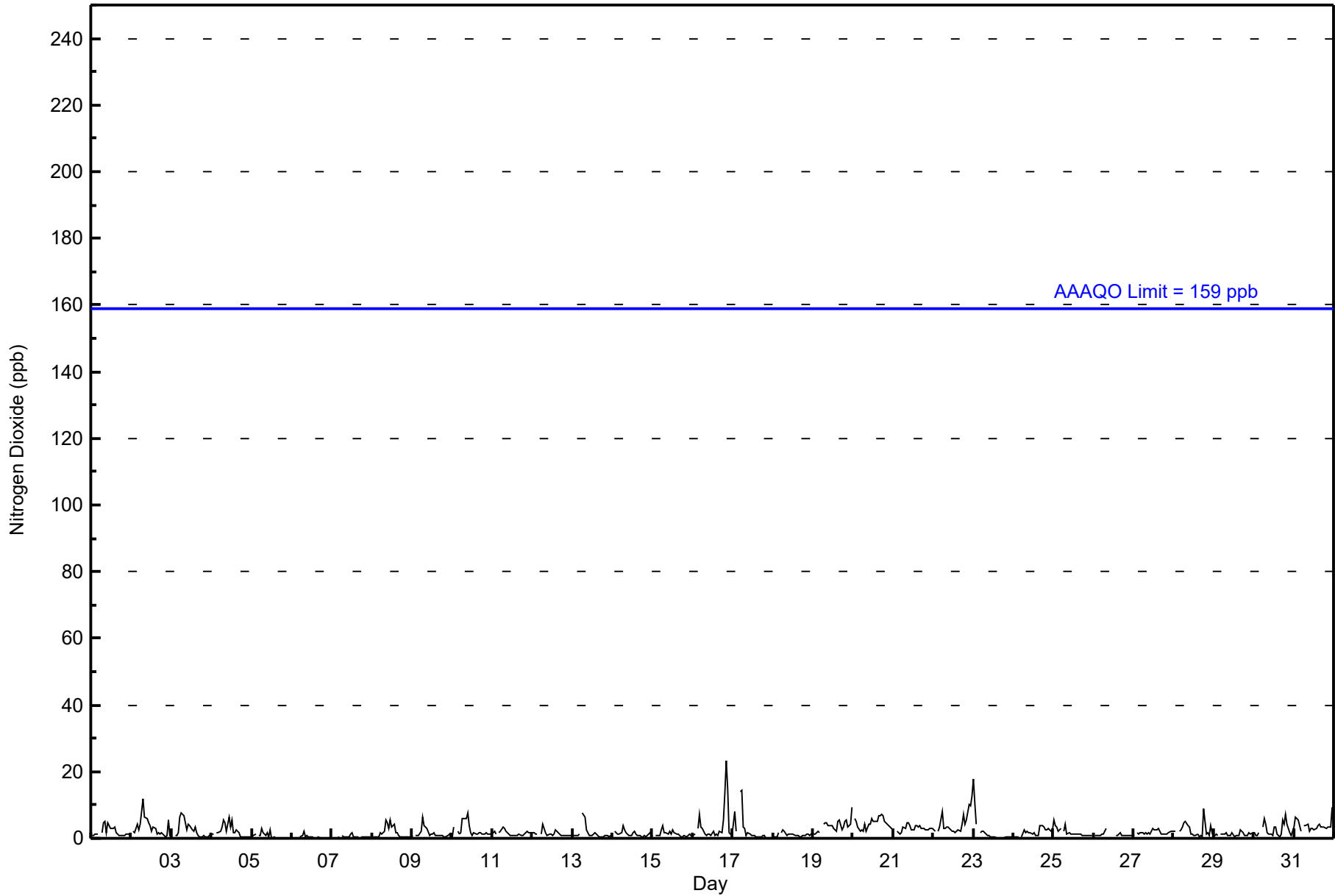
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	0.9	1.0	1.2	1.4	1.3	Z	1.9	4.6	5.2	1.9	4.7	2.8	2.8	3.1	3.2	1.6	0.8	0.7	0.7	0.8	0.9	1.4	1.4	1.0	2.0	5.2																							
2-May	Z	2.1	1.5	4.1	2.7	4.2	8.2	12.0	6.4	5.9	4.5	3.7	2.2	3.2	3.1	1.2	1.6	1.4	1.6	1.3	0.3	1.0	5.5	0.9	3.4	12.0																							
3-May	0.5	Z	1.0	1.0	1.6	6.2	7.5	6.6	4.6	2.4	4.2	3.9	2.7	2.0	3.2	1.7	0.7	0.6	0.6	0.7	0.6	0.4	0.6	1.1	2.4	7.5																							
4-May	1.2	1.4	Z	1.7	1.8	2.3	3.2	5.5	4.5	2.1	6.5	3.5	5.3	1.9	1.8	2.4	1.6	0.4	0.5	0.4	0.5	0.4	0.4	0.4	2.2	6.5																							
5-May	0.4	0.7	1.3	Z	1.0	0.9	2.9	1.7	1.0	1.6	0.5	2.5	0.2	0.3	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.7	2.9																							
6-May	0.1	0.2	0.2	0.2	Z	0.5	0.7	2.2	0.6	0.8	0.5	0.5	0.3	0.2	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	2.2																							
7-May	0.2	0.2	0.2	0.2	0.3	Z	0.7	0.6	0.5	0.6	0.6	1.1	1.5	0.6	0.4	0.4	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	1.5																							
8-May	Z	0.6	0.5	0.5	0.5	1.9	1.2	2.0	5.7	4.5	3.1	5.5	3.4	4.1	1.7	1.6	0.7	0.6	0.5	0.5	0.4	0.5	0.6	0.6	1.8	5.7																							
9-May	0.8	Z	0.9	0.8	0.9	2.1	6.4	3.7	3.4	2.9	1.0	1.4	1.2	1.9	0.7	0.8	0.7	0.7	0.7	0.6	0.5	0.7	1.3	0.7	1.5	6.4																							
10-May	0.6	3.3	Z	2.1	1.2	1.7	6.1	6.1	6.0	7.6	4.0	1.5	1.0	1.5	1.3	1.3	1.5	1.6	1.1	1.4	1.5	1.3	1.1	1.1	2.4	7.6																							
11-May	1.1	2.0	1.2	Z	1.5	2.0	3.5	2.9	2.0	1.5	1.1	0.9	0.7	0.8	1.0	0.9	1.1	1.0	1.0	1.1	1.5	2.0	1.6	1.5	1.5	3.5																							
12-May	1.9	1.6	1.4	1.3	Z	1.3	4.2	3.1	1.5	1.0	1.1	1.1	1.0	1.4	2.6	1.6	1.3	0.7	0.7	0.8	0.9	0.8	1.0	0.7	1.4	4.2																							
13-May	0.8	0.8	0.9	0.9	1.1	Z	7.5	6.5	2.6	1.5	0.9	0.8	1.0	1.5	1.4	0.8	0.6	0.6	0.6	0.7	0.7	0.7	0.6	0.7	1.5	7.5																							
14-May	Z	2.0	1.6	1.2	1.2	1.7	4.0	2.7	1.8	1.4	0.9	0.9	1.9	2.2	1.2	0.9	0.7	0.6	0.6	0.7	0.6	0.7	1.5	0.9	1.4	4.0																							
15-May	0.7	Z	0.9	1.0	1.0	2.6	3.9	1.9	1.9	1.2	2.0	1.3	2.7	1.7	1.1	1.1	0.7	0.6	0.5	0.9	0.6	0.9	1.1	0.9	1.4	3.9																							
16-May	0.9	1.2	Z	3.0	7.4	3.3	2.9	1.1	0.8	1.2	1.2	0.9	2.0	1.0	1.4	0.7	2.2	1.5	5.6	13.4	23.1	14.8	1.6	1.0	4.0	23.1																							
17-May	4.2	8.1	2.3	Z	13.8	14.6	3.6	3.1	1.0	1.7	1.1	1.0	0.8	0.9	0.6	0.4	0.5	0.5	0.7	0.7	0.2	0.2	0.2	0.2	2.6	14.6																							
18-May	0.2	0.3	0.3	1.5	Z	1.5	2.7	2.0	0.9	1.4	1.1	1.2	1.1	1.0	0.7	0.9	0.4	0.6	0.7	1.0	1.2	1.1	1.0	1.1	1.0	2.7																							
19-May	1.1	1.3	1.7	2.0	1.9	Z	4.4	4.5	4.5	3.8	3.9	3.7	2.9	2.4	2.2	5.2	5.4	2.5	3.6	4.9	5.3	3.6	4.4	9.2	3.7	9.2																							
20-May	Z	6.0	5.0	3.2	2.0	2.7	2.3	4.1	2.1	4.1	4.4	5.8	5.2	4.9	4.9	6.7	6.9	7.2	6.9	5.0	4.2	3.9	3.3	2.8	4.5	7.2																							
21-May	2.7	Z	2.0	1.5	1.4	1.8	3.6	3.1	4.5	4.5	4.0	2.6	2.7	3.8	3.7	3.4	3.9	3.1	2.9	2.6	2.5	2.6	2.8	2.8	3.0	4.5																							
22-May	2.4	2.3	Z	2.2	3.3	8.1	2.9	2.8	3.5	3.2	2.6	2.3	2.3	1.8	2.3	2.4	2.0	4.1	7.2	4.1	5.7	10.0	9.8	12.9	4.4	12.9																							
23-May	17.8	10.7	4.1	Z	1.7	2.0	2.3	1.9	0.9	0.7	0.5	0.3	0.3	0.3	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.4	2.0	17.8																							
24-May	0.4	0.4	0.3	0.4	Z	0.6	2.4	1.9	2.0	1.9	1.6	1.1	1.7	0.9	0.8	0.9	4.0	4.0	3.2	2.5	2.6	2.9	2.3	2.5	1.8	4.0																							
25-May	5.6	4.0	3.6	2.0	3.0	Z	2.1	4.1	1.4	1.5	1.3	1.2	1.3	1.1	1.1	1.1	1.4	1.0	0.9	0.9	1.0	1.0	1.0	0.9	1.8	5.6																							
26-May	Z	0.8	0.8	0.7	0.8	1.4	1.1	2.8	C	C	C	C	C	1.0	0.9	1.1	1.7	0.8	0.8	0.8	0.7	0.7	0.7	0.8	1.0	2.8																							
27-May	0.8	Z	1.5	1.4	1.9	1.9	1.3	1.7	1.2	1.8	1.4	2.8	2.7	2.4	2.4	2.8	1.1	1.1	1.1	1.2	1.2	1.6	2.0	2.0	1.7	2.8																							
28-May	2.0	2.2	Z	2.3	2.4	3.4	4.7	5.1	3.8	3.3	1.3	1.1	0.8	0.8	1.3	0.6	0.7	0.6	9.0	1.2	1.6	0.8	3.8	1.5	2.4	9.0																							
29-May	0.6	1.1	0.8	Z	1.2	1.4	1.1	1.6	0.9	0.8	1.0	1.9	0.5	0.8	0.8	0.7	2.4	1.7	1.0	0.9	0.8	1.7	1.1	1.6	1.1	2.4																							
30-May	1.6	0.9	0.7	1.5	Z	3.4	5.8	4.2	1.7	1.3	1.1	0.8	3.2	3.2	1.4	0.5	1.3	5.3	4.4	7.4	4.3	1.6	1.0	2.1	2.6	7.4																							
31-May	3.5	6.4	5.7	3.7	2.1	Z	3.9	3.7	4.3	2.2	2.8	2.8	2.7	2.8	3.9	4.3	3.4	3.3	3.2	3.1	3.5	3.3	3.2	9.5	3.8	9.5																							
																								2.0	2.4	1.6	1.6	2.3	2.9	3.5	3.5	2.7	2.3	2.2	2.0	1.9	1.8	1.7	1.6	1.6	1.5	2.0	2.0	2.2	2.0	1.8	2.0	Diurnal Average	
																								17.8	10.7	5.7	4.1	13.8	14.6	8.2	12.0	6.4	7.6	6.5	5.8	5.3	4.9	4.9	6.7	6.9	7.2	9.0	13.4	23.1	14.8	9.8	12.9	Diurnal Maximum	

Z - zerospan C - Calibration
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Jackfish 1 - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Jackfish 1 - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	707	99.86	99.86
21 - 40	1	0.14	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Jackfish 1 - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	22	13	16	12	21	41	95	79	172	62	34	22	23	11	30	54	707
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	22	13	16	12	21	41	95	79	172	62	34	22	23	11	31	54	708

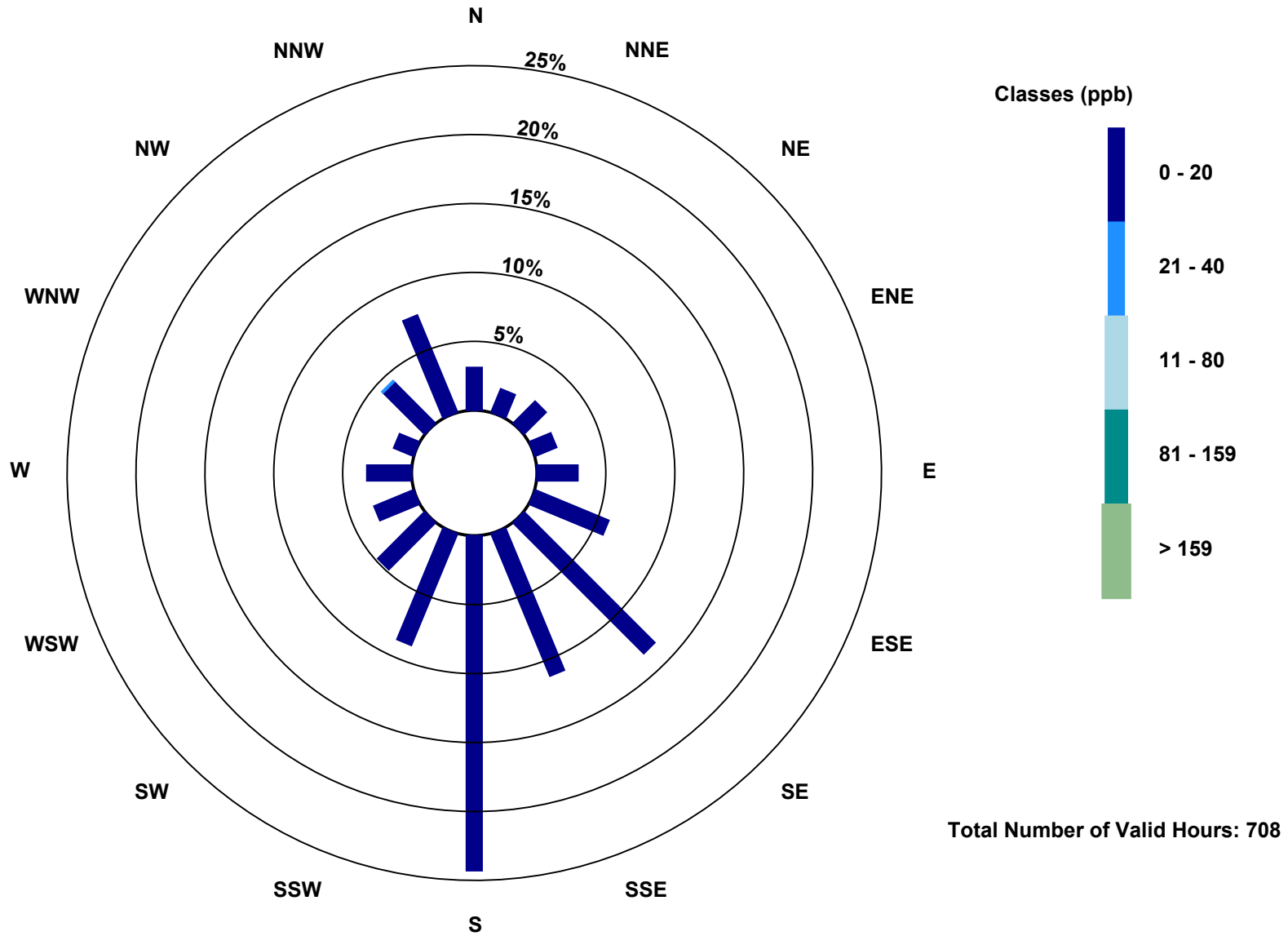
Total Number of Valid Hours: 708

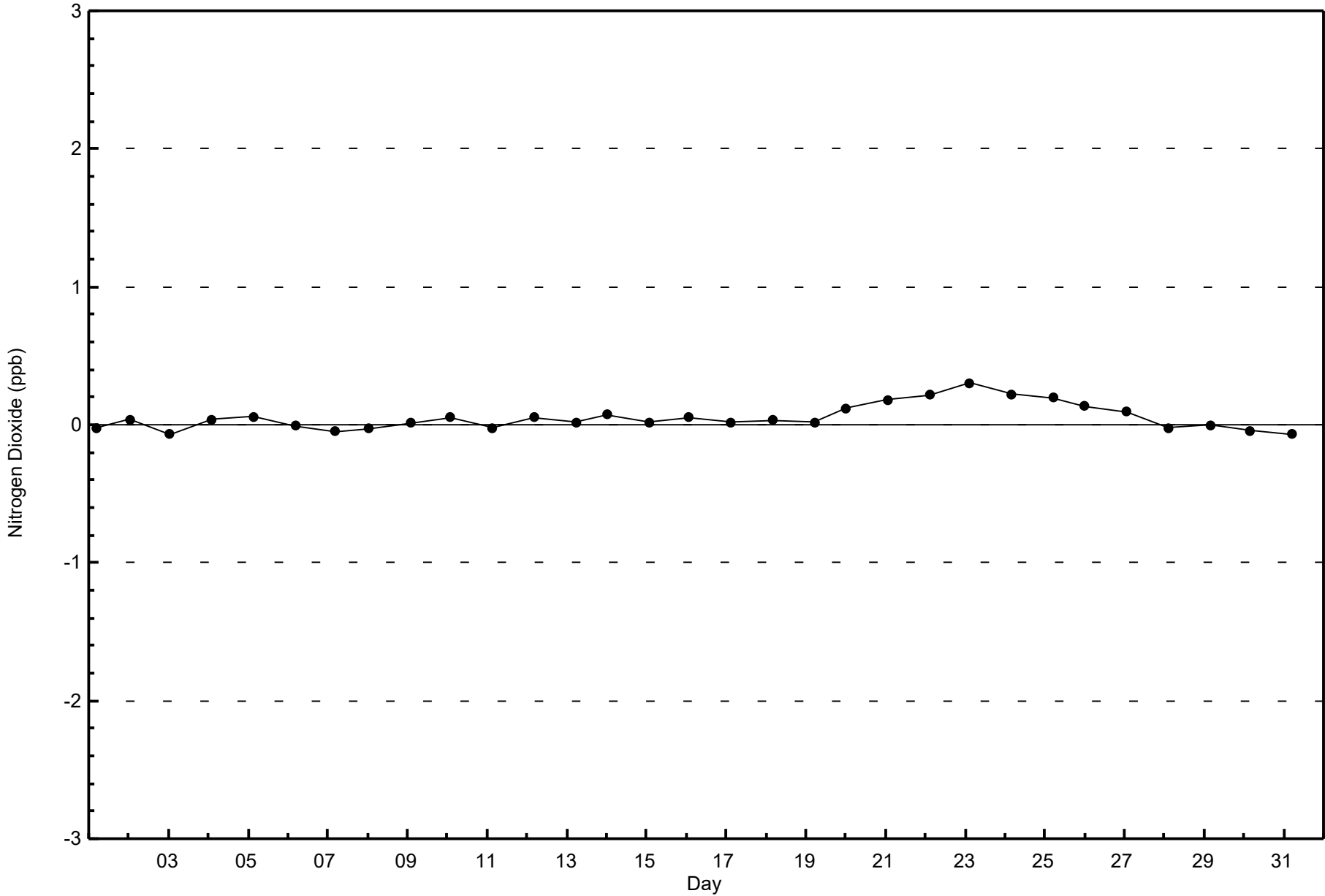
Total Number of Hours: 744

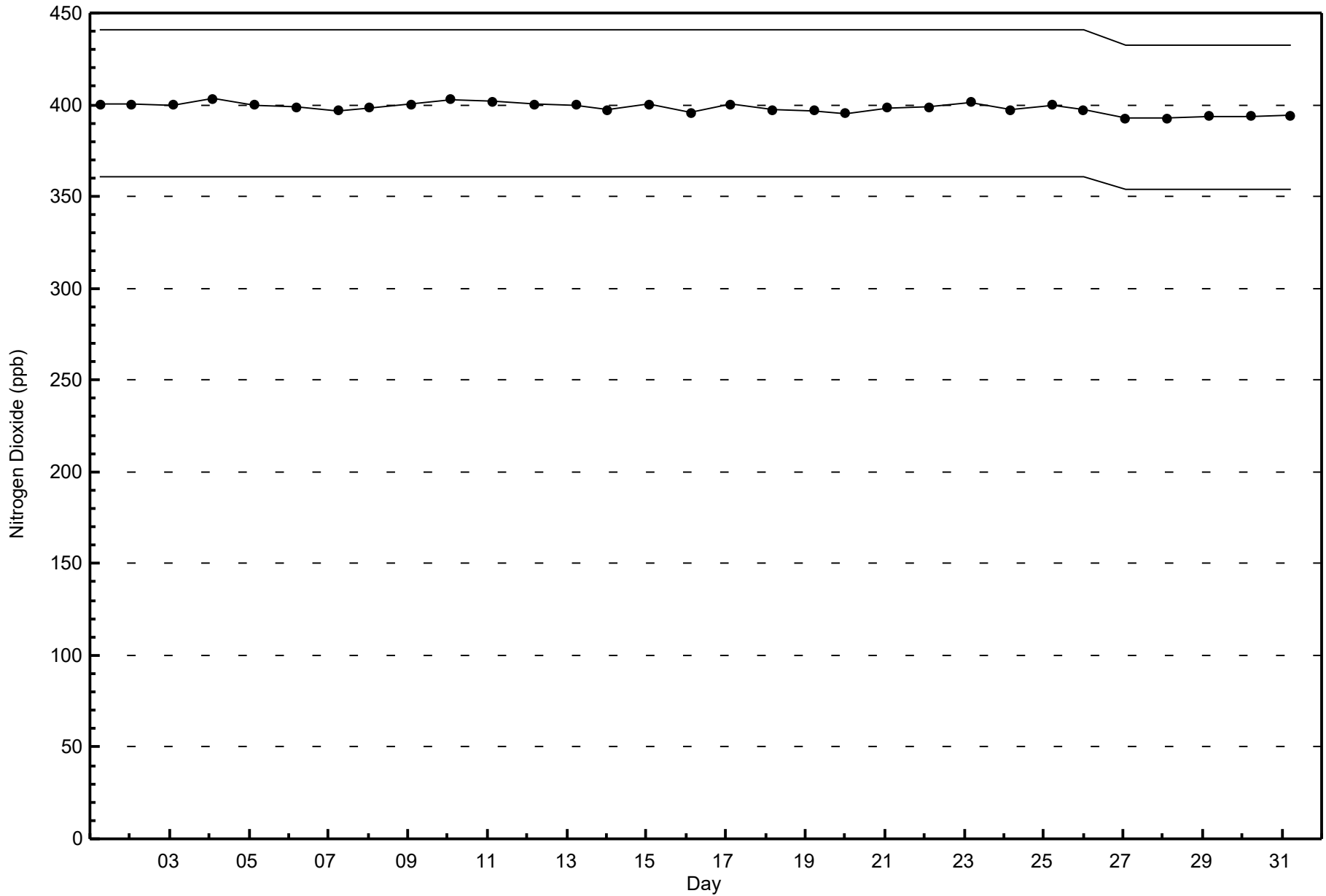


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Jackfish 1









Wood Buffalo Environmental Association
Summary of Hour Averages

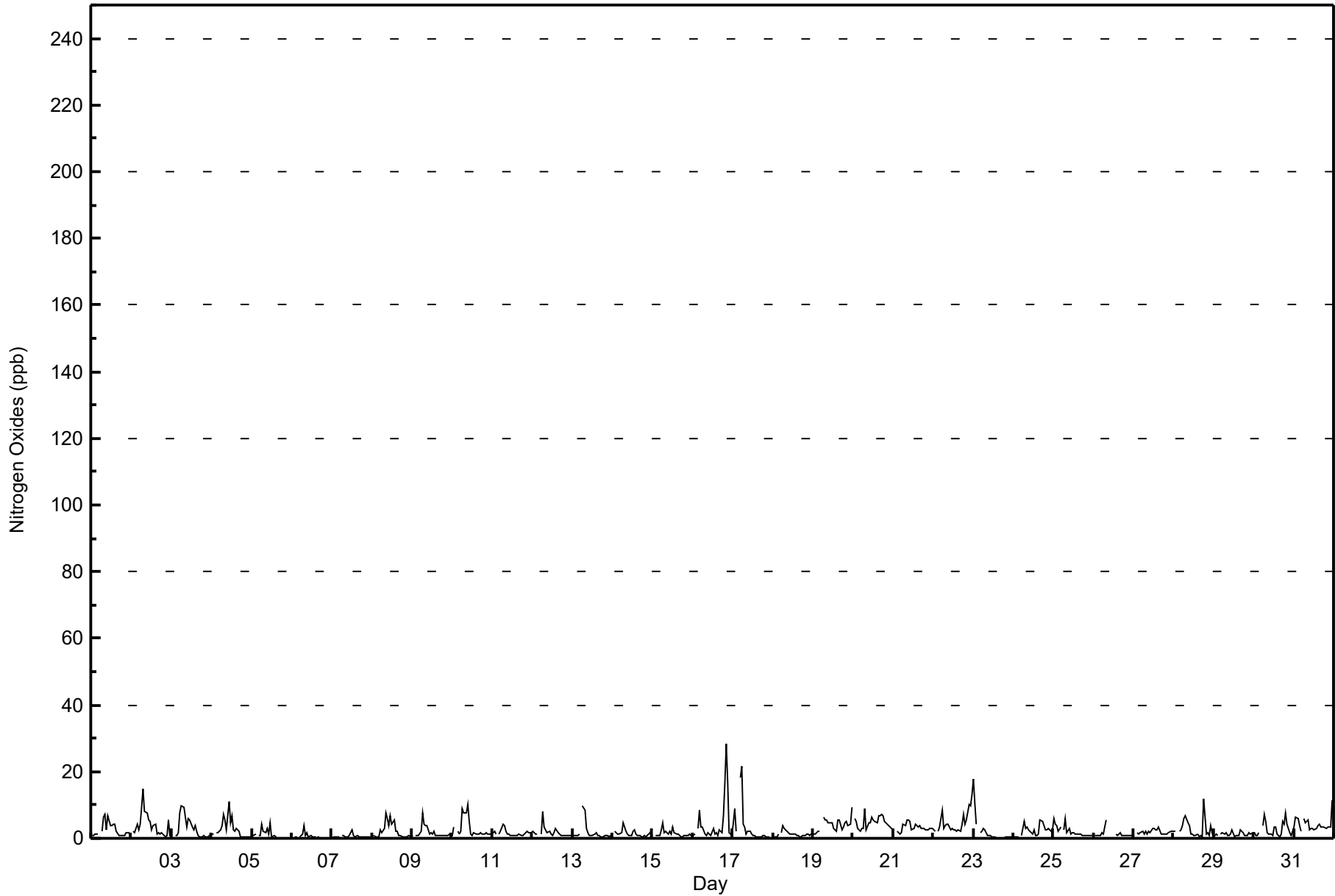
Nitrogen Oxides (NO_x) - ppb
Jackfish 1 - May 2023

Maximum Value: 28.5 ppb on May 16 21:00																				Maximum Daily Average: 4.8 ppb on May 20					Hours in Service: 744	
Minimum Value: 0.1 ppb on May 5 17:00																				Minimum Daily Average: 0.6 ppb on May 7					Hours of Data: 708	
Maximum Diurnal Average: 4.8 ppb at hour 8																				Minimum Diurnal Average: 1.6 ppb at hour 8					Hours of Missing Data: 36	
Monthly Average: 2.44 ppb																				Percentiles: P ₁ = 0.1 P ₁₀ = 0.5 Q ₁ = 0.8 Median = 1.5 Q ₃ = 3.2 P ₉₀ = 5.5 P ₉₉ = 12.9					Hours of Calibration: 36	
																									Percent Operational Time: 100.0	
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.9	1.0	1.2	1.4	1.3	Z	2.3	6.5	7.3	2.5	6.8	3.9	3.7	4.1	4.4	2.0	0.9	0.8	0.8	0.9	1.0	1.5	1.6	1.1	2.5	7.3
2-May	Z	2.1	1.5	4.4	2.7	4.2	9.3	15.0	8.2	7.5	5.7	5.2	2.6	4.0	4.2	1.3	1.7	1.5	1.6	1.3	0.3	1.0	5.5	0.9	4.0	15.0
3-May	0.5	Z	1.0	1.0	1.6	7.4	9.5	9.5	6.3	3.4	5.8	5.5	3.5	2.6	4.0	2.1	0.8	0.6	0.6	0.7	0.6	0.4	0.6	1.1	3.0	9.5
4-May	1.2	1.4	Z	1.8	1.8	2.5	3.8	7.0	5.7	2.5	11.1	4.6	6.7	2.6	2.2	3.1	2.1	0.5	0.5	0.4	0.5	0.4	0.4	0.5	2.8	11.1
5-May	0.5	0.7	1.3	Z	1.0	1.0	4.1	2.3	1.6	3.1	1.2	4.5	0.3	0.7	0.4	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	1.0	4.5
6-May	0.1	0.2	0.2	0.2	Z	0.6	1.2	3.8	0.8	1.9	0.6	1.0	0.3	0.2	0.2	0.2	0.6	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.6	3.8
7-May	0.2	0.2	0.2	0.2	0.3	Z	0.9	0.7	0.5	0.6	0.7	1.5	2.5	0.7	0.6	0.7	0.2	0.2	0.4	0.3	0.3	0.3	0.3	0.3	0.6	2.5
8-May	Z	0.6	0.5	0.5	0.5	2.5	1.6	3.1	7.5	5.9	3.9	7.0	4.2	5.5	2.1	2.0	0.7	0.6	0.5	0.5	0.4	0.5	0.6	0.6	2.3	7.5
9-May	0.8	Z	0.9	0.9	1.0	2.3	7.6	4.2	3.9	3.6	1.1	1.5	1.3	2.3	0.7	0.8	0.7	0.7	0.8	0.7	0.6	0.7	1.3	0.8	1.7	7.6
10-May	0.8	3.4	Z	2.1	1.2	2.1	9.0	7.6	7.8	10.2	5.0	1.5	1.0	1.5	1.3	1.3	1.5	1.6	1.1	1.4	1.5	1.3	1.1	1.1	2.9	10.2
11-May	1.1	2.0	1.2	Z	1.5	2.0	4.4	3.8	2.2	1.5	1.1	0.9	0.7	0.9	1.0	0.9	1.1	1.0	1.0	1.1	1.5	2.0	1.7	1.6	1.6	4.4
12-May	2.0	1.7	1.4	1.3	Z	1.4	7.8	3.5	2.6	1.8	2.0	1.4	1.1	1.5	2.8	1.6	1.3	0.7	0.7	0.8	0.9	0.8	1.1	0.8	1.8	7.8
13-May	0.9	0.9	1.0	0.9	1.1	Z	9.8	8.5	3.1	1.6	0.9	0.8	1.0	1.5	1.5	0.8	0.6	0.6	0.6	0.7	0.7	0.7	0.6	0.7	1.7	9.8
14-May	Z	2.0	1.6	1.2	1.2	1.7	4.6	3.5	2.0	1.4	0.9	0.9	2.0	2.5	1.2	0.9	0.7	0.6	0.6	0.7	0.6	0.7	1.5	0.9	1.5	4.6
15-May	0.7	Z	0.9	1.0	1.0	2.7	4.8	1.9	2.0	1.2	2.3	1.3	3.3	1.9	1.2	1.2	0.7	0.6	0.5	0.9	0.6	0.9	1.2	1.0	1.5	4.8
16-May	1.0	1.2	Z	3.0	8.5	3.3	3.5	1.2	0.9	1.8	1.4	1.0	3.0	1.4	1.7	0.7	2.7	1.6	6.7	16.7	28.5	17.1	1.6	1.0	4.8	28.5
17-May	4.6	8.9	2.3	Z	18.0	21.6	4.2	3.6	1.2	2.0	2.3	1.3	0.8	0.9	0.6	0.4	0.5	0.5	0.7	0.7	0.2	0.2	0.2	0.2	3.3	21.6
18-May	0.2	0.3	0.3	1.5	Z	1.9	3.8	2.9	2.2	1.7	1.4	1.4	1.3	1.1	0.7	1.0	0.4	0.6	0.7	1.0	1.2	1.1	1.0	1.1	1.2	3.8
19-May	1.1	1.3	1.7	2.0	2.0	Z	6.2	5.3	5.5	4.8	4.8	4.6	3.0	2.4	2.2	5.6	5.6	2.5	3.6	4.9	5.3	3.6	4.4	9.3	4.0	9.3
20-May	Z	6.0	5.0	3.2	2.0	2.8	2.9	9.0	2.7	4.8	4.7	6.3	5.3	5.1	4.9	6.7	6.9	7.2	6.9	5.0	4.2	3.9	3.3	2.8	4.8	9.0
21-May	2.7	Z	2.0	1.5	1.4	1.8	4.3	3.7	5.4	5.6	5.1	2.7	2.8	4.0	3.8	3.4	3.9	3.1	2.9	2.6	2.5	2.6	2.8	2.8	3.2	5.6
22-May	2.4	2.3	Z	2.2	3.3	8.4	3.2	3.8	4.0	4.0	2.6	2.9	2.7	2.7	2.3	2.4	2.0	4.1	7.2	4.1	5.7	10.0	9.8	12.9	4.6	12.9
23-May	17.8	10.7	4.1	Z	1.7	2.0	2.8	2.6	1.1	0.8	0.6	0.5	0.3	0.3	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.4	2.1	17.8
24-May	0.4	0.4	0.3	0.4	Z	0.7	5.0	2.8	3.3	2.4	2.2	1.3	2.4	1.0	0.9	1.1	5.4	5.2	3.8	2.7	2.7	3.0	2.3	2.5	2.3	5.4
25-May	5.8	4.2	3.8	2.1	3.2	Z	2.6	5.8	1.7	3.1	1.5	1.6	1.6	1.2	1.2	1.1	1.4	1.0	0.9	0.9	1.0	1.0	1.0	0.9	2.1	5.8
26-May	Z	0.9	0.9	0.8	0.9	1.9	1.3	5.4	C	C	C	C	C	1.1	0.9	1.1	1.9	0.8	0.8	0.8	0.7	0.7	0.7	0.8	1.2	5.4
27-May	0.8	Z	1.5	1.4	1.9	2.0	1.4	2.1	1.3	2.2	1.6	3.2	3.0	2.7	2.7	3.2	1.1	1.1	1.1	1.2	1.2	1.6	2.0	2.0	1.8	3.2
28-May	2.0	2.2	Z	2.3	2.5	3.8	6.0	6.7	4.5	3.9	1.3	1.1	0.8	0.8	1.3	0.6	0.7	0.6	11.7	1.2	1.6	0.8	3.8	1.5	2.7	11.7
29-May	0.6	1.1	0.8	Z	1.2	1.5	1.2	1.8	1.0	0.8	1.1	2.4	0.5	0.8	0.9	0.7	2.6	1.8	1.0	0.9	0.8	1.8	1.1	1.6	1.2	2.6
30-May	1.6	0.9	0.7	1.5	Z	3.7	7.2	5.1	1.9	1.4	1.1	0.8	3.2	3.2	1.4	0.5	1.3	5.3	4.4	7.4	4.3	1.6	1.0	2.1	2.7	7.4
31-May	3.5	6.4	5.7	3.7	2.2	Z	5.9	4.9	5.6	2.5	2.8	2.8	2.7	2.8	4.0	4.4	3.4	3.3	3.2	3.1	3.5	3.3	3.3	11.4	4.1	11.4
																								Diurnal Average		
																								Diurnal Maximum		
2.1 2.4 1.6 1.6 2.5 3.4 4.6 4.8 3.5 3.0 2.8 2.5 2.3 2.1 1.9 1.7 1.7 1.6 2.1 2.1 2.4 2.1 1.8 2.1																										
17.8 10.7 5.7 4.4 18.0 21.6 9.8 15.0 8.2 10.2 11.1 7.0 6.7 5.5 4.9 6.7 6.9 7.2 11.7 16.7 28.5 17.1 9.8 12.9																										
Z - zerospan C - Calibration																										



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Jackfish 1 - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Jackfish 1 - May 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	706	99.72	99.72
21 - 40	2	0.28	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Jackfish 1 - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	22	13	16	12	21	41	95	79	172	62	34	22	23	11	29	54	706
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	22	13	16	12	21	41	95	79	172	62	34	22	23	11	31	54	708

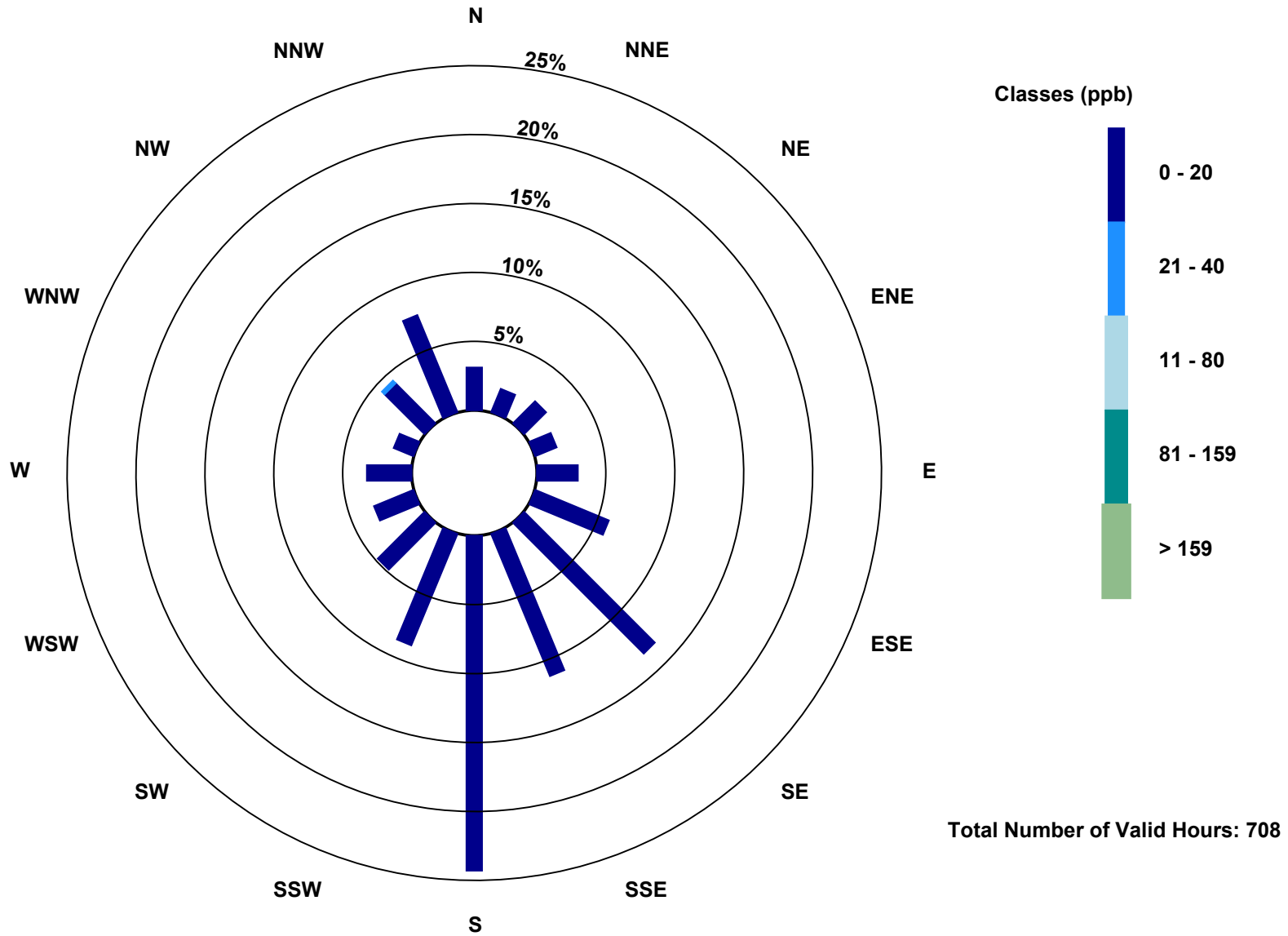
Total Number of Valid Hours: 708

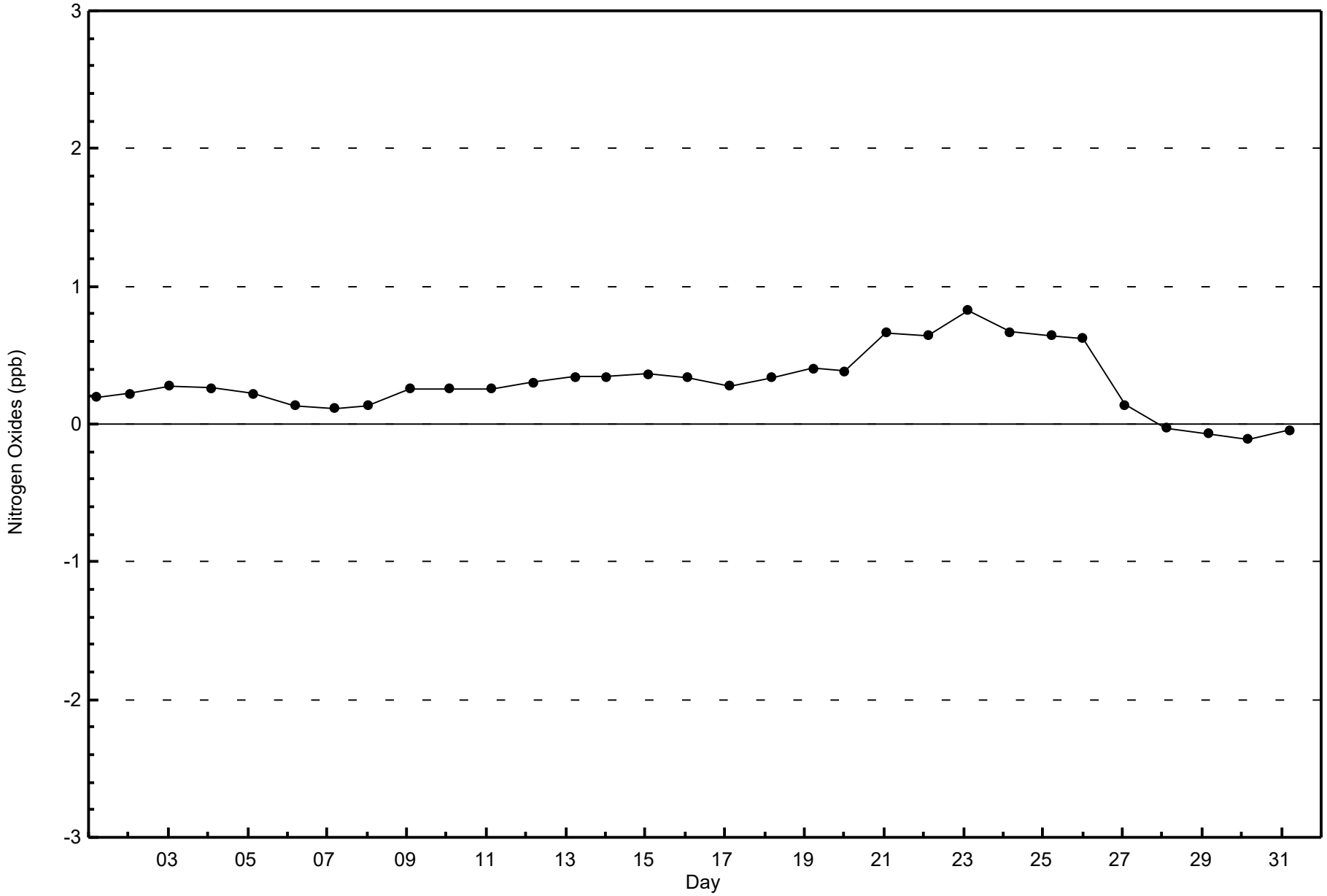
Total Number of Hours: 744

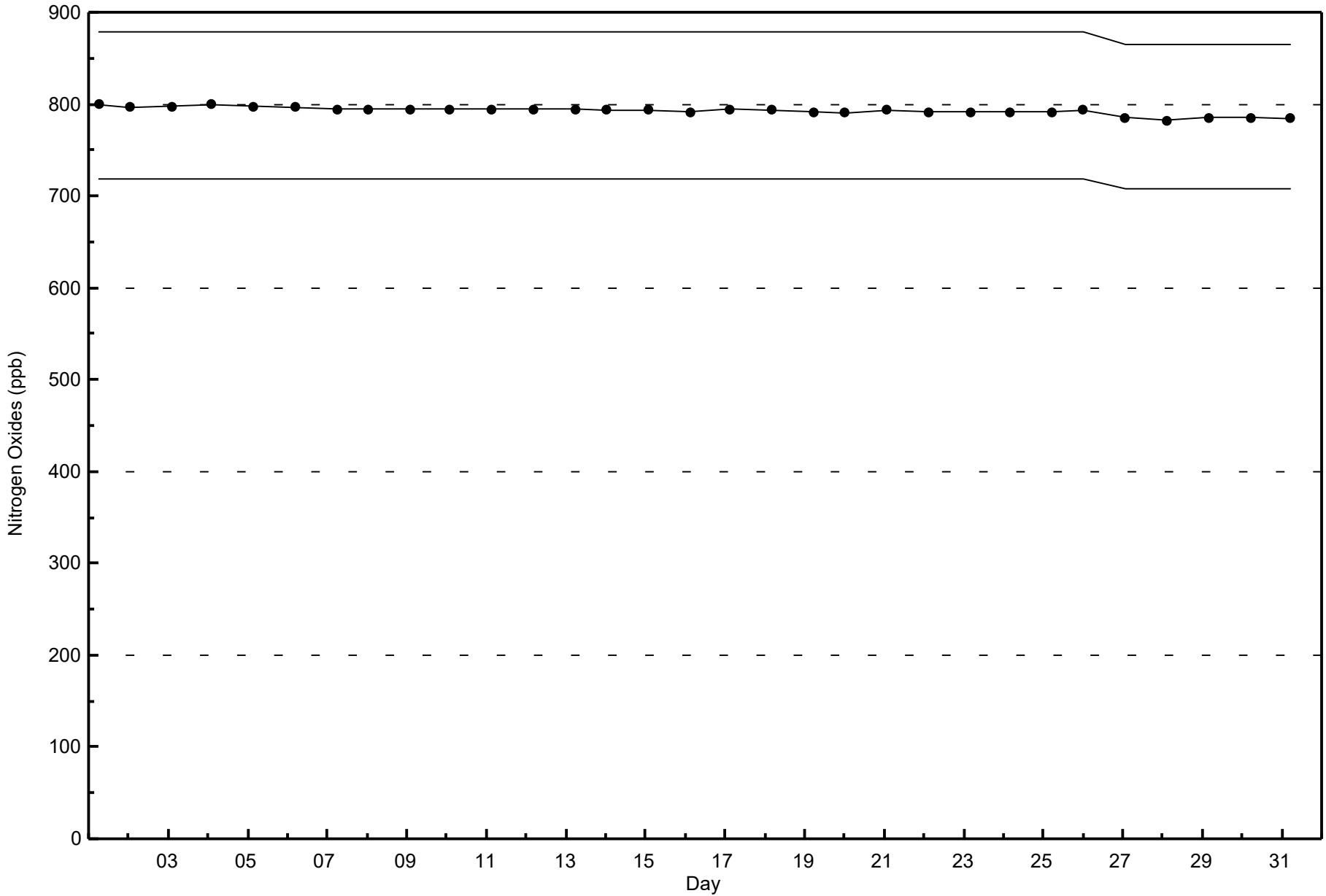


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Jackfish 1







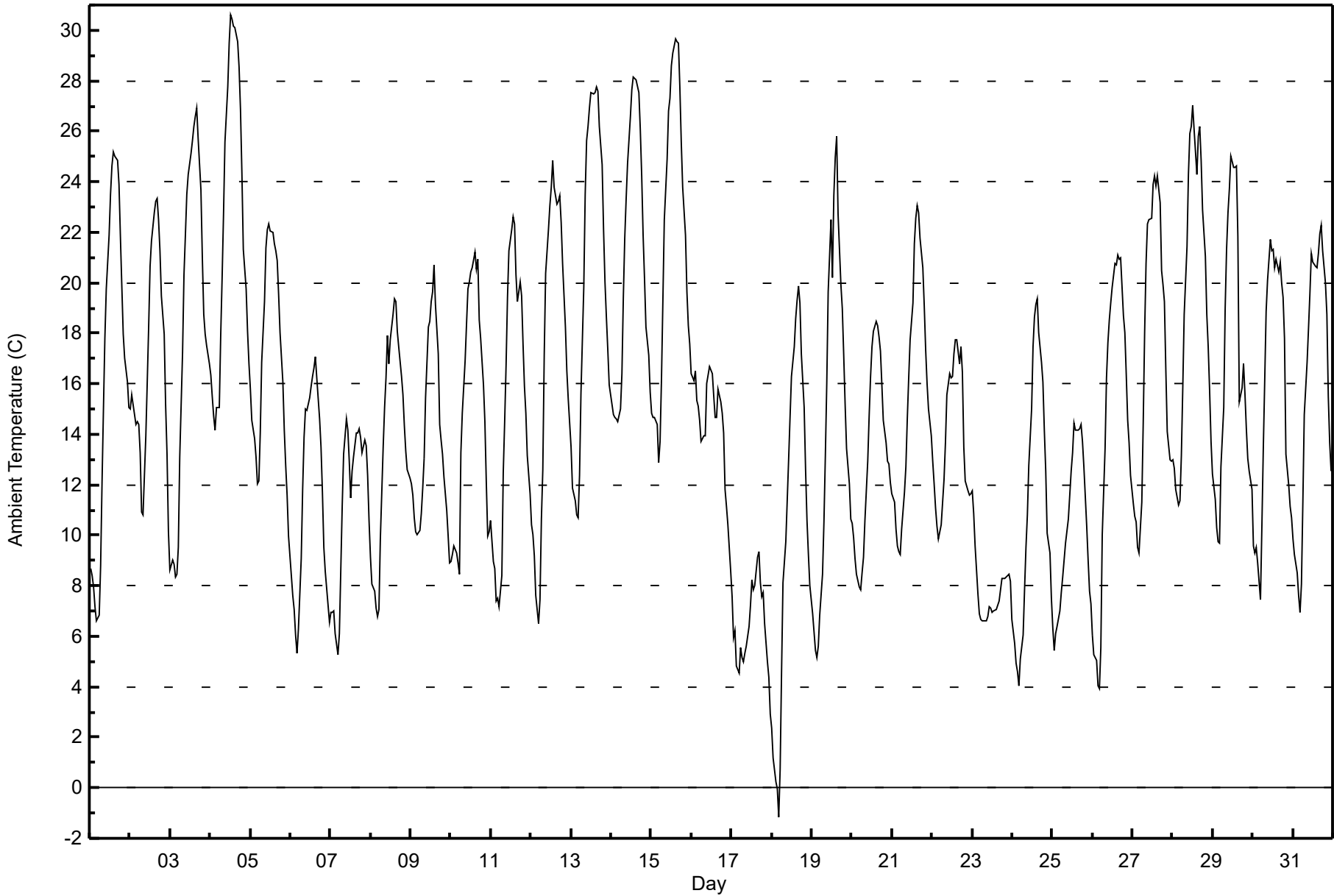


Maximum Value: 30.6 C on May 4 13:00 Maximum Daily Average: 22.5 C on May 4																						Hours in Service: 744 Hours of Data: 744				
Minimum Value: -1.1 C on May 18 05:00 Minimum Daily Average: 6.4 C on May 17 Maximum Diurnal Average: 20.9 C at hour 15 Minimum Diurnal Average: 8.5 C at hour 5 Monthly Average: 15.15 C Percentiles: P ₁ = 4.0 P ₁₀ = 7.2 Q ₁ = 10.2 Median = 14.7 Q ₃ = 19.7 P ₉₀ = 23.8 P ₉₉ = 29.5																						Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0				
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	8.7	8.4	7.9	7.2	6.6	6.8	8.8	12.1	15.0	17.8	19.8	21.9	23.5	24.6	25.2	25.0	24.9	23.9	21.9	19.9	17.9	17.0	16.1	15.1	16.5	25.2
2-May	15.0	15.5	15.2	14.4	14.5	14.4	13.2	10.9	10.8	13.9	16.0	18.3	20.7	21.7	22.8	23.2	23.3	22.5	21.3	19.5	18.0	15.2	13.2	10.1	16.8	23.3
3-May	8.7	9.0	8.8	8.4	8.5	9.5	13.1	17.3	20.3	21.9	23.5	24.3	25.1	25.7	26.2	26.6	26.9	25.7	23.7	21.0	18.7	18.0	17.5	16.8	18.5	26.9
4-May	16.4	15.5	14.7	14.2	15.0	15.1	17.9	20.2	22.7	25.6	27.7	29.5	30.6	30.4	30.2	30.1	29.5	28.5	26.8	24.4	21.3	19.8	18.1	16.8	22.5	30.6
5-May	15.8	14.5	13.9	13.1	12.1	12.2	14.1	16.8	19.3	21.4	22.1	22.3	22.1	22.0	21.5	21.3	20.9	19.5	18.0	16.1	14.2	12.8	11.6	10.0	17.0	22.3
6-May	8.4	7.6	7.0	6.1	5.4	6.3	9.1	11.8	13.9	15.0	14.9	15.4	15.9	16.3	16.6	17.1	16.3	14.6	13.5	11.7	9.5	8.6	7.2	6.5	11.4	17.1
7-May	6.9	7.0	7.0	6.1	5.3	6.1	8.6	11.2	13.2	14.6	14.2	12.9	11.5	12.5	13.1	14.1	14.0	14.2	13.9	13.3	13.8	13.6	12.4	10.6	11.3	14.6
8-May	9.1	8.1	7.8	7.1	6.8	7.1	9.9	13.5	15.0	16.2	17.9	16.8	17.8	18.8	19.4	19.2	18.1	17.4	16.3	15.6	14.3	13.3	12.6	12.2	13.8	19.4
9-May	12.1	11.6	10.7	10.1	10.0	10.2	10.8	11.9	13.0	15.4	18.2	18.5	19.3	19.6	20.7	19.2	17.2	14.4	13.8	13.2	12.3	11.0	10.0	8.9	13.8	20.7
10-May	8.9	9.2	9.6	9.3	8.9	8.5	13.3	14.9	16.9	18.4	19.7	20.0	20.4	20.6	21.2	20.6	20.9	18.5	17.8	15.9	14.5	12.1	10.0	10.1	15.0	21.2
11-May	10.6	9.0	8.7	7.4	7.5	7.2	8.4	12.5	14.5	16.7	19.4	21.3	22.1	22.6	22.3	20.3	19.3	20.0	19.5	17.6	15.9	14.9	13.1	11.6	15.1	22.6
12-May	10.4	10.0	9.2	7.6	6.5	7.4	10.6	12.6	17.1	20.4	22.1	23.1	23.8	24.9	23.8	23.1	23.2	23.4	22.4	20.8	18.3	16.5	15.4	14.4	17.0	24.9
13-May	13.5	11.9	11.3	10.8	10.7	12.4	15.6	19.8	23.5	25.6	26.2	26.9	27.5	27.5	27.6	27.8	27.6	26.2	24.7	22.1	20.0	18.6	17.4	15.9	20.5	27.8
14-May	15.2	14.8	14.6	14.6	14.5	15.0	16.4	19.4	21.8	23.3	24.7	26.6	27.7	28.1	28.1	28.0	27.5	26.1	24.3	21.9	20.1	18.3	17.1	15.7	21.0	28.1
15-May	14.8	14.7	14.7	14.4	12.9	13.7	16.2	19.3	22.5	24.9	26.8	27.3	28.6	29.1	29.7	29.5	29.5	27.8	25.6	23.8	21.9	19.6	18.3	17.6	21.8	29.7
16-May	16.4	16.1	16.5	15.3	15.1	14.6	13.7	14.0	13.9	16.0	16.4	16.7	16.4	15.5	14.7	14.7	15.8	15.3	14.9	14.0	11.8	11.1	10.4	8.6	14.5	16.7
17-May	7.6	5.9	6.2	4.8	4.5	5.5	5.2	5.0	5.3	5.6	6.4	7.2	8.2	7.8	8.0	9.1	9.4	8.1	7.6	7.7	6.5	5.0	4.4	2.9	6.4	9.4
18-May	2.3	1.2	0.3	0.0	-1.1	0.7	4.6	8.1	9.8	11.4	13.0	14.7	16.3	17.5	18.6	19.3	19.9	19.2	17.2	15.1	12.6	10.6	9.2	8.0	10.3	19.9
19-May	6.9	6.2	5.4	5.2	5.6	6.8	8.5	10.5	13.2	16.0	19.7	22.5	20.2	23.5	24.9	25.8	22.7	19.9	19.0	17.1	15.1	13.4	12.0	10.6	14.6	25.8
20-May	10.5	9.9	9.1	8.5	8.0	7.9	8.5	9.1	10.6	12.9	14.7	16.3	17.5	18.1	18.5	18.3	17.9	17.3	15.9	14.5	13.6	12.9	12.8	12.1	13.1	18.5
21-May	11.6	11.3	10.2	9.6	9.4	9.3	10.3	11.7	12.7	14.6	16.2	17.7	19.2	21.6	22.6	23.1	22.8	21.8	20.6	19.1	17.4	16.0	15.0	13.9	15.7	23.1
22-May	12.9	12.1	11.1	10.3	9.9	10.4	11.3	12.2	13.6	15.6	16.4	16.3	16.3	17.2	17.8	17.8	16.8	17.5	16.5	13.5	12.1	11.7	11.6	11.6	13.9	17.8
23-May	11.8	10.9	9.6	7.7	6.9	6.7	6.6	6.6	6.6	6.8	7.1	7.1	7.0	7.0	7.3	7.4	7.8	8.3	8.3	8.3	8.4	8.5	8.2	7.8	11.8	11.8
24-May	6.7	5.7	4.9	4.6	4.0	5.1	6.1	7.9	9.5	10.8	12.7	15.0	17.5	18.7	19.2	19.4	18.0	16.8	16.1	14.2	12.5	10.1	9.3	7.5	11.3	19.4
25-May	6.3	5.4	6.1	6.4	7.0	7.7	8.4	9.0	9.7	10.6	11.6	12.5	13.3	14.5	14.2	14.2	14.2	14.4	13.7	12.7	10.4	9.0	7.8	7.3	10.3	14.5
26-May	6.0	5.3	5.0	4.1	3.9	5.5	10.0	13.4	16.2	17.7	18.5	19.2	19.8	20.8	20.7	21.1	20.9	21.0	18.7	18.0	16.4	14.5	13.6	12.3	14.3	21.1
27-May	11.2	10.8	10.6	9.5	9.3	11.3	14.4	18.0	20.7	22.3	22.5	22.6	23.9	24.3	23.8	24.2	23.2	20.5	19.9	19.3	16.5	14.1	13.0	12.9	17.5	24.3
28-May	13.0	12.7	11.8	11.2	11.4	13.2	15.8	18.8	21.4	24.3	25.9	26.2	27.0	26.1	24.3	25.8	26.2	24.9	22.9	21.0	18.8	17.5	15.7	13.7	19.6	27.0
29-May	12.5	11.4	10.3	9.7	9.7	12.7	15.1	19.0	21.3	22.8	23.7	25.0	24.6	24.6	24.6	21.8	15.3	15.9	16.8	15.6	14.2	13.0	12.5	11.8	16.8	25.0
30-May	9.6	9.3	9.5	8.9	7.5	10.3	13.4	16.1	18.9	20.1	21.7	21.2	21.3	20.6	20.9	20.4	20.8	20.0	19.4	17.8	13.2	12.0	11.2	10.7	15.6	21.7
31-May	9.8	9.2	8.5	7.6	6.9	8.1	11.3	14.8	16.9	18.2	19.6	21.2	20.8	20.6	20.6	21.2	22.0	22.3	21.3	20.0	18.7	15.5	13.7	12.6	15.9	22.3
																						Diurnal Average				
																						Diurnal Maximum				



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Jackfish 1 - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Jackfish 1 - May 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	2	0.27	0.27
0 - 10	176	23.66	23.92
10 - 20	391	52.55	76.48
> 20	175	23.52	100.00

Total Number of Valid Hours: 744

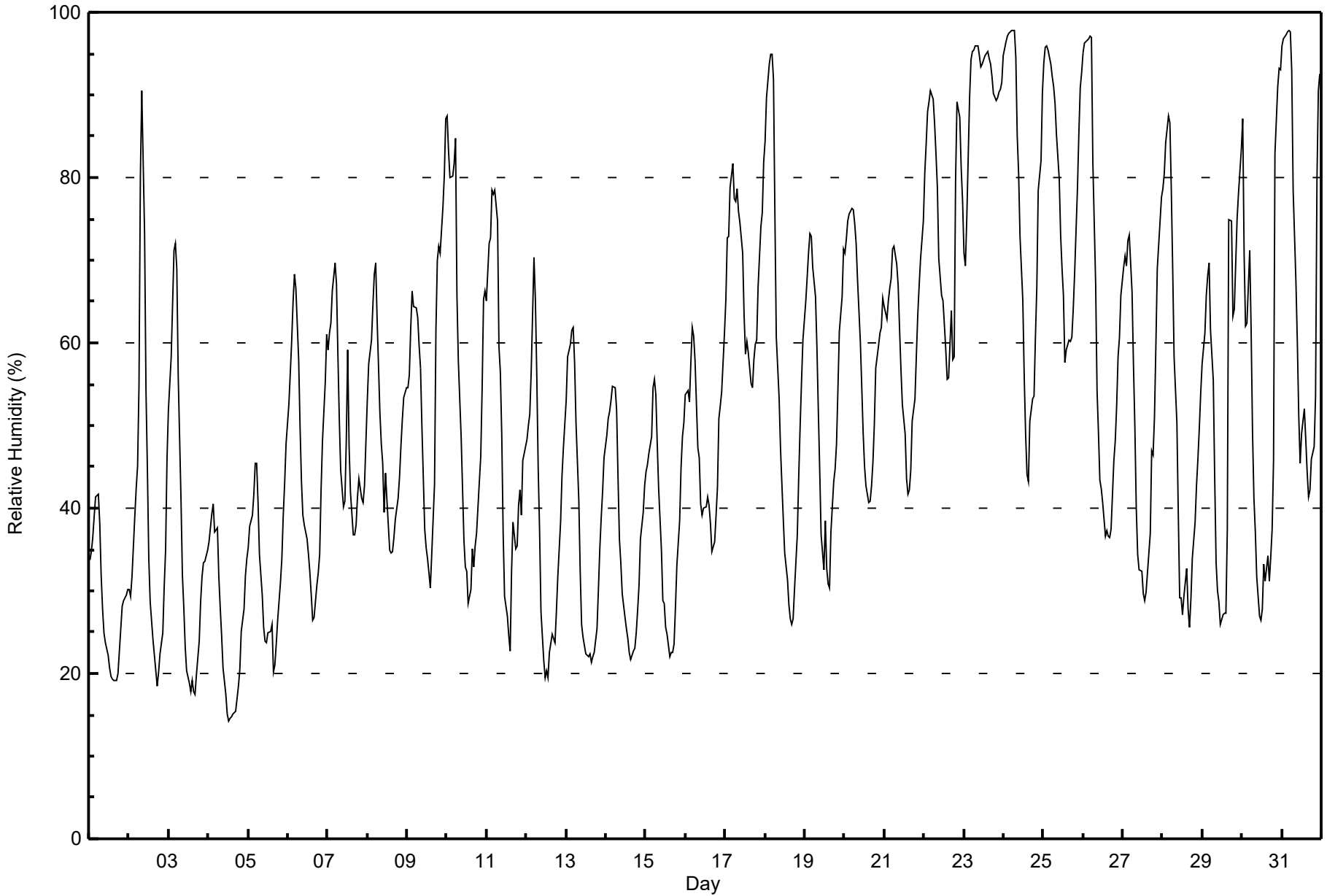
Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Jackfish 1 - May 2023

Maximum Value: 97.9 % on May 24 06:00 Maximum Daily Average: 90.4 % on May 23 Minimum Value: 14.2 % on May 4 13:00 Minimum Daily Average: 25.6 % on May 4 Maximum Diurnal Average: 72.2 % at hour 5 Minimum Diurnal Average: 34.9 % at hour 15 Monthly Average: 52.26 % Percentiles: P ₁ = 17.5 P ₁₀ = 25.2 Q ₁ = 34.5 Median = 49.1 Q ₃ = 67.9 P ₉₀ = 86.7 P ₉₉ = 97.2																								Hours in Service:	744																								
																								Hours of Data:	744																								
																								Hours of Missing Data:	0																								
																								Hours of Calibration:	0																								
																								Percent Operational Time:	100.0																								
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	33.7	34.8	36.5	39.0	41.3	41.8	38.2	31.9	27.8	25.0	23.8	22.3	20.6	19.6	19.3	19.2	19.2	20.1	22.7	25.5	28.1	28.9	29.4	30.2	28.3	41.8																							
2-May	30.1	29.3	31.6	39.0	42.4	45.0	54.8	80.1	90.5	73.3	54.2	44.8	33.9	28.6	24.1	22.2	20.4	18.4	20.1	22.5	24.8	30.5	34.9	45.9	39.2	90.5																							
3-May	51.9	58.3	64.7	71.1	72.1	69.0	56.0	41.1	31.9	27.9	23.3	20.4	18.8	17.8	19.1	17.8	17.5	19.8	23.9	28.7	31.6	33.3	33.6	34.8	36.9	72.1																							
4-May	35.9	37.6	39.3	40.5	37.2	37.7	31.7	27.9	24.5	20.6	17.4	15.1	14.2	14.5	14.7	15.0	15.4	16.9	18.5	20.5	25.1	27.7	31.8	33.9	25.6	40.5																							
5-May	35.2	37.8	39.2	41.7	45.4	45.4	40.6	34.4	29.5	25.6	23.9	23.8	24.9	25.1	26.0	20.1	21.0	23.6	26.4	31.0	34.0	39.2	43.1	47.8	32.7	47.8																							
6-May	52.6	56.2	60.1	64.8	68.3	66.6	58.0	49.8	43.3	39.1	38.0	36.3	34.4	32.2	29.4	26.4	26.7	30.6	32.1	34.4	42.3	48.1	55.2	61.0	45.3	68.3																							
7-May	59.2	61.3	62.4	66.3	69.6	67.0	58.6	50.8	44.5	40.1	40.9	48.1	59.1	47.5	41.9	36.8	36.8	37.9	41.3	43.5	41.2	40.7	42.7	48.0	49.4	69.6																							
8-May	53.1	57.5	60.3	64.6	68.3	69.7	62.8	51.5	47.8	45.4	39.5	44.2	41.0	34.9	34.5	34.7	36.5	38.7	41.2	43.7	47.4	50.6	53.4	54.6	49.0	69.7																							
9-May	54.6	56.2	61.7	66.3	64.4	64.3	63.0	59.7	57.0	49.9	37.5	35.3	33.9	32.1	30.4	34.4	42.9	61.6	70.0	71.7	70.9	76.5	80.3	87.1	56.7	87.1																							
10-May	87.5	83.3	79.9	80.2	81.7	84.8	65.7	57.7	48.6	42.4	36.1	32.9	32.3	28.4	30.1	35.1	33.0	35.5	37.0	43.2	46.2	54.6	65.3	66.3	53.7	87.5																							
11-May	65.2	72.0	72.7	78.6	78.0	78.5	74.8	59.4	56.4	48.8	36.9	29.3	26.9	24.6	22.7	32.4	38.3	35.1	35.5	40.4	42.1	39.2	45.8	47.4	49.2	78.6																							
12-May	48.3	50.1	51.3	56.5	70.4	65.3	56.0	45.0	37.3	27.4	21.6	19.6	20.3	19.6	22.6	24.7	24.3	23.7	27.4	31.8	38.4	43.8	47.2	50.1	38.4	70.4																							
13-May	53.0	58.2	59.8	61.5	61.8	57.7	50.3	41.0	32.4	25.9	24.4	23.4	22.4	22.0	22.4	21.3	22.1	22.6	25.4	30.1	35.1	38.8	42.0	46.1	37.5	61.8																							
14-May	48.9	50.9	51.7	53.1	54.8	54.6	51.8	43.8	36.3	33.4	29.7	26.8	25.4	24.2	22.6	21.6	22.7	23.1	24.9	27.6	30.7	36.3	39.5	42.8	36.5	54.8																							
15-May	44.4	45.3	46.7	48.6	54.5	55.5	53.7	47.7	42.4	34.9	28.8	28.5	25.6	24.8	22.1	22.5	22.6	23.6	28.0	33.1	38.5	44.9	48.6	50.3	38.1	55.5																							
16-May	53.7	54.2	53.0	57.6	61.8	60.8	57.8	47.2	46.1	40.4	39.1	40.1	41.4	40.4	38.2	34.8	35.9	39.1	42.6	50.9	52.4	54.1	61.2	47.6	61.8																								
17-May	65.3	72.7	72.8	78.8	81.6	77.4	77.1	78.6	76.0	74.6	70.8	63.4	58.6	60.2	58.8	55.0	54.5	57.9	59.9	60.3	66.8	74.1	75.7	81.8	68.9	81.8																							
18-May	84.4	89.6	93.7	94.9	94.9	91.8	75.6	60.6	53.4	47.3	42.9	38.6	34.6	31.4	28.3	26.6	25.9	26.6	30.2	36.7	43.7	49.9	55.3	60.3	54.9	94.9																							
19-May	64.9	67.9	70.9	73.3	72.9	69.1	65.5	59.5	51.8	44.6	36.8	32.5	38.5	32.7	30.9	30.4	37.1	43.3	44.7	47.7	54.5	61.3	65.6	71.3	52.8	73.3																							
20-May	70.8	72.6	74.8	75.6	76.2	76.2	74.5	72.0	67.7	60.2	54.7	49.2	45.0	42.8	40.6	40.8	42.7	45.6	50.1	57.0	59.6	61.2	61.8	65.5	59.9	76.2																							
21-May	64.5	62.9	65.0	66.6	67.9	71.4	71.7	69.5	67.0	61.8	56.7	52.5	48.9	43.5	41.7	42.1	44.6	50.6	53.2	58.6	63.3	67.0	70.2	74.7	59.8	74.7																							
22-May	80.5	84.1	87.9	89.1	90.5	89.5	86.7	82.9	78.8	70.2	65.8	65.0	62.2	59.1	55.7	55.7	63.9	58.0	58.3	79.7	89.1	87.3	81.2	77.1	74.9	90.5																							
23-May	70.9	69.3	75.0	89.6	94.2	95.2	95.5	96.0	96.0	94.7	93.4	93.8	94.2	94.7	95.2	94.5	93.8	92.2	90.2	89.3	89.7	90.4	90.6	91.6	90.4	96.0																							
24-May	94.8	96.4	97.1	97.5	97.7	97.9	97.9	94.6	85.1	80.5	72.9	65.1	56.0	49.0	44.1	43.2	50.6	53.2	53.5	60.8	66.8	78.4	82.0	90.4	75.2	97.9																							
25-May	93.9	95.7	95.9	95.4	93.7	92.2	91.0	89.0	85.3	79.8	73.0	69.0	65.7	57.6	59.1	60.3	60.2	60.6	64.1	68.5	78.7	85.2	90.9	92.8	79.1	95.9																							
26-May	95.0	96.2	96.6	96.8	97.1	97.0	81.9	67.1	54.3	49.1	43.4	42.4	40.7	36.6	37.4	36.6	36.5	37.5	45.8	48.1	52.3	58.3	60.6	65.7	61.4	97.1																							
27-May	69.1	70.4	69.3	72.3	73.0	66.1	57.3	49.9	39.9	34.5	32.6	32.4	29.7	28.9	29.8	32.2	36.9	46.9	46.5	51.0	59.7	69.0	74.7	77.6	52.1	77.6																							
28-May	78.6	80.6	84.3	87.5	86.6	78.7	69.0	58.2	50.4	39.4	29.2	29.2	27.1	29.3	32.7	27.8	25.6	29.0	34.0	38.3	42.7	46.0	49.7	53.9	50.3	87.5																							
29-May	57.5	61.2	65.8	68.2	69.6	61.5	55.4	43.5	33.4	30.0	28.7	26.0	27.2	27.3	27.3	37.5	75.0	74.7	63.3	64.1	69.7	75.1	78.1	83.4	54.3	83.4																							
30-May	87.1	70.8	62.0	62.3	71.2	61.6	49.1	41.2	37.1	31.7	27.0	26.5	27.8	33.2	31.2	34.3	31.1	34.1	37.4	45.8	82.9	91.1	93.2	93.1	52.6	93.2																							
31-May	95.9	96.8	97.3	97.6	97.8	97.7	92.8	78.5	67.2	60.1	51.2	45.4	49.1	52.1	48.2	44.4	41.3	42.2	46.0	47.5	53.5	79.6	90.5	92.5	69.4	97.8																							
																								63.9	65.5	67.1	70.2	72.2	70.5	65.0	58.4	52.9	47.0	41.7	39.4	38.0	34.9	35.0	37.2	39.3	41.6	45.9	51.6	56.8	60.2	63.8	Diurnal Average		
																								95.9	96.8	97.3	97.6	97.8	97.9	97.9	96.0	96.0	94.7	93.4	93.8	94.2	94.7	95.2	94.5	93.8	92.2	90.2	89.3	89.7	91.1	93.2	93.1	Diurnal Maximum	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Jackfish 1 - May 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	22	2.96	2.96
20 - 40	236	31.72	34.68
40 - 60	221	29.70	64.38
60 - 80	166	22.31	86.69
80 - 100	99	13.31	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Jackfish 1 - May 2023

Maximum Speed: 19 km/h on May 16 14:00	Maximum Daily Speed Average: 12.3 km/h on May 23	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 2 22:00	Minimum Daily Speed Average: 1.2 km/h on May 24	Hours of Data: 744
Maximum Diurnal Speed Average: 3.5 km/h at hour 1	Minimum Diurnal Speed Average: 2.4 km/h at hour 7	Hours of Missing Data: 0
Monthly Average Velocity: 2.7 km/h 155.2 deg	Percentiles: $P_1 = 1$ $P_{10} = 2$ $Q_1 = 4$ Median = 6 $Q_3 = 8$ $P_{90} = 12$ $P_{99} = 17$	Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SSE10	SSE8	S8	SSE8	SSE8	SSE10	SSE10	S10	S12	S11	S11	SSE12	S11	S11	S10	S11	S11	S10	S8	S6	S6	S9	S10	S9	S9.5	S12
2-May	S9	SSW6	WSW4	W3	NNW7	NW5	NW6	W2	WSW2	NW7	NNW6	N6	NNW6	W3	NW7	NNW8	NNW4	NNW8	NW5	WVW1	W2	NNE0	SW1	SSW3	NW3.0	S9
3-May	S4	SSW5	S6	S6	S7	S8	S6	S8	S8	S10	S11	SSE11	SSE11	S11	SSE11	S10	SSE9	S9	S7	SSE6	SSE8	SSE9	SSE9	SSE8	S8.1	SSE11
4-May	SSE8	SSE6	SSE7	S6	S6	S4	S8	S8	S8	S8	SSE10	SSE11	S9	SSE12	SSE11	SE11	SE11	SE13	SE12	SE10	SE8	SE9	SSE8	SSE7	SSE8.5	SE13
5-May	SSE8	SSE9	SSE8	SSE8	SSE9	SSE10	SSE9	SSE9	SSE10	SSE12	SE15	SE15	ESE14	ESE18	ESE16	ESE18	ESE17	ESE18	ESE16	SE13	SE12	SE13	SE16	SE14	SE12.2	ESE18
6-May	SE11	SE11	SE11	SE10	SE10	SE9	SE10	SE11	SE13	ESE16	ESE14	ESE16	ESE15	ESE15	ESE14	ESE14	ESE17	ESE16	SE19	ESE10	ESE7	SE7	SE7	SE7	SE11.9	ESE19
7-May	SE8	SE9	SE9	SE8	SE9	SE8	SE12	SE12	SE14	SE16	SE14	SSE12	SSE8	SE13	SE15	SE11	ESE7	SE5	SSE5	SE7	SE12	SE12	SE10	SE9	SE10.1	SE16
8-May	SSE8	SE8	SE8	SE7	SE7	SSE6	SSE7	SSE10	S8	S6	SSE8	S6	S7	S9	SSW8	SSE8	SE14	SSE11	SSE9	SE7	SSE5	SSE5	SSE4	WSW3	SSE7.0	SE14
9-May	SSW2	NNE0	SSE3	S3	S4	S4	S3	W0	S3	S4	ESE5	SE5	SE7	SE4	ENE6	NE3	E4	SSE4	ESE2	SW3	SSW3	SW2	SSE1	S3	SSE2.3	SE7
10-May	SSW2	NW2	W2	WSW2	WSW1	S2	NNW1	NNW4	NE4	NE4	NE5	N4	N7	N5	WSW5	SSW6	WSW4	NNW10	NE3	ENE0	WVW2	SW2	S3	W2	NW1.3	NNW10
11-May	WSW2	SSW2	W2	W2	W2	NW2	NW1	SE3	SSE3	NE2	E5	E9	ESE8	SE13	SE10	S6	S5	S2	SE2	SE3	SSE4	SSE5	SSE4	SSE4	SE2.9	SE13
12-May	S3	SW1	W2	SSE3	S4	S2	SSW0	ESE2	E4	E8	SE8	SE6	SE6	SSE4	SSW3	WVW1	SSE2	SE3	SE6	S3	S1	S3	S4	SSW4	SSE2.7	SE8
13-May	S4	S4	S4	S5	S5	S5	S4	S5	SSW5	SSW8	SW8	SW7	SW7	SSW7	SSW8	SSW7	SW6	SW6	SW5	SSW3	S4	S5	S5	S5	SSW5.2	SSW8
14-May	S5	S5	S5	S6	S6	S6	S6	SSW6	SSW9	SW8	SW8	SW7	SSW6	SSW7	SW6	WSW5	SW4	SW5	SSW4	SSW3	SSW2	S2	S3	S3	SSW5.1	SSW9
15-May	S4	S4	S4	S3	S2	S3	WSW3	SW6	SW6	SW6	SSW6	SSW6	S6	SW7	SSW7	SSW6	SSW6	SSW6	SSW5	SSW3	S3	S3	S4	S5	SSW4.5	SSW7
16-May	S5	S5	SW3	W2	NNW10	NNW13	NW11	NW14	NNW14	NW16	NNW17	NNW17	NW16	NNW19	NNW17	NNW18	NW16	NW15	NW10	NW9	NW6	NW8	NNW8	NNW8	NW10.6	NNW19
17-May	NNW8	NW6	NNW10	NW7	NW5	NW7	NNW10	NNW9	NNW12	NNW12	NNW13	NNW12	N12	N11	N11	N12	NNE10	NE9	NNE8	NNE6	E1	E1	ENE2	E2	N7.2	NNW13
18-May	SE2	S1	WSW2	SSW1	S2	S4	S4	S4	S1	NNW1	SSE4	SSE4	SSE5	S4	SSE5	S6	S5	SSW4	SSW4	S4	S4	S3	S4	S4	S3.1	S6
19-May	S5	S5	S5	S5	S5	S5	S5	S5	S5	SSW6	SSW7	SSW6	W2	WSW3	WSW4	NW6	NNW8	NNW8	NNW10	NNW10	NNW7	NNW6	NNW6	NW5	W2.1	NNW10
20-May	NNW5	NNW6	NNW6	NNW6	NNW5	NNW4	N4	NE5	E5	ESE6	ESE6	ENE7	E7	ESE8	ESE8	ESE9	ESE8	ESE7	E5	SE6	SE7	SE6	SSE6	SSE4	E3.2	ESE9
21-May	SSE5	SSE6	S5	S6	S5	S3	S4	SSE5	S5	S4	SSE5	SE6	SE6	S4	S4	SSW3	SSW2	S1	SE2	SE4	S3	S2	S2	S2	SSE3.8	SSE6
22-May	S3	S2	S2	W2	W1	E2	NNW4	N6	N7	NE7	NNE9	N11	NNE12	NNE12	NE12	ENE11	NE9	ENE13	E13	E12	ENE10	ENE10	ENE9	ENE8	NE6.0	E13
23-May	E12	ESE13	E15	E11	E11	E10	ESE12	ESE13	ESE14	SE17	SE15	SE14	SE13	SE13	SE13	SE14	SE14	SE14	SE14	SE14	SE11	SE8	SE8	SE7	ESE12.3	SE17
24-May	SE4	ESE2	SE1	SE2	SSE4	SE6	SSE7	S6	S4	SW3	SSW4	SSW4	SSW4	SSW4	WSW4	WVW5	NW4	NW5	NNW7	NNW8	NNW8	NNW5	NNW8	NW2	W1.2	NNW8
25-May	WVW1	NNW4	SSW2	WSW2	SSW1	S1	WVW2	NNW7	N6	N5	N7	N6	N5	NNE7	N6	NNE6	NE5	E3	SE3	SE4	SSE2	S2	S1	SSW2	N1.9	N7
26-May	S1	S3	SSE2	S1	S3	SW2	SW4	SSW3	S3	W2	W1	SSW3	SW4	SSW4	NW2	W2	NNW2	SSW2	S1	S3	S3	S3	S3	S3	SSW1.9	SW4
27-May	S4	S3	S3	S4	S4	S4	S4	S5	S6	S7	SSE9	S7	S7	S7	S7	S6	S4	S6	SSE6	S6	S6	S4	S4	S5	S5.3	SSE9
28-May	S5	S5	S5	S5	S6	S5	SSW5	SSW5	SSW4	SSW4	SW5	WSW5	SW6	WSW5	WVW5	SW7	WSW5	WSW4	NW5	W2	W1	WVW2	WVW3	SE1	SW3.4	SW7
29-May	SSE2	S4	SSW5	S3	WSW4	SW4	SW5	WSW3	W4	W5	WVW5	WVW5	W5	W5	SW4	W4	NW5	S2	SSW4	S3	S2	SSW2	SW4	SSW4	WSW2.9	NW5
30-May	SSE2	S2	SE1	SW1	WVW2	NW2	NNW3	ENE3	SSE5	SE4	ESE6	ESE6	ESE7	SE5	SSE4	SE12	ESE11	E7	NE4	N2	SSW2	SW3	ESE3	SSE4	SE2.9	SE12
31-May	W1	WSW1	W2	SW2	S1	S2	NNW1	NE3	NE5	NE7	NNE8	ENE6	N2	SW1	NNW7	NNE6	NNE7	N6	NNE6	N8	NNW4	E4	NNW8	NW9	N3.1	NW9

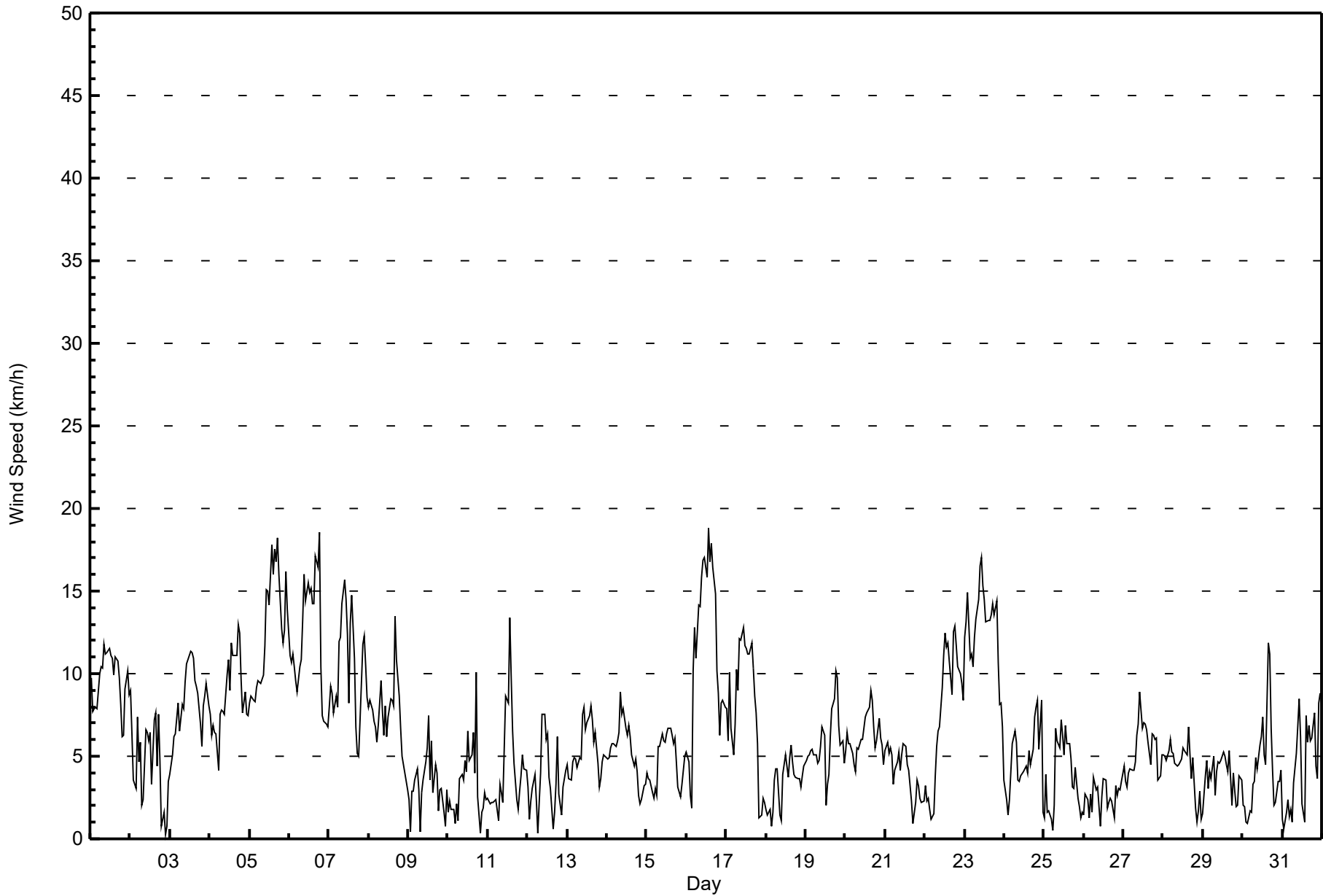
SSE3.5 SSE3.1 S2.9 S2.8 S2.6 S2.6 S2.4 SSE2.5 SSE2.8 SSE2.7 SE3.0 SE2.9 SSE2.7 SSE3.3 SSE2.4 SE2.5 SE2.6 SE2.5 SE2.6 SE2.5 SSE2.6 SSE2.9 SSE2.6 SSE2.9	Diurnal Average
E12 ESE13 E15 E11 E11 NNW13 ESE12 NW14 ESE14 SE17 SE17 NNW17 NW16 NNW19 NNW17 NNW18 ESE17 ESE18 ESE19 SE14 SE12 SE13 SE16 SE14	Diurnal Maximum

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Jackfish 1 - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Jackfish 1 - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	369	49.60	49.60
6 - 11	290	38.98	88.58
12 - 19	85	11.42	100.00
20 - 28	0	0.00	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Wind Speed (WS) - km/h
Jackfish 1 - May 2023

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	7	2	11	3	11	5	19	32	126	42	22	22	27	12	14	14	369
6 - 11	13	10	4	8	7	15	45	49	60	22	14	0	0	0	13	30	290
12 - 19	2	2	1	1	4	21	33	4	1	0	0	0	0	0	5	11	85
20 - 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	22	14	16	12	22	41	97	85	187	64	36	22	27	12	32	55	744

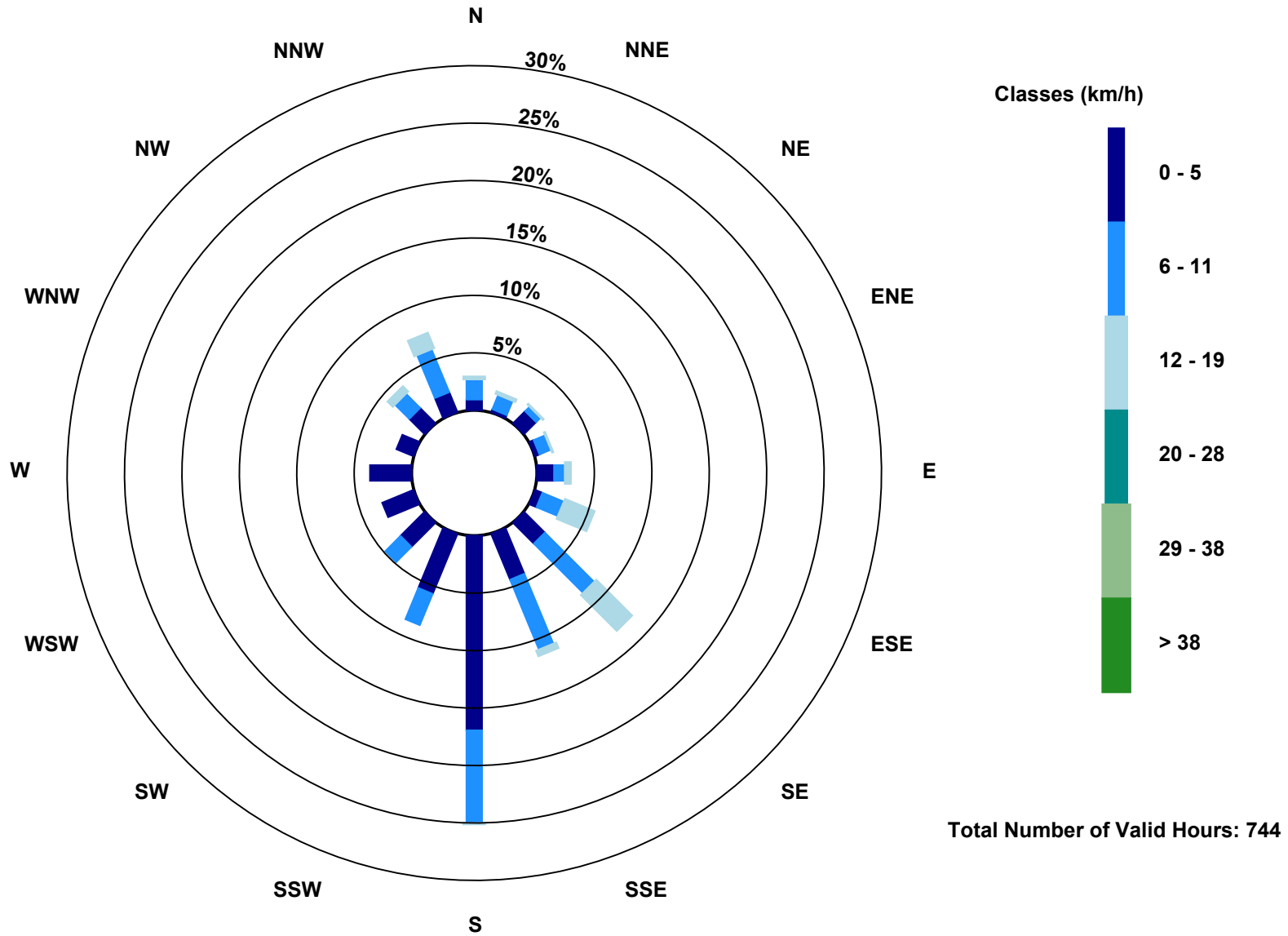
Total Number of Valid Hours: 744

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Jackfish 1





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Jackfish 1 - May 2023

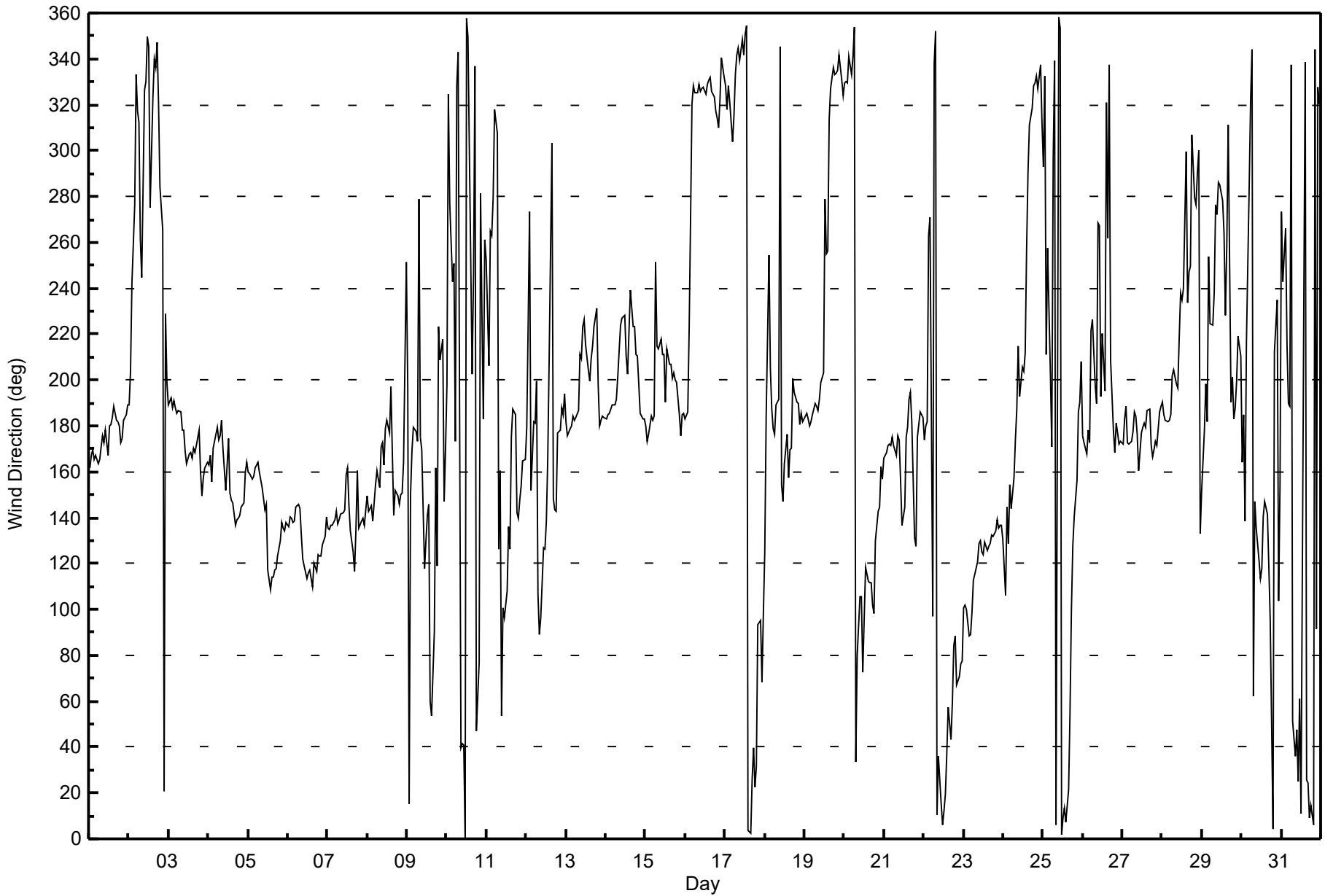
Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 6 km/h on May 16 14:00																	Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0								
Minimum Value: 0 km/h on May 21 23:00																									
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 1 Median = 2 Q ₃ = 3 P ₉₀ = 4 P ₉₉ = 5																									
Day	Hourly Period Ending At (MST)																							Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
1-May	2	2	2	2	2	2	3	3	4	4	4	4	4	4	4	4	4	3	3	2	2	3	3	2	4
2-May	2	2	2	2	2	2	3	3	2	2	2	2	3	2	3	3	3	3	3	1	1	1	1	1	3
3-May	2	1	2	1	1	2	2	3	3	3	4	4	4	4	4	4	4	3	2	1	2	2	2	2	4
4-May	2	2	2	2	2	1	2	3	3	3	4	4	4	3	4	4	4	4	3	3	2	2	1	2	5
5-May	2	2	2	2	2	2	3	3	3	4	5	5	6	6	5	6	5	5	5	4	3	4	5	4	6
6-May	3	3	3	2	2	2	3	4	4	5	5	5	5	5	5	5	5	5	5	5	3	2	2	2	5
7-May	1	2	2	2	2	2	4	4	5	6	5	4	3	4	5	5	2	2	2	3	3	4	3	2	6
8-May	2	2	2	2	2	1	2	3	3	2	3	3	3	3	3	4	4	4	3	2	1	1	1	1	4
9-May	1	1	1	1	1	1	1	1	1	1	3	3	3	2	3	3	3	2	1	1	1	1	1	2	3
10-May	2	1	1	1	1	2	1	1	2	2	3	2	4	3	3	2	3	4	2	1	1	1	1	1	4
11-May	1	1	1	1	1	1	1	2	1	1	3	3	5	5	4	4	2	1	1	2	1	1	1	1	5
12-May	1	1	1	1	1	1	1	1	1	3	3	3	4	3	2	1	2	2	2	1	2	1	1	1	4
13-May	1	1	1	1	1	1	1	2	2	3	3	3	3	3	3	3	3	3	3	1	1	1	1	1	3
14-May	1	1	2	2	2	2	2	3	4	4	3	3	3	3	3	3	2	2	1	1	1	1	1	1	4
15-May	1	1	2	1	1	1	2	2	2	3	3	3	3	3	3	3	3	3	2	1	0	0	1	1	3
16-May	1	1	2	2	3	3	3	4	4	4	5	5	5	6	5	5	5	4	3	2	2	3	2	2	6
17-May	3	2	2	3	2	3	3	3	4	3	4	3	3	3	4	4	4	3	3	2	1	1	1	1	4
18-May	1	1	1	1	1	1	1	2	2	2	2	2	2	3	2	3	2	2	2	2	2	1	1	1	3
19-May	1	1	1	2	2	2	2	2	2	2	3	3	1	2	2	2	4	2	2	2	1	1	1	1	4
20-May	1	2	1	1	1	1	1	2	2	2	2	3	2	3	3	3	3	2	2	2	2	2	2	2	3
21-May	2	2	2	2	2	1	1	2	2	2	2	3	2	2	2	2	1	1	1	1	1	0	0	1	3
22-May	1	1	1	1	1	1	1	2	2	3	3	4	4	4	5	5	4	5	5	4	4	4	4	4	5
23-May	5	5	5	4	4	5	4	5	5	5	6	5	5	5	4	4	5	5	5	4	4	3	3	2	6
24-May	2	1	1	2	1	2	2	2	2	2	2	2	2	2	2	3	2	3	3	2	1	3	2	3	3
25-May	2	2	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	2
26-May	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	1	1	1	0	1	1	2
27-May	1	1	1	1	1	1	1	2	3	3	5	4	3	3	3	3	2	3	3	2	2	1	2	2	5
28-May	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	3	2	3	2	2	1	1	1	1	3
29-May	1	1	1	1	2	1	1	2	2	2	3	3	3	3	2	4	3	2	2	1	1	1	1	1	4
30-May	1	1	1	1	1	2	2	2	2	2	3	3	3	2	3	4	4	3	2	1	1	1	3	3	4
31-May	1	1	1	1	1	1	1	1	2	2	3	3	2	1	3	2	2	2	2	2	3	3	4	4	4
Diurnal Maximum																									



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Jackfish 1 - May 2023

Direction of Maximum Speed: 329 deg on May 16 14:00																						Hours in Service:	744		
Direction of Maximum Daily Speed Average: 120.7 deg on May 23																						Hours of Data:	744		
Direction of Minimum Speed: 21 deg on May 2 22:00											Direction of Minimum Daily Speed Average: 1.2 deg on May 24											Hours of Missing Data:	0		
Monthly Average Direction: 155.2 deg																						Percent Operational Time:	100.0		
Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	161	167	170	165	167	164	165	171	176	172	178	167	180	180	184	188	183	182	180	173	175	183	185	189	175.5
2-May	189	204	242	276	333	317	312	262	245	326	330	350	346	275	323	340	336	347	321	284	266	21	229	199	308.8
3-May	189	193	188	191	188	185	186	186	178	178	169	164	168	169	166	170	168	171	178	160	149	158	162	164	172.5
4-May	163	167	155	170	173	180	174	176	182	170	152	163	175	151	148	146	137	139	139	141	145	146	160	164	156.4
5-May	160	159	157	158	162	163	164	160	153	148	144	146	117	109	114	114	117	118	123	130	138	135	134	138	135.7
6-May	136	141	140	138	139	144	146	144	132	122	119	114	116	117	113	110	120	116	124	123	123	128	132	140	126.2
7-May	135	135	137	136	139	143	138	139	141	142	143	159	162	145	134	125	116	135	160	135	139	140	137	143	140.1
8-May	149	143	145	138	146	154	161	153	171	173	163	179	183	177	197	168	141	152	149	146	150	151	164	252	159.2
9-May	197	15	150	169	179	178	174	279	175	170	118	130	141	146	60	54	90	162	119	224	208	218	147	170	149.5
10-May	199	324	277	243	251	173	328	343	40	41	41	1	357	350	251	203	247	337	47	77	282	229	183	261	321.8
11-May	253	206	265	263	280	318	307	126	160	53	101	97	108	136	126	175	188	185	142	140	147	154	165	166	143.9
12-May	179	225	273	152	182	181	200	107	89	96	127	126	138	166	209	303	148	144	143	177	178	188	185	194	151.7
13-May	182	176	179	180	184	182	184	187	211	209	223	226	215	204	199	209	215	223	231	198	180	182	184	183	200.7
14-May	183	185	186	187	189	189	191	201	213	224	227	228	211	202	221	239	223	223	211	210	198	186	183	183	206.0
15-May	180	173	176	184	183	184	252	215	214	218	211	211	190	214	207	207	201	203	200	199	185	176	185	186	200.1
16-May	183	186	223	270	320	328	325	325	329	326	327	328	325	329	331	332	326	323	317	314	310	322	340	332	323.9
17-May	328	318	328	321	304	316	333	341	345	339	348	342	351	354	3	2	27	40	22	32	93	95	68	98	351.2
18-May	125	184	255	205	187	179	177	189	191	345	155	147	164	176	158	170	170	201	195	190	190	181	185	182	177.3
19-May	184	185	183	180	182	185	190	189	187	192	199	203	279	255	256	314	327	336	333	334	335	342	331	324	262.2
20-May	330	330	329	341	333	341	354	34	80	106	106	73	96	118	112	112	112	102	98	130	143	144	162	157	91.7
21-May	166	168	172	172	171	175	171	167	176	174	156	136	145	175	179	192	194	182	131	128	175	181	186	184	167.3
22-May	174	180	182	263	271	97	338	352	10	36	16	6	12	19	38	58	43	60	84	88	67	71	76	77	47.6
23-May	100	102	100	89	89	99	113	116	121	129	130	125	124	129	126	128	129	132	132	134	139	135	137	137	120.7
24-May	131	106	144	129	155	144	157	174	187	215	193	206	204	212	257	290	311	318	328	329	333	327	337	312	259.4
25-May	293	333	211	257	203	171	296	340	6	358	353	2	9	14	7	21	55	99	127	140	156	186	190	208	8.9
26-May	176	173	168	178	173	222	227	197	190	268	268	193	220	195	321	262	337	209	178	169	181	177	172	173	197.8
27-May	172	183	189	172	172	173	177	186	184	177	160	177	179	181	179	187	188	172	167	170	173	172	186	188	176.9
28-May	191	185	183	182	182	185	202	204	198	197	219	238	235	240	300	234	247	250	307	280	276	291	300	133	221.1
29-May	151	178	198	182	254	225	224	238	276	272	286	285	278	264	228	259	311	191	201	183	188	200	219	211	238.2
30-May	164	185	138	216	285	322	344	62	147	136	122	113	118	141	147	142	119	95	50	4	213	235	104	154	126.2
31-May	274	243	266	215	190	188	338	51	36	47	25	61	11	234	339	26	24	9	15	6	344	92	328	320	9.2
164.7	165.6	169.0	169.0	175.9	173.5	178.5	164.9	161.3	154.5	145.5	144.1	147.2	154.8	147.4	145.8	129.2	129.5	131.1	136.9	151.4	152.9	156.4	168.4		
Diurnal Average																									
All monthly, daily, and diurnal averages have been calculated using vector methods																									





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Jackfish 1 - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 108 deg on May 18 09:00 Minimum Value: 5 deg on May 2 23:00 Percentiles: P ₁ = 10 P ₁₀ = 14 Q ₁ = 20 Median = 30 Q ₃ = 50 P ₉₀ = 70 P ₉₉ = 94																		Hours in Service: 744 Hours of Data: 744 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0							
Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	12	15	16	14	13	11	16	20	24	25	27	26	28	29	32	29	27	25	21	16	16	17	16	16	32
2-May	17	32	48	61	17	43	30	76	69	23	25	41	53	78	43	48	79	32	56	70	77	94	5	26	94
3-May	31	15	15	14	14	14	20	26	30	27	27	30	28	26	29	29	28	24	20	16	13	13	12	12	31
4-May	15	14	14	15	20	34	19	23	26	29	25	27	31	26	27	29	23	19	16	12	11	14	10	11	34
5-May	12	12	14	15	12	14	17	20	22	25	22	23	33	29	27	25	24	23	21	17	14	14	15	13	33
6-May	14	15	14	12	13	15	18	20	21	26	28	25	30	25	28	31	23	23	20	18	15	12	16	11	31
7-May	10	12	13	12	12	13	16	20	21	22	22	24	26	21	18	24	26	33	24	10	14	15	13	14	33
8-May	15	14	17	12	15	13	18	23	30	33	34	32	38	29	33	33	19	20	18	16	15	16	13	21	38
9-May	40	88	37	11	11	11	44	100	41	49	73	50	36	75	56	60	70	43	78	34	33	69	91	43	100
10-May	59	35	42	24	68	37	92	30	60	73	63	73	57	69	63	34	65	21	84	92	34	29	59	33	92
11-May	22	62	29	21	21	28	59	69	57	82	56	41	54	26	40	45	37	54	65	37	14	16	13	13	82
12-May	18	68	41	28	10	18	89	48	54	38	41	70	61	86	68	105	95	48	22	35	70	12	12	17	105
13-May	12	11	12	12	12	14	23	37	55	46	57	66	57	49	43	46	60	54	59	28	10	12	12	13	66
14-May	16	18	24	29	30	35	36	41	46	58	51	61	64	47	57	71	66	53	48	26	29	17	11	11	71
15-May	14	27	40	46	30	34	76	35	43	53	61	60	54	55	51	48	48	45	36	35	17	10	15	18	76
16-May	18	19	75	60	16	15	16	17	17	17	18	18	18	17	19	19	19	18	18	21	21	20	19	14	75
17-May	22	25	14	19	28	27	15	20	24	21	25	23	27	30	33	34	40	41	36	37	41	44	27	25	44
18-May	42	44	15	52	15	18	34	59	108	102	73	77	64	76	67	55	68	53	37	35	29	22	22	15	108
19-May	15	14	15	19	24	32	34	46	44	52	50	52	71	94	83	49	29	15	14	15	12	16	10	11	94
20-May	10	8	10	8	10	20	25	38	37	36	37	49	39	39	36	29	28	32	29	21	23	25	29	23	49
21-May	27	26	25	19	22	28	24	28	37	41	48	43	45	52	51	51	43	27	25	20	14	11	11	16	52
22-May	11	23	25	55	48	54	28	21	33	39	34	31	32	32	38	43	41	41	35	31	40	35	38	43	55
23-May	35	31	30	34	35	34	29	26	26	22	22	23	24	23	23	24	24	23	25	21	26	27	24	24	35
24-May	27	28	49	44	23	22	30	40	54	50	67	66	65	73	76	71	51	42	30	21	15	18	19	61	76
25-May	69	24	67	55	61	79	52	21	31	32	29	35	45	39	37	38	52	62	44	27	19	23	14	19	79
26-May	29	10	11	52	12	31	38	50	64	92	104	82	77	83	84	80	80	89	23	20	9	7	12	12	104
27-May	14	22	25	13	13	22	32	46	45	47	46	52	52	52	52	55	56	39	34	33	33	27	30	37	56
28-May	38	35	26	24	28	36	54	58	53	62	75	78	77	73	67	65	78	78	48	94	105	83	58	79	105
29-May	57	23	9	25	44	40	32	81	86	77	85	80	74	72	72	70	62	80	52	47	29	41	20	26	86
30-May	49	78	66	60	50	83	47	61	45	75	65	63	40	33	68	31	31	41	48	78	53	32	66	60	83
31-May	88	63	23	36	65	44	77	39	44	50	45	62	85	95	28	42	42	39	33	28	56	79	38	32	95
Diurnal Maximum																									



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS508
KIRBY NORTH
MAY 2023

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

June 30, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - KIRBY NORTH (AMS 508)
MAY 2023

MONTHLY SUMMARY

Parameter	Hours of Data	Hours of Calibration	Hours without Data	Operational Time	Maximum 1-Hour Value	1-Hour Exceedances	Maximum 24-Hour Value	24-Hour Exceedances
SO2 (ppb) Average	707	36	37	99.87	9.6	0	1.5	0
H2S (ppb) Average	703	38	41	99.6	0.8	0	0.3	0
THC (ppm) Average	707	36	37	99.87	3.3	-	2.5	-
NO2 (ppb) Average	663	40	81	94.49	18.2	0	4.6	-
NO (ppb) Average	663	40	81	94.49	37.1	-	2.1	-
NOX (ppb) Average	663	40	81	94.49	40.2	-	4.6	-
Temperature 2 m (C) Average	743	0	1	99.87	29.3	-	22.4	-
Relative Humidity (%) Average	743	0	1	99.87	99	-	91	-
Wind Speed 10 m (km/h) Average	743	0	1	99.87	29	-	19	-
Wind Direction 10 m (deg) Average	743	0	1	99.87	-	-	-	-

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - KIRBY NORTH (AMS508)
MAY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

Parameter	Number	Mean	StnDev	Total	Percentile						
					Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	707	0.42	0.9	-	0	0	0	0.2	0.5	1	9.6
H2S (ppb) Average	703	0.11	0.1	-	0	0	0.1	0.1	0.1	0.2	0.8
THC (ppm) Average	707	2.32	0.1	-	2.1	2.2	2.2	2.3	2.4	2.4	3.3
NO2 (ppb) Average	663	1.35	1.6	-	0	0.1	0.4	0.9	1.9	3	18.2
NO (ppb) Average	663	0.12	1.5	-	0	0	0	0	0	0.1	37.1
NOX (ppb) Average	663	1.48	2.3	-	0	0.1	0.4	0.9	2	3.2	40.2
Temperature 2 m (C) Average	743	14.8	5.7	-	0.9	7.2	10.5	14.5	19	22.7	29.3
Relative Humidity (%) Average	743	52.84	21.4	-	15.1	26.9	35.7	49.6	66.7	86.8	99
Wind Speed 10 m (km/h) Average	743	11.5	5	-	0	5	8	11	15	19	29
Wind Direction 10 m (deg) Average	743	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - KIRBY NORTH (AMS508)
MAY 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL PARAMETERS (except NO2)	15 May 2023 15:00	15 May 2023 15:00	1	DAS Failure - data not recorded
H2S	18 May 2023 11:00	18 May 2023 12:00	2	Maintenance - sample manifold cleaned
NO2	12 May 2023 09:00	12 May 2023 11:00	3	Unstable Operation - flatline in analyzer output signal
NO2	13 May 2023 07:00	13 May 2023 11:00	5	Unstable Operation - flatline in analyzer output signal
NO2	14 May 2023 06:00	14 May 2023 10:00	5	Unstable Operation - flatline in analyzer output signal
NO2	15 May 2023 06:00	15 May 2023 10:00	5	Unstable Operation - flatline in analyzer output signal
NO2	15 May 2023 16:00	16 May 2023 10:00	19	Maintenance - stabilization post maintenance
NO2	18 May 2023 09:00	18 May 2023 09:00	1	Maintenance - troubleshooting analyzer
NO2	18 May 2023 11:00	18 May 2023 13:00	3	Maintenance - troubleshooting analyzer



Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 9.6 ppb on May 29 16:00	Maximum Daily Average: 1.5 ppb on May 29		Hours of Data:	707
Minimum Value: 0.0 ppb on May 1 15:00	Minimum Daily Average: 0.0 ppb on May 14		Hours of Missing Data:	37
Maximum Diurnal Average: 0.8 ppb at hour 10	Minimum Diurnal Average: 0.2 ppb at hour 23		Hours of Calibration:	36
Monthly Average: 0.42 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.2 Q ₃ = 0.5 P ₉₀ = 1.0 P ₉₉ = 5.1		Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	0.8	Z	0.5	0.4	0.4	0.5	0.4	0.5	0.4	0.4	0.3	0.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.2	0.8	
2-May	0.1	0.1	Z	0.0	0.3	0.8	1.0	0.2	0.5	0.1	1.3	1.4	0.9	1.1	0.3	1.6	0.3	1.0	0.6	0.1	0.2	0.2	0.3	0.2	0.6	1.6	
3-May	0.2	0.3	0.2	Z	0.1	0.2	0.3	0.0	0.0	0.3	0.5	0.4	0.5	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.6	0.2	0.6	
4-May	0.7	0.5	0.4	0.6	Z	0.6	0.5	0.5	0.4	0.4	0.1	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	
5-May	0.0	0.1	0.2	0.3	0.2	Z	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	
6-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	
7-May	0.0	Z	0.2	0.4	0.4	0.1	0.2	0.3	0.5	0.4	0.4	0.4	0.3	0.3	0.0	0.1	0.4	0.2	0.3	0.0	0.1	0.5	0.5	0.4	0.3	0.5	
8-May	0.4	0.5	Z	0.3	0.4	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.1	0.1	0.2	0.1	0.0	0.0	0.2	0.2	0.3	0.3	0.2	0.0	0.3	0.5	
9-May	0.1	0.1	0.3	Z	0.4	0.6	0.6	0.7	0.5	0.4	0.4	1.1	2.1	0.6	0.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.4	2.1	
10-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	
11-May	0.2	0.3	0.1	0.2	0.2	Z	0.6	3.1	6.7	8.6	3.3	1.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.3	0.2	0.1	1.1	8.6	
12-May	Z	0.0	0.0	0.0	0.1	0.6	1.1	0.3	0.0	0.2	0.2	0.1	0.0	1.3	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.2	1.3	
13-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.2	
14-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
15-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	DF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
16-May	0.0	0.0	0.4	1.3	Z	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.3	
17-May	0.0	0.0	1.1	1.9	1.2	Z	0.4	0.7	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	1.9	
18-May	Z	0.1	0.1	0.0	0.0	0.0	0.1	C	C	C	C	C	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
19-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	5.1	5.4	0.5	0.4	0.4	0.5	0.5	0.4	0.5	0.6	5.4	
20-May	1.3	2.0	Z	1.0	0.6	0.5	0.4	1.3	2.7	0.8	0.8	0.6	0.5	0.5	0.5	0.7	0.5	0.2	0.1	0.2	0.1	0.1	0.2	0.8	0.7	2.7	
21-May	0.6	0.2	0.3	Z	0.4	0.5	0.7	0.6	0.6	0.6	0.5	0.5	0.6	0.6	0.8	0.7	0.7	0.5	0.4	0.4	0.3	0.8	0.9	1.1	0.6	1.1	
22-May	0.9	1.1	0.5	0.3	Z	0.9	1.7	1.5	0.9	0.7	0.6	0.4	0.4	0.4	0.5	0.9	0.6	0.8	0.7	0.3	0.9	0.9	1.1	0.6	0.8	1.7	
23-May	0.4	0.2	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.2	0.2	0.1	0.4	
24-May	Z	0.2	0.2	0.2	0.4	0.6	0.4	0.3	0.3	0.5	0.4	0.2	1.2	3.2	2.6	2.8	5.0	5.0	3.3	0.1	0.1	0.1	0.0	0.0	1.2	5.0	
25-May	0.2	Z	0.0	0.1	0.2	0.3	0.3	0.3	0.1	0.3	0.2	0.1	0.1	0.0	0.0	0.1	0.3	0.8	1.3	1.3	0.4	0.2	0.1	0.2	0.3	1.3	
26-May	0.2	0.2	Z	0.2	0.2	0.3	0.2	0.1	0.2	0.6	1.2	0.3	0.2	0.1	0.1	0.7	0.2	2.1	0.3	0.2	0.2	0.1	0.1	0.1	0.3	2.1	
27-May	0.0	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.3	0.4	0.5	0.2	0.3	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.5	0.7	0.5	1.0	0.2	1.0	
28-May	1.1	0.9	0.7	0.4	Z	0.5	0.3	0.6	0.7	0.6	0.6	0.5	0.5	2.5	0.2	0.0	0.0	1.8	5.9	2.6	5.3	0.4	0.0	0.1	1.1	5.9	
29-May	0.5	0.5	0.2	0.3	0.1	Z	0.1	0.3	0.0	4.0	2.4	5.7	3.7	3.3	0.0	9.6	1.8	0.1	0.1	0.1	0.4	0.3	0.1	0.3	1.5	9.6	
30-May	Z	0.1	0.2	0.2	0.7	0.6	0.4	0.3	0.9	1.9	1.0	0.4	0.4	0.3	0.1	0.3	0.1	0.1	0.4	1.1	0.2	0.2	0.3	0.2	0.5	1.9	
31-May	0.0	Z	0.0	0.1	0.5	0.1	0.2	1.1	3.2	2.0	2.3	2.1	1.8	0.7	1.3	1.2	1.6	1.6	1.1	1.0	3.3	0.5	0.2	0.1	1.1	3.3	

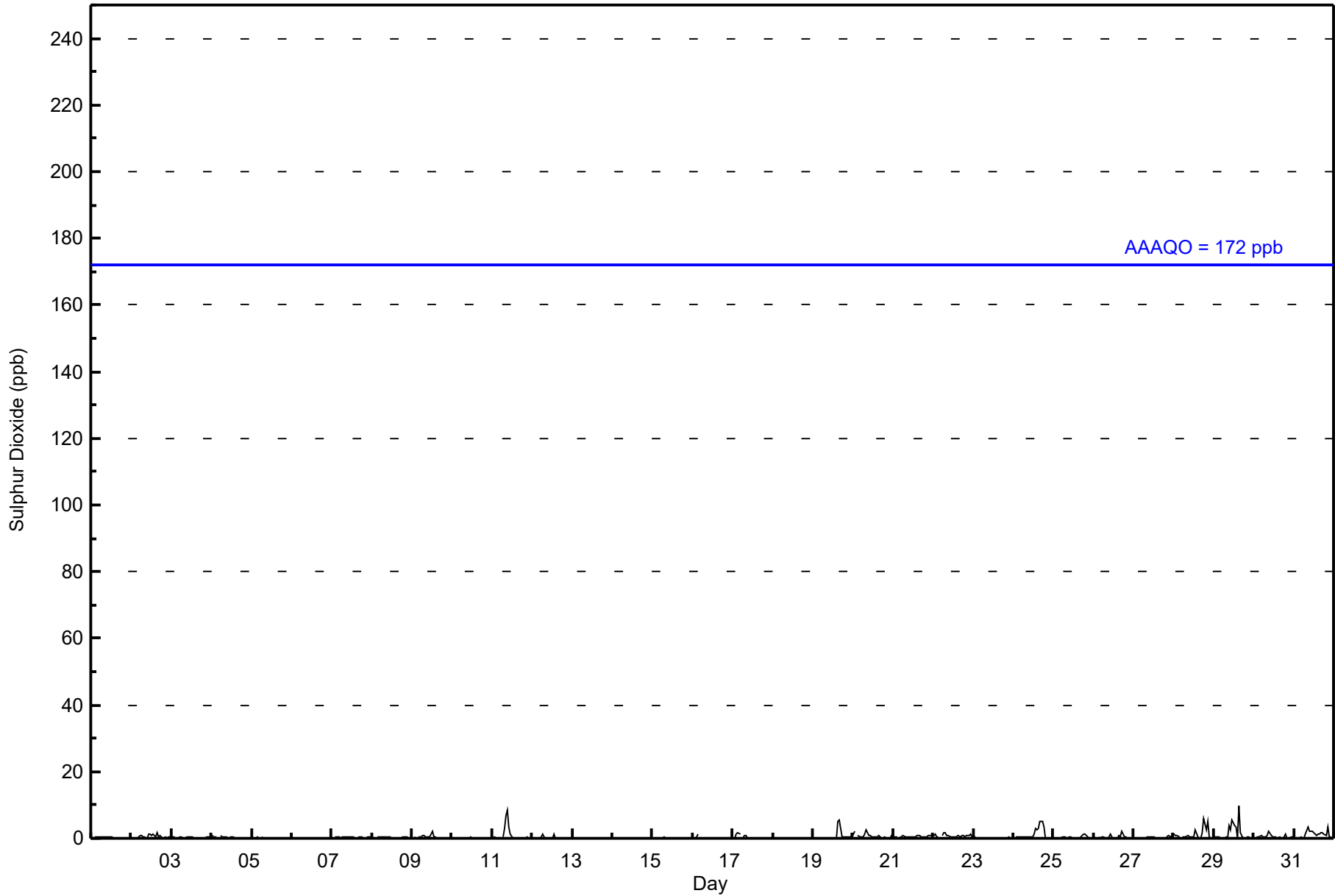
0.3	0.3	0.2	0.3	0.3	0.3	0.4	0.5	0.7	0.8	0.6	0.6	0.5	0.5	0.2	0.8	0.6	0.5	0.5	0.3	0.4	0.2	0.2	0.2	Diurnal Average	
1.3	2.0	1.1	1.9	1.2	0.9	1.7	3.1	6.7	8.6	3.3	5.7	3.7	3.3	2.6	9.6	5.4	5.0	5.9	2.6	5.3	0.9	1.1	1.1	Diurnal Maximum	

Z - zerospan C - Calibration DF - DAS Failure
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Kirby North - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Kirby North - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	707	100.00	100.00
11 - 20	0	0.00	100.00
21 - 60	0	0.00	100.00
61 - 110	0	0.00	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Kirby North - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	18	19	41	30	20	65	69	98	114	62	67	21	9	14	24	36	707
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	18	19	41	30	20	65	69	98	114	62	67	21	9	14	24	36	707

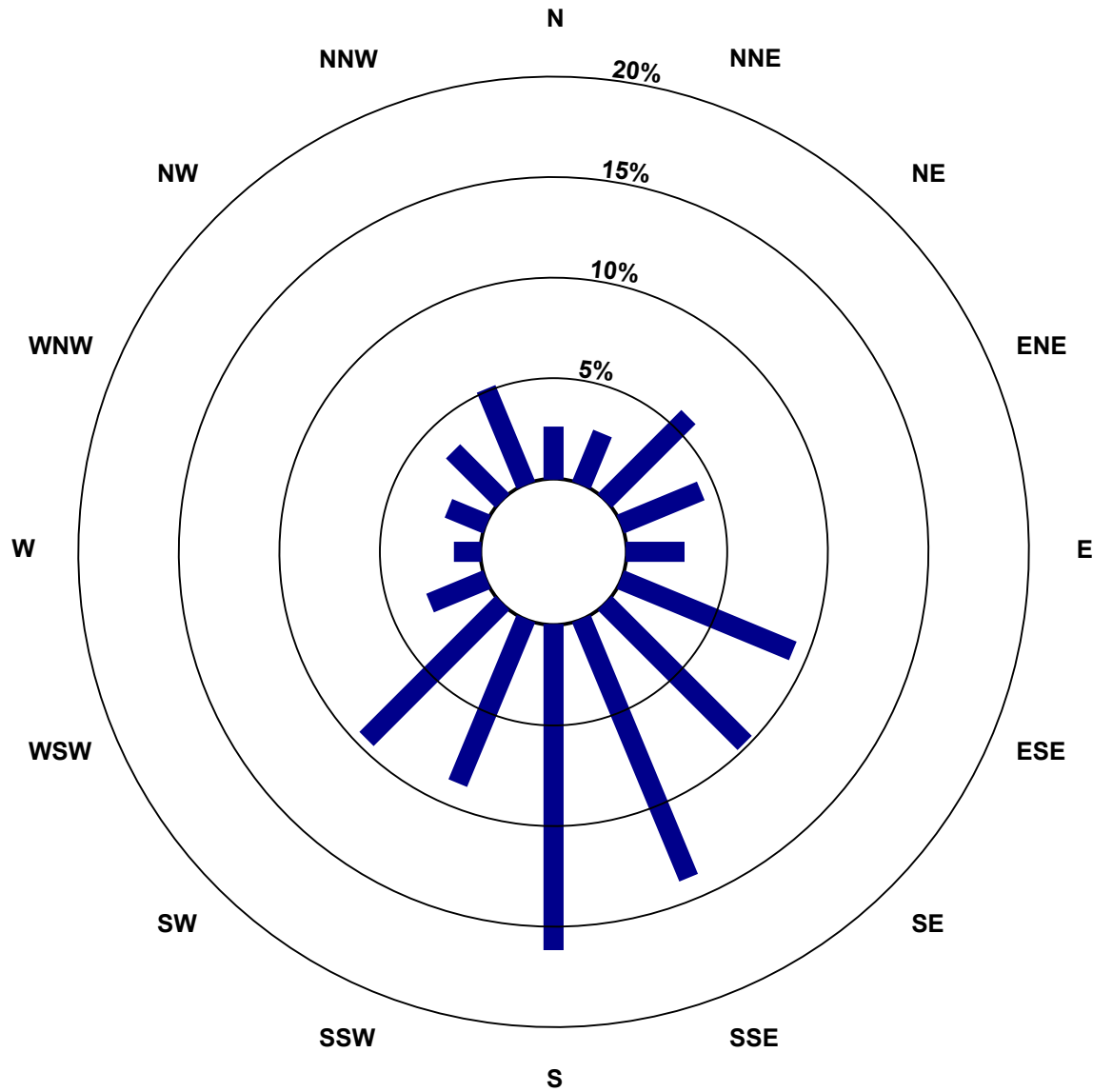
Total Number of Valid Hours: 707

Total Number of Hours: 744

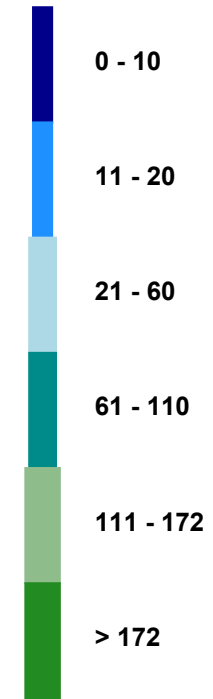


Wood Buffalo Environmental Association
Wind Rose May 2023

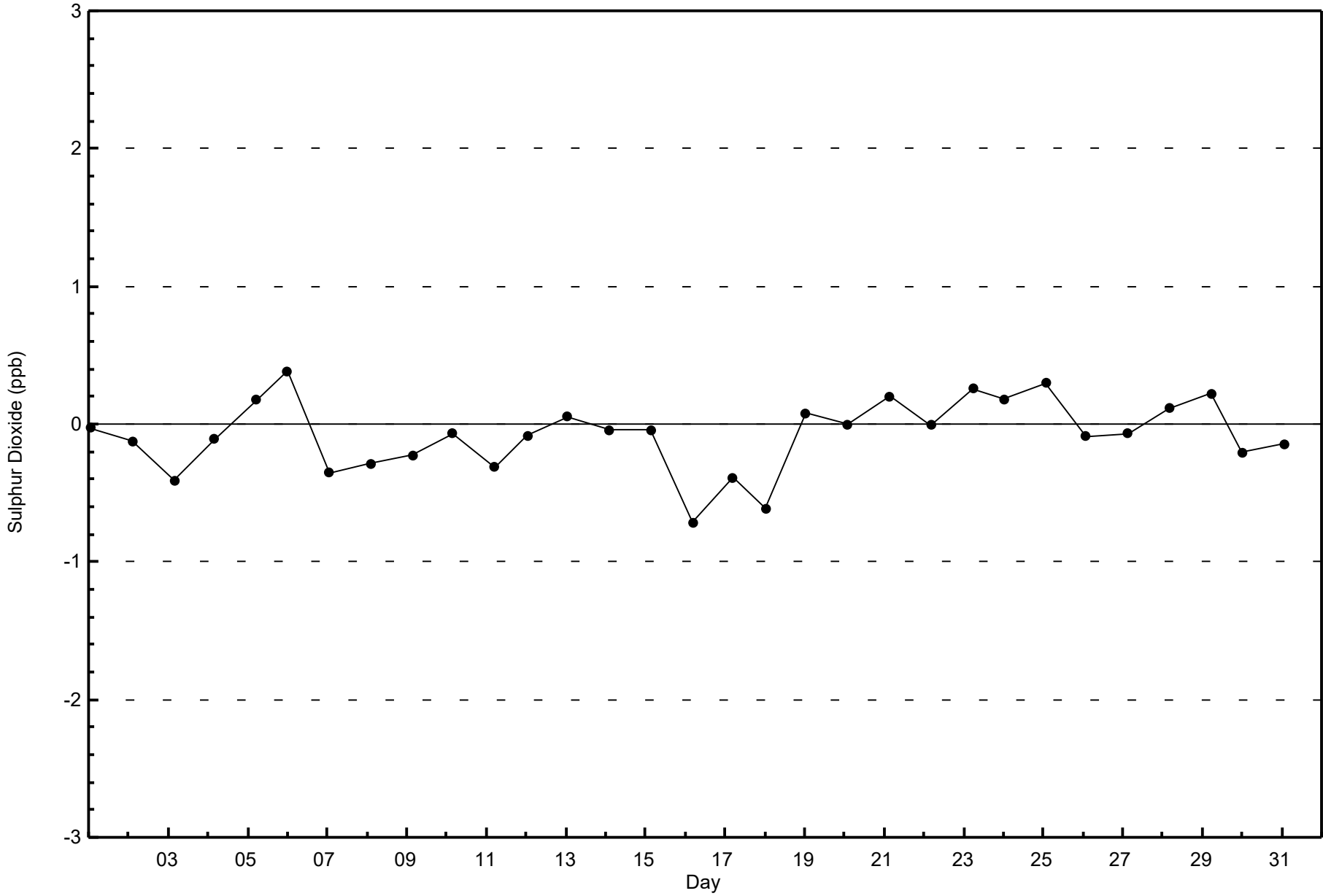
Sulphur Dioxide (SO₂) - ppb
Kirby North

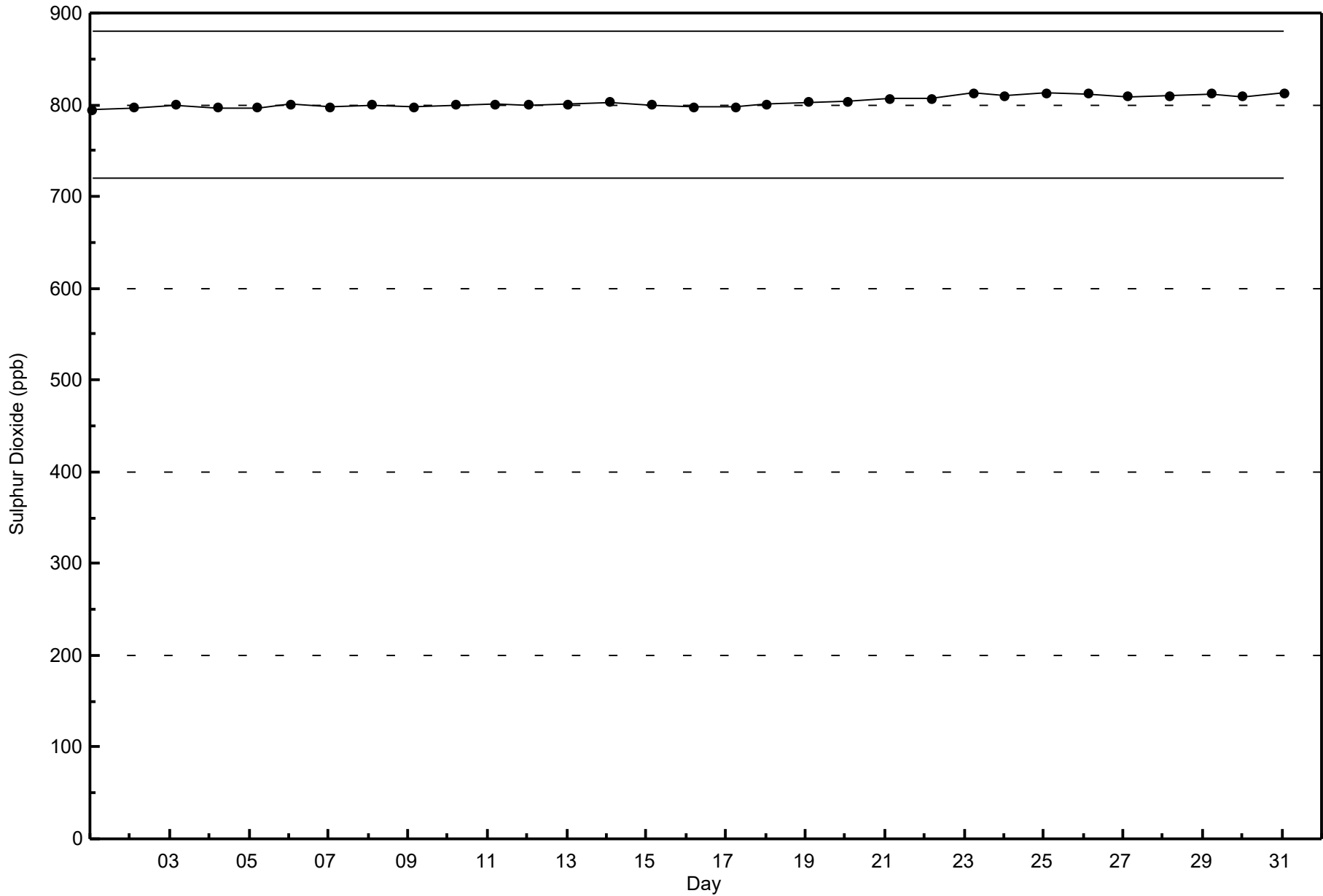


Classes (ppb)



Total Number of Valid Hours: 707







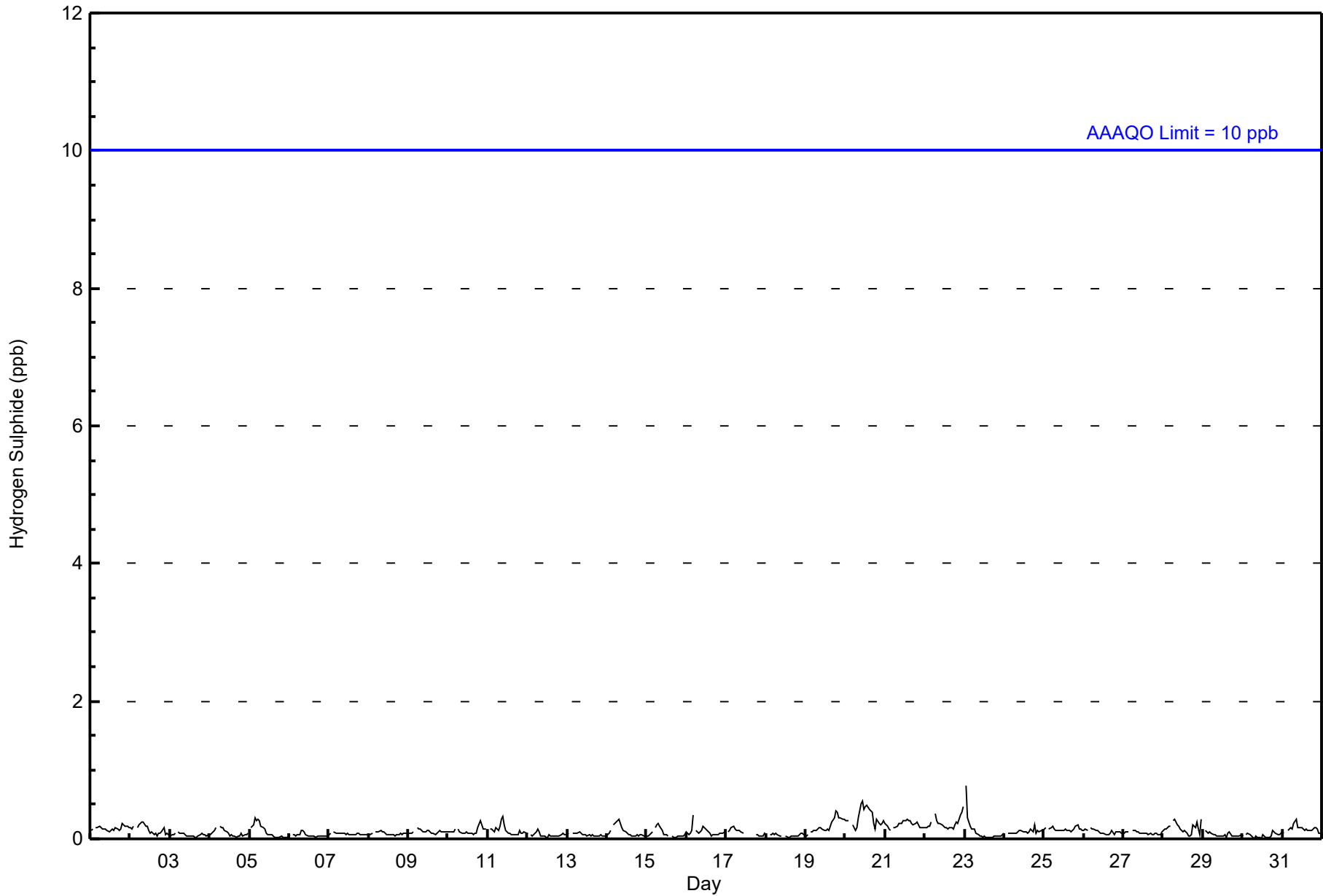
Wood Buffalo Environmental Association
Summary of Hour Averages

Hydrogen Sulphide (H₂S) - ppb
Kirby North - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 0.8 ppb on May 23 02:00	Maximum Daily Average: 0.3 ppb on May 20		Hours of Data:	703
Minimum Value: 0.0 ppb on May 30 08:00	Minimum Daily Average: 0.0 ppb on May 30		Hours of Missing Data:	41
Maximum Diurnal Average: 0.1 ppb at hour 5	Minimum Diurnal Average: 0.1 ppb at hour 18		Hours of Calibration:	38
Monthly Average: 0.11 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.1 Q ₃ = 0.1 P ₉₀ = 0.2 P ₉₉ = 0.4		Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
1-May	0.1	0.1	Z	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2		
2-May	0.2	0.1	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	
3-May	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	
4-May	0.1	0.1	0.1	0.1	0.2	Z	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
5-May	Z	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
6-May	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
7-May	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
8-May	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
9-May	0.1	0.1	0.1	0.1	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
10-May	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.3
11-May	Z	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
12-May	0.1	Z	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
13-May	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
14-May	0.1	0.1	0.1	Z	0.2	0.2	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.3
15-May	0.0	0.0	0.1	0.1	Z	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	DF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2
16-May	0.1	0.1	0.1	0.1	0.3	Z	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
17-May	Z	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	C	C	C	C	C	C	C	C	0.1	0.1	0.0	0.0	0.0	0.1	--	0.2	
18-May	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	M	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
19-May	0.0	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.4	0.4
20-May	0.3	0.3	0.3	Z	0.2	0.2	0.1	0.2	0.3	0.5	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.5	0.5
21-May	0.2	0.2	0.1	0.1	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
22-May	0.2	0.2	0.2	0.2	0.2	Z	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.4	0.4	0.5	0.2	0.5	
23-May	Z	0.8	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.8	
24-May	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
25-May	0.2	0.2	Z	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2
26-May	0.1	0.1	0.1	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
27-May	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
28-May	0.1	0.2	0.2	0.2	0.2	Z	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.2	0.1	0.1	0.3	0.2	0.2	0.3	
29-May	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
30-May	0.0	Z	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
31-May	0.1	0.1	Z	0.1	0.1	0.2	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3
																								Diurnal Average				
																								Diurnal Maximum				

Z - zerospan C - Calibration M - Maintenance DF - DAS Failure
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Kirby North - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	703	100.00	100.00
3 - 4	0	0.00	100.00
5 - 7	0	0.00	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 703

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Kirby North - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	16	17	38	31	20	66	69	99	112	63	68	22	9	14	25	34	703
3 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	16	17	38	31	20	66	69	99	112	63	68	22	9	14	25	34	703

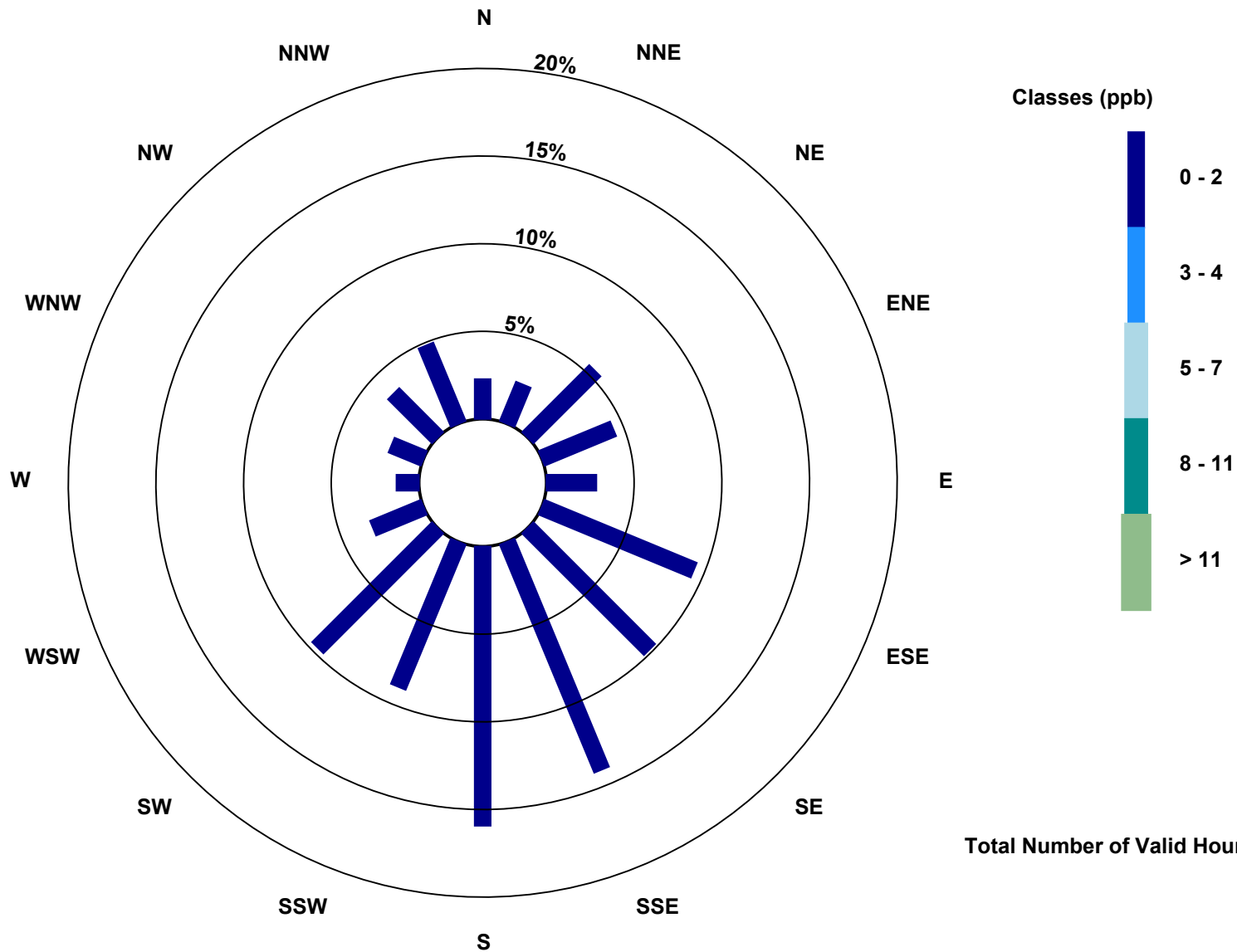
Total Number of Valid Hours: 703

Total Number of Hours: 744

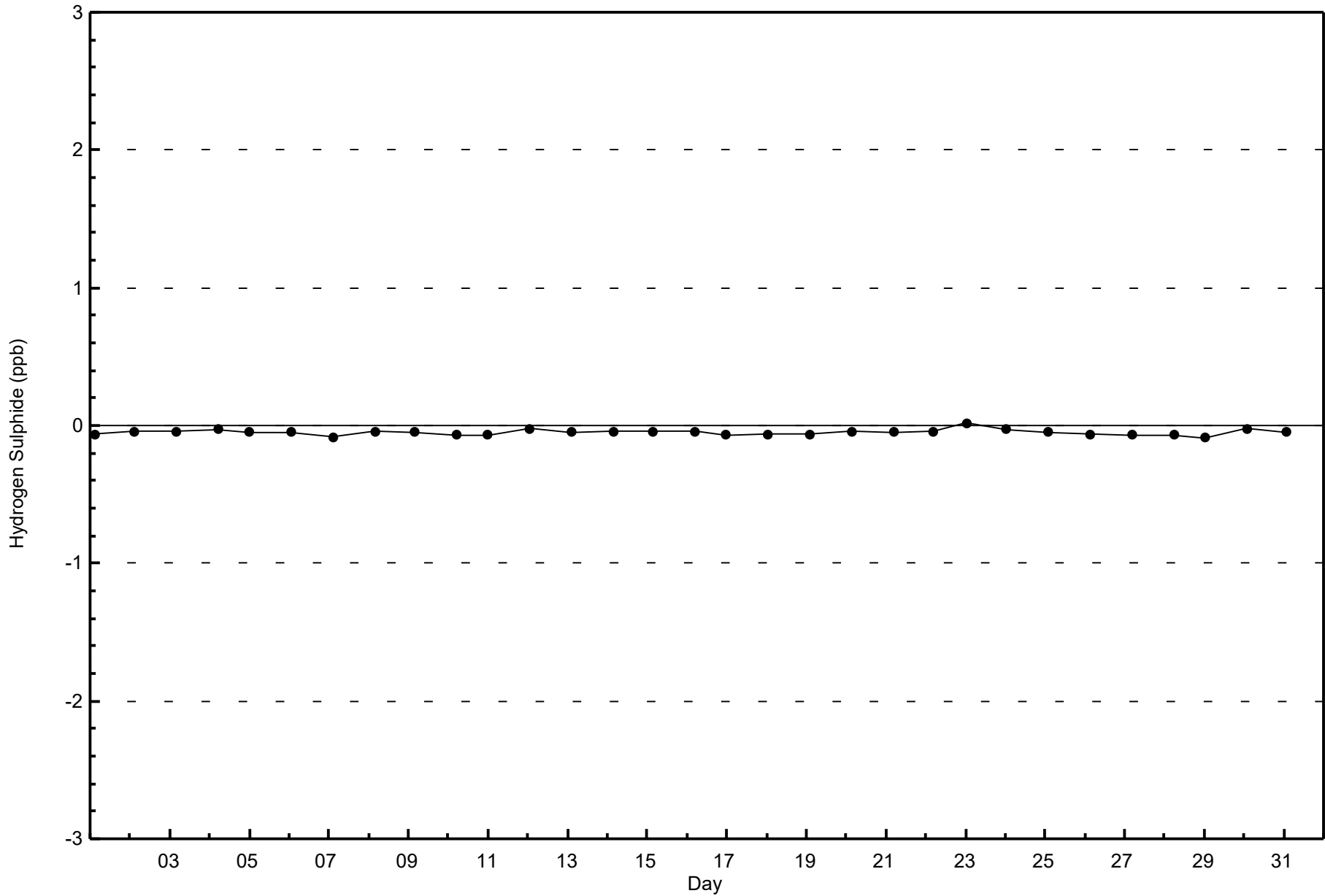


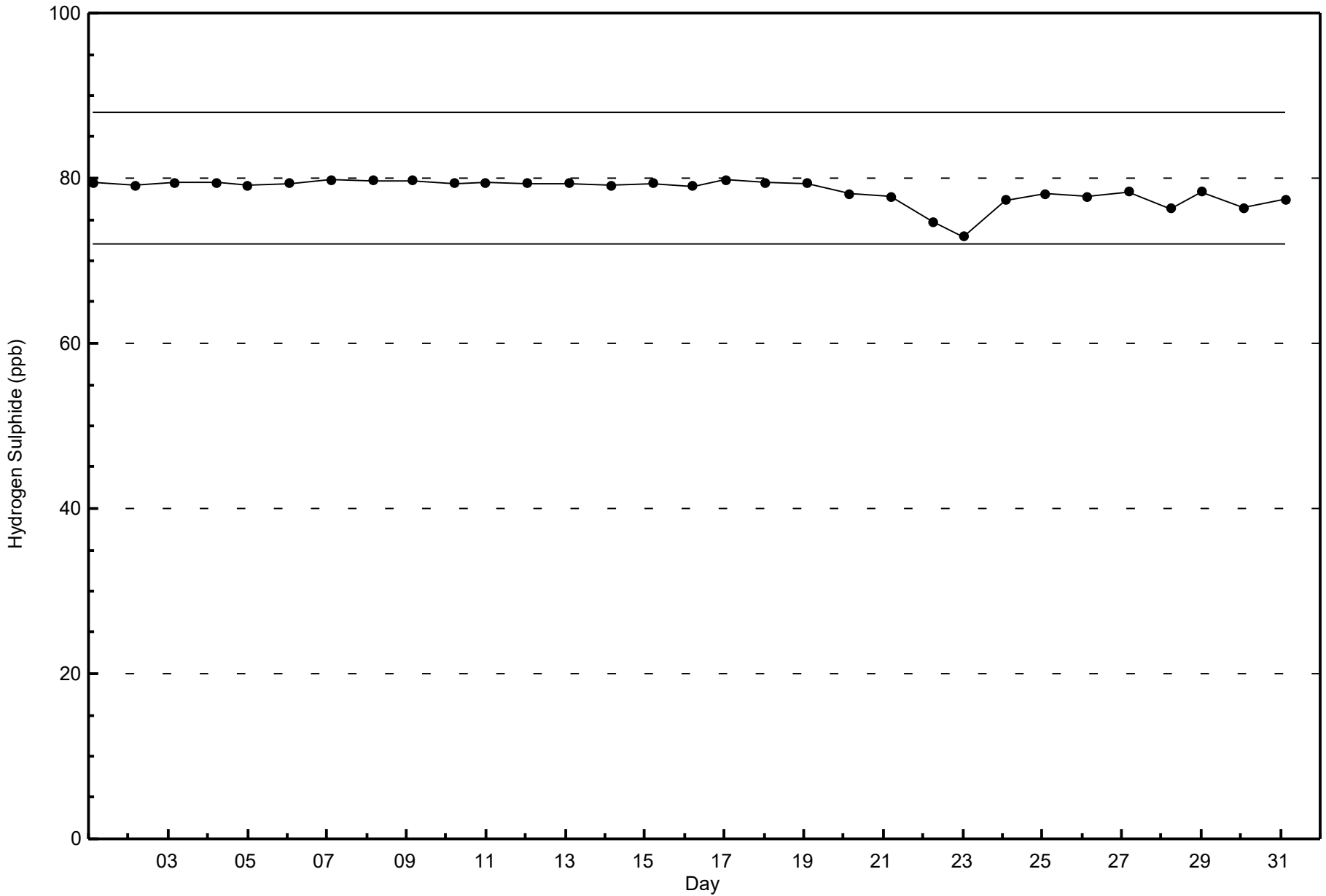
Wood Buffalo Environmental Association
Wind Rose May 2023

Hydrogen Sulphide (H₂S) - ppb
Kirby North



Total Number of Valid Hours: 703







Wood Buffalo Environmental Association
Summary of Hour Averages

Total Hydrocarbons (THC) - ppm
Kirby North - May 2023

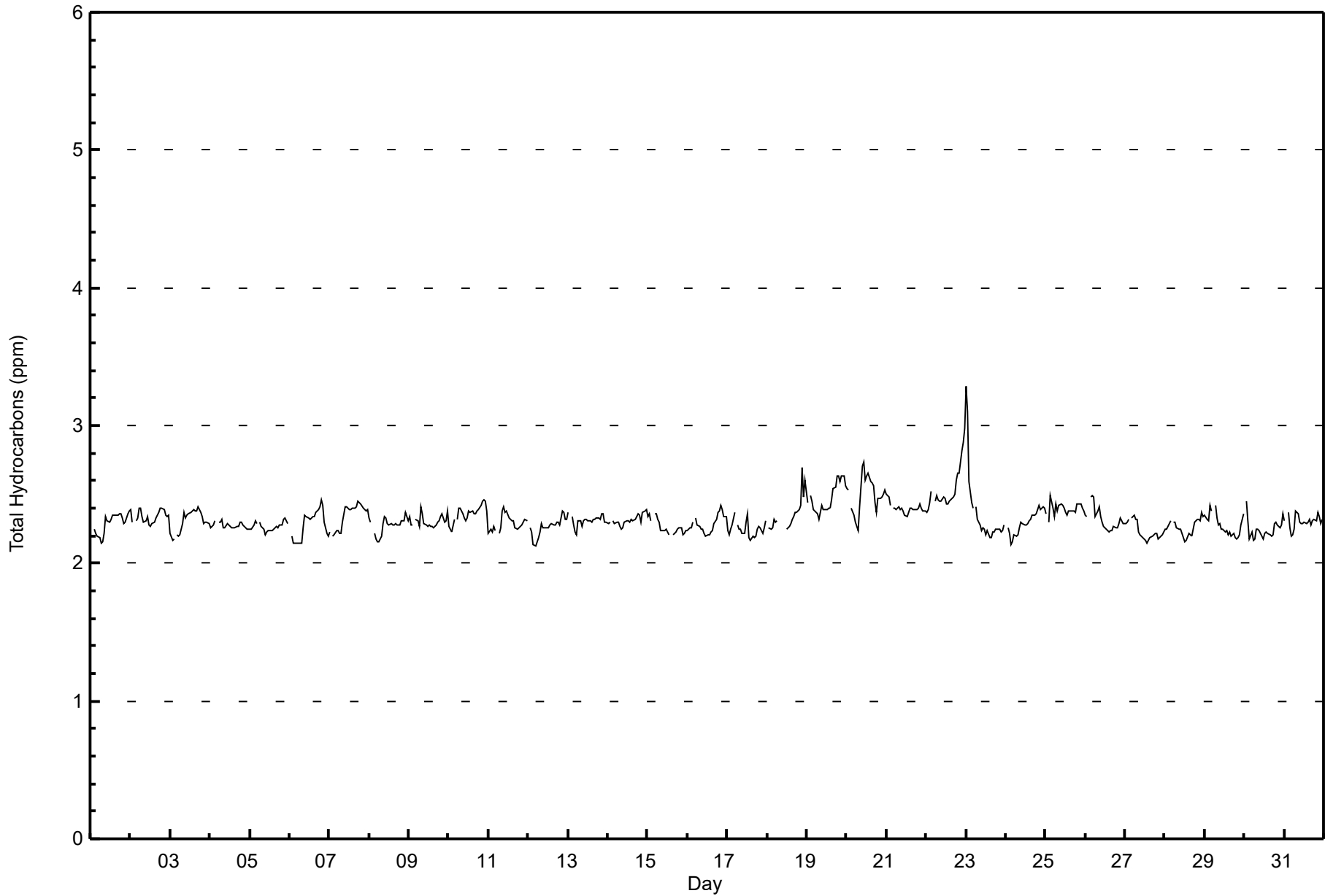
Maximum Value: 3.3 ppm on May 23 01:00		Maximum Daily Average: 2.5 ppm on May 22		Hours in Service: 744																						
Minimum Value: 2.1 ppm on May 12 05:00		Minimum Daily Average: 2.2 ppm on May 27		Hours of Data: 707																						
Maximum Diurnal Average: 2.4 ppm at hour 24		Minimum Diurnal Average: 2.3 ppm at hour 6		Hours of Missing Data: 37																						
Monthly Average: 2.32 ppm		Percentiles: P ₁ = 2.1 P ₁₀ = 2.2 Q ₁ = 2.2 Median = 2.3 Q ₃ = 2.4 P ₉₀ = 2.4 P ₉₉ = 2.7		Hours of Calibration: 36																						
				Percent Operational Time: 99.9																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	2.3	Z	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.4	2.4	2.3	2.3
2-May	2.4	2.3	Z	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3
3-May	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.3	2.4	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3
4-May	2.3	2.3	2.3	2.3	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2
5-May	2.3	2.2	2.3	2.3	2.3	Z	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
6-May	Z	2.2	2.1	2.1	2.1	2.2	2.1	2.1	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.5	2.4	2.3	2.2	2.2	2.2	2.3
7-May	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3
8-May	2.3	2.3	Z	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.3
9-May	2.3	2.3	2.3	Z	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.4	2.3	2.3
10-May	2.3	2.2	2.2	2.3	Z	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.4	2.4	2.4
11-May	2.2	2.2	2.2	2.3	2.2	Z	2.2	2.3	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
12-May	Z	2.3	2.2	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.3
13-May	2.4	Z	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.3
14-May	2.3	2.3	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.4	2.4	2.4	2.4	2.3
15-May	2.3	2.4	2.3	Z	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	DF	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.3
16-May	2.2	2.3	2.3	2.3	Z	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3
17-May	2.2	2.2	2.2	2.3	2.4	Z	2.3	2.2	2.3	2.2	2.2	2.3	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.3	2.3	2.2	2.2
18-May	Z	2.3	2.2	2.3	2.3	2.3	2.3	C	C	C	C	C	2.2	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.7	2.5	2.6	2.4	2.7
19-May	2.4	Z	2.5	2.5	2.4	2.4	2.4	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.5
20-May	2.5	2.5	Z	2.4	2.3	2.3	2.3	2.2	2.4	2.7	2.7	2.6	2.6	2.7	2.6	2.6	2.6	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.5
21-May	2.5	2.5	2.4	Z	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
22-May	2.4	2.4	2.4	2.5	Z	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.7	2.8	2.9	3.0	2.5
23-May	3.3	3.1	2.6	2.4	2.4	Z	2.4	2.3	2.3	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.4
24-May	Z	2.3	2.2	2.1	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3
25-May	2.4	Z	2.3	2.5	2.4	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
26-May	2.3	2.3	Z	2.5	2.5	2.5	2.3	2.4	2.4	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
27-May	2.3	2.3	2.3	Z	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
28-May	2.2	2.2	2.3	2.3	Z	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.3	2.3
29-May	2.3	2.3	2.3	2.4	2.4	Z	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.3	2.4
30-May	Z	2.5	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.4
31-May	2.3	Z	2.4	2.3	2.2	2.2	2.2	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.3	2.3
																								Diurnal Average		
																								Diurnal Maximum		
																								3.3 3.0		

Z - zerospan C - Calibration DF - DAS Failure



Wood Buffalo Environmental Association
Hourly Averages

Total Hydrocarbons (THC) - ppm
Kirby North - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Kirby North - May 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	0	0.00	0.00
2.1 - 3.0	705	99.72	99.72
3.1 - 10.0	2	0.28	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 744



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Kirby North - May 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1 - 3.0	18	19	41	29	19	65	69	98	114	62	67	21	9	14	24	36	705
3.1 - 10.0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	18	19	41	30	20	65	69	98	114	62	67	21	9	14	24	36	707

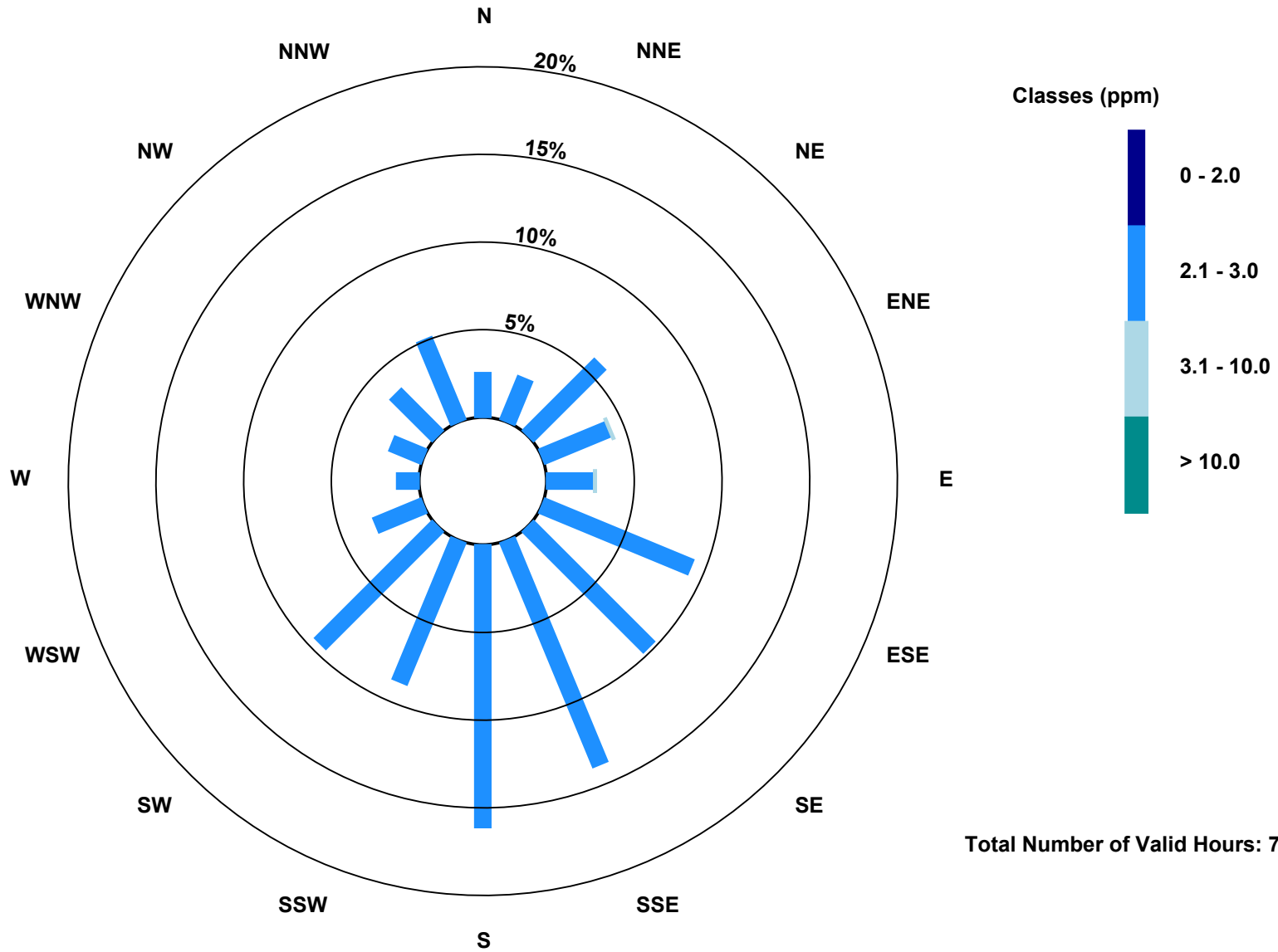
Total Number of Valid Hours: 707

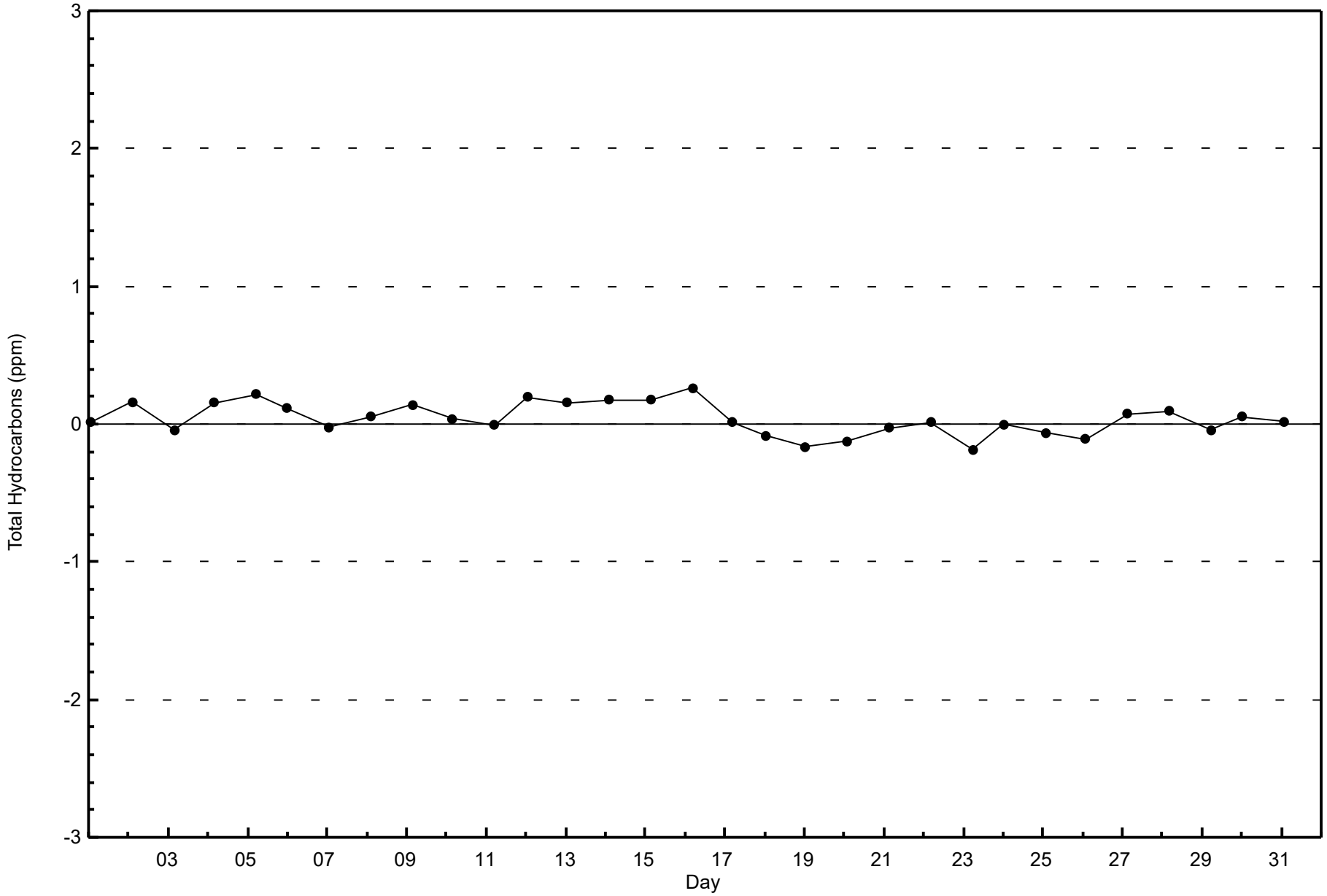
Total Number of Hours: 744

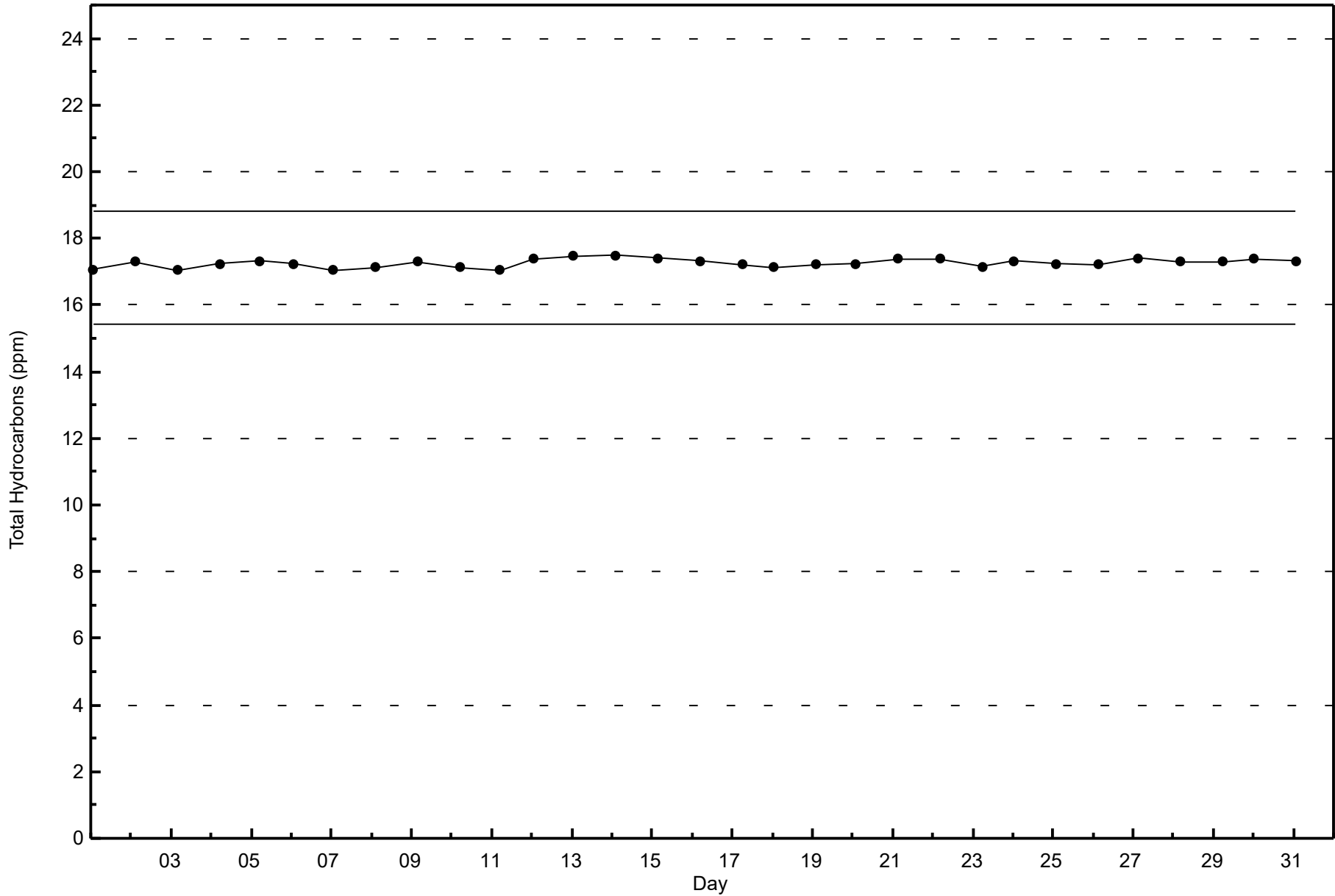


Wood Buffalo Environmental Association
Wind Rose May 2023

Total Hydrocarbons (THC) - ppm
Kirby North









Wood Buffalo Environmental Association
Summary of Hour Averages

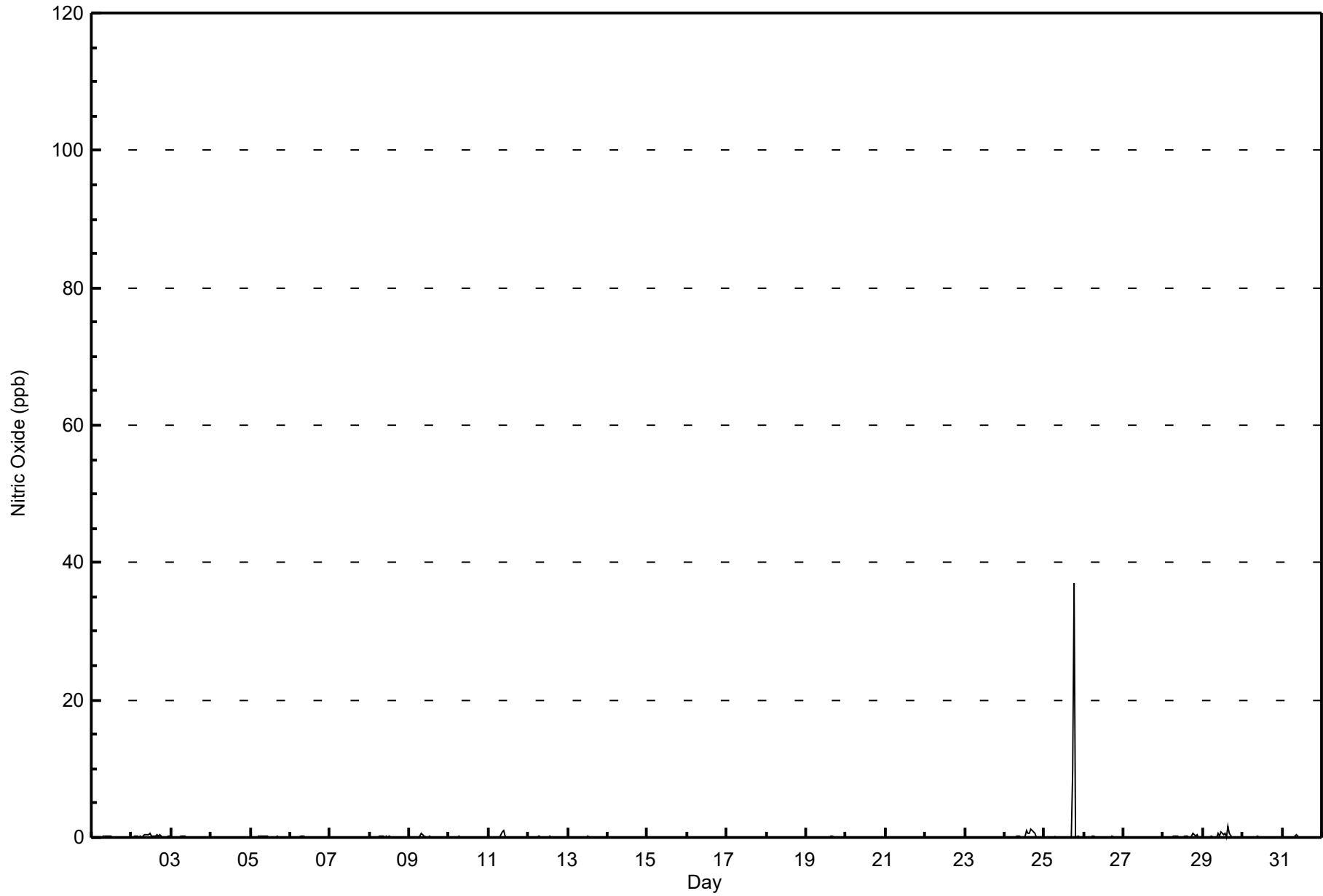
Nitric Oxide (NO) - ppb
Kirby North - May 2023

Maximum Value: 37.1 ppb on May 25 19:00		Maximum Daily Average: 2.1 ppb on May 25		Hours in Service: 744																						
Minimum Value: 0.0 ppb on May 1 20:00		Minimum Daily Average: 0.0 ppb on May 14		Hours of Data: 663																						
Maximum Diurnal Average: 1.3 ppb at hour 19		Minimum Diurnal Average: 0.0 ppb at hour 22		Hours of Missing Data: 81																						
Monthly Average: 0.12 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.1 P ₉₉ = 0.8		Hours of Calibration: 40																						
				Percent Operational Time: 94.5																						
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	0.0	0.0	0.1	0.1	0.0	Z	0.2	0.2	0.2	0.3	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
2-May	Z	0.0	0.2	0.1	0.0	0.1	0.0	0.1	0.4	0.4	0.4	0.5	0.2	0.3	0.1	0.4	0.1	0.5	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.5
3-May	0.1	Z	0.1	0.0	0.0	0.1	0.2	0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
4-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1
5-May	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.2
6-May	0.0	0.0	0.0	0.0	Z	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
7-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
8-May	Z	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2
9-May	0.1	Z	0.1	0.0	0.0	0.1	0.2	0.6	0.4	0.3	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6
10-May	0.0	0.0	Z	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2
11-May	0.2	0.0	0.0	Z	0.1	0.1	0.1	0.4	0.9	1.0	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0
12-May	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.1	UO	UO	UO	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
13-May	0.0	0.0	0.0	0.0	0.0	Z	UO	UO	UO	UO	UO	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
14-May	Z	0.0	0.0	0.0	0.0	UO	UO	UO	UO	UO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-May	0.0	Z	0.0	0.0	0.0	UO	UO	UO	UO	UO	C	C	C	C	C	M	M	M	M	M	M	M	M	M	M	0.0
16-May	M	M	M	M	M	M	M	M	M	M	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	M	0.0	M	M	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
20-May	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22-May	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23-May	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24-May	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.1	0.1	0.1	0.0	0.2	1.0	0.7	0.7	1.3	0.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.3
25-May	0.0	0.0	0.0	0.0	0.0	Z	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	37.1	0.0	0.2	0.0	0.0	0.0	0.0	2.1	37.1
26-May	Z	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
27-May	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
28-May	0.0	0.0	Z	0.0	0.0	0.0	0.2	0.3	0.2	0.1	0.0	0.0	0.2	0.2	0.0	0.0	0.1	0.5	0.2	0.4	0.0	0.0	0.0	0.0	0.1	0.5
29-May	0.0	0.0	0.0	Z	0.0	0.1	0.0	0.0	0.0	0.6	0.3	0.7	0.5	0.6	0.0	1.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.6
30-May	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2
31-May	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan																										
C - Calibration																										
M - Maintenance																										
UO - Unstable Operation																										



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Kirby North - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Kirby North - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	662	99.85	99.85
21 - 40	1	0.15	100.00
11 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 663

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Kirby North - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	18	18	42	29	20	66	68	89	112	54	53	21	9	13	24	26	662
21 - 40	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	18	18	42	30	20	66	68	89	112	54	53	21	9	13	24	26	663

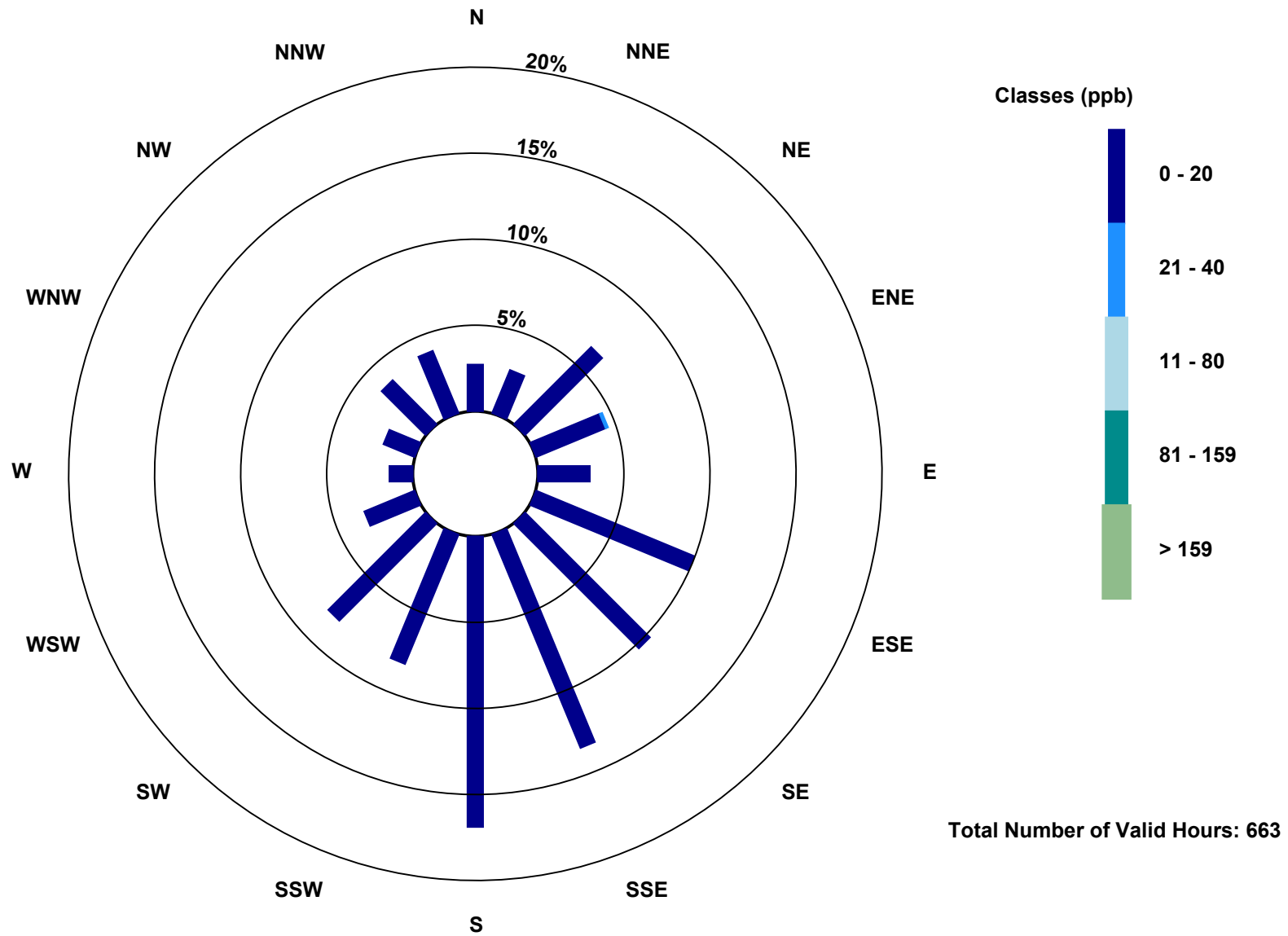
Total Number of Valid Hours: 663

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

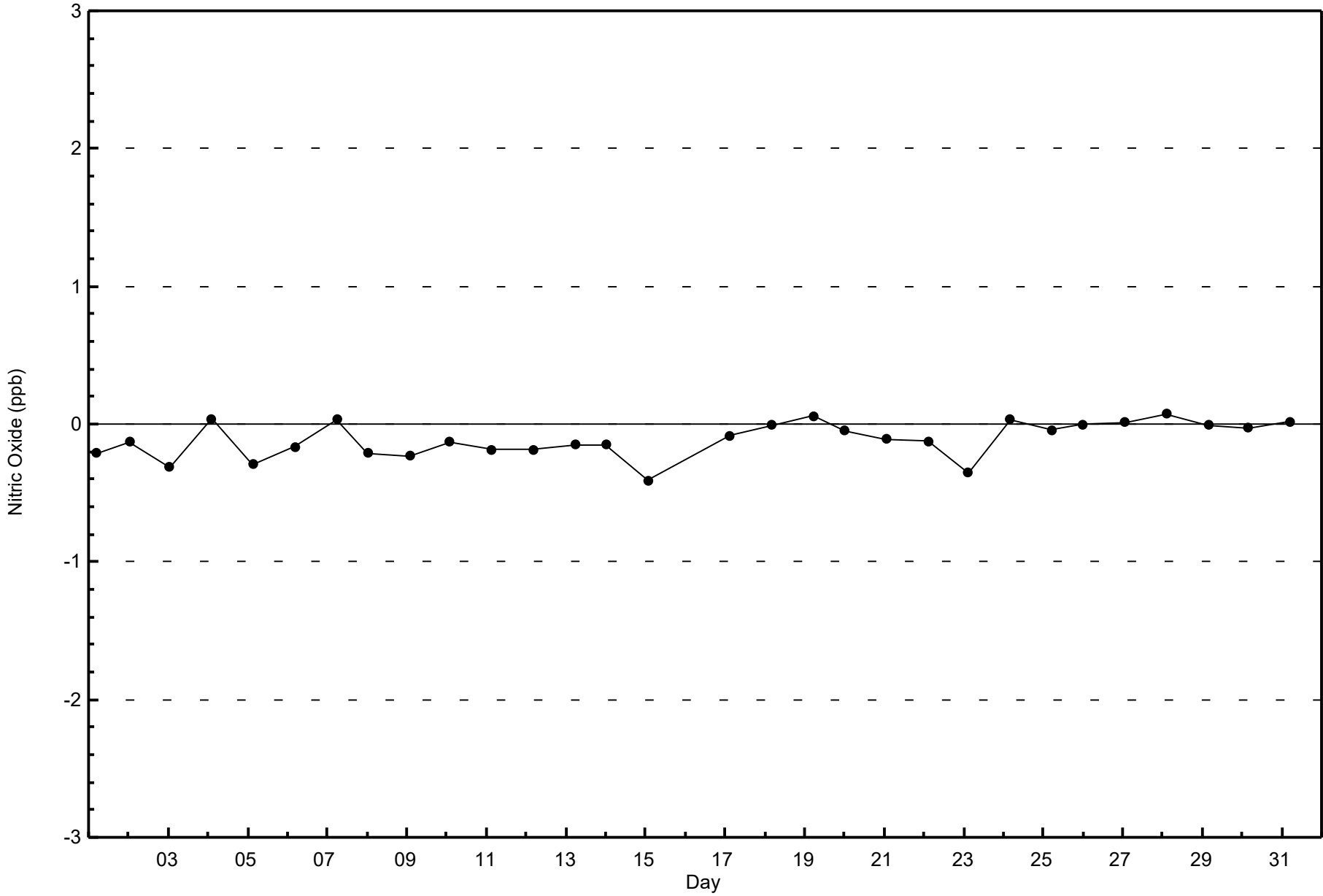
Nitric Oxide (NO) - ppb
Kirby North





Wood Buffalo Environmental Association
Zero Responses

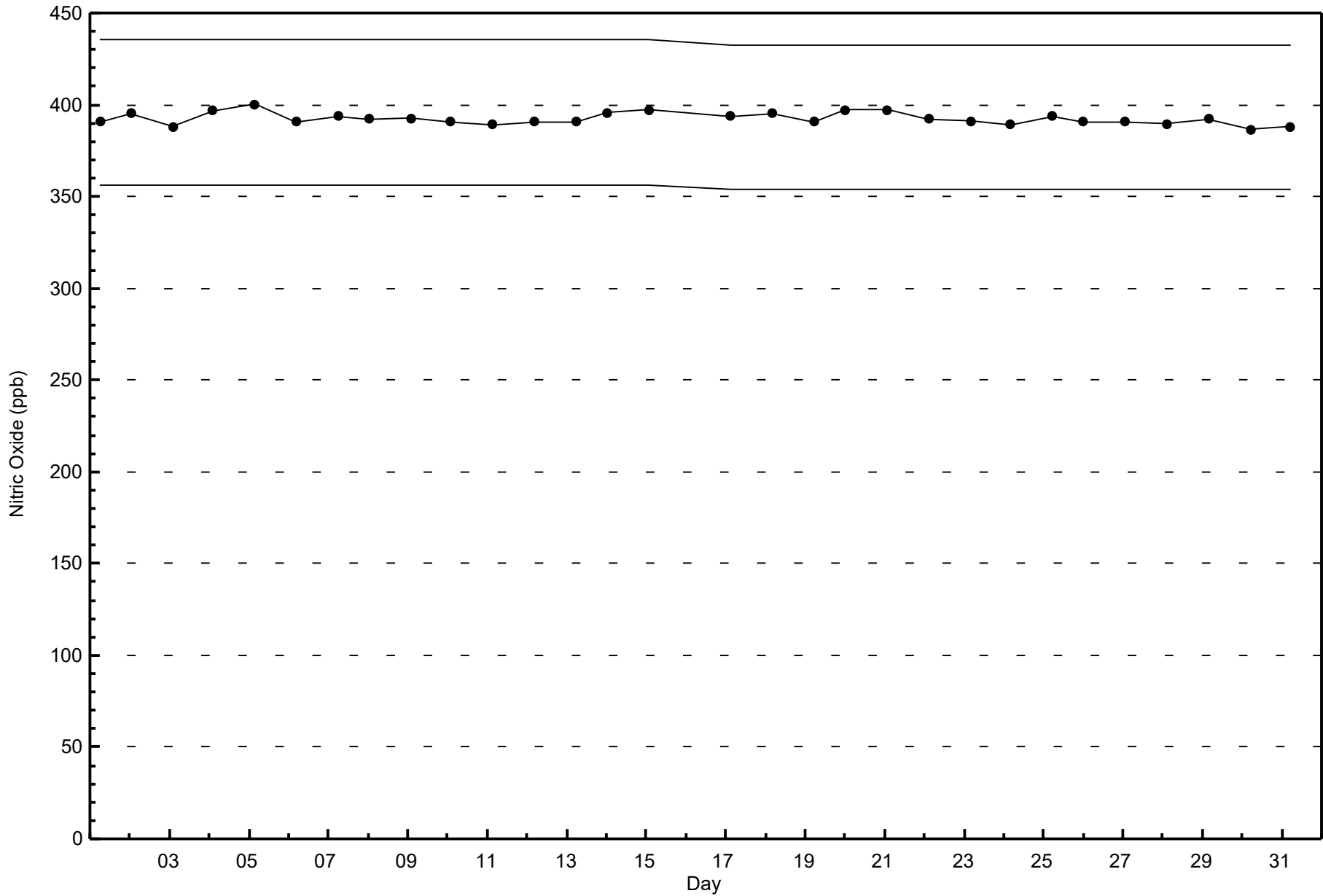
Nitric Oxide (NO) - ppb
Kirby North - May 2023





Wood Buffalo Environmental Association
Span Responses

Nitric Oxide (NO) - ppb
Kirby North - May 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

Kirby North - May 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	744
Maximum Value: 18.2 ppb on May 23 01:00	Maximum Daily Average: 4.6 ppb on May 22		Hours of Data:	663
Minimum Value: 0.0 ppb on May 5 12:00	Minimum Daily Average: 0.1 ppb on May 6		Hours of Missing Data:	81
Maximum Diurnal Average: 2.0 ppb at hour 1	Minimum Diurnal Average: 0.9 ppb at hour 15		Hours of Calibration:	40
Monthly Average: 1.35 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.1 Q ₁ = 0.4 Median = 0.9 Q ₃ = 1.9 P ₉₀ = 3.0 P ₉₉ = 6.2		Percent Operational Time:	94.5

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
1-May	1.8	1.7	1.4	1.3	1.6	Z	1.6	1.3	1.0	1.1	0.8	0.8	0.7	0.7	0.7	0.7	0.6	1.0	0.6	0.7	0.8	1.8	1.9	1.1	1.9			
2-May	Z	1.1	2.5	2.0	0.9	3.2	1.5	2.0	2.4	2.2	1.4	1.3	0.7	0.7	0.5	0.8	0.4	0.9	0.5	0.4	0.5	0.1	0.4	1.5	1.2	3.2		
3-May	0.9	Z	0.2	0.2	0.6	1.1	1.4	1.1	0.5	0.2	0.3	0.2	0.3	0.3	0.3	0.4	0.4	0.7	0.4	0.4	0.5	0.7	0.6	0.8	0.5	1.4		
4-May	1.0	0.9	Z	1.9	2.0	1.7	1.6	1.8	1.2	0.6	0.4	0.4	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.4	0.4	0.2	0.9	0.2	0.8	2.0		
5-May	0.4	0.6	0.9	Z	1.2	1.1	1.0	0.4	0.3	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.2		
6-May	0.0	0.0	0.0	0.1	Z	0.3	0.7	0.9	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.9		
7-May	0.0	0.1	0.3	1.3	1.0	Z	0.7	0.9	0.9	0.5	0.4	0.2	0.3	0.2	0.1	0.1	0.3	0.4	0.2	0.3	0.3	0.5	1.3	1.1	0.5	1.3		
8-May	Z	1.0	1.2	1.4	1.1	1.6	1.1	0.6	0.7	0.6	0.6	0.4	0.4	0.3	0.4	0.3	0.2	0.2	0.3	0.3	0.4	0.3	0.5	0.2	0.6	1.6		
9-May	1.0	Z	0.6	0.5	1.2	1.5	1.5	3.0	1.6	0.9	0.6	1.0	1.2	0.5	0.3	0.3	0.1	0.6	0.2	0.0	0.0	0.1	0.0	0.0	0.7	3.0		
10-May	0.0	0.0	Z	0.1	0.0	1.5	1.5	0.2	0.2	0.0	0.0	0.2	0.7	0.2	0.1	0.4	0.3	0.2	0.2	0.5	1.4	0.5	0.9	0.5	0.4	1.5		
11-May	3.3	0.5	0.3	Z	2.0	0.9	0.9	3.1	5.7	4.5	2.0	1.1	0.7	0.5	0.5	0.8	0.4	0.7	0.6	0.6	0.7	1.3	1.7	1.0	1.5	5.7		
12-May	0.9	0.4	0.3	0.4	Z	1.1	2.1	1.3	UO	UO	UO	0.3	0.2	0.7	0.2	0.1	0.2	0.1	0.0	0.0	0.8	1.2	0.0	0.0	0.5	2.1		
13-May	0.7	0.3	0.4	0.0	0.0	Z	UO	UO	UO	UO	UO	0.1	0.3	0.0	0.0	0.0	0.1	0.0	0.3	0.2	1.2	1.3	0.0	0.0	0.3	1.3		
14-May	Z	0.4	0.3	0.2	0.2	UO	UO	UO	UO	UO	0.3	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.0	0.0	0.4	0.7	1.0	1.1	0.3	1.1		
15-May	1.0	Z	0.5	0.3	0.4	UO	UO	UO	UO	UO	C	C	C	C	C	C	M	M	M	M	M	M	M	M	M	M	--	1.0
16-May	M	M	M	M	M	M	M	M	M	M	C	C	C	C	C	0.2	0.3	0.2	0.8	1.1	1.2	1.4	1.0	1.7	--	1.7		
17-May	1.1	1.9	2.3	Z	2.5	0.9	0.8	1.3	1.7	1.0	0.3	0.3	0.3	0.4	0.3	0.4	0.3	0.0	0.0	0.5	0.7	0.3	0.7	0.9	0.8	2.5		
18-May	1.3	0.0	0.0	0.1	Z	0.4	0.8	0.9	M	0.5	M	M	M	0.5	0.6	0.4	0.5	0.6	0.6	1.6	1.5	4.2	1.3	2.9	1.0	4.2		
19-May	2.3	2.3	3.0	2.7	2.1	Z	2.6	2.1	1.7	2.0	1.9	2.4	2.0	1.9	1.8	4.1	6.0	3.7	4.0	3.8	3.4	3.3	3.2	2.8	2.8	6.0		
20-May	Z	5.3	4.4	3.4	2.4	1.6	1.8	2.3	5.3	5.5	6.3	4.6	4.6	4.8	4.3	5.2	5.7	2.7	1.7	2.7	2.3	2.3	2.7	4.5	3.8	6.3		
21-May	3.8	Z	2.8	2.2	2.0	2.3	2.5	2.8	3.0	3.4	3.5	3.2	3.3	3.5	3.7	3.5	3.4	2.9	2.6	2.7	3.1	2.9	3.0	2.9	3.0	3.8		
22-May	3.0	3.7	Z	3.2	2.8	2.7	4.3	3.5	2.6	2.6	2.4	2.1	2.0	2.5	2.6	2.8	3.0	3.5	6.1	6.3	6.1	11.1	13.2	12.8	4.6	13.2		
23-May	18.2	12.3	4.3	Z	2.1	1.9	1.9	0.9	0.6	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.5	0.5	0.6	0.7	1.2	2.1	18.2	2.1		
24-May	1.5	1.3	1.1	1.0	Z	2.0	1.9	1.9	2.0	1.7	1.6	1.3	1.4	1.9	1.8	2.1	2.7	2.4	3.3	1.2	1.1	1.0	1.0	1.2	1.7	3.3		
25-May	0.8	0.9	0.8	0.8	1.1	Z	2.4	0.9	1.0	0.9	0.9	0.9	1.0	0.9	0.9	1.0	1.3	1.8	3.1	5.4	3.3	0.8	0.8	0.8	1.4	5.4		
26-May	Z	1.1	3.1	2.8	2.8	2.9	1.8	1.0	0.8	1.1	1.3	0.8	0.8	1.1	0.7	0.9	0.9	1.9	0.7	0.6	0.7	0.9	0.8	0.6	1.3	3.1		
27-May	0.5	Z	1.3	1.3	1.4	1.7	1.8	2.0	0.8	0.7	0.9	0.9	0.9	1.0	0.8	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.3	1.9	1.2	2.0		
28-May	2.3	2.4	Z	2.4	2.2	2.4	2.6	2.5	2.4	2.1	1.4	1.1	1.0	1.4	1.5	0.7	0.6	1.3	3.0	2.0	2.7	1.0	0.6	1.8	1.8	3.0		
29-May	2.5	1.9	1.4	Z	1.1	2.2	0.9	0.6	0.6	1.5	1.0	1.9	1.5	1.3	0.6	3.8	2.4	1.1	0.5	0.6	0.5	0.9	0.6	1.0	1.3	3.8		
30-May	0.6	3.0	2.0	0.8	Z	1.0	0.8	0.5	0.9	1.7	1.0	0.4	0.6	0.6	0.3	0.4	0.2	0.2	2.9	2.4	1.1	0.6	0.8	0.9	1.0	3.0		
31-May	0.7	0.4	0.4	0.7	0.6	Z	1.9	2.5	4.3	3.2	3.5	3.6	4.0	2.6	2.6	2.5	2.6	3.0	2.2	2.0	4.5	2.3	1.4	0.9	2.3	4.5		

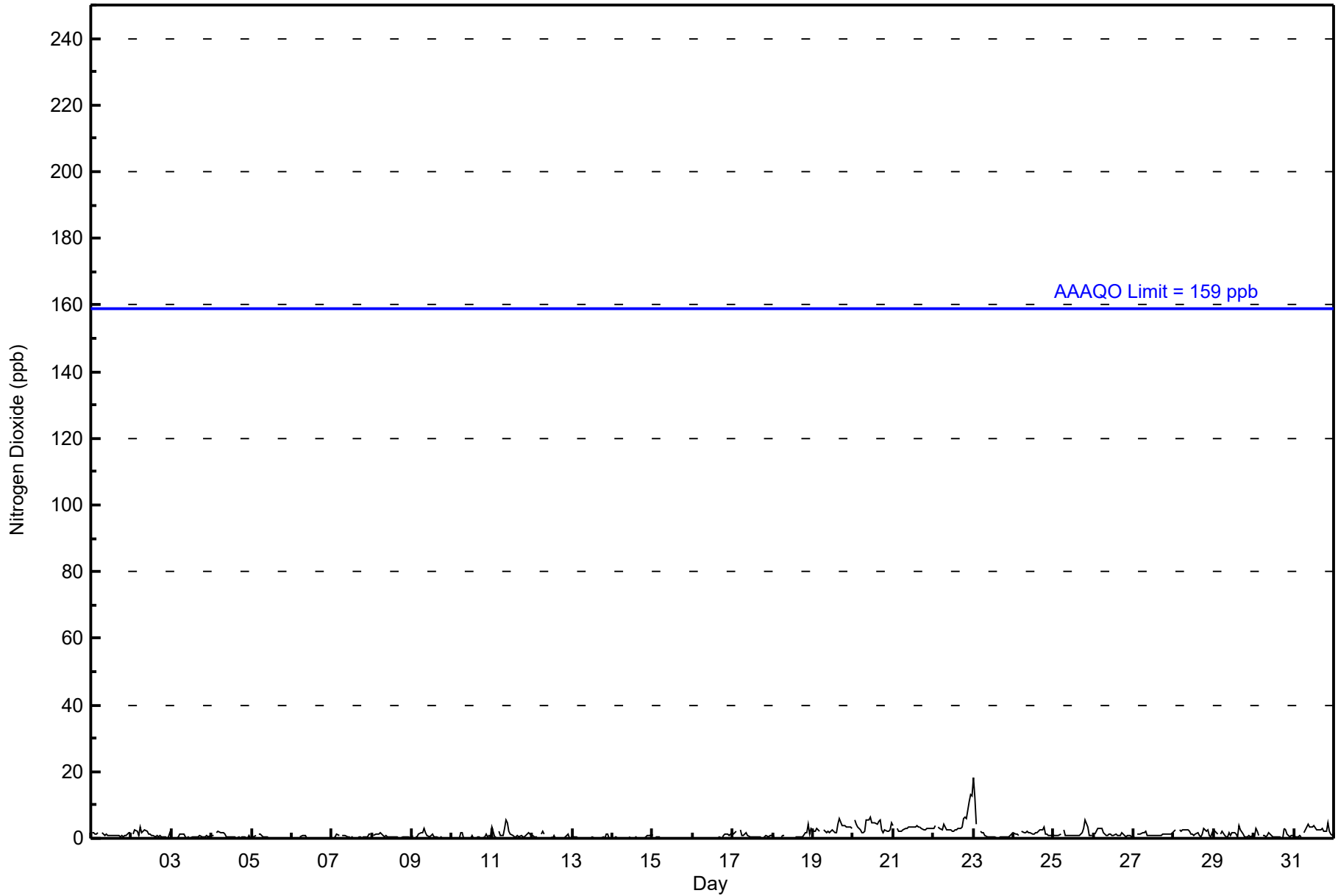
2.0	1.7	1.4	1.2	1.4	1.6	1.6	1.6	1.7	1.5	1.3	1.1	1.1	1.0	0.9	1.1	1.2	1.0	1.2	1.3	1.4	1.4	1.4	1.4	1.6	Diurnal Average	
18.2	12.3	4.4	3.4	2.8	3.2	4.3	3.5	5.7	5.5	6.3	4.6	4.6	4.8	4.3	5.2	6.0	3.7	6.1	6.3	6.1	11.1	13.2	12.8	Diurnal Maximum		

Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Kirby North - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Kirby North - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	663	100.00	100.00
21 - 40	0	0.00	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 663

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Kirby North - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	18	18	42	30	20	66	68	89	112	54	53	21	9	13	24	26	663
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	18	18	42	30	20	66	68	89	112	54	53	21	9	13	24	26	663

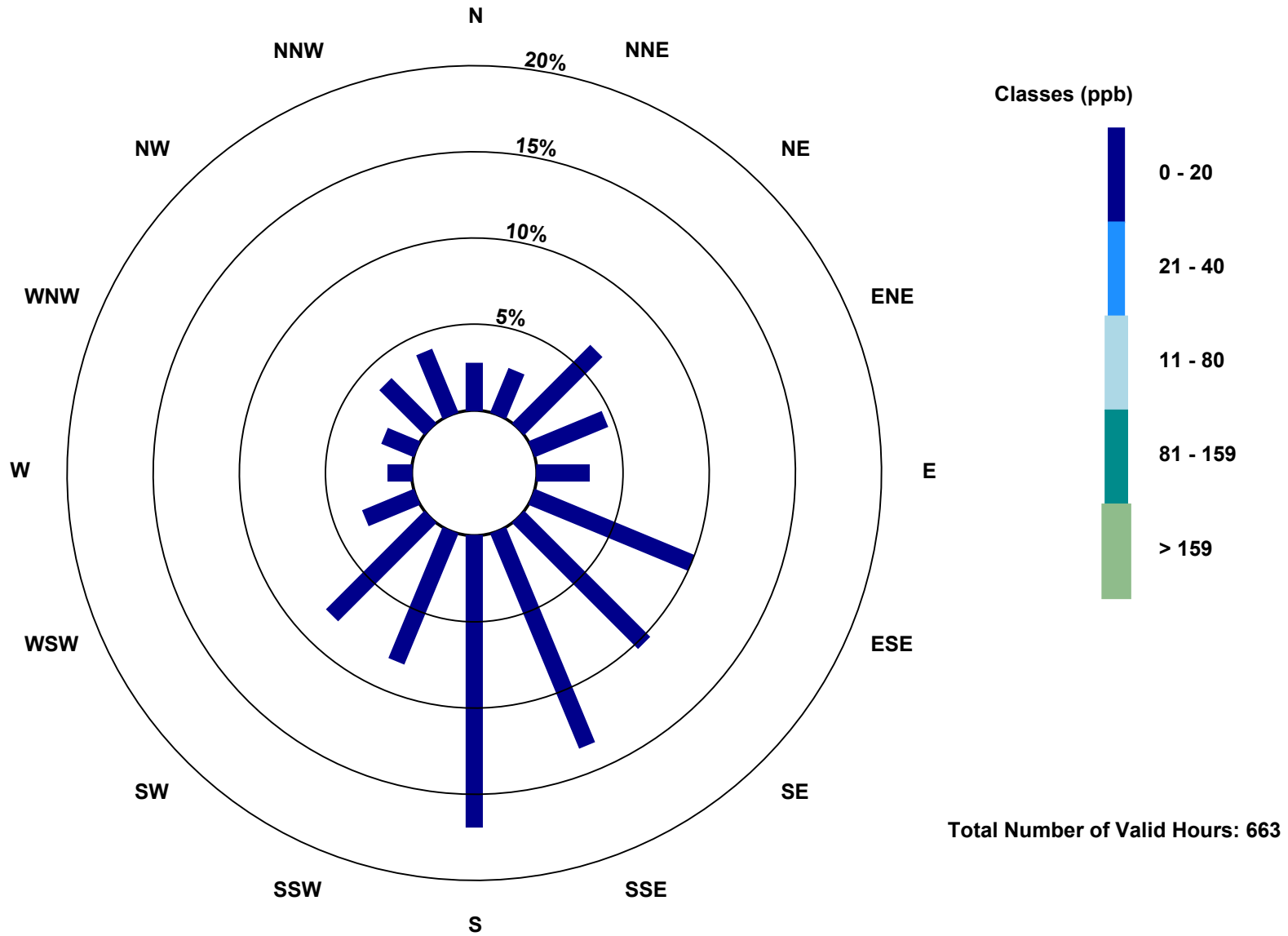
Total Number of Valid Hours: 663

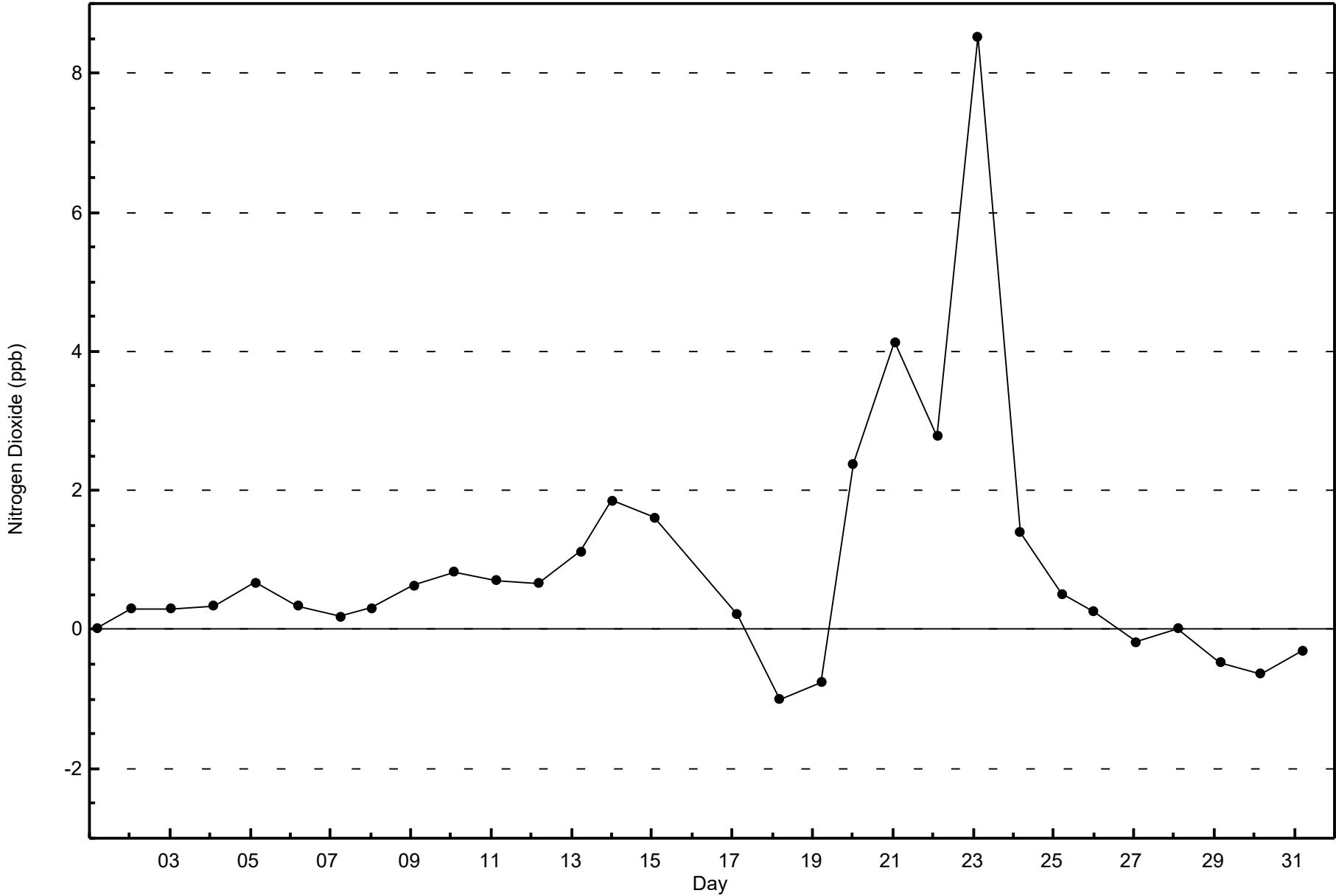
Total Number of Hours: 744

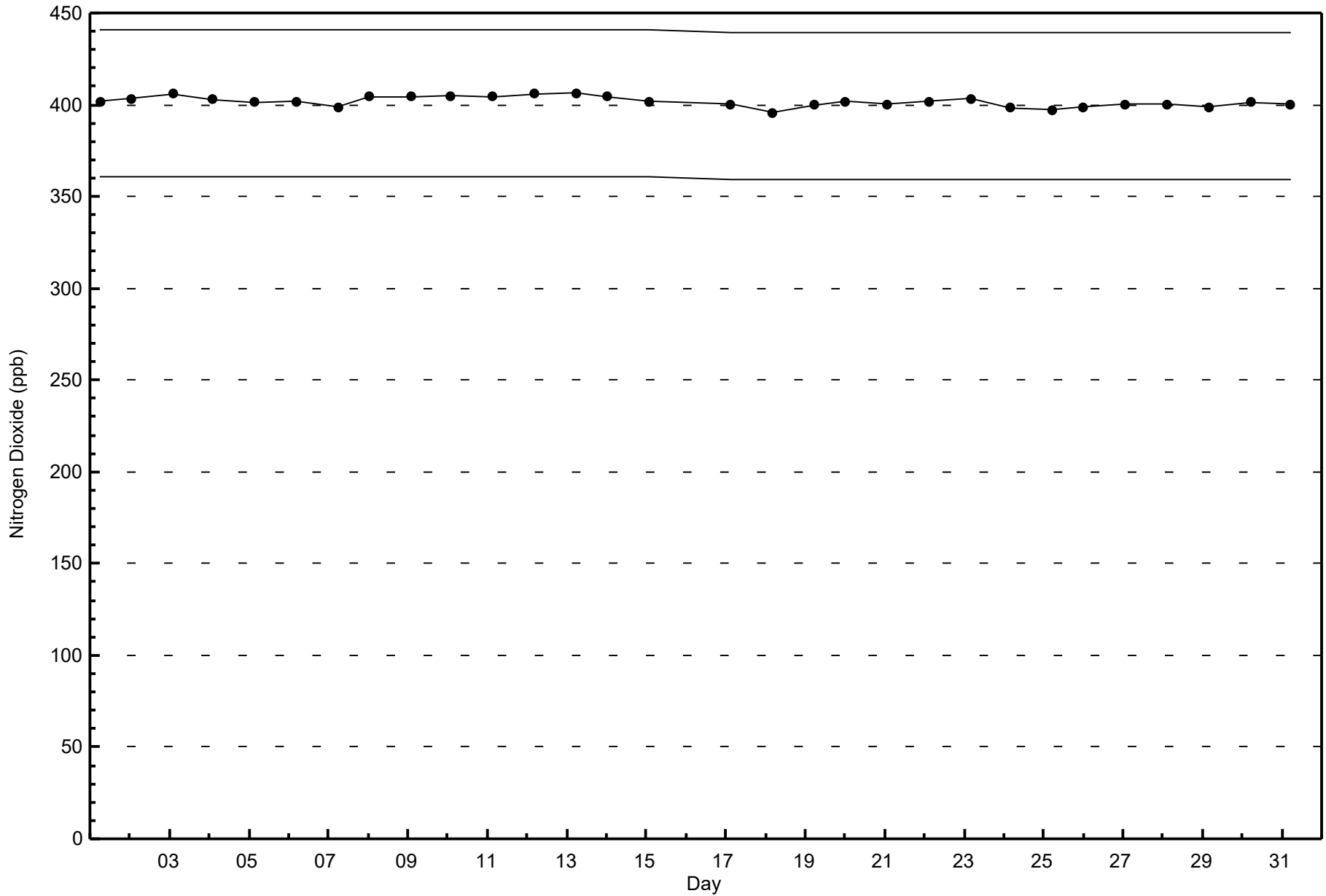


Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Dioxide (NO₂) - ppb
Kirby North









Wood Buffalo Environmental Association
Summary of Hour Averages

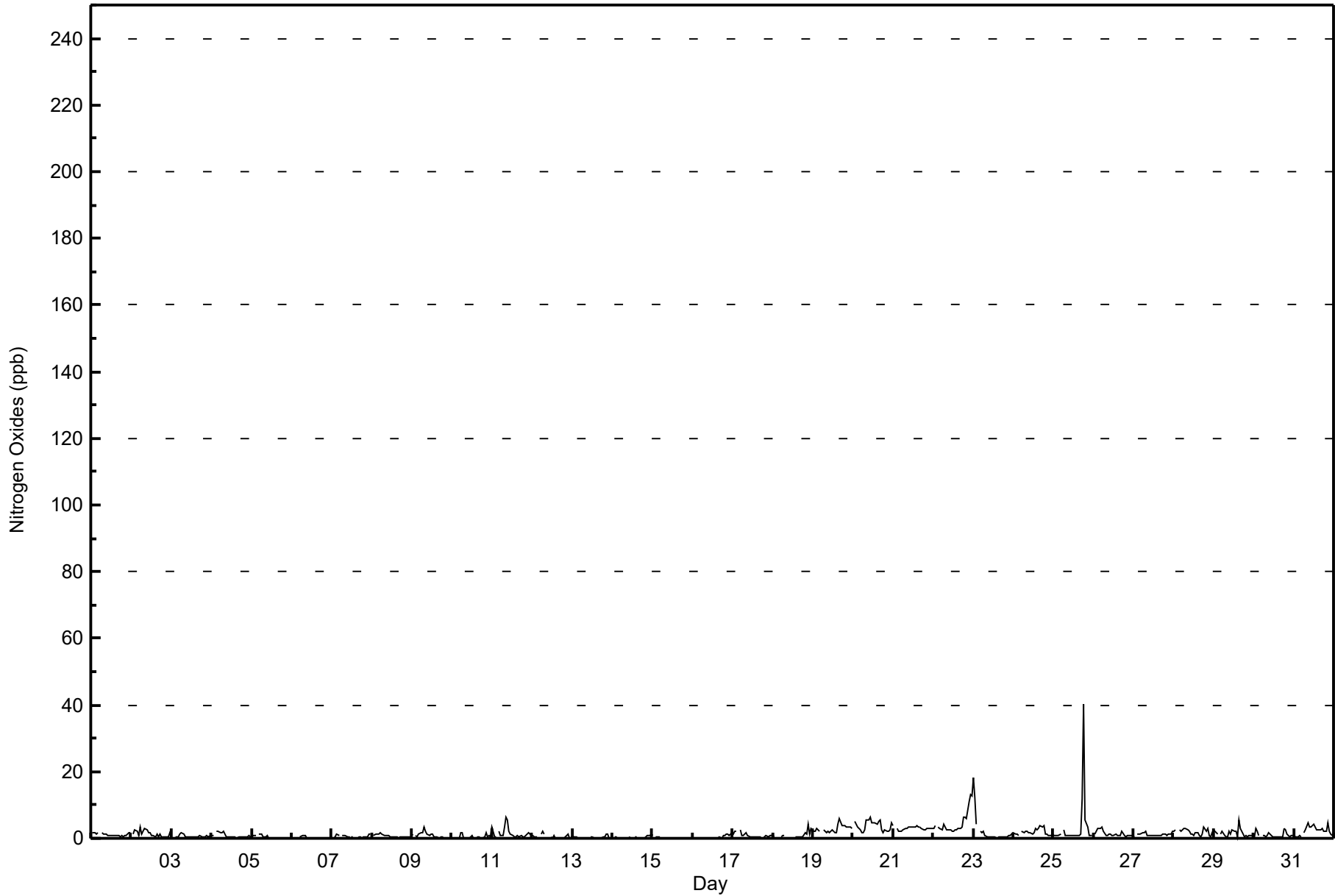
Nitrogen Oxides (NO_x) - ppb
Kirby North - May 2023

Maximum Value: 40.2 ppb on May 25 19:00		Maximum Daily Average: 4.6 ppb on May 22		Hours in Service: 744																							
Minimum Value: 0.0 ppb on May 5 22:00		Minimum Daily Average: 0.2 ppb on May 6		Hours of Data: 663																							
Maximum Diurnal Average: 2.5 ppb at hour 19		Minimum Diurnal Average: 0.9 ppb at hour 15		Hours of Missing Data: 81																							
Monthly Average: 1.48 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.1 Q ₁ = 0.4 Median = 0.9 Q ₃ = 2.0 P ₉₀ = 3.2 P ₉₉ = 8.3		Hours of Calibration: 40																							
				Percent Operational Time: 94.5																							
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	1.8	1.7	1.5	1.4	1.6	Z	1.8	1.5	1.2	1.4	0.9	0.9	0.7	0.8	0.7	0.7	0.8	0.6	1.0	0.6	0.7	0.8	1.8	1.9	1.2	1.9	
2-May	Z	1.1	2.7	2.1	0.9	3.3	1.5	2.1	2.8	2.6	1.8	1.8	0.9	1.0	0.6	1.2	0.5	1.4	0.6	0.5	0.5	0.2	0.5	1.6	1.4	3.3	
3-May	1.0	Z	0.3	0.2	0.6	1.2	1.6	1.4	0.6	0.2	0.4	0.2	0.3	0.3	0.3	0.4	0.4	0.7	0.4	0.4	0.5	0.7	0.6	0.8	0.6	1.6	
4-May	1.0	0.9	Z	1.9	2.0	1.7	1.6	1.9	1.2	0.6	0.4	0.4	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.4	0.4	0.3	0.9	0.3	0.8	2.0	
5-May	0.5	0.7	1.0	Z	1.3	1.2	1.1	0.6	0.4	0.7	0.2	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.3	1.3	
6-May	0.0	0.0	0.0	0.1	Z	0.3	0.9	1.0	0.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0	
7-May	0.0	0.1	0.3	1.3	1.0	Z	0.7	0.9	1.0	0.5	0.4	0.2	0.3	0.2	0.1	0.1	0.3	0.4	0.2	0.3	0.4	0.5	1.3	1.1	0.5	1.3	
8-May	Z	1.0	1.2	1.4	1.1	1.6	1.3	0.8	0.9	0.7	0.7	0.5	0.5	0.4	0.4	0.4	0.2	0.3	0.4	0.3	0.4	0.3	0.5	0.3	0.7	1.6	
9-May	1.1	Z	0.7	0.5	1.2	1.6	1.7	3.6	2.0	1.2	0.7	1.1	1.4	0.5	0.3	0.3	0.1	0.6	0.2	0.0	0.0	0.1	0.0	0.0	0.8	3.6	
10-May	0.0	0.0	Z	0.1	0.0	1.5	1.7	0.2	0.2	0.0	0.0	0.3	0.7	0.2	0.1	0.4	0.3	0.2	0.2	0.5	1.5	0.5	0.9	0.5	0.4	1.7	
11-May	3.5	0.5	0.3	Z	2.1	1.0	1.0	3.5	6.6	5.5	2.2	1.2	0.7	0.5	0.6	0.8	0.4	0.7	0.6	0.6	0.7	1.3	1.7	1.0	1.6	6.6	
12-May	0.9	0.4	0.3	0.4	Z	1.1	2.2	1.4	UO	UO	UO	0.3	0.2	0.8	0.2	0.1	0.2	0.1	0.0	0.0	0.8	1.2	0.0	0.0	0.5	2.2	
13-May	0.7	0.3	0.4	0.0	0.0	Z	UO	UO	UO	UO	UO	0.2	0.4	0.0	0.0	0.1	0.0	0.3	0.2	1.2	1.3	0.0	0.0	0.3	1.3		
14-May	Z	0.4	0.3	0.2	0.2	UO	UO	UO	UO	UO	0.3	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.0	0.0	0.4	0.7	1.0	1.1	0.3	1.1	
15-May	1.0	Z	0.5	0.3	0.4	UO	UO	UO	UO	UO	C	C	C	C	C	C	M	M	M	M	M	M	M	M	--	1.0	
16-May	M	M	M	M	M	M	M	M	M	M	C	C	C	C	C	0.2	0.3	0.2	0.8	1.1	1.2	1.4	1.0	1.7	--	1.7	
17-May	1.1	1.9	2.3	Z	2.5	0.9	0.8	1.3	1.7	1.0	0.3	0.3	0.3	0.4	0.3	0.4	0.3	0.0	0.0	0.5	0.7	0.3	0.7	0.9	0.8	2.5	
18-May	1.3	0.0	0.0	0.1	Z	0.4	0.8	0.9	M	0.5	M	M	M	0.5	0.6	0.4	0.5	0.6	0.6	1.6	1.5	4.2	1.3	2.9	1.0	4.2	
19-May	2.3	2.3	3.0	2.7	2.1	Z	2.6	2.1	1.7	2.0	1.9	2.4	2.0	1.9	1.8	4.4	6.1	3.7	4.0	3.8	3.4	3.3	3.2	2.8	2.9	6.1	
20-May	Z	5.3	4.4	3.4	2.4	1.6	1.8	2.3	5.3	5.5	6.3	4.6	4.6	4.8	4.3	5.2	5.7	2.7	1.7	2.7	2.3	2.3	2.7	4.5	3.8	6.3	
21-May	3.8	Z	2.8	2.2	2.0	2.3	2.5	2.8	3.0	3.4	3.5	3.2	3.3	3.5	3.7	3.5	3.4	2.9	2.6	2.7	3.1	2.9	3.0	2.9	3.0	3.8	
22-May	3.0	3.7	Z	3.2	2.8	2.7	4.3	3.5	2.6	2.6	2.4	2.1	2.0	2.5	2.6	2.8	3.0	3.5	6.1	6.3	6.1	11.1	13.2	12.8	4.6	13.2	
23-May	18.2	12.3	4.3	Z	2.1	1.9	1.9	0.9	0.6	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.5	0.5	0.6	0.7	1.2	2.1	18.2		
24-May	1.5	1.3	1.1	1.0	Z	2.0	1.9	2.0	2.1	1.8	1.6	1.3	1.6	2.9	2.5	2.8	4.0	3.2	3.9	1.2	1.1	1.0	1.0	1.2	1.9	4.0	
25-May	0.8	0.9	0.8	0.8	1.1	Z	2.7	0.9	1.0	0.9	0.9	0.9	1.0	0.9	0.9	1.0	1.3	11.7	40.2	5.4	3.5	0.8	0.8	0.8	3.5	40.2	
26-May	Z	1.1	3.1	2.8	2.8	3.2	2.0	1.0	0.8	1.1	1.4	0.8	0.8	1.1	0.7	0.9	0.9	2.1	0.7	0.6	0.7	0.9	0.8	0.6	1.3	3.2	
27-May	0.5	Z	1.3	1.3	1.4	1.7	1.8	2.1	0.8	0.7	0.9	0.9	0.9	1.0	0.8	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.3	1.9	1.2	2.1	
28-May	2.3	2.4	Z	2.4	2.2	2.4	2.8	2.8	2.6	2.2	1.4	1.1	1.0	1.6	1.7	0.7	0.6	1.4	3.5	2.2	3.1	1.0	0.6	1.8	1.9	3.5	
29-May	2.5	1.9	1.4	Z	1.1	2.3	0.9	0.6	0.6	2.1	1.3	2.6	2.0	1.9	0.6	5.4	3.0	1.1	0.5	0.6	0.5	0.9	0.6	1.0	1.5	5.4	
30-May	0.6	3.0	2.0	0.8	Z	1.0	0.8	0.5	0.9	1.9	1.0	0.4	0.6	0.6	0.3	0.4	0.2	0.2	2.9	2.5	1.1	0.6	0.8	0.9	1.0	3.0	
31-May	0.7	0.4	0.4	0.7	0.6	Z	1.9	2.6	4.7	3.4	3.5	3.6	4.0	2.6	2.6	2.5	2.6	3.0	2.2	2.0	4.5	2.3	1.4	0.9	2.3	4.7	
		2.0	1.7	1.4	1.2	1.4	1.7	1.7	1.7	1.9	1.7	1.3	1.1	1.1	1.1	0.9	1.2	1.2	1.4	2.5	1.3	1.4	1.4	1.4	1.6	Diurnal Average	
		18.2	12.3	4.4	3.4	2.8	3.3	4.3	3.6	6.6	5.5	6.3	4.6	4.6	4.8	4.3	5.4	6.1	11.7	40.2	6.3	6.1	11.1	13.2	12.8	Diurnal Maximum	
Z - zerospan		C - Calibration					M - Maintenance					UO - Unstable Operation															



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Kirby North - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Kirby North - May 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	662	99.85	99.85
21 - 40	1	0.15	100.00
41 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 663

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Kirby North - May 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	18	18	42	29	20	66	68	89	112	54	53	21	9	13	24	26	662
21 - 40	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
41 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	18	18	42	30	20	66	68	89	112	54	53	21	9	13	24	26	663

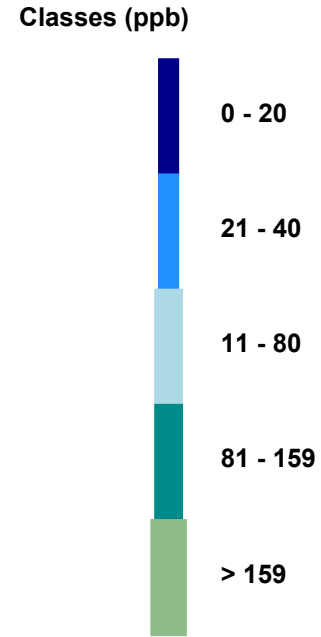
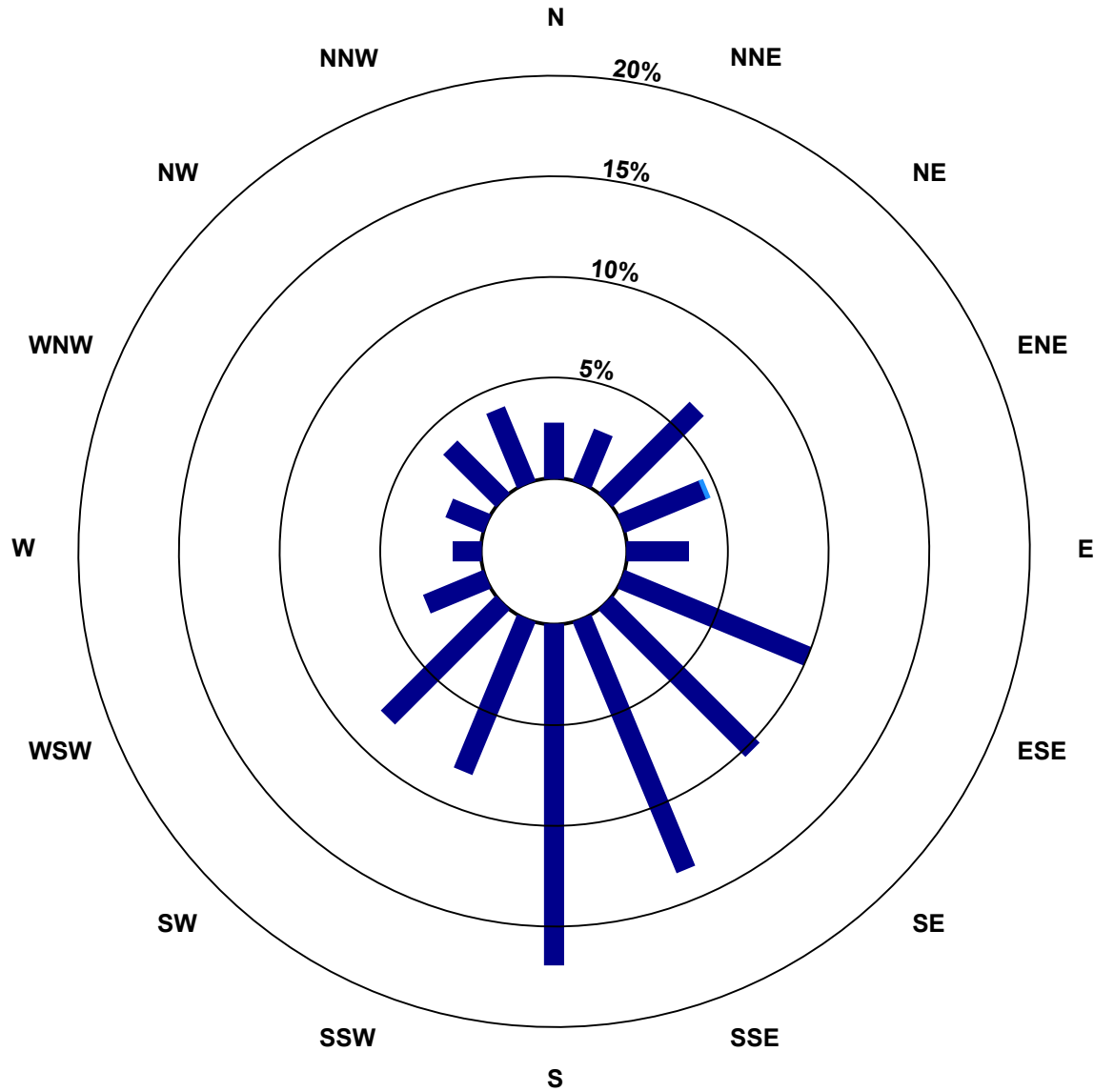
Total Number of Valid Hours: 663

Total Number of Hours: 744

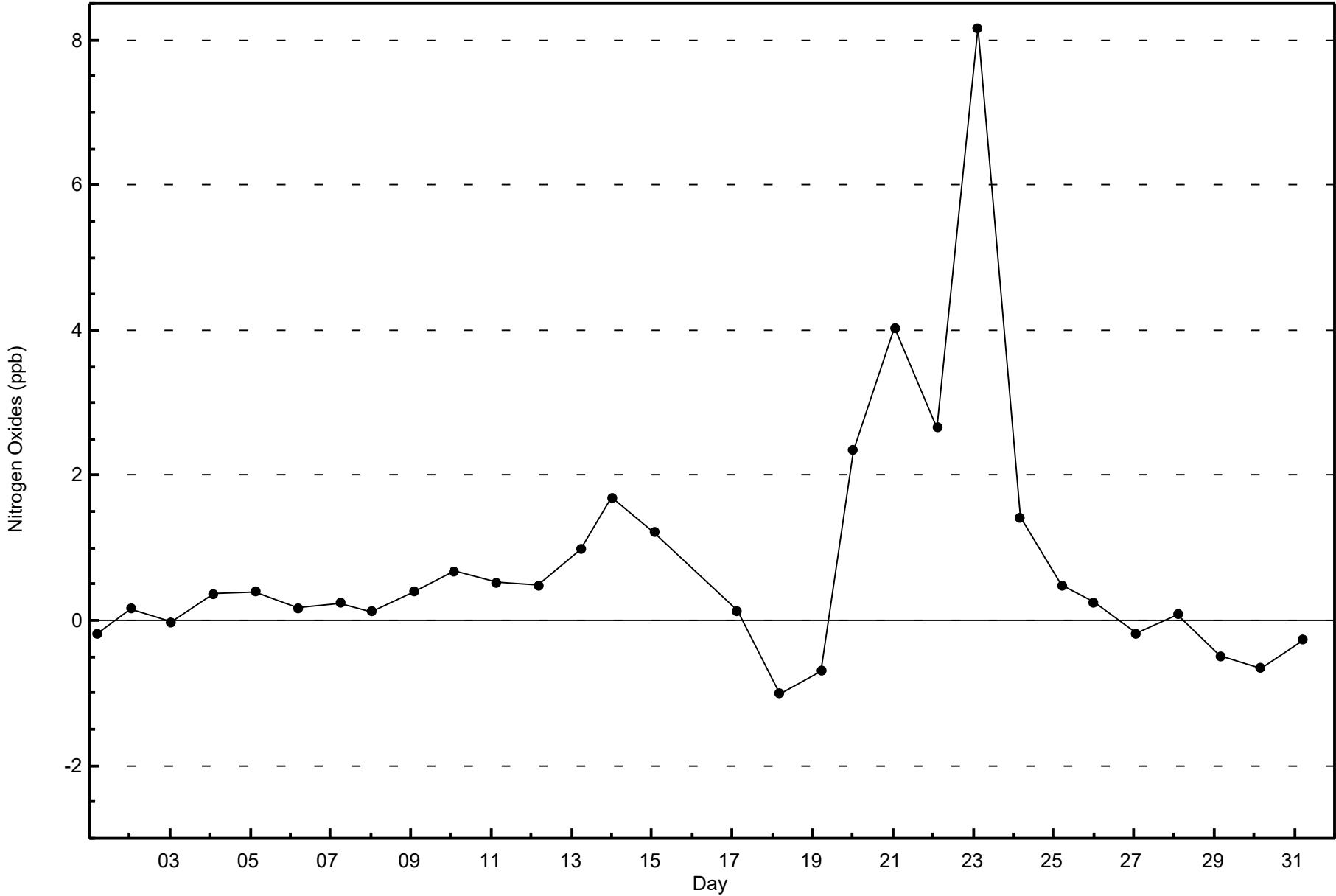


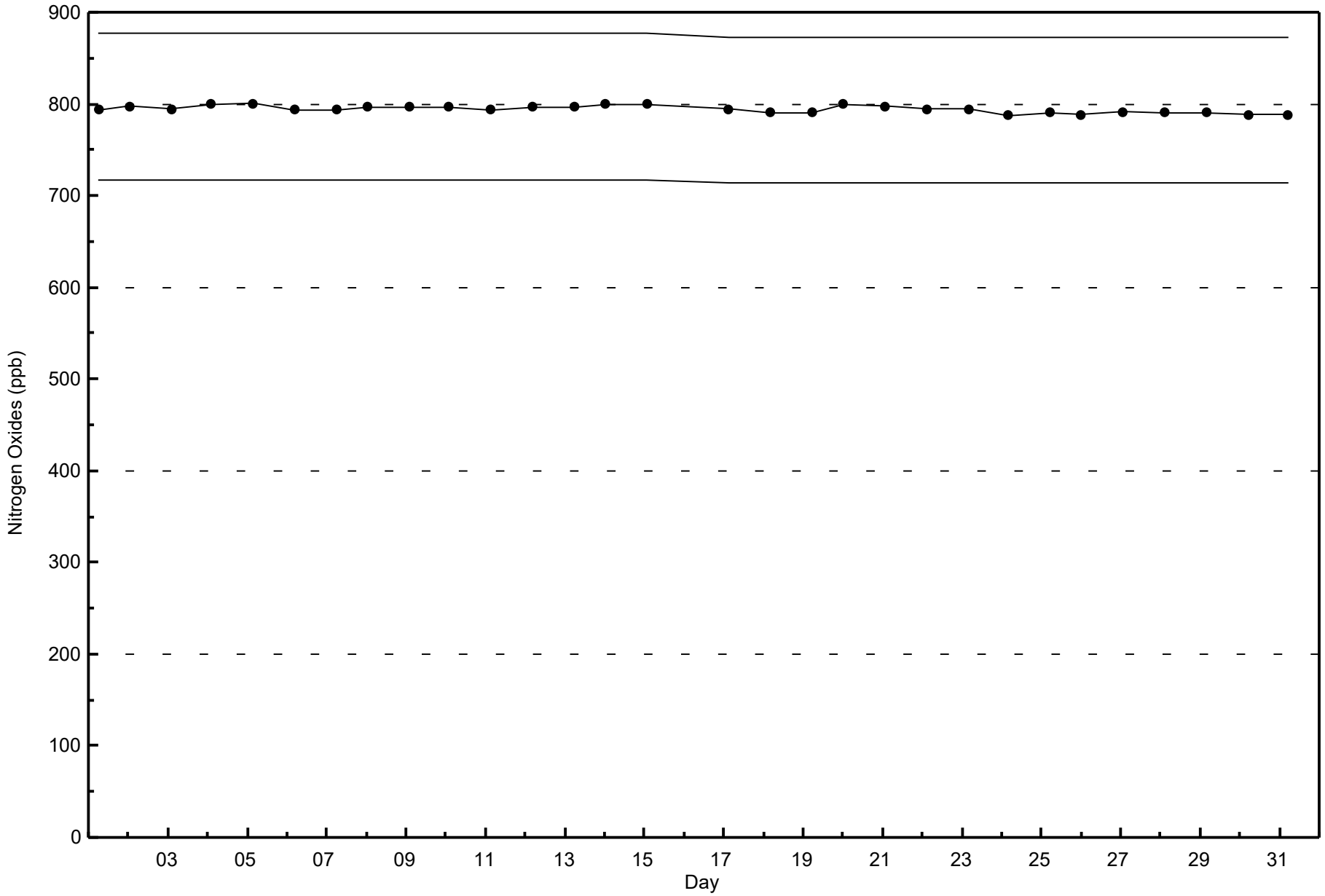
Wood Buffalo Environmental Association
Wind Rose May 2023

Nitrogen Oxides (NO_x) - ppb
Kirby North



Total Number of Valid Hours: 663







Wood Buffalo Environmental Association
Summary of Hour Averages

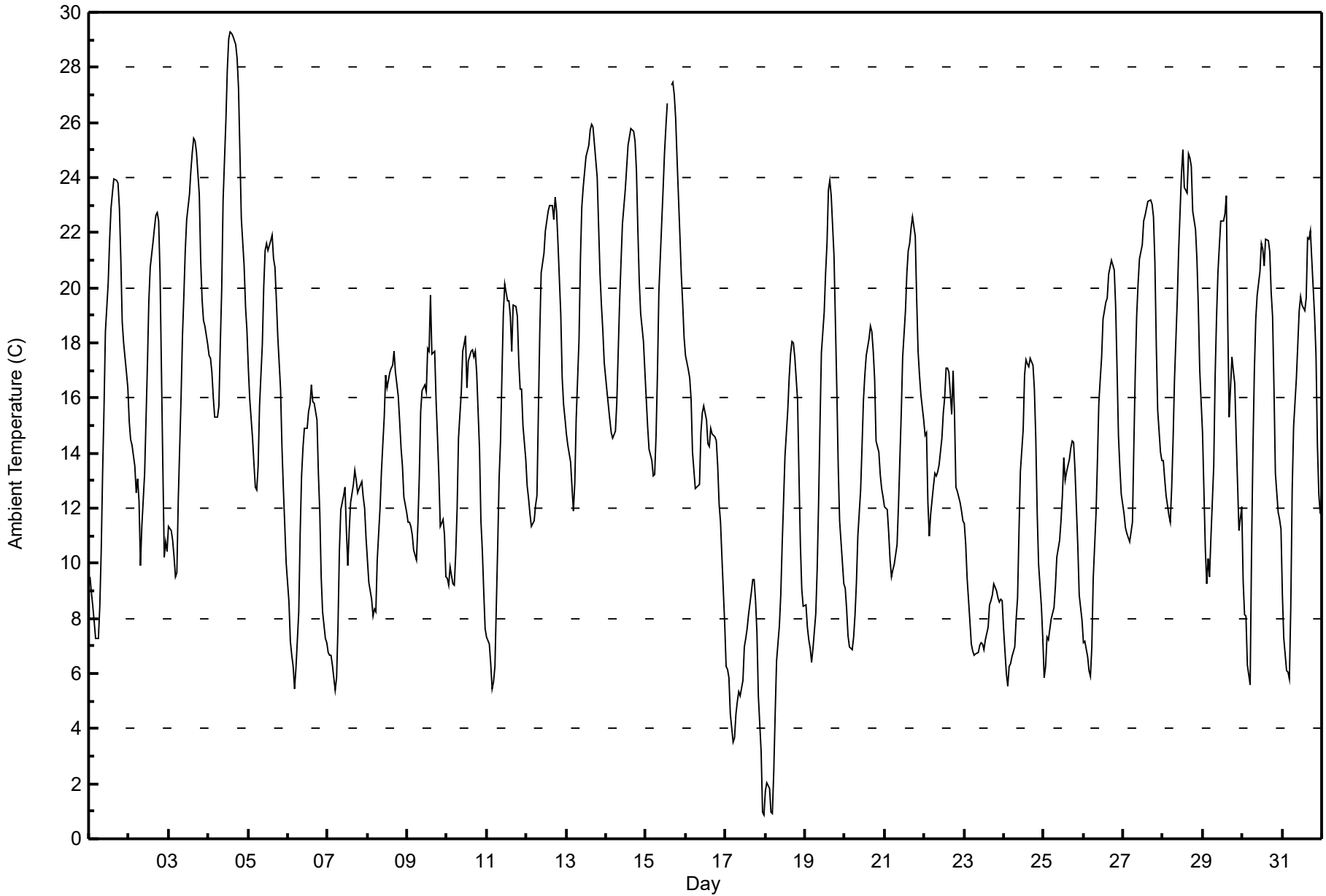
Ambient Temperature (AT) - C
Kirby North - May 2023

Maximum Value: 29.3 C on May 4 14:00 Maximum Daily Average: 22.4 C on May 4																						Hours in Service: 744 Hours of Data: 743																										
Minimum Value: 0.9 C on May 18 00:00 Minimum Daily Average: 5.8 C on May 17 Maximum Diurnal Average: 19.9 C at hour 16 Minimum Diurnal Average: 8.9 C at hour 5																						Hours of Missing Data: 1 Hours of Calibration: 0																										
Monthly Average: 14.80 C Percentiles: P ₁ = 2.7 P ₁₀ = 7.2 Q ₁ = 10.5 Median = 14.5 Q ₃ = 19.0 P ₉₀ = 22.7 P ₉₉ = 27.4																						Percent Operational Time: 99.9																										
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-May	9.5	8.9	8.4	7.9	7.3	7.3	8.4	10.4	13.3	15.6	18.4	20.2	21.7	22.9	23.5	24.0	23.9	23.8	22.9	21.0	18.7	18.0	16.9	16.4	16.2	24.0																						
2-May	15.2	14.5	14.3	13.5	12.6	13.1	12.2	9.9	11.3	13.3	15.3	17.2	19.5	20.8	21.7	22.2	22.6	22.7	22.4	20.5	13.5	10.2	10.8	10.4	15.8	22.7																						
3-May	11.3	11.2	10.8	10.2	9.5	9.7	12.3	16.0	18.3	19.7	21.3	22.5	23.4	24.3	24.9	25.4	25.3	24.9	23.4	21.0	19.6	18.8	18.6	17.9	18.4	25.4																						
4-May	17.5	17.4	17.0	16.0	15.3	15.3	15.7	17.9	19.9	23.2	26.1	27.9	29.1	29.3	29.2	29.1	28.8	28.3	27.3	24.9	22.5	20.8	19.3	18.5	22.4	29.3																						
5-May	17.1	16.0	14.5	13.6	12.8	12.7	13.5	15.7	18.0	20.0	21.3	21.6	21.4	21.7	21.9	21.1	20.7	19.6	18.3	16.3	14.2	12.7	11.4	10.0	16.9	21.9																						
6-May	8.6	7.2	6.7	6.3	5.4	6.2	8.2	11.1	13.2	14.2	14.9	14.9	15.5	15.8	16.5	15.8	15.8	15.2	13.3	11.8	9.5	8.2	7.3	7.1	11.2	16.5																						
7-May	6.8	6.7	6.7	6.3	5.4	5.9	7.7	10.5	12.0	12.5	12.8	11.2	9.9	11.2	12.2	12.9	13.4	13.0	12.6	12.7	13.0	12.4	12.0	10.9	10.4	13.4																						
8-May	10.1	9.3	8.7	8.1	8.3	8.2	10.1	12.0	13.3	14.3	15.3	16.8	16.4	16.9	17.1	17.2	17.7	16.9	16.0	15.1	14.2	13.5	12.4	11.8	13.3	17.7																						
9-May	11.5	11.5	11.3	11.1	10.5	10.1	11.4	13.1	15.5	16.3	16.5	16.2	17.8	17.7	19.7	17.6	17.7	15.9	14.6	13.1	11.3	11.6	11.0	9.5	13.9	19.7																						
10-May	9.4	9.2	9.9	9.2	9.2	10.3	12.0	14.5	16.2	17.7	18.0	18.2	16.4	17.3	17.7	17.8	17.5	17.7	16.9	14.2	11.5	10.5	9.0	7.6	13.7	18.2																						
11-May	7.3	7.1	6.4	5.4	5.7	6.3	10.7	13.1	14.4	16.8	19.1	20.1	19.5	19.5	19.0	17.7	19.4	19.3	19.0	17.4	16.3	16.3	15.0	13.8	14.4	20.1																						
12-May	12.8	12.3	11.8	11.3	11.6	12.1	12.5	15.5	18.4	20.6	21.2	22.1	22.4	22.8	23.0	23.0	22.5	23.3	22.8	21.6	19.0	16.7	15.8	15.3	17.9	23.3																						
13-May	14.7	14.3	13.7	12.8	11.9	12.9	15.3	18.1	21.0	22.9	23.7	24.2	24.8	25.2	25.7	25.9	25.8	25.2	24.0	22.2	20.5	19.4	18.4	17.3	20.0	25.9																						
14-May	16.2	15.7	15.2	14.7	14.5	14.8	15.9	17.7	19.5	20.9	22.3	23.5	24.4	25.2	25.5	25.8	25.7	25.3	24.3	22.1	20.3	19.1	18.0	17.0	20.2	25.8																						
15-May	16.0	14.9	14.1	13.7	13.2	13.2	14.6	16.9	19.9	22.3	23.6	24.9	25.8	26.7	DF	27.4	27.5	27.0	26.1	24.7	21.9	20.5	19.4	18.2	20.5	27.5																						
16-May	17.5	17.0	16.8	16.0	14.0	13.4	12.7	12.8	12.9	14.8	15.5	15.7	15.2	14.4	14.3	14.9	14.7	14.6	14.4	13.5	12.2	11.5	10.2	7.8	14.0	17.5																						
17-May	6.3	6.1	5.8	4.5	3.5	3.7	4.5	5.0	5.4	5.2	5.7	7.0	7.3	7.6	8.1	8.9	9.4	9.4	8.7	7.5	5.2	3.1	1.0	0.9	5.8	9.4																						
18-May	1.7	2.1	1.8	1.0	0.9	2.4	4.5	6.4	7.7	8.9	10.7	12.2	13.9	15.5	16.7	17.6	18.0	18.0	17.5	15.9	13.2	10.7	9.1	8.4	9.8	18.0																						
19-May	8.5	7.7	7.2	6.9	6.4	6.9	8.2	9.8	12.2	15.0	17.7	19.1	20.6	21.6	23.6	23.9	23.3	21.1	18.7	16.3	13.5	11.6	10.0	9.2	14.1	23.9																						
20-May	9.1	8.4	7.4	6.9	6.9	7.3	8.1	9.3	11.0	12.7	14.2	15.9	16.9	17.6	18.1	18.6	18.4	17.7	16.7	14.5	14.1	13.2	12.7	12.4	12.8	18.6																						
21-May	12.0	12.0	11.1	10.1	9.5	9.7	10.0	10.7	12.1	13.8	15.4	17.5	19.1	20.6	21.4	21.6	22.2	22.6	21.8	19.6	17.7	16.8	16.1	15.2	15.8	22.6																						
22-May	14.7	14.8	12.2	11.0	11.8	12.8	13.3	13.2	13.3	13.6	14.6	15.5	16.0	17.1	17.1	16.9	15.4	17.0	15.4	12.8	12.6	12.2	11.9	11.6	14.0	17.1																						
23-May	11.5	10.7	9.5	7.9	7.1	6.8	6.7	6.7	6.8	7.0	7.1	7.0	6.9	7.2	7.7	8.5	8.6	8.9	9.3	9.0	8.8	8.6	8.7	8.7	8.1	11.5																						
24-May	7.6	6.0	5.6	6.3	6.4	6.6	7.0	8.0	8.8	11.1	13.3	14.8	16.8	17.4	17.2	17.1	17.5	17.2	16.3	14.5	11.9	10.0	8.4	7.3	11.4	17.5																						
25-May	5.9	6.2	7.3	7.2	8.0	8.2	8.4	9.2	10.2	10.8	11.6	12.5	13.8	13.0	13.3	13.8	14.2	14.4	14.4	13.3	10.6	8.8	8.4	8.0	10.5	14.4																						
26-May	7.1	7.2	6.6	6.1	5.9	6.9	9.4	11.8	13.7	15.8	16.7	17.5	18.9	19.5	19.6	20.5	20.7	21.0	20.7	19.3	17.1	14.7	13.5	12.5	14.3	21.0																						
27-May	11.8	11.3	11.1	11.0	10.8	11.5	14.3	16.9	19.0	20.2	21.0	21.6	22.4	22.6	22.9	23.2	23.2	23.0	22.6	20.9	17.9	15.5	14.0	13.7	17.6	23.2																						
28-May	13.7	13.1	12.5	11.7	11.5	12.8	14.5	16.7	19.6	21.4	22.8	24.2	25.0	23.6	23.4	24.9	24.7	24.4	22.8	22.1	21.1	19.3	17.1	15.8	19.1	25.0																						
29-May	14.7	10.5	9.3	10.2	9.5	10.9	13.5	16.8	18.9	20.5	21.5	22.4	22.4	22.7	23.3	18.8	15.3	17.5	17.0	16.5	14.6	12.9	11.2	12.0	16.0	23.3																						
30-May	9.4	8.1	8.1	6.3	5.6	10.5	14.2	17.0	18.9	19.7	20.6	21.6	21.4	20.8	21.8	21.7	21.3	19.8	19.0	16.4	13.3	11.9	11.6	11.2	15.4	21.8																						
31-May	8.8	7.3	6.1	6.1	5.8	8.4	12.7	15.0	16.7	18.0	19.2	19.7	19.4	19.2	19.6	21.8	21.8	22.1	21.0	19.0	17.6	14.3	12.5	11.8	15.2	22.1																						
																								11.1	10.5	9.9	9.3	8.9	9.6	11.0	12.8	14.6	16.1	17.3	18.3	18.8	19.3	19.5	19.9	19.8	19.6	18.7	17.1	15.1	13.7	12.6	11.9	Diurnal Average
																								17.5	17.4	17.0	16.0	15.3	15.3	15.9	18.1	21.0	23.2	26.1	27.9	29.1	29.3	29.2	29.1	28.8	28.3	27.3	24.9	22.5	20.8	19.4	18.5	Diurnal Maximum
DF - DAS Failure																																																



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Kirby North - May 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ambient Temperature (AT) - C
Kirby North - May 2023

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	170	22.88	22.88
10 - 20	421	56.66	79.54
> 20	152	20.46	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

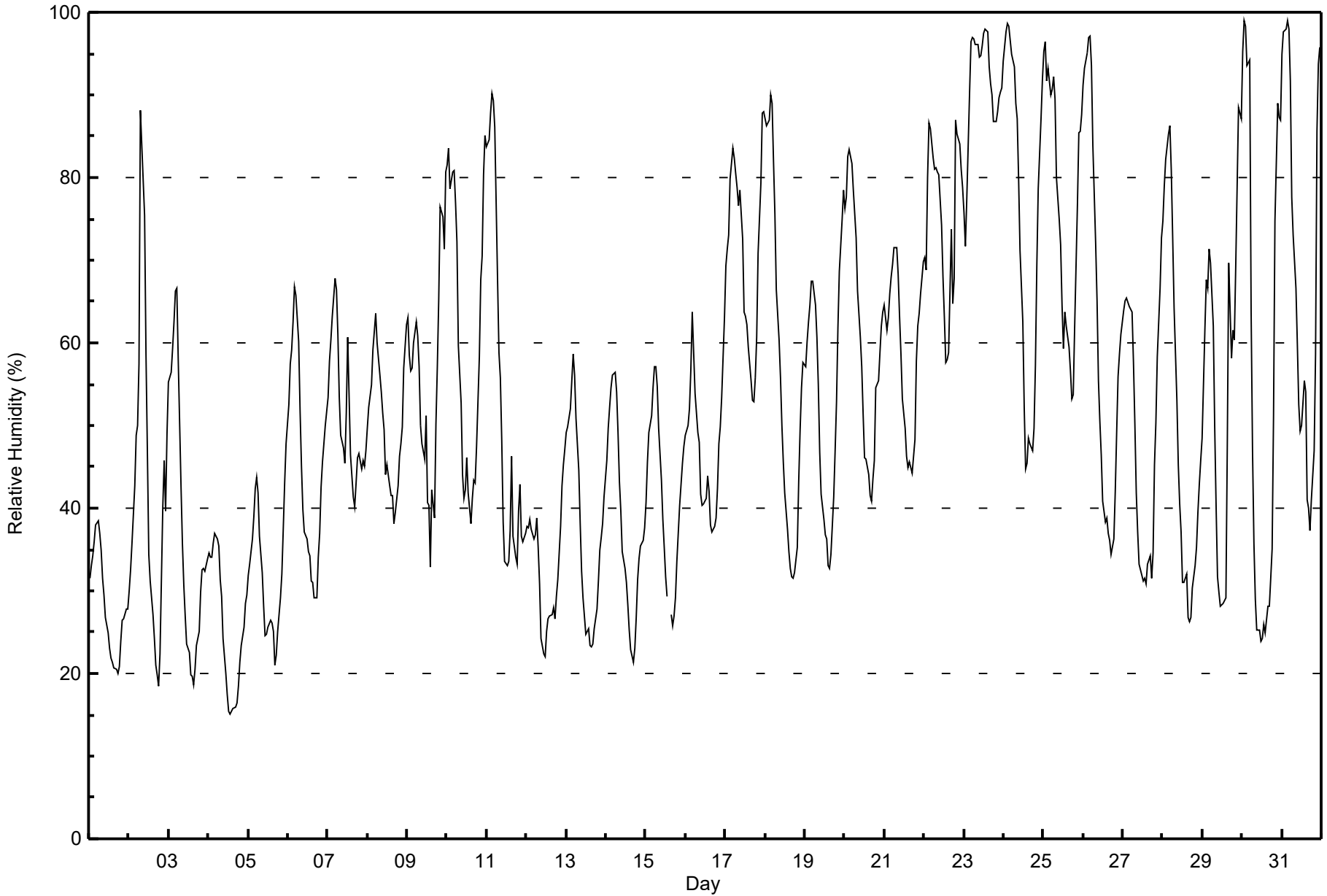
Relative Humidity (RH) - %
Kirby North - May 2023

Maximum Value: 99.0 % on May 30 02:00 Maximum Daily Average: 91.0 % on May 23																						Hours in Service: 744 Hours of Data: 743																											
Minimum Value: 15.1 % on May 4 14:00 Minimum Daily Average: 25.4 % on May 4 Maximum Diurnal Average: 70.9 % at hour 5 Minimum Diurnal Average: 37.7 % at hour 16 Monthly Average: 52.84 % Percentiles: P ₁ = 18.5 P ₁₀ = 26.9 Q ₁ = 35.7 Median = 49.6 Q ₃ = 66.7 P ₉₀ = 86.8 P ₉₉ = 97.8																						Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9																											
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-May	31.6	33.0	34.3	35.9	37.9	38.4	36.9	34.9	31.5	29.5	26.8	24.9	23.0	21.9	21.3	20.6	20.5	20.0	20.9	23.9	26.5	26.7	27.8	27.8	28.2	38.4																							
2-May	30.0	32.5	35.8	42.7	48.8	49.9	57.4	88.1	83.9	75.4	58.6	46.7	34.4	31.2	27.1	24.3	21.1	19.8	18.5	22.3	40.1	45.7	39.6	49.0	42.6	88.1																							
3-May	55.2	56.5	59.3	62.5	66.2	66.6	58.2	42.7	35.7	30.7	26.9	23.5	22.6	19.8	19.6	18.7	20.5	23.3	25.1	29.8	32.6	32.7	32.4	33.9	37.3	66.6																							
4-May	34.6	34.1	34.1	35.8	36.9	36.3	35.4	31.4	29.4	24.2	19.9	17.5	15.5	15.1	15.5	15.7	15.9	16.5	18.4	21.4	23.3	25.6	28.4	29.5	25.4	36.9																							
5-May	31.9	33.3	36.3	38.9	42.3	43.7	41.9	36.6	32.3	28.1	24.5	24.7	25.5	26.4	26.1	25.0	21.1	22.1	25.1	29.1	32.1	37.5	43.1	47.8	32.3	47.8																							
6-May	52.5	57.4	59.2	62.6	66.8	65.8	60.2	51.8	45.1	39.9	37.0	36.3	34.8	34.3	31.2	31.1	29.2	29.1	34.0	37.0	42.6	45.6	50.1	51.7	45.2	66.8																							
7-May	53.4	57.8	60.3	63.2	67.8	66.4	61.0	53.5	48.8	47.3	45.4	51.6	60.8	53.6	46.4	41.3	40.1	43.0	46.2	46.7	44.7	45.8	45.2	47.0	51.6	67.8																							
8-May	49.7	52.1	55.0	59.2	61.3	63.5	60.1	56.1	54.1	51.5	49.6	44.1	45.3	42.7	41.5	41.6	38.2	39.6	42.6	46.3	47.8	49.9	57.0	62.1	50.5	63.5																							
9-May	63.0	58.4	56.6	57.0	60.0	62.5	60.8	57.2	49.9	47.8	46.0	51.2	40.7	40.3	33.0	42.2	38.8	50.2	57.1	65.3	76.5	75.2	71.4	80.8	55.9	80.8																							
10-May	81.6	83.6	78.6	80.6	80.8	77.0	72.1	59.7	52.8	44.1	41.3	42.2	46.1	41.8	38.2	41.2	43.4	43.0	47.5	58.4	67.6	70.6	80.4	85.1	60.7	85.1																							
11-May	83.7	84.5	87.8	90.2	89.3	86.1	67.7	58.8	55.8	48.1	38.4	33.6	33.0	33.6	37.3	46.3	36.7	34.0	33.2	39.6	42.9	36.6	35.9	36.9	52.9	90.2																							
12-May	37.8	37.7	38.7	37.4	36.2	36.7	38.8	35.3	30.8	24.3	22.3	22.1	25.0	26.5	26.9	27.1	28.0	26.6	29.3	31.3	37.8	42.7	45.3	47.0	33.0	47.0																							
13-May	49.2	49.8	52.0	55.5	58.6	56.2	50.8	44.6	38.1	32.4	29.1	27.0	24.8	25.3	23.4	23.3	23.6	25.5	27.9	31.2	34.9	36.4	38.1	41.4	37.5	58.6																							
14-May	45.8	49.7	52.1	54.6	56.2	56.5	54.1	49.1	43.2	39.7	34.8	32.7	31.1	28.3	25.2	22.9	21.3	23.0	26.8	31.3	33.9	35.4	36.1	37.5	38.4	56.5																							
15-May	40.8	45.5	49.1	51.3	54.5	57.1	57.1	54.7	49.6	43.3	38.7	35.2	31.7	29.4	DF	27.1	25.7	27.0	29.1	33.6	40.4	42.9	45.4	47.4	41.6	57.1																							
16-May	48.9	49.9	52.0	56.7	63.8	58.8	53.8	49.1	47.9	41.7	40.4	40.4	41.3	43.9	42.1	38.1	37.0	37.7	38.7	42.5	47.8	49.8	53.4	63.0	47.4	63.8																							
17-May	69.4	71.4	73.0	79.8	83.5	82.3	80.4	78.7	76.6	78.5	72.6	63.7	63.2	62.3	59.5	55.5	53.0	52.9	55.7	60.7	70.9	79.3	87.9	88.0	70.8	88.0																							
18-May	87.1	86.3	87.0	89.9	89.1	82.1	75.6	66.4	60.3	55.7	50.0	45.7	41.8	37.5	34.7	32.7	31.8	31.6	32.2	35.2	43.3	49.6	54.6	57.7	56.6	89.9																							
19-May	57.2	60.2	62.6	64.5	67.4	67.4	64.5	60.7	54.9	46.8	41.7	38.6	36.8	36.3	33.0	32.7	34.5	41.3	46.9	52.8	61.9	68.6	74.9	78.5	53.5	78.5																							
20-May	76.3	77.6	82.6	83.4	81.6	78.4	75.7	72.7	66.2	60.7	57.1	51.4	46.0	46.0	44.0	41.5	40.8	43.5	45.7	54.5	55.5	58.9	62.0	63.7	61.1	83.4																							
21-May	64.5	61.6	63.1	65.9	68.0	69.5	71.5	71.6	68.3	63.2	58.7	53.2	49.7	46.3	45.0	45.5	44.8	44.3	48.3	57.8	62.1	63.5	65.9	69.9	59.3	71.6																							
22-May	70.4	68.9	79.9	86.6	86.0	82.4	81.0	81.3	80.6	80.4	74.3	68.0	63.0	57.7	57.9	58.8	73.8	64.7	67.7	86.9	85.2	84.1	81.0	78.9	75.0	86.9																							
23-May	75.8	71.7	77.5	90.4	96.4	97.0	96.8	96.1	96.1	94.6	94.8	96.0	97.5	98.1	97.6	93.4	91.4	90.1	86.8	86.8	87.9	89.7	90.3	90.9	91.0	98.1																							
24-May	94.1	97.6	98.7	98.4	96.6	95.0	93.4	88.9	87.2	79.9	71.2	62.6	52.2	44.7	45.4	48.5	47.8	47.0	49.7	57.3	69.4	78.6	87.1	91.9	74.3	98.7																							
25-May	95.2	96.4	91.7	93.2	90.0	90.7	92.2	89.5	80.0	74.9	71.9	64.6	59.3	63.7	62.1	59.5	56.6	53.3	53.7	61.8	76.8	85.4	85.5	87.6	76.5	96.4																							
26-May	91.2	93.2	95.1	97.0	97.1	93.6	83.8	72.0	65.0	55.4	50.5	46.4	40.9	38.4	38.8	36.9	36.1	34.4	36.3	42.0	49.1	56.0	58.7	61.0	61.2	97.1																							
27-May	63.9	65.0	65.4	64.9	64.5	63.7	57.7	50.1	41.8	37.0	33.2	31.8	31.3	31.5	30.9	33.2	34.2	31.5	34.6	45.2	50.4	58.3	66.5	72.7	48.3	72.7																							
28-May	74.7	78.9	82.3	85.2	86.3	80.9	72.8	64.3	53.0	45.3	40.6	37.2	31.1	31.0	32.1	26.8	26.3	26.8	30.4	33.0	35.2	39.6	42.9	45.8	50.1	86.3																							
29-May	48.5	61.6	67.7	66.6	71.3	69.7	62.0	49.9	40.1	31.7	29.8	28.2	28.4	28.9	29.1	47.8	69.6	58.1	61.6	60.4	69.2	78.9	88.6	87.1	55.6	88.6																							
30-May	95.3	99.0	98.3	93.5	94.2	63.8	46.9	35.7	29.0	25.2	25.3	23.9	24.2	25.9	24.9	28.1	28.1	31.6	35.1	51.2	74.7	89.0	87.3	86.9	54.9	99.0																							
31-May	95.0	97.6	98.0	98.9	97.9	91.7	77.7	73.0	66.7	59.9	52.5	49.4	50.0	55.5	54.1	41.0	40.0	37.2	41.1	46.9	58.6	85.5	93.7	95.8	69.1	98.9																							
																								62.8	64.6	66.6	69.1	70.9	68.7	64.5	59.8	54.7	49.6	45.3	42.4	40.4	39.3	38.1	37.7	37.7	37.7	40.2	45.9	52.3	56.9	59.9	62.7	Diurnal Average	
																								95.3	99.0	98.7	98.9	97.9	97.0	96.8	96.1	96.1	94.6	94.8	96.0	97.5	98.1	97.6	93.4	91.4	90.1	86.8	86.9	87.9	89.7	93.7	95.8	Diurnal Maximum	
DF - DAS Failure																																																	



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Kirby North - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %
Kirby North - May 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	15	2.02	2.02
20 - 40	231	31.09	33.11
40 - 60	243	32.71	65.81
60 - 80	141	18.98	84.79
80 - 100	113	15.21	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Speed (WS) - km/h
Kirby North - May 2023

Maximum Speed: 29 km/h on May 23 04:00	Maximum Daily Speed Average: 18.2 km/h on May 23	Hours in Service: 744
Minimum Speed Value: 0 km/h on May 2 21:00	Minimum Daily Speed Average: 1.2 km/h on May 10	Hours of Data: 743
Maximum Diurnal Speed Average: 6.1 km/h at hour 1	Minimum Diurnal Speed Average: 2.9 km/h at hour 18	Hours of Missing Data: 1
Monthly Average Velocity: 4.4 km/h 157.5 deg	Percentiles: P ₁ = 2 P ₁₀ = 5 Q ₁ = 8 Median = 11 Q ₃ = 15 P ₉₀ = 19 P ₉₉ = 26	Percent Operational Time: 99.9

Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-May	SSE15	S15	S16	S16	SSE17	S18	SSE20	SSE21	S19	S18	S16	S19	S20	S20	SSW20	SSW21	SSW20	SSW17	S15	SSE11	S12	S13	S13	S13	\$16.4	SSW21
2-May	S12	SW10	W7	NNW4	NNE9	NW5	NW10	NNE1	NW3	NW9	NW9	WNW8	NNW11	NNW9	NNW10	NW8	NNW7	NW8	NW7	NNW4	NNE0	ESE3	S5	S5	NW4.2	S12
3-May	SSE9	S9	S8	S9	S10	S10	S10	S12	S14	S20	S18	SSE17	S16	S16	S16	S16	S16	S16	SSE12	SSE9	SE11	SSE13	SSE16	SSE14	S13.1	S20
4-May	S14	S14	S13	S12	S11	S13	S12	S14	S12	SSE14	SSE12	SE14	SSE15	SE15	SE14	SE12	SE12	SE12	SE12	SE11	SE12	SE13	SE13	SSE14	SSE12.3	SSE15
5-May	SSE13	SSE14	S12	SSE14	SSE14	SSE15	SSE18	SSE16	SSE16	SE15	SE18	SE20	ESE21	SE17	ESE19	E21	ESE21	ESE20	ESE20	ESE18	ESE17	ESE16	ESE19	SE16	SE15.8	ESE21
6-May	SE13	SE13	SE13	SE14	ESE15	SE15	SE14	SE15	SSE16	ESE18	ESE19	ESE17	ESE18	ESE17	E18	E18	ESE18	ESE19	ESE19	ESE15	ESE10	ESE10	ESE11	ESE12	ESE15.0	ESE19
7-May	ESE13	SE14	SE14	SE13	SE12	SE14	ESE13	SE14	SE15	SE16	SE19	SSE22	SE18	ESE16	ESE20	SE17	SE14	SSE7	ESE6	ESE10	SE13	SE12	SE13	SE13	SE13.9	SSE22
8-May	SE13	SE13	SE13	SE11	SE12	SE12	SSE13	SSE13	SSE11	SSE14	SSE13	SSE14	SSE14	SE17	SSE13	SE14	SSE13	SSE15	SE11	SE8	SE9	SSE7	SSW5	S3	SSE11.5	SE17
9-May	SE5	SE5	SE5	SE8	SSE8	SSE7	S5	S5	SW7	SW7	SW7	NNW7	WNW3	NE4	S2	N11	NNE5	SSE4	SSW6	SSW6	SSW4	WSW5	WSW5	S3	S2.5	N11
10-May	E2	NNE5	NNE5	N5	N5	SSW2	W2	NW6	NNW6	N6	S2	N5	S6	NW5	NNW5	SW10	SW10	NNW3	N3	S2	S4	S4	SSW2	SE1	NW1.2	SW10
11-May	SSE2	E1	NE1	N3	NNE3	ENE3	NE5	ENE6	NE6	NE7	NE9	ENE9	ENE9	ESE10	SSE12	S16	SSE12	SE8	ESE7	SE5	ESE9	ESE11	SE11	SE9	ESE5.0	S16
12-May	SSE6	SE7	SE6	SE9	SE10	SE8	SSE7	SSE6	SSE7	SSE6	SSE5	SSE7	S7	SW7	S8	S6	SSW6	S9	SSW11	SSW7	S5	SSE6	SSE7	SSE8	SSE6.4	SSW11
13-May	S6	S7	S8	S9	SSE9	S8	S9	SSW9	SSW12	SW18	SW21	SW21	SW21	SW21	SW20	SW21	SW19	SW16	SW12	SSW7	S7	S8	S8	S9	SSW11.8	SW21
14-May	SSW9	SSW12	SSW11	SSW10	SSW11	SSW11	SSW14	SSW17	SW19	SW19	SW21	SW21	SW19	SW18	SW19	SW18	SW16	SW13	SW10	SW7	SSW6	S7	S7	S8	SW13.1	SW21
15-May	SSW8	SSW9	S10	SSW10	SSW10	SSW10	SSW9	SSW11	SW12	SW15	SW16	SW15	SW17	SW17	DF	SW17	SW16	SW15	SSW14	SSW8	SSE6	SSE8	SSE9	SSE10	SSW11.1	SW17
16-May	S10	S9	SW9	WNW10	NNW16	NNW16	NNW15	NNW20	NNW22	NNW24	NNW24	NW23	NNW24	NNW23	NNW22	NNW23	NNW20	NNW19	NW18	NW16	NW10	NW13	NNW12	N8	NNW14.8	NNW24
17-May	N10	NNW9	NW11	NNW7	NW7	NW10	NNW13	NNW14	NNW13	NNE14	N18	N17	N15	N15	NNE17	NE18	NE17	NE18	NE15	ENE11	E6	ESE4	SE3	E6	NNE9.7	NE18
18-May	ESE7	ESE8	SE7	SSE7	SSE7	S7	S8	SSW10	SW9	WSW9	WSW7	WSW11	WSW13	SW10	WSW12	WSW14	WSW13	WSW14	SW13	SSW10	SSW9	S8	S8	S8	SSW7.6	WSW14
19-May	S9	S9	S9	S11	S10	S11	S12	SSW14	SSW14	SSW19	SW18	SSW16	SW17	SW16	SW16	WSW16	W14	NNW12	N8	N11	NNE8	N8	N8	NNE6	SW6.6	SSW19
20-May	NE7	NE9	NE11	NE13	NE12	NE13	NE13	NE14	ENE13	ENE12	ENE12	ENE13	E13	ESE12	E11	ESE11	ESE10	ESE9	ESE9	E7	SE11	SE10	SE11	SE13	E9.3	NE14
21-May	SSE13	SSE15	SSE13	S10	S9	S11	SSE11	SSE11	S11	S7	SSW7	SSE8	SSE8	SSE8	SSW8	SSW7	S5	S3	SSE4	SE4	SSE6	SSE8	SSE7	SSE6	SSE8.1	SSE15
22-May	SSE8	SSE5	E1	NE4	NE5	NE8	NE11	NE15	NE20	NE15	NE18	NE24	NE27	NE28	NE28	ENE24	NE23	ENE27	ENE27	ENE23	ENE24	ENE27	ENE26	ENE24	ENE17.3	NE28
23-May	ENE23	E26	E28	ENE29	ENE26	E24	E25	E26	E22	ESE19	ESE19	ESE18	ESE17	ESE15	E16	ESE15	ESE16	ESE18	ESE17	ESE15	ESE11	ESE11	ESE8	SE7	E18.2	ENE29
24-May	ESE4	E5	ESE4	ESE6	SE9	SSE10	ESE11	S10	SSW10	SSW9	SW10	SW12	SW14	WSW18	WSW18	W14	WNW16	WNW15	WNW15	NW14	NW12	NNW10	NNW9	NNW6	WSW4.9	WSW19
25-May	NNE4	N8	NNW4	NW1	WNW4	W6	NW8	N8	N10	NNE9	NE9	NE10	NE10	WSW10	NE9	NNE10	ENE10	ENE8	E6	ESE5	SE6	SSE8	SSE8	SSE8	NE4.5	ENE10
26-May	SSE8	S8	S7	S7	S7	S8	SSW7	SSW8	SSW10	SW8	SW9	SW10	SW10	WSW11	SW9	SW9	WSW12	WSW10	SW9	SSW6	SSW5	SSE6	SSE7	SSE7	SSW7.3	WSW12
27-May	SSE9	SSE10	SSE10	SSE10	S9	S8	S9	S11	S15	SSE15	S15	SSE14	SSE14	SSE12	S13	SSW13	S11	SW14	SSW10	SSE13	SSE13	S10	S10	SSE11	S11.2	SSE15
28-May	S11	S11	S11	S12	S13	S12	SSW13	SSW13	SSW11	SW12	SW12	SW14	SW16	WSW15	WSW16	SW14	SW12	WNW17	WNW13	W9	WNW13	NW10	WNW9	WNW7	SW9.1	WNW17
29-May	W8	SSE3	S7	S9	S8	S8	SSW8	SW9	SW11	WSW16	WSW14	W14	WSW17	WSW14	SW12	W21	WSW8	SSW9	SSW13	S9	SSW8	SSW8	S5	WSW5	SW8.7	W21
30-May	S5	S5	SW6	SSW2	N2	NNE6	NE9	ENE8	E5	ENE9	ESE10	ESE10	ESE12	ESE12	ESE13	SE15	ESE12	E11	ENE10	W10	S6	SSW7	ESE13	NNW3	ESE5.0	SE15
31-May	N3	ENE3	NNE3	S1	SSE2	NE4	NNE3	NE8	ENE13	NE15	NE15	ENE11	WNW5	SW8	NE12	ENE13	ENE10	NE13	NE13	NNE12	NNW9	WNW11	NW17	NW16	NNE6.0	NW17

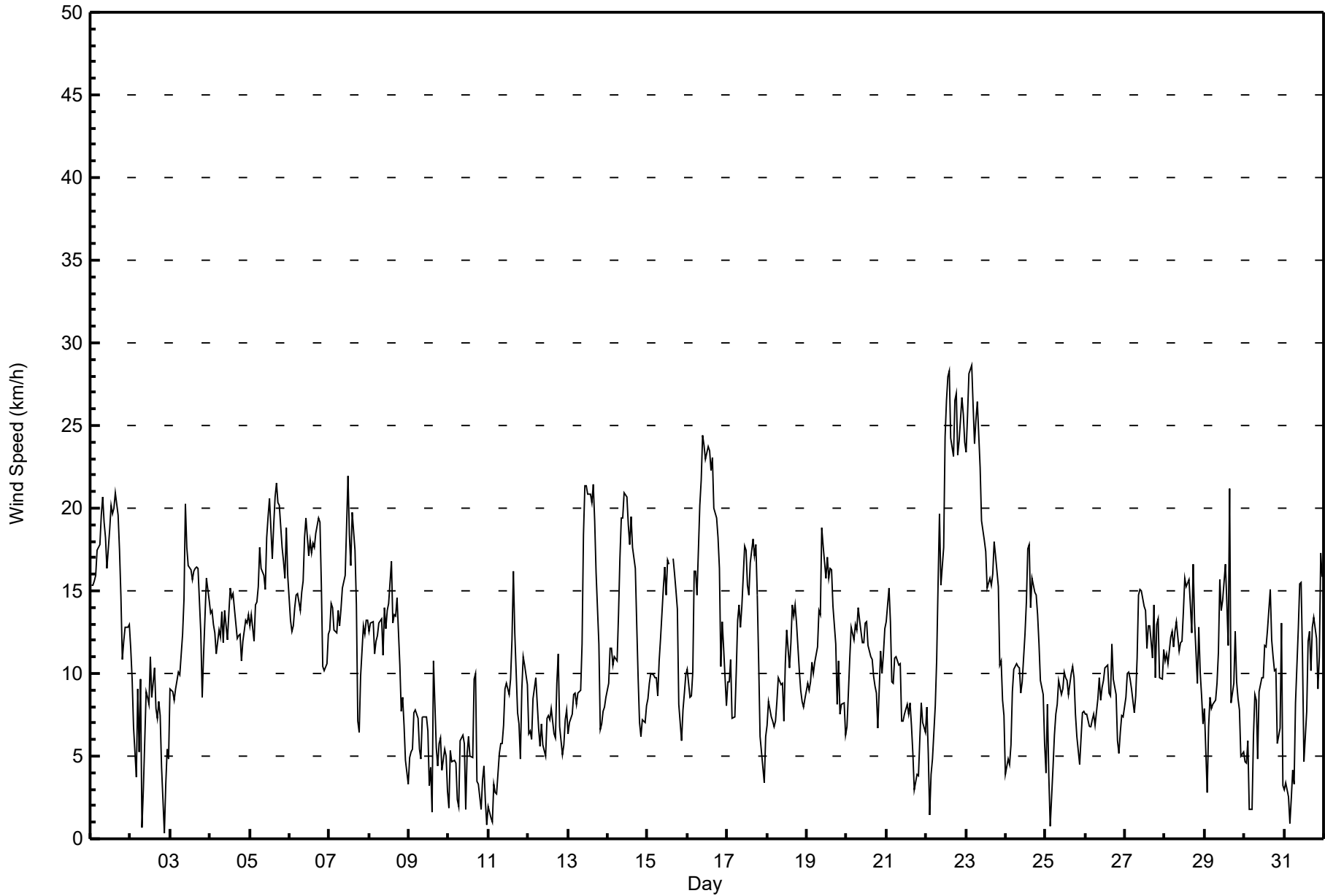
SSE6.1 SSE6.0 SSE5.4 SSE5.2 SSE5.0 SSE5.3 SSE4.7 SSE4.7	\$4.7 \$4.4 \$4.4 SSE4.1 \$4.7 \$3.9 SSE3.9 \$4.1 \$3.7 SSE2.9 SE3.3 SE3.2 SE4.2 SE4.6 SE4.8 SSE4.8	Diurnal Average
ENE23 E26 E28 ENE29 ENE26 E24 E25 E26	E22 NNW24 NNW24 NE24 NE27 NE28 NE28 ENE24 NE23 ENE27 ENE27 ENE23 ENE24 ENE27 ENE26 ENE24	Diurnal Maximum

DF - DAS Failure
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Kirby North - May 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Kirby North - May 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	89	11.98	11.98
6 - 11	311	41.86	53.84
12 - 19	285	38.36	92.19
20 - 28	57	7.67	99.87
29 - 38	1	0.13	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 743

Total Number of Hours: 744



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Kirby North - May 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	7	9	5	3	5	5	7	7	17	7	0	3	1	3	4	6	89
6 - 11	9	7	15	12	6	21	22	49	62	42	24	6	5	5	13	13	311
12 - 19	4	3	17	6	3	36	43	43	40	14	36	15	3	6	7	9	285
20 - 28	0	0	6	10	7	5	1	3	3	3	8	0	1	0	1	9	57
29 - 38	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	20	19	43	32	21	67	73	102	122	66	68	24	10	14	25	37	743

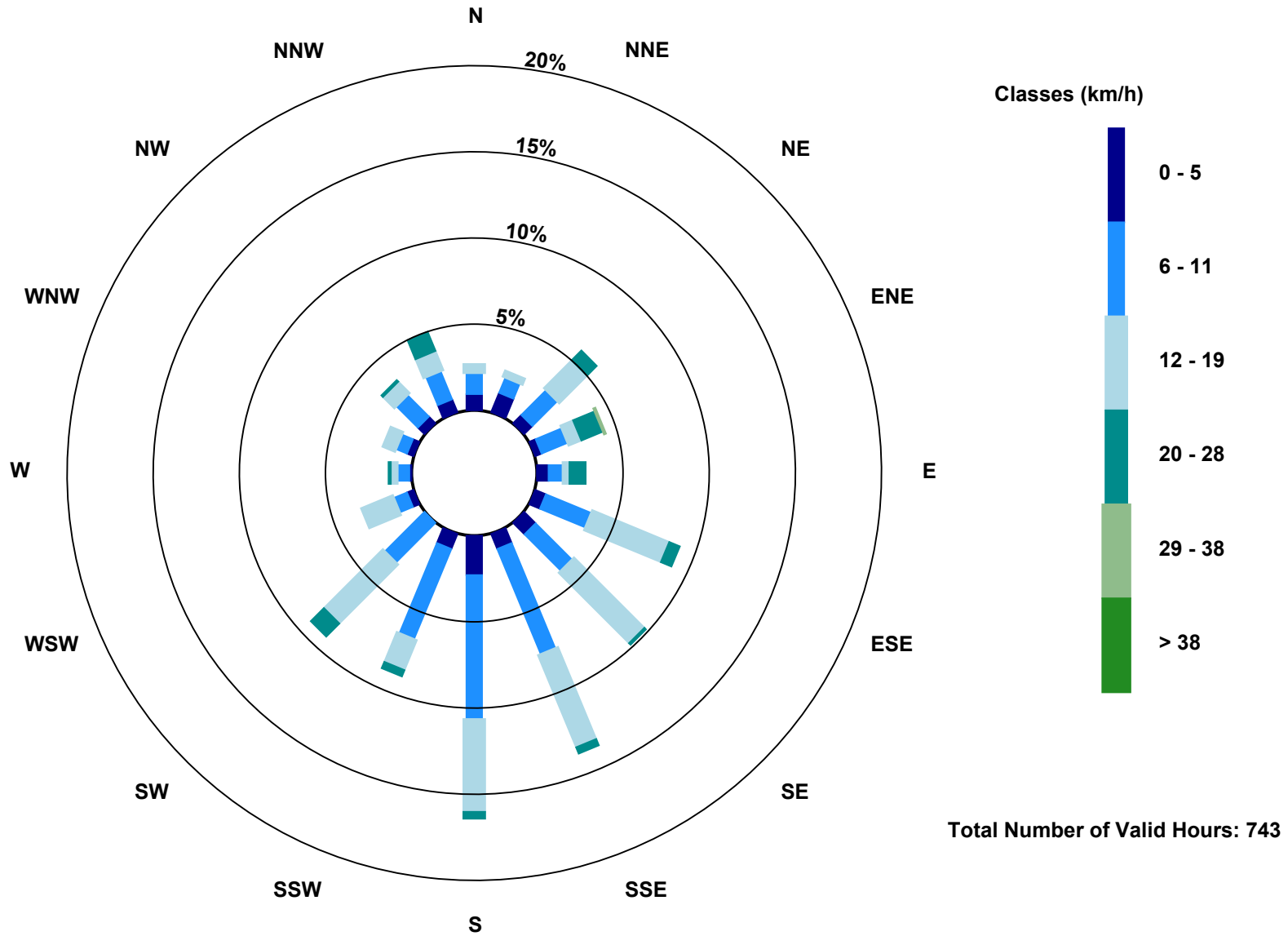
Total Number of Valid Hours: 743

Total Number of Hours: 744



Wood Buffalo Environmental Association
Wind Rose May 2023

Wind Speed (WS) - km/h
Kirby North





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Kirby North - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0														Hours in Service: 744													
Maximum Value: 11 km/h on May 30 23:00														Hours of Data: 743													
Minimum Value: 0 km/h on May 10 03:00														Hours of Missing Data: 1													
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7														Hours of Calibration: 0													
														Percent Operational Time: 99.9													
Day	Hourly Period Ending At (MST)																								Daily Maximum		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-May	3	4	4	4	4	4	5	5	6	5	5	6	6	6	7	6	7	6	4	3	3	3	3	4	7		
2-May	3	2	2	3	2	2	3	3	3	3	2	3	4	4	4	4	4	3	2	1	1	2	3	1	4		
3-May	2	2	1	1	2	2	2	4	5	5	6	5	5	5	5	5	5	5	4	2	2	3	4	3	6		
4-May	3	4	3	3	3	3	3	4	4	4	4	4	4	5	5	4	4	4	4	3	3	3	3	3	5		
5-May	3	3	3	3	3	3	4	4	4	4	5	6	6	6	5	6	5	6	5	5	4	4	5	4	6		
6-May	3	3	3	3	3	3	3	4	4	5	6	5	5	5	5	5	6	5	5	4	2	2	2	3	6		
7-May	2	3	3	3	3	3	3	4	4	5	6	7	5	5	5	5	4	3	2	3	3	3	3	3	7		
8-May	3	3	3	3	3	3	3	4	3	4	3	4	4	5	4	4	4	4	3	2	2	1	1	1	5		
9-May	1	1	2	2	2	1	1	2	2	2	2	2	3	3	3	5	2	2	2	2	2	2	2	2	5		
10-May	1	2	0	1	1	1	2	2	2	3	3	2	2	4	3	2	2	2	1	1	1	2	2	1	4		
11-May	1	1	1	1	1	2	1	1	2	2	3	4	3	3	5	5	4	2	3	1	2	2	2	2	5		
12-May	1	1	1	2	2	2	1	2	2	3	3	4	4	4	4	3	3	3	3	2	1	1	1	1	4		
13-May	1	1	1	1	1	1	2	3	3	5	5	5	5	5	6	5	5	4	3	2	1	2	2	2	6		
14-May	2	3	3	3	3	3	4	4	5	5	5	5	4	4	4	4	4	3	2	1	1	1	1	1	5		
15-May	2	2	2	2	2	2	2	3	3	4	4	4	5	5	DF	5	4	4	4	3	1	2	2	2	5		
16-May	2	2	3	3	5	5	4	6	5	6	6	6	7	6	6	6	6	5	6	4	3	3	3	2	7		
17-May	2	2	3	2	3	2	4	3	3	4	4	5	4	4	4	4	5	4	4	3	1	1	1	2	5		
18-May	1	1	1	1	1	1	2	3	3	4	3	4	4	4	4	4	4	3	3	3	3	2	2	2	4		
19-May	2	2	2	3	2	3	3	4	4	6	5	5	4	4	4	4	4	3	3	3	1	1	1	1	6		
20-May	1	1	1	1	2	2	2	3	3	3	3	3	4	3	3	3	3	2	2	1	3	2	3	3	4		
21-May	3	4	3	2	2	2	2	3	3	2	3	2	3	3	2	2	2	2	1	1	2	2	2	1	4		
22-May	1	1	1	2	1	2	2	3	4	3	4	5	6	6	6	6	5	6	7	6	6	6	6	5	7		
23-May	7	6	7	7	6	6	7	7	6	6	5	5	5	4	4	5	5	6	5	5	3	3	2	2	7		
24-May	1	1	2	1	2	2	3	3	3	3	3	6	5	6	3	4	4	4	4	3	2	2	2	2	6		
25-May	2	2	2	2	2	2	2	3	3	2	3	3	4	3	2	3	3	3	2	1	1	1	1	1	4		
26-May	1	1	1	1	1	1	2	2	3	3	3	4	3	4	3	3	4	3	2	1	1	1	1	2	4		
27-May	2	2	2	2	2	2	3	4	4	4	5	5	5	4	4	4	4	4	3	4	4	2	2	3	5		
28-May	3	3	2	3	3	3	4	3	3	3	3	4	4	4	4	4	4	5	5	3	3	3	3	2	5		
29-May	2	1	1	1	1	2	2	3	4	5	4	4	4	4	4	9	5	3	4	3	2	1	2	2	9		
30-May	2	1	2	1	1	1	3	3	3	3	3	4	4	4	5	4	4	3	3	7	3	3	11	2	11		
31-May	2	1	1	2	2	1	2	2	3	4	4	4	3	3	4	3	3	3	3	2	3	8	4	4	8		
														Diurnal Maximum													
														7 6 7 7 6 6 7 7 6 6 6 7 7 6 7 9 7 6 7 7 6 8 11 5													
DF - DAS Failure																											



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Kirby North - May 2023

Direction of Maximum Speed: 77 deg on May 23 04:00	Hours in Service: 744
Direction of Maximum Daily Speed Average: 96.9 deg on May 23	Hours of Data: 743
Direction of Minimum Speed: 14 deg on May 2 21:00	Hours of Missing Data: 1
Direction of Minimum Daily Speed Average: 1.2 deg on May 10	Percent Operational Time: 99.9
Monthly Average Direction: 157.5 deg	

Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	168	174	176	172	168	171	167	168	170	171	171	181	184	184	196	209	208	196	184	168	172	175	179	189	179.8
2-May	188	224	270	347	14	308	316	28	317	325	307	301	329	345	328	318	329	321	317	347	14	110	187	176	311.5
3-May	167	169	170	169	172	170	175	184	185	170	173	163	177	177	179	174	179	174	168	154	141	147	153	158	169.3
4-May	169	172	177	175	191	173	186	184	180	166	161	146	167	161	139	131	139	140	150	129	130	134	140	148	157.8
5-May	154	162	173	163	161	158	160	151	148	144	132	125	114	125	109	95	104	116	110	111	113	117	119	129	129.9
6-May	126	126	131	130	121	125	127	127	148	123	117	113	109	106	101	96	111	108	109	112	110	108	108	119	116.5
7-May	118	124	130	128	126	124	122	137	140	141	136	157	136	122	121	130	135	157	117	119	128	129	139	141	132.2
8-May	146	144	138	146	139	140	153	158	154	160	155	156	148	137	151	142	151	153	146	145	142	151	200	179	149.1
9-May	145	141	144	143	151	156	169	177	222	226	234	345	286	48	185	9	23	162	209	197	196	237	239	185	185.4
10-May	94	25	24	353	352	213	274	323	337	10	185	359	179	306	327	229	220	341	359	182	174	182	192	129	304.3
11-May	150	94	49	6	27	67	48	62	50	44	37	61	59	106	153	175	165	141	123	138	111	123	127	141	110.2
12-May	149	145	144	132	137	138	158	151	161	162	156	168	183	235	183	173	201	175	211	198	177	167	158	166	167.7
13-May	174	174	175	170	168	170	178	197	212	220	225	232	231	228	222	231	232	223	216	196	180	183	190	189	210.9
14-May	194	201	200	199	196	198	201	210	221	219	224	226	228	227	229	228	229	220	217	214	194	191	191	191	214.6
15-May	195	194	190	194	193	193	195	211	219	230	223	217	223	222	DF	225	225	220	212	199	163	167	167	167	207.5
16-May	171	179	229	301	338	340	338	340	333	339	343	325	328	339	347	335	336	328	325	323	319	313	330	351	330.7
17-May	354	338	325	335	308	321	338	340	345	22	9	6	8	3	22	36	34	42	49	73	97	122	142	83	12.6
18-May	109	122	131	159	159	175	182	208	230	258	245	246	245	233	238	240	238	239	221	208	197	181	177	182	211.3
19-May	182	183	184	181	182	182	187	194	199	213	220	212	228	231	236	257	278	334	349	357	13	7	7	28	224.2
20-May	43	40	43	42	46	49	46	46	65	76	75	75	89	106	92	109	114	110	111	91	126	135	138	144	82.5
21-May	154	162	164	172	174	170	166	167	176	176	192	148	158	165	203	198	190	181	157	135	168	164	163	160	168.7
22-May	156	159	82	44	41	50	39	39	43	40	36	39	44	45	49	57	55	62	73	70	61	67	72	69	56.4
23-May	77	80	80	77	76	85	91	94	96	105	111	109	108	105	98	104	106	109	114	122	121	119	116	130	96.9
24-May	104	94	108	115	142	150	165	174	204	199	217	215	234	256	255	262	298	298	298	319	322	333	340	348	253.2
25-May	33	355	345	313	292	272	306	351	11	25	48	40	41	32	39	49	59	77	75	85	121	134	151	156	42.3
26-May	158	172	182	182	184	183	195	209	207	225	226	227	217	246	232	216	238	249	227	212	200	168	164	168	207.3
27-May	165	165	162	163	173	172	176	185	173	166	177	168	167	167	185	198	188	222	193	159	161	170	172	166	174.8
28-May	171	173	178	177	180	176	200	201	203	218	225	217	223	251	237	219	224	291	288	276	291	305	303	284	226.9
29-May	274	166	182	188	185	191	200	221	229	252	252	279	255	245	220	264	253	210	194	191	201	198	184	248	228.4
30-May	191	177	217	212	8	22	36	64	88	66	116	111	114	110	115	131	111	91	63	276	190	196	102	339	107.2
31-May	3	71	20	177	160	56	28	53	60	56	53	63	284	230	38	58	69	38	36	29	340	297	322	317	27.5

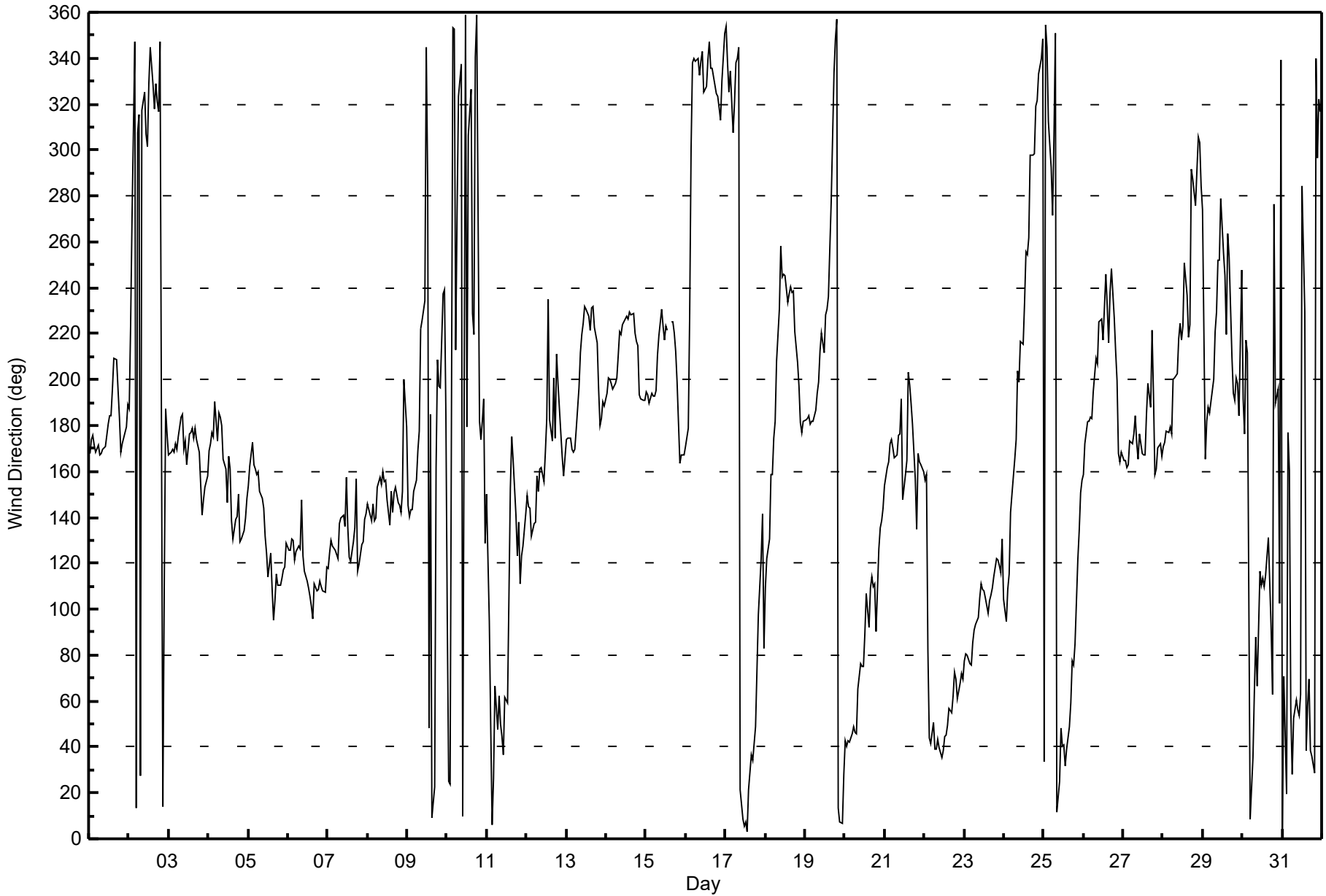
150.6 150.7 156.0 150.8 149.3 151.1 157.1 159.3 169.7 169.3 170.8 166.5 178.8 180.2 163.6 178.1 173.0 158.5 145.7 134.6 139.3 145.0 142.1 148.9
 Diurnal Average

DF - DAS Failure
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Direction (WD) - deg
Kirby North - May 2023





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Kirby North - May 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 744
Maximum Value: 107 deg on May 9 15:00	Hours of Data: 743
Minimum Value: 6 deg on May 20 02:00	Hours of Missing Data: 1
Percentiles: P ₁ = 8 P ₁₀ = 13 Q ₁ = 15 Median = 19 Q ₃ = 25 P ₉₀ = 39 P ₉₉ = 81	Hours of Calibration: 0
	Percent Operational Time: 99.9

Day	Hourly Period Ending At (MST)																								Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-May	16	17	17	16	16	17	17	17	20	23	24	25	24	24	24	21	21	23	21	17	17	17	18	21	25
2-May	20	21	36	55	11	23	22	98	92	21	22	33	40	48	42	62	52	38	26	13	39	12	31	40	98
3-May	11	10	10	11	14	15	18	21	24	22	25	24	27	26	26	24	26	23	18	16	13	15	17	16	27
4-May	17	18	18	19	25	19	19	21	24	23	28	27	27	25	28	27	31	20	19	14	13	13	13	16	31
5-May	16	15	17	15	14	15	16	16	18	23	24	23	24	29	25	20	20	20	16	15	14	14	14	15	29
6-May	14	13	15	14	13	14	15	18	21	22	22	28	26	25	24	25	19	19	17	15	10	11	10	12	28
7-May	13	14	14	13	12	14	15	19	21	23	19	20	18	19	19	18	18	22	15	13	15	14	14	14	23
8-May	15	15	14	15	16	15	18	17	20	20	22	28	24	19	25	20	23	19	17	14	14	14	34	36	36
9-May	9	13	14	14	15	12	18	42	29	27	34	37	92	69	107	59	40	55	26	20	68	42	41	44	107
10-May	55	21	10	26	14	71	80	26	45	58	81	61	30	67	71	19	17	52	33	64	33	24	55	86	86
11-May	51	66	80	32	30	46	15	21	20	26	30	37	26	28	35	21	21	24	20	31	8	14	13	16	80
12-May	16	10	14	10	13	16	15	24	29	57	72	57	56	67	58	52	41	33	20	19	10	10	8	9	72
13-May	11	11	11	11	11	13	19	23	21	18	18	17	18	17	20	17	16	18	17	17	14	17	17	17	23
14-May	15	18	18	18	17	19	19	17	16	17	16	18	17	19	16	17	15	15	16	12	14	12	11	13	19
15-May	13	14	14	13	13	13	17	18	16	18	23	23	23	23	DF	23	20	19	18	20	13	13	15	15	23
16-May	15	16	38	30	18	17	18	20	18	20	22	22	23	21	24	22	21	19	17	17	15	17	16	17	38
17-May	16	18	17	19	18	17	19	18	20	15	18	21	22	24	18	20	22	20	17	14	14	13	20	19	24
18-May	13	8	10	11	10	15	19	26	31	33	66	33	26	38	30	22	20	19	18	18	20	16	15	17	66
19-May	19	19	18	18	18	19	20	21	22	18	18	22	19	16	22	18	26	23	24	16	10	9	11	11	26
20-May	8	6	7	7	9	9	11	12	18	18	18	18	21	22	22	25	18	16	14	17	15	15	16	16	25
21-May	16	17	16	16	18	17	17	18	21	31	35	32	36	36	26	30	42	59	34	28	15	16	15	12	59
22-May	13	25	81	49	19	10	11	10	11	12	13	13	13	14	13	14	12	15	13	13	14	13	13	13	81
23-May	16	14	15	13	14	17	16	16	18	20	18	19	18	18	19	23	20	17	17	19	20	17	16	18	23
24-May	32	20	33	23	16	17	18	21	22	29	30	22	29	19	16	25	24	22	20	16	15	17	15	25	33
25-May	39	16	58	66	22	28	19	22	19	21	23	23	38	18	21	23	21	22	24	18	15	10	10	8	66
26-May	11	15	10	10	9	15	21	19	25	31	31	32	34	39	44	35	26	25	22	14	14	14	8	12	44
27-May	11	14	13	12	14	16	21	23	24	25	28	32	33	37	27	28	35	22	28	20	19	16	15	14	37
28-May	17	17	16	15	17	17	19	21	26	21	22	21	24	31	20	20	20	28	18	25	19	16	16	28	31
29-May	22	63	10	14	11	17	20	20	27	21	28	30	20	26	31	25	58	23	22	19	15	16	56	29	63
30-May	27	24	31	68	75	17	14	38	75	32	44	33	30	22	37	23	30	21	15	60	61	47	83	59	83
31-May	48	30	52	80	62	17	27	20	21	19	18	26	51	28	23	22	24	19	12	10	44	48	23	25	80
	55	66	81	80	75	71	80	98	92	58	81	61	92	69	107	62	58	59	34	64	68	48	83	86	

Diurnal Maximum

DF - DAS Failure



Appendix 1 - Summary of Ambient Air Quality Objectives (AAAQOs) and Ambient Air Quality Guidelines (AAAQGs) in May 2023

<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Lower Camp	H2S	1May23, 19:00	412315	1-hr	13	13.0	exc
Lower Camp	H2S	1May23, 20:00	412315	1-hr	24	24.0	exc
Lower Camp	SO2	1May23, 20:00	412315	1-hr	238	237.7	exc
Lower Camp	H2S	1May23, 21:00	412315	1-hr	19	18.8	exc
Lower Camp	SO2	1May23, 21:00	412315	1-hr	217	216.7	exc
Lower Camp	H2S	1May23, 24:00	412315	24-hr	4	3.7	exc
Surmont 2	PM2.5	3May23, 06:00	412695	1-hr	166	166.3	exc
Athabasca Valley	PM2.5	4May23, 19:00	412696	1-hr	82	81.7	exc
Anzac	PM2.5	4May23, 20:00	412697	1-hr	113	112.5	exc
Surmont 2	PM2.5	4May23, 20:00	412695	1-hr	96	96.2	exc
Anzac	PM2.5	4May23, 21:00	412697	1-hr	143	143.0	exc
Anzac	PM2.5	4May23, 22:00	412697	1-hr	142	141.9	exc
Anzac	PM2.5	4May23, 23:00	412697	1-hr	114	113.8	exc
Ft. McKay S	PM2.5	4May23, 24:00	412698	24-hr	32	32.5	exc
Anzac	PM2.5	4May23, 24:00	412697	24-hr	39	38.9	exc
Fort Hills	PM2.5	4May23, 24:00	412518	24-hr	31	30.6	exc
Bertha Ganter	PM2.5	4May23, 24:00	412700	24-hr	31	30.7	exc
Patricia McInnes	PM2.5	4May23, 24:00	412701	24-hr	29	29.0	nae
Athabasca Valley	PM2.5	4May23, 24:00	412696	24-hr	39	39.2	exc
Buffalo Viewpoint	PM2.5	5May23, 01:00	412702	1-hr	82	81.6	exc
Athabasca Valley	PM2.5	5May23, 01:00	412696	1-hr	90	90.0	exc
Buffalo Viewpoint	PM2.5	5May23, 02:00	412702	1-hr	134	133.7	exc
Athabasca Valley	PM2.5	5May23, 02:00	412696	1-hr	120	120.0	exc
Wapasu	PM2.5	5May23, 02:00	412704	1-hr	104	104.1	exc
Buffalo Viewpoint	PM2.5	5May23, 03:00	412702	1-hr	113	113.3	exc
Athabasca Valley	PM2.5	5May23, 03:00	412696	1-hr	90	89.6	exc
Wapasu	PM2.5	5May23, 03:00	412704	1-hr	80	80.1	exc
Buffalo Viewpoint	PM2.5	5May23, 04:00	412702	1-hr	80	80.4	exc
Athabasca Valley	PM2.5	5May23, 15:00	412696	1-hr	97	97.0	exc
Anzac	PM2.5	5May23, 15:00	412697	1-hr	97	96.6	exc
Janvier	PM2.5	5May23, 15:00	412705	1-hr	100	99.9	exc
Surmont 2	PM2.5	5May23, 15:00	412695	1-hr	214	214.0	exc
Janvier	PM2.5	5May23, 16:00	412705	1-hr	386	386.4	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Surmont 2	PM2.5	5May23, 16:00	412695	1-hr	129	129.1	exc
Janvier	PM2.5	5May23, 17:00	412705	1-hr	458	458.1	exc
Surmont 2	PM2.5	5May23, 17:00	412695	1-hr	290	290.1	exc
Janvier	PM2.5	5May23, 18:00	412705	1-hr	478	477.7	exc
Surmont 2	PM2.5	5May23, 18:00	412695	1-hr	578	578.3	exc
Janvier	PM2.5	5May23, 19:00	412705	1-hr	166	166.4	exc
Surmont 2	PM2.5	5May23, 19:00	412695	1-hr	503	503.4	exc
Surmont 2	PM2.5	5May23, 20:00	412695	1-hr	316	315.6	exc
Janvier	PM2.5	5May23, 21:00	412705	1-hr	267	266.8	exc
Surmont 2	PM2.5	5May23, 21:00	412695	1-hr	218	217.7	exc
Surmont 2	PM2.5	5May23, 23:00	412695	1-hr	171	171.2	exc
Buffalo Viewpoint	PM2.5	5May23, 24:00	412702	24-hr	36	36.2	exc
Athabasca Valley	PM2.5	5May23, 24:00	412696	24-hr	34	33.8	exc
Janvier	PM2.5	5May23, 24:00	412705	24-hr	88	87.5	exc
Surmont 2	PM2.5	5May23, 24:00	412695	1-hr	106	105.8	exc
Surmont 2	PM2.5	5May23, 24:00	412695	24-hr	113	113.1	exc
Wapasu	PM2.5	6May23, 03:00	412704	1-hr	109	108.7	exc
Bertha Ganter	PM2.5	6May23, 04:00	412700	1-hr	94	93.7	exc
Athabasca Valley	PM2.5	6May23, 04:00	412696	1-hr	119	119.5	exc
Ft. McKay S	PM2.5	6May23, 04:00	412698	1-hr	93	93.4	exc
Wapasu	PM2.5	6May23, 04:00	412704	1-hr	116	115.6	exc
Fort Hills	PM2.5	6May23, 04:00	412699	1-hr	92	92.2	exc
Bertha Ganter	PM2.5	6May23, 05:00	412700	1-hr	92	91.9	exc
Athabasca Valley	PM2.5	6May23, 05:00	412696	1-hr	147	147.1	exc
Ft. McKay S	PM2.5	6May23, 05:00	412698	1-hr	101	101.3	exc
Bertha Ganter	PM2.5	6May23, 06:00	412700	1-hr	84	84.4	exc
Buffalo Viewpoint	PM2.5	6May23, 06:00	412702	1-hr	99	98.6	exc
Patricia McInnes	PM2.5	6May23, 06:00	412701	1-hr	116	115.7	exc
Athabasca Valley	PM2.5	6May23, 06:00	412696	1-hr	169	168.8	exc
Ft. McKay S	PM2.5	6May23, 06:00	412698	1-hr	105	104.6	exc
Bertha Ganter	PM2.5	6May23, 07:00	412700	1-hr	91	91.0	exc
Buffalo Viewpoint	PM2.5	6May23, 07:00	412702	1-hr	173	172.8	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Patricia McInnes	PM2.5	6May23, 07:00	412701	1-hr	162	162.3	exc
Athabasca Valley	PM2.5	6May23, 07:00	412696	1-hr	178	178.4	exc
Ft. McKay S	PM2.5	6May23, 07:00	412698	1-hr	130	129.6	exc
Anzac	PM2.5	6May23, 07:00	412697	1-hr	119	118.7	exc
Ells River	PM2.5	6May23, 07:00	412706	1-hr	85	85.3	exc
Buffalo Viewpoint	PM2.5	6May23, 08:00	412702	1-hr	116	115.9	exc
Patricia McInnes	PM2.5	6May23, 08:00	412701	1-hr	133	133.5	exc
Athabasca Valley	PM2.5	6May23, 08:00	412696	1-hr	151	150.8	exc
Ft. McKay S	PM2.5	6May23, 08:00	412698	1-hr	91	91.4	exc
Anzac	PM2.5	6May23, 08:00	412697	1-hr	117	117.3	exc
Patricia McInnes	PM2.5	6May23, 09:00	412701	1-hr	106	106.3	exc
Athabasca Valley	PM2.5	6May23, 09:00	412696	1-hr	102	102.2	exc
Anzac	PM2.5	6May23, 09:00	412697	1-hr	101	100.8	exc
Anzac	PM2.5	6May23, 10:00	412697	1-hr	88	87.5	exc
Surmont 2	PM2.5	6May23, 15:00	412695	1-hr	83	82.7	exc
Janvier	PM2.5	6May23, 16:00	412705	1-hr	137	137.4	exc
Surmont 2	PM2.5	6May23, 16:00	412695	1-hr	98	97.8	exc
Janvier	PM2.5	6May23, 17:00	412705	1-hr	357	356.8	exc
Surmont 2	PM2.5	6May23, 17:00	412695	1-hr	127	127.1	exc
Janvier	PM2.5	6May23, 18:00	412705	1-hr	252	251.6	exc
Surmont 2	PM2.5	6May23, 18:00	412695	1-hr	156	155.5	exc
Surmont 2	PM2.5	6May23, 19:00	412695	1-hr	281	281.2	exc
Anzac	PM2.5	6May23, 20:00	412697	1-hr	169	168.5	exc
Surmont 2	PM2.5	6May23, 20:00	412695	1-hr	317	316.6	exc
Patricia McInnes	PM2.5	6May23, 21:00	412701	1-hr	122	122.1	exc
Athabasca Valley	PM2.5	6May23, 21:00	412696	1-hr	138	138.0	exc
Anzac	PM2.5	6May23, 21:00	412697	1-hr	305	305.4	exc
Surmont 2	PM2.5	6May23, 21:00	412695	1-hr	165	165.4	exc
Patricia McInnes	PM2.5	6May23, 22:00	412701	1-hr	294	293.9	exc
Athabasca Valley	PM2.5	6May23, 22:00	412696	1-hr	294	294.5	exc
Anzac	PM2.5	6May23, 22:00	412697	1-hr	225	225.1	exc
Surmont 2	PM2.5	6May23, 22:00	412695	1-hr	182	182.0	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Patricia McInnes	PM2.5	6May23, 23:00	412701	1-hr	274	273.8	exc
Athabasca Valley	PM2.5	6May23, 23:00	412696	1-hr	319	318.8	exc
Anzac	PM2.5	6May23, 23:00	412697	1-hr	175	175.3	exc
Surmont 2	PM2.5	6May23, 23:00	412695	1-hr	147	147.2	exc
Bertha Ganter	PM2.5	6May23, 24:00	412700	24-hr	31	31.0	exc
Buffalo Viewpoint	PM2.5	6May23, 24:00	412702	24-hr	39	39.5	exc
Patricia McInnes	PM2.5	6May23, 24:00	412701	1-hr	131	131.0	exc
Patricia McInnes	PM2.5	6May23, 24:00	412701	24-hr	72	71.7	exc
Athabasca Valley	PM2.5	6May23, 24:00	412696	1-hr	226	226.5	exc
Athabasca Valley	PM2.5	6May23, 24:00	412696	24-hr	91	91.1	exc
Ft. McKay S	PM2.5	6May23, 24:00	412698	24-hr	36	36.3	exc
Anzac	PM2.5	6May23, 24:00	412697	1-hr	108	108.3	exc
Anzac	PM2.5	6May23, 24:00	412697	24-hr	70	70.3	exc
Janvier	PM2.5	6May23, 24:00	412705	24-hr	43	43.4	exc
Surmont 2	PM2.5	6May23, 24:00	412695	1-hr	118	118.2	exc
Surmont 2	PM2.5	6May23, 24:00	412695	24-hr	77	77.4	exc
Athabasca Valley	PM2.5	7May23, 01:00	412696	1-hr	98	98.5	exc
Surmont 2	PM2.5	7May23, 01:00	412695	1-hr	156	156.0	exc
Anzac	PM2.5	7May23, 02:00	412697	1-hr	96	95.9	exc
Surmont 2	PM2.5	7May23, 02:00	412695	1-hr	180	179.8	exc
Anzac	PM2.5	7May23, 03:00	412697	1-hr	96	95.5	exc
Surmont 2	PM2.5	7May23, 03:00	412695	1-hr	194	193.7	exc
Anzac	PM2.5	7May23, 04:00	412697	1-hr	141	140.8	exc
Surmont 2	PM2.5	7May23, 04:00	412695	1-hr	178	178.5	exc
Anzac	PM2.5	7May23, 05:00	412697	1-hr	182	181.9	exc
Surmont 2	PM2.5	7May23, 05:00	412695	1-hr	182	182.2	exc
Anzac	PM2.5	7May23, 06:00	412697	1-hr	186	186.4	exc
Surmont 2	PM2.5	7May23, 06:00	412695	1-hr	168	167.9	exc
Anzac	PM2.5	7May23, 07:00	412697	1-hr	129	129.4	exc
Surmont 2	PM2.5	7May23, 07:00	412695	1-hr	113	112.8	exc
Anzac	PM2.5	7May23, 08:00	412697	1-hr	99	98.9	exc
Anzac	PM2.5	7May23, 09:00	412697	1-hr	83	83.0	exc
Anzac	PM2.5	7May23, 19:00	412697	1-hr	91	90.6	exc
Surmont 2	PM2.5	7May23, 24:00	412695	24-hr	63	62.7	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Buffalo Viewpoint	PM2.5	7May23, 24:00	412702	24-hr	35	34.7	exc
Patricia McInnes	PM2.5	7May23, 24:00	412701	24-hr	33	32.9	exc
Athabasca Valley	PM2.5	7May23, 24:00	412696	24-hr	39	38.8	exc
Anzac	PM2.5	7May23, 24:00	412697	24-hr	67	66.6	exc
Bertha Ganter	PM2.5	10May23, 13:00	413093	1-hr	81	81.1	exc
Ells River	PM2.5	10May23, 13:00	413219	1-hr	87	86.8	exc
Bertha Ganter	PM2.5	10May23, 14:00	413093	1-hr	96	95.8	exc
Ft. McKay S	PM2.5	10May23, 14:00	413094	1-hr	86	86.2	exc
Fort Hills	PM2.5	10May23, 23:00	412853	1-hr	92	91.8	exc
Fort Hills	PM2.5	10May23, 24:00	412853	1-hr	90	90.3	exc
Fort Hills	PM2.5	10May23, 24:00	412853	24-hr	34	33.4	exc
Bertha Ganter	PM2.5	10May23, 24:00	413093	24-hr	32	32.3	exc
Athabasca Valley	PM2.5	10May23, 24:00	413097	24-hr	33	32.9	exc
Ft. McKay S	PM2.5	10May23, 24:00	413094	24-hr	29	29.2	exc
Lower Camp	H2S	11May23, 20:00	412897	1-hr	12	11.4	exc
Lower Camp	H2S	11May23, 21:00	412897	1-hr	30	29.3	exc
Lower Camp	SO2	11May23, 21:00	412899	1-hr	239	238.7	exc
Conklin	PM2.5	11May23, 22:00	413098	1-hr	85	84.7	exc
Stony Mtn.	PM2.5	11May23, 23:00	413099	1-hr	93	92.7	exc
Stony Mtn.	PM2.5	11May23, 24:00	413099	1-hr	88	88.3	exc
Stony Mtn.	PM2.5	11May23, 24:00	413099	24-hr	37	37.1	exc
Conklin	PM2.5	11May23, 24:00	413098	24-hr	37	37.3	exc
Janvier	PM2.5	11May23, 24:00	413100	1-hr	85	85.2	exc
Athabasca Valley	PM2.5	11May23, 24:00	413097	24-hr	30	30.3	exc
Stony Mtn.	PM2.5	12May23, 01:00	413099	1-hr	82	82.0	exc
Janvier	PM2.5	12May23, 01:00	413100	1-hr	87	87.1	exc
Janvier	PM2.5	12May23, 02:00	413100	1-hr	86	86.2	exc
Janvier	PM2.5	12May23, 03:00	413100	1-hr	81	81.1	exc
Anzac	PM2.5	12May23, 04:00	413101	1-hr	89	89.2	exc
Janvier	PM2.5	12May23, 04:00	413100	1-hr	84	84.0	exc
Anzac	PM2.5	12May23, 05:00	413101	1-hr	141	140.8	exc
Janvier	PM2.5	12May23, 05:00	413100	1-hr	91	91.4	exc
Surmont 2	PM2.5	12May23, 05:00	413102	1-hr	134	133.8	exc
Anzac	PM2.5	12May23, 06:00	413101	1-hr	147	146.8	exc
Janvier	PM2.5	12May23, 06:00	413100	1-hr	88	87.5	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Surmont 2	PM2.5	12May23, 06:00	413102	1-hr	120	120.4	exc
Anzac	PM2.5	12May23, 07:00	413101	1-hr	149	149.2	exc
Stony Mtn.	PM2.5	12May23, 07:00	413099	1-hr	136	135.7	exc
Janvier	PM2.5	12May23, 07:00	413100	1-hr	88	88.4	exc
Surmont 2	PM2.5	12May23, 07:00	413102	1-hr	125	125.0	exc
Anzac	PM2.5	12May23, 08:00	413101	1-hr	133	132.7	exc
Stony Mtn.	PM2.5	12May23, 08:00	413099	1-hr	165	165.4	exc
Janvier	PM2.5	12May23, 08:00	413100	1-hr	103	102.7	exc
Surmont 2	PM2.5	12May23, 08:00	413102	1-hr	156	155.6	exc
Buffalo Viewpoint	PM2.5	12May23, 09:00	413103	1-hr	81	80.8	exc
Anzac	PM2.5	12May23, 09:00	413101	1-hr	82	82.3	exc
Stony Mtn.	PM2.5	12May23, 09:00	413099	1-hr	118	117.8	exc
Conklin	PM2.5	12May23, 09:00	413098	1-hr	93	92.8	exc
Janvier	PM2.5	12May23, 09:00	413100	1-hr	133	132.9	exc
Bertha Ganter	PM2.5	12May23, 10:00	413093	1-hr	88	87.7	exc
Athabasca Valley	PM2.5	12May23, 10:00	413097	1-hr	90	89.9	exc
Ft. McKay S	PM2.5	12May23, 10:00	413094	1-hr	95	94.9	exc
Janvier	PM2.5	12May23, 10:00	413100	1-hr	122	122.0	exc
Conklin	PM2.5	12May23, 21:00	413098	1-hr	165	164.7	exc
Surmont 2	PM2.5	12May23, 21:00	413102	1-hr	89	88.7	exc
Anzac	PM2.5	12May23, 22:00	413101	1-hr	84	83.8	exc
Janvier	PM2.5	12May23, 22:00	413100	1-hr	203	202.5	exc
Surmont 2	PM2.5	12May23, 22:00	413102	1-hr	207	207.0	exc
Athabasca Valley	PM2.5	12May23, 23:00	413097	1-hr	87	86.9	exc
Anzac	PM2.5	12May23, 23:00	413101	1-hr	144	143.9	exc
Janvier	PM2.5	12May23, 23:00	413100	1-hr	259	258.6	exc
Surmont 2	PM2.5	12May23, 23:00	413102	1-hr	275	274.9	exc
Bertha Ganter	PM2.5	12May23, 24:00	413093	24-hr	45	45.5	exc
Buffalo Viewpoint	PM2.5	12May23, 24:00	413103	1-hr	122	121.7	exc
Buffalo Viewpoint	PM2.5	12May23, 24:00	413103	24-hr	41	41.0	exc
Patricia McInnes	PM2.5	12May23, 24:00	413104	1-hr	109	108.6	exc
Patricia McInnes	PM2.5	12May23, 24:00	413104	24-hr	33	33.4	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Athabasca Valley	PM2.5	12May23, 24:00	413097	1-hr	124	124.1	exc
Athabasca Valley	PM2.5	12May23, 24:00	413097	24-hr	42	42.3	exc
Barge Landing	PM2.5	12May23, 24:00	413107	1-hr	81	81.0	exc
Barge Landing	PM2.5	12May23, 24:00	413107	24-hr	33	32.9	exc
Ft. McKay S	PM2.5	12May23, 24:00	413094	1-hr	86	85.6	exc
Ft. McKay S	PM2.5	12May23, 24:00	413094	24-hr	48	47.8	exc
Anzac	PM2.5	12May23, 24:00	413101	1-hr	248	248.1	exc
Anzac	PM2.5	12May23, 24:00	413101	24-hr	68	68.2	exc
Wapasu	PM2.5	12May23, 24:00	413108	1-hr	88	88.4	exc
Stony Mtn.	PM2.5	12May23, 24:00	413099	24-hr	46	46.3	exc
Conklin	PM2.5	12May23, 24:00	413098	24-hr	50	50.3	exc
Fort Hills	PM2.5	12May23, 24:00	412973	1-hr	83	83.3	exc
Janvier	PM2.5	12May23, 24:00	413100	1-hr	227	227.3	exc
Janvier	PM2.5	12May23, 24:00	413100	24-hr	83	82.9	exc
Fort Hills	PM2.5	12May23, 24:00	412973	24-hr	39	39.1	exc
Surmont 2	PM2.5	12May23, 24:00	413102	1-hr	312	312.4	exc
Surmont 2	PM2.5	12May23, 24:00	413102	24-hr	80	79.8	exc
Ells River	PM2.5	12May23, 24:00	412974	24-hr	37	36.7	exc
Bertha Ganter	PM2.5	13May23, 01:00	413093	1-hr	99	98.9	exc
Buffalo Viewpoint	PM2.5	13May23, 01:00	413103	1-hr	142	141.6	exc
Patricia McInnes	PM2.5	13May23, 01:00	413104	1-hr	125	124.9	exc
Athabasca Valley	PM2.5	13May23, 01:00	413097	1-hr	138	138.0	exc
Barge Landing	PM2.5	13May23, 01:00	413107	1-hr	119	119.0	exc
Ft. McKay S	PM2.5	13May23, 01:00	413094	1-hr	137	137.2	exc
Anzac	PM2.5	13May23, 01:00	413101	1-hr	283	282.7	exc
Wapasu	PM2.5	13May23, 01:00	413108	1-hr	132	131.8	exc
Fort Hills	PM2.5	13May23, 01:00	413011	1-hr	130	129.8	exc
Janvier	PM2.5	13May23, 01:00	413100	1-hr	195	195.4	exc
Surmont 2	PM2.5	13May23, 01:00	413102	1-hr	289	289.1	exc
Ells River	PM2.5	13May23, 01:00	413012	1-hr	105	104.8	exc
Bertha Ganter	PM2.5	13May23, 02:00	413093	1-hr	130	129.9	exc
Buffalo Viewpoint	PM2.5	13May23, 02:00	413103	1-hr	169	168.9	exc
Patricia McInnes	PM2.5	13May23, 02:00	413104	1-hr	125	125.0	exc
Athabasca Valley	PM2.5	13May23, 02:00	413097	1-hr	157	157.4	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Barge Landing	PM2.5	13May23, 02:00	413107	1-hr	154	153.8	exc
Ft. McKay S	PM2.5	13May23, 02:00	413094	1-hr	183	182.9	exc
Anzac	PM2.5	13May23, 02:00	413101	1-hr	295	295.4	exc
Wapasu	PM2.5	13May23, 02:00	413108	1-hr	220	219.6	exc
Fort Hills	PM2.5	13May23, 02:00	413011	1-hr	157	156.6	exc
Janvier	PM2.5	13May23, 02:00	413100	1-hr	152	152.5	exc
Surmont 2	PM2.5	13May23, 02:00	413102	1-hr	230	230.0	exc
Ells River	PM2.5	13May23, 02:00	413012	1-hr	138	138.0	exc
Bertha Ganter	PM2.5	13May23, 03:00	413093	1-hr	169	168.6	exc
Buffalo Viewpoint	PM2.5	13May23, 03:00	413103	1-hr	199	198.5	exc
Patricia McInnes	PM2.5	13May23, 03:00	413104	1-hr	103	102.8	exc
Athabasca Valley	PM2.5	13May23, 03:00	413097	1-hr	188	187.6	exc
Fort Chip	PM2.5	13May23, 03:00	413109	1-hr	97	97.0	exc
Barge Landing	PM2.5	13May23, 03:00	413107	1-hr	189	189.1	exc
Ft. McKay S	PM2.5	13May23, 03:00	413094	1-hr	199	198.8	exc
Anzac	PM2.5	13May23, 03:00	413101	1-hr	219	218.8	exc
Wapasu	PM2.5	13May23, 03:00	413108	1-hr	250	249.8	exc
Fort Hills	PM2.5	13May23, 03:00	413011	1-hr	172	172.2	exc
Janvier	PM2.5	13May23, 03:00	413100	1-hr	83	83.4	exc
Surmont 2	PM2.5	13May23, 03:00	413102	1-hr	174	174.5	exc
Ells River	PM2.5	13May23, 03:00	413012	1-hr	140	140.2	exc
Bertha Ganter	PM2.5	13May23, 04:00	413093	1-hr	164	164.3	exc
Buffalo Viewpoint	PM2.5	13May23, 04:00	413103	1-hr	142	142.4	exc
Athabasca Valley	PM2.5	13May23, 04:00	413097	1-hr	199	199.0	exc
Fort Chip	PM2.5	13May23, 04:00	413109	1-hr	126	126.2	exc
Barge Landing	PM2.5	13May23, 04:00	413107	1-hr	208	208.3	exc
Ft. McKay S	PM2.5	13May23, 04:00	413094	1-hr	197	197.3	exc
Anzac	PM2.5	13May23, 04:00	413101	1-hr	114	113.8	exc
Wapasu	PM2.5	13May23, 04:00	413108	1-hr	212	212.3	exc
Fort Hills	PM2.5	13May23, 04:00	413011	1-hr	230	230.3	exc
Surmont 2	PM2.5	13May23, 04:00	413102	1-hr	183	183.0	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Ells River	PM2.5	13May23, 04:00	413012	1-hr	140	139.9	exc
Bertha Ganter	PM2.5	13May23, 05:00	413093	1-hr	166	165.8	exc
Buffalo Viewpoint	PM2.5	13May23, 05:00	413103	1-hr	114	114.4	exc
Athabasca Valley	PM2.5	13May23, 05:00	413097	1-hr	218	217.8	exc
Fort Chip	PM2.5	13May23, 05:00	413109	1-hr	119	119.3	exc
Barge Landing	PM2.5	13May23, 05:00	413107	1-hr	208	207.8	exc
Ft. McKay S	PM2.5	13May23, 05:00	413094	1-hr	203	203.3	exc
Wapasu	PM2.5	13May23, 05:00	413108	1-hr	158	158.0	exc
Fort Hills	PM2.5	13May23, 05:00	413011	1-hr	231	230.8	exc
Surmont 2	PM2.5	13May23, 05:00	413102	1-hr	125	125.0	exc
Ells River	PM2.5	13May23, 05:00	413012	1-hr	118	118.4	exc
Bertha Ganter	PM2.5	13May23, 06:00	413093	1-hr	173	172.8	exc
Buffalo Viewpoint	PM2.5	13May23, 06:00	413103	1-hr	110	110.2	exc
Athabasca Valley	PM2.5	13May23, 06:00	413097	1-hr	212	211.7	exc
Fort Chip	PM2.5	13May23, 06:00	413109	1-hr	124	124.4	exc
Barge Landing	PM2.5	13May23, 06:00	413107	1-hr	198	197.5	exc
Ft. McKay S	PM2.5	13May23, 06:00	413094	1-hr	177	176.9	exc
Wapasu	PM2.5	13May23, 06:00	413108	1-hr	107	106.6	exc
Fort Hills	PM2.5	13May23, 06:00	413011	1-hr	213	212.9	exc
Ells River	PM2.5	13May23, 06:00	413012	1-hr	93	93.3	exc
Bertha Ganter	PM2.5	13May23, 07:00	413093	1-hr	166	166.1	exc
Buffalo Viewpoint	PM2.5	13May23, 07:00	413103	1-hr	89	89.4	exc
Athabasca Valley	PM2.5	13May23, 07:00	413097	1-hr	237	237.1	exc
Fort Chip	PM2.5	13May23, 07:00	413109	1-hr	125	124.6	exc
Barge Landing	PM2.5	13May23, 07:00	413107	1-hr	155	154.8	exc
Ft. McKay S	PM2.5	13May23, 07:00	413094	1-hr	170	170.2	exc
Fort Hills	PM2.5	13May23, 07:00	413011	1-hr	148	148.4	exc
Bertha Ganter	PM2.5	13May23, 08:00	413093	1-hr	152	152.0	exc
Buffalo Viewpoint	PM2.5	13May23, 08:00	413103	1-hr	94	94.4	exc
Athabasca Valley	PM2.5	13May23, 08:00	413097	1-hr	224	224.4	exc
Fort Chip	PM2.5	13May23, 08:00	413109	1-hr	114	114.2	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Barge Landing	PM2.5	13May23, 08:00	413107	1-hr	124	124.0	exc
Ft. McKay S	PM2.5	13May23, 08:00	413094	1-hr	151	151.5	exc
Bertha Ganter	PM2.5	13May23, 09:00	413093	1-hr	120	120.2	exc
Buffalo Viewpoint	PM2.5	13May23, 09:00	413103	1-hr	95	95.1	exc
Athabasca Valley	PM2.5	13May23, 09:00	413097	1-hr	197	197.3	exc
Fort Chip	PM2.5	13May23, 09:00	413109	1-hr	96	95.9	exc
Barge Landing	PM2.5	13May23, 09:00	413107	1-hr	102	102.2	exc
Ft. McKay S	PM2.5	13May23, 09:00	413094	1-hr	95	95.2	exc
Bertha Ganter	PM2.5	13May23, 10:00	413093	1-hr	95	94.9	exc
Buffalo Viewpoint	PM2.5	13May23, 10:00	413103	1-hr	80	80.3	exc
Athabasca Valley	PM2.5	13May23, 10:00	413097	1-hr	170	169.7	exc
Ft. McKay S	PM2.5	13May23, 10:00	413094	1-hr	89	89.3	exc
Lower Camp	H2S	13May23, 17:00	413004	1-hr	11	10.2	exc
Lower Camp	H2S	13May23, 23:00	413004	1-hr	12	11.6	exc
Bertha Ganter	PM2.5	13May23, 24:00	413093	24-hr	64	-	ret
Buffalo Viewpoint	PM2.5	13May23, 24:00	413103	24-hr	64	64.3	exc
Patricia McInnes	PM2.5	13May23, 24:00	413104	24-hr	33	32.5	exc
Athabasca Valley	PM2.5	13May23, 24:00	413097	24-hr	101	100.7	exc
Fort Chip	PM2.5	13May23, 24:00	413109	24-hr	61	61.3	exc
Barge Landing	PM2.5	13May23, 24:00	413107	24-hr	79	78.7	exc
Ft. McKay S	PM2.5	13May23, 24:00	413094	24-hr	87	86.7	exc
Anzac	PM2.5	13May23, 24:00	413101	24-hr	48	48.2	exc
Wapasu	PM2.5	13May23, 24:00	413108	24-hr	63	63.4	exc
Janvier	PM2.5	13May23, 24:00	413100	24-hr	29	29.1	exc
Fort Hills	PM2.5	13May23, 24:00	413011	24-hr	75	74.6	exc
Surmont 2	PM2.5	13May23, 24:00	413102	24-hr	51	50.8	exc
Ells River	PM2.5	13May23, 24:00	413012	24-hr	49	48.7	exc
Fort Chip	PM2.5	14May23, 05:00	413109	1-hr	81	81.0	exc
Fort Chip	PM2.5	14May23, 06:00	413109	1-hr	89	89.2	exc
Fort Chip	PM2.5	14May23, 07:00	413109	1-hr	104	103.8	exc
Fort Chip	PM2.5	14May23, 08:00	413109	1-hr	111	110.9	exc
Fort Chip	PM2.5	14May23, 09:00	413109	1-hr	84	83.5	exc
Ft. McKay S	PM2.5	14May23, 12:00	413094	1-hr	84	83.8	exc
Wapasu	PM2.5	14May23, 13:00	413108	1-hr	99	98.8	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Fort Hills	PM2.5	14May23, 13:00	413029	1-hr	93	93.2	exc
Athabasca Valley	PM2.5	14May23, 13:00	413097	1-hr	80	80.1	exc
Athabasca Valley	PM2.5	14May23, 14:00	413097	1-hr	93	93.4	exc
Athabasca Valley	PM2.5	14May23, 16:00	413097	1-hr	114	113.6	exc
Athabasca Valley	PM2.5	14May23, 17:00	413097	1-hr	108	107.9	exc
Athabasca Valley	PM2.5	14May23, 18:00	413097	1-hr	83	83.4	exc
Patricia McInnes	PM2.5	14May23, 18:00	413104	1-hr	87	86.7	exc
Buffalo Viewpoint	PM2.5	14May23, 19:00	413103	1-hr	106	105.7	exc
Buffalo Viewpoint	PM2.5	14May23, 20:00	413103	1-hr	127	127.2	exc
Wapasu	PM2.5	14May23, 20:00	413108	1-hr	81	80.5	exc
Fort Hills	PM2.5	14May23, 20:00	413029	1-hr	111	111.4	exc
Buffalo Viewpoint	PM2.5	14May23, 21:00	413103	1-hr	123	123.1	exc
Ft. McKay S	PM2.5	14May23, 21:00	413094	1-hr	93	92.7	exc
Fort Hills	PM2.5	14May23, 21:00	413029	1-hr	139	139.3	exc
Buffalo Viewpoint	PM2.5	14May23, 22:00	413103	1-hr	94	93.9	exc
Ft. McKay S	PM2.5	14May23, 22:00	413094	1-hr	94	94.3	exc
Fort Hills	PM2.5	14May23, 22:00	413029	1-hr	121	121.4	exc
Buffalo Viewpoint	PM2.5	14May23, 23:00	413103	1-hr	82	81.8	exc
Ft. McKay S	PM2.5	14May23, 23:00	413094	1-hr	88	88.3	exc
Fort Hills	PM2.5	14May23, 23:00	413029	1-hr	103	102.6	exc
Ft. McKay S	PM2.5	14May23, 24:00	413094	1-hr	83	82.7	exc
Wapasu	PM2.5	14May23, 24:00	413108	24-hr	39	39.2	exc
Fort Hills	PM2.5	14May23, 24:00	413029	1-hr	93	92.5	exc
Fort Hills	PM2.5	14May23, 24:00	413029	24-hr	54	54.2	exc
Ells River	PM2.5	14May23, 24:00	413030	24-hr	40	39.7	exc
Buffalo Viewpoint	PM2.5	14May23, 24:00	413103	24-hr	51	50.9	exc
Patricia McInnes	PM2.5	14May23, 24:00	413104	24-hr	32	32.4	exc
Athabasca Valley	PM2.5	14May23, 24:00	413097	24-hr	45	45.4	exc
Fort Chip	PM2.5	14May23, 24:00	413109	24-hr	39	38.6	exc
Barge Landing	PM2.5	14May23, 24:00	413107	24-hr	39	38.9	exc
Ft. McKay S	PM2.5	14May23, 24:00	413094	24-hr	48	48.4	exc
Buffalo Viewpoint	PM2.5	15May23, 01:00	413644	1-hr	89	89.0	exc
Ft. McKay S	PM2.5	15May23, 01:00	413610	1-hr	85	85.2	exc
Fort Hills	PM2.5	15May23, 01:00	413111	1-hr	82	82.3	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Buffalo Viewpoint	PM2.5	15May23, 02:00	413644	1-hr	102	102.2	exc
Ft. McKay S	PM2.5	15May23, 02:00	413610	1-hr	92	92.1	exc
Fort Hills	PM2.5	15May23, 02:00	413111	1-hr	82	82.5	exc
Buffalo Viewpoint	PM2.5	15May23, 03:00	413644	1-hr	96	96.3	exc
Ft. McKay S	PM2.5	15May23, 03:00	413610	1-hr	90	89.7	exc
Buffalo Viewpoint	PM2.5	15May23, 04:00	413644	1-hr	89	89.3	exc
Ft. McKay S	PM2.5	15May23, 04:00	413610	1-hr	87	87.0	exc
Buffalo Viewpoint	PM2.5	15May23, 05:00	413644	1-hr	82	81.5	exc
Ft. McKay S	PM2.5	15May23, 05:00	413610	1-hr	83	83.5	exc
Buffalo Viewpoint	PM2.5	15May23, 06:00	413644	1-hr	81	80.6	exc
Ft. McKay S	PM2.5	15May23, 06:00	413610	1-hr	82	81.5	exc
Buffalo Viewpoint	PM2.5	15May23, 08:00	413644	1-hr	83	82.6	exc
Buffalo Viewpoint	PM2.5	15May23, 09:00	413644	1-hr	86	85.6	exc
Ft. McKay S	PM2.5	15May23, 09:00	413610	1-hr	84	84.3	exc
Buffalo Viewpoint	PM2.5	15May23, 10:00	413644	1-hr	91	90.8	exc
Ft. McKay S	PM2.5	15May23, 10:00	413610	1-hr	82	82.1	exc
Ft. McKay S	PM2.5	15May23, 11:00	413610	1-hr	109	108.7	exc
Barge Landing	PM2.5	15May23, 12:00	413651	1-hr	90	90.5	exc
Ft. McKay S	PM2.5	15May23, 12:00	413610	1-hr	127	127.3	exc
Ft. McKay S	PM2.5	15May23, 13:00	413610	1-hr	105	105.3	exc
Fort Hills	PM2.5	15May23, 13:00	413111	1-hr	81	80.9	exc
Lower Camp	H2S	15May23, 20:00	413095	1-hr	24	24.0	exc
Lower Camp	SO2	15May23, 20:00	413096	1-hr	183	182.7	exc
Lower Camp	H2S	15May23, 21:00	413106	1-hr	10	9.3	nae
Wapasu	PM2.5	15May23, 21:00	413653	1-hr	131	131.5	exc
Conklin	PM2.5	15May23, 21:00	413656	1-hr	110	109.9	exc
Wapasu	PM2.5	15May23, 22:00	413653	1-hr	260	260.2	exc
Conklin	PM2.5	15May23, 22:00	413656	1-hr	263	262.7	exc
Wapasu	PM2.5	15May23, 23:00	413653	1-hr	252	252.3	exc
Conklin	PM2.5	15May23, 23:00	413656	1-hr	81	81.1	exc
Bertha Ganter	PM2.5	15May23, 24:00	413611	1-hr	96	95.7	exc
Buffalo Viewpoint	PM2.5	15May23, 24:00	413644	1-hr	89	88.9	exc
Lower Camp	H2S	15May23, 24:00	413110	24-hr	3	2.9	nae



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Ft. McKay S	PM2.5	15May23, 24:00	413610	1-hr	85	85.4	exc
Ft. McKay S	PM2.5	15May23, 24:00	413610	24-hr	62	62.4	exc
Wapasu	PM2.5	15May23, 24:00	413653	1-hr	187	187.3	exc
Wapasu	PM2.5	15May23, 24:00	413653	24-hr	65	65.3	exc
Conklin	PM2.5	15May23, 24:00	413656	24-hr	29	29.5	exc
Fort Hills	PM2.5	15May23, 24:00	413111	1-hr	179	179.4	exc
Fort Hills	PM2.5	15May23, 24:00	413111	24-hr	57	57.4	exc
Buffalo Viewpoint	PM2.5	15May23, 24:00	413644	24-hr	51	50.6	exc
Barge Landing	PM2.5	15May23, 24:00	413651	24-hr	51	51.3	exc
Ells River	PM2.5	15May23, 24:00	413112	1-hr	129	129.0	exc
Ells River	PM2.5	15May23, 24:00	413112	24-hr	47	46.7	exc
Bertha Ganter	PM2.5	16May23, 01:00	413611	1-hr	240	239.7	exc
Buffalo Viewpoint	PM2.5	16May23, 01:00	413644	1-hr	151	151.2	exc
Patricia McInnes	PM2.5	16May23, 01:00	413648	1-hr	127	127.0	exc
Athabasca Valley	PM2.5	16May23, 01:00	413649	1-hr	105	105.2	exc
Barge Landing	PM2.5	16May23, 01:00	413651	1-hr	129	129.3	exc
Ft. McKay S	PM2.5	16May23, 01:00	413610	1-hr	258	257.5	exc
Wapasu	PM2.5	16May23, 01:00	413653	1-hr	100	99.7	exc
Fort Hills	PM2.5	16May23, 01:00	413212	1-hr	245	244.7	exc
Ells River	PM2.5	16May23, 01:00	413213	1-hr	267	267.4	exc
Bertha Ganter	PM2.5	16May23, 02:00	413611	1-hr	216	216.3	exc
Buffalo Viewpoint	PM2.5	16May23, 02:00	413644	1-hr	222	222.0	exc
Patricia McInnes	PM2.5	16May23, 02:00	413648	1-hr	255	255.3	exc
Athabasca Valley	PM2.5	16May23, 02:00	413649	1-hr	226	226.4	exc
Barge Landing	PM2.5	16May23, 02:00	413651	1-hr	112	111.6	exc
Ft. McKay S	PM2.5	16May23, 02:00	413610	1-hr	224	224.5	exc
Ells River	PM2.5	16May23, 02:00	413213	1-hr	125	124.8	exc
Buffalo Viewpoint	PM2.5	16May23, 03:00	413644	1-hr	94	93.6	exc
Patricia McInnes	PM2.5	16May23, 03:00	413648	1-hr	191	190.9	exc
Athabasca Valley	PM2.5	16May23, 03:00	413649	1-hr	215	215.3	exc
Anzac	PM2.5	16May23, 03:00	413652	1-hr	196	196.1	exc
Surmont 2	PM2.5	16May23, 03:00	413663	1-hr	104	103.9	exc
Bertha Ganter	PM2.5	16May23, 04:00	413611	1-hr	187	187.5	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Barge Landing	PM2.5	16May23, 04:00	413651	1-hr	119	118.8	exc
Ft. McKay S	PM2.5	16May23, 04:00	413610	1-hr	106	106.3	exc
Anzac	PM2.5	16May23, 04:00	413652	1-hr	129	128.9	exc
Fort Hills	PM2.5	16May23, 04:00	413212	1-hr	239	238.8	exc
Surmont 2	PM2.5	16May23, 04:00	413663	1-hr	204	204.4	exc
Ells River	PM2.5	16May23, 04:00	413213	1-hr	182	182.5	exc
Bertha Ganter	PM2.5	16May23, 05:00	413611	1-hr	248	247.6	exc
Buffalo Viewpoint	PM2.5	16May23, 05:00	413644	1-hr	161	160.8	exc
Barge Landing	PM2.5	16May23, 05:00	413651	1-hr	233	232.6	exc
Ft. McKay S	PM2.5	16May23, 05:00	413610	1-hr	225	224.9	exc
Stony Mtn.	PM2.5	16May23, 05:00	413655	1-hr	149	148.5	exc
Conklin	PM2.5	16May23, 05:00	413656	1-hr	151	150.6	exc
Janvier	PM2.5	16May23, 05:00	413662	1-hr	125	125.1	exc
Fort Hills	PM2.5	16May23, 05:00	413212	1-hr	205	204.9	exc
Surmont 2	PM2.5	16May23, 05:00	413663	1-hr	89	89.4	exc
Ells River	PM2.5	16May23, 05:00	413213	1-hr	164	164.5	exc
Bertha Ganter	PM2.5	16May23, 06:00	413611	1-hr	177	177.3	exc
Buffalo Viewpoint	PM2.5	16May23, 06:00	413644	1-hr	147	146.5	exc
Barge Landing	PM2.5	16May23, 06:00	413651	1-hr	139	139.5	exc
Ft. McKay S	PM2.5	16May23, 06:00	413610	1-hr	184	183.6	exc
Stony Mtn.	PM2.5	16May23, 06:00	413655	1-hr	82	81.7	exc
Conklin	PM2.5	16May23, 06:00	413656	1-hr	95	95.1	exc
Janvier	PM2.5	16May23, 06:00	413662	1-hr	81	82.7	exc
Fort Hills	PM2.5	16May23, 06:00	413212	1-hr	122	121.8	exc
Ells River	PM2.5	16May23, 06:00	413213	1-hr	115	115.0	exc
Buffalo Viewpoint	PM2.5	16May23, 07:00	413644	1-hr	84	83.8	exc
Ft. McKay S	PM2.5	16May23, 07:00	413610	1-hr	81	80.8	exc
Patricia McInnes	PM2.5	16May23, 17:00	413648	1-hr	85	84.8	exc
Athabasca Valley	PM2.5	16May23, 17:00	413649	1-hr	97	97.3	exc
Patricia McInnes	PM2.5	16May23, 18:00	413648	1-hr	83	83.2	exc
Anzac	PM2.5	16May23, 19:00	413652	1-hr	87	87.4	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Surmont 2	PM2.5	16May23, 19:00	413663	1-hr	100	100.2	exc
Janvier	PM2.5	16May23, 20:00	413662	1-hr	115	114.9	exc
Surmont 2	PM2.5	16May23, 20:00	413663	1-hr	100	100.2	exc
Janvier	PM2.5	16May23, 21:00	413662	1-hr	83	83.4	exc
Stony Mtn.	PM2.5	16May23, 23:00	413655	1-hr	88	88.4	exc
Buffalo Viewpoint	PM2.5	16May23, 24:00	413644	24-hr	60	60.1	exc
Patricia McInnes	PM2.5	16May23, 24:00	413648	24-hr	52	51.6	exc
Athabasca Valley	PM2.5	16May23, 24:00	413649	24-hr	53	53.2	exc
Barge Landing	PM2.5	16May23, 24:00	413651	24-hr	42	41.9	exc
Ft. McKay S	PM2.5	16May23, 24:00	413610	24-hr	61	61.0	exc
Anzac	PM2.5	16May23, 24:00	413652	24-hr	39	38.6	exc
Stony Mtn.	PM2.5	16May23, 24:00	413655	24-hr	39	39.3	exc
Bertha Ganter	PM2.5	16May23, 24:00	413611	24-hr	70	70.2	exc
Conklin	PM2.5	16May23, 24:00	413656	24-hr	39	38.6	exc
Janvier	PM2.5	16May23, 24:00	413662	24-hr	35	35.0	exc
Fort Hills	PM2.5	16May23, 24:00	413212	24-hr	45	45.4	exc
Surmont 2	PM2.5	16May23, 24:00	413663	24-hr	44	44.0	exc
Ells River	PM2.5	16May23, 24:00	413213	24-hr	48	48.1	exc
Lower Camp	H2S	18May23, 21:00	413352	1-hr	28	27.6	exc
Lower Camp	SO2	18May23, 21:00	413353	1-hr	199	198.7	exc
Lower Camp	H2S	18May23, 23:00	413352	1-hr	18	17.7	exc
Lower Camp	H2S	18May23, 24:00	413352	1-hr	29	28.6	exc
Lower Camp	H2S	18May23, 24:00	413352	24-hr	4	4.0	exc
Lower Camp	H2S	19May23, 01:00	413359	1-hr	11	10.9	exc
Fort Chip	PM2.5	19May23, 10:00	413650	1-hr	136	135.8	exc
Fort Chip	PM2.5	19May23, 11:00	413650	1-hr	150	150.5	exc
Fort Chip	PM2.5	19May23, 12:00	413650	1-hr	159	159.0	exc
Fort Chip	PM2.5	19May23, 13:00	413650	1-hr	142	142.3	exc
Bertha Ganter	PM2.5	19May23, 14:00	413611	1-hr	96	96.4	exc
Fort Chip	PM2.5	19May23, 14:00	413650	1-hr	119	119.3	exc
Ft. McKay S	PM2.5	19May23, 14:00	413610	1-hr	82	82.0	exc
Fort Hills	PM2.5	19May23, 14:00	413423	1-hr	116	116.0	exc
Ells River	PM2.5	19May23, 14:00	413425	1-hr	127	126.6	exc
Fort Chip	PM2.5	19May23, 15:00	413650	1-hr	159	159.4	exc
Ft. McKay S	PM2.5	19May23, 15:00	413610	1-hr	85	85.1	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Fort Hills	PM2.5	19May23, 15:00	413423	1-hr	137	137.3	exc
Ells River	PM2.5	19May23, 15:00	413425	1-hr	103	103.5	exc
Bertha Ganter	PM2.5	19May23, 15:00	413611	1-hr	101	101.5	exc
Athabasca Valley	PM2.5	19May23, 16:00	413649	1-hr	85	85.1	exc
Fort Chip	PM2.5	19May23, 16:00	413650	1-hr	92	92.2	exc
Barge Landing	PM2.5	19May23, 16:00	413651	1-hr	82	81.6	exc
Ft. McKay S	PM2.5	19May23, 16:00	413610	1-hr	99	99.3	exc
Stony Mtn.	PM2.5	19May23, 16:00	413655	1-hr	97	96.9	exc
Conklin	PM2.5	19May23, 16:00	413656	1-hr	88	87.6	exc
Fort Hills	PM2.5	19May23, 16:00	413423	1-hr	138	137.5	exc
Ells River	PM2.5	19May23, 16:00	413425	1-hr	109	109.1	exc
Bertha Ganter	PM2.5	19May23, 16:00	413611	1-hr	111	111.3	exc
Patricia McInnes	PM2.5	19May23, 16:00	413648	1-hr	107	107.3	exc
Athabasca Valley	PM2.5	19May23, 17:00	413649	1-hr	122	122.3	exc
Barge Landing	PM2.5	19May23, 17:00	413651	1-hr	99	98.8	exc
Ft. McKay S	PM2.5	19May23, 17:00	413610	1-hr	109	108.8	exc
Fort Hills	PM2.5	19May23, 17:00	413423	1-hr	157	157.5	exc
Ells River	PM2.5	19May23, 17:00	413425	1-hr	128	128.3	exc
Bertha Ganter	PM2.5	19May23, 17:00	413611	1-hr	133	133.2	exc
Patricia McInnes	PM2.5	19May23, 17:00	413648	1-hr	114	113.8	exc
Patricia McInnes	PM2.5	19May23, 18:00	413648	1-hr	81	80.5	exc
Athabasca Valley	PM2.5	19May23, 18:00	413649	1-hr	101	101.2	exc
Barge Landing	PM2.5	19May23, 18:00	413651	1-hr	116	116.2	exc
Ft. McKay S	PM2.5	19May23, 18:00	413610	1-hr	126	125.7	exc
Wapasu	PM2.5	19May23, 18:00	413653	1-hr	85	85.0	exc
Stony Mtn.	PM2.5	19May23, 18:00	413655	1-hr	154	153.6	exc
Conklin	PM2.5	19May23, 18:00	413656	1-hr	148	147.8	exc
Janvier	PM2.5	19May23, 18:00	413662	1-hr	166	165.9	exc
Fort Hills	PM2.5	19May23, 18:00	413423	1-hr	210	209.9	exc
Ells River	PM2.5	19May23, 18:00	413425	1-hr	144	143.8	exc
Bertha Ganter	PM2.5	19May23, 18:00	413611	1-hr	161	160.9	exc
Buffalo Viewpoint	PM2.5	19May23, 19:00	413644	1-hr	83	83.0	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Barge Landing	PM2.5	19May23, 19:00	413651	1-hr	173	173.4	exc
Ft. McKay S	PM2.5	19May23, 19:00	413610	1-hr	143	142.6	exc
Anzac	PM2.5	19May23, 19:00	413652	1-hr	95	94.8	exc
Wapasu	PM2.5	19May23, 19:00	413653	1-hr	89	88.7	exc
Stony Mtn.	PM2.5	19May23, 19:00	413655	1-hr	184	184.4	exc
Conklin	PM2.5	19May23, 19:00	413656	1-hr	190	190.2	exc
Janvier	PM2.5	19May23, 19:00	413662	1-hr	178	178.0	exc
Fort Hills	PM2.5	19May23, 19:00	413423	1-hr	229	228.8	exc
Ells River	PM2.5	19May23, 19:00	413425	1-hr	218	218.1	exc
Bertha Ganter	PM2.5	19May23, 19:00	413611	1-hr	230	229.9	exc
Buffalo Viewpoint	PM2.5	19May23, 20:00	413644	1-hr	111	110.6	exc
Barge Landing	PM2.5	19May23, 20:00	413651	1-hr	220	220.1	exc
Ft. McKay S	PM2.5	19May23, 20:00	413610	1-hr	250	250.0	exc
Anzac	PM2.5	19May23, 20:00	413652	1-hr	97	96.8	exc
Wapasu	PM2.5	19May23, 20:00	413653	1-hr	129	129.1	exc
Stony Mtn.	PM2.5	19May23, 20:00	413655	1-hr	194	194.3	exc
Conklin	PM2.5	19May23, 20:00	413656	1-hr	242	242.3	exc
Fort Hills	PM2.5	19May23, 20:00	413423	1-hr	193	192.7	exc
Ells River	PM2.5	19May23, 20:00	413425	1-hr	193	193.0	exc
Bertha Ganter	PM2.5	19May23, 20:00	413611	1-hr	287	286.6	exc
Buffalo Viewpoint	PM2.5	19May23, 21:00	413644	1-hr	129	129.1	exc
Patricia McInnes	PM2.5	19May23, 21:00	413648	1-hr	111	111.1	exc
Athabasca Valley	PM2.5	19May23, 21:00	413649	1-hr	83	83.0	exc
Barge Landing	PM2.5	19May23, 21:00	413651	1-hr	115	115.2	exc
Ft. McKay S	PM2.5	19May23, 21:00	413610	1-hr	180	180.3	exc
Anzac	PM2.5	19May23, 21:00	413652	1-hr	89	89.3	exc
Stony Mtn.	PM2.5	19May23, 21:00	413655	1-hr	187	186.9	exc
Conklin	PM2.5	19May23, 21:00	413656	1-hr	231	231.3	exc
Surmont 2	PM2.5	19May23, 21:00	413663	1-hr	88	87.8	exc
Bertha Ganter	PM2.5	19May23, 21:00	413611	1-hr	158	157.6	exc
Patricia McInnes	PM2.5	19May23, 22:00	413648	1-hr	163	163.3	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Athabasca Valley	PM2.5	19May23, 22:00	413649	1-hr	112	111.6	exc
Anzac	PM2.5	19May23, 22:00	413652	1-hr	82	82.1	exc
Stony Mtn.	PM2.5	19May23, 22:00	413655	1-hr	162	161.6	exc
Conklin	PM2.5	19May23, 22:00	413656	1-hr	224	223.9	exc
Surmont 2	PM2.5	19May23, 22:00	413663	1-hr	93	93.4	exc
Athabasca Valley	PM2.5	19May23, 23:00	413649	1-hr	115	114.8	exc
Anzac	PM2.5	19May23, 23:00	413652	1-hr	97	97.3	exc
Stony Mtn.	PM2.5	19May23, 23:00	413655	1-hr	140	140.1	exc
Conklin	PM2.5	19May23, 23:00	413656	1-hr	204	204.0	exc
Janvier	PM2.5	19May23, 23:00	413662	1-hr	88	87.6	exc
Surmont 2	PM2.5	19May23, 23:00	413663	1-hr	97	96.5	exc
Ft. McKay S	PM2.5	19May23, 24:00	413610	24-hr	70	69.8	exc
Anzac	PM2.5	19May23, 24:00	413652	1-hr	94	94.0	exc
Anzac	PM2.5	19May23, 24:00	413652	24-hr	49	49.1	exc
Wapasu	PM2.5	19May23, 24:00	413653	24-hr	39	39.3	exc
Stony Mtn.	PM2.5	19May23, 24:00	413655	1-hr	127	127.4	exc
Stony Mtn.	PM2.5	19May23, 24:00	413655	24-hr	77	77.4	exc
Conklin	PM2.5	19May23, 24:00	413656	1-hr	179	179.4	exc
Conklin	PM2.5	19May23, 24:00	413656	24-hr	91	90.8	exc
Janvier	PM2.5	19May23, 24:00	413662	1-hr	100	100.0	exc
Janvier	PM2.5	19May23, 24:00	413662	24-hr	56	56.0	exc
Fort Hills	PM2.5	19May23, 24:00	413423	24-hr	69	68.8	exc
Surmont 2	PM2.5	19May23, 24:00	413663	1-hr	100	100.1	exc
Surmont 2	PM2.5	19May23, 24:00	413663	24-hr	49	49.2	exc
Ells River	PM2.5	19May23, 24:00	413425	24-hr	60	59.7	exc
Bertha Ganter	PM2.5	19May23, 24:00	413611	24-hr	80	80.0	exc
Buffalo Viewpoint	PM2.5	19May23, 24:00	413644	24-hr	48	48.0	exc
Patricia McInnes	PM2.5	19May23, 24:00	413648	24-hr	57	57.4	exc
Athabasca Valley	PM2.5	19May23, 24:00	413649	24-hr	59	58.6	exc
Fort Chip	PM2.5	19May23, 24:00	413650	24-hr	54	53.5	exc
Barge Landing	PM2.5	19May23, 24:00	413651	24-hr	61	61.1	exc
Stony Mtn.	PM2.5	20May23, 01:00	413655	1-hr	135	134.9	exc
Conklin	PM2.5	20May23, 01:00	413656	1-hr	167	167.1	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Janvier	PM2.5	20May23, 01:00	413662	1-hr	98	98.1	exc
Surmont 2	PM2.5	20May23, 01:00	413663	1-hr	91	91.2	exc
Stony Mtn.	PM2.5	20May23, 02:00	413655	1-hr	128	127.7	exc
Conklin	PM2.5	20May23, 02:00	413656	1-hr	152	151.9	exc
Janvier	PM2.5	20May23, 02:00	413662	1-hr	101	101.3	exc
Stony Mtn.	PM2.5	20May23, 03:00	413655	1-hr	105	104.6	exc
Conklin	PM2.5	20May23, 03:00	413656	1-hr	120	120.5	exc
Conklin	PM2.5	20May23, 04:00	413656	1-hr	116	116.1	exc
Conklin	PM2.5	20May23, 05:00	413656	1-hr	113	112.9	exc
Conklin	PM2.5	20May23, 06:00	413656	1-hr	101	100.6	exc
Conklin	PM2.5	20May23, 07:00	413656	1-hr	97	96.6	exc
Stony Mtn.	PM2.5	20May23, 10:00	413655	1-hr	208	208.4	exc
Conklin	PM2.5	20May23, 10:00	413656	1-hr	194	193.6	exc
Janvier	PM2.5	20May23, 10:00	413662	1-hr	94	93.8	exc
Stony Mtn.	PM2.5	20May23, 11:00	413655	1-hr	274	273.6	exc
Conklin	PM2.5	20May23, 11:00	413656	1-hr	295	295.5	exc
Janvier	PM2.5	20May23, 11:00	413662	1-hr	165	168.1	exc
Surmont 2	PM2.5	20May23, 11:00	413663	1-hr	123	123.0	exc
Anzac	PM2.5	20May23, 12:00	413652	1-hr	112	112.0	exc
Stony Mtn.	PM2.5	20May23, 12:00	413655	1-hr	344	343.9	exc
Conklin	PM2.5	20May23, 12:00	413656	1-hr	420	419.7	exc
Janvier	PM2.5	20May23, 12:00	413662	1-hr	348	348.1	exc
Surmont 2	PM2.5	20May23, 12:00	413663	1-hr	116	116.1	exc
Stony Mtn.	PM2.5	20May23, 13:00	413655	1-hr	468	467.6	exc
Conklin	PM2.5	20May23, 13:00	413656	1-hr	510	510.3	exc
Janvier	PM2.5	20May23, 13:00	413662	1-hr	338	337.7	exc
Surmont 2	PM2.5	20May23, 13:00	413663	1-hr	84	84.0	exc
Stony Mtn.	PM2.5	20May23, 14:00	413655	1-hr	397	397.4	exc
Conklin	PM2.5	20May23, 14:00	413656	1-hr	387	387.4	exc
Janvier	PM2.5	20May23, 14:00	413662	1-hr	413	412.7	exc
Surmont 2	PM2.5	20May23, 14:00	413663	1-hr	89	89.3	exc
Anzac	PM2.5	20May23, 15:00	413652	1-hr	88	88.0	exc
Stony Mtn.	PM2.5	20May23, 15:00	413655	1-hr	357	356.7	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Conklin	PM2.5	20May23, 15:00	413656	1-hr	339	339.5	exc
Janvier	PM2.5	20May23, 15:00	413662	1-hr	332	331.7	exc
Surmont 2	PM2.5	20May23, 15:00	413663	1-hr	115	115.0	exc
Athabasca Valley	PM2.5	20May23, 16:00	413649	1-hr	94	94.3	exc
Anzac	PM2.5	20May23, 16:00	413652	1-hr	84	83.7	exc
Stony Mtn.	PM2.5	20May23, 16:00	413655	1-hr	325	324.5	exc
Conklin	PM2.5	20May23, 16:00	413656	1-hr	322	321.6	exc
Janvier	PM2.5	20May23, 16:00	413662	1-hr	238	238.0	exc
Surmont 2	PM2.5	20May23, 16:00	413663	1-hr	195	195.3	exc
Patricia McInnes	PM2.5	20May23, 17:00	413648	1-hr	82	81.8	exc
Athabasca Valley	PM2.5	20May23, 17:00	413649	1-hr	114	114.0	exc
Anzac	PM2.5	20May23, 17:00	413652	1-hr	186	185.9	exc
Stony Mtn.	PM2.5	20May23, 17:00	413655	1-hr	390	389.5	exc
Conklin	PM2.5	20May23, 17:00	413656	1-hr	390	390.2	exc
Janvier	PM2.5	20May23, 17:00	413662	1-hr	237	237.1	exc
Surmont 2	PM2.5	20May23, 17:00	413663	1-hr	236	236.0	exc
Athabasca Valley	PM2.5	20May23, 18:00	413649	1-hr	87	87.5	exc
Anzac	PM2.5	20May23, 18:00	413652	1-hr	357	356.6	exc
Stony Mtn.	PM2.5	20May23, 18:00	413655	1-hr	491	490.9	exc
Conklin	PM2.5	20May23, 18:00	413656	1-hr	550	550.4	exc
Janvier	PM2.5	20May23, 18:00	413662	1-hr	448	448.3	exc
Surmont 2	PM2.5	20May23, 18:00	413663	1-hr	379	378.5	exc
Patricia McInnes	PM2.5	20May23, 19:00	413648	1-hr	231	230.6	exc
Athabasca Valley	PM2.5	20May23, 19:00	413649	1-hr	312	311.8	exc
Anzac	PM2.5	20May23, 19:00	413652	1-hr	401	400.7	exc
Stony Mtn.	PM2.5	20May23, 19:00	413655	1-hr	639	638.8	exc
Conklin	PM2.5	20May23, 19:00	413656	1-hr	654	654.3	exc
Janvier	PM2.5	20May23, 19:00	413662	1-hr	575	575.4	exc
Surmont 2	PM2.5	20May23, 19:00	413663	1-hr	446	446.0	exc
Patricia McInnes	PM2.5	20May23, 20:00	413648	1-hr	378	377.8	exc
Athabasca Valley	PM2.5	20May23, 20:00	413649	1-hr	377	377.0	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Anzac	PM2.5	20May23, 20:00	413652	1-hr	358	357.9	exc
Stony Mtn.	PM2.5	20May23, 20:00	413655	1-hr	612	612.2	exc
Conklin	PM2.5	20May23, 20:00	413656	1-hr	636	636.2	exc
Janvier	PM2.5	20May23, 20:00	413662	1-hr	672	672.0	exc
Surmont 2	PM2.5	20May23, 20:00	413663	1-hr	436	436.3	exc
Buffalo Viewpoint	PM2.5	20May23, 21:00	413644	1-hr	121	121.0	exc
Patricia McInnes	PM2.5	20May23, 21:00	413648	1-hr	278	278.1	exc
Athabasca Valley	PM2.5	20May23, 21:00	413649	1-hr	293	293.4	exc
Anzac	PM2.5	20May23, 21:00	413652	1-hr	377	377.2	exc
Stony Mtn.	PM2.5	20May23, 21:00	413655	1-hr	537	536.7	exc
Conklin	PM2.5	20May23, 21:00	413656	1-hr	571	570.5	exc
Janvier	PM2.5	20May23, 21:00	413662	1-hr	586	586.4	exc
Surmont 2	PM2.5	20May23, 21:00	413663	1-hr	474	474.1	exc
Bertha Ganter	PM2.5	20May23, 22:00	413611	1-hr	120	120.4	exc
Buffalo Viewpoint	PM2.5	20May23, 22:00	413644	1-hr	131	131.0	exc
Patricia McInnes	PM2.5	20May23, 22:00	413648	1-hr	295	294.9	exc
Athabasca Valley	PM2.5	20May23, 22:00	413649	1-hr	294	293.6	exc
Barge Landing	PM2.5	20May23, 22:00	413651	1-hr	141	140.7	exc
Anzac	PM2.5	20May23, 22:00	413652	1-hr	431	431.2	exc
Stony Mtn.	PM2.5	20May23, 22:00	413655	1-hr	403	403.0	exc
Conklin	PM2.5	20May23, 22:00	413656	1-hr	515	515.0	exc
Fort Hills	PM2.5	20May23, 22:00	413467	1-hr	90	90.3	exc
Janvier	PM2.5	20May23, 22:00	413662	1-hr	464	463.7	exc
Surmont 2	PM2.5	20May23, 22:00	413663	1-hr	521	520.6	exc
Bertha Ganter	PM2.5	20May23, 23:00	413611	1-hr	232	231.5	exc
Buffalo Viewpoint	PM2.5	20May23, 23:00	413644	1-hr	145	144.8	exc
Patricia McInnes	PM2.5	20May23, 23:00	413648	1-hr	403	403.1	exc
Athabasca Valley	PM2.5	20May23, 23:00	413649	1-hr	471	471.4	exc
Barge Landing	PM2.5	20May23, 23:00	413651	1-hr	189	189.4	exc
Ft. McKay S	PM2.5	20May23, 23:00	413610	1-hr	171	171.5	exc
Anzac	PM2.5	20May23, 23:00	413652	1-hr	542	542.3	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Wapasu	PM2.5	20May23, 23:00	413653	1-hr	145	145.4	exc
Stony Mtn.	PM2.5	20May23, 23:00	413655	1-hr	282	282.2	exc
Conklin	PM2.5	20May23, 23:00	413656	1-hr	506	506.4	exc
Fort Hills	PM2.5	20May23, 23:00	413467	1-hr	171	171.0	exc
Ells River	PM2.5	20May23, 23:00	413468	1-hr	178	178.2	exc
Janvier	PM2.5	20May23, 23:00	413662	1-hr	423	422.6	exc
Surmont 2	PM2.5	20May23, 23:00	413663	1-hr	587	586.9	exc
Bertha Ganter	PM2.5	20May23, 24:00	413611	1-hr	292	292.4	exc
Buffalo Viewpoint	PM2.5	20May23, 24:00	413644	1-hr	164	163.5	exc
Buffalo Viewpoint	PM2.5	20May23, 24:00	413644	24-hr	51	50.5	exc
Patricia McInnes	PM2.5	20May23, 24:00	413648	1-hr	530	529.8	exc
Athabasca Valley	PM2.5	20May23, 24:00	413649	1-hr	519	518.9	exc
Athabasca Valley	PM2.5	20May23, 24:00	413649	24-hr	119	118.6	exc
Barge Landing	PM2.5	20May23, 24:00	413651	1-hr	298	297.9	exc
Barge Landing	PM2.5	20May23, 24:00	413651	24-hr	42	42.4	exc
Ft. McKay S	PM2.5	20May23, 24:00	413610	1-hr	358	358.3	exc
Ft. McKay S	PM2.5	20May23, 24:00	413610	24-hr	44	43.8	exc
Anzac	PM2.5	20May23, 24:00	413652	1-hr	588	588.0	exc
Anzac	PM2.5	20May23, 24:00	413652	24-hr	167	167.5	exc
Wapasu	PM2.5	20May23, 24:00	413653	1-hr	478	478.5	exc
Wapasu	PM2.5	20May23, 24:00	413653	24-hr	44	44.3	exc
Stony Mtn.	PM2.5	20May23, 24:00	413655	1-hr	220	219.5	exc
Stony Mtn.	PM2.5	20May23, 24:00	413655	24-hr	275	274.9	exc
Conklin	PM2.5	20May23, 24:00	413656	1-hr	396	396.3	exc
Conklin	PM2.5	20May23, 24:00	413656	24-hr	320	320.0	exc
Fort Hills	PM2.5	20May23, 24:00	413467	1-hr	259	258.7	exc
Ells River	PM2.5	20May23, 24:00	413468	1-hr	251	251.3	exc
Bertha Ganter	PM2.5	20May23, 24:00	413611	24-hr	51	50.9	exc
Patricia McInnes	PM2.5	20May23, 24:00	413648	24-hr	106	105.8	exc
Janvier	PM2.5	20May23, 24:00	413662	1-hr	388	387.6	exc
Janvier	PM2.5	20May23, 24:00	413662	24-hr	261	260.9	exc
Fort Hills	PM2.5	20May23, 24:00	413467	24-hr	37	36.7	exc
Surmont 2	PM2.5	20May23, 24:00	413663	1-hr	597	597.4	exc
Surmont 2	PM2.5	20May23, 24:00	413663	24-hr	206	206.4	exc
Ells River	PM2.5	20May23, 24:00	413468	24-hr	34	33.5	exc
Bertha Ganter	PM2.5	21May23, 01:00	413611	1-hr	468	468.4	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Buffalo Viewpoint	PM2.5	21May23, 01:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 01:00	413648	1-hr	596	595.5	exc
Athabasca Valley	PM2.5	21May23, 01:00	413649	1-hr	616	616.2	exc
Barge Landing	PM2.5	21May23, 01:00	413651	1-hr	464	463.6	exc
Ft. McKay S	PM2.5	21May23, 01:00	413610	1-hr	542	542.5	exc
Anzac	PM2.5	21May23, 01:00	413652	1-hr	602	601.6	exc
Wapasu	PM2.5	21May23, 01:00	413653	1-hr	441	441.4	exc
Stony Mtn.	PM2.5	21May23, 01:00	413655	1-hr	232	232.2	exc
Conklin	PM2.5	21May23, 01:00	413656	1-hr	247	247.0	exc
Fort Hills	PM2.5	21May23, 01:00	413500	1-hr	408	408.3	exc
Ells River	PM2.5	21May23, 01:00	413501	1-hr	460	460.4	exc
Janvier	PM2.5	21May23, 01:00	413662	1-hr	347	347.0	exc
Surmont 2	PM2.5	21May23, 01:00	413663	1-hr	501	500.6	exc
Bertha Ganter	PM2.5	21May23, 02:00	413611	1-hr	557	556.6	exc
Buffalo Viewpoint	PM2.5	21May23, 02:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 02:00	413648	1-hr	599	598.8	exc
Athabasca Valley	PM2.5	21May23, 02:00	413649	1-hr	603	603.0	exc
Barge Landing	PM2.5	21May23, 02:00	413651	1-hr	491	491.1	exc
Ft. McKay S	PM2.5	21May23, 02:00	413610	1-hr	579	579.5	exc
Anzac	PM2.5	21May23, 02:00	413652	1-hr	531	530.5	exc
Wapasu	PM2.5	21May23, 02:00	413653	1-hr	386	386.0	exc
Stony Mtn.	PM2.5	21May23, 02:00	413655	1-hr	222	221.6	exc
Conklin	PM2.5	21May23, 02:00	413656	1-hr	229	229.2	exc
Janvier	PM2.5	21May23, 02:00	413662	1-hr	342	342.0	exc
Fort Hills	PM2.5	21May23, 02:00	413500	1-hr	504	504.1	exc
Ells River	PM2.5	21May23, 02:00	413501	1-hr	512	512.0	exc
Surmont 2	PM2.5	21May23, 02:00	413663	1-hr	466	466.1	exc
Bertha Ganter	PM2.5	21May23, 03:00	413611	1-hr	535	534.9	exc
Buffalo Viewpoint	PM2.5	21May23, 03:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 03:00	413648	1-hr	531	531.0	exc
Athabasca Valley	PM2.5	21May23, 03:00	413649	1-hr	523	523.0	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Barge Landing	PM2.5	21May23, 03:00	413651	1-hr	437	437.3	exc
Ft. McKay S	PM2.5	21May23, 03:00	413610	1-hr	585	584.8	exc
Anzac	PM2.5	21May23, 03:00	413652	1-hr	443	442.7	exc
Wapasu	PM2.5	21May23, 03:00	413653	1-hr	347	347.1	exc
Stony Mtn.	PM2.5	21May23, 03:00	413655	1-hr	188	187.9	exc
Conklin	PM2.5	21May23, 03:00	413656	1-hr	211	211.2	exc
Janvier	PM2.5	21May23, 03:00	413662	1-hr	360	360.5	exc
Fort Hills	PM2.5	21May23, 03:00	413500	1-hr	505	504.5	exc
Ells River	PM2.5	21May23, 03:00	413501	1-hr	447	446.6	exc
Surmont 2	PM2.5	21May23, 03:00	413663	1-hr	400	400.2	exc
Bertha Ganter	PM2.5	21May23, 04:00	413611	1-hr	516	515.9	exc
Buffalo Viewpoint	PM2.5	21May23, 04:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 04:00	413648	1-hr	449	449.0	exc
Athabasca Valley	PM2.5	21May23, 04:00	413649	1-hr	482	482.1	exc
Barge Landing	PM2.5	21May23, 04:00	413651	1-hr	419	418.6	exc
Ft. McKay S	PM2.5	21May23, 04:00	413610	1-hr	550	549.8	exc
Anzac	PM2.5	21May23, 04:00	413652	1-hr	353	353.2	exc
Wapasu	PM2.5	21May23, 04:00	413653	1-hr	389	388.6	exc
Stony Mtn.	PM2.5	21May23, 04:00	413655	1-hr	166	166.1	exc
Conklin	PM2.5	21May23, 04:00	413656	1-hr	199	199.2	exc
Janvier	PM2.5	21May23, 04:00	413662	1-hr	327	326.8	exc
Fort Hills	PM2.5	21May23, 04:00	413500	1-hr	459	459.1	exc
Surmont 2	PM2.5	21May23, 04:00	413663	1-hr	382	381.6	exc
Ells River	PM2.5	21May23, 04:00	413501	1-hr	416	415.8	exc
Bertha Ganter	PM2.5	21May23, 05:00	413611	1-hr	506	505.7	exc
Buffalo Viewpoint	PM2.5	21May23, 05:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 05:00	413648	1-hr	426	426.5	exc
Athabasca Valley	PM2.5	21May23, 05:00	413649	1-hr	454	453.7	exc
Fort Chip	PM2.5	21May23, 05:00	413650	1-hr	125	125.0	exc
Barge Landing	PM2.5	21May23, 05:00	413651	1-hr	381	380.5	exc
Ft. McKay S	PM2.5	21May23, 05:00	413610	1-hr	504	503.5	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Anzac	PM2.5	21May23, 05:00	413652	1-hr	359	358.8	exc
Wapasu	PM2.5	21May23, 05:00	413653	1-hr	417	416.5	exc
Stony Mtn.	PM2.5	21May23, 05:00	413655	1-hr	152	151.9	exc
Janvier	PM2.5	21May23, 05:00	413662	1-hr	324	323.8	exc
Fort Hills	PM2.5	21May23, 05:00	413500	1-hr	432	431.7	exc
Surmont 2	PM2.5	21May23, 05:00	413663	1-hr	389	388.6	exc
Ells River	PM2.5	21May23, 05:00	413501	1-hr	415	415.4	exc
Conklin	PM2.5	21May23, 05:00	413656	1-hr	200	200.1	exc
Bertha Ganter	PM2.5	21May23, 06:00	413611	1-hr	490	490.1	exc
Buffalo Viewpoint	PM2.5	21May23, 06:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 06:00	413648	1-hr	409	409.2	exc
Athabasca Valley	PM2.5	21May23, 06:00	413649	1-hr	444	444.3	exc
Fort Chip	PM2.5	21May23, 06:00	413650	1-hr	269	269.0	exc
Barge Landing	PM2.5	21May23, 06:00	413651	1-hr	384	383.9	exc
Ft. McKay S	PM2.5	21May23, 06:00	413610	1-hr	474	474.5	exc
Anzac	PM2.5	21May23, 06:00	413652	1-hr	365	364.9	exc
Wapasu	PM2.5	21May23, 06:00	413653	1-hr	387	387.0	exc
Stony Mtn.	PM2.5	21May23, 06:00	413655	1-hr	129	129.3	exc
Janvier	PM2.5	21May23, 06:00	413662	1-hr	401	400.9	exc
Fort Hills	PM2.5	21May23, 06:00	413500	1-hr	403	402.6	exc
Surmont 2	PM2.5	21May23, 06:00	413663	1-hr	397	397.4	exc
Ells River	PM2.5	21May23, 06:00	413501	1-hr	350	350.1	exc
Conklin	PM2.5	21May23, 06:00	413656	1-hr	208	208.1	exc
Bertha Ganter	PM2.5	21May23, 07:00	413611	1-hr	430	429.9	exc
Buffalo Viewpoint	PM2.5	21May23, 07:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 07:00	413648	1-hr	406	405.7	exc
Athabasca Valley	PM2.5	21May23, 07:00	413649	1-hr	434	434.0	exc
Fort Chip	PM2.5	21May23, 07:00	413650	1-hr	362	362.2	exc
Barge Landing	PM2.5	21May23, 07:00	413651	1-hr	397	397.4	exc
Ft. McKay S	PM2.5	21May23, 07:00	413610	1-hr	466	466.0	exc
Anzac	PM2.5	21May23, 07:00	413652	1-hr	378	378.5	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Wapasu	PM2.5	21May23, 07:00	413653	1-hr	329	329.2	exc
Stony Mtn.	PM2.5	21May23, 07:00	413655	1-hr	111	110.8	exc
Janvier	PM2.5	21May23, 07:00	413662	1-hr	377	376.8	exc
Fort Hills	PM2.5	21May23, 07:00	413500	1-hr	416	416.0	exc
Surmont 2	PM2.5	21May23, 07:00	413663	1-hr	385	384.8	exc
Ells River	PM2.5	21May23, 07:00	413501	1-hr	331	330.7	exc
Conklin	PM2.5	21May23, 07:00	413656	1-hr	192	191.6	exc
Bertha Ganter	PM2.5	21May23, 08:00	413611	1-hr	416	416.4	exc
Buffalo Viewpoint	PM2.5	21May23, 08:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 08:00	413648	1-hr	404	403.8	exc
Athabasca Valley	PM2.5	21May23, 08:00	413649	1-hr	444	444.3	exc
Fort Chip	PM2.5	21May23, 08:00	413650	1-hr	407	407.0	exc
Barge Landing	PM2.5	21May23, 08:00	413651	1-hr	375	375.1	exc
Ft. McKay S	PM2.5	21May23, 08:00	413610	1-hr	440	440.4	exc
Anzac	PM2.5	21May23, 08:00	413652	1-hr	364	364.0	exc
Wapasu	PM2.5	21May23, 08:00	413653	1-hr	267	266.5	exc
Stony Mtn.	PM2.5	21May23, 08:00	413655	1-hr	93	93.5	exc
Janvier	PM2.5	21May23, 08:00	413662	1-hr	379	379.1	exc
Fort Hills	PM2.5	21May23, 08:00	413500	1-hr	405	405.1	exc
Surmont 2	PM2.5	21May23, 08:00	413663	1-hr	352	351.9	exc
Ells River	PM2.5	21May23, 08:00	413501	1-hr	347	347.0	exc
Conklin	PM2.5	21May23, 08:00	413656	1-hr	176	175.9	exc
Bertha Ganter	PM2.5	21May23, 09:00	413611	1-hr	405	404.9	exc
Buffalo Viewpoint	PM2.5	21May23, 09:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 09:00	413648	1-hr	398	398.3	exc
Athabasca Valley	PM2.5	21May23, 09:00	413649	1-hr	412	412.5	exc
Fort Chip	PM2.5	21May23, 09:00	413650	1-hr	415	415.4	exc
Barge Landing	PM2.5	21May23, 09:00	413651	1-hr	369	369.2	exc
Ft. McKay S	PM2.5	21May23, 09:00	413610	1-hr	406	406.2	exc
Anzac	PM2.5	21May23, 09:00	413652	1-hr	302	302.2	exc
Wapasu	PM2.5	21May23, 09:00	413653	1-hr	213	213.2	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Stony Mtn.	PM2.5	21May23, 09:00	413655	1-hr	100	99.5	exc
Janvier	PM2.5	21May23, 09:00	413662	1-hr	374	373.9	exc
Fort Hills	PM2.5	21May23, 09:00	413500	1-hr	389	389.4	exc
Surmont 2	PM2.5	21May23, 09:00	413663	1-hr	263	262.8	exc
Ells River	PM2.5	21May23, 09:00	413501	1-hr	344	343.5	exc
Conklin	PM2.5	21May23, 09:00	413656	1-hr	137	137.3	exc
Bertha Ganter	PM2.5	21May23, 10:00	413611	1-hr	372	372.1	exc
Buffalo Viewpoint	PM2.5	21May23, 10:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 10:00	413648	1-hr	364	364.2	exc
Athabasca Valley	PM2.5	21May23, 10:00	413649	1-hr	359	358.7	exc
Fort Chip	PM2.5	21May23, 10:00	413650	1-hr	399	399.1	exc
Barge Landing	PM2.5	21May23, 10:00	413651	1-hr	327	326.8	exc
Ft. McKay S	PM2.5	21May23, 10:00	413610	1-hr	379	378.9	exc
Anzac	PM2.5	21May23, 10:00	413652	1-hr	262	262.1	exc
Wapasu	PM2.5	21May23, 10:00	413653	1-hr	193	193.3	exc
Stony Mtn.	PM2.5	21May23, 10:00	413655	1-hr	110	110.2	exc
Janvier	PM2.5	21May23, 10:00	413662	1-hr	253	252.5	exc
Fort Hills	PM2.5	21May23, 10:00	413500	1-hr	362	361.8	exc
Surmont 2	PM2.5	21May23, 10:00	413663	1-hr	242	242.4	exc
Ells River	PM2.5	21May23, 10:00	413501	1-hr	321	320.7	exc
Conklin	PM2.5	21May23, 10:00	413656	1-hr	115	114.7	exc
Bertha Ganter	PM2.5	21May23, 11:00	413611	1-hr	350	349.8	exc
Buffalo Viewpoint	PM2.5	21May23, 11:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 11:00	413648	1-hr	321	321.4	exc
Athabasca Valley	PM2.5	21May23, 11:00	413649	1-hr	317	316.6	exc
Fort Chip	PM2.5	21May23, 11:00	413650	1-hr	371	370.6	exc
Barge Landing	PM2.5	21May23, 11:00	413651	1-hr	287	287.4	exc
Ft. McKay S	PM2.5	21May23, 11:00	413610	1-hr	338	338.4	exc
Anzac	PM2.5	21May23, 11:00	413652	1-hr	223	222.9	exc
Wapasu	PM2.5	21May23, 11:00	413653	1-hr	189	189.1	exc
Stony Mtn.	PM2.5	21May23, 11:00	413655	1-hr	131	130.6	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Conklin	PM2.5	21May23, 11:00	413656	1-hr	116	115.8	exc
Janvier	PM2.5	21May23, 11:00	413662	1-hr	148	147.8	exc
Fort Hills	PM2.5	21May23, 11:00	413500	1-hr	332	332.1	exc
Surmont 2	PM2.5	21May23, 11:00	413663	1-hr	195	195.1	exc
Ells River	PM2.5	21May23, 11:00	413501	1-hr	257	257.0	exc
Bertha Ganter	PM2.5	21May23, 12:00	413611	1-hr	316	315.9	exc
Buffalo Viewpoint	PM2.5	21May23, 12:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 12:00	413648	1-hr	285	285.2	exc
Athabasca Valley	PM2.5	21May23, 12:00	413649	1-hr	268	268.3	exc
Fort Chip	PM2.5	21May23, 12:00	413650	1-hr	338	338.3	exc
Barge Landing	PM2.5	21May23, 12:00	413651	1-hr	262	262.4	exc
Ft. McKay S	PM2.5	21May23, 12:00	413610	1-hr	314	313.9	exc
Anzac	PM2.5	21May23, 12:00	413652	1-hr	205	204.9	exc
Wapasu	PM2.5	21May23, 12:00	413653	1-hr	198	197.6	exc
Stony Mtn.	PM2.5	21May23, 12:00	413655	1-hr	156	156.3	exc
Conklin	PM2.5	21May23, 12:00	413656	1-hr	133	133.1	exc
Janvier	PM2.5	21May23, 12:00	413662	1-hr	115	115.1	exc
Fort Hills	PM2.5	21May23, 12:00	413500	1-hr	293	293.0	exc
Surmont 2	PM2.5	21May23, 12:00	413663	1-hr	191	190.6	exc
Ells River	PM2.5	21May23, 12:00	413501	1-hr	250	250.0	exc
Bertha Ganter	PM2.5	21May23, 13:00	413611	1-hr	287	286.8	exc
Buffalo Viewpoint	PM2.5	21May23, 13:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 13:00	413648	1-hr	274	274.1	exc
Athabasca Valley	PM2.5	21May23, 13:00	413649	1-hr	254	253.8	exc
Fort Chip	PM2.5	21May23, 13:00	413650	1-hr	282	281.8	exc
Barge Landing	PM2.5	21May23, 13:00	413651	1-hr	242	241.6	exc
Ft. McKay S	PM2.5	21May23, 13:00	413610	1-hr	291	290.6	exc
Anzac	PM2.5	21May23, 13:00	413652	1-hr	224	223.6	exc
Wapasu	PM2.5	21May23, 13:00	413653	1-hr	212	212.1	exc
Stony Mtn.	PM2.5	21May23, 13:00	413655	1-hr	184	184.0	exc
Conklin	PM2.5	21May23, 13:00	413656	1-hr	155	154.5	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Janvier	PM2.5	21May23, 13:00	413662	1-hr	118	118.3	exc
Fort Hills	PM2.5	21May23, 13:00	413500	1-hr	266	266.1	exc
Surmont 2	PM2.5	21May23, 13:00	413663	1-hr	166	166.0	exc
Ells River	PM2.5	21May23, 13:00	413501	1-hr	241	241.1	exc
Bertha Ganter	PM2.5	21May23, 14:00	413611	1-hr	271	270.6	exc
Buffalo Viewpoint	PM2.5	21May23, 14:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 14:00	413648	1-hr	252	251.6	exc
Athabasca Valley	PM2.5	21May23, 14:00	413649	1-hr	241	241.4	exc
Fort Chip	PM2.5	21May23, 14:00	413650	1-hr	264	263.5	exc
Barge Landing	PM2.5	21May23, 14:00	413651	1-hr	243	243.2	exc
Ft. McKay S	PM2.5	21May23, 14:00	413610	1-hr	282	281.6	exc
Anzac	PM2.5	21May23, 14:00	413652	1-hr	236	236.2	exc
Wapasu	PM2.5	21May23, 14:00	413653	1-hr	219	218.7	exc
Stony Mtn.	PM2.5	21May23, 14:00	413655	1-hr	193	193.0	exc
Conklin	PM2.5	21May23, 14:00	413656	1-hr	167	167.2	exc
Janvier	PM2.5	21May23, 14:00	413662	1-hr	142	141.9	exc
Fort Hills	PM2.5	21May23, 14:00	413500	1-hr	264	264.1	exc
Surmont 2	PM2.5	21May23, 14:00	413663	1-hr	157	157.1	exc
Ells River	PM2.5	21May23, 14:00	413501	1-hr	243	242.9	exc
Bertha Ganter	PM2.5	21May23, 15:00	413611	1-hr	285	284.9	exc
Buffalo Viewpoint	PM2.5	21May23, 15:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 15:00	413648	1-hr	245	245.1	exc
Athabasca Valley	PM2.5	21May23, 15:00	413649	1-hr	248	247.9	exc
Fort Chip	PM2.5	21May23, 15:00	413650	1-hr	251	250.6	exc
Barge Landing	PM2.5	21May23, 15:00	413651	1-hr	258	258.0	exc
Ft. McKay S	PM2.5	21May23, 15:00	413610	1-hr	305	305.3	exc
Anzac	PM2.5	21May23, 15:00	413652	1-hr	209	209.2	exc
Wapasu	PM2.5	21May23, 15:00	413653	1-hr	210	210.0	exc
Stony Mtn.	PM2.5	21May23, 15:00	413655	1-hr	218	218.1	exc
Conklin	PM2.5	21May23, 15:00	413656	1-hr	184	183.7	exc
Janvier	PM2.5	21May23, 15:00	413662	1-hr	139	139.2	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Fort Hills	PM2.5	21May23, 15:00	413500	1-hr	268	268.3	exc
Surmont 2	PM2.5	21May23, 15:00	413663	1-hr	156	156.3	exc
Ells River	PM2.5	21May23, 15:00	413501	1-hr	235	235.5	exc
Bertha Ganter	PM2.5	21May23, 16:00	413611	1-hr	295	294.5	exc
Patricia McInnes	PM2.5	21May23, 16:00	413648	1-hr	251	250.8	exc
Athabasca Valley	PM2.5	21May23, 16:00	413649	1-hr	259	258.9	exc
Fort Chip	PM2.5	21May23, 16:00	413650	1-hr	251	250.9	exc
Barge Landing	PM2.5	21May23, 16:00	413651	1-hr	267	267.2	exc
Ft. McKay S	PM2.5	21May23, 16:00	413610	1-hr	307	307.3	exc
Anzac	PM2.5	21May23, 16:00	413652	1-hr	199	198.6	exc
Wapasu	PM2.5	21May23, 16:00	413653	1-hr	218	218.3	exc
Stony Mtn.	PM2.5	21May23, 16:00	413655	1-hr	233	233.2	exc
Conklin	PM2.5	21May23, 16:00	413656	1-hr	245	245.0	exc
Janvier	PM2.5	21May23, 16:00	413662	1-hr	138	137.8	exc
Fort Hills	PM2.5	21May23, 16:00	413500	1-hr	261	261.5	exc
Surmont 2	PM2.5	21May23, 16:00	413663	1-hr	144	144.2	exc
Ells River	PM2.5	21May23, 16:00	413501	1-hr	253	252.6	exc
Bertha Ganter	PM2.5	21May23, 17:00	413611	1-hr	281	281.0	exc
Buffalo Viewpoint	PM2.5	21May23, 17:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 17:00	413648	1-hr	251	250.5	exc
Athabasca Valley	PM2.5	21May23, 17:00	413649	1-hr	240	240.4	exc
Barge Landing	PM2.5	21May23, 17:00	413651	1-hr	252	251.8	exc
Ft. McKay S	PM2.5	21May23, 17:00	413610	1-hr	286	285.6	exc
Anzac	PM2.5	21May23, 17:00	413652	1-hr	190	190.1	exc
Wapasu	PM2.5	21May23, 17:00	413653	1-hr	221	220.7	exc
Stony Mtn.	PM2.5	21May23, 17:00	413655	1-hr	222	222.2	exc
Conklin	PM2.5	21May23, 17:00	413656	1-hr	230	230.0	exc
Janvier	PM2.5	21May23, 17:00	413662	1-hr	139	139.2	exc
Fort Hills	PM2.5	21May23, 17:00	413500	1-hr	280	279.6	exc
Surmont 2	PM2.5	21May23, 17:00	413663	1-hr	144	143.9	exc
Ells River	PM2.5	21May23, 17:00	413501	1-hr	266	265.9	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Bertha Ganter	PM2.5	21May23, 18:00	413611	1-hr	262	261.5	exc
Buffalo Viewpoint	PM2.5	21May23, 18:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 18:00	413648	1-hr	229	229.5	exc
Athabasca Valley	PM2.5	21May23, 18:00	413649	1-hr	223	223.4	exc
Fort Chip	PM2.5	21May23, 18:00	413650	1-hr	297	297.2	exc
Barge Landing	PM2.5	21May23, 18:00	413651	1-hr	237	237.4	exc
Ft. McKay S	PM2.5	21May23, 18:00	413610	1-hr	278	278.4	exc
Anzac	PM2.5	21May23, 18:00	413652	1-hr	179	179.3	exc
Wapasu	PM2.5	21May23, 18:00	413653	1-hr	229	228.7	exc
Stony Mtn.	PM2.5	21May23, 18:00	413655	1-hr	201	200.7	exc
Conklin	PM2.5	21May23, 18:00	413656	1-hr	221	220.8	exc
Janvier	PM2.5	21May23, 18:00	413662	1-hr	129	129.0	exc
Fort Hills	PM2.5	21May23, 18:00	413500	1-hr	284	283.9	exc
Surmont 2	PM2.5	21May23, 18:00	413663	1-hr	150	150.4	exc
Ells River	PM2.5	21May23, 18:00	413501	1-hr	246	246.0	exc
Bertha Ganter	PM2.5	21May23, 19:00	413611	1-hr	261	261.1	exc
Patricia McInnes	PM2.5	21May23, 19:00	413648	1-hr	206	205.9	exc
Athabasca Valley	PM2.5	21May23, 19:00	413649	1-hr	202	202.4	exc
Fort Chip	PM2.5	21May23, 19:00	413650	1-hr	285	284.6	exc
Barge Landing	PM2.5	21May23, 19:00	413651	1-hr	233	233.3	exc
Ft. McKay S	PM2.5	21May23, 19:00	413610	1-hr	263	262.9	exc
Anzac	PM2.5	21May23, 19:00	413652	1-hr	181	181.3	exc
Wapasu	PM2.5	21May23, 19:00	413653	1-hr	221	221.3	exc
Stony Mtn.	PM2.5	21May23, 19:00	413655	1-hr	198	198.3	exc
Conklin	PM2.5	21May23, 19:00	413656	1-hr	216	216.2	exc
Janvier	PM2.5	21May23, 19:00	413662	1-hr	128	127.9	exc
Fort Hills	PM2.5	21May23, 19:00	413500	1-hr	266	265.8	exc
Surmont 2	PM2.5	21May23, 19:00	413663	1-hr	144	143.8	exc
Ells River	PM2.5	21May23, 19:00	413501	1-hr	222	222.0	exc
Bertha Ganter	PM2.5	21May23, 20:00	413611	1-hr	252	251.9	exc
Patricia McInnes	PM2.5	21May23, 20:00	413648	1-hr	197	196.7	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Athabasca Valley	PM2.5	21May23, 20:00	413649	1-hr	193	193.1	exc
Fort Chip	PM2.5	21May23, 20:00	413650	1-hr	275	274.7	exc
Barge Landing	PM2.5	21May23, 20:00	413651	1-hr	235	235.4	exc
Ft. McKay S	PM2.5	21May23, 20:00	413610	1-hr	255	255.1	exc
Anzac	PM2.5	21May23, 20:00	413652	1-hr	186	186.2	exc
Wapasu	PM2.5	21May23, 20:00	413653	1-hr	191	190.7	exc
Stony Mtn.	PM2.5	21May23, 20:00	413655	1-hr	203	202.7	exc
Conklin	PM2.5	21May23, 20:00	413656	1-hr	234	234.3	exc
Janvier	PM2.5	21May23, 20:00	413662	1-hr	127	128.3	exc
Fort Hills	PM2.5	21May23, 20:00	413500	1-hr	262	262.1	exc
Surmont 2	PM2.5	21May23, 20:00	413663	1-hr	136	136.4	exc
Ells River	PM2.5	21May23, 20:00	413501	1-hr	226	225.9	exc
Bertha Ganter	PM2.5	21May23, 21:00	413611	1-hr	245	244.9	exc
Buffalo Viewpoint	PM2.5	21May23, 21:00		1-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 21:00	413648	1-hr	196	196.2	exc
Athabasca Valley	PM2.5	21May23, 21:00	413649	1-hr	195	195.1	exc
Fort Chip	PM2.5	21May23, 21:00	413650	1-hr	270	269.6	exc
Barge Landing	PM2.5	21May23, 21:00	413651	1-hr	235	234.7	exc
Ft. McKay S	PM2.5	21May23, 21:00	413610	1-hr	251	251.5	exc
Anzac	PM2.5	21May23, 21:00	413652	1-hr	185	184.6	exc
Wapasu	PM2.5	21May23, 21:00	413653	1-hr	180	179.8	exc
Stony Mtn.	PM2.5	21May23, 21:00	413655	1-hr	201	200.6	exc
Conklin	PM2.5	21May23, 21:00	413656	1-hr	236	236.0	exc
Janvier	PM2.5	21May23, 21:00	413662	1-hr	133	132.7	exc
Fort Hills	PM2.5	21May23, 21:00	413500	1-hr	257	256.5	exc
Surmont 2	PM2.5	21May23, 21:00	413663	1-hr	131	130.8	exc
Ells River	PM2.5	21May23, 21:00	413501	1-hr	229	228.9	exc
Bertha Ganter	PM2.5	21May23, 22:00	413611	1-hr	255	255.1	exc
Patricia McInnes	PM2.5	21May23, 22:00	413648	1-hr	188	187.7	exc
Athabasca Valley	PM2.5	21May23, 22:00	413649	1-hr	191	190.8	exc
Fort Chip	PM2.5	21May23, 22:00	413650	1-hr	266	265.9	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Barge Landing	PM2.5	21May23, 22:00	413651	1-hr	249	248.7	exc
Ft. McKay S	PM2.5	21May23, 22:00	413610	1-hr	248	247.9	exc
Anzac	PM2.5	21May23, 22:00	413652	1-hr	176	175.9	exc
Wapasu	PM2.5	21May23, 22:00	413653	1-hr	169	168.7	exc
Stony Mtn.	PM2.5	21May23, 22:00	413655	1-hr	161	160.7	exc
Conklin	PM2.5	21May23, 22:00	413656	1-hr	206	205.7	exc
Janvier	PM2.5	21May23, 22:00	413662	1-hr	136	136.1	exc
Fort Hills	PM2.5	21May23, 22:00	413500	1-hr	194	194.0	exc
Surmont 2	PM2.5	21May23, 22:00	413663	1-hr	129	129.0	exc
Ells River	PM2.5	21May23, 22:00	413501	1-hr	222	222.0	exc
Bertha Ganter	PM2.5	21May23, 23:00	413611	1-hr	253	252.6	exc
Patricia McInnes	PM2.5	21May23, 23:00	413648	1-hr	183	183.1	exc
Athabasca Valley	PM2.5	21May23, 23:00	413649	1-hr	181	181.0	exc
Fort Chip	PM2.5	21May23, 23:00	413650	1-hr	263	263.4	exc
Barge Landing	PM2.5	21May23, 23:00	413651	1-hr	253	252.6	exc
Ft. McKay S	PM2.5	21May23, 23:00	413610	1-hr	249	248.7	exc
Anzac	PM2.5	21May23, 23:00	413652	1-hr	167	167.1	exc
Wapasu	PM2.5	21May23, 23:00	413653	1-hr	164	163.6	exc
Stony Mtn.	PM2.5	21May23, 23:00	413655	1-hr	108	107.5	exc
Conklin	PM2.5	21May23, 23:00	413656	1-hr	209	209.2	exc
Janvier	PM2.5	21May23, 23:00	413662	1-hr	136	135.8	exc
Fort Hills	PM2.5	21May23, 23:00	413500	1-hr	175	175.3	exc
Surmont 2	PM2.5	21May23, 23:00	413663	1-hr	129	128.6	exc
Ells River	PM2.5	21May23, 23:00	413501	1-hr	222	221.8	exc
Bertha Ganter	PM2.5	21May23, 24:00	413611	1-hr	245	244.9	exc
Bertha Ganter	PM2.5	21May23, 24:00	413611	24-hr	356	356.3	exc
Buffalo Viewpoint	PM2.5	21May23, 24:00	413644	24-hr	-	-	nae
Patricia McInnes	PM2.5	21May23, 24:00	413648	1-hr	174	174.5	exc
Patricia McInnes	PM2.5	21May23, 24:00	413648	24-hr	326	326.4	exc
Athabasca Valley	PM2.5	21May23, 24:00	413649	1-hr	175	174.8	exc
Athabasca Valley	PM2.5	21May23, 24:00	413649	24-hr	332	331.7	exc
Fort Chip	PM2.5	21May23, 24:00	413650	1-hr	260	259.7	exc
Fort Chip	PM2.5	21May23, 24:00	413650	24-hr	249	248.7	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Barge Landing	PM2.5	21May23, 24:00	413651	1-hr	238	237.9	exc
Barge Landing	PM2.5	21May23, 24:00	413651	24-hr	314	314.0	exc
Ft. McKay S	PM2.5	21May23, 24:00	413610	1-hr	248	248.3	exc
Ft. McKay S	PM2.5	21May23, 24:00	413610	24-hr	368	368.4	exc
Anzac	PM2.5	21May23, 24:00	413652	1-hr	160	160.2	exc
Anzac	PM2.5	21May23, 24:00	413652	24-hr	278	278.3	exc
Wapasu	PM2.5	21May23, 24:00	413653	1-hr	147	147.1	exc
Wapasu	PM2.5	21May23, 24:00	413653	24-hr	256	255.6	exc
Stony Mtn.	PM2.5	21May23, 24:00	413655	1-hr	83	82.6	exc
Conklin	PM2.5	21May23, 24:00	413656	1-hr	191	191.1	exc
Janvier	PM2.5	21May23, 24:00	413662	1-hr	144	143.8	exc
Janvier	PM2.5	21May23, 24:00	413662	24-hr	223	223.2	exc
Fort Hills	PM2.5	21May23, 24:00	413500	1-hr	205	205.2	exc
Fort Hills	PM2.5	21May23, 24:00	413500	24-hr	329	328.8	exc
Surmont 2	PM2.5	21May23, 24:00	413663	1-hr	139	139.4	exc
Surmont 2	PM2.5	21May23, 24:00	413663	24-hr	245	245.3	exc
Ells River	PM2.5	21May23, 24:00	413501	1-hr	205	204.8	exc
Ells River	PM2.5	21May23, 24:00	413501	24-hr	302	302.4	exc
Stony Mtn.	PM2.5	21May23, 24:00	413655	24-hr	166	166.4	exc
Conklin	PM2.5	21May23, 24:00	413656	24-hr	194	194.0	exc
Bertha Ganter	PM2.5	22May23, 01:00	413942	1-hr	205	204.9	exc
Patricia McInnes	PM2.5	22May23, 01:00	413943	1-hr	144	143.7	exc
Athabasca Valley	PM2.5	22May23, 01:00	413944	1-hr	170	170.4	exc
Fort Chip	PM2.5	22May23, 01:00	413945	1-hr	245	245.1	exc
Barge Landing	PM2.5	22May23, 01:00	413946	1-hr	227	227.1	exc
Ft. McKay S	PM2.5	22May23, 01:00	413947	1-hr	244	244.1	exc
Anzac	PM2.5	22May23, 01:00	413948	1-hr	154	154.3	exc
Wapasu	PM2.5	22May23, 01:00	413949	1-hr	148	148.3	exc
Conklin	PM2.5	22May23, 01:00	413950	1-hr	174	173.8	exc
Janvier	PM2.5	22May23, 01:00	413951	1-hr	150	149.6	exc
Fort Hills	PM2.5	22May23, 01:00	413534	1-hr	235	235.1	exc
Surmont 2	PM2.5	22May23, 01:00	413952	1-hr	136	136.1	exc
Ells River	PM2.5	22May23, 01:00	413535	1-hr	185	184.6	exc
Bertha Ganter	PM2.5	22May23, 02:00	413942	1-hr	227	226.6	exc
Patricia McInnes	PM2.5	22May23, 02:00	413943	1-hr	149	149.0	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Athabasca Valley	PM2.5	22May23, 02:00	413944	1-hr	163	162.8	exc
Fort Chip	PM2.5	22May23, 02:00	413945	1-hr	201	200.8	exc
Barge Landing	PM2.5	22May23, 02:00	413946	1-hr	216	215.7	exc
Ft. McKay S	PM2.5	22May23, 02:00	413947	1-hr	236	236.0	exc
Wapasu	PM2.5	22May23, 02:00	413949	1-hr	161	161.5	exc
Conklin	PM2.5	22May23, 02:00	413950	1-hr	164	164.3	exc
Janvier	PM2.5	22May23, 02:00	413951	1-hr	152	151.5	exc
Fort Hills	PM2.5	22May23, 02:00	413534	1-hr	263	263.1	exc
Surmont 2	PM2.5	22May23, 02:00	413952	1-hr	138	137.6	exc
Ells River	PM2.5	22May23, 02:00	413535	1-hr	207	206.5	exc
Anzac	PM2.5	22May23, 02:00	413948	1-hr	158	157.9	exc
Bertha Ganter	PM2.5	22May23, 03:00	413942	1-hr	248	248.1	exc
Patricia McInnes	PM2.5	22May23, 03:00	413943	1-hr	154	153.8	exc
Athabasca Valley	PM2.5	22May23, 03:00	413944	1-hr	165	165.1	exc
Fort Chip	PM2.5	22May23, 03:00	413945	1-hr	137	137.2	exc
Barge Landing	PM2.5	22May23, 03:00	413946	1-hr	228	228.1	exc
Ft. McKay S	PM2.5	22May23, 03:00	413947	1-hr	240	239.9	exc
Wapasu	PM2.5	22May23, 03:00	413949	1-hr	192	191.7	exc
Stony Mtn.	PM2.5	22May23, 03:00	413953	1-hr	85	85.5	exc
Conklin	PM2.5	22May23, 03:00	413950	1-hr	158	157.5	exc
Janvier	PM2.5	22May23, 03:00	413951	1-hr	160	159.5	exc
Fort Hills	PM2.5	22May23, 03:00	413534	1-hr	270	269.8	exc
Surmont 2	PM2.5	22May23, 03:00	413952	1-hr	130	129.8	exc
Ells River	PM2.5	22May23, 03:00	413535	1-hr	231	231.3	exc
Anzac	PM2.5	22May23, 03:00	413948	1-hr	159	158.6	exc
Bertha Ganter	PM2.5	22May23, 04:00	413942	1-hr	258	258.3	exc
Patricia McInnes	PM2.5	22May23, 04:00	413943	1-hr	145	145.4	exc
Athabasca Valley	PM2.5	22May23, 04:00	413944	1-hr	139	138.7	exc
Fort Chip	PM2.5	22May23, 04:00	413945	1-hr	89	89.0	exc
Barge Landing	PM2.5	22May23, 04:00	413946	1-hr	239	238.7	exc
Ft. McKay S	PM2.5	22May23, 04:00	413947	1-hr	254	253.7	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Wapasu	PM2.5	22May23, 04:00	413949	1-hr	212	212.3	exc
Stony Mtn.	PM2.5	22May23, 04:00	413953	1-hr	121	121.2	exc
Conklin	PM2.5	22May23, 04:00	413950	1-hr	145	145.1	exc
Janvier	PM2.5	22May23, 04:00	413951	1-hr	156	156.2	exc
Fort Hills	PM2.5	22May23, 04:00	413534	1-hr	283	282.8	exc
Surmont 2	PM2.5	22May23, 04:00	413952	1-hr	123	122.9	exc
Ells River	PM2.5	22May23, 04:00	413535	1-hr	247	246.9	exc
Anzac	PM2.5	22May23, 04:00	413948	1-hr	151	151.0	exc
Bertha Ganter	PM2.5	22May23, 05:00	413942	1-hr	271	270.8	exc
Patricia McInnes	PM2.5	22May23, 05:00	413943	1-hr	198	198.5	exc
Athabasca Valley	PM2.5	22May23, 05:00	413944	1-hr	135	134.6	exc
Barge Landing	PM2.5	22May23, 05:00	413946	1-hr	253	252.7	exc
Ft. McKay S	PM2.5	22May23, 05:00	413947	1-hr	287	286.7	exc
Anzac	PM2.5	22May23, 05:00	413948	1-hr	151	150.7	exc
Wapasu	PM2.5	22May23, 05:00	413949	1-hr	204	204.4	exc
Stony Mtn.	PM2.5	22May23, 05:00	413953	1-hr	89	88.7	exc
Conklin	PM2.5	22May23, 05:00	413950	1-hr	133	132.5	exc
Janvier	PM2.5	22May23, 05:00	413951	1-hr	152	152.1	exc
Fort Hills	PM2.5	22May23, 05:00	413534	1-hr	262	261.8	exc
Surmont 2	PM2.5	22May23, 05:00	413952	1-hr	115	115.4	exc
Ells River	PM2.5	22May23, 05:00	413535	1-hr	247	246.9	exc
Bertha Ganter	PM2.5	22May23, 06:00	413942	1-hr	241	240.7	exc
Patricia McInnes	PM2.5	22May23, 06:00	413943	1-hr	247	247.1	exc
Athabasca Valley	PM2.5	22May23, 06:00	413944	1-hr	145	144.5	exc
Barge Landing	PM2.5	22May23, 06:00	413946	1-hr	241	240.8	exc
Ft. McKay S	PM2.5	22May23, 06:00	413947	1-hr	284	284.2	exc
Anzac	PM2.5	22May23, 06:00	413948	1-hr	144	143.6	exc
Wapasu	PM2.5	22May23, 06:00	413949	1-hr	214	214.1	exc
Stony Mtn.	PM2.5	22May23, 06:00	413953	1-hr	87	86.9	exc
Conklin	PM2.5	22May23, 06:00	413950	1-hr	125	124.6	exc
Janvier	PM2.5	22May23, 06:00	413951	1-hr	143	143.4	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Fort Hills	PM2.5	22May23, 06:00	413534	1-hr	185	185.4	exc
Surmont 2	PM2.5	22May23, 06:00	413952	1-hr	111	110.7	exc
Ells River	PM2.5	22May23, 06:00	413535	1-hr	178	178.4	exc
Bertha Ganter	PM2.5	22May23, 07:00	413942	1-hr	171	170.8	exc
Patricia McInnes	PM2.5	22May23, 07:00	413943	1-hr	249	249.1	exc
Athabasca Valley	PM2.5	22May23, 07:00	413944	1-hr	196	195.7	exc
Barge Landing	PM2.5	22May23, 07:00	413946	1-hr	161	161.4	exc
Ft. McKay S	PM2.5	22May23, 07:00	413947	1-hr	196	196.4	exc
Anzac	PM2.5	22May23, 07:00	413948	1-hr	124	124.1	exc
Wapasu	PM2.5	22May23, 07:00	413949	1-hr	212	211.5	exc
Stony Mtn.	PM2.5	22May23, 07:00	413953	1-hr	123	123.3	exc
Conklin	PM2.5	22May23, 07:00	413950	1-hr	156	155.6	exc
Janvier	PM2.5	22May23, 07:00	413951	1-hr	137	136.7	exc
Fort Hills	PM2.5	22May23, 07:00	413534	1-hr	105	104.8	exc
Surmont 2	PM2.5	22May23, 07:00	413952	1-hr	117	116.6	exc
Ells River	PM2.5	22May23, 07:00	413535	1-hr	120	120.1	exc
Bertha Ganter	PM2.5	22May23, 08:00	413942	1-hr	133	132.6	exc
Patricia McInnes	PM2.5	22May23, 08:00	413943	1-hr	259	258.8	exc
Athabasca Valley	PM2.5	22May23, 08:00	413944	1-hr	256	256.0	exc
Barge Landing	PM2.5	22May23, 08:00	413946	1-hr	122	122.4	exc
Ft. McKay S	PM2.5	22May23, 08:00	413947	1-hr	157	157.0	exc
Anzac	PM2.5	22May23, 08:00	413948	1-hr	125	125.2	exc
Wapasu	PM2.5	22May23, 08:00	413949	1-hr	222	222.4	exc
Stony Mtn.	PM2.5	22May23, 08:00	413953	1-hr	121	121.1	exc
Conklin	PM2.5	22May23, 08:00	413950	1-hr	148	148.0	exc
Janvier	PM2.5	22May23, 08:00	413951	1-hr	136	136.3	exc
Surmont 2	PM2.5	22May23, 08:00	413952	1-hr	136	136.1	exc
Bertha Ganter	PM2.5	22May23, 09:00	413942	1-hr	99	98.8	exc
Patricia McInnes	PM2.5	22May23, 09:00	413943	1-hr	259	259.0	exc
Athabasca Valley	PM2.5	22May23, 09:00	413944	1-hr	262	262.4	exc
Barge Landing	PM2.5	22May23, 09:00	413946	1-hr	88	87.6	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Ft. McKay S	PM2.5	22May23, 09:00	413947	1-hr	115	114.8	exc
Anzac	PM2.5	22May23, 09:00	413948	1-hr	137	136.8	exc
Wapasu	PM2.5	22May23, 09:00	413949	1-hr	219	218.8	exc
Stony Mtn.	PM2.5	22May23, 09:00	413953	1-hr	150	150.5	exc
Conklin	PM2.5	22May23, 09:00	413950	1-hr	152	152.1	exc
Janvier	PM2.5	22May23, 09:00	413951	1-hr	141	140.6	exc
Surmont 2	PM2.5	22May23, 09:00	413952	1-hr	140	140.3	exc
Bertha Ganter	PM2.5	22May23, 10:00	413942	1-hr	92	92.0	exc
Patricia McInnes	PM2.5	22May23, 10:00	413943	1-hr	233	233.3	exc
Athabasca Valley	PM2.5	22May23, 10:00	413944	1-hr	243	243.1	exc
Ft. McKay S	PM2.5	22May23, 10:00	413947	1-hr	97	97.3	exc
Anzac	PM2.5	22May23, 10:00	413948	1-hr	176	175.6	exc
Wapasu	PM2.5	22May23, 10:00	413949	1-hr	191	190.8	exc
Stony Mtn.	PM2.5	22May23, 10:00	413953	1-hr	178	178.0	exc
Conklin	PM2.5	22May23, 10:00	413950	1-hr	178	177.9	exc
Janvier	PM2.5	22May23, 10:00	413951	1-hr	154	154.2	exc
Surmont 2	PM2.5	22May23, 10:00	413952	1-hr	147	147.1	exc
Bertha Ganter	PM2.5	22May23, 11:00	413942	1-hr	95	94.8	exc
Patricia McInnes	PM2.5	22May23, 11:00	413943	1-hr	195	194.5	exc
Athabasca Valley	PM2.5	22May23, 11:00	413944	1-hr	211	210.8	exc
Barge Landing	PM2.5	22May23, 11:00	413946	1-hr	80	80.3	exc
Anzac	PM2.5	22May23, 11:00	413948	1-hr	196	196.2	exc
Wapasu	PM2.5	22May23, 11:00	413949	1-hr	149	148.7	exc
Stony Mtn.	PM2.5	22May23, 11:00	413953	1-hr	172	171.5	exc
Conklin	PM2.5	22May23, 11:00	413950	1-hr	170	170.1	exc
Janvier	PM2.5	22May23, 11:00	413951	1-hr	151	150.8	exc
Ft. McKay S	PM2.5	22May23, 11:00	413947	1-hr	95	95.5	exc
Surmont 2	PM2.5	22May23, 11:00	413952	1-hr	158	158.2	exc
Bertha Ganter	PM2.5	22May23, 12:00	413942	1-hr	85	84.7	exc
Patricia McInnes	PM2.5	22May23, 12:00	413943	1-hr	141	141.3	exc
Athabasca Valley	PM2.5	22May23, 12:00	413944	1-hr	154	153.9	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Anzac	PM2.5	22May23, 12:00	413948	1-hr	203	203.5	exc
Wapasu	PM2.5	22May23, 12:00	413949	1-hr	131	131.4	exc
Stony Mtn.	PM2.5	22May23, 12:00	413953	1-hr	174	174.2	exc
Conklin	PM2.5	22May23, 12:00	413950	1-hr	168	168.4	exc
Janvier	PM2.5	22May23, 12:00	413951	1-hr	152	152.0	exc
Surmont 2	PM2.5	22May23, 12:00	413952	1-hr	174	173.9	exc
Patricia McInnes	PM2.5	22May23, 13:00	413943	1-hr	127	127.1	exc
Athabasca Valley	PM2.5	22May23, 13:00	413944	1-hr	130	130.3	exc
Anzac	PM2.5	22May23, 13:00	413948	1-hr	215	215.3	exc
Wapasu	PM2.5	22May23, 13:00	413949	1-hr	99	98.6	exc
Stony Mtn.	PM2.5	22May23, 13:00	413953	1-hr	180	179.6	exc
Conklin	PM2.5	22May23, 13:00	413950	1-hr	181	180.9	exc
Janvier	PM2.5	22May23, 13:00	413951	1-hr	155	154.7	exc
Surmont 2	PM2.5	22May23, 13:00	413952	1-hr	190	189.5	exc
Patricia McInnes	PM2.5	22May23, 14:00	413943	1-hr	137	136.8	exc
Athabasca Valley	PM2.5	22May23, 14:00	413944	1-hr	142	141.7	exc
Anzac	PM2.5	22May23, 14:00	413948	1-hr	203	202.7	exc
Stony Mtn.	PM2.5	22May23, 14:00	413953	1-hr	193	193.1	exc
Conklin	PM2.5	22May23, 14:00	413950	1-hr	196	196.3	exc
Janvier	PM2.5	22May23, 14:00	413951	1-hr	191	191.2	exc
Surmont 2	PM2.5	22May23, 14:00	413952	1-hr	192	192.3	exc
Patricia McInnes	PM2.5	22May23, 15:00	413943	1-hr	109	109.0	exc
Athabasca Valley	PM2.5	22May23, 15:00	413944	1-hr	115	-	ret
Anzac	PM2.5	22May23, 15:00	413948	1-hr	175	174.9	exc
Stony Mtn.	PM2.5	22May23, 15:00	413953	1-hr	207	207.2	exc
Conklin	PM2.5	22May23, 15:00	413950	1-hr	211	211.0	exc
Janvier	PM2.5	22May23, 15:00	413951	1-hr	194	193.9	exc
Surmont 2	PM2.5	22May23, 15:00	413952	1-hr	183	183.5	exc
Athabasca Valley	PM2.5	22May23, 16:00	413944	1-hr	97	96.5	exc
Anzac	PM2.5	22May23, 16:00	413948	1-hr	177	177.0	exc
Stony Mtn.	PM2.5	22May23, 16:00	413953	1-hr	209	208.5	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Conklin	PM2.5	22May23, 16:00	413950	1-hr	210	209.9	exc
Janvier	PM2.5	22May23, 16:00	413951	1-hr	189	189.0	exc
Surmont 2	PM2.5	22May23, 16:00	413952	1-hr	168	167.7	exc
Anzac	PM2.5	22May23, 17:00	413948	1-hr	144	143.9	exc
Stony Mtn.	PM2.5	22May23, 17:00	413953	1-hr	201	201.3	exc
Conklin	PM2.5	22May23, 17:00	413950	1-hr	205	204.6	exc
Janvier	PM2.5	22May23, 17:00	413951	1-hr	173	173.4	exc
Surmont 2	PM2.5	22May23, 17:00	413952	1-hr	169	169.2	exc
Anzac	PM2.5	22May23, 18:00	413948	1-hr	146	145.8	exc
Stony Mtn.	PM2.5	22May23, 18:00	413953	1-hr	186	186.2	exc
Conklin	PM2.5	22May23, 18:00	413950	1-hr	187	187.1	exc
Janvier	PM2.5	22May23, 18:00	413951	1-hr	177	177.2	exc
Surmont 2	PM2.5	22May23, 18:00	413952	1-hr	156	156.4	exc
Anzac	PM2.5	22May23, 19:00	413948	1-hr	203	202.9	exc
Stony Mtn.	PM2.5	22May23, 19:00	413953	1-hr	206	206.0	exc
Conklin	PM2.5	22May23, 19:00	413950	1-hr	208	207.8	exc
Janvier	PM2.5	22May23, 19:00	413951	1-hr	134	133.8	exc
Surmont 2	PM2.5	22May23, 19:00	413952	1-hr	90	89.6	exc
Patricia McInnes	PM2.5	22May23, 20:00	413943	1-hr	103	103.1	exc
Athabasca Valley	PM2.5	22May23, 20:00	413944	1-hr	152	152.4	exc
Stony Mtn.	PM2.5	22May23, 20:00	413953	1-hr	255	255.2	exc
Conklin	PM2.5	22May23, 20:00	413950	1-hr	248	248.0	exc
Janvier	PM2.5	22May23, 20:00	413951	1-hr	123	122.5	exc
Patricia McInnes	PM2.5	22May23, 21:00	413943	1-hr	139	139.1	exc
Athabasca Valley	PM2.5	22May23, 21:00	413944	1-hr	120	120.0	exc
Stony Mtn.	PM2.5	22May23, 21:00	413953	1-hr	305	308.6	exc
Conklin	PM2.5	22May23, 21:00	413950	1-hr	329	329.4	exc
Janvier	PM2.5	22May23, 21:00	413951	1-hr	163	163.2	exc
Wapasu	PM2.5	22May23, 22:00	413949	1-hr	87	86.7	exc
Stony Mtn.	PM2.5	22May23, 22:00	413953	1-hr	583	583.2	exc
Conklin	PM2.5	22May23, 22:00	413950	1-hr	580	580.4	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Janvier	PM2.5	22May23, 22:00	413951	1-hr	293	293.1	exc
Ft. McKay S	PM2.5	22May23, 23:00	413947	1-hr	88	88.1	exc
Stony Mtn.	PM2.5	22May23, 23:00	413953	1-hr	584	583.6	exc
Conklin	PM2.5	22May23, 23:00	413950	1-hr	542	541.6	exc
Janvier	PM2.5	22May23, 23:00	413951	1-hr	367	367.3	exc
Bertha Ganter	PM2.5	22May23, 24:00	413942	24-hr	109	109.1	exc
Buffalo Viewpoint	PM2.5	22May23, 24:00		24-hr	-	-	nae
Patricia McInnes	PM2.5	22May23, 24:00	413943	24-hr	135	134.8	exc
Athabasca Valley	PM2.5	22May23, 24:00	413944	24-hr	132	132.6	exc
Stony Mtn.	PM2.5	22May23, 24:00	413953	1-hr	493	493.4	exc
Conklin	PM2.5	22May23, 24:00	413950	1-hr	480	480.2	exc
Conklin	PM2.5	22May23, 24:00	413950	24-hr	227	227.0	exc
Janvier	PM2.5	22May23, 24:00	413951	1-hr	342	341.9	exc
Janvier	PM2.5	22May23, 24:00	413951	24-hr	179	178.5	exc
Fort Hills	PM2.5	22May23, 24:00	413534	24-hr	90	89.6	exc
Fort Chip	PM2.5	22May23, 24:00	413945	24-hr	38	38.4	exc
Ft. McKay S	PM2.5	22May23, 24:00	413947	24-hr	115	114.6	exc
Anzac	PM2.5	22May23, 24:00	413948	24-hr	134	134.4	exc
Wapasu	PM2.5	22May23, 24:00	413949	24-hr	111	110.7	exc
Stony Mtn.	PM2.5	22May23, 24:00	413953	24-hr	211	210.7	exc
Surmont 2	PM2.5	22May23, 24:00	413952	1-hr	101	101.0	exc
Surmont 2	PM2.5	22May23, 24:00	413952	24-hr	124	123.9	exc
Ells River	PM2.5	22May23, 24:00	413535	24-hr	81	81.2	exc
Stony Mtn.	PM2.5	23May23, 01:00	413953	1-hr	592	591.7	exc
Conklin	PM2.5	23May23, 01:00	413950	1-hr	596	595.8	exc
Janvier	PM2.5	23May23, 01:00	413951	1-hr	307	306.5	exc
Anzac	PM2.5	23May23, 02:00	413948	1-hr	99	98.8	exc
Stony Mtn.	PM2.5	23May23, 02:00	413953	1-hr	758	758.5	exc
Conklin	PM2.5	23May23, 02:00	413950	1-hr	728	727.5	exc
Janvier	PM2.5	23May23, 02:00	413951	1-hr	347	346.6	exc
Surmont 2	PM2.5	23May23, 02:00	413952	1-hr	125	125.3	exc
Anzac	PM2.5	23May23, 03:00	413948	1-hr	138	138.2	exc
Stony Mtn.	PM2.5	23May23, 03:00	413953	1-hr	603	603.0	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Conklin	PM2.5	23May23, 03:00	413950	1-hr	593	592.9	exc
Janvier	PM2.5	23May23, 03:00	413951	1-hr	443	442.9	exc
Surmont 2	PM2.5	23May23, 03:00	413952	1-hr	150	150.1	exc
Anzac	PM2.5	23May23, 04:00	413948	1-hr	136	135.9	exc
Stony Mtn.	PM2.5	23May23, 04:00	413953	1-hr	359	359.0	exc
Conklin	PM2.5	23May23, 04:00	413950	1-hr	345	348.0	exc
Janvier	PM2.5	23May23, 04:00	413951	1-hr	454	453.5	exc
Surmont 2	PM2.5	23May23, 04:00	413952	1-hr	211	211.1	exc
Patricia McInnes	PM2.5	23May23, 05:00	413943	1-hr	111	110.7	exc
Anzac	PM2.5	23May23, 05:00	413948	1-hr	156	155.7	exc
Stony Mtn.	PM2.5	23May23, 05:00	413953	1-hr	258	258.0	exc
Janvier	PM2.5	23May23, 05:00	413951	1-hr	409	410.0	exc
Athabasca Valley	PM2.5	23May23, 05:00	413944	1-hr	89	-	ret
Surmont 2	PM2.5	23May23, 05:00	413952	1-hr	258	257.9	exc
Patricia McInnes	PM2.5	23May23, 06:00	413943	1-hr	147	147.5	exc
Anzac	PM2.5	23May23, 06:00	413948	1-hr	192	191.7	exc
Stony Mtn.	PM2.5	23May23, 06:00	413953	1-hr	177	177.4	exc
Janvier	PM2.5	23May23, 06:00	413951	1-hr	347	346.7	exc
Surmont 2	PM2.5	23May23, 06:00	413952	1-hr	286	286.3	exc
Patricia McInnes	PM2.5	23May23, 07:00	413943	1-hr	157	156.7	exc
Anzac	PM2.5	23May23, 07:00	413948	1-hr	228	227.7	exc
Stony Mtn.	PM2.5	23May23, 07:00	413953	1-hr	166	166.5	exc
Janvier	PM2.5	23May23, 07:00	413951	1-hr	205	205.4	exc
Surmont 2	PM2.5	23May23, 07:00	413952	1-hr	274	274.3	exc
Barge Landing	PM2.5	22May23, 24:00	413946	24-hr	99	99.0	exc
Patricia McInnes	PM2.5	23May23, 08:00	413943	1-hr	160	160.3	exc
Ft. McKay S	PM2.5	23May23, 08:00	413947	1-hr	87	87.4	exc
Anzac	PM2.5	23May23, 08:00	413948	1-hr	227	226.6	exc
Stony Mtn.	PM2.5	23May23, 08:00	413953	1-hr	165	165.5	exc
Janvier	PM2.5	23May23, 08:00	413951	1-hr	188	187.6	exc
Surmont 2	PM2.5	23May23, 08:00	413952	1-hr	231	231.2	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Bertha Ganter	PM2.5	23May23, 09:00	413942	1-hr	102	102.3	exc
Patricia McInnes	PM2.5	23May23, 09:00	413943	1-hr	177	177.4	exc
Ft. McKay S	PM2.5	23May23, 09:00	413947	1-hr	110	110.3	exc
Anzac	PM2.5	23May23, 09:00	413948	1-hr	194	194.0	exc
Stony Mtn.	PM2.5	23May23, 09:00	413953	1-hr	109	109.0	exc
Janvier	PM2.5	23May23, 09:00	413951	1-hr	195	194.6	exc
Surmont 2	PM2.5	23May23, 09:00	413952	1-hr	138	138.2	exc
Athabasca Valley	PM2.5	23May23, 09:00	413944	1-hr	148	148.5	exc
Bertha Ganter	PM2.5	23May23, 10:00	413942	1-hr	114	114.4	exc
Patricia McInnes	PM2.5	23May23, 10:00	413943	1-hr	177	177.3	exc
Ft. McKay S	PM2.5	23May23, 10:00	413947	1-hr	121	120.9	exc
Anzac	PM2.5	23May23, 10:00	413948	1-hr	157	157.2	exc
Janvier	PM2.5	23May23, 10:00	413951	1-hr	113	113.1	exc
Surmont 2	PM2.5	23May23, 10:00	413952	1-hr	113	112.8	exc
Athabasca Valley	PM2.5	23May23, 10:00	413944	1-hr	151	151.4	exc
Bertha Ganter	PM2.5	23May23, 11:00	413942	1-hr	114	113.6	exc
Patricia McInnes	PM2.5	23May23, 11:00	413943	1-hr	188	188.4	exc
Ft. McKay S	PM2.5	23May23, 11:00	413947	1-hr	126	126.4	exc
Anzac	PM2.5	23May23, 11:00	413948	1-hr	148	148.0	exc
Fort Hills	PM2.5	23May23, 11:00	413633	1-hr	84	83.7	exc
Surmont 2	PM2.5	23May23, 11:00	413952	1-hr	116	116.0	exc
Ells River	PM2.5	23May23, 11:00	413634	1-hr	84	83.6	exc
Athabasca Valley	PM2.5	23May23, 11:00	413944	1-hr	165	164.6	exc
Barge Landing	PM2.5	23May23, 11:00	413946	1-hr	84	83.8	exc
Bertha Ganter	PM2.5	23May23, 12:00	413942	1-hr	122	122.2	exc
Buffalo Viewpoint	PM2.5	23May23, 12:00	413954	1-hr	126	125.9	exc
Patricia McInnes	PM2.5	23May23, 12:00	413943	1-hr	195	194.9	exc
Ft. McKay S	PM2.5	23May23, 12:00	413947	1-hr	132	131.7	exc
Anzac	PM2.5	23May23, 12:00	413948	1-hr	160	160.2	exc
Wapasu	PM2.5	23May23, 12:00	413949	1-hr	88	88.4	exc
Fort Hills	PM2.5	23May23, 12:00	413633	1-hr	90	89.6	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Surmont 2	PM2.5	23May23, 12:00	413952	1-hr	98	97.9	exc
Ells River	PM2.5	23May23, 12:00	413634	1-hr	88	88.3	exc
Athabasca Valley	PM2.5	23May23, 12:00	413944	1-hr	176	175.7	exc
Barge Landing	PM2.5	23May23, 12:00	413946	1-hr	91	90.7	exc
Bertha Ganter	PM2.5	23May23, 13:00	413942	1-hr	141	141.3	exc
Buffalo Viewpoint	PM2.5	23May23, 13:00	413954	1-hr	162	161.5	exc
Patricia McInnes	PM2.5	23May23, 13:00	413943	1-hr	180	180.1	exc
Ft. McKay S	PM2.5	23May23, 13:00	413947	1-hr	165	165.1	exc
Anzac	PM2.5	23May23, 13:00	413948	1-hr	138	138.3	exc
Wapasu	PM2.5	23May23, 13:00	413949	1-hr	98	98.4	exc
Fort Hills	PM2.5	23May23, 13:00	413633	1-hr	112	111.9	exc
Ells River	PM2.5	23May23, 13:00	413634	1-hr	115	115.2	exc
Athabasca Valley	PM2.5	23May23, 13:00	413944	1-hr	150	150.1	exc
Bertha Ganter	PM2.5	23May23, 14:00	413942	1-hr	156	156.0	exc
Buffalo Viewpoint	PM2.5	23May23, 14:00	413954	1-hr	133	133.4	exc
Patricia McInnes	PM2.5	23May23, 14:00	413943	1-hr	160	159.9	exc
Ft. McKay S	PM2.5	23May23, 14:00	413947	1-hr	193	192.7	exc
Anzac	PM2.5	23May23, 14:00	413948	1-hr	115	114.7	exc
Fort Hills	PM2.5	23May23, 14:00	413633	1-hr	119	118.8	exc
Ells River	PM2.5	23May23, 14:00	413634	1-hr	130	129.8	exc
Athabasca Valley	PM2.5	23May23, 14:00	413944	1-hr	141	140.9	exc
Bertha Ganter	PM2.5	23May23, 15:00	413942	1-hr	178	178.1	exc
Buffalo Viewpoint	PM2.5	23May23, 15:00	413954	1-hr	103	102.8	exc
Ft. McKay S	PM2.5	23May23, 15:00	413947	1-hr	205	204.8	exc
Anzac	PM2.5	23May23, 15:00	413948	1-hr	109	108.5	exc
Wapasu	PM2.5	23May23, 15:00	413949	1-hr	145	144.6	exc
Fort Hills	PM2.5	23May23, 15:00	413633	1-hr	122	121.7	exc
Ells River	PM2.5	23May23, 15:00	413634	1-hr	153	152.9	exc
Patricia McInnes	PM2.5	23May23, 15:00	413943	1-hr	132	131.6	exc
Athabasca Valley	PM2.5	23May23, 15:00	413944	1-hr	108	107.8	exc
Barge Landing	PM2.5	23May23, 15:00	413946	1-hr	179	179.2	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Bertha Ganter	PM2.5	23May23, 16:00	413942	1-hr	176	176.2	exc
Buffalo Viewpoint	PM2.5	23May23, 16:00	413954	1-hr	95	95.2	exc
Ft. McKay S	PM2.5	23May23, 16:00	413947	1-hr	158	157.9	exc
Wapasu	PM2.5	23May23, 16:00	413949	1-hr	243	243.0	exc
Fort Hills	PM2.5	23May23, 16:00	413633	1-hr	196	196.0	exc
Ells River	PM2.5	23May23, 16:00	413634	1-hr	187	187.1	exc
Patricia McInnes	PM2.5	23May23, 16:00	413943	1-hr	104	103.6	exc
Athabasca Valley	PM2.5	23May23, 16:00	413944	1-hr	87	87.1	exc
Barge Landing	PM2.5	23May23, 16:00	413946	1-hr	167	167.4	exc
Bertha Ganter	PM2.5	23May23, 17:00	413942	1-hr	138	137.7	exc
Buffalo Viewpoint	PM2.5	23May23, 17:00	413954	1-hr	85	84.8	exc
Ft. McKay S	PM2.5	23May23, 17:00	413947	1-hr	135	135.4	exc
Wapasu	PM2.5	23May23, 17:00	413949	1-hr	185	184.7	exc
Fort Hills	PM2.5	23May23, 17:00	413633	1-hr	217	216.9	exc
Ells River	PM2.5	23May23, 17:00	413634	1-hr	137	137.5	exc
Patricia McInnes	PM2.5	23May23, 17:00	413943	1-hr	89	88.7	exc
Barge Landing	PM2.5	23May23, 17:00	413946	1-hr	108	108.1	exc
Bertha Ganter	PM2.5	23May23, 18:00	413942	1-hr	106	106.0	exc
Fort Chip	PM2.5	23May23, 18:00	413945	1-hr	201	201.5	exc
Ft. McKay S	PM2.5	23May23, 18:00	413947	1-hr	106	106.3	exc
Wapasu	PM2.5	23May23, 18:00	413949	1-hr	110	109.8	exc
Fort Hills	PM2.5	23May23, 18:00	413633	1-hr	183	183.1	exc
Ells River	PM2.5	23May23, 18:00	413634	1-hr	109	109.3	exc
Barge Landing	PM2.5	23May23, 18:00	413946	1-hr	82	81.7	exc
Bertha Ganter	PM2.5	23May23, 19:00	413942	1-hr	83	83.1	exc
Fort Chip	PM2.5	23May23, 19:00	413945	1-hr	261	261.1	exc
Ft. McKay S	PM2.5	23May23, 19:00	413947	1-hr	85	85.2	exc
Wapasu	PM2.5	23May23, 19:00	413949	1-hr	116	115.8	exc
Fort Hills	PM2.5	23May23, 19:00	413633	1-hr	89	88.6	exc
Fort Chip	PM2.5	23May23, 20:00	413945	1-hr	501	500.6	exc
Wapasu	PM2.5	23May23, 20:00	413949	1-hr	90	89.8	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Fort Chip	PM2.5	23May23, 21:00	413945	1-hr	659	659.1	exc
Fort Chip	PM2.5	23May23, 22:00	413945	1-hr	808	808.3	exc
Fort Chip	PM2.5	23May23, 23:00	413945	1-hr	543	543.4	exc
Bertha Ganter	PM2.5	23May23, 24:00	413942	24-hr	74	74.3	exc
Fort Chip	PM2.5	23May23, 24:00	413945	1-hr	269	269.3	exc
Anzac	PM2.5	23May23, 24:00	413948	24-hr	103	102.9	exc
Wapasu	PM2.5	23May23, 24:00	413949	24-hr	66	64.8	exc
Stony Mtn.	PM2.5	23May23, 24:00	413953	24-hr	144	144.0	exc
Conklin	PM2.5	23May23, 24:00	413950	24-hr	129	-	ret
Buffalo Viewpoint	PM2.5	23May23, 24:00	413954	24-hr	55	-	ret
Patricia McInnes	PM2.5	23May23, 24:00	413943	24-hr	92	92.4	exc
Athabasca Valley	PM2.5	23May23, 24:00	413944	24-hr	65	71.9	exc
Fort Chip	PM2.5	23May23, 24:00	413945	24-hr	142	142.3	exc
Barge Landing	PM2.5	23May23, 24:00	413946	24-hr	55	53.3	exc
Ft. McKay S	PM2.5	23May23, 24:00	413947	24-hr	77	77.0	exc
Janvier	PM2.5	23May23, 24:00	413951	24-hr	138	137.7	exc
Fort Hills	PM2.5	23May23, 24:00	413633	24-hr	71	71.5	exc
Surmont 2	PM2.5	23May23, 24:00	413952	24-hr	99	98.9	exc
Ells River	PM2.5	23May23, 24:00	413634	24-hr	61	61.3	exc
Fort Chip	PM2.5	24May23, 01:00	413945	1-hr	83	83.3	exc
Fort Chip	PM2.5	24May23, 24:00	413945	1-hr	86	86.0	exc
Fort Chip	PM2.5	25May23, 11:00	413945	1-hr	108	108.5	exc
Fort Chip	PM2.5	25May23, 12:00	413945	1-hr	125	124.6	exc
Fort Chip	PM2.5	25May23, 13:00	413945	1-hr	128	128.5	exc
Fort Chip	PM2.5	25May23, 14:00	413945	1-hr	127	126.9	exc
Fort Chip	PM2.5	25May23, 15:00	413945	1-hr	112	111.7	exc
Fort Chip	PM2.5	25May23, 16:00	413945	1-hr	101	100.8	exc
Fort Chip	PM2.5	25May23, 17:00	413945	1-hr	91	90.6	exc
Ft. McKay S	PM2.5	25May23, 17:00	413947	1-hr	82	82.3	exc
Fort Chip	PM2.5	25May23, 18:00	413945	1-hr	81	80.6	exc
Fort Chip	PM2.5	25May23, 19:00	413945	1-hr	86	85.6	exc
Fort Chip	PM2.5	25May23, 20:00	413945	1-hr	85	84.9	exc
Patricia McInnes	PM2.5	25May23, 24:00	413943	24-hr	40	39.6	exc
Athabasca Valley	PM2.5	25May23, 24:00	413944	24-hr	33	32.7	exc
Barge Landing	PM2.5	25May23, 24:00	413946	24-hr	39	39.0	exc
Ft. McKay S	PM2.5	25May23, 24:00	413947	24-hr	52	51.6	exc
Anzac	PM2.5	25May23, 24:00	413948	24-hr	32	32.2	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Wapasu	PM2.5	25May23, 24:00	413949	24-hr	34	33.8	exc
Fort Hills	PM2.5	25May23, 24:00	413755	24-hr	46	45.6	exc
Ells River	PM2.5	25May23, 24:00	413756	24-hr	40	40.1	exc
Bertha Ganter	PM2.5	25May23, 24:00	413942	24-hr	53	52.6	exc
Buffalo Viewpoint	PM2.5	25May23, 24:00	413954	24-hr	35	35.5	exc
Fort Chip	PM2.5	25May23, 24:00	413945	24-hr	82	81.8	exc
Conklin	PM2.5	25May23, 24:00	413950	24-hr	30	29.8	exc
Conklin	PM2.5	26May23, 20:00	413950	1-hr	124	124.3	exc
Conklin	PM2.5	26May23, 21:00	413950	1-hr	115	115.2	exc
Bertha Ganter	PM2.5	26May23, 24:00	413942	24-hr	44	-	ret
Patricia McInnes	PM2.5	26May23, 24:00	413943	24-hr	30	29.6	exc
Fort Chip	PM2.5	26May23, 24:00	413945	24-hr	41	40.8	exc
Barge Landing	PM2.5	26May23, 24:00	413946	24-hr	29	29.3	exc
Conklin	PM2.5	26May23, 24:00	413950	24-hr	36	36.1	exc
Fort Hills	PM2.5	26May23, 24:00	413814	24-hr	32	32.3	exc
Ft. McKay S	PM2.5	26May23, 24:00	413947	24-hr	38	37.9	exc
Lower Camp	H2S	27May23, 20:00	413835	1-hr	13	13.0	exc
Bertha Ganter	PM2.5	27May23, 24:00	413942	24-hr	39	-	ret
Conklin	PM2.5	27May23, 24:00	413950	24-hr	30	29.6	exc
Ft. McKay S	PM2.5	27May23, 24:00	413947	24-hr	30	30.0	exc
Fort Chip	PM2.5	28May23, 19:00	413945	1-hr	208	207.5	exc
Fort Chip	PM2.5	28May23, 20:00	413945	1-hr	202	201.7	exc
Fort Chip	PM2.5	28May23, 21:00	413945	1-hr	122	122.3	exc
Fort Hills	PM2.5	28May23, 21:00	413873	1-hr	143	143.2	exc
Fort Chip	PM2.5	28May23, 22:00	413945	1-hr	162	162.0	exc
Fort Hills	PM2.5	28May23, 22:00	413873	1-hr	181	180.5	exc
Bertha Ganter	PM2.5	28May23, 23:00	413942	1-hr	83	-	ret
Fort Chip	PM2.5	28May23, 23:00	413945	1-hr	158	157.9	exc
Ft. McKay S	PM2.5	28May23, 23:00	413947	1-hr	112	112.1	exc
Wapasu	PM2.5	28May23, 23:00	413949	1-hr	113	112.9	exc
Fort Hills	PM2.5	28May23, 23:00	413873	1-hr	155	154.6	exc
Ells River	PM2.5	28May23, 23:00	413877	1-hr	82	81.9	exc
Buffalo Viewpoint	PM2.5	28May23, 23:00	413954	1-hr	82	82.0	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Bertha Ganter	PM2.5	28May23, 24:00	413942	1-hr	100	-	ret
Bertha Ganter	PM2.5	28May23, 24:00	413942	24-hr	40	-	ret
Fort Chip	PM2.5	28May23, 24:00	413945	1-hr	130	130.2	exc
Barge Landing	PM2.5	28May23, 24:00	413946	1-hr	91	91.0	exc
Ft. McKay S	PM2.5	28May23, 24:00	413947	1-hr	124	124.0	exc
Ft. McKay S	PM2.5	28May23, 24:00	413947	24-hr	31	30.9	exc
Wapasu	PM2.5	28May23, 24:00	413949	1-hr	121	120.6	exc
Fort Hills	PM2.5	28May23, 24:00	413873	1-hr	126	126.2	exc
Fort Hills	PM2.5	28May23, 24:00	413873	24-hr	40	40.0	exc
Ells River	PM2.5	28May23, 24:00	413877	1-hr	95	95.0	exc
Fort Chip	PM2.5	28May23, 24:00	413945	24-hr	58	58.4	exc
Bertha Ganter	PM2.5	29May23, 01:00	414290	1-hr	105	-	ret
Fort Chip	PM2.5	29May23, 01:00	414291	1-hr	108	107.6	exc
Barge Landing	PM2.5	29May23, 01:00	414292	1-hr	100	99.8	exc
Ft. McKay S	PM2.5	29May23, 01:00	414293	1-hr	131	131.3	exc
Wapasu	PM2.5	29May23, 01:00	414294	1-hr	116	116.5	exc
Fort Hills	PM2.5	29May23, 01:00	413929	1-hr	147	147.3	exc
Ells River	PM2.5	29May23, 01:00	413930	1-hr	105	104.8	exc
Buffalo Viewpoint	PM2.5	29May23, 01:00	414295	1-hr	80	80.4	exc
Bertha Ganter	PM2.5	29May23, 02:00	414290	1-hr	92	-	ret
Buffalo Viewpoint	PM2.5	29May23, 02:00	414295	1-hr	93	92.7	exc
Fort Chip	PM2.5	29May23, 02:00	414291	1-hr	80	80.2	exc
Barge Landing	PM2.5	29May23, 02:00	414292	1-hr	110	109.8	exc
Ft. McKay S	PM2.5	29May23, 02:00	414293	1-hr	126	126.3	exc
Wapasu	PM2.5	29May23, 02:00	414294	1-hr	107	106.9	exc
Fort Hills	PM2.5	29May23, 02:00	413929	1-hr	157	157.5	exc
Ells River	PM2.5	29May23, 02:00	413930	1-hr	95	95.3	exc
Bertha Ganter	PM2.5	29May23, 03:00	414290	1-hr	100	-	ret
Buffalo Viewpoint	PM2.5	29May23, 03:00	414295	1-hr	87	87.4	exc
Barge Landing	PM2.5	29May23, 03:00	414292	1-hr	107	107.3	exc
Ft. McKay S	PM2.5	29May23, 03:00	414293	1-hr	124	124.2	exc
Wapasu	PM2.5	29May23, 03:00	414294	1-hr	124	123.6	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Ells River	PM2.5	29May23, 03:00	413930	1-hr	111	111.4	exc
Fort Hills	PM2.5	29May23, 03:00	413929	1-hr	136	136.3	exc
Bertha Ganter	PM2.5	29May23, 04:00	414290	1-hr	107	-	ret
Buffalo Viewpoint	PM2.5	29May23, 04:00	414295	1-hr	82	81.8	exc
Fort Chip	PM2.5	29May23, 04:00	414291	1-hr	177	177.1	exc
Barge Landing	PM2.5	29May23, 04:00	414292	1-hr	106	105.8	exc
Ft. McKay S	PM2.5	29May23, 04:00	414293	1-hr	133	133.1	exc
Wapasu	PM2.5	29May23, 04:00	414294	1-hr	138	138.4	exc
Fort Hills	PM2.5	29May23, 04:00	413929	1-hr	158	158.3	exc
Ells River	PM2.5	29May23, 04:00	413930	1-hr	123	122.5	exc
Bertha Ganter	PM2.5	29May23, 05:00	414290	1-hr	108	-	ret
Buffalo Viewpoint	PM2.5	29May23, 05:00	414295	1-hr	87	87.1	exc
Fort Chip	PM2.5	29May23, 05:00	414291	1-hr	254	253.8	exc
Barge Landing	PM2.5	29May23, 05:00	414292	1-hr	109	108.6	exc
Ft. McKay S	PM2.5	29May23, 05:00	414293	1-hr	136	136.4	exc
Wapasu	PM2.5	29May23, 05:00	414294	1-hr	143	143.3	exc
Fort Hills	PM2.5	29May23, 05:00	413929	1-hr	161	160.9	exc
Ells River	PM2.5	29May23, 05:00	413930	1-hr	131	131.4	exc
Bertha Ganter	PM2.5	29May23, 06:00	414290	1-hr	104	-	ret
Buffalo Viewpoint	PM2.5	29May23, 06:00	414295	1-hr	84	84.1	exc
Fort Chip	PM2.5	29May23, 06:00	414291	1-hr	181	181.2	exc
Barge Landing	PM2.5	29May23, 06:00	414292	1-hr	113	113.4	exc
Ft. McKay S	PM2.5	29May23, 06:00	414293	1-hr	137	137.1	exc
Wapasu	PM2.5	29May23, 06:00	414294	1-hr	132	132.0	exc
Fort Hills	PM2.5	29May23, 06:00	413929	1-hr	152	152.5	exc
Ells River	PM2.5	29May23, 06:00	413930	1-hr	119	118.6	exc
Fort Chip	PM2.5	29May23, 07:00	414291	1-hr	171	171.1	exc
Barge Landing	PM2.5	29May23, 07:00	414292	1-hr	122	122.5	exc
Ft. McKay S	PM2.5	29May23, 07:00	414293	1-hr	146	146.4	exc
Wapasu	PM2.5	29May23, 07:00	414294	1-hr	122	122.0	exc
Fort Hills	PM2.5	29May23, 07:00	413929	1-hr	130	129.6	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Ells River	PM2.5	29May23, 07:00	413930	1-hr	116	115.6	exc
Bertha Ganter	PM2.5	29May23, 07:00	414290	1-hr	109	-	ret
Fort Chip	PM2.5	29May23, 08:00	414291	1-hr	139	138.9	exc
Barge Landing	PM2.5	29May23, 08:00	414292	1-hr	124	123.6	exc
Ft. McKay S	PM2.5	29May23, 08:00	414293	1-hr	145	144.8	exc
Wapasu	PM2.5	29May23, 08:00	414294	1-hr	150	149.8	exc
Fort Hills	PM2.5	29May23, 08:00	413929	1-hr	111	110.7	exc
Ells River	PM2.5	29May23, 08:00	413930	1-hr	107	106.8	exc
Bertha Ganter	PM2.5	29May23, 08:00	414290	1-hr	110	-	ret
Fort Chip	PM2.5	29May23, 09:00	414291	1-hr	120	120.0	exc
Barge Landing	PM2.5	29May23, 09:00	414292	1-hr	115	115.3	exc
Ft. McKay S	PM2.5	29May23, 09:00	414293	1-hr	160	160.3	exc
Wapasu	PM2.5	29May23, 09:00	414294	1-hr	132	131.7	exc
Fort Hills	PM2.5	29May23, 09:00	413929	1-hr	101	101.0	exc
Ells River	PM2.5	29May23, 09:00	413930	1-hr	96	95.6	exc
Bertha Ganter	PM2.5	29May23, 09:00	414290	1-hr	102	-	ret
Fort Chip	PM2.5	29May23, 10:00	414291	1-hr	111	111.1	exc
Barge Landing	PM2.5	29May23, 10:00	414292	1-hr	91	90.7	exc
Ft. McKay S	PM2.5	29May23, 10:00	414293	1-hr	88	87.9	exc
Wapasu	PM2.5	29May23, 10:00	414294	1-hr	102	102.3	exc
Ells River	PM2.5	29May23, 10:00	413930	1-hr	83	82.9	exc
Bertha Ganter	PM2.5	29May23, 10:00	414290	1-hr	98	-	ret
Fort Hills	PM2.5	29May23, 10:00	413929	1-hr	87	87.2	exc
Fort Chip	PM2.5	29May23, 12:00	414291	1-hr	87	86.8	exc
Fort Chip	PM2.5	29May23, 13:00	414291	1-hr	107	106.9	exc
Fort Chip	PM2.5	29May23, 17:00	414291	1-hr	116	116.3	exc
Fort Chip	PM2.5	29May23, 18:00	414291	1-hr	144	144.2	exc
Fort Chip	PM2.5	29May23, 19:00	414291	1-hr	94	94.4	exc
Bertha Ganter	PM2.5	29May23, 22:00	414290	1-hr	84	-	ret
Barge Landing	PM2.5	29May23, 22:00	414292	1-hr	93	92.6	exc
Wapasu	PM2.5	29May23, 22:00	414294	1-hr	202	202.0	exc
Fort Hills	PM2.5	29May23, 22:00	413929	1-hr	140	140.1	exc
Bertha Ganter	PM2.5	29May23, 23:00	414290	1-hr	107	-	ret



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Buffalo Viewpoint	PM2.5	29May23, 23:00	414295	1-hr	96	96.3	exc
Fort Chip	PM2.5	29May23, 23:00	414291	1-hr	132	131.7	exc
Barge Landing	PM2.5	29May23, 23:00	414292	1-hr	165	164.7	exc
Wapasu	PM2.5	29May23, 23:00	414294	1-hr	146	146.1	exc
Fort Hills	PM2.5	29May23, 23:00	413929	1-hr	165	164.6	exc
Ells River	PM2.5	29May23, 23:00	413930	1-hr	80	80.5	exc
Bertha Ganter	PM2.5	29May23, 24:00	414290	1-hr	110	-	ret
Buffalo Viewpoint	PM2.5	29May23, 24:00	414295	1-hr	152	151.6	exc
Buffalo Viewpoint	PM2.5	29May23, 24:00	414295	24-hr	39	38.8	exc
Barge Landing	PM2.5	29May23, 24:00	414292	1-hr	160	159.9	exc
Ft. McKay S	PM2.5	29May23, 24:00	414293	1-hr	135	135.1	exc
Wapasu	PM2.5	29May23, 24:00	414294	1-hr	222	221.5	exc
Wapasu	PM2.5	29May23, 24:00	414294	24-hr	85	84.8	exc
Fort Hills	PM2.5	29May23, 24:00	413929	1-hr	215	214.5	exc
Fort Hills	PM2.5	29May23, 24:00	413929	24-hr	86	88.5	exc
Ells River	PM2.5	29May23, 24:00	413930	1-hr	85	84.8	exc
Ells River	PM2.5	29May23, 24:00	413930	24-hr	64	63.8	exc
Bertha Ganter	PM2.5	29May23, 24:00	414290	24-hr	76	-	ret
Fort Chip	PM2.5	29May23, 24:00	414291	24-hr	111	110.1	exc
Barge Landing	PM2.5	29May23, 24:00	414292	24-hr	70	70.0	exc
Ft. McKay S	PM2.5	29May23, 24:00	414293	24-hr	73	72.8	exc
Bertha Ganter	PM2.5	30May23, 01:00	414290	1-hr	127	-	ret
Buffalo Viewpoint	PM2.5	30May23, 01:00	414295	1-hr	170	170.3	exc
Patricia McInnes	PM2.5	30May23, 01:00	414296	1-hr	84	83.5	exc
Barge Landing	PM2.5	30May23, 01:00	414292	1-hr	192	191.6	exc
Ft. McKay S	PM2.5	30May23, 01:00	414293	1-hr	155	154.7	exc
Wapasu	PM2.5	30May23, 01:00	414294	1-hr	244	244.0	exc
Fort Hills	PM2.5	30May23, 01:00	414013	1-hr	208	207.6	exc
Ells River	PM2.5	30May23, 01:00	414014	1-hr	87	87.0	exc
Bertha Ganter	PM2.5	30May23, 02:00	414290	1-hr	108	-	ret
Buffalo Viewpoint	PM2.5	30May23, 02:00	414295	1-hr	191	190.7	exc
Patricia McInnes	PM2.5	30May23, 02:00	414296	1-hr	111	110.5	exc
Barge Landing	PM2.5	30May23, 02:00	414292	1-hr	194	193.6	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Ft. McKay S	PM2.5	30May23, 02:00	414293	1-hr	178	178.4	exc
Wapasu	PM2.5	30May23, 02:00	414294	1-hr	372	372.3	exc
Fort Hills	PM2.5	30May23, 02:00	414013	1-hr	159	159.4	exc
Ells River	PM2.5	30May23, 02:00	414014	1-hr	100	99.8	exc
Bertha Ganter	PM2.5	30May23, 03:00	414290	1-hr	106	-	ret
Buffalo Viewpoint	PM2.5	30May23, 03:00	414295	1-hr	175	174.6	exc
Patricia McInnes	PM2.5	30May23, 03:00	414296	1-hr	126	126.4	exc
Barge Landing	PM2.5	30May23, 03:00	414292	1-hr	162	162.1	exc
Ft. McKay S	PM2.5	30May23, 03:00	414293	1-hr	180	179.8	exc
Wapasu	PM2.5	30May23, 03:00	414294	1-hr	420	420.2	exc
Fort Hills	PM2.5	30May23, 03:00	414013	1-hr	148	147.8	exc
Ells River	PM2.5	30May23, 03:00	414014	1-hr	110	110.0	exc
Bertha Ganter	PM2.5	30May23, 04:00	414290	1-hr	107	-	ret
Buffalo Viewpoint	PM2.5	30May23, 04:00	414295	1-hr	146	146.4	exc
Patricia McInnes	PM2.5	30May23, 04:00	414296	1-hr	151	150.8	exc
Fort Chip	PM2.5	30May23, 04:00	414291	1-hr	82	82.1	exc
Barge Landing	PM2.5	30May23, 04:00	414292	1-hr	134	134.2	exc
Ft. McKay S	PM2.5	30May23, 04:00	414293	1-hr	132	132.1	exc
Wapasu	PM2.5	30May23, 04:00	414294	1-hr	322	322.1	exc
Fort Hills	PM2.5	30May23, 04:00	414013	1-hr	116	116.4	exc
Ells River	PM2.5	30May23, 04:00	414014	1-hr	99	98.8	exc
Bertha Ganter	PM2.5	30May23, 05:00	414290	1-hr	89	-	ret
Buffalo Viewpoint	PM2.5	30May23, 05:00	414295	1-hr	126	125.6	exc
Patricia McInnes	PM2.5	30May23, 05:00	414296	1-hr	136	135.5	exc
Fort Chip	PM2.5	30May23, 05:00	414291	1-hr	90	89.7	exc
Barge Landing	PM2.5	30May23, 05:00	414292	1-hr	112	111.9	exc
Ft. McKay S	PM2.5	30May23, 05:00	414293	1-hr	116	115.7	exc
Wapasu	PM2.5	30May23, 05:00	414294	1-hr	252	252.3	exc
Fort Hills	PM2.5	30May23, 05:00	414013	1-hr	113	112.7	exc
Ells River	PM2.5	30May23, 05:00	414014	1-hr	97	97.3	exc
Bertha Ganter	PM2.5	30May23, 06:00	414290	1-hr	94	-	ret



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Buffalo Viewpoint	PM2.5	30May23, 06:00	414295	1-hr	112	112.1	exc
Fort Chip	PM2.5	30May23, 06:00	414291	1-hr	106	106.3	exc
Barge Landing	PM2.5	30May23, 06:00	414292	1-hr	110	110.2	exc
Ft. McKay S	PM2.5	30May23, 06:00	414293	1-hr	100	100.5	exc
Wapasu	PM2.5	30May23, 06:00	414294	1-hr	224	223.8	exc
Fort Hills	PM2.5	30May23, 06:00	414013	1-hr	110	110.4	exc
Ells River	PM2.5	30May23, 06:00	414014	1-hr	90	89.6	exc
Bertha Ganter	PM2.5	30May23, 07:00	414290	1-hr	82	-	ret
Buffalo Viewpoint	PM2.5	30May23, 07:00	414295	1-hr	109	109.5	exc
Fort Chip	PM2.5	30May23, 07:00	414291	1-hr	137	137.2	exc
Barge Landing	PM2.5	30May23, 07:00	414292	1-hr	91	91.4	exc
Ft. McKay S	PM2.5	30May23, 07:00	414293	1-hr	100	100.1	exc
Wapasu	PM2.5	30May23, 07:00	414294	1-hr	250	249.5	exc
Fort Hills	PM2.5	30May23, 07:00	414013	1-hr	109	109.0	exc
Ells River	PM2.5	30May23, 07:00	414014	1-hr	85	85.3	exc
Bertha Ganter	PM2.5	30May23, 08:00	414290	1-hr	88	-	ret
Buffalo Viewpoint	PM2.5	30May23, 08:00	414295	1-hr	139	139.3	exc
Fort Chip	PM2.5	30May23, 08:00	414291	1-hr	201	201.4	exc
Barge Landing	PM2.5	30May23, 08:00	414292	1-hr	86	86.2	exc
Ft. McKay S	PM2.5	30May23, 08:00	414293	1-hr	123	122.6	exc
Wapasu	PM2.5	30May23, 08:00	414294	1-hr	237	237.3	exc
Fort Hills	PM2.5	30May23, 08:00	414013	1-hr	121	121.2	exc
Ells River	PM2.5	30May23, 08:00	414014	1-hr	93	92.8	exc
Bertha Ganter	PM2.5	30May23, 09:00	414290	1-hr	110	-	ret
Fort Chip	PM2.5	30May23, 09:00	414291	1-hr	242	241.6	exc
Barge Landing	PM2.5	30May23, 09:00	414292	1-hr	116	115.7	exc
Ft. McKay S	PM2.5	30May23, 09:00	414293	1-hr	149	148.9	exc
Wapasu	PM2.5	30May23, 09:00	414294	1-hr	204	204.4	exc
Fort Hills	PM2.5	30May23, 09:00	414013	1-hr	196	196.0	exc
Ells River	PM2.5	30May23, 09:00	414014	1-hr	119	118.7	exc
Bertha Ganter	PM2.5	30May23, 10:00	414290	1-hr	112	-	ret



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Buffalo Viewpoint	PM2.5	30May23, 10:00	414295	1-hr	89	89.0	exc
Fort Chip	PM2.5	30May23, 10:00	414291	1-hr	91	91.3	exc
Barge Landing	PM2.5	30May23, 10:00	414292	1-hr	138	138.0	exc
Ft. McKay S	PM2.5	30May23, 10:00	414293	1-hr	189	189.4	exc
Wapasu	PM2.5	30May23, 10:00	414294	1-hr	197	197.2	exc
Fort Hills	PM2.5	30May23, 10:00	414013	1-hr	204	203.8	exc
Ells River	PM2.5	30May23, 10:00	414014	1-hr	163	162.9	exc
Bertha Ganter	PM2.5	30May23, 11:00	414290	1-hr	110	-	ret
Fort Chip	PM2.5	30May23, 11:00	414291	1-hr	82	81.7	exc
Barge Landing	PM2.5	30May23, 11:00	414292	1-hr	136	136.2	exc
Ft. McKay S	PM2.5	30May23, 11:00	414293	1-hr	163	162.6	exc
Wapasu	PM2.5	30May23, 11:00	414294	1-hr	112	112.1	exc
Fort Hills	PM2.5	30May23, 11:00	414013	1-hr	165	165.1	exc
Ells River	PM2.5	30May23, 11:00	414014	1-hr	138	137.5	exc
Ft. McKay S	PM2.5	30May23, 12:00	414293	1-hr	92	92.5	exc
Fort Hills	PM2.5	30May23, 12:00	414013	1-hr	105	105.1	exc
Fort Chip	PM2.5	30May23, 13:00	414291	1-hr	117	116.7	exc
Fort Chip	PM2.5	30May23, 14:00	414291	1-hr	138	137.9	exc
Conklin	PM2.5	30May23, 14:00	414297	1-hr	152	151.6	exc
Fort Chip	PM2.5	30May23, 15:00	414291	1-hr	97	97.4	exc
Stony Mtn.	PM2.5	30May23, 15:00	414298	1-hr	90	89.9	exc
Conklin	PM2.5	30May23, 15:00	414297	1-hr	207	207.3	exc
Janvier	PM2.5	30May23, 15:00	414299	1-hr	105	104.6	exc
Conklin	PM2.5	30May23, 16:00	414297	1-hr	104	103.7	exc
Janvier	PM2.5	30May23, 16:00	414299	1-hr	182	181.6	exc
Janvier	PM2.5	30May23, 17:00	414299	1-hr	277	277.4	exc
Conklin	PM2.5	30May23, 18:00	414297	1-hr	103	102.7	exc
Janvier	PM2.5	30May23, 18:00	414299	1-hr	479	478.7	exc
Surmont 2	PM2.5	30May23, 18:00	414300	1-hr	199	199.5	exc
Stony Mtn.	PM2.5	30May23, 19:00	414298	1-hr	125	124.9	exc
Conklin	PM2.5	30May23, 19:00	414297	1-hr	195	195.1	exc
Janvier	PM2.5	30May23, 19:00	414299	1-hr	526	526.1	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Surmont 2	PM2.5	30May23, 19:00	414300	1-hr	450	450.4	exc
Fort Chip	PM2.5	30May23, 20:00	414291	1-hr	129	128.7	exc
Stony Mtn.	PM2.5	30May23, 20:00	414298	1-hr	191	190.5	exc
Conklin	PM2.5	30May23, 20:00	414297	1-hr	238	237.6	exc
Janvier	PM2.5	30May23, 20:00	414299	1-hr	510	515.0	exc
Fort Chip	PM2.5	30May23, 21:00	414291	1-hr	308	308.5	exc
Conklin	PM2.5	30May23, 21:00	414297	1-hr	248	248.1	exc
Janvier	PM2.5	30May23, 21:00	414299	1-hr	492	492.4	exc
Fort Chip	PM2.5	30May23, 22:00	414291	1-hr	188	187.9	exc
Wapasu	PM2.5	30May23, 22:00	414294	1-hr	165	165.2	exc
Conklin	PM2.5	30May23, 22:00	414297	1-hr	125	125.4	exc
Janvier	PM2.5	30May23, 22:00	414299	1-hr	423	423.0	exc
Fort Hills	PM2.5	30May23, 22:00	414013	1-hr	193	192.8	exc
Fort Chip	PM2.5	30May23, 23:00	414291	1-hr	187	187.2	exc
Wapasu	PM2.5	30May23, 23:00	414294	1-hr	225	225.1	exc
Janvier	PM2.5	30May23, 23:00	414299	1-hr	313	313.1	exc
Fort Hills	PM2.5	30May23, 23:00	414013	1-hr	233	232.7	exc
Ells River	PM2.5	30May23, 23:00	414014	1-hr	146	146.5	exc
Bertha Ganter	PM2.5	30May23, 24:00	414290	1-hr	84	-	ret
Bertha Ganter	PM2.5	30May23, 24:00	414290	24-hr	80	-	ret
Buffalo Viewpoint	PM2.5	30May23, 24:00	414295	24-hr	75	74.7	exc
Patricia McInnes	PM2.5	30May23, 24:00	414296	24-hr	49	48.5	exc
Fort Chip	PM2.5	30May23, 24:00	414291	1-hr	208	208.1	exc
Barge Landing	PM2.5	30May23, 24:00	414292	1-hr	80	80.4	exc
Barge Landing	PM2.5	30May23, 24:00	414292	24-hr	80	80.1	exc
Ft. McKay S	PM2.5	30May23, 24:00	414293	1-hr	83	83.4	exc
Ft. McKay S	PM2.5	30May23, 24:00	414293	24-hr	83	83.4	exc
Wapasu	PM2.5	30May23, 24:00	414294	1-hr	244	243.7	exc
Wapasu	PM2.5	30May23, 24:00	414294	24-hr	159	159.3	exc
Stony Mtn.	PM2.5	30May23, 24:00	414298	24-hr	39	38.7	exc
Conklin	PM2.5	30May23, 24:00	414297	24-hr	71	70.8	exc
Janvier	PM2.5	30May23, 24:00	414299	1-hr	306	306.0	exc
Janvier	PM2.5	30May23, 24:00	414299	24-hr	171	177.3	exc
Fort Hills	PM2.5	30May23, 24:00	414013	1-hr	165	165.2	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Fort Hills	PM2.5	30May23, 24:00	414013	24-hr	108	108.4	exc
Surmont 2	PM2.5	30May23, 24:00	414300	24-hr	43	43.3	exc
Ells River	PM2.5	30May23, 24:00	414014	1-hr	94	93.5	exc
Ells River	PM2.5	30May23, 24:00	414014	24-hr	69	69.4	exc
Fort Chip	PM2.5	30May23, 24:00	414291	24-hr	117	117.4	exc
Bertha Ganter	PM2.5	31May23, 01:00	414290	1-hr	91	-	ret
Fort Chip	PM2.5	31May23, 01:00	414291	1-hr	399	399.3	exc
Barge Landing	PM2.5	31May23, 01:00	414292	1-hr	102	102.3	exc
Ft. McKay S	PM2.5	31May23, 01:00	414293	1-hr	106	105.7	exc
Wapasu	PM2.5	31May23, 01:00	414294	1-hr	230	229.5	exc
Janvier	PM2.5	31May23, 01:00	414299	1-hr	297	297.3	exc
Fort Hills	PM2.5	31May23, 01:00	414070	1-hr	222	221.5	exc
Ells River	PM2.5	31May23, 01:00	414071	1-hr	80	80.4	exc
Fort Chip	PM2.5	31May23, 02:00	414291	1-hr	365	365.2	exc
Wapasu	PM2.5	31May23, 02:00	414294	1-hr	256	256.1	exc
Stony Mtn.	PM2.5	31May23, 02:00	414298	1-hr	110	110.3	exc
Janvier	PM2.5	31May23, 02:00	414299	1-hr	307	307.3	exc
Fort Hills	PM2.5	31May23, 02:00	414070	1-hr	116	115.5	exc
Fort Chip	PM2.5	31May23, 03:00	414291	1-hr	249	249.4	exc
Wapasu	PM2.5	31May23, 03:00	414294	1-hr	251	251.5	exc
Stony Mtn.	PM2.5	31May23, 03:00	414298	1-hr	121	121.1	exc
Janvier	PM2.5	31May23, 03:00	414299	1-hr	297	297.5	exc
Fort Hills	PM2.5	31May23, 03:00	414070	1-hr	174	173.8	exc
Fort Chip	PM2.5	31May23, 04:00	414291	1-hr	244	243.5	exc
Wapasu	PM2.5	31May23, 04:00	414294	1-hr	246	246.1	exc
Stony Mtn.	PM2.5	31May23, 04:00	414298	1-hr	125	125.2	exc
Janvier	PM2.5	31May23, 04:00	414299	1-hr	292	292.3	exc
Fort Hills	PM2.5	31May23, 04:00	414070	1-hr	81	81.0	exc
Fort Chip	PM2.5	31May23, 05:00	414291	1-hr	217	217.2	exc
Wapasu	PM2.5	31May23, 05:00	414294	1-hr	223	223.0	exc
Stony Mtn.	PM2.5	31May23, 05:00	414298	1-hr	116	116.1	exc
Janvier	PM2.5	31May23, 05:00	414299	1-hr	240	239.7	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Fort Chip	PM2.5	31May23, 06:00	414291	1-hr	218	218.0	exc
Wapasu	PM2.5	31May23, 06:00	414294	1-hr	232	232.2	exc
Stony Mtn.	PM2.5	31May23, 06:00	414298	1-hr	96	95.6	exc
Janvier	PM2.5	31May23, 06:00	414299	1-hr	175	174.6	exc
Fort Chip	PM2.5	31May23, 07:00	414291	1-hr	210	209.9	exc
Wapasu	PM2.5	31May23, 07:00	414294	1-hr	220	220.3	exc
Stony Mtn.	PM2.5	31May23, 07:00	414298	1-hr	118	118.0	exc
Janvier	PM2.5	31May23, 07:00	414299	1-hr	122	122.1	exc
Fort Chip	PM2.5	31May23, 08:00	414291	1-hr	231	231.3	exc
Wapasu	PM2.5	31May23, 08:00	414294	1-hr	139	138.6	exc
Stony Mtn.	PM2.5	31May23, 08:00	414298	1-hr	119	119.2	exc
Conklin	PM2.5	31May23, 08:00	414297	1-hr	84	84.4	exc
Janvier	PM2.5	31May23, 08:00	414299	1-hr	114	113.8	exc
Fort Chip	PM2.5	31May23, 09:00	414291	1-hr	316	315.8	exc
Stony Mtn.	PM2.5	31May23, 09:00	414298	1-hr	146	146.2	exc
Conklin	PM2.5	31May23, 09:00	414297	1-hr	166	166.4	exc
Janvier	PM2.5	31May23, 09:00	414299	1-hr	140	140.0	exc
Fort Chip	PM2.5	31May23, 10:00	414291	1-hr	277	276.7	exc
Stony Mtn.	PM2.5	31May23, 10:00	414298	1-hr	151	151.0	exc
Conklin	PM2.5	31May23, 10:00	414297	1-hr	176	175.5	exc
Janvier	PM2.5	31May23, 10:00	414299	1-hr	174	174.3	exc
Fort Chip	PM2.5	31May23, 11:00	414291	1-hr	102	102.1	exc
Stony Mtn.	PM2.5	31May23, 11:00	414298	1-hr	154	154.5	exc
Conklin	PM2.5	31May23, 11:00	414297	1-hr	174	174.3	exc
Janvier	PM2.5	31May23, 11:00	414299	1-hr	131	130.6	exc
Stony Mtn.	PM2.5	31May23, 12:00	414298	1-hr	154	154.3	exc
Conklin	PM2.5	31May23, 12:00	414297	1-hr	203	202.9	exc
Janvier	PM2.5	31May23, 12:00	414299	1-hr	126	125.9	exc
Surmont 2	PM2.5	31May23, 12:00	414300	1-hr	90	90.3	exc
Anzac	PM2.5	31May23, 13:00	414301	1-hr	119	118.5	exc
Stony Mtn.	PM2.5	31May23, 13:00	414298	1-hr	203	203.2	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Conklin	PM2.5	31May23, 13:00	414297	1-hr	224	223.9	exc
Janvier	PM2.5	31May23, 13:00	414299	1-hr	144	144.2	exc
Surmont 2	PM2.5	31May23, 13:00	414300	1-hr	108	108.1	exc
Buffalo Viewpoint	PM2.5	31May23, 14:00	414295	1-hr	111	111.2	exc
Anzac	PM2.5	31May23, 14:00	414301	1-hr	149	149.2	exc
Stony Mtn.	PM2.5	31May23, 14:00	414298	1-hr	183	183.0	exc
Conklin	PM2.5	31May23, 14:00	414297	1-hr	207	206.5	exc
Janvier	PM2.5	31May23, 14:00	414299	1-hr	151	150.6	exc
Surmont 2	PM2.5	31May23, 14:00	414300	1-hr	156	156.2	exc
Bertha Ganter	PM2.5	31May23, 15:00	414290	1-hr	91	-	ret
Buffalo Viewpoint	PM2.5	31May23, 15:00	414295	1-hr	97	96.8	exc
Patricia McInnes	PM2.5	31May23, 15:00	414296	1-hr	116	116.4	exc
Athabasca Valley	PM2.5	31May23, 15:00	414289	1-hr	126	125.8	exc
Barge Landing	PM2.5	31May23, 15:00	414292	1-hr	86	86.1	exc
Ft. McKay S	PM2.5	31May23, 15:00	414293	1-hr	158	158.4	exc
Anzac	PM2.5	31May23, 15:00	414301	1-hr	179	178.5	exc
Stony Mtn.	PM2.5	31May23, 15:00	414298	1-hr	168	167.6	exc
Conklin	PM2.5	31May23, 15:00	414297	1-hr	172	171.6	exc
Janvier	PM2.5	31May23, 15:00	414299	1-hr	175	174.6	exc
Surmont 2	PM2.5	31May23, 15:00	414300	1-hr	169	168.6	exc
Bertha Ganter	PM2.5	31May23, 16:00	414290	1-hr	110	-	ret
Patricia McInnes	PM2.5	31May23, 16:00	414296	1-hr	173	172.6	exc
Athabasca Valley	PM2.5	31May23, 16:00	414289	1-hr	160	160.0	exc
Barge Landing	PM2.5	31May23, 16:00	414292	1-hr	130	130.1	exc
Ft. McKay S	PM2.5	31May23, 16:00	414293	1-hr	146	146.2	exc
Anzac	PM2.5	31May23, 16:00	414301	1-hr	180	179.9	exc
Stony Mtn.	PM2.5	31May23, 16:00	414298	1-hr	143	142.8	exc
Conklin	PM2.5	31May23, 16:00	414297	1-hr	147	146.5	exc
Janvier	PM2.5	31May23, 16:00	414299	1-hr	184	184.1	exc
Surmont 2	PM2.5	31May23, 16:00	414300	1-hr	144	143.6	exc
Ells River	PM2.5	31May23, 16:00	414071	1-hr	116	115.6	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Bertha Ganter	PM2.5	31May23, 17:00	414290	1-hr	82	-	ret
Buffalo Viewpoint	PM2.5	31May23, 17:00	414295	1-hr	117	116.8	exc
Patricia McInnes	PM2.5	31May23, 17:00	414296	1-hr	180	179.5	exc
Athabasca Valley	PM2.5	31May23, 17:00	414289	1-hr	161	161.3	exc
Barge Landing	PM2.5	31May23, 17:00	414292	1-hr	92	91.6	exc
Ft. McKay S	PM2.5	31May23, 17:00	414293	1-hr	109	108.7	exc
Anzac	PM2.5	31May23, 17:00	414301	1-hr	176	175.7	exc
Wapasu	PM2.5	31May23, 17:00	414294	1-hr	131	131.4	exc
Stony Mtn.	PM2.5	31May23, 17:00	414298	1-hr	98	98.3	exc
Conklin	PM2.5	31May23, 17:00	414297	1-hr	137	137.0	exc
Janvier	PM2.5	31May23, 17:00	414299	1-hr	180	179.6	exc
Fort Hills	PM2.5	31May23, 17:00	414070	1-hr	114	114.0	exc
Surmont 2	PM2.5	31May23, 17:00	414300	1-hr	143	143.0	exc
Ells River	PM2.5	31May23, 17:00	414071	1-hr	91	90.7	exc
Buffalo Viewpoint	PM2.5	31May23, 18:00	414295	1-hr	150	150.1	exc
Patricia McInnes	PM2.5	31May23, 18:00	414296	1-hr	198	198.0	exc
Athabasca Valley	PM2.5	31May23, 18:00	414289	1-hr	186	186.5	exc
Barge Landing	PM2.5	31May23, 18:00	414292	1-hr	94	94.2	exc
Ft. McKay S	PM2.5	31May23, 18:00	414293	1-hr	139	139.5	exc
Wapasu	PM2.5	31May23, 18:00	414294	1-hr	143	142.8	exc
Stony Mtn.	PM2.5	31May23, 18:00	414298	1-hr	132	131.6	exc
Conklin	PM2.5	31May23, 18:00	414297	1-hr	157	157.1	exc
Janvier	PM2.5	31May23, 18:00	414299	1-hr	186	186.1	exc
Fort Hills	PM2.5	31May23, 18:00	414070	1-hr	93	92.8	exc
Surmont 2	PM2.5	31May23, 18:00	414300	1-hr	155	154.6	exc
Ells River	PM2.5	31May23, 18:00	414071	1-hr	91	91.4	exc
Bertha Ganter	PM2.5	31May23, 19:00	414290	1-hr	94	-	ret
Buffalo Viewpoint	PM2.5	31May23, 19:00	414295	1-hr	148	148.1	exc
Patricia McInnes	PM2.5	31May23, 19:00	414296	1-hr	160	159.8	exc
Athabasca Valley	PM2.5	31May23, 19:00	414289	1-hr	107	107.3	exc
Barge Landing	PM2.5	31May23, 19:00	414292	1-hr	140	140.2	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Ft. McKay S	PM2.5	31May23, 19:00	414293	1-hr	175	175.1	exc
Wapasu	PM2.5	31May23, 19:00	414294	1-hr	191	190.9	exc
Stony Mtn.	PM2.5	31May23, 19:00	414298	1-hr	139	138.9	exc
Conklin	PM2.5	31May23, 19:00	414297	1-hr	128	127.5	exc
Janvier	PM2.5	31May23, 19:00	414299	1-hr	202	201.8	exc
Fort Hills	PM2.5	31May23, 19:00	414070	1-hr	92	92.3	exc
Surmont 2	PM2.5	31May23, 19:00	414300	1-hr	148	147.6	exc
Ells River	PM2.5	31May23, 19:00	414071	1-hr	118	117.5	exc
Bertha Ganter	PM2.5	31May23, 20:00	414290	1-hr	94	-	ret
Buffalo Viewpoint	PM2.5	31May23, 20:00	414295	1-hr	162	162.4	exc
Barge Landing	PM2.5	31May23, 20:00	414292	1-hr	148	148.1	exc
Ft. McKay S	PM2.5	31May23, 20:00	414293	1-hr	169	168.8	exc
Wapasu	PM2.5	31May23, 20:00	414294	1-hr	200	199.9	exc
Stony Mtn.	PM2.5	31May23, 20:00	414298	1-hr	166	165.8	exc
Conklin	PM2.5	31May23, 20:00	414297	1-hr	180	180.2	exc
Fort Hills	PM2.5	31May23, 20:00	414070	1-hr	107	106.7	exc
Janvier	PM2.5	31May23, 20:00	414299	1-hr	217	216.7	exc
Surmont 2	PM2.5	31May23, 20:00	414300	1-hr	119	119.2	exc
Ells River	PM2.5	31May23, 20:00	414071	1-hr	124	124.3	exc
Buffalo Viewpoint	PM2.5	31May23, 21:00	414295	1-hr	116	115.7	exc
Barge Landing	PM2.5	31May23, 21:00	414292	1-hr	99	99.1	exc
Ft. McKay S	PM2.5	31May23, 21:00	414293	1-hr	106	105.6	exc
Wapasu	PM2.5	31May23, 21:00	414294	1-hr	190	189.7	exc
Stony Mtn.	PM2.5	31May23, 21:00	414298	1-hr	188	187.9	exc
Conklin	PM2.5	31May23, 21:00	414297	1-hr	223	223.0	exc
Janvier	PM2.5	31May23, 21:00	414299	1-hr	207	206.8	exc
Wapasu	PM2.5	31May23, 22:00	414294	1-hr	149	148.6	exc
Stony Mtn.	PM2.5	31May23, 22:00	414298	1-hr	130	130.3	exc
Conklin	PM2.5	31May23, 22:00	414297	1-hr	174	174.0	exc
Janvier	PM2.5	31May23, 22:00	414299	1-hr	189	188.6	exc
Fort Chip	PM2.5	31May23, 23:00	414291	1-hr	188	188.3	exc



<u>Site</u>	<u>Paramter</u>	<u>Date/Time</u>	<u>Reference</u>	<u>Period</u>	<u>Reported</u>	<u>Final</u>	<u>Status</u>
Janvier	PM2.5	31May23, 23:00	414299	1-hr	111	111.1	exc
Bertha Ganter	PM2.5	31May23, 24:00	414290	24-hr	68	-	ret
Buffalo Viewpoint	PM2.5	31May23, 24:00	414295	24-hr	57	56.7	exc
Patricia McInnes	PM2.5	31May23, 24:00	414296	24-hr	52	51.7	exc
Athabasca Valley	PM2.5	31May23, 24:00	414289	24-hr	49	48.6	exc
Fort Chip	PM2.5	31May23, 24:00	414291	1-hr	177	177.1	exc
Fort Chip	PM2.5	31May23, 24:00	414291	24-hr	147	146.5	exc
Barge Landing	PM2.5	31May23, 24:00	414292	24-hr	53	53.1	exc
Ft. McKay S	PM2.5	31May23, 24:00	414293	24-hr	69	68.5	exc
Anzac	PM2.5	31May23, 24:00	414301	24-hr	57	56.6	exc
Wapasu	PM2.5	31May23, 24:00	414294	24-hr	134	134.1	exc
Stony Mtn.	PM2.5	31May23, 24:00	414298	24-hr	129	128.9	exc
Janvier	PM2.5	31May23, 24:00	414299	1-hr	94	93.5	exc
Conklin	PM2.5	31May23, 24:00	414297	24-hr	127	127.4	exc
Janvier	PM2.5	31May23, 24:00	414299	24-hr	186	185.5	exc
Fort Hills	PM2.5	31May23, 24:00	414070	24-hr	62	61.9	exc
Surmont 2	PM2.5	31May23, 24:00	414300	24-hr	76	76.3	exc
Ells River	PM2.5	31May23, 24:00	414071	24-hr	44	44.0	exc
Fort Hills	PM2.5	6May23, 24:00	412699	24-hr	29.3	29.3	late
Fort Chip	PM2.5	21May23, 17:00	413650	1-hr	277.3	277.3	late

*status legend:

late

exc

nae

ret

exceedance, raw values were not found to be in exceedance in real time, and/or were not reported, but final values were found to be an exceedance after data processing.

exceedance, raw values reported in real time were confirmed to be in exceedance after data processing.

not an exceedance, raw values reported in real time were found not in exceedance after data processing.

retracted, reported exceedance was found to be not an exceedance after investigation of measurement system status and/or validation of raw data in conjunction with all associated measurement



End of Report